

Thursday, 21.04.2016

Hall: Mediteraneo+Adriatic

16.00-17.30

V 1: CAROTID I

Moderators: I.Droc (Romania), D.Milic (Serbia)

Key Note Lecture: What evidence are we missing in carotid field? R. Bulbulia (UK)

Key Note Lecture: Emergency surgery for carotid occlusion, U.Bengisun (Turkey)

Urgent carotid endarterectomy: our opinionK. Andreychuk¹, A. Shatravka²¹The Nikiforov Russian Center of Emergency and Radiation Medicine, St Petersburg, Russian Federation²City Hospital #26, Cardiac Surgery, St Petersburg, Russian Federation

The validity of carotid endarterectomy (CEA) within 6 weeks after carotid-related ischemic events remains debatable. Principal fear are associated with a high hazard of the hemorrhagic transformation. A benefit of early CEA altogether has been established by multiple reports and guidelines. However, a concrete timing and patients' selection are uncertain at present. In separate opinion, CEA can be performed in patients within the hyperacute period of stroke without significant increase of procedural risks, but it can be reduced a hazard of repeated ischemic events. Moreover, some sources advices to perform CEA in symptomatic patients without high-grade stenosis (more than 70%). The emergency CEA within first 6 hours is a worse-understood problem. There is a plenty of opposite judgement about it. The negative opinion is being based on findings about extremely procedural risks of surgery within the first 2 days after stroke. It is obvious there is not enough of good-quality data. However, there is good reason to believe that the prospective results of STACI Trial will make things clear.

We have an experience in 160 early CEA within 14 days (from 2 hours) after acute ischemic event in 2010-2015. Fifteen patients among them were underwent an emergency surgery due to thrombosis of internal carotid artery. CEA within 2-14 days was performed in 145 patient after an ischemic stroke with significant carotid stenosis and without MR-signs of hemorrhage. We used a selective carotid shunt in 15.5% only in cases of critical clamping intolerance. Near infrared spectroscopy (NIRS) level was used as an only criterion for shunting.

The patients after emergency CEA had a neurological deficiency improvement in 73.3%, 20% died. The patients in early CEA group received improvement in 78.6 %. No stroke or recurrent stenosis were revealed in both group.

The feasibility of surgical treatment in patients with type ii internal carotid artery occlusion

S. Babic, S.Tanaskovic, P. Gajin, D. Nenezic, P. Popov, N. Ilijevski, N. Aleksić, P. Matić, G. Vucurevic, D. Unic-Stojanovic, Dj. Radak

Institute for cardiovascular disease “Dedinje”, Belgrade, Serbia

Aim: To present feasibility, safety and efficiency of the surgery in the patients with type II internal carotid artery occlusion, including long-term results.

Patients and Methods: From March 2008 to August 2015, 74 consecutive patients (48 men with a mean age of 65.1 ± 8.06 years) underwent surgical treatment because of internal carotid artery (ICA) segmental occlusion, verified preoperative with Duplex scans and CT angiography. Also, brain CT was performed in all the patients. Indication for treatment was made by vascular surgeon, neurologist and interventional radiologist. After successful treatment, all patients were followed up at 1, 3, 6, and 12 months after the procedure and every 6 months thereafter.

Results: Most common symptom at presentation was TIA (46.7%), followed with stroke in the past six months in the 30 (33.3%) patients. Desobstruction of the ICA with endarterectomy techniques was performed successfully in all the patients with a mean clamp time of 11.9 min. All the procedures were performed under general anesthesia in combination with superficial cervical block. The early complication rate was 8.1% and included two cardiac, two transient and two neurologic events which required reintervention. One of these patients had intracerebral hemorrhage and died 5 days after surgery. During follow-up (mean 50.4 ± 31.3 months), the primary patency rates after at 1, 3, 5 and 7 years were 98.4%, 94.9%, 92.9% and 82.9% respectively and survival 98.7%, 96.8%, 89% and 77.6% respectively. Ultrasound Doppler controls during follow-up detected 8 ICA restenosis.

Conclusion: Surgical treatment of the internal carotid artery (ICA) segmental occlusion is a safe and effective procedure associated with low risk and good long-term results.

Key words: internal carotid artery; occlusion; carotid endarterectomy.

The immediate and intermediate results of staged carotid endarterectomy and coronary artery bypass grafting

V.G. Tsoi, E.E Khudenko, P.A. Shilenko, A.N. Cherkas

Federal Center of High Medical Technologies, Kaliningrad, Russian Federation

Aim: study the effectiveness and advisability of staged carotid endarterectomy and coronary artery bypass grafting.

Materials and Methods: Since September 2012 258 patients (191 men (74%), mean age 67 +/- 4 years) were admitted for coronary artery bypass graft and carotid endarterectomy (CEA). All patients first stage was performed carotid endarterectomy. The staging interval was 31.5 days. Most patients (90%) were neurologically symptomatic. Carotid disease was bilateral in 41 cases (15.9%), in 19 cases (7.3%) were contralateral carotid occlusion and 8 patients (3.1%) has stenosis combined with kinking on the same side. Only obstructions >70% were considered for endarterectomy. The majority (61.2%) had triple vessel and 10.5% had left main disease. History of myocardial infarction was in 152 (58.9%) patients. Left ventricular ejection fraction was less than 50% in 168 (65.1%) patients. In 70% of cases index revascularization was 3 and more. 152 (58.9%) times we used two ITA.

Results: No cases of stroke and 2 (0.8%) cases of myocardial infarction in perioperative period. Hospital mortality was 1 (0.39%). All the patients underwent complete myocardial revascularization. The majority of patients had marked clinical benefit revascularization manifested a decrease in functional class or eliminate angina attacks, and the improvement of myocardial contractile function. Within two years under the supervision there were thirty patients. During the observation were not cases of myocardial infarction, stroke and lethal outcome.

Conclusion: Using modern methods of surgical treatment, the newest means of anesthetic and postoperative management of patients, staged surgery of carotid and coronary vessels can be successfully carried out with results comparable to the results of operations of the isolated coronary artery bypass grafting.

Endovascular treatment of carotid artery disease – experience from Serbian clinical centre

V.Cvetic, M. Colic, B.Lukic, O.Radmili, L. Davidovic

Serbian Clinical Centre, Belgrade, Serbia

Aim: Carotid artery stenting (CAS) has become a standard alternative to surgical treatment of patients with hemodynamically significant carotid stenosis.

Methods: According to literature recommendations respecting the indications for CAS, starting from June 2006 to November 2015 at Clinical Centre of Serbia more than 550 patients with carotid artery stenosis underwent CAS. There were more asymptomatic (n=290, 53 %), than symptomatic patients (n=265, 47 %). 219 patients had restenosis after carotid endarterectomy, 46 patients had surgically unapproachable lesions, 16 patients were treated after radiation therapy, and almost 50 % of the patients were with severe coronary or pulmonary disease. Because of anatomical reasons we didn't finish the procedure in 12 patients.

Results: The overall rate of in-hospital adverse events (transient ischemic attack, minor stroke, major stroke, myocardial infarction, and death) was 5.94 % (33 of 555). Implanted carotid stents open and closed design, depending on the type of lesion, with mandatory use of cerebral protection devices. All the carotid stenting procedures were carried out by one or both of two interventional radiologists.

Conclusion: CAS seemed feasible and relatively safe in our experience. CAS is the method of choice in the treatment of carotid disease in appropriately selected patients with a selection of the optimal material. Identifying complications during endovascular treatment of carotid stenosis, and the possibility of their solution is conditional upon the learning curve, experienced operator and the number of procedures performed in specialized centers.

Operative repair of extracranial carotid aneurysms based on anatomic types and kinks

M.Sevkovic¹, L.Davidović², S.Tanasković¹, S.Babić¹, P.Matić¹, P. Gajin¹, P.Popov¹, D.Nenzic¹, P.Jovanovic¹, M.Ilic¹, B.Lożuk¹, D.Jocic¹, I.Banzić², D.Kostić², N.Ilijevski¹, G.Vučurević¹, Đ. Radak¹

¹ Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

² Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Aim: Extracranial carotid aneurysms (ECAAs) surgical repair represents one of the most challenging fields in surgery. Aim of this study is to report outcomes following an operative treatment of ECAAs based on anatomic types and kinks.

Methods: We retrospectively analyzed anatomic type based approach to operative repair of 87 patients with ECAA from 1994 to 2011, out of which 30 (34.5%) also had associated kinking. Patients were followed for neurological ischemic events, postoperative hematoma, cranial nerve injury, myocardial infarction, other neurological complications and overall mortality. The results were presented as early (within 30 days after the surgery) and long term (during the follow-up) results. Based on anatomic types and kinks surgical treatment included; aneurysm resection and end-to-end anastomosis; ellipsoid transection of internal carotid artery (ICA), followed by prolonged incision on the medial wall, and reimplantation of ICA; reconstruction with Dacron graft between ICA and common carotid artery (CCA) ; reconstruction with Dacron graft between ICA bifurcation and distal ICA.

Results: In the early postoperative period, there were no strokes or mortality, cranial nerve injury rate was reported in 2 patients (2.3%) while 1 patient had myocardial infarction (1.14%). During the follow-up, 4 patients (4.6%) had stroke, out of which 2 had died (2.3%), while 4 (4.6%) had significant restenosis (> 50%). Overall mortality was 4.6%. The average 5-year survival rate was 96 +/- 3%.

Conclusion: Excellent outcomes can be obtained with surgical repair of ECAA, provided that the approach is tailored to the anatomic type and presence of kinks.

Coexistence of internal carotid artery stenosis in patients with abdominal aortic aneurysm

M.Vranes, L.Davidović, D.Vasić, D.Marković, O.Radmili

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Aim: Abdominal aortic aneurysm and carotid disease have medical and social significance, considering their morbidity, disability, and economic consequences. The study objectives were to determine the prevalence of asymptomatic internal carotid artery lesions $\geq 70\%$ in patients with AAA, the correlation of AAA diameter with the degree of internal carotid artery stenosis and symptoms, and the importance of preventive ultrasound checkups.

Methods: A prospective non-randomized controlled study including 740 patients, aged from 18-85 years, who were suitable for the inclusion and exclusion criteria and reported at the vascular laboratory from 1st of December 2011 to the 1st of November 2012.

Results: The prevalence of asymptomatic internal carotid artery stenosis $\geq 70\%$ in patients with abdominal aortic aneurysm is 10.8%. Male representatives have more symptomatic internal carotid artery stenosis $\geq 70\%$. Patients with small aneurysms more often have asymptomatic internal carotid artery stenosis $\geq 70\%$. The occurrence of symptoms of carotid disease was more prevalent among patients with internal carotid artery stenosis $\geq 70\%$ compared to the group with stenosis $< 70\%$. There was no correlation found between the grade of internal carotid artery stenosis with the size of abdominal aortic aneurysm.

Conclusion: The prevalence of asymptomatic internal carotid artery stenosis $\geq 70\%$ in patients with abdominal aortic aneurysm is found to be 10.8%. Male patients with internal carotid artery stenosis $\geq 70\%$ more often had symptoms of carotid disease. In the smaller aneurysms, internal carotid artery stenosis $\geq 70\%$ occurs frequently, but without the symptoms of carotid disease, and there was no correlation between the size of abdominal aortic aneurysm and the grade of internal carotid artery stenosis. Clinical implications of internal carotid artery imaging in patients with previously diagnosed abdominal aortic aneurysm is necessary.

Chronic symptomatic internal carotid artery occlusion – conservative, endovascular or surgical treatment

M. Gasparini

Izola general hospital, Department of vascular surgery, Izola, Slovenia

Aim: Chronic occlusion of the internal carotid artery carries a 5-8% per year risk of recurrent ipsilateral ischemic stroke. However, there are no guidelines on the optimal treatment of this clinical situation. Through literature search we tried to identify the optimal treatment for a 54-year-old diabetic patient who presented at our institution with dizziness and visual loss. Imaging showed occlusion of both internal carotid arteries and a subtotal stenosis of the left vertebral artery with multiple ischemic lesions in the left hemisphere.

Methods: A literature search on current treatment options for chronic internal carotid artery occlusion.

RESULTS: There is no general agreement in the literature whether unilateral or bilateral internal carotid artery occlusion requires surgical treatment. To select patients for conservative or surgical treatment, stroke risk assessment by measuring changes in brain oxygen extraction or cerebrovascular reserve capacity is of paramount importance. Older studies showed that surgery reduced the rate of stroke recurrence in patients with bilateral internal carotid artery occlusion but increased the mortality rate. Recently the Carotid Occlusion Surgery Study showed that extra-intracranial bypass surgery failed to reduce the rate of stroke recurrence in symptomatic patients with unilateral internal carotid artery occlusion.

Conclusion: In patients with occlusion of one or both internal carotid arteries who have mild symptoms and good cerebral perfusion and metabolism, surgical intervention is not indicated. Patients with symptoms of focal cerebral ischemia and reduced cerebrovascular reserve capacity who are unresponsive to best medical treatment should still be evaluated for an extra-intracranial bypass. Surgical or endovascular revascularization of the concomitant external carotid or vertebral artery stenosis should also be considered. In our case we decided to treat conservatively both internal carotid artery occlusions and dilate percutaneously the stenosis of the left vertebral artery.

MicroNet covered stent in the treatment of vulnerable carotid plaque: short and mid-term results

V.Gavrilovic, A.Vit, A.Pellegrin

Santa Maria della Misericordia, Udine, Italy

Aim: To evaluate the periprocedural safety, and mid-term period efficacy, of MicroNet carotid covered stent implantation for vulnerable plaque in neurologically symptomatic and asymptomatic patients candidates for carotid artery stenting (CAS) procedure.

Methods: From August 2015 to December 2015, 26 patients. (22M; 4F; mean age 72.92yr, range 62-83yr) underwent CAS. High grade carotid stenosis, using NASCET criteria, with vulnerable carotid plaque was detected on duplex sonography study and then confirmed on angio-CT for all the patients (22/26 asymptomatic, 4/26 symptomatic). All patients underwent brain MRI evaluation 24h pre-treatment. In 4/26 patients near-occlusion lesions were pre-dilated with coronary balloon to 4mm. The stent was always deployed under distal filter protection, all lesions were post-dilated. Clinical neurologic evaluation and duplex sonography follow-up (FU) was planned at 24h post-procedural and 1mo and 6mo after treatment. Cerebral MRI was performed in all Pts 24h post-procedural.

Results: Treatment with MicroNet covered stent was technically feasible in all patients with no periprocedural complications. Mean carotid stenosis evaluated at angiography before and immediately after the procedure was respectively $84.8\% \pm 7.1\%$ and $4.8\% \pm 3.3\%$. Duplex ultrasound at 24h (n=26); 1mo (n=26), 6mo (n=13) months showed stent patency without significant intra-stent stenosis. No Pt. developed major adverse cardiac events (death, stroke, MI) at 30 day FU without new ischemic lesions at 24h cerebral MRI FU.

Conclusion: In patients with high grade carotid artery stenosis and vulnerable plaque, MicroNet covered stenting is a safe technique that could offer clinical benefits for patients undergoing CAS, confirmed on short and mid-term follow-up.

Actual strategy in asymptomatic carotid stenosis: a single centre experience

I. Droc, M.Dumitrascu, L.Stan, S. Deaconu, F. Pinte

Army's Centre for Cardiovascular Diseases Department of Cardiovascular Surgery, Bucharest, Romania

Aim: Stroke is the third leading cause of death, following heart diseases and cancer. Stroke prevention continues to challenge the best efforts of all the specialists involved in this pathology. Extra cranial carotid occlusive disease is responsible for one third of the patients who have a cerebrovascular event. The optimal therapeutic management strategy remains unclear.

We present the results of 588 patients with symptomatic and asymptomatic carotid stenosis treated by carotid endarterectomy (CEA) and carotid artery stenting (CAS). We also present our therapeutic strategy in patients with carotid artery stenosis and simultaneous coronary artery disease.

Method: Between January 2009 and May 2013, 588 patients with carotid artery stenosis were treated in our department by open or endovascular interventions. Preoperative evaluation consisted in Echo2D+ Doppler examination and arteriography in inconclusive cases. 510 patients (70% symptomatic and 30% asymptomatic, with stenosis > 70%) underwent CEA and 78 patients (60% symptomatic and 40% asymptomatic, with stenosis > 70%) underwent CAS. The follow-up was between 1 and 24 months with an average of 12 months. We assessed perioperative and postoperative morbidity and mortality (cerebrovascular event related mortality and all cause mortality).

Results: The morbidity/mortality cumulative percent was 0,8% for CEA patients and 2,5% for CAS patients. There was no statistically significant difference between symptomatic and asymptomatic patient outcomes in both CEA or CAS group.

Conclusion: CAS is indicated to treat high risk patients. Use of cerebral protection devices are strongly recommended. CEA remains the "gold standard" for all other patients who are candidates for revascularization. CAS is not opposite to CEA, but a complementary method. The use of a well defined protocol may help to significantly reduce morbidity and mortality rates of open carotid surgery.

Thursday, 21.04.2016

Hall: Baltic+Aegean

16.00-17.30

V 2: AORTIC DISEASE I

Moderators: George Kouvelos (Greece), Dusan Kostic (Serbia)

Key Note Lecture: Optimal treatment for ruptured abdominal aortic aneurysm, Dusan Kostic (Serbia)

Thoracic aorta redo surgery: how to do it

M. Cherchi, P. Petruzzo, L. Pibiri, S. Camparini

Thoraco-Vascular Surgery Department- Azienda Ospedaliera Brotzu Cagliari, Italy

Aim: TEVAR is the gold-standard for the treatment of traumatic and degenerative pathologies of the thoracic aorta. The accurate planning and the choice of the right device are crucial to achieve good outcomes. The aim of our study is to report the treatment of post-procedural early and late complications.

Methods: From January 2009 to November 2015, 111 patients underwent TEVAR at our Thoraco-Vascular Surgery Unit due to acute or chronic pathologies of the thoracic aorta, such as aneurysms and dissections. Nine patients (0,08%) underwent redo interventions for complications, such as graft misfolding (2 cases), graft dislocation (8 cases of type I endoleak, 1 case of type III endoleak), distal pseudoaneurysm (1 case). Six patients were treated electively while three patients in emergency (2 aortic ruptures and 1 aortic embolization). Five patients underwent TEVAR while four patients were treated with supraortic vessel transposition and TEVAR. Moreover, one TEVAR was converted to open surgery and another one underwent left inferior lobectomy due to aneurysm erosion of the pleura.

Results: Seven patients survived and were discharged asymptomatic, with good patency of the graft. The redo-surgery mean inhospital stay was 24,9 days. In one case there were two different complications: a type I endoleak 26 months after the first TEVAR, and a type III endoleak 23 months after the type I endoleak correction. The two patients with further complications died: the first one died during the open surgery conversion for aneurysm rupture, whereas the second patient died of sepsis 85 days after the first operation.

Conclusions: TEVAR plus debranching (when needed) is a feasible option in the redo surgery of TEVAR early and late complications, when performed by skilled surg

Prospective evaluation of post implantation inflammatory response after evaer for aaa. influence on patients one-year outcome.

G. Kouvelos, E. Arnaoutoglou, N. Papa, K. Gartzonika, H. Milionis, V. Koulouras, M. Matsagkas

Department of Surgery – Vascular Surgery Unit, School of Medicine, University of Ioannina, Ioannina, Greece

Aim: To prospectively investigate the association of post implantation syndrome (PIS) with the clinical outcome during the first year after endovascular aneurysm repair (EVAR) for abdominal aortic aneurysm (AAA) and to assess the evolution of the inflammatory response as outlined from specific inflammatory markers.

Methods: From January 2010 to January 2013, 182 consecutive patients treated electively by EVAR for AAA were prospectively included. PIS was defined according to systemic inflammatory response syndrome criteria and patients were followed for 1 year. Adverse events included any major adverse cardiovascular events (MACE), acute renal failure, re-admission and death from any cause.

Results: PIS was diagnosed in 65 (35.7%) patients. White blood cell (WBC) count, hs-CRP and interleukin 6 (IL-6) were significantly higher in the PIS group at the postoperative period ($p < 0.001$). At the 1-year follow-up hs-CRP ($p = 0.99$) and IL-6 ($p = 0.17$) were attenuated towards the values of non-PIS group, while WBC count ($p = 0.02$) remained higher in the PIS group though within the normal range. During the follow-up period 17.2% and 18.8% of patients in the PIS group suffered a MACE or an adverse event respectively, in comparison to 4.3% and 5.1% in the non-PIS group. The occurrence of PIS was the only independent predictor of a MACE ($p = 0.007$) or an adverse event ($p = 0.005$) during the follow-up period.

Conclusion: The inflammatory response after EVAR is attenuated after the first postoperative month, as showed by the kinetics of several inflammatory biomarkers. However, PIS seems to correlate with the presence of a cardiovascular or any other adverse event during the first year after EVAR. Further studies should focus on whether a change in care is needed to ameliorate the higher cardiovascular risk of PIS patients.

Renal function impairment in patients undergoing evaR versus open repair

K. Spanos, C. Karathanos, A. Athanasoulas, V. Saleptsis, I. Vasilopoulos, A. Giannoukas

Department of Vascular Surgery, University Hospital of Larissa, Faculty of Medicine, School of Health Sciences, University of Thessaly, Larissa, Greece

Aim: Endovascular (EVAR) or open surgical (OSR) repair are the two currently treatment options for elective treatment of abdominal aortic aneurysm (AAA). The aim was to evaluate the impact of these two treatment options on renal function.

Methods: MEDLINE, CENTRAL, and Cochrane databases were searched to identify all studies which were designed to compare directly EVAR versus OSR regarding their impact on renal function during follow up.

Results: From 2000 to 2015, four retrospective and two RCT studies were identified reporting on direct comparison between elective EVAR and OSR in respect to renal function. All studies used GRF (Glomerular Filtration Rate) or estimated GFR (eGFR) to record renal function. In all the above studies total of 2,012 patients underwent AAA repair (54%; 1096 EVAR, 46%; 1006 OSR). The mean age in EVAR group was 72.6 ± 5 years (91% males), and in OSR group 69.9 ± 4 years (91% males). The incidence of atherosclerosis risk factors and AAA diameter except for chronic obstructive pulmonary disease, did not differ between the two groups. During follow up, there was no disparity in new events of renal impairment (increase $>20\%$ of GFR) between EVAR patients (5.3%; 58/1096) and OSR patients (5.2%; 52/1006), (OR 1.189, 95% C.I. 0.562 – 2.514, $P=.651$). The mean reduction in the GFR between pre-operative and in the follow up period was not associated with the type of the procedure (OR 0.225, 95% C.I. -0.069 – 0.519, $P=.133$).

Conclusions: Our analysis shows that the mean reduction of GFR between pre-operative and follow up period was not different between EVAR and OSR. Also, the incidence of renal impairment in the follow up period was similar between the two treatments. This underlines the importance of setting a similar renal function follow up protocol after both intervention

An aggressive strategy of iliac limb deployment may reduce iliac related secondary interventions after eva

M. P. Borrelli, G. de Donato, G. Galzerano, L. Sauro, V. Mascolo, C. Setacci

Vascular and Endovascular Surgery Unit Department of Medicine, Surgery and Neuroscience University of Siena, Siena, Italy

Aim: Re-interventions after endovascular aortic aneurysm repair (EVAR) are common. Iliac artery sequels after EVAR are a possible cause of re-intervention, whose frequency may be related to the precision of iliac limb implantation. The purpose of this study was to evaluate whether the introduction of an aggressive strategy of iliac limb deployment can increase technical success, and reduce iliac-related outcomes (IRO) and iliac-related secondary interventions (IRSI) in our recent EVAR procedures.

Methods: A retrospective review of our prospectively collected database of all patients undergoing an elective EVAR for infrarenal abdominal aneurysm (AAA) was performed. A systematic aggressive strategy of iliac limb deployment, that includes the treatment of the entire length of common iliac artery, has been adopted since September 2013, when a dedicated software for aortic planning has been available. Data from 122 EVAR procedures ["old strategy" (OS) group] performed between September 2011-August 2013, were compared with those of 133 EVAR procedures ["newest strategy" (NS) group] performed between September 2013-August 2015, in terms of technical success, IRO [type IB endoleak (EL), type III EL, symptomatic limb occlusions/ stenosis, and hypogastric artery patency], and IRSI rate up to 2 year follow-up.

Results: Technical success was similar (>99%) for both groups. During follow-up there were 9 IRO events in group OS (4 type IB EL, 2 type III EL, 2 limb occlusions/stenosis, 1 hypogastric occlusion) and 3 IRO events in group NS (no type IB and type III EL, 2 limb occlusions/stenosis, 1 hypogastric occlusion). Freedom from iliac-related secondary intervention (IRSI) was significantly different between the two study groups (KM, log-rank test, $p=0.02$).

Conclusions: An aggressive iliac limb deployment strategy by treating the entire length of common iliac artery may improve iliac-related outcomes and reduce iliac-related secondary interventions after EVAR.

Aortic neck measurement methods and development of type 1A endoleak

R. Buijs, T. Willems, C. Zeebregts, I. Tielliu

University Medical Center Groningen, Groningen, The Netherlands

Aim: In endovascular aortic aneurysm repair (EVAR), proximal type 1 endoleaks (EL1A) occur as a result of hostile neck characteristics or over- or undersizing of the graft. The current standardized method of proximal neck diameter measurement, using the average of short and long axes, is prone to provide faulty measurements, as the aortic neck commonly is irregularly shaped. In these cases, a circumference-derived method for measuring the proximal aortic neck could provide a more accurate indication of the endograft size and might therefore decrease the incidence of type 1 endoleaks.

Methods: Demographic and clinical variables of patients who underwent elective EVAR in our center in the period 2005 – 2012 were collected and all incidences of EL1A were identified. A control group was deemed statistically relevant at a 4:1 ratio of EL1A patients, which was matched for known hostile neck features including aortic neck calcification, thrombus, reverse taper and angulation. Aortic neck diameters were collected at 0, 7.5 and 15 mm infrarenal using the currently standardized method and a circumference-derived method.

Results: In 341 EVAR patients, the incidence for EL1A was 4.7%, providing eleven EL1A cases. Both groups showed similar distribution of gender, age, cardiovascular comorbidity, diabetes mellitus type 1 and 2 and the abdominal aortic aneurysm size. No significantly different measurements were found between the two methods at all levels below the renal arteries. However, the degree of oversizing was significantly less in the EL1A group compared to that of the control group.

Conclusions: Despite a trend towards less oversizing in the EL1A group, no correlation could be found between EL1A incidence and different neck diameter measurements of the two methods. This study encourages further investigation to improve the evidence for the current standard for neck measurement or development of new methods.

The petticoat technique using the e-xl endograft in the treatment of acute type b aortic dissection

F. Squizzato, M. Piazza, I. Raunig, M. Menegolo, F. Grego, M. Antonello

University of Padova, Vascular and Endovascular Surgery Clinic, Padova, Italy

Aim: The Provisional ExTensio To Induce COmplete Attachment (PETTICOAT) technique has shown good results in the treatment of acute type B aortic dissections. Usually stainless steel stents are used, but cases of stent misalignment are described . We report three cases of type B aortic dissections successfully treated with the PETTICOAT technique using the self-expanding nitinol stent E-XL (Jotec GmbH).

Methods: From January 2013 to September 2015, 3 patients underwent type B acute aortic dissection endovascular treatment using the PETTICOAT technique with the E-XL stent. After surgical right femoral approach, a first endograft (2 Bolton and 1 Gore) was placed to cover the entry tear, and then the E-XL stent was delivered to complete the PETTICOAT technique. An angio-CT scan was performed at 1, 3, 6 and 12 months from the intervention and then yearly.

Results: All patients presented with acute type B aortic dissection. Supra-aortic trunks debranching was performed in all patients. Technical and clinical success was 100%, and no early medical nor surgical complications were observed. During the follow up (mean 16 months; range 6-36 months) true lumen expansion and false lumen thrombosis occurred in all patients. There were no re-intervention and no deaths during the follow-up.

Conclusions: Our experience shows that the PETTICOAT technique using the E-XL is feasible in selected patients and is associated with true lumen expansion and false lumen remodeling during the follow-up. The use of the E-XL stent may be favorable due to its great radial force, the double-flared design, and the open cell structure that allows eventual side branches catheterization.

Early and late failure of evar – surgical and endovascular solution

J. Molacek, V. Treska, K. Houdek, B. Certik, P. Duras, J. Baxa

University Hospital in Plzen, Plzen, Czech Republic

Aim: Endovascular aneurysm repair (EVAR) is commonly used and respected method all over the world. With an increasing numbers of procedures and with solving more challenging cases increases number of required reinterventions. The aim of this study was to review a group of patiens after EVAR in one institution, to evaluace technical success and and clinical outcome of necessary reinterventions.

Methods: Between 1.1.2010 and 31.12.2015 was performed 81 EVAR in our institution. In 14 patients (17,3%) of patient was required whether surgical or endovascular reintervention due to some complication. Retrospective review of all reinterventions was done, their technical success and clinical result was evaluated.

Results: Mean follow-up was 3,5 years, from 10 reinterventions were 5 surgical and 9 radiointerventional. Reasons for surgical procedures were AAA rupture (1x), AAA progression (2x), stentgraft thrombosis (2x) and distal embolisation (2x). Endovascular reinterventions were performed due to endoleak (5x), distal embolisation (2x) and graft thrombosis (2x). 30-day mortality was 0%. Technical sussces and clinical outcome was in 13 patients (93%) optimal.

Conclusion: Although the short-term benefit of EVAR is undoubtedly clear, challenges remain regarding long-term durability. The number of patients with failed EVAR is growing. Vascular surgeon must be prepared to solve this problem either surgically or radiointerventionally.

Inflammatory abdominal aortic aneurysm - special challenge for surgeons or not?

S. Cvetkovic^{1,2}, M. Markovic^{1,2}, I. Koncar^{1,2}, Marko Dragas^{1,2}, Perica Mutavdzic², D. Maksimovic³, Lazar Davidovic^{1,2}

¹ School of medicine, University of Belgrade, Belgrade, Serbia; ² Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia, Belgrade Serbia; ³ General Hospital "Laza K. Lazarevic" Sabac, Sabac, Serbia

Aim: Inflammatory abdominal aortic aneurysms (IAAA) is a special form of aneurysmal disease that manifests intense fibrosis and inflammation anterolateral wall of the aorta and periaortic tissue. A typical symptom is pain that radiates to the lumbar region, often with fever and laboratory signs of inflammatory syndrome. Surgical treatment due to anatomical features are to some extent different from the operative treatment of non-inflammatory AAA. The aim is to show the immediate (in first 30 days) and far (first one year) results of the operative treatment of patients with IAAA

Methods: In a five year period (January 2009-December 2013) in the Clinic of Vascular and Endovascular surgery Clinical Centre of Serbia operated 62 patients diagnosed with IAAA (group A). This group of patients was compared with a group of 70 patients who were in the same period of elective surgery due to atherosclerotic AAA (group B). The groups were analyzed perioperative (age, sex, diameter AAA...) and perioperative parameters (position and duration of aortic clamps, bleeding, urine output, type of reconstruction..).

Results: Postoperative death occurred in two patients in group A (3.2%) while the control group was not death during the first 30 postoperative days. During the first year in group A mortality rates was 8,1% compared with 1.4% in the control group (group B) ($p < 0.001$). In the group of dead important factors have been shown supraceliac aortic cross clamping ($p = 0.0023$), intraoperative oliguria ($p < 0,05$) and prolonged aortic cross clamping ($p = 0.0002$)

Conclusion: The results of early post operative course point to higher mortality and morbidity in comparison to the control group electively operated atherosclerotic AAA, while the late postoperative morbidity and mortality was significantly increased. Surgical treatment IAAA therefore represents a major challenge for each surgeon.

Friday, 22.04.2016

Hall: Atlantic I

08.00-09.30

C1: AORTIC VALVE SURGERY

Moderators: F.Doguet (France), M. Vranes (Serbia)

Key Note Lecture: Minimal invasive aortic valve replacement – is there enough evidence to support it?
M.Vola (France)

Technical tips and tricks for the heart valve surgery through a mini-sternotomy approach

L. Velicki, A. Redzek, M. Majin, M. Fabri, S. Susak, D. Nikolic, M. Todić

Institute of cardiovascular diseases Vojvodina, Sremska Kamenica, Serbia

Aim: The aim of this study was to report on our experience after 7 years of practicing partial upper median sternotomy in surgery of cardiac valves and to present technical tips and tricks when using this approach.

Methods: The study included all the patients who underwent minimally invasive cardiac valve surgery through the partial upper median sternotomy, during the period from December 2008 to September 2015.

Results: During the observed period, a total of 96 mini-sternotomies were performed, with 92 aortic valve replacements (95,83%), of which 88 (91,67%) due to aortic valve stenosis, and 4 (4,17%) due to aortic valve insufficiency; and 4 mitral valve replacements (4.17%), of which 1 (1,04%) due to mitral valve stenosis, and 3 (3,12%) due to mitral valve insufficiency. Mean age of the patients was 65.57 ± 10.21 years - 42 (43.75%) were females, and 54 (56.25%) were males. On the average, time of 0.52 days (12.5 hours) passed from operation to extubating of the patients. Mean extracorporeal circulation time was 93.56 ± 30.36 minutes. Mean duration of hospital stay was 18.68 ± 11.07 days (postoperative hospital stay was 11.86 ± 6.75 days). Postoperative complications included: 2 (2.08%) surgical revisions of bleeding and 2 (2.08%) drainages of pericardium; 2 (2.08%) surgical wound infections; 3 (3.12%) CVI; and 1 (1.04%) resuture of sternum. Conversion to total median sternotomy was performed on 3 (3.12%) patients. Death in perioperative period occurred in 2 (2.1%) cases.

Conclusion: Partial upper median sternotomy still represents an optimal surgical method for interventions on the cardiac valves and whole ascending aorta, with a few significant advantages compared to the surgical approach of total median sternotomy.

Predictive factors of 12-year survival in octogenarians following aortic valve replacement: a retrospective comparison with same-aged general population

F. Terrieri, S. Ferrarese, P. Borsani, M. Matteucci, M. Sella, V. Mantovani, C. Beghi

Department of Cardiac Surgery, Varese, Italy

Aim: In TAVI era, aortic valve replacement (AVR) in octogenarians still provides excellent short-term results as widely described in literature. It is instead less known what is the long-term fate of these patients compared to same-age general population. Primary end-point of this observational, retrospective single-centre study is to compare the 12-year survival of octogenarians undergone surgical AVR to the survival of same-age general population and to identify predictive factors of poor outcome.

Methods: From 2000 to 2015, 292 patients aged >80 years underwent surgical AVR. Follow-up ranged between 1 month and 15.9 years (mean 4.1 ± 3.2 years), completeness was 99%. Logistic and Cox regressions were used to identify risk factors of in-hospital mortality and follow-up survival.

Results: mean age was 81.9 ± 1.9 years (range 80-88). Isolated AVR was performed in 51.7% of patients whereas the remaining were combined procedures. Elective procedures were 93.4%.

Thirty-day mortality was 4.5% against a logistic EuroSCORE of 14.9%. Predictive factors of in-hospital mortality were the non-elective priority of the procedure (OR 5.7, CI 1.28-25.7, $p=0.02$), CPB time (OR 1.02, CI 1.01-1.03, $p=0.004$) and age (OR 1.36, CI 1.01-1.84, $p=0.04$). Overall survival at 1, 4, 8 and 12 years was $89.4 \pm 1.1\%$, $69.4 \pm 3.0\%$, $39.6 \pm 4.2\%$, and $19.6 \pm 4.8\%$: this survival was not statistically different from the survival of an age/sex matched general population ($p=0.52$). Predictive factors of poor long-term survival were diabetes (HR 1.55, CI 1.01-2.46, $p=0.05$), preoperative creatinine >200 $\mu\text{mol/l}$ (HR 2.07, CI 1.21-3.53, $p=0.007$), preoperative atrial fibrillation (HR 1.79, CI 1.14-2.80, $p=0.01$).

Conclusions: In our experience octogenarians undergoing AVR have very good in-hospital results outperforming the EuroSCORE. Following the operation the long term survival returns similar to same age general population but common risk factors such as diabetes, renal dysfunction and atrial fibrillation have an impact on long term prognosis

Our experiences of aortic valvular reconstruction (carvar technique)

M. Zorc, D. Petrovic, R. Zorc Pleskovic, N. Cernic Suligoj, A. Pleskovic, M. Gun Song

International Centre for Cardiovascular Diseases MC MEDICOR, Isola, Slovenia

Aim: Comprehensive aortic valvular repair (CARVAR technique) represent nowadays successful and superior alternative to aortic valvular replacement with biological valves. Aortic leaflet reconstruction was performed with tailoring of aortic leaflets by bovine pericardium using special templates. The fixation of synotubular junction with exactly sized internal and external teflon rings is essential to prevent aortic root dilatation.

Methods: Between June 2013 and November 2015, 26 patients (12 female and 14 male) with isolated aortic valve disease (19 with severe aortic stenosis and 9 with severe aortic regurgitation) underwent the new surgical treatment in MC MEDICOR Slovenia. Clinical outcomes and ultrasound investigations were exactly evaluated every three months.

Results: Predicted mortality before surgical procedure using Parsonnet score was 2.4 % and using EuroScore was 3.8 %. There was no perioperative, no in hospital and no late mortality observed. Aortic valvular regurgitation after operation was absent in 21 patients (81.5%), mild was noticed in 5 patients (18.5%). The mean aortic valve gradient before surgery was 82.8 ± 21.6 mm Hg and decreased after surgery to 13.85 ± 5.9 mm Hg ($p < 0.001$). Aortic valve area index (AVAi) before surgery was 0.57 ± 0.1 cm²/m² and after surgery 0.8 ± 0.03 cm²/m² ($p < 0.01$). Mean peak aortic jet velocity (Vp) before surgery was 4.29 ± 0.21 m/s and after surgery it was 2.47 ± 0.42 m/s ($p < 0.001$).

Conclusion: According to the results CARVAR technique assures hemodynamics superiority, minimizes functional impairment of aortic valve, obviates anticoagulation and is universally applicable for almost any kinds of AV diseases. CARVAR technique is particularly useful for future pregnancy. After the first successful post operative results in our group of 26 patients with short term follow up we could conclude that CARVAR technique is safe and promising for patients with aortic valvular diseases.

Excellent results of minimally invasive aortic valve replacement through j-sternotomy: single-center experience with over 400 cases

M. Kaczmarczyk, M. Zembela, I. Mokryk, W. Karolak, K. Filipiak, J. Wojarski, R. Przybylski, M. Zembala
Silesian Center for Heart Disease, Zabrze, Poland

Aim: Full sternotomy (FS) is well-established standard approach to aortic valve replacement (AVR) or repair. While offering adequate access to all anatomical structures of the heart, it remains highly invasive and may result in sternal dehiscence in endangered patients. For the last two decades numerous techniques of minimally invasive AVR (mAVR) have been developed, with J-sternotomy being most widely adopted. The aim of this study was to evaluate safety and efficacy of mAVR performed through J-sternotomy in comparison with FS.

Methods: Out of 2002 patients operated on for aortic valve disease in the period from February 2004 to March 2015, 402 patients underwent mAVR. 53,48% of them were male with mean age $63,34 \pm 14,87$ years; 27,86% were diabetic; 32,84% were obese and 8,21% suffered from Chronic Obstructive Pulmonary Disease. Median EuroScore was $5,12 \pm 2,44$. In order to compare in-hospital outcomes, mAVR population was matched against FS AVRs using propensity score analysis.

Results: mAVR was feasible in 399 patients (99,3%), with 3 cases requiring conversion to FS due to technical difficulties. When compared to conventional AVR we found no difference in in-hospital mortality (1,74% -7 pts vs 1,49% - 6 pts; $p=NS$); reoperation rate due to bleeding (13pts vs 18pts; $p=NS$) or tamponade (12 vs 14 pts; $p=NS$). Although cardiopulmonary bypass time ($102,32 \pm 33,05$ min. vs $97,47 \pm 35,72$ min.; $p=0,002$) and cross-clamp time ($68,16 \pm 22,72$ min. vs $65,40 \pm 25,51$ min.; $p=0,009$) were slightly longer in mAVR group, no difference in postoperative complications rate was detected between both groups. Overall hospital stay ($8,34 \pm 4,80$ vs $8,40 \pm 4,66$ days $p=NS$) was also similar. Yet, statistically significant reduction in both ventilation time ($9,15 \pm 10,97$ h vs $10,54 \pm 13,42$ h; $p<0,05$) and the amount of transfused blood units ($1,62 \pm 2,62$ vs $2,24 \pm 4,25$; $p<0,05$) was noticed in mAVR group.

Conclusions: Minimally invasive AVR is safe and feasible procedure in everyday clinical practice. Despite excellent cosmesis, our analysis demonstrated important advantages of mAVR like: reduction of blood transfusions, shortened ventilation time and faster rehabilitation. These results prove that mAVR should be used as a standard approach to an isolated aortic valve replacement or repair, especially in older and more demanding patients.

Surgical treatment of poststenotic aneurysms of ascending aorta during correction of aortic valve disease

V. Popov

National Amosov Institute of Cardiovascular Surgery, Kyiv, Ukraine

Aim: To analyze surgical treatment of poststenotic aneurysms of ascending aorta (PAAA) by different methods.**Methods:** During 2000-2014 yy 442 patients (pts) with aortic stenosis (AS)+ PAAA were consecutively operated. The average age of pts was $59,1 \pm 5,2$ yy. 16 (3,6 %) pts were in II NYHA class, 192 (43,5%) pts in III and 234 (52,9%) pts in IV. The following operations were performed: aortic valve replacement (AVR) + wrapping tape operation (WTO) (original method) of AA - 183 (41,4%) pts (group A), AVR + Robischek's operation – 167 (37,8 %) pts (group B), Benthal's (n= 83) and Wheat's (n= 9) operations – 92 (20,8%) pts (group C).**Results:** Hospital mortality was 0,9%, 1,6% and 4,1% in groups A,B,C respectively ($p < 0.05$). Cross-clamping time (min) was: $97,1 \pm 8,5$ (group A), (group B) $107,3 \pm 12,1$ and $135,7 \pm 19,5$ (group C) ($p < 0.05$). Blood loss was $297,7 \pm 38,1$ ml (group A), $425,3 \pm 52,5$ ml (group B) and $645,4 \pm 47,5$ ml (group C) ($p < 0.05$). During remote period ($5,7 \pm 0,7$ yy) we followed-up 421 pts. Actuarial survival at 5 years after operation was in group A 97,5% (n=175), in group B 96,3% (n=164), and group C 85,5% (n= 82) ($p < 0.05$).Echo examination of diameter of AA for group A (cm): preoperative (PRE) $4,9 \pm 0,4$, postoperative (POST) (6–7 days) $4,0 \pm 0,3$, remote period (RP) $4,1 \pm 0,3$; for group B: PRE $5,2 \pm 0,3$, POST – $3,9 \pm 0,2$, RP $4,2 \pm 0,1$ and for group C: PRE $5,9 \pm 0,4$, POST $3,6 \pm 0,2$, RP $3,7 \pm 0,2$. There were no reoperations in all groups.**Conclusion:** We recommend WTO and the Robischek's operation for moderate dilatation of AAA ($< 5,5$ cm) during AVR without graft prostheses of AA.

Automatic planning and simulation for minimally invasive approach to the aortic valve

V. G. Ruggieri, H. Li, R. B. Soulami, A. Anselmi, M. Castro, A. Lucas, H. Corbineau, P. Haigron, JP Verhoye

Cardiovascular and Thoracic Surgery, Pontchaillou University Hospital, Rennes, France

Aim: During the last decades different less invasive approaches to the aortic valve have been developed. However their global diffusion is still limited because of technical complexity. Preoperative planning could reduce the risk of anatomical unknowns, the rate of conversion and finally patient's risk. We developed an automatic tool to identify, optimize and simulate the patient-specific minimally invasive approach to the aortic valve.

Method: Angio-CT images were segmented to visualize chest bones and heart structures 3D-meshes. The automatic detection of sternum right bordering and centerline related to the ascending aorta position allowed to identify the best minimally invasive approach (J- or T-shaped mini-sternotomy or right mini-thoracotomy). The intercostal spaces were automatically detected and related to the aortic valve position to choose the best intercostal space. The aortic valve plane and its normal vector were computed and visualized into the 3D mesh including the patient skin.

Results: The automatic tool was tested on 30 datasets. The quality of automatic results was verified by 2 surgeons that felt comfortable in minimally invasive setting: 93% of intercostal spaces, 96% of right sternum bordering and 93% of sternum centerlines were judged as perfectly detected by both surgeons. In remaining cases the error was minimal allowing anyway a minimally invasive planning result. The possibility to modify the skin incision length and the sternal/ribs retraction width was also implemented to optimize the access. A warning concerning technical difficulty to anatomical features such as deep ascending aorta or very low aortic valve was included.

Conclusion: The 3D reconstruction allowed to simulate the real surgical vision during minimally invasive approach to the aortic valve in order to choose the best access for each patient and to optimize it. This automatic tool could be helpful especially for surgeons starting their experience in minimally invasive aortic valve surgery.

Development of a novel autologous bioprosthesis

Y. Takewa¹, Y. Nakayama², H. Sumikura¹, N. Naito¹, H. Sumikura¹, E. Tatsumi¹

¹ National Cerebral and Cardiovascular Center Research Institute, Department of Artificial Organs, Osaka, Japan

² National Cerebral and Cardiovascular Center Research Institute, Department of Biomedical Engineering, Osaka, Japan

Aim: We are developing a novel autologous heart valve prosthesis (Biovalve) with a unique in-body tissue engineering method. This enables us to select a tailor made valve replacement to fit the each patient and keep biocompatibility. In this study, we made 3 types of heart valve and tested the feasibility of them in a large animal model.

Methods: We created many kinds and sizes of molds for Biovalves using plastic rods with 3D printer easily and quickly considering the recipient character. In this study, we selected 3 types (a conventional type, a full-root type and a valve with a metallic stent for transcatheter implantation) and embedded them in the subcutaneous spaces of adult goats for 1-2 months. After extracting the molds with the tissue and removing the plastic rods only, Biovalve with tri-leaflets similar to those of the native valves were constituted from completely autologous connective tissues and fibroblasts. Five cases of conventional Biovalves were implanted in the aorta under cardiopulmonary bypass, 8 cases of full-root type were implanted in the apico-aortic bypass, and 22 stent valve type were implanted with transcatheter technique into in situ the aortic and pulmonary valves (15 and 7, respectively).

Results: In each type, Biovalves were successfully implanted and showed smooth movement of the leaflets with a little regurgitation in angiogram, and the maximum duration reached to 2 months in fullroot type and 6 months in stent valve type. Histological examination of the Biovalves showed the autologous cells covering the laminar surface of the valve leaflets and also getting into the connective tissues.

Conclusion: The Biovalves have a potential to be used for tailor made therapy in valve surgery and satisfy the higher requirements of the systemic circulation maintaining the histological character as autologous tissues.

In which low- or intermediate-risk patient redo-aortic valve surgery is futile? indications for transcatheter procedures from a multicenter european “record” (redo cardiac operation research database) initiative

F. Onorati, F. Biancari, M. De Feo, G. Mariscalco, A. Messina, G. Santarpino, C. Beghi, G. Nappi, G. Troise, T. Fischlein, J. Heikkinen, G. Faggian, F. Santini
RECORD Investigators from Italy, Germany, Finland

Aim: Redo-surgery still represent a major challenge with significant mortality, morbidity, and rise of hospital costs. Early postoperative mortality might indicate a futile surgery. Definition of factors affecting early survival after redo-AVR (rAVR) might save human lives – with the potential candidacy to less-invasive interventional procedures such as TAVR – and hospital costs. Indeed, transcatheter procedures (TAVR) have been popularized in intermediate-risk redo patients in several worldwide experiences.

Methods: Mortality within 6 months from surgery defined a “futile procedure”. Perioperative independent predictors of hospital mortality and of mortality within 6 months from surgery (PMWSM) were assessed in low- or intermediate-risk rAVR of the multicenter European RECORD Database.

Results: Among 700 rAVR-patients with Euroscore<20, hospital mortality was 4.7% and PMWSM 9.2% (52.4% of whole mortality at 10-year follow-up). Independent predictors of hospital mortality were LVEF<30%, CPB-time, major cardiovascular re-entry complications, postoperative low cardiac output syndrome and need for renal replacement therapy (O.R.=2.4, 1.1, 17.5, 39.8, 10.3 respectively, $p \leq .033$). On the other hand, endocarditis, NYHA-IV, CPB-time, postoperative AMI, intubation lasting > 48 hours, length of ITU-stay, length of hospitalization, and thrombo-embolisms during follow-up (O.R.=2.3, 1.6, 1.1, 3.8, 3.0, 1.1, 1.1, 5.6 respectively, $p \leq .036$) predicted PMWSM.

Conclusions: Some perioperative complications significantly affect early survival and indicate improvements in surgery and intensive-care medicine. Despite the prediction of poor surgical results, endocarditis still indicates surgery, whereas preoperative LVEF<30% and NYHA IV might be better served with alternative therapies.

The development of a new physiological flow chamber for the investigation of artificial aortic valves

D. Dohle¹, W.Kowalczyk², K. Tsagakis¹, H. Jakob¹ Daniel Wendt¹

¹University Hospital Essen, Westgerman Heart and Vascular Center, Essen, Germany

²University of Duisburg-Essen, Chair of mechanics and robotics, Duisburg, Germany

Aim: An optimized fluid dynamic profile of artificial heart valves is crucial to result in excellent hemodynamic valve behavior. Therefore, the testing of prostheses under physiological conditions is mandatory to improve the flow characteristics of artificial heart valves. However, due to the specific contraction of the left ventricle and the complex physical behavior of the aorta, the development of a realistic flow channel remains challenging.

Methods: Our newly developed flow channel consists of an (1) elastic and transparent silicon aorta that allows for application of particle-image-velocimetry (PIV), (2) a specific valve fixation system, (3) a Windkessel function, and (4) possibilities to fine adjust and simulate the peripheral resistance. The pressures within the aorta were measured by a pressure transducer connected to a Radioanalyzer Xpress system (Siemens, Erlangen, Germany), and the flow was observed by PIV (LaVision, Göttingen, Germany). Six commercially available bioprostheses (Trifecta, SJM, St. Paul, MN, USA and Perimount Magna Ease, Edwards Lifesciences, Irvine, CA, USA; size: 21mm, 23mm and 25mm) were compared.

Results: Pressure data revealed a pressure curve very close to physiological human conditions. By changing pump parameters, peripheral resistance and the setup of the Windkessel function, the model delivered excellent results with covering of the whole physiological hemodynamic range. The data collected by PIV supported these results. Different regions of interest were analyzed. In general the Perimount Magna Ease showed higher velocities in the central part of the flow profile, whereas the Trifecta showed higher velocities close to the aortic wall.

Conclusion: The current flow channel is an important step towards physiological testing of prosthetic aortic valves under various conditions. Moreover, it comes with the unique feature to evaluate the flow conditions by PIV, thereby enabling a precise evaluation of the individual flow pattern of different valves.

The place for homografts in aortic valve replacement surgery

V. Podpalov, M. Shchatsinka, V. Adzintsov, V. Podpalov, S. Kurganovich, Y. Ostrovsky

Republican Scientific and Practical Centre of Cardiology/Laboratory of Cardiac Surgery, Minsk, The Republic of Belarus

Aim: To analyze short- and mid-term outcomes after surgical aortic valve replacement with homografts versus mechanical and biological prostheses in patients with infective and prosthetic aortic valve endocarditis.

Methods: Prospective single-center study was carried out conducted in the period 2009 – 2014. Patients with infective or prosthetic endocarditis underwent aortic valve replacement: the 1st group - 46 patients received aortic homografts (cryopreserved homografts - 36 patients (78,3%), homografts sterilized in antibiotics – 8 patients (17,4%), homovital valves – 2 patients (4,3%)), the 2nd group - 56 patients received mechanical or biological aortic prostheses. The indications for the operation were the following: infective endocarditis in 24 patients (52,2%), prosthesis endocarditis in 22 patients (47,8%) in the 1st group; infective endocarditis in 48 patients (86,3%), prosthesis endocarditis in 8 patients (13,7%) in the 2nd group of patients. Survival and freedom from recurrent infections were estimated during the follow-up period of $905,4 \pm 545,9$ days.

Results: The 30-day postoperative mortality was 10,9% (5 patients) in the homografts group, 5,3% (3 patients) in the prostheses group, which wasn't statistically different ($p=0,3$). In postoperative period actuarial survival was significantly higher in patients with homografts in comparison with patients with prostheses ($p=0,039$). The reinfection rate was significantly lower for the the homograft group in comparison with the prostheses group of patients, 2,4% and 7,3% respectively ($p<0,01$).

Conclusions: Homografts are preferable for aortic valve replacement surgery in case of infective and prosthetic aortic valve endocarditis in comparison with mechanical and biological prostheses. There is need to analyze the perspectives of their use in other groups of patients.

Friday, 22.04.2016

Hall: Mediteraneo

08.00-09.30

C 2: MITRAL VALVE SURGERY

Moderators: T.Folliguet (France); I.Stojanovic (Serbia)

Key Note Lecture: Trans apical Neochords early experience, A. Colli (Italy)

Preserved posterior valve prevents to embed the catheter during transapical peripreosthetic mitral leakage closure

F. Cingoz, C. Gunay, T. Celik, A. Iyisoy

Department of Cardiovascular Surgery, Gulhane Military Medical Academy, Ankara, Turkey

Aim: Peripreosthetic mitral leakage may be closed by invasive techniques. These techniques gives standart approaches via left atrial and aortic ways. If this ways are not suitable to close the leakage, transapical approach may necessary for closing procedure.

Material and Method: The patient with 2-3 degree paravalvular mitral leakage will be presented. Transapical closure of peripreosthetic mitral leakage is performed via sternotomy or mini-thoracotomy. The patient with peripreosthetic leakage was treated by mini-thoracotomy in our hospital. Mitral prosthesis had been implanted preserving posterior leaflet. Leaflet tissue and subvalvular components were detected by ECHO.

Result: Posterior leaflet subvalvular apparatuses were mobil and their movements were hiding exact hole of the leakage. It was so difficult to insert a guiding catheter into the hole because of the preserved posterior leaflet and is subvalvular components. Exact way was not founded regarding movements of chordae, papillary muscles and posterior leaflet. The procedure was successfully finalized serious effort of the team without complication.

Conclusion: You may consume much more time while closing peripreosthetic mitral leakage if the patient had mitral valve replacement with preserved posterior valve.

Midterm outcomes of chordal cutting in combination with downsized ring annuloplasty for mitral regurgitation

S. Gunaydin, I. Erkengel*, O.F. Cicek*, E. Kadirogullari*, S. Mola*, E. Gunertem*, A. Baran Budak**, E. Yasar*, A. Yalcinkaya***, G. Lafci*, S. Gunaydin**, K. Cagli*

*Yuksekt Ihtisas Training & Research Hospital, Ankara-Turkey

Aim: Secondary chordal cutting is one of the newest surgical approaches in which division of a limited number of critically positioned basal chordae results in better valve function by relieving restriction and improving coaptation of leaflets. In this study, we present our experience of perioperative outcomes of secondary chordal cutting combined with reductive ring annuloplasty technique.

Patients and Methods: During 6-year period, 61 patients (26 male, mean age: 51.7 ± 16.2) underwent isolated ring annuloplasty due to mitral regurgitation (MR). Etiology was rheumatic in 10 (16.4%) patients, degenerative in 32 (52.5%), congenital in 2 (3.3%) and ischemic in 17 (27.9%). 3 (4.9%) patients were in NYHA I, 42 (68.9%) NYHA II, 15 (24.6%) III and 1 (1.6%) IV. Preoperative transthoracic echocardiogram demonstrated grade II MR in 15(24.6%), grade III MR in 39(63.9%) and grade IV in 6(9.8%) patients.

Results: Secondary chordal cutting were performed in all patients. Additionally 5 patients received triangular resection, 12 triangular plication, one quadrangular resection, 8 secondary chordal transfer, 7 neochorda replacement, 8 commissurotomy, 5 chordal shortening and 3 cleft repair. All patients then had downsized ring annuloplasty; 25 rigid (St Jude Medical Saddle) and 36 flexible (Carpentier-Edwards Physio). Mean follow-up was 29.3 ± 16.1 months. Functional capacity significantly improved with respect to preoperative evaluation (51 patients in NYHA I and 10 in NYHA II, $p < 0.001$). Postoperative mean MR decreased from 2.8 ± 0.6 to 1.1 ± 0.4 ($p < 0.001$). Postoperative improvement in left ventricular end diastolic (5 ± 0.48 cm vs 5.5 ± 0.49 , $p < 0.001$) and end systolic diameters (3.8 ± 0.55 cm vs 4.1 ± 0.56 , $p = 0.005$) pulmonary artery pressure (32.8 ± 6.5 mmHg vs 44.4 ± 15.2 , $p < 0.001$) and left atrial diameter (4.1 ± 0.32 cm vs 4.9 ± 0.93 , $p < 0.001$) were significant.

Conclusion: Chordal cutting improves mitral valve leaflet mobility without any obvious deleterious effects on left ventricular function. This technique is safe, durable and contributes to better outcomes in the treatment of functional mitral regurgitation

Comparative assessment of mitral valve repair with rigid ring and synthetic strip. Whether it is possible to unify procedure?

G. Antipov, A. Mikheyev, M. Isayan, E. Sozinova

Federal center of high medical technologies, Kaliningrad, Russian Federation

Aim: to estimate results of mitral valve (MV) repair with a synthetic strip and a rigid ring as a unify procedure.

Methods: From October, 2012 and May, 2015 128 operations at patients with mitral insufficiency of the II-IV degree are executed. Average age 65.2 ± 8 years (65 men). Etiology of mitral insufficiency: a prolapse and a myxomatosis - 35, ischemic dysfunction of the left ventricle (LV) - 66, relative insufficiency due aortic pathology – 19, aritmogenic dysfunction - 8. Performing MV repair we used synthetic strip 4.5 to 5.0 cm long, depending on diameter of MV (<40 mm and >40 mm according to) and rigid ring diameter 28 and 30 mm depending on diameter of MV also. 81 (63.2%) patients were in the first group and 47 (36.8%) in the second one. Repair with a strip was carried out with U-shaped pledgetted stitches for the purpose of formation of the roller which gave additional elasticity of fibrous annulus. In the second group 42 patients carried out with 28 mm ring and 5 with 30 mm ring. In 11 patients in both groups partial resection of posterior leaflet was performed and in 16 patients of the first group Alfieri repair was added.

Results: The hospital mortality was 3.1% (4 patients). In one case of Barlow disease we had SAM syndrome that required aortic recross-clamping and additional resection of posterior leaflet of MV (patient with 30 mm rigid ring). Reoperations were not carried out.

Conclusion: Use of a ring or a strip for correction of mitral insufficiency effective and safe, connected with the low frequency of intraoperative and postoperative complications. Unify and simple variants of mitral valve repair (a strip or a ring of one size depending on diameter of MV for all patients) showed a good short-term results. The assessment of freedom from significant mitral regurgitation in a long-term period is noted.

Severe intravascular hemolysis and acute renal failure following a valve replacment

O. Korkmaz, U. Yetkin, O. Berkan

Department of CVS , Cumhuriyet University, Medical Faculty, Sivas, Turkey

Background: Intravascular hemolysis is a rare complication that can occur following a mitral valve repair or replacement. We present here the case of a patient who died during preparation for a reoperation after the development of multiple organ failure due to renal failure, secondary to severe intravascular hemolysis developing in the early period due to mitral failure following corda reimplantation and mitral annuloplasty.

Case report: A 44 year-old male applied to our clinic with complaints of dyspnea, rapid exhaustion and palpitations. ECO of the patient revealed a ruptured corda in the P2 segment of the posterior leaflet and a 4th degree mitral failure. The coronary angiography of the patient was normal(Figure 1). Intraoperative evaluation revealed that two chordae were ruptured at the P2 segment and a dilated annulus(Figure 2). The chordae were reimplanted and an annuloplasty was performed using a SJM Taylor™ Flexible Ring. A trace mitral failure was detected during the intraoperative transesophageal echocardiography.

Results: Hemoglobin levels of the patient decreased and the urine color darkened starting at postoperative 12th hour. His biochemical tests were compatible with intravascular hemolysis and his direct coombs test was (-).Oliguria started to develop at the 24th hour and he had anuria at the 36th hour. BUN and creatinine levels at 24th and 36th hours were 41.9 mg/dl and 2.24 mg/dl, and 53 mg/dl and 3.51 mg/dL, respectively. The patient underwent emergency hemodialysis. The patient died 72 hours postoperatively. Hemolysis that occurs following mitral valve repair, has different mechanisms of etiology, some of which are: whip type movements of ruptured chordae or suture materials, para-ring jet leaks due to removal of annuloplasty rings, rings that could not be endothelialized, paravalvular suture materials or mechanical trauma of pledgets to the erythrocytes in the circulation. Early surgical valve replacement is the foremost method of treatment.

Mitrofix™ Restoration Concept for ischemic mitral valve regurgitation

T.Adademir, A.A. Dönmez, F. Büyükbayrak, G. Kahveci, A. Agavey, M. Alp

Kartal Kosuyolu Heart and Research Hospital, Istanbul, Turkey

Aim: Monocuspidalisation of the Mitral Valve(MV) by using Mitrofix™ restoration concept was thought to be an alternative for ischemic MV regurgitation treatment. The restoration of the MV with a fixed bio-posterior leaflet(PL) has a theoretical advantage of preserving the anterior leaflet and providing good coaptation with a prosthetic bio-PL even after further tethering of the PL. Fewer recurrence of mitral regurgitation was expected since further remodeling of left ventricle will not affect the bio-PL and the valve will become competent unless anterior leaflet functions improperly.

We present our 2-year follow-up data of patients who were treated by Mitrofix™ device.

Method: Patients referred for CABG with preoperative moderate-severe ischemic functional MR between July 2013 to February 2014 were included. Patients with structural valve defects were intraoperatively excluded. Serial clinical and echocardiographic data were collected out to 2 year.

Results: The device was successfully implanted in 6 patients and the early intraoperative and postoperative echocardiography demonstrated none or trivial residual MR in 5 of them and 1-2 + in one. The mean EOA measured was 2.26 cm² with a mean gradient of 4.5 mmHg during the first postoperative control before discharge. During follow up, 2 of the patients died, none of them were due to valve related factors. No device failure, reemergence of mitral regurgitation, heart failure readmission or valve reoperations were observed in the remaining 4 patients. Early postoperative and 2 year follow up echocardiographic data of the patients are more than satisfactory. All of the survivors were classified as being in NYHA class I or II.

Conclusion: The device is no longer available in the market but results of this very limited series are important for further innovations in the treatment of ischemic mitral regurgitation. Mitrofix™ has some theoretical advantages in the long term. Further follow up should be done.

Robot assisted mitral valve surgery: an early experience and current knowledge

F. Bouchart, C. Nafet-Bizet, A. Gay, V. Le Guillou, A. Abriou, J.P. Bessou, F. Doguet

Cardiac surgery department , Rouen University Hospital, Rouen, France

Aim: Robotic mitral valve (MV) surgery programs have been reported with good outcome, patient safety, reduced length of stay and without higher cost compared to a mini-invasive approach. Despite the fact that the first cases were reported in France and Germany, only a handful centers in Europe have robotic MV repair programs.

Methods: Since march 2015, 11 patients were operated on using the four arm Da Vinci system through endoscopic ports and a 4cm right thoracotomy (no rib spreader). A peripheral femoro-femoral extracorporeal circulation (ECC) was used with extra jugular venous drainage. Clamping was achieved with an intra-aortic balloon. We could transpose our routine mini-invasive MV repair techniques with rigid annuloplasty, Gore-Tex neochordae, triangular and quadrangular resection to this robotic approach.

Results: Our initial success rate was 91%. The median ECC duration was 201 min and aortic cross clamp time 157 min. Median ICU and hospital stay was 4 and 9 days respectively. There was no in-hospital mortality or stroke. One patient was converted to full median sternotomy after two unsuccessful mitral valve repair attempts and a bioprosthesis was implanted. One patient had minor surgery for an intercostal bleeding after removal of thoracic drain. We observe a shorter operative time comparing to our first 11 minimally invasive MV repairs: ECC 223 min and cross clamp 160 min although it did not reach statistical significance due to our small population ($p = 0.2783$ and $p = 0.8438$ respectively).

Conclusion: With this initial experience we feel that starting a robotic MV program can be done safely and effectively. Having reached the learning curve plateau in a minimally invasive program might shorten the learning curve of the robotic approach but further study of our population is needed. We then discuss the current knowledge on the topic.

Starting a robotic mitral valve surgery program: early experience and current knowledge on the topic

N. F. Bayard, F. Bouchart, C. Nafet-Bizet, A. Gay, V. Le Guillou, A. Abriou, J.P. Bessou, F. Doguet

Cardiac surgery department, Rouen University Hospital, Rouen, France

Aim: Robotic mitral valve (MV) surgery programs have been reported with good outcome, patient safety, reduced length of stay and without higher cost compared to a mini-invasive approach. Despite the fact that the first cases were reported in France and Germany, only a handful centers in Europe have robotic MV repair programs.

Methods: Since march 2015, 11 patients were operated on using the four arm Da Vinci system through endoscopic ports and a 4cm right thoracotomy (no rib spreader). A peripheral femoro-femoral extracorporeal circulation (ECC) was used with extra jugular venous drainage. Clamping was achieved with an intra-aortic balloon. We could transpose our routine mini-invasive MV repair techniques with rigid annuloplasty, Gore-Tex neochordae, triangular and quadrangular resection to this robotic approach.

Results: Our initial success rate was 91%. The median ECC duration was 201 min and aortic cross clamp time 157 min. Median ICU and hospital stay was 4 and 9 days respectively. There was no in-hospital mortality or stroke. One patient was converted to full median sternotomy after two unsuccessful mitral valve repair attempts and a bioprosthesis was implanted. One patient had minor surgery for an intercostal bleeding after removal of thoracic drain. We observe a shorter operative time comparing to our first 11 minimally invasive MV repairs: ECC 223 min and cross clamp 160 min although it did not reach statistical significance due to our small population ($p = 0.2783$ and $p = 0.8438$ respectively).

Conclusion: With this initial experience we feel that starting a robotic MV program can be done safely and effectively. Having reached the learning curve plateau in a minimally invasive program might shorten the learning curve of the robotic approach but further study of our population is needed. We then discuss the current knowledge on the topic.

Early and mid term outcome in patients undergoing redo mitral valve surgery. A single center experience.

E. Prifti, D. Pellumbi, A. Veshti, K. Krakulli, A. Baboci

Division of Cardiac Surgery, University Hospital Center of Tirana, Tirana, Albania

Aim: The aim of this study was to evaluate the early and mid term outcome in patients undergoing reintervention mitral valve surgery and to determine the predictors for poor postoperative outcome.

Materials and methods: Between January 2000 and October 2015, 110 patients underwent redo mitral valve surgery at our center. There were 23 males and the mean age was 49.5 $\pm$ 12 (range 20 to 76 years old). There were 13 patients undergoing second redo procedure and 4 the third redo procedure. 52 patients were undergone previously mitral valve replacement. 13(12%) patients presented bacterial endocarditis, 11 (10%) patients paravalvular leak, 11 (10%) patients presented prosthesis degeneration, 15(14%) thrombosis on the prosthesis, 36 (32%) residual stenosis, 22(20%) residual severe regurgitation and 2 patients presented prosthesis dehiscence. Previous associated procedure were aortic valve replacement in 5 patients, tricuspid valve repair in 8 and myocardial revascularization in 2.

Results: The hospital mortality was 6 patients (5.5%). The mean clamping time was 61.7 $\pm$ 21 min. All patients underwent MV replacement with a biological prosthesis in 6 patients. The associated procedures were AVR in 9 patients, TV repair in 17, TV replacement in one and CABG in 7 patients. The mean follow – up was 3.7 $\pm$ 2.26 years. The regression model demonstrated the endocarditis ($p<0.001$), associated procedure ($p=0.002$), and low LVEF ($p=0.0014$) as strong predictors for early mortality and major complications. The Cox model demonstrated the endocarditis ($p<0.001$) and low LVEF ($p=0.04$) as strong predictors for poor overall survival. The overall actuarial survival at 5 years was 84% and free reoperation survival was 78% at 5 years follow-up.

Conclusion: Patients undergoing redo mitral valve replacement have satisfactory results in early and mid term postoperative period. Our results confirm that redo MV replacement is a procedure accompanied with excellent outcome. \

Predictors of hospital mortality in a European multicenter redo mitral surgical experience: inferences for future transcatheter mitral procedures

F. Onorati, D. Reichart, A. Perrotti, G. Mariscalco, E. Della Ratta, A. Rubino, G. Santarpino, F. Biancari, C. Detter, S. Chocron, C. Beghi, M. De Feo, C. Mignosa, T. Fischlein, G. Faggian, F. Santini

RECORD Investigators from Italy, Germany, France, UK, Finland

Aim: Current literature lacks results of redo-mitral surgery from large multicenter experiences. Transcatheter procedures (valve-in-valve and valve-in-ring) are gaining a growing consensus in high-risk redo-mitral procedures, and several transcatheter mitral prostheses are entering different clinical trials worldwide.

Methods: Hospital outcome and predictors of hospital mortality – potentially representing direct indications for transcatheter mitral procedures – were reported from 832 consecutive redo-mitral patients enrolled in a multicenter European registry, and in the subset of 462 patients potentially eligible for transcatheter procedures.

Results: Redo-mitral surgery still reports high hospital mortality (12.5%). Hospital major morbidity was similarly significant, in terms of perioperative acute myocardial infarction (5.9%), stroke (4.9%), acute respiratory insufficiency (14.8%), pneumonia (7.0%), acute renal insufficiency (16.1%) and failure (12.6%), reintervention for bleeding (7.6%), massive transfusion (28.0%). Need for permanent pace-maker was also not negligible (10.1%). Hospital mortality was 9.5% in 462 patients potentially eligible for transcatheter procedures. In these patients, recent (<4 weeks) acute myocardial infarction (O.R. 25.7, 95% C.L. 10.2 – 64.9 - $p=.04$), urgent/emergent procedures (O.R. 42.5, 95% C.L. 22.7 – 79.6 - $p=.01$), and life-threatening arrhythmias on admission (O.R. 23.5, 95% C.L. 12.6 – 43.9 - $p=.03$) maximize the risk of hospital mortality.

Conclusion: redo mitral surgery still carries the risk of significant early mortality and major morbidity, especially in high-risk candidates (elderly patients, previous CABG, COPD, urgent/emergent procedures, and severe LV dysfunction). Patients with recent acute myocardial infarction, with urgent/emergent indication, and with life-threatening arrhythmias on admission carry unacceptable risk of hospital mortality and should be considered in the perspective of less-invasive trans-catheter alternative procedures.

Supraanular implantation of mechanical arteficial mitral valve in case of extreme

R. Ilic, V.Mandaric, Z. Markovic, Z. Trifunovic, S. Tišma,P. Vukićević, V. Neškovic, L. Babic

Clinic for cardiosurgery, Military Medical Academy, Belgrade, Serbia

Background: Objective of this paper is to show one successfully implanted artificial mitral valve in patient with extreme calcifications of native valve combined with calcification of left ventricle base. Standard implantation of artificial valve was not possible.

Case report: Case of 72 year old female with severe mitral stenosis (MVA 0,8 cm²)combined with pulmonary hypertension is shown.After exploration of mitral valve via posterior approach in total CPB ,heavy degree calcifications of papillary muscles ,pectinate muscles of left ventricle and posterior left ventricular wall were found.After extraction of native valve in fragments and calcium particles ,narrow mitral orifice with heavy anular and left ventricular calcifications were found .Standard arteficial valve implantation was not possible.After insight in surgical anatomy a decision was made to implant StJude M25mm artef. valve in Teflon patch 70x70mm in vitro.After that teflon patch was teiored to ovoid shape 50x40mm with alredy incorporated arteff.valve and it was sewn to tender parts of the left ventricle basis and atrial walls in supraanular position. Valve function was checked by probe.After termination of CPB artificial valve function was regular and ICU recovery succeeded.

Results: In further recovery patient is awake, without neurological damage, with stabile hemodynamic and with occasional bradycardia (temporary pacemaker was used).Postoperative chest X-ray shows normal findings. Postoperative ultrasound shows regular function of artificial mitral valve. Patient was discharged from hospital in sinus rhythm.

It is possible to implant arteficial mitral valve supraanular in this kind of serious situations with favorable results although at one point situation proves to be impossible to solve.

Friday, 22.04.2016

Hall:Baltic

08.00-09.30

C 3: TRANSCATHETER AORTIC VALVE REPLACEMENT

Moderators: M.Thielmann (Germany), M. Peric (Serbia)

Key Note Lecture: Overview of current practice, M. Thielmann (Germany)

Impact of trans-catheter aortic valve implantation on mitral regurgitation at mid-term follow-up

E. Senanayake, A. Panayiotou, M. Matuszewski, S. Khogali, H. Luckraz

New Cross Hospital, United Kingdom

Aim: Transcatheter Aortic Valve Implantation (TAVI) has now become an established procedure for severe symptomatic aortic stenosis in patients unsuitable for an AVR. A large proportion of these patients also have mitral regurgitation. TAVI for AS should physiologically improve the degree of MR post TAVI. Mid to long-term data on the consequence of TAVI on pre-existing MR is unclear. We aim to evaluate the degree of mitral regurgitation following TAVI for aortic stenosis.

Methods: Case notes for all 257 consecutive TAVIs from April 2008 – March 2015 were assessed retrospectively. Patients were routinely followed up in the outpatients clinic and Transthoracic echocardiography (TTE) performed. MR was classified into 5 categories; < mild, mild, mild-moderate, moderate and severe, based on the final quantification. Statistical analysis was performed using categorical testing for a paired sample.

Results: Pre and post TAVI MR quantification was available for 126 patients. 55% of patients were male and 9.5% were performed urgently. Logistic EuroSCORE was 12.56 ± 9.42 . The Core valve was used in 89% of cases. 21% required ICU admission, 18% required PPM, 2.5% required CVVH and 0.8% had stroke. There was no difference in MR post TAVI at a median echocardiographic FU of 13 months (IQR 4 – 26) $p=0.42$. At median clinical FU of 17 months (IQR 8–35) survival was 80%. Despite MR, NYHA class improved post TAVI.

Conclusion: There is no significant change in the degree of MR following TAVI at 1 year and this may influence long-term functional symptomatic status. Mid-term FU shows symptomatic improvement and hence NYHA status may primarily be related to aortic stenosis rather than the degree of MR. Further long-term echocardiographic and MRI follow-up is required to evaluate this further.

Does trans-catheter aortic valve implantation improve LV function at short-term follow-up?

E. Senanayake, M. Matuszewski, S. Khogali, H. Luckraz

New Cross Hospital, United Kingdom

Aim: Transcatheter Aortic Valve Implantation (TAVI) has now become an established procedure for severe symptomatic aortic stenosis (AS) in patients unsuitable for an aortic valve replacement. Within this cohort of patients left ventricular (LV) function is variable and may influence long-term outcome. The impact of TAVI on LV function at mid to long-term follow-up (FU) is yet unclear. We aim to evaluate the change in LV function and associated survival post TAVI for AS.

Methods: Case notes for all 257 consecutive TAVIs from April 2008 – March 2015 were assessed retrospectively. Patients were routinely followed up in the outpatients clinic and Transthoracic echocardiography (TTE) performed. All patients that had LV function quantified pre and post TAVI were included in this analysis. LV function was classified into 3 categories; poor (EF<30), moderate (EF 30-50), good (EF>50). Statistical analysis was performed for a paired sample.

Results: Pre and post TAVI LV function was available for 95 patients. 59% of patients were male and 10% were performed on an urgent basis. Logistic EuroSCORE was 12.53 ± 9.2 . The Corevalve was used in 84% of cases. 21% required ICU admission, 20% required PPM, 4% required CVVH, 1% had a stroke. There was no change in LV function post TAVI ($p=0.4$) at median TTE FU of 6 months (IQR 3–24). At median clinical FU of 12 months (IQR 4–28) survival was 89% with no difference in survival between the post TAVI LV groups ($p=0.9$).

Conclusion: LV function does not statistically improve post TAVI, at short-term follow-up. Survival is not affected by post TAVI LV function at mid-term follow-up. Long term echocardiographic and MRI follow-up is required to evaluate this further.

Sutureless-AVR versus TAVI: clinical outcome and costs matching

G. Santarpino, J. M. Kalisnik, T. Fischlein

Cardiac Surgery Department, Paracelsus Medical University Nuremberg, Germany

Aim: Sutureless-AVR and TAVI are nowadays extensively adopted in high-risk elderly patients. An explorative analysis was carried out to compare the clinical outcome and costs associated to these approaches.

Methods: Since 2010, a total of 626 patients were distributed between TAVI (n=364) and sutureless (n=262). Patients of both groups were not comparable for clinical and surgical characteristics, but many patients were in a “gray zone”; therefore a retrospective propensity score analysis was possible and performed. For the matched pair samples, postoperative, follow-up clinical data, and costs data were obtained.

Results: In-hospital death occurred in 5 sutureless and 3 TAVI patients (P=0.36). Blood transfusions were higher in **sutureless** (2.1 ± 2.3 vs 0.4 ± 1.0 units). No differences in postoperative neurological (P=0.361), renal (P=0.106), or respiratory (P=0.391) complications were observed between groups. TAVI had a shorter ICU and hospital stay (2.2 ± 2.7 vs 3.2 ± 3.5 days, P=0.037; 12 ± 6 vs 14 ± 6 days, P=0.017). At follow-up (24.5 $\pm$ 13.8 months), one sutureless-patient and 7 TAVI-patients died (P=0.032). Paravalvular leakage occurred more frequently in TAVI-patients (35[34%] vs 7[6.9%]; P<0.001) with impact on follow up survival. The costs associated to the two procedures are similar when the cost of the device was excluded (p=0.217). When included, the sutureless approach resulted a cost-saving (€22,451 vs €33,877, p<0.001).

Conclusion: the patients in the “grey zone” record a satisfying clinical outcome following sutureless surgery and TAVI. Sutureless patients endure more hospital complications, but TAVI entails a higher follow up mortality. On the costs aspects, TAVI technologies are more expensive and it reflects on higher overall hospital costs.

Anesthesia for TAVI

Z. Valuh, I. Job, E. Bednárová, M. Hudec, P. Poliačiková

Institute of cardiovascular diseases, Department of anesteziology and intensive medicine, Cardiac care unit, Invasive cardiology department, BanskáBystrica, Slovakia

Aim: TAVI is a less-invasive therapeutic alternative when surgical AVR is contraindicated because of technical limitations or co-morbid states. It is commonly undertaken using a retrograde approach via the femoral or other major artery, or by an antegrade transapical approach through the apex of the left ventricle via an anterolateral thoracotomy. Current indications for TAVI include severe symptomatic AS in conjunction with a high perioperative surgical risk for AVR, contraindication to surgery such as porcelain aorta, severe kyphoscoliosis, significant cirrhosis, extensive mediastinal radiotherapy, previous cardiac surgery. Transfemoral approach is performed either in general or local anesthesia with analgosedation, transapical in general anesthesia with a single lumen tracheal tube. The most frequent complications are: hypotension during rapid ventricular pacing, AV block, vascular complications, cardiac tamponade, aortic regurgitation, malpositioning and embolization, left main coronary artery embolization, acute renal failure and neurologic complications.

Methods: Since August 2013 until September 2015, we performed 40 TAVI procedures. 23 patients were male and 17 female, aged 65-79 years, average EuroScore 19.41. 36 procedures were transfemoral, 4 transapical. One procedure had to be interrupted, because of insufficient femoral access. We used only general anesthesia with endotracheal intubation. For induction of anesthesia we used propofol, muscle relaxation was achieved with rocuronium, maintenance of anesthesia with volatile anesthetics / desflurane or sevoflurane / combined with opioids / sufentanil or remifentanyl /. Patients were standardly monitored with three-electrodes EKG, pulse oxymetry, ET CO₂, urinary catheter, bladder temperature, arterial and central venous lines, transesophageal echocardiography, occasionally NIRS / high risk of stroke /.

Results: Intrahospital mortality was 0.4% / 1 patient /. Transfemoral patients with uncomplicated procedural course were extubated at the end of the procedure, transapical were transferred intubated to the ICU. The most serious periprocedural complication was cardiac tamponade from perforation of the right ventricle, during the pacing wire placement. The second was perforation of the right common femoral artery. Both were successfully treated surgically.

Conclusion: TAVI is a relatively new technique, representing the challenge for the anesthesiologist. Currently, we prefer general anesthesia at both kind of approach, from various reasons / airway control, the use of TEE, treatment of complications, number of procedures performed /, with the monitoring mentioned above.

Impact of previous coronary artery bypass grafting in patients undergoing transcatheter aortic valve implantation

S.E. Shehada, Y. Elhmidi², N. Puluca², Ö. Öztürk³, D. Wendt¹, E. Demircioglu¹, H.G. Jakob¹, M. Thielmann¹

Department of thoracic and cardiovascular surgery, West-German Heart and Vascular Center Essen, University Hospital Essen, University Duisburg-Essen, Germany

Aim: Redo surgical aortic valve replacement after previous coronary artery bypass grafting is usually related to a higher risk of mortality and morbidity. Transcatheter aortic valve implantation became an alternative therapy for those patients in the past couple of years. Hence, we aimed in this study to analyze and compare the outcomes of patients undergoing transcatheter aortic valve implantation after a previous cardiac surgery especially those who underwent a prior coronary artery bypass grafting.

Methods: We searched for relevant articles in Medline and abstracted clinical information based on pre-defined criteria and endpoints. In all studies, we compared the baseline characteristics, implantation data and postoperative outcomes and major adverse cardiac complications.

Results: Data of nine studies, which were published between 2011 and 2015 were collected and evaluated. Those studies included more than 1300 patients underwent transcatheter aortic valve implantation for symptomatic severe aortic stenosis. Patients' age ranged from 78 ± 3 to 82 ± 5.8 years. The STS and EuroSCORE ranged from 4.5 ± 3 to 14.7 ± 12.3 % and 25.6 ± 16.2 to 37 ± 18 %, respectively. 30-day mortality rate in all reviewed studies was ranged from 2.5 to 14.5 % and was not significantly higher compared to patients with no history of earlier coronary artery bypass grafting.

Conclusion: Although, patients presented with severe aortic valve diseases after a previous cardiac surgery exhibited a higher preoperative STS and EuroSCORE than those without previous cardiac surgery, the 30-day mortality is not significantly higher in comparison to those patients without history of coronary artery bypass grafting. According to that, Transcatheter aortic valve implantation is considered as an attractive alternative for patients with previous coronary artery bypass grafting.

Imaging in Transcatheter Aortic Valve Replacement – The role of radiologist

A. Petkovic¹, N. Menkovic¹, M. Tesic², M. Vuckovic¹, N. Janeski¹, D. Zoric¹, M. Ilic¹, D. Cosic¹, Milan Nedeljkovic², D. Masulovic¹

¹Center for radiology and magnetic resonance, Serbian Clinical Center, Belgrade, Serbia

²Clinic for cardiology, Serbian Clinical Center, Belgrade, Serbia

Aim: Aortic valve stenosis is the most common valvular heart disease, when symptomatic leads to poor patient outcome. The standard of care in treatment of patients with symptomatic severe aortic stenosis remains surgical aortic valve replacement. However, high-risk patients often have significant comorbidities that limit their chance of survival. Transcatheter aortic valve replacement (TAVR) provides a minimally invasive therapeutic option for patients with aortic valve stenosis who cannot undergo conventional open-heart surgery.

Methods: In TAVR, the native aortic valve is re-placed with a bioprosthetic valve via a nonsurgical endovascular, transaortic or transapical pathway. Non-invasive imaging plays important role in selection of eligible patient and appropriate size of device, as well as assessment of possible access route. For the purpose, the accurate imaging method is electrocardiographic (EKG) - gated multi detector computed tomography (MDCT) of cardiac structures, aorta and iliac vessels.

Results: From 2013 to 2015 year 10 patients were examined at MDCT department, Center of radiology and MRI, Clinical center of Serbia who were candidates for TAVR procedure. We assessed measurements of the aortic valve apparatus, evaluated degree of aortic cusps calcification, determined suitability of the iliofemoral or alternative pathway, as well as appropriate coaxial angles.

Conclusion: In order to achieve successful TAVR procedure, multidisciplinary approach is required for patient selection, procedure planning and performance. Part of the team is radiologist, who in a help of MDCT can assess anatomy of the aortic root and propose iliofemoral or alternative vascular pathway. The main goal is to select appropriate size device to prevent postprocedural complications such as paravalvular regurgitation or aortic root rupture.

Infectious complications after transcatheter aortic valve implantation or surgical aortic valve replacement

D. Wendt, D. Peters, P. Kahlert, F. Al-Rashid, A. Janosi, M. Thoenes, K. Tsagakis, H. Jakob, M. Thielmann

University Hospital Essen, Westgerman Heart and Vascular Center, Essen, Germany

Aim: Transcatheter aortic valve implantation (TAVI) represents a minimal-invasive and straight-forward procedure. Currently, scant data exists concerning infectious complications after TAVI. We aimed to evaluate infectious complications after TAVI versus surgical AVR.

Methods: Between 06/2014 and 03/2015, 100 consecutive patients were treated by TAVI with or without PCI (group1), and another 100 consecutive patients were treated by surgical AVR (group2) with or without concomitant CABG. Primary endpoints were wound healing disorders, pneumonia, sepsis/SIRS or urinary tract infection.

Results: 50 patients received a transapical, 47 a transfemoral and 3 a transaortic TAVI. Isolated AVR was performed in 52 patients and 48 received concomitant CABG surgery. Mean age (81 ± 6 years), EuroSCORE ($23.1 \pm 13.8\%$), renal insufficiency (31%), pulmonary hypertension (43%) and diabetes in group1 was significantly different compared to group2 ($P < 0.01$). There were no significant differences in regard to re-intubation, fever, pneumonia, sepsis/SIRS, urinary tract infection or 30-days mortality ($P=0.311$; $P=1.00$; $P=0.446$; $P=1.00$; $P=0.537$; $P=0.08$). Pneumonia was the most important postoperative complication with a prevalence of 14% in TAVI and 19% in AVR patients. Group2 showed significantly higher procalcitonin levels ($P < 0.001$), a higher rate of superficial wound healing disorders (8% vs. 1%, $P=0.035$) and a longer ICU-stay (6.6 vs. 4.7 days, $P=0.026$). TAVI patients showed a 30-day mortality of 13% compared to 5% in surgical patients $P=0.08$.

Conclusion: The present study is the first to compare infectious complications between TAVI and AVR with a low infectious complication rate in TAVI. On the other hand, surgical AVR, even in combination with CABG shows low mortality rates of 5%.

Transapical Transcatheter Aortic Valve Implantation In Pure Aortic Regurgitation: Mid-Term Outcomes

D. Wendt, P. Kahlert, K. Tsagakis, T. Schlosser, D. Dohle, J. Schelhorn, H- Jakob, M. Thielmann

University Hospital Essen, Westgerman Heart and Vascular Center, Essen, Germany

Aim: Recently, we evaluated the self-expandable ACURATE-TA device (Symetis S.A., Ecublens, Switzerland) in patients with pure aortic regurgitation. As current experience with TAVI in this specific entity is limited, we aimed to analyze the fate of the aortic annulus as well as the implanted self-expandable prosthesis in the mid-term.

Methods: 10 high-risk patients with pure, severe aortic regurgitation were treated (grade III+). Clinical-, hemodynamic- and CT-data were collected at 3-years follow-up. Post-interventional non-contrast CT scans were performed using a 2x192 slice CT scanner (Somatom Definition Force; Siemens Healthcare, Germany; 70 kV; collimation, 0.6mm; reconstructed slice thickness, 0.75mm). CT data analysis was performed by using dedicated software that enables post processing of cardiac CT data (Syngo Via, Siemens Healthcare, Germany).

Results: Patients mean age was 72.3 ± 7.9 years (mean $\pm$ SD) and 40% were female. Mean logistic EuroSCORE-I was $31.9 \pm 8.7\%$. All patients underwent successful transapical TAVI with the transapical ACURATE-TA device without any intra-procedural complications according to the VARC-2 criteria. At 30-days, stroke incidence and all-cause mortality were 0%. At 3-years follow-up, all, but one patient were alive and in NYHA functional class I or II. Mean pressure gradients were 8.1 ± 2.1 mmHg. Post-interventional CT-scan revealed a slightly increased aortic annulus diameter (compared to pre-intervention) after implantation of the self-expandable bioprosthesis with no migration of the prosthesis, or any fractures of the Nitinol stent frame itself.

Conclusion: The present small single-center observational study proves a stable situation of the aortic annulus in patients with pure aortic regurgitation treated with the self-expandable ACURATE-TA device with no migration of the prosthesis at 3-years follow-up.

Access Site Vascular Complications In Patients Undergoing Transfemoral Transcatheter Aortic Valve Implantation Via Open Versus Percutaneous Approaches

R. Walas, T. Jaźwiec, M. Zembala, M. Gaska, M. Zembala

Silesian Center for Heart Disease, Vascular and Endovascular Surgery Department, Poland

Aim: The aim of the study was to evaluate and compare the incidence, predictors and implications of access site vascular complications (VC) after transfemoral transcatheter aortic valve implantation (TAVI) via fully percutaneous versus open surgery transfemoral route. Access site VC after transfemoral TAVI are relatively frequent (4-30%) and strongly associated with increase morbidity and mortality of the procedure. Despite that, transfemoral access remains the most preferred route for TAVI.

Methods: Between 2013-2014, 585 patients underwent transfemoral TAVI in 17 polish centers and were included in the prospective POLTAVI registry. Sixty four patients were excluded due to incomplete or incoherent data. VC were defined by the Valve Academic Research Consortium criteria.

Multivariable analysis with Chi-square and Mann-Whitney U tests were used for comparison and assessment of minor and major VC, duration of procedures and length of hospital stay after fully percutaneous and open surgery transfemoral TAVI.

Results: In total, 521 patients were included in the study, of whom 219 had fully percutaneous and 302 open surgery transfemoral TAVI. There were 65 (12.5%) access site VC. In the fully percutaneous transfemoral TAVI group minor VC were more frequent (9.6% vs. 4.3%; $p=0.026$), duration of procedures was longer (149.7min vs. 139.4min; $p=0.022$) and length of hospital stay was greater (17.66days vs. 15.26days; $p=0.001$) than in the group with open surgery access. Major VC were similar (4.1 vs. 3.6; $p=0.966$)

Conclusion: This analysis of POLTAVI registry data showed that minor VC were more frequent in patients with fully percutaneous transfemoral access for TAVI. Major VC occurred with similar incidence in both groups.

Duration and the time of hospital stay were statistically longer in fully percutaneous TAVI group. The data showed that transfemoral TAVI via open surgery access was preferable in polish centers.

Effect of anti-embolic filter protection on brain injury during transcatheter aortic valve implantation

S. Knipp, S. Schweter, D. Wendt, M. Schlamann, P. Kahlert, C. Weimar, H. Jakob, M. Thielmann

University Hospital Essen/ Clinic for thoracic and cardiovascular surgery /Westgerman Heart and Vascular Center

Aim: Embolic cerebral complications remain a major concern of transcatheter aortic valve implantation (TAVI). Recently, anti-embolic intraaortic filters combined with the transaortic approach have gained attraction as a promising protective strategy.

Methods: Patients with severe symptomatic aortic stenosis were randomly assigned to receive transaortic TAVI with (ETAo) or without (TAo) the Embol-X® protection system (Edwards Lifesciences, USA). In addition, the transaortic was compared to the transapical route (TA). Diffusion-weighted MRI, neurological examination and neuropsychological assessment (n=6 tests) were performed at baseline, pre-discharge and by 3 months follow-up (NCT01735513).

Results: Fifty-two patients were studied. All-cause mortality at 30-days was 9.2%. New postoperative DWI lesions were observed in 57%, 69% and 64% of patients after ETAo (n=14), TAo (n=16) and TA (n=22), respectively (p=0.88). Cumulative volume of lesions per patient tended to be smaller during ETAo (88±60 vs 168±217 vs 258±219 µl, p=0.15). There were no acute clinical strokes. Individual cognitive decline (z-score drop >1 SD in ≥2 tests) following ETAo, TAo and TA was present in 0%, 14% and 22% of patients at discharge (p=0.22), and 28%, 18% and 6% of patients at 3 months (p=0.7), respectively. Of 6 tests, 1 was significantly decreased at discharge (TA), and 1 at 3 months (ETAo), while all other tests remained unchanged over time. An association between new brain lesions and postoperative cognitive decline or patient-/procedure-related factors was not found.

Conclusion: With the intra-aortic protection device, a reduction of embolic brain injury during TAVI seems feasible. Cognitive decline was mild and independent of the approach and the use of an anti-embolic filter system.

Friday, 22.04.2016

Hall:Baltic

16.30-18.00

C-4: HEART TRANSPLANTATION, ECMO and LVAD

Moderators: S.Schueler (UK), S.Borovic (Serbia), K. Kurali (Turkey)

Key Note Lecture: From anecdotal cases to mainstream application of durable devices. S.Schueler (UK)

C110

Two-year experience in heart transplant and continuous – flow left ventricular assist device in Serbia

E. Nestorovic, N. Milic, S. Putnik, D. Markovic, D. Terzic, M. Ristic

Department for Heart Transplant, LVAD and ECMO, Clinic for Cardiac surgery, Clinical Center of Serbia, Belgrade, Serbia

Aim: Due to limited availability of donor hearts and growing number of heart transplant ineligible patients, left ventricular assist device has become more a beneficial option for the treatment of patients with end-stage heart failure. The goal of this study is to report our single-center experience concerning the treatment of patients with advanced heart failure.

Methods: Overall, 38 patients received continuous flow left ventricular assist device and 14 were transplanted at the Clinical Center of Serbia; 3 (7,9%) underwent heart transplant after a median duration of left ventricular assist device support of 13 months. The median follow-up for consequent outcomes (overall survival and adverse events) was 7 (23) months in left ventricular assist device patients and 12,5 (26) months in heart transplant patients.

Results: The mean age of left ventricular assist device and heart transplant patients was $50,24 \pm 14,6$ years and $49,55 \pm 7,2$ years. The median duration of left ventricular assist device support was 7 (23) months. The overall 30 day, 6-months and 1-year survival were 92,1%, 88,5% and 76,2% in left ventricular assist device group, and 63,6% for the whole period of follow-up in heart transplant group. Among left ventricular assist device patients major adverse events were present in 20 (52,6%), mainly by post-operative mediastinal bleeding. Serum creatinine, blood urea nitrogen, total bilirubin, infection and renal failure were associated with a significant decrease of overall survival rate in the Univariate Cox regression analysis ($p < 0,05$), and renal failure was found to be an independent risk factor for overall survival in multivariate Cox regression analysis ($p = 0,035$).

Conclusion: Due to organ donor shortage, left ventricular assist device is a feasible, life-saving therapy for end-stage heart failure. Resolution of optimal timing of left ventricular assist device implantation will contribute to a better survival rate.

C269

Extracorporeal membrane oxygenation as a bridge to definitive cardiac operation in critically ill patients

N. Dobrilovic, L. Michalak, O. Lateef, B. Mohamedali, M. Delibasic, D. Radovanovic, J. Surla, E. Bak, E. Hederman, J. Raman

Department of Cardiovascular and Thoracic Surgery, Rush University Medical Center, Chicago, Illinois, USA

Aim: A select group of critically ill patients requiring cardiac surgery faces either exceptionally high operative mortality with surgical intervention or near-certain mortality without. Extracorporeal membrane oxygenation (ECMO) offers an opportunity for patient recovery through complete cardiopulmonary support but is fraught with complications that limit duration and overall utility. We examine the role of ECMO as a potential bridge to high-risk cardiac surgery.

Methods: This study reports a retrospective, single institution experience examining all patients for whom ECMO was utilized as a bridge to definitive cardiac surgery. All consecutive patients over a four-year period (Dec, 2011 to Dec, 2015) were examined for inclusion within the study. Eight patients fit inclusion criteria. Five were male, three female. Average age was 57 (46-77) years. All eight patients were supported with Veno-Arterial ECMO in preparation for subsequent definitive cardiac surgery. Definitive cardiac surgical procedures included: Complex valve (n=5), CABG/VSD repair (n=1), CABG (n=1), LVAD (n=1). Average time of ECMO support required by each patient was 200 (118-378) hours. Two patients were decannulated from ECMO at the conclusion of definitive cardiac surgery. Logistic Euroscore 2 was calculated for each patient (prior to the decision to initiate ECMO) and is presented as one metric of patient acuity. Euroscore 2 values ranged from 59.5 to 89.2. Average Euroscore 2 representing all eight patients was 74.5%.

RESULTS: Thirty-day mortality was 38% (3/8), hospital mortality 50% (4/8), and overall surgical mortality 50% (4/8). Mean survival thus far is 10 months (2 days - 41 months). Three patients are still alive today, with a mean survival of 19 (11-41) months. Two deaths were associated with gastrointestinal bleeding and two with pre-existing liver failure.

CONCLUSION: ECMO can successfully be utilized as a bridge to prepare critically ill patients for high-risk cardiac surgical procedures.

Early clinical results for post-approval HeartMate 3 left ventricular assist device implantation – Astana experience

A. Medressova¹, S. Bekbossynov¹, M. Bekbossynova¹, S. Andossova¹, S. Dzhetybayeva¹, A. Medressova¹, S. Novikova¹, M. Murzagaliyev¹, R. Salov¹, K. Begaliyeva¹, A. Izmailova¹, L. Damme²

¹National Research Cardiac Surgery Center, Astana, Kazakhstan

²Thoratec Corporation, Burlington, MA

Objective: Astana Center was one of the enrolling centers in the HeartMate 3 CE Mark Study. Post-approval using of HeartMate 3 left ventricular assist device started in January 2015. The objective of this study was to determine outcomes of patients with post-approval HeartMate 3 left ventricular assist devices.

Methods: A total number of cases with the HeartMate3 assist devices was 39 patients. Among them 8 patients were within the CE Mark Study and 31 patients were implanted in the HeartMate 3 post-approval period. We analyzed data for 26 consecutive patients that have been enrolled in HeartMate3 Registry for post-approval data collection.

Results: The patients were representative of an advanced heart failure population and were a mix of «bridge to transplantation» (BTT) (57%) and «destination therapy» (DT) (43%) patients. Patients were in INTERMACS (Interagency Registry for Mechanically Assisted Circulatory Support) profiles 3-4 in most of cases. Currently 28 patients are ongoing with HeartMate3 support, 1 transplanted (day 75) and 2 expired (day 12 due to multi-organ failure and day 48 at home). Survival to date is 94%. 4 patients (15%) experienced bleeding requiring surgery, arrhythmia was observed in 3 patients (11.5%), driveline infections were reported in 2 patients (7.7%) and sepsis in 1 patient (3.8%). There have been no strokes, hemolysis or pump thrombosis and right ventricular assist device support in the patients.

Conclusion: Overall post-approval experience with the HeartMate 3 has been positive with the high rates of survival. We observed low adverse event rates without strokes, hemolysis or pump thrombosis. Long-term patient follow-up is necessary to confirm these preliminary findings.

Heart transplantation in University Hospital Dubrava Zagreb: 20 years of experience

M. Planinc¹, I. Rudez¹, D. Baric¹, D. Unic¹, R. Blazekovic¹, M. Grubisic¹, J. Varvodic¹, M. Kusurin¹, B. Starcevic², D. Planinc³, M. Udovicic², M. Stipcevic², D. Susnjar¹, Z. Sutlic¹

¹Department of Cardiac and Transplant Surgery, University Hospital Dubrava, Zagreb, Croatia

²Department of Cardiovascular Diseases, University Hospital Dubrava, Zagreb, Croatia

³Department of Cardiovascular Diseases, University Hospital Center Sisters of Mercy, Zagreb, Croatia

Aim: Despite advances both in medical treatment as well as development of mechanical circulatory support (MCS) heart transplantation (HTx) remains the treatment of choice for end-stage heart failure. Objective of this study is to report the single center 20 years experience and outcomes of patients whom underwent HTx.

METHODS: We retrospectively examined the outcomes of 135 HTx recipients between September 1995 and December 2015. The mean recipient age was 53±8 years, and 86% were male. Dilated cardiomyopathy was present in 55%, ischemic in 32% and 13% were other causes. Twelve patients that were heart recipients from our cohort were on high urgent list of Eurotransplant. Survival was studied using Kaplan-Meier curves.

RESULTS: In-hospital mortality was 16%. The median follow-up was 23 months. The global survival rates at 1, 5, and 10 years were 80%, 75%, and 61% respectively. The mean survival is 105 months (95% CI, 93.4-118.3). Early main causes of death were sepsis (41%) and primary graft failure (29%) and late causes were late rejection (20%), malignant disease and other causes (10%).

CONCLUSION: In our center, post-HTx survival rates at 1, 5, and 10 years were comparable to those reported by the International Society of Heart and Lung Transplantation as a result of combined effort of all medical personnel involved in perioperative and postoperative management.

C388

Extracorporeal membrane oxygenation: experience in primary graft dysfunction after heart transplantation

Ino Husedzinovic, Andrej Sribar, Davor Baric

Clinic of Anesthesiology, Reanimatology and Intensive Care Medicine, University Hospital Dubrava, Zagreb, Croatia

Background: Approximately 12-15% heart transplantations (HTx) don't survive initial months after procedure. The leading cause of early mortality is primary graft dysfunction (PGD). In 3 of 36 our transplanted in last two-years, developed PGD. In early phases, we established veno-arterial ECMO combined with levosimendan.

