Cardiac Surgery Forum 1 - Coronary Session
May 1, 2009, 2nd Congress Day
08:00-09:00

CSF1-1
HOW TO SELECT RADIAL ARTERIES THAT ARE SUITABLE FOR CONDUITS PRIOR TO CABG
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Objective: This study presents our approach in radial artery selection prior to CABG addressing two main concerns of radial artery harvesting: the safety of harvest and the conduit quality evaluation.

Methods: One hundred and fifty-four patients underwent Allen test, Doppler ultrasonography and the pulse oximetry testing prior to surgery. Collateral circulation was considered insufficient based on positive Allen test results, abnormal pulse oximetry tests as well as on Doppler ultrasonographic criteria: increase in the ulnar peak systolic flow velocity >20%, absent snuffbox reversal of flow, small ulnar artery (<2 mm in inner diameter) and congenital anomalies of forearm arteries. The graft quality criteria to exclude usage were small size (<2 mm in inner diameter) and calcifications.

Results: The series of tests employed, excluded 27.9% of patients from radial artery removal. The assessment of safety for radial artery removal showed that Allen test was positive in 9.7% of patients, 14.9% of patients did not meet Doppler ultrasonographic criteria for safe radial artery harvesting, and abnormal pulse oximetry test results were present in 5.8% of patients. Graft quality evaluation excluded 10.4% of patients from radial artery removal.

Conclusions: The common practice to rely on Allen test alone, can be improved by using the proposed algorithm of tests. This method provides very safe radial artery removal as well as preoperative insight in quality of a potential graft.

CSF1-2
PREOPERATIVE USE OF LEVOSIMENDAN IN PATIENTS WITH SEVERE LEFT VENTRICULAR DYSFUNCTION UNDERGOING CORONARY ARTERY BYPASS GRAFTING
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Objective: Levosimendan is a potent inotropic and vasodilator drug used in the treatment of decompensated heart failure. It enhances myocardial contractility by raising troponin C responsiveness to calcium with no increase in oxygen demands, and produces antistunning effects without increasing myocardial intracellular calcium concentrations. Nowadays, use of levosimendan in cardiac surgery has gradually increased. The aim of this study is to investigate the efficacy and safety of preoperative use of levosimendan in high-risk patients undergoing coronary artery bypass grafting.

Methods: We studied 18 patients with severe left ventricular dysfunction undergoing first-time elective coronary artery bypass grafting. Preoperative left ventricular ejection fractions were 35% or less in study population. All patients received 12.5 mg of levosimendan infusion at a rate of 0.2 µg/kg/min without a loading dose. Levosimendan infusion started 12 h before operation. It did not continue during postoperative period.

Results: There was no in-hospital mortality. Levosimendan infusion was tolerated well in all patients. There were significant amelioration in hemodynamic parameters and diuresis. Six patients needed intraaortic balloon-pump support including preoperative insertion in two patients. Within 24 h, all other inotropic agents were weaned successfully. All patients showed no stormy postoperative course.

Conclusions: We conclude that the preoperative use of levosimendan may be associated with good cardiac function during weaning from cardiopulmonary bypass and during postoperative period in patients with severe left ventricular dysfunction undergoing coronary artery bypass grafting.

CSF1-3
OPCAB VS. ON-PUMP CAB IN HIGH RISK PATIENTS
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Objective: To confirm OPCAB as a safe procedure in high-risk patients. To assess myocardium damage in OPCAB patients in comparison to classic CABG.

Methods: Single centre study. Records of patients undergoing either OPCAB (n=367) or isolated classic CABG (n=477) in 2008 were reviewed retrospectively. Redo surgery, cardiogenic shock or evolving myocardial infarction were exclusion criteria. Nevertheless, patients with unstable angina remained within the study. The incidence of several preoperative parameters was compared in both groups. Multivariable analysis was applied in order to evaluate OPCAB as a risk factor for early mortality and several morbidities. Additionally, in a randomly chosen group of patients (n=439) serum troponin was measured early after surgery. Again OPCAB was evaluated as a risk factor for the elevation of postoperative troponin concentration.

Results: As for preoperative variables OPCAB patients were older (mean age 65.0 vs. 62.8, P=0.001), more frequently female (31.3% vs. 24.5%, P=0.05), with higher incidence of cerebro-vascular disease (24.4% vs. 16.6%, P=0.001) and higher operative risk as assessed by EuroSCORE (4.4 vs. 3.7, P=0.001).

There was no significant difference in early mortality (1.4% vs. 1.3%, NS). In multivariable analysis OPCAB did not prove to affect either mortality or most morbidities like postoperative MI, IABP use, cerebral stroke, mental disorder, bleeding, blood products use, MOF, SIRS and ICU stay. The only exception was high dose inotropic support which was required less frequently in case of OPCAB (OR=0.3). Early postoperative troponin concentration was lower in OPCAB patients (0.48 ng/ml vs. 0.97 ng/ml, P=0.001). Again in multivariate analysis OPCAB significantly influenced troponin level (β=0.47).

Conclusions: Although there was no significant difference in postoperative outcome between both groups OPCAB still can be regarded as a less invasive procedure considering worse preoperative characteristics, especially in terms of neurological disorders. Troponin level in CABG patients may suggest myocardial damage due to cardiac arrest during surgery. Fortunately it seems to be reflected only by higher inotropic support without higher rate of myocardial ischemia or infarction.

CSF1-4
DIAGNOSTIC ACCURACY OF DUAL SOURCE COMPUTED TOMOGRAPHY IN PATIENTS WITH OCCLUDED LEFT ANTERIOR DESCENDING ARTERY THAT COULD NOT BE VISUALIZED IN CORONARY ANGIOGRAPHY
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Objective: The aim of this study is to validate the usefulness of coronary computed tomography (CT) in assessing patency of occluded LAD.

Methods: In twenty-one patients (17 males, mean age 69.5±11.8 years) with clinical indication for revascularization (chest pain, ECG oscillation, positive functional testing) and occluded left anterior descending (LAD) artery that could not be seen in coronary angiography. In all patients cardiac surgeon primarily refused coronary bypass grafting and suggested laser
revascularization, as a standard of care in our institution. The coronary computed tomography was performed in all patients, using the dual-source scanner with temporal resolution of 83 ms. The individual modifications of scanning protocol were applied. In all cases, if technically feasible, the arterial graft was implanted to LAD, during surgery.

Results: The graft to the LAD was implanted in 17 patients, all of them had a good distal segments in CT, without significant stenosis. In the remaining four patients, in whom the distal part was not seen in CT it was impossible to implant the graft - laser revascularization was performed. All the patients with successful revascularization had a LAD with a minimal diameter of 1.5 mm clearly seen in CT. The remaining patients with no filling of the LAD, had an intraoperatively small LAD diameter, massive calcifications, significantly diseased distal part or intramural course of the vessel.

Conclusions: The dual source computed tomography allows for optimal visualization of the occluded LAD, with good correlation to surgical findings. CT should be the modality of choice for patient with occluded LAD and clinical indication for revascularization.

CSF1-5
EARLY RESULTS OF TMLR WITH/WITHOUT CABG IN 150 CONSECUTIVE PATIENTS WITH ‘NO OPTION’ CAD
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Objective: The goal of a study was to evaluate mortality and complication rate in patients with ‘no option’ subject to TMLR+CABG.

Methods: One hundred and fifty consecutive patients with ‘no option’ CAD were operated between January 2004 and November 2008. There were 45 female and 105 male patients aged 42-81 years, mean age was 65.5 years. Thirty-five patients underwent sole TMLR procedure, and 115 patients underwent TMLR+ CAGB. All patients were carefully monitored for: need for intrastitch support; troponin I release, myocardial ischemia or MI; heart rhythm disturbances; bleeding or septic complications.

Results: Twenty patients (13.3%) with moderate heart failure needed support with dobutamine 5-15 mg/kg/h. Six patients needed (4%) support with dobutamine and IABP, three patients (2%) needed support with dobutamine, epinephrine and IABP; 38 patients (24.8%) had increased level of troponin above 10. 35 patients (23%) had new ischemia on ECG, nine patients (5.9%) had diagnosis of new myocardial infarction, 13 patients (8.6%) had ventricular arrhythmia, four patients with VF required defibrillation Other complications were rare and included - rethoracotomy for bleeding in four patients, neurological deficit, infection and asystole in one patient each. One patient died because of intraoperative MI, on the second postoperative day.

Conclusions: TMLR+CABG is a safe procedure with low mortality and minor transient complications. This procedure can be recommended for patients with ‘no option’ CAD.

CSF1-6
DID INCREASED NUMBER OF PCI CHANGE PROFILE OF CORONARY PATIENTS INDICATED FOR SURGERY?
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Objective: Despite the fact that the number of PCI increases every year, the incidence of CAGB does not decrease and it seems that coronary patients with higher risk represents a greater proportion of patients treated by cardiac surgeons.

Methods: A consecutive group of 4,019 coronary patients operated on from January 2001 to December 2007 in our Clinic, was reviewed. Patients with combined coronary and valvular procedures were excluded from the study. The number of PCI and CAGB per year was analyzed. The European System for Cardiac Operative Risk Evaluation (EuroSCORE), mean age and the number of bypasses were compared in CAGB patients. For statistical analyses the Pearson $\chi^2$ and ANOVA tests were used.

Results: The number of PTCA per year increased significantly from 159 in 2002 to 1328 in 2007 ($P=0.001$). In comparison with CAGB, from 557 to 704 ($P=0.037$). The mean EuroSCORE increased from 2.74±2.14 in 2001 to 2.96±2.21 in 2007 ($P=0.027$), while the mean age increased from 56.8±8.82 to 60.41±8.33 ($P=0.001$). The number of one and two vessels coronary disease decreased from 42.5% to 37.1% in 2007, while the number of three vessels disease increased from 54.8% to 62.9% ($P=0.001$). The mean number of bypasses was 2.55±0.80 in 2001, but 2.96±2.2 in 2007 ($P=0.001$).

Conclusions: The number of CAGB increased despite the enlargement of PCI. Patients having an indication for CAGB are older and older, have higher and higher EuroSCORE and need more and more bypasses.

CSF1-7
PREOPERATIVE GLYCATED HEMOGLOBIN (HGBA1C) PREDICTS POSTOPERATIVE ATRIAL FIBRILLATION AFTER CORONARY ARTERY BYPASS GRAFTING
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Objective: Many factors are associated with the occurrence of postoperative new-onset atrial fibrillation (POAF) after coronary artery bypass grafting (CABG). However, it is unknown whether preoperative blood glucose control, manifested by glycated hemoglobin (HgbA1c) levels, impacts POAF after CABG. The purpose of this study was to examine the value of preoperative HgbA1c for prediction of POAF after CABG.

Methods: Between 1 January 2002 and 31 March 2008, 596 consecutive patients had isolated CABG (99.4% off-pump, no conversion to on-pump during operation) in our hospital. We excluded patients who had non-elective operation (n=122) or incomplete data (n=56). Remaining 418 patients were retrospectively reviewed. HgbA1c levels were measured in preoperative blood samples of each patient. The end point was POAF. POAF occurred in 87 patients (20.8%, 87/418, group 1) and sinus rhythm was maintained in 331 patients (79.2%, 331/418, group 2). Potential independent predictors of end point were identified by univariable logistic regression analyses. Variables identified by univariable analyses with P-value of 0.05 or less were added to the multivariable regression models.

Results: Between two groups, patients did not differ according to most of their demographics, risk factors, comorbidities, preoperative medications, and operative data except for mean age (group 1 vs. group 2, 71 years vs. 68 years, $P=0.002$), mean HgbA1c (5.8% vs. 6.1%, $P=0.022$), and incidence of red blood cell transfusion (42% vs. 54%, $P=0.039$). Univariable analyses identified age, HgbA1c, and red blood cell transfusion as potential predictors. Multivariable logistic regression analysis reveals HgbA1c and age as independent predictors of POAF (HgbA1c, OR, 0.77; 95% CI, 0.61-0.97; $P=0.029$. Age, OR, 1.03 per year; 95% CI, 1.00-1.06; $P=0.047$).

Conclusions: Patients with higher preoperative HgbA1c levels are at lower risk of having postoperative new-onset atrial fibrillation in coronary artery bypass grafting.
of platelet inhibition was measured using TEG and a 100% of inhibition of platelet aggregation was found using VerifyNow® (Aspirin Reaction Units 487.9±17.3). Glucose at 300 mg/dl impaired the inhibitory effects of aspirin on human platelet using thromboelastography and VerifyNow®. In hyperglycemia, inhibition of the AA-activation pathway with aspirin may not be sufficient to prevent platelet activation.

CSF1-9
RE-DO TRANSMYOCARDIAL LASER THERAPY FOR DIFFUSE, NON-RE-VASCULARIZABLE CORONARY ARTERY DISEASE IS SAFE AND FEASIBLE
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Objective: Reoperative CABC is a fundamental problem of coronary surgery. Adverse events still regularly occur during cardiac reoperations. Most of these events can be anticipated and they occur despite utmost effort to avoid them. This obviously depends on the availability of good quality conduits and graftable distal coronary arteries. Patients with not suitable distal targets available either for CABC or PTCA are appropriate candidates for re-do TMR. The purpose of the study was to assess in-hospital and long-term results and the effectiveness of re-do TMR procedures.

Methods: Between 2004 and 2008, 52 patients in our centre underwent reoperative TMR. Isolated TMR was performed in 31 patients (1st group), in eight cases TMR was done with application of angiogenic factor ECGF (2nd group), in four cases with mesenchymal stem cells (3rd group). In cases (9 patients) with at least one stenotic graftable major vessel with viable myocardium in the area of this CA TMR was performed in combination with CABC on beating heart (OPCAB) (4th group).

Results: There were no hospital deaths, no perioperative myocardial infarctions, and no strokes. No patient required in-hospital and follow-up reoperations. This was associated with increased exercise tolerance, significant reduction of angina scores and improvement in quality of life. Postoperative technecium scan controls (SPECT) after lasing demonstrated significant improvement in stress-induced ischemia in majority of patients. PET study revealed restoration of segments with hibernating myocardium. In long-term periods after TMR no deaths from cardiac or TMR-related causes were documented. Results in the 4th group were a little bit better and we consider that this combination allows to achieve more complete myocardial revascularization.

Conclusions: Re-do TMR is a safe and effective procedure. It allows to avoid risks associated with re sternotomy, cardiopulmonary bypass, cardioplegy and manipulations on conduits and coronary arteries. In stable patients with ‘no option’ CCS angina grade III-IV TMR can significantly reduce the grade of angina. TMR effectiveness is determined by improvement of regional micro-perfusion. At follow-up TMR showed significant functional improvement as well as improvement in quality of life. Re-do TMR definitively decreases operative mortality and morbidity when comparing data with that from reoperative CABC.

CSF1-10
REAL COLOR CCD CAMERA SYSTEM; NEW DEVICE FOR INTRAOPERATIVE GRAFT ASSESSMENT IN CABG
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Objective: We developed a new color CCD imaging device for intraoperative ICG angiography during CABG. Here we showed that the device visualized ICG fluorescence on the heart with vivid colors and enabled us to assess myocardial perfusion as well as graft flow.

Methods: A combination of custom-made optical filters and an ultra-high sensitive color CCD image sensor, which can detect near-infrared (NIR) rays up to 1200 nm. A light source for excitation of ICG dye was made with an array of light emitting diodes (LED). Using this system, we investigated intraoperative graft patency, while ICG dye (0.02 mg/kg) was injected through a central venous catheter. All patients signed a consent form before operation.

Results: We assessed the intraoperative graft patency in 30 patients undergoing isolate OPCAB and five patients undergoing conventional CABC. The average age was 69.7±9.2 years. We obtained intraoperative graft flows and images in 130 anastomoses of 116 grafts. The average number of distal anastomoses was 3.8±1.0 per patient. Although the ultrasound transit-time flowmeter (TFM) detected only three abnormal graft flows (2.6%), the color CCD camera detected 20 abnormal flows (17.2%); 5 unfavorable perfusions, 11 competitive flows, 4 others. The TFM gave only the local flow information of the graft on its probe, and thus never revealed the quality of CABC-induced restoration of myocardial perfusion at the area distal to the probe. In unfavorable group, although patency of the grafts was indicated with the TFM, the analysis of the ICG fluorescence intensity showed the significant hypoperfusion at the myocardial area distal to the anastomoses in three among 19 in-situ arterial grafts and two among 20 sequential grafts (graft vs. myocardial area: 230±26 vs. 156±13 a.u., P=0.02). When the native stenosis was around 75%, percentage of retrograde flow (retrograde flow/total forward flow) was >3% and mean flow was around 20 ml/min with TFM, our system visualized competitive flows in 11 among 39 in-situ arterial grafts. In others group, although ICG fluorescence was captured on the grafts, CCD camera was unable to capture the target coronary fluorescence.

Conclusions: The unique device that visualized ICG-enhanced structures against a background of natural myocardial color improved the visibility of abnormality in flow and perfusion. Therefore, the real color CCD camera is useful for the intraoperative assessment of graft flow and patency in CABC.

CSF1-11
PROGNOSTIC VALUE OF PREOPERATIVE QT INTERVAL FOR PREDICTION OF LONG-TERM MORTALITY AFTER ISOLATED OFF-PUMPK CORONARY ARTERY BYPASS GRAFTING
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Objective: Prolonged QT interval has been associated with an increased mortality in population-based studies and a variety of cardiac diseases. The purpose of this study was to examine the value of computerized QT interval for prediction of long-term all cause and cardiovascular mortality in patients undergoing isolated off-pump coronary artery bypass grafting (CABG).

Methods: We studied 656 consecutive patients undergoing isolated off-pump CABG between January 2002 and October 2008. QT intervals were preoperatively measured by computer in all 12 leads and corrected for heart rate (QTC) by use of Bazett’s formula.

Results: After mean follow-up of 3.1 years, there were 71 deaths from all causes, including 21 cardiovascular deaths. The 71 patients who died were older; had lower LBMIs, lower BSAs, higher NYHA classes, a greater prevalence of chronic kidney disease, congestive heart failure, and peripheral vascular disease, and greater number of diseased coronary artery. The 21 patients who suffered a cardiovascular death similarly had lower LBMIs, higher NYHA classes, a greater prevalence of chronic kidney disease, and congestive heart failure. When patients were divided into groups by use of threshold of 460 ms, the 117 (17%) patients with QTc<460 ms had a significantly greater all cause and cardiovascular mortality by Kaplan-Meier analyses. The actuarial 5-year all cause mortality was 54% among patients with QTc>460 ms and 12% among those with QTc<460 ms (P=0.0001). The actuarial 5-year cardiovascular mortality was 32% among patients with QTc>460 ms and only 3% among those with QTc<460 ms (P=0.0001). After multivariate Cox regression analyses including all potential univariate predictors, QTc remained a strong predictor of all cause mortality (hazard ratio [HR], 1.11 per 10 ms; 95% CI, 1.03–1.19; P=0.0048) and cardiovascular mortality (HR, 1.23 per 10 ms; 95% CI, 1.10–1.38; P<0.0002). Similarly, QTc>460 ms was an independent predictor of all cause mortality (HR, 2.34; 95% CI, 1.16–4.69; P=0.017) and cardiovascular mortality (HR, 3.49; 95% CI, 1.03–11.85; P=0.045) in multivariate Cox models with other univariate predictors. Risk stratification remained statistically significant even if alternative thresholds of 440 ms and 460 ms for QTc were used.

Conclusions: Rate corrected QT interval is a powerful and independent predictor of long-term mortality after CABG.
CSF2-1
SELF-EXPANDING ARTERIAL CANNULA FOR CARDIOPULMONARY BYPASS: HEMODYNAMIC PERFORMANCE IN AN ANIMAL MODEL
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Objective: Small arterial cannulas for peripheral cardiopulmonary bypass are frequently related to high pressure in the circulatory system. Despite several improvement over the last ten years, the peripheral arterial cannulas did not changed in their main concept. Shear-induced haemolysis in the arterial lines under high pressure and high flow can be avoided using a new-shape cannula. Aim of this study is to compare the hemodynamic parameters coming from a standard peripheral arterial cannula and from the arterial self-expanding Smartcanula™ (Smartcanula LLC, Lausanne, Switzerland).

Methods: Three consecutive calves underwent general anesthesia, intubation and peripheral cannulation with a standard cardiopulmonary bypass circuit (3/8-1/2 PVC tubing). Hemodynamic parameters were monitorized after general heparinisation (3 mg/kg), a 15 french (F) standard arterial cannula (NovaPort, Novalung® GMBH, Talheim, Germany) and an arterial self-expanding Smartcanula™ were inserted into the carotid artery after cervicotomy. The Smartcanula™ size was constricted to 15F to be comparable to the standard one. Hemodynamics were compared under different pump flows.

Results: Three animals were cannulated successfully with the standard arterial cannula and with the Smartcanula. The mean bodyweight was 61.7±1.5 kg and the mean body surface area was 1.39±0.1 m². The mean calculated target pump flow was 3.30±0.1 l/min. Under CPB, cannulas were tested for different pump flows: from 1 to 6 l/min. Measurements were compared: despite an equalisation of the arterial pressures from 1 to 3 l/min, the Smartcanula™ pressure is lower under high pump flow (284 mmHg vs. 349 mmHg, respectively, at 5 l/min, P<0.005 and 370 mmHg vs. 448 mmHg, respectively, at 6 l/min, P=0.005).

Conclusions: Self-expanding arterial cannula guarantees good results under standard CPB flows. Moreover, the mean arterial line pressures reached under high flows (4-6 l/min) are lower than mean arterial line pressures reached using a standard rigid arterial cannula. Despite more studies are mandatory, the results coming from this study are satisfactory.

CSF2-2
STENTBASED, OFF-PUMP CREATION OF AN APICOAORTIC CONDUIT
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Objective: An apicoaortic conduit (AAC) is an alternative therapy in patients with aortic valve stenosis and severe aortic calcification. We investigated whether it is feasible to create an apicoaortic conduit off-pump with a newly developed stent-based coring- and cannulation-device in an animal model.

Methods: Five adult pigs with a mean weight of 70 kg were anesthetised and a left-lateral thoracotomy was performed. A metal cylinder sharpened at its tip was used to punch the beating heart's apex allowing the removal of the tissue via a lock. Subsequently, a 20 mm vascular prosthesis with a built-in stent at its proximal end was introduced into the apex. The stent expanded by pulling back the punch creating the apical anastomosis of the conduit. The distal anastomosis to the descending aorta was performed by conventional running suture. The whole procedure was guided by distinct echocardiographic imaging. Functionality was validated by banding the ascending aorta. MR-Imaging was conducted to visualise the conduit and its state of flow.

Results: There was no significant blood loss and no hemodynamic depression during the procedure. It was possible to yield the entire cardiac output through the conduit after creating a high grade aortic stenosis without any significant changes in hemodynamics. Autopsy revealed an excellent anchorage of the prosthesis. Neither relevant intracavitary injury nor thrombotic formation was seen.

Conclusions: Our investigations proved the feasibility and excellent functionality of a stentbased sutureless off-pump creation of an AAC. This approach might be used for other purposes, for instance off-pump installation of mechanical cardiac assist devices.

CSF2-3
CHARACTERIZATION OF ENDOTHELIAL PROGENITORS IN ISCHEMIC HUMAN HEART
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Objective: The identification of cardiac resident stem cells has raised new hope for myocardial restoration and might have an important impact on stem-cell based therapy concepts in the future. Here we investigate the frequency and the expression pattern of endothelial progenitors before and after ischemic events in human heart.

Methods: Expression of ABCG2+/CD31+ cells was evaluated by immunohistochemistry in biopsies obtained from 55 patients during heart surgery, including left and right ventricles and both atria. ABCG2 is a specific cardiac stem cells marker and CD31 is well known as a surface marker for endothelial cells. Fluorescence microscopy was used for analysis and BCRP+ cells were excluded from the cell count if they did not stain positive for CD-31.

Results: ABCG2+/CD31+ cells were found more frequently in ischemic heart compared to non-ischemic heart (5.4±2.6% vs. 3.40±2.79%, P<0.024). In detail the distribution pattern of ABCG2+/CD31+ cells was identified as follows: they were characteristically located in proximity of small capillaries and in the walls of arteries and a mean of 7.68±2.15% was detected in ischemic ventricle. p-VEGF2/3.7±2.17% in non-ischemic ventricle (P=0.001). In contrast to this, the atria showed very similar levels of ABCG2+/CD31+ cells in the ischemic and non-ischemic group (4.98±2.56% vs. 4.51±2.29%).

Conclusions: ABCG2+/CD31+ cells representing endothelial progenitors were detected in all areas of the heart within capillaries and small arteries. Increased numbers were detected in the ischemic area of the ventricle indicating reactive angiogenesis after myocardial infarction. The heart seems to induce angiogenesis as a specific response to injury along with the migration of endothelial progenitors to the infarction area.
CSF2-5
PERIVASCULAR TISSUE OF INTERNAL THORACIC ARTERY RELEASES RELAXING FACTOR ACTING THROUGH CALCIUM-DEPENDENT POTASSIUM CHANNELS
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Objective: We have shown that perivascular tissue (PVT) of human internal thoracic artery (ITA) releases potent, soluble relaxing factor. The nature of this factor and its exact mechanism of action remains however unknown. It was proposed that releasing properties of PVT may involve different potassium channels. The aim of the study was to assess the involvement of potassium channels in relaxing properties of human ITA PVT.

Methods: Human ITA rings were studied in vitro. Fragment of ITA from one patient was skeletonized and placed in 20 ml organ tissue bath. The PVT remaining from skeletonization was incubated separately. Two 3 mm rings from the same ITA were studied simultaneously - one serving as a control. ITA was precontracted with serotonin (10-5.5 M), PVT was then transferred to studied vessel. After washout appropriate potassium channel inhibitor was added and relaxation of precontracted artery to PVT was assessed again. We analyzed: selective large conductance calcium-dependent potassium channels inhibitor - iberiotoxin (100 nM), selective small conductance calcium-dependent potassium channels inhibitor - apamin (1 µM) voltage-dependent potassium channels inhibitor - 4-aminopyridine (1 mM and 5 mM), inward rectifier potassium channel blocker - BaCl2 (100 µM) and ATP-dependent potassium channel inhibitor - glibenclamide (10 µM); n=7 for every inhibitor. ITA contractility was presented in mN. Relaxation to PVT was expressed as the percent of preconstriction with serotonin and compared using paired t-test.

Results: The transfer of perivascular tissue caused significant relaxation of ITA precontracted with serotonin (serotonin: 52±2.6 mN vs. serotonin+PVT 23±2.6 mN, P<0.001; 53±4% relaxation). The relaxation of ITA caused by PVT was prevented by pretreatment with iberiotoxin - 100 nM (50±12% vs. 0±5% before and after PVT transfer, respectively; P=0.002) and ATP - 5 mM (67±5% vs. 12±6% before and after PVT transfer, respectively; P<0.001). Neither apamin - 1 µM (53±7% vs. 51±6% P=0.8) nor 4-aminopyridine - 1 mM (46±7% vs. 48±10% P=0.7) or BaCl2100 µM (49±7% vs. 62±9% P=0.15; before and after PVT transfer, respectively) affected the relaxation properties of PVT. Conclusions: Periarterial tissue of ITA releases soluble factor that significantly attenuates ITA contractility and might therefore prevent ITA spasm. The factor appears to act through the activation of large-conductance calcium dependent potassium channels.

CSF2-6
PREOPERATIVE INDIVIDUAL NEUTROPHIL RESPONSE AS A PREDICTIVE MARKER OF CLINICAL OUTCOME FOLLOWING OPEN HEART SURGERY AND THE IMPACT OF LEUKOCYTE FILTRATION
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Objective: Open heart surgery is associated with massive systemic inflammatory response. Neutrophils, are the main mediator of this response. We hypothesised that the degree of neutrophil activation and inflammatory response to open heart surgery varies individually and correlates with clinical outcome. The aim of this study was to determine if individual clinical outcome can be predicted preoperatively through assessment of in-vitro stimulated neutrophil response. Following that, the effects of neutrophil manipulation through leukocyte filtration are examined.

Methods: Neutrophil response was assessed preoperatively (n=40) through change in neutrophil adhesion molecule (CD11b, CD62L and PSLG-1) expression before and after in-vitro stimulation with PMA (1 ng/ml), LPS (1 µg/ml) and FMLP (1 ng/ml). Stimulated neutrophil response was then correlated with postoperative clinical outcome. Patients are then randomised to leukocyte filtration (LD) (n=20) and control group (n=20) and the effect of leukocyte filtration on neutrophil response and clinical outcome studied.

Results: Individual variation of preoperative in-vitro stimulated neutrophil response was demonstrated. Preoperative in-vitro stimulated neutrophil response mimics surgical stimulation. Significant correlation were shown between neutrophil response with maximum serum creatinine change, CKMB-fraction, adrenaline requirement, noradrenaline requirement, duration of adrenaline required and time to extubation. White cell count and percentage neutrophils is lower in the LD group (P<0.05). CD11b expression (P<0.005) and PSLG-1 expression (P=0.043) across leukocyte filters are increased. However, no significant difference was detected in clinical outcome between LD and control group.

Conclusions: Individual neutrophil response varies and can be predicted pre-operatively through artificial in-vitro stimulation. Preoperative in-vitro stimulated neutrophil response mimic surgical stimulation and can predict clinical outcome of open heart surgery. However, leukocyte filtration did not offer significant benefit in clinical outcome in our study.

CSF2-7
CONTRACTILITY OF ISOLATED RADIAL ARTERY AND ANTIVASOCONTRACTOR EFFECT OF POTASSIUM CHANNEL OPENER PINACIDIL
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Objective: The aims of our study were to investigate the contractility of human radial artery (RA) to various vasoconstrictors and to evaluate the inhibitory effect of potassium channel opener pinacidil on neuromodulatory contractions of RA.

Methods: Contractions of isolated RA rings were provoked by exogenously applied vasoconstrictors: angiotensin II, phenylephrine, 5-hydroxytryptamine, noradrenaline (NA) or by electrical field stimulation (EFS, 20 Hz).

Results: The order of vasoconstrictor potency based on their EC50 values was: phenylephrine (20 nM) > angiotensin II (1 µM) > 5-hydroxytryptamine (0.4 µM). Presence of endothelium increased potency of phenylephrine (2.2 µM) and angiotensin II (3.2 nM), but inhibited reactivity of RA to 5-hydroxytryptamine (2.3 µM). Pinacidil produced similar concentration-dependent inhibition of EFS- and NA-evoked contractions (EC50=1.3 and 1.2 µM, P<0.05) of RA with endothelium. Inhibition of NA-evoked contractions was greater when endothelium was preserved (EC50=1.2 vs. 6.4 µM, P<0.05). NO synthesis inhibitor, L-NAME (10 µM) or the guanylate cyclase inhibitor, methylene blue (10 µM) partially antagonize the antivasoconstrictor effect of pinacidil only on NA-evoked contractions (% of control contraction: 22% vs. 41% and 23% vs. 56%, respectively, P<0.05). In rings without endothelium, potassium channel blockers, glibenclamide (10 µM) and tetraethylammonium (TEA, 1 mM) antagonized the effect of pinacidil on both EFS- and NA-evoked contraction (% of control contraction for glibenclamide 25% vs. 70% and 72% vs. 72%, P<0.01; TEA: 33% vs. 75%, P<0.01 and 31% vs. 54%, P<0.05). The inhibition of pinacidil’s effect on EFS-evoked contractions by glibenclamide was concentration-dependent and Schild analysis has demonstrated non-competitive antagonism (pA2=5.61; slope -1.76, significantly different from unity, P=0.01). In contrast, 4-aminopiridine (4-AP, 1 mM) antagonized the effect of pinacidil only on the EFS-evoked contractions (% of control contraction: 26% vs. 78%, P<0.01).

Conclusions: The presence of intact endothelium increased potency of phenylephrine and angiotensin II, but inhibited sensitivity of RA to 5-hydroxytryptamine. The antivasoconstrictor effect of pinacidil on RA is partly endothelium-dependent and probably mediated via cGMP-dependent NO-pathway. Endothelium-independent component of this effect most likely involves opening of postsynaptic glibenclamide- and TEA-sensitive K+ channels on smooth muscle cells, and 4-AP-sensitive K+ channels on perivascular nerve endings.

CSF2-8
NEW APPROACH TO REDUCE ALLOGRAFT TISSUE IMMUNOGENICITY. EXPERIMENTAL DATA AND EARLY CLINICAL EXPERIENCE
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Objective: Rejection is thought to contribute to the degeneration of valved homografts. Most proposed methods of decellularisation allow usage of treated valves in pulmonary instead of aortic position because of concern of tearing in systemic pressure. We developed a new protocol of devitalisation, which provides smooth cell death and anticalcificication with dixonin and EDTA, and with preserved durability. The aim of study was an evaluation of new homografts in chronic canine model and after clinical implantation.

Methods: After preliminary studies in subcutaneous rat implantation, two groups of adult mongrel dogs (5 in each) survived homograft implantation. New homografts in chronic canine model and after clinical implantation.
All canine homografts were obtained after acute experiments, and treated by standard cryopreservation protocol (1 group) or devitalisation (2 group). Homografts were implanted as valved patch into thoracic aorta and explanted after four months. Histologic examination, collagen and cell vital dye were used. Since 2004-2007 devitalised aortic homografts in aortic position were used in 21 patients (mean age 32 years), and devitalized pulmonary homografts were implanted in Ross procedure in 34 patients (mean age 23 years). During follow-up echocardiography was a main method of patients evaluation. In half of patients CT-scan was added.

Results: In all explanted patches aortic cusp was invisible or adhered to the wall, and internal surface was covered with neointima. Media was a cellular. In cryopreserved homografts the aortic wall had plots of dissection mixed with macrophages in zones close to host tissue. Devitalised patches were homogenous including border zones without leukocyte infiltration and ‘empty holes’ in comparison with cryopreserved valves.

In clinical setting no reoperations was required. In mean follow-up of two years, slight insignificant increasing of systolic gradient in both positions was observed. The degree of regurgitation did not increased, which was observed previously in cryopreserved aortic homografts.

Conclusions: The new devitalizing technology seems effective in decreasing of immune response to homologous tissue. It does not affect elastomeric properties and collagenous structure of homografts. However, short follow-up does not allow concluding about advantages of this new generation of homografts.

1st Cardiac Scientific Session - Coronary 1
May 1, 2009, 2nd Congress Day
11:30-13:00

C1-1
THE POSTOPERATIVE HOSPITAL STAY - IS IT A PREDICTOR OF MORTALITY FOLLOWING CORONARY ARTERY BYPASS GRAFTING?
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Objective: The length of hospital stay following cardiac surgery depends on the preoperative characteristics of the patient and the postoperative complications. A combination of morbidity and longer hospital stay is often associated with increased mortality. We analysed our data to identify factors that contribute to delayed discharge from the hospital and its impact on early mortality.

Methods: One thousand three hundred and sixty-two patients underwent cardiac surgical procedures under single surgeon between January 2002 and December 2007. One thousand and seventy-eight patients had first time coronary artery bypass grafting during this period. Data was entered prospectively into a cardiac surgical database (PATS database). Demographic profile, pre and postoperative variables were obtained from the database and clinical records. The variables were statistically analysed using SPSS (ver 15.0).

Two groups were identified: Group E - early discharge (<7 days) (n=737); group P - prolonged stay (>7 days) (n=341). Univariate and multivariate analysis was performed to identify the factors affecting prolonged hospital stay and mortality.

Results: Male/female (E=82.18; P=75.25) and the mean age (E - 62.4±8.7; P - 61.±9.7) was, respectively. Pre, intra and postoperative variables were comparable. Mortality (E-1.24%; P-1.07%) was similar in both groups.

Multivariate logistic regression analysis showed increasing age, and higher NYHA, poor LV diabetes mellitus, CAD, peripheral vascular disease, pre-operative IABP, prolonged CPB time, use of postoperative vasoconstrictors predicted prolonged hospital stay. Whereas female gender, preoperative neurodysfunction, preoperative IABP, prolonged cross clamp time predicted increased mortality.

Conclusions: Prolonged hospital stay does not translate into increased mortality. Prospective studies are needed to evaluate the impact of length of stay on long-term mortality in patients undergoing CABG.

C1-2
THE RADIAL ARTERY FOR CORONARY BYPASS GRAFTING: FIVE-TO-TWENTY-YEAR ANGIOGRAPHIC FOLLOW-UP
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Objective: Previous reports have shown that the radial artery (RA) as a coronary bypass conduit offers excellent mid-term results but its durability remains unknown. The aim of this study was to assess long-term (beyond five years) angiographic results.

Methods: Control angiograms of RA grafts were obtained in 202 patients after a 5-19.2 year follow-up (mean: 10.1 years). CT-scanner with multiplanar reconstruction and volume rendering was performed in 123 patients and conventional angiography in 79 patients. Age was 69±9 years. Symptoms were noted in 69 patients: acute infarction (4), angina (46), CHF (13) and signs of aortic stenosis (6). Scintigraphic/EGK abnormalities were noted in 12 patients and 121 patients were asymptomatic. Five hundred and twenty conduits (2.57/pt) were controlled: RA (230), left IMA (190), right IMA (30) and veins (70). RAs were anastomosed to: right coronary (24%), marginal (58%), diagonal (16%) and LAD (+1%) whereas LIMAs were mostly anastomosed to the LAD (95%). Comorbidities included: diabetis (35%), carotid disease (12%), arteritis/abdominal aneurysm (21%). Medications Included antithrombotics: aspirin (71%), clopidogrel (30%), oral anticoagulant (15%) and vasodilators: nitrates (15%), beta-blockers (70%), Ca2+ blockers (46%) and ACE inhibitors (48%).

Results: Nine reoperations were needed at 10.5 years for valve replacement (aortic: 6 or mitral 2) with two combined coronary bypasses and one isolated LAD bypass. Percutaneous intervention was performed in 48 patients (24%) at 7.6 years and involved either a graft: LIMA (4), RA (13), vein (2) and/or a native coronary (48). The 10-year patency of RA grafts was 83.4%. It was lower than LIMAs (95.3% P<0.001) and similar to RIMAs (86.6% P=0.66) and to veins (81.4% P=0.50). No medication either antithrombotic or vasodilator seemed to affect RA graft patency (aspirin: P=0.26, clopidogrel: P=0.36). All-raft patency was lower when symptoms or evidence of myocardial ischemia were present than in asymptomatics (83.4% vs. 90.4% P=0.02). The patency of LAD grafts (95.7%) was higher than that of all the other targets: right coronary (84.1% P=0.001), marginal (80.2% P=0.001) and diagonal (87.3% P=0.02). The ejection fraction was only slightly decreased compared to its preoperative value (54±11% vs. 57±9 P=0.009). Three stenoses of a subclavian artery supplying an IMA graft were noted on CT-scan.

Conclusions: In this study the RA-to-coronary bypass conduit provided excellent long-term results with a very low coronary reoperation rate and high 10-year patency (83%). When compared to other conduits, the main determinant of the angiographic outcome appears to be the site of the target coronary.

C1-3
COMPARISON OF SEQUENTIAL LITA GRAFTING AND SEPARATE LITA AND VENOUS GRAFTING? A FIVE YEAR FOLLOW-UP
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Objective: The superiority of IAT grafting to the LAD has been well established over the last decades. Patency rates of 80-90% have been reported at 10 and 15 years of follow-up. The superiority of sequential ITA grafting has not been proven. Our aim was to compare the patency rates after sequential ITA grafting to a diagonal branch and the LAD with patency rates after LITA grafting to LAD and separate vein grafting to a diagonal branch.

Methods: Fifty-nine CABG patients, operated between January 2000 and December 2002, underwent multi slice computed tomography (MSCT) between 2006 and 2008. Twenty-nine of them had undergone sequential LITA grafting to a diagonal branch and to the LAD (group 1), in 29 of them the LAD and a diagonal branch were separately grafted with LITA and vein grafts (group 2). Patencies of all grafts were investigated.

Results: Mean intraoperative flow on LITA graft was not different between groups (69±8 in group 1 and 68±9 in group 2, P=0.8). Mean follow-up was 1950±208 days. Patency rate of the LAD anastomosis was 100% in group 1 and 93% in group 2 (P=0.04). Patency rate of the diagonal branch anastomosis was 100% in group 1 and 85% in group 2 (P=0.02).

Conclusions: The patencies of LITA anastomoses were not different between the groups. There was a significant difference between arterial and venous grafting to diagonal branches, which indicates that, concerning the antero-lateral wall, there is an advantage of sequential arterial grafting compared with separate arterial and venous grafting.
C1-4 CLINICAL APPLICATION OF AUTOLOGOUS BONE MARROW MONONUCLEAR CELLS IN PATIENTS WITH CORONARY ARTERY DISEASE AND SEVERE HEART FAILURE

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Objective: Little is known about efficiency of intracoronary delivery of autologous bone marrow mononuclear cells (ABMMC) in patients with non-acute ischemic heart disease.

Methods: Autologous transplantation of ABMMC was performed in 125 patients with non-acute ischemic heart disease. For 105 patients with counterindications to open heart and/or endovascular surgery, the ABMMC suspension was injected intracoronarily during coronary angiography, with 0.4-0.7×10 billion nucleated cells, including 0.1-0.18×10 billion mononuclear and 0.6-1.7×10 million CD34+ cells, being introduced for each patient. Severe heart failure had 29 patients (Main group). Control group - 16 patients with coronary artery disease and severe heart failure received only medical treatment.

Results: Twenty-nine patients of main group were followed for 36 months. We observed clinical improvement in 24 patients during three years: functional class of heart failure improved on one stage, 6-min test improved from 230 m to 420 m. Single-photon emission computer tomography revealed a significant improvement in the initially non- and/or hypoperfusable myocardium area(s). Positron emission tomography demonstrated an appreciable improvement in both myocardial viability and perfusion. Echocardiography revealed a significant decrease in end-diastolic and end-systolic volume of left ventricle as well as an increase of global ejection fraction in patients with initially dilated left ventricle. Five (17%) patients died after three years. Overall mortality in control group was five patients (37%). Survival patients initially dilated left ventricle had the same functional class of congestive heart failure (3-4), 6-min test improved from 230 m to 300 m.

Conclusions: autologous bone marrow cell therapy can be considered to be a distinct strategy for chronic human ischemic heart disease as an efficient and safe approach to the restoration of the myocardium perfusion and myocardial viability.

C1-5 INTEGRATED REVASCULARIZATION WITH MINIMALLY INVASIVE DIRECT CORONARY ARTERY BYPASS COMBINED TO CORONARY ANGIOPLASTY IN TWO-VEssel CORONARY ARTERY DISEASE. A PROSPECTIVE SPECT-GUIDED STUDY

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Objective: Minimally invasive direct coronary artery bypass (MIDCAB), a safe and effective procedure for revascularization of the left anterior descending coronary artery (LAD), may offset the higher rate of restenosis which occurs with percutaneous transluminal coronary angioplasty (PTCA) on this vessel with respect to the right (RCA) and circumflex coronary artery (LCx). In patients with two-vessel coronary artery disease (CAD) combining MIDCAB to PTCA of the RCA or Cx, the so called integrated revascularization, might represent an effective alternative to conventional bypass grafting or double-vessel PTCA. We prospectively tested a strategy of integrated revascularisation or MIDCAB alone, as guided by evidence of ischemia at stress perfusion single photon emission computed tomography (SPECT), in patients with LAD plus RCA or LCx CAD.

Methods: According to angiographic and scintigraphic criteria, 40 patients underwent possible double-vessel revascularization: Integrated revascularisation during the index admission (n=15) or MIDCAB alone (n=25). Quality of life and ischemic area were evaluated at baseline and at 2 and 12 months. Based on the findings of a SPECT, performed two months after surgery to assess residual ischemia in the non-revascularized second vessel territory, 9 of 25 patients in the MIDCAB group underwent PTCA on the second vessel, while 16 had no further procedure.

Results: During 1-year follow-up, no differences were observed between the integrated revascularization and MIDCAB alone groups (SF36 score 52±39 vs. 37±37, P=0.25; total ischemic area -78±20% vs. -68±32% P=0.29).

Conclusions: Scintigraphic guided integrated revascularization has proven very effective in revealing it the impact of MIDCAB in global myocardial revascularization defining the concept of functionally complete revascularization. In conclusion, a SPECT-guided strategy of integrated coronary revascularization or MIDCAB alone is safe and effective in patients with two-vessel CAD and compares favourably to double-vessel PTCA.

C1-6 PRELIMINARY EXPERIENCE FOR THE ASSESSMENT OF THE INTRAOPERATIVE COMPETITIVE FLOWS WITH REAL COLOR CCD CAMERA SYSTEM

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Objective: Our institution developed a new color CCD imaging device for intraoperative ICG angiography during CABG. Here we showed that the device visualized ICG fluorescence on the heart with vivid real colors and enable us to assess intraoperative competitive flows.

Methods: A combination of custom-made optical filters and an ultra-high sensitive color CCD image sensor, which can detect near-infrared (NIR) rays up to 1200 nm. A light source for excitation of ICG dye was made with an array of light emitting diodes (LED). Using this system, we investigated intraoperative graft patency in 41 patients, while ICG dye was injected through a central venous catheter. And we performed a comparison of ultrasound transit-time flowmeter (TFM) and our Color CCD imaging device for assessing graft patency.

Results: We obtained intraoperative graft flows and images in 151 anastomoses of 125 grafts. This system imaged the operative field with vivid real colors. Here, it was easy to verify the localization of the target coronary and myocardial perfusion. Our system visualized 104 patent grafts (83%), 11 competitive grafts (9%) and 10 others (8%) with vivid color images. CCD camera visualized ICG fluorescence in the target coronary according to the time delay running between the native coronary and the grafts. In early imaging phase, ICG flow fluorescence was dependent on the native coronary flow that was related to the severity of the native coronary stenosis. When the stenosis was moderate, ICG fluorescence was an intermittent pattern because of the native coronary pressure exceeds the graft pressure in early diastolic phase. When the stenosis was severe, ICG fluorescence through the native coronary was not captured because of the graft pressure exceeds the native coronary pressure. In late imaging phase, ICG fluorescence in the perfusion territory was dependent on the diastolic graft flow. Although TFM assessment was patent, this device visualized competitive flows, especially in in-situ arterial grafts. Because to-and-fro flow fluorescence was produced by the time delay running between the systolic flow onset through the native coronary and the systolic flow through the in-situ graft. The analysis of the ICG fluorescence intensity was not differed between the graft and the perfusion territory (231±23 vs. 228±25, P=0.19), and the perfusion was dependent on the diastolic graft flows. We defined these images as a functionally patent perfusion with competitive flows.

Conclusions: Our findings suggest that this device may become a useful tool for the intraoperative competitive flows assessment.

C1-7 TOTAL ARTERIAL REVASCULARIZATION WITH BILATERAL INTERNAL THORACIC ARTERIES: THE Y GRAFT TECHNIQUE IN 700 CONSECUTIVE PATIENTS

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Objective: Nowadays is world wide accepted the benefit of total arterial revascularization in term of survival and grafts patency rate in the treatment of coronary disease. We analyzed the results of double mammary Y-graft for total-arterial revascularization in the treatment of multivessel disease.

Methods: Between January 2003 and August 2008, 700 consecutive patients underwent myocardial revascularization with double mammary Y-graft. The mean age was 62.9 years (34-84 years). The in-hospital mortality and morbidity were reported. Univariate and multivariate analysis were performed to find risk factors for in hospital mortality, morbidity and late events. The patients were followed with clinical evaluation, treadmill test and re catheterization in case of indubible ischemia or new-onset angina.

Results: The mean number of anastomosis for patients was 3.2±1.5. In the 1.3% of cases valvular surgery was associated. The hospital mortality was 0.8%. The incidence of perioperative infarction was 0.3%, neurological complications 0.4%. The actuarial survival rate was 98.6% at three years and...
C1-8 TROPONIN I AFTER ADULT CARDIAC SURGERY. A PREDICTOR FOR HOSPITAL MORTALITY?
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Objective: Troponin is a specific marker of myocardial damage; it is the golden standard for the diagnosis of an acute myocardial infarction. Increased troponins however, are observed after most all cardiac surgery. The clinical significance of this elevation is controversial. The aim of this study was to evaluate if troponin I (cTnI) measured one hour after cardiac surgery provides additional information to identify patients at risk for hospital mortality.

Methods: Nine hundred and thirty-eight patients undergoing cardiac surgery between October 2006 and June 2008 served as development set. This group including 688 isolated CABGs and 250 valvular (+CABG) operations. cTnI levels were measured one hour (CTnI) after surgery. Hospital mortality, defined as death occurring at the UMCN at any time after surgery, is the studied outcome. To assess the value of cTnI as a predictor for hospital mortality, ROC curves were used. The Youden-index was used for identifying the best cut-off point. One hundred thirty nine patients undergoing cardiac surgery between July and September 2008 served as validation set.

Results: The median cTnI level was 1.3 µg/l, 75% inter quartile range (IQR) 0.68-2.59 µg/l. Ten patients (1.1%) died, CTnI release of the dead, median: 6.8 µg/l was significant higher than the measured values in the group of survivors, median: 1.3 µg/l (P<0.001). Regression analysis showed a significant correlation between cTnI and hospital mortality (P=0.001). The ROC indicates a cTnI level 4.25 µg/l with a ROC of 0.80 as optimal cut-off point for predicting hospital mortality, with a sensitivity of 70% and a specificity of 89%. Addition, of type of surgery, isolated CABG vs. valve surgery, acute vs. elective surgery and EuroSCORE class did not improve the ROCs. In the validation set, the median cTnI level was 1.29 µg/l. Twenty-six patients had a cTnI level >4.25 µg/l. Of the 139 patients six patients (3%) died, five of them had a cTnI level >4.25 µg/l.

Conclusions: Postoperative cTnI level, measured within the first after cardiac surgery can identify a subgroup of patients with increased risk for hospital mortality. These patients may benefit from better monitoring, eventually specific diagnostic and therapeutic interventions.

C1-9 ON PUMP VS. OFF PUMP CORONARY BYPASS GRAFTING: CLINICAL AND LABORATORY FOCUS ON NEUROLOGICAL OUTCOME
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Objective: Conventional bypass grafting using cardiopilecic arrest continues to be associated with some complications that may negate an otherwise successful procedure. Interest in off-pump bypass grafting (OPCABG) in the mid-1990s presented surgeons with the option of revascularization without the potential complications of extracorporeal support if CPB can be avoided; a reduction in peri-operative morbidity and mortality is anticipated. The aim of our study is to compare both techniques regarding mortality, morbidity, complications and brain injury in both groups of patients with ischemic heart disease.

Methods: Eighty patients (patients) were subjected to CABGs, 40 with off-pump (group I) and the other 40 patients with on-pump (group II) techniques. Patients in both groups were matching as regards age, sex, risk factors, and number of bypassed coronaries. Preoperatively and postoperatively all patients were subjected to clinical examination, ECG, chest X-ray, trans-echocardiography, routine laboratory tests and serum S100 B protein as well as Neuron Serum Enolase (NSE). Brain injury will be evaluated by using Glasgow Coma Scale and the neuromediators.

Results: Intra-operative: group I patients had statistically significant shorter operative time (3.6±0.6 vs. 4.1±0.7 h in group II, P<0.001), less intra-operative bleeding - of medical causes - with lower intra-operative use of blood products (55% of patients in group I vs. 100% of group II) and lower incidence of arrhythmias (25% vs. 60% of group II). Postoperatively, group I showed statistically significant shorter stay in intensive care unit (2.8±0.7 vs. 3.8±1.3 days in group II; P<0.001), earlier extubation (9.4±4 vs. 15.5±11.6 h in group II; P<0.002), lower pulmonary complications as regard atelectasis, chest infection (5% vs. 22.5% in group II; P<0.02), lower cardiac complications as regard atrial fibrillation, low cardiac output and need for use of inotropic support (55% vs. 82.5% in group II; P<0.007), less hypothermic with lower incidence of postoperative bleeding with less need for use of blood products and reopening. Group I showed significantly less renal (22.5% vs. 52.5% in group II; P<0.05) and less hepatic impairment than in patients of group II (20% vs. 55% in group II, P=0.05). No statistically difference between both groups as regards cardiac ischemia, cardiac arrest, ECG changes, trans-thoracic echocardiographic findings, hematemesis, and sternal wound infection. Finally, group I showed lower incidence of neurological deficits (whether reversible or permanent) (5% vs. 27.5% in group II; P=0.006). Despite the latter, postoperative values of neuromediators S100B protein and NSE showed a significant increase in both groups compared to preoperative serum level denoting some brain ischemia (as regard S100B protein, 60 vs. 20 pg/ml preoperatively in group I; P=0.05 and 100 vs. 35 pg/ml preoperatively in group II; P<0.05), (NSE, 22 vs. 6 µg/l preoperatively in group I; P<0.05 and 20 vs. 7 µg/l preoperatively in group II; P<0.05). However, there is no statistically significant difference between both groups regarding the percent of increase of both mediators postoperatively (1.88% in group I vs. 1.7% in group II; P-value: non-significant).

Conclusions: 1. No significant difference between both groups regarding the neurological outcome. 2. Off-pump Coronary artery bypass grafting is effective with success rate comparable to On-pump CABG. 3. Off-pump technique is safer in patients with preoperative bleeding disorders, renal/hepatic impairment, pulmonary disorders, or high-risk for stroke e.g. calcific aortic roots. 4. Off-pump technique saves expenses due to fewer complications and less postoperative stay in intensive care unit.

2nd Cardiac Scientific Session - Valve 1
May 1, 2009, 2nd Congress Day 11:30-13:00

C2-1 ISOLATE AORTIC VALVE REPLACEMENT: ANALYSIS OF RISK FACTORS AND RELIABILITY OF EUROSCORE IN PREDICTING EARLY OUTCOMES
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Objective: Aortic valve replacement (AVR) represents the gold standard for the treatment of aortic valve disease. Although unequivocal data shows the efficacy and the safety of AVR, transcatheter alternatives have been developed to reduce the anticipated mortality and morbidity in high-risk patients. This study was designed to analyze the factors related to adverse outcomes and to evaluate the viability of EuroSCORE algorithms on patients that undergo AVR.

Methods: From 1 January 2001 to 30 April 2008, 339 patients with isolate aortic valve disease were referred to our department and underwent aortic valve replacement. No other associated procedures were performed. Data collection was prospective and preoperative, perioperative, and postoperative data were obtained from our institutional database and reviewed using a standard data collection form. The logistic and additive EuroSCORE algorithms were calculated according to published guidelines (http://www. euroscore.org). Thirty-day follow-up was obtained by means of direct visits and telephone interviews. Continuous variables were expressed as means±S.D. Discrete variables were expressed as numbers and proportions. Significant predictors of perioperative death (mortality within 30 days of the operation or during the same admission) were investigated by examining the association between various variables and mortality in univariate analysis, followed by a stepwise logistic regression analysis on factors demonstrated
C2-3

ISOLATED AORTIC VALVE REPLACEMENT IN ELDERLY: MINIMAL INVASIVE VS. FULL STERNOTOMY

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Objective: We report our experience to compare the postoperative outcome obtained in elderly and octogenarian patients undergoing elective isolated aortic valve operation, whether through ministernotomy or full sternotomy.

Methods: A single center clinical study was conducted retrospectively between November 2002 and October 2008. Two hundred and thirteen consecutive patients underwent elective aortic valve replacement were divided into two groups: group I (n=105 patients) underwent a ministernotomy approach (J sternotomy), and group II (n=108 patients) underwent full conventional sternotomy.

Results: The mean age was 71±5 and 70±11 in group I, and II, respectively. The length of skin incision was significantly shorter in group I than in group II (4±1.3 cm vs. 23.7±2.6 cm, P=0.0001). No significant differences were found in cardiopulmonary bypass duration, or aortic cross-clamping or total operating times. A similar incidence of cardiac, neurologic, and renal complications between both groups was found. Mean mediastinal drainage and mean blood transfusions (amount of blood transfused) per patient were greater in group II (P=0.004 and P=0.001, respectively). Twenty-three (21.3%) patients in group II and 11 (10.5%) patients in group I required postoperative blood transfusion (P=0.04). Mechanical ventilation time was significantly longer in group II (7.2±1.8 h vs. 4.4±1.1 h, P=0.05). Postoperative respiratory tract infection needed antibiotic treatment was significantly higher in group II (26 patients (24.1%) group II and 8 patients (7.6%) group I, P=0.001). Sternal wound infection was happened in four patients in group II and not in group I, P=0.04. Hospital and intensive care unit stay was higher in group II than group I (12.5±11 vs. 9.5±8 and 3.5±4.6 vs. 2.1±1.6 days, P=0.05). The in-hospital 30 days mortality was in three patients (2.7%) in group II and no mortalities in group I, P=0.05. Late mortality happened only in one patient in group II one year after the operation because of hepatic carcinoma.

Conclusions: Our study demonstrates that AVR with J sternotomy is safe in different age groups, in addition to its cosmetic advantages, it is an effective technique with a less morbidity and mortality to conventional aortic valve surgery. Patients derive clear benefits from this minimally invasive approach including less pain, shorter length of hospital stay, and faster return to preoperative function levels.

C2-4

3-YEAR FOLLOW-UP AFTER SUTURELESS AORTIC-VALVE IMPLANTATION

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Objective: Aortic valve replacement with the use of extracorporeal circulation (ECC) is currently the treatment of choice. However, patients with multiple pre-existing comorbid conditions may benefit from reduced ECC-time by the use of sutureless aortic valve replacement. We therefore describe our results of our first sutureless 3F-Enable implantations three years after implantation.

Methods: We studied 4 patients (mean age: 74±2.3 years; 3 females) in the present study. Sutureless aortic valve implantation was performed between September 2005 and December 2005. At 3-years follow-up echocardiography and volume-rendered CT-scans were performed and furthermore, blood samples were taken in order to evaluate potential haemolysis.

Results: At 3-years follow-up all patients were alive and asymptomatic (NYHA I). Mean pressure gradients (MPG) were 7.2±3.1 mmHg, maximum gradients were 15.6±6.0 mmHg and aortic valve area (AVA) was 2.1±0.3 cm². Left ventricular ejection fraction was 55±7%. One patient showed a grade I-II paravalvular leakage at 3-year follow-up. No structural deterioration of the equine cusps of the prosthesis could be observed. Additionally, a multi-slice CT-scan followed by a 3-dimensional reconstruction could not detect any structural deterioration of the Nitinol® stent. In one patient a new aneurysm of the ascending aorta was detected. The mean HDH and free haemoglobin levels were 28±59 U/l and 174±117 mg/l indicating a slightly increase. Haptoglobin showed normal levels of 0.75±0.63 g/l.

Conclusions: The present follow-up data demonstrate good hemodynamic function three years after sutureless aortic valve implantation and no signs of structural valve deterioration could be observed. Mild signs of haemolysis were present and one patient showed mild signs of paravalvular leakage.
C2-5
IS THE ROSS PROCEDURE SUITABLE FOR PATIENTS SUFFERING FROM AORTIC VALVE ENDOCARDITIS?
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Objective: This study was performed to evaluate the potential effect using an autologous valve during infective aortic valve endocarditis treatment.

Methods: Between August 2005 and November 2008, Ross procedures have been performed in 20 patients suffering from infective native aortic valve endocarditis. Patients mean age was 50.6±7.5 years. Nine patients were emergency cases, eight patients preoperative embozilmed peripheral and in one patient a prosthetic valve was infiltrated. All patients received antibiotic therapy for six weeks and were echocardiographic followed weekly until discharge. Records were evaluated for clinical status, adverse events and survival.

Results: Hospital mortality was 10% (n=2), one due to multi-organ-failure and one due to brain death by septic emboli. Four patients suffered from abscess, nine patients needed additional surgery. The predominant infective organisms was staphylococccus aureus including MRSA. No recurrent endocarditis was seen during follow-up. Two patients needed reoperation one due to a mycotic aneurysm and one due to distal anastomosis narrowing. At discharge all of the patients were in NYHA class I. The median follow-up was 12 months (range 4.36 months). The pressure gradient at discharge on the neo-aortic valve was 3.7±1.5 mmHg (n=15), at one year follow-up 3.9±0.6 mmHg (n=5), at two years follow-up 3.0 mmHg (n=11) and at three years follow-up 3.0 mmHg (n=1). No death was seen during follow-up.

Conclusions: The Ross operation seems to be an excellent option in patients with infective aortic valve endocarditis even in emergency cases.

C2-6
VALVE REPAIR FOR AORTIC INSUFFICIENCY IS A SAFE ALTERNATIVE TO VALVE REPLACEMENT IN SELECTED PATIENTS: OUR EXPERIENCE
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Objective: In the last two decades, aortic valve repair has emerged as alternative option to aortic valve replacement in patients with aortic valvular insufficiency. This study was undertaken to evaluate the short and mid-term outcomes of aortic valve repair.

Methods: From May 2000 to December 2008, 93 consecutive patients underwent aortic valve repair. Data were retrospectively reviewed and follow-up was performed by means of direct visit and echocardiography/Magnetic Resonance Imaging (MRI).

Results: The mean age was 61.1±11.6 years (range 29-81 years). Aortic valve lesions were classified into three different types: type I, isolated aortic annular dilatation (34 patients, 36.6%); type II, annular dilatation associated with aortic aneurysm (32 patients, 34.4%); type III, aortic cusps’ disease, prolapse and/or perforation (27 patients, 29.0%). Four patients underwent emergency operation for acute type ‘A’ dissection. The aortic valve was bicuspid in eight cases (8.6%). Repair methods included reimplantation technique (32 patients, 34.4%), commissural plication (34 patients, 36.6%), partial cusp resection, resuspension, cusp shortening and closure of cusp perforation (27 patients, 29.0%). There were three perioperative deaths (3.2%). Two of them had emergent surgery for type A dissection. The mean follow-up was 32.8±24.7 months and was 100%. Two patients (2.2%) required aortic valve replacement, all were in group II. The freedom from reoperation at 6-year follow-up was 97.6%±1.6%. The log-rank test did not show differences in freedom from reoperation among the groups. The echocardiographic follow-up showed no or trivial aortic valve regurgitation in 74 patients (84.1%), mild to moderate regurgitation in 11 (12.9%) and moderate regurgitation in 3 (3.4%). Freedom from aortic regurgitation was higher in group I (87.1%) and II (88.9%) although no significant differences were found with the χ2-test (P=0.078).

Conclusions: Aortic valve repair appears to be a good option for selected patients with satisfactory intermediate-term results. Valve-sparing aortic replacement with reimplantation technique can be also safely applied to a regurgitant bicuspid aortic valve. Surgery for isolated cusps’ disease seems to provide a less durable freedom from regurgitation.

C2-7
COMPARISON OF HOMOGRAPHTIC AORTIC ROOT REPLACEMENT IN NATIVE OR PROSTHETIC ACTIVE INFECTIVE ENDOCARDITIS ASSOCIATED WITH PERIANNUAL ABSCESS: 20-YEAR SINGLE CENTER EXPERIENCE
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Objective: To compare early and long-term results of cryopreserved homograft aortic root replacement (ARR) in native (NVE) or prosthetic valve endocarditis (PVE) associated with perianular abscess.

Methods: Between May 1986 and December 2007, 1163 endocarditis patients were operated upon. Of these, 221 patients (n=185 men, median age 55 years) underwent homograft ARR due to 99 cases of NVE (45%) and 122 of PVE (55%). 189 patients (86%) developed perianular abscess formation. Perioperative characteristics, probability of survival, freedom from recurrence and reoperation and valve-related events were analyzed. Follow-up (median 3.49 years) was completed in all survivors, with a total of 1109 patient years.

Results: Overall survival at 30 days, 1, 5, 10 and 15 years was 78.6±2.8%, 71.3±3.0%, 56.8±3.5%, 40.7±3.9% and 29.8±4.8% with significantly better survival of NVE than PVE patients (P=0.029) and a greater tendency towards abscess formation. Thirty-one (14.0%) required reoperation either for SVD (19, 8.6%, mean 1062 days) with a higher risk in patients ≥40 years or for endocarditis of the homograft (n=12, 5.4%, median 98 days) with a tendency towards PVE. Mortality for reoperation was 38.7% (n=12).

Conclusions: Radical resection, reconstruction of LVOT and homograft ARR for infected aortic root with perianular abscess has improved patients survival for primary and secondary operations, significantly better in NVE. It is associated with a low recurrence rate of most valve-related events although the risk of SVD increases over time, especially in young patients. Reoperations for homograft endocarditis show a high mortality rate. In our institution homograft ARR remains the preferred valve substitute in perianular abscess formation.

C2-8
REPAIR VS. REPLACEMENT FOR CHRONIC ISCHEMIC MITRAL REGURGITATION - MEDIUM TERM RESULTS OF UNDERSIZE RING ANNULOPLASTY WITH ECHOCARDIOGRAPHIC FOLLOW-UP
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Objective: Mitral valve annuloplasty is the standard surgical technique for the management of chronic ischemic mitral regurgitation (IMR). However, up to 1/3 of patients develop recurrent IMR after surgical annuloplasty.

Methods: In a series of consecutive 284 patients with CAD undergoing CABG with mitral valve repair, first 134 were evaluated: 90 male (67.2%), mean age 63.1, mean EuroSCORE 6.4±2.6 and 106 patients with history of acute MI, Transthoracic echocardiography (TTE) with quantitative Doppler measurements revealed moderate MR in 62 patients (46.3%) and severe in 72 patients (53.7%). Undersized ring was implanted in all patients (Ring diameter ranged 24-30 mm, but sizes 26, 27, 28 were used in 93.7% of patients). Patients were observed for 4.20 months (Median 7.2±3.0). TTE was performed in all patients.

Results: Severe MR occurred in eight patients (5.9%). Two patients of them required reoperation. Statistical analysis revealed that length of coaptation (LC) (P<0.0001), NYHA class (P=0.034), CCS class (P=0.027), EuroSCORE (P=0.021) are the predictors of postoperative MR. Cox regression showed independent predictors of recurrent MR are: age (OR 0.9 P=0.041), postoperative IABP (OR 3.4 P=0.023), BSA (OR 0.084 P=0.041), EROA (OR 154.4 P<0.001), LVEDVI (OR 1.024 P=0.011), LVEFSVI (OR 1.020 P=0.044) and LC (OR 0.011 P=0.014). Risk of IMR recurrence-Cox multivariate analyzes-if four predictors are present: LC ≤6.0 mm, IMR severe preoperatively, LVEF <35% preoperative, BSA ≤1.9 preoperative -84.33%, for three predictors-LC, IMR and LVEF 50.13%, for three predictors-LC, IMR, BSA -60.08%, respectively.

Conclusions: We identified clinical and echocardiographic parameters associated with repair failure, that suggests some patients with IMR might be better served by MV replacement than repair.
Objective: The assessment of organ perfusion after thoracic-abdominal endografts and evaluation of stenoses in visceral or renal arteries often is difficult because of artifacts caused by the stentgrafts in CT-angiography (CTA). Therefore, gold standard for evaluation still is digital subtraction angiography (DSA). Specialized ultrasonic techniques using contrast-enhancement represent an alternative method for the detection of stenoses of visceral or renal arteries after endovascular repair of juxtarenal aortic lesions.

Methods: In this prospective evaluation 17 patients (16-87 years, median 74 years, 15 males, 2 females) were examined by means of CTA or ultrasound after a mean postoperative follow-up period of 3 months after endovascular repair of juxtarenal aortic lesions. Ultrasound was performed using a multifrequency ultrasound probe (2-4 MHz) with Contrast Harmonic Imaging (CHI). For contrast-enhancement bolus injection of Sonovue (2.4 ml i.v.) was used. The CTA was done using a 16-line spiral CT-scan with a 100 ml bolus of contrast medium.

Results: In two thirds of the cases no reliable evaluation of the visceral or renal arteries could be achieved with CTA. On the other hand by means of contrast-enhanced ultrasound using CHI artifact free evaluation of relevant stenoses was possible in these cases. This could not be achieved by colour coded ultrasound without contrast-enhancement. The stenoses seen in contrast-enhanced ultrasound could be confirmed by digital subtraction angiography with following intervention.

Conclusions: Contrast-enhanced ultrasound sonography allows better evaluation of visceral or renal artery stenoses after endovascular aortic aneurysm repair with fenestrated or branched endografts compared to CTA. DSA can be used for verification of stenosis with consecutive intervention or therapy.

Abstracts/Interactive CardioVascular and Thoracic Surgery

CV1-1
ORGAN PERFUSION AFTER THORACIC-ABDOMINAL ENDOGRAFTS
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Objective: The assessment of organ perfusion after thoracic-abdominal endografts and evaluation of stenoses in visceral or renal arteries often is difficult because of artifacts caused by the stentgrafts in CT-angiography (CTA). Therefore, gold standard for evaluation still is digital subtraction angiography (DSA). Specialized ultrasonic techniques using contrast-enhancement represent an alternative method for the detection of stenoses of visceral or renal arteries after endovascular repair of juxtarenal aortic lesions.

Methods: In this prospective evaluation 17 patients (16-87 years, median 74 years, 15 males, 2 females) were examined by means of CTA or ultrasound after a mean postoperative follow-up period of 3 months after endovascular repair of juxtarenal aortic lesions. Ultrasound was performed using a multifrequency ultrasound probe (2-4 MHz) with Contrast Harmonic Imaging (CHI). For contrast-enhancement bolus injection of Sonovue (2.4 ml i.v.) was used. The CTA was done using a 16-line spiral CT-scan with a 100 ml bolus of contrast medium.

Results: In two thirds of the cases no reliable evaluation of the visceral or renal arteries could be achieved with CTA. On the other hand by means of contrast-enhanced ultrasound using CHI artifact free evaluation of relevant stenoses was possible in these cases. This could not be achieved by colour coded ultrasound without contrast-enhancement. The stenoses seen in contrast-enhanced ultrasound could be confirmed by digital subtraction angiography with following intervention.

Conclusions: Contrast-enhanced ultrasound sonography allows better evaluation of visceral or renal artery stenoses after endovascular aortic aneurysm repair with fenestrated or branched endografts compared to CTA. DSA can be used for verification of stenosis with consecutive intervention or therapy.
were discovered in 55.5% of cases. The type 3 of the arterial lesion (Lupi-Herrera et al., 1977 classification) was discovered in 57% of cases, type 1 - 29% of cases and type 2 - in 14% of cases. We discovered three variants of thoracoabdominal aorta lesion in our patients. Lesion of descending aorta was found out in 5% of cases, lesion of supra-, inter-, infrarenal aorta - in 68% and combined lesion - 27%. Primarily we operated 118 patients and carried out 140 primary arterial reconstructions. Forty-three patients underwent reconstructions of brachiocephalic arteries, 63 patients underwent reconstructions of thoracoabdominal aorta and its branches. In the cases of combined lesions 12 patients underwent multiple-stage reconstructions of brachiocephalic arteries and thoracoabdominal reconstructions.

Results: Seventy-seven underwent reconstructions of thoracoabdominal aorta, abdominal aorta and visceral arteries. We did 46 primary operations on thoracoabdominal aorta, in 39 cases of them we reconstructed thoracoabdominal aorta and its branches. In cases of combined lesion of thoracoabdominal aorta and both renal arteries we preferred to carry out two-stage operations (9 patients). In the nearest postoperative period we had renal artery thrombosis in one patient (2.1%), bleeding - in three cases (6.4%). The postsurgical lethality after reconstructions of thoracoabdominal aorta was 8.5%. Isolated reconstructions of renal arteries were performed in 22 patients. After renal artery reconstructions we had neither postoperative complications nor lethality. In long-term period we had redo surgery of thoracoabdominal aorta and its branches in eight patients. Five of them had false aneurysms of the proximal or distal anastomosis and 3-thrombosis of renal artery. Three patients required nephrectomy.

Conclusions: 1) The surgery for patients with combined lesion should be split in stages. 2) Thoracophrenolumbotomy is indicated in case of thoracoabdominal aorta repair, in case of symptoms recurrence in patients with thoracoabdominal aorta and its branches lesion the redo reconstruction is indicated.

CV1-5
THORACOABDOMINAL ANEURYSM SURGERY (OPEN VS. HYBRID TREATMENT)
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Objective: At the moment the indications for use of ‘open’ vs. ‘hybrid’ procedure, in surgical treatment of Thoracoabdominal aneurysm, represent a debatable question, particularly with regard to a population of patients more and more elderly, with heavy co-morbidity. Our surgical options for use of one or the other procedure is the aim of this study.

Methods: From 1995 to 2007, 486 thoracoabdominal aneurysms were treated and particularly 476 with ‘open’ procedure, 10 with ‘hybrid’ procedure. The ‘open’ procedure collects, in our experience, aneurysms and dissecting aneurysms from type I to Type IV according Crawford’s classification, Marfan’s syndrome, patient >70-year-old, ASA class type I-II, without serious co-morbidity. Every presentation such as symptomatic, covered or ruptured aneurysm and particularly patients with haemodynamically unstable were treated traditionally. The ‘hybrid’ procedure is reserved for patients who were known to be high-risk (>70-year-old, ASA III–IV). FEV1 <60%, creatinin level more than 2.2-5.2-mg/dl. Ideal candidates were patients already operated on in thoracoabdominal segment, ‘frozen thorax’, calcified aortic wall.

Results: The ‘open’ procedure presents, in our experience, a mortality rate of 7% in infection, 28% in emergency. The Paraparesis and paraplegia occurs for 8% in infection, 18% in urgency or emergency. Acute renal failure reveals an incidence of 13%. Pulmonary complication of 30-26%. Postoperative bleeding, IMA and stroke are present, in this surgery, with no different rate compared to normal cardiac surgery. The ‘open’ procedure presents a mortality rate of 10% (1/10), no case of paraparesis/paraplegia (0%), Acute renal failure 10% (1/10), Pulmonary complication 30% (3/10), occlusion graft of retrograde bypass 10%, endoleak 20% of cases. Conclusions: ‘Open’ surgical repair continues to be, in our experience, the standard therapy for thoracoabdominal aneurysm, but in presence of patients with prohibitive risk and heavy co-morbidity, a combined technique with visceral and renal artery’s translocation, followed by endoluminal repair of the aneurysm, seems to be a viable option.

CV1-6
ANEURYSMS OF THE VISCERAL AORTIC SEGMENT: A SINGLE-CENTRE EXPERIENCE WITH THE SURGICAL TREATMENT
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Objective: Open surgery of the abdominal aortic aneurysms extending to or across diaphragm and including the s.c. visceral aortic segment (VAS) still represents a more common alternative to endovascular treatment. The authors present here their to-date experience.

Methods: Between January 1996 and December 2008, 26 patients (22 men, 4 women) of the average age 63.5 years were operated. All but two accumulated serious comorbid conditions, including chronic renal failure in five. Elective procedures outnumbered the urgent ones only slightly (15:11). Of the latter, two aneurysms were ruptured and seven were symptomatic: out of these, five were mycotic VAS aneurysms and two suprarenal inflammatory aneurysms. CT angiography sovereigned the diagnostics and various surgical approaches were chosen with visceral arterial implantation or bypasses. In the mycotic aneurysms, radical aortic resection and débridement followed by replacement with Rifampicin-soaked dacron graft was performed. For organ protection, both cold crystalloid perfusion and slight hypotermia and left atriofemoral bypass and selective organ blood perfusion were used.

Results: Generally, postoperative course was characterized with substantial morbidity expressed notably in cardiopulmonary complications and (multi) organ failure rate. Cross-clamp time, renal ischemic interval and blood loss were major intraoperative determinants of the further outcome. The total in-hospital mortality was 26.9% (7/26), elective 13.3% (2/15), urgent 45.3% (5/11). Out of five, one patient with the mycotic aneurysms died after surgery (20%). Major causes of death were hemorrhagic shock and multiorgan failure.

Conclusions: Compared to the more standard infrarenal AAA surgery, inclusion of the visceral segment into the surgical aortic pathologys augments substantially the perioperative risk. Elective expeditious operation, controlled blood loss and effective organ protection are major prerequisites for the eventual success. However, even our best efforts can scarcely overcome the ominous impact of the chronic deleterious comorbidities in the aged patients.

1st Vascular Scientific Session - Abdominal Aorta Aneurysms 1
May 1, 2009, 2nd Congress Day 11:30-13:00

V1-1
TOTA LLY LAPAROSCOPIC AORTIC SURGERY: EXPERIENCE IN A FRENCH ACADEMIC CENTER
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Objective: The application of laparoscopic techniques for vascular procedures has been limited by factors such as difficulties in aortic exposure and anastomosis techniques, as well as the concurrent competitive progress of endovascular surgery. The purpose of this study was to review the outcomes for laparoscopic aortic interventions in the endovascular era.

Methods: Retrospective analysis was carried out for a series of 219 patients who underwent a totally laparoscopic aortic procedure for treatment of aortic occlusive disease (AOD; n=127) or abdominal aortic aneurysm (AAA; n=80) and 12 aorta-renal bypasses. This series did not include patients operated in others centers (110 aortic bypasses).

Results: Mean patient age was 61 years and the sex ratio was three men for one woman. The mean operative time of procedures for AOD was 223±50 min, with a mean clamp time of 56±21 min. 3.6% of the AOD procedures had to be converted to open. For laparoscopic AAA procedures, the mean operative time was 262±57 min and the mean clamp time was 103±15 min. Eight conversions (10%) to open procedure had to be performed in this subgroup. The 30-day mortality rate was 0.9%. Overall mortality rate was 13.4% during a mean follow-up time of 16.2 months. The primary patency rate was 100%.

Conclusions: Totally laparoscopic aortic surgery is feasible and showed promising and satisfactory results in our experience. Precise indications for this kind of surgery, compared to endovascular and open surgery, remain to be determined by randomized studies. Nevertheless, it is a difficult technique. Further development will rely on effective training, advances in technique and instrumentation.
CHANGES OF THE HEALTH RELATED QUALITY OF LIFE AFTER OPERATIVE TREATMENT OF ABDOMINAL AORTIC ANEURYSM: COMPARISON OF OPEN AND ENDOVASCULAR REPAIR IN TWO YEARS OBSERVATION

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Objective: To evaluate the influence of the treatment method over health related quality of life (QoL) in patients with abdominal aortic aneurysm (AAA), in long-term observation.

Methods: Twenty-six patients with AAA of minimum 55 mm in diameter were included to the study between January 2000 and February 2005. Twenty-five (4 females and 21 men, mean age 70.4) patients underwent endovascular repair (EVAR), 21 (2 females and 19 men, mean age 65.9) open operation. QoL was evaluated using SF-36 general questionnaire before the treatment and 6, 12, 18 and 24 months after the operation. The changes of QoL were analyzed in eight subscales, defined in questionnaire (describing different aspects of QoL, such as: physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional and mental health) and in summary scales providing general evaluation of two main aspects: physical and mental health. The trends of changes in subscales and summary scales were statistically analyzed using ANOVA method. Differences between groups were checked using Mann-Whitney's U-test.

Results: In both groups, six months after treatment, decrease of bodily pain and general health subscales and physical health summary scale were observed. Changes in these aspects of QoL were similar in both groups. The only significant difference between groups was the tendency to decrease of role-physical subscale values in the EVAR group. This trend was observed after 18 months from treatment.

Conclusions: The changes of health related QoL were similar in both groups during the two years observation. The study did not reveal a significant advantage of the EVAR over open repair, in the aspect of QoL. However, the analysis of acquired data did not show any long-term setback of the patients' QoL after EVAR, too.

ABSTRACTS/INTERACTIVE CARDOVASCULAR AND THORACIC SURGERY

EARLY AND LATE MORTALITY AFTER OPEN REPAIR OF ACUTE ABDOMINAL AORTIC ANEURYSMS IN THE ERA OF ENDOVASCULAR REPAIR

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Objective: Emergency endovascular aneurysm repair (EVAR) has been shown to be an advantageous treatment option in non-elective repair of abdominal aortic aneurysm (AAA). The outcome in the remaining patients, unsuitable for EVAR and needing an open repair (OR), is not well known. We present the results of OR in our institution, where emergency EVAR is performed with an 'intention to treat all non-elective AAA by EVAR'.

Methods: Retrospective analysis of 104 patients treated with OR for acute AAA (symptomatic [22, 21%] and ruptured [82, 79%]) at the University Hospital of Zurich, between 1997 and 2002. CT angiography was performed in all patients to confirm the diagnosis and assess EVAR feasibility. Since 1998, EVAR was performed on all patients with an infrarenal neck >4 mm long and OR in the remaining patients, most of whom required suprarenal clamping. Mean aneurysm diameter was 7.4±1.6 cm. Mean age of the patients was 70.9 years and most were men (85, 86%). Univariate and multivariate regression analyses were used to determine predictors of mortality and morbidity.

Results: Thirty-day mortality was 31% and did not increase after introduction of EVAR at our institution. True aortic rupture, shock at arrival, mechanical resection/clamping, transposition of >10 red blood cell units and abdominal compartment syndrome (ACS) were the most significant predictors of 30-day mortality. There was a strong correlation between the volume of transfusion and the development of ACS. The highest mortality rate occurred in patients requiring massive transfusion and secondary ACS decompression. Cumulative overall survival rate at five years was 55%.

Conclusions: In our institution, where emergency EVAR is the first treatment option, OR candidates require mostly suprarenal clamping. In such patients a less aggressive transfusion policy and primary open abdominal treatment to avoid ACS should be considered. These adjuncts that improve EVAR mortality with acute AAAs also appear to reduce OR mortality in this setting.
Conclusions: Classic open aortic surgery for AAA repair can be performed with acceptable risk in Octogenarians. For therapy of ruptured AAA it is not justified to exclude patients from surgery because of their age or preoperative score values.

V1-6 EFFECT OF EVAR WITH TRF AND IRF ON RENAL FUNCTION COMPARED TO OPEN REPAIR: RESULTS OF A PROSPECTIVE COMPARATIVE STUDY
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Objective: Recent studies have shown that progressive renal dysfunction may develop in patients after EVAR, data are conflicting about the effect of EVAR on renal function compared with open repair (OR). The purpose of this prospective study was to assess the effects of EVAR both with TRF and infra-renal fixation (IRF) vs. OR on renal function detected with serum creatinine (SCr), creatinine clearance (CrCl) and renal perfusion scintigraphy (RPS) and to compare them with OR.