Case report: Male patient, 53 years old, with previous coronary and valve surgery, became hemodynamically unstable two hours after HTx despite of inotropic and vasoactive medications. Transesophageal echocardiography (TEE) has shown dilated right atrium with akinetic right ventricle. ECMO and 0.1 mcg/kg/min of levosimendan established immediately. After 24 hours, levosimendan discontinued and ECMO continued for the next five days. Fifth day, TEE has showed improvement of heart function, ECMO discontinued, and patient was transferred to the ward. Following two patients, 39 and 47 years old male patients with previously diagnosed dilated cardiomyopathy, both could not be weaned from CPB. In both, ECMO and 0.1 mcg/kg/min of levosimendan established in operating room. In first, postoperative course was complicated with hemodynamic instability and surgical bleeding with subsequent multiple revisions. ECMO continued for 72 hours. Fifth postoperative day TEE showed left ventricle with systolic collapse and dilated/akinetic right ventricle. Despite all measures, patient died. In second one, levosimendan discontinued after 24 hours and ECMO discontinued third day after HTx. TEE has shown improvement in heart contractility and patient discharged to the ward. This report has shown that in case of PGD, combination of ECMO and levosimendan has positive effects on hemodynamic parameters and recovery. This encouraging numbers could be explained with small number of patients. According to the suggestions of ISHLT consensus, ECMO usage reduces the amount and dose of inotropic and vasoactive drugs and improves the overall outcome. Combination with levosimendan within first 24 hours after HTx with PGD may shorten the time of ECMO.

Left ventricular assist device—related infection: prevention, treatment and outcome

D. Terzić, S. Putnik, E. Nestorović, A. Djordjevic, V. Jovicic, M. Ristić

Department for Heart Transplant, LVAD and ECMO, Clinical for Cardiac surgery, Clinical Center of Serbia, Belgrade, Serbia,

Aim: Left ventricular assist device (LVAD) implantation has become an effective treatment option for patients with severe heart failure awaiting transplantation. LVAD specific infections, including infections of the drive line (DL) exit site, as the most frequent, are the leading cause of morbidity and the second most common cause of death in patients who survive the first six months of the MCS device implantation. This is also the most common cause of readmissions in hospital. The aim of this study is to report our single-center experience concerning prevention, treatment and outcome for the patients with LVAD related infection.

Methods: Overall, 34 patients received MCS device and 14 underwent heart transplantation (HTx) at our center between 2013 and 2015. All patients were administered with antibiotic prophylaxis treatment and a daily treatment of dressing the wound on the cable exit site after surgery.

Results: The age of CF-LVAD was $51,38 \pm 13,9$ years. The median duration of CFLVAD support was 6 (21) months. 4 patients (13.0%) developed driveline infections. Median time from VAD implantation to DLI was 126 days. Trauma to the driveline has been associated with DL infection, probably, due to loss of tissue in-growth at the exit site. *Pseudomonas aeruginosa* was the most frequent infecting organism, causing 75% of DL infections. Two patients were treated with surgical driveline repositioning with extensive debridement of the wound; One patient underwent heart transplantation; One patient has a chronic infection that was conservatively treated with regular wound toilet.

Conclusion: Considering the clinical specificity in terms of presence of foreign body and formation of bacterial or fungal biofilm, prevention and treatment of these infections presents a serious therapeutic challenge. With the development of surgical techniques for prevention and treatment of infections of the cable exit site, it is possible to increase survival rate and reduce the rate of morbidity in patients with implanted LVAD.

C470

Retrograde crystalloid cardioplegia for isolated mitral valve replacement

V. Popov

National Amosov Institute of Cardiovascular Surgery, Kyiv, Ukraine

Aim: To present analysis of retrograde crystalloid cardioplegia during isolated mitral valve replacement (MVR) .

METHODS: During 2009 -2014 y 224 patients (pts) with isolated pathology of mitral valve disease (MVD) were operated by MVR. There were 103 (45,9%) males, 121 (54,1%) females. Average age was $59,5 \pm 8,1$ yy. NYHA class in all group were followings: II class – 12 (5,4%), III class – 97 (43,3%), IV class – 115 (51,3%) pts. Decreased ejection fraction of left ventricle ($<0,45$) was marked in 21 (9,4%) pts. The reasons of MVD were: rheumatism (65%), lipoidoses (25%), atherosclerosis (5%) and others (5%). Systemic hypothermia 34°C , cardiopulmonary bypass, permanent retrograde cardioplegic solution (Custadiol) (in dose 20 ml/kg) + external cooling of myocardium occurred in all pts. Average time of improvement of cardioplegia solution was $19,8 \pm 2,7$ min. Average cross-clamping time was $49,8 \pm 4,5$ min and reperfusion time was $17,1 \pm 2,5$ min .

RESULTS: Hospital mortality was 0,9% ($n=2/224$). Reason of death was pneumonia (1), brain damage (1). Absence of pts with heart failure. Average doses of dobutamin was 2,0-3,0 mcrg/min/kg during 56 hours. Duration of stay on artificial lung ventilation was $7,1 \pm 0,4$ hours, in intensive care unit - $43,2 \pm 4,5$ hours, average time of the postoperative period staying was $8,2 \pm 0,8$ days.

CONCLUSION: Improved myocardial protection in cases with isolated MVD by using retrograde crystalloid cardioplegic solution (Custadiol) + external cooling lead to better results and absence of postoperative heart failure.

C475

The importance of ventricle and pulmonary mechanical support with IABP and ECMO for a patient bridging to redo coronary bypass surgery

S. Iscan, A. Gurbuz, S. Iscan, B. Eygi, M. Balkanay, Y. Besir, H. Iner, I. Peker

Katip Celebi University Izmir Ataturk Training and Education Hospital, Izmir, Turkey

Background: Extracorporeal membrane oxygenation (ECMO) is one of the most preferable mechanical support devices with intra-aortic balloon pump (IABP). ECMO can assist heart, peripheral tissues and pulmonary system and it is considered more effective than IABP alone.

Case Report: Our patient who had coronary bypass surgery 10 years ago and presented with a new myocardial infarction was hospitalized with the diagnosis of severe cardiopulmonary failure. ECMO circulation and IABP were established immediately for a 7-day period. After a successful recovery period for 20 days, we performed redo coronary bypass surgery with no postoperative complication. The patient was discharged on postoperative day 10.

Conclusion: Immediate commencement of ventricle support systems like IABP and especially ECMO on preoperative period is a life saving method for complicated patients who have surgical or percutaneous coronary intervention in their past.

Management of upper limb hypoxia in peripheral veno-arterial ECMO

O. Gokalp, B. Eygi, O. Gökalp, N. Karakaş Yeşilkaya, H. İner, Y. Beşir, M. Balkanay, L. Yılık, S. İscan, G. Gokalp, A. Gürbüz

Department of Cardiovascular Surgery, Izmir Katip Celebi University, Ataturk Education and Research Hospital, Izmir, Turkey

Background: Peripheral ECMO can cause inappropriate oxygenation of upper limb in some patients, namely “Blue Head Syndrome”. We would like to share our approach to two similar patients with this syndrome.

Case report: Two patients, between December 2014 and March 2015, underwent VA-ECMO implantation due to cardiogenic shock. One patient underwent VA-ECMO due to right ventricular failure after coronary artery bypass procedure. The other patient was admitted to the intensive care unit following acute myocardial infarction. Both patients underwent femoral VA-ECMO implantation in emergency settings.

Results: Blood gas analyses were taken from right radial artery cannula in both patients after commencing ECMO flow. Discordance of PaO₂ between upper and lower limb samples is actually a problem with normally functioning femoral VA-ECMO patients. As a solution, 8F sheath catheters were introduced into right jugular veins of the patients connected directly to the oxygenator of ECMO with a 1/8 line. With this technic, oxygenated blood was transferred directly from ECMO into right atrium. Ten minutes later, blood samples were collected from right radial arteries. And the blood gas analyses revealed PaO₂ as 100-120 mmHg.

The oxygenation problem can also be avoided if the arterial cannula is placed on ascending aorta, or any closest point. But, in many patients this is considered inappropriate or excessively invasive (in preoperative cardiogenic shock or ventricular failure after closure of sternum postoperatively). In many patients with cardiogenic shock, mechanical ventilation often fails to achieve acceptable blood gas readings due to pulmonary edema. ECMO is very helpful in these cases too. Transferring oxygenated blood from ECMO into right atrium can simply cure Blue Head Syndrome. With this technic, patients can also be weaned from mechanical ventilation easily without interrupting cardiac support.

MDCT imaging of left ventricle assist device

N. Menkovic, M. Vuckovic, A. Petkovic, M. Ilic, D. Zoric, D. Cosic, D. Masulovic

Center of radiology and MRI, Clinical center of Serbia, Belgrade, Serbia

Aim: Left ventricular assist devices (LVAD) are implanted as a bridge to myocardial recovery or heart transplantation or as destination therapy and improve clinical outcomes. The rising number of patients with advanced heart failure who receive LVAD requires improved recognition of device complications. Evaluation for complications when clinically suspected is typically performed with echocardiography, but often limited by the acoustic window and acoustic shadowing due to the metallic artifact from the device, as well as other postoperative changes. MDCT provides noninvasive, high-resolution imaging of LVADs and is useful in identifying normal and pathologic appearances.

Methods: We obtain a contrast enhanced, retrospective electrocardiogram (ECG)-gated multi-detector cardiac computed tomography (MDCT) study to screen for normal position, indicators of normal functioning and presence of complications. Short and long axis views through cardiac cycle are helpful in making diagnosis.

Results: During exam we analyze normal position of LVAD by defining attachments of inflow and outflow cannula. We are looking for CT indicators of normal functioning of LVAD such as neutral position of septum, significant reduction in mitral regurgitation and closed aortic valve during systole. If complications are suspected we have to take into account time of their presence. Early complications are dysfunction of right ventricle, cannula obstruction, pericardial hematoma and pulmonary embolism. Late complications are thrombus formation, aortic stenosis or insufficiency, and infections around the driveline or the pump itself.

Conclusion: Three-dimensional reconstruction of the imaging data allows LVAD evaluation from different views. Improved spatial and temporal resolution, with retrospective gating allows assessment of both LV and RV function. The combination of hemodynamic information and reliable anatomic information by MDCT is a powerful tool for noninvasive assessment of LVAD.

Extracorporeal membrane oxygenation: experience in primary graft dysfunction after heart transplantation

N. Bradic, I. Husedzinovic, A. Sribar, D. Baric

University Hospital Dubrava, Zagreb, Croatia

Background: Approximately 12-15% heart transplantations (HTx) don't survive initial months after procedure. The leading cause of early mortality is primary graft dysfunction (PGD). In 3 of 36 our transplanted in last two-years, developed PGD. In early phases, we established veno-arterial ECMO combined with levosimendan.

Case report: Male patient, 53 years old, with previous coronary and valve surgery, became hemodynamically unstable two hours after HTx despite of inotropic and vasoactive medications. Transesophageal echocardiography (TEE) has shown dilated right atrium with akinetic right ventricle. ECMO and 0.1 mcg/kg/min of levosimendan established immediately. After 24 hours, levosimendan discontinued and ECMO continued for the next five days. Fifth day, TEE has showed improvement of heart function, ECMO discontinued, and patient was transferred to the ward. Following two patients, 39 and 47 years old male patients with previously diagnosed dilated cardiomyopathy, both could not be weaned from CPB. In both, ECMO and 0.1 mcg/kg/min of levosimendan established in operating room. In first, postoperative course was complicated with hemodynamic instability and surgical bleeding with subsequent multiple revisions. ECMO continued for 72 hours. Fifth postoperative day TEE showed left ventricle with systolic collapse and dilated/akinetic right ventricle. Despite all measures, patient died. In second one, levosimendan discontinued after 24 hours and ECMO discontinued third day after HTx. TEE has shown improvement in heart contractility and patient discharged to the ward. This report has shown that in case of PGD, combination of ECMO and levosimendan has positive effects on hemodynamic parameters and recovery. This encouraging numbers could be explained with small number of patients. According to the suggestions of ISHLT consensus, ECMO usage reduces the amount and dose of inotropic and vasoactive drugs and improves the overall outcome. Combination with levosimendan within first 24 hours after HTx with PGD may shorten the time of EC

Friday 22.04.2016

Hall: Mediteraneo

16.30-18.00

C 5: MISCELANEOUS I

Moderators: Ihsan Bakir (Turkey), P.Kovacevic (Serbia)

Key Note Lecture: Robotics in cardiac surgery, Ihsan Bakir (Turkey)

Our surgical strategy in a patient with mid-septal obstructive hypertrophic cardiomyopathy and coronary artery disease

L.Yilik, H.Iner, I.Yurekli, M.Balkanay, B.Lafci, Y.Besir, A.Gurbuz

Izmir Katip Celebi University Ataturk Training and Research Hospital, Department of Cardiovascular Surgery, Izmir, Turkey

Background Hypertrophic cardiomyopathy is a complex genetic disease associated with sudden death. We presented a patient with mid-septal obstructive hypertrophic cardiomyopathy and coronary artery disease.

Case report: A 51-year-old female was hospitalized in our clinic on November, 2015. She had chest pain causing significant limitations on her daily life activities. Echocardiography disclosed inappropriate left ventricular hypertrophy involving the left ventricle septum (20 mm) and lateral wall (22 mm), mid-ventricular obstruction and a apical aneurysm. Mid-left intraventricular gradient was 70 mm Hg. Ejection fraction was 50%. The coronary angiography revealed stenosis of the anterior descending, circumflex and right coronary arteries. The surgery was performed via a median sternotomy with the use of cardiopulmonary bypass (CPB), moderate systemic hypothermia (28OC). The left internal thoracic artery was anastomosed to the left anterior descending coronary artery. The saphenous veins grafts were anastomosed to right and circumflex coronary arteries. Myectomy was performed using a transapical approach. The transapicalmyectomy is an effective option for surgical treatment of mid-septal obstructive hypertrophic cardiomyopathy.

Fifteen year experience in using synthetic patches "baseX" for management of post-infarction lv aneurysm of heart

L.A. Bokeria, S.Sanchez., M.M. Alshibaya,M.R. Abdulgasanova,A.I. Vyacheslavovich

SC CVS n. a. A. N. Bakulev, Moskow, Russian Federation

Aim: To show the antimicrobial, thromboresistant, low porosity properties of the "BASEX" patches which can be used for geometric reconstruction(GR) of left ventricle(LV) following post-infarction left ventricular aneurysms of the heart.

Materials: "BASEX" (Bokeria-Abdulgasanov-Spyridonov explants) patches is being manufactured and used in our center since 1997. Domestic textiles were subjected to various modifications for producing "BASEX" patches. Medical gelatin was used as a base for modifying its coating. To maintain the antimicrobial and thromboresistant properties of the coatings were introduced, antimicrobials (ciprofloxacin, metronidazole) anticoagulants(heparin), antiaggregants(acetylsalicylic acid, dipyridamole). GR LV using "BASEX" patches were done on 742 patients. In 25% of patients were additionally done mitral valve interventions.

Results: Postoperative complications were observed in 18% patients. Major postoperative complications were CHF (21.6%), arrhythmias (22.9%) and neurological complications (8.9%). Hospital mortality was 6.4%. The main causes of deaths were heart failure, multiple organ failure and ventricular fibrillation. Mural thrombosis around the patch was observed in 4 (0.54%) patients. Thromboembolic complications were not observed. Infection of patch was observed in 3 (0.4%) patients. First patient suffered from sepsis due to post-injection abscess 2 years after surgery. She was re-admitted to hospital in a terminal condition. Autopsy revealed an abscess above the patch with penetration into pericardial cavity. In second patient, 2 months after surgery complained of episodes of fevers, on examination vegetations were noticed around the patch, patient refused to proposal for re-surgery, his further fate is unknown. In the third case infections were managed using conservative interventions.

Conclusion: Thus the synthetic patches "BASEX" which showcased antimicrobial, thromboresistant, low-porosity properties can widely be used in reconstructive corrections of the LV of heart.

Predictors for hospital readmission after cardiac surgery

S. Susak, M.Fabri, M. Rosic, M. Majin, I. Bjeljic, L.Velicki, J. Dejanovic

Institute of cardiovascular diseases Vojvodina, Novi Sad, Serbia

Aim: Unplanned hospital readmissions are responsible for increase in health care costs and have direct influence on patients quality of life. It remains unclear how hospital readmission rates can be effectively lowered. The aim of the study was to determine the predictors for hospital readmission after open heart surgery. The other purposes were to document extent and causes of one year readmission in our hospital.

Methods: Prospective study analysed all patients underwent cardiac surgery on Institute of cardiovascular diseases of Vojvodina in year 2012. Follow up period was one year from the date of operation. Patients were divided in two groups based on their readmission status. Examined factors were divided in preprocedural (patient related), procedural and postprocedural.

Results: A total of 1268 patients who underwent cardiac surgery were included. Total of 121 patients (9.54%) were readmitted within one year after the operation. The main reasons for readmission were congestive heart failure (17.3%), sternal dehiscence (14.9%), rhythm and conduction disturbances (14.9%), wound infection (11.6%), recurrent angina pectoris (11.6%) and pericardial effusion (10.7%). Independent predictors for hospital readmission were previous stroke ($p=0.002$), chronic heart failure ($p<0.0005$) and postoperative pericardial effusion ($p=0.006$).

Conclusion: Our study determined risk factors and predictors for hospital readmission after cardiac surgery that include numerous patient and procedure related factors. This is the first step in creating predictive model for early hospital readmission. Such effort to identify patients at risk, should reduce readmission rate in future.

Impact of negative blood cultures on outcome after surgery for acute infective endocarditis

A.Salsano¹, D.R.Giacobbe², F.Scarano¹, U.Muschiato¹, F.Santini¹

¹Department of Cardiac Surgery, IRCCS San Martino-IST, Genoa, Italy;

²Infectious Diseases Division, University of Genoa (DISSAL) and IRCCS San Martino-IST, Genoa, Italy

Aim: Early diagnosis and targeted therapy are essential factors for an effective treatment of Infective Endocarditis (IE). Aim of this study was to identify predictive variables for in-hospital mortality after surgical treatment of IE, with regard to negative blood culture.

Methods: This retrospective observational study included 258 consecutive operations performed for IE at our institution, from January 2000 through December 2014. Overall, 126 patients (48%) presented negative blood culture on admission. Risk factors for in-hospital mortality were investigated with univariate and multiple logistic regression analysis, reporting distributions for individuals with and without positivity of blood cultures.

Results: Overall in-hospital mortality was 12% (N=31), 6% in the positive blood cultures subgroup (N=8) and 19% in the negative blood cultures cohort (N=24) ($p<0.001$). Variables significantly associated with in-hospital deaths ($p<0.05$) and included in the risk model were: Age, Ejection Fraction, Concomitant Coronary Artery Disease, Previous Cardiac Surgery, Chronic Kidney Disease, Dialysis, Re-Operation for Bleeding, Multiple Valve Procedures, Negative Blood Cultures. At the multivariable logistic regression analysis, significant risk factors for mortality were: Age (OR=1.05, 95% CI [1.02-1.1], $p=0.006$), Ejection Fraction (OR=3.14, 95% CI [1.25-7.92], $p=0.015$), Multiple Valve Procedures (OR=4.92, 95% CI [1.71-14.16], $p=0.003$), Negative Blood Cultures (OR=3.80, 95% CI [1.42-10.18], $p=0.008$). The addition of the variable Negative Blood Cultures at the risk model, conferred further dismal prognostic value (continuous net reclassification improvement=0.59, 95% CI [0.27 - 0.92], p -value <0.001 ; improving C-statistic from 0.83 to 0.86).

Conclusion: Surgery for acute IE is still associated with significant in-hospital mortality. Negativity of blood cultures in an acute scenario appears to further compromise the prognosis. Possibly, the loss of a microbiological reference may prevent the establishment of an effective antimicrobial therapy.

Comparison of the capacity to predict early mortality in patients undergoing cardiac surgery of the glomerular filtration rate and the new huge formula

A.Abascal, M.E. Arnáiz-García, J.López-Rodríguez, M.J.Dalmau-Sorlí, J.Florencio Macías-Núñez

Cardiovascular Department of the University Hospital of Salamanca, Salamanca, Spain

OBJECTIVE: Renal failure is frequently diagnosed in population undergoing cardiac surgery, especially in the elderly. This condition is associated with increased early morbidity and mortality. The new HUGE formula, calculated from the value of the hematocrit, serum urea and gender, allows an easy characterization of the renal function. The capacity of this formula to predict early mortality seems to be greater than that estimated by glomerular filtration rate, both in general population and in patients with cardiovascular disease. In this study we compare the predictive capacity of both glomerular filtration and HUGE formula in early mortality after mayor cardiac operations.

METHODS: We performed a retrospective study including 4.450 consecutive patients (2850 men, 1600 women, mean age 68.7 ± 10.4 years) undergoing major cardiac surgery. The mortality estimated by logistic EuroScore was $8.9 \pm 6.3\%$ and $6.3 \pm 8.4\%$ by the EuroScore II. Renal failure was defined by a glomerular filtration rate less than $60 \text{ ml/min/1.73 m}^2$ and a HUGE value greater than 0. We investigate the discriminatory capacity of early mortality of both scales using ROC curves.

RESULTS: The incidence of renal failure was 18.9% according to the glomerular filtration rate and 25.6% according to the HUGE formula. Overall early mortality was 6.76% (301 patients), 13.6% for those who had renal failure according to the glomerular filtration rate and 13.0% according to the formula HUGE formula. The area under the ROC curve was 0.6189 for the GFR and 0.6502 for HUGE formula. These values were 0.5496 and 0.6784 for patients older than 69 years of age.

CONCLUSIONS: The HUGE formula better discriminates early mortality than the glomerular filtration rate, especially in elderly patients. The incorporation of the HUGE formula to the EuroScore could increase the predictive value of this widely used scale.

Topical negative pressure for the treatment of deep sternal wound infection and mediastinitis after cardiac surgery

Dj.Zdravković, P.Dabić, O.Djokić, M.Nešović, P.Milojević

Dedinje Cardiovascular Institute, Cardiac Surgery, Belgrade, Serbia

Aim: Surgical site infection (SSI) after cardiac surgery increases mortality rate and prolongs hospital stay. This study presents our results of topical negative pressure (TNP) application for post-cardiac surgery wound complications.

Methods: This is a retrospective study where we collected and analyzed outcomes of 39 patients with deep sternal wound infection and mediastinitis, treated with TNP (from June 2011 to December 2015).

Results: Out of 39 patients, 19 (48.7%) were female. The average patient age was 64 years (from 44 to 79). In average, the interval from cardiac surgery to the beginning of the SSI treatment was 20 days (from 5 to 130). SSI was deep sternal in 10 (25.6%) patients and mediastinitis in 29 (74.4%). The average duration of TNP therapy was 27 days (from 8 to 70). In 30 (76.9%) patients it was possible to perform sternal rewiring, in 4 (10.3%) patients omental flap transfer was performed, in 1 (2.5%) patient spontaneous closure was achieved, and in 4 (10.3%) patients there was no closure because of the lethal event during TNP therapy. In the group of 35 patients with closed wound, SSI recurred in 4 (11.4%) and 7 (17.9%) patients died because of SSI.

Conclusion: SSI treatment after the cardiac surgery is demanding and challenging, especially in patients suffering from mediastinitis. TNP therapy has good outcomes with reduced hospital stay and costs in those patients.

Surgical management of renal cell carcinoma with invasion of the inferior vena cava and right atrium: case report.

B.Aureliu, M.Gheorghe, B.Vlad, T.Aureliu, G.Iurie, S.Piotr, B.Ghenadie

Cardiovascular Surgery Department, Moldova

Aim: Renal cell carcinoma is a particular form of tumor by its tendency to invade through the renal vein, the inferior vena cava system. In the literature there are only few articles that describe situations with renal tumor propagation into the inferior vena cava. In this article we present a clinical case of metastatic thrombus in the inferior vena cava up to the right atrium. We will refer in particular to the surgical management and treatment outcomes in the given situation.

Material and Methods: We present the clinical case of a young patient of 41 years old, diagnosed with right kidney tumor and invasion of the renal vein, the inferior vena cava, and the right atrium, inclusively. The diagnosis was confirmed by ultrasound and computer tomography. The patient was operated in two stages. Initially, right nephrectomy was performed and over 3 weeks the metastatic thrombus from the inferior vena cava and right atrium was removed through combined approach: median sternotomy and bilateral subcostal laparotomy. The last surgery required cardiopulmonary bypass.

Results: There have been no complications during the surgery. The postoperative period was uneventful. The patient recovered well and was discharged 2 weeks postoperatively.

Conclusion: The surgical removal of intracaval and intraatrial metastatic thrombus can be performed safely. Surgery may be challenging and a combined team of cardiovascular and hepatobiliary surgeons is needed.

Heart injuries - Emergency surgery and predictors for reintervention

A. Batrinac, Gh. Manolache, V. D. Moscalu, I. Guzman, S. Barnaciuc, V. Morozan, A. Margineanu, V. V. Moscalu, D. Tarita

Republican Hospital

Aim: Heart injuries, who survived to the hospital, represent major surgical emergencies, represents 3.1% of all thoracic trauma. Cardiorrhaphy which provides heart wound closure and haemostasis may provide good results even for a big lesion. The objective is review of in hospital management of the patients with heart injury, highlighting intraoperative issues and review early and long-term results of treatment.

Material and methods: In the period January 2005 – December 2015 there were 42 hospitalized patients (M:F-40:2) with heart injury, out of which 2 patients have had pericardial injury and one –nonpenetrating cardiac injury. The following parameters were analyzed: demographic data, the time from injury to surgery, injured cardiac chambers, preoperative paraclinical examinations depending on the hemodynamic instability. Patients were divided into two groups: I – "white injured" (n=16) with hypovolemic shock and II – "blue injured" (n=26) with cardiogenic shock. All patients were operated by emergency anterolateral thoracotomy: left(29) and right(13). Intraoperatively injury of LV(20), RV(11), LA(2), RA(8), SCV(1) were detected, in all cases accompanied by haemopericardium and haemopneumothorax. Of total group 3 patients needed reoperation in "on-pump".

Results: The median hospital stay – 17.6 ± 3.6 , including ICU – 2.4 ± 1.2 days. Eight (19.%) patients died after cardiac arrest on the operating table: group I – 5(31,25%) and group II – 3 (11.53%).

Conclusion: Cardiorrhaphy performed with proper timing and the degree of heart chambers injuries resulted in 80,96% survival in this case series; hypovolemic shock was associated with worse outcomes, though without statistically significant difference.

Managing Sternal Defects After Cardiovascular Surgery With Free Flaps

A.Mario, M.Dadras, M.Ghods

Ernst von Bergamnn Klinikum, Plastic Surgery

Aim: Offering patients with cardiovascular disease an appropriate treatment is world wide established; offering the minority of these patients -who develop sternal infections and defects- an optimal therapy plan still remains a challenge for the reconstructive surgeon despite the plethora of approaches. The associated mortality with sternal wound infections is a problem to be solved. The aim of this study is to examine the reconstructive concept of sternal defects in our unit.

Methods: A retrospective analysis of the patients treated with sternal osteomyelitis between 2010 and 2014 was carried out. Data was collected from patient notes, OR and ICU records. **Results:** 28 patients received 35 free flap reconstructions in 29 operations. Average patient age was 68,2 years. All patients had an ASA of III or IV. Hospital stay from referral centre to discharge was 47 days, with a median stay on ICU of 4 days. 3 free flaps were lost, 4 patients died. Median operative time was 398 minutes and 3 flaps had to be revised. 8 patients received complementary operations to complete the reconstruction.

Conclusion: In the current era of microsurgical proficiency free tissue transfer should also be considered for severely ill patients. With meticulous preoperative planning and an interdisciplinary approach we can offer high risk patients a safe sternal defect reconstruction.

Dysphagia as a coronary surgery complication

V.Vujić¹, D.Mandić, R.Mojašević, M.Zagoričnik, M.Sladojević

Department of Anesthesia, Clinic of Cardiovascular Surgery, Institute of Cardiovascular Diseases of Vojvodina, Novi Sad, Serbia

Background: Postoperative dysphagia occurring after cardiac surgery carries the risks of aspiration, pneumonia, undernourishment, dehydration, prolonged hospital treatment, increased hospital costs, and reduced quality of life of a patient.

Case report: A 63 year-old patient was admitted to the Clinic of Cardiovascular Surgery at the Institute of Cardiovascular Diseases Vojvodina to undergo myocardial revascularization managed with triple aortocoronary bypass surgery. From the first postoperative day she complained to having swallowing difficulties which was later followed by inability to swallow, throwing up and heavy coughing. Suspecting there was a tracheoesophageal fistula, the gastrografinesophagram was performed which registered suspected pathological communication around 3-4 cm cranially of tracheal bifurcation. Bronchoscopy followed registering around 1 cm long lacerated mucos on the left side of the lateroposterior wall 2 cm away from cords. Due to the result discrepancy and after consulting thoracic surgeons and a gastroenterologist, the computerized tomography of the chest (CT) was done and the result pointed to the probable disorder of the swallowing act. Because of fever, increased inflammatory markers and bilateral spot-like shadows, the aspiration pneumonia was suspected and empirical dual antibiotic therapy was given. After the otolaryngologist confirmed that there were no organic reasons for swallowing disorders, the gastrografen esophagram examination was repeated as well as the CT of chest which confirmed the previous results. Then esophagogastroduodenoscopy was performed which registered chronic erythematous gastritis with no fistula present. The entire time the patient was being fed parenterally and also through nasogastric tube. She started swallowing spontaneously on the 25th postoperative day. Timely diagnostics and treatment of dysphagia is highly important in order to reduce postoperative complications, shorten the length of hospital stay and reduce mortality.

Friday, 22.04.2016

Hall: Atlantic I+II

16.30-18.30h

CARDIAC YOUNG SURGEONS' AWARD SESSION

Chairman: O. Oto (Turkey)

Jury: O.Oto, Z.Sutlic, F.Doguet, M. Thielman, T. Folliguet

Postoperative Complications and The Degree Of Patients' Satisfaction After Radial Artery Harvesting for Coronary Artery Bypass

A. Milutinovic, P. Milojevic, P. Vukovic

Institute of Cardiovascular Diseases "Dedinje", Belgrade, Serbia

Aim: The purpose of this study is to analyze the frequency of wound-site complications after the radial artery harvesting. Heart surgery is a life-saving and life-extending procedure, but the visual effects and patients' satisfaction with treatment, scarring and overall satisfaction with the wound-site itself are all too important for patient and its relation to the general success of the surgery.

Methods: This was a retrospective study. It included 102 consecutive patients treated at The Institute for Cardiovascular Diseases "Dedinje", Belgrade, Serbia, from April, 2009 to October, 2013. Inclusive criteria involved the presence of the radial artery as a graft, and a free will of the patient to participate in this study. The Likert scale, a golden standard for this type of studies, was used. The clinical characteristics observed in this protocol were: arm mobility, arm pain, arm swelling, arm cosmesis, arm sensory and neurological complications, health state. The methods of descriptive statistics were used (measures of central tendencies, variability measures), the methods of analytical statistics (Pearson's correlation) and ANOVA test.

Results: The mean age of the patients was 57.95 years, standard deviation (4.39). Permanent pain in the arm was not reported at all, while frequent pain was noted in one patient only. Absence of pain was reported by 73 patients (75.25 %). Swelling was insignificant in this research. 93 patients (96, 59%) had a positive opinion about cosmetic result. Eighty-nine patients (91.75%) never reported any problems after the surgery. Rare or occasional problems were present in 4 (4.2%) i.e. 3 patients (3.10 %). The examination of sensory changes showed that 5 patients (5.15%) experienced a persistent discomfort and 4 patients (4.12%) experienced fatigue on a frequent basis. 24 patients (24.74%) were rarely symptomatic and 51 (52.58%) were without any symptoms. Health state after the surgery 82 patients (84.54%) described it as excellent or good. None of the examinees had an extremely weak state of health.

Conclusion: Obtained results of the examined data after the radial artery harvesting for coronary artery bypass in our population are within acceptable ranges compared with the current results published in the literature. Physical and mental characteristics of each patient are extremely important. The endoscopic harvesting of the radial artery will create a better esthetic result but with possibly higher incidences of neurological complications and tendency to spasm.

Clinical and Echocardiographic Outcome at Three Years in Patients with Functional Tricuspid Regurgitation comparing Annuloplasty with Rigid Ring, Flexible Ring and De Vega Technique

F. L. Valdiviezo, J. Hernández, M. Á. Gutiérrez, J. C. Téllez, C. Velázquez, J. Olarte, M. García de la Borbolla, O. Araji, J. Barquero

Hospital Universitario Virgen Macarena, Department of Cardiovascular Surgery, Sevilla, Spain

Aim: To compare the clinical outcome, recurrence and mortality at three years of patients with functional tricuspid regurgitation undergoing annuloplasty with rigid ring, flexible ring and De Vega technique.

Methods: A retrospective observational study was performed comparing the follow up in terms of clinical outcome, recurrence and mortality in patients with functional tricuspid regurgitation undergoing different annuloplasty techniques in the period from 2007 to 2013. From a total of 95 tricuspid annuloplasty only 64 were functional who were divided in three groups: De Vega annuloplasty with 31 patients, flexible ring with 17 patients and rigid ring with 16 patients.

Results: From the 64 patients, 47 were women (73,4%). The mean age was $63,56 \pm 9,62$ years. 58 patients were in a NYHA class III-IV before surgery and had severe tricuspid regurgitation (grade III-IV). All patients underwent concomitant surgery of mitral valve repair/replacement and some underwent also aortic valve replacement. At three year most of the patients had a lower NYHA class comparing with the preoperative one, being more evident in patients who underwent annuloplasty with rigid ring with a $p < 0,0001$. The ejection fraction was improved in 10-15% in patients with use of flexible and rigid ring compared to those with De Vega technique. The recurrence of tricuspid regurgitation (greater than grade II) was higher with De Vega technique (26%) compared with used of flexible and rigid ring (6,25% and 6,66% respectively) with a $p < 0,01$. There was no statistically difference in mortality comparing the three techniques.

Conclusion: Annuloplasty with rigid ring has better clinical results than flexible ring and De Vega technique, with less recurrence and is a safe surgical procedure.

Early results of valve sparing aortic root reconstruction in acute Stanford type A aortic dissection

M. Wahba, S. Soliman, O. Dawoud, A. Mohamed, A. Daoud, W. Hussein.

Cardiothoracic Surgery department, Faculty of Medicine, Benisuef University, Benisuef, Egypt

Aim : The aim of this study is to evaluate the early mortality and morbidities in acute ascending aortic dissection patients treated by aortic root reconstruction techniques.

Methods : This is a retrospective and prospective non randomized study including 30 patients in which aortic valve sparing and root reconstruction was done.

Results : The mean age was 53 ± 12 years, 21 were males and 9 were females. Aortic valve re-implantation technique was done in 19 patients, one or two sinus replacement plus supra-commisural conduit in 10 patients while remodelling technique was done in only one patient. Early hospital mortality occurred in 6 patients (20%). Five patients (17.9 %) needed re-exploration for bleeding, while 7 patients (25%) . had neurological complications , with complete recovery except one that had residual hemiplegia . Ten patients (35.7%) suffered from renal impairment, 3 of which needed dialysis. Five patients (17.9 %) required prolonged ventilation . 7 patients (25%) had residual trivial to mild aortic regurge and none of them had moderate or severe aortic regurge.

Conclusions : Our early results show excellent valvular stability without an increased operative risk. Freedom from anticoagulation and complete resection of diseased tissue represent unquestionable advantages of these techniques.

Systolic Stretching Of The Ascending Aorta As A New Method Of The Assessment Of Elasticity Of The Aortic Wall.

T. Plonek, B. Rylski , P. Nawrocki, A. Gozdzik, W. Kustrzycki, A. Mysiak, F. Beyersdorf, W.Kuliczkowski

Wroclaw Medical University, Department of Cardiac Surgery, Wroclaw, Poland

Aim: Two mechanical factors contribute to the stress and strain of the ascending aorta: arterial pressure and longitudinal stretching of the aorta due to systolic heart motion (systolic aortic stretching – SAS), however, the SAS has not been examined so far. The objective of this study is to assess the SAS and its correlation with the diameter of the ascending aorta and with the incidence of aortic valve disease.

Methods: The aortographies of 122 patients were analyzed. The diameter of the aorta was measured at the level of the aortic root, sinotubular junction and tubular ascending aorta. Moreover, a systolic-diastolic longitudinal translocation of the aorta (systolic aortic stretching – SAS) caused by the contraction of the heart during systole was measured at the level of ventriculo-aortic junction.

Results: Mean diameter of the aortic root was 34.9 ± 4.5 mm and ascending aorta 33.9 ± 5.4 mm. Systolic aortic stretching (SAS) negatively correlated with the diameter of the tubular ascending aorta ($r = -0.42$, $p < 0.001$) but there was no significant correlation of the SAS with the diameter of the root ($r = -0.11$, $p = 0.239$). There was a statistically significant ($p < 0.001$) difference in the SAS values between patients with normal aortic valve (10.6 ± 3.1 mm) and aortic valve pathology (for all patients with aortic valve pathology: 8.0 ± 3.2 mm; for isolated aortic stenosis: 7.5 ± 4.3 mm, for isolated insufficiency: 8.5 ± 2.9 mm, for valves that are both stenotic and insufficient: 8.2 ± 2.8 mm).

Conclusions: Systolic aortic stretching correlates with the diameter of the tubular ascending aorta and does not correlate with the diameter of the aortic root. SAS is lower in patients with aortic valve pathology. Further studies are needed to assess the correlation of SAS with aortic wall elasticity and the risk of aortic dissection.

Biomechanical Analysis Of The Ascending Aorta – A Finite Elements Study.

T. Plonek, M. Zak, K. Burzynska, A. Gozdzik, W. Kustrzycki, J. Filipiak

Wroclaw Medical University, Department of Cardiac Surgery, Wroclaw, Poland

Aim: Biomechanical factors influence the stress and strain in the ascending aorta. The aim of this study was to perform a finite elements analysis to assess how the diameter and shape of the vessel, blood pressure and aortic movement caused by the contraction of the myocardium during systole influence the strain in the wall of the ascending aorta.

Methods: Two computational models of the non-dilated aorta and an aneurysm of the ascending aorta were created. A finite elements analysis was carried out. The models were subjected to blood pressure (120mmHg and 160mmHg) and to the longitudinal movement of the ascending aorta caused by the systolic motion of the heart (0mm, 5mm, 10mm and 15mm).

Results: In the non-dilated aorta, the maximal strain in the aortic wall increased with the distance to which the aorta was pulled during the systolic motion of the heart and it amounted to 0.12MPa for 0mm, 0.3MPa for 5mm, 0.4MPa for 10mm and 0.6MPa for 15mm. Such a correlation was not observed in the aneurysm model, where the maximal strain was 0.6MPa for 0mm, 0.55MPa for 5mm, 0.5MPa for 10mm and 0.65MPa for 15mm. Maximal blood pressure had a smaller impact on the strain than the longitudinal movement of the aorta. An increase in blood pressure from 120mmHg to 160mmHg increased the strain by less than 0.1MPa in the non-dilated aorta and by less than 0.2MPa in the aneurysm model.

Conclusions: The longitudinal systolic movement of the ascending aorta has a larger impact on the strain within the aortic wall than blood pressure. In the dilated aorta, it can lower the strain caused by the blood pressure. The finite elements analysis may be used as a tool to define the risk factor of aortic dissection.

Combination of Port-Access and Direct Vision in Open Heart Surgery. Initial Three Years Single Center Experience

A. Kurmalayev

National Research Center for Cardiac Surgery, Astana, Kazakhstan

Aim: The objective of this prospective cohort observational study was to assess in-hospital mortality, bypass time and morbidity in all patients undergoing open heart surgery at our Center using a combination of port access and direct vision.

Methods: Between January 2013 and September 2015 164 patients (69% female) underwent open heart surgery using above-mentioned technique. Average age was 42 years (range: 18-72 years). Mean New York Heart Association functional class 2.18 ± 0.8 . Mean ejection fraction was 48 ± 11 . 109 (67%) patients had pulmonary hypertension >30 mmHg. Atrial septal defect repair was in 64 (39%) patients, mitral valve replacement in 37 (23%), mitral valve repair in 43 (26%), ventricular septal defect repair in 3 (2%), tricuspid valve replacement in 10 (6%), aortic valve replacement in 3 (2%), pericardium fenestration and draining in 2 (1%), tricuspid valve repair in 2 (1%). In 3 cases of mitral valve surgery left atrium monopolar radiofrequency ablation was performed.

Results: There were no in-hospital deaths. The mean cardiopulmonary bypass and aortic clamping times were 135 ± 15 minutes and 66 ± 5 minutes, respectively. Mild pain at surgical access site was reported in 15 patients (9%). Rethoracotomy for bleeding from intercostal artery was required in one case. One patient had ischemic stroke in hospital. Conversion to sternotomy was required in 4 patients because of adhesive pericarditis. Mean time to discharge was 5 ± 1 days.

Conclusions: Minimally invasive access without sternotomy has been associated with good patient outcomes at our Center. Post-operative recovery time was good, surgical site pain was mild if reported, and there were low rates of conversion to conventional sternotomy. Further research should focus on the procedure effectiveness compared to conventional surgery and include longer follow-up

Innominate vein cannulation: easy but neglected technique

M. Akbulut, O. Arslan, A. Ak, S. Taş, D. Cekmecelioglu, M. Sismanoglu, A. Tuncer

Kartal Kosuyolu Yuksek Ihtisas Egitim ve Arastirma Hastanesi, Istanbul, Turkey

Aim: Our experience in minimally invasive procedures and improvement of graft technology enables easy and successful operation carried out even with complex thoracic aortic diseases from limited surgical area. However, it should be more than one incision or cannulation site for such intervention. We aimed to present our experience and results of 23 patients who has ascending aorta and aortic arch pathologies of which we operated with J-shaped partial sternotomy and innominate vein cannulation..

Methods: From January 2013 to January 2015, 23 patients with aorta and aortic valve pathologies who underwent aortic surgery with J-shaped partial sternotomy and innominate vein cannulation included. Operation findings, cardiopulmonary bypass(CPB) values, postoperative results, surgical mortality and morbidity rates, late conversion to full sternotomy rates, ICU and hospital length of stay were evaluated.

Results: The mean age of the patients was 53.7 ± 12 (range 19-68) and 18 (78.2%) were males. Arcus aorta debranching applied to 4 patients (17.3%) and one of these procedures was frozen elephant trunk procedure (%4.3). Neither mortality nor cerebrovascular accident occurred. Mean CPB peak flow was 4.6 ± 0.4 L/min, mean flow index calculated as 2.01 ± 0.38 L/min/m² and there was no CPB problem intraoperatively. Innominate vein ligation was carried out in 5 patients but no complication was seen except one who had left arm swelling treated with elevation.

Conclusion: Innominate vein cannulation with J-shaped partial sternotomy is a reliable and easily applicable method providing effective utilization of limited operative field not only in ascending aorta and aortic arch operations but also with the advancements of hybrid systems used in descending aorta pathologies.

Comparison of frozen elephant trunk technique according different zone implantation

M.Akbulut, A. Ak, O. Arslan, D. Cekmecelioglu, A. A. Donmez, S.G.Tas, M. A.Tuncer

Kartal Kosuyolu Yuksek Ihtisas Research and Training Hospital, Istanbul, Turkey

Aim: Frozen elephant trunk procedure (FET) is a complete single-stage repair technique with outstanding results with successful clinical experience in the complex aortic diseases that intended to reduce cumulative morbidity and mortality in mean of two-stage procedures. In this paper we examine the advantages and disadvantages of FET regarding the application of pathology showing involvement of different zones.

Methods: 56 from 71 patients were included in the study who applied islet shaped anastomosis as the zone 4 (N:35) and who applied arch debranching as zone 0 (N:21) between May 2012 - December 2015. Mean age was 55.2 ± 9.8 , 82.1% were male (n = 46), respectively. Preoperative and peroperative properties (total perfusion time, antegrade perfusion time, visceral perfusion time, postoperative complications, mortality and morbidity) were evaluated.

Results: In early period, 5 patients in the zone IV group died, mortality was observed in 4 patients in group zone 0. There was no statistically significant difference in mortality. ($p>0.10$). Mean cardiopulmonary bypass time of Zone 0 and Zone 4 groups were 178.5 ± 52.9 , 187.5 ± 67.8 minutes, respectively. Antegrade selective cerebral perfusion times were 70.3 ± 26.8 , 76.4 ± 37.4 minutes and visceral ischemia time were 45.6 ± 11.7 , 51.7 ± 27.9 minutes respectively. There were not statistically significance for these values. Although the revision due to bleeding and renal dysfunction incidence, neurological complication rates, the total amount of drainage and blood transfusion were less in zone 0 group; there were no statistically significant difference between the groups.

Conclusion: Although non significant differences in mortality and morbidity, we believe that zone 0 applications reduce the risk of postoperative bleeding more comfortable beating the surgical technical difficulties in patients who underwent single-stage for zone.

Aortic Cryopreserved Allograft Implantation in Reoperations for Active Prosthetic Endocarditis with Aortic Root Destruction

M. Kokoev, L. Bockeria, V. Mironenko, S. Rychin

Bakoulev Scientific Center for Cardiovascular Surgery , Department of Reconstructive Surgery and Aortic Root, Moscow, Russian Federation

Aim: Allograft implantation in acute prosthetic endocarditis is the generally accepted treatment, but is limited due to allografts' deficiency, scarcity of sizes' variety and difficult preparation.

We represent our 5 years' experience in such kind of operations.

Methods: From 2010 to 2015, we performed 11 reoperations on the aortic root with cryopreserved allograft implantation (10 males, mean age 49,9 years). Primary operations were: 4 – aortic valve replacement (2 – with aortorrhaphy, 1 – with tricuspid valve replacement), 5 – original Bentall procedure (1 – with CABG), 1 – aortic valve re-replacement with mitral valve replacement and tricuspid valve annuloplasty, 1 – prosthetic aortic valve replacement with allograft and CABG.

Mean interval between operations– 17,1 months. Endocarditis occurred within a year after primary operation in 63,7%, and in 100% it was in active phase at the time of reoperation.

Eight patients had aortic root abscesses with extensive destructions, 4 – intracardiac fistulas and 3 – mediastinitis with a fistula on suprasternal notch. In 2 patients the infection extended around temporary pacing wires. One patient had vegetations on the internal wall of dacron graft with an embolism in right radial artery, the mechanical prosthesis was clear.

Additional procedures: CABG due to involvement of the right coronary artery ostium into aortic abscess, mitral valve replacement with tricuspid valve annuloplasty, mitral valve re-replacement, tricuspid valve annuloplasty and tricuspid valve re-replacement.

Results: Resternotomy – 2 (bleeding), 1 – side thoracotomy and lung stitching (massive pneumothorax due to violent lung emphysema), 1 – permanent pacemaker implantation (complete AV-block). All patients were discharged.

Conclusions: 1. Allografts showed high resistance to infection in active prosthetic endocarditis with purulent abscesses and mediastinitis. 2. Allografts' shape and its implantation technique allows to apply it into destructed aortic root with deeply changed anatomy and to fill abscesses' cavities with its tissues without hemodynamic deterioration

Management of perioperative myocardial ischemia after CABG – our experience in last 5 yearsD. Sef, J. Szavits-Nossan², Z.A. Korda¹, I. Alfircic¹, T. Sipic², K. Stambuk, V. Juranko¹¹ Department of Cardiovascular Surgery, Magdalena – Clinic for Cardiovascular Diseases,² „J.J. Strossmayer University“, Krapinske Toplice, Croatia

Objective : Perioperative myocardial ischemia is rare but serious complication after coronary artery bypass grafting (CABG) which may require an immediate secondary revascularization procedure to salvage myocardium, in order to preserve ventricular function and improve patient outcome. Graft dysfunction, coronary artery thrombosis and incomplete revascularization are main causes. The purpose of this study was to analyze the causes of perioperative ischemia and coronary angiography based treatment strategy within our Heart team.

Methods : Among all patients with coronary artery disease who consecutively underwent CABG from January 2011 till December 2015 we enrolled patients that underwent immediate coronary angiography for perioperative myocardial ischemia. Creatine kinase (CK-MB) was assessed after CABG as well as 12-lead standard electrocardiography (ECG) in all patients. Perioperative coronary angiography was performed in 46 patients with suspected myocardial ischemia. As a result, patients immediately underwent acute PCI (group 1), emergency reoperation (group 2), or were treated conservatively (group 3). Primary endpoint was in hospital mortality. Secondary endpoints were postoperative left ventricular ejection fraction (LVEF%) assessed by echocardiography and major adverse cardiac events.

Results : We enrolled 46 patients that underwent immediate coronary angiography for perioperative myocardial ischemia in a prospective longitudinal study. Incorrect graft anastomosis, graft spasm, displacement, dissection, acute coronary artery thrombotic occlusion and ischemia due to incomplete revascularization were found. Global LVEF was reduced during the acute ischemic event when compared with preoperative values. Immediate PCI was performed in 15 patients (32,6%), redo-CABG in 16 patients (34,8%) and conservative treatment in 15 patients. Intrahospital mortality in group of patients who underwent immediate coronary angiography for acute perioperative ischaemia was 8,7% (4 patients).

Conclusion: We concluded that graft dysfunction is usual cause of myocardial ischemia due to incorrect anastomosis and that re-revascularization with percutaneous intervention on bypass graft or coronary artery, or reoperation can lessen high mortality and morbidity rate in these patients. Combined diagnostic criteria of either ST elevation or CK-MB concentrations >35 U/L (at hour 6) should indicate coronary angiography and potential revascularization. Best treatment strategy should be discussed by the Heart team in order to find the best solution for each patient.

Algisyl-LVR™ ventriculoplasty in Patients with Dilated Cardiomyopathy - the cardiovascular surgeon's perspective

B.C. Alexandru, S. Dumitrescu, I. Crisan, G. Cristian, V. Murgu, I. Droc

Army's Center for Cardiovascular Diseases, Bucharest, Romania

Aim: The dilated cardiomyopathy (DCM) represents the leading cause for cardiac transplantation, being associated with a significant rate of mortality. The AUGMENT-HF clinical trial (multicentre, prospective, open-label, randomized, controlled study) evaluated the efficiency and safety of the left ventricular augmentation by Algisyl (injectable calcium alginate hydrogel) implantation, in patients with severe cardiac failure. Alginate (Algisyl-LVR) is a highly biocompatible polysaccharide hydrocolloid, exhibiting functional properties similar to the myocardium. **Objective.** We aimed to investigate the effects of Algisyl-LVR implantation in the left ventricle wall, in the group of patients enrolled in the Army's Center for Cardiovascular Diseases (Bucharest, Romania), randomized to the surgical group in AUGMENT-HF clinical trial, by evaluating the left ventricular function (LVEF). **Material and methods:** 35 patients diagnosed with DCM, were treated using the Algisyl-LVR™ device. The outcome of patients receiving the device was compared to a control group (patients treated by standard medical therapy for severe heart failure). A lateral thoracotomy *was performed in order to expose the left ventricle*. Volumes ranging from 0.25 to 0.35 mL of Algisyl-LVR were injected into the left ventricle's myocardium. The implants were equally placed in the mid-myocardium following a zigzag pattern. Patients were evaluated by transthoracic and transesophageal echocardiography, before, and at three months postoperative.

Results: The total number of alginate-hydrogel implants (injections) was: mean (SD) = 15.5 (2.0), median (min-max) = 15 (11-19). The total volume of Algisyl-LVR administered (mL) was: mean (SD) = 4.6 (0.6), median (min-max) = 4.5 (3.5 – 3.7). No adverse events were encountered during and after the procedure. The LVEF significantly increased after the procedure. The NYHA class significantly improved, from IV to II.

Conclusions: The Algisyl-LVR™ ventriculoplasty represents a safe and valuable treatment for patients diagnosed with dilated cardiomyopathy.

Friday, 22.04.2016

Hall: Drina

16.30-18.30

BEST CARDIAC POSTER SESSION

Moderators: T. Gencipar (Turkey), V.G.Ruggieri (France), M.Rosic (Serbia)

Renal malperfusion in acute aortic dissection type A operated– early and mid outcomes

C. Parasca, R. Geana, D Filipescu, S. I. Bubenek-Turconi, V. A. Iliescu

Institute of Cardiovascular Emergency "Prof. dr. C.C. Iliescu

Aim: Malperfusion syndrome is a feared complication of acute aortic dissection, known to increase both morbidity and mortality rates. Our purpose was to evaluate the impact of preoperative renal dysfunction complicating acute aortic dissection type A on short and mid term.

Methods: Two hundred-ninety patients with surgically treated acute aortic dissection type A in a single center were included in this retrospective study. Two groups were defined and compared according to the presence of preoperative renal function impairment assessed by creatinine levels. Univariate analysis was performed.

Results: Between 2005 and 2013 two hundred-ninety patients were operated in our institute for acute aortic dissection type A, of whom 131 (45.2%) presented with preoperative reduced renal function, defining Group A. Group B – the control group – included the remaining 159 (54.8%) patients. The median follow up period was 7 years. Preoperative renal function impairment associated with an increased rate of early postoperative complications: renal failure (72.5% vs 45.3%), hematologic dysfunction (64.1% vs 52.2%), MSOF (45.8% vs 29.6%), sepsis (38.9% vs 20.8%) and bleeding (36.6% vs 15.1%), increasing median mechanical ventilation period (99 vs 36.5 hours) and median ICU stay (8 vs 5 days). No significant difference between groups was observed regarding early (31.4% vs 29.8%, $p=0.758$) or mid term mortality rates (41.9% vs 36.8%, $p=0.823$).

Conclusion: Although preoperative renal dysfunction associates an increased morbidity rate, prolonging hospital stay, it appears to influence neither short nor long term mortality rates, suggesting that immediate surgical treatment is the solution for these patients.

Aortic valve sparing procedures – a single institution experience

T. Tumpaj, M. Jelenc

Department for Cardiovascular Surgery, University Medical Center Ljubljana , Slovenia

Aim: Aortic valve sparing procedures are an important method of treatment for patients with aortic root and ascending aortic aneurysms with or without aortic valve regurgitation with relatively preserved aortic valve leaflets. We report our experience and short term outcomes.

Methods: From January 2006 to December 2015, 63 patients underwent aortic valve sparing procedures at our institution. The mean age of the patients was 56 ± 13 years ranging from 22 to 77 years, 50 patients (79%) were male. The main indications for surgery were: ascending or root aneurysm with or without aortic valve regurgitation (52), acute type A aortic dissection (7) and isolated aortic valve regurgitation (4). 10 patients had bicuspid aortic valve disease, 8 patients had Marfan syndrome and 1 patient had Loeys-Dietz syndrome. Reimplantation and remodeling procedures were performed in 55 and 2 cases, respectively. Additionally, aortic valve repair with (2) or without (4) replacing the ascending aorta was performed in 6 patients. Concomitant procedures were performed in 18 patients (coronary bypass procedure (12), mitral and tricuspid repair (3), hemi-arch repair (3), atrial fibrillation ablation procedure (2), carotid endarterectomy (1)).

Results: 30-day mortality was 4,7% (3 patients), 4-year survival was 91,8%. 8 patients (12,7%) were revised due to bleeding and 1 patients needed postoperative implantation of a permanent pacemaker. Two reoperations were performed due to aortic valve regurgitation. In the first patient 13 months after isolated aortic valve repair and in the second patient 3 years after reimplantation procedure.

Conclusion: Aortic valve sparing operations are safe and effective operating techniques which offer good short and long term results.

Triangular Plasty Of Left Atrium For Atriomegaly During Mitral Valve Replacement

V. Popov

National Amosov`s Institute of Cardiovascular Surgery, Kyiv, Ukraine

Aim: To determine possibilities of left atrium (LA) reduction by triangular plasty of LA (TPLA) (original method) during mitral valve replacement (MVR) for isolated mitral valve disease (MVD).

Methods: During 2000 – 2014 yy 680 adult patients (pts) with MVD and LA atriomegaly (diameter of LA > 60 mm) were operated. MVR were performed in all pts. There were 295 (43,4%) males, 385 (56,6%) females in average age $51,5 \pm 6,9$ yy. 413 (60,7%) in IV NYHA class and 267 (39,3%) in III class. AF was marked in 91% pts. All data divided at 2 groups: group A (TPLA+ligation of LA auriculum) – 108 (15,9%) pts and group B 572 (84,1%) pts (only MVR).

Results: Cross-clamping time of aorta (min) was: group A - $85,4 \pm 6,1$ and group B $53,2 \pm 4,9$ ($p < 0,05$). The hospital mortality was in group A 0,9% and in group B 2,6%. Reasons of deaths in group A – pneumonia (1 pts), group B – brain damage (thrombemboli) (3), heart failure (9), MOF (3). At remote period ($5,7 \pm 1,1$ yy) 631 (94,8%) pts were followed-up. Data of echo for group A: diameter of LA (mm) - preoperative (PRE) - $70,1 \pm 6,2$, postoperative (POST) $52,3 \pm 4,5$, remote period (RP) $50,3 \pm 3,7$; ejection fraction of LV (EFLV): PRE $0,54 \pm 0,03$, POST $0,56 \pm 0,03$, RP $0,58 \pm 0,02$. There were no thrombembolic events and HF at remote period. Data of echo for group B were: diameter of LA (mm): PRE $72,1 \pm 6,3$, POST $69,1 \pm 2,1$, RP - $79,1 \pm 8,1$; EFLV: PRE $0,54 \pm 0,03$, POST $0,55 \pm 0,02$, RP $0,49 \pm 0,03$. Thrombembolic events and HF were marked at remote period respectively -7,5% and 17,2%.

Conclusion: TPLA allows to improve clinical results after MVR.

Single centre 7 year experience of trans-catheter valve implantation

A.Panayiotou, M. Matuszewski, S. Khogali, H. Kuckraz

New Cross Hospital, Wolverhampton

Aim: Transcatheter Aortic Valve Implantation (TAVI) has now become an established procedure for severe symptomatic aortic stenosis in patients unsuitable for an AVR. There is variable practice on the choice of prosthesis used and team dynamics, including selection criteria. Hence outcome from TAVI can be variable based on centre. We aim to evaluate the outcome of TAVI in our centre over a 7 year period

Methods: Case notes for all 257 consecutive TAVIs from April 2008 – March 2015 were assessed retrospectively. Patients were routinely followed up in the outpatients clinic and Transthoracic echocardiography (TTE) performed. Paravalvular leak (PVL) was classified into $\geq$ mild (group 1) and $<$ mild (group 2). Statistical analysis was performed for survival

Results: 56% were male and 15% were performed urgently. 66% were NYHA class III and 64% had good LV. 27% were in cardiac failure at the time of TAVI. The Corevalve was used in 77% of cases and Lotus in 11%. 20% required ICU, 23% required PPM, 3% required CVVH and 2% had a stroke. 12% had moderate PVL. In-patient stay was 10 days (IQR 5–13). Survival was 86% at median FU of 12 months (IQR 4–26) and median survival was 16 months (IQR 6–34). There was no difference in survival between group 1 and 2 ($p=0.9$).

Conclusion: In our 7-year experience, TAVI with the Corevalve is safe and is associated with good haemodynamic performance. At median follow-up survival is good. Percentage of moderate paravalvular leak is low and mild PVL has no impact on survival. Further robust echocardiographic and MRI follow-up is essential to evaluate long-term durability and outcomes.

Novel method for ex-vivo preservation of donor heart using blood cardioplegia and the Organ Care System

R. Kaliyev, S. Bekbossynov, T. Lesbekov, T. Kapyshev, S. Novikova, N. Smagulov, Z. Ashyrov, L. Faizov, Y. Pya

Operating department with the laboratory of mechanical circulation, National research cardiac surgery center, Astana

Aim: This prospective case-series observational study was to assess perioperative lactate level and 30-day post-transplant outcomes in heart recipients whose donor hearts were preserved using blood cardioplegia and the OCS.

Methods: Between January and September 2015, 19 patients underwent heart transplantation at our Center. Of these, we arrested the donor heart before explant and before implant using blood cardioplegia in four patients.

Results: Donor heart warm ischemic times were 21, 21, 24, and 20 min; with ex-vivo OCS perfusion times of 268 min, 248 min, 310 min and 343 min. lactate mean values at starts of perfusion was 5.7 mmol/l and at end was 4.07 mmol/l. Duration of ICU was 2, 4, 4 and 9 days. First patient in TMD S1LV lat-8.3cm/s, S1LVmed-8.1cm/s, S1RV-8.6cm/s, EF – 58%. Second patient in TMD S1LV lat-10,4cm/s, S1LV med-8,5 cm/s, S1RV-11cm/s, EF – 56%. Third patient in TMD S1LV lat-11,5 cm/s, S1LV med-9.8 cm/s, S1RV-15.0cm/s, EF – 60%. Fourth patient in TMD S1LV lat-8,0 cm/s, S1LV med-6 cm/s, S1RV-8 cm/s, EF – 60%. One patient needed temporary mechanical support (ECMO during 3 days).

All four recipients had normal cardiac function within a week of transplantation and are making a good recovery at 30 days after transplantation.

Conclusion: Our observations, while preliminary, show that blood cardioplegia and conditioning has promise for myocardial protection in distant procurement and preservation of donor hearts in the OCS. Evaluation of the efficacy and safety in comparison with standard methods of cardioplegia in the OCS requires further study.

Controversies and challenges in coronary and carotid artery occlusive disease treatment

L. Velicki, A. Redzek, M. Majin, M. Fabri, S. Susak, D. Nikolic, A. Milosavljevic

Institute of cardiovascular diseases Vojvodina, Sremska Kamenica

Aim: Due to increased life expectancy, the risk profile of the patients undergoing cardiac surgery changed dramatically. This is especially important in case of concomitant coronary artery disease and carotid artery stenosis (CAS). Careful decision making and appropriate surgical strategy in these patients is critical for the success of the operation. Controversy about relationship between staged and concomitant carotid endarterectomy (CEA) and coronary artery bypass grafting (CABG) still exists. In the current study, we present our case load in treating patients with concomitant carotid artery stenosis and coronary artery disease.

Methods: CABG with additional CEA due to neurologic symptoms or high grade (>80%) CAS has been performed in 905 patients in the period of 1982-2014.

Results: The average patient age was 62.6 +/- 8.7 years. Echocardiography revealed that 28% of the patients had poor left ventricle ejection fraction (<30%). Coronarography demonstrated that 21.4% of the operated patients had significant left main coronary artery stenosis (>60%). In terms of neurological status, majority of the patients (88.3%) were neurologically asymptomatic. The overall mortality regardless the sequence of procedures was 2.3%. In the group of concomitantly treated patients 44.6% required triple coronary bypass while the mean number of coronary bypasses was 2.6. Postoperative neurologic complications were present in 12.2%. Ninety-one patients (10.0%) have had TIA, while 18 patients have had permanent neurologic deficit while 4 patients died as a result of it.

Conclusion: Concomitant surgery on patients with severe CAS and coronary disease carries a slightly higher operative risk and, therefore, should be avoided. Concomitant surgical treatment should only be considered in patients with unstable angina and significant CAS in whom we may expect higher morbidity and mortality.

Septal Myectomy as a Successful Surgical Treatment for Dynamic Obstruction of Left Ventricular Outflow Tract in Hypertrophic Cardiomyopathy Without a Dedicated Team: Is It Possible?

H. Moldovan, C. Voica, C. Ciobanu, A. Stoica, L. Dorobantu, B. Radulescu, V. Rasvan

1st Department of Cardiovascular Surgery, Institute of Cardiovascular Disease "Prof. Dr. C.C. Iliescu", Bucharest, Romania

Aim: Hypertrophic Cardiomyopathy, on one hand, being a primary myocardial disease characterized by hypertrophy of the myocardium has come to be recognized as a treatable clinical entity with established guidelines, primarily regarding treatment in experienced centers and in hands of experienced operators. On the other hand, many patients are presenting with HCM-related complications or the clinical course may progress along with other cardiac diseases so that specific strategies are dictated by these pathways.

Methods: This is a retrospective single center study of septalmyectomy, using Morrow operation, for dynamic obstruction of left ventricular outflow tract (LVOT) in septal asymmetric subaortic hypertrophic cardiomyopathy (HCM) between January 2007 and September 2015 and has included a total of 34 patients.

Results: From the 34 patients, 21 were women, 61.76% and 13 patients were male, 38.23%, with a mean age of 57 years, ranging from 14 to 81 year. Only 5 patients, 14.70%, of them were with HOCM alone and 29 were primarily guided to surgery for other cardiac diseases. The mean preoperative LVOT gradient was 80 mmhg, and has been reduced to 25 mmhg. The mean septal thickness was 18.23 mm and has been reduced to 11 mm. Of the 34 patients included in the study 29 pts (85.29%) were in functional class NYHA III–IV at the time of the operation and 28 have been converted in Nyha I-II at discharge. Total in-hospital deaths: 2 patients (5.88%). Postoperative complications: heart block – 17.64% (2 patients – 5.88% - with reversible AV block and 4 of them – 11.76%- requiring Implantable pace-makers).

Conclusions: Despite the absence of a dedicated HOCM team, our overall clinical outcomes for septalmyectomy are comparable to those in the literature, making us considering it a solution even in smaller centre.

Hypoxia Pre-conditioning Of Human Adipose Tissue-derived Stromal Vascular Fraction Cell Patches for Ischemic Heart Disease Treatment

G. Cerino, M. G. Muraro, F. Eckstein, M. Grapow, A. Marsano

Department of Heart Surgery, University Hospital of Basel

Aim: Human adipose tissue-derived stromal vascular fraction contains a heterogeneous cell population capable to promote vascularization and regeneration of ischemic myocardium. Perfusion-culture is known to strongly enhance stromal vascular fraction angiogenic potential. We hypothesized that hypoxia-preculture of stromal vascular fraction cell-based patches enhances cell survival and angiogenic potential upon in vivo implantation compared to normoxia.

Methods: Freshly isolated human stromal vascular fraction cells from six donors were cultured on 3D collagen scaffolds in perfusion-based bioreactors for 5 days at 20 or 0,2% of oxygen tension. The generated patches were implanted in subcutaneous pockets of nude rats for 3 days (2 donors). Image analysis of immunofluorescence staining for DAPI (nuclei), CD31/Ve-cadherin (endothelial cells), Ki67 (proliferating cells) and HuNu (human cells) was used to quantify the total number of human, endothelial, proliferating cells and vessel ingrowth. In vitro cell population composition was analyzed by flow-cytometry and amount of released angiogenic factor was quantified.

Results: Culture in low oxygen tension enhances cell proliferation and the total cell amount in the 3D constructs. The endothelial cells were similar in amount in both experimental conditions, but hypoxia promotes better organization of complex vessel-like structures (composed by ≥ 11 aligned endothelial cells). Vascular endothelial growth factor was more expressed in hypoxia than normoxia (1578 ± 948.39 and 414.40 ± 586.40 pg/ μ g, respectively). Pericytic-like, mesenchymal/stromal and endothelial cell subpopulations increased in both conditions compared to initial population. After 3 days in vivo patches pre-conditioned in hypoxia showed a superior human cell survival, proliferation, and vessel ingrowth.

Conclusion: Here, we obtained the proof-of-principle that hypoxia pre-conditioning strongly enhanced vascularization potential by improving implanted cell survival and pro-angiogenic factor release. Future investigations will aim to assess the cell survival and angiogenic efficacy of the engineered patches in a harsh environment as the ischemic rat heart.

Results Of Aortic Valve Repair David Surgery Vs. Biological Bentall Procedure With Echocardiography Follow-Up After 4 Year Practice At Our Centre

I. Medved

Department of Cardiac Surgery, University Hospital Rijeka

Aim: We compared two methods for surgical management of aortic regurgitation and aortic root pathology performed in our hospital - aortic valve repair David surgery and Bentall procedure with biological composite graft.

Methods: 54 patients underwent surgery between January 1st 2011 and November 30th 2015. 28 patients had David procedure, and 26 patients underwent Bentall procedure with Medtronic Freestyle.

Results: The cardiopulmonary bypass time and aortic cross clamp time were significantly longer for David procedure group, with $p=0.05$ and 0.01 respectively, but the duration of surgery for David procedure did not reach statistical significance compared to Bentall group. Early postoperative morbidity and postoperative hospital stay had no statistical significance. There was 1 death (3.57%) in David procedure group due to postoperative low cardiac output syndrome, and 1 death (3.84%) in Bentall group due to acute lung failure. At 1 year after surgery echocardiography follow-up in David procedure group showed no aortic regurgitation in 14 (66.7%), grade 1 aortic regurgitation in 5 (23.8%), and grade 2 aortic regurgitation in 2 (9.52%) patients. Two years after the surgery 9 (47.36%) patients had no aortic regurgitation, 7 (36.84%) had grade 1, and 3 (15.78%) grade 2 aortic regurgitation. At 3 and 4 years no aortic regurgitation had 8 (57.14%) and 4 (57.14%) patients, respectively, 6 (42.85%) patients had grade 1 aortic regurgitation at 3 years, and 3 patients (42.86%) at 4 years postoperatively. Reoperation was done in one patient (3.57%) in David procedure group due to severe aortic regurgitation of repaired bicuspid aortic valve.

Conclusion: Aortic valve repair David surgery is well-established and complementary method to biological Bentall procedure considering early morbidity, mortality and follow-up echocardiography.

Short-term outcomes of patients undergoing aortic valve replacement after previous coronary artery bypass grafting

S. Susak, A. Redzek, M. Fabri, P. Kovacevic, M. Rosic, M. Majin, M. Milosavljevic

Institute of cardiovascular diseases Vojvodina, Sremska Kamenica

Aim: Redo surgery for aortic valve replacement (AVR) after previous coronary artery bypass grafting (CABG) is technically challenging, especially in case of patent grafts, and might lead to severe perioperative complications. We sought to review our short-term operative results to maintain current surgical outcomes for comparison.

Methods: A retrospective review was conducted from 2010 through 2015 of patients undergoing AVR as a re-operation after previous CABG. Patient outcomes were compared with EuroSCORE II risk prediction score.

Results: A total of 29 patients met inclusion criteria (male 79%, female 21%). Average age at reoperation was 68 (± 10). All patients underwent isolated AVR. Average ejection fraction was 54% ($\pm 8\%$). Comorbid conditions included: diabetes 21% (6/29), hypertension 76% (22/29), chronic obstructive pulmonary disease 7% (2/29), history of myocardial infarction 34% (10/29), renal failure 31% (9/29) and peripheral arterial disease 7% (2/29). Operative (30-day + hospital) mortality was 14% (4/29). The mean EuroSCORE II predicted mortality risk score was 7.0% (± 6) for 22 (applicable) patients.

Conclusion: The data reported in this study: (i) suggest relatively high operative mortality, higher than EuroSCORE II predicted; (ii) older age and multiple comorbidities in this patient population may significantly influence outcomes (iii) support open surgical technique in selected patients as a safe, reliable approach for redo AVR in patients who have undergone previous CABG.

Postoperative outcome in patients with bacterial endocarditis undergoing surgery

K. Krakulli, A. Veshti, A. Baboci, S. Kuci, A. Ibrahimi, M. Zeka

Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Aim: The aim of this study was to evaluate the postoperative outcome in patients undergoing surgery due to bacterial endocarditis and to identify the predictors for poor overall survival.

Methods: Between January 1998 and October 2014, 90 patients underwent cardiac surgery due to bacterial endocarditis. Mean age was 50 $\pm$ 17 years. There were 40 females. 29 patients presenting periprosthetic bacterial endocarditis underwent reoperation. 42 patients presented aortic valve endocarditis, 38 patients presented mitral valve endocarditis, three patients tricuspid valve endocarditis and 7 patients mitro-aortic endocarditis. The mean leucocytosis was 13400 $\pm$ 7000 (n/mm³) and mean haemoglobin level was 10 $\pm$ 2 g/dl. The cause of endocarditis was found in 64 patients. BE due to brucellosis was found in 14 patients. 60 patients underwent emergent surgery due to vegetations >1cm² on the left side or due to hemodynamic instability. The mean follow-up was 73 $\pm$ 36 months.

Results: The hospital mortality was 4.4% (4 patients). All of them underwent reoperation and two of them presented bacterial endocarditis of both left side valves. 15 patients underwent bivalvular replacement, two patients underwent associated ascending aortic replacement and two patients Bentall operation. The mitral valve was repaired in 7 patients and in 13 patients a bioprosthesis was employed on the mitral position. Periaortic abscess was found in 8 patients and 18 patients underwent bioprosthesis implantation on the aortic position. The overall actuarial survival at 5 years was 87% and free reoperation survival was 81%. The multivariate Cox model analysis revealed the preoperative leucocytosis ($p=0.03$), >1 location of the vegetations ($p=0.013$), hemodynamic instability ($p=0.02$) as strong predictors for poor overall free reoperations survival.

Conclusion: Prompt surgical treatment of various forms of bacterial endocarditis offers excellent outcome.

In Situ Bentall Operation – Good Solution For Reoperative Aortic Surgery

B. Djukanović,^{1,2} D. Nežić,¹ M. Boričić,¹ M. Jović^{1,2}

¹Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

²Faculty of Medicine, University of Belgrade

Aim: Nowadays, we are dealing with many patients who need reconstruction for aortic root aneurysm after earlier aortic valve replacement. Mainly, this appears to be in those who had previous surgery for diseased bicuspid valve if aortic root dilatation was not addressed during primary surgery.

Methods: Reoperative aortic surgery carries a substantial perioperative morbidity and mortality. During the last last decade, we have been using technique of In situ Bentall's operation for patients who are undergoing reoperative aortic reconstruction with well functioning prosthetic valve.

All the valves with no evidence of dysfunction are left in situ. New graft is anchored to valve cuff using two 2-0 polypropylene sutures. Additional second suture line was performed by connecting surrounding aneurysmal tissue with newly constructed conduit graft. The coronary buttons are then anchored into the graft in usual fashion.

Results: Between August 2004 and May 2013, 16 patients (11 men, 5 women; mean age, 57.4 ± 11.5 years) underwent reoperation for ascending aortic aneurysm. All patients had aortic valve replacement previously done. Indication for the reoperation was late aneurysm formation. Mean CPB time was 132 ± 22 min. There were no intraoperative deaths, stroke or myocardial infarction. One patient required reexploration for bleeding. One patient had transitory renal failure. Mean hospital stay was 16,3 days.

Conclusion: The in situ Bentall procedure could be safer, better and faster performance of surgery than classic Bentall "button" procedure, and a superior option for reoperative aortic root surgery in the case of well functioning mechanical prosthesis.

Case report: Simultaneous open heart and gynecological surgery

I. Stojanovic,¹D. Unic-Stojanovic,^{1, 2}M. Petrovic,¹ M. Jović^{1, 2}

¹Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

²Faculty of Medicine, University of Belgrade

Background: Cardiosurgery procedure may be indicated with other surgical or invasive procedure. We will show case of patient who needed simultaneous cardio and gynecological surgery.

Case report: Fifty three years old female patient was admitted to hospital for severe aortic prosthetic paravalvular leakage along with severe tricuspid regurgitation. She was in NYHA functional class IV in spite of aggressive heart failure drug therapy. On the other hand she was extremely anaemic due to bleeding uterine leiomyoma. Therefore it was mandatory to perform simultaneous valve surgery along with leiomyoma extirpation in shortest time. As soon as we achieved acceptable preoperative hemodynamic by inotropes and haemoglobin level as well, patient underwent surgery. Leiomyoma was extirpated first, and thereafter a redo aortic valve was replaced by mechanical prosthesis along with De Vega tricuspid valve repair. Continuous invasive hemodynamic monitoring and frequent coagulation status assessment as well, was mandatory in order to maintain hemodynamic stability during the procedure. Intraoperative blood salvage reduced units of blood to be transfused. Inotropes and vasopressors were necessary for cardiopulmonary bypass weaning and during early postoperative period. She experienced rhythmic disturbance, pleural effusion and short febrile episode, and was treated medically. She was discharged from hospital on the 21st day of surgery. This case illustrates that even short term but aggressive preoperative preparation and multidisciplinary approach is necessary for good outcome in such a complex cardiac surgery patients.

Natural history of aortic wall changes in adults with degenerative aortic stenosis: morphometric proofs and implications for echocardiography

M. Labudović Borović, P. Dabić, O. Djokić, D. Nežić, P. Milojević

Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

Aim: We aimed to grade histopathological changes of the ascending aorta in patients with severe, calcific aortic valve stenosis, without dilatation and to prove that established grades follow progression of the disease. The focus was on the tricuspid aortic valve stenosis and two factors contributing to the aortic wall changes: age and gender. We correlated the observed changes with echocardiographic parameters.

Methods: Samples from 37 patients subjected to aortic valve replacement (AVR) or from the control group were included into morphometric analysis.

Results: The results of our study highlighted several features. The exact region of hemodynamic influence could be identified morphometrically with mathematical distinction towards the control group. In this region, gradual elastic lamellae disruption is proved morphometrically with statistically significant difference through three different grades. Changes of the elastic skeleton are potentiated with aging and are more intensive in females through the course of aortic stenosis. The changes of the ascending aorta wall correlate statistically significant with echocardiographic parameters: the sinus Valsalvae diameter and the sinus Valsalvae index.

Conclusion: Hemodynamic stress induced by the tricuspid aortic valve stenosis leads to the ascending aorta elastic lamellae disruption that could be histopathologically graded. Histopathological changes are correlated with the echocardiographic parameters of the sinus Valsalvae providing a potential for improvement of surgical decision making process in these cases when AVR is considered in relation to the ascending aorta replacement.

C380

Extracorporeal membrane oxygenation (ecmo) as a bridge to surgery in two patients with post-infarction ventricular septal defect

D.Radakovic, C.Schimmer, M.Glanowski, I.Schade, M.Leistner, A.Gorski, R.Leyh, I.Aleksic

Department of Thoracic and Cardiovascular Surgery, Julius-Maximilians-University Hospital, Würzburg, Germany

Background: Extracorporeal Membrane Oxygenation (ECMO) is a life-saving intervention for patients with severe cardiogenic shock. Post-infarction ventricular septal defect (VSD) is a serious complication associated with high mortality. ECMO could serve as a bridge to VSD closure after clinical stabilization and improve surgical outcomes by allowing infarcted tissue to demarcate. We present two patients with postinfarction VSD who underwent ECMO implantation as rescue therapy and bridge to surgical therapy.

Case presentations: Two patients in cardiogenic shock due to post-infarction VSD were treated with ECMO: a 74-year-old-man developed post-infarction VSD one day after successful stent implantation in the right coronary artery for acute myocardial infarction (MI) . After 2 days of ECMO support and recovery of end organ function d definitive surgical repair could be performed and the patient was discharged home and is fine with three years of follow-up. A 65-year-old-patient received veno-arterial ECMO therapy as a rescue procedure for refractory ventricular arrhythmia as a result of acute MI. Under ECMO support PTCA with intervention on the right coronary artery was performed. Due to this MI the patient developed a large VSD, which couldn't be surgical repaired because of the size. No ejection through aortic valve could be detected on echocardiography. The patient was transferred to another institution for planned Total Artificial Heart implantation and consecutive listing for heart transplantation. ECMO is feasible as rescue therapy and bridge to definitive surgical repair in patients with post-infarction VSDs. Early institution of ECMO therapy with resultant stabilization of patients with post-infarction VSD related cardiogenic shock might improve the surgical outcome.

C378

First implantation of the heartmate iii left ventricular assist device

M.Kusurin, Z.Sutlic, R.Blazekovic, M.Planinc, D.Baric, D.Unic, J.Varvodic, I.Rudez

KB Dubrava, Department of Cardiac and Transplantation Surgery, Zagreb, Croatia

Background: Left ventricular assist devices (LVAD) are increasingly used in clinical practice due to heart transplant donor shortage. We report first HeartMate III implantation at our institution.

Case report: A 59-year-old male presented with progression of heart failure symptoms due to diffuse coronary artery disease and permanent atrial fibrillation. Ejection fraction of the left ventricle was significantly reduced and the end-diastolic diameter enlarged. Due to progressive clinical decline, the patient was listed on the Eurotransplant national high urgent heart transplant list. Since no available organ, we decided to implant LVAD as a bridge to transplant option. The procedure was done via left anterior thoracotomy and ministernotomy with help of fem-fem bypass. Postoperative course was uneventful. Further on we follow reverse remodelling of the left ventricle and improvement of the ejection fraction.

Although heart transplant is still gold standard in treatment end-stage heart failure patient, due to organ shortage, LVAD implantation is useful and viable option. At the moment patient is in bridge to decision status.

C469

Surgical treatment of isolated mitral valve disease complicated by massive thrombosis of left atrium

V.Popov

National Amosov Institute of Cardiovascular Surgery, Ukraine

Aim:To analyze problems in surgery of mitral valve diseases (MVD) complicated by left atrium's massive thrombosis (LAMT) (thrombosis $>1/3$ of LA's volume).

METHODS:336 adult patients (pts) with MVD (only mitral stenosis)+LAMT were consecutively operated during 1984-2013 yy. There were 147 males (43,7%) and 189 females (56,3%) in average age $59,2 \pm 5,2$ yy. All in IV NYHA class. The following procedures were performed: MVR (n=294) including plastic procedure on TV (n=35); open mitral commissurotomy (OMC) (n=42) including plastic procedure on TV (n=7). Only mechanical valves were used. All pts were divided on 2 groups: group A (n=162) maternal thrombotic basement was removed together with all thrombotic masses out of LA, group B (n=174) without its removal.

RESULTS: The hospital mortality (HM) in period 1994-2011 yy was 4,5% (n=9/198) for MVR and 0% (n=0/29) for OMC. Reasons of deaths were: heart failure (n=4), brain damage (thrombemboli) (only group B) (n=3), MOF (n=1), bleeding (n=1) (group A). Traumatic rupture of LA's wall during radical removing of maternal thrombotic basement as specific complication was marked in 2,5% (n=4/162)(1 died). At all period of experience thromboembolic events were marked: group A – 1,8% (n=3/162) (no lethal), remote period - 3,6% (n=5/140) (lethal 1,4%), group B – 5,8% (n=10/174) (lethal 3,4%), remote period - 13,3% (n=19/142) (lethal 9,2%) ($p<0,05$). At all period of experience thromboembolic events were marked: MVR in 4,1% (n=12/294), (lethal 1,0%), remote period - 8,9% (n=22/245) (lethal 5,7%) and during OMC 2,4% (n=1/42), (no lethal), remote period - 5,4% (n=2/37) (lethal 2,7%) ($p<0,05$). 282 pts was followed-up at the remote period (average $16,2 \pm 3,1$ yy).

CONCLUSION:Thromboembolic events at postoperative period is specific complicated factor for LAMT. Mechanical valve is independent risk-factor at postoperative period.

A 55 year-old female patient with the left main coronary artery originating from the pulmonary artery (ALCAPA)

Ö.Korkmaz,O.Beton,U.Yetkin,Ö.Berkan

Cumhuriyet University,Medical Faculty, Department of Cardiovascular Surgery, Sivas, Turkey

Background: The main coronary artery originating abnormally from the pulmonary artery is rare in cases of congenital heart diseases. Life is maintained with a shunt from the right coronary artery to the left coronary artery. In the first year of life, mortality is seen in 90% of cases with inadequate collateral circulation, as a result of secondary heart failure to mitral valve failure, due to myocardial ischemia and/or infarction, unless surgical correction is performed.

Case report: A 55 year-old female patient was admitted to our clinic with complaints of fatigue on exertion, palpitations, dyspnea and chest pain that had continued for five years. Her medical history revealed a completely normal childhood, adolescence period and adulthood. She has a history of hypertension, diabetes and dyslipidemia. Electrocardiography revealed signs of ischemia and all tests were normal except T negativity in V1-V6. Transthoracic echocardiography revealed no pathological findings. Coronary angiography of the patient demonstrated that the left main coronary artery was originating from the pulmonary artery (ALCAPA) and that it was fed by a large collateral originating from the right coronary artery. The patient underwent surgery and the connection between the left main coronary artery and pulmonary artery was disconnected and an aortic by-pass was performed using a saphenous vein graft. She had regular follow-ups during the following three years that revealed no pathological abnormalities.

ALCAPA is a rarely encountered anomaly that causes severe problems during the early stages of life and the patient presented here is one of the oldest reported in the literature. Due to adequate collateral circulation, she lived for many years without any complaints. Surgical intervention should be carried out as soon as possible in patients who are diagnosed with ALCAPA.

Constrictive pericarditis due to sarcoidosis: a challenging diagnosis

J.M. González-Santos, J.López-Rodríguez, M.J.Dalmau-Sorlí, M.E.Arnáiz-García, E.Del-Barrio-Gómez, R.A. Abascal

Cardiovascular Department, University Hospital of Salamanca, Salamanca, Spain

Background: Sarcoidosis is a chronic multisystem disorder without any defined etiology. Cardiac sarcoidosis is detected in 2-7% of patients with systemic sarcoidosis and in more than 20% of the cases the disease is clinically silent. Pericardial involvement is even less frequent, being detected in 20% of patients with cardiac sarcoidosis. The clinical diagnosis of cardiac sarcoidosis can be challenging because of the wide variety of clinical presentations, especially when the cardiac involvement precedes other manifestations of the systemic disease. Early diagnosis and prompt initiation of antiinflammatory therapy is crucial to preventing poor outcomes.

Case report: We report the case of a 44-year-old man who was being followed by cardiologist because of a moderate aortic insufficiency and recurrent atrial fibrillation since 2013. In 2015 he was admitted to the hospital because of an acute pulmonary edema. Different diagnostic tests as an echocardiogram, cardiac catheterization, cardiac computed tomography and a cardiac magnetic resonance imaging were performed. The patient was diagnosed of severe aortic insufficiency with ventricular dysfunction, ascending aorta dilatation and moderate pericardial effusion with signs of constrictive pericarditis. Surgery was indicated and he underwent an aortic valve replacement, wrapping of the ascending aorta, anterior phrenic to phrenic pericardiectomy with biopsy of the pericardium and mediastinal lymph nodes. The pathologic findings in pericardium and in mediastinal lymph nodes showed non-caseating granulomas and led to the diagnosis of cardiac sarcoidosis presenting as constrictive pericarditis. The patient was discharged from the hospital in good condition.

Pericardial involvement, especially constrictive pericarditis as occurred in our patient, appears to be an extremely rare clinical manifestation of systemic sarcoidosis. A high level of suspicion is mandatory in order to do an early diagnosis of the disease, in a manner which allows an appropriate management and a potential cure.

Optimal therapeutic approach in aortic coarctation and associated cardiac lesions-our experience

R.Karan, M.Velinovic, N.Kovacevic-Kostic, A.Mikic, B.Obrenovic-Kircanski, V.Milicevic, N.Karamarkovic, D.Nikolic, M.Vranes

Clinic for Cardiac Surgery, Clinical Center of Serbia, Belgrade, Serbia

Background: Aortic coarctation is a congenital condition mostly detected and treated during childhood. Adult patients with coarctation and associated cardiac lesions represent a challenge and subject of debates concerning adequate treatment.

Case report: We report a case of 3 patients with aortic coarctation when surgical treatment was necessary. The first patient was a 12 year-old boy with aortic dissection type II, aortic coarctation. Surgery was in two stages: first surgical reparation of the dissected aorta and second stage surgical treatment of coarctation by end to end anastomosis. Second patient, a 61 year old male with previous mechanical aortic valve implantation. He underwent one stage surgical reconstruction of aortic coarctation and ascending aortic aneurysm. The third patient was a 49 year-old female with aortic aneurysm, severe aortic insufficiency and coarctation of aorta below branching of subclavian artery. She underwent Bentall procedure, with ascending aorta to thoracic aorta bypass. Post operative course and the follow up duration 1-3 years were without complications for all patients. Single operation is a better choice in patients with concomitant pathology such as aortic aneurysm or aortic valve disease. Each case should be analyzed on a single basis, and decision about surgical technique and surgical course brought accordingly.

Occlusion of right coronary artery after aortic valve replacement in a patient with single coronary artery

Y.Jung, K.Seon Lee, I.S.Jeong, Sang Gi Oh, K.J.Na, B.Hee Ahn

Department of Thoracic and Cardiovascular Surgery, Chonnam National University Hospital, Chonnam National University School of Medicine, Korea

Background: This is the first report of rare complication of right coronary artery occlusion after aortic valve replacement combined with annular enlargement procedure.

Case report: A 73-year old female underwent aortic valve replacement for severe aortic stenosis. Preoperative coronary angiography (CAG) revealed a single coronary artery arising from the left sinus of Valsalva, which was categorized into the type LII-B of Lipton's classification. Manouguian procedure was performed for making 21mm-sized valve prosthesis seated with ease in tight annulus. Intraoperatively it was confirmed that the coronary ostium was not obstructed by prosthetic valve. Results: The patient could not be weaned from cardiopulmonary bypass, so extracorporeal membrane oxygenator (ECMO) was needed to be set for leaving operating room. Intraoperative transesophageal echocardiography revealed newly developed right ventricular dysfunction. Postoperatively she could not be weaned from ECMO and both ventricular contractilities were worsening. CAG performed in postoperative day 4 (POD 4) revealed the right coronary artery occlusion just after its origin, therefore, emergent coronary artery bypass surgery was performed. After then, both ventricular functions improved. She could be weaned from ECMO in POD 10 and discharged in POD 70. Aortic valve replacement with annular enlargement procedure can result in unexpected coronary artery occlusion in those with single coronary artery. Therefore, in such a case, coronary arterial complication should be suspected when unexplained myocardial dysfunction and vital instability occur.

Is it possible to operate aortic arch without deep hypothermia?

R.Ilic, V. Mandarić, S.Rusović, Z.Vukić, Z.Trifunović, S.Tišma, Z.Marković, L.Babić, V.Mrdak

Clinic for Cardiac Surgery, Military Medical Academy, Belgrade, Serbia

Background: Objective of this paper is to show one successful operation of dissected aortic arch with formed pseudoaneurism without CPB, deep hypothermia, and circulatory arrest.

Case report: Case of 59 year old male with sudden onset of hoarseness is shown. He was immediately admitted to hospital and diagnosed in otorhinolaryngology clinic with paralysis of left vocal cord caused by aneurism of terminal aortic arch with compressive lesion of n.laryngeus recurrens. Diagnosis was made by MSCT aortography. By analysing surgical anatomy decision was made to operate on beating heart accessing through left thoracotomy and cross clamping aortic arch distal of left carotid artery, clamping proximal part of descending thoracic aorta and clamping left subclavian artery. Brain perfusion was secured by regular heart function and spinal cord perfusion was secured by aorto-aorta bypass (Gotts shunt methodology-by pass connection of ascending and descending thoracic aorta). After that pseudoaneurism was resected and defect was reconstructed with synthetic patch. Operative procedure was finalised with declamping of aorta and by drainage of left hemithorax. Postoperative period was without complications. Patient was stable hemodynamically, without neurological damage. The hoarseness symptom remained after surgery. Patient was sent to physical therapy. Postoperative chest X-ray and MSCT aortography showed good angiographic effect with excellent circulation through reconstructed aortic arch.

It is possible to operate aortic arch in carefully selected patients without CPB, deep hypothermia and circulatory arrest when using operative techniques that provide perfusion of spinal cord and brain.

C441

Whether stenting is the best choice for myocardial "bridges"?

O.Gogayeva, A.Rudenko, L.Dzakhoieva, S.Salo, K.Rudenko

National Amosov's Institute of cardiovascular Surgery NAMS of Ukraine, Department of Surgical Treatment of Ischemic Heart Disease, Ukraine

Aim: to evaluate the effectiveness of stenting of tunneled segment of coronary artery (CA) for symptomatic patients with myocardial "bridges" (MB).

METHODS: During 9 years we observed 311 patients with symptomatic MB. The following clinical studies have been done for all patients: ECG, echocardiography and coronary angiography.

RESULTS: Direct drug-eluting stents (DES) implantation of the tunneled artery was performed for 22 patients (7.07%) with severe angina pectoris. In all cases MB was settled down over LAD; mean systolic compression was 75%. Extensive usage of this method of treatment for this anomaly, constrain the literature data of high percentage of restenosis, whereas in our Institute in stent restenosis appeared for 4 (18.1%) patients with extended tunneled segment, where MB was over middle and distal portion of LAD. Coronary artery bypass surgery off-pump was performed for 3 patients with restenosis in stent. For one patient with deep lying of LAD in 3 months occurred stent fracture and we performed repeat endovascular intervention with DES.

CONCLUSION: Despite the safety of endovascular procedure, indications for this minimally invasive treatment should only be performed in cases of patients who are resistant to drug therapy and have an unextended (<15mm) tunneled segment of CA.

Correction of the congenital heart malformations in adults

I.Sagatov,

National Scientific Center of Surgery named after A.N. Syzganov, Kazakh Medical University of Continuous Education, Kazakhstan

Aim is to present experience of the surgical treatment of adult patients with congenital heart malformations.

Methods:In cardiosurgical department of the National Scientific Center of Surgery named after A.N. Syzganov there have been operated 17 patients with congenital heart malformations aged from 20 till 52 years. There were 6 males and 11 females. 14 patients had secondary pulmonary hypertension due to ASD. In 2 patients the secondary pulmonary hypertension was associated with VSD, and 1 patient had a partial anomalous pulmonary venous drainage into vena cava superior in combination with ASD. All patients had pulmonary hypertension with pressure in pulmonary vein from 36 mm per mercury till 72 mm per mercury.

Results:There were performed the following operations: plastic closure of ASD with autopericardial patch and plastic closure of VSD with patch from PTFE bypass with annuloplastic repair of the tricuspid valve. Annuloplastic repair of tricuspid valve by de Vega was performed to 14 patients, while annuloplastic repair of tricuspid valve by Boid was performed to 3 patients. In early postoperational period the control EcoCG was performed. There was detected a residual tricuspid valve insufficiency of 0-I degree in 3 patients and the pulmonary hypertension of I degree in 4 patients. The control EcoCG in 2 – 3 months revealed that nobody of patients has tricuspid valve insufficiency, the systolic pressure in pulmonary artery is normal, there is a reduction of heart chambers in sizes and regression of hypertrophy right parts of heart.

Conclusions:The presented tactics of surgical correction of ASD and VSD in combination with annuloplastic repair of tricuspid valve contributes the liquidation of relative tricuspid valve insufficiency and faster knocking over pulmonary hypertension in early postoperational period.

Takotsubo cardiomyopathy after elective aortic valve replacement surgery

O.Al Razo, J.A.Blazquez, M.D.Arenas, T.Lopez, J.M.Mesa

La Paz University Hospital, Department. of Cardiovascular Surgery, Madrid, Spain

Background: Takotsubo cardiomyopathy (TCM) is a syndrome characterized by acute reversible left ventricular (LV) dysfunction with apical ballooning and electrocardiographic changes mimicking acute anterior myocardial infarction in the absence of coronary artery disease. TCM after cardiac surgery has been recently reported, usually in the postoperative period of mitral, tricuspid and aortic valves surgical procedures.

Case report: In this report, we describe a case of TCM diagnosed in a 74 years old woman immediately after elective aortic valve replacement surgery. The patient presented sudden unexplained left ventricular dysfunction with apical ballooning, electrocardiographic changes showing ST elevation in the absence of angiographic evidence of coronary artery disease. Full recovery of the LV function was achieved in few days with supportive measures and the implantation of intra-aortic balloon. TCM should be considered as a possible complication of cardiac surgery and specific supportive measures should be considered to achieve full recovery.

Coronary artery rupture without pericardial effusion: a diagnostic challenge

U.Sevuk, S.Ozyalcin, F.Ayaz, K.Kose, A.Erkul

Diyarbakir Gazi Yasargil Education and Research Hospital, Department of Cardiovascular Surgery, Diyarbakir, Turkey

Background: Spontaneous coronary artery rupture is an extremely rare and life-threatening entity. We describe a case of a spontaneous rupture of the right coronary artery presented with acute coronary syndrome that was managed surgically and discuss the diagnostic dilemma's of coronary artery rupture.

Case report: A 60-year-old male was admitted to emergency department with one hour of chest pain. The patient had been using clopidogrel due to coronary artery disease. An electrocardiogram revealed 3- to 4-mm ST-segment elevations in leads D2, D3 and aVF which suggested inferior ST-segment elevation myocardial infarction. Two-dimensional transthoracic echocardiogram showed a normal left ventricular systolic function and was negative for pericardial effusion. The patient was immediately transferred to catheterization laboratory.

Coronary angiography revealed subtotal stenosis of the left anterior descending coronary artery, complete occlusion of the right coronary artery with intraluminal dissection and extravasation of contrast into the epicardium at the mid portion of the right coronary artery which suggested rupture of the right coronary artery. Percutaneous coronary intervention was not attempted because of the intraluminal dissection. The patient underwent an uneventful emergency coronary artery bypass grafting under cardiopulmonary bypass. No continuous bleeding was found, however a sub-epicardial hematoma was observed around the right coronary artery. Hematoma was evacuated and bleeding portion of the coronary artery was ligated. Saphenous vein grafts were anastomosed to the left anterior descending and right posterior descending coronary arteries. The patient had an uneventful postoperative course. Coronary artery rupture should be considered as a differential diagnosis in all patients with acute chest pain, even in the absence of pericardial effusion, particularly in case of inferior wall involvement. Favorable outcome can be achieved with high clinical suspicion and early diagnosis.

V496

Tubular patch prepared using recipient's right atrial tissue; a new technique to repair short vena cava inferior

M.Balkanay, L.Yilik, O.Gokalp, B.Eygi, Y.Besir, N.Karahan, A.Gurbuz

Izmir Katip Celebi University, Faculty and Medicine, Department of Cardiovascular Surgery, Izmir, Turkey

Background: In heart transplantation, surgical techniques and long-term results are well established in four decades. Although in individual cases, one might still face surgical obstacles such as short vena cava inferior. This is especially a greater problem when using bicaval technique during surgery. Leading causes for short vena cava are donor-recipient size mismatch; inappropriate donor cardiectomy technique or extreme tissue adhesions in redo cases.

Case report: In this case, a simple patch can be used to repair the missing part of vena cava inferior. In this case report, we would like to present a patient where we used a tubular patch, which was prepared from recipient's atrial tissue in bicaval orthotopic heart transplantation.

Extraanatomical bypass for aortic coarctation repair via sternotomy- mid term clinical results

S.Mlcovic, D.Nežić , M.Miličić , P.Milačić , B.Djukanović

Dedinje Hospital Belgrade, Serbia: Department for cardio-vascular surgery, Belgrade, Serbia

Background: Thoracic aortic coarctation is usually accompanied other heart abnormalities as bicuspid aortic valve or other cardiac lesion. The simultaneous operative management of both lesions is desirable because of the higher morbidity and mortality that would occur with staged procedures.

Case report: We describe the operative management in five adult patients with coarctation by extraanatomical bypass. They either had other cardiac lesion or other thoracic, aortic pathology(re-coarctation) that made direct repair too risky. All 5 patients had intrapericardial ascending aorta–descending aorta bypass and four of them concomitant repair of a cardiac lesion. The concomitant procedures in the 3 patients, respectively, were aortic root repair or replacement and one had aortic valve replaced. In three patients we used deep hypothermic circulatory arrest for distal anastomosis, Aorto–aortic bypass was performed using medium sized grafts. During early postoperative phase we used α -agonists to stabilize systemic pressure. Each patient had an essentially uneventful postoperative course. Extraanatomic ascending aorta-to-descending thoracic aorta bypass grafting for repair of aortic arch coarctation in adults is safe procedure, with low morbidity and no mortality. The favorable midterm results indicate this technique is a safe and less invasive way of repairing aortic arch coarctation or recoarctation in adults.

Postoperative results in adult patients with congenital heart defects and intracardiac shunting

O.Repin, L.Maniuc , E.Cheptanaru , O.Maliga , N.Sciuca , G.Namesnic, I.Guzgan

Republican Clinical Hospital, Cardiac Surgery Department, Moldavia

Aim: Elucidation of causes and frequency of specific postoperative complications in adult patients with congenital heart defects and assessment of functional status of operated patients with intracardiac shunting.

Methods: This work presents the results of surgical intervention in a group of 348 patients with congenital heart defects and intracardiac shunting, aged between 18 and 66 years, of which 234 (67.2%) were women and 114 (32.8%) were men. The methods of investigation include a clinical evaluation data, ECG, radiological EcoCG of cardiac and angiography cateterizm , studying invasive hemodynamics during operation.

Results: Postoperative pulmonary complications made up 61% . Functional class III NYHA was seen in 29 (8.4%) patients and NYHA functional class IV in 25 (7.4%) patients, the rest were in NYHA functional class I and II. Mortality made up 1.15% (4 patients).

Conclusion:

1. Curative treatment of VCC is exclusively surgical, intervention practically is preferbale before HTP's beginning.
2. Indications for operations do not depend on the patient's age and hemodynamic disturbances but it depends on pulmonary obstruction degree.
3. Upgrading surgical techniques and intraoperative myocardial protection technique have reduced postoperative complications and mortality.

Aortic root enlargement procedures in adult patients with congenital stenosis of aortic valve

R.Ilic, Trifunović Z ,Tišma S,Marković Z,Vukićević P,Vukić Z,Rusović S,Mihajlović M,Babić L.

Clinic for cardiosurgery, Military medical academy, Belgrade, Serbia.

Background: This paper shows results of 3 aortic root enlargement procedures in adult patients with congenital aortic stenosis combined with other congenital heart diseases.

Case reports: By analysing operated patients in our clinic ,results of aortic root enlargement procedures in 3 adult patients with complex congenital heart diseases and with dominant congenital aortic stenosis are shown. First case was 19 year old female student who had surgery for aortic coarctation and ductus arteriosus persistens on 17 th day after birth. After the diagnostic tests in our clinic narrow congenital aortic stenosis with giant aneurism of ascending aorta (80mm in diameter), persistent left superior vena cava and coronary artery origin anomaly were detected. Operation was conducted in CPB. After excision of aortic leaflets Manouguian procedure for aortic root enlargement was performed. After resection of aneurism Bentall procedure with composite graft was performed. Second case was 43 year old housewife with congenital aortic stenosis. The same method (Manouguian procedure) was performed. ATS 20mm artificial mechanical heart valve was implanted with „patch“ plastic of aortic bulbus. This patient had operation for aortic coarctation when she was 4 years old. Third case was 27 year old male student who had aortic valve stenosis combined with „tunnel „type subvalvular stenosis. After excision of aortic leaflets and subvalvular membrane Nicks aortic root enlargement procedure was performed. Sorin „Top hat“ A 21mm artificial heart valve was implanted. Postoperatively all three patients were in sinus rhythm with stable hemodynamic, and on oral anticoagulation therapy. They had good ultrasound and chest X-ray results .Postoperative cardiological results were regular on discharge day.