Methods: A prospective study was carried out at the Department of Vascular Surgery - University of Padua, from January 2003 to June 2006. To assess renal function a RPS, SCr, CrCl (estimated with the Cockcroft-Gault) were performed preoperatively and in the 4th postoperative day. A postoperative change ≥20% of SCr, CrCl or of the glomerular filtration rate (GFR) at the RPS was considered significant for renal dysfunction. The follow-up included: dosage of SCr, CrCl, duplex scan of renal artery and angio-CT at 6, 12 months and then yearly. Patients with a preoperative SCr >2.5 mg/dl were excluded.

Results: The patients enrolled in the study were 320; 111 underwent EVAR; 57 (51.3%) received a TRF and 54 (48.7%) an IRF vs. OR. No significant change were observed for SCr, CrCl from the preoperative to the postoperative period (4th day) in both EVAR groups. A significant reduction of the GFR at the RPS was observed in nine patients (8.1%), 5 (8.8%) from the TRF group and four (7.4%) from the IRF group in absence of relevant variation of SCr and CrCl. In five patients (4.5%); 3 TRF, 2 IRF the decrease was limited to a single kidney. No difference emerged by comparing preoperative and postoperative SCr and CrCl, between EVAR groups and OR. During the follow-up (mean 52 months, range 30-72), a progressive and significant decline of renal function was observed in EVAR group differently in OR group renal function remained stable. No sign of renal artery occlusion or renal infarction was observed at the angio-CT and renal artery duplex scan.

Conclusions: An early decrease of renal function is seen after EVAR at the RPS in 8.8% of patients, regardless of fixation level. Long-term results showed a worsening of renal function in EVAR group respect to OR; this results should be considered in selecting patients with a preoperative renal insufficiency for this procedure.

V1-7 THE ABDOMINAL COMPARTMENT SYNDROME (ACS) AFTER ABDOMINAL AORTIC ANEURYSM (AAA) OPEN REPAIR
G. Bajardi, F. Pecoraro, D. Mirabella, M.G. Bellisi
Vascular Unit - University of Palermo, Palermo, Italy

Objective: The abdominal compartment syndrome (ACS) is a condition in which increased tissue pressure in a confined anatomic space, causes decreased blood flow leading to ischemia and dysfunction and leading to permanent impairment of function. ACS is a condition that can be caused by many conditions such as sepsis, trauma, obesity, and retroperitoneal bleeding. The pressure in the abdominal cavity can increase due to various factors such as fluid accumulation, infection, or organ failure. If the pressure becomes too high, it can lead to organ dysfunction and failure, which can be life-threatening.

Methods: Between June 2007 and June 2008 we operated surgically 23 cases of AAA (14 in emergency and 9 in nonemergency), with indirect intra-abdominal pressure (IAP) monitoring (intra-vesical catheter). Mean age was 68 (64-84) years: 19 males and 4 females. Mean transverse diameter was 6.2 cm (5.5-9.0). Preoperative diagnostic procedure was ultrasound and tomography when possible. All patients were managed in hypotensive hemostasis (restricting fluids and keeping blood pressure around 90 mmHg). Rise in IAP >20 mmHg was considered for surgical decompression. In one case we registered preoperatively IAP >20 mmHg treated with only skin cut. No 30-days mortality was occurred.

Results: Is possible to distinguish an acute ACS secondary to a rapid rise in IAP; and a chronic (compensated by increased abdominal wall compliance). In vascular patients ACS may occur following free intraperitoneal or contained retroperitoneal aneurysm rupture. ACS was defined as ‘killer syndrome’ in rAAA treatment. Aggressive ACS treatment has determined in Mayer experience overall 30-day mortality decreased by two-thirds to 12% in 94 patients treated by emergency EVAR for rAAA and 33% for 107 patients treated by open repair over the past 10 years. Management for patients with raised IAP or at risk of developing ACS following aortic surgery, is to consider urgent decompression in any patients with IAP over 20 mmHg or at lower pressures associated with worsening organ dysfunction. The rise of IAP >20 mmHg is the determinant of ACS that may lead to ischemia and dysfunction of the principal organ and system leading to Multi-Organ Failure. Measurement of IAP may be performed directly (intra-abdominal catheter) or indirectly (intra-vesical). All these methods have as objective IAP monitoring before its clinical manifestation. We used intra-vesical catheters for IAP monitoring and in one case it leads to a surgical decompression.

Conclusions: ACS can be a reliable predictive factor for aneurysm outcome. Prevention of ACS, with early recognition of rising IAP and urgent intervention to decompress the tense abdomen can lead to mortality reduction after aneurysm rupture. IAP measurement IAP is simple and non-invasive, and should be a routine component of physiological monitoring in patients after rAAA in association with hypotensive hemostasis.

2nd Vascular Scientific Session - Cerebrovascular Insufficiency 1
May 1, 2009, 2nd Congress Day 11:30-13:00

V2-1 IS THE URGENT CAROTID ENDOARTERECTOMY IN PATIENTS WITH ACUTE NEUROLOGICAL SYMPTOMS A SAFE PROCEDURE? M. Gorlitzer1, A. Froeschl1, D. Puschnig1, E. Locker2, P. Skyllouriotis1, J. Meinhardt1, M. Grabenwoeger3
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Objective: The aim of the present case-control study was to assess patients with acute neurological symptoms requiring urgent carotid endarterectomy (CEA) and compare the outcome of the procedure in this group with that achieved in stable patients.

Methods: Twenty-eight CEAs (9.3%) were performed in patients with an acute neurological deficit and 302 in stable patients from December 2006 to April 2008. Those selected for urgent surgery fulfilled the following criteria: acute onset of hemispheric neurological symptoms or crescendo TIAs, significant carotid pathology, the absence of cerebral haemorrhage, uncompromised vigilance, and stable cardiopulmonary conditions.

Results: Perioperative mortality in the stable patients cohort was 0.33%. One patient died during the hospital stay because of myocardial infarction. Perioperative neurological events were observed in 2.2%: one ipsilateral stroke in stage II A, one contralateral stroke in stage I A, and a prolonged neurological deficit with complete restitution at the time of discharge in five patients. No mortality or neurological morbidity was encountered in those who underwent urgent CEA.

Conclusions: Compared to stable patients with stage I, II or IV disease, neither mortality nor morbidity was increased in those who underwent urgent CEA. Urgent CEA after non-disabling stroke or crescendo TIAs is a safe procedure with a favourable outcome.

V2-2 EVERSION CAROTID ENDARTERECTOMY VS. BEST MEDICAL TREATMENT IN SYMPTOMATIC PATIENTS WITH NEAR TOTAL INTERNAL CAROTID ARTERY OCCLUSION: A PROSPECTIVE NON-RANDOMIZED TRIAL D. Radak, S. Tanaskovic, D. Nenezic, G. Vucurevic, P. Popov, P. Gajin, B. Lozuk, N. Ilijevski
Dedinje Cardiovascular Institute, Belgrade, Serbia and Montenegro

Objective: To prospectively evaluate clinical effects of eversion carotid endarterectomy (ECAE) vs. best medical treatment of symptomatic patients with near total internal carotid artery occlusion.

Methods: From January 2003 to December 2006 a total of 309 recently (≤12 months) symptomatic patients with near total ICA occlusion who were eligible for surgery were identified in our institution. Patients were...
Objective: Final data demonstrated a rapid and an unexpected improvement of neurological deficit after hospital discharge. The neurological conditions and no increase of risk surgery-related occurred.

Methods: From September 2004 to September 2006, 99 consecutive patients with age ≥80 years, with symptomatic or asymptomatic severe carotid stenosis underwent to elective carotid revascularization through CAS or CEA and have been included prospectively in the study: seventy patients underwent to CEA, while 29 underwent to CAS. In all the patients has been evaluated CTnI preoperative, postoperative (1–3 h after the procedure) and in days 1, 2 and 3. The follow-up in the long-term has been carried out through a systematic clinical review of the patients. Endpoints were major and minor cardiac and neurological events.

Results: An increased level of CTnI (≥0.5 ng/ml) has been found with the same frequency in the patients who underwent to CEA (7.1%) and in those who underwent to CAS (6.9%). Also separately analyzing to cardiological major events (4.3% CEA vs. 0% CAS) and minors (2.9% CEA vs. 6.9% CAS) the values are the same about. There have been no cases of cardiac death. No correlation has been found between periprocedural homodynamic instability and increase of the levels of the troponin. Analyzing only the patients with preoperative heart disease we have had the same percentage as far as the cardiological events. Instead the percentage of neurological events was higher in subgroup of patients with preoperative heart disease and who underwent to CAS: all the neurological events of group CAS occurred in the subgroup of patients with previous cardiological heart disease.

Conclusions: The increase in the levels of CTnI is an objective measure of ischemic lesion of the heart and a sure preannouncer of the cardiac morbidity in the postoperative period and in the mid-term. The advantage of the CAS is in the reduction of the cardiological complications in elderly patients with high clinical comorbidity, but in this population with previous aortomyopathy we have to consider an increased risk of neurological complications. This risk comes however reorganized if the CAS is conceived not like an alternative intervention but like a complementary intervention to the CEA.

V2-5
SURGICAL MANAGEMENT OF CERVICAL PARAGANGLIOMAS
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Objective: Carotid body tumors are rare, but represent the most common form of head and neck paraganglioma. At surgery, 11 tumors were classified as Shambilin class II and six as class III. The present study reviews our experience in the diagnosis and treatment of these uncommon lesions.

Methods: A cervical approach was the method of choice in 16 cases; a transternal approach. Complete excision of the tumor was accomplished in ten cases.

Results: Mortality and mortality was 3.8% (7/180). No neurological mortality related occurred. Three patients died for cardiovascular (n=2) and pulmonary (n=1) diseases. At discharge, three patients (1.6%) experienced worsened of the neurological deficit (ΔmNIH: +1 in two cases, +2 in one case); two patients presented TIA in the postoperative phase completely decreased before hospital discharge. At discharge ΔmNIH was -2.5, -6.3 and -15 for the three groups, respectively. In presence or not of recent brain ischemia, ΔmNIH was -3.6 and -3.2, respectively. ΔmNIH was -3.5 in the 63 patients who underwent CEA within 6 h; while ΔmNIH was -3.2 in the remaining 117 patients treated after 6 h (mean 55 h).

Conclusions: Patient’s outcome seems to be not related to clinical evidence, acute brain ischemia, and surgical timing. Patients who underwent immediate surgical procedure present a more rapid improvement of their clinical conditions and no increase of risk surgery-related occurred.
V2-7
RESULTS OF SUBCLAVIAN ARTERY TRANSPOSITION
Department of General and Thoracic Surgery, Warsaw Medical University, Warsaw, Poland

Objective: To evaluate the outcomes of surgical procedures performed in patients with symptomatic Subclavian Steal Syndrome (SSS), with a particular focus on subclavian-carotid transposition.

Methods: Since 1986, 242 patients with symptomatic SSS were treated, including 88 males and 154 females, aged between 20 and 79, 50.1 on average. Seven percent had symptoms of arm ischemia, 63% had neurological manifestations and 30% had both.

Results: During that period, 61 patients were operated on for symptomatic SSS. Subclavian to carotid artery transposition was the most frequent type of procedure (32 patients). Others included chiefly endartereotomies and bypasses, as well as transpositions performed simultaneously with endarterectomies. Subclavian transposition was performed because angio-plasty and stenting were either not feasible (25 cases of occlusion) or the attempt at endovascular treatment failed (in 7 patients). In all 32 patients, the subclavian-carotid transposition was a success in terms of immediate patency. One patient had an ischemic stroke intraoperatively. A lesion of the left phrenic nerve was noted in two and further four patients developed a left neck lymph fistula. Out of the 24 patients presenting for follow-up for 43 months on average, we observed three cases of anastomotic stenosis (including 1 significant) and five cases of left vertebral artery occlusion. The subclavian artery remained patent in all the patients.

Conclusions: Primary surgical treatment is rarely indicated in symptomatic subclavian steal syndrome. Occlusion of the artery is the most typical indication. Both short and longer term follow-up results indicate that subclavian-carotid transposition prevails over the other procedures with its simplicity, smaller blood loss and shorter operative time.

V2-8
SURGICAL TREATMENT OF VERTEBRAL-BASILAR INSUFFICIENCY CAUSED BY PATHOLOGICAL PASSAGE OF THE VERTEBRAL ARTERY THROUGH THE BONE CHANNEL
D. Turlyuk, V. Yanushko, O. Kardash, L. Barovkova
Republican Scientific Practical Cardiology Center, Minsk, Belarus

Objective: To determine the efficacy of the surgical treatment of vertebral-basilar failure caused by pathological passage of the vertebral artery (VA) through the bone channel.

Methods: Twenty-seven patients after six months of non-effective conservative treatment underwent reconstruction of the 3rd segment of VA (2 atherosclerotic, 25 abnormalities) from 2003 to 2008. An approach similar to carotid invasions was used, without sternocleidomastoid muscle transaction. All patients preoperatively underwent neuropsychological testing, echography (extra/intracranial) with position tests, and angiography (MRI or subtraction). The bypass Doppler-echography, neuropsychological testing, and angiography were carried out if indicated on the 7th day and three months postoperatively. The following subjects underwent extracranial-vertebral rerouting: three patients with VA hypoplasia (mean age 48±5.2 years, gender 1 male/2 females), 20 with extravalvar compression at V2 (38±5.2 years, 3 males/17 females), five with VA tortuosity at V2-V3 (42±4.3, 1 male/4 females) with the vertebral artery mean diameter at the anastomosis level of 2.3±0.2, 4.5±0.5, and 3.8±0.5 mm, respectively.

Results: All the patients demonstrated high preoperative severity of VBF. Dynamics of VBF and cognitive disorders after extracranial-vertebral rerouting were evaluated pre- and postoperatively. Mean VBF Score was 8±5.2 and 4±1.2 (P=0.023); mean value at Folstein Cognitive Disorders Scale was 29±3.1 and 20±4.5 (P=0.09); mean result of Tinnetty balancing stasis was 19.6±4.5 and 8.4±4.5 (P=0.012); mean Burdon’s test result was 0.66 and 0.52 (P=0.03) for pre- and postoperative conditions, respectively. A marked results improvement according to the VBF and Tinnetty scales was demonstrated on day 7 postoperatively. The cognitive functions improvement was inadequate (P=0.05). Transcranial Doppler with De Kleijn testing primarily revealed complete blood flow cessation in one of the VA in 5 (25%) subjects with >50% blood flow reduction in the a. basilaris. In the other cases mean difference in flow characteristics in a. basilaris was 42.0±5.4%. Echography with position test revealed no significant decrease of basic artery blood flow in early and late postoperative periods (7 days, 3 months).

Conclusions: Neuropsychological and De Kleijn testing enable the estimation of intensity and character of vertebrobasilar arterial blood flow reduction associated with posterior cranial fossa dynamical circulation impairment. In patients with VA lesion at V2-V3 after non-effective six months of conservative therapy, extracranial-vertebral rerouting appears to be the strategy of choice.

V2-9
OUR EXPERIENCE IN SURGICAL TREATMENT OF THE CAROTID AND VERTEBRAL ARTERIES ELONGATION
G. Sokurenko, Y. Schneider, G. Garbonov, A. Chotuncoy, A. Markov, D. Voskovets, V. Tisy, A. Shatravka
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Objective: From February 1993 to May 2008, 328 patients with elongated carotid and vertebral arteries were operated on. All patients were symptomatic (157 patients underwent stroke, 112 had TIA and 186 had syncope). Majority of the patients had headache (89%), giddiness (86%), ataxia (79%). An examination program included a thorough neurologic examination, ultrasound examination, cerebral CT and angiography of the aorta arch branches. Since 1998 the MRA has been introduced in common clinical practice for revealing of elongated arteries.

Methods: In 328 patients 349 surgical procedures were performed. All operations were performed under general anesthesia. Intraoperative cerebral protection was realized with barbiturates, dexetamethasone, intravenous injection of 1000 mg of glialthiline just before the artery cross-clamping and inducing a moderate arterial hypertension. Temporary shunt was not used. Resections of elongated ICA and CCA were performed in 178 cases. ICA transposition was performed in 46 cases. VA transposition was performed in 48 cases and Power’s procedure in 66 cases. Combined procedures on ICA and VA were performed in 11 cases.

Results: The analysis of the surgical treatment results has shown no cases of intraoperative mortality and 1 (0.2%) stroke. Intraoperative complications included two cases of internal carotid artery injury. Craniovertebral nerve injury was observed in 12 patients, Horner’s syndrome in seven cases. The symptoms have regressed totally within 3-6 months. Two hundred and eighteen patients were followed up from 22 to 120 month (at an average 79 months). Twenty-eight patients died (12.8%). Only five patients had stroke as a cause of death. Ipsilateral stroke occurred in eight patients (3.7%). One hundred and sixty-nine patients (77.5%) had a distinct regression of the symptoms.
analysis for the factors affecting early outcomes in patients of group 1 were performed. Follow-up results were analysed with Kaplan-Meier curves and compared with log-rank test.

Results: patients of group 1 were more likely to have hyperlipemia, diabetes and arterial hypertension; patients of group 2 were more likely to be smokers or past-smokers and to have concomitant coronary artery disease (CAD) and peripheral arterial disease (PAD). There were no differences in terms of clinical status, degree of stenosis and kind of intervention (primary intervention or redo surgery). Patients of group 2 had a significantly higher percentage of contralateral carotid artery occlusion than patients in group 1 (6.9% and 3.9%, respectively). Patients of group one had a lower percentage of primary closures (14% vs. 23%; P<0.001) and an higher percentage of eversion technique (6.2% vs. 2.2%, P<0.001) than patients of group 2. There were no differences in terms of intraoperative neurological events (0.4% and 0.9%, respectively); also 30-day stroke and death rates were similar in the two groups (1.2% for both groups). Univariate analysis demonstrated the presence of CAD, of PAD, of diabetes and of contralateral carotid artery occlusion to significantly affect 30-day stroke and death rate in female patients. At multivariate analysis, only diabetes (OR 3.6, 95% CI 0.1–0.9) and contralateral occlusion (OR 7.4, 95% CI 0.03–0.05) were independently associated with an increased periperative risk of stroke and death. Median duration of follow-up was 27 months (range 1-144). There were no differences between the two groups in terms of survival, freedom from ipsilateral stroke, freedom from any neurological symptom and freedom from severe (>70%) restenosis.

Conclusions: Female sex per se does not represent an adjunctive risk factor during CEA, with early and long-term results well comparable to those obtained in male patients. However, there are several subgroups of patients at higher surgical risk, requiring an appropriate selection and careful intra and postoperative management.
3rd Cardiac Scientific Session - Valve 2
May 1, 2009, 2nd Congress Day
15:00-16:30

C3-1
THE EUROSCORE? STILL HELPFUL IN PATIENTS UNDERGOING ISOLATED AORTIC VALVE REPLACEMENT?
D. Wendt, B. Oswald, M. Thiellmann, K. Kayser, P. Massoudy, M. Kamler, H. Jakob
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Objective: The EuroSCORE is one of the most prominent scores used for the evaluation of predicted mortality in cardiac surgery. The aim of our study was to analyze the logistic and additive EuroSCORE in view of its accuracy for patients undergoing isolated aortic valve replacement.

Methods: A total of 652 patients underwent isolated aortic valve replacement from January 1999 to June 2007. Emergency and redo operations were included. Acute endocarditis was excluded. Out of logistic regression analyses, ROC curves statistics were calculated both for the logistic and additive EuroSCORE. Results: By using the identical variables used in the EuroSCORE, the area under curve was 70.7% for the logistic and 72.4% for the additive EuroSCORE, respectively. Age, which is by nature positively correlated with increasing cardiac and non-cardiac comorbidity is calculated as a single parameter, the area under curve remains at 69.7% being very close to the result of the EuroSCORE.

Conclusions: For the subgroup of patients undergoing isolated aortic valve replacement, the use of the EuroSCORE provides a comparable precision concerning the estimation of early mortality compared with the simple factor ‘age’. The extended use of the EuroSCORE in view of percutaneous aortic valve replacement, the insufficient accuracy of the score bears the risk of incorrect decision-making.

C3-2
MITRAL FUNCTIONAL REGURGITATION EVOLUTION AFTER AORTIC SURGERY
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Hospital de Navarra, Pamplona, Navarra, Spain

Objective: The aim of this abstract is to analyze our experience, results and evolution of patients with functional mitral regurgitation associated with aortic surgery in terms of different surgical options.

Methods: We evaluated 37 patients, 28 men and 9 women. Mean age 65±10. Mitral regurgitation was severe in 12 and moderate in 25. Aortic stenosis was present in 26 and regurgitation in 11. NYHA class III in 27 and IV in 10. Mean EF 0.45±0.11. In 10 patients EF was <0.35. Mean aortic gradient 80±26. Pulmonary hypertension more than 50, in 16. Associated coronary disease in class III (P<0.05). 25% died in group of aortic regurgitation P=n.s. In NYHA class IV 90% died and 26% in class III (P=0.001). Mean improvement 1.8 points. Eighty-nine percent of patients were alive at 5 years and 59% at 10 Mean survival 7.4 years. There were no correlation with previous EF in clinical and ecocardiographic control.

Results: Surgical mortality in one patient (2.5%). Postoperative complications, like renal, respiratory neurologic or infection in seven patients. Late mortality 16 (43%) 41% with mitral surgery and 44% without (P=n.s.) 14% with mitral ring and 80% with prosthesis P=0.05. 25% died in group of aortic regurgitation and 52% in aortic stenosis patients P=n.s. In NYHA class IV 90% died and 26% in class III (P=0.001). Mean improvement 1.8 points. Eighty-nine percent of patients were alive at 5 years and 59% at 10 Mean survival 7.4 years. There were no correlation with previous EF. In ecocardiographic evolution, mitral competency was correct in 84% and not improved in 16%. Patients EF <0.35 contractility improved to near normal values in 80% of cases (P<0.05). Conclusions: 1-Mitral competency was correct in 84% of patients with preoperative moderate regurgitation treated without mitral surgery 2- The improvement in contractility was more evident in patients with lower EF 2- Survival and evolution were better in cases with mitral ring and clearly worse after mitral replacement 4-NYHA class IV and the need of mitral prosthesis were significant risk factors for late mortality.

C3-3
UNDERSIZE RING IMPLANTATION - IS IT A GOOD SOLUTION FOR PATIENTS OPERATED ON FOR CHRONIC ISCHEMIC MITRAL DISEASE? - CLINICAL AND ECHOCARDIOGRAPHIC EVALUATION
D. Puszczechowicz, J. Paccholевич, R. Przybylski, J. Wojarski, B. Ryfinski, T. Niklewski, T. Kukulska, M. Zembala
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Objective: Chronic ischemic mitral regurgitation (IMR) is a frequent complication of CAD and is observed in 12-20% of patients after MI. About 10-30% of patients undergoing MV operation have significant regurgitation during follow-up.

Methods: In a series of consecutive 294 patients with CAD undergoing CABG with mitral valve repair, first 144 patients were 95 males, mean age 63.7, mean EuroSCORE 6.7±2.5. TTE with Doppler measurements revealed moderate MR in 67 patients (46.5%) and severe in 77 patients (53.5%). Undersized ring was implanted in all patients (ring ranged 24-30 mm, sizes 26, 27, 28 were used in 94.6% of patients). Patients were observed for 4-21 months (median 7.1±3.02). TTE was performed in all patients (100%). Results: Severe MR occurred in nine patients (6.2%). Two patients of them required reoperation. Statistical analysis revealed that length of coaptation (LC) (P<0.0002), NYHA (P=0.034), CCS (P=0.027), EuroSCORE (P=0.021). We found significant negative correlation between LC and LV4ch basal level sphericity index (SI) (r=0.56, P=0.001) and LV2ch medium level SI (r=0.47, P=0.013). Cox regression showed independent predictors of recurrent MR are: age (OR 0.9 P=0.041), postoperative IABP (OR 3.4 P=0.023), ASA (OR 0.084 P=0.041), ERAO (OR 154.4 P=0.001), LVEDVI (OR 1.024 P=0.011), LVESVI (OR 1.020 P=0.044) and LC (OR 0.011 P=0.014).

Conclusions: Surgical repair of IMR is a safe and effective method of treatment. However, mid-term results depend on LC (cut-off 6.3 mm, sensitivity 94.0%, specificity 85.0%, P=0.05) and LVEDVI (cut-off 82.6 ml/m², sensitivity 60.0%, specificity 61.3%, P=0.05), LVESVI (cut-off 54.2 ml/m², 60.0%, 68.8%, P=0.05), UFEP cut-off 35%, 75.0%, 65.0%, P=0.05).

C3-4
MID-TERM RESULTS OF CHORDAL REPLACEMENT VS. QUADRANGULAR RESECTION FOR REPAIR OF ISOLATED POSTERIOR MITRAL LEAFLET PROLAPSE
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Objective: Isolated prolapse of the posterior leaflet was treated by leaflet resection; whereas chordal replacement techniques with expanded polytetrafluoroethylene (ePTFE) sutures have been normally employed to correct anterior leaflet pathology. This study reports mid-term results of isolated mitral posterior leaflet prolapse repair with ePTFE chordal replacement compared to the usual quadrangular or triangular leaflet resection.

Methods: Between 1995 and 2008, 401 consecutive patients underwent mitral valve repair (MVR) for isolated posterior leaflet prolapse. Two hundred and nine patients (52%) underwent classic quadrangular/triangular resection (group 1) and 192 patients (48%) underwent ePTFE chordal replacement (group 2). In both groups, a complete annuloplasty ring was also implanted. Follow-up is 98% complete (mean follow-up 2.1±2.4 years).

Results: Hospital mortality was 1.0% (4/401). Ten patients (2.5%) died after an average of 2.1±2.3 years. Actuarial survival at four years in group 1 and 2 was 94±2.6% and 98±8%, respectively (P=0.99). Six patients (1.5%) from group 1 required late (4.1±1.8 years) reoperation due to recurrence of MR. Freedom from reoperation at four years in group 1 and 2 was, respectively 97±1% and 100% (P=0.011). Patients of group 2 received larger annuloplasty ring (mean size 34.1±1.8 vs. 32.1±1.9, P=0.0001). At present, 94% of the patients show either trivial or mild mitral regurgitation without difference between groups. Conclusions: Repair of posterior mitral leaflet prolapse by ePTFE chordal replacement is as effective as quadrangular/triangular resection, allows the use of larger annuloplasty rings, gives more physiological repair with increased leaflet mobility and can be performed with excellent mid-term results; no reoperation was required in group 2.

C3-5
SORIN MEMO 3D MITRAL ANNULOPLASTY RING: A NEW RING FOR A MORE PHYSIOLOGICAL ANNULOPLASTY?
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Objective: Mitral ring annuloplasty as part of mitral valve repair has been shown to significantly reduce the incidence of late failure and is, therefore, routinely performed by the majority of surgeons. The choice of best ring to implant, however, is still under discussion. Several authors have shown different advantages using different types of rings available (rigid, semi rigid, complete or incomplete). However, data on dynamic evaluation following mitral annuloplasty are scarce. Sorin Memo 3D is a ring recently introduced claiming of mimicking the physiological 3D motion of the native mitral annulus due to a semi rigid cell-structure design. Here we report our preliminary
experience in mitral annulus dynamic evaluation following mitral annuloplasty using Sorin Memo 3D ring implantation.

Methods: Ten low-risk patients undergoing isolated mitral valve repair for symptomatic severe mitral regurgitation were enrolled. All patients underwent preoperative and pre-discharge mitral annulus dynamic evaluation by trans-thoracic echo. Our dynamic evaluation included mitral annulus systolic excursion (MASE) measured in four longitudinal LV segments (anterior, inferior, septal and lateral) with two-dimensionally-guided 4-mode from apical four-chambers and apical two-chambers views. Systolic and diastolic annular excursion (in both AP and LL view) was also measured postoperatively.

Results: Preoperative mean MASA was 1.63, 1.61, 1.37 and 1.77 mm for anterior, posterior, septal and lateral portion, respectively. Preoperative mean diastolic annulus diameter was 39.5±0.7 and 35.5±1.2 mm (for LL and AP diameter, respectively). Post ring annuloplasty a consistent reduction of MASE was shown but with a residual excursion (postoperative MASE not ~75% compared to preoperative) in all patients. Both AP and LL annulus diameter were significantly reduced but, once more, a residual systo-diastolic excursion of AP annulus diameter (>10%) compared to preoperative) was preserved in all patients.

Conclusions: Sorin Memo 3D seems to effectively preserve physiological mitral annulus dynamics allowing for post implant residual systo-diastolic excursion of AP diameter and limited reduction of MASE. Impact of preserved annulus physiology on long-term durability in consideration of different mitral regurgitation mechanism has to be further evaluated.
Objective: The aim of this study is to perform a clinical and echocardiographic evaluation of a new pericardial bovine supraannular stentless valve (Sorin Freedom Solo). The study analyses prospectively the clinical outcome and one-year follow-up.

Methods: One hundred and one patients with pre-operative echocardiographic assessment undergoing aortic valve replacement with a bovine pericardial stentless valve (Sorin Freedom Solo) implanted with a single suture line in supraannular position were enrolled in the study. There were 60 females (59.4%) and 41 males (40.6%) with a mean age of 73.3±8.6 years (22-85). Etiology: 89 degenerative disease, five congenital disease, four endocarditis and three rheumatic disease. Procedures were performed electively in 87 cases (86.1%), and urgently in 14 (13.9%). Associated procedures were performed in 33 cases: 26 CABG, five mitral anuloplasties and two ascending aorta replacements. Mean cross clamping time without concomitant procedures was 297±191 days and cumulative 4723±60 days. A subgroup of 21 patients underwent stress-echo evaluation at 12 months.

Results: Postoperative mortality was 1.9% (2 patients, 1 heart failure and 1 pneumonia 175 days PO (not intestinal infarction). No early valve-related complications were observed. Results: Forty-three cases (25.7%) presented with neurological events including 17 cases (10.2%) with cerebral infarction. After this monitoring was stopped and treatment with fondaparinux needed to be started in 16%. Conclusions: Postoperative early recovery from platelet cell depression was seen in stentless porcine bioprosthesis and autologous pulmonary valve. However, the sustained thrombocytopenia was seen with stentless bovine pericardial bioprosthesis, which had impact on postoperative antplatelet therapy regime.
The causes of malperfusion detected by this monitoring included malposition of selective perfusion cannula, kinking of perfusion circuit, and false lumen perfusion following femoral or auxiliary arterial perfusion.

Conclusions: Integrated three-stage monitoring system proved to be protective for neurological complications in aortic surgery with selective cerebral perfusion. An occurrence of neurological event was not necessarily related to the duration of systemic or selective perfusion but to the individual situations that newly developed intraoperatively. This study suggests that problem-oriented solution based on this monitoring is beneficial to reducing neurological complications.

C4-3

THE AORTIC ARCH ANEURYSM SURGERY (OPEN VS. HYBRID PROCEDURE)
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Objective: The aim of this study is to compare the mortality and morbidity rates in the surgical treatment of aortic arch aneurysm, between ‘open’ and ‘hybrid’ procedure.

Methods: From 1994 to 2007, 127 aortic arch aneurysms were treated surgically, 117 with open procedure, ten with hybrid procedure. We prefer distinguish, in the open repair, the period between 1994 and 2000 in with we have used deep hypothermia with circulatory arrest and in some cases retrograde cerebral perfusion. From the period 2001 and 2007 in which, antegrade selective cerebral perfusion with moderate or moderate-deep hypothermia was used. The hybrid procedure was performed in two stages, the first using extra-anatomic bypass of epicardic vessels, the second obtaining the aortic arch aneurysm exclusion with endoluminal grafts, always in different operative time.

Results: Overall mortality rate, with open procedure, was 18.8% (22/117), but evaluating the patients operated on only on elective shape the mortality rate was 14.5% (14/96), whereas with urgency or emergency presentation was 33.3% (8/24). The morbidity rate was 11.5% (20/117), including seven cases of stroke (5.9%), three cases of MA (2.5%), six cases of postoperative bleeding (5.8%), no case of paraparesis/paraplegia (0%), 20 cases of acute renal failure (11.5%) all with increasing serum creatinin levels but without need of dialysis. The morbidity rate in the hybrid procedure was 10% (1/10), whereas primary technical success was 100%. Endoleak in 10% of cases, no cases of dislocation, one case of stroke (10%), no case of paraparesis/paraplegia (0%), no case of surgical conversion (0%). One case of postoperative bleeding (1/10) and two cases (20%) of postoperative fever (2/10).

Conclusions: In the light of our experience the open treatment of aortic arch aneurysm is confirmed as gold standard procedure particularly in patients aged <70-year-old, without or with minimal risk factor; in emergency presentation, particularly with haemodynamic instability and finally in marfan syndrome, hybrid procedure is reserved, in our experience, in elderly patients, redo or complex disease of arch, and overall in presence of heavy co-morbidity. Further progress, in endograft planning, useful in very complex anatomical area as aortic arch, will increase the critical indications for hybrid procedure use, evaluating the growing acceptance and the future developments.

C4-4

THE EFFICACY OF BRANCHED OPEN STENT GRAFTING TECHNIQUE FOR REOPERATION AFTER REPAIRED TYPE A DISSECTION
Y. Shirakawa, T. Kuratani, K. Shimamura, M. Takeuchi, K. Kin, G. Matsumiya, Y. Sawa Osaka University Graduate School of Medicine, Osaka, Japan

Objective: Surgical treatment of acute aortic dissection has been largely standardized, but some patients develop late complications that require repeat surgery. Persistent perfusion of the distal false lumen has been repeatedly shown to have an impact on dilatation of the down stream aorta. Concerned with the associated risks of reoperation, a safer procedure is essential in successful management of these patients. To address these problems, we have developed a new method for arch graft implantation with branched open stent-grafting technique. Branched open stent grafting technique is described as follows; the operation was performed with a median sternotomy. After deep hypothermic circulatory arrest, the aortic arch is transected between the distal anastomosis site of initial surgery and left common carotid artery. The main body of the stentgraft is inserted into the descending thoracic aorta. Simultaneously, the branches of the stentgraft are inserted into the left common carotid artery and the left subclavian artery. In this study, we evaluated the efficacy of our branched open stent grafting technique for the reoperation after repaired type A dissection.

Methods: From January 2004 to December 2008, 104 patients were enrolled branched open stent grafting technique for aortic arch disease. Among them, 11 cases were underwent reoperation after repaired acute type A dissection (mean age 58-year-old, 8 male and 3 female). Eight cases required distal reoperation only, and three cases needed proximal and distal reoperation. Results: Perioperative mortality was 0%. Respiratory failure was observed in two cases required proximal and distal reoperation. From 7 to 46 months follow-up periods, late death was 0% and re-intervention by TEVAR was required in two cases.

Conclusions: Branched open stent grafting technique has some advantages such as an avoidance of left thoracotomy, simplification of distal anastomosis, and decrease of exposure area. Furthermore, open stent grafting technique may facilitate staged replacement of the distal aorta and decrease the risk of re-intervention. Reoperation for repaired type A dissection can be performed with acceptable early and late mortality by branched open stent graft technique.

C4-5

OUR EXPERIENCE IN PATIENTS WITH INTRAMURAL HAEMATOMA OF THE AORTA IN THE LAST TEN YEARS
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Objective: Since it is first description in the mid-1980s, both clinical interest and pertinent controversies related to the aortic intramural haematoma (IMH) are permanently present. IMH witch is a precursor of dissection, cannot be reliably distinguished from classic dissection on clinical grounds and is considered to represent about 10-20% of all cases of acute aortic syndromes. In spite of accumulating reports, many unresolved questions regarding this entity are still pending. Here we present our experience in management and follow-up.

Methods: Between 1998 and 2008, we admitted 288 patients with acute aortic syndrome. Diagnosis of IMH was established in 24 (8.33%) patients, 14 (58.33) female, 10 (41.66) male, mean age 56.4 years (36-72). Chest pain was present in all patients, hypertension in 18, syncope in 2, arm pressure difference in six and paraplegia in one patient. We estimated diagnosis with TTE in all (100%) patients, TEE in 10 (41.66%), contrast CT-scan in 22 (83.33%), MRI in 1 (4.16%) and aortography in 8 (33.3%) cases. Type-A IMH was present in 16 (66.6%) patients and type-B IMH was present in 8 (33.3%) patients.

Results: Surgical treatment was necessary in 15 (62.4%) patients with type-A IMH, while all patients with type-B IMH underwent conservative therapy including anti-hypertensive medication. Indications for surgery were: persistent pain in eight patients, coronary malperfusion in one, aortic dissection early superimposed on IMH in three and aneurysmal dilatation of ascending aorta in three patients. There was no operative mortality in this group. In one female with type-A IMH, who was untreated for IMH, the aortic dissection secondarily showed regression of IMH. In all patients with type-B IMH we did control CT, which showed regression of IMH in four patients, reduction of aortic diameter was recorded in six, while in two patients it remained the same.

Conclusions: On the basis of our experience, operation is recommended for almost all patients with type-A IMH and medical therapy for those with descending aortic involvement, unless complications occur.

C4-6

THE ‘LUPIAE TECHNIQUE’, A NEW APPROACH FOR TWO-STAGE HYBRID TREATMENT OF TYPE A AORTIC DISSECTION

Objective: Repair of aortic dissection involving ascending, arch, peri-aortic trunks and descending aorta usually needs hard surgery and is associated with substantial morbidity and mortality. With the purpose to improve the results of this extremely complex disease we propose an effective and safe hybrid two-stage strategy called ‘Lupiae technique’.

Methods: Between November 2007 and November 2008 24 patients (17 [70.8%] males, 7 [29.2%] females; mean age 64.6±9.2 years; range 55-84 years) underwent surgical and endovascular treatment of type A aortic
dissection in our institution. In the surgical first stage ascending aorta and arch replacement associate to debranching of aortic arch was done in emergency using a new multibranchen Dacron prosthesis (so called ‘Lupiae’ made under our design). The second stage procedure was done after four weeks with exclusion of the remaining dissected aorta by deployment of multiple stent grafts with femoral endovascular approach. The surgical procedure was performed in sternotomy, arterial perfusion through right subclavian artery or brachiocephalic trunk, ECC(123.7±34.3 min), aortic cross-clamp (63.7±22.3 min) and distal circulatory arrest (25.6±7.3 min).

Results: Overall hospital mortality was 8.3% (n=2/24), with one death in the surgical stage and one in intensive care unit due to neurologic, renal and respiratory failure. One patients developed transient stroke. At latest follow-up all patients were alive and in good conditions. CT-scan control confirmed good post-procedural result with no evidence of type A dissection pathology, endoleak or hypoperfusion of reimplanted vessels.

Conclusions: The ‘Lupiae technique’ allow a safe and complete hybrid treatment of the type A aortic dissection with a low morbidity and mortality.

2nd Cardiovascular Scientific Session - Descending Aorta
May 1, 2009, 2nd Congress Day
15:00-16:30
CV2-1
LOCAL DISSECTION FLAP AS A POTENTIAL CAUSE OF THE SIZE INCREASE IN THE POSTTRAUMATIC ANEURYSM
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Objective: The aim of the study was to analyze the radiologic differences between the posttraumatic aneurysms in 1) acute and 2) chronic phase of the disease in correlation to size of the aneurysm and symptoms of the disease.

Methods: In the program of endovascular treatment of the aortic aneurysms and dissections that is active in our centre since 1999 twenty one patients were treated due to posttraumatic aneurysms. Diagnostic CT-scan and preintervention angiography were retrospectively analyzed and searched for important differences. Patients data were compared in two groups: the first - group of patients treated in emergency shortly after trauma and the second - group of patients treated electively with typical size-of-aneurysm indications.

Results: In early diagnosed, acute phase group (n=11) nine patients had transection localized typically at the level of aortic isthmus; one had posttraumatic dissection type IIA and one had aneurysm localized at the level of oesophagus of thoracic part of vertebral column. Mean diameter of the aneurysm was 4.03±0.75 cm. Eight patients in this group had flap of the inter nal layer of the aortic wall which created a valve like structure that partially obstructed the aortic flow. Two of the patients did not have pulse palpable at the femoral arteries and one had prerenal kidney failure that required dialysis and was markedly improved after successful stentgraft implantation. Swirling of the blood redirected by the valve-flap from the main stream in thoracic aorta into the aneurysm was clearly seen in aortography in this group. Blood was present in left pleural cavity in 8 (80%) patients in this group. In none of the patients in the chronic group narrowing of the thoracic aorta was noted. None of the patients presented emergent indication of any kind. In both groups results of the endovascular treatment were satisfactory.

Conclusions: In early stage of posttraumatic transection of thoracic aorta dis tal part of the tissue flap of the internal layer of the aortic wall in the area of transection can narrow or even significantly obstruct the aortic lumen and by redirection of the blood flow into aneurysm sac can be a cause of its increase.

CV2-2
TREATMENT OF THE FALSE THORACIC ANEURYSMS. CAN WE REACH THE ULTIMATE DECISION?
N.S. Ilic
Institute for the Cardiovascular Disease, Belgrade, Serbia and Montenegro

Objective: Acute thoracic aortic rupture or pseudoaneurysm formation as a result of blunt trauma is a serious and devastation consequence of deceleration trauma most commonly as a result of car accidents. The aim of this study was to review the treatment of blunt thoracic aortic injuries at a single institution over the past 24 years and to compare both; open and thoracic endovascular (TEVAR) repair of thoracic aortic aneurysm.

Methods: All cases of confirmed blunt aortic injuries from 1985 to present were included in this retrospective view. Seventeen patients underwent repair of the false thoracic aneurysm. These patients were treated within an average interval of 10 years (range, 1 day-20 years). All aneurysms were located at the level of the aortic isthmus. Six patients had associated polytrauma. An open surgical procedure was performed in 13 of our cases. Patients were treated with distal aortic perfusion for spinal protection (cardiopulmonary bypass in four cases, external heparin-bounded shunt in five cases) while ‘clamp and sew’ technique was performed in four hemodynamically unstable patients. TEVAR was the procedure of choice in four patients, using Medtronic-Valiant aortic stent graft under regional epidural anesthesia. Follow-up data consisted of control multi slice computed tomo graphy one week, six months and one year after the procedure accompanied with plain chest radiography.

Results: All endovascular procedures were technically successful, no neurological complications occurred. There were no deaths in TEVAR group. Open surgical procedure was accompanied with neurologic deficit (paraplegia) in 23.0%. Mortality rate was 17.6%. Polytrauma was found to be a negative predictor of successful procedure.

Conclusions: Endovascular procedure is safe in selected patients. TEVAR reduces the substantial mortality and morbidity in comparison with open surgery. Our short-term results are encouraging and are favorably compared to the surgically approach in the anatomically suitable patients. However, close and long-term follow-up concerning endovascular procedures, especially in younger patients are mandatory.

CV2-3
ENDOVASCULAR REPAIR FOR TRAUMATIC THORACIC AORTIC RUPTURE. SINGLE CENTER EXPERIENCE
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Objective: Blunt traumatic thoracic aortic rupture is a life-threatening surgical emergency associated with high mortality and morbidity. The recent development of endovascular stent-graft prostheses offers a potentially less invasive alternative to open surgery, especially in patients with associated injuries. The aim of this study was to evaluate the results, at short and long-term, of endovascular stent-graft repair of the traumatic thoracic aortic trauma in patients undergoing emergent repair for thoracic aortic trauma in a single center.

Methods: From October 2002 to December 2008, 66 patients were treated with endovascular stent-grafts for lesions of the descending thoracic aorta. The patients had an emergent endovascular procedure for traumatic thoracic aortic rupture (mean age 38.5 years; 9 male and 1 female). Patients characteristics, procedural variables, outcomes, and complications were recorded in electronic database. All patients were followed with chest CT-scans at 1, 3, 6, and 12 months. Mean follow-up was 16 months ranging from 1 to 72 months.

Results: All procedures were technically successful. Average duration of the procedure was 41-5.4 min. Average length of stay was eight days. In this group successful stent-graft deployment was achieved in all patients, with no conversion to open repair. In all patients the left subclavian artery was intentionally covered with the device. No patient died and no procedure-related complications, including paraplegia, occurred in this group. One patient as required a second procedure of carotid-subclavian left bypass for ischemic limb. During follow-up no morbidity (endoleak, pseudoaneurysm, migration, or infection) or mortality was found.

Conclusions: In the treatment of traumatic thoracic aortic rupture, the early outcome of patients treated with endovascular stent grafts appears to be better than that with conventional surgical repair and is a safe and feasible alternative to open repair. The new technique allows safe and successful repair of this life-threatening injury in the early phase of trauma management. There is a reduction in the high mortality, prolonged intensive care requirement and total hospital stay, which are historically associated with open repair. The opportunity to successfully perform endovascular repair may be possible many days after the initial injury in the hemodynamically stable patient. Long-term follow-up is necessary to assess long-term effectiveness of stent management specially in younger patients.
CV2-4
MID-TERM RESULTS AFTER ENDOVASCULAR STENT-GRAFT PLACEMENT DUE TO PERFORATING ATHEROSCLEROTIC ULCERS OF THE THORACIC AORTA
Departments of Cardiothoracic Surgery and Interventional Radiology, Medical University Vienna, Vienna, Austria

Objective: To determine mid-term durability of endovascular stent-graft placement in patients perforating atherosclerotic ulcers (PAU) involving the thoracic aorta and to identify risk factors for death as well as early and late cardiovascular events.

Methods: From 1997 to 2006, 27 patients (mean age 66 years) presented with PAU (rupture n=7). Mean numeric EuroSCORE was 11 and mean logistic EuroSCORE was 35. Median follow-up was 42 (10-86) months, being complete in all patients. Outcome variables included death and occurrence of early and late cardiovascular events.

Results: In-hospital mortality was 11%. Primary success rate was 100%. Actuarial survival rates at 1, 3 and 5 years were 93%, 78% and 70%, respectively. Hemodynamic instability (OR 2.5; P=0.034) as well as logistic EuroSCORE (OR 2.8; P=0.019) were identified as independent predictors of early and late cardiovascular events.

Conclusions: Endovascular stent-graft placement in patients with PAU is an effective palliation for a life-threatening sign of a severe systemic process. Hemodynamic instability at referral and a high preoperative risk score predict adverse outcome. During mid-term follow-up, patients are mainly limited by sequellea of their underlying disease.

CV2-5
SURGICAL TREATMENT OF COMPREHENSIVE EFFECTS OF HUGE RUPTURED THORACIC AORTIC ANEURYSMS TREATED BY ENDOVASCULAR TECHNIQUE
P. Frigatti, M. Menegolo, S. Lepidi, M. Antonello, I. Morelli, F. Grego
Division of Vascular and Endovascular Surgery, University of Padua, Padua, Italy

Objective: Thoracic endovascular aortic repair (TEVAR) represents an attractive alternative to open aortic repair (OAR) and nowadays it represents the gold standard in treatment of emergency thoracic aorta pathologies. The rupture of thoracic aorta aneurysm is often preceded by an important and sudden growth of the aneurysmatic sac which increases the compressive effects on the closest anatomical structures (left lung, esophagus and venous structures). TEVAR can be associated to low invasive surgical procedures to resolve compressive thoracic complications.

Methods: From January 2003 to January 2008, 65 patients (42 men, 23 women; 65±19.2 years, range 45–88 years) were treated for descending thoracic aortic aneurysms (13 OAR, 52 TEVAR). Twenty-seven cases of TEVAR were emergent because of haemothorax (13 cases) or fissuration at the CT-scan associated to back pain (10 cases) and respiratory insufficiency (6 cases); in this group seven patients died in the immediate postoperative period for cardiac and/or renal complications or multi-organ failure. Between the survivors seven patients had heavy problems related to the compression from the excluded aneurysmatic sac. Four patients had bronchial compression with respiratory insufficiency: one was treated by positioning a bronchial metallic stent (Wallstent) with an immediate improvement of the ventilatory activity; two patients underwent a left small thoracotomy with the opening of the aneurysmatic sac, evacuation of thrombus and the decompression of the lung with optimal resumption of the ventilatory activity; one patient was not treated and was discharge with home oxigenotherapy. Two patient had disfagia from esophageal compression: one of them underwent surgical evacuation of the haematoma with only partial decompression of the esophagus and after six months must still be fed with semi-liquid diet and hyperto-protic foods. The other patient, considering his age and general conditions, had a conservative treatment and died six months later. In only one case we observed symptoms related to venous compression: the patient was in haemodialitic treatment and the aneurysms compressed the left brachiocephalic trunk with a worsening of the left arm arteriovenous fistula during dialysis; he was treated by positioning a nitinol self-expandable stent type Smart stent 12X4.

Conclusions: TEVAR can represents the first approach in emergency cases and can be successfully associated with low invasive surgical procedures also in case of compressive complication due to haematomas or large aneurysms on periarticular structures.

CV2-6
GRAFT INFECTION AFTER THORACIC ENDOVASCULAR AORTIC REPAIR: APROACH NOW OR SURGERY: DEAD-END?
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Objective: Thoracic endovascular aortic repair (TEVAR) proved to be a viable option for treatment of thoracic aorta pathology. There is little known about therapeutic options for prosthetic infection after TEVAR. We report on two cases of prosthetic infection after complex aortic repairs including TEVAR and debranching procedures.

Methods: Among 240 TEVARs in our institution we had to deal with two cases of prosthetic infection. First patient, a 25-year-old white male patient was treated with TEVAR on emergency basis for traumatic rupture of descending aorta. Three months later and to treat a proximal leak, an additional stent was implanted up to the mid aortic arch and carotido-carotido-subclavian bypass was performed. The recovery was uneventful. Three months later the patient presented with saccular aneurysm of lesser curvature of aortic arch. During urgent reoperation the ascending aorta and aortic arch were replaced and a debranching procedure was performed. Unexpectedly, bacterial infection was diagnosed few days later on intraoperative speci- mens of aortic arch wall. During primary uneventfull recovery the patient received long-term antibiotics. Three months later the patient presented with sepsis and mediastinitis, which was treated surgically with drill-drain vacuum assisted closure and antibiotics. The chest wound healed and could be finally closed. Serial computed tomograms showed no new signs of mediastinal or perigraft infection. The second patient, a 50-year-old white male patient presented with an acute Type A aortic dissection. To treat the complex pathology an emergent replacement of ascending aorta and aortic arch, debranching procedure and TEVAR in descending aorta was performed.

Results: Few months later, the first patient developed heart insufficiency NYHA III-IV which was successfully treated with optimized medical therapy over several weeks. During that time the patient developed chronic sternal fistula which obviously drained the area of aortic arch prothesis. Primary in view of heart insufficiency and worsened liver function, the surgical therapy for prosthetic infection could not be regarded as a viable option. Recently, and in addition to long-time antibiotic therapy, the patient has underwent a series of sessions in hyperbaric oxygen chamber. The other patient presented with recurrent but short lived signs of bacterial graft infection. He is doing very well on life-long antibiotics.

Conclusions: The prosthetic infection after TEVAR is a rare but dreadful complication. The options for treatment are very limited and published information on successful treatment strategy is lacking. While antibiotics are not always effective, the surgical options remain unclear.
Conclusions: We recommend endovascular treatment in cases of acute or chronic traumatic thoracic aortic aneurysm as well as in elderly and high-risk patients with abdominal or thoracic aneurysms, when open surgery is connected with significantly higher mortality and morbidity.

CVZ-8
NOVEL INSIGHTS INTO THE MECHANISMS AND TREATMENT OF INTRAMURAL HEMATOMA AFFECTING THE ENTIRE THORACIC AORTA
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Objective: The purpose of this study was to address a previously not described mechanism underlying intramural hematoma (IMH) of the entire thoracic aorta and to test the hypothesis whether endovascular stent graft placement in this particular mechanism could be beneficial.

Methods: Within a 5-year period, we treated eight patients with IMH affecting the entire thoracic aorta. The presumed site of initial plaque rupture was chosen as target for endovascular stent graft placement.

Results: In all patients, a small atherosclerotic plaque at the free lateral wall or at the concavity of the distal aortic arch could be identified as initial site of IMH. Endovascular stent graft placement was performed successfully in all patients. By covering the suspected primary lesion, resorption of IMH especially within the ascending aorta could be achieved. Mean follow-up is 16 months (range, 1-25).

Conclusions: Plaque rupture may be identified as the cause of IMH in a previously unrecognized subgroup of patients. If at the convexity of the distal arch, supra-aortic branches prevent retrograde extension toward the ascending aorta. If at the free lateral wall or at the concavity, IMH may affect the entire thoracic aorta, owing to the lack of the natural barrier of the supra-aortic branches. Endovascular stent graft placement of this plaque-associated IMH may be more effective and less invasive than conventional surgery to treat the entire thoracic aortic disease.

3rd Vascular Scientific Session - EVAR
May 1, 2009, 2nd Congress Day 15:00-16:30

V3-1
CONVERSION RATE AFTER ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSM: A SINGLE CENTRE EXPERIENCE IN 450 CONSECUTIVE PATIENTS
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Objective: Endovascular aneurysm repair (EVAR) of abdominal aortic aneurysm (AAA) has been shown to have a significantly lower peri-procedural mortality rate than open repair (OR). Unfortunately, durability of EVAR and the need for secondary conversion to open repair are still not well known.

Methods: Retrospective analysis of 450 consecutive EVAR procedures performed between July 1997 and January 2005 at the University Hospital of Zurich. Mean AAA diameter was 5.85±1.2 cm (asymptomatic [A]: 5.9±1.1 cm, symptomatic [S]: 6.6±1.5 cm and ruptured [R]: 7.12 cm). The AAA was stable in most, but 44% were symptomatic (9.8%) and 57 were ruptured AAA (12.7%). Mean age of the patients was 72±8 years (min: 43 years, max: 93 years). EVAR with implantation of bifurcated devices was performed under local anaesthesia in most (79.3%).

Results: Thirty-day mortality was 3.1% (A: 0.9%, S: 9.1% and R: 12.3%) and MACE (death from any cause, myocardial infarction and stroke) rate was 5.1% (A: 1.8%, S: 11.4% and R: 19.3%). Primary type I and III Endoleak (EL) was found in 6.4% (A: 4.8%, S: 6.8% and R: 15.8%). Overall survival rate was 92.6% at two years, 84.3% at four years and 77% at 6 years. Reintervention-free survival rate was 82.1% at two years, 68.9% at four years and 44.5% at six years. The need for secondary interventions was significantly increased in patients with an untreated primary EL (I and III), a RAAA, and after implantation of a Vanguard device. Overall conversion rate to OR was 2.7% (A: 2.1%, S: 2.3% and R: 7%).

Conclusions: This series shows a 2.7% conversion rate to OR up to six years after EVAR. Risk-factors for a conversion are untreated primary type I and III endoleaks and EVAR in symptomatic and ruptured AAA.

V3-2
DOES THE HIGH-RISK PATIENT FOR ENDOVASCULAR ABDOMINAL AORTIC ANEURYSM REPAIR REALLY EXIST?
G. Piffaretti1, C. Lomazzi1, G. Mariscalco2, A. Bacuzzi1, M. Tozzi1, N. Rivolta1, P. Castelli1
1Vascular Surgery, Department of Surgical Sciences, University of Insubria, Varese, Italy; 2Cardiac Surgery, Department of Surgical Sciences, University of Insubria, Varese, Italy; 3Anesthesia and Palliative Care Unit - Circolo University Hospital, Varese, Italy

Objective: The purpose of this study is to review our experience with high-risk patients undergoing endovascular repair for abdominal aortic aneurysm to determine the prognosis and whether the endovascular approach in patients considered unfit for open repair could be justified.

Methods: Between November 2000 and June 2008, 235 consecutive patients (218 male; mean age 71.6±9 years, range 55-97) in the high-risk group and 53±15 years (range, 38-100) in the lower-risk group (P=0.0004). Primary technical success was 97.8%. There were no early conversions to open repair in both groups. Three early deaths (1.25%) were reported, one in the high-risk group and two in the lower-risk group (P=0.002). The lower-risk group had a longer follow-up (18±16 months vs. 25±23, P=0.15). We encountered an overall 28.4% incidence of endoleak, significantly higher in the high-risk group (83.3% vs. 25.4%, P=0.0001). Forty-two (18.1%) patients died during the follow-up at a mean 18.6±17.8 months from the intervention: six patients (5%) died in the high-risk group and 38 (17.3%) in the lower-risk group (P=0.00001). Life-table estimates of cumulative survival were 69.2% at 12 months, 50.4% at 24 months, and 10.1% at 48 months for the high-risk group, but 66.4% at 12 months, 50.1% at 24 months, and 23% at 48 months, in the lower-risk group; log-rank test was 56. Conclusions: High-risk patients experienced a substantially worse prognosis compared to their good-risk counterparts. Until data from randomized trials are available, a careful and individualized approach is mandatory in the selection of high-risk patients for endovascular repair. High-risk patients found to have an extremely short life expectancy from non-aneurysmal disorders may be appropriate candidates for watchful waiting.

V3-3
ADVANCES IN ENDOVASCULAR REPAIR OF ANEURYSMS INVOLVING THE COMMON ILIAC ARTERY USING BRANCHED TECHNOLOGY: EARLY OUTCOMES OF INTERNAL ILIAC PRESERVATION
S.C.V. Paravastu, F. Serracino-Inglott
Manchester Royal Infirmary, Manchester, Lancashire, UK

Objective: The Zenith iliak bifurcated device (ZBS) is similar to a standard Zenith iliak limb but has an additional branch along its length to allow endoprostheses of the internal iliak artery (IIA). It is used together with a conventional Zenith endograft to treat aneurysms involving the common iliak artery. We present the early experience with this device.

Methods: Patients who underwent ZBS-enhanced EVAR since November 2005 and were available for follow-up were interrogated for buttock claudication and impotence. CT angiography/duplex ultrasound follow-up were used to look for endoleaks and assess the IIA patency.

Results: Twenty-one ZBS devices were implanted in 20 patients: 11 aorto-iliac aneurysms, six aorto-unil-iliac aneurysms, one solitary common iliak aneurysm, one distal type I endoleak and one IIA aneurysm. Median AAA size was 5.5 cm (range 2.8-6.5). Median common iliak artery diameter on the side of ZBS was 3.5 cm (2.1-4). All ZBS devices were successfully deployed and all IIA were cannulated. Completion DSA revealed a satisfactory result in all cases except one, where an endoleak was noted at the junction of the
covered stent and IIA. Median fluoroscopy time was 56 min (38-110). A median of 88 g (27-130) of iodine was used. Median follow-up was 15 months (1-37).

Two side branches occurred during the first month, but none thereafter. No patients with a patent IIA developed buttock claudication or impotence.

Conclusions: This experience adds to the evidence that iliac side branch devices are safe and effective in the preservation of IIA flow.

V3-4
TYPE II ENDOLEAK AFTER EVAR: ROLE AND MANAGEMENT IN LONG-TERM FOLLOW-UP
L. Mezzetto1, S. Mezzacasa1, F. Baratto1, D. Zippin1, M. Macrì1, I. Juergenson1, G. Mansuetu2, A. Scuro1
1Chirurgia Vascolare - Policlinico G.B. Rossi, Verona, Verona, Italy; 2Istituto di Radiologia - Policlinico G.B. Rossi, Verona, Italy

Objective: To understand the role and management of type II endoleak in patients with long-term follow-up after EVAR. Comparison with other types of leak has been accomplished.

Methods: Between 1994 and 2008, 250 patients underwent EVAR in our Vascular Institute: we have considered 135 cases with six years mean follow-up: in particular minimum was 36 months, mean 67 and maximum 133 months.

An angiographic study was done at the first month, and then once per year. Only when complications occurred, earlier controls have been conducted. Contrast-enhanced ultrasonography has been used later as a complementary test. We have analyzed the diameter of sacs, number of re-operations, the cases of rupture and the aneurysm-related mortality.

Results: During follow-up 58 patients did not present any type of leak; in 16 we found a type I; in one a type III and in eight a type V endoleak (endotension).

Fifty-two patients have presented a type II endoleak: Thirteen were transient (disappeared into 12 months), 19 were persistent (present at least 12 months after procedure) and 20 were secondary (appeared after 12 months from the procedure). Important growth (>5 mm) of the sac with diameter ≥55 mm or stable aneurysm with diameter ≥65 mm were considered indications for re-operation. In the group with transient endoleak, no complications occurred neither reoperations were necessary. Between groups with persistent or secondary type II endoleak vs. group without any leak we found an important difference in significant (≥5 mm) growth of sac diameter (14 cases vs. 0); on the other hand any difference was found in number of endovascular re-operations (5 vs. 5), number of surgical conversions (1 vs. 1), ruptures (1 vs. 1) and aneurysm-related mortality (0 vs. 1). Patients with other types of endoleak (I, III and V) had major risk of sac growth, re-operations, aneurysm rupture and aneurysm-related mortality.

Conclusions: In our long-term EVAR follow-up, the incidence of endoleaks has been very high. As to the type II leak (which is not related to the endoprosthesis), it has been more frequent than the others but did not affect long-term results when precise indications to re-operation were followed. Worse outcome has been obtained in case of other types of leak.

V3-5
LONG-TERM FOLLOW-UP OF ENDOVASCULAR TREATMENT OF ABDOMINAL AORTIC ANEURYSMS WITH TALENT DEVICE: TEN YEARS SINGLE CENTER PROSPECTIVE STUDY
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Objective: To evaluate the outcome after a 10-year follow-up of patients submitted to endovascular treatment for infrarenal abdominal aortic aneurysms (AAA).

Methods: Three hundred and thirty seven patients with AAA submitted, between 1997 and 2007, to endovascular treatment through the implantation of Talent® aortic endoprosthesis were prospectively studied.

Patients were between 52 and 89 years of age (72.47±14.3 mm). All patients were clinically and radiologically assessed by helical CT in the immediate post surgery period (15-30 days), after six months and yearly thereafter. Plain abdominal X-rays were performed yearly to assess the endoprosthesis metalization.

In LONG-TERM FOLLOW-UP
TYPE II ENDOLEAK AFTER EVAR: ROLE AND MANAGEMENT IN LONG-TERM FOLLOW-UP
L. Mezzetto1, S. Mezzacasa1, F. Baratto1, D. Zippin1, M. Macrì1, I. Juergenson1, G. Mansuetu2, A. Scuro1
1Chirurgia Vascolare – Policlinico G.B: Rossi, Verona, Verona, Italy; 2Istituto di Radiologia – Policlinico G.B. Rossi, Verona, Italy

Objective: To understand the role and management of type II endoleak in patients with long-term follow-up after EVAR. Comparison with other types of leak has been accomplished.

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An angiographic study was done at the first month, and then once per year. Only when complications occurred, earlier controls have been conducted. Contrast-enhanced ultrasonography has been used later as a complementary test. We have analyzed the diameter of sacs, number of re-operations, the cases of rupture and the aneurysm-related mortality.

Results: During follow-up 58 patients did not present any type of leak; in 16 we found a type I; in one a type III and in eight a type V endoleak (endotension).

Fifty-two patients have presented a type II endoleak: Thirteen were transient (disappeared into 12 months), 19 were persistent (present at least 12 months after procedure) and 20 were secondary (appeared after 12 months from the procedure). Important growth (>5 mm) of the sac with diameter ≥55 mm or stable aneurysm with diameter ≥65 mm were considered indications for re-operation. In the group with transient endoleak, no complications occurred neither reoperations were necessary. Between groups with persistent or secondary type II endoleak vs. group without any leak we found an important difference in significant (≥5 mm) growth of sac diameter (14 cases vs. 0); on the other hand any difference was found in number of endovascular re-operations (5 vs. 5), number of surgical conversions (1 vs. 1), ruptures (1 vs. 1) and aneurysm-related mortality (0 vs. 1). Patients with other types of endoleak (I, III and V) had major risk of sac growth, re-operations, aneurysm rupture and aneurysm-related mortality.

Conclusions: In our long-term EVAR follow-up, the incidence of endoleaks has been very high. As to the type II leak (which is not related to the endoprosthesis), it has been more frequent than the others but did not affect long-term results when precise indications to re-operation were followed. Worse outcome has been obtained in case of other types of leak.

V3-6
MIDDLE VS. LONG-TERM RESULTS IN ENDOVASCULAR AORTIC ANEURYSM REPAIR: A 10-YEAR EXPERIENCE
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Objective: Endovascular repair of aortic aneurysms is a relatively new technique, with fewer studies as regarding middle and long-term results. The aim of the study was to compare middle vs. long-term results in a group of patients treated with EVAR, to demonstrate that all patients treated with EVAR need a strict and long follow-up.

Methods: From 1998 to 2002, 541 patients underwent elective treatment of AAA in our center; 213 of them were treated with EVAR (38%). Patients were regularly followed up at the 1, 6, 12 months and every year. Median follow-up period was 22 months for analysis of middle-term results (range 9-60 months) and 57 months for analysis of long-term result (range 9-121 months). We collected data about cardiac and renal complications, thrombosis, surgical conversions, endoleaks, major adverse events, death from major adverse events and death from aortic rupture. All data were entry in a database and then analyzed with χ2-test and Kaplan-Meier statistical survival method.

Results: The procedure was successful in 98% of the cases, with 1% of perioperative mortality rate. At long-term follow-up vs. middle-term follow-up, we observed an increase as regarding the incidence of cardiovascular adverse events (4.3% vs. 1.4%), renal insufficiency (5.2% vs. 3.3%), thrombosis of EGV (1.9% vs. 1.4%), type II endoleaks (8.1% vs. 5.7%), type II endoleaks (4.3% vs. 2.4%), type III endoleaks (1% vs. 0.5%), but there were no statistical significant differences between EVAR middle-term results and long-term results. There were no type IV endoleaks. We noted 3.6% of surgical conversion within 60 months; no new surgical conversions after 60 months was observed. As regarding Kaplan-Meier survival analysis, at 120 months 42% of patients were free from major adverse events, 60% of patients were still alive and 98% of patients were free from aortic rupture.

Conclusions: Our data show that EVAR is associated with important complications in long-term follow-up, but there are no statistical significant differences; moreover this therapy is protective against aortic rupture. We however suggest that patients treated with EVAR should undergo a strict follow-up as long as possible.

V3-7
THE TREATMENT OF ABDOMINAL AORTIC ANEURYSMS: MINIMALLY INVASIVE METHOD FAST-TRACK AND ENDOVASCULAR TECHNQUE, WHICH ONE IS BETTER?
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Objective: The aim of this study is to compare endovascular vs. fast-track surgical treatment, in patients treated for abdominal aortic aneurysm in elective surgery in Vascular Surgery Center of ‘Novara University Hospital’. Methods: All patients treated in elective surgery, for abdominal aortic aneurysm, with left subcostal minimal incision and fast-track protocol (Group 1) or EVAR treatment (Group 2), from January 2006 since September 2007 have been selected. All candidates have been treated by the same health team, using standardized protocols. We have treated 184 patients affected
by abdominal aortic aneurysm, in elective surgery; 128 patients have been selected for the study: OPEN group, 94 patients (73.4%) and EVAR group, 43 patients (26.6%). The demographic characteristics of both groups are the same and the comorbidities too. Risk stratification and hostile abdomen have not been exclusion elements for the OPEN group.

Results: From the study results it is important to underline that there are not relevant differences between the OPEN and EVAR group regarding length of the intervention and blood loss. Patients of both groups did not need intensive care. In both groups the postoperative rehabilitation was shorter compared to the standards of the literature of traditional treatment: in the OPEN group the mobilization has been performed in average 2 h from the end of the intervention instead of die 1 for the EVAR group; the passage of stools, in die 1 (the day after the surgery) for the EVAR group, and in die 2 for the OPEN group. In 4% of the OPEN group patients have had complications that needed surgical treatment within 30 days from the surgery. In the EVAR group within 30 days five patients (14.7%) needed additional procedures. The discharge average results in the 4th day postoperative in both groups. The mortality rate in the OPEN group has been is equal to 2%, in the EVAR group it has been equal to 3%.

Conclusions: This study demonstrates that minimally invasive treatment with fast-track protocol, may propose itself as a valid alternative to EVAR considering the recovery times and the postoperative discharges, less than the traditional treatment.

V3-8 PRELIMINARY EXPERIENCE WITH INTRAOPERATIVE INTRASCAR THROMBIN INJECTION DURING ENDOVASCULAR ABDOMINAL AORTIC ANEURYSM REPAIR
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Objective: To verify in our experience if fibrin glue injection into the aneurysm sac, made at the end of EVAR, can reduce type II endoleak rates.

Methods: Between January 2005 and February 2008, 38 patients underwent EVAR for their unruptured AAA. First 20 consecutive did not receive fibrin glue injection into the aneurysm sac while last 18 underwent this procedure, regardless of type II endoleak’s finding.

Results: There was no statistically significant difference between the two groups concerning time of intervention \((P=0.30)\) and time of X-ray exposure \((P=0.54)\). Postoperative type II endoleak’s rate was significantly higher in Group A compared to Group B (6 cases, 30% vs. 1 case, 5.5%, respectively, \(P=0.05\)). Two required selective lumbar embolization at 12 months among Group A, one among Group B. Primary short-term clinical success was 95% and 100%, respectively. Number of CT examinations per patient resulted to be higher in Group A in respect to Group B (2.0 vs. 1.2, respectively, \(P=0.024\)).

Conclusions: Fibrin glue injection is a safe procedure and seems to reduce type II endoleak rates at the end of EVAR. Patients who received this procedure had a larger interval of freedom from CT examinations, without further sanitary costs.

V3-9 THE POTENTIAL ROLE OF INFLAMMATION MARKERS IN ‘POST IMPLANTATION SYNDROME’ ASSOCIATED WITH ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSM
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Objective: Post Implantation Syndrome (PIS) has been observed postoperatively in patients undergoing endovascular repair of abdominal aortic aneurysm (EVAR). This syndrome is typically characterized by pyrexia and leukocytosis. The aim of this study was to evaluate the association of PIS with inflammation markers in patients undergoing EVAR.

Methods: From May 2007 to July 2008, 40 patients were entered in a prospective observational study. No patient had clinical evidence of coexistent inflammatory disease. Pre- and postoperative values of body temperature, white blood cells (WBC), hs-CRP, platelets (PLT), fibrinogen (Fib), interleukin-1 (II-1), interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-a) were recorded.

Results: Post implantation syndrome was observed in 14 patients (35%). There was no correlation between the age of patients and expression of PIS. Maximum values already body temperature were correlated with postoperative values of WBC (\(P=0.002\)), hs-CRP (\(P=0.05\)) and IL-6 (\(P=0.005\)). Hs-CRP, IL-6 increased and PLT decreased postoperatively (\(P<0.005\)) in all patients. However, this increase was significantly greater in patients with PIS. Aneurysm diameter correlated with preoperative values of IL-1 (\(P=0.005\)). Correlation was also noted between PIS and the type of the stent graft that was deployed (\(P=0.002\)).

Conclusions: Endovascular repair of aortic aneurysm lead to an inflammatory response. Patients with clinical expression of post implantation syndrome show significantly greater values of various inflammation markers. Whether these markers could predict the clinical outcome as well as the grade of the post implantation syndrome should be further investigated.

V3-10 PROGRESSION OF RENAL ARtery STENOSES IN PATIENTS AFTER ENDOVASCULAR ANEURYSM REPAIR
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Objective: Renal artery stenosis (RAS) is a suspected contributor to the morbidity and mortality of cardiovascular disease through its potential effects on blood pressure and renal function. A high grade stenosis of above 60% is an accepted indication for renal artery intervention. Since there is little data on RAS progression, it is important to determine a screening protocol for patients with low and mild grade stenosis (≤60%) in order to refer them for intervention at the right time.

Methods: A longitudinal study was constructed based on 103 patients with 206 kidneys (86.4% men; mean age 71.4±7.8 years) included in a follow-up screening protocol after endovascular aortic aneurysm repair. Selection criteria included at least two consecutive CT-scans at minimum eight months period (mean period 19.0±5.8 months) and each kidney single artery. Stenotic and referent diameters of the RAs in two different planes (MPR), kidney length, cortical thickness, aneurysm and aortic infrarenal diameter were measured. Patients were divided into three groups: I (≤30%, low grade stenosis, LGS), II (30-60%, mild grade stenosis, MGS) and III (≥60%, high grade stenosis, HGS). Progression of stenosis was defined as translocation to higher group. Mean values with S.D. and statistical significance of disease progression for selected parameters were calculated.

Results: On initial examination, there were 157 RAs in group I (79 left RAs; 50.3%), 44 RAs in group II (21 left RAs; 47.7%) and 5 RAs in group III (3 left RAs; 60%). In group I there were 105 RAs with no stenosis (53 left RAs; 50.5%). Out of 157 RAs presenting with LGS, 26 progressed to group II and 3 to group III. Out of 44 RAs presenting with MGS, 3 progressed to group III. Two RAs progressed to total occlusion. A statistical significance was found for the lack of progression of renal artery stenosis in patients with determined initial renal artery stenosis (\(P<0.05\)) and for the development of new stenosis in patients with previously patent renal arteries (\(P<0.05\)).

Conclusions: The study showed that there is probably no necessity for LGS and MGS progression screening within first 18 months from diagnosis, longer term observation is needed.

4th Vascular Scientific Session - Peripheral 1
May 1, 2009, 2nd Congress Day
15:00-16:30

V4-1 TREATMENT OF INTERMITTENT CLAUDICATION DUE TO INFRA INGUINAL DISEASES: RESULTS OF A RANDOMISED CONTROL TRIAL
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Objective: To compare percutaneous transluminal angioplasty (PTA), supervised exercise programme (SEP) and combined therapy (PTA+SEP) in...
the treatment of intermittent claudication (IC) due to femoro-popliteal disease.

Methods: Over a six years period, 178 patients (108 men, median age 70 years) with angioplastiable femoro-popliteal lesions were randomized to the three treatment arms: PTA, SEP or PTA+SEP. Patients with critical limb ischaemia were excluded. All patients received best medical treatment. Patients were assessed prior to and at 1, 3, 6 and 12 months post treatment. Clinical outcomes (Ankle pressures, treadmill walking distances, ICSS criteria) and Quality of Life (QoL) questionnaire (SF36 and VasuQoL) were analysed.

Results: All groups were well matched at baseline. Thirty-three patients withdrew. Intra group analysis: All groups demonstrated significant clinical and QoL improvements (Friedman test, P<0.05). SEP (60 patients, 14 withdrew) - 69.6% of patients (n=32) improved following treatment (19 mild, 10 moderate, 3 marked), 13% (n=6) no improvement and 17.4% (l=8) deteriorated. PTA (60 patients, 8 withdrew) - 71.1% of patients (n=37) improved following treatment (16 mild, 16 moderate, 5 marked), 17.3% (n=9) no improvement and 11.6% (n=6) deteriorated. PTA+SEP (58 patients, 12 withdrew) - 87.0% of patients (n=40) improved following treatment. [18 mild, 20 moderate, 2 marked]. 13.0% (n=6) no improvement and 0% (n=0) deteriorated. Inter group Analysis: PTA and SEP were equally effective in improving clinical outcome significantly, however, the effect was short lived. PTA+SEP produce a sustained improvement in clinical outcome measures than PTA or SEP alone, but there was no significant QoL advantage (Kruskal-Wallis test, P=0.05).

Conclusions: For patients with claudication due to femoro-popliteal disease, SEP can be used as the primary treatment. PTA should be supplemented by a SEP for best results.

V4-2
A FLEXIBLE APPROACH TO INFRAPoplITEAL REvascularization ACCORDING TO A MOrPHOLOGICAL STRATIFICATION OF TIBIAL LesIONS. AN ANALYSIS OF CLINICAL RESULTS OF A PROSPECTIVE SINGLE-CENTER STUDY OF 351 LIMBS WITH CLI
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Objective: The association of vascular and endovascular procedures, in patient with multifocal obstructive disease of lower limbs, give the opportunity to treat in a single step multi-segmental lesions. Endovascular treatment of stenotic lesions above and/or below the implanted graft offers a good long-term patency rate.

Methods: From January 2003 to January 2008 62 patient, 51 male and 11 female, with peripheral occlusive chronic arterial disease of lower limbs were submitted to 62 combined vascular and endovascular procedures. In 43 patients (69.4%) the procedure was PTA, BPG or PTA/stenting of tibial arteries and femorodistal bypass, while in the remaining 19 patients (30.6%) a femoropopliteal bypass with PTA/stenting of tibial vessels was carried out. Iliac stenting interested common iliac artery in 23 patients (53.5%), common and external iliac in 13 patients (30.2%) and only external in 7 (16%). In the same group a below-knee femoropopliteal bypass was carried out in 31 (72.1%), an above-knee femoropopliteal in 10 (23.3%), a femoropopliteal-jump bypass on the posterior tibial in 1 (2.3%) and a superficial femoropopliteal bypass in the last one (2.3%). In the other group the below-knee femoropopliteal bypass has been preceded by a PTA of tibial vessels in 15 cases (79%) and by stenting in 4 cases (21%). Follow-up was led by means colour flow mapping, magnetic resonance imaging or computed tomography angiography.

Results: Three patients died for myocardial infarction during follow-up. Occlusion of femorodistal bypass occurred in 13 patients (30.2%) submitted to iliac stenting and in 11 patients (58%) with PTA of the tibial vessels. In 15 patients, an acute ischemia of the limb occurred, six suffered for a critical ischemia and three did not need treatment. The 15 patients who presented ALI underwent fibrinolysis and in nine of them we observed resolution of symptoms and a good patency of bypass during follow-up. In six patients fibrinolysis was unsuccesful: two needed a surgical revision (an aortofemoral bypass and a below-knee bypass), four needed a tight amputation. The six patients with CLI underwent medical therapy with iloprost and low molecular weight heparin: four showed a good result and the other two needed leg amputation. The primary patency rate was 61.3%.

Conclusions: Combination of vascular and endovascular surgery to treat simultaneously multilevel lesions of lower limbs is effective and durable in terms of patency and complication rate. In our opinion, the good results obtained depends on patient’s selection and on arterial disease morphology.

V4-4
LONG-TERM RESULTS OF FEMORODISTAL RECONSTRUCTIONS WITH CRYOPRESERVED SAPHENOUS VEIN ALLOGRAFTS
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Objective: The lack of a suitable alternative for autologous vein grafts is usually the limiting factors for complex vascular reconstructions in critical limb ischemia (CLI). Prosthetic grafts, even with adjuncts have a dismal results. On previous experimental work we reviewed our experience with cryopreserved vein allografts as an alternative conduit for infrapopliteal reconstructions.

Methods: Between 1991 and 2005, 108 cryopreserved saphenous allografts were implanted on crural or pedal arteries in 92 patients with CLI. These patients were prospectively followed until march 2007 for graft patency, limb salvage and patient survival. There were 42 woman and 50 men with
a mean age of 71 years (range 39-88 years). Atherosclerosis was the main cause of CLI (57%) followed by diabetes (41%). Most patients had a previous vascular reconstruction in the same leg. All allografts were matched for ABO-compatibility and recipients received low dose immunosuppression for one year.

Results: The primary and secondary patency rates were 56% and 73% at one year, 32% and 60% at three years, and 17% and 38.5% at five years. The limb-salvage rate was 84.9% at one year and 63.7% at five years. The patient survival was 87.4% at one year and 64.5% at five years. No predictive risk factors were correlated with graft patency or patient survival.

Conclusions: Cryopreserved greater saphenous vein allografts with low-dose immunosuppression have better patency rates than prosthetic grafts in femoro-crural reconstructions and have the advantage of being resistant to infection. Graft and patient selection, optimization of compatibility and immunosuppression can improve the results. They are a valuable alternative conduit when autologous veins are not available.

V4-5
EARLY EXPERIENCE WITH CRYOPRESERVED SAPHENOUS VEIN COVERED BY METAL MESH FOR LOWER LIMB GRAFT INFECTION
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Objective: The lack of autologous saphenous vein is a major limitation in case of distal revascularization of lower limbs, especially in case of infection of previous prosthetic graft. The cryopreserved autologous saphenous vein, covered by mesh, can be in these case an alternative to prosthetic material.

Methods: From January 2000 to December 2007, 185 femoro-distal revascularizations were performed (121 patients received a P.T.F.E. graft and 56 patients a great saphenous vein (GSV)). In eight cases (4.3%) a cryopreserved homograft protected by metal mesh was used for the revascularization because of infection of a previous PTFE graft (4 cases) or lack of suitable GSV (4 cases). The graft were prepared on the bench; in each case multiple segments of the cryopreserved veins were anastomosed each other and covered by a metal mesh and coated by glue. In three cases distal anastomosis was performed on anterior tibial artery, in two cases on posterior tibial artery, in one case on peroneal artery and in two cases on the tibio-peroneal trunk. In all cases the biological new graft was tunneledized in extranatomical route. Physical examination and duplex scan were performed at 1, 3 and 6 months and, in case of flow abnormalities during the follow-up, an angio CT or an angiography was performed. Bypass occlusion, re-stenosis ≥50% and signs of infection were considered clinical failure.

Results: Primary patency rate was 87.5% at the short-term follow-up (6 months). A case of occlusion, secondary to graft infection, was observed six months after and the patient underwent major amputation. Any rejection or stenosis were observed.

Conclusions: An extranatomical bypass with cryopreserved homograft is a viable alternative to autologous vein (GSV) in cases of complex revascularization of the lower limbs especially in re-do surgery due to infection.

V4-6
THE EXTENSION OF TREATMENT DOES NOT INFLUENCE THE OUTCOMES OF ENDOVASCULAR PROCEDURES IN INFRAINGUINAL ARTERIAL DISTRICT
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Objective: To evaluate the impact of different extensions and sites of arterial lesions on early and mid-term results of the endovascular treatment of peripheral arterial disease (PAD) due to femoral, popliteal and tibial involvement.

Methods: From May 2005 to October 2008, 145 endovascular procedures cases were carried on for the involvement of femoro-tibial district. Patients were divided in three group on the basis of the site of lesions and the extension of the treatment: patients with diffuse involvement of femoral, popliteal and tibial axis (Group 1; 55 patients), patients with lesions and treatment limited to superficial femoral (SA) and popliteal arteries (Group 2; 18 patients) and patients who had only their SFA treated (Group 3, 72 patients). Early results in terms of technical success to need for conversion to open surgery, thrombosis and amputation rates were analysed and compared by χ² and Fisher’s exact tests.