After good diagnostics you can successfully operate adult patients with complex congenital heart diseases and with narrow aortic root .Good postoperative ICU support is also important.

Atrial septal defect closure – from minimally invasive technique to conventional surgery

O.Gokalp, Y.Besir, S.Iscan, N.K.Yesilkaya, H.Iner, M.Balkanay, L.Yilik, S.Dernek, A.Gurbuz

Izmir Katip Celebi University, Faculty and Medicine, Department of Cardiovascular Surgery, Izmir, Turkey

Background: Minimally invasive approach becomes popular in cardiac surgery. In this paper we aimed to present a patient with atrial septal defect which was planned to be repaired with minimally invasive technique but repaired with conventional surgery.

Case report: 37 year-old female presented with dyspnea. Transthoracic echocardiography revealed an atrial septal defect with a diameter of 2,7cm. Moderate tricuspid regurgitation existed. EF was 60% and PAB was 35mmHg. Mini thoracotomy was performed. As lungs were attached tightly to the chest wall, full sternotomy was performed with mini skin incision. atrial septal defect was closed with gore-tex patch following aorto bicaval cannulation. She was referred to service on postoperative 1th day and she was discharged without any complication on postoperative 6th day.

Although minimally invasive procedures' aesthetic benefits and shorter hospital stay, variations in thoracic cavity may block their usage because of limited exploration.

Friday, 22.04.2016

Hall: Atlantic II

08.00-09.30

V 3: VEINS

Moderators: A.Giannoukas (Greece); Z. Maksimovic (Serbia)

Key Note Lecture: The recent guidelines on DVT &PE. K.Ozisik (Turkey)

Chronic venous insufficiency and subsequent adverse cardiovascular event

P. Bondarenko, M. Ivanov, M. Yermine, E. Podsuslonnikova, A. Yadernaya, M. Khvostova, A. Mischenko, A. Novikova

North-West State Medical University, St.Petersburg, Russian Federation

Aim: Dyslipidemia, age and arterial hypertension are the common risk factors of adverse cardiac events. Chronic venous insufficiency is often not considered to be a risk factor for cardiovascular events. There is some data that venous and arterial thrombosis are closely associated with each other, but the question which one is primary still remains open. The objective of the present study was to measure the link between chronic venous insufficiency of the inferior vena cava system including cardiometabolic changes and adverse arterial events.

Materials and methods. The study was based on monitoring 64 patients suffering from chronic venous insufficiency and whose varicose dilatation had been treated surgically. According to the results of physical examinations and venous duplex scans of lower extremities venous thrombosis was found among 18 patients (which was the main group), while 46 patients did not have this disease. Statistical analysis: The link between chronic venous insufficiency and atherosclerosis risk factors, signs of asymptomatic atherosclerosis, and adverse arterial events diseases has been analyzed. The program STATISTICA 10 was used for statistical analysis of the results. The results were put on an arithmetic mean value scale with $\pm$ standard deviation. The difference in categorical variables was analyzed by the Pearson chi-squared test and Fisher's criterion. The differences were considered to be statistically significant at $p < 0.05$.

Results: Patients with hypertension have an increased risk of venous thrombosis ($p < 0.05$). The clinical manifestation of chronic venous insufficiency (19-27 points according to VCSS) was 4 times more likely in patients with insulin-independent diabetes. Serious changes of the venous outflow were also related to the presence of such risk factors as visceral obesity. During the study of symptoms of atherosclerosis it has been found that in case of clinical manifestation of venous insufficiency there is an increasing incidence of atherosclerotic plaque in carotid arteries and also there is a tendency towards increasing the number of arterial thrombosis events (myocardial infarction).

Conclusion: Chronic venous insufficiency is expressed more distinctly in patients with metabolic syndrome and is accompanied both by asymptomatic and symptomatic (adverse cardiovascular events) atherosclerosis that demands revision of the direction and nature of rehabilitation procedures for the above mentioned category of patients

Elevated gamma glutamyl transferase levels are associated with the location of acute pulmonary embolism. Cross-sectional evaluation in hospital setting

O. Korkmaz

Department of CVS , Cumhuriyet University, Medical Faculty, Sivas, Turkey

Aim: The location of embolism is associated with clinical findings and disease severity in cases of acute pulmonary embolism. The level of gamma-glutamyl transferase increases under oxidative stress-related conditions. In this study, we investigated whether gamma-glutamyl transferase levels could predict the location of pulmonary embolism.

Methods: 120 patients who were diagnosed with acute pulmonary embolism through computed tomography-assisted pulmonary angiography were evaluated. They were divided into two main groups (proximally and distally located), and subsequently into subgroups according to thrombus localization as follows: first group (thrombus in main pulmonary artery; n = 9); second group (thrombus in main pulmonary artery branches; n = 71); third group (thrombus in pulmonary artery segmental branches; n = 34); and fourth group (thrombus in pulmonary artery subsegmental branches; n = 8).

Results: Gamma-glutamyl transferase levels on admission, heart rate, oxygen saturation, right ventricular dilatation/hypokinesia, pulmonary artery systolic pressure and cardiopulmonary resuscitation requirement showed prognostic significance in univariate analysis. The multivariate logistic regression model showed that gamma-glutamyl transferase level on admission (odds ratio, OR = 1.044; 95% confidence interval, CI: 1.011-1.079; P = 0.009) and pulmonary artery systolic pressure (OR = 1.063; 95% CI: 1.005-1.124; P = 0.033) remained independently associated with proximally localized thrombus in pulmonary artery.

Conclusion: The findings revealed a significant association between increased existing

Effects of rosuvastatin as an adjuvant treatment for deep vein thrombosis

E.M. San Norberto, M.V Gastambide, R. Fuente, C. Flota, J. Taylor, C. Vaquero

Department of Angiology and Vascular Surgery, Valladolid Area, Spain

Aim: Statins, a class of drugs used to lower cholesterol levels, have been reported to help prevent the development and the recurrence of DVT. We will conduct a prospective randomized clinical trial to compare the effects of rosuvastatin plus a low-molecular-weight heparin (LMWH), bemiparin, with conventional LMWH therapy in the treatment of DVT.

Patients and Methods: In total, 234 patients were randomized into two groups, 116 in the LMWH group and 118 in the statin plus LMWH group. All patients underwent lower limb duplex ultrasound and analytic markers at diagnosis and 3-months follow-up. The final analysis included 230 patients.

Results: No significant differences were observed in D-dimer levels after 3-months follow-up between patients treated with LMWH+rosuvastatin compared to the LMWH group (802.51+1062.20 vs 996.25+1843.37, $p=0.897$). The group of patients treated with statins displayed lower levels of CRP (4.17+4.27 vs 22.39+97.48, $p=0.018$) after 3-months follow-up. Significant reductions in liver function markers (AST $p=0.006$, ALT $p=0.001$, GGT $p=0.018$) were seen in patients treated with rosuvastatin. The Villalta scale demonstrated significant differences between groups (3.45+6.03 vs 7.79+5.58, $p=0.035$). In addition there was a significant decrease in PTS incidence (Villalta score>5) in the rosuvastatin group (38.3% vs 48.5%, $p=0.019$). There were no differences in EuroQol score between groups.

Conclusion: We concluded that adjuvant rosuvastatin treatment in patients diagnosed of DVT improve CRP levels and diminish PTS incidence without an increase in secondary liver or muscular injury.

Prevention, diagnosis and treatment of venous insufficiency during pregnancy and breastfeeding

M. Kabić Stakić, S. Tanasković, S. Babić, M. Nešković, N. Đukić, D. Nenezić, N. Ilijevski, P. Popov, M. Jovanović, A. Bučić, P. Matić, B. Lozuk, P. Gajin, Đ. Radak

Institute of Cardiovascular Diseases "Dedinje", Belgrade, Serbia

Chronic venous disease represents one of the most frequent medical conditions that could be seen in the general population. Pregnancy is one of the major predisposing factors for venous insufficiency development that occurs due to obstruction of the pelvic venous outflow by enlarged gravid uterus and weakening of the vein wall induced by increased hormonal secretion. Diagnosis of venous insufficiency during the pregnancy includes clinical examination and Doppler ultrasound evaluation. Clinical findings vary from insignificant teleangiectasies to severe varicose veins and skin damage. It is known that relative risk of venous thromboembolism is estimated to be 4-6 fold increased in pregnancy and is further increased postpartum. In the first trimester many fatal antenatal venous thromboembolism events could occur and therefore prophylaxis for women with previous venous thromboembolism should begin early. In woman with previous venous thromboembolism, thromboprophylaxis should begin as early in pregnancy as practical while women without previous venous thromboembolism but with other risk factors, can start antenatal prophylaxis at 28 weeks of gestation. We have reviewed and discussed current guidelines for diagnosis and treatment of chronic venous insufficiency in pregnancy and prevention of venous thromboembolism. Current role of low molecular weight heparin, warfarin, venotonic agents and compressive stocking therapy have been discussed in the terms of prevention of venous thromboembolism and treatment of venous insufficiency in pregnancy.

The use of mini-invasive technologies for the treatment

V. Starodubtsev, M. Lukyanenko, A. Karpenko, P. Ignatenko

Academician E.N. Meshalkin Novosibirsk State Budget Research Institute of Circulation Pathology, Ministry for Public Healthcare of Russian Federation, Hybrid and vascular surgery department, Novosibirsk, Russian Federation

Aim: To estimate the safety and efficacy of using the laser wavelength of 1560 nm with the foam sclerotherapy (FS) of varicose veins (VVs) for the treatment of primary chronic venous leg ulcers in patients with different diameters of the proximal segment (DPS) of the great saphenous vein (GSV).

Methods: We have separated the patients into two groups depending on the size of great saphenous vein: group 1 (55 cases; DPS of GSV less than 15 mm) and group 2 (35 cases; DPS of GSV more than 15 mm). Both groups received the endovenous laser ablation (EVLA) of the saphenous vein trunk, incompetent perforator veins (IPs) and FS (the original Tessari method) of VVs. The linear endovenous energy density (LEED) was personalized on the size of the veins.

Results: The healing of ulcers in 6 months was considered the primary end-point. The procedure was found successful in 53 (96%) cases in the 1st group and in 34 cases (97%) in the 2nd group. In the cases of ineffective treatment (2 (4%) cases in the 1st group and 1 (3%) case in the 2nd group) the patients suffered significant obesity (BMI > 40). Leg ulcer recurrence for two years follow- up was not determined in both groups.

Conclusion: Our experience of using the laser wavelength of 1560 nm and FS of VVs for the treatment of the primary venous leg ulcers shows the safety and efficacy of this technique in patients with different DPS of GSV.

Duplication of great saphenous vein can change approach during laser ablation

V. Jokovic, D. Petrović, S. Sretenović, D. Stamenković, D. Vulić

Center for vascular surgery, Clinical Center Kragujevac, Serbia

Aim: To determinate does veins anatomy variations predict ELVeS access

Methods: The patients with varicose veins from C2-C6 stadium according to CEAP classificatn, treated with ELVeS (356) and legs (490), were included in study. We have selected patients with some variations of pathway of GSV and different level of pathologic reflux, diagnosed by Color Doppler Scan (CDS), preproceduraly. Our procedurre was ELVES accompanying with microphlebectomies and ligation of perforating veins (Cocket, but not proximal perforators) controlled by CDS.

Results: Double GSV with independent junction in deep femoral vein were found at 3% of treated patients. Double GSV with conjoint before influx in deep femoral vein were found at more than 10%. This variation in all cases was found at femoral segment of GSV. In those cases safenous compartment was anatomically apparent by CDS. According to CDS anatomical data we changed access by ELVeS. In more than half of patients with double GSV we have performed two punctions for access and laser ablation of both GSV on the same leg. In some cases we have had CDS confirmation of reflux at the level of Hunter, Dodd and Boyd perforators. With laser treatment of GSV we have abolished this reflux. We confirmed thus state postoperatively with CDS from 7th day to one year after procedure.

Conclusion: preoperative anatomic data – mapping by CDS of superficial vein system, especially GSV and perforating veins play signifficant role in long term postoperative results as well as in planing the way of treatment.

Cryo Laser and Cryo Sclerotherapy (CLaCS) for the treatment of spider veins and telangiectasias

L. Velicki

Dr Dragic Clinic, Belgrade, Serbia

Aim:Reality were used to detect reflux and feeder veins, respectively.

Methods: Feeder veins and telangiectasias were treated the same way by a combination of Nd:YAG 1064 nm with spot sizes of 6mm, 15 msec pulse and fluence of up to 80 J/cm² followed by injection sclerotherapy of Dextrose 75%. Both techniques were performed under forced air skin cooling. Response to the treatment was rated on: total or partial improvement with patient satisfaction (Group 1); partial improvement or lack of resolution, without patient satisfaction (Group 2).

Results: Mean age of patients was 41 years (21 to 67), with prevalence of women (95 %). No allergic reactions, systemic reactions, skin burns, post-sclerotherapy matings, infections or crustings were observed. Temporary ecchymosis were observed in 35 % of the cases. No frostbite was registered due to cold air blowing. Partial or total lesion improvement was obtained in 17 patients (85 %), with satisfactory cosmetic results.

Conclusion: CLaCS guided by Augmented Reality is a novel and promising option for treatment of telangiectasias, reticular and feeder veins. CLaCS is a safe, effective, and reproducible method for achieving superior cosmetic results.

Endovascular treatment of varicose veins using steam pulses

I.Droc, R. Milleret, C. Buzila

Army's Centre for Cardiovascular Diseases, Department of Cardiovascular Surgery, Bucharest, Romania

Aim : Endovenous heating techniques have been in clinical use since 1999 : long-term results are now available for both Radio-frequency and Endovenous laser . These results compare favourably with the reference : high ligation + stripping of the vein. Heating the vein with superheated steam may provide significant medical and economical advantages .

Material: To emit steam at 150 ° C , we pressurize water , then force it through a very small diameter tube (100 nm) heated by electrical current. The 1,2 mm (5F) catheter emits vapour near the tip through 2 lateral holes. At the tip of the catheter, steam is emitted at 120 °C due to heat losses along the stainless steel catheter. A Generator console controls the whole process and pressurizes the water. Operative technique: The whole procedure is performed under Echo-Guidance. Vein access is obtained either by phlebotomy or by introduction of a 16G short catheter under Echo-guidance .The heating catheter is directly pushed in the vein, without a guide wire. Catheter tip position is checked by ultrasound: for a GSV, it is kept 3 cm away from the sapheno-femoral junction. Tumescence is then applied. Vapour is emitted while removing the catheter: 2 consecutive pulses of 45 joules are sent , then the catheter is removed on 1 cm .

Results: In Bucharest, 25 patients were operated with this new technique between oct 2011-sept 2012 with no complications and 100 % obliteration of the veins at early control (one month). Postoperative pain was minimal and no pain killers were necessary.

Conclusion: This new technique has better results in short term than other thermal endovascular procedures. It needs validation in long time follow up.

Quality-of-life assessment in patients after endovenous laser therapy and conventional surgery using VCSS (Venous Clinical Severity Score)

R. Vlachovsky, R. Staffa, T. Novotny, J. Bucek

St. Anne's University Hospital, Medical Faculty, Masaryk University, Brno, Czech Republic

Aim: Reduction of symptoms associated with chronic venous insufficiency remains the main goal of conventional or endovenous varicose vein ablation. The venous clinical severity score (VCSS) was proposed in 2000 to assess the usefulness of an intervention in patients with chronic venous insufficiency. The validity of the score system was later evaluated and was confirmed by different groups and studies, and in 2007 was refined. Our prospective study was designed to compare quality-of-life outcomes following endovenous laser treatment (EVLT) and conventional surgery (CS) using venous clinical severity score (VCSS).

Methods: Between September 2010 and December 2013, 194 patients were enrolled to the study and underwent surgery for varicose veins (97 laser ablations and 97 traditional surgery procedures). In both groups, preoperative VCSSs were recorded and clinical and duplex examinations were performed at 7 days, 4 weeks and 6 months after the procedure. VCSS scoring was repeated at follow-up visits. All endovenous procedures were performed with tumescent local anesthesia with 1470 nm laser (Biolitec Ceralas E 1470 nm/15W/400, CeramOptec GmbH, Bonn, Germany).

Results: In the CS group, the respective preoperative, 7 days, 4 weeks and 6 months VCSS scores were as follows, 8.1 $\pm$ 2.3 in 97 limbs, 6.0 $\pm$ 1.9 in 89 limbs, 5.4 $\pm$ 2.1 in 79 limbs and 3.5 $\pm$ 1.4 in 75 limbs. In the EVLT group, the respective preoperative, 7 days, 4 weeks and 6 months VCSS scores were 8.2 $\pm$ 2.4 in 97 limbs, 4.8 $\pm$ 1.9 in 91 limbs, 3.8 $\pm$ 2.0 in 84 limbs and 3.3 $\pm$ 1.4 in 79 limbs. VCSS scores were significantly better in the EVLT group than the CS group at 7 days and at 4 weeks ($P < 0.001$). At 6 months, no significant differences between the groups were evident.

Conclusion: Treatment of saphenous vein reflux with either procedure results in clinical improvement of symptoms but, in the early postoperative period, endovenous laser therapy removes quality-of-life limitations associated with conventional surgery. We found the VCSS to be an efficient tool in outcome assessment after varicose vein procedures.

Comparison of three different endovenous ablation techniques for treatment of varicose veins

S. Gunaydin

Numune Training and Research Hospital/ Department of Cardiovascular Surgery, Ankara, Turkey

Aim: Endovenous ablation (EVA) techniques, including radiofrequency ablation (RFA), laser ablation (EVLA) and glue (n-butyl cyanoacrylate) ablation (EGA) for the treatment of great saphenous vein (GSV) insufficiency have commonly replaced conventional surgery for the last decade. Insufficient data has been documented as which technique has been more efficient and has less complication. We assessed the efficacy and perioperative outcome of three different techniques.

Methods: A total of 428 CEAP 2-6 patients who were suffering from the symptoms of GSV insufficiency underwent EVA within a two-year period. Of these patients, 161 (38%) received 1470 nm wavelength diode laser, 155 (36.2%) RFA, and 112 (26%) EGA treatment. Average Venous Clinical Severity Score (VCSS) at baseline was 4.99 ± 1.15 for EVLA, 4.35 ± 1.12 for RFA and 4.8 ± 1.15 for EGA groups.

Results: Procedural occlusion rate was 100% in all groups. Ecchymosis were seen significantly more in EVLA group ($n=24$; $p<0.05$). RFA and EGA groups had significantly less postoperative pain. (11 and 8 vs 21 patients, $p<0.05$). At one-year follow-up, total recanalization was observed in 6 patients in EVLA and 5 in RFA groups. Partial recanalization (>5 cm) were documented in 14 patients in EVLA, 10 in RFA and 5 in EGA groups. Total occlusion rate at 6 month is 88% for EVLA, 90% for RFA and 95% for EGA groups. Average VCSS improved to 2.2 ± 1.1 in EVLA, 2.1 ± 1.2 for RFA and 1.39 ± 0.8 for EGA.

Conclusion: This study suggests there is little to choose among EVA techniques in terms of efficacy and each offers a viable, clinically effective alternative to surgery.

Although data on non-thermal non-tumescent techniques are still sparse, the potential benefits, especially easier application and reduced risk of nerve injury, might be of considerable clinical important.

Friday, 22.04.2016.

Hall: Adriatic

08.00-09.30

V 4 CAROTID ARTERY DISEASE II

Moderators: J. Molacek (Czech Republic); N. Ilijevski (Serbia)

Key Note Lecture: The need for a uniform definition of "index event" in reporting timing of intervention,
GJ de Borst, (Netherlands)

Treatment of simultaneous carotid disease and intracranial aneurysms

P. Matic, S. Tanasković, S. Babić, P. Gajin, D. Nenezić, G. Vučurević, N. Ilijevski, P. Popov, B. Lozuk, D. Jocić, M. Ilić¹, P. Jovanović, M. Nešković, Đ. Radak

Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

Aim: Before the routine use of computed tomography angiography, decisions for carotid artery treatment were mostly based on ultrasound findings and conventional angiography.

Implementation and increasing use of computed tomography angiography provided better visualization of the carotid and vertebrobasilar arteries system leading to an unexpected more frequent detection of unruptured intracranial aneurysms. Due to the possible higher risk of aneurysm rupture after carotid procedures and ischemic events after aneurysm repair, the simultaneous presence of both lesions creates several therapeutic dilemmas.

Methods: A prospective cohort study was conducted from January 2009 to October 2012. It included 1730 patients in whom carotid stenosis (above 50%) and/or significant kinking/coiling were diagnosed with simultaneous presence of unruptured intracranial aneurysms. In all patients computed tomography of supraaortic branches was performed and they were divided in three groups, according to the treatment of carotid disease: surgical, endovascular and conservative.

Results: Intracranial aneurysms were found in 104 (6%) patients. Prevalence of intracranial aneurysms in patients with carotid atherosclerosis was 4.9%, and with kinking/coiling 1%. Carotid stenosis above 70% was associated with contralateral aneurysms larger than 5 mm. Carotid surgery was performed in 47 patients, endovascular treatment in 17, and in 41 patients conservative treatment was indicated. No subarachnoid hemorrhage was observed during follow-up.

Conclusion: The presence of carotid disease influences on localization and size of intracranial aneurysms, and comparing with general population presence of intracranial aneurysms is more frequently found in patients with carotid disease. Presence of aneurysms smaller than 10 mm does not influence on outcome of surgical, endovascular and conservative treatment of carotid disease.

Predictive value of morphology of circle of Willis on hyperperfusion syndrome after carotid endarterectomy in asymptomatic patients

V. Manojlović, J. Pasternak, V. Popović, V. Marković, D. Nikolić, Đ. Milošević, N. Budakov, A. Lučić Prokin

Department of Vascular surgery, Clinical center of Vojvodina, Novi Sad, Serbia

Aim: Hyperperfusion syndrome that develops after carotid endarterectomy is characterized by TCD finding of increased blood flow on medial cerebral artery (ACM), severe hypertension, headache and occasionally transient neurological deficiency which can lead to perioperative stroke. In asymptomatic patients operative treatment of carotid artery stenosis is expected to be with low risk, thus any adverse event has more prominent effect on perioperative assessment and results. Aim of this study was to analyze influence of morphology of Circle of Willis (CoW) and other factors on development of hyperperfusion syndrome after carotid endarterectomy in asymptomatic patients.

Methods: Research included 97 patients, who were operated from significant asymptomatic extracranial carotid stenosis in the period of two years. Preoperative assessment included: presence of hypertension; duplex ultrasound; MRA for CoW morphology and completeness; TCD and measurement of Breath Holding Index (BHI). Presence of hyperperfusion syndrome was established by former criteria. Univariate analyses and binary logistic regression were used.

Results: From 97 operated patients, 22 (22,4%) patients developed hyperperfusion syndrome, in mild form in 18 patients and in form with transient neurological deficiency with complete regression in 4 patients. No perioperative stroke or death was noticed. Following factors were brought to analyses: hypertension, taking of antihypertensive drugs, preoperative systolic blood pressure, degree of stenosis, cerebrovascular reactivity estimated by apnea test and BHI value, TCD signs of collateral blood flow on CoW, completeness of CoW on MRA finding, operative technique, time of cross-clamping and usage of intraluminal shunt. Morphology and completeness of CoW had strongest predictive value on development of hyperperfusion syndrome after carotid endarterectomy in asymptomatic patients ($p=0,000$ $\exp B=45,951$ CI 7,01-301,12). Regressive model was statistically significant $\chi^2(6)=40,5$, $p<0,0001$ and it explains 54,3% of cases.

Conclusion: Hyperperfusion syndrome develops after carotid endarterectomy more frequently in patients with incomplete CoW, low cerebrovascular reactivity and untreated hypertension.

Relationship between calcification and vulnerability of the carotid plaques

L. Ferrante, G. Faggioli, R. Pini, M. Longhi, A. Vacirca, M. Gargiulo, A. Stella

Sant'Orsola-Malpighi, Vascular Surgery, Bologna, Italy

Aim: Carotid plaques with a high degree of calcification are considered at low embolic risk. Since a precise evaluation of the extent of calcification is not possible preoperatively through duplex ultrasound and postoperatively by conventional histological examination due to the decalcification process, the relationship between the amount of calcium involvement and plaque vulnerability has not been evaluated yet. This study aims to correlate the extent of carotid plaque calcification with clinical, radiological and histological element of vulnerability.

Methods: 105 consecutive patients submitted to carotid endarterectomy between January to December 2013 were included. The amount of carotid calcification was assessed at preoperative CT-scan and graded from 1 to 8 accordingly (Barbiaz classification). Patients were categorized into two groups (low-level: grade 1-5; high-level: grade 6-8) and correlated by uni-multivariate analysis with clinical characteristics and ipsilateral cerebral ischemic lesions at CT. Vulnerability of the plaque was assessed histologically according with American-Heart-Association-AHA Classification. Results were blindly correlated.

Results: We enrolled 105 patients (80% male; age 72 ± 7), 41 (39.0%) symptomatic and 45 (42.8%) with ipsilateral focal lesion at preoperative CT. Forty-four (41.9%) had high-level carotid calcification degree at CT. At histological analysis 65 (61.2%) were considered vulnerable plaques (AHA type VI). Non vulnerable plaques were divided into 27 (26%) AHA type V and 13 (12%) AHA type IV. Both high and low-level groups had similar epidemiological risk-factors. The high-level-calcification group showed significantly higher incidence of ipsilateral cerebral lesions at preoperative CT (63.6% vs. 36.4%, $p=.009$) as confirmed by multivariate analysis (OR 7.02; 95% confidence-interval 1.71-28.78, $p=.007$).

Conclusion: High levels of calcification of carotid plaques are not necessarily associated with lower vulnerability: the incidence of preoperative neurological symptoms and histological vulnerability is similar in patients with and without extensive carotid plaque calcification. Cerebral ischemic lesions may be even more frequent in presence of highly calcified plaques.

Treatment Strategies for Carotid Artery Aneurysms

I. Končar¹, I. Tomić¹, M. Dragaš¹, N. Ilić¹, I. Banzić¹, S. Pavlović², M. Marković¹, N. Ristanović¹, B. Barišić¹, L. Davidović¹

¹Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

²Pacemaker Center, Serbian Clinical Centre, Belgrade, Serbia

Aim: The aim of this paper is to present single centre experience in the treatment of extra cranial carotid artery aneurysms (ECCA) and to analyze results discussing different treatment modalities.

Methods: The study organized as prospective-retrospective, analysed 60 patients with 62 ECCA treated surgically at the Clinic for vascular and endovascular surgery, Serbian Clinical Center (Belgrade) in the period between 1985 and 2013. Treatment strategy was individually selected and demographic, morphologic, intraoperative and postoperative parameters were collected.

Results: Thirty-day operative mortality was 3.3% and completely stroke related. Besides two fatal strokes one additional was registered making total number of 3 (4.9%) postoperative strokes. Only one (1.6%) early graft thrombosis has been found. The 30-day-patency rate was 98.4%. During the same period, seven local complications were found: three (4.9%) hemorrhage and four (6.4%) cranial nerves injuries. In all causes of hemorrhage successful re-intervention was performed without any consequences. Cranial nerves injuries transient contusions of hypoglossal (2) and superior laryngeal nerve (2).

Conclusion: The etiology, location and morphology of an ECAA are determining selection of appropriate therapy. Large tortuous aneurysms, as well as aneurysms involving common carotid or proximal internal carotid artery, are also absolutely indicated to open surgical therapy.

Aneurysms which involve the distal internal carotid artery and false anastomotic aneurysms are best managed with endovascular techniques. The ligature or endovascular occlusion is indicated for the treatment of external carotid aneurysms, mycotic aneurysms with local infection and in ruptured ECCA with uncontrolled bleeding.

Cerebral ischaemia in carotid disease relates to carotid plaque volume

E. Katsogridakis, K. Kanessalingam, R. Taylor, J. Morris, C. McCollum

Academic Surgery Unit, Institute of Cardiovascular Sciences, University of Manchester, Manchester, Great Britain

Aim: The severity of carotid stenosis along with recent symptoms of cerebral ischaemia have been traditionally used as the main criteria to identify patients at risk of stroke, that would benefit from carotid endarterectomy (CEA). Recent evidence suggests that severity of carotid stenosis is a poor predictor of stroke in asymptomatic patients. We therefore decided to investigate the relationship between carotid plaque volume (CPV) and symptoms of cerebral ischaemia in patients undergoing CEA.

Methods: 220 patients undergoing CEA between 2011 and 2014 in Greater Manchester were recruited with symptoms of cerebral ischaemia and the date of most recent symptoms recorded. Preoperatively, the severity of carotid stenosis was measured using peak systolic velocity (PSV) on Duplex ultrasound. The volume of the endarterectomy specimen (CPV) was measured using the suspension hydrostatic technique.

Results: Mean CPV (sd) was significantly higher in the 177 symptomatic patients at 1.01 (0.45) cm³ compared with 0.78 (0.46) cm³ in 43 asymptomatic patients ($p=0.003$). Mean (sd) CPV in 110 patients undergoing CEA less than four weeks following symptom onset was 1.10 (0.48) cm³, compared with 0.96 (0.24) cm³ in 23 patients between four and eight weeks and close to the CPV in asymptomatic patients at 0.78 (0.36) cm³ in those more than eight weeks after the most recent symptoms.

Conclusion: CPV was strongly associated with recent symptoms of cerebral ischaemia in patients undergoing CEA. This decline in CPV following stroke symptoms coincides with the well known decline in stroke risk. Accurate and noninvasive measurement of CPV in patients with carotid disease may prove it to be a more reliable predictor of stroke risk and a more appropriate indication for CEA.

Endovascular Therapy in Acute Ischemic Stroke; a Single center experience.

V. Gavrilovic, S. Massimo, A. Vit, B. Petralia, A. Pellegrin

Santa Maria della Misericordia, Italy

Aim: To evaluate feasibility, peri-procedural safety and efficacy of endovascular mechanical thrombectomy, with the intravenous (IV) administration of recombinant tissue-type plasminogen activator (rtPA) in acute ischemic stroke patients with severe neurological deficit (National Institutes of Health Stroke Scale [NIHSS] score, ≥ 10).

Methods: From December 2014 until December 2015; 33 patients (18F; 15M, mean age 64 y, $sD \pm 13$ y) with cerebral arterial thrombosis ($n=28/33$, anterior circulation; $n= 5/33$ posterior circulation) were treated with mechanical thrombectomy (using stent retriever or aspiration catheter) within 6 to 8 hours from stroke onset. Arterial thrombosis was diagnosed at CTA of the brain. The primary outcome was the modified Rankin scale (mRS) score at 90 days.

Results: Mechanical thrombectomy with stent retriever or aspiration catheter was technically feasible in 32/33 (97%) patients. Brain DSA before treatment was crucial in evaluation of collateral circulation. 15/33 (45.5%) subjects were treated with IV rtPA, before intrarterial (IA) thrombectomy. In 16/33 (48.5%) subjects IV rtPA treatment couldn't be applied and patients underwent only IA thrombectomy with intracranial stent retriever deployment. Three subjects had tandem lesion (i.e. carotid artery and cerebral artery occlusion on same side). Treatment was performed in deep sedation for 28 Pt, and general anesthesia 5 Pt. Inclusion criteria followed the SPREAD recommendation. Post-procedural NIHSS score was reduced for 6.2 ± 6.1 points IA group, and for 12.6 ± 6.5 points in IA+EV group. 45.5% of all Pt had Functional independence ($mRS \leq 2$) when discharged. 5/33 (15.2%) Pt died.

Conclusion: Mechanical thrombectomy is feasible and safe procedure. The ideal therapy of acute ischemic stroke is achieved by early recanalization, IA+IV group showed lower NIHSS than only mechanical group, suggesting combined approach could be beneficial. Pre-procedural angio-CT is a key step to select appropriate patients and to plan the correct endovascular approach.

Significant Association Between Annual Hospital Volume And The Risk Of In-Hospital Stroke Or Death After Carotid Endarterectomy, But Not Following Carotid Stenting

A Kuehnl, P. Tsantilas, C. Knappich, S. Schmid, T. König, T. Breitzkreutz, U. Mansmann, H.H. Eckstein

Klinikum rechts der Isar, Departement for Vascular and Endovascular Surgery

Aim: Since high hospital volume is associated with better health outcomes in a variety of surgical procedures, it seems obvious that this may also be the case for carotid endarterectomy and carotid artery stenting. Therefore, the purpose of this study was to analyze the association between hospital volume and the risk of stroke or death following CEA or CAS in Germany.

Methods: Secondary data analysis using microdata from the German nationwide statutory quality assurance database on all surgical and endovascular carotid interventions of the extracranial carotid artery between 2009 and 2014. Hospitals were categorized as quintiles that were determined empirically according to the annual case volume. The resulting volume thresholds for our analysis were 10, 25, 46, and 79 for CEA and 2, 6, 12, and 26 for CAS procedures. The primary (binary) endpoint of this study was any stroke or death occurring until discharge from hospital. For risk-adjusted analyses, a multilevel regression model with robust error variance was applied.

Results: A total of 161,448 CEA and 17,575 CAS procedures were included in the analysis. In CEA patients, the crude risk of stroke or death decreased monotonously from 4.2% in low-volume hospitals (first quintile, 1-10 CEA/year) to 2.1% in hospitals providing ≥ 80 CEA/year (fifth quintile, $p < 0.001$ for trend). The overall risk of any stroke or death in CAS patients was 3.7%, but no trend regarding the annual volume was seen ($p = 0.304$). Risk-adjusted analyses confirmed an inverse relationship between hospital volume (categorized as well as continuous) and the risk of stroke or death after CEA, but not following CAS procedures.

Conclusion: This study provides evidence for an inverse volume-outcome relationship in patients treated with CEA, but in patients treated with CAS.

Shunting during carotid endarterectomy: Is it safe? Lessons learned from diffusion-weighted magnetic resonance imaging!

P. Lerut, E. Wybaillie, H. Ceuppens, P. Wallaert, G. Desmul, P. Seynaeve, H. Pottel

Department of Vascular Surgery University Hospital Gasthuisberg, Leuven, Belgium

Aim: The use of a shunt during carotid endarterectomy (CEA) remains controversial. In this study, we want to assess the role of shunting in the occurrence of cerebral embolization during CEA.

Methods: 366 CEA procedures, with a policy of selective shunting, were included in this retrospective cohort study for a period of 7 years. Two medical databases were reviewed to collect data on shunt use, perioperative neurological events and postoperative diffusion-weighted magnetic resonance imaging (DWI) of the brain. The primary outcome measure was the incidence of an emboligenic ischemic DWI lesion ipsilateral to the side of surgery. The incidence of these DWI lesions was compared between the shunting and non-shunting group. A subgroup analysis was performed to differentiate between asymptomatic and symptomatic carotid stenosis.

Result: Shunt use was similar in both groups (21.8% vs. 26.2%, respectively; $p=0.38$). The overall incidence of emboligenic DWI lesions is 8.7% (32/366). In the non-shunting group ($n=280$), a 7.1% incidence is reported, whereas in the shunting group ($n=86$), a 14.0% incidence is seen (borderline non-significant difference; $p=0.08$). In the asymptomatic group, there were significantly more emboligenic DWI lesions when a shunt was used, compared to when no shunt was used (16.3% vs. 5.7% incidence, respectively; $p=0.03$). In the symptomatic group, no difference in incidence of emboligenic DWI lesions was found when a shunt was used or not (10.8% vs. 9.6%; $p=0.76$).

Only one patient with an emboligenic DWI lesion presented with a stroke; all other lesions were clinically silent (31/32; 97%).

Conclusion: There is a tendency for higher incidence of emboligenic DWI lesions when using a shunt during CEA. Subgroup analysis for the asymptomatic carotid stenosis group shows a statistically significant higher incidence of emboligenic DWI lesions when a shunt was used, compared to when no shunt was used.

Friday, 22.04.2016

Hall: Aegean

08.00-09.30

V-5: PERIPHERAL ARTERY DISEASE

Moderators:T. Ulus (Turkey), V. Popovic(Serbia)

Key Note Lecture: Vascular disease in diabetic patients: What is different?-T. Ulus (Turkey)

Clinico-pathological assessment of vascular lesions in complicated diabetic foot

M. Elsharawi, A. Elsaid, M. Shawarby, T. Elsharkway

University of Dammam, Alkhobar, Saudi Arabia

Aim: The pathological lesions of microcirculation in diabetic foot have not been previously fully studied. Identification of such lesions and its association with clinical finding in complicated diabetic foot will allow the expansion of the knowledge related to the pathological background of this condition. The aim of this study is to give a quantitative report on microvascular changes of complicated diabetic foot and correlate these changes with clinical findings in such patients

Patients and Methods: This is a prospective study on all cases admitted to the vascular unit, King Fahd Hospital of University with diabetic foot problems who required foot amputation between January 2014 and September 2015. Preoperative diagnosis was based on history and comprehensive neuro vascular physical examination $\pm$ Computed CT angiogram. Skin and tissue biopsies will be taken from the amputated foot and subjected to histopathological and immunohistochemical study. The findings were compared with similar parameters of non-diabetic patients (controls).

Results: During the study period, 26 patients (22 diabetic and 4 controls) were included. Of the diabetic patients, 16 (73%) had peripheral arterial disease (PAD). There was significant difference between diabetic and control groups in small blood vessel basement membrane thickness (22.46 ± 10.28 microns in diabetic vs 10.51 ± 3.15 microns in control, $p < 0.001$) and microvascular density (41.61 ± 19.54 per mm^2 in diabetic vs 13.27 ± 2.44 per mm^2 in control $p < 0.001$). However there was no significant difference in small vessel (microvascular) changes between diabetics with and without PAD. Arteriolar hyalinosis and mononuclear inflammatory cell infiltrate was seen in all diabetic cases.

Conclusion: Ischaemia of the diabetic foot is secondary to pre-existing diabetic microangiopathy which sometimes be aggravated by superimposed multi-segment arterial disease.

Bellow-knee bypasses using vein cuffs – our results

A. Tomić, I. Marjanović, I. Leković, M. Šarac, D. Paunović

Clinic for vascular and endovascular surgery, Military Medical Academy, Belgrade, Serbia

Aim: The aim of this study was to evaluate the advantages and disadvantages of distal revascularization using by vein cuff versus femoropopliteal bypass using by prosthetic graft.

METHODS: The following period was 3-24 months. Thirty seven patients were monitored with femorodistal revascularization using by vein cuff (Group I), and fifty-two patients with femoropopliteal bypass using by prosthetic graft (Group II- control group). The surgical indications were rest pain in 19 (51,4%) patients in Group I and 25 patients (48,1%) in Group II; the ischemic tissue loss in 10 (37%) patients in Group I and in 8 patients (15,4%) in Group II; the claudication less then 100m in 8 patients (21,6%) in Group I and in 19 patients (36,5%) in Control group. The graft patency was checked using by ultrasound duplex scan.

RESULTS: After 3 months of following 36 patients (97,3%) in Group I had primary graft patency and 51 patients (98,1%) from Group II. After six months of following 97,3% had primary patency in Group I and 86,6% in Group II. After one year of following 34 patients (91,2%) from Group I had primary patency and 40 patients (76,9%) from Group II. After 2-years of following the same percentage of primary graft patency was in both group as after the first year of following. Seven patients (13,5%) had a secondary patency from Group II.

CONCLUSION: Below-knee bypasses with synthetic graft and vein cuff for critical lower limb ischemia have better long-term results that are comparable to those reported for bypasses without venous patch.

Design of a new risk score in critical limb ischaemia: the ERICVA model

C. Vaquero, JA Brizuela, JA González Fajardo, JH Taylor, L Río Solá, F Muñoz Moreno

Division Vascular surgery, University Hospital of Valladolid, Valladolid, Spain

Aim: It is difficult to establish which patients suffering from critical lower limb ischaemia will benefit from revascularization. Risk scores can provide objectivity in decision making. The aim was to design a new risk score (ERICVA) and compare its predictive power with the PREVENT III and Finnvasc scores.

Methods: An observational retrospective study of patients who underwent revascularization (open or endovascular) in Valladolid's University Hospital between 2005 and 2010 was designed. The sample was divided into two subgroups (development and validation subsamples). After univariate analysis followed by a multivariate Cox regression, a number of variables associated with death and/or major amputation were selected, creating a weighed score called ERICVA, and a simplified version of it. The area under the curve (AUC) of receiver operating characteristic (ROC) curve analysis was performed and the AUC of these two scores were additionally compared with the AUC of the PREVENT III and Finnvasc scales.

Results: Six hundred and seventy two cases with an average surveillance of 778 days were included in the study. Amputation free survival (AFS) was 84.8% at 30 days and 63.1% at 1 year. Variables associated with death and/or major amputation in the Cox regression were cerebrovascular disease, prior contralateral major amputation, diabetes mellitus, dialysis, chronic obstructive pulmonary disease, cancer, haematocrit less than 30%, neutrophil/ lymphocyte ratio exceeding 5, absence of arterial Doppler signal at the ankle, emergency admission, and Rutherford stage 6; these variables were used for the ERICVA and simplified ERICVA score designs. Scores were applied to both subsamples; in the development sample the AUC of ERICVA and simplified ERICVA was significantly higher than the PREVENT III ($p = .008$ and $p = .045$) and Finnvasc ($p < .0001$ and $p = .0013$) scores; in the validation sample the AUC of ERICVA and simplified ERICVA were significantly higher than Finnvasc score ($p = .0323$ and $p = .0017$).

Conclusions: The ERICVA model has a good predictive capacity for death and/or major amputation in the clinical setting, and is better than the PREVENT III and Finnvasc scores.

Factors associated with healing process in diabetic patients with foot ulceration and evaluation of quality of life.

K. Spanos, V. Saleptsis, A. Athanasoulas, A. Bargiota, P. Chan, A. D. Giannoukas.

Department of Vascular Surgery, Intensive Care Unit and Anesthesiology, University Hospital of Larissa, Faculty of Medicine, School of Health Sciences, University of Thessaly, Larissa, Greece

Aim: To assess factors associated with the healing process or limb salvage in diabetic patients with foot ulceration, and to evaluate the impact of their treatment in the quality of life (QOL).

Method: A prospective non-randomized observational study on consecutive diabetic patients with foot ulcer. Social-demographics, morbidity risk factors, type of treatment (open, endovascular, hybrid and conservative), clinical variables and self care management were recorded. QOL was evaluated using diabetic foot ulcer scale- short form questionnaire (DFS-SF) for all subjects before and after treatment.

Results: A total of 103 diabetic patients (mean age 69.7±9.6 years, 77% male) were treated for foot ulceration and followed up for 12 months. Ulcer healing was achieved in 41% (42/103), minor amputation in 41% (43/103) and major amputation in 18% (18/103). During the follow up period the mortality rate was 18% (18/103) and the most common cause was myocardial infarction (13/18). After multivariate regression analysis, ulcer healing was associated with hybrid procedures or conservative treatment, with University of Texas wound grade I and SIDESTEP trial's wound score. Limb loss was associated with only open or only endovascular procedure, non-palpable popliteal artery, longer in-hospital stay and delay until referral. QOL was improved in all domains of DFS-SF ($p<0.0001$) throughout the cohort of our patients regardless of their outcome and no outcome (healing, minor or major amputation) was superior to other. Significant improvement was observed in all domains of hygiene self management after consultation during follow up period. **Conclusion:** Delayed hospital referral, prolonged hospitalization and absence of popliteal pulses were associated with limb loss. Initial clinical status, hybrid procedures or conservative treatment achieved ulcer healing. QOL improved in all patients after treatment regardless the outcome (healing or amputation).

Distinctive peculiarity and influence of a metabolic syndrome on the course of a peripheral arterial disease at women

P. Bondarenko, A.S. Yadernaya, M.A. Ivanov, E.D. Podsuslonnikova, M.Y. Yeremia, M.S. Khvostova, A.A. Mischenko

North-West State Medical University, St.Petersburg, Russia.

Aim: The originality of a peripheral arterial disease (PAD) at women is in lack of characteristic symptomatology for a long time, until defeat symptoms become obvious up to critical ischemia. The purpose of this research is detection of features of PAD course at women, who has undergone reconstructive operations on the main vessels.

Materials and methods: In this research we took 130 patients both genders. It was 82 male (63%) and 48 female (37%) who were operated in case of PAD. The patients under the examine were analyzed on intensity of calcinosis, chronical ischemia, ankle-brachial index, presence of metabolic syndrome, endocardiography's results, feature of kidney function, stress resistant, daily exercise, blood pressure variability.

Statistical analysis. The differences were considered statistically significant if $p < 0,05$. Mathematical processing was carried out with the help of the STATISTICA 10 program.

Results: Women with PAD have 1,5–3 times grater a risk of comorbid conditions such as an ischemic heart disease and a cerebrovascular disease. It is confirmed by the identification of areas of akinesia at the echocardiography, verification of heart failure and family history of heart attack ($p < 0,05$).

Significant distinctive feature of PAD among women is belated request for help (5 of 6 female were taken to hospital with critical ischemia, whereas every 3rd male is a patient; $p < 0,05$).

Definitely, the components of the metabolic syndrome are more often identified among women: arterial hypertension, dislipidemy, hyperglycemia ($p < 0,05$).

Conclusion: The peculiarities of PAD among women assume a special role of minimally invasive surgery (hybrid and endovascular) among this category of patients.

Efficacy of dorsalis pedis artery bypass for limb salvage in patients with critical limb ischemia

S. Pejkić, M. Milošević, T. Francesca, I. Said, K. Cassar

Mater Dei Hospital Malta, Department of Vascular Surgery, Malta

Aim: The aim of this study is to review our experience with dorsalis pedis artery bypass performed as limb salvage for critical ischemia.

METHODS: Retrospective analysis of computerized local vascular registry identified 35 dorsalis pedis bypasses performed over the recent period of 22 months for limb salvage in 33 patients (59% males, mean age 72 years, 79% diabetics). Duplex scanning was the sole preoperative imaging modality in 22 (62.9%) of procedures. Prior angioplasty of femoropopliteal inflow was performed in 11 (31.4%) cases. Conduits included 29 ipsilateral great saphenous veins (82.9% – 20 non-reversed, 5 reversed and 4 in situ), non-reversed contralateral saphenous and arm veins in two (5.7%) cases each, and one (2.9%) composite (Dacron plus ipsilateral saphenous) and polytetrafluoroethylene graft each. The inflow arteries were 25 below-knee popliteal (71.4%), 9 superficial femoral (25.7%) and one common femoral (2.9%). For intraoperative quality control completion angiography was routinely obtained. Postoperatively, patients underwent periodic duplex ultrasound surveillance (at discharge, 3, 6 months, and annually thereafter) and balloon angioplasty was performed as necessary to prevent graft failure.

RESULTS: Thirty-day mortality, caused by systemic complications, was 9.1% (3/33). Six grafts (17.1%) failed within the first month. One graft was successfully thrombectomized and another one revised for distal anastomotic bleeding. Distal incision healing complications was observed in 7 (20%) cases. During the follow-up period (mean, 11 months, range, 1–21 months) 4 (11.4%) failing grafts were successfully angioplastied for stenosis detected by routine duplex sonography. Assisted-primary patency, secondary patency, limb salvage, and patient survival rates at the end of the follow-up were as follows: 82.9%, 85.7%, 88.6%, and 87.9%, respectively.

CONCLUSION: Our experience indicates that dorsalis pedis bypass is effective for limb salvage in this high-risk patient population. Very acceptable patency rates are achieved especially with duplex ultrasound graft surveillance and targeted angioplasty interventions.

Diagnostics of early thrombosis in superficial femoral artery prosthetic bypass using the ankle brachial index

V. Markovic, J. Pasternak, D. Nikolić, V. Popović, V. Manojlović, Đ. Milošević, N. Budakov

Clinic for Vascular and transplant surgery, Clinical Centre Vojvodina, Novi Sad, Serbia

Introduction: One method of diagnostics in peripheral arterial occlusive disease (PAOD) includes the determination of the ratio between arterial pressure above pedal arteries and brachial arteries (ABI), a non-invasive diagnostic test. Nominal values range from 0.9 to 1.1. Objective. To verify the significance of ABI values in the diagnostics of early thrombosis with PAOD.

Method: A retrospective study of 300 patients during a period of 6 years with femoro-popliteal (F-P) arterial reconstruction using Dacron graft was conducted. Walking perimeter was considered as well as ABI values before and after the operation. Measurements of ABI were taken immediately after the operation, and on the 7th, 14th, and 30th day.

Results: The population included 216 men and 84 women, between 40 and 79 years of age, with 46% of the patients in the 60 to 69 year old range, and 57% falling into stage IIb of PAOD sec. Fontaine's classification. Preoperative values were 0.39 on average and 0.78 after the procedure. Early thrombosis of the Dacron graft was incident to 18 men and 6 women, or 8% of the patients. Of these, 9 remained in stage IIb while 9 were in the IVb stage of ischemia, and 3 were in stages II/III and III. ABI values in patients that developed Dacron graft thrombosis were 0.36 following the operation and 0.08 on the 30th day. A statistically significant difference was noted between the average ABI values immediately following the operation where early thrombosis eventually occurred and where it did not ($t = 8.938$, $p < 0.019$).

Conclusion: Results illustrate how preoperative ABI values are correlated with the occurrence of thrombosis of the FP Dacron graft. We concluded that lower ABI values indicate higher chances of early thrombosis.

V445

Primary aortic stenting in subtotal aortic occlusion: long-term results

T. Cohnert, T. Belyavskaya, P. Kalmar, A. Baumann, P. Konstantiniuk, H. Portugaller

Graz University Hospital, Department of Vascular Surgery, Graz, Austria

Aim: Long-term durability after endoluminal therapy In subtotal infrarenal aortic occlusion the technical is still under discussion. The aim of this study was to evaluate long-term results of interventional therapy by primary stent implantation in patients presenting with infrarenal aortic occlusive disease.

Methods: All patients who had undergone interventional therapy for atherosclerotic subtotal aortic occlusion between April 1996 and May 2014 were included in the study. After ethics committee approval and informed consent prospectively collected data from a dedicated vascular database were analysed retrospectively. In addition all patients underwent clinical and radiological follow-up investigations. One patient withdrew informed consent and was excluded from further analysis.

Results: in 35 patients angioplasty with primary stent implantation was performed. Mean follow-up was 81 months (range 2-205 months). Technical success was achieved in all patients. The early procedure-related complication rate was 5.9% (2/34) - one femoral access site bleeding, one pseudoaneurysm development requiring surgery. 30 day morbidity was 11,8% (4/34: one stroke, one peripheral embolization and two above). 30 day mortality rate was 0% (0/34). Mortality rates were 15.3% (3/21) after five years and 23,5% (4/17) after ten years. The primary patency rates: 100% (32/32) after one year, 100% (16/16) after five years, 91% (10/11) after 10 years. The mean estimated primary patency was 185.6 months. Five patients required further surgical or endovascular reconstruction for PAD progression distally.

Conclusion: Endovascular stent implantation is a safe and long term effective strategy for the treatment of infrarenal aortic occlusive disease,. Long-term follow-up is recommended due to the underlying disease with development of vascular stenosis proximally or distally to the treated aortic segment.

Indications and technical aspects of ultradistal bypass surgery

K. Kerin, Ž. Gradecki

Department of Vascular Surgery, General hospital Novo Mesto, Novo Mesto, Slovenia

Aim: With rising levels of diabetic patients and lengthening of their life expectancy the number of patients who will experience diabetic complications will increase greatly in the following years. The consequences of diabetes can be seen on all levels of the arterial system and frequently these patients need an amputation of gangrenous foot digits or parts of the foot. In diabetes an occlusion of distal crural arteries is a common occurrence. Amputations in borderline ischemic tissue is very challenging and produces poor results. Angiosomal magistral revascularisation is ideal to promote good healing. A possible approach in managing these patients is an ultradistal bypass. We intend to discuss selection of appropriate patients, our technical approach in performing an ultradistal bypass and additional wound treatment (NPWT, dressings).

METHODS: Approximately 50 patients underwent an ultradistal bypass procedure in our hospital since 2005.

RESULTS: We intend to examine the outcome.

Conclusion: Due to patient bias, different treatments prior to ultradistal bypass surgery and different technical factors, no conclusions can be made. However, in selected patients with lower limb ischemia and crural artery involvement, an ultradistal bypass can be a bailout procedure to prevent a major amputation.

V542

Panta rhei in vascular surgery: Hybrid procedures in patients with critical lower limb ischemia

M. Gorlitzer, H. Schulz, L. Varga, J. Meinhart, M. Grabenwoeger

Hospital Hietzing- Vienna, Vienna, Austria

Aim: Hybrid interventions in patients with critical limb ischemia is carried out by a vascular surgeon skilled in vascular and endovascular operative techniques. This method become more important due to increasing co-morbidities in these high risk patients with multilevel arterial occlusive disease. Hybrid procedures ensure improved in- and outflow and offers long-term patency of vascular artery reconstructions.

Methods: This study reports various approaches of hybrid revascularisation in high risk patients with critical lower limb ischemia. Patients with multilevel disease underwent thrombendarterectomy of the common femoral artery associated with stenting of iliac artery or superficial femoral artery, femoropopliteal bypass grafting and angioplasty of lower leg arteries or thrombembolism with intraoperative lysis.

The patient group had a mean age of 79,2 years, complaints were resting pain or peripheral occlusive artery disease with tissue loss.

Results: The outcome of this patient group is favourable and offers a single stage procedure avoiding secondary interventional procedures. No minor or major amputations until now occurred.

Conclusion: Hybrid revascularisation in vascular surgery becomes increasing importance according to high risk patients and less availability of specialists. Preprocedural planning is mandatory for appropriate treatment.

Friday, 22.04.2016.

Hall: Adriatic

16.30 – 18.00

V 6: MISCELLANEOUS

Moderators: C. Houdek (Czech Republic), I. Cinara (Serbia)

Key Note Lecture: Tissue reconstruction after leg revascularization M. Ionac (Romania)

Topical autologous fibrin sealants for primary prevention of groin wound and prosthetic graft complications following aortobifemoral bypass

S. Pejkić, N. Savić, I. Tomić, M. Sladojević, N. Jakovljević, I. Kuzmanović, I. Činara, D. Kostić, Ž. Maksimović, L. Davidović

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Aim: Groin incision for femoral artery exposure is prone to healing complications, of particular concern after prosthetic reconstructions. We performed a randomized study to investigate effectiveness of topical fibrin sealant in preventing such complications.

Methods: 120 consecutive patients undergoing aortobifemoral bypass for occlusive disease were enrolled in a prospective study. Femoral incisions were randomly assigned to standard closure or closure complemented with one of 3 variants of autologous fibrin sealant Vivostat (plain, platelets- or antibiotic-supplemented). Postoperatively groin wounds drainage and healing were assessed.

Results: Early postoperative complications affected 35 groins (15%) in 29 patients (24.8%). Lymph fistulas/lymphoceles were observed in 15 (6.4%), infection in 11 (4.7%) and noninfectious dehiscence in 9 (3.8%) of groin incisions. No differences were found in the amount of fluid drained and time to drain removal between treated and control wounds. Addition of fibrin sealant did not reduce the frequency of incisional complications overall (treated groins, 15.9%, vs untreated, 14.9%), wound infections (6.2% vs 3.5%) or breakdowns (5.3% vs 2.6%), but demonstrated potential efficacy in prevention of lymphatic complications (4.4% vs 8.8%). Three types of sealant used did not differ in prophylactic efficacy. The only independent predictor of impaired groin healing in multivariate analysis was preoperative length of stay >1 day. Groin incision-related morbidity significantly increased the duration and cost of hospitalization. 60% of groin healing problems were diagnosed after discharge and they represented the most common cause for early readmission.

Conclusions: Topical fibrin sealant is not effective in reducing femoral incisional morbidity after aortobifemoral bypass. Incidence of groin complications after aortobifemoral bypass is considerable, their financial impact significant and delayed onset frequent, necessitating improved prevention measures and strict adherence to conventional ones, including minimal preoperative hospitalization.

Iatrogenic arterial injuries

A. Dimic^{1, 2}, S. Cvetkovic^{1, 2}, M. Dragas^{1, 2}, I. Tomic¹, L. Davidovic^{1, 2}

¹Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

²School of medicine, University of Belgrade, Belgrade, Serbia

Aim: Iatrogenic arterial injuries occur as a result of many invasive diagnostic, therapeutic and monitoring procedures or as a result of many surgical interventions. Their number is constantly increasing making almost 50% of all cases of vascular trauma. This increase is primarily a consequence of the increasing number of post catheterization injuries. The aim of the study was to identify factors influencing surgical treatment outcome following iatrogenic arterial injuries.

Methods: The study included 142 surgical patients treated at the Clinic for Vascular and Endovascular Surgery, Clinical Centre of Serbia in the period from 01 January 1992 to 31 December 2007 due to iatrogenic arterial injury. The patient data were retrospectively and prospectively entered into a vascular trauma database and then analyzed.

Result: In 85.9% of all cases the iatrogenic injuries occurred after catheterization. The most frequently damaged vessels were femoral arteries (68% of all injuries), followed by the iliac (12.7%) and brachial arteries (7.7%). The most common surgical procedure was direct suture repair of the vessel (57.04%). Ninety four (66.2%) patient had significant cardiac disease, 96 (67.6%) hypertension, seven (4.9%) cerebrovascular disease, 10 (7.0%) chronic obstructive pulmonary disease, 25 (17.6%) diabetes mellitus and 21(14.8%) renal insufficiency. There were 6 early graft failure, with two amputations due to secondary graft occlusion which was found to be significant risk ($p < 0.01$) factors for limb loss. Overall mortality was 5.6 % (eight deaths) and need for reoperation, limb loss and significant cardiovascular and cerebrovascular co-morbidity were found to be significant risk ($p < 0.01$) factors for early mortality.

Conclusion: Iatrogenic vascular trauma affects an older, more vulnerable group of patients with many co-morbidities, with attendant increase of early mortality.

Cardiometabolic risk factors and the development of infectious process among patients after reconstructive surgeries for atherosclerosis of main arteries

A. Artemova, D. Petrov, C. Maksimkina, M. Ivanov

State budget institution of higher education “North-Western State Medical University named after I.I Mechnikov”, St Petersburg, Russia

Aim: The infectious complications are one of the most severe complications, after reconstructive surgeries for extensive atherosclerotic process. Our aim was to research of predisposing factors and circumstances, which lead to development of infectious complications in postoperative period among patients with atherosclerosis.

Methods: We researched postoperative period between 57 patients to whom was made reconstructive surgical intervention for atherosclerosis of main arteries. 34 patients had infectious complications in area of operational intervention (the main group). 23 patients had no complications (the control group). We analyzed the role of the sites of chronically infection, visceral obesity, dislipoproteinemia, characteristics of atherosclerosis process, type 2 diabetes mellitus, and arterial hypertension in the development of infectious complications.

Results: The presence of type 2 diabetes mellitus definitely increases the risk of infectious complications ($p < 0,01$). Also the research has shown the in the main group visceral obesity definitely ($p < 0,01$) meets more often compared to the control group. Founded that moderate hypertension stage 3 ($p < 0,01$) and high atherogenic index ($p < 0,01$) is more common in the main group compared to the control group. The critical ischemia definitely occurs more often among the patients in the main group ($p < 0,01$).

Conclusion: Anomalies in carbohydrate and lipid metabolism along with uncontrollable arterial hypertension affects the development of infectious complications (also against the background of critical ischemia) among patients after reconstructive surgeries for multifocal atherosclerosis.

Cryopreserved homografts for in situ repair of the complex vascular infections

M. Petrunić¹, T. Meštrović¹, B. Golubić – Čepulić², M. Golemović², I. Šafradin³, Damir Halužan¹

¹ Department for Vascular Surgery, University Hospital Centre Zagreb - "Rebro", Zagreb, Croatia

²University Hospital Centre Zagreb - "Rebro", Department of transfusion medicine and transplantation biology

³University Hospital Centre Zagreb - "Rebro", Department for Cardiac Surgery

Aim: Optimal material for in situ replacement of infected vascular grafts remains undetermined. Autogenous veins, silver coated prostheses, rifampicin- bonded and cryopreserved homografts (CHG) are commonly used. However, due to the small volume of patients and diversity of the pathology in published series, standard treatment protocols have not been established yet. Hereby we present feasibility and results of in situ repair in patients with complex vascular infections using CHG.

Methods: From July 2012 to December 2015, ten patients with graft infection and one with native aortic infection were treated using a new generation of CHG provided by cardiovascular tissue bank in our institution. Indications for operation included distal aortic arch rupture after infected TEVAR associated with aorto-esophageal fistula, intraabdominal aortic graft infections (with and without aortoenteral fistula), graft infections in the groin, contained rupture of mycotic thoracoabdominal aortic aneurysm, and ruptured distal anastomosis after ascending aorta to bilateral carotid artery bypass. Emergency surgery was performed in four patients due to massive bleeding. Thoracic aortic CHG was used for repair in six patients, iliac CHG was used in three, and femoral artery CHG in two patients. Deep hypothermic circulatory arrest and adjuncts were used for thoracic aorta and thoracoabdominal aortic repair.

Results: There was neither intraoperative nor perioperative mortality. Postoperative complications included pericardial and pleural effusion, perigraft collection, inguinal cellulitis and ventral hernia. During the follow-up period from 7 to 40 months we did not register any of the graft-related complications.

Conclusions: Complexity of presented cases stemmed from graft infection associated with aortodigestive fistulas and/or massive bleeding. Such unfavorable clinical scenarios brought into focus the need for immediate or urgent in situ surgical repair. Results with a new generation of CHG were favorable, although in rather limited and diverse series of patients.

Early diagnosis of infectious complications in vascular surgeries

R. Abdulgasanov, B. Leo, S. Sanchez, A. Mehriban, I. Alexey

Scientific center of cardiovascular surgery named after A. N. Bakulev, Moscow, Russia

Aim: To study the use of scintigraphy with labeled leukocytes (SLL) and procalcitonin test (PCT) for diagnosis of infections in vascular surgery.

Methods: SLL and PCT were performed on 89 patients with wound infections following surgery on aorta and arteries. Patients with wound infections were divided into 2 groups. The first group consisted of 45 patients with superficial suppurating wounds, a second group of 44 patients with deep suppurating wounds. For comparative evaluation were examined the count of white blood cells, leukocyte intoxication index (LII), C-reactive protein (CRP), erythrocyte sedimentation rate (ESR).

Results: In all patients, the plasma level of PCT before surgery was <0.5 ng / ml, 6-8 hours after surgery was observed a moderate increase in PCT (<1.5 ng / ml). In first group patients were observed moderately elevated or normal PCT. Severe hypercalcitonimea was detected in second group patients. After re-surgery for treatment of high levels of PCT, within 24-72 hours PCT decreased to normal values.

Improvement of the patient's condition was always preceded by a decrease in the concentration of PCT. In second group the degree hypercalcitonimea correlated with the degree of intoxication, the severity of the patients ($p < 0,05$). In patients without infection on day 4 after the operation levels of PCT declined to normal values (<1.0).

The use of PCT in predicting the development of the infectious process was superior. SLL of 15 patients revealed local infection within projections of graft. However, increased accumulation of labeled leukocytes in these areas was less than 10-15%. Patients underwent antibiotic therapy and all recovered.

Conclusion: Thus, SLL and PCT are more informative methods in the early diagnosis of infectious complications in vascular surgery.

Vacuum-assisted closure therapy for Szilagi II and Szilagi III groin infections

P. Jovanovic, P. Matic, D. Jovic, S. Tanaskovic, Dj. Radak

Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

Aim: To assess the outcome for groin surgical site infection Szilagi grade II and Szilagi grade III treated with Vacuum Assisted Closure therapy.

Methods: A total of 32 patients, with Szilagi grade II and Szilagi grade III groin infection treated with vacuum assisted closure therapy between October 2011 and June 2015, were enrolled in this observational study.

Results: In Szilagi II group the Vacuum Assisted Closure system was used in 15 patients and 17 wounds for the treatment of non graft involved surgical site infection. They were treated with surgical wound revision, VAC therapy and antibiotics. No bleeding occurred during treatment. There were no signs of secondary graft infection or any complications related to VAC therapy. VAC therapy resulted in delayed primary closure of 3 wounds or healing by secondary intention. There was no recurrence of wound infection during follow up period. In Szilagi III group 17 patients (19 wounds) were treated. Majority of wounds (11/19) healed by secondary intention, and remaining (8/19) healed by primary intention after initial negative pressure wound therapy and graft substitution with silver-coated prostheses or autologous artery/vein implantation. No early mortality was observed. Minor bleeding was observed in one patient. Reinfection was noted in three wounds. Only one graft occlusion was noted. Late mortality was observed in 3 patients.

Conclusions: VAC therapy seems to be safe for groin vascular graft infections and comfortable. This technique, can be used as a “bridge” from initial wound debridement to definitive wound management, when good local conditions are achieved for wound closure in Szilagi II patients or for graft substitution in Szilagi III. In selected cases of both, Szilagi II and Szilagi III infections VAC can be used as only therapeutic approach in wound treatment.

First experience of US guided percutaneous embolization of femoral pseudoaneurysms using D-STAT

C. Maturi, M. Menegolo, F. Grego, M. Antonello

Padova University Hospital, Padova, Italy

Aim: We present our clinical experience and technique regarding US guided embolization of femoral pseudoaneurysm with D-Stat Flowable (vascular solution LTD) injection. This bicomponent product (collagen and 5000 UI thrombin) is the only one CE marked and approved for this treatment in the instructions for use.

Methods: From January 2012 to December 2015 42 patients with diagnoses of femoral pseudoaneurysm after arterial puncture and catheterization, not solved with 48h rest in bed and compression, underwent US guided percutaneous embolization with D-Stat Flowable.

Inclusion criteria for this procedure were: optimal visualization of the pseudoaneurysm, vein and artery below, minimum 5mm distance between artery and pseudoaneurysm, "neck" well visible with US scan.

Results: The procedure was successful in 39/42 patients (93% of the cases) with the immediate complete sac thrombosis. In 2 cases (5%) after 24h of rest in bed and compression we observed the complete closure of the pseudoaneurysm. Surgical conversion occurred in 1 case (2%).

We have not observed any episode of distal arterial/venous embolization of D-STAT, or any other problem at the treated groin.

Mean follow-up was 20 months with no pseudoaneurysm reperfusion at US control scans.

Conclusions: Femoral pseudoaneurysms are becoming more frequent due to growing of percutaneous procedures in patients on chronic anticoagulation and/or single or double antiplatelet therapy. Surgical treatment of pseudoaneurysms is effective but with possible significant local complications, blood loss and prolonged hospitalization. US guided embolization with DSTAT (unique product approved for this kind of treatment) seems to guarantee good results and very low complications.

Long-term results of open and endovascular treatment of visceral artery aneurysms

W. Dorigo¹, G. Piffaretti², E. Giacomelli¹, A. Fargion¹, R. Pulli³, G. Carrafiello², M. Franchin², P. Castelli², C. Pratesi¹

¹Vascular Surgery, Department of Cardiothoracic and Vascular Surgery Careggi University Teaching Hospital, University of Florence School of Medicine, Florence – Italy

²Vascular Surgery - Department of Surgery and Morphological Sciences Circolo University

³Vascular Surgery - "Policlinico Giovanni XXIII" Teaching Hospital, University of Bari School of Medicine

Aim: To report long-term results of open and endovascular treatment of visceral artery aneurysms (VAAs).

Methods: From January 1982 to December 2014, we treated 144 VAAs. Endovascular repair (group 1) was performed in 76 (52.7%) cases, the remaining 68 with open surgery. Early (<30 days) and follow-up results were evaluated and compared with χ^2 test and Kaplan-Meier curves.

Results: Splenic artery was the most frequently involved both in group 1 (n = 43, 56.6%) and in in group 2 (n = 34, 50.0%). Rupture was found in 10 (6.9%) cases. Mean diameter was 29.3mm (range, 15-120). In group 1, interventions consisted of coiling (n = 59, 77.6%), stent-grafting (n = 14, 18.4%) and flow-modulating stent (n = 3, 3.9%). In group 2, aneurysmectomy was performed predominantly (n = 58, 85.3%). Nine (13.2%) patients underwent aneurysm excision during splenectomy. Overall, operative mortality was (2.1%) and did not differ between the groups (group 1 vs. 2: n = 1, 2.6% vs. n = 1, 1.5%, P = 0.6). Major complications occurred in 9 (11.8%) patients in group 1 and in 7 (10.2%) in group 2 (P = 0.7). Three (3.9%) patients in group 1 underwent early reintervention, while in group 2 no early reintervention was required (P = 0.08). Median duration of follow-up was 48 months (range, 1-324). Estimated 7-year survival was 83.4% in group 1 and 85.2% in group 2 (P = 0.2, log rank 1.2). Also the rates of freedom from aneurysm-related complications and of reinterventions were similar between the two groups (P = 0.3 and P = 0.7, respectively).

Conclusions: In our experience, open and endovascular treatment of VAAs yielded excellent early and late operative outcomes. A single patient-based choice allows to effectively treat most of these lesions.

Visceral artery aneurysms (VAA) single center case series in endovascular treatment using up-to-date materials, based on 11 patients during the past 2 years.

V. Gavrilovic, A. Pellegrin, A. Vit

Santa Maria della Misericordia, Udine, Italy

Aim: Visceral artery aneurysms (VAAs) are now being diagnosed with increased frequency, endovascular treatment is an emerging alternative to surgical procedures and materials as well as techniques evolved in the recent years. This study aims to assess short-term outcome of treatments using latest materials.

Methods: In a single Interventional Radiology center 11 Patients from Mar 2013 to Mar 2015 (median 65.2±sd 6.7y, range 56-76y; M/F ratio 5/6) underwent endovascular treatment for VAA diameter 26.8±sd 11.5mm diagnosed on CTA; 10/25 incidental findings 7/11; 5 splenic artery aneurysms (SAA), 3 gastroduodenal artery aneurysm (GDA), 2 renal artery aneurysms (RAA), 1 superior mesenteric artery (SMA), 1 hepatic artery aneurysm (HAA); 2/11 were considered pseudoaneurysms. Treatment was coiling or plug deployment 6/25, liquid agents 1/11, coiling and liquid agents 1/11, coiling and stent (jailing technique) 1/11, covered or flow diverter stent 3/11; all coils were controlled detachment coils. Follow-up was available at 6 months for all patients with CTA.

Results: Immediate technical success was obtained in 10/11 patients (91%), failure was in a GDA with sub-occluded celiac artery that eventually underwent surgical procedure. At 6 months follow-up 1/10 VAAs were at least partially perfused, remaining 9/10 were excluded (90%). No major complications were reported, while minor complications in 1/11 patients (9%).

Conclusion: In this case series, VAA could be safely treated with endovascular techniques most often preserving vascular bed distal to the aneurysm, nevertheless technical success can still result in later reperfusion/failed exclusion, follow-up with cross sectional imaging is mandatory.

Use of Cormatrix patch in cardiovascular procedures

T. Tumpaj, M. Jelenc

Cardiovascular Surgery, University Medical Centre Ljubljana, Ljubljana, Slovenia

Aim: CorMatrix ECM Technology represents a new approach in surgical tissue repair and reconstruction. The aim of this study is to assess the efficacy and safety of Cormatrix technology in cardiac tissue and peripheral vessel repair.

Methods: Tissue and vessel reconstruction with Cormatrix was performed on 86 patients from year 2013 – 2015. Of the patients 59 (68,7%) were male and 27 (31,3%) female. Average age ranged from 26 to 90 years (mean $65,2 \pm 13,3$ years). Cormatrix was mostly used for femoral artery reconstruction (57 patients). 11 (19,3%) patients had previous surgery on the femoral artery. 8 patients (14%) had persistent infections with MRSA, ESBL and C. difficile. Other comorbidities were diabetes mellitus type 2, arterial hypertension and a history of smoking. Cormatrix patch was used also for 9 carotid, 3 brachial, 2 iliac, 1 superior mesenteric, 1 vena cava and 1 vena anonyma patches. The use of Cormatrix for cardiac tissue repair included the reconstruction of tricuspid valve (3 patients), aortic annulus enlargement (3 patients), ASD repair (1 patient), VSD repair (1 patient), interatrial septum plasty (1 patient), aortic valve cusp (2 patients) and mitral valve leaflet repair (1 patient).

Results: Peripheral vessel reconstruction with Cormatrix yielded excellent results. There were no restenoses. We encountered two complications with the femoral patch. In the first case there was persistent ischemia of the leg after surgery which led to the amputation of the leg. Two of the patients with preoperative groin infections developed femoral pseudoaneurysms which were resolved with reoperation. There were no strokes in the carotid patch group. There were no complications with the use of Cormatrix patch on cardiac tissues.

Conclusions: We conclude that Cormatrix technology enables to successfully perform peripheral vessel and cardiac tissue reconstruction.

Friday, 22.04.2016

Hall:Aegena

16.30-18.00

V 7: TEVAR

Moderators:F. Grego (Italy), I.Koncar (Serbia)

Key Note Lecture: What is the role of Endovascular treatment of uncomplicated type B dissection S. Trimarchi (Italy)

Intra- aortic tumor-like mass

F.Urgnani, I.Ortiz, V. Riambau

VR Vascular Centre, Centro Medico Teknon, Barcelona, Spain

Background: An intra-aortic mass can represent either a malignant aortic tumor or an aortic mural thrombus. Differential diagnosis is not easy, since clinical and radiological findings are often analogous. Clinical symptoms of malignant aortic tumors include locally occlusive disease, peripherals or mesenteric emboli and eventually general symptoms as fatigue, anorexia and involuntary weight loss (constitutional syndrome). Mural thrombus in the aorta can cause symptoms due to peripheral embolization or luminal occlusion too. It is commonly observed in the setting of aneurysmal disease, but, less frequently, we can observe it in the absence of aneurysmatic pathology.

We report a case of an abdominal aortic mural thrombus, which clinically and radiographically mimicked an aortic angiosarcoma. Endovascular biopsy and endovascular treatment with aortic bare stent was applied.

Case report: The aim of this case report is to share this particular experience, in which the systematic diagnostic method didn't lead us to the most common pathology, but to realize a differential diagnosis between this and a much more rare one. In our patient the presence of a constitutional syndrome, together with the absence of a strong atheromatosis of the aorta, induced us to suspect a malignant nature of the mass, and to consider the atheromatous pathology as a differential diagnostic, for its mayor frequency and similarity of symptoms. Our case represents a diagnostic error but with an excellent outcome. Taking into account the two possible diagnostics, an open intervention was our first choice. Due to the patient's refuse, we had to plan a minimal invasive intervention that could be beneficial for both clinical possibilities. An aorta angioplasty seemed us like the best option in this patient. It represented a healing treatment in case of atheromatous thrombus and a palliative one in case of aortic malignant mass, able to relieve patient's symptoms and allow better quality of life.

Health related quality of life to evaluate long term outcome after left subclavian artery overstenting during TEVAR

L.Tomassi, G.Surace, G. Pinna, F.Scigliano, G.Castellano, R.Smimmo, G.Iannelli

Cardiac Surgery Department, University “Federico II” Naples, Italy

Aim: Left subclavian artery (LSA) overstenting is often necessary to achieve a satisfactory proximal landing zone during thoracic endovascular aortic repair (TEVAR). In order to avoid complications primary surgical revascularization of LSA is recommended by numerous authors. As well as for other authors, our policy is to perform LSA coverage without previous revascularization when specific indications are not present. In order to evaluate the mid and long-term outcome after LSA coverage without revascularization, here we investigate health-related quality of life (QOL) in our patients undergone TEVAR with LSA overstenting

Methods: From March 2001 to November 2015, 216 patients undergone TEVAR. Seventy-four patients (34.2 %) required intentional complete LSA overstenting. No patient had prophylactic surgical revascularization. QOL was assessed with the Short Form 12-item Health Survey (SF-12) and a specific form to investigate signs and symptoms that arise from LSA occlusion, the DASH(Disability of the Arm, Shoulder and Hand) Questionnaire.

Results: There were no postoperative neurological complications, steal phenomena or critical arm ischemia. Minor complications (temporary arm claudication or dizziness) occurred in 5 (6.7%) patients. No patient required a secondary revascularization.

Patient perceived QOL was evaluated in 71 of the 74 patients. All patients had better QOL scores post-operatively. Our patients indicated they would make the same choice about endovascular surgery if they had to do it all over again.

Conclusions: No reliable technique is available to assess the individual risk of stroke and paraplegia in case of LSA coverage, so that no consensus exists on indications for LSA revascularization. We believe that appropriate preoperative evaluation of aortic arch vessels is mandatory and that primary LSA revascularization is reserved for those patients who developed previous ischemic symptoms or showed preoperatively supra-aortic vascular pathologies with a potentially compromised circle of Willis or collateral arm supply.

Thoracic endovascular surgery for traumatic aortic injury: a fifteen-years single center experience

L.Di Tomasso, R.Alba Mozzillo, G.Di Palo, A.Mariniello, C.La Storia, M.Mottola, G.Iannelli

Cardiac Surgery Department, University “Federico II” Naples, Italy

Aim: Traumatic aortic injury leads to immediate death in up to 85% of cases. Historically open surgery is still associated with a high risk of mortality rate and serious complications. Thoracic endovascular aortic repair (TEVAR) emerged as a valid alternative compared with open surgical treatment.

Materials: From March 2001 to Novembre 2015, out of 216 patients undergone TEVAR, 24 patients (11.1%) were treated for an aortic injury after road accident.. Clinical outcomes, including primary endpoints (early and late mortality) and secondary endpoints (early and late major complications) were evaluated. To describe the perioperative physical status in order to assess the operative risk we follow: the Injury Severity Score (ISS), the Glasgow Coma Scale (GCS) and the American Society of Anesthesiologist classification (ASA class). Fifteen patients (62.5%) showed an unstable clinical picture ($ISS \geq 40$); head injury (with stupor or coma) was present in 10 patients ($GCS \leq 12$); multitrauma with leg, arm and/or vertebral fractures occurred in 17 patients (70.8%) and abdominal blunt trauma in 14 (58.3%). Three patients (12.5%) had a delayed TEVAR, the others 21 (87.5%) required an urgent/emergency treatment

Results : There were no operative death or surgical conversion. Any neurological complication, including paraplegia, was observed. One patient (4.1%) died after 48 hours for the intracranial associated lesions. One vascular complication occurred requiring a rescue prosthetic ileofemoral bypass. Eleven patients (45.8%) required prolonged mechanical ventilation and 3 (12.5%) required temporary haemodialysis. At follow-up (2-177 months), a patient showed a late type I endoleak, requiring a secondary TEVAR.

Conclusion : TEVAR is a safe procedure in patients with aortic injury, mostly in instable/emergent conditions. Moreover, TEVAR allows for prompt treatment of associated lesions in complex multitrauma patients. These associated lesions especially of intracranial or intraabdominal organs became prognostically predictive of postoperative outcome.

Early results of big diameter Bare Stents in endovascular treatment of aortic dissection

A. Kazimierczak, R.Samad, P.Rynio, A.Rybicka, P.Gutowski

Vascular Surgery Department Pomeranian Medical University Powstańców Wielkopolskich 72 70-111 Szczecin, Poland

Aim: The gold standard in Aortic Dissection type B is covering entry tear with thoracic stentgraft (TEVAR). It is based on the assumption that closure of the entry tear alone can restore the true lumen, causing the false lumen to collapse. Consequently, the arch and visceral part of the aorta are usually left untreated. Unfortunately, the flow in the false lumen persists in 60% cases, leading to its aneurysmatic degeneration. The easiest solution seems to be implantation of big diameter bare stents to restore normal true lumen in distal part of aorta in the early phase of the disease. We present preliminary results of such an attempt, which we called BEST (Bare Stents in Endovascular Treatment of aortic dissection).

Material: We treated eight patients with type B aortic dissection and two with dissection extending proximally to the aortic arch.

Results: There were no early deaths in the treatment group. We did not observe any occlusion of visceral branches covered by bare stents. One patient, treated for acute symptoms, died 60 days later due to multiorgan failure. One patient needed redo procedure 6 months after TEVAR+stents due to persisting type 1A endoleak. One patient had additional stentgraft implantation (EVAR) due to aneurysmatic deterioration of the abdominal aorta. The rest of our patients (70%) remained asymptomatic. Whole period of observation equals 4.36 patient-years. Mean follow-up time was 6 months (range 1.5 months - 1.2 year).

Conclusion: Big diameter Bare Stents implantation to the true lumen in type B aortic dissections, as addition to TEVAR closure of entry tear, seems to be safe; early results are promising. Longer follow-up is necessary.

Prognostic value of multi-slice computed tomography in patients with acute aortic dissection type III

N.Fatic¹, L.Davidovic^{2,3}, I.Tomic², N. Ilić^{2,3}, D.Markovic^{2,3}, G.Vukcevic¹, D.Kostic^{2,3}

¹ Clinical Centre of Montenegro, Department of Vascular surgery

² Clinic for Vascular and endovascular Surgery, Serbian Clinical Centre

³ Belgrade Medical Faculty, University of Belgrade

Aim: In-hospital mortality of acute aortic type III dissection ranged about 12%. Complicated dissections represent about 18% of all cases, and require open surgery or TEVAR. More morphological predictors of in hospital mortality are needed to differentiate patients who should be selected for immediate, surgical or endovascular intervention.

Methods: From January 2009 to December 2014, 74 patients with acute aortic type III dissection were enrolled at Clinic of Vascular and Endovascular Surgery in Belgrade Serbia and retrospectively analyzed. Every MSCT was observed in regard to morphologic characteristics of dissection.

Results: By analyzing morphologic parameters in patients between survival and non-survival group only localization of intimal tear showed statistical significance ($p=0,020$). The size of the intimal tear didn't reach statistical significance with the tendency of doing so in a larger sample of patients ($p=0,063$) with the cut-off value of 9.55mm. The shape of the true lumen was on the border of statistical significance ($p=0,053$).

Conclusion: Due to huge intimal tear, pressurization of the false lumen can leads to elliptic formation of the true lumen followed by malperfusion or retrograde dissection if the intimal tear is located in the inner curvature. Inner curvature intimal tear localization, huge intimal tear as well as elliptic shape of the true lumen together should raise awareness to a subgroup at risk for in-hospital mortality.

Aortic mobile thrombi of the descending aorta leading to acute limb ischemia: endovascular treatment

M.T.Occhiuto, D. Mazzaccaro, S.Stegher, P.Righini, G.Malacrida, G. Nano

First Unit of Vascular Surgery, IRCCS Policlinico San Donato, San Donato Milanese, Milan, Italy

Aim: Aortic mobile thrombi are rare source of cerebral, visceral or peripheral embolism. Literature shows no consensus about aortic embolism aetiology or its appropriate therapy. Aortic thrombosis often occurs in young patients and could be an indicator of dissection, malignant tumors or hemostatic disorders. In the most part of patient despite current testing methods is not possible to identify coagulation disorders. In case of peripheral ischemia in young patients a total body CT scan and a trans esophageal echocardiography are suggested as diagnostic exams. There are several different methods in aortic thrombus treatment including open surgery, anticoagulation therapy and endovascular treatment. Anticoagulation therapy is associated with a high rate of recurrence.

METHODS: We present our experience in a short series of 4 patients with acute limb ischemia due to aortic thrombi treated with an endovascular approach. A perioperative trans-esophageal echocardiography and a CT scan confirmed the presence of a floating thrombus into thoracic aorta. All patients were treated with endovascular graft coverage of the aortic thrombus. For three patients a distal thrombectomy was necessary. All patients underwent systemic anticoagulation.

RESULTS: Technical success was obtained for all patients. No procedure-related major complications or paraplegia were recorded. One patient underwent distal amputation for the severe gangrene. No further embolic events were recorded during a median follow up of 43 months (8-102).

CONCLUSIONS: In our experience endovascular approach is a feasible and less invasive alternative to open surgery in patients with symptomatic aortic floating thrombus. An accurate diagnosis is mandatory for young patients with peripheral ischemia including total body CT scan, trans esophageal echocardiography and coagulation disorders research. Surgical or endovascular indications in patients with incidental finding of aortic thrombus in absence of peripheral ischemia remains uncertain and controversial.

Efficacy of surgical and endovascular supraaortic debranching for TEVAR at zone 1

I.Kuchin, R.Akchurin, T.Imaev, D.Salichkin, A.Kolegaev, A.Komlev

Federal state budget institution «Russian Cardiology Research and Production Complex» Department of cardiovascular surgery, Moscow, Russian Federation

Aim: To analyze the outcomes of supraaortic debranching, which is performed to create an endoprosthesis landing zone as a part of aortic arch and descending aorta hybrid surgical treatment.

Materials and methods: Since 2010 to 2015 more than 30 patients underwent hybrid surgical treatment of aortic arch pathology. 16 patients had a proximal neck in zone 1 according to Ishimaru classification. For this reason, debranching of the left common carotid and left subclavian arteries was performed on. All the patients were divided into two groups with regard to anatomical issues. 8 patients (group 1) underwent conventional left common carotid and left subclavian arteries bypass. Other 8 patients (group 2) underwent left carotid artery endodebranching using “chimney”-technique combined with left carotid-subclavian bypass formed the second group. Debranching efficacy criteria were as follows: 1) supraaortic vessels patency and 2) absence of endoleak type 1a assessed by intraoperative angiography and multidetector computed tomography.

Results: Stent graft implantation into zone 1 after debranching was performed within the same procedure in all cases. Intraoperative angiography confirmed supraaortic vessels patency in all cases. In 1 case there was insignificant 1a type endoleak that was left untreated. Multidetector computed tomography (7 days, 3 and 6 months and 1 year after procedure) determined no endoleaks or supraaortic vessels occlusions in both groups.

Conclusion: Endodebranching of the aortic arch with use of “chimney” technique to produce an adequate landing in zone 1 is assumed to be a good and safe alternative to conventional methods.

Outcomes of hybrid vs total endovascular repair in the treatment of aortic arch aneurysm

F.Squizzato ,T.Miccoli, M.Menegolo, F.Gregio, M.Antonello, M.Piazza

University of Padova, Vascular and Endovascular surgery Clinic, Padova, Italy

Aim: To compare early and mid-term outcomes of Hybrid Repair (HR) vs Total Endovascular Repair (ER) with chimney technique, in the treatment of aortic arch aneurysm needing supraortic vessels (SAV) revascularization.

Methods: Between 2009 and 2015, 22 patients (43 target SAV) were treated with HR and 11 patients (18 target SAV) were treated with ER. HR was defined as endovascular exclusion of the aortic arch aneurysm and surgical revascularization of SAV (staged or contemporary). ER was defined as endovascular exclusion of the aortic arch aneurysm and contemporary endovascular revascularization of SAV with the chimney technique. Thirty-day mortality and morbidity were analyzed; mid-term target vessel patency rate, free from related-reintervention as related-mortality were compared with Kaplan-Meier curves.

Results: The ER group had higher Society for Vascular Surgery (SVS) comorbidity score compared to HR group (1.2 ± 0.7 vs 1.8 ± 0.6 , $P = .03$). ER group had shorter hospitalization (6.3 ± 6.4 vs 12.6 ± 6.3 ; $P = .01$) and less ICU days than HR (3.1 ± 1.9 vs 5.2 ± 3.7 ; $P = .04$). At 30 days major neurologic events (9% vs 9%; $p = .1$) and overall mortality ($<10\%$ in both groups; $P = .1$) were similar. At 14 months (range, 3 months to 3.1 years), target vessel patency rate was similar (ER, 94% vs HR, 100%; $p = .77$) but there was an higher related-reintervention rate in the ER group (22% vs 11%; $p = .04$). No related mortality at midterm follow-up were reported in both groups.

Conclusion: ER is a valid option in the treatment of aortic arch aneurysm with SAV revascularization especially in high risk patients; it guarantee shorter hospitalization and ICU stay as similar SAV patency rates during midterm follow-up when compared to HR. However patients undergoing ER are at higher risk of adjunctive procedures.

,

Outcomes of endovascular treatment of acute aortic syndrome

F.Squizzato, M.Piazza, C.Colacchio, M.Menegolo, M.Antonello, F.Grego

University of Padova, Vascular and Endovascular Surgery Clinic, Padova, Italy

Aim: Acute Aortic Syndrome (AAS) includes dissection, intramural hematoma, penetrating aortic ulcer and traumatic rupture of thoracic aorta. Thoracic Endovascular Treatment (TEVAR) has shown good results in AAS, but mid and long term benefits are still unproved. The aim of the study was to present early and mid term outcomes of patients with AAS undergoing TEVAR.

Methods: From January 2009 to June 2015, 61 consecutive patients with AAS underwent TEVAR. Traumatic ruptures were not included in the study. 22 patients were included: 15 (68%) aortic dissection, 6 (27%) penetrating ulcer and 1 (5%) intramural hematoma. Demographics, cardiovascular risk factors and peri-operative risk scores were obtained from a prospectively-maintained database. Early (30-days) and mid-term (24-months) mortality, complication, and re-intervention rates were collected during follow-up. In cases of dissection, aortic remodeling was assessed calculating volume variations of aneurysmal true (TL) and false lumen (FL) with the Osirix Pro 4.0 software.

Results: Mean age was 68.1 ± 12.4 ; 13% of aortic dissection had genetic disorders of connective tissue. An urgent surgical treatment was necessary in 14 (67%) patients. The endograft was placed in sealing zone 0, 1 or 2 in 72.7% cases (surgical by-pass was performed in 10, endovascular chimney technique in 6). At 30 days, major complications and re-intervention occurred in 3 (14%) patients and mortality in 2 (9%). At 2 years (range, 1-58 months), re-intervention occurred in 1 (5%) patient; re-intervention and pathology-related mortality rate were 5% (n=1). In cases with aortic dissection, mean volume variations were +14% for TL ($P=0.012$), and -14% for FL, ($P=0.063$) at 2 years.

Conclusion: The treatment of the AAS with TEVAR provides good results for ulcers and hematomas. TEVAR is effective in cases of dissection, with significant increase in the TL at 2 years. When genetic disorders of connective tissue are present, serious complications are observed.

Outcome after branched endovascular aortic repair for thoracoabdominal aortic aneurysms treated by single step or staged procedures with aneurysm sac perfusion

B. Cucuruz, K. Gallis, M. Janotta, PM. Kasprzak

University Hospital Regensburg, Regensburg, Germany

Aim: Branched endovascular aortic repair (BEVAR) has become an accepted option for treatment of thoracoabdominal aortic aneurysms (TAAA). Staged procedures with temporary aneurysm sac perfusion using a non-completed open branch (TASP) was shown to reduce the risk of spinal cord ischemia in patients with extended aortic aneurysmal disease. However, further results on perioperative outcome, analysis of organ function, neurologic complications and follow-up data are required.

Methods: Patients with TAAA were treated with branched EVAR between 09/2007 and 12/2014 were treated using a single step or staged procedure with temporary aneurysm sac perfusion. TASP side branches were completed after 1-12 months. Postoperative spinal cord motor dysfunction was classified according to the Tarlov scale.

Results: 114 patients were treated with BEVAR, 46 without an aneurysm sac perfusion (non-TASP) and 68 with TASP. In 7 Patients the TASP side branch was not completed for various reasons. Technical success, duration of intervention, contrast volume and the rate of early reinterventions were similar in both groups. The combined number of days on the intensive care unit and the hospital stay was longer in the staged TASP group. The risk of paraplegia was reduced in the TASP group (4.9 %) in comparison to the non-TASP group (26 %, $p < 0.001$). In addition, mesenteric ischemia with small or larger bowel resections or evidence of non-occlusive mesenteric ischemia was more frequently observed in the non-TASP group (15.2 % vs 1.5 %, $p = 0.006$). Perioperative mortality was similar in both groups (8.7 % vs 7.3 %), including one patient (1.6 %) who died during the TASP interval.

Conclusion: Staged procedures with temporary aneurysm sac perfusion seem to improve outcome after branched EVAR for TAAA.

Friday, 22.04.2016

Hall: Pacific

16.30-18.30

VASCULAR YOUNG AWARD SESSION

Chairman: V. Treska (Czech Republic)

Jury: D. Palombo (Italy), P. Kasprzak (Germany), T. Ulus (Turkey); L. Davidovic (Serbia)

Could endogenous markers predict the outcome and prognosis of patient with abdominal aortic aneurysm? Single centre study

K. Houdek, V. Třeška¹, O. Topolčan², V. Křížková³

¹ Faculty of Medicine, University Hospital in Pilsen, Department of Surgery, Pilsen, Czech Republic

² Faculty of Medicine and University Hospital in Pilsen, Laboratory for radio- and immunoanalysis, Pilsen, Czech Republic

³ Faculty of Medicine in Pilsen, Charles University, Department of Histology and Embryology, Pilsen, Czech Republic

Aim : Indications for treatment of patients with AAA are set regarding symptoms and size or growth of the AAA. Many actions are responsible for the development of AAA. We know many markers of these constituent actions and we are able to detect them. We are interested, if any of these proteins could predict the prognosis and outcome of patients with AAA.

Methods : We collected data of single centre patients (n=103) with AAA indicated for open repair in a prospective study. We collected clinical data, measured levels of markers in blood, intraluminal thrombus (ILT) and wall of AAA and we made histological analysis of the aneurysmatic wall. All data were evaluated statistically. We tried to find correlation between markers and 30 days mortality and morbidity rate or rupture.

Results : 30 days mortality had positive correlation with age (p=0,042), rupture (p<0,001) and morbidity (p<0,001) and negative correlation (p<0,04) with VEGF, ICAM and PAI-1 levels and hospital stay. Older patients or patients with ruptured AAA stayed longer in hospital, had cardiac problems and higher morbidity and showed negative correlation (p<0,02) with TIMP1 and PAI-1 levels. Symptomatic and ruptured AAA cases showed positive correlation with size of AAA, age, mortality and morbidity and levels of MMP9, IL10, 6 and 8 (p<0,02) and negative correlation (p<0,02) with MMP2, TIMP2, EGF, VEGF, Osteoprotegerin, TNF α levels and the amount of vimentin and tPa in aneurysmatic wall.

Conclusions : We did not find a marker, suitable to predict the prognosis of our patients. Cases with more expressed adventitial immuno-inflammatory response, degradation of extracellular matrix and ILT activity are in higher risk of rupture, but we conclude that none of these markers is specific enough to be used to highlight a patient in risk of rupture apart of commonly used diameter of AAA.

Degree of contralateral carotid stenosis improves preoperative risk stratification of patients with asymptomatic ipsilateral carotid stenosis

J. Basic

Wilhelminenspital, Vienna, Austria

Aim: The benefit of carotid surgery in asymptomatic patients with high-grade internal carotid artery stenosis (ICAS) is subject of intense debate, and thus improved preoperative risk stratification is mandatory. This study aimed to investigate the predictive value of contralateral ICAS (cl-ICAS) for the preoperative clinical presentation of patients with ipsilateral ICAS (primary outcome).

Methods: This study was a post hoc analysis of a prospective cohort comprising 485 consecutive patients undergoing carotid endarterectomy for high-grade ICAS. Patients were classified by their clinical presentation, ie, asymptomatic (n = 213) or symptomatic (within 6 months of surgery; n = 272, comprising both transient ischemic attack [TIA; n = 163] and stroke [n = 109]). We investigated the association of cl-ICAS with the primary outcome in adjusted regression models.

Results: Mean ipsilateral degrees of ICAS were similar in both groups ($84\% \pm 10\%$ vs $84\% \pm 11\%$; $P = .92$), whereas contralateral degrees were significantly higher in the symptomatic group ($29\% \pm 34\%$ vs $38\% \pm 39\%$; $P = .008$). After multivariable regression analysis, cl-ICAS $>60\%$ conferred a three times higher preoperative stroke risk (odds ratio, 3.31; 95% confidence interval, 1.98-5.54; $P < .001$). Inclusion of cl-ICAS significantly improved ($P = .001$) ipsilateral combined TIA and stroke risk prediction based on established risk factors (area under the curve, 0.66; 95% confidence interval, 0.60-0.72; $P < .001$).

Conclusions: Our study identifies a high contralateral degree of ICAS as an independent predictor of preoperative ipsilateral TIA and stroke in patients with ipsilateral high-grade ICAS. Therefore, such patients might rather benefit from elective carotid surgery and intensive postoperative medical care.

Urgent Carotid Endarterectomy is Safe and Effective Treatment for Patients with Acute Neurological Ischemic Events

M. Nešković, P. Gajin, D. Nenezic, N. Ilijevski, P. Popov, B. Lozuk, G. Vucurevic, N. Djukic, S. Tanaskovic, S. Babic, P. Matic, P. Jovanovic, D. Jocic, Đ. Radak

"Dedinje" Cardiovascular Institute, Vascular surgery Clinic, Belgrade, Serbia

Aim: Our objective was to evaluate the results of urgent carotid endarterectomy performed in patients with crescendo transient ischemic attack or stroke in progression.

Methods: In period between January 1998 and December 2014, 72 patients suffering from acute neurological ischemic events (60 with crescendo transient ischemic attack, 12 with stroke in progression) underwent urgent carotid endarterectomy within the six hours of symptom onset. Both brain computed tomography and disability level assessment (modified Rankin scale) were done before and after the surgery. Eversion carotid endarterectomy was surgical technique of choice in all cases. Median follow-up was 42.8 ± 16.2 months.

Results: All patients in crescendo transient ischemic attack group completely recovered and no patients had stroke in early postoperative period, while in stroke in progression group 3 patients had a positive brain computed tomography scan, though with significantly improved neurological status. During the follow-up stroke rate was 1.7% in crescendo transient ischemic attack group and 8.3% in stroke in progression group. There were no lethal outcomes in the early postoperative period in either groups. Mid-term mortality rate was 0% in crescendo transient ischemic attack group and 8.3% in stroke in progression group.

Conclusions: According to our results, urgent carotid endarterectomy is a safe and effective treatment option for patients with crescendo transient ischemic attack and stroke in progression, with minimal rate of postoperative complications.

Morphological differences of the aortoiliac segment in patients of Caucasian and Asian origin with abdominal aortic aneurysm

Milos Brankovic², Igor Banzic^{1,2}, Qingsheng Lu³, Lei Zhang³, Hubert Stepak⁴, Lazar Davidovic^{1,2}, Grzegorz Oszkinis⁴, Ana Mladenovic⁵, Maja Markovic⁶, Zoran Rancic⁷, Zaiping Jing³

¹ Faculty of Medicine, University of Belgrade, Serbia

² Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia, Belgrade, Serbia

³ Department of Vascular Surgery, Changhai Hospital, Second Military Medical University, Shanghai, China

⁴ Department of General and Vascular Surgery Poznan, University of Medical Sciences, Poznan, Poland

⁵ Institute of Radiology, Clinical Center of Serbia, Belgrade, Serbia

⁶ Faculty of Organizational Sciences, University of Belgrade, Serbia

⁷ Clinic for Cardiovascular Surgery, University Hospital Zurich, Zurich, Switzerland

Aim: The objective was to quantitatively examine the aortoiliac morphology differences between AAA patients of Caucasian and Asian origin. Additionally, we assessed the impact of patients' demographic characteristics that could influence the investigated morphological differences.

Methods: The international multicenter study included two tertiary referral institutions from Europe and one from China. CT scans with 3D-reconstruction of 296 patients with infrarenal AAA larger than 5cm were analysed. CT scans were used regardless of later treatment type. Eighteen measurements were recorded from each CT scan and compared between Caucasian and Asian subjects.

Results: Caucasians had longer common iliac arteries (right: 65.0 vs. 33.1mm, $p<0.001$ left: 65.0 vs. 35.2mm, $p<0.001$), longer aneurysm neck (33.0 vs. 28.4mm, $p<0.001$), greater aneurysm-aortic axis angle (153.0° vs. 142.2° , $p<0.001$), and longer combined aortoiliac length (195.7 vs. 189.2mm, $p<0.001$). However, Asians had longer infrarenal abdominal aorta (152.0 vs. 130.0mm, $p<0.001$), longer AAA (126.2 vs. 93.0mm) and longer linear distance from renal artery to aortoiliac bifurcation (143.6 vs. 116.0mm, $p<0.001$). Caucasians had larger inner diameter of the common iliac arteries (right: 16.0 vs. 14.9mm, $p<0.001$, left: 16.0 vs. 15.2mm, $p<0.001$), larger inner diameter of the external iliac arteries (right: 9.0 vs. 7.5mm, $p<0.001$ left: 9.0 vs. 7.7mm, $p<0.001$), and larger inner diameter of the common femoral arteries (right: 10.0 vs. 5.9mm, $p<0.001$ left: 10.0 vs. 6.1mm, $p<0.001$). No difference was observed in AAA transverse diameter between Caucasians and Asians (62.0 vs. 63.1mm, $p=0.492$).

Conclusion: The aortoiliac anatomy in Caucasians significantly differs from Asians, particularly in length of common iliac arteries, infrarenal abdominal aorta, transverse diameter of the common iliac, external iliac and common femoral arteries. Therefore, the exact criteria for stent-graft design depend on racial origin of the patient.

**Innovative technique for paraanastomotic leak closure after type I aortic dissection repair;
Endovascular stent graft implantation to ascending aorta**

M. Akbulut, A. Ak, D. Cekmecelioglu, O. Arslan, A. A. Donmez, S. Tas, M. A. Tuncer

Kartal Kosuyolu Yuksek Ihtisas Egitim ve Arastirma Hastanesi, Istanbul, Turkey

Background: Despite endovascular treatment of aortic pathologies has become quite successful applications in the last decade; endovascular repair of ascending aorta is still a controversial title by the difficulties due to durability problems caused by tissue stress of biomechanical structure of the ascending aorta.

Case report: The patient who operated and applied Benthall procedure for type I dissection two years ago admitted to out hospital with residue type I dissection as paraanastomotic leakage, the endovascular stent graft was implanted via left subclavian artery to the distal 5 cm segment of the ascending aorta successfully.

Preoperative Intraluminal Thrombus Load Predicts Worse Outcome After Elective Endovascular Repair Of Abdominal Aortic Aneurysms

N. Montelione, P. Sirignano, L. Capoccia, W. Mansour, M. Formiconi, E. Paciaroni, F. Speziale

Vascular and Endovascular Surgery Division, Policlinico Umberto I, "Sapienza" University of Rome, Rome, Italy

Aim : To evaluate the impact of two-dimensional and three-dimensional preoperative morphologic features analyzed on computed tomography angiography on midterm outcome in patients with abdominal aortic aneurysms treated with endovascular aneurysm repair.

Methods : A retrospective analysis was conducted using a prospectively collected database. Morphologic features considered as potentially influencing outcomes were maximum aortic diameter, thrombus area, overall aneurysm volume, and intraluminal thrombus volume. Outcome measures were all perioperative and midterm aneurysm-related reinterventions and all-cause mortality.

Results : Investigators reviewed 191 preoperative computed tomography angiography scans. Mean maximum aortic diameter was 58mm; thrombus area, 49.6%; aortic volume, 159.36cm³; and thrombus volume, 58.6%. Technical success was achieved in all cases. No perioperative reinterventions and deaths were reported. At a mean follow-up of 32 months $\pm$ 16.8 (range, 3-66 mo), mortality rate was 9.4%, aneurysm-related death was 0, and reintervention rate was 8.9%. Causes of reintervention included type I endoleak (n = 3 [1.6%]), type II endoleak (n = 7 [3.7%]), type III endoleak (n = 1 [0.5%]), endograft limb thrombosis (n = 4 [2.1%]), and access vessel thrombosis (n = 2; 1%). Greater thrombus area (>60%) and thrombus volume (>59%) were predictors for reintervention (P = .005 and P = .0034). Greater maximum aortic diameter (>59mm) and aortic volume (>159cm³) were related to higher reintervention rate without statistical significance (P = .62 and P = .12). Aortic volume was a predictor of any adverse event, reintervention, and all-cause mortality after endovascular aneurysm repair (P = .03).

Conclusions : Thrombus area and volume are related to higher rates of reintervention. Maximum aortic diameter was related to a higher reintervention rate, but this was not significant.

Should We Reassess the Risk Factors for Peripheral Vascular Disease?

Rosu Stefana, Loredana Mehrab, Georgel Taranu, Mihai Ionac, George Patrut, Andreea Rata

Emergency County Hospital Timisoara, Timisoara, Romania

Aim: To evaluate the incidence of peripheral arterial disease (PAD) among the population with at least two risk factors in the Banat region of Romania, from both urban and rural areas.

Method: The study took place between June and September 2013. It was addressed to the population in the Banat Region, Romania. The project was brought to the attention of the population by media and internet. Subjects who carried a minimum of 2 risk factors, out of arterial hypertension, diabetes mellitus, smoking, age over 45 years, high cholesterol, family history of stroke or myocardial infarction requested an appointment for PAD screening at the University Emergency County Hospital in Timisoara. The evaluation comprised of taking patient history primarily targeted towards PAD, a standard cardiovascular clinical examination (peripheral pulses, carotid auscultation), reviewing of laboratory tests and arterial brachial index measurement.

Results: A number of 384 patients were enrolled, 182 (47.2%) men and 202 (52.8%) women, with an average age of 60.15 years; the incidence for PAD was 6.78% (26 subjects) with a mean age of 70.2 years (between 58-87 years). 3.9% of subjects were symptomatic. The incidence among women was 3.96% (8 subjects), whereas among men 9.9% (18 subjects). Amongst the 26 subjects with an ABI <0.9, 23 subjects (88.46%) presented with arterial hypertension, 11 (42.3%) presented diabetes mellitus, 9 (34%) were smokers, 14 (53.8%) had a family member with symptomatic cardiovascular disease, whereas 15 (57.7%) were having intermittent claudication.

Conclusions: The study clearly indicates that in our group arterial hypertension is the major predisposing risk factor for PAD, whereas diabetes mellitus has a 2 fold risk to be associated with PAD as compared to other studies.

Role of Contrast Enhanced Ultrasound in the Follow-up of EVAR with Branched and Fenestrated Endografts

F. B. Calinescu, I.Droc, H. Kinkel, R. Dammrau, A. Mironiuc

"Vasile Goldis" Western University of Arad, Faculty of Medicine, Cardiovascular Surgery
Department, Bucharest, Romania

Aim: Endovascular repair has emerged as an alternative to open repair for patients with abdominal aortic aneurysm. Although the method's safety and efficacy have been established, challenging anatomy and especially inadequate landing zones create limitations to its application. Stent grafts, fenestrated and branched, were developed to overpass these anatomic restrictions. Contrast-enhanced Ultrasound (CEUS) is investigated as a novel, noninvasive technique that can be employed to characterize endoleak type and consequently prescribe appropriate treatment.

Our aim was to develop a safe and effective follow-up protocol of patients with abdominal aortic aneurysm treated by EVAR, using an alternative imaging method that eliminates the inconvenience of repeated CT examinations.

Methods: We conducted a prospective comparative study for the evaluation of diagnostic accuracy between Color- Duplex Ultrasound (DUS), Contrast-enhanced Ultrasound (CEUS) and Contrast-enhanced Computed Tomography (CTA) in detecting changes in the abdominal aortic aneurysm (AAA) size and endoleaks during follow-up after EVAR. 60 patients were enrolled in the study of which 12 had fenestrated or branched endografts. Mean follow-up period was 18 months with DUS, CEUS and CTA imaging at 1, 6, 12 months and yearly after EVAR. During the follow-up period 187 investigation sets were performed and analysed.

Results: CEUS proved 100% specificity and sensitivity in diagnosing and determining the type of endoleaks after EVAR. CEUS proved to be safe and effective in the follow-up of patients with type II endoleaks as well as in patients with complex aneurysms treated with fenestrated and branched endografts.

Conclusion: CEUS is effective in the identification of the type of endoleak, the delineation of the vessel involved, providing hemodynamic information not available with any other non-invasive testing method. We present an EVAR follow-up protocol based on Contrast-Enhanced Ultrasound examination.

Clinical Presentation, Surgical Management and Outcomes of Anastomotic versus Non-Anastomotic Dialysis Access Aneurysms

M. Z.Ghariani, W. Ghariani, A. El Mehdi, O. Ben Gaied, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to compare clinical presentation, surgical management and outcomes of anastomotic and non-anastomotic dialysis access aneurysms.

Methods: This was a retrospective study compiling all cases of anastomotic (Group 1) and non-anastomotic dialysis access aneurysms (Group 2) treated between November 2012 and June 2015 in our academic institution. Demographic characteristics, clinical presentation and surgical details were recorded.

Results: Fifty-one patients (45.1% male) were included: 17 in Group 1 and 34 in Group 2. The mean age was 57.4 ± 2.1 years (range, 25.5-86.4). Sixty-five aneurysms were recorded: 17 in Group 1 and 48 in Group 2. In Group 1, the onset of aneurysms after fistula creation was earlier (35.3 vs 54.7 months, $P=.003$) and the frequency of infectious aneurysms was higher (70.6% vs 24.3%, $P=.001$). However, demographic characteristics, comorbidities and rupture rate were comparable between the two groups. Only one access (6%) was preserved in Group 1 against 17 (46%) in Group 2 ($P=.004$). The primary and secondary patency rates of preserved accesses were 82% and 88% at 12 months respectively. The mean follow up was 11.49 ± 1.3 months (range, .033-32). Early morbidity was similar between the two groups (11.8% vs 13.5, $P=1.000$) whereas the late morbidity was significantly higher in the Group 2 (6.7 vs 41.2, $P=.019$) and was mainly related to access complications. There was no difference in mortality rates (35.3% vs 32.4, $P=.834$) and survival ($P=.280$) between the two groups.

Conclusions: Anastomotic aneurysms seem to occur earlier after fistula creation and are more likely to be infectious, which make it difficult to preserve the access. Paradoxically, morbidity is higher in non-anastomotic aneurysms and is mainly related to access complications.

4,5-Year Follow-Up After Carotid Bifurcation Resection And Interposition Of A Polytetrafluorethylene Graft. A Retrospective Study Of 49 Consecutive Procedures

I.Diebels, Ph. De Vleeschauwer, M. Dubois

Vascular surgery, Antwerp, Belgium

Aim: To present the long-term results of an alternative surgical treatment for significant carotid artery disease: carotid Bifurcation Resection and Interposition of a polytetrafluorethylene Graft procedures.

Methods : We have retrospectively analysed all consecutive patients with at least 3-year follow-up after interposition grafting. All procedures were performed by a single experienced surgeon, Dr. Philippe De Vleeschauwer.

During the procedure the affected carotid bifurcation is resected. A 6mm polytetrafluorethylene thin wall graft is sutured between the common carotid artery and internal carotid artery via end-to-end anastomoses (figure 1). The external carotid artery is routinely ligated. A shunt was never placed.

Results : The analysed procedures were performed between April 2006 and June 2012 and included 49 consecutive procedures. Follow-up ranged from 1 to 117 months (mean = 54 months). In our population, 85.7% had a high grade stenosis ($\geq 80\%$) and 42.9% of the patients were symptomatic. Mean clamping time was 31.6 minutes and a mean total procedure time of 110.4 minutes. Postoperative complications were extremely rare, with only 1 significant haemorrhage require revision. We did not see any cerebrovascular events nor short term mortalities (<30 days postoperatively). Restenosis of 50% occurred in 2 patients (4.1%), but did not lead to any cerebrovascular events. The interposition graft procedure was initially reserved for technically challenging cases but with increasing experience and positive outcome became the primary procedure of choice for significant carotid artery disease.

Conclusions : The carotid Bifurcation Resection and Interposition of a polytetrafluorethylene Graft procedure has a low postoperative stroke rate, low short term mortality and low (non-significant) long term restenosis rates. Given these excellent results, we propose that our procedure has the potential to become a viable alternative to carotid endarectomie.

Endovascular aneurysm repair: risk factors for limb occlusion

A.Vinha, S. Sampaio

Faculty of Medicine, Oporto University, Porto, Portugal

Aim: limb occlusion is an important complication of endovascular aneurysm repair (EVAR). We intend to conduct a systematic review of the literature to assess the occurrence and the average time of limb occlusion and identify associated risk factors.

Methods: a literature search was performed using the query EVAR LIMB OCCLUSION, limited in time to the last ten years, to articles written in Portuguese and English. We selected twenty articles with original data; fourteen from the literature and six from the reference lists of articles read during the selection process.

Results: the frequency of limb occlusion varies between 0% and 24%. In most studies, the time of occlusion rarely exceeds six months. Age, body mass index, tortuosity of the iliac vessels, stenosis of the iliac or femoral artery > 70%, graft type and configuration, limb kinking, anchoring in the external iliac artery (EIA), tertiary hospital, absence of primary stenting during the index procedure and failure to comply to the specific instructions for use were identified as risk factors for limb occlusion.

Conclusions: demographic / co-morbidities factors seem to have a minor impact in outcome limb occlusion compared to risk factors related to arterial anatomy and related to the surgical technique. The type of graft, the anchoring zone in the EIA and the tortuosity of the iliac vessels seem to be the most important risk factors.

Friday, 22.04.2016

Hall: Dunav

16.30.-18.30.

BEST VASCULAR POSTER SESSION

Moderators: V. Palmiste (Estonia), A.Tomic (Serbia)

Using „cormatrix“ material as a patch for profundoplasty

A. Tomić, I. Marjanović

Clinic for Vascular and Endovascular Surgery, *Military Medical Academy, Belgrade, Serbia*

Aim: To evaluate application of CorMatrix material in the treatment of peripheral occlusive arterial disease as a patch in profundoplasty.

Method: Based on MSCT angiography is indicated profundoplasty. Due to the lack of autologous veins and infections of the lower leg, the patient was performed “W” profundoplasty with patch angioplasty using CorMatrix dimensions 10x 1 cm.

Results: The postoperative course was duly passed. Infection of the lower leg with the surgical treatment and the daily toilet repaired. The patient charge home eleventh postoperative day. After the annual monitoring of the patient has no signs of restenosis in femoral bifurcation.

Conclusion: In the absence of autologous veins, infection of the soft tissue of the leg and on the basis of diabetic angiopathy can be safely used CorMatrix material profundoplasty

Incidence of contrast induced nephropathy in patients treated with endovascular aortic repair

E.M. San Norberto, D. Gutiérrez, R. Fuente, R. Flota, I. Estévez, C. Vaquero

Angiology and Vascular Surgery, Valladolid, Spain

Aim:Intravascular iodinated contrast media (ICM) is essential in endovascular therapy, but it is not exempt of risks. One of its major inconveniences is contrast-induced nephropathy (CIN), which has been associated with an increase in morbidity, mortality and prolonged hospital stay.

Method:A retrospective study including 130 patients treated with EVAR between January 2014-September 2015. Demographic information was gathered concerning age, history of diabetes mellitus, hypertension and pre-existing chronic kidney disease (CKD), and previous treatment with loop diuretics, thiazides, potassium-sparing diuretics, inhibitors of angiotensin converting enzyme, angiotensin II antagonist or oral antidiabetics.

We analysed serum levels of urea, creatinine, sodium, potassium and glomerular filtrate (GF) rate at baseline, at 24hours, peak levels during post-operative period and before discharge. The amount of intravascular contrast and hydration before and after the procedure was correlated to creatinine and GF to determine the incidence of CIN.

Results:Of 130 patients, 11 (8,5%) developed CIN. In the univariate analysis, preoperative levels of urea ($p=0.030$), creatinine ($p=0.012$) and GF ($p=0.050$) showed statistically significant association with increase of peak creatinine levels in postoperative period ($p=0.013$) or worsening of previous CKD. The latter did not depend on the use of fluid-therapy before or after exposure to contrast. However, the use of ICM proved association with increase of postoperative creatinine ($p=0.041$) with a global relative increase in postoperative creatinine levels at 24h of $0,12\pm0,42$ mg/dl.

Conclusions:The incidence of CIN depends mainly on baseline GF and is barely associated with the amount of contrast or hydration in perioperative period. This suggests that controlling risk factors and identifying patients with previous decrease of GF is key to prevent its appearance.

Selecting approach in open repair of popliteal artery aneurysm

M. Sladojevic¹, I. Koncar^{1,2}, N. Ilic^{1,2}, I. Banzic^{1,2}, M. Dragas^{1,2}, M. Markovic^{1,2}, P. Mutavdzic¹, D. Opacic³, L. Davidovic^{1,2}

¹Clinic for Vascular and Endovascular Surgery, Serbian Clinical Center, Belgrade, Serbia; ²School of medicine, University of Belgrade, Belgrade, Serbia; ³Department of Physiology, Maastricht University, Maastricht, The Netherlands

Aim: of this paper was to overview the indications for medial or dorsal approach in the open treatment of PAA in a high volume centre.

Methods: Retrospective analysis of our database was performed for period 1994-2014 and all patients with PAA were selected. Indications for particular approach and early results were analyzed.

Results: One-hundred-sevety-five PAAs were treated in the selected period. In-hospital mortality was 1.1%. Primary patency was accomplished in 93.4%, while early re-intervention have been performed in 15 cases (8.8%). Amputation occurred in 12 (6.85%) limbs, 1 with DA and 11 with MA. Ten out of 12 amputees presented with acute limb ischemia ($p=0.001$).

Conclusion: Open repair of PAA provides good early and long term results in a high volume centre. Posterior approach provides good results when anatomical suitable however indications for this approach might be more liberal.

Comparative evaluation of immediate results of surgical treatment of ischemic heart disease and defeats of brachiocephalic arteries

A. Yulbarisov, R.D. Sunnatov, A.A. Irnazarov, A.A. Yulbarisov, R.T. Muminov, H.K. Alidzhanov, J.S. Abdullaev

Tashkent Medcal Academy, Tashkent, Uzbekistan

Aim: comparison of immediate results of coronary artery bypass grafting (CABG) with simultaneous stenting of internal carotid artery (ICA) and CABG in conjunction with simultaneous carotid endarterectomy (CEA) in patients with concomitant hemodynamically significant atherosclerotic lesions of coronary and brachiocephalic arteries (CA and BCA).

Methods: From 2009 to 2014 in the 2-clinic of Tashkent Medical Academy 52 patients with associated atherosclerosis of CA and BCA performed simultaneous operations on carotid and coronary arteries basins.

ICA stenting and CABG was performed in one day consequentially («one-step» method). ICA stenting is performed with femoral access using protection from distal embolization.

CEA follows conventional procedure with cardiopulmonary bypass.

Results: In I group was dominated patients with angina pectoris functional class (FC) II - 69.2%, compared with 30.8% in group II ($p < 0.05$) and in group II found more patients with angina pectoris FC III - 64.1%, compared with 30.8% in group I ($p < 0.05$). I group patients had more severe degree of chronic cerebrovascular insufficiency: ischemic stroke in anamnesis - 53.8%, compared with 12.8% in group II ($p < 0.05$).

I group was less than the average length of operation ($179,6 \pm 6,4$ minutes against $273,2 \pm 5,6$ minutes in group II) ($p < 0.001$) and a shorter time of cardiopulmonary bypass - $75,9 \pm 4,5$ minutes vs. $115,2 \pm 3,8$ minutes in group II ($p < 0.001$).

Hospital mortality was 12.8% (5 patients), all of the dead belonged to group II. In I group patients had no fatal complications.

Conclusions: Differentiated approach to treatment patients with concomitant atherosclerotic lesions of hemodynamically significant coronary artery and carotid and timely correction can significantly reduce the incidence and severity of cardiac complications, stroke, improve the results of surgical treatment.

Preliminary results of radiofrequency vein ablation programme at mater dei hospital malta

K. Cassar, N. Petrovic, S. Pejkić

Department of Vascular Surgery, Mater Dei Hospital Malta, Msida, Malta

Aim of this review is to audit the initial results of venous radiofrequency ablation at our institution.

Methods: Patients referred with symptomatic primary/recurrent varicose veins were evaluated with Duplex ultrasonography. Patients were deemed suitable for radiofrequency ablation if following criteria were met: (1) evidence of truncal superficial venous reflux, (2) deep veins patent and competent, and (3) target vessel at least 1.5-mm in diameter, deeper than 5-mm below the skin and not excessively tortuous. All patients underwent clinical and Duplex ultrasound follow-up examination 6 weeks postoperatively to assess for occurrence of deep vein thrombosis and success of target vein occlusion.

Results: In the period between February and July 2015, 71 patients were recruited with a male to female ratio of 1:3 (24% male vs 76% female). A total of 69 great saphenous veins, 4 short saphenous veins and 1 anterior accessory saphenous vein were treated. Simultaneous phlebectomies were performed in 95% of patients. On postoperative Duplex ultrasound at 6 weeks, 100% of treated veins were successfully occluded with resolution of truncal reflux. Three patients had evidence of further reflux but not of truncal origin. No cases of postoperative deep vein thrombosis (symptomatic/asymptomatic) occurred. No cases of skin burns were documented.

Conclusions: Early results of our endovenous radiofrequency ablation programme are encouraging, although study of a larger number of cases is needed for more comprehensive comparison with international practices.

Acute thrombosis of both internal carotid arteries following endarterectomy of the right internal carotid artery

S. Pećanić¹, D. Primc¹, D. Mihaljević¹, I. Strenja Linić², M. Kovačević¹

Department of vascular surgery, Clinical hospital centre, Rijeka, Croatia

Background: Bilateral internal carotid occlusion is a very rare condition and it might resemble thrombosis of the basilar artery leading to acute coma but also the clinical course of these patients can be chronic due to collateral posterior circulation which maintains hemodynamic stability.

Case Report: A 63-year old man was admitted to our department for elective endarterectomy of the symptomatic 87% stenosis of the right internal carotid artery. The operation was performed in cervical block anesthesia and during the procedure the patient was stable, had no new neurological deficits and after was admitted to the intensive care unit. Four hours after the operation the patient developed paraphasia and paresis of the right hand. Urgent brain MSCT showed no signs of hemorrhage or new ischemic lesions while MSCT carotidography revealed acute occlusion of both internal carotid arteries. Revision of the right carotid artery and endarterectomy of the left carotid artery were indicated. Fresh thrombi were evacuated from both internal carotid arteries. After surgery neurological deficits have regressed and he was discharged with mild paraphasia and paresis of the right hand. During follow up control color doppler was performed and it showed normal result while mild neurological deficit persisted.

Conclusions: Acute carotid bilateral thrombosis is rare and it is mostly associated with trauma and cardiac embolization. Early CEA can be effective in preventing neurological recurrence in symptomatic patients and if the proper treatment protocol is applied there is a low risk of converting ischemic stroke into a hemorrhagic one. Because bilateral occlusion of the carotid arteries leads to coma or severe neurological deficits and the patient had no visible brain damage on MSCT scans, we decided to perform urgent carotid endarterectomy which was in our case proven effective since the patient had only discreet neurological deficits after surgery and during follow up.

Urgent open surgical treatment of thoracic aortic expansion following acute type b dissection—single center experience

I. Marjanovic, A. Tomic

Clinic for Vascular and Endovascular Surgery, *Military Medical Academy, Belgrade, Serbia*

Aim: Patients with acute aortic dissection type B (AAD B) without complications should be treated with hypotensive drugs in the acute phase. Indications for emergency surgical intervention for AAD B has been reserved for complications included rupture, retrograde dissection, malperfusion (visceral, peripheral), and acute aortic expansion.

Methods: We present our single center experience in the urgent surgical treatment of thoracic aortic expansion following AAD B. Between the January 2012 and June 2015 we treated 6 patients with acute aortic expansion of descending thoracic aorta (5 male, 1 female patient) age 44 to 76 years (average 56). A mean diameter of the aortic expansion was 8,6 centimeter (from 7 to 11 cm).

Results: Four patients, who had aortic expansion following AAD B were operated from 14th to 28th day after first symptoms and two patients was operated within two weeks of the first symptoms. Proximal extent of the dissection flap was at level of the left common carotid in 2 patients, left subclavian artery in 3 patients and just distal to left subclavian artery in one patient. The partial aortic arch and descending thoracic aorta were replaced in 2 patients and in 4 patients was replaced only descending thoracic aorta. The hospital mortality was 30% (one patient died due to multiorgan failure, and one died due to infection and rupture of the aorta in the proximal anastomosis). The follow-up period was from 6 months to 2 years.

Conclusion: A main cause of death following AAD B is rupture of aorta. Emergency surgery for AAD B with rupture has a mortality rate of higher than 50% according to the International Registry of Acute Aortic Dissection (IRAD). Prompt diagnosis of acute aortic expansion and surgical treatment can reduce a mortality rate.

Midterm follow-up of endovascular treatment of peripheral arterial disease in elderly patients

S. Gunaydin

Department of Cardiovascular Surgery, Numune Training and Research Hospital, Ankara, Turkey

Aim: The prevalence of peripheral arterial disease (PAD) increases with the age of the population. It is important to remember the significant association of coronary artery disease and cerebrovascular disease in these patients, because it represents the major cause of major morbidity and mortality in the PAD population. We compared midterm outcome of elderly patients undergoing endovascular repair for PAD.

Methods: 80 patients underwent procedure within two-year period were studied retrospectively and allocated into young-age (<50 years, N=39) and elderly (>75 years, N=41) groups. 38 patients (92%) in elderly group had diabetes, 31 (76%) coronary disease and 16 history of stroke (39%). The endpoints were survival, success rate, procedure-related complications, hospital-stay and reintervention rates.

Results: The procedure was successful in 35 patients in young-age (89.7%), and 33 in elderly groups (80.4%). There was no early death. There were 2 early occlusions in young-age, and 2 in elderly groups (2 underwent surgery, 2 received stents). 2 dissections in young-age and 5 in elderly groups were documented (2 underwent surgery, 4 received stents and 1 medical treatment). 1 early leak in young-age and 2 in elderly groups were observed. The length of hospital stay was 3.5 ± 1.3 days for young-age and 4.6 ± 1.6 for elderly groups. The freedom from reintervention rate at 2 years was 95% in young-age and 89% in elderly groups. 4 patients (2 from young-age and 2 from elderly groups) underwent surgery and 2 elderly patients received cellular therapy. 20 finger (4 from young-age and 16 from elderly groups), 7 below-knee (from elderly group) amputations were reported.

Conclusion: Elderly patients can undergo endovascular repair for PAD with a reasonable success rate, complications and length of stay. Improved patient and physician awareness of PAD and the availability of high-quality noninvasivediagnostic imaging have increased the number of patients seeking treatment for PAD.

Thoracic duct injury after subclavian artery aneurysm reconstruction- surgical or conservative treatment?

I. Marjanovic, A. Tomic

Clinic for Vascular and Endovascular Surgery, *Military Medical Academy, Belgrade, Serbia*

Background: The thoracic duct injuries are infrequent but a serious complication, which may lead to nutritional deficiencies, and immunosuppression with mortality up to 50% when chylous leakage persists.

Case Report: We present a treatment of thoracic duct injury following open surgical reconstruction of extrathoracic part of left subclavian artery aneurysm (SAA). A 52 years old man admitted in our hospital with left arm pain and pulsating mass in the supraclavicular region. Two years before the patient underwent endovascular reconstruction of SAA with Viabhan 8x 50 mm stent graft in our hospital. Multi-slice scanner angiography showed type 1 endoleak and new SAA 6 cm in diameter. New endovascular reconstruction was not possible due to the inadequate proximal and distal landing zone. The patient underwent open surgical reconstruction of the subclavian artery with a ringed PTEF graft 8 mm. The surgical approach was supraclavicular and anterior axillary. Postoperatively, the neck drain showed milky white fluid and it was confirmed to be chyle. The average chyle output was 1500-2000 ml/day. On the 3rd postoperative day, due to the high chyle drainage in a patient has been made a new operation and suspicious leaking end of the thoracic duct was identified and tied but without success. Patient underwent on the seventh postoperative day, to a video-assisted thoracoscopic surgery (VATS) and thoracic duct ligation at the level just above right part of diaphragm. Postoperatively, the patient was 3 days on total parenteral nutrition, and a further 7 days on a low-fat diet and chylous drainage in the neck is completely stopped.

Conclusion: In reconstruction of SAA with chylous fistula complication, especially problem is possible infection . VATS thoracic duct ligation a good solution for the treatment of this serious complication.

Transjugular, transcaval coil embolization of an aaa in marfan's syndrome

M. Aleksic, A. Gossmann

Division of Vascular Surgery, Merheim Medical Center, Cologne, Germany

Background:

Marfan's syndrome represents a progressive disease implying a lifelong risk for vascular complications which might require unusual and challenging therapeutical strategies especially after previous surgery.

Case Report: In a 70-year-old patient with known Marfan's syndrome more than 20 years ago an aortic valve replacement including resection and prosthetic replacement of the ascending aorta followed by replacement of the thoraco-abdominal aorta due to aneurysmal degeneration after acute aortic dissection had been performed. In 2010 an aneurysm of the original abdominal aorta had been diagnosed which penetrated into the inferior vena cava causing cardiac and renal failure. The inflow into the aneurysm could be occluded successfully by inserting balloons into the external iliac artery. After immediate recovery the condition worsened 4 years later when again an aorto-caval fistula was present being perfused in a retrograde fashion from the right internal iliac artery which also showed an increase in diameter from 0,6 cm to 2.3 cm. Since no direct access to the original aorta was available anymore, coil embolization of the branches of the internal iliac artery was performed in 2 sessions via the internal jugular vein passing the aorta-caval fistula. Dislocation of the coils occurred several times hindering the whole procedure due to the high flow situation in this arteriovenous shunt. Ultimately the aortic aneurysm could be occluded completely. Thrombosis and shrinkage of the aneurysm were confirmed on CT scan 2 months later. The development of this aorta-caval fistula could have been prevented probably if the original aorta had been excluded completely during the primary operation by an end-end iliac anastomosis just like on the contralateral side.

Below the knee interventions, single-center case series

B. Lukić, V. Cvetić, M. Čolić, N. Kecman

Clinical centre of Serbia, Belgrade, Serbia

Critical limb ischemia (CLI) is a limb- and life-threatening condition with a yearly incidence of around 220 new cases per million population. It is caused by inadequate blood flow to supply and maintain the metabolic needs of the muscles and tissues. Occlusive disease of infra-popliteal arteries, with or without concomitant inflow disease, is a leading source of CLI.

The world is facing an epidemic of diabetes. The risk of peripheral vascular disease (PAD) is 3 to 4 times higher in patients with diabetes and, unfortunately, it has a tendency to be more aggressive, and the rate of amputation 5 to 10 times higher. Diabetic arterial disease is characterized by numerous and long occlusions of crural arteries, therefore represents a great challenge for vascular operators. The aim of endovascular below the knee procedures is to restore blood flow through the main blood vessels to the foot. After these procedures ischemic pain disappears, ulcers heal, loss of limbs is prevented and quality of life is improved. It can also be performed after angioplasty or bypass surgery of femoro-popliteal segment, in order to improve "outflow", and thus the patency of pre-treated segment.

Percutaneous transluminal angioplasty (PTA) - balloon dilatation is the method of choice in the treatment of infra-popliteal steno-occlusive disease. The experience with the use of stents in this field is increasing, but it is currently insufficient for their primary use. Implantation of stents is related with resolving eventual complications.

In patients with complex lesions of crural arteries number of procedures is increasingly growing, followed by growing prevalence of diabetes and end-stage renal failure. Patients with CLI typically belong to the older population with numerous comorbidity and limited life prognosis, therefore, endovascular procedure that is minimally invasive with less morbidity and mortality, although with a shorter expected patency, is desirable in comparison to invasive procedures with a higher rate of patency.

Reviewing the literature, we see that the technical success of these interventions is over 90%, the low frequency of complications and avoiding amputation in 95% of procedures performed. Also, the previous data on the long-term effect of BTK interventions indicate that the treated segment restenosis occurs after one year in up to 30% in case of short stenosis, and up to 80% in long lesions. Clinical success was more significant compared to angiographic preserved patency, as after the healing of tissue defect, if it comes to restenosis of the treated artery, collateral flow may be sufficient that a new defect does not happen, if we do not have any new injuries.

Aorto-aortic bypass following infection of descending thoracic aorta graft

R. Abdulgasanov, L. Bockeria, V. Arakelyan, S. Sebastian, M. Abdulgasanova, A. Ivanov

Scientific center of cardiovascular surgery named after A. N. Bakulev, Moscow, Russia

Aim: To demonstrate the successful treatment of infections to descending thoracic aorta grafts.

Methods: From 2004 to 2015, were operated 12 patients with infections to the descending thoracic aorta graft after istmoplasty (5 patients), lined grafting (6 patients) and endo-grafting (1 patient).

In all patients, surgery was performed in two stages. In the first stage, surgery was done using auxiliary cardiopulmonary bypass through right sided thoracotomy was performed aorto-aortic bypass from the ascending to the descending thoracic aorta using the "BASEX". After closing the thoracotomy on the right side, the patient is turned to the right side and the left thoracotomy was performed. Resection of false aneurysm, infected graft was removed, most of the aneurysm wall was excised and the para-aortic abscess cavity cleaned using potent bactericidal agents (Octenisept, formic acid, chlorhexidine, iodine). The aorta is then sutured double-row suture as a prophylaxis for proximal and distal aneurysm. The surgery is culminated by draining the pleural cavity and leaving micro-irrigators for administration of antimicrobial agents. During the postoperative period was performed detoxification, antibacterial and immune-correction therapy.

Results: The mortality rate after surgery was 2 (16.7%) patients: first patient died from continuing source of sepsis during the postoperative period, in the other case the death was due to acute heart failure. The remaining patients (83.3%) were discharged from the hospital in satisfactory condition. In the long term there was no evidence of reinfection of the grafts.

Conclusion: Thus, the aorto-aortic bypass using the antimicrobial vascular graft "BASEX" significantly improves the results of operations following the infections of the descending thoracic aorta graft.

Finite element analysis of uncommonly large renal arteriovenous malformation

L. Velicki¹, A. Vukicevic¹, G. Jovicic¹, N. Jovicic¹, M. Stojadinovic¹, A. Redzek¹, S. Susak¹, N. Filipovic²

¹Institute of cardiovascular diseases Vojvodina, Sremska Kamenica, Srbija; ²Faculty of Engineering, University of Kragujevac, Kragujevac, Serbia

Aim: Renal arteriovenous malformation (RAVM) represents abnormal communication between the intrarenal arterial and venous system. The purpose of this study was to investigate hemodynamics and biomechanics quantities which may influence the instability of RAVM and imply clinical complications.

Methods: A detailed 3D reconstruction of RAVM was obtained from the patient CT scans, aortic inlet flow was measured by color-flow Doppler ultrasound, while material characteristics were adopted from the literature. A numerical finite element analysis (FEA) of the blood flow was performed by solving the governing equations for the viscous incompressible flow. The physical quantities calculated at the systolic and diastolic peak moment were velocity, pressure, shear stress and drag forces.

Results: We reported a case of a 50-year-old patient with a large RAVM and adjacent renal cyst, who unsuccessfully underwent two attempts of embolization that resulted in the consequent nephrectomy. FEA showed that the cyst had a very low pressure intensity and velocity field (with unstable flow in diastolic peak). For both systolic and diastolic moments, increased values of wall shear stress were found on the places with intensive wall calcification. Unusually high values of drag force which would likely explain the presence of pressure in the cystic formation were found on the infero-medial side where the cyst wall was the thinnest and where the flow streamlines converged.

Conclusions: FEA showed that the hemodynamics of the cyst-RAVM complex was unstable making it prone to rupture. Clinically established diagnosis of imminent rupture together with unfavorable hemodynamics of the lesion consequently made additional attempts of embolization risky and unsuccessful leading to total nephrectomy.

Computational simulation of blood flow in the abdominal and left common iliac aneurysm with and without stent graftS. Djorovic¹, I. Koncar^{2,3}, L. Davidovic^{2,3}, N. Filipovic¹

¹Faculty of Engineering, University of Kragujevac, Kragujevac, Serbia; ²School of medicine, University of Belgrade, Belgrade, Serbia; ³Clinic for Vascular and Endovascular Surgery, Serbian Clinical Center, Belgrade, Serbia

Aim: The aim of this computational study was to examine the hemodynamic changes of the velocity field, shear stress, pressure and drag force field in the complex three-dimensional aortic system. The study was based on an individual patient who had an abdominal and left common iliac aneurysm with and without stent graft.

Methods: Two different cases of the same patient were analyzed; the first case with implemented stent graft, and the second without stent graft. Both cases were with the existing abdominal and left common iliac aneurysm. The aorta and the large tube graft geometries were reconstructed based on the computed tomography in order to obtain a patient-specific three-dimensional finite element meshes. The computational simulations of cardiac cycle were performed for average blood properties and blood flow rate. A laminar, incompressible blood flow inlet condition, a zero-pressure condition at the aortic outlets, and a zero-velocity at the rigid wall boundary condition were applied.

Results: The simulation at the peak systole showed velocity profiles with smaller intensity in the aneurysm part than in the case with the graft tube. The shear stress distribution showed low zones (around 0.6 Pa) in the aneurysm without the graft tube. In the case with the graft tube, the areas of high pressure and shear stress appeared at the tube bifurcation. The calculated distribution of the drag force field and pressure in the stent graft case provides evidence of the hemodynamic and biomechanical benefits for this type of intervention and this specific patient.

Conclusions: After analyzing calculated hemodynamic parameters in the aorta with and without stent graft implantation, we can conclude that computational fluid dynamics is a versatile and non-invasive tool which improves our understanding of the local structural and fluid dynamic conditions for aortic stent graft placement.

Stepwise Total Aortic Treatment of Combination of Open Surgery and Fenestrated Endografts for a Dissecting Thoracoabdominal Aneurysm in a Patient with Loeys-Dietz

M. Honda,² S. Inoue,¹ A. Nemoto,¹ H. Kitahara,¹ K. Hayashi,¹ R. Hosoda,¹ H. Kanayama,¹ H. Shimizu³

¹ Department of Cardiovascular Surgery, Saiseikai Utsunomiya Hospital, Tochigi, Japan;

Background: Patients with Loeys-Dietz syndrome (LDS) manifest with spontaneous aneurysms and dissections of aorta. EVAR for Thoracoabdominal aortic aneurysm (TAAA) with challenging such as connective tissue disorder has become a hotly debated subjected. We report the successful treatment of hybrid endovascular repair for a TAAA affected by LDS.

Case Report: A 41-year-old woman with LDS underwent emergency ascending aorta replacement for acute type A aortic dissection. Two years after the surgery, enlargements in the aneurysms of the aortic sinus and arch were observed. Later, since the chronic type B dissecting aortic aneurysm remaining on computed tomography had enlarged to 6 cm, a stepwise operation was planned. At that point, a modified Bentall procedure and arch replacement were performed. At the first TEVAR was performed to close the entry at the distal aortic arch. After that, abdominal visceral debranching hybrid TEVAR was performed to close the large entry that remained at the renal artery level. Since the celiac artery, superior mesenteric artery, and right renal artery had blood flow in the true lumen, the Cook TX2 was fenestrated manually, and a retrograde bypass from the external iliac artery was additionally performed. The hand-made fenestrated TX2 was placed, and after her condition improved without vascular occlusion, endoleak, or paraplegia, the patient was discharged uneventful. And at 1 year after surgery, the diameter of the thrombosed aneurysm is reduced. Surgical strategy for a TAAA with LDS is challenging. However, it seems reasonable to use this new hybrid anatomic approach on extensive lesions of the dissecting TAAA, using TEVAR to treat the thoracic aorta and completing the procedure in an open fashion, thus limiting the surgical replacement to the abdominal aorta. Stepwise total aortic treatment with hybrid endovascular repair might reduce the incidence of lung failure and spinal cord injury.

Ultrasound Measurement Carotid Arterial Stiffness and Estimation in Strain Rate -Our Experience

D. Vasic, M. Vranes-Stojimirov, S. Todorovic, D. Markovic

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Aim: Arterial stiffness presents important marker of arterial disease. Strain and strain rate is relatively new method developed in echocardiography with intention of tracking of myocardial function. It is well known that changes in arterial wall behavior may occur before detectable atherosclerotic lesions are present. Also, progression and severity of atherosclerotic disease is associated with increased arterial stiffness and intima-media thickness increment.

Methods: We present our experience in noninvasive measurement of biomechanical properties of carotid arterial wall by using long- and short-axis images in B-mode and M-mode ultrasonography, and special software and algorithm used for vascular application. These measurements were associated with demographic parameters and risk factors, as well as other markers of atherosclerotic disease.

Results: We have found high correlation between strain and plaque features, and intraoperative findings.

Conclusion: 2D strain allows the evaluation of carotid arterial wall mechanics. It allows adequate risk stratification of patients.

Evaluation of the renal function using serum Cystatin C following open and endovascular aortic aneurysm repair

P. Mutavdzic,¹ D. Opacic,² I. Koncar,^{1,2} M. Dragas,^{1,2} S. Jovicic,⁴ D. Markovic,^{1,2} A. Dimic,^{1,2} L. Davidovic^{1,2}

¹Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

²Faculty of Health, Medicine and Life Sciences of Physiology, Maastricht University, Maastricht, The Netherlands

³Faculty of Medicine, University of Belgrade

⁴Department of Biochemistry, Serbian Clinical Centre, Belgrade, Serbia

Aim: The most frequently standard renal markers after open and endovascular aortic aneurysm repair (EVAR) are serum creatinine (sCr) and estimated glomerular filtration rate (eGFR). More recently, the low molecular weight protein cystatin C (CC) has been validated as a superior renal marker to the detection of sub-clinical renal injury. The purpose of this study was to evaluate the renal function following open (OR) and EVAR using CC.

Methods: We analyzed prospectively collected 60 patients who underwent elective open repair of AAA or EVAR in the period between September 2012 and December 2014. First elective group of 30 patients with AAA morphologically unsuitable for EVAR and were operated by open surgery. Second group of 30 patients selected for EVAR. Biochemical markers of renal function (sCr, Urea, Potassium, serum CC) were recorded pre-operatively and at these specific time points, immediately after the operation and at discharge (within 7 days).

Results: Cystatin C levels in EVAR patients significantly increased postoperatively and restored to values comparable to baseline at the discharge (0.865 ± 0.319 vs. $*0.962 \pm 0.353$ vs. 0.921 ± 0.322 , $*p < 0.001$). Cystatin C levels in patients treated with the open surgery was decreasing over time but not statistically significant comparing to Cystatin C values at the admission. However, decrease in Cystatin C serum levels in patients treated with conventional surgery resulted in statistically significant lower values compared to EVAR patients both postoperatively and at the time of discharge (0.760 ± 0.225 vs. 0.962 ± 0.353 , $p < 0.05$; 0.750 vs. 0.156 , $p < 0.05$). Multivariate linear regression models confirmed that, even after correction for previously observed intergroup differences, type of surgery i.e. EVAR is independently associated with the higher levels of Cystatin C both postoperatively and at the discharge ($b = 0.141$, $SE = 0.041$, $p = 0.001$; $b = 0.170$, $SE = 0.051$, $p = 0.002$;

Conclusion: Serum Cystatin C can be reliable marker to the detection of sub-clinical renal damage after open and endovascular aortic aneurysm repair. Improve the performance of EVAR using advanced radiological techniques can be one way of reduction of renal impairment after endovascular approach.

Treating Uncomplicated Type B Aortic Dissection with TEVAR: From Elective Procedure to Emergency Surgery

D. Unic, ¹ D. Baric, ¹ R. Blazekovic, ¹ I. Rudez, ¹ J. Varvodic, ¹ M. Kusurin, ¹ A. Smaljcelj, ² Z. Sutlic¹

¹Department of Cardiac and Transplant Surgery, University Hospital "Dubrava" Zagreb, Croatia

Aim: Thoracic endovascular aneurysm repair (TEVAR) is a lifesaving therapy and currently the preferred treatment modality for patients with Type B aortic dissection (ABAD) presenting with complications such as aortic rupture or malperfusion syndrome. Its role to treat uncomplicated ABAD is still to be determined.

Methods: A 52-year-old male patient presented with acute chest and lower back pain in June 2014. MSCT showed ABAD with involvement of both iliac arteries. Thoracic part of descending aorta is measuring 36 mm, and left renal coming off the false lumen. Initial acute renal insufficiency resolved before discharge with no other complications occurred. On MSCT follow-up after 6 months progression of descending aortic diameter was observed measuring 43 mm.

Results: In November 2014 30 mm Valiant Thoracic Captivia stent graft (Medtronic, Minneapolis, Minn, USA) was deployed. Initial postoperative course was uneventful beside one episode of absence and slight confusion that was noticed by personnel. On control MSCT retrograde Type A aortic dissection was observed and emergency surgery was indicated. Intraoperative TEE showed moderate aortic regurgitation (AR). Using selective antegrade cerebral perfusion and moderate hypothermic circulatory arrest replacement of ascending aorta and hemiarch with tube graft (Braun Unigraft 26 mm, BBraun, Melsungen, Germany) and reconstruction of aortic valve was performed. Postoperative MSCT showed optimal result of replaced ascending aorta and well seated stent graft in descending aorta with no endoleak and with thrombosed false lumen. Postoperative echocardiography showed no residual AR.

Conclusion: It is still matter of debate if chronic ABAD with no complications beside descending aortic enlargement should be addressed. The timing of the procedure as well as patient selection is of importance as well as procedural planning. Post procedural Type A aortic dissection can be a dreadful complication and strong clinical suspicion is mandatory.

Side-Limb Conduit Used For Distal Aortic Perfusion During Open Thoracoabdominal Aortic Aneurysm Repair

T. Meštrović, ¹ T. Tomić, ² D. Halužan¹

¹ University Hospital Center Zagreb - "Rebro", Department of Vascular Surgery

Aim: A variety of distal aortic perfusion (DAP) techniques are used for organ and spinal cord protection during open thoracoabdominal aortic aneurysm (TAAA) repair. However, the threat of spinal cord injury has not been eliminated. In hereby presented case series, a temporary side-limb conduit was used to maintain DAP and for the reattachment of critical intercostal arteries in order to prevent paraplegia.

Methods: Seventeen patients with TAAA were selected for open repair from 2010 to 2015; eight with type V, six with type I and three with type II. Selection criteria were based on preoperative cardiac performance workout and on the patency of distal aorta, iliac and femoral arteries that were free from massive thrombus. Thoracophrenolaparotomy with partial resection of diaphragm was preferred operative approach. A side-limb Dacron graft, anastomosed first to the common femoral artery and then to the proximal portion of the main graft, was used for DAP. Peripheral ischemia was thus limited to the time needed to create the proximal aortic anastomosis. After termination of DAP, side-limb was used for reattachment of critical intercostal arteries just opposite to the visceral patch.

Results: One patient died of myocardial infarction on 7th postoperative day, and another fatality occurred three months postoperatively after aortic anastomosis rupture. A 73-year-old female died of myocardial infarction two years after type I repair. One transitory paraparesis and one permanent monoparesis without loss of walking ability were registered during follow-up.

Conclusion: The value and optimal method for DAP during TAAA repair remains undefined. Results of this series are favorable, although derived from a small and selected group of patients. Benefits observed during repair were reduced need for heparin and for transfused blood. Furthermore, reattachment of critical intercostal arteries just opposite to the visceral patch was feasible without technical difficulties.

Case report: hybrid treatment of aortoenteric fistula in Type I endoleak post EVAR

I. Spina, A. M. Hamade, F. A. Cusmai, M. Setti

Vascular Surgery Humanitas Gavazzeni

Background: Aortoenteric fistulas occur rarely, but they are potentially lethal.

Case report: We report an unusual case of secondary aortoenteric fistula after endovascular aortic repair (EVAR) in a fragile patient, who presented acute anemia and melena in our emergency department. The fistula was caused by a growing aneurysm sac due to type 1 endoleak, resulting in an erosion into the duodenum through the aneurysm wall. The patient was successfully treated with a hybrid procedure: we performed an aortouniliac stenting, associated to the chimney graft in the right renal arteries, followed by a femoro-femoral crossover bypass. Despite the presence of the stent graft in a previously infected field, the patient has recovered from his acute phase with no septic recurrence nor hemorrhage during the next two months of follow-up.

"Laser crossectomy" further steep in endovenous thermal ablation - single center experience using radial fiber and diode 1470 nm laser

L. Velicki

Aim: Evaluation of safety and efficacy of endothermal ablation of the saphenofemoral junction (SFJ) and greater saphenous vein (VSM).

Methods: The study included 74 patients with symptomatic varicose veins (63 women) in whom endovenous laser ablation (EVLA) of VSM was performed on 100 limbs using Biolitec ELVES radial fiber 1470 nm laser. Complete ablation of VSM and branches to the SFJ level was done on 50 limbs - group I. Group II included patients in whom ablation of VSM was performed distally from the confluence of epigastric superficial vein at least 1 cm distal to the confluence.

Results: Significant differences were observed with respect to the extension of the thrombus in deep vein between the groups: 3 patients in group I were with observed minor extension of the thrombus in the common femoral vein (VFC) (maximal thrombus extension 1.7 mm); while in Group II 2 patients were with thrombus extension in the VFC of maximum of 1.5 mm. It was noted that in the group I the thrombus masses were entirely attached to the VSM wall (SFJ level), while in group II thrombus was attached to the wall distally to the confluence of the VSM or the place of positioning of the catheter. Proximal or the extended part of the thrombus was not tied to a VSM wall. At the repeated-examination after 4 weeks in both groups we observed retraction of the thrombus from the VFC.

Conclusion: The extension of the thrombus within the lumen of VFC when performing EVLA (radial fiber) in VSM diameter of ≤ 1 cm is not tied to the positioning of the laser catheter within the lumen of the VSM. The extension of the thrombus, to a great extent, depends on the characteristics of blood flow within the lumen of the VSM.

Mid-term results of distal lower limbs revascularizations

A.El Mehdi, W. Ghariani, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess mid-term results of distal lower limbs surgical revascularizations.

Methods: This was a retrospective study compiling consecutive cases of distal lower limbs revascularization performed between June 2007 and June 2015, in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: Forty limbs were revascularized in 37 patients (82.5% male). The mean age was 62.9 ± 2 years (range, 39.8-87.2). The main cardiovascular risk factor was tobacco (90%) and the main comorbidity was coronary artery disease (25%). The principal indication was critical ischemia (67.5%). Fourteen patients (35%) presented with major tissue loss. Seventy-six percent of femoral popliteal artery lesions were classified type D, according to the TASC II classification. Forty venous bypasses were performed. Proximal anastomoses involved the femoral artery (70%), the popliteal artery (27.5%) and the anterior tibial artery (2.5%). Distal anastomoses involved the posterior tibial artery (57.5%), the anterior tibial artery (15%), the tibial peroneal trunk (12.5%), the peroneal artery (12.5%) and the dorsalis pedis artery (2.5%). The mean follow-up was 5.3 ± 1.3 months (range, 0-29.2). Nine patients were lost to follow-up after a mean period of 3 ± 1.9 months. There were ten (25%) early and two (9.5%) late thromboses, which led to major amputation in five patients. Limb salvage was achieved in 71.9% of ischemia cases. The primary and the secondary patency were 70.5% and 70.8% at 1 month, and 66.1% and 66.7% at 6 months respectively. The early mortality was 20% and was mainly related to cardiac causes (17.5%). The six-month survival was 77.5%.

Conclusions: According to this study, distal lower limbs surgical revascularizations seem to have acceptable mid-term results in term of patency, limb salvage and outcomes. However, cardiac-related morbidity and mortality remain high in this patient population.

Mid-term results of upper limb revascularizations

A.El Mehdi, W. Ghariani, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess the outcomes and the mid-term patency of upper limb revascularizations.

Methods: This was a retrospective study compiling consecutive cases of upper limb open revascularization between March 2013 and June 2015, in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: There were 50 revascularizations in 47 patients (63.8% male). The mean age was 57.1 ± 3 years (range, 20.6-94 years). The main cardiovascular risk factors and comorbidities were tobacco (54%), chronic renal failure (50%) and hypertension (46%). The main indications were ischemia (44%) and dialysis access complications (38%). Lesions were mainly occlusive (62%). Proximal lesions (18%) concerned mainly the subclavian artery (14%), while distal lesions (82%) concerned mostly the brachial artery (62%). Proximal lesions were mainly treated by subclavian artery transposition (12%) and extra-anatomic bypass (8%), whereas distal lesions were mostly treated by resection anastomosis (24%) and surgical thrombectomy (26%). The mean follow-up was 9.1 ± 1.2 months (range, 0-28 months). The early morbidity was 10%, including three thromboses, one myocardial infarction, one distal arm ischemia, and one contralateral arm ischemia. Late thrombosis and late stenosis occurred in 2 cases each. The primary patency, the primary assisted patency and the secondary patency were 96%, 96%, and 98% at 12 months respectively. Patency seemed better with proximal revascularizations (100%), but the difference was not statistically significant ($P=.605$). There were three early deaths (6%) and the survival was 88% at 6 months and 75% at 12 months.

Conclusion: According to this study, upper limb revascularizations seem to have good mid-term patency. However, long-term results are required to assess their durability.

Takayasu arteritis from MDCT perspective – our experience

N. Menković, M. Ilić, J. Markov, A. Petković, D. Zorić, M. Stojanović, D. Mašulović

Department of Radiology, Serbian Clinical Centre, Belgrade, Serbia

Aim: MDCT is widely available diagnostic modality which provides accurate informations about the exact localisation and type of changes in the blood vessel walls in Takayasu arteritis and therefore confirm the diagnosis and determining the stage of disease. Takayasu arteritis is a systemic vasculitis of large arteries. It primarily affects the aorta and its major branches. It is more common among Asian patients but can be seen in all races. It mainly affects females under the age of 40.

Methods: During the two year period, 37 patients diagnosed with large vessels arteritis, according to the criteria of American College of Rheumatology, underwent MDCT examination as well as analysis of clinical activity status, serological markers and doppler ultrasonography.

Results: Takayasu arteritis was diagnosed in 5 patients, based on MDCT findings - morphological changes in large vessels walls. All confirmed cases were females, four of them under the age of 40 and one was older. One was diagnosed at the early stage of the disease, which was noticed as thickening of the thoracic aorta wall, while other three patients were at advanced stage, with alternating stenosis and aneurysmal changes and they were classified according to new angiographic classification of Takayasu arteritis (1994). Doppler ultrasonography correlates with MDCT findings in two cases.

Conclusion: MDCT versus Doppler ultrasonography is superior in imaging large thoracic vessels. It also provides additional informations and allows the evaluation of vessel morphology and localization of the wall changes.

Mid-term results of subclavian artery transposition

A.El Mehdi, W. Ghariani, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess the mid-term results of subclavian artery transposition in case of subclavian artery proximal occlusions.

Methods: This was a retrospective study compiling consecutive cases of subclavian artery transposition performed between November 2013 and June 2015, in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: There were 6 patients, 4 men and 2 women. The mean age was 58.6 ± 2.9 years (range, 51.2-70.9 years). The main cardiovascular risk factor was tobacco (83.3%) and the main comorbidity was coronary artery disease (33.3%). Indications for surgery were ischemia in 5 cases and subclavian steal syndrome in one case. Three patients were presenting neurological deficit and one patient had a minor trophic disorder. Arterial occlusions were located at the prevertebral segment of the left subclavian artery in 5 cases and the right subclavian artery in one case. All patients had a supraclavicular approach. Postoperative course was uneventful in four cases. Two patients required an additional thrombectomy of forearm arteries for persistent hand ischemia. The mean follow-up was 5.9 ± 2.1 months (range, 0.8-12.9 months). All patients recovered their distal pulses and all neurological deficits improved. The subclavian steal syndrome had also disappeared. Limb salvage was achieved in all cases. There was no death and no complication occurred during follow-up.

Conclusion: According to this study, subclavian artery transposition seems to be an effective and minimal invasive technique for the treatment of subclavian artery proximal occlusions. However, the small number of cases and the relatively short follow-up do not allow drawing conclusions about the significance and the durability of these results.

Acute aortic syndrome - what radiologist needs to know

N. Menković, A. Petković, D. Ćosić, M. Ilić, D. Mašulović

Department of Radiology, Serbian Clinical Centre, Belgrade, Serbia

Aim: Acute aortic syndrome (AAS) refers to a spectrum of acute, life-threatening conditions of aortic diseases characterized clinically by intense chest pain. AAS embraces three aortic diseases: aortic dissection (AD), intramural haematoma (IMH) and penetrating atherosclerotic ulcer (PAU). MDCT is the current imaging modality of choice for AAS with a reported sensitivity of 100% and specificity of 98–99%. ECG-gated MDCT has greatly improved imaging because it reduces unwanted motion artefact, most notably in the proximal ascending aorta.

Methods: MDCT protocol of AAS comprise unenhanced and contrast enhanced scanning (in dose of 1,5ml/kg at flow rate 4-5 ml/sec), with bolus tracking technique and Region of Interest (ROI) placed over the proximal descending thoracic aorta and trigger set at 150 HU. Images are reformatted with different algorithms in 2D - multiplanar reconstruction (MPR), maximum intensity projection (MIP) and 3D - shaded surface display (SSD) or volume rendering (VR). In most cases a multiplanar approach using coronal, sagittal and oblique reformatted planes makes a correct detection, characterization and evaluation.

Results: 25 patients were examined over a period of 16 months at the Clinical Center of Serbia - department of MDCT diagnostics. We observed the presence of individual and combined entities and found 7 AD, 5 IMH, 4 PAU, combine AD with IMH in one patient, also in one combination AD with PAU, five cases of combine IMH and PAU and two patients with all three entities together.

Conclusion: ECG-gated MDCT is the modality of choice for the evaluation of suspected AAS in the emergency setting. High sensitivity, rapid acquisitions and easy access to the technique are its major advantages over transoesophageal echocardiography and MRI. Radiologists should be aware of the different CT-features of these conditions as well as of its complications, as these may have great impact on patient management and outcome.

Hybrid revascularisation of lower limb ischaemia

V. Popovic, J. Pasternak, V. Manojlovic, D. Nikolic, V. Markovic, N. Budakov

Clinic for vascular surgery Clinical center of Vojvodina, Novi Sad

Aim: To present early and late results after hybrid revascularisation of lower limb ischemia.

Methods: Retrospective study which included patients with PAD in five year period who had multilevel arterial stenosis. In all cases iliac stenosis was treated with stent and then followed by infrainguinal open revascularisation. It was performed in two stages, endovascular first. Operative risk of treated patients was estimated by ASA score. Effect of revascularisation was estimated by ABI ratio, clinical improvement in walking distance and limb salvage rate. All patients were controlled postoperatively clinically and by duplex ultrasound examination at 1,6 and 12 months and once a year after.

Results: Study included 34 patients, average age was 62.68. Most common comorbidities were hypertension in 44%, diabetes mellitus 38.2% and coronary artery disease 33%. Majority of patients /59%/ were with critical limb ischemia and 41% were with severe claudications. All patients were ASA 3 and 4 class. Technical success of endovascular procedures was 100%. Of infrainguinal revascularisation procedures we performed femoropopliteal /above knee/ bypass in 51%, femoropopliteal /below knee/ bypass in 20% and femorofemoral bypass in 29%. There were no major complications of endovascular nor open surgery. There was statistically significant improvement in ABI ratio / $p=0.003$ / Limb salvage rate was 78.95% and amputation was performed in 4/34 patients (11,76%). Perioperative mortality rate was 6%. Average follow up period was 4 years with primary patency of 93% and 98% during first and second year of follow up. We found that there was no significant influence of infrainguinal revascularisation on iliac stent patency.

Conclusion: Hybrid revascularisation provide good revascularisation effect with high percentage of limb salvage and acceptable mortality of high risk patients. According to our results infrainguinal revascularisation doesn't influence stent patency.

Popliteal entrapment, an unusual case of lower limb ischemia in young patients: a rare case of twins

M. Tatafiore, E. Barone, F. Pignatelli

UOC ASL NA 1 Centro - P.O. dei Pellegrini Napoli - UOC di Chirurgia Vascolare, Naples, Italy

Aim:To report our experience of a rare and special case of popliteal entrapment found in two young twins, both symptomatic with claudicatio, practicing cycling at a competitive level.

Methods:The two patients, who came to our observation with diagnosis of popliteal aneurysm, have been studied by EcocolorDopppler, and CT angiography.

The study has identified in a popliteal entrapment the true genesis of aneurysms.

As symptomatic (thrombosed aneurysm in one of two and high grade stenosis due thrombosis in the other, both with clauducatio less than 100 meters), they underwent surgery aneurysmectomy with autologous saphenous vein graft reversed and correction of the muscle-tendineous anatomical anomaly of the popliteal fossa

Results:In both patients, treated at distance of about 30 days of each other, the results were very good, with removal of the aneurysm, revascularization of the arteries of the leg and more than good functional recovery which obviously has necessitated a certain period of rehabilitation.

Conclusion:An interesting case of a rare disease treated with surgical correction and with good result. The presence of a popliteal entrapment in twins might suggest the need in these cases to perform family screening.

Surgical management outcomes of infectious versus non-infectious dialysis access aneurysms

A.El Mehdi, W. Ghariani, O. Ben Gaied, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to compare outcomes of the surgical management of infectious and non-infectious dialysis access aneurysms.

Methods: We retrospectively included consecutive cases of dialysis access aneurysm operated between September 2012 and June 2015, in our academic institution. Patients were divided in two groups (Group 1: infectious aneurysms, Group 2: non-infectious aneurysms). Demographics, aneurysm characteristics and surgical details were collected.

Results: Fifty-three patients (47.2% male) were included: 21 in Group 1 and 33 in Group 2. The mean age was 56.7 ± 2.1 years (range, 25.5-86.4 years). Seventy aneurysms were recorded: 24 in Group 1 and 46 in Group 2. The mean diameter size was 49.1 mm (range, 17-97 mm). The comparison between the two groups showed higher rates of prosthetic accesses and anastomotic location in group 1 ($P=.021$ and $P=.001$ respectively), while demographic characteristics, comorbidities and rupture rate were nearly the same. *Staphylococcus aureus* was the most frequent bacteriological germ (50%). All infectious aneurysms were resected and the corresponding accesses were ligated, whereas 60.9% of non-infectious aneurysms were repaired and corresponding accesses (56%) were preserved. The mean follow up was 11.84 ± 1.28 months (range, .033-32 months). Outcomes were comparable between the two groups in terms of morbidity (31.8% vs 41.2%, $P=.480$) and reintervention (27.3% vs 17.6%, $P=.508$). The primary and secondary patency rates of preserved accesses were 82% and 88% at 12 months respectively. The survival was better in group 2 (83% vs 46% at 12 months) but the difference was not statistically significant ($P=.050$).

Conclusion: This study did not show a significant difference in surgical management outcomes between infectious and non-infectious dialysis access aneurysms.

Saturday, 23.04.2016.

Hall: Baltic

08.00-09.30

C 6: ATRIAL FIBRILLATION

Moderators: B.Gersak (Slovenia), A.Redzek (Serbia)

Key Note Lecture: B.Gersak (Slovenia)

Surgical Treatment of Atrial Fibrillation (STAF) as a Concomitant Procedure - 10 Years Experience

L. Boyadzhiev, A. Nesheva, L. Bakalivanov, M. Ivanov, D. Cimeshich

National Heart Hospital/ Department of Cardiac Surgery, Sofia, Bulgaria

Aim: This study presents our experience with STAF as a concomitant procedure in patients who undergo cardiac surgery. The first STAF in Bulgaria was performed in the Department of Cardiac Surgery – National Heart Hospital in March 2004.

Methods: For the period between 2004 and 2015 the procedure was performed on 73 patients.

Results: A sinus rhythm was restored in 62, 5 % of the patients at the time of discharge; 72 % of the patients were in sinus rhythm in the end of the 6th month and 79 % in the end of the 12th month.

Conclusion: The Intraoperative radiofrequent ablation (IRA) is an effective and safe method for treatment of atrial fibrillation in patients undergoing cardiac surgery.

Late Results Of Surgical Radiofrequency Ablation of Atrial Fibrillation

M. Fabri, A. Redzek, D. Kovacevic

Institute of cardiovascular diseases of Vojvodina, Clinic of Cardiovascular Surgery, Sremska Kamenica, Serbia

Aim: Atrial fibrillation (AF) is the most frequent type of heart rhythm disorder in the clinical practice. Its significance was proven as well as the negative effects it has on mortality, morbidity and the quality of a patient's life. Surgically treating atrial fibrillation with radiofrequency (RF) ablation has become a standard surgical procedure.

Methods: Since January 2008 until the end of 2013 there has been performed 50 RF at the Clinic of Cardiovascular Surgery of the Institute of Cardiovascular Diseases of Vojvodina as part of the combined surgery with the mitral valve repair or replacement. The open procedure was used with Medtronic cardioblate bipolar and unipolar systems. Cardioplegia was used to stop the heart activity.

Results: Postoperative mortality in 30 days was 0. No complications of RF were registered. After five years 31 patients (62%) were in sinus rhythm.

Conclusion: Our results are in accordance with the published results of other institutions. Further long-term evaluations of results will be continued.

Implantable cardioverter defibrillators in prevention of sudden cardiac death in ischemic HEART disease and coronary artery bypass graft surgery

R. Karan¹, N. Kovacevic-Kostic¹, M. Vranes¹, M. Velinovic¹, A. Mikic¹, N. Karamarkovic¹, V. Milicevic¹, G. Milasinovic²

¹Department of Anesthesiology at Clinic for Cardiac Surgery, Serbian Clinical Centre, Belgrade, Serbia

²Pacemaker center, Serbian Clinical Centre, Belgrade, Serbia

Aim: The most common cause of sudden cardiac death is coronary artery disease (80%). It can develop any time after myocardial infarction due to onset of ventricular fibrillation or fast prolonged ventricular tachycardia which alters to ventricular fibrillation.

Present literature has showed that medical therapy with beta blockers and amiodarone hasn't yielded satisfying results compared to prophylactic ICD implantation. To compare arrhythmic mortality in patients with $EF \leq 35\%$, after CABG surgery, who had prophylactic ICD implantation, and patients from control group.

Methods: Patients were divided into two groups, one group with 29 patients who had prophylactic ICD implantation at least a month after CABG surgery, and control group of 36 patients who were only on medical therapy for rhythm disturbances after CABG surgery.

Results: The follow up period was 39.35 ± 21.37 months; Overall VT/VF survival in ICD group was 88%, while in Control group was 87% (Log-Rank $p=0.98$)

Conclusion: Prophylactic ICD implantation in patients with $EF \leq 35\%$, one month after CABG surgery showed better VT/VF survival compared to patients only on medical therapy, but without statistical significance.

Post Coronary Bypass Surgery and New-onset of Atrial Fibrillation – Sarajevo's Cardiac Surgery Experience

S. Straus, M. Kacila, I. Haxhibeqiri Karabdić, S. Granov, E. Mujičić, F. Kučukalić

Clinic for Cardiac Surgery, University Clinical Center Sarajevo, Sarajevo, Bosnia and Herzegovina

Aim: The goal of our study was to identify risk factors for new-onset of atrial fibrillation in patients with coronary artery disease who underwent coronary bypass surgery.

Methods: In the period from November 2014 to September 2015, 170 patients underwent coronary artery bypass surgery for the first time without baseline atrial fibrillation. The relevant medical history, clinical and laboratory data were gathered in the included patients, and all patients were monitored in Intensive Care Unit for development of new-onset of postoperative atrial fibrillation.

Results: Out of 170 patients, 56 (33%) developed atrial fibrillation postoperatively. The collected data (pre, intra and postoperatively) showed that new-onset of atrial fibrillation in our study was connected with low ejection fraction ($<35\%$), longer time of extracorporeal circulation and higher inotropic score ($p 0.042$). In patients with new-onset atrial fibrillation level of lactate was significantly higher in the first 24 hours ($p 0.017$) and 48 postoperative hours ($p 0.028$). In our study transfusion of blood was not significantly connected with new-onset of atrial fibrillation.

Conclusion: Atrial fibrillation still remains one of the most common complications after coronary bypass surgery with higher morbidity, mortality, longer hospitalisation causing quite high hospital costs. It is important to mark possible risk factors in order to reduce the above mentioned conditions.

The relationship between postpericardiotomy syndrome and atrial fibrillation following cardiac surgery

U. Sevuk, F. Ayaz, K. Kose, E. Demirdas, A. Erkul

Diyarbakir Gazi Yasargil Education and Research Hospital, Department of Cardiovascular Surgery, Turkey

Aim: Post-operative atrial fibrillation (POAF) and postpericardiotomy syndrome (PPS) are common complications of cardiac surgery. PPS and POAF are both associated with increased morbidity, mortality, costs and length of stay following cardiac surgery. Inflammation is involved in the pathogenesis of PPS and POAF, however the relationship between PPS and POAF remains unclear. Aim of this study was to examine the relationship between PPS and POAF in patients undergoing cardiac surgery.

Methods: Records of the patients who underwent elective on-pump CABG surgery were reviewed retrospectively. 102 consecutive patients with PPS were included in the study. 100 consecutive patients who were not diagnosed with PPS were taken as control group.

Results: POAF incidence was significantly higher in patients with PPS compared to patients without PPS (36.3% vs 23 %, $p=0.03$). Hospital stay ($P = 0.04$) and intensive care unit stay ($P = 0.04$) were significantly longer in patients with PPS. Logistic regression analysis demonstrated that PPS was independently associated with POAF occurrence (OR 2.5, 95 % CI 1.2-5.3, $p < 0.001$). Age (>60 year-old), male gender, chronic obstructive pulmonary disease, obesity, low cardiac output syndrome, perioperative transfusion, severe right coronary artery stenosis was also found to be independently associated with POAF occurrence.

Conclusion: The present study showed that PPS was associated with an increased incidence of POAF in patients undergoing isolated CABG. Patients who develop PPS should therefore be closely monitored for the occurrence of postoperative AF.

Left Mini Thoracotomy as an approach for stimulation of the left ventricle in cardiac resynchronisation therapy

N. Aleksic, I. Bilbija, M. Cubrilo, M. Matkovic, S. Putnik

Clinic for Cardiac Surgery, serbian Clinical Centre, Belgrade, Serbia

Aim: Purpose of this study is to show that surgical approach for stimulation of the left ventricle through left mini-thoracotomy is a valid therapeutical option when it is impossible to use endovascular approach.

Methods: We used left mini-thoracotomy as an approach for placing the CRT electrodes in patients that were not suitable for endovascular approach because of the inadequate anatomy of the venous system of the heart. This study is a retrospective review of 17 consecutive patients who underwent surgery for placing CRT electrodes.

Results: Surgical approach was used in 17 patients from February 2008. until October 2015. We experienced no major bleedings as a complication of the procedure. There were no deep wound infections. 15 patients responded to resynchronisation therapy. There were two cases of electrode breakage, and one superficial infection of the wound.

Conclusion: Our experience showed that surgical approach is a safe and effective option for placing the CRT electrodes on the left ventricle in patients that are unsuitable for endovenous approach

Saturday, 23.04.2016

Hall: Aegean

08.00-09.30

C7: CORONARY SURGERY I

Moderators: M.Thielman (Germany), S. Micovic (Serbia)

Key Note Lecture: Coronary surgery in 2016, M. Thielman (Germany)

Effect of coronary artery bypass grafting in ejection fraction in patients with low preoperative left ventricular ejection fraction

F.Valdiviezo, C.Velázquez, M.Gutiérrez, J.Hernández, J.Olarte, J.C.Téllez, M.G de la Borbolla, O.Araji, J.Barquero

Hospital Universitario Virgen Macarena / Department of Cardiovascular Surgery

AIM: To determine if there is any improvement in the left ventricular ejection fraction at one year after performance of coronary artery bypass grafting.

METHODS: A retrospective observational study was performed comparing the variability of ejection fraction in patients who had low preoperative ejection fraction (less than 45 percent) versus the left ventricular ejection fraction at one year after the surgery in all patients who underwent coronary artery bypass grafting in the period from 2010 to 2014. From a total of 479 coronary artery bypass grafting done in that period of time, only 43 were done in patients with low ejection fraction and the year follow up was available in a total of 34 patients.

RESULTS: From the total of 34 patients selected for the study, 28 patients where men (82,4%) and had a mean age of $62,42 \pm 3,59$ years. The mean preoperative ejection fraction was $36,12 \pm 2,19\%$ been the lowest value 25%. In all patients was performed a complete revascularization. After one year of follow up the mean ejection fraction was $45,56 \pm 3,05\%$. The mean of the difference between preoperative ejection fraction and control ejection fraction was $10,44 \pm 2,70\%$ that was statistically significant with a $p < 0,0001$. Just three patients had a reduce in their ejection fraction at one year follow up, one keeps the same value of ejection fraction and there was only one death in the patients after the year of follow up.

CONCLUSION: Coronary artery bypass grafting is a safe procedure in patients with low left ventricular ejection fraction with very low mortality and good improvement of ejection fraction after the surgery.

Influence of postoperative anemia on functional capacity recovery in patients undergoing coronary artery bypass grafting

Hsin Yi Huang, Cheng Hsin

General Hospital/Heart Center, China

AIM: Postoperative anemia (PPA) is a prevalent comorbidity after cardiac surgery. This study investigated the association between functional capacity (FC) recovery and PPA, and the threshold level of hemoglobin (Hb) linked with FC.

METHODS: We retrospectively analyzed 120 patients who received coronary artery bypass grafting. We divided the patients into two groups on the basis of Hb cutoff points. Peak oxygen consumption based on the results of a cardiopulmonary exercise test (CPXT) after discharge was used as the primary index of FC. For data analysis, receiver operating characteristic curves were used to evaluate the Hb cutoff point. Logistic regression was performed to analyze the influence of PPA on functional capacity recovery. Statistical significance was a P value of 0.05.

RESULTS: Most of the patients were men (73.3%), and the mean age was 64.3 ± 10.5 years. All the patients had PPA during hospitalization. Patients with Hb levels >9.0 g/dL had a 3.4-fold higher probability of FC recovery to 3.5 METs when they discharge from hospital. Furthermore, patients with Hb levels ≥ 9.5 g/dL had a 2.85-fold higher probability of recovery to 5 METs when they discharge from hospital.

CONCLUSION: PPA is a major problem in CABG patients. Patients who have Hb levels <9.0 g/dL during hospitalization may not attain the expected FC after discharge.

V237

The use of two internal thoracic artery as the gold standard of the coronary bypass surgery.

Aleksei Cherkes, Tsoi V.G., Cherkes A.N., Shilenko P.A., Khudenhik E.E.

Federal Center of High Medical Technologies

Aim: to present results of usage two internal thoracic artery for bypass surgery

Materials and Methods: In the period from 09.2012 to 12.2015 in our clinic performed 912 operations isolated coronary artery bypass grafting using two internal thoracic arteries.

Results: The isolated CABG using 2 ITA made 626 (68.6%) men and 286 women. The average age of patients was 65.5 years. 396 (43.5%) patients underwent OPCAB, 264 (28.9%) patients underwent beating-heart on-pump grafting and 252 (27.6%) patients - on-pump grafting and cardioplegia. The average operation time: isolated off-pump CABG - 150 minutes, 220 minutes - beating-heart on-pump and on-pump grafting and cardioplegia - 214 minutes. The average number of grafts -3.1. In all groups of patients was observed low incidence of myocardial infarction in the early postoperative period (5 patients (0,5%)). 49 (5,4%) patients had development of acute heart failure. The average volume of intraoperative blood loss was 470 ml. Infectious complications of the sternum was observed in 9 (0.97%) patients. It was performed 25 (3.2%) resternotomy about bleeding. Stroke in the early postoperative period was observed in 1 (0.1%) patients. There was 1 (0.12%) lethal outcome. We had no differences in treatment outcomes of all three groups. Within three years under the supervision there were 318 patients. Total mortality was 4.7% (15 patients). Freedom from angina and cardiac events - 82.1%. Needed a redo-CABG was 0. Need for cardiac interventions (PTCA or stent) was 9 (2.8%).

Conclusion: Isolated CABG using 2 ITA immediately after surgery accompanied by low incidence of heart failure, perioperative myocardial infarction, resternotomy about bleeding, infectious complications of the sternum (minor infection, mediastinitis), intraoperative blood loss, need for transfusion of blood components, neurological complications and good follow-up (2 years) results

Bilateral Skeletonized IMAs: “in situ” Grafts for Different Coronary Territories

Z.Jonjev, I.Bjeljac, M.Zagoričnik, J.Rajić

Institute for CVD of Vojvodina, Novi Sad, Serbia

AIM: Bilateral internal mammary arteries (BIMAs) has been recognized as the most advanced surgical option for coronary artery bypass grafting (CABG). However, diabetes, chronic obstructive pulmonary disease (COPD) and obesity have been accepted as a limitation for extensive use of such surgical option. The aim of this prospective study is to evaluate immediate and long term results in patients with BIMAs used as in-situ grafts for different coronary territories in CABG.

METHODS: In 2003-2015, 6981 patients underwent primary CABG for multivessel coronary artery disease at our institution. Among them, 144 patients underwent in-situ BIMAs grafting where right IMA was used to revascularize right coronary artery, and left IMA for left anterior descending artery (LAD). All patients were operated on as elective cases. Most of the patients were male (119pts, 82.63%), with average age 58.08 years (33-80 y/o). Twenteen patients were diabetic (8.33%), and 35 (24.3%) had COPD. The average number of grafts was 2.84, and average ejection fraction was 51.22% (Range=25-65%).

RESULTS: There was no immediate postoperative mortality (30 days). There was no perioperative myocardial infarction or cerebrovascular incidence as well. Mean follow-up was 8.2 ± 1.1 years with freedom from death $95.4 \pm 0.7\%$ 8 years after surgery.

CONCLUSION: BIMAs as in situ grafts could be successfully used for different coronary territories in CABG, especially if total arterial revascularization is preferred. IMA harvesting with skeletonized technique provides better IMA length, detailed graft visualization, and minimal trauma to the chest wall. That makes traditionally accepted limitations for usage of bilateral IMAs irrelevant.

Acute Kidney Injury (AKI) Following Elective Coronary Artery Bypass Graft Surgery: Preoperative Risk Factors And Outcomes One Year On

A.Isted ,N.Ahmed ,H.Kilbride ,J.Joseph , N.Mansfield, R.Deshpande , S.Jayawardene ,J.Wang

King's College London, School of Medicine, London, UK 2 Department of Renal Medicine, King's College Hospital, London, UK

AIM: Acute kidney injury (AKI) occurs in 12-50% of patients undergoing CABG surgery and is associated with increased risk of chronic kidney disease (CKD), coronary events and early mortality. Our aim was to identify factors that predispose patients to postoperative AKI and to determine the impact on mortality and renal function one year on.

METHODS: This retrospective observational study with secondary prospective follow-up analysis included all patients who underwent isolated, elective CABG surgery at a UK tertiary centre in 2012. Patients with CKD stage 5 or requiring dialysis were excluded. Serum creatinine measured at pre-assessment clinic was taken as baseline. AKI stage was calculated according to the KDIGO classification, utilising the maximum postoperative creatinine value. Follow-up data were obtained from patients' local hospitals and general practitioners. Outcomes of death and 'significant renal deterioration' (eGFR reduction $>5\text{ml/min/yr}$) were examined.

RESULTS: Of 219 patients included, 20% developed postoperative AKI (33 Stage 1, 3 Stage 2, 8 Stage 3). Patients with AKI were more likely to be male ($p<0.05$) and diabetic ($p<0.05$) and were older ($p<0.01$) with worse NYHA staging ($p<0.01$) and a higher baseline creatinine ($p<0.01$). No significant difference was observed in medication history, operative time or procedural variations. Only 127 patients had follow-up data available, 20 (15%) of whom had postoperative AKI. Median follow-up duration was 1.77 years. No deaths occurred. The mean rate of reduction in eGFR was greater in those with postoperative AKI (5.2 versus 2.9 ml/min/yr) though this was not statistically significant.

CONCLUSION: In our cohort, risk factors for postoperative AKI related to preoperative patient characteristics as opposed to operative variations. Change in renal function after one year was not significantly associated with postoperative AKI.

Synchronous CEA and CABG vs. solely CABG:still existing dilemma

V. Jovicic, S.Putnik, A.Djordjevic, N.Karamarkovic, D.Terzic, I.Atanasijevic, M.Buzejic

Clinic for Cardiac Surgery, Clinical Centre of Serbia, Belgrade, Serbia

AIM:In certain cases, patients with carotid artery stenosis (CAS) often have the severe coronary artery disease (CAD) requiring coronary artery bypass grafting (CABG). Yet there has been no agreement that a synchronous carotid endarterectomy (CEA) and CABG (CEA/CABG) is safe in patients with CAS in reducing neurological morbidity during and after cardiac surgery.

Methods: For answering this question, we analyzed our patients with CAD and asymptomatic CAS over 75 % undergoing combined CEA/CABG, or solely CABG in order to compare the short-term outcomes of these two procedures. Perioperative and postoperative complications, and clinical outcomes were observed.

Results: From January 2012 to January 2015, 50 patients with CAD and CAS underwent CABG, 80 patients with CAD and CAS underwent synchronous CABG and CEA. Average age was 66 years old. The degree of CAS was similar in both groups. All patients undergoing synchronous CEA / CABG, were performed on pump-CABG. One patient died in CABG group and two patients died in CABG/CEA group. Two patients in CABG group and one patient in CABG/CEA group had sternal wound infection.

Conclusion: According to our experience both synchronous CABG/CEA and CABG can be performed safely, without increasing the overall risk of surgery. The keys to prevent complications include a comprehensive evaluation of the patients' condition, an optional and personal surgical plan prior to the operations, and a dedicated management during the operations.

Patients' operation results repaired with a patch due to left ventricle aneurysm

E.Aliyev, A.Aliyeva, A.Memmedov

Scientific centre of surgery by Ac. M.Topchubashov

AIM: True left ventricular aneurysm is a complication of myocardial infarction and occur most often with total occlusion of the left anterior descending artery. Ventricular aneurysm in patients with angina and heart failure should be surgically treated. There is a couple of repair techniques hasbeen described, which results in better left ventricular geometry and function. We reviewed our surgical repair experience in true left ventricular aneurysm.

Methods: Between 2005 and 2009, total of 46 patients with left ventricular aneurysm had classic aneurysmectomy repair . Of them, ventricular wall was closed with plication method in 26 patients and linear closure technique in 20 patients. We described the postoperative early outcomes after aneurysmrepair. The pre-, intra- and postoperative results of these patients were analyzed accordingly.

Results: There were no hospital mortality in linear closuretechniques but one patient died in plication method. The postoperative early mortality rate and postoperative bleeding, respiratory failure and renal failure were not significantly different between two techniques, but postoperative arrhythmias were significantly higher in plication method.

Conclusion: Classic ventriculotomy repair is a better surgical technique in left ventricle aneurysm and ventriculotomy can be closed through plication or by linear techniques. In our experience we found that two repair techniques have similar impacts on the early outcomes, but direct linear closure of ventriculotomy can be more beneficial compared to plication technique.

Unsuccessful surgical correction of a severely ectatic circumflex artery fistula to coronary sinus

M.Kusurin, I.Rudez, D.Baric, D.Unic, M.Planinc, J.Varvodac, Z. Sutlic

KB Dubrava/ Cardiothoracic surgery, Zagreb, Croatia

AIM: Fistulous connection of an ectatic circumflex artery to coronary sinus is a rare clinical condition. Treatment strategies are various, since its infrequent occurrence, and surgical correction is one of the possible treatment options.

METHODS: 61 - year - old patient presented with progressive shortness of breath and fatigue in the last six months. After comprehensive diagnostic workup, a diagnosis of coronary artery fistula (CAF) was established along with coronary artery disease, pulmonary artery hypertension and moderate tricuspid regurgitation. Right-sided cardiac chambers were enlarged. Closure of the fistula was performed together with the ligation of the circumflex artery in its origin, triple aortocoronary bypass and tricuspid valvuloplasty.

RESULTS: Weaning from the cardiopulmonary bypass was not possible. Although extracorporeal support (ECMO, Levitronix LVAS) was established, the patient died.

CONCLUSIONS: CAFs are rare disorders. Surgical repair represents a challenge with many questionable steps. Firstly, should we surgically address such conditions? Secondly, should we ligate fistulous connection only or entirely exclude ectatic artery? Thirdly, is there any other option for the patient?

**Differentiated approach to choice the methodic of coronary artery bypass grafting.
Experience in 3454 patients**

P.Myaluk, M.Andrey

Federal Centre of Cardiovascular Surgery, Perm, Russia

AIM: For more than 50 years of existence, coronary bypass cultivate ways to reduce complications. Despite this, the incidence of cerebrovascular complications after revascularization remains within 0.8 - 4.2%, according to different authors. The aim of this study is to develop and assess the effectiveness of the differentiated approach to the choice of optimal tactics coronary bypass surgery.

METHODS: During the period from 01.01.2013 to 04.06.2015 we performed 3454 coronary bypass grafting. The average age of 61.2 ± 12.2 , men 2346 (67.9%), obese in 1090 (31.6%), diabetes was diagnosed in 281 (8.1%) patients, permanent atrial fibrillation in 82 (2.4%), left ventricular ejection fraction less than 30% in 31 (0.9%), unstable angina in 370 (10.7%). We divided the patients into 2 groups: 1 - 2689 patients, and 2 - 765 patients we used differentiated approach. In 1 group, patients underwent standard coronary artery bypass grafting. For Patients in 2 group we include into examination transesophageal echocardiography, CT and epiaortic ultrasound scanning. If the aorta is normal patients underwent standard coronary artery bypass grafting - 585 (76.4%). Atheromatosis or plaques protruding into the lumen more than 5 mm or local calcinosis of aorta were detected in 190 patients. In all of them, we had changed the surgical tactics. Modifications applied: place of cannulation and place of clamping changing - 92 (12%), «Single clamp» - 43 (5.6%), «on pump beating» - 27 (3.5%), «no-touch aorta» - 18 (2.3%).

RESULTS: Overall hospital mortality was 1.1% (38). Perioperative stroke 33 (1.4%) in the group 1, and 0 in group 2 .

CONCLUSIONS: Differentiated approach to surgical tactics choice, reduces the risk of neurological complications when atherosclerosis of the ascending aorta is detected after CABG.

Functional evaluation of the coronary ischemia using coronary flow velocity reserve after coronary artery bypass surgery in left ventricular hypertrophy

K.Honda, Y.Okamura, Y.Nishimura, M.Yuzaki, M.Kaneko, H.Kunimoto, N.Oka, M.Shibata

Department of Thoracic and Cardiovascular Surgery, Wakayama Medical University, Japan

AIM: Dysfunction of the coronary microcirculation is observed in patients with left ventricular hypertrophy. In such patients, myocardial ischemia exist without any significant stenosis in coronary artery. The aim of this study is to assess the functional evaluation of the myocardial ischemia in patients with left ventricular hypertrophy after coronary artery bypass surgery with patent graft.

Methods: One hundred and fourteen patients were enrolled. Patients were divided into two groups according to the preoperative left ventricular mass index; H group :left ventricular mass over 148g/m² in male, 121 g/m² in female, N group: others. Sixteen patients were classified to H group. Pre and post-operative coronary flow velocity reserve of the left anterior descending artery and intraoperative graft flow were compared between two groups. In all patients, post-operative graft patency was confirmed.

Results: preoperative coronary flow velocity reserve was 1.57 ± 0.60 in H group and 1.78 ± 0.55 in N group. No significant difference was observed ($p=0.063$). Intraoperative graft flow to the left anterior descending artery was 35.0 ± 27.1 ml/min in H group and 27.4 ± 16.8 ml/min in N group ($p=0.045$). The number of distal anastomosis was 2.81 in H group and 2.80 in N group. Postoperative coronary flow velocity reserve was 2.20 ± 0.68 in H group and 2.61 ± 0.63 in N group. Significant difference was observed ($p=0.018$).

Conclusion: Normal value of the coronary flow velocity reserve in the same generation was reported 2.47 ± 0.54 . In this study, coronary flow velocity reserve was not improved to the normal range in left ventricular hypertrophy in spite of the patent graft. Functional evaluation of the myocardial ischemia is important in patients with coronary microcirculation disorders.

Saturday, 23.04.2016

Hall: Adriatic

08.00-09.30

V8: ENDOVASCULAR PROCEDURES

Moderators: M. Gasparini (Slovenia), S. Cvetkovic (Serbia)

Key Note Lecture: Endovascular procedures in Romania, I. Droc (Romania)

Safety and efficacy of ultra-high-dose, short-term thrombolysis with rt-PA for acute lower limb ischemia

R. A. Samad, A. Falkowski, A. Kazimierczak, S. Mokrzyński

Department of Vascular Surgery, Pomeranian Academy of Medicine, Szczecin, Poland

Aim: The aim of the study was to evaluate the success and complication rates of high-dose recombinant tissue-type plasminogen activator (rt-PA) administered over a short time in the treatment of acute lower limb ischemia.

Material and methods: The outcome of treatment in 97 patients with acute limb ischemia (<14 days) with the use of catheter directed rt-PA infusion were evaluated. The study group included 45 native arteries and 52 bypass grafts in the segment below the inguinal ligament. The mean total dose of rt-PA was 54.1 mg (50 - 60 mg) and was administered for a mean of 2.51 hours (2 - 4 h). Thrombolytic success was defined as 95% thrombolysis of an occluded segment with return of prograde flow. The secondary endpoints were the degree of clot lysis, the rate of adverse effects of the treatment, including hemorrhagic complications and additional surgical interventions.

Results: Thrombolytic success was achieved in 83.5 %. Overall clinical success was 88.7 %. The 30-day amputation-free survival rate was 93.8%. The mean hospitalization time was six days. Major bleeding complications occurred in 10 patients (10.3%). There were two deaths (2.1 %), including one after hemorrhagic stroke. Four patients (4.1%) underwent amputation; in 6 cases (6.2%) a distal embolism was successfully treated with endovascular approach. Long-term amputation-free survival was 70%.

Conclusions: Administration of ultra high doses of rt-PA over a short period of time gives promising results - does not support superiority of this regime, but does not seem to be associated with a higher number of complications as compared to the current standard methods of thrombolysis. Such delivery improves patient tolerance by rapid restoration of limb perfusion, however further studies are required to confirm these results.

Endovascular management of blunt axillo-subclavian arterial injuries as the first –choice treatment

G. Kouvelos, M. Peroulis, D. Xanthopoulos, V. Bouris, E. Arnaoutoglou, M. Matsagkas

Department of Surgery, Vascular Surgery Unit, School of Medicine, University of Ioannina, Ioannina, Greece

Aim: To report our results regarding the endovascular management of blunt axillo-subclavian arterial injuries as the first line treatment.

Methods: During an eight-year period, seven patients (all males, age 56.4 ± 14.1 years) with blunt traumatic axillo-subclavian arterial injuries were treated in our department. All patients suffered from concomitant other injuries, had a supraclavicular hematoma along with diminished or absent upper limb peripheral pulses, while computed tomography angiography set the diagnosis.

Results: Technical success was achieved in all patients. No procedure-related complication was encountered during the in-hospital stay, while none of the patients died. The median hospital stay was 22 days (range 12-46). During a follow-up period spanning an average of 27 months (range 6-44 months) there was one stent-graft thrombosis at 12 months in an otherwise asymptomatic patient that required no further intervention.

Conclusion: Endovascular technique seems to constitute a reliable approach for treating blunt axillo-subclavian arterial injuries in the emergent setting. Despite uncertainties in patient selection and optimal management algorithms, it seems that endovascular approach could be the first line treatment for such injuries. Accumulation of data on larger number of patients with longer follow-up is warranted to further define the value of this therapeutic modality in the trauma setting.

Mid term results after drug eluting stenting of superficial femoral artery in Critical Limb Ischemia patients. An italian multicentre Registry

G. Galzerano, M. Pia Borrelli, M. Tadiello, M. Mele, C. Setacci

Clinic for Vascular and Endovascular Surgery, University of Siena, Siena, Italy

Aim : Aim of the study is to evaluate effectiveness of treatment using a drug eluting stent in superficial femoral artery and above the knee popliteal artery in patient suffering Critical Limb Ischemia. This is a preliminary report of an Italian multicentre Registry the ZORRO (Zilver® PTX® Observational Registry on Recanalization for Obstructive disease) trial.

Methods : All patients prospectively treated with deployment of a drug eluting stent in 12 Italian Vascular Centres were included in a registry lasting from the 1st of October 2013 to 30th of August 2015. Inclusion criteria were: patients suffering CLI (Rutherford >3) and reference vessels diameter 4-9 mm. Multilevel disease, as iliac or tibial involvement and treatment, did not represent an exclusion criteria. Outcome evaluated in this report are: patency rate and limb salvage at 6 and 12 months of follow-up in patients that completed the follow-up period.

Results : Seventy-five patients were recorded in the registry from 12 Vascular surgery centres. Fortythree patients presented TASC C and D lesions. Median length of the lesion was 10.72 cm (range 1-33). No patients were lost at follow-up, 51 patients reached 6 months follow-up and 31 patients 12 months. Primary and secondary patency at 6 months of follow up were respectively 89.8% and 93.9%, and at 12 months of follow-up 75% and 96.4% respectively. Only 3 amputations were recorded in all series with limb salvage rate of 96.1% at 6 months.

Conclusions : This preliminary data encourage wisely use of drug eluting stent in superficial femoral artery for CLI treatment.

The use of an innovative balloon catheter (Chocolate) in femoro-popliteal occlusive disease

W. Mansour, P. Sirignano, L. Capoccia, N. Montelione, C. Pranteda, A. d'Adamo, F. Speziale.

Policlinico Umberto I, "Paride Stefanini" Department of Surgery, Vascular and Endovascular Surgery Unit, Sapienza, University of Rome, Rome, Italy

Aim: To report our experience using the Chocolate® balloon (Quattro Vascular Pte Ltd) intended to minimise the bailout-stenting rate in femoro-popliteal occlusive disease treatment.

Materials and Methods: All patients treated for femoro-popliteal occlusive disease Rutherford Class ≥ 3 by percutaneous transluminal angioplasty (PTA) using Chocolate balloon followed by drug coating balloon (DCB) Ranger™ (Boston scientific), were included in this series. Intraoperative technical success and bailout-stenting rates were assessed as well as clinical improvement (defined as improvement in at least 2 class of Rutherford's Classification), primary patency (PP) and primary assisted patency (PA) rate at follow-up.

Results: From January 2014 to February 2015, 27 patients were treated. Target lesions were located in superficial femoral artery (SFA), popliteal artery (PA), and in SFA+PA in 62,9%, 22,2%, and 14,8% of patients, respectively. Average lesion length was 82 mm (range 38-165), and chronic total occlusion (CTO) rate was 51,8% (14/27). Technical success was 100% with adjunct bailout-stenting in 2 patients (7,4%; 1 flow limiting dissection, 1 severe residual stenosis). At a mean follow-up of 12.2 months (6-22) PP, and AP were 96.3%, and 100%, respectively.

Conclusion: In this preliminary experience, the use of Chocolate balloon seems to reduce the bailout-stenting rate after PTA.

Real world experience in using the covered heparin-bonded stents for infra-inguinal occlusive disease

S.Vimalesvaran, T. R A Lane, L. Fiengo, M. Najeem, T. Hussain.

Vascular and Endovascular Department Northwick Park, St Mark's Hospital London North West Hospital Trust London, London, United Kingdom

Aim: Treatment of infrainguinal disease with angioplasty and stents has recently been shown to be a viable alternative to bypass surgery in selected patients. Heparin bonded covered stents such as the Gore Viabahn offer the advantage of reduced neo-intimal hyperplasia over bare metal stents, as shown by the VIASTAR trial. This series aims to describe the real world experience with covered stents in unselected patients.

Methods and Materials : Patients undergoing placement of infrainguinal Gore Viabahn arterial stents were identified from April 2012-December 2014 (30 months) from retrospective case note review and duplex ultrasound surveillance programme review. Outcomes, complications and reinterventions were recorded on a dedicated database.

Results : 25 patients were treated with a Viabahn stent (68% male). 15 were elective cases and 10 were emergency. Mean follow-up was 12 months (0-21 months). Patency rate was 76%, limb salvage rate was 80%, mortality was 4%. Mean length of coverage was 165mm (50-400mm). Fontaine classification was significantly improved after stent placement ($p=0.029$).

Conclusions : Covered stenting using the Viabahn device offers an acceptable alternative to surgery for infrainguinal occlusive disease in unfit patients. Stent grafts may appear occluded when patent when imaged with duplex ultrasound due to difficulty of insonation and this requires experienced assessment of distal flow.

Remote Hybrid Iliac Endo-Endarterectomy: Early Results

S. Bonvini, V. Wassermann, S. Tasselli, M. Menegolo, M. Piazza, F. Grego

Clinic of Vascular and Endovascular Surgery, University of Padua, Padua, Italy

Aim To describe early results of remote hybrid external iliac endo-endarterectomy using a fem-fem “through-and-through” guidewire access.

Methods : Eight patients with Trans-Atlantic Society Consensus C/D external iliac artery lesions underwent remote endo-endarterectomy through the exposure of the homolateral common femoral artery and percutaneous access at the contralateral groin. The latter permitted to advance a guidewire over the aortic bifurcation, through the occluded external iliac artery, into the common femoral artery. The guidewire was caught via longitudinal arteriotomy of the exposed artery, an occlusive balloon was inserted from the percutaneous access and inflated into the common iliac artery and the first tract of the external iliac artery to avoid back bleeding. The Vollmar ringstripper and an over-the-wire embolectomy catheter were advanced homolaterally up to the inflated balloon. The latter was inflated beyond the Vollmar ringstripper, both were retracted simultaneously, cutting the plaque. Post-procedural intraoperative angiography demonstrated its complete removal. Remote iliofemoral endarterectomy was performed in combination with homolateral femoral bifurcation endarterectomy. Procedures were performed under local anesthesia.

Results : Mean age was 66 years (range, 50-80). Indications for remote iliac endarterectomy were severe claudication (n=4; 50%) and rest pain (n= 4; 50%). Initial technical success was achieved in 7 patients (87,5%). One needed a thrombectomy using a Fogarty catheter and stenting due to irregularities in the external iliac artery. Mean follow-up length was 12 months (range, 1-21).

No perioperative and postoperative re-stenosis, occlusions occurred within the first 30 days and in the post-operative period.

Conclusions : An angioplasty balloon introduced contralaterally avoids back bleeding from the common and internal iliac arteries and protects the aortoiliac bifurcation from retrograde dissection. This technique offers a safe and effective alternative to conventional laparotomy in patients with severe concomitant pathologies.

Long-term outcome following stent reconstruction of totally occluded infrarenal aortic bifurcation.

A. Siani, F. Accrocca , G. De Vivo, R. Antonelli, A. Giordano, G. Marcucci

S.Paolo Hospital, Vascular and Endovascular Surgical Unit,Civitavecchia Rome, Italy

Aim: Kissing stent reconstruction of the aortoiliac bifurcation is a widely used technique for the management of aortoiliac occlusion. Aim of our study is to evaluate long-term patency of kissing stent reconstruction of the aortoiliac bifurcation and identified variables that may influence it.

Methods : From January 2012 to December 2015 22 patients underwent to total endovascular treatment of infrarenal occlusion of aortic bifurcation. The impact of demographic variables, vascular risk factors, disease location and characteristics, stent material and design, and stenting configuration on stent patency was assessed using univariate and multivariate analysis.

Results : In all cases an extensive/diffuse disease (TASC C and D) was present .Complete occlusions was present in 20 cases . Balloon-expandable stents were routinely used to treat aortic bifurcation in kissing configuration. Self-expanding stents were used in 18 cases to treat external iliac arteries.

Technical success was 100%. No perioperative mortality occurred. Mean follow-up was 39.5 months (range, 5-80 months). The primary patency rate was 95.2% at 1 year and 90.5% at 3 years, and the secondary patency rate was 95.2% at 1 year and 100% at 3 years.

Conclusions : Stent reconstruction of the aortoiliac bifurcation for occlusive disease is effective and durable, even with complex aortoiliac disease and long segment occlusions. Geometric variables related to individual aortic anatomy and disease pattern and stenting configuration may have an impact on long-term patency.

Is there Outcome Differences between Total and Non-total Occlusion in Patients undergoing Superficial Femoral Artery Intervention?

J. Ahn, J. Seo

Department of Cardiology, Soonchunhyang University Gumi Hospital, Gumi, Korea

Aim: The role of endovascular treatment of chronic total occlusion of the superficial femoral artery (SFA) continues to evolve. Despite of continuous development of technology and newer devices, still significant restenosis remain as a limitation. The aim of the study is to compare mid-term outcomes of patients treated for SFA occlusive lesion versus non-occlusive lesions.

Methods: A retrospective single center study included 261 consecutive patients (pts) with SFA lesions suffering from peripheral artery disease treated with endovascular intervention. The pts were divided into two groups (Occlusive group: n=180 pts, Non-occlusive group: n=81 pts). The primary patency and 12-months clinical outcome were compared between the two groups.

Results: Clinical risk factors such as diabetes, hypertension and history of smoking was more frequent in the occlusive group. Primary patency (85% vs. 73%, $p < 0.05$) and primary assisted patency (91% vs. 77%, $p < 0.05$) at 12-months were lower in occlusive group. However, the incidence of other individual hard endpoints including mortality and repeat revascularization were not different between the two groups. In multivariate analysis, occlusive lesion was an important independent predictor for target lesion revascularization (TLR) who underwent SFA endovascular intervention (OR 2.746, $p < 0.05$).

Conclusion: The primary patency was lower in pts who had occlusive SFA disease compared with the pts with non-occlusive disease and occlusive lesion was an independent predictor of future TLR who underwent SFA endovascular intervention.

The use of bioactive stent HeliFlex in patients with atherosclerotic lesions of superficial femoral artery: First Experience

M. Generalov, A. Oleschuk, D. Maystrenko, A. Ivanov, A. Khmel'nitskiy

FSBI "Russian research center of radiology and surgical technologies" of the Ministry of Healthcare of the Russian Federation, Department of Vascular Surgery, St. Petersburg, Russia

Aim: To evaluate the results of the use of stents with bioactive coating based in the treatment of patients with atherosclerotic lesions of the superficial femoral artery (SFA).

Methods : Between January 2014 on December 2015 endovascular interventions on the SFA performed in 25 patients (16 men and 9 women, mean age $61,3 \pm 9,2$ years). By classifying TASC II occurred following types SFA lesions: Type A - 9 (36%) of cases of type B and C - 7 (28%) and 9 (36%) cases, respectively. Stents used for implantation with a bioactive coating based on titanium oxynitride HeliFlex (Hexacath, France). The level of nitric oxide (NO) in blood ($N=24 \mu\text{mol/L}$) was determined with immunosorbent method by using test-systems (R&D Systems Inc., USA). Blood analysis was made before the surgery and in 7 days after implantation of the bioactive stent.

Results : The overall procedure success rate was 100%. Revealed normalization of blood levels of NO: preoperative average was $18,9 \pm 2,3 \text{ mmol / l}$, after the operation - $28,9 \pm 4,1 \text{ mmol / l}$.

Primary patency of endovascular constructions were as follows: 30 days - 100%; 6 months - 92% (2 occlusion); 12 months - 88% (1 restenosis, 2 occlusion).

Patients with restenosis or occlusion was performed repeated endovascular intervention. At the moment, all 25 patients retained permeability of the blood vessels of the lower limbs with no signs of restenosis in the areas of operations.

Conclusion: The use of stents with a bioactive coating based on titanium oxynitride increases the level of NO in blood that can help to prolong the period of function of endovascular constructions.

The first data on the primary patency of stents of this type can hope to improve long-term results of treatment of patients with atherosclerotic lesions of the SFA.

Clinical outcome of popliteal artery aneurysms treated with a heparin-bonded stent graft.

G. Bahar, I.F.J. Tielliu, E.L.G. Verhoeven, C. Möllenhoff, M. Antonello, C.J. Zeebregts, M.M.P.J. Reijnen

Vascular surgery department, Groningen, Netherlands

Aim: The use of self-expanding stent grafts for the treatment of popliteal artery aneurysms (PAA) is a matter of debate although several studies showed similar results as compared to open surgery. In the past years, a new generation stent graft with heparin-bonding technology became available. The aim of this study is to present the results of endovascular PAA repair with heparin-bonded stent grafts.