Follow-up results were analysed with Kaplan-Meier curves and compared with log-rank test.

Results: The three groups were homogeneous in terms of sex, age, common risk factors for atherosclerosis and comorbidities. Patients of group 1 were more likely to have critical limb ischemia than patients in groups 2 and 3 (67%, 39% and 15%, respectively; P<0.001); there was a significant higher percentage of complex (TASC II C and D) lesions in groups 1 and 2 than in group 3 (85%, 77% and 34%, respectively; P<0.001). Postoperative medical treatment included double antiplatelet drugs in most patients, without differences between the three groups; however, patients of groups 1 and 2 were more likely to be treated with warfarin than patients in group 3 (16.3%, 11.1% and 1.4%, respectively; P<0.05). Technical success was 96.5%, without differences between the three groups. There were no perioperative deaths; early rates of thrombosis, restenosis and amputation were 2.8%, 2.1% and 1.4%, without differences in the three groups. Mean duration of follow-up was 10.2 months (range 1-36). There were no differences in terms of estimated 12-month survival, primary and secondary patency and limb salvage between the three groups, even if there was a trend towards poorer survival (P=0.08, log rank 4.3) and secondary patency P=0.07, log rank 5.1) in patients of group 1.

Conclusions: Endovascular treatment of diffuse and extensive lesions of femoro-tibial vessels in patients with PAD is safe and feasible and provides satisfactory early and mid-term results, similar to those obtained in the treatment of segmentary and focal lesions.

V4-7
PERCUTANEOUS ANGIOPLASTY AND STENTING OF THE SUPERFICIAL FEMORAL ARTERY
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Objective: The objectives of this study were to examine factors predictive of success or failure after percutaneous angioplasty (PTA) and stenting (S) of the superficial femoral artery (SFA) to obtain information regarding its results and its long-term patency and to compare the results of PTA/S with a group of patients treated with femoropopliteal bypass.

Methods: A group of patients undergoing PTA and/or S of the SFA between 2004 and 2008 was studied. Angiograms were reviewed to assess lesion characterization and preprocedural and postprocedural runoff. Patients underwent duplex scanning follow-up at 1, 3, and every 6 months after the intervention. Results were standardized to current TASC and Society for Vascular Surgery (SVS) criteria.

Results: We examined the primary success rates and long-term patency in 53 total limbs underwent PTA/S in 41 patients (71% male, 29% female; average age, 67 years). Indications for intervention were claudication in 60%, rest pain in 25%, and tissue loss in 15%. TASC lesion grades were A (48%), B (18%), C (22%), and D (12%). Angioplasty alone was performed in 57% of cases. Primary treatment failure (inability to cross lesion) was seen in 7% of patients. Primary patency rates were 90% at 3 months, 82% at 6 months, 75% at 12 months, 65% at 24 months, 58% at 36 months. Patency of PTA/S was associated with higher preoperative ABI and the performance of angioplasty only. Failed or occluded PTA/S was associated with TASC C and D lesions. Subgroup analysis revealed that primary patency rates are highly dependent on lesion type (A>B>C>D). PTA/S patency for TASC A and B lesions compared favorably to prosthetic and venous femoropopliteal bypass. Surgical bypass was superior to PTA/S for TASC C and D lesions. After 1.5 years, primary patency, and secondary-assisted patency were 67%, and 87%, respectively.

Conclusions: PTA and stenting of the SFA can be performed safely with excellent procedural success rates. Worse patency was seen with TASC C and D lesions. Patency rates were strongly dependent on lesion type, and the results of angioplasty and stenting compared favorably with surgical bypass for TASC A and B lesions. Early failure is not associated with significant morbidity and mortality and will not interfere with surgical options.
Methods: From January 2008 to July 2008, 11 male patients of mean age 65.8 years (range 45-83 years) were treated with percutaneous transluminal cryoplasty. Three patients presented grade III, and eight grade IV ischemia which required minor amputation as a concomitant procedure in seven cases. According to TASC classification: one patient belonged to group A, three patients to group B, three patients to group C and four patients to group D. All cases were treated by antegrade approach employing predilation with low profile balloon. Target vessels were: femoral (n=3), anterior tibial (n=4), posterior tibial artery (n=4). Four patients have additional angioplasty with stenting of superficial femoral or popliteal artery during the same procedure. Primary outcome points were: early technical success, freedom from major amputation and all type of other secondary intervention of the target limb six months post-procedure.

Results: Average follow-up was 6.4 months, range 6-12 months. Early technical success was achieved in nine patients. Two patients required stent placement due to persisting residual stenosis. Nine patients were free from major amputation at six-month assessment. Two who required amputation were classified in TASC D group before the procedure. Two patients needed secondary intervention other than major amputation: minor amputation and distal bypass.

Conclusions: Cryoplasty seems to be a safe and effective method for treating infrapopliteal atherosclerotic disease. It is important to use predilation with low profile balloon prior to cryoplasty of distal small diameter vessels to pass safely a cryoplasty catheter. Endovascular treatment of TASC D lesions is associated with higher postoperative amputation rate. Primary outcomes are promising as a part of a complex treatment of critical limb ischemia.


Objective: The aim of the study was to evaluate the effect of SCS on limb rescue in a selected group of CLI patients who could not receive surgical treatment or had failed it. Surgical treatment is the first line therapeutic option for CLI. The management of patients with CLI (III-IV Fontaine stages) who cannot receive or failed surgical or endovascular treatment remains challenging. SCS is aimed at blocking central transmission of pain signals by electrical stimulation of posterior spinal roots. SCS may improve pain as well as trophic lesions by inducing microcirculatory effects. In addition, it has been considered as an adjunct to standard conservative therapy in patients with non-reconstructable CLI.

Methods: Inclusion criteria: diagnosis of CLI, based on criteria reported in the TASC Consensus Document; Fontaine stage: III, IV; CLI unreconstructable or not benefited by previous surgical treatment. Exclusion criteria: diameter of ulcer >3 cm; severe gangrenia; low TcPO2. The study included 34 patients with CLI that were followed during 6–9 months. Patients were classified in TASC D group before the procedure. Two patients needed secondary intervention other than major amputation: minor amputation and distal bypass.

Conclusions: Cryoplasty seems to be a safe and effective method for treating infrapopliteal atherosclerotic disease. It is important to use predilation with low profile balloon prior to cryoplasty of distal small diameter vessels to pass safely a cryoplasty catheter. Endovascular treatment of TASC D lesions is associated with higher postoperative amputation rate. Primary outcomes are promising as a part of a complex treatment of critical limb ischemia.

V4-10 RENAL ARTERY STENOSIS IN PATIENTS WITH SYMPTOMATIC PERIPHERAL ARTERY DISEASE UNDERGOING ARTERIOGRAPHY: PREVALENCE AND RISK FACTORS A. Pokrovsky, L. Kokov, D. Suntsov Vishnevsky Institute of Surgery, Moscow, Russian Federation

Objective: The purpose of this study was to evaluate the incidence and risk factors associated with renal artery stenosis (RAS), incidentally discovered during diagnostic angiography for patients with symptomatic peripheral artery disease.

Methods: Nine hundred and fifty nine consecutive patients who underwent angiographic evaluation of symptomatic lower extremity peripheral artery disease were studied retrospectively. Angiograms were reviewed for the presence of renal artery stenosis. Angiographic findings were also correlated with risk factors to determine if a relationship correlated to the presence of and degree of renal artery stenosis. Data was analyzed using the Student’s test. 771 (80.6%) patients were male (mean age was 61.9 years) and 186 (19.4%) female, (mean age was 64.9 ± 3 years). The etiological reasons of lower extremity peripheral artery disease were atherosclerosis in 936 patients and Burger’s disease in 23 patients. Diabetes mellitus had 168 (17.5%) patients. 378 patients (39.4%) had aorto-iliac occlusion, 199 patients (20.8%) had isolated iliaco-femoral occlusion, 382 patients had occlusion of infrarenal arteries.

Results: The overall frequency of any degree of renal artery stenosis in this population was 34.6%. Bilateral RAS was present in 90 (9.4%) patients. Significant RAS, defined as a narrowing of the diameter by more than 60%, was found in 182 patients (19%) and severe (≥75% diameter narrowing) stenosis was found in 110 patients (11.5%). Twenty patients (2.1%) had occlusion one of the renal arteries. In multivariable analysis we found the patients with RAS were significantly older than patients without RAS - 63.7±8.7 years vs. 60.4±9.5 years (P=0.001). Significant RAS was found more frequently in females. Frequency of RAS in patients with aorto-iliac occlusion was 39%, from them 24% of patients had significant RAS. Frequency of RAS in patients with iliaco-femoral and infrarenal occlusion was 28.4% and 30.6% accordingly, from them 19.2% and 16.3% of patients accordingly had significant RAS.

Conclusions: The overall frequency of any degree of renal artery stenosis in patients with symptomatic peripheral artery disease was 34.6%. Significant RAS was found more frequently in patients with aorto-iliac occlusion - 39%. In multivariable analysis we found the patients with RAS were significantly older than patients without RAS - 63.7±8.7 years vs. 60.4±9.5 years (P=0.001). Significant RAS was found more frequently in females.

V4-11 USING OF METABOLIC DRUGS FOR ACCELERATION OF ULCER HEALING IN PATIENTS WITH DIABETIC FOOT M.S. Bogomolov, V.M. Sedov, I.V. Lukyanov, L.N. Edivodna, V.V. Slobodyanikyuk, S.V. Ostrovskaya Faculty Surgical Clinic, Saint-Petersburg Pavlov's State Medical University, Saint-Petersburg, Russian Federation

Objective: The prevalence of foot ulcers in patients with diabetes is approximately 4-10%. The risk of amputation is 10-15 times higher in diabetic than in non-diabetic patients. The most common cause of amputations in diabetic patients is ischaemia: gangrene or non-healing foot ulcer is the cause of amputations in 60-70% of patients with diabetes. In case of development of ischemic infected deep ulcers these patients become candidates to major amputation. Aim of the study is to analyze the results of conservative treatment of diabetic patients. The most common cause of amputations in diabetic patients is ischaemia: gangrene or non-healing foot ulcer is the cause of amputations in 60-70% of patients with diabetes. In case of development of ischemic infected deep ulcers these patients become candidates to major amputation. The most common cause of amputations in diabetic patients is ischaemia: gangrene or non-healing foot ulcer is the cause of amputations in 60-70% of patients with diabetes. In case of development of ischemic infected deep ulcers these patients become candidates to major amputation.

Methods: To achieve the best results we have developed the following protocol of treatment: aggressive cleansing, irrigation and debridement (sharp surgical debridement of the hyperkeratotic rim and ulcer base, with removal of surface debris and necrotic material) of the ulcers and the surrounding tissues, regular application of antiseptics and wound healing stimulators; administration of antibiotics, vasodilators. The most of the patients were treated using infusions of “Cytoflavin” (combination of succinic acid, inosine, nicotinamide and riboflavin). For analysis of the results these patients were divided on two groups: subgroup A - 15 patients, who received standard conservative treatment and subgroup B - 19 patients, who received standard conservative treatment and 10 everyday infusions of Cytoflavin. In both of these subgroups average age, period of previous existence and size of the ulcers were comparable at baseline.
Results: In spite of the fact that in all of the patients the Ankle-Brachial Index was below 0.7, more than 93% of the ulcers were healed. Average time of treatment: 3.7 months and 2.7 months, accordingly. Average speed of ulcer healing was 0.33 cm² per months in the subgroup A and 0.42 cm² per months in the subgroup B.

Conclusions: Our results demonstrate that this complex multidisciplinary approach allows to get good results in patients who otherwise would have undergone amputation.

**Cardiac Posters 1 - Coronary**

**May 1, 2009, 2nd Congress Day**

**15:00-16:30**

**CP-1**

**EARLY RESULTS OF CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH VENTRICULAR CONDUCTION DELAY AND WITH IMPAIRED OR PRESERVED LEFT VENTRICLE SYSTOLIC FUNCTION**

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**MEDINET Heart Center, Wroclaw, Poland**

Objective: A prolonged duration of QRS interval is a known predictor for worse prognosis in patients with chronic heart failure. Its prognostic value in patients undergoing isolated CABG has not been established. We evaluated whether preoperatively prolonged QRS duration was related to increased risk of hemodynamic instability in the early postoperative period.

Methods: We studied 346 consecutive patients who underwent elective primary CABG (mean age 62.8±9.2 years). QRS duration ≥ 120 ms was registered in 28 patients. Impaired systolic left ventricle function (LVEF≤45%) was detected in 79 patients. Both impaired LVEF and prolonged QRS duration were observed in 12 patients.

Results: Patients with QRS duration ≥120 ms were older, presented higher operative risk estimated with EuroSCORE and had lower LVEF than patients with QRS duration <120 ms. The need of inotropic support was more frequent in the patients with intra-ventricular conduction delay (32% vs. 15%, P<0.04). When other clinical parameters (age, EuroSCORE, previous myocardial infarction, LVEF, impaired renal function, preoperatively unstable angina, number of grafted vessels, the highest serum CKMB concentration) were taken into consideration in multivariable analysis, prolonged QRS duration was not a predictor for the need of inotropic drug use. However, there was a tendency of increased postoperative inotropic support (OR: 2.1, CI 95%, 1.2–3.6, p=0.07) in the patients with QRS duration ≥120 ms. In the subgroup A (n=150), the incidence of cardiogenic shock requiring inotropic support (OR: 2.4, CI 95%, 1.3–4.4, p=0.005) was significantly higher in patients with QRS duration ≥120 ms than in patients with QRS duration <120 ms (15% vs. 5%).

Conclusions: In patients undergoing CABG a preoperative ventricular conduction delay may be a risk factor of postoperative hemodynamic instability, especially when it is accompanied by impaired left ventricle systolic dysfunction.

**CP-2**

**CEFAZOLIN AS PROPHYLACTIC AGENT IN CARDIAC SURGERY? THE INFLUENCE OF CARDIOPULMONARY BYPASS ON TISSUE AND SERUM CONCENTRATION OF THE DRUG**

M. Zbigniew Guc1, M. Krejca1, K. Bialek1, J. Bafelkowska2, P. Szmagala1, W. Gerber1, E. Buszman2, A. Bochenek1

1First Department of Cardiac Surgery, Medical University of Silesia, Katowice, Poland; 2Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Medical University of Silesia, Sosnowiec, Poland

Objective: Aim of the study was to establish adequate dosage regimen using cefazolin for antibiotic prophylaxis during coronary artery bypass grafting. We investigated the influence of extracorporeal circulation on concentration of the drug in tissue and serum.

Methods: The prospective, randomized study was performed in 40 patients undergoing coronary artery bypass grafting with the use of cardiopulmonary bypass. In the control group patients received 1 g i.v. of antibiotic at the induction of anesthesia and 1 g i.v. at the chest closure. In experimental group an additional dosage of the drug at the onset of cardiopulmonary bypass was administered. Blood samples were obtained at seven time points of the surgical procedure and high-pressure liquid chromatography method was used for drug level evaluation. Two points of tissue samples were obtained. The results were compared with minimal inhibitory concentrations (MIC) of common bacterial pathogens isolated in cardio-surgery departments.

Results: Mean cefazolin levels until cardiopulmonary bypass institution were not significantly different in both groups. After that point of the operation concentrations of the drug in experimental group remained above 74.5 μg/ml and were three times greater than concentrations in control group. The half-life periods of cefazolin before and during extracorporeal circulation were noted: in experimental group - before cardiopulmonary bypass half-life periods=1.006 h, during cardiopulmonary bypass half-life periods=1.787 h; and in control group - before cardiopulmonary bypass half-life periods=1.354 h, during cardiopulmonary bypass half-life periods=3.363 h.

Conclusions: Administering additional dose of cefazolin results in increase of its serum and tissue levels above minimal inhibitory concentrations for all pathogens covered by that antimicrobial agent. The use of extracorporeal circulation causes the extension of cefazolin half-life period during coronary artery bypass grafting.

**CP-3**

**OUR EXPERIENCE IN CARDIAC PATIENTS WITH HEPARIN INDUCED THROMBOCYTOPENIA TYPE II**

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Objective: Heparin induced thrombocytopenia type II (HIT type II) is well-defined thrombophilic and immunological complication due to heparin therapy, which occurs in 1-3% treated patients. In around 50% of the patients with HIT type II has developed serious thrombotic arterial and venous complications. Special place it has in cardiac surgery, regarding standard use of heparin. In a patients with HIT type II is contraindicated continuation of heparin therapy including use of low molecular heparin. Alternative drugs should be used as danaparoid sodium, lepirudin, argatroban etc.

Methods: Coronary revascularization was done in two patients and mitral valve repair was down in one patient. First was male, 50-year-old, who has suffered three myocardial infarctions previously and has developed left ventricular low ejection fraction of 25%. He had three vessels disease. We had performed revascularization off-pump (one arterial and one vein graft) using danaparoid sodium as alternative anticoagulation. Second patient was male, 65-year-old, who has previously suffered two myocardial infarctions and had three vessels disease. We had done coronary revascularization on-pump (three vein grafts) using danaparoid sodium. Third patient was female, 58-year-old. She suffered diaphragmatic myocardial infarction with consequently significant insufficiency of mitral valve, three years after myocardial revascularization. We had done mitral valve repair with ring using argatroban as alternative anticoagulation.

Results: In all patients, during operation and postoperatively we had no any complications, except in second patient who had superficial wound infection.

Conclusions: The diagnosis and treatment of HIT type II needs to be considered on an individual basis, because of the variable presentation and severity of the syndrome. Special attention should be placed on platelet count in patients who received heparin therapy. In cardio surgery, we need a better screening test to discovery the HIT type II patients who are previously treated with heparin.

**CP-4**

**PREDICTORS OF EARLY DISCHARGE FOLLOWING CORONARY ARTERY BYPASS GRAFTING - ITS ROLE TO CONTROL PATIENT TRAFFICKING**

K. Javangula, K. Adluri, S. Papaspyros, D. O’Regan

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Objective: The aging population with associated comorbidities is a growing concern among cardiac surgeons of this generation. Prolonged ICU and total hospital stay is causing higher cancellations of elective cases. This study was aimed at predictors of early discharge and whether it can be used for patient trafficking in a tertiary cardiac unit.

Methods: One thousand five hundred and sixty-two patients underwent cardiac surgical procedures under single surgeon between January 2002 to October 2008. One thousand one hundred and forty-five patients had first-time coronary artery bypass grafting (CABG). Five hundred and thirty-two patients were discharged within five days after surgery. Data was entered...
prospectively into a cardiac surgical database (PATS database). Demographic profile, pre, intra and postoperative variables were obtained from the database and clinical records. The variables were statistically analysed using SPSS (ver. 15.0). The patients whose postoperative hospital stay was five days or less were analysed to see whether early discharge can be predicted. The adverse outcomes were also explored. Results: Male/female and the mean age was (82:18), (62.9±9.1) respectively. Mean hospital stay was 4.6±10.76 and mortality was 1.24% in early discharge group. Three patients needed IABP support in addition to inotropes. Multivariate logistic regression analysis showed age >65 years, EF >50%, male gender, short cross clamp time, left sided grafts and good social support predicted shorter hospital stay. Conclusions: Early discharge following CABG can be predicted. We have started applying this to allocate theatre slots and patient trafficking. The early results are encouraging but it needs further evaluation before it can be widely recommended.

**CP-5**

HEPARIN-INDUCED THROMBOCYTOPENIA AFTER CORONARY ARTERY BYPASS OPERATION: A CASE REPORT

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Objective: Heparin-induced thrombocytopenia (HIT) is a catastrophic complication which develops by immunological mechanisms secondary to heparin usage and characterized by arterial and venous thromboembolism. There are two types of HIT that develops secondary to heparin usage, being type I and II, in clinical practice. We report a patient in whom thromboembolic complications developed due to HIT.

Methods: A 75-year-old male patient with diagnosis of stable angina pectoris and coronary artery disease was hospitalized for coronary artery bypass operation. A progressive decrease in thromboocyte count and a thromboembolic appearance in the distal parts of upper and lower extremities developed concomitantly on early postoperative period. Platelet aggregation test was done with suspect of HIT and it was positive. Heparin/PL-4 antibodies were positive but serotonin release assay could not be done and patient had diagnosis of HIT. The diagnosis was confirmed by a positive functional platelet aggregation test. The patient was lost due to multi-organ failure on postoperative 11th day. Results: The pathogenesis of HIT has been fully clarified but the treatment of HIT is still controversial. Mortality rate for HIT is still between 20 and 30% despite early diagnosis and currently available treatment methods. Multivariate analysis is a determined preoperative coronary intervention as an important predictor of HIT development. Functional tests include platelet aggregation test, serotonin release assay, platelet activation test and detection of IgG antibodies by ELISA methods. In addition to clinical suspect and findings, a positive platelet aggregation test or serotonin release assay confirms diagnosis. However, in case of being these two tests negative, the result of ELISA test can be negative either. Therefore, in patients having borderline antibody titration, performing sequential ELISA tests is recommended. As soon as diagnosis is made, heparin should be stopped. Platelet infusions can cause thromboembolic complications, thus should be avoided. While cessation of heparin is adequate treatment in majority of type I HIT cases, alternative anticoagulants should be added to treatment in type II HIT cases. Non-platelet inhibitors such as danaparoid and ancord and direct platelet inhibitors such as hirudin, lepirudin and argatroban are the first line medications.

Conclusions: Currently, more heparin is used due to increasing number of invasive interventions both in Cardiology and Cardiovascular Surgery practice. We think that, HIT, a life treating complication, should be kept in mind in the patients receiving heparin.

**CP-6**

‘NO-TOUCH’ TECHNIQUE USING SAPHENOUS VEIN HARVESTED WITH ITS SURROUNDING TISSUE FOR CABG: CAN IT BE IMPROVED?

P.M. Vukovic1, M. Labudovic-Borovci2, M. Peric1, B. Rada1, P. Milojovic1, M. Cirkovic1, S. Borovic1, B. Djukanovic1
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Objective: Reduced venospasm was observed with ‘No-touch’ harvesting technique in which the saphenous vein was harvested with a pedicle of surrounding tissue. The ‘No-touch’ grafts were not mechanically distended resulting in excellent preservation of the endothelial cell integrity. An angiographic follow-up study showed a high patency rate of ‘no-touch’ vessels at 18 months after surgery, a significant improvement compared to vessels harvested conventionally. We hypothesize that pharmacological treatment of ‘No-touch’ grafts would enable additional relaxation of the grafts without compromising the integrity of the endothelial layer.

Methods: In each of 30 patients who underwent elective CABG, vein grafts were prepared with three techniques: ‘no-touch’ technique, our modification of ‘no-touch’ technique in which ‘no-touch’ grafts were gently flushed with saline solution containing nitroglycerin and verapamil and conventional technique where the vein was stripped of its surrounding tissue and manually distended. Graft samples were taken for morphometrical and immunohistochemical analysis. Immunomarkers were used for identification of endothelial cells.

Results: The largest inner diameter of ‘No-touch’ grafts was significantly reduced as compared with pharmacologically treated ‘no-touch’ grafts and conventionally harvested grafts (1.317.75±1.43.21 µm, 2.181.10±1.65.72 µm, 3.787.70±1.80.36 µm, respectively; P<0.01). Endothelial cell integrity was well preserved in ‘No-touch’ and pharmacologically treated ‘No-touch’ grafts (3.9±0.14 vs. 3.02±1.02, P>0.05) but significantly reduced in conventionally harvested grafts as compared with the other two groups (1.23±1.11, P<0.01).

Conclusions: Some degree of venospasm persisted in vein grafts harvested with ‘no-touch’ technique. Maintenance of good endothelial integrity and reduction of venospasm was achieved with our modification of ‘no-touch’ technique in which ‘no-touch’ grafts were pharmacologically treated.

**CP-7**

IS CRYSTALLOID CARDIOPLEGIA STRONG PREDICTOR OF INTRA-OPERATIVE HEMODILUTION?

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Objective: Hemodilution complications association inevitably resulted in significantly and systematically greater intensive care requirements, hospital stays, operative costs, and death with increasing levels of hemodilution, particularly for lowest hematocrit value ~22%. We tried to identify crystalloid cardioplegia as predictor of intraoperative and hemodilution and transfusion requirement.

Methods: One hundred patients were included into this randomized prospective study. We decided to give crystalloid cardioplegia to the odd-numbered patients and not to give the to the even-numbered patients. Patients were divided into the two groups. Group-1 included 50 patients that crystalloid cardioplegia (St. Thomas-II solution) have been used. Blood cardioplegia which was developed in our university (GGU solution) was used in 50 Group-2 patients.

Results: Average intraoperative hematocrit (%) value was 18.4±2.3 in crystalloid group 24.2±3.4 in blood cardioplegia group (P<0.001). Nadir Htc value was 15% and 20% in both groups (P<0.001). Average intraoperative packed RBC was transfused 2.3±1.41 units in crystalloid group, 0.7±0.6 units blood cardioplegia group (P<0.001). Average RBC was transfused 2.7±0.8 units in crystalloid group, 0.9±0.4 units blood cardioplegia group (P<0.001). Multivariate analyses confirmed age (P<0.005, OR=3.78), Female gender (P=0.003, OR=2.91), longer cross-clamp time (~60 min) (P=0.001, OR=6.12), BSA <1.6 m² (P<0.001, OR=6.01) and crystalloid cardioplegia (P<0.001, OR=1.19) as predictor of intraoperative hemodilution.

Conclusions: Crystalloid cardioplegia, compared to blood cardioplegia not only causes much more intra-operative hemodilution but also increases the blood transfusion requirement. Hemodilution and Increased transfusion increases the ICU and hospital stay, in the early postoperative period.

**CP-8**

OFF-PUMP CABG AS PREVENTIVE APPROACH IN A PATIENT WITH NEPHRECTOMY

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Objective: Off-pump coronary surgery clearly has a place and can be a successful procedure for patients with high-risk due to other systemic pathologies. Scientific surgical strategies, excellent surgical techniques
and improvement of cardiac anaesthesia make the mortality and morbidity decrease significantly.

Methods: Our case was a 57-year-old woman. Her chief complaint was exertional chest pain going on for three months. Her coronary angiography revealed that there was significant stenotic lesions in left anterior descending (LAD). Moreover, left ventricular ejection fraction was calculated as 50%. She had a nephrectomy operation anamnesis before 35 years. Regarding her cardiac performance and her nephrectomy anamnesis, we planned to carry out OPCAB surgery in order to avoid the side effects of cardiopulmonary bypass (CPB). She underwent coronary revascularization with these findings.

Results: Following median sternotomy left internal thoracic artery was harvested. Following half-dose heparin administration OPCAB surgery was performed using the Octopus 3 (Medtronic Inc, Minneapolis, MN) stabilizer. The left internal thoracic artery was anastomosed to the LAD. Exposure of LAD was achieved by placing a sponge (gauze) under the heart and a deep pericardial traction suture to elevate and slightly rotate the heart rightward. The patient was extubated at 6th hour postoperatively and the total drainage from the mediastinal drains was 300 ml in 24 h, no further platelet or blood transfusions were required. She did not have additional problem and she was discharged home with surgical success and without any cardiac complications at 6th day.

Comment: It was remarked that beating heart procedure should be preferred for CABG in patients with nephrectomy and in the patients not convenient for this procedure, CPB must be selected. Concerns about systemic inflammatory response to CPB and its consequences, such as interstitial fluid accumulation and tissue edema formation, impaired immune response, and decreased platelet number and function, are factors that make these patients not referred to cardiac surgery. Coronary bypass surgery, with acceptable morbidity and mortality rate, improves the cardiac symptoms, quality of life and survival is longer in these patients.

### CP-9

**SUCCESSFUL MANAGEMENT OF PERFORATION OF THE CORONARY ARTERY COMPLICATION OF ANGIOPLASTY PROCEDURE**

C.-L. Kao
Chang Gung Memorial Hospital at Chiayi, Chiayi, Taiwan

Objective: Perforation of the coronary artery complicates 0.5% of angioplasty procedures and its frequency increases almost 10-fold when ablation devices are used (ablation 1.3% vs. PTCA 0.1%; P=0.001). Coronary artery perforation occurs more frequently in elderly and female patients. Perforations are classified by severity as type I (a visible extraluminal crater without extravasation), type II (pericardial or myocardial blush), and type III (1 mm diameter perforation with contrast material streaming).

Methods: An 85-year-old female was admitted because of unstable angina over several weeks. The patient had a history of coronary artery disease and received stenting to left circumflex artery one year ago. She received coronary angiography and revealed middle LAD 80% stenosis. After PCI for LAD and D revealed dissection and a 2.5×8 mm ACS Pixel stent was deployed. Follow-up angiography showed wire perforation at distal LAD. Repeat prolong balloon inflations were tried to stop perforation point. But final angiography showed extravasation of some contrast medium. She was sent to operative room due to unstable hemodynamic status. Cardiac tamponade was noted and ecchymosis over distal LAD area, which may be the perforation site. The lesion was packing with surgical, and the sternotomy was closed without any complication.

Results: The postoperative course was uneventful and she was discharged on the 7th postoperative day. Three months later follow-up CT-scan revealed that the epicardial hematoma completely resolved.

Conclusions: Pericardial tamponade is frequently but not invariably associated with coronary artery perforation. The overall incidence of tamponade after PCI is 0.12% and doubles when ablation devices are used. PCI-associated tamponade is recognized 35% of the time during or after the procedure while the patient is still in the catheterization laboratory and 45% of the time after the patient leaves the laboratory. A minority of episodes of late tamponade (13%) are associated with recognized coronary artery perforation. Tamponade requires surgical treatment in 39% of patients, is closely associated with MI complicating PCR, and carries a mortality rate of 42%. When a covered stent is used for the treatment of coronary artery perforation, the need for emergency surgery is reduced, and the outcome of coronary artery perforation is improved. A small number of patients, however, still will require surgery.

### CP-10

**RISK PROFILE AND EARLY OUTCOMES OF PATIENTS AFTER PERCUTANEOUS CORONARY INTERVENTION REFERRED TO SURGICAL REvascularization**

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Objective: Percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) are both well evidence based invasive methods of coronary artery disease treatment. PCI is often performed in patients afterwards referred to CABG. The most recent reports show no difference in early outcome between patients treated either with PTCA or CABG. However, patients who underwent PCI more often show need of surgical revascularization. Presented prospective registry was designed to compare preoperative characteristics and in-hospital course of patients with and without PCI effectively referred to CABG.

Methods: There were 63 patients at mean age of 64±8.8 years who underwent CABG. Total group consisted of 52 males (82%) and 11 females (18%). Patients were divided into two arms: post-PCI group and non-PCI group. Until now there are 34 patients in post-PCI group (53%) and 29 patients in non-PCI group (47%). Preoperatively following factors were analyzed: age, gender, hypertension, hypercholesterolemia, diabetes mellitus (DM), renal diseases, smoking, and post-myocardial infarction (MI) status, left ventricle ejection fraction (LVEF%), CCS and NYHA class and pharmacotherapy. In intraoperative course there were following minor end-points analyzed: inotropes use, intra aortic balloon counterpulsation use, temporary stimulation and they are formed together into composite end-point 1. Moreover, postoperative minor end-points 2 consisted of: inotropes use, intra aortic balloon counterpulsation use, temporary stimulation and atrial fibrillation.

Results: Post-PCI patients had significantly higher preoperative LVEF (47±9.3 vs. 58.2±4.5% in non-PCI group; P=0.003) and NYHA functional class (1.7±0.4 vs. 1.8±0.4 in non-PCI group; P=0.01). There was trend towards worse renal failure in non-PCI patients in comparison to post-PCI individuals, respective creatinine level: 1.0±0.2 vs. 0.8±0.2 mg/dl; P=0.07. Patients previously treated with PCI had lower rate of arterial hypertension, smoking and history of MI. Composite end-point 1 occurred significantly more often in post-PCI patients (70%) than in non-PCI patients (22%); P=0.04. Composite end-point 2 occurred non-significantly more often in post-PCI patients (50%) than in non-PCI patients (11%); P=0.07. In post-PCI population catecholamine use was higher (40% in comparison to 22% in non-PCI group; P=0.07). Postoperative atrial fibrillation occurred only in post-PCI patients (30%).

Conclusions: Study showed significant preoperative risk and postoperative outcomes differences in terms of preoperative coronary intervention. Post-PCI patients have less comorbidities and worse left ventricle function. Non-PCI patients have less postoperative complications.

### CP-11

**USE OF DOUBLE WIRES REDUCES INFECTION RISK IN CABG PATIENTS WHEN BILATERAL THORACIC ARTERY ARE USED**

A. Nguyen, P. Schraverus
St Joseph Hospital, Gilly, Belgium

Objective: The use of bilateral thoracic artery for cabg is often limited because of risk of wound healing problems. We try to show that the use of double wiring limits the problems even in diabetic and high body mass index patients.

Methods: We reviewed 109 patients from which 57 were closed with double wire technic (group a) and in 52 patients we used the simple wire closing technique (group b). The study is a retrospective study but the patients were not selected either there were going in one group or the other.

Results: We observed six patients with sternal healing problems in group b and one patient in group a.

Conclusions: The use of double wires to close the sternum in patients undergoing cabg with bilateral thoracic arteries seem to improve healing and diminished reoperation rates for sternal instability.

### CP-12

**ULTRASOUND EVALUATION OF HAND VASCULARITY AFTER RADIAL ARTERY HARVEST FOR CORONARY ARTERY BYPASS GRAFTING**

A. Drohomirecka, R. Cichon
MEDINET Heart Center, Wroclaw, Poland

Abstract: The use of bilateral thoracic artery for cabg is often limited because of risk of wound healing problems. We try to show that the use of double wiring limits the problems even in diabetic and high body mass index patients.

Methods: We reviewed 109 patients from which 57 were closed with double wire technic (group a) and in 52 patients we used the simple wire closing technique (group b). The study is a retrospective study but the patients were not selected either there were going in one group or the other.

Results: We observed six patients with sternal healing problems in group b and one patient in group a.

Conclusions: The use of double wires to close the sternum in patients undergoing cabg with bilateral thoracic arteries seem to improve healing and diminished reoperation rates for sternal instability.
CORONARY SYNDROME: 5 YEARS EXPERIENCE

Objective: To evaluate the results of coronary artery bypass grafting (CABG) in patients with acute coronary syndrome (ACS), to choose the surgical approach of correction.

Methods: From 2003 to 2008 performed more 5000 operations in patients with ischemic heart disease. CABG in patient with ACS - 298 patients (6.6%). Male 271%, female - 29%. Ages 54 ± 1 years (max 73 years ≤ age 48%, min 30%). Forty-six percent patients had risk factor - obesity, diabetes mellitus, in one case - left ventricle aneurysm. In 68% patients had ECG pathologic changes anterior cardiac wall, 32% posterior wall. In 30% patients we have noted manifestation of ACS during the performance of a coronaryography. Indication for urgent operation was significant stenosis of the trunk of the left main coronary artery; proximal stenosis of LAD, CA ≥70%; refractory myocardial ischemia; one vessel disease with refractory myocardial ischemia and impossibility of performance coronary angioplasty. Mean time from arrival time to operation 3 ± 1.5 h (min 2 h). All operations performed with cardiopulmonary bypass. Mean cross-clamp duration was 58 ± 12 min (33-105 min). Mean pump time was 85 ± 18.4 min (51-141 min). Lesion of coronary vessels: 76.5% subtotal stenosis of the trunk of the left main coronary artery, 23.5% proximal stenosis of LAD, 9.1% tandem stenosis of LAD, 88%, three vessels disease. Mean number of graft/patient was 2.7. LIMA was used in 100% patients. In cases of tandem stenosis of LAD - reconstructive procedure. In 12 patients was used intraaortic balloon counterpulsation.

Results: Hospital mortality was 10 patients (3.4%). Causes of death - low cardiac output syndrome. Non-lethal complications - perioperative myocardial infarction in patients (5.3%), pneumonia (0.7%). There were no deaths in the study population at the 4, 5 years follow-up. Three patients had recurrence of stenocardia. Conclusions: Urgent CABG in patients with acute coronary syndrome is high-risk, but in modern cardiac surgery it have low level mortality and complications. Careful selection and risk estimation is necessary for improvement of results of operations.

CP-13 POSTIN farction Ventricular Septal Rupture - IS THE SPECTRUM OF PATIENTS CHANGING?

V. Rohn, J. Lindner, M. Semrad, J. Rulisek, J. Belohlavek, J. Tosovsky
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Objective: The incidence of post infarction ventricular septal rupture (PIVSR) is decreasing in the last years due to aggressive treatment of acute myocardial infarctions by early percutaneous interventions. At the same time more patients with the PIVSR are referred to surgery with significant heart failure. The aims of this retrospective study was to assess the influence of these on operative mortality and morbidity.

Methods: A retrospective analysis of prospectively collected data of patients with the PIVSR admitted to our centre from November 2004 to November 2008 was performed. Variables were analyzed using the two-dimensional correspondence analysis.

Results: There were 19 patients (8 males and 11 females) with mean age of 65.8 years (47-82) admitted to our center with PIVSR during the last four years. Eleven of them (62.2%) presented with anterior and seven (36.8%) with posterior PIVSR. Fifteen (78.9%) patients had significant acute heart failure, nine (47.3%) patients presented with cardiogenic shock. Before surgery intraaortic balloon pump (IABP) was inserted to 16 (84.2%) patients; in one case extracorporeal membrane oxygenation (ECMO) as a ventilatory assist device was used. Operative mortality was 47.3%. Four (21%) patients had non-significant recurrent shunt on postoperative echocardiography. As risk factors for operative mortality operation in hypothermia, concomitant LV repair, renal impairment before operation, male gender, history of ischemic heart disease, VSD location posterior, and shock at surgery were identified.

Conclusions: The PIVSR is less common in recent years due to percutaneous interventions. The majority of patients with the PIVSR has acute heart failure prior to surgery; these have negative influence on the operative mortality. More liberal use of ventricular assist devices before the operation could change the unfavourable outcome of this high-risk group of patients.

CP-14 CORONARY ARTERY BYPASS GRAFT SURGERY IN PATIENT WITH ACUTE CORONARY SYNDROME: 5 YEARS EXPERIENCE

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Objective: To evaluate the results of coronary artery bypass grafting (CABG) in patients with acute coronary syndrome (ACS), to choose the surgical approach of correction.

Methods: We examined 50 patients (the study group) in whom radial artery was harvested from the non-dominant forearm at least six months earlier (mean follow-up time 16 months). The control group constituted 50 patients who underwent CABG without use of radial artery. Ultrasound examination of forearm arteries was performed in all patients.

Results: The diameter of ulnar artery in the operated forearm was greater than in the non-operated forearm (2.55±0.45 vs. 1.96±0.52 mm, P<0.001) and greater than diameter of every artery (both radial and ulnar, both-sided) in the control group. Similarly, the mean blood flow velocity in ulnar artery was higher in the operated than in the non-operated forearm (32.0±14.4 vs. 22.0±8.7 cm/s, P<0.001) and higher than mean velocities observed in forearm arteries in the control group. The calculated blood volume supplied for the hand was comparable on both sides in the study group (operated: 1.73±1.1 ml/s; non-operated: 1.61±0.85 ml/s, P=0.92) and in the control group. Five patients in the study group demonstrated greater difference in the blood volume supplied for the hand between dominant and non-dominant (operated) side than the average difference observed in the control group. The values of both basic and after exercise oxygen saturation measured on forefinger, which could indicate hand ischemia resulted from insufficient blood supply, did not differ between sides in these patients.

Conclusions: Radial artery can be safely use as a conduit for CABG, with no significant deterioration in blood flow in the operated forearm than to postoperative increase of ulnar artery diameter and blood flow velocity.
complications after bypass surgery, compared with the elevated the concentration of the brain markers could be an evidence for the subclinical changes.

CP-16
TWO YEARS FOLLOW-UP OF INTRAMYOCARDIAL CELL DELIVERY
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Objective: If a patient with heart ischemia has no chance for CABG or PTCA - cell therapy could be in use. The reliable way of cell delivery to ischemic area of myocardium is intramyocardial injection. The only problem is surgical access. Mini invasive surgery or video assisted approach is required.

Methods: Fourteen patients (8 men and 6 women) with end stage coronary diseases were enrolled in clinical trial. Methods of investigation: coronaryography, Echo-ECG, perfusion analysis with Tc-99 m, serum analysis for cardiac enzymes, cytoflowmetry and clinical assessment with SF-36 were performed before operation and at 12th and 24th month after cell transplantation. Preclinical experiment on human cadavers was performed for assessment of surgical advantages of four miniinvasive accesses - transthoracic pericardiotomy, diotomy, mini thoracotomy, modified subxiphoid pericardiotomy, transdiaphragmatic pericardiotomy. The modified subxiphoid pericardioteomy with video assistance had advantages above all approaches. We could gain access to all areas of left and right ventricle and used this approach in clinical practice. Autologous bone marrow mononuclears CD34+/CD45- cells 1.8±10 (6.2±16.4) 10^6 were directly injected in ischemic segments of myocardium by plastic catheter with needle 22 G (BD) 1.0 ml per injection, mean number of injection 8±2.