Methods: All patients with PAA treated with a heparin-bonded polytetrafluoroethylene (ePTFE) stent graft between April 2009 and March 2014 were prospectively gathered in a database and retrospectively analyzed. Data were collected in four participating hospitals. Standard follow-up consisted of clinical assessment, duplex ultrasound examination and X ray of the knee at 6 weeks, 6 months, 12 months, and annually thereafter. Primary endpoint of the study was the primary patency. Secondary endpoints were primary-assisted and secondary patency rates and limb salvage rate.

Results: A total of 72 PAA were treated in 70 patients. Mean age was 71.2 ± 8.5 years; 93% was male (n=65). The majority of the PAA were asymptomatic (78%). Sixteen cases (22%) had a symptomatic PAA of which seven (44%) presented with acute ischemia. Early postoperative complications occurred in two patients (3%). Median follow-up was 13 months (range 0-63 months). Primary patency rate at 1 year was 83% and after 3 years 69%; primary assisted was 87% at 1 year and 74% after 3 years. Secondary patency rate was 88% and 76% at 1 and 3 years respectively. There were no amputations during follow up.

Conclusion: Endovascular treatment of PAA with heparin bonded stent grafts is a safe treatment option with good early and mid-term patency rate comparable to open repair using the great saphenous vein. There were no amputations in this series.

Saturday, 23.04.2016

Hall: Dunav

08.00-09.30

V-9: RESEARCH

Moderators: I. Lovricevic (Croatia), P. Matic (Serbia)

Key Note Lecture: Update on long-term behavior mechanical of new generations of endoprotheses. N. Chakfe (France)

Quantitative histopathology of abdominal aortic aneurysms in human and in porcine models

Z. Tonar, J. Molacek, K. Houdek, L. Nedorost, L. Eberlova, K. Witter, V. Treska

Faculty of Medicine in Pilsen, Charles University in Prague, Biomedical Center and Department of Histology and Embryology, Pilsen, Czech Republic

Aim: Our aim was (1) to quantify the histopathology of the abdominal aortic aneurysm wall in human, and (2) to assess segmental and age differences in wall composition of porcine aorta in age range used most commonly used for experiments.

Methods: Using quantitative histology and stereology, we estimated the area fraction of elastin, collagen, actin, vimentin, and desmin, the vasa vasorum, and inflammatory infiltration in (i) 6 normal and 65 aneurysmatic (asymptomatic, symptomatic, and ruptured) aortae. Similar analysis was done (ii) in 123 tissue samples collected from five segments (thoracic ascending; aortic arch; thoracic descending; suprarenal abdominal; infrarenal abdominal aorta) of porcine aortae from growing domestic pigs (n=25, age 0-230 days).

Results: Asymptomatic aneurysms (i) had more abundant inflammatory infiltrates than symptomatic aneurysms. Compared with the aneurysmatic aorta, the normal aorta contained less collagen and more elastin, actin, desmin; in addition, it was more vascular. Medium-sized aneurysms were the most actin and vimentin rich, and large aneurysms were the most vascular. In porcine aortae, (ii) the descending thoracic aorta had the greatest elastin fraction, which decreased proximally toward the aortic arch as well as distally toward the abdominal aorta. Abdominal aortic segments had the highest fraction of actin, desmin, and vimentin. Thicker aortic segments had more elastin and collagen with fewer contractile cells. The collagen fraction decreased from ascending toward the descending aorta.

Conclusion: Our results show that (i) asymptomatic abdominal aortic aneurysm walls often have more potentially deleterious histopathological alterations than symptomatic AAA walls. This result indicates that a progression from asymptomatic aneurysms to rupture can be expected and screening patients who are at risk of rupture could be beneficial. In porcine aortae (ii), segmental and age differences in the elastin network, collagen, and smooth muscle phenotype are to be considered when performing experiments.

Role of calcifying nanoparticle in the development of hyperplasia and vascular calcification in an animal model

N. Cenizo-Revuelta, JA. Gonzalez-Fajardo, T. Alvarez-Gago, B Aguirre , C. Vaquero

Laboratory Surgical Research and Experimental Techniques. University of Valladolid, Valladolid, Spain

Aim: Calcifying nanoparticles (NPs) have been detected recently in calcified human arterial specimens and are involved in the process of calcification. This study was designed to test the hypothesis that human-derived NPs could worsen the response to arterial endothelial injury and induce vascular calcification.

Methods: The right carotid artery of 24 New Zealand rabbits was injured with an angioplasty balloon. Animals were perfused intravenously with saline (100 mL) during the experiment and divided into three groups: group-A, control; group-B, exposed to NPs (2 mL) obtained from calcified aortic valves; and group-C, exposed to NPs (2 mL) and treated postoperatively with atorvastatin (2.5 mg/kg/24 h). At 30 days, both carotid arteries were removed and examined histologically. Blood measurements were monitored during the study.

Results: The intimal hyperplasia area was significantly larger in the injured right carotid artery compared with the left unoperated carotid artery in all groups. There was no significant variation in medial area between groups. Morphometrically, the intima/media ratio (IMR) was significantly higher in damaged carotids compared with controls. A significant increase of IMR was found in group-B (1.81 ± 0.41) compared with group-A (0.38 ± 0.59; $p = .004$) or group-C (0.89 ± 0.79; $p = .035$). Differences between groups C and A were not significant ($p = .064$). Calcifications were observed in six animals, all of which had been exposed to NPs (4 in group-B, 2 in group-C, $p = .027$). Plasma levels of cholesterol and triglycerides remained stable.

Conclusions: This research confirms the ability of systemic inoculation of human-derived NPs to accelerate hyperplasia and stimulate calcification in localized areas of arteries previously submitted to endothelial damage, while it was harmless in healthy arteries. Atorvastatin was demonstrated to slow down this process.

Functionalizing small diameter vascular grafts with gelatin

B. Aliakbarian, P. F. Ferrari, P. Perego, D. Palombo

Department of Civil, Chemical and Environmental Engineering, University of Genoa, Genoa, Italy

Aim: Among native tissues, there is an increase demand for small diameter vascular grafts for the treatment of ischemic heart diseases and peripheral vascular diseases. The limit availability of suitable autogenous veins for complete coronary revascularization and the frequency of occlusion with small diameter prosthesis have attracted several investigators to turn their attention toward the fabrication of alternative biocompatible small caliber grafts. With the support of biomaterials, many tissues have been engineered, including skin, bone, cartilage and tendon. In this work, we fabricated and functionalized a bio-compatible, bio-absorbable and bio-degradable electrospun graft with small internal diameter. Gelatin coating was used to improve the mechanical properties, bioactivity and cytocompatibility of the electrospun hybrid scaffold.

Methods: in this study small diameter tubular grafts (2 mm) was fabricated by electrospinning process. A blend of (poly(glycerol-sebacate) (PGS) and poly(ϵ -caprolactone) (PCL) at a ratio of 1:1 v/v was used. Our electrospinning apparatus (Spinbow, Bologna, Italy) consists of a high voltage power supply (PCM series, Spellman, NY, USA) for charging the polymer solution, a grounded aluminum roto-translating drum (2 mm outer diameter and 13 cm in length) for collecting fibers and a syringe pump (KDS-100, KD Scientific, Holliston, MA, USA) for controlling feed flow rate. The 1.50 mL of polymer solution was pumped through a 5 mL syringe at a flow rate of 2.20 mL h⁻¹, under a driving voltage of 17.0 kV with a 18.0 cm vertical distance between the metallic needle (16-gauge blunt ended) and the collector. The tubular collector had a rotation and translation speed of 500 rpm and 600 mm min⁻¹, respectively. Fibers were collected at room temperature. Electrospun constructs were then placed in a desiccator overnight to allow the completely evaporation of the solvents. Surface modification was performed by gelatin coating at 37 °C for 1 h followed by UV-irradiation for 1 h. Morphology, water uptake, mass loss and mechanical properties of functionalized electrospun grafts were measured and compared with scaffolds without coating treatment.

Results: the results of this study confirmed the importance of surface treatment with gelatin to enhance the properties of the electrospun graft to be used as vascular prosthesis. A significant increase in the mechanical features such as burst pressure and Young modulus was noticed when gelatin coating was used. SEM images illustrated gelatin surface modification did not affect pore interconnectivity of the scaffolds.

Conclusion: Functionalized electrospun scaffolds with porous structures with large surface area mimic the micro-environment of the ECM. However, further in-vitro tests must be employed to examine the successful compatibility with functional endothelial and smooth muscle cells.

Inflammation As Carotid Restenosis Predictor Following Eversion Endarterectomy

S. Tanaskovic, S. Babić, D. Nenezić, N. Ilijevski, P. Popov, G. Vučurević, P. Gajin, P. Matić, N. Aleksić, D. Jovic, B. Lozuk, M. Nešković, N. Đukić, P. Jovanović, Đ. Radak

Institute of Cardiovascular Diseases "Dedinje", Belgrade, Serbia

Aim: The role of inflammation is well known in atherosclerosis pathogenesis. The aim of our paper is to evaluate predictive value of acute phase inflammatory markers (high-sensitivity (hs)-CRP, fibrinogen, C3 complement) in development of carotid restenosis after eversion endarterectomy and to compare our results of carotid angioplasty (CAS) and "redo" surgical treatment as carotid restenosis treatment modalities.

Material and Methods: From March 1st till August 1st 2010, a total of 300 patients underwent eversion CEA. HsCRP, C3 complement and fibrinogen were collected on the day of the surgery (06h), 48h after the surgery as well as 1 month, 6 months, 1 year and 2 years thereafter. During the follow up, all patients underwent colour duplex scan evaluation and computed tomography (CT) angiography if indicated. 'Inflammation score' was created that consisted of 6 predictive values of mentioned inflammation factors (hsCRP, C3 complement, fibrinogen). If measured values were within the referent values they were scored with 0 and 1 if above this values. Minimum score was 0 and maximum score 6.

Results: Restenosis rate was more frequent in females than males, $p=0.003$. However, in males on aspirin and inflammation score >2 significantly more restenosis was noted during the follow up than in patients with score <2 , $p=0.043$. Patients not taking aspirin were protected from restenosis in 72.8% regardless of gender. We have found that both procedures, carotid angioplasty and "redo" surgery, have good results still with better outcome after the angioplasty with regards to post-procedural stroke ($p=0.002$) and recurrent restenosis rate ($p=0.001$).

Conclusion: Inflammation is significant predictor for development of carotid restenosis after eversion CEA in males while females have increased risk for restenosis regardless of inflammation score. Identification of patients with high-risk of restenosis could influence more aggressive statin and antiplatelet therapy following endarterectomy in order to reduce restenosis rate.

Prognostic value of neutrophil-to-lymphocyte ratio in patients undergoing endovenous ablation therapy for venous insufficiency

S. Gunaydin

Numune Training and Research Hospital/ Department of Cardiovascular Surgery, Ankara, Turkey

Aim: Neutrophil to lymphocyte ratio (N/L) is a novel inflammation index that has been shown to independently predict poor clinical outcomes. In this study, we retrospectively documented the role of N/L ratio in patients undergoing endovenous ablation therapy (EVA) for predicting success of the procedure, perioperative complications and midterm outcome.

Methods: A total of 267 CEAP 2-6 patients who were suffering from the symptoms of great saphenous vein insufficiency underwent EVA within a six-month period. Of these patients, 155 (36.2%) received radiofrequency ablation (RFA) and 112 (26%) endovenous glue ablation (EGA) treatment.

Results: Preoperative mean N/L ratio was 3.03 ± 0.9 in RFA and 3.36 ± 1.2 in EGA groups. Patients with higher N/L ratio had significantly higher rate of postoperative ecchymosis (hazard ratio: 1.05; 95% CI: 1.01-1.10; $P = 0.033$) and postoperative pain (hazard ratio: 1.1; 95% CI: 1.01-1.2; $P = 0.04$). At six-month evaluation, higher N/L ratio correlated partial recanalization rate in RFA ($r=0.84$) and less average venous clinical severity score ($r=0.75$). Receiver operating characteristic analysis revealed that using a cut-off point of 3, N/L ratio predicts complications with a sensitivity of 75% and specificity of 62%.

Conclusion: N/L ratio, which is quick, cheap, easily measurable novel inflammatory marker with routine complete blood count analysis, is a surrogate marker of perioperative outcome in patients undergoing EVA therapy.

Carotid bifurcation geometry is associated with common carotid intima-media thickness

K. Spanos, L. Livieratos ¹, C. Karathanos ², N. Labropoulos ³, A. Giannoukas ²

¹ Vascular Ultrasound imaging Unit, Department of Radiology, "KAT" Hospital of Athens, Greece

² Department of Vascular Surgery, University Hospital of Larissa, Faculty of Medicine, School of Health Sciences, University of Thessaly, Larissa, Greece

³ Department of Vascular Surgery, Stony Brook Medical Center, USA³

Objective: To investigate the impact of carotid bifurcation geometry in the development of early carotid atherosclerosis as derived from the common carotid artery (CCA) intima-media thickness (IMT).

Methods: Prospectively collected data including a cohort aged 50-60 years without history, symptoms and signs indicative of cardiovascular disease. Demographic variables and atherosclerotic risk factors (hyperlipidemia, hypertension, diabetes mellitus or history of relevant medication, smoking, family history of cardiovascular disease, body mass index, lipoprotein (a), serum creatinine and homocysteine levels) were recorded. All individuals were subjected to carotid duplex scanning in order to determine carotid intima-media thickness (IMT) and the presence of plaque (focal thickening >0.15mm). Also the end-diastole diameters (d) were measured at the level of common carotid artery (CCA), carotid bulb (BULB), internal carotid artery (ICA) and external carotid artery (ECA).

Results: In 294 carotid bifurcations without the presence of plaque (207 with and 87 without atherosclerotic risk factors) after multiple regression analysis, the higher dBulb and lower ratios dICA+ dECA/ dCCA and dICA2+ dECA2/ dCCA2 were associated with early wall thickening in CCA (IMT) independently of the presence of atherosclerotic risk factors.

Conclusion: Carotid bifurcation geometry appears to be associated with early wall (IMT) thickening independently of the presence of risk factors for atherosclerosis. These parameters may be useful in early identification of subjects at risk but before their use in clinical practice they should be confirmed in future studies with larger numbers.

Cerebral oxidative damage and the use of shunt during carotid endarterectomy

M. Dragas, I. Koncar^{1,2}, N. Ilic^{1,2}, M. Pljesa-Ercegovac³, M. Ercegovac^{2,4}, T. Simic³, M. Markovic^{1,2}, D. Opacic⁵, L. Davidovic^{1,2}

¹Clinic for Vascular and Endovascular Surgery, Clinical Centre of Serbia, Belgrade, Serbia,

²Faculty of Medicine, University of Belgrade, Belgrade, Serbia,

³Faculty of Health, Medicine and Life Sciences, Department of Physiology, Maastricht University, Maastricht, The Netherlands,

⁴Clinic of Neurology, Clinical Centre of Serbia, Belgrade, Serbia,

⁵Institute of Medical and Clinical Biochemistry, Faculty of Medicine, University of Belgrade, Belgrade, Serbia

Aim: To test the hypothesis whether routine shunting during carotid endarterectomy in regional anesthesia protects the brain from ischemia and reperfusion injury.

Methods: Prospective study included 60 patients operated due to carotid stenosis. Patients were preoperatively randomized in two groups: shunt group (sCEA) operated with conventional endarterectomy technique and routine shunting, and no-shunt group (eCEA) undergoing eversion endarterectomy without shunting. All operations were performed in regional anesthesia. Blood from the ipsilateral jugular vein was sampled before carotid clamping, immediately after declamping, 5 minutes and 10 minutes after declamping, for measurement of biomarkers of reperfusion injury (protein thiol groups, carbonyl groups, nitrotyrosine, malondialdehyde). Before and 24h after surgery, peripheral venous blood was sampled to determine the antioxidant capacity (glutathione peroxidase, superoxid dismutase). Serum was separated, aliquoted and frozen at -70oC for further analysis.

Results: There were no deaths, neurologic, or other complications. Carotid clamping time, due to the use of shunt, was significantly shorter in sCEA group ($P<0.01$), while total duration of surgery in this group was significantly longer ($P<0.01$). There were no differences in changes of biomarkers of protein oxidative damage (protein thiol, carbonyl groups and nitrotyrosine). In both groups increase of malondialdehyde was recorded upon carotid declamping, greater in patients operated without the use of shunt ($P<0.01$). In the shunted group (sCEA), no changes in the activity of key antioxidant enzymes were noted on the first postoperative day. In eCEA group, the activity of superoxide dismutase and glutathione peroxidase was significantly higher 24h after surgery, compared to preoperative values ($P<0.01$).

Conclusion: Routine shunting during carotid endarterectomy causes significantly less changes in concentrations of oxidative stress biomarkers and antioxidant capacity.

Biomechanical properties of isolated rabbit carotid artery in experimental atherosclerosis

V. Jokovic, M. Čolić, D. Knežević, M. Matković, S. Sretenović, S. Pantović, M. Rosić

Clinical Center "Kragujevac", Center for vascular surgery, Kragujevac, Serbia

Aim: The goal of our work was to examine the dynamic responses and biomechanical properties of isolated rabbit carotid arteries in experimental atherosclerosis.

Method: We present the experimental and mathematical model for a precise assessment of isolated blood vessel dynamic response under a sudden change of blood pressure and for detecting changes in biomechanical properties. The isolated segments of rabbit carotid arteries were used under constant perfusion flow and pressure induced (0mmHg to 140mmHg) blood vessel distension in control and experimental group.

Results: Obtained results indicate the influence of atherogenic diet on the time history of the pressure and diameter change in between alternate steady states, when a abrupt change of blood pressure occurs at the vessel outlet. The time needed to achieve alternate steady state in pressure-time experiments was much higher in experimental group (5.12 vs 7.03 s), showing the slower pressure change. There was no significant difference between two groups in time needed to achieve maximal diameter-alternate steady state, in diameter-time experiments when adrenalin was not applied. When adrenalin was applied we gain statistically significant lower values in experimental group and therefore faster change of blood vessel diameter (6.29 ± 0.43 vs 5.59 ± 0.24). Also, we have detected changes in the stress-strain and shear-stress law, caused by atherogenic diet. In experimental group values of stress and shear stress were lower.

Conclusion: The atherogenic diet have influenced the dynamic response of blood vessels in order to increase time needed to achieve maximal pressure which indicates that viscous component is larger in experimental group. On the other hand we can see faster change of blood vessel diameter under influence of adrenalin in experimental group suggesting a lower reactivity of experimental group vessels or blunted contractile response on adrenalin.

Hemodynamic variation on renal arteries in custom- made and pivot branch fenestrated grafting with different orientations of renal stents

J.Ou, A.Yik-Sau Tang, S. Wing-Kueng Cheng, T.L. Chiu, K.W. Chow

Vascular surgery, Hong Kong, China

Aim: This study aims to investigate the hemodynamic effects of custom-made and pivot branch (p-branch) fenestrated stent-grafts on renal arteries with different stent angulations, using computational fluid dynamics analyses.

Methods: Computational models of custom-made and p-branch fenestrated grafting were constructed in the form of a 26mm stent-graft and 6mm renal stent. The longitudinal orientation of the renal stent in both fenestrated models was represented by a takeoff angle (ToA) between the renal stent and distal stent-graft centerline, varying from 55° to 125° in this study. Renal stents were designed protruding into the stent-graft. Computational simulations were performed in the FLUENT platform with realistic boundary conditions governing blood flow.

Results: The flow rate and wall shear stress (WSS) were generally higher and re-circulation zones were smaller in both fenestrated models when the renal stent faced caudally. In custom-made fenestrated models, the highest flow rate (0.390L/min) was detected at 70° and 90° ToA and maximum WSS on vessel segment (16.8Pa) at 55° ToA. In p-branch models, option A and option B displayed no difference in hemodynamics for the same angulation. The highest flow rate (0.378L/min) and maximum WSS (16.7Pa) were both calculated at 55° ToA. The largest and smallest re-circulation zones respectively presented at 90° and 55° ToA in both fenestrated models. Custom-made fenestrated models exhibited more flow rate, higher WSS and smaller re-circulation on renal arteries than p-branch models with the same stent angulation.

Conclusion: Navigating the renal stent downwards may obtain hemodynamic optimization in both devices. Custom-made fenestrated graft appears to have better hemodynamics than p-branch graft and is still a preferred choice for elective patients. Further clinical evidence is required to validate these computational simulations.

The impact of smoking status on the endothelial function and left ventricle systolic function in coronary artery disease

Jae BinSeo, Ji-Hun Ahn

Boramae Medical Center, Soonchunhyang Goomi Hospital, Seoul, South Korea

Aim: Pulse amplitude tonometry (PAT) is a useful tool for the assessment of endothelial function expressed as reactive hyperemia index (RHI). Smoking is a well-known risk factor for atherosclerosis including coronary artery disease and endothelial dysfunction. The aim of this study was to identify the impact of smoking status on endothelial function and left ventricle (LV) systolic function and to elucidate the association between endothelial function and LV systolic function according to smoking status in coronary artery disease.

Methods: Data from 92 patients who underwent PAT and percutaneous coronary intervention after coronary angiography were analyzed.

Results: RHI values were 1.74 ± 0.46 , 1.62 ± 0.38 and 1.45 ± 0.44 in non-smoker, ex-smoker, and current smoker group, respectively. We could found the statistical difference between non-smoker and current smoker group (1.74 ± 0.46 vs 1.45 ± 0.44 ; $p=0.030$). Also, LVEF values were $65.4 \pm 8.8\%$, $61.5 \pm 10.9\%$ and $58.4 \pm 14.8\%$ in non-smoker, ex-smoker, and current smoker group, respectively. We could found the statistical difference between non-smoker and current smoker group ($65.4 \pm 8.8\%$ vs $58.4 \pm 14.8\%$; $p=0.040$). In addition, there were no association between RHI and LVEF in non-smoker and ex-smoker group ($r=-0.039$; $p=0.825$; $r=-0.120$; $p=0.455$, respectively). However, in the current smoker group, there was positive relationship between RHI and LVEF ($r=0.674$; $p=0.003$). In other words, the better endothelial function, the better LV systolic function.

Conclusion: Current smoking is more likely to give rise to poorer endothelial function and LV systolic function in coronary artery disease. Moreover, current smoking is an influential factor in the relationship between endothelial function and LV systolic function.

Saturday, 23.04.2016

Hall:Mediterraneo

08.00-09.30

CVA: CARDIOVASCULAR ANESTHESIA & CRITICAL CARE

Moderators: M.Jovic (Serbia), WT.McBride (UK)

Key note speaker: Biomarkers of renal dysfunction at cardiac surgery, WT. McBride (UK)

Cervical plexus block for carotid endarterectomy: intraoperative hemodynamic stability in patients with different degree of cardiovascular disease

K. Stevanovic, B. Barisic, J. Varnai-Canak, N. Ristanovic, R. Trailovic, B. Kukic

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Aim: Regarding intraoperative hemodynamic stability, none of various anesthesiological techniques used for carotid endarterectomy can be considered completely safe for the patient. Although cervical plexus block represents a convenient technique in the terms of neurological function monitoring during carotid artery cross-clamping in conscious patients, its effects on intraoperative hemodynamics may be questioned. The aim was to compare the frequency of intraoperative hemodynamic instability between patients with different degree of cardiovascular disease who underwent carotid endarterectomy under cervical plexus block.

Methods: A total of 105 consecutive patients underwent carotid endarterectomy under cervical plexus block during a three month period at our institution. Patients' medical records were retrospectively reviewed. The Vascular Study Group of New England Cardiac Risk Index was used in order to classify patients into 3 groups: low (I), medium (II) and high risk group (III). Intraoperative hemodynamic instability was defined as an increase/decrease in systolic and diastolic blood pressure or heart rate for $\geq 20\%$ from basal value, for 2 minutes. Statistical analysis included Chi-square, Kruskal Wallis tests and ANOVA.

Results: Group I consisted of 59 patients (56.2%), group II of 25 (23.8%) and group III of 21 (20%). No statistically significant differences in blood pressure alterations (systolic and diastolic) between groups, were noted, except for systolic blood pressure value immediately after cervical block application – in medium risk group: the value was statistically significantly higher compared to the other two groups ($p=0.04$). The frequency of intraoperative bradycardia (I-28.8%, II-36%, III-47.6%) and the incidence of intraoperative hypotension (I-27.1%, II-36%, III-33%) also were not significantly different between groups ($p=0.294$, $p=0.688$, respectively).

Conclusion: Three study groups did not differ regarding the frequency of intraoperative hemodynamic instability. In order to clarify whether cervical plexus block represents safe technique with no effect on hemodynamics, we firmly believe that high quality multicenter clinical trials are needed.

Anesthetic challenge in infant presenting with Bland-White-Garland syndrome

A. Mandras

Institute for mother and child health care, Belgrade

Background: Infants with ALCAPA are in great risk of myocardial ischemia, cardiac arrest and sudden cardiac death. Patients that survive perioperative period have an excellent prognosis for functional recovery of the left ventricle regardless of their preoperative state. Therefore anesthetic management has to be meticulous in order to create optimal conditions for maximal recovery.

Case report: This case report describes anesthetic management in 4 months old girl with ALCAPA. She was admitted to the hospital for further investigations due to detected cardiac murmur during an episode of acute bronchitis. Besides respiratory symptoms, sings of failure to thrive were obvious. ECG and subsequent echocardiography revealed ALCAPA anatomy and poor left ventricular performance. Indication for immediate surgery was made. We faced a malnourished child, with dilated, poorly contractile left ventricle (LVED 34mm, LVFS 19%, LVEF 40%) and moderate respiratory symptoms due to previous infection. A detailed anesthetic plan had to be made to minimize potential complications such as myocardial ischemia and cardiac arrest. Goal of anesthetic management is to avoid major swings in blood pressure, titrate fluids to maintain adequate preload but avoid pulmonary edema and in postbypass period careful selection of drugs to support myocardial function and prevent ischemia.

Central venous-to-arterial carbon dioxide difference in cardiac surgical patients

D.Unic-Stojanovic^{1, 2}

¹Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

²Faculty of Medicine, University of Belgrade

Aim: The purpose of this study was to evaluate the clinical relevance of high values of central venous-to-arterial carbon dioxide difference (dCO₂) in cardiac surgical patients admitted to a postoperative ICU. We hypothesized that dCO₂ could serve as a useful tool to identify patients still requiring hemodynamic optimization at ICU admission.

Methods: This was a prospective observational study in a 22-bed heart surgery intensive care unit (ICU) in a tertiary university hospital. Blood central venous and arterial gas analysis on ICU arrival were recorded. Patients were separated according to central venous oxygen saturation: ScvO₂≥70% (high-ScvO₂) and ScvO₂<70% (low-ScvO₂). The high-ScvO₂-group was separated according to dCO₂: dCO₂≥8 mmHg (high-dCO₂) and dCO₂<8 mmHg (low-dCO₂).

Results: 96 patients, underwent elective cardiac surgery with cardiopulmonary bypass, included in this analysis. On admission to the ICU, 43 patients had an ScvO₂≥70%. On the basis of the first postoperative dCO₂ measurement, 8 patients (16%) were assigned to the high-dCO₂ group. After ICU admission, the high-dCO₂ group showed a significantly higher lactate levels (p=0.001) in comparison to the low-dCO₂ group. The lactate levels remained significantly elevated after 8 hours (p=0.008). The high-dCO₂ group patients had trend towards longer hospital length of stay (LOS) (8.3±2.3 vs. 10.1±2.4 days, P=0.068), significantly longer ICU LOS (55.5±42.5 vs. 147±95 hours, P=0.012), longer duration of mechanical ventilation (12.5±4.1 vs. 18.0±4.0 hours, P=0.001) and MODS on days 1, 2 and 5.

Conclusion: A high dCO₂ at admission in the postoperative ICU was significantly associated with increased postoperative complications in cardiac surgical patients.

Cardio – organo protection

M. Jovic^{1,2}

¹Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

²Faculty of Medicine, University of Belgrade

Aim: Brief periods of ischemia, followed with periods of reperfusion provoke reversible dysfunction in many organs. In myocardium, underlying mechanisms of dysfunction are: damage on the extracellular collagen matrix and electrical impulse conduction system associated with disbalance in energy production and utilisation. The next attack of more severe period of hypoperfusion / ischemia induces a net of intracellular mechanisms protecting the functional integrity of cells. Some anesthetics, metabolic modulators and brief remote ischemia might modulate intracellular signaling on similar way, inducing myocardial preconditioning.

Methods: Twenty-two patients scheduled to undergo elective aortic valve replacement due to aortic valve stenosis with cardiopulmonary bypass (CPB) were prospectively randomized in two groups regarding the anesthetic regime: sevoflurane and propofol. Hemodynamic parameters, biomarkers of cardiac injury and brain natriuretic peptide (BNP) were measured preoperatively and postoperatively. In tissue samples, taken from the interventricular septum, key mitochondrial molecules were determined by Western blot, real time PCR, as well as confocal microscopy and immunohisto- and immunocyto-chemical analysis.

Results: There were no difference in hemodynamics, inotrop support and cardio specific biomarkers level between two groups. Biocellular findings suggested difference in intracellular signaling dependent on anesthetic drug. The protein levels of cytochrome c oxidase and ATP synthase were higher in sevoflurane than in propofol group. Nevertheless, cytochrome c protein content was higher in propofol than sevoflurane receiving patients. Propofol group also showed higher protein level of connexin 43 (Cx43) than sevoflurane group.

Conclusion: Our data indicate that sevoflurane and propofol lead to cardiac protection via different mitochondrially related molecular mechanisms. It appears that sevoflurane acts regulating cytochrome c oxidase and ATP synthase, while the effects of propofol occur through regulation of cytochrome c, Cx43, mtDNA transcription and UCP2. Based on recent scientific evidence these mechanisms and anesthetics, protecting mitochondrial function, might protect other organs.

Implications of acute kidney injury after cardiac surgery: what we should know

M. Filipovic

Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

Aim: Data regarding risks and consequences of acute kidney injury (AKI) after cardiac surgery are disarmingly few and unclear. This study defined the incidence, risk factors and prognostic implication of AKI in single center cohort operated on between December 2009 and November 2015.

Methods: Data from 11594 patients (mean age: 63.8 ± 10 , female 43.7%, diabetics 43.7% combined surgery 87.5%, LV ejection function $< 35\%$ - 56.2%, urgent surgery 18.2%) were analysed using multivariable logistic regression modeling. AKI was defined according to RIFLE (Risk, Injury, and Failure, and Loss, and End-stage kidney disease) criteria.

Results: RIFLE scores of I to F were detected in 12.5%, and continuous venovenous hemofiltration was needed in 6.6%. Risk factors for AKI were: Troponin I release > 15 , blood transfusion, diabetes. Overall hospital mortality averaged 3.6% and overall AKI mortality was 13.8%. Mortality rate increased with each RIFLE stratification (Normal 3.6%, RIFLE F 12.5%).

Conclusion: AKI is a highly prevalent and prognostically important complication. Some of the risk factors identified may be modifiable.

General versus regional anaesthesia for carotid endarterectomy

D. Unic-Stojanovic

Cardiovascular Institute Dedinje Belgrade, Medical school, University of Belgrade, Serbia

Carotid endarterectomy (CEA) is a preventive procedure that reduces the risk of stroke in patients with haemodynamically significant carotid stenosis. There is a widespread view that surgery, including CEA also, is safer, if it can be performed under regional anaesthesia (RA) rather than general anaesthesia (GA). This is a review about pros and cons for both anaesthetic techniques: RA and GA. Although, the debate continues as to whether RA or GA is safer, the choice of anaesthetic technique is a complex decision and surgical teams should be able to offer both RA and GA. The individual approach is the ideal choice.

Rotation thromboelastometry in goal-directed treatment of bleeding-case reports

T.Kocica^{1,2}, N. Savic^{1,2}, L.Davidovic²

¹ Department of transfusion medicine, Vascular and Endovascular Surgery Clinic, Clinical Center of Serbia, Belgrade, Serbia

² Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

BACKGROUND: Rotation thromboelastometry (ROTEM) is valuable “point of care” test which provides information on the whole kinetics of haemostasis. Precisely detecting the cause of bleeding, it makes possible distinguishing between coagulopathy and surgical bleeding as well as choosing the most appropriate haemostatic drug and/or blood product therapy. ROTEM analysis with specific reagents (EXTEM, INTEM, FIBTEM, APTEM and HEPTM) provides a subtle discrimination of haemostasis disorders: coagulation factors concentration and activity impairment, changes in levels of functional fibrinogen, fibrin clot firmness and polymerization, platelet dysfunction, hyperfibrinolysis, presence of heparin. On the basis of established criteria and individual experience in ROTEM tests performance and interpretation it is possible to prescribe a specific haemostatic therapy. We describe the value of ROTEM in three haemostatically compromised patients.

Case reports: In the first case, we present the ROTEM-based dynamic assessment and goal directed treatment of hemorrhage in patient with massive bleeding during operation of aortic abdominal aneurysm. Intraoperative ROTEM analysis showed early stages of hypofibrinogenaemia. Due to it fibrinogen (cryoprecipitate) was administrated. In the second patients with excessive postoperative bleeding after resection of aortic aneurysm ROTEM test showed prolonged CFT with decreased α -angle and decreased clot amplitude and platelet transfusion and DDAVP were applied. In the third one delay postoperative bleeding was caused of ROTEM verified hyperfibrinolysis and successfully managed with antifibrinolytic agents (tranexamic acid).

Rotation thromboelastometry (ROTEM) as point-of-care coagulation monitoring is valuable as it assesses the whole clotting process, from fibrin formation through to clot retraction and fibrinolysis, at the bed side with minimal delays. ROTEM facilitates rapid and accurate detection of coagulopathy and hyperfibrinolysis in patients with bleeding.

Influence of open surgical and endovascular abdominal aortic aneurysm repair on clot quality assessed by ROTEM® test

M.Sarac, A.Tomic, I. Marjanovic. S.Sarac

Clinic for vascular and endovascular surgery, Military, Medical Academy, Belgrade, Serbia

Aim: The disturbances in hemostasis are often in OR and EVAR of AAA. These changes may influence the perioperative and early postoperative period inducing serious complications. The aim of this study was to compare the impact of OR and EVAR of AAA on clot quality assessed by ROTEM® tests.

Methods: The study included 40 patients who underwent elective AAA surgery. The ROTEM® test was performed in 4 points during the operation. Three ROTEM® tests were performed as: EXTEM, INTEM, FIBTEM. All tests included the assessment of the MCF and the platelet component of clot strength was presented as maximal clot elasticity MCE.

Results: The time required for the procedure was significantly longer and loss of blood was greater in the OR group than in the EVAR group ($p < 0.001$). The significant deviation of MCF values in EXTEM test was found mainly in the point 3 ($p \leq 0.004$) with significant difference between groups ($p < 0.001$). A significant difference of MCF values in INTEM test between groups was found in the points 3 and 4 ($p < 0.001$), which were dose-dependent by heparin sulfate. The MCF values in FIBTEM test were more prominent in the OR group than in the EVAR group without significant difference. The significant changes of MCF values in the FIBTEM test were found during time in both groups ($p < 0.001$). The values of MCE were lower in both groups, but without significant changes and difference between groups ($p = 0.105$).

Conclusion: The disorders of hemostatic parameters assessed by ROTEM® tests are present in both the OR and the EVAR groups being more prominent in OR of AAA. Vigilant monitoring of hemostatic parameters evaluated by ROTEM® tests could help in administration of the adequate and target therapy in patients who underwent EVAR or OR of AAA.

Sunday, 24.04.2016

Hall: Atlantic I

09.00-11.00

C 8: CONGENITAL HEART DISEASE

Moderators: O.Oto (Turkey), M.Stajevic (Serbia)

Key Note Lecture: Challenges of leading a paediatric cardiac surgery program in Serbia
M.Stajevic (Serbia)

Rehabilitation of hypoplastic pulmonary arteries in pulmonary atresia with ventricular septal defect : Systemic to pulmonary artery shunt or palliative right ventricular and pulmonary artery connection?

Q.Chen, S. Li, Z.Hua, K.Yang, J.Yan, H.Zhang, H.Gao, K.Ma, S.Zhang, L. Qi

Fuwai Hospital, Beijing, China

Aim: Rehabilitation of native pulmonary artery (PA) was controversial in older patients with pulmonary atresia with ventricular septal defect (PAA/VSD) and hypoplastic PAs. This study compared the effect of a systemic-to-pulmonary artery shunt (SPS) with right ventricular-pulmonary artery connection (RV-PA) on the development of the native PAs.

Methods: Between January 2010 and December 2014, 182 patients with PAA/VSD and hypoplastic PA underwent palliated surgery using RV-PA connection (n=69, 37.9%) or SPS palliation (n=113, 62.1%) to promote native PA growth. Early and late results were compared between the two groups.

Results: Hospital mortality occurred in 5 (2.7%) patients (2 [2.9%] for RV-PA versus 3 [2.7%] for SPS, $p=1.00$). There was no statistical difference in length of ICU stay, duration of ventilatory support, or rate of postoperative complications between the two groups. Mean follow up was 2.5 ± 1.5 years. There was 6 (5.5%) shunt occlusion and 5 patients needed surgical shunt revision in SPS group. The RV-PA group had a higher rate of interventional PA dilation and stent implantation to address PA stenosis compared with the SPS group ($P=0.000$). 49.3% patients in RV-PA group achieved adequate PA and underwent complete repair (32.7% in SPS group, $P=0.039$). Using the Kaplan-Meier curve, cumulative complete repair rate at 3, 5 years was $64.8\pm8.2\%$ and $86.9\pm10.9\%$ in RV-PA group, $52.8\pm6.3\%$ and $57.1\pm7.1\%$ in SPS group. There was 1 death in RV-PA group after complete repair and 4 interstage death in SPS group.

Conclusion: The RV-PA connection was more effect to promote hypoplastic native PA growth and had higher complete repair rates than systemic-to-pulmonary artery shunt for patients with PAA/VSD

Tricuspid valve surgery after previous radical correction of “blue” congenital heart defects

M.Saidov, VP Podzolgov, MR Chiaureli, BN Sabirov, IA Yurlov, TYu Danilov

A.N. Bakoulev Scientific Center for Cardiovascular Surgery, Moskow, Russian Federation

Aim: The tricuspid valve disease after previous radical correction of “blue” CHD is caused by different of morphological changes needs the repair in 24. The aim of the study to present the results of operations in the tricuspid valve in patients who have previously performed radical correction of congenital heart blue.

Methods: During the 2000 to 2014 years 40 re-do procedures on the tricuspid valve after radical correction of tetralogy of Fallot - 20 patients (50.0%), double outlet right ventricle - 9 (22.5%), transposition of the great arteries - 8 (20.0%), pulmonary atresia - 3 (7.5%) were performed. The age of patients ranged from 3 to 47 years (26±16). The indications for reoperation were: tricuspid valve dilatation in 12 patients (25.0%) due to residual high right ventricle pressure >50 mmHg of (15.35%); >65 mmHg (34.50%); >85 mmHg (49.15%) and/or valve deformation due to infective endocarditis (5.5%), papillary muscle dysfunction, leaflets injury in 34 (74%). The III-IV regurgitation grade and congestive heart failure in all patients were observed. 6 (16.6%) patients corresponded to II NYHA class, 21 (58.3%) - to the III, and 9 (25.0%) - to Class IV. TC was done 12 patients, of which 2 cases were re plastic. The tricuspid valve replacement was needed in 28 (70.0%) patients (in 8 after plastics) and plastic procedure in 12 (30.0%).

Results: One patient (2.7%) died. Non-lethal complications were observed in 7 (17%) cases: low cardiac output in 3, pacemaker implantation in 3, neurological in 1. Follow-up was 6±4, 1 years. The survival at 1, 5 and 10 years was 97%, 93% and 85% respectively. Most of patients (80.6%) moved to I-II class NYHA.

Conclusion: The results of tricuspid valve repair after radical correction of “blue” CHD are good. Surgical treatment is preferable before the onset of severe heart failure.

Fontan operation with simultaneous atrioventricular valve replacement: institutional experience

D.Kovalev, Podzolkov VP, Yurlov IA. Zelenikin MM, Putiato NA, Astrakhantseva TO,
Pursanov MG, Yurpolskaya LA, Barishnikova IY, Mustafina LE, Zaets SB

Bakoulev Center for Cardiovascular Surgery, Moscow, Russia

Aim: Optimal management for critical aortic stenosis and depressed left ventricular function in early infancy remains a challenge. Outcomes of cardiopulmonary bypass surgery and percutaneous balloon dilation are not favorable. We aim to present our novel hybrid balloon valvuloplasty through the ascending aorta via sternotomy, whose advantages include: 1) avoiding cardiopulmonary bypass which deteriorating ventricular function, and 2) facilitating directionally and effectively heart resuscitation when lethal arrhythmia, cardiac arrest or perforation occasionally occurs.

Methods: Indication of this procedure was small infants (age <3 months) with critical congenital valvular aortic stenosis and depressed left ventricular function (EF < 50%). In the hybrid operating room, sternotomy was performed and a purse-string suture was placed in the anterior wall of ascending aorta. The size of balloon was selected according to the diameter of the aortic valve, starting with a balloon/annulus diameter ratio of 0.8, but not exceeding 1.0. The duration of each dilatation was ≤5s.

Results: From 2011 to 2014, consecutive 6 infants (mean age: 45.2±9.7days, mean weight: 4.88±0.93kg) with critical aortic stenosis and depressed left ventricular function (Mean preoperative EF is 37.5±8.2%) were retrospectively included. There is no in-hospital death, no more than mild aortic regurgitation, no cardiac rupture and no lethal arrhythmia. Only one infant experienced cardiac arrest during dilation and subsequently underwent surgically aortic repair with cardiopulmonary bypass. The aortic valve pressure gradient decreased significantly from 89.88 ± 17.35 mmHg to 17.88± 6.53 mmHg immediately after dilation (P<0.001). During the 16 months median follow-up time, neither significant aortic re-stenosis nor re-intervention noted.

Conclusion: With low mortality and morbidity, this novel hybrid procedure appeared to be option for critical aortic stenosis and depressed left ventricular function in early infancy.

Late reoperations after arterial switch operation for complex congenital heart disease correction

T.Danilov, V.Podzolkov, M. Chiaureli, V. Samsonov, D.Kovalev, N.Tyukina, L.Mustafina

Aim: According to the literature data, some patients (10-20%) after arterial switch operation require repeat surgical correction. The aim of this study is to evaluate results of reoperations in patients in long-term period after arterial switch operation.

METHODS: During the years 2007 - 2015, 25 patients underwent reoperation late after arterial switch operation. Original diagnoses were simple transposition of the great arteries in 17, transposition of the great arteries with ventricular septal defect in 5 and Taussig-Bing anomaly in 3 patients. The interval between the arterial switch operation and reoperations ranged from 1 to 14 years (mean, 6.9 ± 2.3). In 15 patients with diffuse right ventricle outflow tract obstruction, a transannular patch was inserted. In 5 cases, supra-valvular pulmonary stenosis was repaired by enlargement using a xenopericardial or synthetic patch. Four patients underwent aortic valve replacement, and 1 patient – mitral valve replacement for correction of the valve disease.

RESULTS: There was no hospital and late mortality. Mean follow-up was 3.7 years (range, 0.5-14 years). The right ventricular pressure (105.9 ± 30.2 to 57.5 ± 15.5 mm Hg, $p < 0.05$) and peak systolic gradient right ventricle - pulmonary artery (79 ± 27.3 to 30.4 ± 14 mm Hg, $p < 0.05$) decreased significantly after removing of the right ventricle outflow tract obstruction. The left ventricular ejection fraction increased (58 ± 6 to $63.8 \pm 4.7\%$, $p < 0.05$) and the left ventricle end-diastolic volume index reduced (104.1 ± 4.7 to 88.4 ± 4.1 ml/m², $p < 0.05$) significantly in patients after correction of the valve pathology. Freedom from second reoperation was 92% at 1 year and 82% at 5 years.

CONCLUSION: Right ventricle outflow tract obstruction and neo-aortic valve insufficiency is the most common indications for reoperation after arterial switch operation. Repeat surgical intervention in patients after arterial switch operation is a safe procedure that provides good immediate results.

Results of surgical treatment for neonatal aortic coarctation

V.Milovanovic, I.Vulicevic, T.Zecevic, I.Jovanovic, V.Parezanović, M.Djukić, J.Kalanj, I.Stefanovic, S.Ilic

University Children's Hospital, Belgrade, Serbia

Aim: Evaluation of a single center experience with neonates referred for a surgical treatment of aortic coarctation.

METHODS: During a six years period (2006-2012) 69 consecutive neonates underwent coarctation repair through posterolateral thoracotomy. Median age at operation was 10 ± 7 days, median weight was 3,2 kg (range 1,4-4,4 kg) with 6 patients weighing less than 2,5 kg. Isolated coarctation was present in 33 patients (group 1), 12 patients had associated ventricular septal defect (group 2), and 24 patients had associated complex intracardiac lesion (group 3). "Extended end to end" aortoplasty was operative technique in 53 patients, "radically extended end to end" in 13, and "end to end" in 3 patients.

RESULTS: The overall mortality was 5,7 % (4/69). Mortality rates in group 1 (1/33) and 2 (0/12) were significantly lower than in group 3 (3/24). In group 1 single death was related to non cardiac concomitant condition. In group 3 all deaths were related to associated cardiac lesions and their subsequent repair. In group 2 pulmonary artery banding was performed in 2 patients, ventricular septal defect was closed in additional operation in 7 patients. Spontaneous ventricular septal defect closure was observed in 5 patients. All but 5 survivors were followed up for 57 months (range 5-112). The recoarctation rate was 11,6% (7/60), leading to 7 balloon angioplasties and 1 reoperation with actual freedom from reintervention for recoarctation of 87,3%. In group 3 there were 14 patients with some form of Shone complex requiring 8 additional operations (3 Ross-Kono, 3 commissurotomies for aortic stenosis, 2 repairs for mitral stenosis) and one balloon dilatation for aortic stenosis. All of the patients from group 1 and 2 are symptom free and without therapy.

CONCLUSION: "Extended end to end" aortoplasty and its variants provides an adequate and safe repair of neonatal coarctation with low recoarctation rate. Balloon angioplasty is an effective treatment for recoarctation. Successful management of the neonates with associated ventricular septal defect is possible with repair of coarctation alone. Coarctation repair is just "a tip of an ice berg" in treatment of patients with Shone complex.

Tricuspid valve repair after previous radical correction of septal congenital heart defects

M.Saidov, VP Podzolkov, MR Chiaureli, BN Sabirov, IA Yurlov, TYu Danilov

A.N. Bakoulev Scientific Center for Cardiovascular Surgery, Moscow, Russian Federation

Aim: The tricuspid valve repair is needed after radical correction of CHD in 28-35% of cases. The aim of the study is to observe tricuspid valve morphological changes after previous radical correction of septal congenital heart defects.

Methods: During January 2000 to December 2015 46 tricuspid valve repair were performed after radical correction of ventricular septal defect in 18 (39.1%) patients, atrial septal defect in 7 (15.2%), partial pulmonary veins anomaly in 5 (10.8%), isolated pulmonary stenosis in 10 (21.74%), partial AV canal in 4 (8.7%), and oblique AV canal in 2 (4.3%). The median age was 23 ± 14 (7-62) years. The associated pathology were: mitral or aortic valve insufficiency, ventricular or atrial septal defect recanalization and arrhythmias. 3 (5.7%) patients corresponded to II functional NYHA class, 36 (78%) to III, and 7 (15.3%) to IV. Different types of annulo and/or valvuloplasty in 13 (28.3%) patients with posterior or septal leaflet damage of the tricuspid valve were performed. In 36 (78%) with the front or septal leaflet damage the replacement of the valve by biological prosthesis had been done. Simultaneously the repair of associated cardiac pathology was performed in 28 patients.

Results: Median The follow-up ranged from 5 to 172 (88.2) months. One patient (2.1%) died due to acute heart failure caused by ischemic attack. 15-year survival rate was 82%.

Conclusions: The tricuspid valve insufficiency repair after radical correction of septal congenital heart defects is associated with good results and may be the method of choice in patients with concomitant cardiac pathology.

Surgical outcome in complex double outlet right ventricle with complete atrioventricular canal defect: 15 years of experience from a single center

Q. Chen, S.Li, Z.Hua, K.Yang, J.Yan, H.Zhang, K.Ma, S.Zhang, L.Qi

Fuwai Hospital, Beijing, China

Aim: The combination of double-outlet right ventricle (DORV) and complete atrioventricular septal defect (CAVSD) is a rare lesion that presents a challenge for surgical repair. The objective of this report is to evaluate our surgical approach with this disease and to determine the best surgical management for this malformation.

Methods: From 2001 to 2014, medical records of 109 patients who had complex DORV with CAVSD were reviewed. Forty five patients had heterotaxy syndrome (24 with total anomalous pulmonary venous connection). Moderate or greater common atrioventricular valve (AVV) regurgitation was present in 53.2%. The mean follow-up period was 3.5 ± 2.7 years (maximum, 13.4).

Results: Twenty two patients had primary biventricular repair (Group BR), and 87 patients were palliated to single ventricle (Group SV). Early mortality was 13.6 % for Group BR and 5.7 % for Group SV. Four patients were converted to biventricular repair after a median of three years of palliation. Only 24 patients reached the total cavapulmonary connection. Moderate or greater preoperative AVV regurgitation was univariate risk factor for early death in both groups. Overall survival at 1, 5 and 10 years was 81.8%, 81.8% and 58.4% in Group BR, and 94.3%, 86.5 % , 86.5% in Group SV. Three patients had AVV reoperation in Group SV and one patient required AVV reoperation in Group BR. At last follow-up, 12.2% of survivors in Group SV had severe AVV regurgitation and none in Group BR had severe left AVV regurgitation. All survivors remained in good condition in New York Heart Association (NYHA) class I or II in Group BR, but 10.2 % of survivors in Group SV were in NYHA III.

Conclusion: Biventricular repair of complex DORV with CAVSD remains a challenge. Moderate or greater AVV regurgitation represented the risk factor for death and significant complication in both strategie

Valve replacement in the pediatric population – our experience

M.Stajevic, I.Dizdarevic, I.Sehic, J.Kosutic, V.Vukomanovic, S.Prijic, I.Krunic, B.Mojisic

Institute for Mother and Child Health care of Serbia " Dr Vukan Čupić", Department of cardiothoracic surgery , Belgrade, Serbia

Aim: Valve replacement in children still remains a challenge, due to of the selection of the appropriate substitute, growth potential and changed relations between the cardiac chambers and great vessels in congenital heart disease.

METHODS: A retrospective study was conducted in 19 patients with isolated valvular disease aged 9.8 to 17.4 (mean 13.4) years operated between 2003 and 2015. In 14 patients the aortic valve was replaced, mitral valve in two. In one patient concomitant aortic and mitral valve replacement was done, and in one patient a Bentall operation. Due to intraoperative dissection of the aorta in one case, aortic valve plasty and the insertion of the graft at the site of the ascending aorta was performed. By 2006 four biological valves were implanted on aortic position. In other patients mechanical valves were implanted (since 2007), three in the mitral position and 12 in the aortic position.

RESULTS: Overall early mortality in our study was 10,5 %. One patient with associated aortic and mitral valve disease and Williams syndrome died due to acute aortic dissection. The second patient who recieved the Bentall procedure died seven days after discharge. Two patients developed complete heart block. All patients were followed up to age of 18. During follow-up there were no hemorrhagic and thromboembolic complications. There were no reoperations.

CONCLUSION: Aortic valve replacement in children and adolescents may represent a satisfactory alternative to other operative techniques. In addition to the usual risks known in adults, narrowed left ventricular outflow tract as well as the basic pathology of valve presents additional challenges in children. Mitral valve replacement as a forced solution showed satisfactory results in our series.

Outcomes following surgical ligation of patent ductus arteriosus in premature infants

V.Milovanovic, M.Kostić -Todorević, I.Vulicevic, T.Zecevic, I.Jovanovic, V.Parezanović, M.Djukić, J.Kalanj, I.Stefanovic, J.Perunicic, B.Beloševac, S.Ilic

University Children's Hospital, Belgrade, Serbia

Aim: Description of the population characteristics of premature infants referred for surgical ligation of patent ductus arteriosus (PDA). To define morbidity, mortality and associated risk factors following PDA ligation in premature infants.

METHODS: During a three years period (2010-2013) 31 consecutive preterm neonates underwent PDA ligation through posterolateral thoracotomy. Referral characteristics were prematurity, left atrium to aorta relation bigger than 1.6, inability to wean from mechanical ventilation and prior failed treatment with nonsteroid anti-inflammatory drug. Patients with associated intracardiac anomalies and severe genetic disorders were excluded from study. Median gestational age was 27 weeks (range 24-35), mod for APGAR score was 3, median weight at operation was 1100 gr (range 600-2000). Median age at PDA ligation was 27 days (range 13-69), median duration of mechanical ventilation before PDA ligation was 22 days (range 0-69)

RESULTS: There was no mortality, all patients were discharged from hospital with median follow up of 42 months (19-77). Median time to extubation after the surgery was 6 days, median duration of hospitalization was 112 days. Incidence of rethinopathy was 29% (9/31), neurodisability 25% (8/31), vocal cord palsy 19% (6/31), bronchopulmonary dysplasia 45 % (14/31) with only one patient requiring home oxygen therapy. There were no hemodynamic instability, pneumothorax or chylothorax following surgery. One patient developed coarctation after PDA closure and subsequently underwent aortoplasty, incidence of systemic infection following surgery was 3% (1/31).

CONCLUSION: Surgical ligation of PDA is safe and effective treatment that is associated with short term respiratory improvements. Incidences of bronchopulmonary dysplasia, rethinopathy and neurodisability are related to prematurity, not to surgical ligation of PDA. Prolonged medical therapy with aim of avoiding surgical procedure can be detrimental and can lead to increased hospital morbidity.

Comparative results of aortic valve replacement with and without Manouguian technic in adolescents with «normal» aortic annulus

V.Mataev, V. Samsonov, V. Podzolkov, O.Medvedeva, I.Urlov, A.Gadjieva

Bakulev Scientific Center for Cardiovascular Surgery/Department of Surgical Treatment of Children after 3 Years of Age, Moscow, Russian Federation

Aim: Manouguian technic performed in pediatric patients provides the opportunity to implant prostheses of the “adult” diameter

Materials and methods: 25 children aged 10-14 years underwent aortic valve replacement with Manouguian technic used in 13 cases (groups 1&2). Mean age was $12,5 \pm 1,4$ and $12,2 \pm 1,3$ years ($p=0,6$). Average value of aortic valve annular diameter was $22,0 \pm 1,5$ and $20,6 \pm 2,0$ ($p=0,1$). There where no aortic annulus hypoplasia in both groups (median Z-score 2(1-3) and 1(1-3) ($p=0,02$)). Underlying pathology in both groups was valvular aortic stenosis with median peak gradient of 60 (17-114) and 80 (24-110) mm Hg ($p=0,03$). There where 2 patients in each group with additional subvalvular obstruction – subvalvular membrane and muscular outflow tract hypertrophy in 1st group, and only muscular hypertrophy in the 2nd.

All surgery had being preformed in moderate hypothermia with 28 degrees Celsius. Median bypass time was 83 (64-176) and 131 (100-293) min. ($p=0,0003$); median ischemic time was 85 (41-135) and 105 (70-196) min. ($p=0,001$). Mechanical valves where used in all patients.

Results: No significant difference had being observed on such variables as implanted valve diameter, in-hospital stay and left ventricle ejection fraction. There was no in-hospital or late deaths.

Follow-up was complete in 100% cases; median time was 3,5 and 2,5 years ($p=0,6$). We have observed significant increase of mitral valve insufficiency in the 2nd group – 4 patients developed mild MVR, and 2 patients developed severe MVR, requiring valve replacement in 1 case. Reoperation frequency was also different (but not statistically significant) in both groups: in the 1st group only 2 patients required valve replacement, with cumulative freedom 84,6% versus 5 patients and cumulative freedom of 61,5% in the 2nd group. Factors associated with reoperation where infective endocarditis in 1st group and progressive ascending aorta dilation in 2nd.

Conclusion is missing

C563

Treatment of pediatric patients with vascular anomalies causing airway obstruction.

I.Sehic, M.Stajevic, I.Dizdarevic

Mother and Child Health Institute of Serbia, Cardiothoracic Surgery Department, Belgrade, Serbia

Aim: The aim of this study is to present the patients with vascular anomalies causing airway obstruction, and to evaluate the treatment of this patients in our Institution where tracheal surgery is not developed.

METHODS : In a retrospective study over 10 years period (2006-2015) 19 patients (11 boys - 58% and 8 girls - 42%) were identified with vascular anomalies causing airway obstruction. Their ages ranged from 5 days to 10 months (mean 4.4 months).

RESULTS: Patients with vascular anomalies causing airway obstruction presented in less than 1.5% of all operated patients. The most common diagnosis was Double aortic arch (10 patients, 53%), followed by Aberrant right subclavian artery (3 patients, 16%) and Pulmonary artery sling (3 patients, 16%). Stridor was the commonest presenting symptom (15/19). Associated anomalies were presented in 4/19 patients. All patients were examined by flexible fiberoptic bronchoscopy and cardiac echo. Barium esophagography was performed in 7/19 patients. Angiography, performed in 7/19 patients and chest CT scanning in 5/19 patients were the most accurate imaging modalities. Postoperative ventilatory dependency occurred in 2/19 patients who proceeded with tracheostomy. Deep wound infection occurred in 1/19 patient. There were two deaths in patients with pulmonary artery sling associated with congenital tracheal stenosis. A substantial number of patients available to follow-up (5/16) were still experiencing stridor 3 months postoperatively.

CONCLUSION: Vascular anomalies causing airway obstruction are rare, however, often present with common symptoms. Most children present in early infancy. The investigations of choice are flexible fiberoptic bronchoscopy, cardiac echo and barium esophagography. Surgery is safe although a number of patients will have persisting symptoms.

Sunday, 24.04.2016

Hall: Atlantic II

09.00-10.30h

C 9: AORTIC SURGERY

Moderators: K.Sagakis (Germany), M.Kocica (Serbia)

Key Note Lecture:

Embolisation of the Atrial Septal Defects occlusion device and late removing from abdominal aorta

F. Cingoz, A. Iyisoy, E. Kuralay

Gulhane Military Medical Academy, Department of Cardiovascular Surgery, Ankara, Turkey

Background: Percutaneous closure of secundum type atrial septal defects (ASD) have been become the first choice in nowadays. The possible complications are device embolisation, erosion, pericardial effusion with tamponade, thrombus formation, atrial arrhythmias, stroke and endocarditis.

Case report: A 35 year-old-female underwent a 13.5 mm ASD occluder device implantation eight months ago in another center. The patient had dyspeptic symptoms due to the ASD or device embolisation. During the routine control at fifth months after closure, the device was not seen in the interatrial septum on transthoracic echocardiography. The computed tomography guided angiogram confirmed the position of the device into abdominal aorta at the level of the superior mesenteric artery. It was planned to remove the device percutaneously with using 20 mm. Amplatzer goose neck snare kit. It was caught the device with two snares but we were not able to move the device. The device was removed surgically and the patient was discharged from hospital uneventfully 5 days later.

Late ASD occluder embolisation usually require surgical removing because of the possible adhesion and endotelial fibrosis.

Comparison of left ventricular apex versus other arterial cannulation sites for the operative management of acute type A aortic dissection

P.Vukovic, S. Micovic, P. Milojevic, M. Peric, I. Stojanovic, I. Nesic, D. Unic Stojanovic, B. Djukanovic

„Dedinje“ Cardiovascular Institute, Belgrade, Serbia

Aim: The selection of the arterial inflow site for cardiopulmonary bypass during surgical treatment of patients with acute aortic dissection remains a very important issue. The aim of the study was to analyse the influence of transapical cannulation on the outcomes of surgical treatment of acute type A aortic dissection.

Methods: Between January 2010 and November 2015, emergent surgical aortic repair was performed in 187 consecutive patient with acute type A aortic dissection. In all patients open distal anastomosis was performed using deep hypothermic circulatory arrest. Patients were divided into two groups: transapical cannulation group and other cannulation sites group (including femoral and axillary artery cannulation). Operative variables and intrahospital outcomes were compared between groups.

Results: The most frequent cannulation site was the transapical cannulation (116 patients, 62.1%). The other sites cannulation group (71 patients, 37.9%) included 36 patients with femoral and 35 patients with axillary artery cannulation. The mortality rate in the transapical group was 17.9% and 17.1% when other arterial cannulation sites were performed ($p=0.89$). There was no difference in major intrahospital outcomes between groups: postoperative stroke rate was 7.8% in transapical group and 8.8% in other cannulation sites group ($p=0.79$), myocardial infarction rate was 5.2% vs 4.3%, (transapical group vs other cannulation sites group respectively, $p=0.80$), and the incidence of postoperative acute renal failure in transapical group was 10.3% vs. 7.2% in the other cannulation sites group ($p=0.48$).

Conclusion: This study suggests that transapical cannulation can be routinely used as a fast and safe method to establish cardiopulmonary bypass in patients with type A aortic dissection. No difference in operative outcomes was found when transapical cannulation was compared to the other cannulation sites.

Valve Sparing Aortic Root Surgery Via Aortic Root Remodeling With External Root Annuloplasty: Preliminary Results In A Single Institution

N. C. Villamucho, A. C. Rico, N. C. Lee, E.S. Tuazon, M.D. Martinez, A. M. Manio

Philippine heart center, Quezon city, Philippines

Aim: Aortic root pathology can result in changes in the geometry of the sinutubular junction, sinuses, and the ventricular-aortic junction, leading to development of ascending aortic aneurysms, which may be distinct from aortic root disease producing aortic regurgitation, but may present as a combination of morphologic manifestations. Standard surgical procedure involved composite valve and graft replacement. This study was undertaken using Lansac's aortic root remodeling with external root annuloplasty to preserve the native aortic valve of patients with aortic root aneurysms with or without dissection. We sought to describe the early outcomes of patients undergoing this procedure and whether the preservation of the aortic valve affected survival.

Material: A total of 7 patients underwent valve sparing aortic root surgery via aortic root remodeling with external root annuloplasty. We reviewed the clinical material, operation methods, echocardiography check during operation and at discharge. Outcomes after the procedure were also documented.

Results: 7 patients underwent the procedure (6 male, 1 female), with a mean age of 40.714 ± 11.4 years. All patients presented with aortic root aneurysm with dissection. 1 patient underwent aortic valve replacement due to failure of repair. There were 2 morbidities reported, pneumothorax with subsequent thoracostomy and acute kidney injury which was managed medically, 1 patient was readmitted and eventually expired >30 days post op due to sepsis and Hospital acquired pneumonia. 2DED prior to discharge showed no aortic regurgitation in 2 patients, 2 patients had mild AR, No 2D echocardiogram was done on 3 patients.

Conclusion: Preliminary results show that valve sparing aortic surgery via aortic root remodeling with external root annuloplasty is a viable alternative to aortic root replacement in our institution. More cases are needed to further validate the success of this procedure in our setting. Another important factor is postoperative care and follow up in order to document if there is improvement after repair.

Carotid Versus Axillary Artery Cannulation For Acute Aortic Dissection Type A

I. Aleksic, J. Hoffmann, D. Radakovic, I. Schade, M. Leistner, S. Sommer, A. Gorski, R. Leyh

Department of Thoracic and Cardiovascular Surgery, Wuerzburg, Germany

Aim: Antegrade perfusion is considered superior in aortic dissection. Routinely, axillary artery cannulation is used. Cannulating the carotid artery is advocated by few centers. We aimed to detect differences between these cannulation strategies.

Methods: We retrospectively evaluated 133 patients undergoing surgery for acute aortic dissection type A (AADA) between 04/07 and 12/13. A total of 74 patients were cannulated via the axillary artery (group A; N=31) or via the left or right carotid artery (group C; N=43). Patients with intrathoracic (N=27), femoral artery cannulation (N=27) or cannulation of one ante- and one retrograde site (N=5) were excluded from further analysis.

Results: Age, gender, preop. EuroscoreII and distribution of preoperative malperfusion (coronary, central nervous system, visceral, renal or extremities) did not differ among groups. Initiation of cardiopulmonary bypass (CPB) was faster in group C than in group A (40.5 ± 7.2 vs. 55.2 ± 21.4 min, $P < .05$) with the use of vascular grafts in an end-to-side fashion. Procedure time was also shorter in group C (283.9 ± 143 min vs 341 ± 82.8 min; $P = .0021$). Cardiopulmonary bypass and cross-clamp times were similar. Postoperative complication rate regarding stroke (group C 8% vs group A 6%), perturbation (group C 10%, group A 20%), acute renal failure (2 vs 7% respectively), paraplegia, mesenteric ischemia, compartment syndrome (all 0%) were similar. However, 30d mortality was lower in group C than in group A (5% vs. 23%; $P = .032$).

Conclusion: Carotid artery cannulation for AADA is faster than axillary artery cannulation with the use of vascular grafts. The procedure time is shorter due to more rapid initiation of CPB and easier decannulation. Whether the decreased 30d mortality in the carotid artery cannulation group is simply due to faster initiation of CPB and shorter operative procedures or attributable to better cerebral perfusion with different perfusion rates is the subject of ongoing analysis of our study cohort.

Associated Djumbodis Aortic System Versus Conventional Surgery in Type A Dissection.

C. Thierry, D. Sirota ², J. Nader ¹, A. Chernyavsky ².

¹University Hospital Amiens France, Amiens, France

²Novosibirsk Research Institute of Circulation Pathology

Aim: To study the impact on operative mortality, late aortic events and reinter-ventions of additional antegrade bare stenting of the distal dissected aorta with a Djum-bodis (DJ) versus conventional surgery in a population of patients operated on for type A dissection.

Methods: This bicentric study included a consecutive cohort of 131 patients operated on under circulatory arrest for type A dissection with (DJ group, n=40) or without (control group, n=91) additional stenting of the distal thoracic aorta with a Djumbodis system between 2005 and 2015. Operative mortality was assessed by CUSUM control-charts. Late outcomes were analyzed for patients discharged from hospital with the method of Kaplan-Meier after matching cases and controls 1:1 by means of a propensity score where age, sex, type of dissection (acute or subacute versus chronic), clinical presentation (complicated versus uncomplicated) and participating center were included into the logit model.

Results: Operative mortality was 20% and 17,6% in the DJ and control group respectively (p=0.9) and was within statistical control with a 95% certitude. Age was the only independent factor for operative (0,008) mortality. Sixty patients were included in the matched survivors cohorts study for a median follow up of 110 months. Late mortality from aortic cause was 10% and 20% in the matched DJ and control group respectively (p=0,25). Rates of aortic events during follow up were 23,3% and 50% in the matched DJ and control group respectively (p= 0.03). However freedom from aortic or vascular reintervention was 71% and 67% in DJ and control group respectively (p=0,4).

Conclusion: Operative mortality was comparable in both groups. Rates of reinter-ventions were identical in matched cohorts of early survivors, but significantly more frequent aortic events in the control group during follow-up resulted in more late deaths from aortic cause.

5 Years (2011 – 2015) Results Of Type A Dissecting Aortic Aneurysms Surgical Treatment.

V.I. Kravchenko, O.A. Tretyak, L.B. Larionova, D.V. Gorban, Y.M. Tarasenko, V.V. Lazoryshinets

National M.Amosov ICVS NAMS of Ukraine, Kyiv, Ukraina

Aim : Despite significant progress in surgical techniques and perioperative management of treatment of type A aortic dissecting aneurysm (AAD) save the life of these patients remains an insoluble problem. This study was to evaluate the last 5 years series of results after AAD surgery in our Institution.

Materials and methods : 286 consecutive patients with AAD were operated on during 2011 – 2015. Males were 217 (75,9%). Their age ranged 20 – 79 years, mean $52,4 \pm 9,6$. Acute/subacute dissection were in 241 (84,3%). The main factors leading to dissection were: arterial hypertension, atherosclerosis – in 201 (70,3%); bicuspid aortic valve – 29 (10,1%); Marfan syndrome – 28 (9,8%); cystomedianecrosis – 21 (7,3%); other – 7 (2,4%); 199 (69,6%) patients had type I according De Bakey classification; 24 (8,4%) had previous cardiac surgery. Most of the patients had severe complications before surgery: acute aortic valve insufficiency - 131 (46,0%); haemopericardium (heart tamponade) - 48 (16,8%); acute renal insufficiency - 26 (9,1%); severe left ventricle failure - 9 (3,1%); multiorgan failure - 6 (2,1%). In 99 (34,6%) patients with arch injury - deep hypothermia (18-20°C) and retrograde cerebral perfusion were used. Supracoronary grafting with or without valve resuspension - in 174 (60,8%) patients, Bentall-de Bono operation in 107 (37,4%); other - in 5 (1,8%) cases.

Results: Throughout the all period (1980-2015) of our experience in surgery of AAD we performed 680 patients with the 11,9% (81 pts) 30-day mortality. The postoperative 30 days mortality at the last 5 years period decrease to 4,5% (13 patients). The reasons of death were: heart failure – 2 (0,7%), acute renal failure – in 4 (1,4%) patients, hemorrhage – in 2 (0,7%) patients, multiorgan failure – in 3 (1,0%), cerebral complication – 1 (0,35%), sepsis – 1 (0,35%).

Conclusion: Obtained surgical experience, improvement of heart and brain protection in surgical treatment of dissecting aneurysms type A permitted to achieve hospital mortality 4,5%.

The Safety of Intermittent Deep Hypothermic Circulatory Arrest in Low-Volume Center

K. Mershin, R. Akchurin, E. Tabakian, S. Partigulov, K. Gruzdev, S. Kuzina, R. Latypov

Cardiology Research Center, Department of cardiovascular surgery, Moscow, Russia

Aim: The deep hypothermic circulatory arrest (DHCA) poses a degree of doubt for inexperienced team, especially if longer DHCA periods expected. Pulmonary endarterectomy (PEA) can serve as a “pure” model to develop new techniques of DHCA for different vascular and hybrid operations.

Methods: From January 2010 to September 2015 we performed 24 consecutive elective PEA operations with hypothermia of 20°C core temp. The mean age of patients was 49±12 years. We didn't have any brain monitoring. No methods of upper body perfusion used. DHCA initiated after reaching 20° C. The DHCA time didn't exceed 20-25 min. The reperfusion period no less than 10-15 min between arrest periods was used. The strict control of core, nasopharyngeal and blood temperatures as well as timing of DHCA and reperfusion were mandatory. Bypass time was 212±44 min. Mean summarized DHCA time was 35.5 min (7-60 min). The mean number of DHCA was 2.2 per patient with a maximum of 4 in two cases. Standard examination by neurologist and neurocognitive assessment was done.

Results: There was two postoperative deaths caused by: bronchial bleeding (1) and hypoxemia-related multiorgan failure (1). Effective reduction of pulmonary vascular resistance (PVR) was seen in the majority of survivors, with PVR reaching 277±80 dyn-5. No major or transient neurologic deficits were observed. Neurocognitive assessment showed mild changes of cognitive function in 4 (18%) patients. There was no cases of renal impairment among survivors.

Conclusion: The strict adherence to the main principles of DHCA makes surgery very safe even in the settings of low-volume center. Intermittent DHCA with reperfusion periods can be safe, allowing comfortable surgical field for up to 60 min.

Ascending aortic repair with supra-aortic bypass for acute type A aortic dissection.

H. Kitahara, K. Hashizume, S. Inoue, A. Nemoto, K. Hayashi, R. Hosoda, H. Kaneyama, H. Shimizu

Saiseikai Utsunomiya Hospital, Tokyo, Japan

Aim : Ascending aortic repair (AAR) is standard therapy for acute type A aortic dissection (AAAD) particularly in emergency case. However, a risk of postoperative complications such as rapid dilatation or rupture of dissected aorta remains high. On the other hand, emergent total arch repair (TAR) does not result in an excellent outcome. In our institution, AAR is performed with at least one supra-aortic bypass. This procedure can make it possible to perform thoracic endovascular aortic repair (TEVAR) as a second surgery more easy and safe.

Methods : Consecutive 18 patients diagnosed with AAAD between March 2014 and March 2015 were retrospectively reviewed. Of these patients, 11 patients underwent AAR with supra aortic bypass as a first surgery in planned hybrid repair.

Results: Ten patients were classified with De Bakey type I, and one patient with type II. Mean age was 63.8 years old. Four patients were men. Thrombosis of the false lumen was observed in four patients. AAR was performed with antegrade selective cerebral perfusion under deep hypothermic circulatory arrest. Branches of supra-aortic bypass were brachiocephalic artery (BCA) in 5 patients, BCA and left common carotid artery (LCA) in 2 patients, and BCA, LCA and left subclavian artery (LSA) in 4 patients. Mean operation time was 335 ± 30 minutes. Transient ischemic attack was observed in 2 patients. One patient died of intestinal ischemia. Mean follow-up time was 14 ± 4.2 months. Five patients underwent TEVAR postoperatively.

Conclusion: AAR with supra-aortic bypass is safe and effective method for AAAD, particular for emergency case. Further study will be needed to evaluate the efficacy of this technique.

Impact of Mesenteric Ischemia in Patients with Type A Acute Aortic Dissection

G.R. Carmen, C.A. Parasca¹, A. Pasare¹, C.N. Bulescu¹, S.I. Bubenek-Turconi², C. Filipescu², V.A. Iliescu¹

¹ IUBCV "Prof. CC Iliescu", Bucharest, Romania

² Department of Anesthesia and Intensive Care, IUBCV "Prof. CC Iliescu", Bucharest, Romania

Aim :Mesenteric ischemia is a rare, but severe complication of type A acute aortic dissection and it is associated with a significant surgical morbidity and mortality.

Methods: Among 300 patients admitted for acute type A aortic dissections who underwent surgery between January 2005 and December 2013 in our hospital, only 9 patients (3.2%) were complicated with visceral ischemia. Diagnosis of mesenteric ischemia was made in the presence of abdominal pain and typical findings for peritoneal irritation at clinical examination, associated with severe metabolic acidosis, lactate increase or abnormal abdominal CT. After dividing the patients into two groups based on the presence or absence of mesenteric ischemia, comparisons of baseline characteristics were made and mortality rates were determined.

Results :There were no differences in baseline characteristics between groups. The hospital mortality rate was 77.8% (7 of 9) in patients with mesenteric ischemia, 25.3%% (69 of 273) in patients without mesenteric ischemia ($p = 0.002$), and an overall in-hospital mortality of 27.0% (76 of 282) in all patients. The long-term overall mortality rate was 88.9% (8 of 9) patients with mesenteric ischemia, 42.0% (115 of 274) in patients without mesenteric ischemia ($p = 0.012$), and an overall in-hospital mortality of 43.5% (123 of 283). Multivariate analysis reveals mesenteric ischemia as the most important independent predictor of in-hospital mortality (OR=5.91, 95% CI=0.96-36.4).

Conclusion: Although rare, acute type A aortic dissection complicated with mesenteric ischemia has the highest postoperative mortality and morbidity.

Frozen elephant trunk in chronic aortic disease: what device for which patient?

V. G. Ruggieri, R. B. Soulami, A. Ansemi, N. Saad, O. Fouquet, X. Beneux, J.P. Verhoye

Cardiovascular and Thoracic Surgery, Pontchaillou University Hospital, Rennes, France

Aim During the last years different hybrid prostheses have been developed for frozen elephant trunk (FET) technique. At this time, 2 devices are available: the E-Vita Open Plus® (Jotec) and the most recent Thoraflex® (Vascutek). We describe our experience with these last generation devices used for elective one-stage treatment of extensive chronic thoracic aorta diseases.

Methods : From 2009 at our institution a total of 34 patients underwent FET for chronic aortic pathologies. Indications were: post-dissection aneurysm, true aneurysm or other etiologies. E-vita Open Plus® prosthesis was used in 20 patients and Thoraflex™ device in 14 patients. The intraoperative management in terms of CPB and organs protection was dependent from the implanted hybrid device. An average 20±9.6 months follow-up was available. Contrast-enhanced control CT-scans were performed at patients discharge, then at 6 months and 1-year thereafter.

Results : Four patients received preliminary carotid-subclavian bypass before E-Vita Open Plus implantation. Concomitant procedures on the aortic root were associated in 30% of cases. No technical intraoperative device-related complications were registered. Myocardial (110.4±31.7 vs 152,11±56,3 min) and visceral (52±13.1 vs 93,8±28,9 min) ischemia times were shorter with the Thoraflex™ 4-branched device. Selective antegrade cerebral perfusion time (93,6±20,3 vs 133.4±30.8 min) was shorter with E-Vita Open Plus® device. There were no cases of operative mortality or cerebral strokes. One case of postoperative paraplegia, two cases of transient paraparesis and 2 cases of Brown-Séquard syndrome occurred. All postoperative angio-CT scans confirmed optimal surgical results. At follow-up, there were no cases of endoleak or endotension.

Conclusion: Our experience confirms the feasibility and reliability of FET technique for treatment of extensive chronic aortic disease involving the aortic arch and descending aorta. The different features of 2 available hybrid prostheses allow the surgeon to choose the good device for each patient's anatomical and clinical characteristics and to justify this choice.

Sunday, 24.04.2016

Hall:Baltic

09.00-10.30h

C10: CORONARY SURGERY II

Moderators: F.Santini (Italy), S.Kacar (Serbia)

Key Note Lecture: Targeting the best treatment strategy: Addition of Frailty and Disability to Cardiac Surgery Risk Scores Identifies Elderly Patients at High Risk of Mortality or Major Morbidity, F.Santini (Italy)

CABG / PCI ratio in young adults ($\leq 35-40$ years of age) with coronary artery disease (CAD)

F. Abdullayev¹, R. M. Makhmudov², I. M. Bagirov¹, I. D. Geybatov¹, L. S. Shikhiyeva¹, N. J. Kazimzade¹

¹ Dept Cardiac Surgery, Topchibashev Research Centre of Surgery, Baku, Azerbaijan

Aim: To tie CA patterns with ratio and volume of CABG and PCI in young adults with ACS and SA.

Material: Enrolled 126 young adults 27-40 years old ($38,5 \pm 0,3$) with CAD, including 19 (15,1%) ≤ 35 years old ($32,5 \pm 0,6$). 64,3% patients manifested with SA, including 60,5% with early MI; 35,7% patients - with ACS, including 37,8% with early MI. 90,5% patients underwent first time hospitalization; 9,5% - second, with angina recurrence 5 - 48 months later revascularization. Rate of primary hospitalization in young adults with SA and ACS comprised 66,7% и 33,3%; secondary - 6,2% и 15,5%, accordingly.

Results: Young adults with ACS differed of SA group by dominance of patients ≤ 35 years old in 20% and 12,3%; one VD in 46,7% and 30,9%; one independent risk predictor in 66,7% and 30,8%, accordingly. Young adults with SA differed of ACS group by early MI in 60,5% and 37,8% patients; 3VD in 40,7% and 22,7%; prevalence of $\geq 2-3$ risk factors in 69,2% and 30,8% patients, accordingly. CABG - ratio in SA and ACS groups comprised 2,5:1, with 1VD grafting in 28% and 35% patients; 3VD grafting in 52% and 40%, accordingly. PCI - ratio in ACS and SA comprised 1,15:1, with revascularization of one CA in 78,3% and 55% patients; 2 CA - in 13% and 45%; mean number of stents implanted $1,22 \pm 0,5$ and $1,9 \pm 0,2$, accordingly.

Conclusion: Group of ACS marked with more frequency but, less volume of PCI; SA group - with high frequency and multi-vessel CABG. These differences tied with predominance of 1VD in ACS group, and necessity for revascularization of 2-3 CA in SA group.

Outcomes of On-pump Beating Heart versus Traditional On-Pump Coronary Artery By-Pass Grafting Surgery in end-stage renal disease patients.

Ö. F. Doğan, H.Özgen, C. C. Ökten, D. Azboy

Adana Education and Training Hospital, Department of cardiovascular Surgery, Adana, Turkey

Aim: High mortality rates have been reported after coronary artery bypass grafting surgery (CABG) in End-Stage Renal Disease Patients (ESRDPs). Little data exist comparing out-comes of on-pump beating heart (OPBH) and on-pump with cross-clamping (OPCC) techniques in this group. Our aim of this study was to compare two CABG techniques.

Methods: From 2004 to 2015, 83 ESRDPs underwent CABG by three Cardiac Surgery Centers. OPBH surgery was performed for 41 patients and OPCC technique for 42. Comparisons were made between patients undergoing OPBH and OPCC CABG with respect to demographics, risk factors, and outcomes.

Results: Institutional analysis revealed that a similar patient demographics, risk factors, use of internal thoracic artery (ITA), and number of distal anastomoses. Outcome analysis was significant for less post-operative supraventricular and ventricular arrhythmia with the off-pump technique: 30 % OPBH and 11.6 % OPCC ($P=0.020$). Data revealed all-cause survivals at 1 and 24 months of 81 % and 55 % for OPBH versus 78 % and 54 % for OPCC procedures ($P=0.21$). In a comorbidity adjusted Cox model, OPBH CABG was associated with a 13 % reduction in all-cause mortality ($P=0.030$). Inotropic agent(s) use was more lower in OPBH patients. Also, intraaortic balloon-pump use was higher in CABG operations underwent aortic cross-clamping.

Conclusion: On-pump Beating Heart CABG is uncommon in our country in ESRDPs who underwent dialysis. Our study showed that on-pump beating heart CABG provides a morbidity benefit and is associated with a lower risk of death.

A New Surgical Approach to Internal Thoracic Artery Spasm Treatment Using the Radial and Gastroepiploic Arteries during Coronary Artery Bypass Graft

Ö. F. Doğan, H. Özgen, C. C. Ökten, D. Azboy

Adana Education and Training Hospital, Department of cardiovascular Surgery, Adana, Turkey

Aim: Spasm of the internal thoracic artery (ITA) conduit remains a life threatening problem during and after coronary artery bypass graft (CABG). Different systemic and local vasodilators have been suggested to prevent ITA spasm. Unfortunately, spasms can be refractory to pre-treatment with vasodilators. We describe a new surgical techniques using the radial artery (RA) or gastroepiploic artery (GEA) as a patch or tubular conduit to resolve ITA spasm and extend the artery in patients who underwent CABG.

Methods: We included 210 patients with multi-vessel coronary artery disease who underwent isolated total arterial CABG between 2008 and 2013. We detected low blood flow due refractory spasm of the ITA (after harvesting or prior to anastomosis) in 35 patients. To increase blood flow, we dilated the distal ITA using a 10–20 mm long RA patch in 20 patients. In the remaining 15 patients, the spasm involved a long portion of the ITA; therefore, we shortened this portion and then anastomosed 4-5 cm long RA or GEA conduit in an end-to-end fashion to gain the appropriate length of ITA. If length of ITAs spasm was too long, we shortened the ITAs, and a RA or GEA tubuler conduit was anastomosed in an end-to-end fashion to gain the appropriate length of ITA.

Results: There were no postoperative mortality and morbidity. Myocardial enzyme analyses showed no evidence of myocardial ischemia. The left and right ITAs had diameters of 1.1 ± 0.40 mm and 1.2 ± 0.21 mm, respectively. After harvesting, the ITAs bled into the cab for 1 min. for calculation of blood flow. The mean blood flows of left and the right ITA was 23 ± 9 mL/min. and 29 ± 11 mL/min., respectively. On comparing the diameters and flows of the left and right ITAs, no significant differences were found ($P > 0.05$). The mean blood flow significantly increased ($P < 0.0001$) to 74 ± 22 mL/min. on the right ITAs and to 53 ± 14 mL/min on the left ITAs. The mean length of the ITAs was significantly increased from 9 ± 2.1 cm to 14 ± 1.9 cm after RA or GEA conduit anastomoses ($P = 0.001$).

Conclusion: Increased blood flows and diameters were successfully facilitated using the RA patch, as a result of ITA dilatation. When ITA spasm is refractory to vasodilators, surgeons should keep in mind that the RA can be used as a biological patch to increase the cross-sectional area of ITAs during CABG. In addition, in case there is a need to shorten ITA grafts, the length can be easily and safely extended using RA or GEA conduits. This study showed that our techniques for extension and release of ITA spasm using RA and GEA are feasible. We recommend these additional options to existing methods while performing total arterial revascularization

Investigation of the vasorelaxant effects of moxonidine and its relaxation mechanism on the human radial artery when used as a coronary bypass graft

O. Korkmaz, B. Sarac, A. Altun, I. Bagcivan, S. Göksel, S. Yildirim, O. Berkan

Cumhuriyet University, Medicine Faculty, Department of cardiovascular Surgery, Sivas, Turkey

Aim: In both low and high risk patients undergoing coronary artery bypass grafting, the internal mammary artery is the first choice of arterial graft, and the second choice is the radial artery (RA). Unfortunately, RA spasms are a significant problem for a surgical team to overcome in the perioperative and postoperative period. In current surgical practice, the use of vasodilator agents perioperatively in the pending graft preparation is generally accepted and these may be implemented topically, endoluminally or both ways. Moxonidine is the latest second-generation, centrally acting antihypertensive agent, and the intention in this paper is to investigate its direct vasorelaxant effects and relaxation mechanisms on the human radial artery in vitro.

Methods: RA rings were mounted in an organ bath and tested for changes in isometric tension in its relaxation response to moxonidine in the presence and absence of NG-nitro-L-arginine methyl ester (L-NAME, non-specific inhibitor of nitric oxide synthase), idazoxan (non-selective I₁ and α 2-antagonist) and yohimbine (selective α 2-antagonist).

Results: Moxonidine induced concentration-dependent relaxations on the RA rings precontracted with phenylephrine ($P < 0.05$). L-NAME and idazoxan significantly reduced the relaxation caused by moxonidine ($P < 0.05$), while yohimbine significantly increased the relaxation by moxonidine ($P < 0.05$). In the presence of L-NAME + idazoxan, the relaxation by moxonidine was eliminated completely ($P < 0.05$).

Conclusion: We speculate that the relaxant effect of moxonidine may be attributed partly to the synthesis and/or release of nitric oxide, and partly to the stimulation of imidazoline I₁ receptors. We suggest that moxonidine may help to prevent RA spasms during the preparation period in operation when used topically or/and endoluminally.

Is preoperative eosinopenia an independent predictor of early mortality for coronary artery bypass surgery?

O. Korkmaz

Cumhuriyet University, Medicine Faculty, Department of cardiovascular Surgery, Sivas, Turkey

Aim : Coronary artery bypass graft (CABG) surgery is one of the most effective and widely used methods employed in the treatment of ischemic heart disease, but many factors to various degrees are directly associated with perioperative and postoperative problems. In this study, we evaluated the relationship between preoperative eosinophil count and postoperative mortality in patients that underwent CABG operation.

Materials- Methods : The data of 241 patients (157 males, 84 females), who underwent isolated on-pump CABG operation between 2011 and 2013 in different centers and for whom study data were available, were retrospectively reviewed.

Results : The mean age of patients was 64 ± 11 years. After the follow-up period, 36 (15%) of the 241 patients experienced cardiovascular death. Patients were classified into two groups as those who survived versus those who died. Eosinophil levels were lower among the patients who died compared to the patients who survived ($0.8 [0-3.8]$ vs. $1.7 [0-9.4]$ $1000 \times \text{cells/mm}^3$, $p < 0.001$). Optimal cut-off level of eosinophil for predicting mortality was determined as ≤ 1.6 $1000 \times \text{cells/mm}^3$, with a sensitivity of 85.7% and specificity of 51.0% (AUC: 0.703, 95% CI: 0.641 to 0.760).

Conclusion : Eosinopenia is used as a biomarker for infections, and recently, it was used as the predictor of mortality in pediatric and adult patients in the intensive care units. Eosinopenia after CABG can be related to the endogenous stress hormones, and insufficiency of the existing cardiac status. Eosinophil levels can assist and facilitate risk stratification for patients with CABG.

Heart string reduces stroke rate and enables complete revascularization in off pump coronary artery bypass graft surgery

D. Odavic, A.Haeussler, H. Loeblein, A. Zientara, K. Graves, D. Berdajs, O. Dzemali, M. Genoni

City Hospital Triemli, Zurich, Switzerland

Aim : Stroke is very devastating complication of coronary artery bypass grafting. According to literature it appears in up to 4% of the patients after isolated bypass surgery. The most common course is the microemboly mobilized by aortic manipulation during cannulation and in particular performing proximal anastomosis. Off pump technique as well as an aortic no touch technique have been proposed to avoid aortic manipulation and aortic side clamping. Using both mammary arteries as T or Y graft is very demanding and not suitable for every patient to perform fully revascularization. The heart string proximal anastomotic device allows creation of the proximal anastomosis without side clamping of the aorta.

Method : We analyzed retrospectively the prospective collected data of 2420 consecutive patients who underwent isolated off pump coronary artery bypass graft surgery, from January 2003 till December 2014. Primary end point was incidence of stroke during hospitalization.

Results : The overall mortality was 1,4% varying from 0,9% to 1,8% per year. The perioperative myocardial infarction occurred in 67 patients (2,8%). The mean number of distal anastomosis was 3.8, and proximal 1,8. BIMA was used in 40% of the patients with an upward trend in the last 4 years. The stroke incidence was 0,83% (20 patients). 13 suffered hemiplegia with or without dysarthria, showing the symptoms directly after operation. 5 patients suffered visual disturbances such as diplopia, hemianopsia or even complete blindness (1), which appears rather later on the ward. All patients with stroke had a structural brain damage in computed tomography. Overall mortality caused by stroke was 0.16% (4 patients), 2 being in coma immediately after operation and the other 2 developing coma in the following course. There was 1 aortic dissection and 1 bleeding, both device-related. Conversion rate to on pump was 4%.

Conclusion : Use of heart string is safe and reduces dramatically the incidence of stroke compared to literature data. It enables complete revascularization regardless on number of distal anastomosis needed.

Successful surgical revascularization strategy in a patient with serious left main coronary artery disease and low ejection fraction in third hour of myocardial infarction with on going chest pain

U. Yetkin², K. Ergüneş¹, K. Dönmez¹, A. Gürbüz¹

¹Department of Cardiovascular Surgery, Katip Celebi University Izmir Atatürk Training And Research Hospital, Izmir, Turkey

Aim : Surgical intervention to coronary arteries may be performed with great risk in first six hours of myocardial infarction. Mortality and morbidity of intervention increases with serious left main coronary artery lesion.

Methods : Our case was 64 year-old male patient. Three hours before his admission to our center, he admitted to emergency service for suffering serious chest pain. ECG was consistent with acute general anterior MI. Troponin I level was over 4 IU and pain was increasing. Emergent coronary angiography was planned. Transthoracic echocardiography revealed left ventricle's ejection fraction as 40%. In addition, left ventricle dimension were hypertrophic (LVd/s diameter: 55/42 mm). Coronary angiography revealed an 80% stenosis of left main coronary artery and multiple stenotic lesions of coronary arteries. In his medical history, he has been extensively using tobacco products for 50 years.

Results : Due to ongoing angina and third hour of MI, high-risk emergency coronary revascularization was planned in the council. Femoral sheath placed for angiography was left in place for possibility of intraaortic balloon pump requirement and arterial monitorization. Anesthetic induction was performed with IV coronary dilator medications and morphine. After median sternotomy and pericardiotomy, routine aorta cannulation of and two-stage venous cannulation, antegrade cardioplegia was initiated. Retrograde cardioplegia was continued through operation. Four vessels (LAD, intermediate, CxOM3, right CRUX) were revascularized by using native saphenous vein. Patient successfully weaned from cardiopulmonary bypass. Patient recovered uneventfully. Intense respiratory physiotherapy was performed afterwards.

Conclusion : For patients with new onset MI, serious left main coronary artery disease, and increasing angina, dynamic and multidisciplinary approach is essential after obtaining emergent coronary angiography. Additional morbid factors will increase the perioperative risk. Only by this method, optimal survival rates and safety of patients may be achieved.

Should We Wait 5 Days After Discontinuation Of Dual Antiplatelet Therapy In Patients Who Need Urgent Coronary artery bypass grafting

S. Kačar, M. Kačar, A. Mikić, S. Kostovski, N. Gutić

Clinic for Cardiac Surgery, Clinical Center of Serbia, Belgrade, Serbia

Aim: Although most studies show increase in operative bleeding in patients who receive DAPT within five days of CABG, unstable individuals may require urgent surgery, to reduce the risk of potentially fatal ischemic events. The aim of our study is to examine if there is a influence of DAPT on mortality, morbidity and postoperative bleeding in patients who were underwent urgent or emergent CABG, in less than five days of DAPT discontinuation.

Methods : Data were collected prospectively on 122 CABG patients, operated by one surgical team in a tertiary care center from march 2008 till august 2013. Patients were stratified in two groups: group 1 received DAPT within the 5 days of CABG (n=65), and group 2 where DAPT was discontinued for more than 5 days before the CABG (n=57). Patients who needed reoperation, combined procedures, or off-pump revascularization were excluded. Statistical analysis was carried out using SPSS 17.0 statistical software. Variables were evaluated using analysis of variance (ANOVA); using χ^2 analysis or Fisher's exact test. Multivariable models were created using logistic regression techniques for dichotomous outcomes and linear regression techniques for continuous outcomes.

Results : There were no mortality in any group. Mean chest tube losses after the surgical revascularization did not differ much, but group 1 received greater amount of transfused red blood cells and platelets. The median length of stay were 12,8 days in the group 1, and 18,96 days in the group 2.

Conclusions: The urgent and emergent surgical revascularization using extracorporeal circulation in patients with acute coronary syndrome is safe and effective procedure. We recommend not to wait 5 or more days after the clopidogrel discontinuation

A Journey of a Thousand Miles Begins With a Single Step

I. Bilbija, M. Matković, N. Aleksić, S. Putnik

Clinic for Cardiac Surgery, Clinical Center of Serbia, Belgrade, Serbia

Aim: The superior patency of internal thoracic artery grafting for coronary revascularization compared with the saphenous veins is well documented. Furthermore, there are many studies that show a long-term survival benefit of bilateral versus single internal thoracic artery. Despite that the frequency of bilateral internal thoracic artery, at least in European countries, is still extremely low, probably under 10%. Guided with these observations, we started to implement a new approach to the coronary revascularization in our institution with the goal of achieving a total arterial revascularization in at least 50% of all coronary artery bypass grafting procedures.

Methods: We report a total of 29 patients operated on between January 2015 and December 2015 that received bilateral internal thoracic artery grafts. There were 21 male patient, mean age was 54.5 years. All operations were elective and all but one were planned in advance as total arterial revascularizations.

Results: There were no perioperative deaths, the duration of surgery was 212 min, the cross clamp time was 47 min. The mean number of grafts was 2.8, the duration of mechanical ventilation was 14.2 hours, there were no reexplorations and no perioperative myocardial infarctions. The mean follow up time was 6 months (2-14 months).

Conclusion: The total arterial revascularization using bilateral internal thoracic arteries can be performed well even in the beginning of the “learning curve” and with the good results. The only thing a surgeon must do is to step out of his comfortable zone he got used to and make a little more effort.

We do this job to help people and we must do it the best we can. There are no excuses.

Bilateral Skeletonized IMAs for Myocardial Revascularization in Elderly Patients

Ž. Jonjev, A. M. Milosavljević, V. Vujić, A. Tenji, M. Fabri

Institute for cardiovascular diseases of Vojvodina, Sremska Kamenica, Serbia

Aim : Bilateral internal mammary arteries (BIMAs) has been recognized as the most advanced surgical option for coronary artery bypass grafting (CABG). However, due to insufficient and inadequate outcome data it is usually proposed for younger patients without traditionally accepted risk factors like diabetes, chronic obstructive pulmonary disease (COPD) and obesity. The aim of this prospective study is to evaluate immediate and long term results in elderly patients (> 70 y/o) to whom BIMAs were used as in-situ grafts for different coronary territories.

Methods : In 2003-2015, 6981 patients underwent primary CABG for multivessel coronary artery disease at our institution. Among them, 144 patients underwent in-situ BIMAs grafting where right IMA was used to revascularize right coronary artery, and left IMA for left anterior descending artery (LAD). All patients were operated on as elective cases. However, 17 patients were over 70 y/o with average age 72.40 years (70-80 y/o). Most of the patients were male (12pts, 70.50%). Two patients were diabetic (11.76%), and 3 (17.64%) had COPD. The average number of grafts was 3.00, and average ejection fraction was 51.41% (Range=30-65%).

Results : There was no immediate postoperative mortality (30 days). There was no perioperative myocardial infarction or cerebrovascular incidence as well. Mean follow-up was 8.3 ± 1.0 years with freedom from death $95.22 \pm 0.6\%$ 8 years after surgery.

Conclusion: BIMAs as in situ grafts could be successfully used in CABG in septuagenarians and beyond. IMA harvesting with skeletonized technique provides better IMA length, detailed graft visualization, and minimal trauma to the chest wall. Thus, the refinement of techniques for constructing the IMA grafts used in this series makes traditionally accepted limitations for usage of bilateral IMAs irrelevant.

Sunday, 24.04.2016.

Hall:Atlantic II

10.45.-12.45

C 11: MISCELANEOUS II

Moderators: M.Thielman (Germany), P. Milojevic (Serbia)

Key Note Lecture: Key note lecture: Stanford type A acute aortic dissection in pregnancy, P. Milojevic (Serbia)

Do surgical techniques make a difference in the treatment of tricuspid valve endocarditis in intravenous drug addicts?

R. Guo, S. Fox, B. Kiaii, M. Chu, R. Novick

London Health Sciences centre, London, United Kingdom

Aim: The study was to evaluate patient outcomes between tricuspid valve (TV) reconstructions and replacements for TV endocarditis requiring surgery among intravenous drug addicts.

Methods: 28 patients undergoing TV surgery for bacterial endocarditis with documented history of intravenous drug use on the admission notes were identified and divided into reconstruction group (group 1) and replacement group (group 2). The group 1(n=22) included vegetectomy and reapproximation (n=6) or autologous pericardial patch repair + Gortex neocords + anuloplasty(n=16). The group 2 (n=6) included valve resections and replacements with tissue prosthesis. In-hospital mortality, major morbidities, post-discharge complications and survivals were obtained and compared.

Results: patients were 39 years old (24-64), male 15/28. 1 patient in the group 2 died of sepsis on post-operative day 1 with mortality 4%. 1 patient in Group 2 required a pace-maker insertion ($p<0.01$). 5 patients in group1 and 1 in group 2 were lost to follow-up and 7 in group 1 and 1 in group 2 died during the mean follow-up 3.7 (0.4-7) years. 1,2 and 5 year survival were 82%, 73% and 64%. There were no statistical significances noted between 2 groups. 64% (14/22) had documented readmissions for sepsis and 55% (12/22) ongoing intravenous drug uses. In 10 survivors in group 1, 1 had mild tricuspid stenosis, 3 with greater than 3+ TR and remainder with 0-2+ TR. 3 patients in group 2 survived, 1with perivalvular leak and 2 well-functioning prosthesis

Conclusion: Most TV remained repairable, but reconstructions or replacements did not show a difference in survivals in this small cohort.

Performance of EuroSCORE 2 and logistic EuroSCORE in patients with native valve endocarditis

D. Baric, M. Planinc, Z. Sutlic, B. Barsic, R. Blazekovic, J. Varvodic, I. Rudez

Department for Cardiac and Transplant Surgery, University Hospital Dubrava, Zagreb, Croatia

Aim: To assess performance of EuroSCORE 2 in patients with native valve endocarditis and compare it to logistic EuroSCORE.

Methods: From 1/2000 to 05/2013, 116 patients underwent surgery for native valve endocarditis. Average age was 50 ± 15 years (21-76). Ninety-two (80%) patients underwent single valve surgery (53 aortic, 29 mitral, 10 tricuspid) and 24 (20%) underwent multiple valve surgery. Logistic EuroSCORE and EuroSCORE 2 were calculated and tested for calibration and discrimination in this subset of patients.

Results: Overall mortality was 9.5%. Predicted mortality for logistic EuroSCORE was $12.9 \pm 12.3\%$ and $6.9 \pm 8.6\%$ for EuroSCORE 2. Both scoring systems exhibit good calibration with Hosmer-Lemeshow test $p=0.160$ for logistic EuroSCORE and $p=0.709$ for EuroSCORE2, respectively. Risk adjusted mortality ratio was 0.74 (95% CI 0.65–0.81) for logistic EuroSCORE, and 1.38 (95% CI 1.25-1.51) for EuroSCORE 2. EuroSCORE 2 has significantly better discrimination (AUC 0.855; 95% CI 0.78-0.91; $p<0.001$) than logistic EuroSCORE (AUC 0.734; 95% CI 0.64-0.82; $p=0.011$) with $Z = 2.103$; $p=0.036$.

Conclusion: EuroSCORE 2 exhibits good calibration and discrimination in patients with native valve endocarditis but underestimates operative mortality. Logistic EuroSCORE is well calibrated but overestimates operative mortality. EuroSCORE 2 exhibits significantly better discrimination than logistic EuroSCORE. Both scoring systems fail in predicting mortality in high-risk subgroups. Development of disease specific risk scoring system for endocarditis might be in order.

Cardiac surgery in patients with liver cirrhosis: not as simple as expected due to point-by-point increase in mortality

I. Aleksic, I. Schade, D. Radakovic, J. Hoffmann, K. Hamouda, S. Sayed, C. Bening, R. Leyh

Department of Thoracic and Cardiovascular Surgery, Julius-Maximilians-University, Würzburg, Germany

Aim: The Child-Turcotte score is widely used for assessment of cirrhosis. Commonly, Child C patients (pts) are considered inoperable while Child B carries a moderate risk for complications. Child A pts are operated upon with a perceived mild risk. A point-by-point analysis of Child scores with 5, 6 or more points is missing.

Methods: We retrospectively evaluated 84pts operated upon with cardiopulmonary bypass (CPB) and liver cirrhosis. Patients with Child A or B cirrhosis were categorized into three groups according to their score: group Child A1 (5 points; N=26), group Child A2 (6 points; N=17) and Child B (7-9 points; N=26). The effect of scores in Child A and B pt on mortality, adverse events (AE=bleeding, dialysis, pneumonia, sepsis, coagulation disorder) and transfusion requirements was assessed.