Results: Operation was performed under general anaesthesia. The only complication in time of injection is ventricular extrasystole, last one did not make us to suppress with drug application. Hospitalization duration is four days. Scanning with Tc99 m before operation revealed mild decrease of left ventricle perfusion (70-50%) in all patients, moderate decrease (less than 50%) in six patients in six segments of 16. After operation significant improvement of myocardium perfusion was found in all treated patients - the number of segments with moderate decrease of perfusion has changed from 6 to 2 (average). Global left ventricular ejection fraction was (62.1±15.4%) before operation after 6 months (69.3±4.4%; P<0.01). The regional wall motion (1.5±0.4; P=0.01) of left ventricle before surgery and (2.5±0.7; P<0.01) after surgery. At month 12 and 24, we assessed rhythmical changes with monitoring for 24 h - there were no significant changes before and after surgery. All operated patients filled SF-36 - all of them have mentioned clini-cal improvement (P<0.05) by all items of SF-36.

Conclusions: Modified subxiphoid pericardioteomy is safe and reliable surgical approach for intramyocardial cell transplantation in patients with coronary diseases. There were no severe complications in time of surgery and in follow-up 24 months. Clinical improvement was found in all patients after surgery.

CP-17
SURGICAL RESULT OF SURGERY FOR VENTRICULAR ANEURYSM IN PATIENT WITH CORONARY HEART DISEASE (CLINICAL REPORT OF 152 CASES)
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Objective: To investigate the surgical methods of left ventricular aneurysm for patients with coronary heart disease.

Methods: A total of 152 consecutive patients with left ventricular aneurysm between January 1997 and December 2006 was received surgical treatment in our hospital. The data in those patients including 116 males and 36 females with mean age of 64.2 years±15 years and mean left ventricular ejection fraction of 36±15% was retrospectively analyzed. Among 152 patients, 48 were subjected to linear repair and the others were received endoventricular patch plasty, concomitant with 151 cases of coronary bypass surgery, seven coronary endarterectomy, 22 mitral valvoplasty, eight mitral and six aortic valve replacement, six mitral and aortic valve replacement and two tricuspid valvoplasty.

Results: Mean CPB and aortic cross-clamp time was 103 min and 68 min, respectively. Twenty-six patients needed intro-aortic balloon pump, four were re-explored for bleeding, three had stroke and 14 manifested ventricular arrhythmia. There were four deaths, with operative mortality of 2.63%. All the others was discharged with full recovery.

Conclusions: For patients with left ventricular aneurysm, linear repair and left ventricular reconstruction with internal patch were both effective methods and choice of surgical procedure was dependent on the size of ventricular aneurysm. The simultaneous coronary bypass surgery and valve treatment was necessary to obtain satisfied results.

CP-18
SURGICAL TREATMENT FOR PATIENTS WITH DIFFUSED CORONARY ARTERY DISEASE
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Objective: To summarize the early outcomes and clinical experience of coronary endarterectomy (CE) and bypass grafting without cardiopulmonary bypass for patients with diffused coronary artery disease.

Methods: From May 2003 to November 2006, 83 patients with diffused coronary artery disease underwent CE and bypass grafting without cardiopulmonary bypass. There were 61 males and 22 females aged from 55 to 80 (mean 65±7) years old. 91.6% patients (76/83) were in Canadian Cardiac Society (CCS) angiia class three and four. 43.4% (36/83) had history of myocardial infarction. Coronary angiography showed multiple stenotic lesions with transdiaphragmatic pericardiotomy. The modified subxiphoid pericardioteomy with video assistance had advantages above all approaches. We could gain access to all areas of left and right ventricle and used this approach in clinical practice. Autologous bone marrow mononuclears CD34+/CD45- cells 1.8±10 (6.2±16.4) 10^6 were directly injected in ischemic segments of myocardium by plastic catheter with needle 22 G (BD) 1.0 ml per injection, mean number of injection 8±2.

Results: Operation was performed under general anaesthesia. The only complication in time of injection is ventricular extrasystole, last one did not make us to suppress with drug application. Hospitalization duration is four days. Scanning with Tc99 m before operation revealed mild decrease of left ventricle perfusion (70-50%) in all patients, moderate decrease (less than 50%) in six patients in six segments of 16. After operation significant improvement of myocardium perfusion was found in all treated patients - the number of segments with moderate decrease of perfusion has changed from 6 to 2 (average). Global left ventricular ejection fraction was (62.1±15.4%) before operation after 6 months (69.3±4.4%; P<0.01). The regional wall motion (1.5±0.4; P=0.01) of left ventricle before surgery and (2.5±0.7; P<0.01) after surgery. At month 12 and 24, we assessed rhythmical changes with monitoring for 24 h - there were no significant changes before and after surgery. All operated patients filled SF-36 - all of them have mentioned clini-cal improvement (P<0.05) by all items of SF-36.

Conclusions: Modified subxiphoid pericardioteomy is safe and reliable surgical approach for intramyocardial cell transplantation in patients with coronary diseases. There were no severe complications in time of surgery and in follow-up 24 months. Clinical improvement was found in all patients after surgery.

CP-19
LINEAR REPAIR OR LEFT VENTRICULAR RECONSTRUCTION WITH INTERNAL PATCH FOR LEFT VENTRICULAR ANEURYSM AFTER MI. HOW TO MAKE A CHOICE?
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Objective: To investigate the surgical methods of left ventricular aneurysm for patients with coronary heart disease.

Methods: A total of 152 consecutive patients with left ventricular aneurysm between January 1997 and December 2006 was received surgical treatment in our hospital. The data in those patients including 116 males and 36 females with mean age of 64.2 years±15 years and mean left ventricular ejection fraction of 36±15% was retrospectively analyzed. Among 152 patients, 48 were subjected to linear repair and the others were received endoventricular patch plasty, concomitant with 151 cases of coronary bypass surgery, seven coronary endarterectomy, 22 mitral valvoplasty, eight mitral and 6 aortic valve replacement, 6 mitral and aortic valve replacement and 2 tricuspid valvoplasty.

Results: Mean CPB and aortic cross-clamp time was 103 min and 68 min, respectively. Twenty-six patients needed intro-aortic balloon pump, four were re-explored for bleeding, three had stroke and 14 manifested ventricular arrhythmia. There were four deaths, with operative mortality of 2.63%. All the others was discharged with full recovery.

Conclusions: For patients with left ventricular aneurysm, linear repair and left ventricular reconstruction with internal patch were both effective methods and choice of surgical procedure was dependent on the size of ventricular aneurysm. The simultaneous coronary bypass surgery and valve treatment was necessary to obtain satisfied results.
Objective: As an increasing number of the aging patients are being referred for coronary artery bypass grafting (CABG) and the radial artery (RA) has gained increasing popularity as a conduit, the aim of this study was to investigate the effectiveness of RA in CABG for the elderly with coronary heart disease.

Methods: Three hundred and twenty-six elderly patients underwent CABG with RA harvesting between January 2000 and June 2008. Perioperative complications and mortality were observed, follow-up was performed, and the data in these patients were reviewed.

Results: A total of 377 RA as grafts were collected. The mean number of distal anastomoses per patient was 3.05 while the mean for RA was 1.07. The operative mortality was 3.07%. Six patients required re-exploration for excess distal anastomoses per patient was 3.05 while the mean for RA was 1.07. The mean time per proximal anastomosis of 11 min ± 2.4 min can be easily obtained. Only one hospital death occurred which was not relate to the novel surgical technique and there was no late death after mean follow-up of 7.2 ± 1.5 months.

Conclusions: This novel technique allows to finishing proximal anastomosis in safe, easy, precise and economical fashion and could have potential to be generally applicable in coronary bypass surgery.

CP-21
RADIAL ARTERY AS CONDUIT IS SAFE AND EFFECTIVE IN CORONARY BYPASS SURGERY IN THE ELDERLY: A SINGLE-CENTRAL RESULTS FROM 326 PATIENTS
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Objective: As an increasing number of the aging patients are being referred for coronary artery bypass grafting (CABG) and the radial artery (RA) has gained increasing popularity as a conduit, the aim of this study was to investigate the effectiveness of RA in CABG for the elderly with coronary heart disease.

Methods: Three hundred and twenty-six elderly patients underwent CABG with RA harvesting between January 2000 and June 2008. Perioperative complications and mortality were observed, follow-up was performed, and the data in these patients were reviewed.

Results: A total of 377 RA as grafts were collected. The mean number of distal anastomoses per patient was 3.05 while the mean for RA was 1.07. The operative mortality was 3.07%. Six patients required re-exploration for excess distal anastomoses per patient was 3.05 while the mean for RA was 1.07. The mean time per proximal anastomosis of 11 min ± 2.4 min can be easily obtained. Only one hospital death occurred which was not relate to the novel surgical technique and there was no late death after mean follow-up of 7.2 ± 1.5 months.

Conclusions: This novel technique allows to finishing proximal anastomosis in safe, easy, precise and economical fashion and could have potential to be generally applicable in coronary bypass surgery.

CP-22
MULTIFRACTAL PROPERTIES OF HEART BEAT DYNAMICS AFTER OFF-PUMP CABG
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Objective: Recent studies suggest that time series of healthy human interbeat intervals belong to a special class of bio-signals displaying multifractal properties. Multifractal signals are extremely patchy and sufficiently inhomogeneous that a single fractal exponent is not sufficient to characterize their scaling properties completely. The breakdown of multifractality was observed in congestive heart failure and angina pectoris; however, there has been no attempt to evaluate multifractal behaviour before and after beating heart myocardial revascularization (off-pump CABG).

Methods: Sixty-seven consecutive patients with isolated multivessel coronary artery disease, chronic β-blocker therapy and sinus rhythm, scheduled for off-pump CABG were included in the study. Twenty-four hour Holter recordings were performed preoperatively and on the seventh postoperative day. Multifractal properties of the RR data set were determined for both, day- (12:00 h to 18:00 h) and night-time (00:00 h to 06:00 h) periods of the ECG recordings containing at least 95% of pure sinus rhythm. Multifractal spectrum τ at q=3 (τ(q=3)), the peak position of the singularity spectrum (h_top) and the width of the singularity spectrum (Δh) were calculated by wavelet modulus maxima method as proposed by Ivanov et al., using freely available software (www.physionet.org).

Mean differences over time were tested using paired-samples t-test. Results are reported as mean±S.E.; P<0.05 or less was considered significant.

Results: From 67 patients included in the study, 48 meet the clinical and technical criteria for final analysis. Three patients died in the early postoperative period and in one patient a conversion from off-pump to on-pump was performed. Day- and/or night-time periods of 24-h ECG recordings of 15 patients contained >5% of ectopic beats or artifacts and thus, were excluded from analysis. Postoperatively, τ(q=3) was reduced significantly for day-time period (p<0.001), whereas h_top and Δh were significantly higher both for day- and night-time periods (p<0.001 and p<0.002 for h_top and 0.41±0.20 and 0.31±0.19 for Δh, respectively). Postoperatively, τ(q=3) was significantly higher for day-time period (p<0.001), whereas h_top and Δh were significantly higher both for day- and night-time periods (p<0.001 and p<0.002 for h_top and 0.41±0.20 and 0.31±0.19 for Δh, respectively).

Conclusions: Significant postoperative increase of all multifractal parameters, except of τ(q=3) for night-time periods, clearly indicates that a marked breakdown of multifractal behavior into mono-fractal can be observed following off-pump CABG, indicating that multifractality is mostly governed by vagal activity. Non-significant changes of τ(q=3) for night-time periods suggest that postoperative vagal withdrawal is masked by nocturnal vagal enhancement following circadian patterns.

CP-23
BIFID TOP-END ANASTOMOSIS: A NEW TECHNIQUE TO PERFORMING PROXIMAL ANASTOMOSES OF TWO ADJACENT SAPHENOUS VEIN GRAFTS
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Objective: We report our surgical experience with a new method to performing proximal anastomosis of two adjacent saphenous vein grafts (SVG) as an unit on the ascending aorta that may minimize aorto-saphenous technical discrepancy.

Methods: Since 2006 to present, 90 patients (mean age of 57.4±19.84; females 21; mean LVEF of 42±8%; mean logistic EuroSCORE 4.07±2.62; three vessel and left main disease 88%), underwent CABG using the current technique as follows: at the completion of last distal anastomoses, the saphenous vein grafts are sized properly, and the top ends of two adjacent grafts are then sewn together in a side-by-side fashion (7/0 polypropylene). After placing the side-biting clamp, a double-barrel shaped opening is made in the aorta by applying twice an aortic punch. The unifocalised grafts are then sutured to the aorta as a unit.

Results: The mean distal anastomosis per patient was 3.9±0.53 (1.06 arterial and 2.8±0.54 venous grafting). A bifid proximal anastomosis was performed on for the left coronary artery branches in 83 patients, and for the right coronary artery branches in seven patients. The mean cardiopulmonary bypass and ischaemic time was, respectively 120±35 min. and 21±9.84 min. One patient suffered postcardiotomy shock that was successfully managed by veno-arterial extracorporeal membrane oxygenation device as bridge to recovery. Two patients (2.2%) required perioperative IABP insertion. One patient (1.1%) with concomitant endarterectomy suffered perioperative myocardial infarction. Three (3.3%) patients were reoperated on for bleeding unrelated to the bifid proximal anastomosis.

Conclusions: Bifid proximal anastomosis is a safe and reproducible technique permitting lesser manipulation of the ascending aorta, overcoming SVG-aorta diameter mismatch, efficiently placing two adjacent grafts with proper angulations, and hiding the necessity of patching the aorta in the setting of complex aortic pathology. However, further imaging study is needed
to determine early graft patency rate of the bifid proximal anastomosis in comparison with classical top-end anastomosis and sequential SVG grafting.

CP-24
SURGICAL EXCLUSION OF A SYMPTOMATIC CIRCUMFLEX CORONARY TO RIGHT ATRIUM FISTULA
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Objective: Coronary arteries fistulas are rare and half of them are symptomatic. Diagnosis is confirmed by echocardiography and coronaryography and can be precisely located by multislice CT-scan. We report the case of a 56-year-old female with congestive heart failure caused by a coronaryo-cardiac fistula established between the proximal circumflex coronary artery and the right atrium.

Methods: Transthoracic and transesophageal echocardiography revealed an important left to right shunt with pulmonary hypertension. These results were confirmed by coronaryography and CT-scan showing a large tortuous vessel originating from the end of the left main coronary artery and following the left atrioventricular sulcus with drainage into the right atrium in the area of the coronary sinus. Though median sternotomy, under normothermic cardio pulmonary bypass, the exclusion of the fistula was achieved by ligation of both extremities and a running suture on the aneurysmal vessel with no consequence on EEG and left ventricular wall motion on intraoperative transesophageal echocardiography.

Results: Follow-up at six months was satisfactory with an asymptomatic patient and the absence of recurrence of the fistula on echocardiography. Conclusions: Coronary fistulas are rare but more frequently discovered, thanks to imaging improvements. They can cause severe complications justifying a treatment in most cases. The surgical treatment remains the gold standard with a weak morbi-mortality even if some cases can benefit from percutaneous closing.

CP-25
BONE MARROW LASER REVASCULARISATION FOR TREATMENT OF END-STAGE CORONARY ARTERY DISEASE
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Objective: The population of patients with end-stage coronary artery disease and ineffective routine treatment (percutaneous coronary intervention (PCI), coronary artery bypass grafting (CABG), intensive pharmacological treatment) is growing. Intramyocardial injection of autologous bone marrow stem cells may induce angiogenesis, intensified by inflammation around channels performed by laser. We tested the safety and feasibility of intramyocardial delivery of stem cells together with transmyocardial laser revascularization.

Methods: Six male patients (age 49–78 years) with history of coronary artery disease (CAD), unstable angina (CCS IV) despite intensive pharmacological treatment and disqualified from prior CABG or PCI were included. At sites where CABG was impossible, transmyocardial laser revascularization (TLMR) was performed with the Holmium: YAG laser. In order to stimulate neangiogenesis, bone marrow precipitate was transplanted in the amount of about 1 ml per channel. Clinical symptoms, quality of life, myocardial perfusion and contractility were evaluated before the procedure and through the follow-up.

Results: No peri-procedural complications occurred. At six months, no major cardiac events (death, acute myocardial infarction, stroke, and malignant ventricular arrhythmias) occurred. Heart function stage (from IV to I CCS) and quality of life improved in all patients. We observed improvement in regional wall motion in cardiac MRI.

Conclusions: Intramyocardial delivery of bone marrow cell together with laser therapy is a safe procedure. Improvement of clinical condition, quality of life and global contractility in this group of patients, are good prognostic results.

CP-26
BILATERAL INTERNAL THORACIC ARTERY IN SURGICAL TREATMENT OF CORONARY ARTERY DISEASE
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Objective: The bilateral internal thoracic artery (BITA) is more common in coronary artery bypass grafting and provide better long-term results than the use of a single internal thoracic artery (ITA) graft. The aim of the study was to evaluate early outcome, in-hospital mortality and perioperative complications in patients receiving BITA.

Methods: All 157 patients with coronary artery bypass grafting (CABG) operated between January 2006 and September 2008 who received BITA grafting were analyzed retrospectively. Demographic data, risk factors, and details of surgical intervention and postoperative complications were analysed.

Results: The mean age was 62 years (males=83%). In 62% left ITA was implanted in LAD. Right ITA as a ‘free graft’ has been used in 43% of patients. Proximal part of RITA was implanted in majority to LITA. The mean number of distal anastomoses was 2.5 per patient. In 49% of patients surgery was performed without extracorporeal circulation. The incidence of mediastinitis was 6.3%. Diabetes was the risk factors for wound infections. Incidence of rethoracotomy due to bleeding was 4.4% and sternal resection was 3.8%. Hospital mortality rates was 1.9%. Low-output syndrome occur in 8.2% patients with older age (P=0.08) and peripheral atherosclerosis (P=0.08) identified as a risk factors.

Conclusions: Both ITAs used in CABG can be performed routinely with low mortality and good clinical results. Increase in the risk of deep sternal wound infections or sternal dehiscence affect particular group of patients.
artery bypass grafting (ACBG). We report on our experience with CCBG using saphenous vein graft (SVG) on the right coronary artery branches (RCA).

Methods: During 2007 to present, 60 patients (mean age 57.6 ± 12.6 years, 32.2%, mean preoperative LVEF 43.8 ± 12.6, mean logistic EuroSCORE 6.5 ± 8.9) underwent right-angled CCBG using SVG. Thirty-four of the patients (57.6%) suffered recent myocardial infarction, and 42.4% of patients were operated on urgently. 86.5% of the patients presented with three-veins or left main disease. 45.5% of patients had occluded RCA, while 7 patients (11.9%) presented with severe stenosis pretreated.

Results: The mean distal anastomosis per patient was 3 ± 0.73 (1.17 arterial and 2.13 SVG grafting), of which 63 performed CCBG anastomosis. Twenty-three patients with uncomplicated CCBG underwent postoperative coronary computed tomography angiography displaying an early CCBG graft patency rate of 96%.

Conclusions: Right sided coronary artery bypass grafting using SVG is a safe and reproducible procedure to surgical revascularization of the RCA branches. Its hypothetical physiological advantages and their consequent impact on long-term patient outcome need further investigation.

CP-29

THE INFLUENCE OF MORPHOLOGICAL STRUCTURE OF MYOCARDIUM ON THE OUTCOMES OF MITRAL VALVE REPAIR IN PATIENTS WITH ISCHEMIC CARDIOMYOPATHY

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Objective: To reveal influence of morphological structure of myocardium on the outcomes of surgical treatment of patients with ischemic cardiomyopathy (ICMP).

Methods: Fifty five patients were enrolled into the study with the mean age of 53.0 ± 4.9 years old with postinfarction ischemic heart failure of III-IV NYHA. Mitral insufficiency (MI) degree in the group studied was 3.1 ± 0.5, EF: 35.3 ± 4.5%, EDVI: 113.2 ± 15.2 ml/m², ESVI: 84.1 ± 12.6 ml/m². All the patients underwent coronary artery bypass grafting (CABG) and mitral valve (MV) repair with the use of a Carpentier ring. The mean number of shunted coronary arteries was 3.2 ± 0.4. From all the patients samples of RA myocardial tissue were harvested intraoperatively and subjected to morphological study.

Results: Hospital mortality after surgical treatment comprised 8%. In 12 months heart failure functional class by NYHA in all the patients decreased significantly, LV functional-volume values improved. Nevertheless in 6 (12.5%) patients positive dynamics was not noticed after the surgical treatment neither clinically nor according to the data of echocardiography. Retrospective morphological analysis of biopsy material from RA myocardial auricle revealed signs of myocarditits and different degrees of atherosclerosis in the patients with negative clinical results of surgical treatment.

Conclusions: Thus, reconstructive procedures on mitral valve of ischemic myopathy (ICMP) make negative effect on surgical correction of mitral valve insufficiency.

CP-30

TROPONIN I AND LACTATE FROM CORONARY SINUS AS MYOCARDIAL DAMAGE PREDICTORS AFTER MYOCARDIAL REvascularization

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Objective: Postoperative troponin I and lactate elevation are related to perioperative myocardial damage and acute myocardial infarction. Our purpose was to evaluate if there was correlation between troponin I and lactate sampled from coronary sinus and postoperative blood values.

Methods: Thirty-nine consecutive isolated myocardial revascularizations were prospectively enrolled in the study. Troponin I and lactate were sampled intraoperatively 15 min after reperfusion from the coronary sinus and at 6, 12, 24 and 48 h in blood. Clinical data and clinical events were recorded.

Results: Myocardial damage defined as troponin I peak >3.1 µg/l at 12 h was developed in 17 patients (43.6%). However, none of them had new Q waves or akinetic/dyskinetic segments, serum CK-MB activity was lower than 100 IU/l and their postoperative course were uneventful. Pearson correlation demonstrated a good correlation (P<0.05) of troponin I sampled from coronary sinus with peripheral postoperative troponin values at 6 h, 12 h and 24 h, and lactate sampled from coronary sinus with peripheral postoperative lactate samples at 6 h and 12 h.

Conclusions: Levels of intraoperative troponin I and lactate detected from coronary sinus may improve the postoperative course, by mandating preventative strategies to reduce further myocardial damage and avoid acute perioperative infarction.

CP-31

PREDICTORS OF EARLY MORTALITY AFTER COMBINED CARDIAC SURGERY IN SEPTUAGENARIANS

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Objective: The number of elderly patients with an indication for cardiac surgery is increasing. The aim of the study: to assess risk factors that influence the 30-day postoperative mortality (PM) in septuagenarians undergoing combined coronary and valvular surgery.

Methods: Data were analyzed from 366 consecutive patients who underwent combined surgery between March 2006 and March 2008, at our clinic. There were 290 patients younger than 70 years (Group I), while Group II consisted of 76 patients in the eighth decade of their life. The presence of risk factors according to the EuroSCORE (The European System for Cardiac Operative Risk Evaluation) model were compared among groups (y²). Predictors of PM in septuagenarians were assessed using multivariate logistic regression analysis.

Results: The postoperative mortality in patients under 70 years was 3.8% (10/290) vs. 12.6% (12/96) in group of septuagenarians (P<0.001). Hypertension, unilateral carotid disease and aortic valve replacement were significantly more frequent in group II (P=0.021; P=0.055; P=0.001, respectively), while the incidence of ejection fraction <30%, cardiomegaly, mitral valve repair and tricuspid valve annuloplasty was significantly higher in patients younger than 70 years (P<0.001; P=0.001; P=0.005; P=0.001, respectively). The multivariate factors predicting PM in group II were: age (P=0.019), mitral valve replacement (P=0.050) and diabetes (P=0.062).

Conclusions: Postoperative mortality in patients older than 70 years, undergoing combined cardiac operation, is significantly higher in respect to younger patients. Multivariate predictors of early mortality in this group are age, mitral valve replacement and diabetes.

CP-32

DOES MELATONIN ATTENUATE ISCHEMIA-REPERFUSION INJURY AFTER CABG?


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Objective: Melatonin is known as a potent free radical scavenger and an antioxidant agent. The relation between the protective effect of melatonin against ischemia-reperfusion injury during cardiopulmonary bypass, plasma level of melatonin and the time of surgery is studied.

Methods: Forty patients who will undergo elective coronary artery bypass grafting were grouped as Group I (n=20) operated in the morning and patients in Group II (n=20) were operated on at noon. Blood samples were collected before the operation (T1), when the aortic cross-clamp was removed (T2), 4 h (T3) and 24 h after the operation (T4).

Results: Preoperative plasma levels of melatonin were severely higher in Group II (P<0.0004). Postoperative melatonin levels of T2, T3, and T4 were also significantly higher in Group I (P<0.0002, P=0.001, and P=0.091, respectively). Postoperative IL-8 levels were found significantly lower in Group I in all samples (P=0.002 in T2, P=0.003 in T3, and P=0.0018 in T4). Postoperative values of ICAM-1 were lower in Group I in all samples and this was statistically significant (P<0.0002 in T2, P=0.001 in T3, and P=0.01 in T4).

Conclusions: High plasma melatonin levels may be directly related with low levels of IRI markers. This effect seems to be directly correlated with the
plasma levels of melatonin and inversely related with the strength of light. If melatonin protects myocardium from IRI, additional studies may be planned for preoperative usage of melatonin in coronary artery diseases patients for improved myocardial protection.

CP-33
ASPIRIN RESISTANCE AFTER CABG
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Objective: Temporary aspirin resistance occurs during the post CABG period. If the factors causing resistance can be identified, the early graft occlusions can also be minimized.

Methods: Twenty-five elective CABG cases were enrolled in the study. The platelet count, mean platelet volume, the C-reactive protein level, lipid profile, BUN, and creatinine levels were identified one day before the operation, and on the 1st, 5th and 10th postoperative days. Optical aggregometry was used for evaluation of aspirin response. The patients are divided into two groups as aspirin resistance and no aspirin resistance.

Results: The rate of postoperative aspirin resistance was found as 60%. No significant difference was found when preoperative and operative data of the two groups were compared. It is detected that the rapid changes observed in postoperative platelet counts and the C-reactive protein levels were similar.

Conclusions: Aspirin resistance is encountered during early postoperative period in the majority of patients undergoing CABG. None of the factors studied were found to be effective in resistance formation. Further studies are required to clarify this entity.

CP-34
CORONARY ARTERY BYPASS GRAFT IN OCTOGENARIAN PATIENTS
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Objective: There has been a gradual increase in the number of elderly patients referred for cardiac surgery. These patients present a difficult challenge, they are usually symptomatic AND at high-risk for intervention. The aim of this study is to review our experience with cardiac surgery in patients aged 80 years or older.

Methods: Between January 2002 and December 2007, 107 patients; 15 female, 92 male, mean age 82.8 years (range 80-103) underwent surgery on cardiopulmonary bypass in our unit. Surgery was performed on 11 as an emergency. Pre-operatively (65.4%) were in NYHA functional class 3 or 4.

Results: Early mortality was 10 (9.3%). Median in-hospital stay was 12 days (range 8-33) and 10 (range 6-49) days, respectively. Survival was significantly worse in patients undergoing a mitral procedure.

Conclusions: Coronary artery bypass graft can be performed in a selected elderly patients with acceptable operative mortality. These very elderly patients face high surgical risks. Postoperatively elderly patients attain an excellent quality of life and survival. Emergency CABG in this group of patients is less rewarding.

CP-35
ANGIOGENIC PROPERTIES OF ADULT THYMUS FAT IN CORONARY PATIENTS. DIABETES COULD AFFECT THESE PROPERTIES?
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Objective: In adult, thymus degenerates into fat. We previously found that thymus fat from ischemic cardiomyopathy patients expresses considerable levels of angiogenic factors, and that the total extract of this adipose tissue induce both proliferation and migration of endothelial cells, indicating the relevant role that could play this fat in angiogenesis process and a possible use like a complementary and intraoperative revascularization technique. The objective of the present work is to investigate whether some pathology could change the levels of angiogenic factors expression in thymus fat.

Methods: Twenty-six patients that received a coronary artery bypass graft (CABG) with cardiopulmonary bypass (CPB), were grouped into two groups, with and without diabetes mellitus, and the expression of VEGF subtypes and PPAR gamma, gene involved in angiogenic factors regulation, were evaluated and compared in both groups. Protein and RNAm expressions were analyzed by western blotting and real time PCR, respectively.

Results: Here we found that both group express the same levels of RNAm and protein of VEGF-A, VEGF-B, VEGF-C, VEGF-D and PPAR gamma 1/2.

Conclusions: Here we show that thymus fat expresses considerable levels of angiogenic factors and gene that play relevant role in the regulation of these angiogenic factors, and that these levels are not changed by diabetes mellitus pathology. These results suggest the relevant role that could play thymus fat in angiogenesis and that this property is not altered in thymus fat from ischemic cardiomyopathy patients with diabetes mellitus.

CP-36
SURGICAL METHODS OF CORRECTION IN PATIENTS WITH POST-INFARCTION ANEURYSM: LONG-TERM PATIENTS LIFE PROGNOSIS AND QUALITY OF LIFE
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Objective: Surgical methods of post-infarction aneurysm repair are very well used currently for long-term patient’s life prognosis as well as for its quality. This study is aimed to make up for a deficiency in examining life quality of the Patients of this category and some signs of his/her condition in later stages of observation.

Methods: All Patients have been split into three groups depending on aneurysm correction type. Group 1 included the Patients with Dor procedure (n=212). Group 2 included the Patients operated by Jatane procedure and the Group 3 included the Patients with Linear aneurysm repair (n=31). Patient’s functional condition has been assessed based on the course of the cardiac insufficiency class according to NYHA. Life quality has been assessed according to Medical Outcomes Study 36-Item Short Form Health Survey (SF-36).

Results: Post surgery Cardiac Insufficiency Class according to NYHA has improved for all groups observed. While comparing the Classes for all Groups, the most significant improvement has been observed for the Patients operated by Dor procedure. Also, in the Group of Patients operated by Dor repair method the most improvement in the life quality has been observed which obviously resulted from the best hemodynamics rehabilitation. There was no any significant statistical difference between the Groups in the mental state.

Conclusions: Life quality of the patients with reconstructed geometry of Ventricular Aneurysm is satisfactory in spite of the fact that with time there might be a regress of certain signs of the patient’s condition, in particular regress of the heart failure class to the initial signs within the next 6-9 years of observation.

5th Cardiac Scientific Session - Coronary 2
May 1, 2009, 2nd Congress Day
17:00-18:30
C5-1
PERCUTANEOUS CORONARY INTERVENTIONS OR CABG FOR PATIENTS WITH NON-HEPARIN-INDUCED THROMBOCYTOPENIA?
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Objective: Thrombocytopenia (TP) is a relatively common finding in patients who undergo open heart operations. Recently publication showed that non-heparin-induced TP at baseline is an independent predictor of in-hospital mortality in cardiological patients. The aim of our work was to determine if TP at baseline has an impact on mortality, postoperative complications and bleeding, in patients after coronary artery bypass grafting (CABG).

Methods: From January 2007 to December 2008 in our hospital, 1598 CABG procedures were performed. Patients were divided into two groups depending on the platelet (PLT) amount, respectively to TP (<150×10 9/l) group (n=177) and to normal (>150×10 9/l) platelet group (n=1421). Pre-, intra-, and postoperative outcomes were collected retrospectively. Statistical analysis was performed.

Results: There were no statistically significant differences between groups in preoperative data despite age (64.9 years in TP and 63.9 years in normal platelet group, P=0.0069). In-hospital death rate did not differ between
groups (1.7% vs. 1.6%, P=0.81), as well as major bleeding (2.8% vs. 2.9% P=0.9) and bleeding in the first 24 h, reoperation rate (4.0% vs. 4.4% P=0.79), renal complications (2.8% vs. 3.1% P=0.65), intraoperative MI (1.1% vs. 2.3%, P=0.45), low postoperative cardiac output (29.4% vs. 28.9% P=0.89). Patients in the TP group did not need more blood (3.78 units vs. 3.59 units P=0.76) or platelets transfusions (2.82 units vs. 1.92 units P=0.3). Baseline thrombocytopenia did not prolonged duration of the operation or hospital stay.

Conclusions: Despite the fact that in patients undergoing percutaneous coronary angioplasty thrombocytopenia was independent predictor of inhospital mortality we did not confirm this relation in our group of patients on which the coronary artery bypass grafting was performed. Our preliminary outcomes allow to think that in the future non-heparin-induced thrombocytopoenia may be the significant factor in qualification to CABG procedure rather than PCI.

C5-2
INITIAL EXPERIENCE WITH MINIMIZED EXTRACORPOREAL CIRCULATION IN ELECTIVE CORONARY ARTERY BYPASS GRAFTING SURGERY
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Objective: The aim of the minimally invasive surgery is the reduction of the surgical impact on patients. The renewed interest in minimally invasive surgery has led to new technologies in order to reduce surgical trauma and even the health-related effects of cardiopulmonary bypass (CPB). Herein, new minimized extracorporeal circuits have been developed to markedly reduce the foreign surface area and the priming volume. This prospective study was undertaken to evaluate the clinical impact and the safety of the minimized extracorporeal circulation (MECC).

Methods: From November 2003 to November 2008, 43 patients were referred to our department with diagnosis of coronary artery disease and underwent elective coronary artery bypass grafting with a modified MECC, with an adjunctive on-demand venous reservoir. Data were prospectively collected with a dedicated database. Continuous variables were expressed as means±S.D. Discrete variables were expressed as numbers and proportions. Significant differences in haemoglobin and haematocrit were evaluated with repeated-measures Analysis Of Variance (ANOVA). If statistically significant, Student’s paired t-test was then performed, with Bonferroni’s method used to correct for multiple comparisons. A P<0.05 was considered statistically significant.

Results: The mean age of the group was 63.8±9.4 years. Thirty-eight were men (88.4%). The mean number of grafts was 3.49±0.9. No perioperative deaths occurred. No patients experienced neurological complications, named stroke and transient ischemic attacks. Acute renal failure occurred in eight patients (18.6%), all had preoperative chronic renal failure. The multivariate analysis showed that preoperative chronic renal failure was the only independent predictor of postoperative acute renal failure. Haemoglobin and haematocrit values decreased significantly before CPB initiation. The mean percentage of the decrease of the haematocrit was 16.8±11.5%. After surgery, the haematocrit trend continued to slightly decrease. Conclusions: In conclusion, the modified MECC is a safe and simple alternative to standard CPB in CABG procedures with good clinical outcomes that could permit to shift easily to total extra corporeal circulation.

C5-3
RESULTS OF COMBINED AORTIC VALVE REPLACEMENT AND CABG SURGERY IN OCTOGENARIAN PATIENTS DURING FIVE YEARS
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Objective: This study was designed to review and present our results in performing combined aortic valve replacement and CABG surgery in octogenarian patients. We analyzed the early outcome of surgery in terms of mortality and morbidity.

Methods: In the period between May 2003 and May 2008, consecutive 44 octogenarian patients were submitted to combined AVR and CABG surgery in our hospital. We analysed demographic data, risk factors, clinical characteristics, details of surgical interventions, and postoperative outcome of all patients.

Results: The total number was 44 patients with a mean age of 81.7±1.7 years. Males were 68.2%. The main associated cardiovascular risk factors were: arterial hypertension (79.5%), hypercholesterolemia (54.7%), smoking (27.3%) and diabetes mellitus (20.5%). Other associated risk factors were: chronic renal failure (11.4%) peripheral vascular disease (6.8%), and previous cerebrovascular accidents (2.3%). The means of expected mortality according to the logistic EuroSCORE and Parsonet 95 were 9.3±4.4 and 28.4±6.4, respectively. Significant left main coronary artery trunk lesion was found in 18.2% of patients. The incidence of one, two, and three vessel disease was 29.5, 34.1, and 36.4%, respectively. The mean of left ventricular ejection fraction (LVEF) was 56±15.4%. All patients had severe aortic valve stenosis while 54.4% had associated regurgitation. All patients presented with angina (stable in 75% and unstable in 25%). Symptoms of heart failure were present in 47.7% while syncope was present in 13.6%. History of previous myocardial infarction was found in 13.6%. Surgery was performed on elective basis in all patients. All patients received biological valve prosthesis. The mean of valve size was 22.2±1.7 mm. The types of coronary grafts were arterial (86.4%) and venous (13.6%) mean number of grafts performed was 1.6±0.7 vessels/patient. There was not any intraoperative mortality. The global morbidity rate was 56.8%. The most frequent postoperative complications were respiratory (15.9%), atrial fibrillation (15.9%), deterioration of renal function (15.9%), and neurological complications (13.6%). Sternal wound infection occurred in 6.8% of patients. Two patients (4.5%) needed insertion of intra-aortic balloon pump due to low cardiac output put state. Eight patients (18.2%) died due to low cardiac output (4 patients), respiratory failure (2 patients), and multisystemic organ failure (2 patients).

Conclusions: The main aim of operating such a group of patients should be improving quality of life rather than longevity. Postoperative morbidity and mortality rates were fairly high. Adequate preoperative selection of these patients should be considered to reduce both morbidity and mortality rates.

C5-4
EFFECT OF CORONARY ARTERY BYPASS GRAFTING FOR CORONARY FLOW RESERVE BEFORE AND AFTER OPERATION
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Objective: There are no reports, which examined coronary flow reserve (CFR) around coronary artery bypass grafting (CABG). Thus, in this study, we investigated the effect of left internal artery graft (LITA) for CFR of left anterior descending artery (LAD) compared before and after CABG using a Doppler guidewire.

Methods: We studied 24 patients (M/F=21/3, age: 65.4±8.7 years old) who underwent CABG. Intracoronary average peak velocity (APV) was measured at rest and during hyperemia (intracoronary infusion of ATP: 50 µg) at the stenosis distal site of LAD using a Doppler guidewire before and after CABG. Three weeks after CABG, Doppler guidewire was inserted to LAD with the via of LITA graft and the CFR of LAD was measured. The CFR was assessed by the ratio of distal hyperemic to baseline average peak velocity.

Results: Average CFR of LAD improved significantly from 1.59±0.52 before CABG to 2.46±0.82 (P<0.0001) at three weeks after CABG. Ten patients (42%) demonstrated an impaired CFR (1.69±0.30 < 2.0) after CABG. There were five patients with graft failure (string sign, stenosis), three patients with anterior wall wide and advanced infarction, two patients within addition.

Conclusions: The bypass operation to LAD by the LITA grafting improved coronary microcirculation of the LAD region in the postoperative significance, and it physiologically proved effect.

C5-5
NON-INVASIVE POSTOPERATIVE PATENCY EVALUATION OF RADIAL ARTERY GRAFTS
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Objective: Total arterial revascularisation was widely utilized in coronary artery bypass grafting as a result of its better long-term effect compared with vein grafts. Following the mammmary artery, radial artery (RA) gained popularity for its easy availability and reported long-term patency. To avoid postoperative coronary angiography, the ability of a 64-multi-slice computer tomography (64-slice MSCT) to assess graft patency and to detect bypass stenosis was investigated.

Methods: A retrospective statistical analysis of pre-, peri-, and postoperative data of the patients with RA was initially performed. Between January 2001 and January 2008, 149 patients received a RA graft (83% male); mean age 62 years (±8.2; 39-84 years). Furthermore, patients were interviewed by telephone in order to evaluate their current state of health, potential postoperative impairment, medication, risk factors, and quality of life. In
addition, a 64-MSCT with 0.4 mm slice thickness and a temporal resolution of 0.85 s was performed with automatic vessel view software.

Results: All patients were able to be committed with postoperative. Four patients died from non-cardiac reasons. The number of grafts/patient was 3.1 ± (0.75); the mean RA-target stenosis was 81.8% ± (12.98) and the mean graft flow 56.12 ml/min ±(33.6). Clinical outcome showed improvement of NYHA classification (71% in NYHA I). There was no functional impairment in 97% and no sensory persisting impairment in 82%. The MSCT showed 100% visualisation of the bypass grafts along their entire run. The graft patency is still under evaluation.

Conclusions: RA-grafts are not in fact associated with a higher morbidity or mortality. Clinical results are excellent using the radial artery in coronary surgery. Specific graft procurement techniques and anti-thrombotic treatment help to reduce graft spasm and improve outcome. Early and late graft patency can easily be evaluated non-invasively with the 36-MSCT.

C5-6
OFF-PUMP CORONARY ARTERY SURGERY ACTIVATES PLATELETS VIA ADENOSINE RECEPTOR IN PATIENTS ON ASPIRIN
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Objective: Off-pump coronary artery bypass grafting (OPCAB) is a less invasive surgical opportunity to treat ischemic heart disease, however avoidance of cardiopulmonary bypass may result in hypercoagulative status. Therefore, aspirin cessation before OPCAB is being lately reduced. We analyzed possible alternative adenosine-dependent platelets activation pathway in post OPCAB patients on aspirin.

Methods: The prospective study included 48 patients at mean age of 62.5 ± (8.2) years. Inclusion criteria was: stable ischemic cardiac disease, off-pump coronary artery bypass surgery scheduled, age between 40-80 years old, preoperative ASA (75 mg/day), statin, beta-blocker, angiotensin conver- tase inhibitor therapy, logistic EuroSCORE below 8%. Adenosine dependent platelets activation was measured before operation and 4 h, 24 h, 120 h postoperatively using Platelets Function Analyzer (PFA-100). Troponin I (TnI), creatine kinase-MB (CK-MB), coagulation times, blood cell count and transfus- sion units was also measured.