Results: Age, gender and distribution of underlying cardiac disease did not differ. Transfusion requirements for platelets, fresh frozen plasma (FFP) and red blood cells (RBCs) were higher in group B but similar for A2 and A1. Only total number of FFPs predicted 30d mortality ($p=.032$). For each unit of FFPs transfused the hazard ratio was 1.187. Any AE was very predictive for mortality with a hazard ratio of 4.35 ($p=.001$), the most relevant AE was postoperative bleeding (HR 4.054, $p=.011$). 30d-mortality was higher in B than A2 and A1 (62% (16/26) vs. 36% (6/17) vs. 15% (4/26); $p=.004$ by Cochran-Armitage trendtest). Correspondingly, one year mortality was also highest in group B (65%, 41% (A2), 15% (A1); $p<.001$).

Conclusions: Child B patients have a higher risk for 30d and long-term mortality than group A2 and A1, respectively. However, a Child A score of 6 points is associated with much higher 30d and long-term mortality than one of 5 points. ChildA2 patients (6 points) should be evaluated for alternatives to conventional heart surgery with cardiopulmonary bypass.

One year follow up in patients who underwent myectomy due to septal hypertrophy

F.López Valdiviezo, M. Ángeles Gutiérrez, J. Hernández, C. Velázquez, J. Olarte, J. C. Téllez, M.García de la Borbolla, O. Arají, J.Barquero

Department of Cardiovascular Surgery, Hospital Universitario Virgen Macarena, Sevilla, Spain

Aim: To determine one year clinical and echocardiographic outcome of patients who underwent myectomy due to septal hypertrophy.

Methods: A retrospective observational study was performed comparing the follow up at one year in terms of clinical and echocardiographic outcome from all patients who underwent myectomy due to septal hypertrophy in the period from 2011 to 2014. The total number of patients undergoing this intervention was 8, their clinical outcome and the difference between echocardiographic results were analyzed.

Results: From the 8 patients, 5 were women (62,5%). The clinical presentation was dyspnea in the 8 patients and 2 of them (25%) had angina. All patients had septal hypertrophy and valve injury (6 had aortic stenosis and 2 mitral stenosis). 5 patients (62,5%) also had SAM and 2 had a remanent subaortic membrane. All had echocardiographic signs of stenosis with elevate maximum gradients and a high velocity. The patients underwent myectomy and valve replacement. At one year follow up all patients were alive, with no clinical symptomatology. In the echocardiographic control there was a mean decrease of $2,75 \pm 1,37$ mm in septal size and also mean decrease of $52,11 \pm 19$ mmHg of maximum gradient and $2,83 \pm 0,45$ m/s of maximum velocity. No patient had valve dysfunction and just one of the five patients with SAM had persistence of it.

Conclusion: Myectomy is a very safe surgical intervention with great clinical and hemodynamic outcome at one year and no mortality.

Utilizing topical negative pressure in treatment of posternotomy wounds

M. Planinc², D. Baric², D. Unic², R. Blazekovic², I. Rudez², J. Varvodic², M. Kusurin², Z. Stanec¹, Z. Sutlic²

¹Department of Plastic, Reconstructive and Aesthetic Surgery, University Hospital "Dubrava," Zagreb, Croatia

²Department of Cardiac and Transplant Surgery, University Hospital "Dubrava", Zagreb, Croatia

Aim: The management of sternal defects arisen after deep sternal wound infection following cardiac surgery procedures is challenging and often requires extensive interdisciplinary teamwork between plastic and cardiac surgeons. Topical negative pressure (TNP) therapy has been suggested to have a positive impact on the healing of sternal or extremity wounds. Authors will present single center experience in utilizing TNP in treatment of posternotomy wounds.

Methods: From May 2013 to December 2015 46 patients were treated with TNP before definitive surgical closure. The mean age was 63 ± 7 years and 67% were male. The mean BMI was 30 ± 6 .

Results: After TNP treatment for at least 10 days in all patients final surgical closure was preformed. Reconstructive procedures ranged from delayed secondary closure to extensive surgical closure requiring muscle flaps. No complications were related to VAC use.

Conclusion: In treatment for posternotomy wounds it is very helpful to prepare the wound and patient for definitive reconstruction. It is also helpful in treating superficial and deep wound sternal infections.

Computed tomography fistulography as a tool for planning treatment of sternal osteomyelitis

M. Planinc², D. Baric², D. Unic², R. Blazekovic², I. Rudez², J. Varvodic², M. Kusurin², Z. Stanec¹, Z. Sutlic²

¹Department of Plastic, Reconstructive and Aesthetic Surgery, University Hospital "Dubrava," Zagreb, Croatia

²Department of Cardiac and Transplant Surgery, University Hospital "Dubrava", Zagreb, Croatia

Aim: Sternal osteomyelitis (SO) is a serious complication after heart surgery. If small fistula is present it is often unclear what is the extent of SO. Knowing extent of osteomyelitis is very important in planning resection and options for reconstruction. We present our case series and discuss modern diagnostic and treatment options for patients with SO.

Methods: In recent years we have utilized computed tomography fistulography (CTF) in visualization the extent of SO which helped us in preparing and planning for resection and reconstruction.

Results: In our cases CTF helped us in visualization of fistulas that originated from implanted foreign material such as tubular aortic grafts or of infection around epicardial residual temporary pacemaker wires. Usage of topical negative pressure therapy was followed by extensive surgical reconstructive procedures such as sternectomy and reconstruction with pectoral muscle flaps or omentum.

Conclusion: The authors will present experience in CT fistulography when treating complex infections of sternum and/or devices.

Validation of EuroSCORE II performances on a single-centre, contemporary cardiac surgery cohort of 5732 patients

D. Nežić, T. Spasić, S. Mićović, S. Trajić, I. Petrović, D. Košević, D. Dinić, M. Borzanović

Cardiac Surgery, Cardiology, Institute for Cardiovascular Diseases “Dedinje”, Belgrade, Serbia

Aim: The aim of our study was to validate the new EuroSCORE II risk stratification model in a contemporary cardiac surgery practice at our institution.

Methods: This study presents a series of 5732 consecutive patients who underwent adult major cardiac surgery at our Institute, from January 1, 2012 to December 31, 2014. EuroSCORE II was prospectively calculated, using an on-line calculator (<http://www.euroscore.org>) and stored in the institutional database. Discriminative power of the model was tested by calculating the area under the receiver operating characteristic curve. The calibration of the model was assessed by the Hosmer-Lemeshow statistics, and with the observed to expected mortality ratio. Patients with EuroSCORE II values of 0.5-2.49%; 2.5-5.99%; 6.0-9.99%; and $\geq 10\%$ were defined to be at low, moderate, high and very high perioperative risk, respectively.

Results: The in-hospital overall mortality was 3.82% (219 out of 5732 patients), with predicted mortality of 3.64% according to EuroSCORE II. The following sub-groups procedures were performed: coronary artery bypass surgery – 3092 (53.9%); valve(s) surgery – (22.2%); combined cases [coronary artery bypass surgery and valve(s) surgery – (15.2%); aortic (thoracic aorta surgery) – 395 (6.9%) and other cardiac procedures – 103 (1.8%). EuroSCORE II confirmed very good to excellent discriminatory power for the whole cohort, and for all sub-groups of performed cardiac procedures (all areas under the curves > 0.75). EuroSCORE II confirmed good calibration (observed to expected mortality ratio) for the whole sample, and in all sub-groups of surgery, excluding aortic surgery (significant underestimation of mortality). Hosmer-Lemeshow test confirmed good calibration only in category of combined and other cardiac procedures. EuroSCORE II overestimate perioperative risk in low, and underestimate perioperative risk in very high risk group.

Conclusion: EuroSCORE II confirmed very good discriminative power and good calibration ability using observed to expected mortality ratio in a contemporary patient's cohort undergoing cardiac surgery.

Predictive factors of 12-year survival following valve surgery for infective endocarditis

F. Terrieri, S. Ferrarese, A. Musazzi, M. Barbiero, G. Mariscalco, G. Cappabianca, C. Beghi

Department of Cardiac Surgery, Varese, Italy

Aim: If the predictive factors of short-term outcome following valve surgery for infective endocarditis are well established, the determinants of long-term survival are less studied: scope of this single-center, retrospective, observational study is to identify the predictive factors of 12-year survival following valve surgery for infective endocarditis.

Methods: from 1998 to 2014 207 patients underwent isolated (69.6%) or combined (30.4%) aortic, mitral and tricuspid valve surgery for infective endocarditis. Follow-up ranged between 10 months and 17.5 years (mean 5.2 ± 4.4 years). Completeness was 100%.

Results: Mean age was 61.5 ± 15.5 years. EuroSCORE was 8.7 ± 3.3 . Sixty patients (28.9%) had prosthetic valve endocarditis. Overall In-hospital mortality was 8.7% (6.8% for native valves and 13.3% for prosthetic valves, $p=0.17$). Age (OR=1.11, $p=0.006$), sex (OR=0.19, $p=0.02$) and cardiogenic shock (OR=28.88, $p=0.0007$) were independent predictors of in-hospital mortality. Twelve-year survival was $18.8 \pm 3.4\%$ at 12 years. Twelve-year freedom from recurrent endocarditis and from reoperation were $92.7 \pm 2.1\%$ and $95 \pm 1.8\%$ respectively. Age (HR=1.02, $p=0.006$), EuroSCORE (HR=1.06, $p=0.003$), cardiopulmonary bypass (CPB) time (HR=1.00, $p=0.01$), postoperative neurologic complications (HR=2.79, $p=0.02$) were risk factors for 12-year survival.

Conclusion: Advanced age, the overall burden of comorbidities (EuroSCORE) and the complexity of surgery received (reflected by the length CPB) keep influencing patients prognosis also in the long-term although the onset of postoperative neurological complications has the most significant impact on prognosis.

The “Jung” variable as predictor of in-hospital outcome in patients presenting with acute ST elevated myocardial infarction after primary percutaneous coronary intervention

M. Sladojevic, S. Sladojevic³, A. Redzek¹, S. Susak¹, J. Dejanovic², D. Mandic¹, A. Milosavljevic¹, R. Jung²

¹Department of Cardiovascular Surgery, Institute of cardiovascular diseases Vojvodina, Novi Sad, Serbia

²Institute of cardiovascular diseases Vojvodina/Department of Cardiology

³Faculty of technical sciences, University of Novi Sad/Information and communication systems

Aim: A specific scoring system was developed in order to make predictions of mortality in patients with acute myocardial infarction as well as evaluation of the quality of treatment performed. The most important variable of the system is the “Jung” variable. The patients with the lower variable value account for a significantly higher mortality. The aim of this study was to assess the significance of the “Jung” variable as predictor of in-hospital outcome in patients presenting with acute ST elevated myocardial infarction after primary percutaneous coronary intervention.

Methods: A total of 1495 patients were analyzed between December 2008 and December 2011. For all the patients the “Jung” variable was defined as $(\text{systolic blood pressure}/\text{heart rate} \times \text{age}) \times 100$.

Results: The in-hospital mortality was 9.00%. Most of the patients were male, 62.22% (aged 61.47 ± 11.83 years). Mean systolic blood pressure was 137.91 ± 29.15 , mean heart rate was 79.80 ± 18.84 , and mean “Jung” variable was 3.01 (2.37 – 3.72). Research has shown that “Jung” variable is a good predictor of lethal outcome (c index = 0.844, $p < 0.0005$), cut-off was 2.47, sensitivity 81.1%, specificity 74.2%. There was statistically significant difference in terms of mean value of “Jung” variable between survivors and those with a lethal outcome ($p < 0.0005$). Mean value of “Jung” variable in those with lethal outcome was 1.85 (1.48 – 2.40) versus 3.07 (2.46 – 3.76) in survivors. Mean value of “Jung” variable in female was 2.73 (2.18 – 3.36) versus 3.15 (2.50 – 3.95) in male, ($p < 0.0005$).

Conclusions: Proposed variable is simple, highly reliable and can be used as a predictor of in-hospital outcome in patients presenting with acute ST elevated myocardial infarction after primary percutaneous coronary intervention.

Impact of negative blood cultures on outcome after surgery for acute infective endocarditis

A. Salsano¹, D. R. Giacobbe², F. Scarano¹, U. Muschiato¹, F. Santini¹

¹Department of Cardiac Surgery, IRCCS San Martino-IST, Genoa, Italy

²Infectious Diseases Division, University of Genoa (DISSAL) and IRCCS San Martino-IST, Genoa, Italy

Aim: Early diagnosis and targeted therapy are essential factors for an effective treatment of Infective Endocarditis (IE). Aim of this study was to identify predictive variables for in-hospital mortality after surgical treatment of IE, with regard to negative blood culture.

Methods: This retrospective observational study included 258 consecutive operations performed for IE at our institution, from January 2000 through December 2014. Overall, 126 patients (48%) presented negative blood culture on admission. Risk factors for in-hospital mortality were investigated with univariate and multiple logistic regression analysis, reporting distributions for individuals with and without positivity of blood cultures.

Results: Overall in-hospital mortality was 12% (N=31), 6% in the positive blood cultures subgroup (N=8) and 19% in the negative blood cultures cohort (N=24)($p<0.001$). Variables significantly associated with in-hospital deaths ($p<0.05$) and included in the risk model were: Age, Ejection Fraction, Concomitant Coronary Artery Disease, Previous Cardiac Surgery, Chronic Kidney Disease, Dialysis, Re-Operation for Bleeding, Multiple Valve Procedures, Negative Blood Cultures. At the multivariable logistic regression analysis, significant risk factors for mortality were: Age (OR=1.05, 95% CI [1.02-1.1], $p=0.006$), Ejection Fraction (OR=3.14, 95% CI [1.25-7.92], $p=0.015$), Multiple Valve Procedures (OR=4.92, 95% CI [1.71-14.16], $p=0.003$), Negative Blood Cultures (OR=3.80, 95% CI [1.42-10.18], $p=0.008$). The addition of the variable Negative Blood Cultures at the risk model, conferred further dismal prognostic value (continuous net reclassification improvement=0.59, 95% CI [0.27 - 0.92], p -value <0.001 ; improving C-statistic from 0.83 to 0.86).

Conclusion: Surgery for acute IE is still associated with significant in-hospital mortality. Negativity of blood cultures in an acute scenario appears to further compromise the prognosis. Possibly, the loss of a microbiological reference may prevent the establishment of an effective antimicrobial therapy.

Sunday, 24.04.2016

Hall: Dunav

09.00-10.30

V 10: HEMODIALYSIS

Moderators: M.Petrunic (Croatia), S. Tanaskovic(Serbia)

Key Note Debate:

In elderly patients liberal use of grafts is recommended, S. Baktiroglu (Turkey)

Always autologous AVF fistulas in elderly patients M.Lazarides (Greece)

Tunneled Dialysis Catheter Exchange Rates: Analysis After a Departmental Switch to the Bard Glidepath

F. Riyaz, J. Elbich, M. Sok

Virginia Commonwealth University Health System, Richmond, United States of America

Aim: Prior to November 2013, our department used a variety of tunneled dialysis catheter types for venous access. A department- wide switch to the Bard Glidepath was made with the hope of improving exchange rates. This study was done to examine the exchange rates of the Glidepath against previously placed catheter types.

Materials: An IRB- approved retrospective review was performed evaluating 1098 tunneled dialysis catheters placed from 10/17/2012 to 2/9/2015. Days to exchange were logged for all exchanged catheters. Indications for exchange were binned as such where possible: poor flow; infection; or malpositioning. Placements were excluded if a patient was lost to followup in ≤ 60 days (86 total) or if the indication was catheter damage (10 total), leaving 1002 total catheters. Exchange rates were analyzed at both ≤ 30 and ≤ 60 day samplings using pairwise χ^2 statistical analyses.

Results: 507 non- Glidepath catheters (50.6%) were placed from 10/17/2012 to 10/31/2013, with the following breakdown: 16 Equistream, 9 Hemosplit, 364 Hemostar, and 118 Palindrome. 495 Glidepath catheters (49.4%) were placed from 11/1/2013 to 2/9/2015. The following comparisons were statistically significant at both 30 and 60 days:

⇒ Glidepaths vs. all non- Glidepaths: less likely to be exchanged when binning all indications (ORs 0.44 and 0.39, at 30 and 60 days, respectively)

⇒ Glidepaths vs. all non- Glidepaths: less likely to be exchanged for poor flow (ORs 0.32 and 0.52, at 30 and 60 days, respectively). Subgroup analysis found that this was due to high exchange rates of the Palindrome catheters for poor flow. Glidepaths vs. all non- Palindromes exchanged for poor flow did not meet significance (ORs 0.72 and 0.76, at 30 and 60 days, respectively)

⇒ Palindromes vs. all other non- Glidepaths: less likely to be exchanged for infection (ORs 0.16 and 0.38, at 30 and 60 days, respectively)

Conclusion: The exchange rate for tunneled dialysis catheters is statistically lower since the switch to the Glidepath, driven by the high exchange rate of the Palindrome catheters for poor flow. Interestingly, the Palindrome has a lower exchange rate for infection, which may be related to differences in the Dacron cuff and will be further studied.

Enhanced maturation and prevention of juxtaanastomotic stenosis of arteriovenous fistula

V. Milacic, N. Janeski, R. Markovic, J. Kusic

Department of Vascular Surgery, Clinical Hospital Center Zemun, Belgrade, Serbia

Aim: Juxta-anastomotic stenosis (JXAS) can prolong maturation time and reduce patency rate of arteriovenous fistula (AVF) for hemodialysis. Anastomotic angle is described as one of the contributing factors in developing JXAS. The aim of this study was to determine maturation time of AVF and incidence of juxta-anastomotic stenosis in distal cephalic reverse loop anastomotic technique of AVF.

Methods: This prospective study included 20 patients, 16 (80%) males, with end stage renal disease. Patients underwent urgent distal cephalic reverse loop procedure with cephalic vein aligned to radial artery in reverse manner. AVF maturation and presence of any juxta-anastomotic stenosis was evaluated by color Doppler sonography (CDS) consecutively at 1, 7 and 14 days postoperatively and after period of 12 – 18 months of AVF puncture.

Results: Significant difference in arterial diameter was observed between 1st and 7th day ($p=0.001$), and 1st and 14th ($p=0.001$). Preoperatively was 2.4 mm (2.1 – 2.8 mm), while 3.09 mm (1.8 – 4.1 mm), 3.73 mm (2.2 – 4.6 mm) and 3.92 mm (2.4 – 5.4 mm) after 1, 7 and 14 days postoperatively, respectively. Significant difference in diameter of the cephalic vein was observed between 1st and 7th day ($p=0.01$), and 1st and 14th ($p=0.00$). Preoperative was 2.66 mm (2.0 – 3.5 mm), whereas 4.2 mm (3.1 – 5.5 mm), 5.2 mm (3.7 – 7.5 mm) and 5.4 mm (4.1 – 8.4 mm) after 1, 7 and 14 days postoperatively, respectively. Puncture of all AV fistula was completed successfully at the day 14th. One patient was re-operated, after two months due to haemathoma at the puncture site. No juxtaanastomotic stenosis were observed by CDS between 12-18 months after AVF creation in 17(85%) patients.

Conclusion: Creation of distal cephalic reverse loop anastomosis might improve time to puncture and patency of AVF. Future randomised studies should compare different anastomotic angles.

The use of vascular dilators in vascular access procedures for haemodialysis

B. Fila, M. Sarlija, M. Ajduk, V.Z. Pelegrin, T. Salamon, A. Situm

University Hospital Dubrava, Zagreb, Croatia

Aim: The formation of an angioaccess is a cornerstone in the treatment of patients needing renal replacement therapy. The high percentage of unsuccessful attempts requires improvements in creation of a vascular access. The primary goal of this study was to evaluate results of using vascular dilators in angioaccess surgery.

Methods: Between February 1, 2006 and January 31, 2009, one hundred and eighteen arteriovenous fistulas (AVF) for hemodialysis (HD) were created using steel vascular dilators by one surgeon. Early patency, early failure, primary patency, and fistula survival outcomes were recorded during a 36-month follow-up.

Results: Distal radial AVF was created in 60,1% of patients, proximal radial AVF in 31,4% and brachial AVF in 8,5% of all cases. The proportion of functional fistulas was 74,2%. By life table analysis of 102 AVFs, primary patency at 12, 24 and 36 months was 71.2%, 62.0% and 58.5%, respectively. Among preoperative and intraoperative predictors of success, vessel characteristics were the most important. Artery diameter was the strongest predictor of functional fistula ($P=0.001$), followed by vein diameter after intraoperative dilatation ($P=0.019$).

Conclusion: Good results could be achieved using vessel dilators in angioaccess surgery even in the lack of preoperative ultrasonography of the vessels. This method is cheap, requires no complex education and is applicable worldwide.

Early AV Fistula Revisions in Chronic Hemodialysis Patients

O. Korkmaz, O. Berkan

Department of CVS , Cumhuriyet University, Medical Faculty, Sivas, Turkey

Aim: Patients with chronic renal failure require permanent arteriovenous fistulas for hemodialysis that have a low rate of complication and can remain unobstructed for a long time. The most frequently seen complication of an arteriovenous fistula during the early and late period is fistula thrombosis. Reuse of the fistula with a revision performed prior to the next session of hemodialysis or insertion of a central venous catheter is mandatory in fistulas where a complication has developed.

Methods: Thirteen patients were evaluated who had undergone revision due to arteriovenous fistula complications in the early period (first 48 hours) between December 2013 and June 2014 at the cardiovascular surgery clinic.

Results: Nine of the 13 patients (69.2%) were male and four (30.8%) were female, and the average age was 62 years (min: 23; max: 82 years). Five of the 13 patients had diabetes mellitus (38.4%) and nine of them had hypertension (69.2%). The most frequent complication requiring a revision was fistula thrombosis. In terms of surgical interventions, four thrombectomy (30.7%), three saphenous vein interposition (23%), two patch plasty with a saphenous vein (15.3%), two graft interposition (15.3%) and two resections of stenotic regions (15.3%) were performed. Eleven of those patients (84.6%) were hemodialyzed, using the same arteriovenous fistula on the next session following the revision.

Conclusion: Continuing to use the same arteriovenous fistula is possible in a high rate of cases with arteriovenous fistulas with the development of complications, by performing a surgical revision during the early period. By using this intervention patient satisfaction can be increased and additional costs, incurred due to the application of a new central venous catheter, can be avoided.

Dialysis access infection: Impact of prosthetic material on clinical presentation, surgical management et outcomes

G. Mohamed Zied, W. Ghariani, A. El Mehdi, O. Ben Gaied, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to evaluate the impact of prosthetic material on clinical presentation, surgical management and outcomes of dialysis access infection.

Methods: This was a retrospective study compiling all cases of dialysis access infection operated between January 2013 and June 2015 in our academic institution. All accesses containing a prosthetic material were included in Group 1, the others were included in Group 2. Demographic characteristics, clinical presentations and surgical details were recorded.

Results: There were thirty-five patients (40.5% male) with a mean age of 58.1 ± 2.4 years (range, 26.6-81.9 years). Nineteen accesses were included in Group 1 and 18 in Group 2. The onset of infection was earlier in Group 1 (13.6 vs 44.4 months), but the difference was not statistically significant (.659).

Demographic characteristics and comorbidities were comparable between the two groups. Infectious aneurysms were predominant in Group 2 (83.3% vs 36.8%, $P=.004$) and were mainly anastomotic (59%). *Staphylococcus aureus* was the main bacteriological germ (40.5%). Forty-three percent were early postoperative infections and eleven percent presented with a septic choc. All accesses were ligated, all infectious aneurysms were resected and all prosthetic material was explanted. Group 1 accesses required more arterial repair (42.1% vs 22.2%, $P=.197$) and extensive debridement (68.4% vs 27.8%, $P=.013$). The mean follow-up was 7.7 ± 1.4 months (range, 0-25.9 months). Overall morbidity was high but similar between the two groups (57.9% vs 61.1%, $P=.842$). There was no difference in overall mortality (44.4% vs 52.9%, $P=.615$), which was mainly related to infectious causes (76.8%).

Conclusions: According to this study, dialysis access infection seems to be associated with high mortality and morbidity rates. However, the presence of prosthetic material does not appear to have a significant impact.

Results of the surgical management of dialysis access stenoses

G. Mohamed Zied, W. Ghariani, A. El Mehdi, O. Ben Gaied, A. Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess the effectiveness and the durability of the surgical management of dialysis access stenoses.

Methods: This was a retrospective study compiling consecutive cases of dialysis access significant stenoses operated between September 2012 and June 2015 in our academic institution. Only interventions intended to preserve the access were included. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: There were 32 patients (59.4% male). The mean age was 66.2 ± 2.1 years (range, 25.5-88.9 years). The mean time from access creation to stenosis was 19.2 ± 4 months (range, 0.3-76.1 months). The main comorbidities included hypertension (81.3%), diabetes mellitus (46.9%) and coronary artery disease (18.8%). Eighty-four percent of accesses were functional, whereas sixteen percent were not yet used. Vein stenoses were mainly juxta-anastomotic (65.6%) and were single in 71.9% of cases. Dialysis difficulties were the main complaint (75%). Afferent artery stenoses were present in 4 patients (12.5%) and were responsible for critical ischemia in one case. Juxta-anastomotic stenoses were mainly treated by proximal reimplantation (45%), while distal stenoses were mainly managed by prosthetic graft interposition (70%). Arterial stenoses were treated by venous patch angioplasty in 3 cases and autologous bypass in one case. The mean follow-up was 9 ± 1.6 months (range, 0-33.8 months). There were two cases of primary failure (one vein thrombosis and one maturation failure). A new vein stenosis occurred in 8 cases (25%) and arterial stenosis in two (7.1%). The early mortality was 6.3%. The primary patency and the primary functional patency were 80% at 6 months respectively.

Conclusion: According to this study, surgical management of dialysis access stenoses seems to be effective with low primary failure and good short-term patency. However, the durability was hardly assessed since the follow-up was relatively short.

Rational choice of permanent vascular approach for hemodialysis

I. Kuzmanović¹, M. Dragaš¹, I. Končar¹, I. Banzić¹, A. Dimić¹, N. Jakovljević¹, M. Sladojević¹, I. Tomić¹, P. Mutavdžić¹, B. Kukić¹, M. Marković¹, B. Kukić¹, T. Jemcov², M. Kravljača², M. Radović², L. Davidović¹

¹Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

²Clinic for Nephrology, Serbian Clinical Centre, Belgrade, Serbia

Aim: Permanent vascular access for hemodialysis should allow safe and efficient hemodialysis to patients with chronic renal insufficiency. Appropriate vascular access has to be simple to use and with low chances of complication during the exploitation. Having all of this in mind, native vascular access stands out and is suggested as the first choice procedure. Aim of this paper is to present single center experience in vascular access surgery throughout nine years.

Method: Retrospective analysis of medical records were performed.

Results: From 2006 to 2015, we have performed 991 native permanent vascular accesses for hemodialysis. Of that number 807 (81,43%), were native arteriovenous fistulas, 43 (5,26%) in anatomical snuffbox, 39 (3,39%) of permanent vascular access with a graft, and 145 with tunneling catheter (14,64%). For permanent vascular access creation, anesthesia choice is very important, and we give advantage to nerve block anesthesia in complex cases and local in primary ones.

Conclusion: Native arteriovenous fistula should be first line choice, however anatomical snuffbox might be more frequently used as first line location for vascular access. Preoperative evaluation and surgical technique might contribute to selection of this location.

24.04.2016.

Hall: Adriatic

09.00-10.30

V 11: EVAR

Moderators: P. Kasprzak (Germany), I. Banzic (Serbia)

Key Note Lecture: Radical management of endograft infection. F.Speziale(Italy)

Key Note Lecture: Infected endografts: is it a clinical problem? (FDG distribution patterns in PET scanning to improve accuracy of diagnosing vascular prosthetic graft infection, C.Zeebrechts (Netherlands)

Evar complications related to high velocity traumas: mith or reality?

Giuseppe Galzerano, Maria Pia Borrelli, Giovanni Giannace, Umberto Ruzzi and Carlo Setacci

University of Siena

Aim: The aim of this study is to confirm if the occurrence of high-velocity traumas (HT) during EVAR follow up could facilitate late type 1, type 3 endoleak (EL) and limb occlusion.

Methods: All Patients underwent abdominal aortic procedures in our Department from the 1st January 2011 to the 31 December 2014 were prospectively included in a dedicated database. All patients received a telephonic interview to verify HT occurred during follow-up or, in case of secondary treatment, before the complication diagnosis. We, also, retrospectively analyzed all CT images of patients underwent aortic reinterventions for late type 1, type 3 EL or limb occlusion (at least 6 months after primary procedure) due to migration, disconnection or graft material fatigue. To divide patients according to the risk of developing an EL we identified 8 predisposing factors (PF). We divided patients in three groups: group A (low risk for EL, $PF \leq 2$), group B (intermediate risk, 3-5 PF) group C (high risk, >5 PF).

Results: During the study period we performed 37 secondary procedures (7 from our institution). In complicated cases, 3 patients suffered an HT before developing the complication (3/37; 8.1%), while in not complicated cases only 1 patient suffered HT (1/234; 0.4%). The analysis of the preoperative CT examination evidenced that patients with endoleak + HT were 2 in group B (intermediate risk) and 1 in group C, while the other 34 complicated patients were 26 in group A and 8 in group B.

Conclusion: HT seem to increase the risk of type 1, type 3 EL and limb occlusion, during EVAR follow-up. A CT angiography should be recommended for patient suffering HT during EVAR follow-up.

3D Ultrasound for EVAR surveillance – goal or gimmick?

W. Schierling, PM. Kasprzak, R. Kopp, M. Janotta, K. Pfister

University hospital Regensburg, Department of vascular surgery, Regensburg, Germany

Aim: Patients after endovascular aneurysm repair (EVAR) need lifetime follow-up to avoid post-EVAR complications. CT scanning is widely used follow-up modality for patients after EVAR. Contrast Enhanced Ultrasound (CEUS) has a strong recommendation and high evidence for endoleak diagnostics. Aim of the following study was to test the value of CEUS for EVAR surveillance in daily practice compared to the already established 2D techniques.

Material/Methods: At the University Medical Center Regensburg, 3D CEUS (Hitachi), 3D CEUS (Curefab) and 4D Ultrasound (Hitachi) were performed on 20 patients after EVAR. Measurements were done in triplets. Aneurysm diameter, volume, and endoleaks were determined and compared to the 2D CEUS measurements.

Results: Creation of a 3D volume data set is possible by freehand technique using special software or by automatic technique using special transducer and special software or by an add on-system, which transforms standard contrast-enhanced 2D images into a high-definition 3D format using a motion tracking mini-GPS (global positioning system). Concerning anterior-posterior and lateral diameter, Bland-Altman plots demonstrated agreement between 2D US and 3D Curefab and disagreement between 2D US and 4D Hitachi. Regarding estimation of aneurysm growth, agreement was found between 2D, 3D and 4D US in 19 of the 20 patients (95 %). The mean aortic volume evaluated by 3D Curefab and 4D Hitachi was 84.4 ± 59.8 ml and 59.4 ± 48.0 ml, respectively. Two out of the 20 patients (10 %) had an endoleak type II, which was detected by all CEUS methods. In one case, endoleak feeding arteries remained unclear with 2D CEUS but could be clearly detected by 3D CEUS.

Conclusion: 3D CEUS is significant improvement of 2D CEUS for EVAR surveillance.

Aneurysmal Sac Glue Embolization in Emergency Endovascular Aneurysm Repair for Ruptured Abdominal Aortic Aneurysm

Ryo Hosino, Seijiro Yamaguchi, Hiroshi Kondo

West Ichinomiya Hospital, Japan

Aim: Although endovascular aneurysm repair in the treatment of ruptured abdominal aortic aneurysms is feasible, it has a potential disadvantage of endoleak, which is undesirable in case of active bleeding. We evaluated the feasibility of n-butyl cyanoacrylate embolization of the ruptured abdominal aortic aneurysm sac in emergency endovascular aneurysm repair. **Methods:** We studied 5 patients [3 men, 2 women; mean age, 76.6 ± 5.1 years (range, 72–85 years)] with ruptured abdominal aortic aneurysm treated with emergency endovascular aneurysm repair and aneurysmal sac glue embolization using n-butyl cyanoacrylate between November 2014 and November 2015. After stent graft deployment, angiography within the aneurysm sac was performed using a catheter, and n-butyl cyanoacrylate (1:4 n-butyl cyanoacrylate and iodized oil) embolization with a coaxial catheter system was performed for prompt sealing.

Result: Preoperative hemodynamic status was Rutherford level I in one patient, level II in one, and level 3 in three. All patients had a suitable anatomy for endovascular aneurysm repair, and both repair and embolization procedures were successful in all patients. The mean operation time was 127.2 ± 33.3 minutes. The mean diameter of aneurysms was 74.0 ± 19.4 mm, and the amount of n-butyl cyanoacrylate injected into the aneurysm sac was 26.4 ± 16.6 mL (range 7–50 mL). No endoleak was seen in any patient after surgery. All patients survived the surgery without any major complications. Follow-up computed tomography angiography revealed no endoleaks, and accumulation of n-butyl cyanoacrylate was observed in the aneurysm sac.

Conclusion: Endovascular aneurysm repair is associated with a potential risk of ongoing bleeding from type II or IV endoleaks into the disrupted aneurysm sac in patients with severe coagulopathy. Therefore, sac angiography and n-butyl cyanoacrylate embolization during emergency endovascular aneurysm repair may improve the treatment of ruptured abdominal aortic aneurysm in hemodynamically unstable pat

Long-term results for EVAR in women

Peter Konstantiniuk, R. Horst Portugaller, Tina Cohnert

Department of Vascular Surgery, Graz, Austria

Aim: of this study was to evaluate operative results for EVAR in female patients with special focus on long-term results.

Methods: Prospectively collected data of all consecutive patients (pts) undergoing AAA repair between 10/96 and 6/15 were analyzed retrospectively. Statistical analysis was performed using SPSS software.

Results: 1487 patients (223 women, 1264 men) underwent AAA surgery: Open repair (OR) in 1164 operations for 970 men and 194 women. 242 pts. were operated because of rupture ($242/1164=20.8\%$). Emergency OR was performed in 46 women. ($46/223=20.6\%$). EVAR was performed strictly in an elective situation in 323 pts ($323/1487=21.7\%$). The percentage of women was higher in OR with 16.2% ($189/1164$ pts). compared to EVAR with 9.0% ($29/323$ pts). 29 women with (age 78.0 ± 8.3 years (69-94 years) underwent EVAR without in-hospital mortality. 4 pts underwent conversion: 1 early and 3 late after 47, 50 and 54 months. 6 pts died after 5-123 months (median 9 years). Mean follow-up in 19 women is 35.5 ± 35.9 months (range 1- 124). No graft limb occlusion or secondary intervention was observed. Computertomographic controls showed complete aneurysm shrinkage in 4 pts whereas 8 aneurysms did not shrink.

Conclusion: During a 19 year period with 1487 AAA operations a total of 29 women was treated by EVAR. Very few women underwent EVAR with 1.9%. Low operative mortality and very good long-term results justify wider use of EVAR in women. AAA screening programs for women, changes in treatment indication, and device modification need further investigation.

Pre-operative morphological features predict late distal type I endoleaks

Gallitto E., Pini R., Longhi M., Faggioli GL, Freyrie A., Gargiulo M., Stella A.

S.Orsola Malpighi Hospital, Vascular Surgery, Bologna University

Aim: Late distal type I endoleak (L-ELIB) reduces the EVAR outcomes. Aims of the study were to evaluate incidence-presentation-treatment of L-ELIB and to identify the relative risk factors.

METHODS: Between 2006-2012, data of patients underwent EVAR were prospectively collected. Follow-up was conducted by duplex-ultrasounds or computed-tomography-angiography at 1,6,12 months and yearly thereafter. Patients with L-ELIB, were retrospectively selected (Group1). Pre-operative morphological aortic-iliac features and EVAR-implant details were evaluated. A control-group (Group2), without late ELIB, was selected and compared with Group1. Results were analysed using χ^2 Test and Logistic regression.

RESULTS: Six-hundred and sixteen patients underwent EVAR. ELIB was detected in 14 cases (2.3%) (mean follow-up 37.4 ± 27.9 months). Three cases (21.4%) were symptomatic. They were managed by open (7%) and endovascular (93%) re-interventions. Thirty patients were clustered in Group2 (mean follow-up 44.3 ± 18.5 months). Common iliac artery length < 4 cm (OR: 5.3, 95%CI: 1.1-29.5, $p = .05$), diameter > 15 mm (OR: 3.5, 95%CI: 1.2-10.9, $p = .03$) and severe thrombotic apposition (OR: 5, 95%CI: 1.2-19.2, $p = .02$) at the iliac sealing zone, were independently associated with higher risk of L-ELIB. Iliac leg diameter oversize $< 10\%$ or distal sealing > 1 cm above the hypogastric origin were associated with L-ELIB (OR: 5.4, 95%CI: 1.3-21.5, $p = .01$ and OR: 6.6, 95%CI: 1.1-39.3, $p = .03$, respectively).

CONCLUSION: L-ELIB is not negligible during EVAR follow-up and re-interventions are always necessary. The endovascular repair is feasible & effective. Iliac leg diameter oversize $> 10\%$ and extensive common iliac artery coverage are suggested to prevent this complication.

New single-sided access evar device: the horizon ce pivotal study– short-term results

Igor Banzic¹, Sagi Raz², Lazar Davidovic¹, Igor Koncar¹, Perica Mutavdzic¹, Vladimir Cvetic¹

Clinic for Vascular and Endovascular Surgery, Clinical Centre of Serbia¹

Endospan Ltd., Hertzelia, Israel²

Aim: The objective was to investigate performance and safety of a new single-sided, 14Fr, bottom-up concept of endovascular stent grafts – the HORIZON™. The HORIZON™ AAA stent graft consists of three stent graft modules, each introduced separately (model 1 – iliac to iliac limb with optional iliac extension for the base limb, model 2 – primary aortic limb, model 3 – aortic extension limb).

Methods: This is ongoing, prospective, non-randomized, open-label, one arm, interventional multi-center (nine centers participating) clinical study. Study population consists of twenty-nine (29) patients, age ≥ 18 years, diagnosed with infrarenal abdominal aortic and/or aortoiliac aneurysms who met inclusion criteria. Data are being collected at baseline, implantation, pre-discharge, 1, 6, 12 months and annually until completion of 5 years follow-up. All adverse events, including death, are recorded throughout the course of the study. The primary performance endpoint at one month post implantation was composite of successful delivery and pararenal deployment of the device, aneurysm isolation, endoleaks, stent graft occlusion, conversion to open surgery, aneurysm rupture, and clinically significant stent graft migration. The primary safety endpoint at one month post implantation was free of Major Adverse Events.

Results: Twenty-nine patients had been treated by complete three component system device, and two patients additionally received two more module 2 components. At one month follow-up 100% performance and 100% safety were obtained, with no endoleaks, aneurysm rupture, stent graft occlusion, stent graft migration, nor conversion to open surgery. So far, there was one case of death due to myocardial infarction (unrelated to the device implantation) among eight patients who have reached six months follow-up.

Conclusion: The HORIZON™ device presents new EVAR technology as a novel single sided access EVAR. This device potentially may offer the new alternative in AAA treatment. The endograft has met all safety and performance endpoints as implantation as well as early follow-up results

Gender specific analysis of a low-profile EVAR device

T. Nolte, M.Tenhoff, L. Maene, G. Maleux, D. Scheinert

Klinikum Karlsruhe, Acad. Teaching Hospital University of Freiburg, Germany

Aim: To determine the performance of the Ovation® and Ovation Prime® stent graft (referred to as “Ovation System”) in women versus men for elective abdominal aortic aneurysm (AAA) repair in a real-world setting.

Methods: From May 2011 to December 2013, 501 patients (86% men, mean age 73 yr) from 30 sites were prospectively enrolled in the OVATION Registry and electively treated with the Ovation System. Patients returned for clinical and imaging follow-up at 1 month, 6 months, and 1 year.

Results: Women were older (median 77 vs. 73 years, $p<0.01$) although men reported a higher frequency of ASA class III/IV (54% vs. 34%), coronary artery disease (43% vs. 29%), diabetes mellitus (19% vs. 7%), and history of tobacco use (50% vs. 33%). Median external iliac diameter was 6.4 mm in women and 7.5 mm in men ($p<0.001$). Women tended to have shorter ($p=0.08$) and more angulated ($p=0.10$) proximal necks compared to men. Proximal neck diameter was larger in men versus women (24 mm vs. 22 mm). Technical success was 100% in women and 99.5% in men. Type I endoleak was identified in 5 men (1.5%) and a type III leak was identified in 1 (0.3%) man. No woman presented with type I or III endoleak at 1 year. The rate of AAA enlargement was similar in women (2.5%) and men (2.7%). Freedom from aneurysm-related mortality through 1 year was 100% in women and 99.3% in men (log-rank $p=0.49$). Freedom from all-cause mortality through 1 year was 94.0% in women and 95.8% in men (log-rank $p=0.51$). One contained AAA rupture was reported in a male patient. One female patient underwent conversion to open surgery. Freedom from a secondary intervention through 1 year was 88.2% in women and 93.7% in men (log-rank p -value=0.11).

Conclusion: Women and men derive similarly favorable benefits with the Ovation System through 1 year follow-up. Longer-term follow-up will be required to determine the durability of these outcomes

Hybrid theatre with image fusion for endovascular aortic aneurysm repair

Andrew Mayes, Khalid Bashaeb, Riza Ibrahim, George A. Antoniou

The Royal Oldham Hospital, The Pennine Acute Hospitals NHS Trust, Vascular Surgery Department, United Kingdom

Aim: To assess the impact of hybrid theatre with image fusion on indirect measures of radiation exposure and operating time in endovascular aortic aneurysm repair (EVAR).

Methods: We conducted a retrospective review of prospectively collected information in departmental computerised databases. We divided the study population into two groups: group 1 included consecutive patients undergoing standard EVAR in a standard operating theatre using a mobile C-arm over a four-month period preceding the introduction of the hybrid theatre in our department, and group 2 included consecutive patients undergoing EVAR in a hybrid suite over the same period of time. Screening time and dose area product (DAP) were defined as the primary outcome measures, whereas contrast volume and procedure time were secondary outcome endpoints. Data were presented as median and interquartile range (IQR) and compared with the Mann-Whitney U test.

Results: The contrast volume was significantly lower ($p < 0.001$) in the post-hybrid group (60 ml, IQR 44.75 – 80) in comparison with the pre-hybrid group (80 ml, IQR, 67.5 – 100). The screening time was not different between the groups (1126.8 sec, IQR 779.05 – 1789.3 vs. 1265 sec, IQR 959.5 – 1622.5; $p = 0.501$). Even though DAP was lower in the post-hybrid group (37.235 Gy cm², IQR 20.31 – 58.4275) compared with the pre-hybrid group (43.5 Gy cm², IQR, 30.4 – 65.6), no significant difference was identified ($p = 0.254$). The operating time was not found to be different between the groups (134 min, IQR 111 – 164 vs. 121.5 min, IQR, 108.25 – 150; $p = 0.304$).

Conclusion: In our series, hybrid theatre with image fusion had a significant impact on contrast volume used for EVAR.

Off-the-shelf stent grafts implantations as the solution for treatment of some aorta and iliac artery aneurysms.

Nowacki M., Turowski R., Falkowski A., Ziętek Z., Gutowski P.

Department of Vascular and General Surgery Pomeranian Medical University in Szczecin, Poland

Aim: Open surgery or long, complicated procedures for patients with aorta and iliac arteries aneurysms with high risk of anaesthesia is associated with high mortality. The development of off the shelf endovascular procedures for patients with isolated iliac artery aneurysms, “bulge” aorta aneurysms, patients with heavily torquosity of iliac arteries is the solution and offers minimally invasive treatment option in patients with that kind of disease.

Method: 446 high risk patients for open surgery has been reviewed, treated with EVAR procedures between January 2011 and April 2015. The study included 36 (mean age 66,2) patients that underwent off-the-shelf procedure. A contrast enhanced 64 slice CTA (<1.5 mm slices) was done before operation to qualify patient to the operating procedure. Operations were done under fluoroscopic control. Surgical access was obtained to both femoral arteries. Procedures followed with 0.035 inch hydrophilic guidewire and endovascular procedure depends on preoperative strategy with Endurant II Medtronic extensions, Anaconda Vascutek extensions, Endurant II Medtronic Stent graft main body and Anaconda Vascutek iliac extensions. Patients with off the shelf EVAR procedures were divided into the couple of groups: 14 patients with bulge aorta aneurysm treated with tube Stent graft, 12 patients with isolated iliac artery aneurysms treated with iliac extensions Stent grafts (Endurant II Medtronic extensions, Anaconda Vascutek extensions), 7 patients with heavily torquosity of iliac arteries treated with combined Endurant II Medtronic Stent graft main body and Anaconda Vascutek iliac extensions, 2 patients with iliac aneurysms treated with kissing Stent grafts.

Results: Postoperative complications were present in 12,4% such as: wound infection, haematoma, PE. Median follow-up was 12,8 months. The preoperative, post operation and the last available Computer tomography were analyzed.

Conclusion: We observe that off the shelf procedures are reliable solution for patients with bulge abdominal aorta aneurysms and isolated iliac.

Sunday, 24.04.2016

Hall: Mediteraneo

09.00-10.30h

V12: AAA

Moderators: Z. Rancic (Switzerland); M.Markovic (Serbia)

Key Note Lecture: Different rates of untreated patients with RAAA in the literature, M.Markovic(Serbia)

New scale in predicting mortality ruptured abdominal aortic aneurysms

E. M. San Norberto, A. Revilla, M. Martín-Pedrosa, R Fuente, J Taylor, C Vaquero
Angiology and Vascular Surgery, Valladolid, Spain

Aim: To determine the usefulness of mortality risk scores for the treatment of ruptured abdominal aortic aneurysm in patients treated endovascularly.

Methods: Retrospective study of 61 patients undergoing endovascular repair between 2009 and 2014. Preoperative variables and in-hospital mortality were collected. The Hardman, GAS, Vancouver and ERAS scales were calculated.

Results: In-hospital mortality was 45.9%. The univariate predictors obtained were age, male sex, hypertension, smoking, chronic obstructive pulmonary disease, systolic blood pressure <90mmHg, heart rate and loss of consciousness. After completing the multivariate analysis, significant variables were age ($p=0.021$), systolic blood pressure <90mmHg ($p=0.004$) and heart rate ($p=0.050$). The GAS (76.79 ± 9.88 vs 90.43 ± 14.76 , $p=0.001$), Vancouver (4.41 ± 0.62 vs 4.83 ± 0.55 , $p=0.007$) and ERAS scales (0.06 ± 0.24 vs 0.86 ± 0.76 , $p=0.001$) were statistically different between both groups. The scale resulting from the following formula: $0.083 + 0.158$ (if age > 80 years) + 0.701 (if systolic blood pressure < 80 mmHg) + 0.598 (if heart rate < 70 beats/min); obtained an area under the curve of 0.95.

Conclusions: Age, systolic pressure and heart rate, are predictors of hospital mortality of patients treated with endovascular repair of ruptured abdominal aortic aneurysms. Applying the scale proposed in this study, in combination with GAS, Vancouver and ERAS scales, it allows to know the patients would not benefit from endovascular treatment.

A systematic review on management of concomitant abdominal aortic aneurysm and colorectal cancer

G. Kouvelos, N. Patelis, G. Antoniou, A. Lazaris, C. Bali, M. Matsagkas

Department of Surgery-Vascular Surgery Unit1, University of Ioannina, Ioannina, Greece

Aim: To conduct a systematic review of the literature and perform an analysis of outcomes of treatment of concomitant colorectal cancer (CRC) and abdominal aortic aneurysm (AAA) focusing on the different treatment options.

Methods: A review of the English-language medical literature from 1980 to 2015 was undertaken using the Pubmed and EMBASE databases to identify studies reporting surgical treatment of patients with concomitant CRC and AAA. The search identified 24 articles encompassing 254 patients (81% male; mean age 73.5 ± 6.1 years).

Results: In 96 (37.9%) patients cancer resection was performed first, followed by AAA repair at a later stage [open (OAR): 79.2%, endovascular (EVAR): 20.8%]. 82 (32.3%) patients underwent AAA repair (OAR: 47.5%, EVAR: 52.5%) prior to CRC resection. 71 (27.9%) patients underwent combined OAR and CRC resection, while just 5 (1.9%) were treated by EVAR and cancer surgery in a single stage. There were 8 out of 96 (8.3%) interval AAA ruptures, mostly in the early postoperative period concerning aneurysms above 6cm in diameter. The mean interval between the two procedures was much shorter in patients treated with EVAR than OAR (11.5 ± 1.8 vs 103.9 ± 42.3 days). Overall 30-day mortality rate was 10.9%. Data from observational studies showed no significant differences in 30-day mortality between patients treated in one or two stages ($p=0.89$). No mortality was recorded in any of the EVAR treated patients. There was one graft infection recorded (0.4%).

Conclusion: No significant differences on 30-day outcome among patients treated in two or one stages were evident. EVAR showed the lowest mortality and also diminished the delay between the two procedures in less than two weeks for a two-stage approach, although has been associated with a significant risk for thrombotic events. The coexistence of AAA and CRC seems to favor the use of EVAR in treating those patients.

Are evar studies fair to open surgery?

I. Lovričević, B.D. Franjić

“Sestre Milosrdnice” University Hospital Center, Zagreb, Croatia

Aim: Early results of open surgery for AAA at a single University Hospital Center were evaluated and compared to potential use of EVAR.

Methods: Patients were classified into 3 groups depending on the morphology of their iuxtarenal and infrarenal aneurysms. The first group of patients (Group A) contained patients with favorable aneurysm morphology whose potential EVAR would be straightforward and easy to perform. The second group (Group B) contained patients whose EVAR was deemed difficult but possible; the third group (Group C) consisted of patients whose EVAR was impossible. The evaluation of AAA morphology was performed by an independent interventional radiologist with extensive EVAR experience.

Results: The results of patients treated with straight grafts are highlighted. Analysis of comorbidity, hostile abdomen, etc. that further increase success rates of EVAR are not included in these results. The results of open surgery are best in the first (easy-for-EVAR) group of patients where morbidity and mortality were low. The mortality and morbidity are highest in the group of patients where EVAR is impossible.

Conclusion: The results of randomized studies on results of EVAR or open surgery should not be generalized rather based on aneurysm morphology.

Effects of atmospheric pressure dynamics and biometeorological phases on abdominal aortic aneurysm rupture onset

D. Opacic¹, N. Ilic^{2,3}, M. Sladojevic³, P. Mutavdzic³, D. Markovic^{2,3}, L. Davidovic^{2,3}, D. Kostic^{2,3}

¹Department of Physiology, Maastricht University, Maastricht, The Netherlands; ² School of medicine, University of Belgrade, Belgrade, Serbia; ³ Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia, Belgrade Serbia

Aim: To investigate effect of atmospheric pressure dynamics and biometeorological phases on abdominal aortic aneurysm rupture onset.

Methods: During a 10-year period a retrospective study of 546 patients with intraoperatively diagnosed abdominal aortic aneurysm rupture was performed. Meteorological information for the corresponding period were obtained from local hydrometeorological station, while biometeorological phases data were provided by qualified biometeorologist.

Results: Months with higher average atmospheric pressure values are associated with higher rupture rates ($p=0.0008$, $R^2=0.665$). Same trend is observed for months with larger atmospheric pressure variability expressed as standard deviation ($p=0.0311$, $R^2=0.374$). Average atmospheric pressure values do not differ significantly between days with and without rupture. Values of atmospheric pressure variability indicators are larger during the period of 3 and 7 days preceding rupture. Abdominal aortic aneurysm ruptures are more frequent during winter and autumn months, but without significant difference in comparison to other seasons. VIII biometeorological phase has the highest rupture incidence (18.7%, $p<0.024$).

Conclusion: High absolute values of atmospheric pressure and larger pressure variability, as well as certain biometeorological conditions may represent risk factors or even precipitate abdominal aortic aneurysm rupture onset. Further studies are required to elucidate possible underlying mechanism of this interaction.

Intraspinal pressure changes after aortic aneurysm repair mapped by quantification of the optic sheath diameter

C. Beatrix, M. Ertl, K. Pfister, PM. Kasprzak, B. Schömig, C Brückl, F Schlachetzki, W Schierling

University hospital regensburg/ department of vascular surgery, Regensburg, Germany

Aim: The quantification of the optic nerve sheath diameter (ONSD) using ocular sonography (OS) is an elegant technique to estimate intracranial pressure changes. Aortic aneurysm repair (AAR) is associated with a reasonable risk of spinal fluid pressure increase, largely dependent on the extent of aneurysm repair (supra- vs. infrarenal). The aim of this study was to prove the feasibility of intraspinal pressure estimation using ONSD-measurements in patients with supra- or infrarenal aortic aneurysms.

Methods: 30 patients with elective endovascular repair of infrarenal aortic aneurysms (iAA) were included, prospectively analyzed and compared with a previously investigated group of 28 patients with suprarenal aortic aneurysms (sAA). Five consecutive measurements of the ONSD were performed in each patient. Statistical analysis was done using the Wilcoxon-test. A p-value < 0.05 was considered statistically significant.

Results: A highly significant difference could be detected in both groups comparing pre- and postinterventional values ($p < 0.01$). In group sAA ONSD-diameters increased by an average of 0.3 mm, whereas a decrease by 0.2 mm could be detected in group iAA. Both groups roughly reached baseline values until the end of their hospitalization.

Conclusion: ONSD seems to be a reliable biomarker for the estimation of intraspinal pressure alterations. As OS provides a suitable bedside tool for rapid reevaluation it can help to identify high risk patients for spinal pressure increase in need for a spinal catheter.

Open repair of aaa in a high volume centre

P. Mutavdzic¹, M. Maksic², I. Koncar^{1,3}, N. Ilic^{1,3}, M. Dragas^{1,3}, M. Markovic^{1,3}, B. Kukic³, Lazar Davidovic^{1,3}

¹Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia, Belgrade, Serbia;

²Clinic for Special and Surgical Skills, Clinical Center of the Republic of Srpska, Banja Luka, Bosna and Herzegovina; ³School of medicine, University of Belgrade, Belgrade, Serbia

Aim: The fact that OR of AAA still has a place in modern vascular surgery has been explained.

Methods: We analyzed prospectively collected data of 450 patients who underwent elective OR of AAA at the Clinic for vascular and endovascular surgery of the Serbian Clinical Centre in the period between January 2013 and September 2014.

Results: Postoperative death occurred in seven patients (1. 55%) during the first 30 postoperative days. The mortality was caused by: uncontrolled bleeding-1, acute myocardial infarction-1, ischemic colitis-2, MOFS-2, sepsis due to infection and dehiscence of laparotomy wound -1. Coronary artery diseases (OR:3.89; CI:0.85-17.7; p=0.0058), postoperative acute myocardial infarction (OR:29.9; CI:2.56-334.95; p=0.0053), chronic renal failure (OR: 7.5; CI 1.35-8.5; p=0.0073), colonic necrosis (OR:88.2; CI:4.77-1629.69; p=0.0026), occlusion of the both hypogastric arteries and the inability to preserve at least one hypogastric artery (OR:17.4; CI:1.99-178.33; p=0.0230), aorto bifemoral reconstruction (OR:9.06; CI:1.76-46.49; p=0.016), significant perioperative bleeding (>2 liters) (OR:7.32; CI:1.31-10.79; p=0.0001), hostile abdomen (OR:5.25; CI:1.3-21.1; p=0.0055), inflammatory aneurysm (OR: 13.99; CI:2.88-65.09; p=0.0002), supraceliac aortic cross clamping (OR:18.7; CI:3.8-90.6; p=0.0003), prolonged aortic cross clamping (>60 minutes) (OR:14.25; CI:2.75-64.5; p=0.0003), the intraoperative hypotension (OR:6.61; CI:0.71-61.07; p=0.0545), the prolonged operation (>240 minutes) (OR:8.66; CI:0.91-81.56; p=0.0585) and complete dehiscence of the laparotomy (OR:44.1; CI:3.39-572.78; p=0.0396) increased the 30 day mortality in our study.

Conclusions: Early mortality after open repair of AAA in high volume centre might be very low due to educated and experienced anaesthesiological and surgical team. Centralized aortic surgery might be solution for effective treatment of patients with unsuitable anatomy or for young patients with long life expectancy. Education of young vascular surgeon in open aortic surgery is of a vast importance.

Open repair of ruptured abdominal aortic aneurysm in modern era: a twenty years experience of a high-volume centre

I. Tomic¹, M. Markovic^{1,2}, N. Ilic^{1,2}, M. Dragac^{1,2}, I. Koncar^{1,2}, I. Banzic^{1,2}, Z. Bukumiric^{2,3}, M. Sladojevic¹, P. Mutavdzic², L. Davidovic^{1,2}

¹Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia, Belgrade, Serbia; ²School of medicine, University of Belgrade, Belgrade, Serbia, ³*Institute of Medical Statistics and Informatics, Faculty of Medicine, University of Belgrade, Belgrade, Serbia*

Aim: Mortality after open repair of ruptured abdominal aortic aneurysms (RAAA) still remains high. The purpose of this study is to compare the results of open RAAA treatment in two different ten-year periods in a single high-volume centre.

Methods: Retrospective analysis of 729 RAAA patients that were treated through 1991-2001 (229 pts, group A) and 2002-2011 (500 pts, group B) was performed. Variables significantly associated with mortality were defined and analyzed. Descriptive and analytic methods were used.

Results: Overall mortality in group A was 53.7% (123/229 pts) with intraoperative mortality of 13.5% (31/229 pts), while in group B overall mortality was 37.4% (187/500 pts) with intraoperative mortality of 12.4% (62/500 pts). Despite a fact that overall mortality was significantly lower in group B ($p=0.012$), according to multivariate analysis that was no significant difference between two groups. Aortic cross-Yclamping level in group A was dominantly infrarenal (68%) while in group B it was mostly supraceliac (53%). Cross-clamping time, duration of surgery and type of aortic reconstruction had no influence by own on survival in group B. Expressed in multivariate regression, preoperative congestive heart failure, intraperitoneal bleeding, longer total operative time and aorto-bifemoral reconstruction were significant predictors of lethal outcome. Despite them, a higher systolic tension on admission, infrarenal clamping and higher intraoperative diuresis were associated with better survival. Cell saving was used only in group B. Postoperative multisystem organ failure, respiratory and renal malfunction, bleeding and cerebrovascular incidents significantly raised mortality in both groups.

Conclusions: Open RAAA repair is still competitive method of treatment in modern era. The high mortality rate can be reduced by appropriate perioperative protocol carried out by teams experienced in open repair. A key goals should be short admission-surgery time, supraceliac cross-clamping, and routine cell-saver usage.

Analysis of renal function after thoracoabdominal aortic aneurysm repair with branched evar

C. Beatrix, PM.Kasprzak, K.Gallis, L. Costin, R. Kopp

University Hospital Regensburg, Regensburg, Germany

Aim: Acute kidney injury (AKI) is an important post-operative complication after complex endovascular aortic repair. The aim of this study is to investigate the incidence of AKI after aortic aneurysm repair with branched stentgrafts (BEVAR) using the ARISe classification (Aneurysm Renal Injury Score) and the impact of AKI on patients outcome.

Methods: A total of 104 patients underwent between 07/2007-03/2015 thoracoabdominal aneurysm (TAAA) repair with standard or custom-made BEVAR. Serum creatinine (crea) and glomerular filtration rate (GRF) at baseline, during 48 h following BEVAR at discharge and last follow-up were evaluated. ARISe score was used to describe the degree of AKI. Severe AKI was defined as ARISe score ≥ 3 . Branch patency was assessed by ultrasound and CTA.

Results: After BEVAR, mean serum crea levels increased during 48 h (baseline creatinine 1.25 ± 0.05 mg/dl; GFR 60.8 ± 3.4 ; after 48 h, crea 1.62 ± 0.09 mg/dl; GFR 46.3 ± 3.3), with recovery until discharge (crea 1.5 ± 0.1 mg/dl; GFR 53.5 ± 3.9). The procedural intra-arterial contrast volume ($p=0.005$) significantly impaired the postoperative renal function without leading to permanent renal dysfunction. Interestingly, patients with preoperative renal insufficiency (crea ≥ 1.5 mg/dl) had postoperatively or during follow up no significantly decreased renal function (crea 2.0 ± 0.2 mg/dl; GFR 37 ± 4.5 , $p=0.7$). Severe AKI was observed in 8/104 (7.7%) patients, 3 out of them needed permanent dialysis, one had renal branch stenosis. During follow up, 8/104 (7.7%) patients developed renal branch stenosis, 4 out of them (50%) without significant impact on renal function after reintervention.

Conclusion: Moderate renal insufficiency is not per se a contraindication for TAAA repair with BEVAR. Regular postoperative control examinations and interventions at an early stage of hemodynamic relevant branch stenosis can prevent permanent renal dysfunction in patients with BEVAR.

Aorto-uni-iliac stent-grafting without synchronous femoro-femoral bypass for the endovascular repair of abdominal aortic aneurysms in patients with contralateral iliac occlusion

K.Papazoglou, C.Karkos, I.Pliatsios, D.Pelekas, M.Mitka, K.Konstantinidis, T.Stamatopoulos, A. Stamatopoulos.

5th Department of Surgery, Medical School, Aristotle University of Thessaloniki, Hippocratio Hospital, Thessaloniki 54642, Greece

Aim: To present the results of the endovascular treatment of abdominal aortic aneurysms (AAAs) in patients with contralateral iliac occlusion using aorto-uni-iliac (AUI) stent-grafts without a synchronous femoro-femoral bypass (FFB).

METHODS: Over a 14-year period (December 2001-November 2015), 24 patients (23 men, average age 70.5 [59-86]) with an AAA and coexisting occlusion or severe stenosis of the contralateral iliac artery were treated with AUI stent-graft without FFB. Five of these were ruptured AAAs and were treated urgently. Comorbidities included: coronary artery disease in 16, hypertension in 8, chronic respiratory disease in 3, obesity in 5, malignancy in 1, renal impairment in 2, and stroke in 16. The procedure was carried out under local anesthesia through an ipsilateral femoral artery cutdown. Stent-grafts used were: 17 Endurant, 3 Talent, 2 Endofit and 2 Excluder. The anatomical characteristics of the aneurysms were: mean proximal neck length 27 mm, mean proximal neck diameter 25.2 mm, mean aneurysm diameter 67.7 mm, and mean length of the infrarenal abdominal aorta 115.2 cm.

RESULTS: There were no intra- or post-operative deaths or complications. Intraoperative endoleak was noted in 3 patients. During follow-up (1-10 years) 4 deaths were recorded (1 AAA rupture after 10 years, 1 heart attack after 4 years, 2 after 1 year due to irrelevant causes). Additionally, 2 endoleaks were detected during the follow-up. Three patients reported intermittent claudication which was unchanged from the pre-operative status.

CONCLUSIONS: The use of AUI stent-grafts without FFB for the endovascular treatment of patients with AAA and coexisting contralateral iliac occlusive disease seems to be safe and effective.

CARDIAC EPOSTER SESSION

Post-infarction ventricular septal defect as a surgical emergency. Our experience.

E. Prifti¹, M. Bonacchi², K. Krakulli¹, A. Veshti¹, G. Giunti², A. Baboci¹

1- Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2- Division of Cardiac Surgery, Policlinico Careggi, Florence, Italy

Aim: The aim of this study was to evaluate the early and mid term postoperative outcome in patients undergoing cardiac operation for surgical repair of post-infarction ventricular septal defect (VSD).

Materials and methods: Between 2000 and 2015, 22 patients underwent surgical repair of post-infarction VSD. There were 8 females and 4 patients were >75 years old. 8 patients were in cardiogenic shock. 6 patients represented posterior VSD and 4 of them had involvement of the RV. All patients underwent coronary angiography and 20 patients represented triple vessel disease. The medical management consisted in stabilization of the hemodynamic and then surgery. Two patients represented post infarctual VSD after previous primary PTCA of the LAD one of them total stents' occlusion implanted on the LAD undergoing endarterectomy.

Results: The hospital mortality was 23% (5 patients). All 5 deaths were patients in cardiogenic shock preoperatively with unstable hemodynamic even after IABP implantation. 7 patients required preoperative IABP implantation. All patients underwent associated CABG. Three patients required MD repair and one MD replacement. Three patients with posterior VSD underwent sandwich technique of the VSD closure and one of them through the right atrium and through the LV. All three patients had reconstruction of the posterior LV wall with a synthetic patch.

Conclusion. Post-infarction VSD is a devastating mechanical complication associated with fatal outcome. Early surgical repair before cardiogenic shock develops is the only real therapeutic chance. Even with the growing experience the postoperative outcome of the surgical repair remains poor.

Outcome of perioperative phosphodiesterase inhibitors treatment in patients with depressed left ventricular function undergoing surgical coronary revascularization

E. Prifiti¹, M. Bonacchi², G. Giunti², K. Krakulli¹, Altin Veshti¹, Merita Zeka¹

1.-Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2- Division of Cardiac Surgery, Policlinico Careggi, Florence, Italy

Aim: The aim of this study was to evaluate the effects of a therapeutic protocol consisting in the employment of phosphodiesterase III inhibitors in patients with depressed LVEF undergoing CABG.

Materials and methods: The study protocol included 100 patients with LVEF $\leq$ 35% (28 $\pm$ 5%) undergoing CABG (Group A) receiving intravenous enoximone (1 mg/kg) during and after the CPB also norepinephrine and/or epinephrine (0.02-0.1 μ g/Kg/min) at weaning from CPB. Group B included 100 patients with LVEF $\leq$ 35% (30 $\pm$ 6.7%) undergoing isolated CABG without including treatment with enoximone. Group C included 100 matched patients with LVEF $>$ 35% (57 $\pm$ 8%) operated without pharmacological treatment.

Results: After treatment, patients showed higher perioperative variations of cardiac index (2.35 $\pm$ 0.6 to 3.6 $\pm$ 0.5 L/min/m² in Group A, 2.4 $\pm$ 0.4 to 3 $\pm$ 0.7 L/min/m² in Group B (p<0.001 versus Group A) and 2.5 $\pm$ 0.4 to 3.2 $\pm$ 0.4 L/min/m² in Group C and of systemic vascular resistances index (2632 $\pm$ 537 to 1423 $\pm$ 374 dynes/sec/cm² in Group A, 2702 $\pm$ 489 to 1730 $\pm$ 413 dynes/sec/cm² in Group B (p=0.002 versus Group A and 2600 $\pm$ 584 to 2031 $\pm$ 378 dynes/sec/cm², in Group C. Operative mortality in Group A was 5% (5 patients) versus 9% (9 patients) in Group B and 2% (2 patients) in Group C. The need of postoperative IABP was 7% (7 patients) in Group A, 18% (18 patients) (p=0.033 versus Group A) (p<0.001 versus Group C) in Group B and 2% (2 patients) in Group C.

At multivariate analysis according to the regression model, risk factors for mortality and postoperative IABP implantation were the advanced NYHA class (p=0.001), non treatment with enoximone (p=0.03), pulmonary hypertension (p=0.025) and cardiopulmonary bypass time (p=0.004). Freedom from late death in group A was 82.7% $\pm$ 3% at 48 months and 77% $\pm$ 4% at 90 months.

Conclusions: Perioperative treatment with enoximone and adrenergic drugs significantly increases cardiac output in patients with severely depressed LVEF, preventing the occurrence of early postoperative low cardiac output.

Frozen Elephant Trunk Technique in Treatment of Acute Aortic Dissection in Marfan Patient: A Word of Caution

M. Planinic, D. Unic, D. Baric, R. Blazekovic, Z. Sutlic, M. Kusurin, I. Rudez

Department of Cardiac and Transplant Surgery, University Hospital Dubrava, Zagreb, Croatia

Background: Aneurysmal disease in young Marfan patients usually involves aortic root and ascending aorta. Optimal multisegmental aneurysmal treatment is still debatable especially in acute dissection.

Case report We present a case of a 32-year-old male Marfan patient who presented to the ER with sudden onset of chest pain and dyspnea with MSCT showing acute aortic dissection DeBakey type II with the involvement of the supraaortic branches and 4.5 cm aneurysm of proximal descending aorta. Under direct visualization a size 24 E-vita Open Plus stent graft (JOTEC GmbH, Germany, Hechingen) was deployed, aortic arch was replaced with the vascular part of the E-vita Open Plus and supraaortic branches were reimplanted using the island technique. Bentall procedure was used for the aortic root. Due to symptoms of acute RHF while weaning of CPB coronary artery bypass grafting (RCA) was performed, and the patient was transferred to the ICU with an open chest.

Results: Re-exploration was done after 6 hours due to bleeding and patient's chest was closed. CVVHDF was started for volume overload. Due to abrupt onset of anuria, MSCT was done on POD 1, which revealed dissection of the descending aorta, starting from the distal ending of the E-vita Open Plus stent graft with the true lumen diameter of 1 mm and no perfusion of visceral organs. Urgent fenestration of the abdominal aorta was performed, with reestablished blood flow through CT and SMA on postoperative angiogram, but with poor clinical improvement. Subsequent TEVAR with 24 mm Medtronic Valiant stent graft was performed with no improvement in visceral perfusion was noted and the patient succumbed on the third postoperative day.

Conclusion: Frozen elephant trunk technique in Marfan patients can result in fatal and hard to treat stent-graft related complications.

Tricuspid Annuloplasty In Cardiac Amyloidosis Previous To Bone Marrow Transplantation

R.A. Arèvalo Abasal, J.M. González-Santos, J. Lopes-Rodríguez, M. J. Dalmau-Sorlí, M. E. Arnáiz-García, A. Matilla-Álvarez

Cardiovascular Department, University Hospital of Salamanca

Aim: Cardiac amyloidosis is a disorder caused by deposits of an abnormal protein (amyloid) in the heart tissue. The clinical manifestations of cardiac amyloidosis may include restrictive cardiomyopathy, characterized by biventricular dysfunction; arrhythmia; and conduction defects. Very few cases of tricuspid regurgitation of cardiac amyloidosis have been reported.

Materials and methods: We describe a 53-year-old-woman diagnosed with monoclonal gammopathy of undetermined significance who had completed chemotherapy and was awaiting a bone marrow transplant. She was also diagnosed with primary amyloidosis with nephrotic syndrome (salivary gland biopsy was positive). The patient reported episodes of supraventricular tachycardia for two years and she was admitted to hospital with symptoms of right heart failure. During the hospitalization she was diagnosed with tricuspid regurgitation. In cardiac magnetic resonance imaging it was observed indirect signs of amyloid deposits in ventricular myocardium with a reduced ejection fraction of the right ventricle.

Results: With the diagnosis of severe tricuspid regurgitation she underwent heart surgery previous to bone marrow transplantation. In surgery we found a thickened and yellowish tricuspid valve. It was also observed a tricuspid valve annular dilatation, and the saline test revealed a central leak caused by inadequate leaflet coaptation. We performed a tricuspid annuloplasty with a good result. Afterwards, the patient recovered without any postoperative complications and her symptoms improved substantially. She was discharged from the hospital to complete her recovery and so then proceed to bone marrow transplantation.

Conclusions: Cardiac amyloidosis is a rare entity, which rarely involves the tricuspid valve. However, we contribute this case to the growing literature on cardiac amyloidosis, with the goal of sharing our experience in the successful management of this complex disease. Whenever tricuspid valve is involved, ring annuloplasty and subsequent bone marrow transplantation may be successful to treat monoclonal gammopathy.

The More You Do the Better: Surgical Strategy in Patients with Aortic Stenosis

V. Podpalov, S. Kurganovich, E. Gorbachov, M. Yudo, Y. Kastsiukovich, S. Spirydonau, V. Sevrukevitch, Y. Ostrovsky

Republican Scientific and Practical Centre of Cardiology, Minsk, The Republic of Belarus /
Laboratory of Cardiac Surgery

Aim: To analyze influence of concomitant surgical procedures on 5-year mortality in patients underwent aortic valve replacement (AVR) for Aortic Stenosis.

Materials and methods:: Among all patients admitted to the Clinic (2005-2007) 278 patients operated for aortic stenosis with secondary atrioventricular valves regurgitation were included in prospective non-randomized study. Using exclusion criteria (infective endocarditis, cancer, mitral stenosis) 152 patients were selected and divided into 2 groups: 1st group - 68 patients underwent isolated AVR; 2nd group - 84 patients with double/triple valve surgery. Follow-up period was 5 years.

Results: The average age of 152 patients was 57,61($\pm 9,81$) years, 65,8% of men. Mean EuroSCORE value was 4,7 $\pm$ 2,4; NYHA functional class III was in 73,3% of patients. The average LVEF was 48,15($\pm 14,52$)%. Groups had different mitral regurgitation grade: 2+ in the 1st group versus 3-4+ in the 2nd group ($p < 0,001$). Concomitant CABG was performed according to ESC/EACTS guidelines in 20(29,4%) patients from the 1st group and 19(22,6%) patients from the 2nd group. 5-year mortality rate in the 1st group was 20,0% in patients with CABG versus 22,9% patients without CABG (no difference: $p > 0,05$), in the 2nd group - 26,3% and 10,8% respectively (tendency to difference: $p < 0,1$). 5-year mortality rate wasn't significantly higher in patients underwent multiple valve surgery as compared with isolated AVR in case of CABG ($p > 0,05$). In patients without CABG there was a tendency to significant increase in 5-year mortality rate in the 1st group as compared with the 2nd ($p < 0,1$). Using multivariate regression model after adjustment for age and sex no significant relationship was found between 5-year mortality and concomitant CABG ($p > 0,05$) and atrioventricular valves surgery ($p > 0,05$).

Conclusion: Concomitant atrioventricular valves surgery and CABG don't increase 5-year mortality in patients underwent AVR for aortic stenosis. Larger population should be examined for detailed prognosis.

Right renal cell carcinoma with tumor thrombus in inferior vena cava extending into the right atrium: A case report.

A. Tomić, N. Milović, R. Ilić, I. Marjanović, D. Stamenković, V. Nešković

Military Medical Academy

Aim: Radical surgery remains a mainstay of curative treatment for RCC, in the Serbian population. The most challenging circumstance is in patients with RCC and tumor thrombus extension (TEE) level IV (RCC/TTE IV) where surgery has to be performed in collaboration of a vascular surgeon, a urologist and a cardiac surgeon.

Methods: A 56-year-old man was found to have a right renal cell carcinoma (RCC) with tumor thrombus in inferior vena cava (IVC) extending in right atrium by multi slice computed tomography (MSCT). First, a right nephrectomy were perform. Removal of intra-atrial tumor thrombus were performed under intermittent cardiac arrest which last 3 minutes. After that heart beat restored by electrostimulation and Adrenaline. The procedures were completed by a removal of IVC tumor thrombus through incision on subhepatic IVC.

Results: The post-operative period was without a major complications and patient was discharged from hospital after 21 day. Pathohistological diagnosis was RCC. However, the patient developed lung metastases and died 19 months after operation.

Conclusion: Intermittent cardiac arrest is a useful maneuver for extirpation of tumor thrombus in right atrium. extending from the inferior vena cava into the right atrium. Collaboration of a vascular surgeon, a urologist and a cardiac surgeon is mainstay in these kind of surgery.

What can be done when subaortic structures affected in type a Aortic dissection? A new technique

O. Gokalp, L.Yilik, N. K. Yesilkaya, Y. Besir, E. Karaagac, H. Iner, T. Goktogan, M. Balkanay, A. Gurbuz

Izmir Katip Celebi University, Faculty and Medicine, Department of Cardiovascular Surgery

Case report: A 47 year-old male patient was presented with type 1 aortic dissection and upon surgical exploration, the intimal tear was detected in non-coronary cusp reaching into the ventricular region. We had used Bentall procedure in the repair using pledged sutures running from inside of left ventricular tissue securing the aortic conduit in the root. On post-operative day 10, the patient showed symptoms of congestive heart failure and on performed echocardiography, a prominent aortic paravalvular leak in non-coronary cusp area was detected. The patient was taken to the operation room immediately for re-exploration. On exploration, subvalvular aortic tissues were detected as totally disintegrated and we also found a fistula from left ventricle leading to right atrioventricular area. This defect was repaired thorough right atriotomy with a patch (Figure 1). Following the patch repair, the former aortic conduit was also removed. We had to plan a new attachment area 2 cm below the aortic annulus into ventricular muscle. A large Teflon felt (7-8x11-12 cm) was prepared and attached with single U sutures in a circular fashion (Figure 2). A new skirted conduit graft was prepared and attached onto the subvalvular Teflon ring using the previously placed single U sutures. We had prepared the conduit with a skirt since we would like to avoid direct contact of prosthetic valve's ring to the Teflon ring aiming an extra support around 2 cm below the annulus. The early post operative recovery of the patient was uneventful despite his catastrophic pathology.

Redissection after 7 years of an Acute Aortic Dissection Type A – is Modified Cabrol Technique safe?

C. Celia, H. Moldovan, C. Voica, A. Stoica, R. Vasile, B. Radulescu

1st Department of Cardiovascular Surgery, Institute of Cardiovascular Disease "Prof. Dr. C.C. Iliescu", Bucharest, Romania

Aim: Cabrol procedure is a dedicated technique for creating "tension-free" anastomoses in cases of tight adhesions, such as: aortic root reintervention, large dissections or giant aneurysms and modifications to this procedure - which consists in creating a drainage shunt from the periprosthetic space into the right atrium, represent useful options in difficult hemostasis.

Methods: Our patient is a 55 years-old Marfanoid man diagnosed with aortic root redissection 7 years after aorto-aortic interposition for acute aortic dissection Stanford type A. Transesophageal echocardiography and Computed tomography are confirming the diagnosis. Surgical technique: Because of tight adhesions the surgical technique chosen was Cabrol technique – aortic valve and ascending aorta replacement with coronary ostia reimplantation into the valvular duct anastomosed in a side-to-side fashion using a ringed PTFE graft. Afterwards, the drainage of the periprosthetic space into the superior vena cava is used as the ultimate solution for heavy and inaccessible bleeding from the aortic root and no reexploration for bleeding was required.

Results : The evolution postoperatively was marked by hemodynamic instability remitted afterwards with high doses of vasopressor and inotropes and acute renal failure AKI III, also remitted after one session of hemodialysis. Subsequently, the evolution was free of myocardial, peripheral and with no incidence of neurological complications, with good clinical outcome at 2 year evaluation.

Conclusion: For patients who undergo reintervention for aortic dissection, hemorrhage is a substantial cause of morbidity and mortality, particularly after complex reconstruction or prolonged cardiopulmonary bypass. Due to all of the above, Modified Cabrol technique is a reliable and safe procedure in order to obtain a surgical success.

VALVE SPARING AORTIC ROOT SURGERY VIA AORTIC ROOT REMODELING WITH EXTERNAL ROOT ANNULOPLASTY: PRELIMINARY RESULTS IN A SINGLE INSTITUTION

N.C.. Villamucho, A. C. Rico, N. C. Lee , E. S. Tuazon, M. D. Martinez, A. M. Manio

Phillipine heart center

Aim: Aortic root pathology can result in changes in the geometry of the sinotubular junction, sinuses, and the ventricular-aortic junction, leading to development of ascending aortic aneurysms, which may be distinct from aortic root disease producing aortic regurgitation, but may present as a combination of morphologic manifestations. Standard surgical procedure involved composite valve and graft replacement. This study was undertaken using Lansac's aortic root remodeling with external root annuloplasty to preserve the native aortic valve of patients with aortic root aneurysms with or without dissection. We sought to describe the early outcomes of patients undergoing this procedure and whether the preservation of the aortic valve affected survival.

Methods: A total of 7 patients underwent valve sparing aortic root surgery via aortic root remodeling with external root annuloplasty. We reviewed the clinical material, operation methods, echocardiography check during operation and at discharge. Outcomes after the procedure were also documented.

Results: 7 patients underwent the procedure (6 male, 1 female), with a mean age of 40.714 ± 11.4 years. All patients presented with aortic root aneurysm with dissection. 1 patient underwent aortic valve replacement due to failure of repair. There were 2 morbidities reported, pneumothorax with subsequent thoracostomy and acute kidney injury which was managed medically, 1 patient was readmitted and eventually expired ≥ 30 days post op due to sepsis and Hospital acquired pneumonia.. 2DED prior to discharge showed no aortic regurgitation in 2 patients, 2 patients had mild AR, No 2D echocardiogram was done on 3 patients.

Conclusion: Preliminary results show that valve sparing aortic surgery via aortic root remodeling with external root annuloplasty is a viable alternative to aortic root replacement in our institution. More cases are needed to further validate the success of this procedure in our setting. Another important factor is postoperative care and follow up in order to document if there is improvement after repair.

Case Report – Anaesthesiological Dilemma

T. Vaštag , S. Lukić, M. Zagoričnik, R. Mojašević, S. Majdevac, J. Petrović, M. Šuntić

Institute of Cardiovascular Diseases of Vojvodina, Sremska Kamenica, Serbia

Background: Antiphospholipid syndrome is a prothrombotic disorder caused by the presence of antiphospholipid antibodies, associated with arterial and venous thrombosis, pregnancy disorders and wide range of cardiac manifestations including accelerated atherosclerosis, ischemic coronary artery disease, valvular disease, intracardiac thrombosis and pulmonary hypertension.

Case report: We present a 49 years old female patient with mitral stenosis who was subjected to mitral valve replacement surgery. Anamnestic data of mitral stenosis, subcortical microvascular changes in the brain and haematological tests in the direction of autoimmune diseases coupled with platelet count on the lower limit of normal values led to suspicion of antiphospholipid syndrome. The process of diagnosis was started, and the perioperative strategy was implemented as if it was a confirmed case of antiphospholipid syndrome.

Conclusion: Patients with antiphospholipid syndrome subjected to cardiac surgery have extremely high perioperative mortality because of thromboembolic events, especially cerebrovascular events. Therefore perioperative antithrombotic strategy should be implemented in all patients with antiphospholipid syndrome who are referred to cardiac surgery.

Keywords: antiphospholipid syndrome, autoimmune disease, thrombosis, mitral stenosis, cardiac surgery

Dysphagia as a coronary surgery complication

D. Mandić, R. Mojašević , M. Zagoričnik, M. Sladojević

Institute for cardiovascular disease of Vojvodina, Sremska kamenica, Serbia

Background: Postoperative dysphagia occurring after cardiac surgery carries the risks of aspiration, pneumonia, undernourishment, dehydration, prolonged hospital treatment, increased hospital costs, and reduced quality of life of a patient.

Case report: A 63 year-old patient was admitted to the Clinic of Cardiovascular Surgery at the Institute of cardiovascular disease of Vojvodina to undergo myocardial revascularization managed with triple aortocoronary bypass surgery. From the first postoperative day she complained to having swallowing difficulties which was later followed by inability to swallow, throwing up and heavy coughing. Suspecting there was a tracheoesophageal fistula, the gastrografin esophagram was performed which registered suspected pathological communication around 3-4 cm cranially of tracheal bifurcation. Bronchoscopy followed registering around 1 cm long lacerated mucos on the left side of the lateroposterior wall 2 cm away from cords. Due to the result discrepancy and after consulting thoracic surgeons and a gastroenterologist, the computerized tomography of the chest (CT) was done and the result pointed to the probable disorder of the swallowing act. Because of fever, increased inflammatory markers and bilateral spot-like shadows, the aspiration pneumonia was suspected and empirical dual antibiotic therapy was given. After the otolaryngologist confirmed that there were no organic reasons for swallowing disorders, the gastrografin esophagram examination was repeated as well as the CT of chest which confirmed the previous results. Then esophagogastroduodenoscopy was performed which registered chronic erythematous gastritis with no fistula present. The entire time the patient was being fed parenterally and also through nasogastric tube. She started swallowing spontaneously on the 25th postoperative day.

Conclusion: Timely diagnostics and treatment of dysphagia is highly important in order to reduce postoperative complications, shorten the length of hospital stay and reduce mortality.

Key words: dysphagia, tracheoesophageal fistula, coronary surgery.

Reconstruction Of Sternal Defects After Cardiovascular Operations With Free Flaps

Avelina Mario, Mehran Dadras, Mojtaba Ghods

Ernst von Bergamnn Klinikum /Plastic Surgery

Aim: Offering patients with cardiovascular diseases is worldwide established routine for medical practitioners; offering though the minority of these patients, who develop sternal infections and defects, an optimal therapy plan still remains a challenge for the reconstructive surgeon despite the plethora of approaches. The associated mortality with sternal wound infections is still a problem to be solved. The aim of this study is to examine the reconstructive concept of sternal defects in our unit.

Methods: A retrospective analysis of the patients treated with sternal osteomyelitis between 2010 and 2014 was carried out. Data was collected from patient notes, OR and ICU records.

Results: 28 patients received 35 free flap reconstructions in 29 operations. Average patient age was 68,2 years. All patients had an ASA of III or IV. Hospital stay from referral centre to discharge was 47 days, with a median stay on ICU of 4 days. 3 free flaps were lost, 4 patients died. Median operative time was 398 minutes and 3 flaps had to be revised. 8 patients received complementary operations to complete the sternal reconstruction.

Conclusion: In the current era of microsurgical proficiency free tissue transfer should also be considered for severely ill patients. With meticulous preoperative planning and an interdisciplinary approach we can offer high risk patients a safe sternal defect reconstruction.

Mitral valve repair with isolated ring annuloplasty: Mid-Term Results Of 43 Patients

S. Gunaydin¹, O. F. Cicek¹, E. Kadirogullari¹, S. Mola¹, I. Erkengel¹, E. Gunertem¹, A. B. Budak², A. Yalcinkaya³, M. C. Cicek¹, K. Esenboga¹, G. Lafci¹, S. Gunaydin², K. Cagli¹

1-Yuksekk Ihtisas Training & Research Hospital, Ankara-Turkey

Aim: Optimal repair of the mitral valve involves the implantation of an annuloplasty device to geometrically reshape and/or stabilize the annulus. We present our experience of the perioperative outcomes of isolated ring annuloplasty technique.

Methods: During 6-year period, 43 patients (25 male, mean age: 53.9±10.8) underwent isolated ring annuloplasty due to mitral regurgitation (MR). Etiology was rheumatic in 2 (4.7%) patients, degenerative in 19 (44.2%), congenital in 1 (2.3%), infective endocarditis in 1 (2.3%) and ischemic in 20 (46.5%). 3 (7%) patients were in NYHA I, 30 (69.8%) in NYHA II and 6 (14%) in NYHA III. Preoperative transthoracic echocardiogram demonstrated grade II MR in 24 (55.8%), grade III MR in 17 (39.5%) and grade IV in 2 (4.7%) patients.

Results: All patients had downsized ring annuloplasty; 22 rigid (St Jude Medical Saddle) and 21 flexible (Carpentier-Edwards Physio). The majority of patients (83.7%) underwent combined procedures. Mean follow-up was 18.4±13.4 months. Functional capacity improved significantly (29 in NYHA I and 2 in NYHA II, $p<0.001$). Postoperative mean MR decreased from grade 2.37±0.49 to 0.73±0.52 ($p<0.001$). Postoperative improvement in left ventricular end diastolic (5.2±0.7 cm vs 5.7±1, $p<0.001$) and end systolic diameters (3.8±0.7 cm vs 4.3±1, $p<0.001$), pulmonary artery pressure (31.5±5.4 mmHg vs 39.7±1, $p<0.007$) and left atrial diameter (4.3±0.6 cm vs 4.7±1, $p<0.005$) were significant. Midterm mortality was 6.9% (3 patients); one low cardiac output on 12th day, one due to pneumonia on 20th day and one due to mediastinitis at 6th month. Also one (2.3%) patient had mitral valve replacement due to significant regurgitation at 6th month.

Conclusion: Isolated ring annuloplasty technique can be safely performed in patient groups with normal leaflet tissue and subvalvular structure accompanied with pure annular dilatation. This technique can be performed in patients undergoing concomitant surgery to reduce the cross clamp duration.

Our experience in minimally invasive cardiac surgery

O. Gokalp, Y. Besir, N. K. Yesilkaya, S. Iscan, H. Iner, M. Balkanay, L. Yilik, G. Gokalp , A. Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Aim: Minimally invasive methods has already been taking place in daily practice on cardiac diseases. In this paper we aimed to present our experiences of minimally invasive approach to cardiac diseases.

Methods: Between July 2014 and May 2015, 6 patients underwent atrial septal defect repair, 4 patients underwent aortic valve replacement and one patient underwent aortic valve surgery combined with coronary artery bypass surgery. Right anterolateral thoracotomy was used in all atrial septal defect cases. Aorto- bicaval cannulation was used in 3 patients, percutaneous right jugular and right femoral venous cannulation and right femoral arterial cannulation via 8mm PTFE graft anastomosed to right femoral artery were used in 4 patients. Percutaneous femoral arterial and venous cannulation were used in one patient. Right femoral venous and aortic cannulation were used in 3 patients. Among patients who underwent aortic valve replacement, 2 of them had mini-sternotomy, 1 of them had right anterolateral thoracotomy and 1 of them had J sternotomy. Edwards valve was used in 3 patients and Perseval valve was used in 2 patients. One patient who underwent aortic valve replacement combined with coronary artery bypass surgery had full sternotomy.

Results: Hospital stay changes between 4-10 days and patients were followed in intensive care unit for between 1-2 days. There was no incision healing complication. One patient, who underwent aortic valve replacement, perioperative aortic valve dehiscence and aortic regurgitation were detected and mechanical bileaflet valve was implanted. This patient died on postoperative 2nd day.

Conclusion: Minimally invasive approach has many advantages on mortality and morbidity when used in appropriate patients. It shortens hospital stay, prolongs survival in high risk older cardiac patients, widens indications. Thus, it is being widely used by more and more surgeons.

Hemodynamic of St Jude medical regent 17-mm mechanical prostheses versus 19-mm and annulus enlargement

E. Prifti¹, M. Bonacchi², A. Baboci¹, G. Giunti², G. Esposito³, K. Krakulli¹, E. Kajo¹, V. Vanini³

1- Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2- Division of Cardiac Surgery, Policlinicco Careggi, Florence, Italy 3. Division of Cardiac Surgery, Humanitas Gavazzeni Clinic, Bergamo, Italy

Aim: The aim of the present study was to compare the early and mid-term clinical and hemodynamic outcome of aortic St Jude Medical Regent 17mm mechanical prosthesis (SJMR-17) versus St Jude Medical Regent 19mm mechanical prosthesis in concomitance to aortic annulus enlargement (SJMR-19-AAE).

Methods: Between January 1999 and January 2012, 20 patients (Group I) with aortic valve stenosis underwent first time aortic valve replacement with a SJMR-17 and 35 patients (Group II) underwent aortic valve replacement with a SJMR-19-AAEs. The mean follow-up was 81 $\pm$ 37 months (range 20-110 months).

Results: There was only one death in Group I versus four deaths in Group II (p=ns). Postoperatively the mean transprosthesis gradient (M-TPG) was 17.5 $\pm$ 4.5mmHg in Group I and 17 $\pm$ 6.4mmHg in Group II (p=0.83) and under stress were 37 $\pm$ 10.7 and 32 $\pm$ 13mmHg respectively (p=0.17). The left ventricular mass (LVM) and LVMi were reduced significantly in both groups versus the preoperative values and were similar between groups. The postoperative indexed effective orifice area was higher in Group II 0.85 $\pm$ 0.17cm²/m² versus 0.76 $\pm$ 0.2cm²/m² in Group I (p=ns). The multivariate Cox model identified the SJMR-19-AAE(p=0.032), NYHA(p=0.025), reoperation(p=0.04), LVEF<35%(p=0.042) and combined surgery (p=0.04) as strong predictors for overall free-events survival (including hospital mortality).

Conclusions: We may conclude that the SJMR-17 might be employed with satisfactory postoperative clinical and hemodynamic outcome in patients with small aortic annulus, especially in elderly patients, as an alternative to larger size prosthesis in association to aortic annulus enlargement.

Our minimally invasive Aortic valve replacement experience in a patient with high risk

O. Gokalp, Y. Besir, N. K. Yesilkaya, S. Iscan, H. Iner, B. Lafcı, L. Yilik, N. Karahan, A. Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Background: Recently, minimally invasive approach reduces mortality and morbidity risk in cardiovascular disease and surgical treatment probability increases when high risk patients are considered. In this paper we aimed to present a patient with chronic obstructive pulmonary disease who underwent aortic valve replacement with minimally invasive technique.

Case report: 53 year-old female patient admitted with dyspnea and palpitation. Severe aortic stenosis was detected by transthoracic echocardiography. Left ventricular diastolic volume was 46mm, aortic root was 27mm, ejection fraction was 45% and pulmonary arterial pressure was 30mmHg. Mean gradient on aortic valve was 47mmHg. Minimally invasive aortic valve replacement was planned to our patient after no lesion was shown by coronary angiography. Mini sternotomy was used. Perfusion started following right femoral venous cannulation and aortic cannulation. Aortotomy was made and aortic valve was resected. Valve replacement was performed with medium size Edwards aortic valve. Patient was referred to service on postoperative 2nd day and she was discharged on postoperative 6th day.

Conclusion: Minimally invasive technique widens surgeon's perspective by successful results in high risk patients with comorbidities.

Our minimally invasive approach to combined coronary artery disease and severe aortic stenosis

O. Gokalp, A. Gurbuz, Y. Besir, S. Iscan, N. K. Yesilkaya, H. Iner, T. Goktogan, L. Yilik, G. Gokalp

Izmir Katip Celebi University, Faculty and Medicine, Department of Cardiovascular Surgery

Background: When cardiac diseases concomitant to aortic stenosis are considered, minimally invasive technique lowers mortality and morbidity rate and takes less time than conventional surgery. In this paper we aimed to present a patient who underwent minimally invasive aortic valve replacement and coronary artery bypass surgery.

Case report: 71 year-old male patient admitted with dyspnea and palpitation. Severe aortic stenosis was detected by transthoracic echocardiography. Left ventricular diastolic volume was 55mm, ejection fraction was 25% and pulmonary arterial pressure was 45mmHg. Mean gradient on aortic valve was 75mmHg and maximum gradient was 100mmHg. Coronary angiography revealed stenosis of 80% in right coronary artery, stenosis of 80% in left anterior descending artery and stenosis of 70% in diagonal artery(D1). Minimally invasive aortic valve replacement was planned and full sternotomy was performed. Perfusion wash and led after aorto- bicaval cannulation. Calcific aortic valve was resected following aortotomy. Distal anastomosis of saphenous vein to right coronary artery, diagonal artery and left anterior descending artery was performed and aortic valve replacement was done with Edwards sutureless valve. Patient was referred to service on postoperative 2nd day and he was discharged on postoperative 10th day. Conclusion: Minimally invasive approach has many advantage such as low mortality –morbidity and short operation period in combined cardiac diseases.

Simultaneous Coronary and Carotid Surgery in A Patient with Hypertension, Diabetes Mellitus and Hyperlipidemia

K. Ergunes , L. Yilik, I. Peker, E. Karaagac, O. Gokalp, B. Lafci, Y. Besir, A. Gurbuz

Izmir Katip Celebi University Ataturk Training and Research Hospital, Department of Cardiovascular Surgery , Izmir, TURKEY

Aim: We reported a smoking patient with hypertension, diabetes, hyperlipidemia having left internal carotid artery stenosis, coronary artery disease.

Methods: A 58-year old man was hospitalized in our clinic in October, 2015. He had hypertension, diabetes, hyperlipidemia, carotid artery stenosis, coronary artery disease. The angiography showed left internal carotid artery stenosis. The angiography again showed left anterior descending, circumflex, intermediate and right coronary artery segmental stenosis.

Results: Left carotid endarterectomy was performed under general anesthesia before coronary artery bypass grafting. Following the median sternotomy, on-pump coronary artery bypass graft was performed with systemic hypothermia (28oC) using two-stage venous and aortic cannula. The patient was discharged with antiplatelet drug.

Conclusion: Simultaneous carotid endarterectomy and coronary artery bypass grafting can be performed safely.

Our minimally invasive Aortic valve replacement experience in a patient with advanced age and high risk

O. Gokalp, Y. Besir, N. K. Yesilkaya, S. Iscan, H. Iner, M. Balkanay, L. Yilik, G. Gokalp , A. Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Background: Minimally invasive approach to aortic valve diseases becomes more and more popular nowadays. It widens indications for operation even in patients with many comorbidities. In this paper we aimed to present a patient with chronic obstructive pulmonary disease and low ejection fraction .

Case report: 59 year-old male patient admitted with dyspnea and palpitation. Severe aortic stenosis was detected by transthoracic echocardiography. Left ventricular diastolic volume was 56 mm, ejection fraction was 40% and pulmonary arterial pressure was 35 mmHg. Mean gradient on aortic valve was 51 mmHg and maximum gradient was 101 mmHg. Minimally invasive aortic valve replacement was planned to our patient after no lesion was shown by coronary angiography. Mini sternotomy was used. Perfusion started following percutaneous right femoral venous cannulation and aortic cannulation. Aortotomy was made and aortic valve was resected. Valve replacement was performed with medium size Edwards aortic valve. Patient was referred to service on postoperative 2nd day and she was discharged on postoperative 6th day. Conclusion: Minimally invasive procedures serves opportunity to operate patients with many comorbidities with low morbidity and mortality risk.

Dynamics of u-NGAL in cardiac surgical patients in early postoperative period

I.Sagatov

National Scientific Center of Surgery named after A.N. Syzganov/Cardiac Surgery

Aim: Objective is to study the dynamics of u-NGAL in cardiac surgical patients, who underwent a bypass surgery, pharmaco-cold (or blood) cardioplegia and hypothermia.

Methods: The research included 25 patients who were treated in the National Scientific Center of Surgery named after A.N. Syzganov in 2015. All patients underwent a surgical intervention for acquired valvular heart disease (8 patients), ischemic heart disease (8 patients), congenital heart malformations (7 patients), infectious endocarditis (1 patient) and aneurysm of an ascending aorta (1 patients). The first group included 14 patients with duration of bypass time without exceeding 150 minutes, the second one - 11 patients with duration of bypass time more than 150 minutes.

The mean age of patients of the first group was $55,1 \pm 17,6$ years. The bypass duration was $108,3 \pm 29,0$ minutes, the aortic cross-clamp time – $75,4 \pm 23,0$ minutes. The mean age of patients of the second group was $43,8 \pm 18,3$ years. The bypass duration was $193,3 \pm 30,3$ minutes, the aortic cross-clamp time – $138,1 \pm 39,6$ minutes.

Results: The mean indicators of u-NGAL was $322,7 \pm 604,9$ (0,0-1836,0) ng/ml right after surgery in patients of the first group, but in patients of the second group – $1047,2 \pm 1605,8$ (10,3-5520,0) ng/ml.

The mean indicators of u-NGAL in 2 hours after surgery in patients of the first group was $224,5 \pm 457,4$ (0,0-1556,0) ng/ml, but in patients of the second group – $593,4 \pm 757,4$ (9,5-2434,0) ng/ml.

Conclusions: The indicators of u-NGAL determined right and in 2 hours after surgery in cardiac surgical patients who underwent surgery with duration of bypass time exceeding 150 minutes are relatively higher than those of patients with duration of bypass time without exceeding 150 minutes.

**Surgery in infective endocarditis in a Tunisian high-volume tertiary care center:
Epidemiologic profile and predictors of mortality**

B. Alhabib, D. Abid , S. Mallek, M. Akroun, Z. Frikha, L. Abid, F. Triki, M. Hentati, I. Frikha, S. Kammoun,

Hedi Chaker Hospital, cardiology

Aim: 50% of infective endocarditis (IE) require surgery during its active phase. Aim was to describe the demographic characteristics of patients who underwent a surgical treatment for IE in our center and to analyse predictors of mortality.

Methods: Our study is retrospective enrolling 297 patients, hospitalized in our institution between January 2001 and January 2012 for infective endocarditis. according to the modified DUKE criteria. 136 patients (49%) required surgery during the active phase of IE.

Results: 58% of the patients were men, The Mean age was 45.45 ± 12.17 years. The mean diagnosis delay was 9 ± 8 days., The Mean delay from diagnosis to surgery was 6 ± 4 days. The mean logistic Euro Score was 3. The Main valve involvement was aortic endocarditis (77,2%). Left-sided native valve IE, left-sided prosthetic valve IE, right-sided IE were involved respectively in 77.2% cases, in 22 % cases, in 1.4 % cases.. Most often surgical indication was persistent heart failure due to severe valvular regurgitation (73%). Global mortality of IE was 16.1%, being 22% in the surgical group. In comparison with survivors, patients who died had more hyperleucocytosis ($p=0.01$) and more severe anemia ($p=0.01$)., high logistic EuroScore ($p=0.03$), early prosthetic endocarditis ($p=0.01$) and septic shock ($p=0.01$).

Conclusion: Our series demonstrate that the strongest predictor of mortality were :leukocytosis, anemia EuroScore value, early prosthetic IE, and septic shock.

Off-pump coronary artery bypass surgery gives complete revascularization opportunity and good results in the early postoperative period

F. Cingoz, M. A. Sahin, A. Guler, C. Günay, A. Iyisoy, B. Savas

Gulhane Military Medical Academy

Introduction: Off-pump coronary artery bypass surgery (OPCAB) is an option for cardiac surgeons to avoid harmful effects of the extracorporeal circulation. OPCAB now accounts for 10-60 % of all CABG operations and has become a standard surgical procedure in the world.

Aim: The aims of this study is to evaluate early postoperative outcomes and results of patients who underwent OPCAB.

Methods: The hospital data of 78 patients who underwent OPCAB from January 2010 to December 2014 were reviewed. 64 patients were male and 14 patients were female. The age ranged 28-84 year, the mean age was 53 year. Analysis of in-hospital mortality, perioperative and early postoperative courses and outcomes were performed.

Results: All patients were extubated within the first 6 hours after surgery. Their intensive care unit staying time was around 18 hours. 12 (15.5%) patients had not received blood and fresh frozen plasma transfusion. Average number of grafts per patient was 2.3. 21 (26.6%) patients had atrial fibrillation and they were converted with amiodarone infusion. Only one patient (1.2%) had perioperative myocardial infarction. There was no mortality in study group.

Conclusion: Patient's data have provided that OPCAB has reasonable early postoperative results and a safe procedure even if the patient has triple vessels disease. Patients had less blood transfusion and plasma as well.