Results: Preoperative mean CT-ADP was 114.9 ± (50.8) s. In 4 h after OPCAB we found significant reduction of CT-ADP (89.5±45.5 s; P=0.01), which increased in next 24 h (132.0±78.5 s; P=0.0001) and did not change to the end of early stage observation (145.5±85.8 s; P=0.6). Four hour investigation revealed significant correlation between group with CT-ADP below 72 s and patients with CT-ADP >72 s in blood transfusion (0.4 vs. 1.2 units, P=0.04), D-dimers level (1718.4 ± 2627.6 ng/ml, P=0.04), troponin I level (0.3 vs. 1.7 ng/ml, P=0.05), WBC level (15.5 ± 11.9+103/μl, P=0.01), hematocrit (35.2 vs. 31.3%, P=0.0009), platelets count (210.5 vs. 148.4+103/μl, P=0.006) and other blood parameters. After 48 h early follow-up the analogical disparity between patients with CT-ADP <132 s vs. group with CT-ADP >132 s was noticed in HCT, HGB, PLT, HBOC and PCT levels (P=0.05) but no longer in 5th day postoperatively.

Conclusions: Adenosine dependent early platelets activation after off-pump coronary artery bypass grafting was observed. We noticed increased endog- enous fibrinolysis among patients with low CT-ADP (below 72 s). This patients also needed more plasma transfusion. Twenty-four and 120 h post-OPCAB lower platelets sensibility on adenosine was remarked.

C5-7
OUTCOMES AND MID-TERM SURVIVAL OF COMBINED RESTRICTIVE ANNULOPLASTY AND CORONARY ARTERY BYPASS GRAFTING FOR ISCHEMIC MITRAL REGURGITATION
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Objective: Data on combined coronary artery bypass grafting (CABG) and restrictive mitral annuloplasty in patients with ischemic cardiomyopathy are scarce. Objective to retrospectively summarize and analyze the experi- ences, the short- and mid-term operative outcomes of ischemic mitral regur- gitation (IMR) by combined CABG and restrictive annuloplasty.

Methods: Seventy-two patients (male 59 and female 13, with mean age 67.2±5.7 years) of coronary artery disease with moderate to severe (grade 3 to 4+) IMR underwent combined CABG and restrictive annuloplasty from January 2002 to December 2007. Serial transthoracic echocardiographic studies were performed (preoperatively and at 3, 6, 12, 24 months postop- eratively) to assess MR, LVEDD, LVEF.

Results: Each case received an undersized semi-rigid ring. Intraoperative transesophageal echocardiography (TEE) showed that no MR in 28 cases, minimal (less than grade 1+) MR in 35; mild (grade 2+) MR in 4; moderate in 3; and severe in 1 who received a bioprosthetic MVR with entire preser- vation of subvalvular apparatus in situ. Early operative mortality was 2.78%. Sixty-four cases were followed up for 21±11 months (range 6-60 months). All patients had an improved cardiac function, and were free of angina pectoris. There was no re-operation because of recurrent MR. There were two cardiac deaths during the follow-up period. Transthoracic echocardiography at 3, 6, 12 and 24 month postoperatively manifested that MR decreased dramatically (P<0.01), LVEDD (mm) decreased from 64±11 to 55±14 mm (P=0.01) and LAD(mm) decreased from 58±6 to 49±7 (P<0.01).

Conclusions: Combined CABG and restrictive annuloplasty is a feasible and effective treatment for ischemic MR, the short and mid term outcomes are satisfactory.
30 days mortality, postoperative renal failure, intensive-care unit (ICU) length of stay, neurological complications, use of intra-aortic balloon pump and conversion to CPB.

Results: Overall mortality was 2%, whereas mortality was 1.8% vs. 3.2% for male and female, respectively (P=ns). As expected due to its inherent nature, the EuroSCORE was significantly correlated to gender (P=0.014). Women were significantly more likely to stay more than two days in the ICU (P=0.006). Significant more occurrence of the composite endpoint was noted in 40% vs. 29% for women and men, respectively (P=0.007).

Conclusions: OPCAP offer low mortality and excellent clinical outcome for patients requiring isolated myocardial revascularization. Gender differences in regard to outcome remain present with modern OPCAP strategies. Women are significantly more likely to experience longer ICU stay and postoperative complications.

C6-10
THE PREDICTIVE VALUE OF INTRAOPERATIVE FLOW MEASUREMENTS OF CABG - GRAFTS FOR LONG-TERM MORTALITY
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Objective: During the CABG-procedure the intraoperative measurement of flow in bypass grafts is not routinely used in many institutions. However, it will provide some kind of intraoperative quality control for the surgeon. The aim of our study was to analyze the value of these flow measurements as predictor for long-term mortality.

Methods: We routinely measure the intraoperative bypass graft flows in every patient using a Doppler – flow meter (Cardiomedi®) and save the data in our ARCHIMAGE® database (developed by the Medical Universities of Vienna and Graz, used since 1998). For this study we retrospectively analyzed the flow measurements in 1596 CABG patients as well as other parameters such as EuroSCORE (ES), LVEF (ejection fraction), age, and sex for the study period of 1998-2006. Bypass-flows <10 ml/min and >125 ml/min had been excluded from the analysis to eliminate a too wide range. Patients were divided into three groups: CABG I (group A), CABG II (group B), CABG III (group C). The mean observation period was 8.8 years. Our follow-up was complete with respect to the official mortality registry.

Results: Group A with a median ES of 5 (3-10) and median LVEF of 64% (33-67%) had a median graft flow of 46 ml/min (20-56 ml/min), with IMA (internal mammary artery) 39 ml/min (28-56 ml/min), without IMA 45.5 ml/min (20-55 ml/min). Median age was 72.3 years (71.8-74.9 years). (m/f=58%/42%). The long-term mortality of group A was 8%. Group B with a median ES of 3 (2-11) and median LVEF of 61% (43.5-64%) had a median flow of 66 ml/min (36-104 ml/min). The median age was 66.4 years (65-71.7). (m/f=83%/17%). The long-term mortality of group B was 10.3%. Group C with a median ES of 3 (3-8) and median LVEF of 62% (52.7-51.5%) had a median flow of 47 ml/min (32.53 ml/min). The median age was 68.4 years (68-71.4). (m/f=75%/25%). The long-term mortality of group C was 4.5%. The overall long-term mortality was 10.2%.

Conclusions: There was no significant difference in flow values, LVEF or ES between these groups; however group A had slightly lower flows than B and C, especially when IMA was used as graft. Overall there was no significant correlation between intraoperative flow values and mortality in any group and therefore quite surprisingly intraoperative flow measurements failed to be a predictor for long-term mortality.

C6-2
RESULTS OF EXTRACARDIAC CONDUIT FONTAN OPERATION IN PATIENTS WITH UNIVENTRICULAR HEART COMBINED WITH-correction-CONCOMITANT ATRIOVERTICAL VALVE INCOMPETENCE
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Objective: Nowadays, extracardiac conduit is one of the most commonly used modifications of Fontan operation. This intervention is accompanied by low mortality rate and favorable immediate and late results. However, the outcomes of extracardiac conduit are not well examined if this procedure is combined with correction of concomitant atrioventricular valve incompetence, which is traditionally considered to be a risk factor for Fontan operation. The aim of the study is to evaluate early and late results of extracardiac conduit Fontan operation performed together with the repair of atrioventricular valve incompetence.

Methods: During the years 2000-2008, 101 patients with univentricular heart were subjected to extracardiac conduit Fontan operation. Twenty-three of them underwent the correction of concomitant atrioventricular valve incompetence. The severity of atrioventricular valve regurgitation, evaluated by color Doppler examination, ranged from 2+ to 4+ (mean, 2.9±0.6+). Methods of atrioventricular valve repair included annuloplasty, leaflet cleft repair, plastic reconstruction of common AV valve, closure of the valve or its replacement. All patients that survived the operation were followed-up for 6.0±2.1 years. During the follow-up period, they underwent 2D echocardiography, color Doppler and X-ray examination. The course of postoperative period was compared in patients with and without the repair of atrioventricular valve incompetence.

Results: Kaplan-Meier analysis revealed that the mean event-free survival time for ToF patients was almost equal of long-term follow-up (except 1 patient) range 5-16 years and for Rastelli group age at reoperation was ranged 3-7 years. The median gradient increase across homograft valve in Rastelli patients was statistically higher than in ToF patients in long-term follow-up. Regression analysis identified the homograft gradient at 1-3 years after surgery may be prognostic for homograft degeneration. Gender and blood group were unrelated to the degree of homograft gradient increase. Patient age at the time of first homograft implantation and previous palliative surgery was not significantly associated with the gradient at one year after operation. Type of the procedure (Rastelli vs. Fallot repair) is of great importance for homograft degeneration in long-term follow-up.

Conclusions: Homograft durability in patients after Rastelli procedure and post Fallot repair was excellent. However, some patients developed homograft degeneration and the gradient across the homograft 1-3 years after surgery was predictable for homograft degeneration. Probably mechanical factors play a crucial role in homograft degeneration.
with univentricular heart provides good early late results. Interventions on atrioventricular valves do not worsen the outcome of the procedure.

C6-3 IMPLEMTATION OF EXTRACARDIAC VALVED CONDUTS OF SMALL DIAMETER IN PATIENTS WITH CONGENITAL HEART DEFECTS: MID-TERM RESULTS
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Objective: An optimal method of establishing rightventricle to pulmonary artery continuity in children with congenital heart defects remains disputable. We reviewed our experience with xenopericardial valved conduits of small diameter for the reconstruction of the rightventricular outflow tract to determine mid-term outcome and risk factors for conduit dysfunction.

Methods: During the years 2003-2008, 48 consecutive patients with pulmonary atresia (n=17), truncus arteriosus (n=16), transposition of great arteries (n=4); corrected transposition of great arteries (n=4); tetralogy of Fallot (n=2), and other complex congenital heart defects with pulmonary stenosis (n=5) were subjected to implantation of xenopericardial valved three-leaflet conduits of small diameter (≤15 mm). For the analysis, patients were retrospectively divided into two groups: Group I (n=37): patients with complete repair of congenital heart defects; and group II (n=11): patients under Ross-Konno-Ross valve reconstruction of right ventricular outflow tract without VSD closure. The age of patients ranged from 1.4 months to 16 years (median, 1.4 years). Conduits were made of porcine or bovine pericardium, and three-leaflet conduit valve was made of porcine pericardium. The diameter of conduits ranged from 6 mm to 15 mm (mean, 11.9±2.3 mm). The duration of follow-up ranged from 4.5 to 66 months (mean, 28.2±16.8 months). Time-related changes in survival and freedom of conduit dysfunction was analyzed by the Kaplan-Meier method. Regression analysis was used to determine risk factors for conduit dysfunction.

Results: Thirty-eight patients survived the operation and were discharged from the hospital. Thus, early mortality was 21%. There were five late deaths (10%). Actuarial survival at two and four years after surgery was the same and reached 82.8%. Freedom from conduit dysfunction was 71.4% and 47.0%, respectively. Freedom from repeat interventions on conduits was 79.1% and 49.4%, respectively. Peak systolic pressure gradient at the last follow-up examination was 24.8±15.4 mmHg in patient Group I, and 36.4±18.0 months in Group II. Systolic pressure gradient exceeded 50 mmHg in nine patients. In five of them, repeat interventions including endovascular procedures were performed. Conduit valve regurgitation was revealed in 12 patients. In 10 of them, it was trivial and in 2 moderate. High systolic pressure gradient on the conduit early after the operation was the only independent risk factor for late conduit dysfunction (P=0.01).

Conclusions: Implantation of extracardiac valved conduits of small diameter in patients with congenital heart defects for the reconstruction of right ventricular outflow tract allows achieving good hemodynamic and clinical mid-term results.

C6-4 INSTITUTIONAL EXPERIENCE FOR AUTOTRAGRAFT DILATATION AND HOMOGRRAFT DEGENERATION FOLLOWING ROSS AVR
M.P. Kopala, J. Moli, K. Miudzik, J.J. Moli
Polish Mothers Memorial Hospital, Lodz, Poland

Objective: Since first Ross operation in 1967 many investigators have been founding autograft and homograft-related factors influencing early and long-term follow-up after surgery. We reviewed our institutional experience to assess risk factors predicting autograft survival and homograft hemodynamic parameters following Ross or Konno-Ross aortic valve replacement.

Methods: We followed up 86 patients (mean age, 9.6±2.7 years) who had Ross or Konno-Ross procedure by transthoracic echocardiography. There were 45 patients below 15 years of age. Follow-up was 6.3 years and was 100% complete. Autograft annulus size, autograft sinus diameter and valve insufficiency (AI) were assessed using transthoracic echocardiography one week after procedure, six months and then annually after operation. These diameters were compared with normal values predicted by body surface area. Cryopreserved homografts were harvested from heart-beating donors or cadavers and were implanted after preparation to reconstruct RVOT during Ross operation. Up-to-size homografts were applied as a rule in children to avoid early replacement. Allograft stenosis was analyzed and risk factors were identified by univariate, multivariate, and survival analysis methods.

Results: End-points of the study were freedom from autograft dilatation, from moderate or severe autograft regurgitation and from reoperation. Late autograft dilatation was identified in 27 (31%) patients and regurgitation in 6 (7%). Freedom from dilatation was 75±10% at least five years, freedom from regurgitation was 90±6%, and freedom from reoperation was 89±4%. Autograft root diameters were compared to normal values (Z-score) referred to annulus, sinus of Valsalva and sinotubular junction. There was no reoperation for homograft stenosis during available mid-term (45 patients) and late (30 patients) follow-up. Stenosis-free survival was 95±3%, 85±5%, and 80±7% after 1, 3, 5, and above 5 years, respectively. As independent predictor for stenosis transhomograft gradient >10 mmHg one year after procedure was revealed.

Conclusions: Autograft dilatation has been identified more often in patients who underwent Ross procedure above seven years of age but it has not been associated with increased autograft valve insufficiency. Homograft oversizing and age of recipient are not important factors for pulmonary stenosis after Ross operation. Echocardiographic transhomograft gradient more than 10 mmHg in early follow-up might predict occurrence of stenosis.
C6-6
LOW BIRTH WEIGHT AS A RISK FACTOR OF CARDIAC SURGERY IN INFANTS WITH CONGENITAL HEART FAILURE: A RETROSPECTIVE STUDY
P. Kazmierczak¹, J. Moli², P. Jarosik¹, J. Dobrowolski¹, M. Kopal¹, W. Pietrzykowski¹, M. Moli¹, J. Moli¹
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Objective: Previous reports have suggested that prematurity and low birth weight are risk factors for definitive surgical intervention in congenital cardiac malformations. A retrospective study was undertaken to evaluate early and mid-term results in infants with congenital heart defects, weighing <2500 g, who underwent cardiac surgery other than patent ductus arteriosus closure.

Methods: From January 2000 to December 2008, 79 patients underwent surgical treatment of congenital heart anomalies at our institution. Surgery included a complete correction in 38 patients and a palliative procedure in 41. Mean age at operation was 29.4 days (7 day-160 days). Mean weight was 2265 g (1200 g–2500 g). Seventy children were born prematurely. 40.5% of neonates were ventilated preoperatively. Heart defects included mainly: coarctation of the aorta (17), transposition of the great arteries (15), hypoplastic left heart syndrome (12), tetralogy of Fallot (8), ventricular septal defect (5), double-outlet right ventricle (5), pulmonary atresia (5), truncus arteriosus (4). Thirty neonates underwent cardiac surgery necessitating extracorporeal circulation. Deep hypothermia with circulatory arrest was used in 13.

Results: Early surgical mortality was 21.5%: seven neonates died after definitive repair (18.6%) and ten after palliation (24.4%). Overall (early and late) survival was 67.1% (76.3% after correction and 58.5% after palliation). Postoperative morbidity occurred in 42 patients (53%). Mainly: pneumonia, low cardiac output. Neurological complications occurred in seven patients. Nine neonates required surgical or invasive cardiological interventions. Clinical state of the patient before the operation, type of the operation and use of deep hypothermia with circulatory arrest influenced higher mortality and morbidity.

Conclusions: Surgery for congenital heart disease can be performed in low weight critically ill infants with reduced, but acceptable early and mid-term survival.

C6-7
SURGICAL TREATMENT OF MULTIPLE VENTRICULAR SEPTAL DEFECTS IN INFANTS AND CHILDREN
Bakoulev Research Center for Cardiovascular Surgery, Moscow, Russian Federation

Objective: The management of infants and small children with multiple ventricular septal defects (mVSDs) remains controversial, particularly in cases associated with complex congenital cardiac lesions. We reviewed our experience with surgical correction of these cardiac anomalies in order to reveal the optimal surgical approach.

Methods: From 2002 to July 2008, 382 patients with mVSDs underwent surgery. Among them 169 (44%) had major associated anomalies including transposition of the great arteries, double-outlet right ventricle, tetralogy of Fallot, atrioventricular septal defect, insufficiency of mitral and tricuspid valves, coarctation of aorta. Mean age at repair was 3.5 (range 3.7–15) kg. Two hundred and eighty-five cases associated with complex congenital cardiac lesions. We reviewed our experience with surgical correction of these cardiac anomalies in order to reveal the optimal surgical approach.

Results: Hospital mortality after radical correction was 9.1% regardless of the number of treatment stages. Fourteen patients died after palliative procedures (4.8% at palliative stage). Analysis of immediate results allowed to find risk factors for primary correction of mVSDs in children of 1-3 years of age: 1) the size of pulmonary arteries (Nakata index >200 mm²/m²), 2) index of left ventricle end-diastolic volume (>35 ml/m²), 3) level of arterial hypoxemia (<70%) and/or presence of cyanotic spells, 4) concomitant abnormalities and 5) major coronary arteries crossing the right ventricular outflow tract. Based upon these risk factors new tactics of treatment of patients with mVSD during the first years of life was developed. Application of these tactics in 2005-2008 allowed for significant improvement of immediate results: in 82 consecutive cases the rate of primary repairs increased from 41.7% to 76.8% (P=0.001) with simultaneous decrease of hospital mortality from 9.1% to 1.2% (P<0.001).

Conclusions: The large spectrum of different forms of tetralogy of Fallot and wide distribution of patients of all ages do not allow to consider that “golden standard” in treatment of these patients to be present in our days. However, the relevance of this problem and the results of research performed in this direction gave us hope that this search will be successful.

C6-8
TREATMENT OF PATIENTS WITH TETRALOGY OF FALLOT. DOES ‘GOLDEN STANDARD’ EXIST NOW?
S. Prasolov, M. Zelenikin
Bakoulev Research Center for Cardiovascular Surgery, Moscow, Russian Federation

Objective: To find universal tactics of treatment of tetralogy of Fallot (TOF) acceptable for all patients with this congenital malformation.

Methods: Treatment results of 512 patients aged 1-3 years with TOF followed during the period from January, 1991 till December, 2000, were retrospectively analyzed. Radical correction was performed in 396 cases (77.3%), palliative procedures - in 116 (22.7%). One hundred and sixty-five patients (41.7%) out of 396 underwent primary correction, staged repair was done in 231 (58.3%) cases.

Results: Hospital mortality after radical correction was 9.1% regardless the number of treatment stages. Fourteen patients died after palliative procedures (4.8% at palliative stage). Analysis of immediate results allowed to find risk factors for primary correction of TOF for children of 1-3 years of age: 1) the size of pulmonary arteries (Nakata index >200 mm²/m²), 2) index of left ventricle end-diastolic volume (>35 ml/m²), 3) level of arterial hypoxemia (<70%) and/or presence of cyanotic spells, 4) concomitant abnormalities and 5) major coronary arteries crossing the right ventricular outflow tract. Based upon these risk factors new tactics of treatment of patients with TOF during the first years of life was developed. Application of these tactics in 2005-2008 allowed for significant improvement of immediate results: in 82 consecutive cases the rate of primary repairs increased from 41.7% to 76.8% (P=0.001) with simultaneous decrease of hospital mortality from 9.1% to 1.2% (P<0.001).
C7.2
HUMAN CARDIAC STEM CELLS ARE PRESENT IN A SEVERELY DAMAGED, ISCHEMIC MYOCARDIUM
M.O. Zembala1, P. Wilczek2, T. Cichon3, R. Smolareczyk3, J. Sliwka1, A. Sokoł1, S. Szala1, M. Zembala1
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Objective: Functional restoration of the damaged heart presents a formidable challenge and developing strategies for treatment and prevention of ischemic heart failure remains of outmost priority. Cells capable of self-renewal and bearing the potential of plasticity have recently been proven to reside in the myocardium. These specific cardiac stem/progenitor cells (CSCs/CPCs) are multipotent and clonogenic, giving rise to cardiomyocytes, smooth muscle cells and endothelial cells both in vivo and in vitro. The aim of this study was to assess pool of CSC/CPCs present in severely damaged, ischemic human heart excised from patients undergoing cardiac transplantation.

Methods: Myocardial tissue samples were taken from the explanted hearts (right atrium, left atrium, left ventricular apex) under sterile conditions, immediately the heart had been removed from the recipient. Tissue samples were then minced and cultured in IMDM medium (standard conditions 5% CO2 at 37 °C). Culture medium was changed every 2–3 days. After the cells had grown to confluence they were detached by gentle enzymatic digestion and reseeded for expansions on fibronectin coated dishes. After the expansion cardiosphere forming cells were cultured on the PoliD-lisyne coated dishes, reseeded for expansions on fibronectin coated dishes.

Results: Aortic valve resection was successful in all cases and nearly all leaflets (2.5±0.4) with a weight of 0.22±0.12 g were cut. Aortic valve area increased significantly (0.3±0.1 cm² vs. 1.1±0.2 cm², P<0.001) with a mean cutting time of 49.7±15.0 s. Mean lateral leaflet rim within the annulus was 3.2±3.2 mm. Cutting precision revealed a median deviation of the cutting ring from the desired position of 1.3±0.6 mm (Y-axis) and 1.4±0.5 mm (X-axis). Median center deviation of the cutting ring was 2.6±0.8 mm.

Conclusions: The present study clearly confirmed ability of an accelerated cutting of stenotic aortic valve by the aortic valve resecting tool. Nearly all leaflets were cut and a small rim was left within the annulus, hence providing an ideal ‘landing zone’ for the new prosthesis. Nevertheless, the aortic valve resection tool should be enhanced by adding a centering mechanism, thus achieving a more precise cutting process in order to avoid aortic wall damage.

C7.3
IMPACT OF ANTIHYPOLIPID ANTIBODIES ON TRANSIENT NEUROLOGICAL COMPLICATIONS FOLLOWING HYPOTHERMIC CIRCULATORY ARREST FOR PULMONARY ENDARTERECTOMY
S. Nicolardi, P. Totaro, M. Morsolini, M. Paris, G. Silvaggio, C. Monterosso, A.M. D’Armini, M. Viganò
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Objective: Antiphospholipid (a-PL) antibodies (especially IgG isotype) have been associated with a variety of neurological manifestations, due to thrombotic mechanism and direct reactivity against nervous tissues. The impact of a-PL antibodies were investigated on postoperative neurological complications following pulmonary endarterectomy (PEA).

Methods: From April 1994 to October 2008, out of 204 PEsAs performed at our Center, 183 patients were prospectively screened for a-PL antibodies. According to IgG title, patients were divided in two groups: a-PL(+), with a title >10 U/ml; and a-PL(-) with a title <10 U/ml. Early outcomes were compared between two groups.

Results: IgG a-PL title >10 U/ml was present in 28 (13.7%) patients. Preoperative parameters were homogeneous between two groups except age which was significantly lower in a-PL(+) group compared to a-PL(-) group (42±16 and 52±16 years old, respectively, P<0.001). Intermittent hypothermic circulatory arrest was used in all cases with no differences between two groups regarding total arrest time (46±28 and 42±28 min for a-PL(+) and a-PL(-), respectively, P=0.4) and numbers of arrest (3.3±2 and 2.2±2 for a-PL(+) and a-PL(-), respectively, P=0.7). Postoperative early and late mortality was not different between two groups. Incidence of transient neurological complications, however, was significantly different (25% and 12% for a-PL(+) and a-PL(-), respectively, P=0.04). No other differences in postoperative outcomes were shown.

Conclusions: Presence of IgG isotype a-PL antibodies significantly influences postoperative incidence of transient neurological complications following pulmonary endarterectomy. An accurate monitoring during hypothermic circulatory arrest period seems therefore, mandatory in a-PL(+) patients.

C7.4
INFLUENCE OF RESTRICTIVE MITRAL ANNULOPLASTY ON GEOMETRY OF LV AND SUBVALVULAR APPARATUS: MRI BASED STUDY
P. Janusiewicz1, M.A. Deja 1, K. Gruszczynska 2, J. Biernat 3, K.S. Golba 3, J. Baron2, S. Wos1
1II Department Cardiac Surgery of Medical University of Silesia, Katowice, Poland; 2Department Radiology of Medical University of Silesia, Katowice, Poland; 3Department Cardiology of Medical University of Silesia, Katowice, Poland

Objective: The aim of this study was to assess MV and subvalvular apparatus geometric changes after surgical treatment of mitral regurgitation (MR) in patients suffering from ischemic cardiomyopathy.

Methods: Nine patients with coronary artery disease, severe mitral insufficiency (MR as percentage of LAarea 35±13%) and poor LVEF (<35%) underwent CABG (3.9±0.3 grafts/patient) and concomitant restrictive mitral annuloplasty (Duran Ring 25). All patients underwent ECG-gated cine-MRI before and four months after the operation. Short axis, two-chamber and four-chamber views were used to measure among others: MVarea and diameter of mitral annulus, distance between saddlehorn of mitral annulus and apex of posteromedial papillary muscle (PM) tips distance from mitral valve, PM tips and bases distance, mitral annulus area.

Results: Postoperative ECHO showed that in all cases annuloplasty of MV was successful (none or trace MR). On MRI ESD (5.9±1.3 cm vs. 5.2±1.3 cm; P<0.02) and EDD (6.8±1.3 cm vs. 6.3±1.1 cm; P=0.04) were smaller after the operation than before. After annuloplasty both MV area (systole: 7.5±1.9 cm² vs. 5.0±1.0 cm²; P<0.003; diastole: 9.7±2.1 cm² vs. 5.5±1.0 cm²; P<0.001) and anteroposterior diameter of mitral annulus (systole: 4.1±0.4 cm vs. 2.7±0.3 cm; P<0.001; diastole: 4.2±0.4 cm vs. 2.8±0.3 cm; P<0.001) were significantly reduced. After surgery length of coaptation increased (0.5±0.1 cm vs. 0.7±0.1 cm; P=0.009) and tenting area decreased (2.5±0.6 cm² vs. 1.4±0.4 cm²; P=0.002). Annulloplasty decreased systolic distance between saddlehorn of mitral annulus and apex of posteroval PM (3.0±1.0 cm vs. 2.5±0.7 cm; P=0.02) while it did not influence distance of anterolateral PM apex from saddlehorn (2.5±0.7 cm vs. 2.3±0.6 cm; P=0.4), Operation did not change the distance between both papillary muscles (3.7±0.8 cm vs. 3.6±0.8 cm; P=0.6 and 3.7±0.9 vs. 3.5±0.6 cm; P=0.1) and bases, respectively. Angle between long axis of posterior leaflet of MV and bases, respectively, increased significantly (0.3±0.1 cm² vs. 1.1±0.2 cm², P<0.001) with a mean cutting time of 49.7±15.0 s. Mean lateral leaflet rim within the annulus was 3.2±3.2 mm. Cutting precision revealed a median deviation of the cutting ring from the desired position of 1.3±0.6 mm (Y-axis) and 1.4±0.5 mm (X-axis). Median center deviation of the cutting ring was 2.6±0.8 mm.

Conclusions: Severely damaged, ischemic human heart still contains pool of undifferentiated cells able to mature into cardiac tissue. However, quantity of these cells may be insufficient for successful auto-repair to occur.
and annulus plane considerably increased after surgical treatment (35±6 vs. 49±11; P=0.004) while angles between both PMs and annulus plane did not change significantly (73±13 vs. 76±6; P=0.4 for anterior PM, 80±12 vs. 82±10; P=0.7 for posterior PM). In long axis view length of the LV before and after annuloplasty did not differ significantly (9.8±0.9 cm vs. 9.4±1.1 cm; P=0.2). Systolic sphericity index of LV tended to decrease (0.59±0.09 vs. 0.52±0.1; P=0.055).

Conclusions: Restrictive mitral anuloplasty with concomitant CABBG is effective procedure in patients with ischemic cardiomyopathy leading to competency of MV and reverse remodeling of LV. It brings postero medial PM anteriorly with concomitant posterior pull on posterior mural leaflet.

C7-5
ANALYSIS OF BIOMECHANICAL PROPERTIES OF INTERATRIUM SEPTUM AFTER ASD REPAIR BY DIFFERENT TECHNIQUES
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SPSMA named after I.I. Mechnikov, Saint-Petersburg, Russian Federation

Objective: There are many techniques for central ASD repair. While relapses may be concerned to absents of investigation of biomechanical properties of septum in choice of operation. Still no any published articles devoted to investigation of biomechanical properties after atrial septum plastic by various techniques.

Methods: Tension and deforming status of atrial septum after ASD repair were investigated by means of math modeling. The base of for math analysis - tensile Mesus epsurs and dislocation epurs in case of repair by autopericardium, synthetic material with different sizes: direct contact of septum defect and material (1st group), above 150% of defect margin (2nd group), above 200% of defect margin (3 group), above 250% of defect margin (4 group) and endovascular ‘Amplatzer septal occcluder’ (ASO).

Results: The maximal tension in case of autopericardium plastic was found in 1st group 2.42×10⁴ Pa, in two group 2.077×10⁴ Pa, 3rd group 2.053×10⁴ Pa, and in 4th group 2.074×10⁴ Pa. Maximum dislocation in one group 3.78 mm, in 2nd group 3.16 mm, 3rd group 3.42 mm, and in four group 3.45 mm. So the bigger size of patch for ASD the lower tension and dislocation. For synthetic material we get following results - maximum tension of device itself 1×10⁴ Pa and maximum dislocation 0.4 mm.

Conclusions: The larger the size of patch to the size of defect the lower tension and dislocation occurred, this fact leads to relapse of ASD. In case of ASO application tension and displacement were the lowers.

C7-6
BRAIN ACTIVITY CHANGES IN AORTIC ANEURYSM AND ACUTE AORTA DISSECTION OPERATIONS ASSESSED BY COMPRESSED SPECTRAL ARRAY
T.K. Urbanowicz, J. Tomczyk, E. Camacho, M. Jemielity
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Objective: The aim of the study was not only to describe brain bioactivity changes during elective operations of the aorta aneurysms and emergency operations of the acute aortic dissection by compressed spectral array (CSA) but also postoperative cognitive function assessment.

Methods: There were 62 patients enrolled into study divided into two groups. There were 45 patients in group 1 in mean age of 54.2±15.4 years, diagnosed with ascending aorta aneurysm, who underwent elective operations in moderate hypothermia. There were 17 patients in group 2 in age of 60.2±8.6 years with acute aortic dissection, who underwent emergency operations in deep hypothermia circulatory arrest (DHCA). During operation bioactivity of brain was monitored by compressed spectral array. Preoperatively and postoperatively cognitive function was evaluated.

Results: There was one death in group 2. In group 1 CSA revealed lowering of total power of brain bioactivity from 0.27±0.18 nW and 0.27±0.17 nW to 0.05±0.12 nW and 0.04±0.11 nW during CPB in left and right hemisphere, respectively. In the group 2 the lowest activity was observed in the left 0.01±0.05 nW and right 0.01±0.03 nW hemisphere during DHCA. The brain activity within frequency range of 0.5-4 Hz was lowered during CPB in group 1 to 61.4±13.9% and 63.6±10.8% in left and right hemisphere, respectively. In group 2 brain activity between 0.5-4 Hz was lowered during DHCA to 24.7±26.7% and 26.1±29.3%. In group 1 the increase in brain bioactivity between 4-8 Hz was observed and decrease between 0.5-4 Hz was noted. In group 2 in 13 (75.4%) patients electrocerebral silence during deep hypothermia was observed. In group 1 there was no difference in the results of preoperative and postoperative Folstein scale (27.6±1.8 points vs. 26.7±7.8 points; ns) in contrary to group 2 results (26.9±1.7 points vs. 22.0±1.7 points; P<0.001). The results of trial making test-A and trial making test-B were worse postoperatively in both groups.

Conclusions: During operation in mild hypothermia the total brain bioactivity lowers at last five-times. The increase in the brain bioactivity within 4-8 Hz, and decrease within frequency range 0.5-4 Hz during operation in mild hypothermia was observed. The electrocerebral silence occurs in 75% of patient during DHCA. The cognitive functions are significantly worse after operation with the use of DHCA. Aortic cross-clamping time is an important factor influencing on the postoperative cognitive function.

C7-7
SUBXIPHOID PERICARDIOCARDIOSCOPY POSITIONING OF PACEMAKER LEADS AND SUBSEQUENT FOUR CHAMBER STIMULATION
Department of Cardiovascular and Thoracic Surgery, University Hospital RWTH Aachen, Aachen, Germany

Objective: Pericardioscopy has been used almost exclusively for diagnostic means. We assessed the feasibility of entering the pericardial cavity endoscopically and the possibility of reaching all four heart chambers for subsequent pacemaker lead placement and stimulation of the autonomous nervous system in an animal model.

Methods: Rigid and flexible endoscopes (Storz®) were used for placement of small calibre Screw-in Pacing Leads (4-7 Fr, Medtronic®). Five pigs (80 kg) were anaesthetised and a 15 mm subxiphoid incision performed. The pericardium was opened and entered under endoscopic vision. Four electrodes were placed epimyocardially via the endoscope. A fifth electrode was placed into the parasympathetic hotspot. Hemodynamic measurements, 12-lead ECG and pacing measurements were carried out. Fluoroscopy was only used for documentation of lead position.

Results: Endoscopy allowed safe and fast entrance into pericardium. Identification of all four heart chambers and subsequent endoscopic lead placement was possible without any major hemodynamic and rhythmical complications. Rigid endoscopy endorsed superior stability at the working site. Active fixation of the electrode using the screw was fast and reproducible; penetration of the epicardium seemed sometimes incomplete. Reduction of heart frequency was achieved by stimulating the Parasympathetic. Following electrophysiological parameters were obtained:

<table>
<thead>
<tr>
<th>LV</th>
<th>RV</th>
<th>LA</th>
<th>RA</th>
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</thead>
<tbody>
<tr>
<td>Amplitude [mV]</td>
<td>17.3 (±4.9)</td>
<td>11.7 (±5.1)</td>
<td>4.2 (±3.0)</td>
</tr>
<tr>
<td>Impedance [Ω]</td>
<td>615 (±231)</td>
<td>928 (±344)</td>
<td>638 (±227)</td>
</tr>
<tr>
<td>Threshold [V]</td>
<td>1.9 (±2.1)</td>
<td>2.0 (±2.5)</td>
<td>1.8 (±1.1)</td>
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Position and pacing characteristics of the electrodes were stable after 120 min. Post mortem examination revealed proper position of the leads, but a fibrinous coating in the pericardial space.

Conclusions: Subxiphoid pericardioscopy lead placement is feasible and safe. It permits optimal lead positioning without fluoroscopy. Therefore, this method allows precise and optimal left ventricular lead placement for CRT. Our minimally-invasive approach allows visualisation and intervention potential of all intrapericardial structures.

C7-8
TRAINING SURGEONS TO ESTABLISH A ROBOTICALLY ASSISTED TOTALLY ENDOSCOPIC CORONARY SURGERY PROGRAM
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Objective: Since 1st introduction totally endoscopic coronary surgery (TECAB) was standardized during the past decade. In addition younger surgeons needed to be trained in robotically assisted cardiac surgery. Methods: In 44 out of 239 robotically assisted (da Vinci®) telemanipulator, Intuitive Inc., Sunnyvale, CA) coronary operations parts of the procedure were performed by two surgeons trained in endoscopic cardiac surgery. The distinct parts of the TECAB procedure were: LIMA/RIMA preparation, Lpectomy, pericardiotomy, IMA to LAD anastomatic suturing.
5th Vascular Scientific Session - Cerebrovascular Insufficiency 2
May 1, 2009, 2nd Congress Day
17:00-18:30

V5-1
5 YEARS FOLLOW-UP AFTER CAROTID ENDARTERECTOMY - DO PATIENTS WITH CONTRALATERAL INTERNAL CAROTID ARTERY OCCLUSION BELONG TO A HIGH RISK GROUP?

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Department of Cardiac and Vascular Surgery, ACK-Szpital AMG, Gdansk, Pomorskie, Poland

Objective: Study objective was to evaluate the influence of contralateral carotid artery occlusion on long-term results of carotid endarterectomy.

Methods: Long-term (5 years) results of CEA performed in our Department in year 2002 and 2003 were analyzed. Indication for surgery was a symptomatic as well as an asymptomatic internal carotid artery stenosis ≥70%. A total of 290 patients underwent 320 consecutive CEA procedures. Data were analyzed to determine the long-term morbidity and mortality overall in two groups - with patent contralateral internal carotid artery (Cpat) vs. group with occlusion of contralateral internal carotid artery (Coc).

Methods: Large series about CEA, published in the last years, show a trend to mending CEA as the treatment of choice for suitable carotid artery stenosis. Does not support a widespread change in clinical practice away from recommending CEA as the treatment of choice for suitable carotid artery stenosis.

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Objective: Carotid artery stenting (CAS) presents some complications related to the anatomical difficulty of the case and to the operator's expertise. To our knowledge there is no agree among the different medical societies about the minimal requirements needed to assess a physician as an expert performer of CAS. We wanted to demonstrate, for the first time in medical literature, the effectiveness of a VR Simulator (Procedicus VIST®) in improving a group of physicians performing virtual CAS in two cases with different level of difficulty: a right bifurcation carotid stenosis in a I type aortic arch and a right internal carotid stenosis in a III type aortic arch.

Methods: We enrolled 38 physicians representing multiple specializations; each of them completed an anagraphe questionnaire and, on the current guidelines of the medical societies, we divided them into a group of expert CAS performers and a group of novice. All participants performed two procedures on the easy case (I type Arch) and two procedures on the difficult case (III type Arch). We collect data of performances using a checklist of procedural steps required for completion and a report of quantitative measures recorded by the machine.

Results: Eighty-nine percent in novice group ended the first procedure on I type arch with acceptable results, while 37% in the same group concluded the first procedure on III type arch (P=0.012). After training, 100% of physicians in novice group ended the easy case and 63% concluded the difficult case with acceptable results. One hundred percent of physicians in expert group ended all four procedures. After training some quantitative measures in I type arch case among novice group improved (total time: 24:06±5:54 vs. 30:21±7:05 min, P=0.012; fluoroscopy time: 14:05±5:54 vs. 18:20±6:17 min, P=0.036; time to gain vascular access to the CCA: 8:32±4:10 vs. 11:17±4:36 min, P=0.0299; time to insertion of EPD: 10:52±4:08 vs. 14:09±6:26 min, P=0.0085; stent placement accuracy: 2:1±1.58 vs. 5:16±4:44 mm, P=0.0016; total checklist score: 36:5±40/2±40 vs. 33:8±40±2±8,40/0, P=0.0002), but the simulator did not improve their performance in III type arch case. There was no improvement after training in expert group.

Conclusions: VR simulator shows a qualitative difference between performances in the 'easy' case and those in the 'difficult' case, most of all among novice group. We underline the necessity to uniform the minimal requirements needed to assess an expert performer of CAS, giving importance not only to the total number of procedures performed, but also to their level of difficulty.

V5-5

THE CRITICAL ROLE OF THE EXTERNAL CAROTID ARTERY IN CEREBRAL PERFUSION OF PATIENTS WITH TOTAL OCCLUSION OF THE INTERNAL CAROTID ARTERY

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Objective: The ipsilateral external carotid artery can potentially provide an important collateral pathway for cerebral blood flow in the presence of occlusion or severe stenosis of the internal carotid artery, recovering up to 15% of the middle cerebral arterial flow. The aim of the study is to elucidate the role of external carotid artery in cerebral flow of patients with total internal carotid artery occlusion.

Methods: Retrospective study of prospectively collected data of 139 patients with total ICA occlusions. Stenosis of the ipsilateral with the occlusion external carotid artery, and of the contralateral internal carotid artery, were evaluated by ultrasound. The patients were divided into symptomatic and asymptomatic and were categorized in four subgroups according to the stenosis rates: A) ipsilateral external carotid artery >75% and contralateral internal carotid artery <75%, B) ipsilateral external carotid artery >75% and contralateral internal carotid artery >75%, C) ipsilateral external carotid artery >75% and contralateral internal carotid artery <75%, D) ipsilateral external carotid artery >75% and contralateral internal carotid artery >75%. Results: Twenty-six (18.7%) patients were asymptomatic. The highest rate (42.3%) of asymptomatic patients was in Group A. Among patients with major strokes, the highest rate (63.3%) belonged in groups C and D where an internal carotid artery stenosis was >75% irrespectively of the contralateral internal carotid artery patency. Ipsilateral external carotid artery stenosis >75% proved to be an independent risk factor for symptom presentation (P<0.05).