Persistent high trans-prosthetic velocity early after aortic valve replacement; its Profile & Predictor

Y. Umeda , Y. Yokota, Y. Matsuno, Y. Mori, Y. Kawamura, H. Takiya

Department of Cardiovascular Surgery, Gifu Prefectural General Medical Center

Introduction: We sometimes experience the persistent high trans-prosthetic velocity (TPV) early after AVR in spite of appropriate EOAI. Little was addressed to this issue. We clarified the profile of patients with persistent high TPV and explored the predictors for TPV.

Methods: Thirty-six patients underwent isolated aortic valve replacement were recruited in this study excluding patients with low EF, aortic regurgitation, and PPM. High TPV was defined as 3.0m/s or greater. Cardiac parameters were obtained by echocardiography at pre-AVR and 1 week after AVR. At the same time, static and dynamic distensibility parameters of the carotid artery (e.g. β , Ep, AC, dD/dt, tDPc) were also obtained by a real time echo-tracking system.

Results: Eight patients revealed persistent high TPV. Compared with low TPV group, high TPV group had greater pre-AVR peak AoV (pre-AoV; 5.5 ± 0.9 m/s vs 4.8 ± 0.7 m/s), less dD/dt (2.89 ± 1.30 mm/s vs 4.03 ± 1.27 mm/s), and less BMI (19.9 ± 2.2 kg/m² vs 22.6 ± 2.8 kg/m²). There were no significant differences in co-morbidities, medications, LVEF, FS, SVi, or static distensibility parameters.

A stepwise multiple regression analysis identified two predominant predictors of TPV; pre-AoV and EOAI/AVAI. Predicted value calculated using formula ($2.31 - 0.44 * EOAI/AVAI + 0.345 * \text{pre-AoV}$) was significantly correlated with TPV with R-value of 0.603.

Conclusion: Two predictors (e.g. pre-AoV and EOAI/AVAI) found in this study would be reasonable when we regard heart and peripheral vascular system as an apparatus creating trans-prosthetic velocity. The formula found in the present study to predict the trans-prosthetic velocity could be significance to avoid the persistent high TPV early after AVR.

Our Procedure in A male patient with Diabetes, Asthma having Carotid Body Tumor

K. Ergunes , L. Yilik, I. Peker, I. Yurekli, H. Iner, M. Balkanay, H. Cakir, A. Gurbuz

Izmir Katip Celebi University Ataturk Training and Research Hospital, Department of Cardiovascular Surgery , Izmir, Turkey

Aim: Carotid body tumor has malignant potential and locally aggressive behavior. We present a case of a 57-year-old female patient.

Methods: She had vertigo, headache and a painless swelling on the left side of her neck. She had diabetes and asthma. The carotid angiography showed a mass 25x30 mm size that spanned the carotid artery bifurcation. The mass had a hypervascular structure.

Results: Preoperative embolization of the feeding arteries was performed. The patient operated on under general anesthesia. The tumor was freed from the adhering common-internal –external carotid arteries, vagus and hypoglossal nerves. Bleeding microvascular vessels were cauterized. The tumor was resected. After the operation, the patient was hemodynamically stable and had no neurological symptoms. The patient was discharged in fourth postoperative days.

Conclusion: Complete surgical resection is the treatment of choice for all carotid body tumors. Preoperative coil embolization reduces the size of carotid body tumor and minimizes intraoperative blood loss.

Patient's advantages using sutureless valves and MIC for the aortic valve replacement

G. Santarpino, J. M. Kalisnik, T. Fischlein

Paracelsus Medical University Nuremberg / Cardiac Surgery Department

Background: MIC-AVR could causes less morbidity than conventional surgery, but up to now a strong clinical advantage is not yet demonstrated. Sutureless aortic valve prosthesis could reduce the surgical time; however, whether shorter operative times may also result in improved patient outcomes remains to be established.

Methods: From June 2007 to June 2015, 627 patients underwent elective isolated aortic valve replacement through upper ministernotomy either with a Perceval sutureless valve (MIC-Su, n = 206) or another stented aortic bioprosthesis (MIC-St, n = 247). 174 patients underwent isolated aortic valve replacement through full sternotomy and stented bioprosthesis (FULL-St).

Results: The MIC-Su was the eldest (77 ± 5 yo) and FULL-St (74 ± 7 yo) older than MIC-St (70 ± 8 yo) (both $p < 0.001$). Aortic X-clamp, cardiopulmonary bypass and operation times were shorter in MIC-Su (MIC-Su 36 ± 10 , 62 ± 17 and 141 ± 49 minutes vs MIC-St 60 ± 18 , 99 ± 145 and 169 ± 61 minutes vs FULL-St 54 ± 16 , 87 ± 25 and 171 ± 50 minutes - $p < 0.001$ for MIC-Su/MIC-St and MIC-Su/FULL-St). X-clamp time was longer in MIC-St than FULL-St ($p < 0.001$). MIC approach enables an advantage for the bleeding complications without sutureless addition in terms of postoperative drainage (MIC-Su 385 ± 287 , MIC-St 403 ± 306 , FULL-St 500 ± 338 ; $p < 0.05$ only for FULL-St/MIC-St and FULL-St/MIC-Su) and transfusions (MIC-Su 1.3 ± 2.1 , MIC-St 1 ± 1.9 , FULL-St 1.8 ± 2.6 ; $p < 0.05$ only for FULL-St/MIC-St and FULL-St/MIC-Su).

We recorded no difference in terms of postoperatively Troponin, CK, CK-MB and Creatinine value, no difference in hospital/ICU stay and no statistical differences in terms of mortality, stroke, wound infection and pacemaker implants.

Conclusions: MIC in itself allows a protective effect on bleeding complication but sutureless implantation is associated with shorter cross-clamp, cardiopulmonary bypass and surgical times, comparing it with other stented aortic bioprosthesis implanted whether in full- or in ministernotomy. In addition, it showed same clinical results in terms of mortality and outcome variables but in comparison with significant younger patients.

Retrograde cellular cardiomyoplasty through the coronary sinus. An experimental study on swines

E. Prifti, K. Krakulli, A. Veshti, A. Baboci, A. Ibrahimi, M. Zeka

Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Aim: The aim was to create a model of myocardial infarction with a borderline myocardial impairment which would enable to evaluate the retrograde cellular cardiomyoplasty through the coronary sinus in a large animal model.

Methods: 15 (study group) and 10 juvenile farm pigs (control group) underwent left anterior descending artery ligation. One month later the study group animals underwent sternotomy and a murine myoblastic line C2-C12 was injected at a constant pressure of 30 mmHg, into the coronary sinus. 30 days later all survived animals from both groups underwent transthoracic echocardiography and 99Tc Scintigraphy and later were euthanized and specimens were taken for microscopic evaluation.

Results: Cardiac output decreased significantly after ligation ($p < 0.001$) and increased significantly after cardiomyoplasty ($p < 0.001$). In all animals, the surgical induction of myocardial infarction caused a marked decline in the echocardiographic values of cardiac function however, the cardiac function and dimensions were significantly improved in the study group after cardiomyoplasty versus the control group. All animals undergoing cardiomyoplasty demonstrated a significant reduction of the perfusion deficit in the left anterior descending artery territory, instead such data remained unchanged in the control group. The histological examination demonstrated the engrafted myoblasts could be distinguished from the activated fibroblasts in the scar tissue because they never showed any signs of collagen secretion and fiber buildup.

Conclusions: As conclusion, the venous retrograde delivery route through the coronary sinus is safe and effective; Retrograde cellular cardiomyoplasty provides a significant improvement in function and viability.

Anomalous origin of one pulmonary artery branch from the aorta. Technical considerations and postoperative outcome

E. Prifti, A. Veshti¹, K. Krakulli¹, M. Zeka¹, G. Esposito², V. Vanini²

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2. Heart of Children Foundation, Bergamo, Italy

Objectives: The aim was to review our experience with the surgical repair of the anomalous origin of one pulmonary artery branch (PAB) from aorta.

Materials and Method: Between 1995-2015, 10 patients with anomalous origin of one PAB underwent surgical correction. Four patients presented isolated anomalous origin of one PAB. Six patients presented anomalous origin of the right PAB and 4 patients anomalous origin of the left PAB. Implantation of the anomalous PAB to the main pulmonary artery trunk was performed by: I) direct anastomosis in 3 patients with anomalous origin of the left PAB; II) interposition of a synthetic graft in one patient with anomalous origin of the left PAB; III) employing an autologous pericardial patch in 1 patients with anomalous origin of the right PAB; IV) using an aortic flap in 5 other patients with anomalous origin of the right PAB according to the single aortic flap or double flap technique. The mean follow-up time was 37.7 months.

Results: One patient died postoperatively due to progressive heart failure unresponsive to inotropic support. Early postoperative pulmonary hypertension crisis was identified in another patient. Within 2 years after surgery, the residual gradient across the anastomotic site was significantly lower in patients undergoing correction employing adjunctive autologous tissues, 9.5 ± 4.6 mmHg versus 21 ± 7.2 mmHg ($p=0.045$). in patients undergoing direct anastomosis or interpositioning of a synthetic graft. Similarly, the Tc-99m scintigraphy demonstrated a significantly lower lung perfusion in patients undergoing anomalous origin of one PAB implantation without employing autologous tissues for increasing the anomalous origin of one PAB length 57 ± 5.6 (%) versus 72 ± 4.5 (%) ($p=0.011$).

Conclusion: The anomalous origin of one PAB is a rare but important entity, necessitating a scrupulous preoperative and intraoperative evaluation. The techniques employing autologous tissues for enlarging and lengthening the anomalous origin of one PAB seem to be associated with better results in terms of postoperative restenosis.

Aortic coarctation repair in adult age. Early and mid term outcome

E. Prifti, A. Baboci, A. Veshti, K. Krakulli

Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Objective: The aim of this study was to evaluate the early and mid- term outcome in adult patients with aortic coarctation undergoing surgical correction.

Materials and Methods: Between 1997 and 2015, 65 adult patients, mean age 26.1 ± 9.7 years (range, 18 to 64 years) with aortic coarctation underwent surgery. 13 patients had ascending aortic replacement with extranatomic bypass. One patient presented a very rare form of a false aneurysm of the descending aorta. Preoperative mean systolic blood pressure was 165 ± 45 mmHg. Mean gradient across the aortic coarctation was 55 ± 32 mmHg. Group I included 8 patients undergoing resection and end-to-end anastomosis and 18 patients undergoing patch enlargement, in total 26 patients. Group II included 39 patients undergoing interposition of a synthetic graft between the left subclavian artery and descending aorta.

Results: There was one hospital mortality (1.8%). One patient developed aortic pseudoaneurysm after patch augmentation. He was reoperated five years later. Four other patients (in Group I) developed significant recoarctation after the first operation and two of them underwent surgery 10 and 15 years later. The mean residual gradient in Group II patients was 13 ± 8 mmHg versus 25 ± 17 mmHg in Group I ($p=0.001$). The mean postoperative blood pressure in Group II was 122 ± 40 mmHg versus 153 ± 48 mmHg in Group I ($p=0.003$).

Conclusions: Surgical repair of the aortic coarctation in adults consisting in interposition of a synthetic graft has proved to be an effective procedure and significantly reduces arterial hypertension.

Surgical repair of various forms of cervical aortic arch

E. Prifti, R. Tiraboschi², G. Esposito², A. Baboci¹, A. Veshti¹, M. Zeka¹, V. Vanini²

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2. Heart of Children Foundation, Bergamo, Italy

Objective: The aim of this study is to report our experience with the surgical repair of such a rare congenital malformation.

Materials and Methods: Between January 1993 and September 2013, 4 patients with right cervical aortic arch and 3 with left cervical aortic arch underwent surgical correction of the malformation at our institutions. In 4 patients with right cervical aortic arch, one presented cyanosis and 3 dysphagia and respiratory distress due to the compression by the vascular ring. In the other 3 patients with left cervical aortic arch a supraclavicular pulsatile mass was present. Mean age was 8 years. Ventricular septal defect was present in one of the patients with right cervical aortic arch and tricuspid atresia in another patient.

Results: One patient with right cervical aortic arch underwent an end-to-end anastomosis through a right thoracotomy and Waterstone shunt and the other 3 underwent interposition of a synthetic graft through a midline sternotomy and extracorporeal circulation in beating heart (Figure 1A) with excellent postoperative outcome (Figure 1B). Two patients with left cervical aortic arch (Figure 1C) underwent end-to-end anastomosis and another one an end-to-lateral anastomosis through a left thoracotomy on the IV space and Bio Medicus pump support with excellent postoperative outcome (Figure 1D). All patients survived the operation without major complications after surgery.

Conclusions: Although a rare congenital malformation, the surgical repair is feasible with excellent early and mid term outcome. Surgical strategy should be according to an accurate understanding of the anatomy.

The “peacock tail” technique. A modified technique in Ebstein malformation

E. Prifti, A. Baboci¹, G. Esposito², E. Kajo¹, A. Veshti¹, V. Vanini²

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2. Heart of Children Foundation, Bergamo, Italy

Objectives: The aim of this study was to evaluate the outcome in a series of patients with Ebstein anomaly and failing right ventricle undergoing an original technique of tricuspid valve repair and bidirectional cavopulmonary shunt.

Materials and Methods: Between January 1996 and August 2015, 13 consecutive patients diagnosed with severe forms of Ebstein anomaly and failing right ventricle underwent tricuspid valve surgery and bidirectional cavopulmonary shunt. The mean age was 16.8 ± 7.4 years. The most frequently found symptoms were cyanosis, dyspnea and arrhythmias. The azygos or hemiazygos vein were left opened and the Glenn shunt was constructed (Figure 1). The “peacock tail technique” consisted in a total detachment of the anterior and posterior leaflets of the tricuspid valve and rotation in both direction reimplanting them to the true annulus (Figure 2). The mean follow-up time was 5.8 ± 2.4 years (range 3 months to 10 years).

Results: The hospital death was 7.7% (1 patient). Tricuspid valve repair was possible in 12 patients. None of the patients had AV block postoperatively. At one year after surgery, the indexed RV and RA diameter were reduced significantly versus the preoperative data ($p=0.003$ and $p<0.001$). Also the mean TVR and indexed TV area were 1.2 ± 0.42 and 1.6 ± 0.6 (mm/m²), significantly lower than preoperatively ($p=0.001$ and $p=0.008$ respectively). The mean NYHA functional class, SaO₂ and cardio thoracic ratio were significantly improved.

Conclusions: The “peacock tail technique” is a surgical approach to Ebstein's anomaly that incorporates unique methods of valvuloplasty, ventricular remodeling, and ventricular unloading. Our management strategy for these challenging patients has yielded a high rate of native tricuspid valve preservation, a low incidence of recurrent regurgitation, favorable functional status and right ventricular function, and marked resolution of cyanosis.

Preferences of transpulmonary repair of patent ductus arteriosus (PDA) in adults (of blessed memory Dr. Terry G. O'Donovan, who performed first successful transpulmonary closure of PDA in adult 24/ 08/ 1967, Groote Schuur Hospital, Cape -Town)

F. Abdullayev, I. M.Bagirov

Topchibashev Research Centre of Surgery

Background: Surgical challenges in adults with PDA are related to: 1. complications of native history and anatomy variables: endocarditis, PH, friable aortic wall, «window»-type PDA, aneurysm formation; 2. necessity of simultaneous repair of concomitant heart diseases. Such changes make adults with PDA poor candidates for traditional ligation/ dividing / mini - invasive approach. Optimal method of PDA closure in adults remains controversial.

Objective: To present result of transpulmonary repair of «window» - type PDA in adult, and preferences of transpulmonary closure of PDA vs. VATS, Coil Embolization and Amplatzer Duct Occluders (ADO) in adults.

Material: Limitations for VATS closure of PDA in adults: calcified ducts, pleural scarring, «window» type PDA, ductal aneurysm; risk of uncontrolled hemorrhage and recurrent nerve injury. Coil embolization and ADO are limited to: pulmonary end ≥ 4 -10 mm, «window»-type PDA, ductal aneurysms, friable aortic wall. Complications: dissection/ rupture of the aorta / PA; migration of the occlusion device.

Preferences of transpulmonary closure of PDA in adults: 1.no limitations with anatomy of PDA; 2. safe in adults with recurrent PDA; 3. effective in PDA aneurysm ; 4. simultaneous repair of concomitant heart diseases.

Transpulmonary repair of PDA in adults restricted to ≈ 125 -130 cases with prevalence of case reports (0% mortality). Majority of repaired are ≤ 50 years old; 4 patients repaired on 72-80 years of age [A.Morishita 2014; K.Fujii 2012; K.Hobo 2009; R.Toda 2000]. Large series presented by R.Toda 2000 [9 pts], J.S.Xie 1991[29 pts] and Y.X.Yu 1989 [17 pts].

Results: 26 years old female, engaged (twice pregnant). X-Ray - CTR 52,5%. Echo - exam: PDA, SPAP - 50mm.Hg. Aortography and (3D) CT-scan: «window» type PDA. Patient underwent transpulmonary closure of PDA using TCA: CPB- 72

min/ Aorta-X - 43 min./ 20°C/ TCA - 5`55 min.

Conclusion: 1. Transpulmonary closure of PDA in adults has no limitations with anatomy of PDA; is safe and effective in adults with recurrent PDA and aneurysm formation (hybrid with TEVAR); 2. Transpulmonary closure of PDA preferable with external temporary occlusion of PDA vs. Foley, avoiding risk of balloon`s rupture and embolization.

Outcome after repair of congenital malformations of the mitral valve

E. Prifti, A. Baboci¹, G. Esposito², A. Veshti¹, M. Zeka¹, V. Vanini²

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2. Heart of Children Foundation, Bergamo, Italy

Objectives: The aims of this study were to determine early and midterm survival and freedom from reoperation, and predictors for poor postoperative outcome in children undergoing mitral valve(MV) repair owing to congenital malformations of the mitral valve.

Materials and Methods: Between 1995-2015,125children with congenital MV disease underwent valve surgery. The mean age was 5.2 ± 6.4 years (range 20 days to 16 years). Thirty-five (28%) children were less than 1 year old. Isolated MV disease was found in 38 (30%) patients. MV stenosis was the predominant lesion in 32 (25.6%) patients with a mean left atrial to left ventricle diastolic peak gradient of 24.5 ± 9.2 mmHg. MV regurgitation was the predominant pathophysiology in 93 (74.4%) patients with a regurgitation grade of 3.3 ± 0.7 . Four patients represented accessory MV tissue and two patients represented accessory MV leaflet. Hammock MV was found in 13 patients.

Results: The hospital mortality was 8.8% (11 patients). Three patients required permanent pacemaker implantation. Two patients underwent mediastinal exploration for significant bleeding. Postoperatively the echocardiography color Doppler study demonstrated a significantly lower mean end diastolic left atrium to left ventricle gradient 8.7 ± 2.2 mm Hg ($p < 0.001$) in patients with MV stenosis and a mean regurgitation grade of 0.9 ± 0.6 ($p < 0.001$) in patients with MV regurgitation. Actuarial survival and actuarial reoperation-free survival were 89.2% and 76.3%, respectively. Multivariate analysis demonstrated that age<1year ($p = 0.035$), hammock MV($p = 0.009$), cardiothoracic ratio greater than 0.6 ($p < 0.0001$), and associated cardiac anomalies ($p = 0.003$) were strong predictors for poor overall freedom from reoperation and midterm survival.

Conclusions: MV repair for congenital mitral valve disease yields acceptable early and midterm mortality and reoperation rates. Strong predictors for poor overall freedom from reoperation and midterm survival were age<1year, hammock MV, cardiothoracic ratio greater than 0.6, and associated cardiac anomalies.

Direct results of the prosthetic repair of heart valves in children

I. Sagatov

National Scientific Center of Surgery named after A.N. Syzganov/Cardiac Surgery

Objectives: The aim of research was to carry out an analysis of direct results of the prosthetic repair of heart valves in children.

Materials of research: There have been retrospectively analyzed the direct results of surgical treatment in 22 patients. The patients age varied from 4 till 15 years, the mean age of patients made $12,3 \pm 3,3$ years. There were 15 (68,2%) boys and 7 (31,8%) girls among researched patients.

The prosthetic repair of aortic valve with mechanical valve was performed in 11 (50%) patients, the prosthetic repair of mitral valve – in 7 (31,8%) patients, the prosthetic repair of tricuspid valve – in 1 (4,6%) patient, prosthetic repair of the aortic and mitral valves was performed in 2 (9,1%) patients, and prosthetic repair of the pulmonary artery valve was performed in 1 (4,6%) patient.

The operational risk according to Aristotle Score in average made $15,2 \pm 20,6$ (Basic score), that corresponded to 4 high level of complexity.

Results: Practically at once after operation of Manuguan-Seibold-Epting 1 (4,6%) patient died from non stopped acute heart failure.

In 5 (22,7%) patients the early postoperative period took a course with complications: bleeding (2 patients), arrhythmia as AV-blockage of the III degree (2 patients) and acute disorder of the brain blood circulation by ischemic type in combination with respiratory insufficiency (1 patient).

Conclusion: The children, who underwent to prosthetic repair of heart valves, relate to a contingent of patients with increased operational risk that is confirmed by the data, received by Aristotle Score. The percentage of freedom from complications after prosthetic repair heart valves in children is generally associated with arrhythmia as AV-blockage.

Management of mediastinal teratomas in small children

I. Mokryk, I. Zhurilo, A. Koval, A. Muzychin, V. Konov, M. Kachmarchyk, V. Gryn, M. Zembala

Gusak Institute of Urgent and Reconstructive Surgery, Department of Pediatric Cardiac Surgery

Objective: Mediastinal teratoma in childhood is life threatening condition due to its mass effect. Objective of the study was to access our experience in treatment of this rare disease in pediatric patients.

Methods: We retrospectively reviewed hospital notes of 6 consecutive patients with diagnosis of mediastinal teratoma, operated in the period from October, 2010 to July, 2014.

Results: There were 1 (16.6%) male and 5 (83.4%) female in the study group: 2 neonates, 3 infants and 1 young child. Age at operation ranged from 7 days to 4 years. 1 (16.6%) patient received diagnosis prenatally. 1 (16.6%) neonate was mechanically ventilated and on medium-dose dopamine prior to surgery. In 3 (50%) patients transportation to Cardiac Surgery Center was considered of excessive risk, therefore operations were performed at surgical suits of Regional Pediatric Hospitals of admission. All surgeries were conducted through median sternotomy. Within Cardiac Surgical Center environment, extracorporeal circulation was in standby. In 3 (50%) cases teratoma was intrapericardial, in the rest – located in anterior mediastinum, extending into the left (1 case, 16.6%) or right (2 cases, 33.4%) pleural cavity. Mass was removed completely in every procedure. Bypass was never used. Histology reported immature teratoma in all specimens. There were no perioperative deaths. Postoperative course was uneventful in all cases. In the follow-up period clinical conditions of all patients returned to normal, instrumental and laboratory data revealed no signs of recurrence of the disease.

Conclusions: Mediastinal teratoma in small children is surgical urgency, due to mass effect of the tumor, that can rapidly grow. Prenatal diagnosis facilitates management strategy. Median sternotomy permits complete removal of the tumor tissue of different localization. Operations should be performed, preferably, with extracorporeal circulation in stand-by. Close follow-up is necessary to exclude recurrence of the disease. "

Management of mediastinal teratomas in neonates, infants and young child

I. Zhurilo MD, PhD, A. Muzychin MD, V. Konov MD, A. Koval MD, PhD, V. Gryn MD, PhD

Gusak Institute of Urgent and Reconstructive Surgery, Department of Pediatric Cardiac Surgery

Objective: Mediastinal teratoma (MT) in childhood is life threatening condition due to its mass effect. Objective of the study was to access our experience in treatment of MT in pediatric patients and focus on important aspects in management of this rare disease.

Methods: We retrospectively reviewed hospital notes of 6 consecutive patients with diagnosis of MT, operated in the period from October, 2010 to July, 2014.

Results: There were 1 male and 5 female in the study group: 2 neonates, 3 infants and 1 young child. Age at operation ranged from 7 days to 4 years. 1 (16.6%) patient received diagnosis prenatally. 1 (16.6%) neonate was ventilated and on dopamine prior to surgery. In 3 (50%) patients transportation to Cardiac Surgery Center (CSC) was of excessive risk, therefore operations were performed at Regional Pediatric Hospitals of admission.

All surgeries were conducted through medium sternotomy. Within CSC environment, bypass machine was in standby. In 3 (50%) cases teratoma was intrapericardial, in the rest – located in anterior mediastinum, extending into the left (1 case, 16.6%) or right (2 cases, 33.3%) pleural cavity. In every procedure mass was removed completely. Extracorporeal circulation was not used in any case. Histology reported immature teratoma in all specimens. There were no deaths or significant complications of postoperative course. In the follow-up period clinical conditions of all patients returned to normal, instrumental and laboratory data revealed no signs of recurrence of the disease.

Conclusions: Small children diagnosed with MT should be operated on without delay. Prenatal diagnosis facilitates management strategy. Median sternotomy permits complete removal of the mass. Operations should be performed by multidisciplinary team with extracorporeal circulation in stand-by. In patients with high risk of transportation, surgeries could be performed at RPH. Close follow-up is necessary to exclude recurrence of the disease.

Satisfactory esthetic results of minimally invasive repair of atrial septal defect in young patient

Y. Besir, S. Iscan, N. Karakas Yesilkaya, O. Gokalp, H. Iner, M. Balkanay, L. Yilik, S. Dernek, A. Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Introduction: Atrial Septal Defect is one of the most common congenital cardiac diseases. Minimally invasive procedure is being widely used as the surgical technique progresses. In this paper we aimed to present a patient who underwent Atrial Septal Defect repair with minimally invasive approach.

Case report: 38 year-old female admitted with dyspnea and fatigue. Echocardiography revealed an Atrial septal defect with a diameter of 14mm and moderate tricuspid regurgitation. Ejection fraction was 60% and pulmonary arterial pressure was 35mmHg. Right anterior thoracotomy was performed. 8mm PTFE graft was anastomosed to right common femoral artery for arterial cannulation. Right femoral vein and right jugular vein were used for percutaneous venous cannulation. Primary repair method was used for Atrial Septal Defect closure. Patient was referred to service on postoperative 2nd day and she was discharged on postoperative 6th day.

Conclusion: Conventional surgery is performed with low risk in Atrial Septal Defect repair. However, minimally invasive procedures minimize hospital stay and incision healing complications, thus they are being used widely.

Our aortic valve replacement experience with minimally invasive approach to high risk geriatric patient

Y. Besir, O. Gokalp, S. Iscan, N. Karakas Yesilkaya, H. Iner, B. Lafci, L. Yilik, G. Gokalp, A. Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Introduction: Minimally invasive approach leads remarkable decrease on mortality and morbidity in cardiovascular diseases. As a result, it becomes favourable among cardiovascular society. In this paper we aimed to present a patient with severe aortic stenosis, who underwent minimally invasive aortic valve replacement.

Case Report: 78 year-old female patient admitted with dyspnea. Severe aortic stenosis was detected by transthoracic echocardiography. Left ventricular diastolic volume was 53mm, aortic root was 26mm, ejection fraction was 70% and pulmonary arterial pressure was 30mmHg. Minimally invasive aortic valve replacement was planned to our patient with no lesions shown by coronary angiography. Right anterior thoracotomy was used. Perfusion started following right femoral venous cannulation and aortic cannulation. Aortotomy was made and aortic valve was resected. Valve replacement was performed with medium size perseval aorticvalve. Patient was referred to service on postoperative 2nd day and she was discharged on postoperative 7th day.

Conclusion: Minimally invasive procedures are favored with their lower mortality and morbidity rates in high risk geriatric patients when compared to conventional surgery

Minimally invasive atrial septal defect repair in young adult patient

Y. Besir, O. Gokalp, N. Karakas Yesilkaya, S. Iscan, H. Iner, M. Balkanay, L. Yilik, G. Gokalp, A. Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Introduction: Although conventional surgery has good results on Atrial Septal Defect repair, minimally invasive technique has further advantages when hospital stay and incision healing is considered. We aimed to present a patient who underwent Atrial Septal Defect repair with minimally invasive technique.

Case report: 22 year-old female admitted with dyspnea. Transthoracic echocardiography revealed an Atrial Septal Defect in diameter of 15 mm and mild tricuspid regurgitation. Ejection fraction was 70% and pulmonary arterial pressure was 20 mmHg. Right anterior thoracotomy was performed. 8 mm PTFE graft was anastomosed to right common femoral artery for arterial cannulation. Right femoral vein and right jugular vein were used for percutaneous venous cannulation. Primary repair method was used for Atrial Septal Defect closure. Patient was referred to service on postoperative 2nd day and she was discharged on postoperative 5th day.

Conclusion: Recent improvements about surgical methods put minimally invasive technique on first rank with esthetic advantages especially on young adults.

Simultaneous aortic coarctation repair and various forms of intracardiac valvular lesions

E.Prifti¹, K.Krakulli, A.Veshti, A.Baboci, A.Ibrahimi, M.Zeka

Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Objectives: The aim of this study was to evaluate the early outcome in patients with various forms of intracardiac valvular lesions and aortic coarctation undergoing simultaneous repair.

Materials and methods: Between 2003-2015, 18 adult patients with CoAo and associated intracardiac lesions underwent single stage surgical repair. Patients were between 14 and 64 years. The associated intracardiac lesions were ascending aortic aneurysm in association with aortic valve stenosis or regurgitation in 15 patients, aortic valve stenosis alone in 1 and mitral valve regurgitation in two patients.

Results. Five patients underwent correction of CoAo through a left thoracotomy and interposition of a synthetic graft between the left subclavia artery and descending aorta. After closing the thoracotomy, the patients underwent sternotomy and ascending aortic aneurysm repair in all of them. Three of them underwent aortic valve repair and two replacement. 13 patients underwent extranatomic bypass through sternotomy. Under CPB the heart was elevated and the extranatomic bypass to the descending aorta was constructed. 10 patients underwent ascending aortic replacement, 5 of them underwent Bentall procedure, one Svenson technique and 4 separated aortic valve and ascending aortic replacement. Another patient underwent extranatomic bypass between the ascending aorta and abdominal aorta due to heavy collaterals and mitral valve repair. Another patient underwent mitral valve repair and extranatomic bypass to the descending thoracic aorta, routed above the pulmonary artery. The last patient underwent associated aortic valve replacement alone. One patient required CABG procedure. One patient died (6%) during the early postoperative course due to heart failure. All other patients had an uneventful postoperative course.

Conclusions: The simultaneous repair of the aortic coarctation with various forms of intracardiac lesions is feasible with acceptable outcome.

Prediction of coronary plaque position on the arteries with myocardial bridge-neural network

D.Nikolic, I.Saveljic, M.Radovic, S.Aleksandric, M.Tomasevic, N.Filipovic

OBJECTIVE Coronary arteries and their major branches, which supply oxygenated and nutrient filled blood to the heart muscle (myocardium), lies on the surface of the heart, in the subepicardial space, between visceral pericardium (epicardium) and myocardium. Sometimes, a shorter or longer segment of the epicardial coronary artery or its branch is covered by a band of heart muscle that lies on top of it. This band of muscle is called a “bridge” and the intramural segment of coronary artery a “tunneled artery”. Myocardial bridging (MB) is a congenital coronary anomaly defined as a segment of a major epicardial coronary artery that runs intramurally through the myocardium beneath the muscle bridge

METHODS We have developed numerical simulation using finite element method to calculate the value of shear stress in the patients’ artery with MB. Due to very complicated and slow process of creating geometric networks and large computing requirements for solving these problems we also developed faster solution to determine the shear stress in the arteries. This solution includes neural networks. The advantage of neural networks is possibility to have results almost in real time from several input parameters (arterial diameter: distal, in MB, proximal, length of the myocardial bridge, flow velocity, pressure outlet etc.). This algorithm works stably and it reaches convergence very quickly.

RESULTS The low value of shear stress and oscillatory shear stress with an average value lead to alterations in the expression of vasoactive agents, such as endothelial nitric oxide synthase (eNOS), endothelin-1 (ET-1), angiotensin-converting enzyme (ACE) and growth-promoting and prothrombotic phenotype, ultimately acquiring a predisposition to atherosclerosis.

On the other hand, the normal shear stress, with a positive time-average ranging between 1.5 N/m² and 7.0 N/m², increases the production of nitric oxide (NO) in endothelial cells and downregulates the expression of proatherogenic molecules, relating to an atheroprotective effect.

CONCLUSION In highly demands numerical simulation with different geometry, boundary conditions, main obstacle is computational time which can be hours or even days. To overcome this problem we have developed artificial intelligence method using neural network which gives results almost in the real time. In this way computer simulations can be very practical for everyday clinical purpose

Extracorporeal Membrane Oxygenation Support for life-threatening acute severe status asthmaticus.

E.Prifti¹, G.Di Lascio¹, A.Veshti², E.Massai¹, A.Peris¹, G.Harmelin¹, G.Sani¹, M.Bonacchi¹

1- Section of Cardiac Surgery, Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy

2- Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Introduction. Status asthmaticus (SA) is a life-threatening condition characterized by progressive respiratory failure due to asthma that is unresponsive to standard therapeutic measures. We used Extracorporeal life support (ECLS) to treat patients with near-fatal SA who did not respond to aggressive medical therapies and mechanical ventilation under controlled permissive hypercapnia.

Materials and Methods. Between January 2011 and October 2015, we treated 16 adult patients with SA (8 women ,8 men, mean age: $50,5 \pm 10,6$ years) with ECLS V-V (13 patients) or V-A (3 patients). Patients failed to respond to conventional therapies despite receiving the most aggressive therapies, including maximal medical treatments, mechanical ventilation under controlled permissive hypercapnia, and general anesthetics

Results. Median time spent on ECLS was $300 \pm 118,79$ hours (range 36 to 384 hours). PaO₂, PaCO₂ and pH, showed significant improvement promptly after initiation of ECLS. Median time of ventilation after decannulation until extubation was $175 \pm 145,66$ hours and median time to ICU discharge after decannulation was $234 \pm 110,30$ hours. All 16 patients survived without neurological sequelae.

Conclusions. ECLS could provide adjunctive pulmonary support for intubated asthmatic patients who remain severely acidotic and hypercarbic despite aggressive conventional therapy and unconventional therapies, including inhaled anaesthetics. We believe that ECLS should be considered early on in the treatment of the patients with SA whose gas exchange cannot be satisfactorily maintained by conventional therapy for providing adequate gas change and preventing lung injury from the ventilation.

Application Of Autologous Bio-regenerative Fibrin Sealant In Elective Coronary Artery Bypass Surgery Improves Post-operative Hemostasis And Lowers The Rate Of Allogeneic Blood Transfusions

S.Micovic, M. I. Boričić, B. M. Čalija, E. D. Strugarević, Dž. Dž. Abazović, H.A.M. Box, P. A.M. Everts

Cardiovascular Institute Dedinje Belgrade, Serbia: Department for cardio-vascular diseases, Department of transfusion medicine

Objectives: It is been proved that transfusion of allogeneic blood products during coronary artery bypass surgery is leading to poorer patient outcomes. This kind of procedure still carries a significant risk of postoperative hemorrhage, redo surgery and wound healing disturbances. There are many commercial sealants available on the market which can be used during surgery. None of these proved to be efficient and their usage carries a significant risk of inflammatory reactions. Our study investigated the feasibility of reducing allogeneic blood transfusion rates by applying an autologous, anti-microbial bio-regenerative fibrin sealant from patient's own blood during elective coronary artery bypass surgery.

Methods: This investigation is a prospective and consecutively executed study performed in 72 patients undergoing elective coronary bypass procedures. In treatment group patients (N=31), a strict blood management application protocol was employed using a novel bio-regenerative fibrin system. In control patients (N=41) no sealant application protocol was used.

Results: Patients groups were comparable regarding preoperative characteristics. Concentrated autologous fibrin sealant and bio-regenerative fibrin sealant was safely prepared without any risks for patients. Postoperative chest tube drainage was significantly lower in the treatment group when compared to the control group. In the treatment group, 2 of 31 patients (7%) required an allogeneic blood transfusion, and in the control group 17 of 41 patients (40%) required an allogeneic blood transfusion. Red blood cell transfusion was significantly reduced in treated patients when compared to control patients, respectively, $p < 0,001$. The discharge hemoglobin content was not statistical different for both patient groups.

Conclusions: No safety issues were identified during the preparation process and the application. The procedure did not increase total operation time and the system revealed no adverse effects and demonstrated to be a useful adjunct to improve postoperative hemostasis following CABG surgery, resulting in significantly less allogeneic blood transfusions.

Surgical aspects and late outcomes of the total coronary endarterectomy and “dome arterial rebuilding”

E.Prifti¹, M.Bonacchi², G.Giunti², A.Veshti¹, A.Baboci¹

1.Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2.Division of Cardiac Surgery, Policlinicco Careggi, Florence, Italy

Objectives: The aim of this study was to evaluate the early and late outcome in a series of patients undergoing an original total arterial reconstruction technique for coronary endarterectomy (CE).

Materials and Methods: Between 2000-2013, 450 consecutive patients (mean age 59.5 ± 12.3 years) underwent an original CE called “coronary dome arterial rebuilding”. 134 patients had a prior PTCA. Following extensive arteriotomy and atheroma removal, the dome of the coronary artery was reconstructed with an adequate flap. 40 patients underwent CE in multiple distributions. Mean 2.2 ± 0.3 arterial grafts per patient were employed. 37% patients underwent total arterial myocardial revascularization. The mean follow-up was 45 ± 23 months.

Results: Hospital mortality was 3.5% (n=16) and 4.4% had a perioperative AMI. Within one year after surgery all patients underwent ergometric test and 80% underwent coronary angiography. 28 endarterectomized vessels were occluded. At follow-up, survival was 95.4%, with most (93%,) of the patients symptoms free. In symptomatic patients (n=38,), re-catheterization showed a progression of disease in the non-endarterectomized vessels and/or in the vein grafts, and 100% patency in bypass grafts to endarterectomized vessels. The Cox model revealed the left ventricular ejection fraction $<35\%$ (p=0.016), age >70 years (p=0.025), NYHA grade $>III$ (p=0.0019), non total arterial myocardial revascularization (p=0.002) and the preoperative presence of more than one ischemic area (p<0.001) as strong predictors for poor overall cumulative free-event survival. Actuarial survival at 7 years was 96% and free revascularization procedure survival was 92.5%.

Conclusions: This technique enhances the probability to achieve a complete and arterial revascularization in patients with an unfavorable anatomical substrate with acceptable operative risk and good long-term results.

Left internal mammary artery anastomosed to a moderately stenotic left anterior descending artery. Hemodynamic and functional evaluation

E.Prifti, M.Bonacchi², G.Giunti², K.Krakulli¹, A.Veshti¹

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2. Division of Cardiac Surgery, Policlinico Careggi, Florence, Italy

Objectives: The aim was to investigate the effects of competitive blood flow and functional status of LIMA anastomosed to LAD with moderate stenosis.

Materials and Method: Between 1995 and 2012, 42(Group I) patients underwent CABG employing both internal mammary arteries. All patients presented critical stenosis of two other <65% LAD. The flow dynamic data were compared with a matched group of 105 patients(Group II) with LIMA anastomosed to a critically stenotic LAD. The mean follow-up was 6.8 ± 2.1 years.

Results: LIMA string sign was found in 12 patients in Group I and 3 in Group II patients (p=0.001). The peak diastolic flow(i) at rest at LIMA main stem in patients with string sign phenomenon was 24 ± 3(ml/min) versus 47 ± 6(ml/min) in fully patent LIMA in Group I(p<0.001). The angiographic control showed a significant progression of the native LAD atherosclerosis in 27 out of 42 in Group I. Seven out of 12 patients in Group I with a string sign phenomenon presented at follow-up examination, a stenotic lesion >70% of the LAD and a fully patent LIMA graft. The linear regression analysis revealed a strong correlation between the LIMA mean flow and the recipient grade stenosis($r=0.53$, p=0.00011), low LIMA free flow ($r=0.37$, p=0.046), LIMA caliber ($r=0.21$, p=0.0018) and the increased grade of stenosis at the LAD(p<0.0001).

Conclusions: The competitive flow from the native coronary vessel in the presence of a low diastolic flow induces a reduction of LIMA. With the progression of the stenosis the LIMA flow increases significantly.

Postinfarctual left ventricular aneurysm. Various surgical techniques

E.Prifti, M.Bonacchi², K.Krakulli¹, G.Giunti², A.Veshti¹, A.Baboci¹

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2. Division of Cardiac Surgery, Policlinico Careggi, Florence, Italy

Objectives: The aim of the study was to analyze the early and mid term outcome after postinfarction left ventricular aneurysm (LVA) repair and to identify predictors for poor overall outcome.

Materials and methods: We reviewed the records of 110 patients who had an operation for postinfarction LVA between 1999 and 2015. Mean follow-up was 3.8 years (range, 6 months to 13 years). Clinical outcomes in 62 patients who underwent endoventricular patch plasty (Group I) were compared with those in 48 patients who had linear repair (Group II).

Results: The early mortality was 4.5% (5 patients), and the 5-year survival rate was 70%. 30 patients required LAD endarterectomy and 14 patients endarterectomy of other coronary vessels. Associated procedures were MV surgery(19), posterior-basal LVA in 7. At 6 months after surgery, the LVEF improved significantly $37.8 \pm 10\%$ versus preoperatively ($p=0.001$). At 1 year the LVEDD was $52 \pm 11\text{mm}$ in Group I versus $58 \pm 10\text{mm}$ in Group II ($p=0.002$) and NYHA class 1.7 ± 0.8 and 2.8 ± 0.9 respectively ($p=0.003$). At follow-up there were no measurable differences between the groups with respect to LVEF ($38 \pm 10\%$ versus $39 \pm 9\%$; $p = \text{ns}$). The Cox model revealed the low LVEF ($p=0.001$), age ($p=0.03$) and linear repair ($p=0.04$) as strong predictors for poor overall free reoperation survival and NYHA <2 .

Conclusions: Postinfarction LVA can be repaired with acceptable surgical risk and long-term survival. The geometric endoventricular patch repair was associated with better hemodynamic postoperative data versus linear repair, demonstrating a better sphericity and functional status of the LV.

Should the mild-to-moderate ischemic mitral regurgitation be corrected in patients with impaired left ventricular function undergoing simultaneous coronary revascularization?

E.Prifti, M.Bonacchi¹, G.Giunti¹, A.Veshti², K.Krakulli², A.Baboci², M.Zeka²

1- Section of Cardiac Surgery, Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy

2- Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Objective: The objective of this study was to assess the feasibility of MV surgery in concomitance to CABG in patients with mild-to-moderate and moderate ischemic MVR and impaired LV function.

Materials and Method. From January 1996 to July 2012, 90 patients (Group I) and 70 patients (Group II) with grade II-III ischemic MVR and LVEF between 17%-30% underwent combined MV surgery and CABG(Group I) or isolated CABG(Group II). LVEF(%), LVEDD(mm), LVEDP(mmHg), LVESD(mm) were 27.5±5, 67.7±7, 27.7±4, 51.4±7 in Group I versus 27.8±4, 67.5±6, 27.5±5, 51.2±6 in Group II respectively. MV repair was performed in 73(81%) patients and MV replacement in 17(19%) patients in Group I.

Results: The preoperative data analysis did not reveal any difference between groups. 9(10%) died in Group I versus 9(12.8%) in Group II(p=Ns). Within 6 months after surgery the LV function and its geometry improved significantly in Group I versus Group II (LVEF, p<0.001, LVEDD, p=0.002, LVESD, p=0.003 and LVEDP, p<0.001 improved significantly in Group I instead of a mild improvement in Group II. The RF decreased significantly in Group I patients after surgery(p<0.001). There was an inverse strong correlation between postoperative forward cardiac output and regurgitation fraction(p<0.001). The LVEF and LVESD improved significantly in Group I versus Group II patients, p=0.04 and p=0.02 respectively. The cardiac index increased significantly in Group I and II, p<0.001 and p=0.03 respectively. The overall survival at 5 years in Group II was significantly lower than Group I(p<0.009).

Conclusion. Both MV repair and replacement preserving subvalvular apparatus in patients with impaired LV function offered acceptable outcome in terms of morbidity and survival. The surgical correction of the mild-to-moderate and moderate MVR in patients with impaired LV function should be taken in consideration yielding in better survival and improved LV function.

Right Y-graft. The flow dynamic of a new composite arterial graft.

E.Prift², M.Bonacchi¹, G.Giunti¹, K.Krakull², M.Zeka², A.Veshti²

1- Section of Cardiac Surgery, Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy

2 Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Objective: The aim of this study was to evaluate the outcome and flow dynamics C536

Materials and methods: From 2007-2012, 65 patients (mean age 55.5+/-4.7 years) with Triple-vessel disease underwent arterial revascularization using RYG. In 30 patients (group I) presenting proximal or middle-third LAD or right coronary arterial stenosis, RYG was constructed by anastomosing the distal LIMA, as a free LIMA graft, to the right coronary artery and proximally to the in situ RIMA. In the other 35 patients (group II) presenting with middle-distal third LAD or right coronary arterial stenosis, the radial artery was used to construct the RYG. All patients underwent transthoracic echo color Doppler before and after an adenosine test at 1 week and 3 months after operation.

Results: There were no hospital deaths. There was no difference between baseline and maximal flows and coronary flow reserve (CFR) between groups. CFR at internal mammary artery stems increased in both groups within 3 months versus 1 week [(LIMA) CFR = 2 +/- 0.3 versus 2.3 +/- 0.3 (p = 0.002) and (RIMA) CFR = 2.2 +/- 0.4 versus 2.5 +/- 0.3 (p = 0.009) in group I, and (LIMA) CFR = 2.12 +/- 0.33 versus 2.4 +/- 0.35 (p = 0.005) and (RIMA) CFR = 2.17 +/- 0.32 versus 2.52 +/- 0.26 (p = 0.001) in group II]. At 3 months versus 1 week, the (RIMA)diameter(i) (mm) at rest was 1.69 +/- 0.32 versus 1.48 +/- 0.2 (p = 0.015) in group I and 1.66 +/- 0.3 versus 1.47 + 0.2 (p = 0.01) in group II.

Conclusions: These data, almost identical for free LIMA and RA to RIMA using the RYGt, demonstrate that RIMA flow reserve is adequate for multiple coronary anastomoses irrespective of the second arterial graft.

EARLY AND MID-TERM OUTCOME OF THE ST. JUDE MEDICAL REGENT 19-MM AORTIC MECHANICAL PROTHESIS VERSUS 19-MM CARPENTIER EDWARDS AORTIC BIOLOGICAL PROTHESIS. FUNCTIONAL AND HEMODYNAMIC EVALUATION

E.Prifti¹, M.Bonacchi², G.Giunti², K.Krakulli¹, 1A.Baboci¹

1.Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

2.Division of Cardiac Surgery, Policlinico Careggi, University of Florence, Italy

Objective: The aim of the present study is to compare the early and mid-term clinical and hemodynamic results of the aortic valve replacement (AVR) with a St Jude Medical Regent 19-mm prosthesis (SJMR-19) versus Carpentier-Edwards bovine pericardial 19-mm valve (CE-19).

Materials and Methods: Between January 2002 and January 2012, 265 patients (Group I) and 58 patients (Group II) with underwent AVR with a SJMR-19 and CE-19 respectively. There were no significant differences between groups regarding the demographic and preoperative echocardiographic data. The mean follow-up was 34±18.5 months.

Results: There were 14 (5.3%) hospital deaths in Group I versus 4(6.8%) in Group II (p=0.86). The multivariate logistic regression analysis identified the LVEF<35% (p=0.001), combined operation(p=0.0005), CPB(p=0.033), age(p=0.011), annulus enlargement(p=0.0009), reoperation(p=0.039) and chronic renal failure(p=0.011) as strong predictors for early postoperative death. The M-TPG was 15.7±6.5mmHg in Group I versus 17±7mmHg in Group II(p=0.19). The multivariate regression analysis revealed the annulus enlargement(p=0.018), small EOAI(p=0.00004), postoperative LVMI (p=0.0001) and BSA(p=0.019) as strong predictors for higher M-TPG. The postoperative LVMI was 119±22.5 gm/m² in Group I and 122±22 gm/m² in Group II (p=0.37), significantly lower than the respective preoperative values 162.5±34 gm/m²(Group I) and 168±30 gm/m²(Group II). The actuarial survival and cumulative free-reoperation actuarial survival at 5 years follow-up were 96.7% and 94.5% respectively in Group I and 97% and 91% in Group II. The Cox model identified the older age(p=0.022), LVEF<35%(p=0.009), reoperation(p=0.018), combined surgery(p=0.00075) and annulus enlargement (p=0.033) as strong predictors for poor actuarial free-reoperation survival.

Conclusions. Both the SJMR-19 and CE-19 offers excellent postoperative clinical and hemodynamic outcome in patients with small aortic annulus. The LV hypertrophy and transvalvular gradients are reduced significantly independently of the employed SJMR-19 or CE-19 prosthesis.

Early outcome of intensive continuous hemofiltration for severe renal failure after cardiac surgery

E.Prifti, Alfred Ibrahim, Saimir Kuci, Merita Zeka, Klodian Krakulli, Altin Veshti, Fiona Nasto, Arjana Strakosha

University Hospital Center of Tirana, Albania

Objectives: The aim of this study was to test whether early and intensive use of continuous venovenous hemofiltration (CVVHF) achieved a better than predicted outcome in patients with severe acute renal failure undergoing cardiac operations.

Materials and methods: Between January 2007 and January 2016, 63 patients underwent postoperative CVVHF. Mean age was 64.3 ± 10.35 years. 35 patients underwent isolated CABG. 10 other patients had post infarct mechanical complications. 5 patients had ascending aortic dissection type A, one patient had spontaneous coronary artery dissection and another patient post traumatic VSD. 2 patients had MV endocarditis, 3 redo surgery, and 6 bivalvular surgery. The mean preoperative Creatinine was 2.6 ± 2.2 (g/dl). 13 patients were operated on emergency basis. 8 patients required preoperative IABP.

Results: There were 12 deaths (19%). 25 patients required IABP. 7 patients underwent surgical reopening due to bleeding. The other postoperative complications included pulmonary edema in 5 patients, perioperative infarction in 4, MOF in 5, sepsis in 4. CVVHF was initiated at mean 48 ± 36.5 hours after surgery and continued for 82 ± 64 hours following the procedure. 38 survivors had a full recuperation of the renal function, 13 patients developed chronic renal failure and 5 of them remained anuric. The mean creatinine level after the ICU stay was 2.5 ± 1.8 (g/dl). Using multivariate logistic regression analysis, the IABP ($p=0.006$), low LVEF ($p=0.017$), longer interval from surgery ($p=0.012$), duration of CVVHF ($p=0.0063$), CPB time ($p=0.015$) and preoperative Hct ($p=0.039$) were strong predictors for early mortality. The Cox model revealed the IABP ($p=0.002$), low LVEF ($p=0.02$), long interval from surgery ($p=0.009$), older age ($p=0.045$) and non CABG surgery ($p=0.0065$) were strong predictors for overall mortality and not full renal function recuperation.

Conclusions: Early and aggressive CVVHF is associated with better survival in severe acute renal failure after cardiac operations. The employment of CVVHF offers acceptable outcome in this high risk group of patient

ECHO-DOBUTAMINE ASSESSMENT AFTER MITRAL VALVE REPAIR IN BARLOW'S DISEASE

E.Prifti¹, M.Bonacchi², G.Giunti², A.Baboci¹, E.Kajo¹, A.Veshti¹

1. Division of Cardiac Surgery, University Hospital Center of Tirana, Albania
2. Division of Cardiac Surgery, Policlinico Careggi, Florence, Italy

Objectives: The aim of this report was to evaluate the stability of repair and haemodynamic response to stress using Dobutamine infusion in patients undergoing anatomic correction of mitral valve regurgitation in Barlow's disease.

Materials and methods: Between January 2002 and January 2012, a total of 35 patients with Barlow's disease underwent mitral valve repair. Five patients were in NYHA class I, 17 patients in class II and 13 in class III. All patients had a flail posterior leaflet and were treated by quadrangular resection and the "sliding technique". Those with a flail anterior leaflet (6 patient) were treated with insertion of gore-tex chordae. Posterior annuloplasty was performed in 20 patients by a 3 mm □ gore-tex tube. At 1 year, all patients underwent baseline and dobutamine stress echocardiography to assess the stability of repair and the hemodynamic response to stress.

Results: Cardiopulmonary by-pass and aortic cross-clamp time were, respectively, 66□25 min and 50□19 min. No hospital death occurred. The mean post-operative stay was 8,5□2,5 days. The pre-discharge echo showed: absence of mitral regurgitation in 20 patients, mild regurgitation in 15 patients and normal trans-mitral flow in all patient. Dobutamine stress echocardiography showed normal annular excursions, mitral valve area, mean transvalvular gradient and pulmonary artery pressure at rest and stress. LVESD under stress improved significantly from 42±7.3mm at rest to 38±6.2 mm under stress (p=0.002), mitral valve area at rest 2.9±0.9 cm² to 4.5 ±1.7 cm² at stress (p=0.001).

Conclusions: Anatomic correction of mitral valve regurgitation is feasible in Barlow's disease with optimal results. Dobutamine stress echocardiography is helpful to evaluate the hemodynamic response to stress after mitral valve reconstruction.

**Management of cardiac myxoma based on a series of 105 cases with long term follow-up.
Clinical and pathological correlation with recurrent myxoma**

E.Prifti, E.Kajo, A.Baboci, K.Krakulli, A.Ibrahimi, M.Zeka, E.Ruci

Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Objective: The aim of this study was to analyze the clinical forms of presentation of cardiac myxoma, the postoperative outcome, and the

possibility of recurrence and tumoral embolism.

Materials and Methods. Between 1981 and 2015, 105 patients were operated for cardiac myxoma. 12 patients (11.4%) presented pulmonary embolism, 4 patients (3.8%) presented cerebral embolism, 4 patients (3.8%) coronary embolism and acute myocardial infarction, one patient (0.9%) presented embolism of the inferior mesenteric artery, and 11 patients (10.5%) femoral artery embolism. In 69 cases the cardiac myxoma originated from the left atrium, in 6 patients from the mitral valve and in 2 patients from the left ventricle. The cardiac myxoma originated from the right atrium in 19 cases, 2 patients from the tricuspid valve.

Results. There was no hospital mortality. 34 patients underwent surgical resection of the cardiac myxoma through the left atrium. Concomitant surgical procedures included mitral valve replacement in 8 patients, tricuspid valve replacement in 2 patients, coronary artery bypass grafting in 13 patients. There were 12 recurrent cardiac myxoma. Four patients had an extracardiac recurrence (3 cerebral metastases and one in the superior caval vein). The actuarial survival at 10 years follow-up was 93% and free recurrence survival was 78%. The Cox model revealed the previous embolism ($p=0.033$), atypical forms ($p=0.004$) and grape-like appearance ($p=0.007$) as strong predictors for recurrent cardiac myxoma at follow-up.

Conclusions: The surgical resection of a cardiac myxoma is a safe and effective treatment, with excellent early postoperative outcome. With a very low recurrence incidence in patients with typical forms of cardiac myxoma.

INITIAL ALBANIAN EXPERIENCE WITH MININVASIVE CARDIAC SURGERY

E.Prifti, A. VESHTI, A.BABOCI, K.KRAKULLI

Division of Cardiac Surgery, University Hospital Center of Tirana, Albania

Objective: The aim of this retrospective study was to evaluate our initial experience with miniminvasive cardiac surgery

Materials and Methods: Between 2011-2015, 75 patients with congenital malformations underwent miniminvasive cardiac surgery. 45 of them underwent right minithoracotomy (RMT) (Group I-correction under ventricular fibrillation) and 24 ministernotomy (MT) (Group II) and one periventricular VSD closure. 42 patients had ASD secundum type, 12 patients had subaortic VSD, 12 patients had ASD sinus venosus type, 6 patients had posterior extension VSD and 2 patients had muscular VSD, one redo VSD post ToF correction. Group III included 22 patients undergoing mitral valve repair or replacement through RMT. 13 patients presented MV regurgitation and 9 MV stenosis. Group I and II was compared with 110 matched patients undergoing conventional surgery. Group III was compared with 80 matched patients with MV disease undergoing median sternotomy.

Results. All patients in all groups survived surgery. None of the patients in the Group I-III required to be converted to a classic full sternotomy or a larger thoracotomy. CPB time in Group I was 31 ± 13 min, similar to patients undergoing full sternotomy 33 ± 16 min but significantly lower than Group II, 43 ± 8 min ($p=0.003$). The hospital stay, incidence of arrhythmias was similar with conventional surgery. There was a significant satisfaction in Group I and II patients. At follow-up there were no problems of lactation in female patients undergoing RMT. The CPB time in Group III was 61 ± 17 min significantly longer than control group 33 ± 10 min ($p<0.001$). The hospital stay was significantly shorter in Group III versus control group. Only one patient (Group III) developed femoral thromboembolism and later cholecystectomy.

Conclusion: The miniminvasive cardiac surgery is now feasible with excellent outcome in a developing country such as Albania

OUR MINIMALLY INVASIVE ATRIAL SEPTAL DEFECT REPAIR WITH FULL PERCUTANEOUS CANNULATION

Y.Besir, N.Karakas Yesilkaya, O.Gokalp, S.Iskan, H.Iner, M.Balkanay, L.Yilik, N.Karahan, A.Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

INTRODUCTION: Minimal invasive procedures are more and more favorable recently on cardiac surgery, especially on Atrial Septal Defect repair with low mortality and morbidity and short hospital stay. In this paper, we aimed to present a patient who underwent minimally invasive Atrial Septal Defect repair with full percutaneous cannulation.

CASEREPORT: 40 year-old male presented with dyspnea. Cribriform Atrial Septal Defect was detected on echocardiography. Mild tricuspid regurgitation and mild mitral regurgitation were present. Ejection fraction was 60% and pulmonary arterial pressure was 25mmHg. Right femoral artery and vein were both cannulated percutaneously for perfusion following right anterior thoracotomy. Defects were repaired with primary method. Patient was referred to service on postoperative 2nd day and he was discharged on postoperative 4th day.

CONCLUSION: Percutaneous cannulation techniques help minimally invasive repair to lower morbidity with smaller incisions.

ATRIAL SEPTAL DEFECT REPAIR WITH MINIMALLY INVASIVE PROCEDURE – A PAIENT WITH ADVANCED AGE

Y.Besir, O.Gokalp, N.K.Yesilkaya, S.Iskan, H.Iner, M.Balkanay, L.Yilik, S.Dernek, A.Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

Introduction: Surgical techniques are improved day by day, minimally invasive procedures with lower mortality and morbidity on especially older patients, attract attention as a result. We aimed to present a patient who underwent Atrial Septal Defect repair with minimally invasive technique.

Casereport: 52 year-old female admitted with dyspnea. Atrial Septal Defect in diameter of 10mm was detected on echocardiography. Mild tricuspid regurgitation existed. Ejection fraction was 58% and pulmonary arterial pressure was 25mmHg. Right anterior thoracotomy was performed. 8mm PTFE graft was anastomosed to right common femoral artery for arterial cannulation. Right femoral vein and right jugular vein were used for percutaneous venous cannulation. Primary repair method was used for Atrial Septal Defect closure. Patient was referred to service on postoperative 2nd day and she was discharged on postoperative 5th day.

Conclusion: Minimally invasive Atrial Septal Defect repair can be safely used with lower mortality and morbidity in patients with advanced age.

FROM MINIMALLY INVASIVE AORTIC VALVE REPLACEMENT TO CONVENTIONAL SURGERY

Y.Besir, O.Gokalp, S.Iscan, N.K.Yesilkaya, H.Iner, B.Lafci, L.Yilik, T.Goktogan, A.Gurbuz

Izmir Katip Celebi University, Ataturk Education and Research Hospital, Department of Cardiovascular Surgery

INTRODUCTION: Minimally invasive technique has become popular when it comes to aortic valve surgery in advanced age. Nevertheless perioperative transition to conventional surgery may occur in certain conditions. In this paper we aimed to present a patient with severe aortic stenosis who was planned to undergo minimally invasive aortic valve replacement, but he underwent conventional surgery as significant paravalvular leak on preserved valve was detected on perioperative transesophageal echocardiography.

CASEREPORT: 85 year-old male patient admitted with dyspnea and palpitation. Severe aortic stenosis was detected by transthoracic echocardiography. Left ventricular diastolic volume was 55mm, ejection fraction was 30% and pulmonary arterial pressure was 40mmHg. Mean gradient on aortic valve was 43mmHg and maximum gradient was 67mmHg. Moderate mitral regurgitation existed. Coronary angiography revealed stenosis of 50% in right coronary artery and stenosis of 30% in left anterior descending artery. Minimally invasive aortic valve replacement was planned and J sternotomy was performed. Perfusion was handled after aorto-bicaval cannulation. Calcific aortic valve was resected following aortotomy. Aortic valve replacement was done with XL size preserved sutureless valve. Perioperative echocardiography revealed that the prosthetic valve was migrated to ascending aorta and severe aortic regurgitation occurred. Perseval sutureless valve was removed and 25 no mechanical bileaflet aortic valve was replaced.

CONCLUSION: High risk patients with advanced age are appropriate subjects for successful minimally invasive procedures. Although transition to conventional surgery is rare, it may cause high mortality and morbidity.

EPOSTER VASCULAR

Hybrid Operating Room Design

M. Cherkashi, N.Berezina, A.Serov, V.Kuplevatsky

DTC IIBS named after Sergey Berezin, St Petersburg, Russia

Objective: To develop and implement hybrid operating room design roadmap

Methods: Hybrid room is the surgical complex, integrating different imaging and treatment options with new technologies implementation (computer-assist tomography, magnetic resonance imaging, C-arm etc). After preliminary assessment we have formed specialized multidisciplinary experts' panel (surgeons, anesthesiologists, radiologists, healthcare managers, architects, electric and gas system engineers, IT-staff) for hybrid theater design development. As informational source for analysis we have used local government policies, international guidelines, indexed in PubMed scientific Articles, industry reports and technical information. After literature analysis the international practical workshop for roadmap creation was organized. We have used the simulation tool (surgical complex's drawing with free to place equipment scale models) for facility planning.

Results: We suggest the following stages as a roadmap:

- Potential useful therapy area (neurooncology, cardiovascular, general oncology) assessment
- Multidisciplinary experts' panel creation
- Imaging (magnetic resonance imaging scanner – 1.5T or 3T, computer-assist tomography sliding gantry) and treatment (robotic C-arm, videoendoscopic tool, surgical tables) technologies assessment and customization
- Facility planning
- Hygiene and air flow system assessment and integration
- Light sources planning
- Medical information and visualization systems (fusion) implementation
- Patients' logistics and anesthesiology care discussion (for intraoperating MRI)
- Educational programs development (for remote education outside of operation room etc)
- Telemedical system assessment and implementation

Conclusion: Simultaneous usage of different imaging technologies and less-invasive surgery demands a strong primary planning and cross-functional engagement. Primary analysis and roadmap development is the corner stone for effective hybrid operating room design development and customization.

Surgical Safety Check-lists As A Part Of Hybrid Operating Room Management System

N.Berezina, A.Serov, V.Kuplevatsky, A. Erofeev

DTC IIBS named after Sergey Berezin, St Petersburg, Russia

Objective: to modify standard World Health Organization's Surgical Safety Check-list for magnetic resonance visualization systems equipped hybrid operating room.

Methods: we have formed multidisciplinary experts' panel (surgeons, anesthesiologists, radiologists, healthcare managers) for hybrid theater management standard operational procedure development. On the first stage the general concept of intrahospital and operating room patients' pathways was developed. The second stage included the technical details discussion. For patients' safety improvement we decided to modify Surgical Safety Check-list in accordance with intraoperational magnetic resonance investigation specific and potential safety challenges and concerns.

Results: World Health Organization's Surgical Safety Check-list is the simple and easy-to use tool, includes a three blocks of question (grouped by surgery process). We have developed two additional blocks of questions for intraoperational magnetic resonance investigation. Pre magnetic resonance investigation: surgeon and nurse confirm investigational area, ferromagnetic devices absence, quantity of non-magnetic devices and tools; anesthesiologist confirm patient's readiness for transportation and switch to non-magnetic ventilator, start of ventilation by non-magnetic device, ferromagnetic devices absence; radiologist confirm coil placement, coil sterility, staff absence, magnetic resonance scanner turning on. Post magnetic resonance investigation: radiologist confirm magnetic resonance scanner turning off, coil removal; anesthesiologist confirm patient's readiness for transportation and switch to standard ventilator, start of standard ventilation; surgeon and nurse confirm non-magnetic devices quantity and start of next surgery stage.

Conclusion: High-energy magnetic resonance investigation characterized with potential influence on patients' and staff safety in case of hybrid surgery. It is obvious to have a strong managerial control of ferromagnetic devices and anesthesiology care. Surgical Safety Check-list is the validated tool, improving patients' safety and surgery processes. Modification and customization of this check-list may be helpful and useful and potentially provides the opportunity to hybrid operating room management optimization.

Hemodynamic profile in patients treated with infrarenal aortic occlusion

C. Argyriou, E. Georgakarakos, G. Georgiadis, N. Schoretsanitis, M. Lazarides

University Hospital of Alexandroupolis, Thrace, Alexandroupolis, Greece

OBJECTIVE: Infrarenal aortic occlusion is a rare form of disease that occurs mostly in young patients with a history of heavy tobacco use. It has been postulated that patients who undergo revascularization present with improved survival rates comparing to those not receiving surgical management. The purpose of this study was to calculate the surrogates of aortic wave reflection and arterial stiffness, such as pulse-wave velocity, augmentation index, augmentation pressure, reflection coefficient, cardiac index and other central hemodynamic biomarkers in patients with infrarenal aortic occlusion by pulse wave analysis.

METHODS: Nine patients underwent revascularization (6 patients aortobifemoral/aortobiiliac bypass, 2 patients primary aortoiliac stenting and 1 patient hybrid procedure consisting of unilateral aortoiliac stenting and femoral crossover bypass). We performed pulse wave analysis in all patients preoperatively, at 1-month and 1-year postoperatively using a brachial cuff-based oscillometric device (Mobil-O-Graph®).

RESULTS: Augmentation Index decreased significantly at 1-month and further at 1-year postoperatively compared to preoperative values (26 ± 12 and 20 ± 13.7 versus 36 ± 15.8 , $p < 0.05$). Augmentation Pressure decreased at 1-month and 1-year postoperatively (6.3 ± 4 mmHg and 7.2 ± 6.7 mmHg compared to 15 ± 1 mmHg, respectively, $p < 0.05$). Reflection Coefficient also decreased at 1-month and 1-year postoperatively, compared with the preoperative values (64 ± 4.5 , 66 ± 4.5 vs. 71 ± 5.2 respectively, $p < 0.05$). On the other hand, pulse wave velocity and cardiac index values showed no statistically significant change postoperatively.

CONCLUSIONS: Augmentation index, augmentation pressure and reflection coefficient which are surrogates of arterial stiffness significantly decrease after surgery in patients with infrarenal aortic occlusion whereas pulse wave velocity is a less sensitive marker of acute changes possibly representing chronic remodeling of the peripheral arterial tree. This improved hemodynamic profile may theoretically contribute to the enhanced survival rates.

Distinctive peculiarity and influence of a metabolic syndrome on the course of a peripheral arterial disease at women

A. Yadernaya, A.Mohnachev, M.Ivanov, E.Podsuslonnikova, M.Yermia, A.Yadernaya, M.Khvestova, A.Mischenko

North-West State Medical University, St Petersburg, Russian Federation

Aim: The originality of a peripheral arterial disease (PAD) at women is in lack of characteristic symptomatology for a long time, until defeat symptoms become obvious up to critical ischemia. The objective of this research is detection of features of peripheral arterial disease course at women, who has undergone reconstructive operations on the main vessels.

Materials and methods: In this research we took 130 patients both genders. It was 82 male (63%) and 48 female (37%) who were operated in case of peripheral arterial disease. The patients under the examine were analyzed on intensity of calcinosis, chronical ischemia, ankle-brachial index, presence of metabolic syndrome, endocardiography's results, feature of kidney function, stress resistant, daily exercise, blood pressure variability. Statistical analysis. The differences were considered statistically significant if $p < 0,05$. Mathematical processing was carried out with the help of the STATISTICA 10 program.

Results: Women with peripheral arterial disease have 1,5–3 times grater a risk of comorbid conditions such as an ischemic heart disease and a cerebrovascular disease. It is confirmed by the identification of areas of akinesia at the echocardiography, verification of heart failure and family history of heart attack ($p < 0,05$). Significant distinctive feature of peripheral arterial disease among women is belated request for help (5 of 6 female were taken to hospital with critical ischemia, whereas every 3rd male is a patient; $p < 0,05$). Definitely, the components of the metabolic syndrome are more often identified among women: arterial hypertension, dislipidemy, hyperglycemia ($p < 0,05$).

Conclusion: The peculiarities of peripheral arterial disease among women assume a special role of minimally invasive surgery (hybrid and endovascular) among this category of patients.

Does rehabilitation measures successful in diffused atherosclerosis?

P.B. Bondarenko, M.Y. Ermina, M.A. Ivanov, R.S.H. Al-Banna, P.D. Puzdriak

North-West State Medical University, St.Petersburg, Russia

Aim: The purpose of the research is to identify the relationship between rehabilitation measures and progress of the underlying pathology in patients with multifocal atherosclerosis.

Materials and methods: The basis of the observation is formed on 49 patients undergoing surgery for multifocal atherosclerosis. The study group included 27 patients, performing rehabilitation recommendation control group consisted of 22 people, who were not mentioned in active response to attempts to rehabilitate. Deviations in blood pressure, severity of ischemia, features of drug effects, dynamics of distance walking, earning capacity, change in social status were studied.

Results: The most important result of the rehabilitation was the stabilization of the pathological process with the formation of chronic ischemia II b degree of Fontain.

In many ways, this has been achieved by pedantic medication (Antiplatelet agents, anticoagulants), affecting the passability of the operated segment in the long-term period ($p < 0.05$).

A group of people who perform rehabilitation activities, noted a significant increase in walk distance in the case of correction of lipid levels, blood pressure, blood sugar, body weight ($p < 0.05$).

Possibilities of rehabilitation were realized in preserving earning capacity against the background of increased daytime walking distance ($p < 0.05$).

Conclusions: Readiness for the implementation of rehabilitation is the main component of success in the treatment of patients with a widespread atherosclerosis in the long-term period after reconstructive surgery.

The rare case of ruptured suprarenal aortic aneurysm

K. Andreychuk, V. Khlebov, G.Sokurenko

The Nikiforov Russian Center of Emergency and Radiation Medicine, St.Petersburg, Russia

Background: The ruptured suprarenal aortic aneurysms (SAA) are characterizing of unfavorable outcomes. Incomplete rupture can obtain better results. However, a development of renal failure and following dialysis is very possible even in cases of elective repair.

Case report: A 66-year-old male with 4 years' history of small SAA was admitted to the emergency department after short episode of back pain. He had a medical history of hypertension and diabetes mellitus. Emergency CTA showed a 9cm-large false aneurysm at level of renal (RA), mesenteric (SMA) arteries and celiac trunk (CT) without signs of retroperitoneal hemorrhage. CTA also revealed occlusion of right RA and right nephrosclerosis. Blood tests showed a slight anemia. However, his glomerular filtration rate was only 35 mL/min (G3).

We decided to perform an open repair, as well-proper fenestrated stent-graft had been not available at that instant. Furthermore, we had for an object to prevent a ischemic injury of functionally-single kidney. A minimal time of ischemia and a refusal of any artificial perfusion, both answered this purpose in our opinion.

The surgical procedure was performed via thoracophrenolaparotomy. The descending thoracic aorta was isolated and clamped partially for proximal anastomosis with the 8mm Dacron graft. Distal end of graft was jointed to left RA. Thus, the time of kidney ischemia amounted 12 min. Next, proximal and distal neck of the aneurysm and visceral branches were mobilized and clamped. The CT and SMA were included in an oblique proximal anastomosis with the 22mm graft. The distal stent portion was anastomosed in infrarenal aorta. Visceral ischemia time amounted 12 min.

In the postoperative period, the patient had recovery with two dialyses and was discharged at the 14th postoperative day. In the follow-up visit after 12 months, the patient's CTA showed no complication in surgery area.

Importance of Embolectomy and Primary Repair of Artery in The Thrombosis and Laceration of Left Posterior Tibial Artery in A Patient having Extensive Left Lower Extremity Calf Injury and Right Lower Extremity Amputation due to Motor Sea Vehicle

K. Ergunes, Y. Gokkurt, H. Iner, K. Donmez, S. Iscan, B.Lafci, O. Gokalp, A.Gurbuz

Izmir Katip Celebi University Ataturk Training and Research Hospital, Department of Cardiovascular Surgery, Izmir, Turkey

Background: Aim: Lower extremity arterial injuries have varied in clinical presentations. For patients with overt signs of arterial injury, immediate surgical exploration in the operation room without further diagnostic testing is preferred. Embolectomy and primer repair are important to avoid morbidity in patients having posterior tibial artery injury and thrombosis, extensive muscle injury and nerve injuries. We presented a patient having thrombosis and laceration of left posterior tibial artery and right lower extremity amputation due to motor sea vehicle.

Case report: A 30-year old male patient admitted emergency department of our hospital on October 16, 2015. He had thrombosis and laceration of the left posterior tibial artery. He had pain and coldness in the left lower extremity. Left posterior tibial artery was thrombosed and injured. He had extensive muscle and nerve injuries. We did not use preoperative angiography for our patient. Under general anesthesia, thrombectomy with the a 3-Fr Fogarty catheter was performed with the endpoint of the obtaining good inflow and back-bleeding before the operatively repairing the injured posterior tibial artery. Distal region of injured tibial artery was primarily repaired with 6/0 polypropylene. The left posterior tibial pulse recovered immediately. Muscle injuries were repaired by orthopedists. Postoperative subcutaneous low-molecular-weight heparin was given to prevent thrombosis of tibial artery.

Conclusion

Embolectomy and primarily repair are important to avoid morbidity in patients having posterior tibial artery injury and thrombosis, extensive muscle injury and nerve injuries.

Carotid Surgery: Development and Results

R.Maric, V. Mitrovic, V. Maric, D. Potpara, N. Lalovic, H. Maric, V. Simetić, R. Miletic, B. Ćurčić, M. Dostić S. Avramov

University hospital Foca, Faculty of Medicine Foca, Center for Surgery, Foca, Republic of Srpska

Aim: Vascular Surgery at the University Hospital of Foca from year to year shows significant results in the treatment of patients with diseases of the blood vessels to the area of the Eastern part of the Republic of Serbian and beyond. As the number of patients with these diseases on the rise Foca University Hospital as a teaching Faculty of Medicine had an obligation to personnel and material reinforce this surgical area which is fully realized, so that today the vascular surgery at this institution by the number of treated and operated patients is the a high level. Aortic Arch Surgery has an important place in the treatment of vascular patients and physicians seeking trained specialists in the field of vascular surgery, general surgery, neurosurgery, anesthesiology, neurology and radiology, as just creating a good diagnostic vascular center, anesthesia teams that are able to provide all types of anesthesia, quality consultants in all areas of internal medicine, physical medicine and neurology at the end of a good surgical team that has qualified for all types of surgical procedures in carotid surgery give satisfactory results. We should not forget that the necessary training other medical staff (scrub nurses, anesthetists, physiotherapists) is also one of the necessary conditions for a good vascular surgery.

To show the development of vascular surgery at the University Hospital of Foca during the period 2010 - 2015 and the results achieved in the diagnosis and treatment of patients with diseases of the extracranial vessels.

Results: During the period 2010 - 2015, the operation was performed in 355 patients with diseases of the Aortic Arch. Complete diagnostic evaluation of patients (CDS extracranial blood vessels, MSCT angiography, transcranial Doppler was performed in our institution). Patients were preoperatively prepared by the consultant team (neurologist, cardiologist, anesthesiologist, a pulmonologist, if necessary, and other specialties). Operated patients with symptomatic and asymptomatic carotid artery disease in the cervical block anesthesia or OET anesthesia in operative techniques used most often eversion technique, but with the use of classical EAT nosing or without him. Using protections were observed in an extremely small number of patients. Morbidity and mortality are within the limits recommended for centers that deal with this type of surgery.

Conclusion: The development of carotid surgery requires good diagnostic treatment, complete surgical - anesthesia for a team, a good post-operative care and early rehabilitation, supervision by experts in this field, which is this kind of surgery is raised to a significant level, and the development and results in referral centers.

A case of unique portosystemic shunt between jejunal mesenteric veins and vena cava cum PTFE graft NoX.

A.Tomic, I.Marjanović, M.Šarac, Z.Bjelanović

Clinic for vascular and endovascular surgery, Military Medical Academy, Belgrade, Serbia

Background: The aim of this article is showing a unique portosystemic shunt in case of portal, splenic and upper mesenteric veins thrombosis.

Case report: A patient, 23 y, female, with prolonged melena, admit to clinic for surgery. On a CT scan we find thrombosis of portal, splenic and upper mesenteric veins. On gastroduodenoscopy we can't find a point of bleeding. On operation we made anastomosis between jejunal mesenteric veins and vena cava with PTFE graft NoX. After operation patient treated with standard doses of Heparin and warfarin. One year after surgery patient is well without melena. Graft is patent and value of international normalized ratio is in therapeutic boundaries. Portosystemic shunt is possible in cases of portal, splenic and upper mesenteric veins thrombosis. Good function and duration of this shunt is secured with anticoagulant medications.

Iliac Artery Dissection of a Patient with Lung Cancer, Liver and Brain Metastasis

Ö. Korkmaz, S.Göksel, U.Yetkin, K.Dönmez, Ö. Berkan

Department of Cardiovascular Surgery, Cumhuriyet University Medical Faculty, Sivas, Turkey

Background: Systemic pathologies should be taken in consideration when treating the dissection pathologies of major branches of aorta.

Case report: Our patient was 68 year-old male. He had lung cancer with liver and brain metastasis in his medical history. He had coronary artery bypass grafting surgery 4 years ago and coronary re-angiography 18 months ago. He admitted to our out-patient clinic after determination of crescent-shaped organized thrombus at abdominal aorta and its major branches and double-lumen view in a 1 cm segment of right common iliac artery, after 1, 5 cm distally to iliac bifurcation.

Patient did not have claudication anamnesis. In his physical examination, all distal pulses were palpable.

Our clinic council decided patient's terminal disease. Also, he did not have any malperfusion signs.

Medical treatment (clopidogrel + metoprolol) was planned. Arterial Doppler ultrasonography and out-patient clinic controls were recommended at 2-month periods.

We believe that conservative medical treatment of patients with asymptomatic terminal aortic main branch dissections and metastatic malignancies would be a better option when pros and cons of surgical treatment are taken in consideration.

V112

Acute venous thrombosis of right lower extremity in a patient undergoing coronary artery bypass grafting that was previously operated due to stomach cancer

K. Ergunes, I.Yurekli, B.Eygi, B.Lafci, H.Cakir, H.Iner, Y.Gokkurt, A.Gurbuz

Izmir Katip Celebi University Ataturk Training and Research Hospital, Department of Cardiovascular Surgery , Izmir, Turkey

Background: Venous thrombosis and cancer are important factor affecting morbidity and mortality. We presented a patient undergoing coronary artery bypass grafting that was previously operated due to stomach cancer having now acute venous thrombosis of right lower extremity.

Case report: A 74-year-old man admitted to the outpatient clinic of our hospital in July, 2015. He had pain and edema in the right lower extremity.

Venous Doppler ultrasonography detected thrombosis in the deep venous system of right lower extremity. Anticoagulant therapy with low-molecular –weight heparin (LMWH) was immediately started. The patient's symptoms, particularly pain and edema continued to improve in right lower extremity. As anticoagulant therapy, LMWH was switched to oral Warfarin for a permanent medication.

Low-molecular –weight heparin and Warfarin are important in treatment of acute deep venous thrombosis of lower extremity in patients undergoing coronary artery bypass grafting that was operated due to stomach cancer.

Vasoactive Shamblin III type carotid body tumor

N.Mirkovic, S.Sretenović, S.Mitrović, S.Tončev

Clinical Centre Kragujevac, Vascular Surgery Center, Kragujevac, Serbia

Background: Carotid body tumor is a well vascularized tumor of hemoreceptor cells whose percentage is very small and is exactly 0.012%. The average tumor diameter is from 1.4 to 6.0 cm. Tumors with a larger diameter are very rare.

Case report: We review a case of resection of a large Shamblin III type vasoactive tumor of the carotid body which has a diameter much bigger than 6.5cm. Tumor was completely removed with the prevention of cerebral ischemia and neurovascular injuries. With intraoperative blood salvation we have returned 1725ml of autologous blood. The outcome of the treatment of the carotid body tumor depends on the type and the size of the tumor and the surrounding area. Resection of the tumor is the gold standard, but it's also a challenge because of possible neurovascular injuries and ischemia of the brain. Early diagnosis, adequate preoperative and perioperative monitoring and experience of the surgeon are the basis for a successful treatment.

V125

The spontaneous rupture of the giant splenic artery aneurysm with a anomalous originating splenic artery arising from the aorta

N.Mirkovic, S. Sretenović, S.Tončev

Clinical Centre Kragujevac, Vascular Surgery Center, Kragujevac, Serbia

Background: True splenic artery aneurysms is a very rare disease with a percentage of 0.02% to 0.1% in general population. The frequency of rupture is 3-9.6%. Because splenic artery aneurysms is usually asymptomatic, with frequent misdiagnosis and rapid deterioration of general condition in patient with rupture is mortality high.

Case report: We are reporting a case of spontaneous giant splenic artery aneurysm rupture in 62-year-old male patient who have anomalous originating splenic artery directly from the aorta. A splenectomy was performed together with ligation splenic artery proximal from the aneurysm at the origin of the aorta. During the operational procedure in the presence of cell saver was restored 1700ml autologous blood. Postoperative patients recovery was uneventful, with no complications.

It is necessary to doubt on ruptured splenic artery aneurysms, appropriate diagnosis and urgent surgical treatment. In the planning of operative treatment it is necessary to determine the existence of possible splenic artery anomalies.

First symptom of abdominal mass consistent with sarcomatous lesion with high-grade metastatic lung involvement: Left lower extremity deep vein thrombosis

I.YÜREKLİ, U. YETKİN*, K.DÖNMEZ, İ. PEKER, H. İNER, A. GÜRBÜZ

Department of Cardiovascular Surgery, Katip Celebi University Izmir Atatürk Training and Research Hospital, Izmir, Turkey

Background: Deep venous thrombosis (DVT) is still an important problem of lower extremities. There are controversial results of statistical studies about etiology and clinical epidemiology of DVT. Many researchers have found a correlation between DVT and malignancies.

Case report: Our patient was 24-year-old male. He admitted to our emergency department with swelling and pain at his left lower extremity for three days. Patient was hospitalized after diagnosis of DVT and transferred to intensive care unit for catheter-guided ultrasound accelerated thrombolytic therapy (EKOS). Procedure was performed successfully. Symptomatic regression was achieved.

Results: Abdominal ultrasonography, which was performed for etiologic research, revealed a hypoechoic solid mass lesion with size of 8x6x7 cm and it was localized at pelvic lodge, adjacent to bladder superiorly. The mass was decided to be a mesenchymal tumor or colon tumor. Further investigation was performed with abdominal computerized tomography. There was a great mass with transvers diameter of 10 cm. It was filling the retroperitoneal compartment, beginning just from the renal hilus. This mass was decided to be conglomerated metastatic lymph pack. Also there was an another mass with 10x7 cm size located between gluteal muscles and posteriorly adjacent to acetabulum. Partial pneumothorax was evident in both hemi-thoraxes at thorax CT. Thoracic surgery consultant reported bullous lesions accompanying diffuse metastatic lesions. Bilateral tube thoracostomy was performed by the same department. Also same investigation revealed multiple metastatic lesions consistent with sarcoma metastasis with 10 cm diameter of greatest one at right lung. There were metastatic lymph nodes with sizes of 32 mm at aorticopulmonary window and 58 mm at prevascular area. multidisciplinary consultations were performed and patient was transferred to internal medicine department afterwards. Lower extremity deep vein thrombosis may be the first extrasystemic sign of cancer. EKOS, as we performed in this case, is an effective method for acute DVT and results are promising. We believe that multidisciplinary approach to patients with serious morbidity factors and left main coronary artery disease is essential. Patient's survey and operative safety will increase with adequate perioperative cautions.

Rupture risk prediction of abdominal aortic aneurysm based on its morphology, by using of correlation analysis

C.Vaquero, JA. Vilalta-Alonso , E. Soudah-Prieto, F. Nieto-Palomo, L. Lipsa , MA. Pérez-Rueda, BP. López-Aguilar, G. Vilalta-Alonso

Angiology and Vascular Surgery Service, Clinic Hospital and University of Valladolid, Valladolid, Spain

The geometric shape of abdominal aortic aneurysms (AAA) is recognized as one of the main factors that could cause its breakage. Morphometry variation, which occurs over time, produces changes in hemodynamic. These changes alter the spatial and temporal distribution of hemodynamic stress on the aneurysm wall. A bidirectional process, that may influence the phenomenon of break, is set.

To evaluate the possible correlations between the main geometric parameters characterizing the AAA and hemodynamic stresses, thirteen models of unruptured AAA have been built from patient CT. For the geometric characterization, they were used twelve indices based on the centreline of the lumen.

The calculation of the temporal and spatial distributions of hemodynamic stress has been made using Computational Fluid Dynamics (CFD). Statistical techniques have been used to evaluate the relationships between the different hemodynamic parameters and the geometric indices defined. Regression analysis have been executed to obtain linear prediction models for hemodynamic stresses using the different defined indices.

Statistical analysis has confirmed that the length, asymmetry and the saccular index affect hemodynamic stresses. These results highlight the potential of statistical techniques to assess the significant parameters to improve risk prediction of AAA rupture.

Vascular injury assessment after the application of extraluminal methods for temporal occlusion

C.Vaquero, E San Norberto, A Alvarez, R Martínez, I Garcia-Saiz

Laboratory surgical Research and Experimental Techniques, University of Valladolid, Spain

Aim: Temporary occlusion systems cause arterial wall injury. The aim of this study is to compare the arterial damage extraluminal methods of vascular occlusion (tangential and circumferential).

Methods: A sample of 80 rats were subjected to occlusion of the common carotid artery for 60 minutes. They were randomized into 8 groups: vascular clamp (CV) and vascular bulldog (BD) as tangential techniques, and Potts loop (LZ) and Rumel tourniquet (RM) as circumferential techniques.

Results: The CV and RM treated groups had a higher average maximum medial thickness in the treated BD at 7 days ($P<.05$), whereas 15-day LZ-treated group had a higher average medial thickness than the measures in the CV group ($P<.05$). After 7 and 15 days, the arteries occluded by occlusion circumferential techniques showed a greater total wall thickening ($P<.01$). The groups treated with BD, RM and LZ showed greater vessel total wall thickness than the group treated with CV ($P<.05$). The RM-treated group also showed a greater total thickness than the BD and LZ groups ($P<.05$). At 7 days, arteries treated by tangential techniques showed a greater area of the lumen than arteries treated by circumferential techniques ($P<.05$).

Conclusions: Tangential methods are less destructive methods of the artery wall structure than the circumferential methods, producing a minor disturbance in the thickness of the vessel wall and less lumen stenosis.

The Quality of Information Available on the Internet About Aortic Aneurysm and Its Endovascular Treatment

C.Vaquero, E San Norberto, R Martínez. I García-Saiz, A Revilla

University Hospital of Valladolid, Division of Vascular Surgery, Valladolid, Spain

Aim: To evaluate the readability, accessibility, usability, and reliability of information available on the Internet in the Spanish language about aortic aneurysm and its endovascular treatment, and to determine whether this information source provides comprehensible material that will enable patients to participate in decisions regarding their condition.

Methods: In November 2010, information from the Internet was compiled by entering the terms “aneurisma aorta” (aortic aneurysm) and “endoprotesis aorta” (aortic endoprosthesis) in the most widely used search engines: Google, Yahoo, and MSN/Bing. The first 30 pages provided by each search engine were analyzed. The Inflesz software was used to calculate the readability of the information retrieved and the LIDA instrument, a validated tool to evaluate the quality of health-related Web sites, was used to assess accessibility, usability, and reliability.

Results: The results for Web pages containing the terms aneurisma aorta and endoprotesis aorta indicated that the readability of the material retrieved was “somewhat difficult” based on the Flesch index within Microsoft Word (48.3 11.42 and 50.11 9.33, respectively; $P=.87$), Flesch-Szigriszt index (52.69 8.86, 49.31 7.24; $P=.87$), Fernánde-Huerta index (58.05 8.5, 54.44 7.19; $P=.82$), and Gunning-Fog index (22.03 2.05, 23.86 1.59; $P=.83$), as well as the Inflesz grading scale (2.39 0.7, 2.08 0.64; $P=.28$). The LIDA values for accessibility (82.28 14.14, 77.77 12.64; $P=.98$), usability (72.28 16.67, 72.28 26.61; $P=.08$), and reliability (46.17 28.69, 56.38 16.17; $P=.06$) and the total score (70.22 16.85, 72.15 14.93; $P=.52$), yielded an evaluation of “moderate”.

Conclusions: The Internet information on aortic aneurysms and its endovascular treatment with aortic endoprostheses was deficient with regard to accessibility, usability, and reliability, and had the added difficulty of complicated readability. Our results suggest that readability indexes should be incorporated in the creation and improvement of Web sites providing medical information related to cardiovascular disease.

V163

Endovascular management of splenic artery aneurysms

C.Vaquero, E San Norberto, R Martínez, L del Río, N Cenizo, JA González-Fajardo, JA Brizuela

University Hospital of Valladolid, Sapin División of Vascular Surgery, Valladolid, Spain

Visceral aneurysms are rare clinical entities, being the most common in this group of pathology the aneurysms of the splenic artery. Its prevalence is estimated between 0.2 and 9.7%, according to different authors, however the introduction of imaging techniques to assess abdominal pathology have increased the incidental findings of these cases. Once diagnosed, treatment should be considered, when they are larger than 2 cm. in size. Conventional surgery in most cases, together with splenectomy and aneurysm resection is often required. Endovascular procedures emerge as a less aggressive and effective treatment option. Our institutional experience is presented in the treatment of 13 cases of splenic aneurysms, analyzing the profile of the patients, treatments performed and results obtained. This type of therapy and the current literature are also analyzed.

Endovascular management of inferior vena cava invasion by hepatic hydatid cyst

S.Norberto, R. Fuente, C. Flota, J. Taylor, C. Vaquero

Angiology and Vascular Surgery, Valladolid, Spain

Background: Hydatid pulmonary embolism from fistulisation or rupture of hydatid liver cysts to the inferior vena cava (IVC) is an uncommon condition. The possibility of a massive pulmonary embolisation indicates an emergency treatment.

Case report: A 54-year-old man was admitted to the emergency room with dyspnea and chest pain.. Abdominal sonography revealed an 8 cm type 3 hepatic hydatid cyst (daughter cysts filling the lesion) adjacent to the IVC. Computed tomography reported that the cyst was possibly ruptured into the vena cava. The thoracic contrast-enhanced CT scan showed a hypodense filling defect obstructing a dilated segmental right lower lobe pulmonary artery branch.

Using a right femoral approach, a self-expanding nitinol stent (E-XL stent) was placed from the suprarrenal cava to the limit of the IVC into the right atrium. The patient recovered from the acidosis and dyspnea two days after the procedure. The patient was treated with albendazole and oral anticoagulation. The follow-up CT scans showed correct stent position with resolution of the IVC stenosis. A persistent hydatid embolus was detected within the right lower lobe pulmonary artery. The patient became asymptomatic after 12 months of follow-up.

Pulmonary artery embolism due to hepatic hydatid cyst rupture into the IVC is an extremely rare entity. Our suggested technique was not oriented to treat the underlying disease but constitutes a near-immediate protection against recurrent pulmonary life-threatening embolisms. A longer follow-up is mandatory to corroborate durable embolus prevention with non-covered stents.

Severe Bleeding after Endoscopic Retrograde Cholangiopancreatography: Case Report

M. Ince, E.Duran, Z.Kilbas,O.Hancerliogulları, O. Menten

Gulhane Military Hospital,Department Of Surgery, Ankara, Turkey

Background: Endoscopic retrograde cholangiopancreatography (ERCP) is routinely used to diagnosis conditions of the bile ducts and to include endoscopic sphincterotomy (EST) with a view to manage the detected abnormalities, without the need for invasive surgery. However, risk of bleeding indicate that 2-12% of patients develop bleeding, with approximately 0,2 % of the patients having severe bleeding after the ES procedure is a critical and could be life threatening. We present a case with severe bleeding after ES aplcation with ERCP.

Case report: A 67-year-old male presented with bleeding since 3 days after ERCP procedure for ES from gastroenterology clinic. His medical history was remarkable for type II diabetes, nephrolithiasis and cholecystectomy 2 years ago. He was admitted to the hospital with jaundice of the skin and sclera, itching 5 days ago. ERCP was performed to determine the cause of bile duct obstruction. After stenting of bile duct EST was performed with ERCP. After EST, the general condition of patient was deteriorate and hematochezia was begin. The prothrombin time prolongs and 4unit erythrocyte suspension (ES) was given as soon as possible. On the endoscopy bleeding to be seen on the continued and adrenaline solution and clips were performed 2 times. The continuation of bleeding and because drop of Hb to 6.7 g/dl, gastroduodenal artery embolization was applied with selective angiography. After stabilization of the patient, he was transferred to our unit and his Hb was 9.7 g/dl and he is at follow-up. Needle knife sphincterotomy has increased the risk of post-EST hemorrhage. The endoscopic hemostatic clip in the management of hemorrhage could be used. However, gastroduodenal arterial embolization should be applied before surgery.

Thoracoabdominal aortic stenosis: a rare presentation of takayasu arteritis treated with percutaneous stent implantation

Huai-Hsu Huang, Jeng Wei

Cardiovascular surgery section, Heart center, Cheng Hsin General Hospital, Cheng Hsin, China

Background: Takayasu arteritis (TA), an idiopathic chronic inflammatory disease of large elastic arteries, commonly affects the abdominal aorta and its branches. Angioplasty with stenting is effective in treating stenotic disease in the abdominal aorta and in visceral arteries

Case report: A 74-year-old woman with the history of Takayasu arteritis with left carotid and subclavian arterial occlusion, dilated cardiomyopathy with severe mitral regurgitation and left ventricular dysfunction was admitted due to progressive dyspnea and intermittent claudication for 15 years. She just accepted left iliac stenting in November 2014 due to intermittent claudication. But symptoms persisted and progressed. Thoracoabdominal aortic stenosis was noted by computed tomography angiogram in January 2015. Stenting for thoracoabdominal aorta is recommended for dilating stenosis and preserving visceral arteries. Thoracoabdominal aortogram showed stenotic segment was from distal descending aorta to juxta-renal aorta and the length was about 5 cm. The narrowest aorta is close to celiac trunk and the diameter is around 7 mm. One Boston 10 mm X 57 mm Express LD balloon-expandable stent was applied and then expanded to 12 mm for treating the stenotic aorta. There was no pressure gradient between two ends of the stent finally.

In summary, endovascular treatment is feasible for occlusive arterial disease in patients with TA. More such cases need to be done with longer duration of follow-up to establish the role of these techniques in the management of patients with TA.

Catastrophic outcome of aortic stent after treatment for abdominal aortic aneurysm

M.Ince, N.Ersoz,Z.Kilbas

Gulhane Military Hospital, Department of Surgery, Ankara, Turkey

Background: Ischemic colitis remains a rare entity after an elective endovascular abdominal aortic aneurysm (AAA) repair with a reported incidence ranging from 1% to 3% and the mortality rate can be as high as 80%. Patients who developed peritonitis, surgery remains the only treatment option.

Case report: 24 hours after endovascular aneurysm repair (EVAR) for abdominal aortic aneurysm, a eighty two years-old man suffered from abdominal pain. He has a history of smoking. His white blood cell, urea, creatinine, D-dimer, lactate dehydrogenase levels were elevated. Doppler ultrasound showed superior mesenteric artery was not patent and arteriogram was performed to clear the blocked artery. Although the procedure was successfully done, patient complained constantly of diffuse abdominal pain. After general surgery consultation patient underwent abdominal surgery for ischemic colitis. On laparotomy transmural infarction of the small intestine and colon was found and resected. Patient died in 12 hours. Clinicians should maintain a high level of suspicion for embolic complication. Early diagnosis of ischemic colitis is mandatory to avoid this catastrophic outcome of aortic stent.

Clinical findings, diagnosis and treatment of congenital vascular malformations, our experience

M.Sladojevic, M.Dragas, I.Banzic, V.Bozic, Z.Maksimovic

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Center, Belgrade, Serbia

Aim: Congenital vascular malformations (CVM) are rare states which might be manifested as a peripheral venous disease (PVD).

The aim of our paper was showing the incidence, types, diagnosis and treatment of CVMs which was presented as a PVD.

Material and methods: Our study included 2.659 patients with chronic venous disease who were examined in the period of 1989-2013. In most cases diagnosis of PVD was based on clinical findings and examination by color duplex ultrasound. In a few cases phlebography and MRI were used in order to achieve more accurate diagnosis.

Results: In 28 patients PVD were caused by CVMs, with a incidence of 1.05%. CVMs were found in 28 patients with PVD. They included primary venous aneurysm (8 patients), angiomyomatosis + aneurysm of saphenous vein (2 patients), venous hemangioma (3 patients), malformations that drains into normal vein (3 patients), arterio-venous malformations (3 patients), Klippel - Trenaunay disease (3 patients), isolated malformations without peripheral drainage (3 patients), hypoplasia of inferior cava vein (2 patients) and arterio-venous malformations cum muscular hemangioma (3 patients). Except hypoplasia of inferior cava vein (2 patients), Klippel Trenaunay disease (2 patients) and AV malformation cum muscular hemangioma (2 patients), all other patients were surgically treated.

Conclusion: CVMs are very rare causes of PVD and in many cases surgical treatment is feasible and successful option.

Surgical Treatment of Carotid In-Stent Restenosis

M.Sladojevic, I.Koncar, D.Kostic, D.Markovic, S.Cvetkovic, I.Tomic, A.Dimic, L.Davidovic

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Center, Belgrade, Serbia

Aim: The aim of this paper was to evaluate the surgical management of restenosis after stenting of carotid artery (CAS).

Material: Between January 2006 and December 2014, 497 CAS procedures were performed in 490 patients. After a mean period of 26 (21-37) months four (0.8%) hemodynamic significant symptomatic (one amaurosis fugax and three TIA) in-stent restenosis were found. In all four cases an excision of the stented carotid artery segment followed by prosthetic graft (2 PTFE and 2 Dacron) replacement, were performed.

Results: No major peri-operative complications occurred. Intimal hyperplasia showed to be the predominant mechanism leading to in-stent restenosis in all four cases. All treated patients remained asymptomatic and without recurrent restenosis over a mean follow-up time of 13 months (range 6 to 26 months).

Conclusion: The optimal treatment of in-stent restenosis is not yet determined. In the presence of significant inflammatory adhesion of the arteries to the neighboring tissue and inflammatory response within the dilated carotid segment, an excision of the stented carotid artery segment associated by prosthetic graft replacement, is recommended.

V190 RESULTS

ECG pathological finding for prognostic purposes in patients with acute aortic dissection type III

N.Fatic, I.Tomic,N.Ilic,I.Banzic, I. Markovic, L. Davidovic, G.Vukcevic, D. Kostic

Clinical Centre of Montenegro, Department of Vascular surgery

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Center,Belgrade, Serbia

Aim: Thoracic outlet syndrome is the presence of hand and arm symptoms due to pressure against the nerves or blood vessels in the thoracic outlet area. There are three types of thoracic outlet syndrome: arterial, venous and neurogenic. The aim of this study was to evaluate our results in the treatment of patients with thoracic outlet syndrome, at last, ten years.

Material and methods: From January 2006 to December 2015, 23 patients with Thoracic outlet syndrome were enrolled at Clinic for Vascular and Endovascular Surgery in Belgrade, Serbia and retrospectively analyzed.

Results: Out of 23 patients, 11 (48%) were male and 12 (52%) were female, aged between 15-63. The male were a little bit younger 37,5 years old average, then female 39 years old average. Arterial thoracic outlet syndrome were observed in 21 (91,30%) of patients while venous and neurogenic were observed in one patient (4,34%) separately. There were 20 (86,95%) patients with unilateral (10 on both sides) and 3 (13,04%) patients with bilateral thoracic outlet syndrome. The causes of compression were cervical rib (8 [34.78%]), abnormalities of the first thoracic rib (8 [34,78%]), combined first thoracic and cervical rib (3[13,04%]), soft tissue anomalies (2 [8.69%]), and combined soft tissue anomalies and first thoracic rib (2 [8,69%]). In all cases, a combined supraclavicular and infraclavicular approach was used.

Decompression was achieved by cervical rib excision in 7 (30.43%) patients, combined cervical and first rib excision in three (13,04%), first rib excision in 12 (52.17%) and excision of soft tissue anomalies in 4 (17,39%) patients. Associated vascular procedures included resection and reconstruction of the subclavian artery (6 [26.08%]) of which 2(33,33%) with 8 mm PTFE graft, 2 (33,33%) with end to end anastomosis and two (33,33%) with an autologous vein graft. Also, one (4,34%) subclavian-axillary bypass was performed. We observed 12 (52,17%) patients with postoperative complications. Nine (75%) of them were arterial thrombosis (two after reconstruction with ePTFE graft, two after autologous vein graft, one after end to end anastomosis, 4 after rib excision), one (8,33%) thrombophlebitis, one (8,33%) pleural effusion with diaphragm partial elevation and one (8,33%) seroma. All complications were resolved successfully and complete resolution of symptoms with a return to full activity was noted in all cases.

Conclusion: In surgical treatment, a combined anterior supraclavicular and infraclavicular approach, with excision of the cervical and first ribs, soft tissue anomalies, resection and reconstruction of the subclavian artery, is recommended in resolving of symptomatic thoracic outlet syndrome.

Management of vascular graft infection at the groin: A challenge for the vascular surgeon

N. Kontopodis, E.Tavlas, S.Lioudaki, D.Pantidis, N.Galanakis, G.Papadopoulos, A.Kafetzakis, D.Tsetis, C.Ioannou

Vascular Surgery Unit, Department of Cardiothoracic & Vascular Surgery University Hospital of Heraklion, University of Crete Medical School, Heraklion, Crete, Greece

Aim: Infection of synthetic vascular prosthesis represents one of the most feared complications in vascular surgery. Such events not only prolong hospitalization and require repetitive and complex arterial reconstruction, but also pose a significant risk for patients' limb and life. We aim to report our single institutional experience with the management of vascular graft infection.

Materials and methods: Patients treated for infected grafts due to groin infections were reviewed. Clinical presentation, treatment strategy and outcome in terms of graft patency, limb salvage and patient survival were recorded.

Results: Twelve patients with graft infection were identified. Clinical presentation included local signs of infection in 11/12 cases (9 abscesses, 2 pseudoaneurysms) and systemic manifestation (sepsis) in 1 case. Prior procedures included 2 aorto-bifemoral, 4 axilo-bifemoral, 1 femoro-femoral, 1 ilio-femoral bypass and 4 above-knee femoro-popliteal bypasses, while 2 patients had concomitant graft thrombosis. All infected grafts were excised and additional reconstructive procedures were required in 9/12 patients.

These included extra-anatomic reconstruction with:

- 1 axilo-bifemoral bypass through obturator foramen,
- 1 thoracic-bifemoral bypass through obturator foramen,
- 2 ilio-femoral bypasses through wing of iliac bone,
- 1 ilio-femoral bypass underneath t iliopsoas fascia through muscular lacuna,
- 3 below-knee femoro-popliteal bypasses through muscular lacuna and
- 1 below-knee femoro-popliteal bypass through wing of iliac bone.

Three patients died (2 with graft excision and 1 with arterial reconstruction), 2 from systemic sepsis and 1 from unrelated causes. Nine patients are alive after a median of 18 months. One below-knee and 2 above-knee amputations were required. Primary patency was achieved in 5 and secondary patency in 1 case for a total of 6/8 grafts that remain patent.

Conclusion: Synthetic graft infection poses significant challenges for the vascular surgeon, often requiring complex arterial reconstruction while limb loss and death may represent a frequent

Descending thoracic aorto-bifemoral bypass. A safe and effective therapeutic alternative to treat peri-renal aorto-iliac occlusive disease

N.Kontopodis, G.Papadopoulos, S.Lioudaki, E.Tavlas, N.Galanakis, N.Daskalakis, A.Kafetzakis, D.Tsetis*, CV Ioannou

Vascular Surgery Unit, Department of Cardiothoracic & Vascular Surgery University of Crete Medical School, Heraklion, Crete, Greece

Aim: Juxtarenal aortic occlusion is often seen in patients with aortoiliac occlusive disease (AIOD) and mortality rates after open surgical reconstruction may reach 9%. In a number of patients the disease may extend proximally and also include the renal or splanchnic vessels further increasing perioperative morbidity and mortality. We aim to present our initial experience with the use of descending thoracic aorto-bi-femoral bypass (TABFB) as an alternative for the treatment of peri-renal AIOD or in hostile abdomens.

Methods: We performed TABFB in five male patients (median age: 58 years) with disabling intermittent claudication due to peri-renal AIOD using a Dacron prosthesis via a left thoracotomy (6-8th intercostal space). The graft was anastomosed to the descending aorta (partial clamp) and tunneled through the diaphragm (5cm from its posterior attachments) posterior to the spleen and kidney and retroperitoneally passed to the left groin. The right graft limb passed posterior to the rectus muscles, through the right femoral channel to the groin.

Results: Technical success was 100% within a median operative time of 170 minutes. Partial clamping of the aorta was employed in all cases with a median clamping time of 20 minutes. No mortality or major morbidity (myocardial infarction, stroke, or renal failure, organ ischemia) was observed and graft patency was 100% for a median follow-up of 25 (range: 1-42) months. Post-procedurally, all patients had palpable distal pulses and ABI equal to 1.0. No deterioration in renal function was observed. Median ICU stay was 2 days with a total length of hospitalization of 18 days. One patient prolonged his stay due to groin lymphorrhea which resolved conservatively.

Conclusion: TABFB is a safe and effective alternative for the treatment of peri-renal AIOD and avoids the risk of renal artery embolization in juxtarenal obstructions, without additional morbidity or mortality.

Long term results of direct stenting in patients with acute lower limb ischemia

N.Kontopodis, N.Galanakis, I.Peteinarakis, E.Kehagias, C.V Ioannou, D.Tsetis

Vascular Surgery Unit, Department of Cardiothoracic & Vascular Surgery University of Crete Medical School, Heraklion, Crete, Greece

Aim: Acute lower limb ischemia (ALLI) represents a sudden decrease in limb perfusion. Patients presenting with ALLI have poor short-term outcomes, with high risk of amputation. The management includes either surgical thrombo-embolectomy or bypass grafting and interventional radiology procedures such as catheter-directed thrombolysis, aspiration thrombectomy and mechanical thrombectomy. In this study, we present the long term results of patients with acute lower limb ischemia who were treated with direct stenting (stent placement without predilatation of the lesion).

METHODS: From 2010 to 2012, 14 patients (10 men and 4 women), aged between 52 and 93 years underwent direct stenting of acute arterial occlusions. The occlusions were located in common and external iliac, superficial femoral or popliteal artery. Guide-wire traversal appeared relatively straightforward in all patients and the presence of soft thrombus was probable. We analyzed both the technical and the clinical outcomes of the procedures.

RESULTS: Recanalization was successful in all patients and there was clinical improvement in 13 patients. There was neither distal embolization nor procedure-related complications. During the 4 years of follow-up, 3 patients died due to not associated medical conditions (colon cancer, breast cancer, myocardial infarction) and there were 2 toe amputations and one above-knee amputation. The follow-up showed a primary patency rate of 80% and an amputation-free survival rate of 78,5% at 4 years.

CONCLUSION: Direct stenting may be a safe and effective procedure for acute lower limb arterial occlusions with high technical success and significant clinical improvement.

Appearance of femoro-popliteal segment aneurysms at the patients with abdominal aortic aneurysm

M.Maksic¹, L. Davidovic², I. Tomic²

¹ Clinic for vascular surgery, Clinical Center Republic of Srpska, Bosnia and Herzegovina

² Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Aim: The aim of this prospective study was to establish the frequency of femoro-popliteal (F-P) segment aneurysms in patients with abdominal aortic aneurysms (AAA), relatively states who prefer that.

Methods: This study included 70 patients who underwent elective or urgent surgery of AAA during 2006 and 2007. After ultrasonographic examination of F-P segment, the group of 20 patients who had and the group of 50 patients who did not have an adjunctive F-P segment aneurysm, were formed. In both groups demographic characteristics (gender, age), risk factors (diabetes mellitus, hyperlipidemia, arterial hypertension, smoking, obesity) and cardiovascular comorbidity (cerebrovascular disease, ischemic heart disease) were investigated with the aim to identify their eventual correlation with aneurysmal disease of F-P segment.

Results: Twenty (28.57%) patients who were operated because of AAA, had an adjunctive aneurysmal disease of F-P segment. Diabetes was statistically significant more present among the patients who, beside AAA, had an adjunctive aneurysmal disease of F-P segment ($\chi^2=5.366$; DF=6; $p<0.01$).

Conversely, in both groups there was no statistically significant difference in gender structure, age, cholesterol and triglyceride levels, presence of arterial hypertension, smoking, obesity, presence of cerebrovascular and ischemic heart disease. Twenty patients, beside AAA, had an adjunctive F-P segment aneurysm.

Conclusion: The results of this study suggests the necessity of performing the ultrasonographic examination of F-P segment in

Endovascular treatment of the subclavian artery aneurysm for high-risk patient – Single center experience

I.Marjanovic, A.Tomic

Military Medical Academy, Vascular and endovascular department, Belgrade, Serbia

Aim: Subclavian artery aneurysm (SAA) is a rare disease and represented only 0.1% of the extensive series of atherosclerotic aneurysm. Possible complications of SAA are rupture, distal embolization or thrombosis.

Method: We report our single center experience with endovascular treatment of 9 SAA in the period between January 2009 to September 2015 (6 male, 3 female). Seven aneurysms were of extrathoracic location, while two aneurysms were intrathoracic. Diameter of SAA ranged from 3.6 cm to 12 cm (mean 5.2 cm). The most common comorbid conditions of the patients were: arterial hypertension, coronary artery disease, peripheral arterial occlusive disease and chronic obstructive pulmonary disease. The follow-up period was from 6 months to 3 years.

Results: Under the local anesthesia we combined transfemoral approach for endovascular treatment and transbrachial approach to put diagnostic catheter. We preferred the Viabhan endoprosthesis (W.L. Gore, Flagstaff, USA) for endovascular repair in 8 cases. In one case, we covered the origin of left subclavian artery with thoracic stent graft (TAG, W.L. Gore, Flagstaff, USA) and after that we put two coils in proximal part of subclavian artery because the aneurysm doesn't had enough proximal neck. During this period, one patient died of heart failure and one patient required endovascular reoperation due to endoleak type I. There was no operative mortality, and the early patency rate during the first six months was 100%. During this follow-up period there was one open reconstruction of SAA after the endovascular treatment.

Conclusion: Endovascular treatment of the subclavian artery aneurysm may represent a valuable, less-invasive alternative to open surgical approaches. This treatment is especially good for high-risk patient with aneurysm of intrathoracic part of subclavian artery. However, long-term results of this technique have not yet been established.

Endovascular repair of peripheral arterial disease: mid-term results from a single center

S.Gunaydin

Numune Training and Research Hospital, Department of Cardiovascular Surgery, Turkey

Aim: 314 patients who underwent endovascular repair in two-year period were studied retrospectively to evaluate technical success, freedom from reinterventions, and early clinical outcome.

Methods: Mean Rutherford class was 4.086 ± 0.8 . 264 patients suffered from claudication, 203 from rest pain and 63 from ischemic ulceration. Angiographic lesions were as follows: Total occlusions- 20 in iliac artery (IA), 19 in common femoral (CFA), 75 in superficial femoral (SFA), 38 in popliteal (PA), 27 in tibioperoneal trunk (TPT), 53 in peroneal (PEA), 99 in anterior tibial (ATA) and 91 in posterior tibial (PTA); stenosis- 34 in IA, 9 in FA, 38 in SFA, 26 in PA, 14 in TPT, 18 in PEA, 41 in ATA and 44 in PTA; aneurysm: 3 in IA, 2 in FA, 3 in SFA, 1 in PA and 1 had AV fistula in SFA.

Results: 252 men and 62 women (mean: 62.5 ± 8 years; range, 19-89 years) underwent endovascular repair. 239 patients received local anesthesia and 75 general anesthesia. Interventions were as follows: 27 predilatations, 61 single atherectomies, 6 atherectomy+surgery, 5 atherectomy+PTA+surgery, 6 atherectomy+PTA+stent+surgery and 31 postdilatations. Mean additional PTA rate was 3.12 ± 2.19 wired and 217 drug-eluting balloons were used. 63 self expandable, 7 balloon expandable, 3 bare stents, 21 stent graft were placed. The procedure was successful in 260 patients (83%). There was no early death. There were 5 early occlusions (3 underwent surgery, 2 received stents), 21 dissections (3 underwent surgery, 16 received stents and 2 medical treatment), 2 hematoma and 3 early leaks. The freedom from reintervention rate at 2 years was 92%. 13 patients underwent surgery and 9 cellular therapy. 34 finger, 12 below-knee and 2 above-knee amputations were reported.

Conclusion: Endovascular interventions can be performed with high technical success and low complication rates; however, nonfatal complications and catheter-based reinterventions are freq

Clinical outcome of endovascular treatment for peripheral arterial disease in high-risk patients

S.Gunaydin

Numune Training and Research Hospital, Department of Cardiovascular Surgery, Turkey

Aim: We compared midterm outcome of high-risk patients undergoing endovascular repair for peripheral arterial disease (PAD).

Methods: 314 patients underwent procedure within two-year period were allocated into low-risk (N=44, 15%), medium-risk (N=165, 52%) and high-risk (N=105, 33%) groups with respect to COPART scoring that consists of six variables each of which is allocated a different number of points. The endpoints were survival, success rate, procedure-related complications, hospital-stay and reintervention rates.

Results: The procedure was successful in 36 patients in low-risk group (LR) (82%), 140 in medium-risk (85%) (MR) and 84 in high-risk (80%) (HR). There was no early death. There were 2 early occlusions in LR, 2 in MR and 1 in HR groups (3 underwent surgery, 2 received stents). 4 dissections in LR, 8 in MR and 9 in HR groups were documented (3 underwent surgery, 16 received stents and 2 medical treatment). 2 hematoma in MR group and 3 early leaks in HR group were observed. The length of hospital stay was 4.3 ± 1.5 days for LR, 4.9 ± 1.5 for MR and 5.1 ± 1.6 for HR groups. The freedom from reintervention rate at 2 years was 95% in LR, 93% in MR and 91% in HR groups. 13 patients (2 from LR, 5 from MR, 6 from HR groups) underwent surgery and 9 (6 from MR and 3 from HR) received cellular therapy. 34 finger (4 from LR, 14 from MR and 16 from HR groups), 12 below-knee (4 from MR and 8 from HR groups) and 2 above-knee (HR group) amputations were reported (12%).

Conclusion: HR patients can undergo endovascular repair with an acceptable success rate, complications and length of stay. The current evidence to support decision-making is shallow but there is an increasing attention to undertake the difficult but necessary task of collecting more definitive data

Two Case Series Of Large Isolated Internal Iliac Artery Aneurysms With Ureteral Obstruction And Hydronephrosis: Compression Symptoms Are Limitation For Endovascular Procedures

N.Djukic, D. Nenezic, N.Ilijevski, G.Vucurevic, P.Popov, S.Tanaskovic, S.Babic, M.Neskovic, M. Jovanovic
P.Jovanovic, D.Jocic, P.Matic, P.Gajin, B.Lożuk, Dj.Radak

Institute for Cardiovascular Disease "Dedinje", Department of Vascular Surgery, Belgrade, Serbia

Background: To present two patients with internal iliac artery aneurysm associated with left ureteric obstruction and consequent hydronephrosis.

Case report: Case 1: A 66-year-old male patient was admitted because of occasional lower back pain. Computed Tomography arteriography revealed isolated internal iliac artery aneurysm (maximum diameter 99 mm) with ureteral obstruction, consequent hydroureter and left hydronephrosis. Case 2: A 66-year-old male patient was admitted with groin and abdominal pain. Computed tomography arteriography showed bilateral internal iliac artery aneurysm (maximum diameter left 104 mm, right 50 mm) and right common iliac artery aneurysm (maximum diameter 38 mm) with ureteral obstruction, hydroureter and left hydronephrosis. Placement of J-J stent was attempted preoperatively.

Results: The patients were successfully treated with surgical resection of the aneurysm. In postoperative follow-up they had normal diuresis, with normal urea and creatinine clearance. After six months patients were doing well.

Bearing in mind that 77% of the patients with isolated internal iliac artery have symptoms caused by aneurysmal compression on adjacent organs, we wanted to highlight that although we live in endovascular era, its therapeutic effect in internal iliac artery aneurysm treatment is to a great extent limited, since compression symptoms cannot be solved. Despite minimally invasive techniques, open surgery remains the gold standard for internal iliac artery aneurysm reparation, due to the inability of endovascular treatment to eliminate problems caused by compression.

We presented two rare cases of ureteral obstruction and consequent hydronephrosis secondary to atherosclerotic aneurysm. A successful operative repair was performed. Postoperative course was uneventful in both patients and they were discharged on the seventh day after the surgery with normal vascular status and renal function.

Tandem Internal Carotid Lesions - "one stage" endovascular treatment

V.Cvetic, M.Dragas, M.Colic, B.Lukic, L.Davidovic

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Background: The incidence of concomitant carotid artery stenosis and aneurysmatic carotid lesions has been reported to be between 2.8% and 5%. The coexistence of carotid artery stenosis and aneurysm in a patient presents challenges for treatment decision-making.

Case report: We describe an asymptomatic male patient with cervical carotid stenosis coupled with an unruptured cerebral aneurysm in the carotid distal segment. Both lesions were treated simultaneously.

Patient underwent carotid stenting followed by aneurysm coiling in the same setting.

We conclude that the simultaneous endovascular technique in this case was well indicated to manage carotid tandem lesions. Both procedures could be done through the same vascular access, reducing flow changes to the aneurysm due to the stenotic carotid revascularisation, with no major or minor complication.

Successful open surgical repair of primary aortoenteric fistula

S.Dunovic¹, Tatjana Sutilovic¹, Lazar Davidovic²

¹ 1.Clinic for Vascular surgery, University Hospital Clinical Centre Republic of Srpska , Banja Luka, Bosnia and Herzegovina

² Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Background:Primary aortoenteric fistula (PAEF) is rare, but should be considered in any patient with upper gastrointestinal bleeding associated with abdominal aortic aneurysm (AAA). 71-old male patient had upper gastrointestinal bleeding associated with AAA 7cm in diameter.

Case repors:After several diagnostic procedures, he was treated with conservative therapy, but 11th day of hospitalization he underwent emergency surgery repair because of massive melena and abdominal pain. Exploratory laparotomy revealed an abdominal aortic aneurysm adherent to the distal duodenum with PAEF. There was no sign of diffuse peritonitis, duodenal fistula was closed with direct suture. AAA was resected and tube graft reconstruction was performed by silver prosthesis with omentoplasty between aneurysmal sack and duodenum.

Results:Patient was treated with antibiotics and 10th day after operation, patient went home with no complications. 3 months later control MSCT didn't describe any pathological inflammatory proccess. PAEF is difficult to diagnose until we made explorative laparotomy, but should be considered in any patient with upper gastrointestinal bleeding associated with AAA.Surgical repair in earlier phase might decrease risk of high mortality and postoperative complications.

Aortic and left femoral anastomotic aneurysms as a late complication after aortobifemoral grafting

M.Maksic¹, T.Sutilovic¹, S.Dunovic¹, L.Davidovic²

¹ 1.Clinic for Vascular surgery, University Hospital Clinical Centre Republic of Srpska , Banja Luka, Bosnia and Herzegovina

² Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Background: The aim of article is to present successful surgical management of a 64-year-old male patient with an anastomotic aneurysm aortic and left femoral anastomoses after the aorto-bifemoral bypass graft.

Case report: 64-year old male patient was admitted to hospital because of pulsating mass in the left inguinal region, slow growing in the last six months. Fifteen years ago, patient underwent aortobifemoral reconstruction and profundoplasty bilateral with Dacron graft 16x8mm due to aortoiliac occlusive disease. MSCT aortoarteriography confirmed the existence of the anastomotic aneurysms at the aortic anastomoses about 5cm and left femoral anastomoses of approximately 8cm with no signs of rupture. Inflammatory factors were not elevated and angiographic findings did not indicate the existence of graft infection. Dacron bifurcated graft was completely removed and replaced by Silver graft 16x8mm. Aortic anastomoses was wrapped with omentum as prevention of secondary complications. Microbiological analysis completely excised graft showed the presence of *Staphylococcus epidermidis* sensitive to antibiotics from the group of quinolones, vancomycin , clindamycin and linezolid . The patient's postoperative course was uneventful and on the thirteenth day patient was discharged from the hospital with normal results of a physical examinations.

Anastomotic aneurysms are late complication after arterial reconstructions and can be detected by examination as palpable, pulsatile mass but aortic and iliac anastomotic anerysms were discovered incidentally during radiologic examinations. Indications for interveticion depend of size, locations, symptom status and etiology, associated with greater morbidity and mortality and present clinical challenges.

Associations between the atherosclerotic process and the condition of the digestive tract

Mokhnachev A.V., Bondarenko P.B., Ivanov M.A.

North-West State Medical University, St.Petersburg, Russia

Aim: The purpose of this study was to investigate associative connections between digestive system and widespread atherosclerosis.

Materials and methods: The work is based on 192 observations of patients with multifocal atherosclerosis. Condition of the bloodstream was studied through clinical tests, duplex scanning, CT - and MR angiography. Changes of the digestive organs were explored by physical examination and also by endoscopic, ultrasonic and morphological methods. Enzymes (alanine aminotransferase, aspartate aminotransferase), lipidogram, total protein content in blood plasma were estimated from biochemical analysis. Components of the metabolic syndrome were evaluated on the recommendations of ATP - III. Mathematical processing was performed using the software package STATISTICA 10. The difference in categorical variables were analyzed by the Pearson χ^2 and Fisher's criterion.

Results: Microbiotic changes in the digestive tract (including afflicted of H. Pylori) are one of the causes of the erosive and ulcerative changes of the stomach and determine the change of hepatic function in patients with dyslipidemia on the background of multifocal atherosclerosis ($p < 0.05$).

The combination of changes in the gastric mucosa and liver parenchyma is typical for persons regularly consuming alcohol ($p < 0.05$). The association between the severity of microbiotic changes, deviation of hepatic function, the state of the proximal segments of the digestive tract on the one hand and the occurrence of critical ischemia on the other ($p < 0.05$) was noted.

Medicines affecting the function of the liver (including non-steroidal anti-inflammatory drugs), predispose to chronic ischemia III - IV Art. by Fontain – A.V. Pokrovsky in patients with advanced atherosclerosis ($p < 0.05$).

Conclusion: Accounting for the effects of digestive organs on the atherosclerotic process requires the implementation of preventive and rehabilitation measures of gastroenterological profile.

Delayed presentation of aortic injury by a thoracic pedicle screw

U.Sevuk, A. Mesut, I.Kiraz, K.Kose, F.Ayaz, A.Erkul

Diyarbakir Gazi Yasargil Education and Research Hospital, Department of Cardiovascular Surgery, Turkey

Background: Damage to the large blood vessels like the aorta represent an uncommon and life-threatening complication of spinal surgery with pedicle screw fixation. Aortic trauma can be manifested by immediate hemorrhage and rapid hematoma formation leading to hemodynamic instability. Although extremely rare, delayed major vascular injury from pedicle screw misplacement has also been reported in the literature.

Case report: Here we present a case of delayed presentation of a thoracic aortic injury with a vertebral pedicle screw after posterior spinal surgery. A 51-year-old female was referred to our department with a 10 month history of back pain 5 years after a posterior spinal stabilization. She was first operated for traumatic spinal fracture of the T6 and T7 and spinal cord compression induced paraplegia which was managed with the placement of spinal instrumentation under fluoroscopic guidance (two longitudinal rods and eight posteriorly placed pedicle screws in T3, T4, T8 and T9, two in each). The procedure was well tolerated and the postoperative course was uneventful. However, she remained paraplegic after the operation. A computed tomography scan revealed a malpositioned pedicle screw (left screw placed in T8) was protruding into the descending thoracic aorta. There was no evidence of periaortic hematoma, pseudoaneurysm formation, or pleural effusion. Removal of two longitudinal rods and pedicle screws were performed by the Neurosurgeons firstly. A left-sided thoracotomy was then performed. Intraoperative findings confirmed screw-head penetration into the descending aorta and a 5-mm-diameter posteromedial wall lesion was noted. After proximal and distal cross clamping of the aorta, the defect was repaired with primary sutures. Removal of the pedicle screw was then performed. CT scanning should be performed after posterior instrumentation in all cases, particularly in patients with severe spinal deformities undergoing thoracic spine surgery.

Best medical treatment of carotid disease

A.Bucic, N.Ilijevski, D.Nenezić, G.Vučurević, P.Popov, P.Gajin, S.Tanasković, S.Babić, M.Jovanović, P.Jovanović, P.Matić, D.Jocić, Đ.Radak

Institute for Cardiovascular Disease "Dedinje", Department of Vascular Surgery, Belgrade, Serbia

Carotid disease is one of the most important causes of cerebral ischemia. Carotid disease treatment options include risk factors modification and medications, carotid endarterectomy (CEA) and carotid artery stenting (CAS). Efficacy of carotid endarterectomy has been proven in preventing of stroke. However, recent clinical observations suggest that all the patients with carotid stenosis could have benefit from modern medical therapy and that aggressive risk factor modification and medical therapy with antiplatelet agents, statins and antihypertensive medications may reduce compelling indications for immediate surgery in asymptomatic patients.

In this paper we are reviewing current guidelines for best medical treatment of patients with both symptomatic and asymptomatic carotid disease, especially when best medical treatment arm is compared to carotid endarterectomy and carotid artery stenting.

An excessive long distance running as a possible cause of multiple splanchnic arterial aneurysms: a report of case

L.C. Jang

Department of Surgery, Chungbuk National University, Korea

Background: Multiple visceral aneurysms are uncommon and usually result from connective tissue diseases, systemic arteritis, drugs or mycotic lesions. An association between multiple visceral aneurysms and a long distance running has not been reported.

Case report: The clinical features of 1 patient at the Hospital of Chungbuk National University for treatment of multiple visceral aneurysms was reviewed. A fifty four year old male patient had a recurrent, intermittent epigastric pain for 2 months. There was no abnormalities in gastroscopy and colonoscopy. The abdominal CT angiography documented a calcified superior mesenteric artery and splenic artery aneurysm.

The patients had history of a recreational long distance running over 10 years. An average running time for week was more than 10 hours. No evidence was seen of systemic arteritis, connective tissue disorder, or an infectious process that may have caused the aneurysms. He didn't take any drugs. A superior mesenteric artery(SMA) aneurysm was resected and the aneurysmal segment of SMA was replaced with GSV graft. A splenic aneurysm was left alone. A patient was recovered without any sequelae.

A long distance running may be a cause of a multiple atherosclerotic visceral artery aneurysm. A possible association between a long distance running and multiple visceral aneurysms is reported for 1 patient in whom other risk factors were absent. The potential for a long distance running to cause multiple visceral aneurysms is ill-defined but a recurrent vasoconstriction or dissection during running may contribute to aneurysm formation.

Two atypical cases of axillary artery aneurysms

O.Radmili, P.Djoric, D.Vasic, V.Cvetic, L.Davidovic L

Aim: Upper extremity aneurysms are relatively rare compared to the other peripheral arterial aneurysms. The subclavian artery is the most common site of upper extremity aneurysmatic disease. Axillary artery aneurysms are infrequent and almost always occur as a result of blunt or penetrating trauma. Some of the cases exposed in the literature were connected to collagen vascular diseases, post-stenotic dilatation in thoracic outlet syndrome and radiation-induced arteritis.

Methods: We present two atypical cases of axillary artery aneurysms; one caused by giant cell arteritis (GCA), and the other by cystic medial necrosis (CMN).

Results: Both patients were minutely examined, and after preparation surgically treated. In both patients definitive diagnosis was confirmed after histological evaluation of the specimens.

Conclusion: We conclude that GCA and CMN are rare, but important causes of peripheral arterial disease. The rarity and importance of cases that we have presented lies in fact that GCA and CMN have caused aneurysmatic, instead of stenotic or occlusive arterial disease. Also, disease was isolated, without affection of thoracic or abdominal aorta or other arterial segments. Both patients were surgically treated with uneventful recovery.

Endovascular treatment of jejunal artery aneurysm combined with AV fistula

B. Lukic, V.Cvetić,M.Čolić,N.Kecman

Clinical centre of Serbia

Background: Aneurysm of the jejunal artery (JA) is a very uncommon disorder that shows few specific symptoms prior to rupture, and which is associated with a high rate of death. The conventional treatment for visceral artery aneurysms has been surgical. Nowadays, endovascular treatment becomes the first-line method of treating almost all visceral aneurysm with high success rates, and low morbidity and mortality.

Case report: This report describes a case of successful embolization of a jejunal artery aneurysm which was found incidentally. A 71-year-old male non-smoker patient with a history of chronic hypertension underwent abdominal ultrasound, due to his earlier problems with gallbladder, that demonstrated an abdominal aortic aneurysm (AAA).Accidental ultrasound finding of the AAA (4,6 x 4,8 cm). He had no clinical symptoms and no abdominal laboratory data. Physical examination presented pulsative abdominal mass of a AAA. He didn't report any episodes of melena or haemathochezia. DSA was then performed, which confirmed the AAA and demonstrated the presence of 21 x 55 mm saccular aneurysm of jejunal artery (JA).After multidisciplinary consultation, a one-stage endovascular tretmant was chosen, transcatheter embolization of proximal vessel to the saccular aneurysm of the first JA. The procedure was well tolerated with no complication. A superior mesenteric angiogram was obtained 15 minutes after embolysation of the feeding vessel that showed complete occlusion and no signs of aneurysm. He was discharged from hospital the day after.

A rare manifestation of Behçet's Disease: Extracranial carotid aneurysm

H.S.Basbug, Y.Gunerhan, H.Gocer, K.Ozisik

Kafkas University, Kars, Turkey

Background: Behçet's disease is a rare systemic immune vasculitis that often presents with recurrent oral and genital mucous membrane ulcers and ocular manifestations. It was first described by a Turkish dermatologist Hulusi Behçet in 1937. The etiology is thought to be the autoimmunity that is triggered by a bacterial or viral infection or another environmental factor. Venous Thrombophlebitis is the most common vascular manifestation, followed by an arterial aneurysm and obstruction. Aneurysms mostly occur in the abdominal aorta and pulmonary arteries. According to the recent literature, less than 50 cases of extracranial carotid aneurysms have been reported.

Case report: This article contains the detailed vascular images of a carotid aneurysm in a young male with Behçet's disease.

An extremely rare source of pulmonary embolism: internal jugular vein aneurysm

U.Sevuk, Firat Ayaz, Aylin Erkul

Diyarbakir Gazi Yasargil Education and Research Hospital, Department of Cardiovascular Surgery, Turkey

Background: We present a case of an internal jugular vein aneurysm that is presented with pulmonary embolism. As far as we know this is the first report of pulmonary embolism in a patient with internal jugular vein aneurysm.

Case report: A 70-year-old female presented to the emergency department of our institution with a 12 h history of sudden onset breathlessness and persistent rightsided non-radiating chest pain.

She had a no history of smoking, malignancy, inflamatur disease, venous thromboembolism, surgery or hormone replacement therapy and herediter thrombophilia. The patient's body mass index was 25.

Electrocardiogram obtained on admission to hospital revealed normal sinus rhythm with rate of 86 BPM.

Transthoracic echocardiogram was negative for thrombus with normal ventricular dimensions and functions.

A D-dimer assay was taken and found to be raised. Therefore Contrast CT scan of the chest was carried out and revealed intraluminal filling defects in the right pulmonary artery. Further testing was done to determine the etiology. Blood tests demonstrated normal full blood count and biochemistry.

Thrombophilia test results (Factor V Leiden, Prothrombin gene mutation, Antithrombin, Protein C and Protein S, lupus anticoagulant) were negative. Deep venous thrombosis was excluded with duplex scan.

Diagnostic screening work-up for occult malignancy (cervical, cranial and abdominopelvic CT) was negative.

CT scan of the neck revealed left internal jugular vein aneurysm. No evidence of any thrombus or calcification was seen. The patient was anticoagulated with warfarin sodyum to target INR of 2.5. No intervention was done.

Due to its asymptomatic nature, jugular vein aneurysm can be underlooked by the patient as well as the clinician. Although rare, internal jugular aneurysm should be considered in the differential diagnosis of idiopathic pulmonary embolism.

Reconstruction of the popliteal vasculature after a close-range shotgun injury

H.S. Basbug, K.Ozisik

Kafkas University, Kars, Turkey

Background: Popliteal penetrating firearm traumas carry a high risk of vascular, neurologic, and musculoskeletal injury with an eventual progression to limb loss. If the damage also includes the popliteal artery (PA) and the popliteal vein (PV), the morbidity and mortality further increase. Shotgun and gunshot injuries are often confused and may be used interchangeably. However, the shotgun injury is clinically and ballistically different from the gunshot injury. Furthermore, the close-range shotgun wounds may have a more severe impact than the gunshot wounds as in this case.

Case report: We present the diagnostic imaging and the surgical treatment of a patient having a total cut of PA and the PV together with a massive popliteal tissue loss due to a close-range shotgun injury.

Paraganglioma of the carotid body

N.Vasić, J.Klasnja, Z.Roljić

University Clinical Centre of the Republic of Srpska, Banja Luka, Vascular surgery Clinic

Background: The aim of our paper is to present and discuss the treatment of patients with carotid body paraganglioma manifested with high blood pressure and palpitations followed by postoperative complications due to intraoperative lesion of cranial nerves.

Case report: A 60-year-old female patient diagnosed with uncontrolled hypertension, painless palpable mass on the right side of the neck, dysphagia and heart palpitations. She had a history of poorly controlled hypertension with 3 antihypertensive drugs. An ambulatory test for urine catecholamines was positive and ultrasound of the neck revealed the tumour mass on the right side. The whole body and SPECT scintigraphy showed a primary neuroendocrine tumour. Contrast-enhanced computed tomography demonstrated an expansive solid-cystic hypervascularised tumour mass, measures 3X5,2X3 cm (APXLLXKK). According to these findings we made an indication for the surgical excision of tumor. Postoperatively the patient complained about the disability of swallowing and talking. Oropharyngeal examination revealed the palsy of the right superior and inferior laryngeal nerve. On plain X-chest radiography there was elevated the right hemidiaphragma. Nasogastric sonde was placed for nutrition and protection of airways. After a two weeks sonde was replaced with PNG (parenteral nutritive gastrostoma). After a six months PNG was removed because the normal function of swallowing and talking was retrieved. One month after surgical procedure the blood pressure was controlled with just one antihypertensive drug, blood pressure was not above 140 mm Hg.

Complete surgical excision is the aim of any operative procedure for paraganglioma and is the only curative option. Early detection of carotis body tumour is beneficial for the operative outcome and can prevent intraoperative nerve lesions. Resection should be performed whenever possible and by a surgeon who is familiar with the head and neck region and has the technical options for vascular reconstruction.

Use of aortoiliac allograft for treatment of aorto-bifemoral bypass graft infection

H.Jarve, T.Ellervee

Tartu University Hospital/Department of Vascular Surgery, Tartu, Estonia

Background: Treatment of infected prosthetic aorto-bifemoral bypass remains a challenge for vascular surgeons even today. One of the biggest concerns is the choice of suitable material to avoid ongoing or re-infection.

Case report: This is a case report. Four male patients (aged 51 to 78 years) were operated on for aorto-bifemoral bypass graft infection: two of them had pseudoaneurysm of a distal anastomosis and two had fistula in the groin. However, finally they all turned up to be culture negative cases. The younger patients (51 and 54 years) developed graft infection within 1-2 years. The older patients (75 and 78 years) had their primary bypass 10 to 17 years before the signs of inflammation appeared. The diagnoses were made using CT angiography which showed presence of fluid surrounding all four bypasses. During the operation the whole prosthetic material was removed and replaced with a cadaveric aortoiliac allograft extended distally with the use of cadaveric allovein when needed. Cadaveric allografts were stored up to 10 days in a 0,9% saline solution containing extra heparin and antibiotics. Two patients had complications in the early postoperative period. One had haemorrhage from a distal anastomosis followed by thrombosis of the left branch of the allograft, which was corrected with thrombectomy. The other had haemorrhage from the proximal anastomosis followed by aortoduodenal fistula, which required ligation of the infrarenal aorta and axillo-bifemoral bypass. Thirty-day survival rate was 100% and 6-months survival rate was 50%.

We consider cadaveric aortoiliac allograft suitable material for treatment of prosthetic aorto-bifemoral bypass infection.

Cerebral vasoreactivity and incomplete circle of willis in patients with asymptomatic carotid stenosis

V.Manojlovic, J.Pasternak, V.Popović, D.Nikolić, Đ.Milošević, N.Budakov, V.Marković, A.Lučić Prokin

Department of Vascular surgery, Clinical center of Vojvodina, Novi Sad, Serbia

Aim: Circle of Willis (CoW) provides the most significant collateral pathway in the presence of extracranial carotid stenosis. In 35-50% of population CoW is incomplete due to hypoplasia or occlusion of consisting arteries. Undeveloped collateral circulation in CoW in patients with carotid disease may manifest impaired cerebral blood flow, reduction of cerebral reactivity and increased risk of stroke. Selection of asymptomatic patients with the highest risk of stroke allows us to operate such patients with priority. Aim of this paper was to determine differences in cerebral vasoreactivity in asymptomatic carotid patients with complete and incomplete CoW before and after carotid endarterectomy.

METHOD: Research included 97 patients, who were operated from significant asymptomatic extracranial carotid stenosis in the period of two years. Patients underwent MRI/MRA diagnostics previous to surgery for determination of CoW morphology. TCD and measurement of Breath Holding Index (BHI) was done before and one month after surgery with cut-off point of 0,69. We defined two groups of patients: with complete CoW (67 patients 69%); and group of patients with incomplete CoW (30 patients- 31%). For statistical analyses of data ANOVA method was used.

RESULTS: Preoperative values of BHI at side of stenosis were 0,897 for group of patients with complete CoW and 0,617 in group of patients with incomplete CoW, and postoperative values were 1,09 and 1,01 for complete and incomplete CoW retrospectively. There was significant reduction of pathological finding after operation in group of patients with incomplete CoW (63,3%) compared to group of patients with complete CoW (28,2%) ($p=0,0016$, OR= 4,36 CI 1,75-10,78) With ANOVA more significant increase in BHI value was registered in group of patients with incomplete CoW ($p = 0.035$ F (1,92) = 4.557) .

CONCLUSION: Surgical treatment more affected on improvement of cerebral circulatory reserve in asymptomatic patients with incomplete CoW.

Use of vascular grafts "baseX" in reconstructive surgeries of aorta and arteries

R. Abdulgasanov, L.Bockeria, S.Sanchez, M.Abdulgasanova, A.Ivanov

Scientific center of cardiovascular surgery named after A. N. Bakulev, Moskow, Russia

Aim: To demonstrate the antimicrobial, impermeable and thromboresistant properties of vascular grafts "BASEX" in vascular surgery.

Methods: "BASEX" (Bockeria-Abdulgasanov-Spyridonov explants) patches is being manufactured and used in our center since 1997. Domestic textiles were subjected to various modifications for producing "BASEX" patches. Medical gelatin was used as a base for modifying its coating. To maintain the antimicrobial and thromboresistant properties of the coatings were introduced, antimicrobials (ciprofloxacin, metronidazole) anticoagulants (heparin), antiaggregants (acetylsalicylic acid, dipyridamole).

Results: From 1996 till 2014, "BASEX" grafts were used on 4550 patients for reconstruction of the aorta and the arteries. During the observation period from 2 months till 17 years after the surgeries, early prosthetic thrombosis occurred in 2.7% patients and late in 5.4% of patients. 91.9% patients retained good graft patency with no signs of inflammation. Surface suppuration of postoperative wound was observed in 5.9%, deep abscess in 2.1% of patients. After rehabilitation, recovery and healing of wounds without graft infection was observed. Infected hydro- and hem-thorax without graft infection was observed in 0.9% patients. After conservative measures, all patients recovered. Of the 19 patients with infectious aneurysms of anastomoses, superficial wound infection was observed in only one patient during postoperative period. Infections within peri-prosthetic space were observed in 0.6% patients. All have recovered following conservative measures. The post-operative mortality rate was 2.7%, the causes of mortality in 72.4% patients were acute cardiac insufficiency, 2.0% acute pulmonary insufficiency, 11.2% acute renal failure, 2.0% peritonitis, 11.2% bleeding and 1.0% preoperative sepsis.

Conclusion: Thus, vascular grafts "BASEX" demonstrated antimicrobial, thromboresistant and impermeable properties preventing pyo-septic complications, significantly reducing the intra- and postoperative bleeding and can be widely used in vascular surgeries.

Fifteen year experience in using synthetic patches "basex" for management of post-infarction aneurysm of heart

R. Abdulgasanov, L.Bockeria, S.Sanchez, M.Alshibaya,M.Abdulgasanova, A.Ivanov

Scientific center of cardiovascular surgery named after A. N. Bakulev, Moskow, Russia

Aim: To show the antimicrobial, thromboresistant, low porosity properties of the "BASEX" patches which can be used for geometric reconstruction (GR) of left ventricle (LV) following post-infarction left ventricular aneurysms of the heart.

Materials: "BASEX" (Bokeria-Abdulgasanov-Spyridonov explants) patches is being manufactured and used in our center since 1997. Domestic textiles were subjected to various modifications for producing "BASEX" patches. Medical gelatin was used as a base for modifying its coating. To maintain the antimicrobial and thromboresistant properties of the coatings were introduced, antimicrobials (ciprofloxacin, metronidazole) anticoagulants (heparin), antiaggregants (acetylsalicylic acid, dipyridamole). GR LV using "BASEX" patches were done on 742 patients. In 25% of patients were additionally done mitral valve interventions.

Results: Postoperative complications were observed in 18% patients. Major postoperative complications were CHF (21.6%), arrhythmias (22.9%) and neurological complications (8.9%). Hospital mortality was 6.4%. The main causes of deaths were heart failure, multiple organ failure and ventricular fibrillation. Mural thrombosis around the patch was observed in 4 (0.54%) patients. Thromboembolic complications were not observed. Infection of patch was observed in 3 (0.4%) patients. First patient suffered from sepsis due to post-injection abscess 2 years after surgery. She was re-admitted to hospital in a terminal condition. Autopsy revealed an abscess above the patch with penetration into pericardial cavity. In second patient, 2 months after surgery complained of episodes of fevers, on examination vegetations were noticed around the patch, patient refused to proposal for re-surgery, his further fate is unknown. In the third case infections were managed using conservative interventions.

Conclusion: Thus the synthetic patches "BASEX" which showcased antimicrobial, thromboresistant, low-porosity properties can widely be used in reconstructive corrections of the LV of heart.

Conservative treatment of aortic graft infections

R. Abdulgasanov, L.Bockeria, S.Sanchez, M.Abdulgasanova, A.Ivanov

Scientific center of cardiovascular surgery named after A. N. Bakulev, Moskow, Russia

Aim: To demonstrate the success of conservative treatment of patients with graft infection (GI) and the thoracic and thoraco-abdominal aorta.

Materials: From 2004 to 2015, after 889 operations for aortic aneurysms, GI was observed in 8 (0.9%) patients. Operations were performed in 3 patients for dissecting aneurysms, four with aneurysm thoraco-abdominal aorta, one with mycotic aneurysm. GI in 7 (87.5%) patients originated within 8-15 days, 1 (12.5%) 3 months after operation. In 5 patients (62.5%) operation was accompanied by blood loss of more than 2 liters, in 2, direct cardiac massage was carried out during the operations, mechanical ventilation was carried out in 3, retractorotomy was carried out in 3. Long term (4-6 days) thoracostomy done in 3, wound suppuration in 6 (75%), pneumonia in 4 (50%) infected hem-thorax in 7 (87.5%) cases. St. aureus was observed in 3 patients, St. epidermidis in 2 and E. coli and Ps. aeruginosa in one case in the pleural cavity. The blood cultures Ps. aeruginosa was found in one patient, St. aureus in two cases, the association Ps. aeruginosa + St. aureus in one patient. Four patients underwent scintigraphy with labeled leukocytes, 6 PCT. CT in 6 patients. Patients underwent reoperation with cleaning of grafts and peri-graft space with antiseptics (Octenisept, iodine), thoracotomy with constant introduction of antimicrobial drugs. Was done double, triple antibiotic therapy. In 5 cases were used sodium hypochlorite and ozone therapy for 8-10 days.

Results: 7 out of 8 patients (87.5%) recovered. One patient died 3 months after surgery due to sepsis. Another patient died within 2 years from MI.

Conclusion: Thus, early diagnosis of graft infections and timely treatment eliminates the unnecessary removal of grafts in most patients.

PTA treatment of renal artery stenosis caused by fibromuscular dysplasia

B.Jovanic, S Dunovic², B Babic³, M Cucak¹, S Vujnovic¹, R Gajanin³

¹University hospital Clinical Center Of Republic of Srpska, Department of Clinical Radiology, Banja Luka, Republic of Srpska, Bosnia and Herzegovina

²University hospital Clinical Center Of Republik of Srpska, Clinic for vascular surgery

³University hospital Clinical Center Of Republik of Srpska, Department of pathology

Background: Fibromuscular dysplasia (FMD) is rare non-inflammatory and non-atherosclerotic small and medium-size artery disease which affects renal arteries (60%-75%). 10% of renal artery stenosis is caused by FMD. Percutaneous transluminal angioplasty of renal arteries (PTRA) is method of choice to treat renovascular hypertension caused by FMD. The aim was to describe successful treatment of severe stenosis of renal artery with PTRA method.

Case report: 48 year old female patient had refractory hypertension and ultrasonography detected severe stenosis of right renal artery. Digital subtraction angiography (DSA) detected several stenosis of middle part of artery with typical "string of beads" sign. Stenosis was treated three times with balloon catheter 5x20mm and postprocedural DSA showed excellent response. 24 hours after PTRA patient had normalized blood pressure at value 120/70mmHg (16/9.3kPa). Method of choice to treat renovascular hypertension caused by FMD is PTRA. Stenting is not recommended in FMD, only if there is complications like dissection, restenosis and suboptimal results with PTRA. Lowering of blood pressure is expected in several weeks because reduced renin excretion.

Early outcome in patients who underwent emergent endovascular repair of the aorta

F.L.Valdiviezo, J.Hernández, J.Olarte, C.Velázquez, M.Á.Gutiérrez, J.C.Téllez, M.García de la Borbolla, O.Araji, J.Barquero

Hospital Universitario Virgen Macarena, Department of Cardiovascular Surgery, Sevilla, Spain

Aim: To determine the early outcome of patients who underwent emergent endovascular repair surgery of the aorta

METHODS: A retrospective observational study was performed from all patients who underwent emergent endovascular repair of the aorta in the period from 2009 to 2015. A total number of 14 patients were selected and their clinical outcome and mortality was analyzed.

RESULTS: From the 14 patients selected 11 were men (78,57%). The mean age was $66,65 \pm 3,59$ years. 8 patients were diagnosed of rupture of abdominal aortic aneurism, 2 of rupture of thoracic aortic aneurism, 1 traumatic rupture of thoracic aorta, 1 mycotic aneurysm, 1 prosthetic pseudoaneurysm and 1 aorto-enteric fistula. There was 4 in hospital deaths (28,57%): 1 cerebrovascular accident, 1 hemorrhagic shock and 2 multiorgan failure. The mean hospital stay for survivors was $18,75 \pm 15,58$ days, while the mean hospital stay for those who died was $3,6 \pm 2,58$ days. 9 patients needed mechanical invasive ventilation with a mean time of $4,508 \pm 5,75$ days, the longest one was of 25 days. As complications there were: Infections in 6 patients (4 late Salmonella bacteremia and 2 pneumonias); 1 endoleak type I which requires reoperation and could be solved with no more complications; 6 patients developed anemia, five of them with the need of red cell transfusion; and 6 (42,96%) patients developed acute renal failure solved without complications in their hospital stay. There were no renal arteries occlusion in the patients who underwent abdominal aortic endovascular repair.

CoNCLUSION: The mortality of patients with need of emergent endovascular repair of the aorta remains high with a 28% of in-hospital mortality, but remains a good option to treat patients with an emergent aortic disease committing their life with acceptable results.

Early complications after reconstructive operations on femoropopliteal segment in patients with atherosclerotic lesions of arteries of the lower limb

Shlomin V.V., Bondarenko P.B., Yurtaev E.A., Didenko Y.P.

City Multi-field Hospital № 2, Saint Petersburg, Russia

Aim: Hybrid operation is a perspective method for treatment of the patients with occlusive atherosclerosis of the lower limbs with minimal operative trauma. Aim of the study was comparative evaluation of open and hybrid surgical interventions on the femoropopliteal segment in patients with chronic lower limb ischemia.

Materials and Methods: This study included 85 patients who underwent reconstructive surgery on the femoropopliteal arterial segment. Among them 27 patients underwent a hybrid method of treatment (first group), 27 patients - bypass surgery, 30 - endarterectomy. To evaluate the results of the operation, we used a survey of patients, as well as the conclusions of ultrasonic duplex scanning, selective angiography, CT or MRI angiography with contrast. The difference in categorical variables were analyzed by the Pearson χ^2 and Fisher test. Differences were considered statistically significant at $P < 0.05$. Mathematical processing were performed using Statistica software package 10.

Results: Amount of days stay at hospital for patients in group of hybrid surgical treatment was on 35% less than for groups with open surgical treatments. ($p < 0,05$). In most cases hybrid operation performed in patients with the presence of severe chronic heart failure and long experience of chronic lower limb ischemia ($p < 0,05$). A larger number of patients with a history of repeated interventions met in groups with hybrid and bypass surgery ($p < 0,05$). Duration of operation in the group with endarterectomy and hybrid operations is less than in the bypass surgery $181,4 \pm 69,5$ vs $209,2 \pm 58,9$ ($p < 0,05$). In the nearest postoperative period in group of bypass surgery and endarterectomy in 9 patients developed complications, among them 6 patients had thrombosis of the operated segment. Thus after bypass surgery and endarterectomy amputations occurred at 7.4% and 3% of patients respectively on the ipsilateral limb. Adverse cardiovascular events (myocardial infarction) occurred in 3.5% cases after bypass surgery and endarterectomy. After the hybrid operation complications were not observed ($p < 0,05$).

Conclusion: Hybrid vascular surgery of chronic lower limb ischemia in lesions of the femoropopliteal segment can reduce the risk of complications, especially in patients with a history of severe comorbid background.

Symptomatic versus ruptured upper extremity artery aneurysms - Significant differences in postoperative evolution: two case reports

H.Moldovan, G.Vasile, S.Rurac, S.Lacau, M.Craciun, D.Popescu

Cardiovascular Surgery Department, Sanador Hospital, Bucharest, Romania

Background: True aneurysms of the subclavian-axillary artery (SAAA) are rare and dangerous lesions that threaten not only the upper extremities with vascular and neurologic damage but also life itself. Once diagnosed they must be treated. We present the results obtained from two patients who underwent surgery for SAAA in our clinic.

Case report: The symptomatic case was a 76-year-old women, presenting with a pulsating right supraclavicular mass, muscle weakness and paresthesia in the ipsilateral extremity. The second case was a 71-year-old female patient, presenting with a pulsating mass in the left axillary region that doubled in volume in the last 24 hours with sever pain and paresis of the ipsilateral extremity. Duplex scanning and angio-CT confirmed: aneurysm of the right subclavian artery in the first case and a ruptured aneurysm of the left axillary artery in the second case. The surgical technique used in both cases was aneurysmectomy followed by subclavian-brachial bypass with armed polytetrafluoroethylene graft.

The first patient has had an evolution free of peripheral vascular or neurological complications, without blood transfusion and surgical stable. The patient who had upper-extremity paralysis and hemorrhagic shock underwent emergent operation and she has had difficult wound recovery because of the muscle hematoma and a great amount of blood transfusion along with a prolonged hospital stay, also she was referred to a physical rehabilitation program, with slow and partially recovery of the neurological dysfunction.

We conclude that aneurysms of the subclavian-axillary artery, although rare, are both life- and limb-threatening and so an early refer to surgery is making the difference in postoperative evolution in means of decrease in hospital length of stay and an evolution free of complications.

Endovascular repair of ruptured abdominal aortic aneurysm: a single-center experience

R.Akchurin, P.Lepilin, I.Kuchin, A.Kolegaev, I.Medvedeva, A.Komlev

Federal state budget institution «Russian Cardiology Research and Production Complex, Moscow, Russian federation

Aim: The aim of this study was to describe our experience of endovascular treatment for aortic aneurysm rupture.

METHOD: Between 2010 and 2015, 9-male patients underwent rEVAR. The mean age was 68.2 years (58-89). The aneurysm mean diameter was 7.9 cm (range 5.6-10cm). CT scan was performed for all patients to evaluate the anatomy of the aneurysm and operative strategy selection. In all cases surgical access to common femoral arteries was used. Four cases were performed under local anesthesia and five cases with general anesthesia. Three different types of endoprosthesis were used: E-vita abdominal (JOTEC), Endurant II (Medtronic), OVATION PRIME (TriVascular). In seven cases, the bifurcation grafts was used, in two patients aorto-uni-iliac (AUI) graft was implanted. In one case, due to the large diameter of infrarenal aorta, thoracic graft (Valiant Thoracic 46mmx212mm, Medtronic) was used as AUI graft.

RESULTS: The technical success of rEVAR was 100%. 30 days mortality include two cases. In the first case, the patient died on the second day after surgery because of hemispheric stroke. In the second case, the patient developed ACS (abdominal compartment syndrome) and died on 20 postoperative day. In one case, we received endoleak type 3, which required the adjustive implantation of the endoprosthesis Advanta V12. The observation period from 6 months to 3 years.

CONCLUSION: Endovascular treatment of rAAA is a feasible procedure overall, postoperative mortality and morbidity of rAAA is likely to be reduced through the implementation of rEVAR. Performing bifurcation stent graft in selected cases can be a good alternative to open repair and AUI in patients with rAAA.

Aorto-caval fistula: one problem of redo operation.

R.Akchurin, P.Lepilin, A.Kolegaev, I.Kuchin, I.Medvedeva, A.Komlev, K.Ivanov

Federal state budget institution «Russian Cardiology Research and Production Complex» Department of cardiovascular surgery, Moscow, Russian Federation

Background: Aorta-venous fistula is a rare threatening complication of aorta wall integrity failure. Penetrating traumatic injury remains the most common cause of abdominal and pelvic arterio-venous fistulae.

Case report: Patient is a 57 year old female, presenting with symptoms of cardiac failure (dyspnoea, increased jugular venous pressure, pulmonary oedema). The patient has a history of an abdomen-penetrating knife wound with formation of aorto-caval fistula. Two months before hospitalization to our clinic patient had been operated for aorto-caval fistula with endovascular implantation of occluding device (Amplatzer plug). Partial hemodynamic recovery was reached post surgery, with symptoms of heart failure coming back within two months.

During hospitalization laboratory signs of impaired renal function was observed (GFR – 77 ml/min). MSCT scan showed significant dilatation of left renal vein (max d – 85mm)/ Radionuclide perfusion imaging revealed the significantly impaired function of the left kidney. Patient was discussed with “heart team” (cardio-vascular surgeon, cardiologist, endovascular cardiologist) and decision was made to perform a redo operation on patient with progressive heart insufficiency.

The level of aorto-caval defect was on the level of origin of left renal artery, and that was limiting factor for stent-grafting of aorta. Under the endotracheal anesthesia, right retroperitoneal access was performed. Exposition of inferior vena cava on the level of renal vein orifice was achieved. Under direct examination of IVC and left renal vein it was determined impossible to fix the margin of occluding device. Reduction of dilated left renal vena was performed. Surgical access to aorta was achieved to inspect occlusion device, but the surgeon was not successful in attempt to replace it. Aortal defect was reduced with longitudinal suture. For exclusion of aorto-venous fistula from blood flow endovascular stent-grafting or systemic was considered as a next step intervention. Gore excluder device (3,5 x 40 mm) was placed from level of right renal artery orifice. In the control aortogram there was no hemodynamic signs of aortovenous fistula. In postoperative period pulmonary hypertension was not observed anymore. Right kidney's function remained subnormal with a tendency to hyperfiltration, left kidney's function was unequivocally severely depressed. No wound complications or signs of systemic infection were seen. Postop MSCT revealed the complete isolation of aorta from vena cava inferior.

Use of endovascular occluding devices has to be extremely well planned; otherwise it can become an additional negative factor for possibility of endovascular stent grafting.

Axillo-bifemoral graft thrombosis associated with severe infection, successfully treated with traditional hip disarticulation and vacuum assisted wound closure therapy – case report

S.Milanovic, S.Dunovic, S.Veselinovic, S.Vlaisavljevic, M.Maksic, K.Vladimir, T.Sutilovic, J.Klasnja, J.Milanovic

The University Clinical Centre of the Republic of Srpska, The Vascular Surgery Clinic, Banja Luka, Republic of Srpska, Bosnia and Herzegovina

Background: Incidence of infection of vascular graft is 0.2-5% and is influenced by the implant site, indication for the intervention, underlying disease, and host defense mechanisms.

Case report: 56-year old male patient had irreversible acute ischemia of left lower limb caused by thrombosis of an axillo-bifemoral bypass. Seven years ago, vascular reconstruction was performed prior to primary aortoenteric fistula. During this hospitalisation, after examination, we performed proximal femoral amputation due to irreversible ischemia. Unfortunately ischemic factors caused amputated limb deterioration and infection. After several necrotomies a traditional hip disarticulation was inevitable. In the next period, they are developed signs of bacterial sepsis with fever and a high level of inflammation markers. It is decided to completely remove an axillo-bifemoral graft and start a vacuum assisted closure treatment of an open wound. After eight weeks of applying a vacuum treatment, the wound was prepared for covering with a split skin graft of partial thickness. This case report represents a necessity of applying a vacuum treatment in the patients who have severe complications with an open wound healing. A vacuum assisted closure treatment offers a several advantages. The patient is not exposed to everyday traditional wound dressing procedures under general anesthesia. This treatment, also, reducing the number of hospitalization days, and give the best chances for a satisfactory outcome.

A novel application of Cyanoacrylate adhesive: Ultrasound-guided percutaneous perforator sealing

Kafkas University, Kars, Turkey

H.S.Basbug, K.Ozisik

Background: Endovenous delivery of the Cyanoacrylate adhesive has been used as a new procedure for the treatment of venous insufficiency. It is a non-ablative technique and it was accepted as an implantable medical device in the United States for the treatment of arteriovenous malformations and intracranial aneurysms. In this article, we present a novel usage of the cyanoacrylate glue in the incompetent perforating veins of the lower extremity.

Case report: A 38-year-old woman admitted to our outpatient clinic with the complaints of edema and itching on her left leg. Color Doppler ultrasound (DUS) revealed an insufficiency in the posterotibial perforator (Cockett-2) of the affected limb (Figure 1). The great saphenous vein and the small saphenous veins were totally normal. The Cockett-2 perforator was punctured percutaneously under the DUS guidance, and the cyanoacrylate glue was injected (Figure 2). After five minutes of external compression over the vein, the DUS images demonstrated the collapsed perforator with no color inside (Figure 3). Perforating veins of the lower extremities can entirely be responsible for the chronic venous insufficiency symptoms and the leg ulcers in the absence of an axial vein insufficiency. The medical treatment, subfascial endoscopic ligation, percutaneous thermal ablation, and the DUS-assisted ligation with mini incisions are the preferred methods for the current perforating vein treatment. We suggest the DUS-guided cyanoacrylate injection as a new alternative modality for the treatment of the perforating vein insufficiency.

Comparison between Total occlusion versus Non-Total Occlusion Intervention of the Superficial Femoral Artery; 12-months Clinical Outcomes

J.SEO

Department of Cardiology, Soonchunhyang University Gumi Hospital, Gumi, Korea

Aim: The role of endovascular treatment of chronic total occlusion of the superficial femoral artery (SFA) continues to evolve. The aim of the study is to compare mid-term outcomes of patients treated for SFA occlusive lesion versus non-occlusive lesions.

Methods: A retrospective single center study included 261 consecutive patients (pts) with SFA lesions suffering from peripheral artery disease treated with endovascular intervention. The pts were divided into two groups (Occlusive group: n=180 pts, Non-occlusive group: n=81 pts). The primary patency and 12-months clinical outcome were compared between two groups.

Results: Clinical risk factor of adverse outcome such as diabetes, hypertension and history of smoking was more frequent in occlusive group. Primary patency (85% vs. 73%, $p < 0.05$) and primary assisted patency (91% vs. 77%, $p < 0.05$) and at 12-months were lower in occlusive group. In multivariate analysis, occlusive lesion is an independent risk factor (odds ratio = 2.75, $p < 0.05$) for target lesion revascularization (TLR) who underwent SFA endovascular intervention.

Conclusion: The primary patency was lower in the pts who have occlusive SFA disease compare with the pts with non-occlusive disease and occlusive lesion is an independent risk factor of TLR who underwent SFA endovascular intervention.

MDCT of aortic abdominal aneurysm follow up and complication

D.Cosic, N.Menković,A.Petković,D.Zorić,M.Ilić,N.Janeski,D.Mašulović

Clinical center of Serbia, Center for radiology and MRI/MDCT department, Belgrade, Serbia

Aim: An abdominal aortic aneurysm (AAA) is defined as a fusiform or saccular enlargement of the aorta that is more than 3 cm in diameter. The most feared complication of AAA is rupture and the risk of rupture is proportional to aneurysm diameter. Other complications include: impending rupture, contained rupture, aorto-enteric fistula, aorto-caval fistula, aorto-left renal vein fistula and infection. The objective is to show ability of multidetector computed tomography (MDCT) to assess the exact diameter of aneurysm as well as volumetric CT acquisition with multiplanar reconstruction and three-dimensional volume rendering analysis which makes MDCT angiography the best suited imaging modality not only for follow up AAA but also detecting possible complications.

METHODS: MDCT protocol of abdominal aortic aneurysm comprise unenhanced and scanning after administration of contrast material in dose of 1,5ml/kg, flow rate 4-5 ml/sec, with bolus tracking technique measured in a region of interest (ROI) plotted inside thoraco-abdominal aorta at threshold of 150 Hounsfield units (HU), using two-dimensional (2D), multiplanar reformation (MPR)-curved planar reformation (CPR), maximum-intensity projection (MIP) and three-dimensional (3D) volume rendering technique.

RESULTS: Standard radiological description of AAA during MDCT follow up must include: shape, exact location of AAA, distance from renal arteries, maximum transverse diameter, total length of aneurysm and volume. MDCT is able to detect the extent of intraluminal thrombus and the presence of complication: impending rupture as a hyperattenuating crescent sign which reflects hemorrhage in the mural thrombus or in the aneurysm wall, draped aorta sign as indicator of aortic wall insufficiency and contained rupture, periaortic presence of gas, inflammation and abscess as signs of infection and characteristic findings in acute rupture, aorto-enteric fistula, aorto-caval fistula, aorto-left renal vein fistula.

CONCLUSION: MDCT angiography using the 2D and 3D technique is supreme imaging modality for monitoring the size of the aneurysm as well as potential complications of AAA in order to prevent rupture and gives active preoperative support prior to surgical or endovascular intervention.

Intraoperative use of continues neuromonitoring with NIRS (near infrared spectroscopy) in carotid endarterectomy at awake patients treated in cervical plexus block, early results

N.Gramatikovski¹, D.Tomevski¹, A.Kokakreva², A.Josifov¹, M.Srceva², A.Simeonova¹, A.Popovska², G.Kondov¹

¹ University clinic for thoracic and vascular surgery. Clinical centre Skopje, R Macedonia

²

Aim: Endarterectomy of carotid artery is standard surgical method in the treatment of the stenotic changes of the carotid arteries. Surgical treatment of the carotid artery can be in general endotracheal anesthesia or using cervical plexus block in patient is awake. Leading of these patients during the surgery is specific, personalized for every patient, due to a temporary interruption of the unilateral blood stream to the brain. When we use cervical plexus block is possible continually to follow awake of patient, and also proper cooperation between the anesthetist and the patient during surgical procedure, but also is possible to use the continuous neuromonitoring with NIRS (near infrared spectroscopy) as a reflection of adequate perfusion of the brain. The application of NIRS consists of placing two electrodes in forehead of the patient. By using the NIRS, is possible to objectively situation for the need for emergency use of intraoperative shunt to carotid artery for preventing intraoperative brain ischemia and stroke.

Methods: Aim of this article is through the analysis of 25 patients monitored with intraoperative NIRS with endarterectomy in cervical plexus block to determine superiority of accuracy in intraoperative neuromonitoring versus only control of the vigilance of the patients in the assessment of the adequacy of brain perfusion. Regional saturation of the brain with oxygen (rSO₂) is measured continuously during

Results:

the whole surgical procedure, with a special punt at a beginning, prior to the start of the intervention (basal perfusion) and 3 minutes after placing of the clamp on the carotid artery.

Conclusion: It can be disengaged that in patients with cervical plexus block next to the vigilance and communication with the patient during the surgery, the continuous neuromonitoring with NIRS, significantly facilitates and objectives adequacies of brain perfusion during surgery.

Superficial cervical plexus block for carotid endarterectomy- prevention of neurological complication

D.Svraka, M.Slaviša,A.Đurđević Švraka, M.Maksić

Background: Carotid endarterectomy (CEA) is a preventive surgery. Peri-operative management such patient is challenging. Both general anesthesia (GA) and loco-regional anesthesia (LRA) can be used with their pros and cons. (1) We present the case where LRA prevented neurobiological complication.

Case report: a 73 year old female patient came to plan elective right CEA, because ACI sin.75% and ACI dex.90% stenosis. After performing LRA and positioning the patient comes to the motor weakness of the right side of the body and loss of consciousness when it withdraws from surgery. After oxygen therapy and antiedematous treatment the patient is fully neurologically recovered. We established by neurological and CT examination that the loss of consciousness caused by left ACI kinking. Surgery is performed after two days, in the superficial cervical plexus block, without neurological complications. Early postoperative course was uneventful, and the patient discharged home on the third day with normal neurological findings. Regional anesthesia has become an increasingly preferred technique for CEA in recent years (2), because it enables monitoring of cerebral function directly. Recent papers report that the complication of CEA comes with clumping CA.

Graft types in above knee femoropopliteal reconstruction and factors influencing their patency

Z.Roljic¹, Saša Vlasiavljević¹, Dragan Milošević¹, Jugoslav Đerić¹, Jovan Čulum¹, Nenad Jakovljević³, Ilija Kuzmanović³, Darko Golić¹, Lazar Davidović^{2,3}

¹ Clinic for vascular surgery, Clinical Center Banja Luka. Serbian Republic

² Faculty of Medicine, University of Belgrade

³ Clinic for vascular and endovascular surgery, Clinical Center of Serbia. Belgrade.

Aim: Above knee femoropopliteal reconstructions are even today one of the most common vascular procedures. The most common used grafts in this position are Dacron® and PTFE grafts. This study was performed in order to analyze graft patency, short and long term complication and influence of risk factors and number of patent crural arteries on long term patency.

Material: The study was conducted as a retrospective-prospective bicentric study. Prospective part of the study was performed at the Clinic for Vascular Surgery, Clinical Center of Banja Luka - Serbian Republic (43 Dacron® graft reconstructions), while retrospective part was performed at the Clinic for Vascular and Endovascular Surgery CCS in Belgrade (42 PTFE graft reconstructions).

Results: After 18 months follow up Dacron® grafts had statistically significant better long term patency ($p = 0.0417$) than PTFE grafts. Smoking ($p < 0.01$), continued smoking during follow-up ($p < 0.001$) and obesity ($p < 0.01$) significantly increased the number of PTFE graft occlusion. Relative risk for graft occlusion was significantly increased with a decrease in the number of patent crural arteries. (Dacron® grafts $p = 0.05$, PTFE grafts $p = 0.01$).

Conclusion: Considering worse long term patency rate and higher price of PTFE grafts, we believe that in femoropopliteal position graft of choice is Dacron® graft. Elimination of the risk factors in the postoperative period increases the chance that the graft in above knee F-P position will stay patent.

Medical follow-up of a recurrent DVT patient with 5 heterozygote and 1 homozygote mutation and treated with rivaroxaban

U.Yetkin, Ö.Korkmaz, S.Göksel, K.Dönmez, Ö.Berkan

Department of Cardiovascular Surgery, Cumhuriyet University Medical Faculty, Sivas, Turkey

Background: Deep vein thrombosis and its recurrence is a much common pathology in patients with genetic mutations than normal population.

Case report: Our patient was 49-year old female. She had deep vein thrombosis (DVT) after cesarean section at her right leg 17 years ago and she had DVT at her left leg 4 years ago. Bilateral venous duplex ultrasonography revealed sequelae at both femoral veins caused by DVT and partial flow due to vein wall irregularities. We performed predisposition to cardiovascular diseases test after recurrence of DVT. This test revealed 6 different mutations. Genotypes of Factor 5 G1691A (Leiden), Beta-Fibrinogen -455G-A, GP IIIa L33P (HPA-1), MTHFR A1298C and ACE mutations were heterozygote and MTHFR C677T mutation was homozygote. Due to serious multiple genetic mutations and recurrent DVT, lifetime prophylaxis with oral anticoagulation was planned. She had gynecologic problems caused by warfarin and medication was altered to rivaroxaban. Patient is still using 20 mg p.o. rivaroxaban for 9 months. There is not any progression of her symptoms and venous duplex ultrasonography findings. We suggested compression stockings, oral and topical venoprotective medicine and periodic intervals for leg elevation or motion. Predisposition to cardiovascular diseases test may be performed to patients with recurrent deep vein thrombosis attacks. This may help for diagnosing etiologic factors, stratify risk factors for lifetime prophylaxis requirement and periodic follow-ups. Preferring new generation oral anticoagulant drugs like rivaroxaban will reduce the possible risks caused by warfarin and patient's hospital dependency for periodic blood checks.

Pseudoaneurysm of an ascending aorta following a double valve replacement

Ö.Korkmaz,U.Yetkin,Ö.Berkan

Cumhuriyet University, Medical Faculty, Department of cardiovascular surgery, Sivas, Turkey

Background: Pseudoaneurysm of the ascending aorta is a rare, well defined but fatal complication, following cardiac surgery. There are more than one treatment options in high-risk patients. We analyzed the treatment alternatives in a patient who presented asymptotically to our clinic and who had previously undergone a double valve operation in another center.

Case report: A 54 year-old male patient applied to the clinic with a 50x50 mm mass between the ascending aorta and superior vena cava, neighboring the ceiling of the left atrium, which was detected on a thoracic computed tomography that was performed for noncardiac reasons(Figure 1). His medical history revealed that he had undergone a double valve replacement two years previously, he had been regularly followed-up and had experienced no complaints. The transthoracic echocardiography of the patient, compatible with the computed tomography findings, revealed a mass just superior to the aortic annulus with an arterial flow on the inside of the mass.The patient denied having had any invasive interventions, including transesophageal echocardiography, and was discharged of his own will. The classical treatment of this condition is the surgical removal of the aneurysm sac and the repair of the aortic defect by suture, surgical mesh or graft replacement. Stent-graft placement in order to exclude the aneurysm sac, has become prevalent for patients who cannot tolerate surgery although localization of the aneurysm and branching off from the aorta, limits this alternative . Although devices used for atrial septal defects have also been reported to be successfully applied in pseudoaneurysms with a narrow neck, for patients where a stent graft cannot be used, the risk of rupture during guiding should be kept in mind.

Limb salvage and mid-term patency of surgical revascularizations for critical lower limb ischemia

M.Z.Ghariani, Abir El Mehdi, Wafa Ghariani, Mohamed Ben Romdhane, Adel Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess limb salvage and mid-term patency of surgical revascularizations for critical lower limb ischemia.

Methods: This was a retrospective study compiling consecutive cases of critical lower limb ischemia operated between June 2012 and June 2015, in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: Sixty limbs were revascularized in 54 patients (88.9% male). The mean age was 64.6 ± 1.6 years (range, 39.8-87.2). The main cardiovascular risk factors were tobacco (89%) and diabetes (51%), while the main comorbidities were history of lower limbs revascularization or amputation (22.5%) and coronary artery disease (25.5%). Patients presented with ischemic rest pain in 38.2%, minor tissue loss in 14.5%, and major tissue loss in 47.3% of cases. The majority of aortoiliac and femoral popliteal artery lesions were classified type D, according to the Inter-Society Consensus for the Management of Peripheral Arterial Disease. Twelve aortoiliac (22%), thirty-two femoral popliteal (58%) and nineteen distal revascularizations (35%) were performed. The mean follow-up was 10.9 ± 1.4 months (range, 0-37). There were seven (13%) early thromboses that were successfully treated by new distal venous bypass in three cases and surgical thrombectomy in one case. Late thrombosis occurred in 7 cases and was successfully treated by new bypass in 3 cases. Only four (7.3%) major amputations were required. Limb salvage was achieved in 88% of cases. Stenosis occurred in only 2 cases. The primary patency, the primary assisted patency and the secondary patency were 73.9%, 74.1%, and 81.5% at 12 months respectively. Patency seemed better with aortoiliac revascularizations (100%), but the difference was not statistically significant ($P=.104$).

Conclusion: According to this study, surgical revascularizations for critical lower limb ischemia seem to have good mid-term results in term of limb salvage and patency.

Mid-term results of aortoiliac surgical revascularizations

M.Z.Ghariani, W.Ghariani, A. El Mehdi, A.Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess mid-term results of aortoiliac surgical revascularizations.

Methods: This was a retrospective study compiling consecutive cases of aortoiliac revascularization performed between March 2006 and June 2015, in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: Ninety-one limbs were revascularized in 57 patients (93% male). The mean age was 60.4 ± 1.5 years (range, 34.1-86.6 years). The main cardiovascular risk factors were tobacco (83.9%), hypertension (40.3%) and diabetes (38.7%), while the main comorbidities were coronary artery disease (33.9%), history of lower limbs revascularization or amputation (16.1%) and asymptomatic carotid artery stenosis (15.6%). The main indications were claudication (46.8%) and critical limb ischemia (32.3%). Ten patients (16.1%) presented with major tissue loss. The majority of aortoiliac artery lesions (64.9%) were classified type D, according to the Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II). Thirty-six anatomic (58.1%) and twenty-seven extra-anatomic revascularizations (43.5%) were performed. The mean follow-up was 12.2 ± 2.2 months (range, 0-84.5 months). There were three (4.8%) early and twelve (29.3%) late thromboses. The other main early complications were nosocomial pneumonia (4.8%), hematoma (3.2%) and infection (3.2%). Limb salvage was achieved in 72.7% of ischemia cases. Seven patients (11.3%) underwent major amputation after revascularization thrombosis. The primary and the secondary patency were 77% and 79% at 12 months, and 68.2% and 70% at 24 months respectively. The early mortality was 6.5%. The 12-month survival was 88%.

Conclusion: According to this study, aortoiliac surgical revascularizations seem to have good mid-term results in term patency and outcomes.

Limb salvage after surgery for upper limb ischemia

M.Z.Ghariani, W.Ghariani, A. El Mehdi, A.Marghli

Aim: This study was designed to assess limb salvage after surgery for upper limb ischemia.

Methods: This was a retrospective study compiling consecutive cases of upper limb ischemia managed surgically between April 2013 and June 2015, in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: There were 22 patients (59.1% male). The mean age was 65.4 ± 4 years (range, 28.3-94 years). The main cardiovascular risk factors and comorbidities were tobacco (59.1%), hypertension (40.9%), diabetes (31.8%), chronic renal failure (27.3%), and atrial fibrillation arrhythmia (18.2%). Ischemia was acute in 14 cases (63.6%), subacute in 5 cases (22.7%) and critical in 3 cases (13.6%). Forty-one percent of patients were presenting neurological deficit and fourteen percent developed minor trophic disorders. Arterial occlusions were mainly located at the level of the brachial (54.5%) and the subclavian (27.3%) arteries. Proximal occlusions were treated by subclavian artery transposition (22.7%) and extra-anatomic bypass (18.2%), whereas brachial and forearm arteries occlusions were treated by surgical thrombectomy (59.1%). The mean follow-up was 6.4 ± 1.5 months (range, 0-24.4 months). Limb salvage was achieved in 90.5% of cases. Despite revascularization, one patient had evolved towards irreversible hand ischemia needing amputation, but he refused and died four days later. In another 94 year-old-patient, thrombectomy was unsuccessful leading to minor digital necrosis that required necrosectomy. One last patient developed recurrent ischemia, which finally required a brachio-ulnar-radial venous bypass. Investigations revealed a protein C deficiency. The early mortality was 9.1%. The primary patency and the secondary patency were 91% and 95% at 12 months respectively.

Conclusion: According to this study, upper limb revascularization in case of ischemia appears to provide an acceptable limb salvage rate.

Early postoperative aortic coarctation complication and its hybrid repair

S.Iscan, L.Yilik, Y.Besir, H.Iner, I.Peker, E.Celik, A.Gurbuz

Katip celebi University Izmir Ataturk Training and Education Hospital, Izmis, Turkey

Background: Aorta coarctation is a congenital vascular anomaly which is mostly seen on aortic isthmus. Its prevalence is, 04% of live births. Repair of the aortic coarctation may have high complication risk. In this study, we aimed to present early postoperative aortic coarctation complication and its hybrid repair in a need of third surgical intervention patient.

Case Report: 50 years old male patient, who had coarctation surgery history, admitted to our hospital with complaints of hematemesis and melena. Computed tomography showed extravasations from the distal anastomosis of descending aorta and, periesophagial and left thoracic hematoma. A hybrid surgery with new graft interposition between supraceliac abdominal aorta and old graft's distal part and, thoracic endovascular aortic repair performed.

Aortic coarctation surgery may have high complication risk in early and late postoperative period. TEVAR is first choose method for descending aortic pathologies, like aortic coarctation patients.

Results of the surgical management of dialysis access infection

M.Z. Ghariani, W.Ghariani, A.El Mehdi, O.Gaied, A.Marghli

Department of Thoracic and Cardio-Vascular Surgery, Abderrahmen Mami Hospital, Ariana, Tunisia

Aim: This study was designed to assess mortality and morbidity after surgical management of dialysis access infection.

Methods: This was a retrospective study compiling all cases of dialysis access infection operated between January 2013 and June 2015 in our academic institution. Demographic characteristics, clinical presentations, surgical details and outcomes were recorded.

Results: There were 37 accesses in 35 patients (40.5% male). The mean age was 58.1 ± 2.4 years (range, 26.6-81.9 years). The mean time from access creation to infection was 28.6 ± 9.7 months (range, 0.1-286.9 months). The main comorbidities were hypertension (64.9%), diabetes mellitus (27%), coronary artery disease (10.8%), and cerebrovascular disease (8.1%). A prosthetic material was present in 51.4% of accesses. Forty-nine percent were still functional and 43.2% were not yet used for hemodialysis. The main bacteriological germs were *Staphylococcus aureus* (40.5%), Coagulase-negative staphylococci (16.2%) and *Acinetobacter Baumanii* (8.1%). Specimens were negative in 21.6% of cases. Local signs of infection were present in almost cases (97.3%), while general signs were present in only 45.9% of cases. Fifty-nine percent presented with infectious aneurysms that were ruptured in 27.3% of cases. All accesses were ligated, all infectious aneurysms were resected and all prosthetic material was explanted. Arterial reconstructions were achieved in 32.4% of cases. The mean follow-up was 7.7 ± 1.4 months (range, 0-25.9 months). Only one patient (2.7%) was lost to follow-up. The overall morbidity was 59.4% (24.3% early and 51.7% late). The overall mortality was 48.6% (17.1% early and 40.7% late). Infection was the main complication (46.4%) and the main cause of death (76.5%). The survival was 67% at 6 months.

Conclusion: According to this study, surgical management of dialysis access infection seems to be associated with high morbidity and mortality rates. Infection remains the main cause of complication in this patient population.

Seat-belt abdominal aortic injury-case report and treatment modalities

I.Tomic, M.Dragas^{1,2}, G.Vukovic³, D.Vasin⁴, B.Oluic³, Z.Loncar^{2,3}, J.Stekovic¹, I.Koncar^{1,2}, Nikola Ilic^{1,2}, M.Sladojević¹, P.Mutavdzic¹, L.Davidovic^{1,2}

¹ Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia

² Medical faculty, University of Belgrade, Belgrade, Serbia

³ Clinic for Emergency Surgery, Clinical Center of Serbia

Background: Blunt abdominal aortic injury (BAAI) is extremely rare, diagnosed in 0.04% of all blunt trauma admissions. "Seat belt aorta" means aortic injury caused by a seat belt during a car accident.

Case report: We present the case of a 18-year-old woman, restrained back passenger involved in car vehicle collision, who had descendent colon deserosation, vertebral and rib fracture, and localized abdominal aortic contusion resulted with intimal dissection and partial thrombosis. A 18-year-old woman, back passenger wearing a 3-point seat belt, was involved in a head-on car collision. She complained of thoracic and lumbar pain. Physical examination revealed abdominal ecchymotic abraded cutaneous bands, paraumbilical abdominal tenderness elicited upon palpation and weakened femoral pulsations.

Multidetector computed tomography (MDCT) scan showed partial Th10 body fracture and bilateral serial rib fractures (IX-XI), as well as mesenterium rupture and dilated ascendent and descendent colon.

Enhanced MDCT angiography showed localised dissection with partial occlusion of the infrarenal aortic lumen. Laparotomy wasn't revealed blood in the peritoneal cavity and solid organ injury. Mesenterium rupture, deserosation of the caecum, ascendent and descendent colon was detected. All sites of bowel deserosation were repaired with few longitudinal sero-serosal sutures. Further exploration revealed localized infrarenal aortic wall contusion, without active bleeding and periaortic haemathoma. Under systemic heparinization and infrarenal aortic cross-clamping, we made partial resection of injured aortic segment (approximately length was 5 cm) and reconstruction with tube Dacron 10 mm graft interposition.

Blunt abdominal aortic injuries caused by seat belt at patients involved in motor vehicle collisions can be very dangerous. Choice of optimal BAAI management depends of various factors. Out of them, presence of aortic lesion with visceral injuries those requiring abdominal exploration, can be resolved with immediate open aortic reconstruction.

V511

Reversal of acute renal failure after aortic dissection using TEVAR procedure: a case report

E.Mujicic, M.Kacila, H.Vranic, S.Straus, E.Kabil

Kosevo, Cardioanesthesia, Sarajevo, Bosnia and Herzegovina

Background: Renal failure is a well-recognized complication of aortic aneurysms

Case report: A 33 years old male, with Marfan syndrom, came with a Type B aortic dissection diagnosed CT angiography in Emergency department. Forth years ago, He had Bentall operation in our institutions. CT angiography demonstrated aortic dissection start from arcus aortae (level of art subclavia) through toracoabdominalis part of aortae until art iliacae, more left side. The origins of the celiac artery, superior mesenteric artery, and both renal arteries are from true lumen. The intimal dissection flap appeared to be causing an intermittent stenosis of the renal artery with compromised blood flow to the kidney. Soon after admission, the patient become anuric and his creatinine began to rise from a baseline of 122 mmol/L and peaked 748 mmol/L. During the next 6 days patient had haemodialysis and total parenteral nutrition because he had vomiting for all oral intake. Seventh day after admission of patients TEVAR procedure was performed. The diuresis started after stent placement, immediately. Hemodialysis was successfully discontinued day after procedure. TEVAR procedure may reverse ischemic renal failure associated with aortic dissection.

Recurrent deep venous thrombosis of lower extremities as a result of compression of large cysts horseshoe kidney to double inferior vena cava

P.Mutavdzic¹, M.Dragas¹, D.Galun², D.Masulovic³, A.Ivanovic³, I.Tomic¹, L.Davidovic¹

¹Clinic for vascular and endovascular surgery, Clinical centre of Serbia, Belgrade

²Clinic for digestive diseases, Clinical centre of Serbia, Belgrade

³Center of radiology and MRI, Clinical centre of Serbia, Belgrade

Background: Horseshoe kidney is a well-known congenital anomaly and the most common anomaly of the upper urinary tract. This condition is rarely associated with anomalous inferior vena cava (IVC). In this report, we present a case of deep vein thrombosis right leg due to the extrinsic mechanical stress of renal cyst horseshoe kidney on the double vena cava inferior who was successfully treated with percutaneously punctured cyst and application sclerosing agents.

Case report: A 75-year-old male patient was diagnosed recurrent deep venous thrombosis of the right leg, three months after suspend of treatment with oral anticoagulants. Ultrasound examination and multidetector computed tomography (MDCT) showed the presence of anomalies - double vena cava and horseshoe kidney with a large cyst measuring about 9cm, with compresses the "right" inferior vena cava. Renal cyst were percutaneously punctured for the relief of compression and he received injection of 99.5% ethanol for prevention against reaccumulation of cyst fluid. The control MDCT examination showed a significant reduction in maximum diameter cyst - from 9 to 3cm.

Treatment of large kidneys cysts associated with extrinsic compression of the IVC could be directed toward cyst decompression. Percutaneous aspiration with ultrasound guidance with injection of sclerosing agents as a relatively simple procedure can be the method of choice.

Combined repair using hybrid treatment and multilayer flow modulator to treat a type ii asymptomatic thoracoabdominal aneurysm and its complication during follow-up

M.C.Perfumo, G.Spinella, B.Pane, D.Musio, M.Antonietta Mura, V.Gazzola,T.Peretti,S.Di Gregorio, D.Palombo

IRCCS AOU San Martino IST Vascular and Endovascular Unit, Genoa, Italy

Background: Type I thoracoabdominal aortic aneurysms treatment is a challenge. Selected cases can be treated with hybrid or combined periscope and sandwiches endovascular techniques. Multilayer flow modulator (MFM) can be considered a treatment option.

Case Report: We treated a 65 years-old female patient, affected by type I thoracoabdominal aneurysm. The patient was asymptomatic, aneurysm diameter was 63 mm. We performed combined repair: zone 0 supra-aortic vessels debranching as first step, after 10 days thoracic endovascular repair and MFM were deployed (custom-made Zenith alpha thoracic endoprosthesis (40-36-200 and 38-32-200) and MFM (35-150). No postoperative complications were observed. Follow-up was carried out through computed tomography at 3, 6, 12 months. After 16 months, the patient had a CT scan for suspected hepatic lesion, and a type III endoleak was observed 1 cm above the overlapping zone between the MFM and the endoprosthesis. The patient was treated with a Thoracic endoprosthesis Zenith alpha ZTA 38 167 bridged between the previous endoprosthesis and the MFM. follow up ct (28 month from first treatment and 12 months from last treatment) shows patency of collateral vessels and increase in thrombus volume, with no endoleaks.

Combined use of hybrid endovascular technique with multilayer stent may allow, in selected cases, to treat complex aortic disease and its possible complications in time, especially with the new MFM now available.

V586

Aortic trauma treated with carotid-subclavian bypass and thoracic endoprosthesis in a 31 years old patient

M.C. Perfumo, G.Spinella,B.Pane, D.Musio, M.Antonietta Mura, V.Gazzola, T.Peretti,S.Di Gregorio,D.Palombo

IRCCS AOU San Martino IST Vascular and Endovascular Unit, Genoa, Italy

Case report: A 31 years old patient was transported in to our ER by helicopter emergency transport after a car accident in which the patient suffered an abdominal and thoracic blunt trauma, resulting in a thoracic herniation of abdominal organs through the diaphragm and aortic acute dissection.

The patient was firstly stabilized with conservative treatment of a splenic rupture, and the abdominal organs were repositioned in their site, stitching the tear in the diaphragm. The patient had also a concussion and multiple costal fractures. He was unconscious and needed assistance to breathe.

The first CT scan showed a tear in the descending aorta, 1 cm after the origin of the left subclavian artery, with no sign of bleeding, and the patient was haemodynamically stable.

48 hours interval CT showed in 6 days a progressive enlargement of the descending aorta, with a full formed pseudoaneurysm of 3,7 cm at the last control. The patient was treated the day after, in general anaesthesia, with a left carotid-left subclavian bypass (through an above the clavicle access) and TEVAR performed with Conformable GORE TAG Thoracic Endoprosthesis with a 10% oversizing, and embolization of the origin of the left subclavian artery (complex standard and complex soft Penumbra coils), with surgical right groin access and percutaneous left groin, and left humeral access.

Three months after treatment, the CT scan showed patency of the carotid-subclavian bypass and patency of the thoracic endograft with exclusion of the pseudo-aneurysmal sac. The patient recovered from all the injuries and is currently in good health.

Role of mdct angiography in the diagnosis of fibromuscular dysplasia of the renal arteries

M.Ilic, N.Menković,A.Petković,D.Zorić,D.Ćosić,D.Mašulović

Health center Zaječar, Zajecar, Serbia

Background: Fibromuscular dysplasia is the second most common cause of renal artery stenosis ,behind atherosclerosis, and accounts for a significant number of patients with renovascular hypertension. The majority of these patients are young or middle-aged women. Since the condition represents a potentially reversible cause of hypertension, precise diagnosis is important. It is usually established by digital subtraction angiography as the reference standard. We evaluated the role of multi detector computed tomography (MDCT) angiography as widely available and noninvasive imaging modality in diagnosis of FMD.

Case report: We performed MDCT examination of renal arteries with bolus tracking technique. Contrast media was instilled intravenously at dosage 1,5 ml/kg and flow rate 5 ml/s. The region of interest for starting examination was at abdominal aorta at the level of truncus celiacus. We analyzed exact localization and type of changes of blood vessel walls and determined the stage of the disease.MDCT angiography, with reconstruction modalities, showed the characteristic finding, so-called „string of beads” appearance (short stenoses and dilatations), vascular loops, fusiform vascular ectasia and less common focal concentric, long-segment tubular stenosis. Furthermore lesions occurred at the mid-distal arterial segment, unlike atherosclerosis, which occurs at the ostium or proximal portion of the renal arteries. We performed quantitative measurement of stenosis as potential guideline to adequate therapy.Digital subtraction angiography is golden standard to diagnose and evaluate FMD. MDCT angiography is reliable, noninvasive imaging modality in evaluation of degree of stenosis as well as vessel wall. It can serve as a screening examination especially in young female patients, with onset of hypertension, resistive to triple-drug therapy, as normal results virtually rule out renal artery stenosis.

Axillo-bifemoral graft thrombosis associated with severe infection, successfully treated with traditional hip disarticulation and vacuum assisted wound closure therapy

S.Dunovic¹, S.Veselinovic², D.Svraka², S.Vlaisavljevic¹, M.Maksic¹, V.Keca¹, T.Sutilovic¹, J.Klasnja¹, J.Milanovic⁴

¹University Clinical Centre of the Republic of Srpska. The Vascular Surgery Clinic, Banja Luka, Bosnia and Herzegovina

²The University Clinical Centre of the Republic of Srpska, Clinic of Plastic and Reconstructive Surgery, Banja Luka, Bosnia and Herzegovina

³The University Clinical Centre of the Republic of Srpska, Clinic for Anaesthesiology and Intensive Care, Banja Luka, Bosnia and Herzegovina

⁴The University Clinical Centre of the Republic of Srpska, Banja Luka, Bosnia and Herzegovina

Background: The aim of our paper is to present Vacuum assisted closure treatment of an open wound, after hip disarticulation due to axillo-bifemoral graft thrombosis.

Case report: 56-year old male patient had irreversible acute ischemia of left lower limb caused by thrombosis of an axillo-bifemoral bypass. During hospitalisation, after examination, we performed proximal femoral amputation due to irreversible ischemia. Unfortunately, ischemic factors caused amputated limb deterioration and infection. After several necrotomies a traditional hip disarticulation was inevitable. In the next period, they are developed signs of bacterial sepsis with fever and a high level of inflammation markers. It is decided to completely remove an axillo-bifemoral graft and start a vacuum assisted closure treatment of an open wound. After eight weeks of applying a vacuum treatment, the wound was prepared for covering with a split skin graft of partial thickness.

This case report represents a necessity of applying a vacuum treatment in the patients who have severe complications with an open wound healing. A vacuum assisted closure treatment offers a several advantages. The patient is not exposed to everyday traditional wound dressing procedures under general anesthesia. This treatment, also, reducing the number of hospitalization days, and give the best chances for a satisfactory outcome.

V604

Negative Pressure Wound Therapy Emerging Treatment for Complex Wounds in Vascular Surgery: Case Report

N.Gramatnikovski, B.Kondov, L.Noveski, D.Daskalov, S.Pejkova

University clinic for thoracic and vascular surgery, Medical faculty- Skopje, FYR of Macedonia

Background: The aim of this case report was to describe the results of negative pressure wound therapy in the treatment of a complex wound in vascular surgery. Negative pressure wound therapy was obtained by applying VivanoTec® negative pressure unit. Data measured included wound surface, depth and exudate handling.

Case report: A 17-year-old teenage boy with left upper extremity skin avulsion, plexus brachialis injury and axillary artery and vein blunt transection was emergently hospitalized due to motor vehicle accident. He underwent emergency repair of axillary artery and vein with reverse saphenous vein. The wound was debrided of devitalized tissue. Negative pressure wound therapy was applied six times during the period of three weeks, each application lasting at least 48 hours, followed by dressing change. A dressing was covered and fixated with a secondary bandage. After cleaning of the wound bed with saline 0.9%, we put an open-pore foam to fill the wound cavity, a semiocclusive wound dressing, and a suction tubing. Due to the four mechanisms of the negative pressure wound therapy: macrodeformation, microdeformation, fluid removal and optimizing of the wound environment, a reduction of wound length, width, and depth was achieved. Serious wound infection was treated with appropriate antibiotic therapy. The wound closed completely in five weeks. Negative pressure wound therapy can be safely applied in the treatment of complex wounds in vascular surgery.

Preliminary single-center experience with the bolton treovance endograft in the treatment of abdominal aortic aneurysm

E. Georgakarakos, G.S. Georgiadis, C.Argyriou, N.Schoretsanitis, M.K. Lazaridis

Aim: to present our preliminary experience with the recently-introduced Bolton Treovance aortic stent-graft in the treatment of Abdominal Aortic Aneurysms (AAA).

Methods: eighteen AAA patients were treated with the Treovance aortic stent-graft. Technical success was defined as successful navigation, delivery and deployment to the target site of the endograft's main body and both iliac limbs. Iliac tortuosity was considered mild with >1 angulation of $45-90^\circ$, moderate with $1 \text{ angle} > 90^\circ$ and severe with more than 2 angulations $> 90^\circ$, respectively.

Results: Mean age of patients was 74years. The maximum diameter of the treated AAA was 58 ± 11 cm. The infrarenal neck length was 26.7 ± 5 mm with a diameter of 24 ± 5 mm. The diameter of the right and left common iliac artery was 13.5 ± 2.7 and 15.4 ± 10.4 mm respectively whereas the length was 38 ± 16 and 39 ± 21 mm for the right and left iliac side, respectively.

Primary technical success was 88% with 2 cases of immediate postimplantation central endoleak, successfully repaired with proximal cuff insertion. Severe and moderate iliac tortuosity was met in 3 and 4 patients, respectively. 3 AAA had infrarenal angulation $> 60^\circ$. There were 4 cases of femoral local dissection (3 patients) which were treated with PTFE or vein patching. No device-related death or device-related serious adverse events were reported during the follow-up period (7 ± 4 months). One case of AAA enlargement due to endoleak from lumbar arteries was observed and required further treatment.

Conclusion: Although the size and relative stiffness of the delivery system pose an extra risk for vascular trauma in access sites, the Treovance aortic stent-graft guarantees an accurate and effective deployment even through angulated and tortuous iliac vessels and presents excellent conformability in highly angulated necks.

Depression and atherosclerosis: a pilot study

V.Saleptsis¹, M.Papaliaga², K.Spanos¹, C.Karathanos¹, A.Giannoukas¹

¹University Hospital of Larisa, Department of Vascular Surgery

²University Hospital of Larisa, Department of Psychiatry

OBJECTIVE: Depression and depressive symptoms have been linked to early atherosclerosis. The Aim of this study was to highlight the potential association of Depression and depressive disorders with known risk factors for atherosclerosis and presence of premature arterial involvement in patients without evident Cardiovascular Disease.

METHODS: A cross-sectional observational study was conducted comparing patients with documented depressive symptoms (case group) and without evident symptoms (control group). The Beck Depression Inventory Questionnaire was given to all patients and blood samples were analyzed for Total Cholesterol, Triglycerides, high sensitivity-CRP, Interleukin-6, Tumor Necrosis Factor- α , P-Selectin, E-Selectin. Duplex Ultrasound of the Common Carotid Artery and Internal Carotid Artery was performed in all patients and the Intima-Media Thickness was measured.

RESULTS: Eighty patients (40 for each group) were enrolled in this study. The case group patients had higher levels of Total Cholesterol (211mg/dl vs. 181mg/dl $p=0.010$); of Triglycerides (138mg/dl vs. 97mg/dl $p=0.005$) of P-Selectin (0.87ng/mL vs. 0.61ng/mL $p=0.050$). No difference was found between the two groups in respect to all other examined factors. The intima media thickness was not different between the two groups.

CONCLUSION: Depression does not appear to be associated with early Atherosclerosis as derived from the intima media thickness of the carotid artery. However, patients with depression had higher levels of known risks factors of atherosclerosis. Whether this may have an impact in future remains to be investigated in larger prospective observational studies.

Ruptured aneurysm of proximal part of right subclavian artery: case report

I.Kuzmanovic, I. Banzić, S. Sretenović, B. Barišić, M. Marković, P. Mutavdžić, L.Davidović

Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

Background: Upper extremity arterial aneurysms are very rare in comparison to other peripheral artery aneurysms. There are only few papers on this subject in the literature. Diagnostic and surgical treatment of ruptured aneurysm of thoracic part of subclavian artery is very important due to many complications including blood loss and lethal outcome.

Case report: Here we present the case report of patient J.A. 42 years old, who was referred to us by a cardiac surgeon after aorta dissection was excluded. Her symptoms started on the admission day, severe pain in her right chest that lasted for 15 minutes. In her medical documentation she had MSCT of her chest from the same day (from regional health centre) that showed large aneurysm of the proximal part of right subclavian artery with the signs of rupture towards the mediastinum. On MSCT aortic arch branches were not shown beyond the chest. Repeated MSCT of chest with shoulder and neck area revealed increase of mediastinal hematoma with the signs of trachea compression. Only small, distal part of right subclavian artery was not affected by the aneurysm. The aneurysm spread up to 1 cm from the right vertebral artery beginning. Medial sternotomy with extension of incision in right subclavicular fossa has been performed. After the partial aneurysm resection, a direct reconstruction was performed using a dacron graft, 8 mm radius. Patient was released on the seventh postoperative day. Pathohistology revealed cystic necrosis of subclavian artery media.

Different assessment of AAA size with ultrasound and MDCT

D.Vasic, O.Radmili, D.Markovic, S.Todorovic, M.Vranes-Stojimirov

Clinic for Vascular and Endovascular Surgery, Belgrade, Serbia

Aim: Accurate measurements of abdominal aortic aneurysm (AAA) diameters with both multiple detector computed tomography (MDCT) and ultrasound (US) are essential for screening, planning and surgical intervention and follow-up after endovascular repair. Clinical assessment of maximal AAA diameter assumes clinical equivalency between US and MDCT. This study was undertaken to compare maximal AAA diameter by US and MDCT, and to assess the effect that AAA angulation and length of neck has on each measurement.

METHODS: Anteroposterior and transverse diameters were measured outer to outer, by US and MDCT, while aortic angulations and minor axis diameters were measured prospectively (neck length ≥ 2.5 cm). Correlations were performed between all image diameters, and differences in their means were assessed with paired t-test.

RESULTS: 213 patients were analyzed. Mean anteroposterior diameter measured by MDCT (59.0 mm) was insignificantly larger ($P > 0.05$) than those measured by US (58.1 mm). The difference between transverse diameter of AAA measured by US and MDCT (3.6 mm) was significant ($P < 0.05$).

In cases of AAA without angulations mean AAA diameter measured by US was 5.4 (± 0.68) cm and 5.5 (± 0.58) cm measured by MDCT ($P = 0.4$), with excellent correlation ($r = 0.94$).

In cases of AAA with angulation $\geq 30^\circ$ mean AAA diameter measured by US was 5.6 (± 0.39) cm and 5.8 (± 0.43) cm measured by MDCT ($P = 0.2$), with good correlation for this group ($r = 0.69$).

In cases of AAA with angulation $\leq 30^\circ$ mean AAA diameter measured by US was 5.7 (± 0.83) cm and 6.0 (± 0.79) cm measured by MDCT; significantly larger ($P < 0.001$).

Conclusion: Difficulties in AAA diameter are caused by aortic tortuosity. Diameter of this tortuous aorta is exaggerated with a true transverse view and is correctly measured only in an oblique view, coronal images eliminate this problem.

A case of necrotizing fasciitis in a hemodynamically unstable and metabolically imbalanced patient – a disaster prevented

B.Kukic¹, K.Stevanovic¹, I.Kuzmanovic², M.Vjestica-Mrdak¹, M.Novovic¹, Lazar Davidovic^{2,3}

BACKGROUND: Necrotizing fasciitis, a microbial infection of fascia, with secondary necrosis of subcutaneous tissues, occurs in approximately 0.4 cases per 100 000 adults.¹ Due to rapidly progressive course² the disease is highly lethal, with mortality rate ranging from 30-50%.³

CASE REPORT: A 57-year-old female, who has undergone femoropopliteal bypass reconstruction, with a history of hypertension, myocardial infarction, dilated cardiomyopathy and insulin dependent diabetes was admitted to the Emergency Center's Metabolic Unit, due to extreme hyperglycemia (38 mmol/L) and metabolic imbalance. Two days later, since intense pain, coldness and phlegmonous process appeared in left leg, the patient was transferred to our institution. On admission the patient was hypotensive, tachycardic, tachydyspnoic and anuric. Laboratory analyses showed significantly increased white blood cell count, C-reactive protein and procalcitonin values (33.8x10⁹/L, 204.4 mg/L, 2.95 ng/mL, respectively). Arterial blood gas analyses revealed pronounced metabolic acidosis with hypokalemia, hypocalcemia, hyponatremia and hyperglycemia (2.4, 1.08, 128, 21.4 mmol/L, respectively). Urgent therapeutic measures were initiated: fluid resuscitation, correction of hyperglycemia and electrolytes disturbances, albumin supplementation, diuresis stimulation, empiric antibiotic therapy (clindamycin 300 mg IV/6h and metronidazole 500 mg IV/8h) and continuous infusions of norepinephrine. Since phlegmonous process spreaded rapidly, when stabilized, the patient underwent an above-knee amputation under general endotracheal anesthesia. Intraoperative findings were indicative for necrotizing fasciitis (later confirmed pathohistologically). When hemodynamic supportive therapy was suspended, laboratory findings and electrolyte/metabolic state were satisfying the patient was transferred in a good general medical condition to the other institution for further evaluation and treatment with hyperbaric oxygen therapy.

Extensive tissue necrosis and consequential systemic toxicity, seen in necrotizing fasciitis may lead to lethal outcome. Though fulminant course required an above-knee amputation, this case highlights the fact that prompt hemodynamic supportive and resuscitation measures, along with timely diagnosis and surgical intervention can reduce mortality of this disease