Conclusions: Our study reveals the significant role of external carotid artery patency in cerebral flow in patients with internal carotid artery occlusion. Considering that modern carotid stenting techniques result in coverage of the external carotid artery origin, our results might be a further argument against routine carotid stenting.
stentosis. CEA is feasible on Parkinsonian and Dementia patients with quality life's improvement. Experimental studies the cerebral glia showed a plastic function in order to substitute neurons after a stroke, and is possible recovery neuron's functional unit with an appropriate cerebral blood flow. We evaluate the possibility to improve a cerebral stabilized deficit (like paralysis or apasia), when is present an ipsilateral chronic carotid occlusion using a transcervical thrombectomy with an open distal internal carotid (IC). Methods: From June 2005 to November 2008, 10 patients (6 males and 4 females) were subjected to recanalization of a chronic carotid occlusion to improve a post-stroke aphasia (6 patients), a controateral emiparalysis (1 patient) and ipsilateral visive deficit (3 patients). Preoperative evaluation was assseted with MR (all), of talmologist/neuroligic evaluation (all) and PET (one). After IC disobieteration thrombectomy, we performed three PTFE bypass, six eversion endarterectomy, one ligature of IC plus EC angioplasty. Intraoperative, we controlled stump pressure, selective angiography end ecocolorodoppler. Postoperative we watched the arterial pressure and administered LMWH (enoxaparine 6000 UI every 12 h).

Results: 5/6 patients had a significant improvement or complete recovery of aphasia; in 3/3 patients we had decisive recovery of visive function; in 1/1 we had good improvement of paralysis with subsequent self-efficiency; in one case we failed disobliteration because a rupture of the artery with distal dissection (10%). No perioperative neurological morbidity and mortality. During follow-up we had an early thrombosis of one PTFE bypass and a late thrombosis of one PTFE bypass with return of symptoms (apasia) (22%); 3/10 (30%) had atypical convulsion. In 7/10 (70%) we had a full improvement of symptoms (median follow-up of 33 months: 41-1); 3/10 (30%) had a return of pathologic symptoms and 1/10 (10%) dead because of myocardial infarction.

Conclusions: Chronic carotid occlusion is not a non-operative 'dogma'. Actually we can operate patients with contralateral open IC, established cerebral lesion with possibility of recovery, when the ipsilateral distal IC is open, and without contralateral laryngeal cord paralysis. This treatment seems effectiveness in 70% of the patients without adjunctive risk.

during this period we observed nine cases of endoleaks (25.7%), one patient needed endovascular secondary procedure (2.8%) and three surgical secondary procedure (8.5%) crossover bypass. AAA-related mortality was 2.8% (1 patient), while non AAA-related mortality was 11.4% (4 patients).

Conclusions: Elective EVAR seems a safe, and effective procedure in patients older than 80 years. Age alone should not preclude patients for being offered endovascular aneurysm repair. Our study supports that EVAR could be considered the preferred approach to AAA repair for properly, upon anatomic criteria-selected octogenarian patients. Longer follow-up will be necessary to determine the incidence of the observed late type II endoleaks.

V6-2 IMAGING OF ABDOMINAL AORTIC ANEURYSM DISSERTIBILITY USING ECG GATED COMPUTER TOMOGRAPHY (CT), EVALUATION OF INFLAMMATORY REACTION IN THE ANEURYSMATIC WALL USING POSTINJETION EMISSION COMPUTER TOMOGRAPHY (PET CT)

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Objective: It is well known that abdominal aortic aneurysm (AAA) can rupture even with diameter <5 cm, on the other hand some AAA bigger than 7 cm can be stationary. Is it possible to recognize which aneurysm is more prone to rupture? One of the options is to observe distensibility of aneurysm wall within the pulse wave or to observe the inflammatory process in aeurysmotic wall using PET CT.

Methods: In our University Hospital we performed ECG gated computer tomography in ten patients with AAA of different diameters. We have used 64-row multidetector CT with nominal collimation 0.6 mm. We observed distensibility of different parts of aorta (above AAA, in the middle of AAA) within the pulse wave. We performed also PET CT in ten patients with AAA, we looked for inflammatory reaction in aeurysmotic wall.

Results: In four patients we have found a typical high distensibility (big difference between systolic and diastolic diameter of AAA) of wall of AAA. It does not depend upon the diameter of AAA. Our opinion is that this higher distensibility can mean higher probability of aneurysm rupture. In two patients we have found atypical inflammatory reaction in the wall of AAA. We conclude that this method can change little bit our point of view on indication of AAA therapy. Some AAA smaller than 5 cm with higher distensibility or positive fading in PET CT should be treated (open repair or endovascular procedure) to avoid the rupture.

V6-3 THERAPEUTIC ALTERNATIVES IN TREATMENT OF VISCERAL ARTERY ANEURYSMS

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Objective: Visceral artery aneurysms (VAAs) may be treated either surgically or interventionally, e.g. with coil embolization or stents. As visceral artery aneurysms are rare and require proper diagnosis and adequate management, the purpose of this study was to review the indication for treating VAAs and analyzes outcome.

Methods: At the University Hospital of Regensburg, 105 patients with visceral and renal artery aneurysms were diagnosed between April 1995 and December 2008: 67 splenic, 10 hepatic, 8 gastro/pancreaticoduodenal, 5 superior/inferior mesenteric, 14 renal aneurysms and 1 patient with multiple VAAs. In 76 patients conservative treatment and surveillance without any intervention were carried out. Eighteen patients underwent open aneurysm repair (in 1 case due to rupture) and 11 patients were treated interventionally (8 symptomatic aneurysms/ruptures). In surgical cases resection of the aneurysm with or without bypass and 22 stent grafts were performed. Interventions included coil embolization with or without stenting. We reviewed medical records for clinical presentation and aneurysm characteristics. Treatment methods and outcome were retrospectively analyzed.

Results: The median age of all treated patients (n=29) with VAAs was 53 years (19 male, 10 female). Patients, which presented with pseudoaneurysms or bleeding (which was in the majority of the cases associated with pancreatitis) were significantly younger than patients presenting with atherosclerotic aneurysms (44 vs. 53 years, P=0.05). True aneurysms and elective cases were more likely to be treated by open surgery (n=16) or stent grafts (n=2) whereas pseudoaneurysms/bleedings were preferably treated by catheter coil embolization (n=11) and uncovered stents (n=3). So, in seven of eight cases immediate bleeding control could be achieved. Overall technical success rate of the endovascular treatment of aneurysms was 91% (10/11). One patient had to be converted to surgery because of hemodynamic instability. In totally, there were 38% (11/29) major procedure-related complications: 28% (5/18) in surgically treated patients and 55% (6/11) after interventions. Three spleenectomies, 1 nephrectomy and 1 small bowel resection had to be carried out. Further, 3 partial renal infarcts, 1 splenic malperfusion and 2 partial liver malperfections were observed.

Conclusions: The morphology of the aneurysm and the symptoms determine the treatment option. The findings on CTA, angiography or MRA influence the final decision on therapeutic strategy. Coiling allows immediate bleeding control in emergency but is associated with a higher incidence of organ malperfusion.

V6-4 NEW HYBRID PROCEDURE FOR MANAGEMENT OF CERVELL PARAGANGLIOMAS

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Objective: Cervical paragangliomas are high vascularized, uncommon neoplasms arising from the neural crest. When those tumors are discovered, surgical excision is recommended. Historically, however, high morbidity and mortality were high with exeresis. Recent advances have reduced operative mortality associated with those tumors, but morbidity associated with resection has remained high in many series. Preoperative embolization decreases morbidity associated with CBT resection, although its use has been controversial because of potential for procedure-related stroke. We report a new approach to preoperative vascular exclusion of cervical paragangliomas. This technique deserves further consideration as a reasonable alternative to conventional embolization.

Methods: Two patients: one carotid body tumor (Shamblin class III) and one vagal body tumor (>5 cm diameter) in Jehovah’s witness were preoperative evaluated with Anglo-CT-scan and carotid angiogram. Preoperative genetic evaluation has been performed. The first step was to performed a vascular exclusion of the mass with covered stents (Jostent; ABBOTT) placed in the external carotid artery to reduce blood supply. The next day surgery has been performed and the mass was excised.

Results: This endovascular procedures resulted in exclusion of multiple feeding branches of the tumor, with preservation of most of the major branches of the external carotid artery. The patients tolerated the procedures well, without complication. The reduction in blood supply of the mass facilitated surgical resection with intraoperative blood loss estimated <100 ml. Postoperative reversible slight disfonia was noted in the patient with vagal body tumor.

Conclusions: As for embolization, vascular exclusion with covered stents resulted in reduced intraoperative blood loss but it offers some advantages as to prevent incomplete occlusion of the vessel and theoretically, small nutrient branches that may not be apparent on angiograms are more likely to be excluded with a covered stent. In addition the risk of stroke seems to be abolished with this technique, as far it avoid the use of coils or intra-arterial gel foam, which can flow inadvertently into the internal carotid artery and lead to stroke. Experience with this technique is still at the very beginning, and further study should be performed but results of first experiences seems to be promised. In our report this approach permits to markedly reduced the intraoperative bleeding and to facilitate paranganglioma cervical mass resection. Covered stents could be a valid and safer alternative to embolization.
Methods: From January 2006 to December 2008, 35 patients with femoral-popliteal arterial occlusive disease underwent 36 SFA revascularization with an endovascular ePTFE/nitinol endograft. In the same period, 44 patients underwent 45 SFA revascularization with femoral-popliteal above-knee PTFE bypass (23). The second group of patients was used as a comparative group. Associated procedures (PTA of the tibial arteries and/or common femoral and profundus femoral artery endarterectomy) were performed in 16 limbs in the endovascular group (EG) and in ten in the surgical group (SG). Duplex scan and clinical examination were performed at 1, 6, 12 and 24 months, during follow-up.

Results: Statistical analysis showed that the two groups were comparable in terms of risk factors, demographic characteristics and clinical presentation; there was a statistical difference on the anatomic characteristics of the lesions: in the EG 8 limbs were classified TASC A, 12 TASC B, 15 TASC C, 1 TASC D; in the SG 3 TASC A, 7 TASC B, 32 TASC C, 3 TASC D (P=0.020). Primary patency rate was 88.89%, 75%, 62.5% in the EG and 95.56%, 91.18%, 87.5% in the SG at 1, 12 and 24 months of follow-up, respectively. Secondary patency rate was 91.67%, 75%, 62.5% in the EG and 100%, 100%, 97.78% in the SG at 1, 12 and 24 months of follow-up, respectively. The difference was statistically significant. The two groups differ also for limb salvage rate (91.67% and 100% at 6 and 12 months in the EG vs. 100% in the SG both at 6 and 12 months of follow-up, respectively). The difference was statistically significant. The two groups also differ for limb salvage rate (91.67% and 100% at 6 and 12 months in the EG vs. 100% in the SG both at 6 and 12 months of follow-up (P=0.048; P=0.010); no differences were found in mortality rate and length of hospital stay (9.44 days in the EG; 8.38 days in the SG) (P=0.451).

Conclusions: Our results on the endovascular treatment of the occlusive disease of the SFA are similar to published reports. Results are in our centre inferior to the bypass group. Based on these preliminary study the endovascular treatment with a ePTFE/nitinol self-expanding stent graft should not be indicated for all patients. More cases and a longer follow-up are necessary to identify the demographic, clinical or anatomical characteristics that can predict a better follow-up.

V6-6
OPHTHALMOCLOGIC FINDINGS AND OCULAR BLOOD FLOW IN PATIENTS WITH PATHOLOGICAL TORTUOSITY OF THE INTERNAL CAROTID ARTERY
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Objective: To study ocular symptoms and ocular blood flow in patients with pathological tortuosity of the internal carotid arteries (ICA). Methods: One hundred and twenty-seven patients with pathological tortuosity of the ICA and 35 control healthy subjects were examined. The average age was 52.3±2.4 years. Color Doppler imaging (CDI), spectral Doppler analysis, and 3D-mode sonography were used for estimation of blood-flow of the following vessels: ophthalmic artery (OA), central retinal artery (CRA), posterior ciliary artery (PCA) and carotid arteries. Results: Ophthalmologic findings were characterised different pathological changes of our fundus; hypertension angiopathy of retinal vessels (82.6%), age-related macular degeneration (82%) and chronic ischemic optic neuropathy (14%). Ultrasound examination of eyes showed significant decreases in the peak systolic velocity and end-diastolic velocity in OA (P<0.05), in CRA (P<0.001), and in short PCA (P<0.01), as compared to the control group. The worsening of blood flow parameters in orbital vessels and changes of the ICA were evidence of deficit circulation of the retina and optic nerve. Conclusions: Modern ultrasound methods showed significant changes of ocular blood flow in cases of pathological tortuosity of the ICA. Altered circulation in CRA, in PCA, and pathological tortuosity of the ICA may be involved in the pathogenesis of the pathological changes of ocular fundus.

V6-7
A MULTICENTER PRELIMINARY EXPERIENCE FOR ENDOVASCULAR AORTIC REPAIR WITH THE ENDURANT STENT-GRAFT
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Objective: Aim of this study was to assess the safety and the effectiveness in the early period of a new generation device (Endurant stent-graft) developed to treat patients suffering from abdominal aortic aneurysms (AAAs) with hostile aortoiliac anatomy. Methods: From November 2007 to December 2008, 45 patients suffering from an AAA were treated with an Endurant stent-graft in three European vascular departments. Data from all interventions were prospectively collected in a dedicated database. Intraoperative, early (≤30 days) and 6-month results in terms of technical success, clinical success, morbidity and mortality were assessed.

Results: Patients were predominantly males (44 cases, 97.8%), with a mean age of 72.7 years (range 51-86). Thirty-eight (84.4%) patients had a hostile anatomy of the proximal neck; major iliac calcifications were present in 41 patients (91.1%). Intraoperative technical and clinical success was achieved in all the cases. At the completion angiography a type II endoleak was detected in seven patients (15.5%); in five patients (11.1%) an iliac branch stenosis was diagnosed and successfully treated. The mean hospital stay was 4.9 days (range 3-8); during this period, an increase of creatinine serum value, an atrial fibrillation and a false aneurysm in the groin were recorded. Seven patients (15.5%) had a postimplantation syndrome. At discharge, CT-scan examination showed one type I endoleak (2.2%) and the persistence of two type II endoleaks. Moreover, at 30 days, a graft thrombosis was diagnosed (2.2%) and successfully treated. The 30-day overall technical success and clinical success rates were 97.7% and 95.6%, respectively. During the follow-up (mean duration 6 months; range 3-14) there were no death, rupture, conversion, migration or reintervention. CT-scan examinations showed the persistence of the endoleaks diagnosed at discharge. Estimated absences of type I/III endoleak and reintervention at six months were both of 95.6%.

Conclusions: Our preliminary experience shows that Endurant stent-graft appears to be effective in endovascular exclusion (EVAR) of AAAs in patients with hostile aortoiliac anatomy. The special features of the graft allow a broader group of patients to be treated with EVAR, even if further studies are needed to evaluate long-term results of this new device.

V6-8
EVALUATION OF INTERNAL CAROTID ARTERY STENOSIS ACCORDING TO NASCT CRITERIA USING DIGITAL 3D ULTRASOUND METHODS
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Objective: Pre-surgical evaluation of the extend of internal carotid artery stenosis (ICA) according to NASCCT criteria using digital 3D ultrasound methods. Methods: In a prospective study, 25 patients (54-88 years, mean 75) with neurological deficits and the diagnosis of ICA stenosis underwent pre-surgical ultrasound examination using Colour Doppler Sonography (CCDS), 3D CCS, 3D Power Doppler, 3D B-flow, contrast enhanced 3D B-Flow, and CTA/MRA. Ultrasound was performed by an experienced examiner with a multifrequency linear transducer (6-9 MHz, Logiq 9, GE). After bolus injection of 2.4 ml Sonovue i.v., low mechanical index technique (MI <0.16) was used for contrast enhanced 3D B-Flow. As reference method for evaluation of the extend of ICA stenosis each patient underwent CTA (16 line multislice CT, Sensation 16, Siemens) and/or MRA (1, 5 T, Symphony Siemens). Indication for surgery (carotid EEA) followed the NASCCT criteria. All images were interpreted and evaluated independently by two observers with three measurements of the distal degree of the ICA stenosis. For assessment of the extend of stenosis a scale rate per 10% from 50% to 99% was used. Statistical analysis was performed using Spearman Correlation and dependent Wilcoxon Test with a significance threshold of P<0.05.

Results: Assessment of the extend of ICA stenosis during surgery and in CTA/MRA displayed a range from 60% to 99% (mean 75%). Non-significant differences were found only for 3D B-flow with and without contrast medium (P<0.05). Correlation with surgical evaluation of the extend of ICA stenosis using kappa analysis was 0.7 for 3D B-Flow, 0.60 for 3D CCS and 0.63 for 3D Power Doppler. When circularly calcifications were present, contrast enhanced flow detection of 3D B-flow proved to be useful. Visualisation of intrastenotic variances of high grade and filiform stenosis (80-99%) without blooming and reverberation artefacts was possible only with 3D B-flow. This facilitates the detection of the morphology plaques ulceru as an embolic source.

Conclusions: In correlation to surgery and CTA/MRA, a valid evaluation of the extend and morphology of ICA stenosis using 3D B-Flow, with and without contrast medium, is possible.
V6-9
DISTRICT BASED ABDOMINAL AORTIC ANEURYSM SCREENING IN MEN AGED 65 YEARS AND MORE

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Objective: Screening of abdominal aortic aneurysm (AAA) was set up in Genoa (Italy) for the early diagnosis of high-risk subjects, such as males aged 65 years or more.

Methods: All the male subjects aged 65 years or older living in a specific urban area (7024 people) were contacted for the study. We screened 1667 men, who have accepted to the screening between March 2007 and February 2008. Ultrasound examination of the abdominal aorta and iliac arteries was carried out on each subject and all data related to concomitant diseases were collected. Subjects without AAA were discharged, while those with an AAA of 3.0-3.9 cm diameter would be followed-up once a year, while those with a 4.0-4.9 cm AAA would be followed-up every six months, and people with a 5.0 cm or greater AAA would be treated.

Results: We found 226 (13.6%) patients with abdominal aortoilic aneurysms. Within this group, 55 (24.3%) patients presented isolated AAA, among whom 37 (67.3%) had a 3.0-3.9 cm aortic diameter, 9 (16.4%) had a 4.0-4.9 cm aortic diameter, and 9 (16.4%) had a 5 cm diameter. Moreover, 57 (25.2%) isolated iliac aneurysms were found, 30 involving right iliac segments and 27 involving left iliac segments, while bilateral isolated iliac aneurysmal disease was found in 87 cases. Twenty-seven subjects (11.9%) had an abdominal aortic aneurysm with involvement of iliac arteries. There were no statistical differences between the subgroup with AAA and the subgroup without AAA with regards concomitant diseases (heart disease, diabetes, family history of cardiovascular disease, pulmonary insufficiency, smoking, hypertension, dyslipidemia), except for chronic renal insufficiency (significantly more frequent in subjects with AAA). Eleven patients (4.9%) with an AAA, or an aneurysm involving iliac arteries, underwent at our institution successful treatment included open surgery in eight and endovascular repair in three. No postoperative mortality occurred.

Conclusions: Our study demonstrates a high incidence of AAA compared to the literature data and this it seems do be justified by the elderly mean age of our population and for absence of a cut-off in these patients (we examined patients over 65-year-old without any limit of age). By AAA screening is possible to raise public awareness about AAA and stimulate further epidemiological research, to coordinate a support network for patients with AAA and their families, and to evaluate the impact of endovascular repair. This research could be taken into consideration as a pilot study for further epidemiological studies.

V6-10
WHY THROMBOTIC COMPLICATIONS OCCUR EARLY AFTER TECHNICALLY SUCCESSFUL VASCULAR RECONSTRUCTIONS?

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Objective: In patients with severe lower limb ischemia the coagulation and fibrinolytic systems have been found to be activated preoperatively. The aim of the study was to evaluate the changes of plasma level of selected coagulation and fibrinolysis factors: thrombin-antithrombin complex (TAT), fibrinogen, antithrombin, factor XIII, α2-antiplasmin, protein S and C, before, during and after surgical revascularization and the analysis of the impact of coexisting diseases on the coagulation during the procedure.

Methods: Fifty patients with RAO/D, in Fontaine stages IIb to IV (29 men and 21 women; median age 65.8 years, ASA II/III) undergoing elective surgical revascularization were studied. Two groups of patients were compared: 20 undergoing reconstruction on aorto-femoral and 30 on femoro-popliteal level. Blood samples were collected five times: 24 h before the operation, intraoperatively after artery exposure, after heparin administration and clamping, after reperfusion and 24 h postoperatively.

Results: Elevated values of TAT (10.5 g/l±7.1) and fibrinogen (5.64 g/dl±1.97) were found before the operation. The elevated value of TAT increased intraoperatively (25.1 g/l±4.58; P<0.001), whereas the fibrinogen level decreased (3.52 g/dl±1.4; P<0.001). The significant correlations between fibrinogen level and presence of diabetes (P=0.034) and elevated level of LDL (P=0.04) were found. Also the correlation between intraoperative increase of TAT and the duration of surgery was noticed. No significant differences between two analysed groups were observed.

Conclusions: The results indicate the activation of coagulation and prothrombotic state in the patients with advanced arteriosclerosis. During the surgical revascularisation permanent increase of activation of blood coagulation was observed. This activation depends on duration of the procedure and maintains increased 24 h after the operation. Our findings may explain the unexpected occurrence of thrombotic complications in early period after technically successful vascular reconstructions.

Cardiac Posters 2 - Congenital, Valve and Cardiovascular
May 1, 2009, 2nd Congress Day
17:00-18:30

CP-37
ANOMALOUS ORIGIN OF THE LEFT PULMONARY ARTERY FROM THE ASCENDING AORTA: 15-YEARS SURGICAL EXPERIENCE

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Objective: The anomalous origin of the left pulmonary artery (AOLPA) from the ascending aorta occurs rarely - only 90 cases are encountered in medical literature. World experience with surgical treatment of AOLPA from the ascending aorta comprises at most 50 operated patients with hospital mortality of 17.5%. To describe the experience with complete repair of congenital heart defects (CHD) with AOLPA from the ascending aorta.

Methods: From January 1993 to January 2008 complete repair of AOLPA from the ascending aorta associated with other CHD was performed in six patients. Median age was 4.3 years (6 months-16 years), three patients were male. Anomalous left pulmonary artery (LPA) arose from the left lateral or posterolateral surface of the ascending aorta in all cases. The average diameter of anomalous LPA was 9.5 mm. The spectrum of CHD associated with AOLPA from the ascending aorta was as follows: TOF (n=4), DORV (TOF type, n=2), mitral insufficiency (n=1), ASD (n=1), anomalous epicardial course of the conus branch of the right coronary artery (n=1). Prior to complete repair mean values of systolic pressure in the left PA and right ventricular - right PA systolic pressure gradient were 90 and 50 mmHg, respectively. Arterial oxygen saturation before complete repair was 78.7±9.9%. Complete repair of AOLPA consisted of the following stages: (1) dissection of the AOLPA from the ascending aorta with subsequent defect aortic wall closure (suturing, n=4; patch insertion, n=2); (2) reimplantation of the left PA into the pulmonary trunk (n=4) or implantation of a conduit between the right ventricle and the left PA (n=2). The correction of TOF and DORV with transannular reconstruction of the RV outflow tract and the PA was performed in three patients (in 2 cases a monocusp patch was used). In a patient with anomalous epicardial course of the conus branch of the right coronary artery a valveless conduit was used.

Results: Hospital mortality was absent. After complete repair systolic pressure in the RV, the right PA and the ratio of systolic pressures in the right and left ventricles were: 56.8±8.6 mmHg, 43.6±19.0 mmHg, 0.64±0.14, respectively. One female patient underwent successful mitral valve replacement for progressive mitral failure 17 months after complete repair of TOF with AOLPA.

Conclusions: Complete repair of CHD with AOLPA from the ascending aorta is a multi-component surgical intervention and is characterized by good immediate results.

CP-38
PULMONARY VALVE REPLACEMENT AFTER RECONSTRUCTION OF RIGHT VENTRICULAR OUTFLOW TRACT: MID-TERM RESULTS

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Objective: Progressive pulmonary valve regurgitation resulted in right ventricular failure and an important problem faced by patients subjected to the reconstruction of right ventricular outflow tract. Indications for pulmonary valve replacement, proper timing for this
intervention and long-term benefits remain disputable. The aim of the study is to analyze the experience with the pulmonary valve replacement performed in patients with right ventricular dysfunction developed after complete repair of congenital heart defects with pulmonary stenosis.

Methods: During the years 2002-2008, pulmonary valve was replaced in 12 patients subjected to complete repair of congenital heart defect with pulmonary stenosis (mainly tetralogy of Fallot and double outlet right ventricle). The time period between the primary repair and pulmonary valve replacement ranged from 4 years to 33 years (mean, 10.1±4.7 years). The mean age of patients at the moment of repeat surgical intervention was 20.2±7.6 years. The diagnosis of the pulmonary valve insufficiency was confirmed by echocardiography and angiography. In 10 cases, pulmonary valve was replaced by stentless xenopericardial valve conduit. ‘Bioglis’ biological valve made of hepatic Glisson’s capsule was implanted in two patients. Mean follow-up period after pulmonary valve replacement was 2.3 years.

Results: Prior to pulmonary valve replacement, all patients demonstrated congestive heart failure resistant to conservative therapy as well as arrhythmias. The severity of pulmonary regurgitation reached 3+ to 4+. Right ventricular ejection fraction was as low as 44±14%. Mean right ventricular end diastolic volume to body surface ratio was as high as 155 ml/m². Concomitant lesions included residual VSD (n=6), tricuspid insufficiency 3+ to 4+ (n=5), mitral insufficiency (n=1), residual ASD (n=1). All patients survived pulmonary valve replacement. At the follow-up examination, 90% patients were in NYHA I-II functional class. In 10 cases, systolic pulmonary valve was replaced by stentless xenopericardial valve conduit, ‘Bioglis’ biological valve made of hepatic Glisson’s capsule was implanted in two patients. Mean follow-up period after pulmonary valve replacement was 2.3 years.

Conclusions: Indications for pulmonary valve replacement in patients after the reconstruction of right ventricular outflow tract include right ventricular enlargement and dysfunction. Pulmonary valve replacement with stentless xenopericardial valved conduits or biological valves are accompanied by good mid-term results.

CP-39 MITRAL VALVE REOPERATIONS IN DOWN AND NON-DOWN PATIENTS
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Objective: The hemodynamically significant left atrioventricular valve regurgitation (LAVVR) after atrioventricular septal defect (AVSD) repair is still associated with high incidence of reoperation. A reparative approach rather than valve replacement is preferable. The aim of the study was to determine the outcomes of LAVVR surgery in patients with Down’s syndrome (DS) and non-DS patients.

Methods: Between 1991 and 2008, 283 infants with AVSD, 1-11 months of age (mean 4.3) were operated on, using two patch technique. DS was diagnosed in 215 patients (76%).

Results: Thirty patients underwent first reoperation for LAVVR at the mean age of 3.4 months. Among these patients in six DS was diagnosed. First reoperation was required more frequently in non-DS patients (7/68±10.3%) than in DS patients (6/215±2.8%, P<0.05). Reoperations were performed 1 week to 8 months in non-DS patients (mean 3 months) and 1 to 36 months in DS patients (mean 19.5 months, P=0.05) after the primary operation. In all patients mitral valve plasty was performed, including single sutures of clefts of mitral leaflets (with Alfieri plasty in one non-DS patient). Subsequent second reoperation for recurrent regurgitation i.e. valve replacement was performed in five patients. Definitively higher incidence of mitral valve replacement was stated in non-DS patients (7/68±5.4%) than in DS patients (2/215±0.9%, P=0.05). Overall hospital mortality (DS and non-DS patients) after AVSD repair was 8.8%. In the first month of age it was 25%, in fourth to sixth month of age 13.4% and above sixth month of age 8.9%. The lowest hospital mortality we stated in patients operated in second (4.6%) and third month of age (5.9%). After first reoperation there was one hospital death in non-DS patient who underwent previously operation for oesophageal atresia. There were four hospital deaths after second reoperation i.e. valve replacement, three in non-DS patients and one in DS patient. Definitive hospital mortality in patients reoperated for LAVVR was 17% in non-DS patients (4/75±5.3%) compared to DS patients (1/6±17%, P=0.05). The remaining reoperated patients had mild or moderate LAVVR and were clinically asymptomatic.

Conclusions: We recommend the period between second and third month of age for operation of AVSD for DS and non-DS patients. We observed significantly higher incidence of LAVVR reoperation in non-DS patients and higher risk for complications after mitral valve replacement.

CP-40 BIODEGRADABLE ANNULOPLASTY RINGS AS A CONSOLIDATION OF TRICUSPID VALVE REPAIR
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Methods: Twenty-eight patients were operated on between 1 June 2005 and 13 December 2007 in a single centre for severe insufficiency of tricuspid valve. Median age was 12.3 years (0.2-18.5). Children were divided into three groups: Ebstein’s anomaly – 11 patients, tetralogy of Fallot – 9 patients, other miscellaneous defects – 8 patients. Reconstruction method of the tricuspid valve depended on encountered pathology and was followed by implantation of biodegradable ring (sizes: 16-34 mm). The Carpenter’s type of repair was utilized in case of children with Ebstein’s anomaly. All children with Fallot’s tetralogy had an homograft implanted in pulmonary position before tricuspid valve reconstruction. Sixty percent of children had a redo surgery (including all patients with tetralogy of Fallot). All patients were followed-up by clinical examination and trans-thoracic echocardiography in a regular manner (preoperatively, at discharge, 1, 6 months, 1, 2, and 3 years) by single echocardiographer.

Results: Median ECC time was 100 min (37-154 min), aortic cross-clamp time was 44 min (0-94 min). One early death was observed (Ebstein anomaly type D, due to postoperative low cardiac output syndrome). Median follow-up time (100% complete) was 423 days (9-1225 days). There were no reoperations. No late deaths occurred. Median tricuspid valve insufficiency fraction decreased significantly (P<0.05) from 35% (55-93%) to 11% (0-29%) at discharge and remained constant throughout the whole follow-up (no significant changes over time). At each follow-up time point the insufficiency fraction was significantly smaller than preoperative value. The last examination of all patients showed the median insufficiency fraction of 10% (0-30%). No significant differences were found between groups of children. There was no correlation between patient age and the final insufficiency fraction. Medians of maximal and mean pressure gradients through the tricuspid valve measured as postoperatively 5.2 mmHg (3-15 mmHg) and 2.8 mmHg (0.8-8.7 mmHg) respectively and did not change significantly over time. The median right ventricle diastolic diameter decreased significantly (P=0.002) from 2.9 cm to 2.1 cm postoperatively and remained within an age norm. All patients were in class I of NYHA at the end of the study.

Conclusions: The implantation of biodegradable rings is safe. Ring implantation can be a time-saving procedure what is potentially reflected in acceptable CPB and aortic cross clamp times. Early and short-term results are satisfactory concerning tricuspid valve function and right ventricle diameter normalisation. These satisfactory results are maintained throughout three years follow-up period after the biodegradation of the ring.

CP-41 REPAIR OF PARTIAL ANOMALOUS PULMONARY VENOUS RETURN WITH INTACT ATRIUM SEPTUM AND PULMONARY VALVE INSUFFICIENCY IN ADULT WITH CONGENITALLY CORRECTED TGA (14 YEARS FOLLOW-UP RESULT)
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Objective: To present follow-up result of surgery for complex cardiac malformations in adult with congenitally corrected TGA.

Methods: The 27-year-old female presented with progressive congestive heart failure for last 6-8 month. Cardiac lesion was suggested during pregnancy when she was 26.5-year-old. The patient underwent Cesarean delivery and admitted to cardiac surgery unit. Routine exam (ECC, X-ray, Echocardiography) revealed: cardiomegally (CTR-68%), L-aorta, anomalous right pulmonary venous return with intact atrium septum and pulmonary valve insufficiency. Neither ASD, no VSD were visualized.
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Cath-Lab exam confirmed congenitally corrected TGA with visero-atrial situs solitus (Van Praagh type SLL), anomalous right pulmonary venous return (intracardiac form), intact IAS and IVS and severe pulmonary valve insufficiency. NYHA class IV.

Results: Surgery (F. Abdullayev) included: excision of the part of IAS and deflection of anomalous right pulmonary venous return to the left atrium via artificially created ASD, using tunnel patch. Pulmonary valve exposure through transverse aortotomy revealed three-leaflet valve with intact cusps and giant pulmonary annular ectasia. Pulmonary artery valve competence was restored by three commissural sutures. Water-exam confirmed good coaptation of all leaflets. Aortic X-clamping time 77 min. Hypothermia-27C. Myocardial protection was ensured by intermittent antegrade cooled blood cardioplegia and topical cooling with ice slush. The patient made an uneventful recovery. Fourteen years later she is doing well, free from any complaints. CTR 50%. NYHA class I. Gave birth to two children.

Conclusions: 1. The majority of associated cardiac anomalies could be successfully repaired in adults with congenitally corrected TGA despite of age and gravity of patients. 2. Comisural plastic procedure could be option of choice in repair of pulmonary valve insufficiency caused by annular ectasia with normal morphology of the cusps.

CP-42
PSYCHOSOCIAL STATUS OF ADULTS WITH CONGENITAL HEART DISEASE. ONE CENTER OBSERVATION
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Objective: The aim of the study is the assessment of psychosocial status of adults who survived after operations which were performed due to congenital heart disease (CHD).

Methods: Two thousand eight hundred and fifty-three patients (F4123, M1160 mean age 32±8.3 years) with various types of CHD were operated between July 1987 and July 2005 in the Institute of Cardiology in Warsaw, Poland. One thousand four hundred and thirty patients were randomly selected. They were asked to complete: specially constructed survey form, a questionnaire to assess quality of life - the Nottingham Health Profile (NHP), the Acceptance of Illness Scale (AIS) and the Satisfaction with Life Scale (SWLS). Seven hundred and fifty patients completed and returned the surveys. Seven hundred and thirty-one were at adult age (≥18 years) and they were analysed.

Results: This group consisted of 731 patients (mean age 42±15.4 years, F436 (mean age 44±15.4 years), M295 (mean age 39±15.2 years). Mean follow-up was 10±4.7 years. Frequency of the cardiac diagnosis was: atrial septal defect - 36.7%, partial atrioventricular septal defect - 5.9%, ventricular septal defect (VSD) - 6.6%, reoperation of VSD - 1.8%, Aortic Stenosis - 6.6%, tetralogy of Fallot (ToF) - 4.8%, reoperation of ToF - 2.9%, other 44.7%. We found that 66.8% of the patients were married and 63% have children. The rate of recurrence of CHD in children was 9.1%. When mother had CHD the recurrence in off springs was 10.4%, when father 6.6%. 21.8% of respondents achieved high level of education. 41% of patients were employed but 65.7% received a disability pension and 39% reported negative effect of CHD on employability. The majority responded as being in good general health. 67.6% of patients were in class I or II of the NYHA. Psychological assessment showed low self-esteem in one of six NHP scale's (energy – 28.5±3.6, ≥). AIS score was 28.4±10.9 points (good) and SWLS score was 18.2±8.34 points (middle). Conclusions: The majority of our patients presented good functioning. They started a family and became parents. The rate of recurrence of CHD in children is greater compared with other reports. Patients presented good education level. Nevertheless, a lot of them have a problems with employability and they receive disability pension. They need continuous education about sexuality and the recurrence of CHD in off springs. They need to be aware of job discrimination and need to be helped in how to demand their legal rights in this field.

CP-43
AORTIC INSUFFICIENCY AFTER TOTAL REPAIR OF TETRALOGY OF FALLOT: CAUSES AND SURGICAL STRATEGY
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Objective: The aim of the study is to reveal the causes of aortic insufficiency after total repair of tetralogy of Fallot and to present results of its surgical correction.

Methods: During the years 2000-2008, moderate to severe aortic insufficiency was revealed in 10 patients previously subjected to total repair of tetralogy of Fallot. The age of patients ranged from 6 to 51 years (mean, 17.3±7.3 years). The severity of aortic regurgitation was assessed by 2D echocardiography and color Doppler examination. All patients underwent aortic valve replacement or its plastic reconstruction. The time interval between the primary repair and the repeat surgical intervention ranged from 4 years to 10 years (mean, 6.7±1.7 years).

Results: The severity of late aortic regurgitation revealed by echocardiographic examination ranged from 3+ to 4+. The most common cause of aortic insufficiency was perforation of the right coronary cusp due to improper fixation of VSD patch (n=6). Other causes of aortic insufficiency included perforation of noncoronary cusp, dilatation of the fibrous annulus, cusp prolapse or aplasia. The diameter of aortic fibrous annulus ranged from 21 mm to 46 mm (mean, 31.5±6.0 mm), and exceeded normal values by 41%. Signs of infective endocarditis were present in five patients. In the majority of cases, plastic reconstruction of the aortic valve was impossible due to its severe anatomic alterations. Nine patients underwent aortic valve replacement with a mechanical prosthesis. The diameter of implanted prostheses ranged from 21 mm to 27 mm (mean, 23.6±1.3 mm). In one patient with satisfactory cusp coaptation, suturing of two perforations of the right coronary cusp was performed. In all cases, early postoperative period was smooth, and patients were discharged from the hospital on 10th-14th day after surgery.

Conclusions: The most frequent cause of aortic insufficiency after total repair of tetralogy of Fallot is improper fixation of VSD patch resulted in trauma and deformation of aortic cusp as well as postoperative infective endocarditis. Aortic insufficiency can be also a result of isolated dilatation of fibrous annulus or congenital cusp aplasia. Aortic insufficiency is successfully curable by the valve replacement. In selected cases, plastic reconstruction of the aortic valve might be performed.

CP-44
SURGICAL REPAIR OF EBSTEIN'S ANOMALY WITH UTILIZING KALANGOS BIODEGRADABLE TRICUSPID RING
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Objective: Ebstein's anomaly is a rare congenital cardiac disease initially described by Wilhelm Ebstein in 1866. The anatomical and functional abnormalities cause important tricuspid regurgitation that results in right atrial and right ventricular dilatation and atrial and ventricular arrhythmias.

Methods: A 21-year-old female was admitted to our hospital with exertional dyspnea. Echocardiographic evaluation revealed Ebstein's anomaly with a severe tricuspid regurgitation, right atrial dilatation, a mild mitral regurgitation. She was operated.

Results: A tricuspid valvar structure consistent with the Ebstein anomaly and an atrialized ventricular segment was explored. Atrialized segment was suspended with pledgeted U-sutures. Patent foramen ovale, which was revealed perioperatively, was closed primarily. After tricuspid valve repair, a 34 mm Kalangos Biodegradable Tricuspid Ring was inserted for annuloplasty. The postoperative course was uneventful with successful correction.

Conclusions: Echocardiography is a useful diagnostic tool in detecting Ebstein’s anomaly. Surgical repair of Ebstein’s anomaly improves functional class and exercise tolerance, eliminates right-to-left intracardiac shunting (if present), and reduces the incidence of supraventricular tachyarrhythmias. Patients have good long-term survival and functional outcomes after undergoing surgery for Ebstein anomaly.

CP-45
REPAIR OF THE COMMON ATRIOVENTRICULAR SEPTAL DEFECT WITH THE DIRECT SUTURE CLOSURE OF THE VENTRICULAR COMPONENT IN INFANTS
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Objective: To present the experience of the surgical correction of the common atrioventricular septal defect (CAVSD) with the direct suture closure of the ventricular component in infants.

Methods: From 2000 to 2008, 14 patients underwent surgical correction of the CAVSD with the direct suture closure of the ventricular component in...
our center. The mean age at operation was 6.3±3 months (3.5-11), mean weight 5.87±1.24 kg (4.4-8.1). The average diameter of ventricular septal defect (VSD) was 7.3±2 mm, primary atrial septal defect (ASD) – 12.3±4 mm. The echocardiography showed moderate tricuspid regurgitation in 6 patients (43%), severe - 6 (43%), total - 2 (14%); moderate mitral regurgitation - 4 patients (29%), severe - 9 (64%), total - 1 (7%). There were four patients with secondary ASD and five with PFO. Indications for direct suture closure of the VSD were normal left ventricular volume and allow-

Results: Direct closure of the VSD was accompanied by patch closure of the ASD. The mean pump time was 68±20 min, cross-clamp time - 44±13 min. Postoperative echocardiography showed minimal mitral regurgitation in eight patients (57%), moderate in six (43%) and absence tricuspid regurgita-

Conclusions: Surgical correction of the CAVSD with the direct suture closure of the VSD in infants allows to decrease pump time, cross-clamp time and complications risk.

CP-46
ECTOPIA CORDIS: DEFINITION AND ESSENTIALS FOR SURVIVAL
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Objective: While several definitions of Ectopia Cordis have been proposed, one must correctly define the complete form as opposed to the partial form and then correctly classify the anatomical types which exist. Secondly, Survival depends on the prenatal diagnosis, existence of other congenital heart defects, immediate correction, and postoperative care.

Methods: A review of the literature including six infants in which the authors were involved results in a dogmatic approach to Ectopia Cordis. The essential factors for optimal success involve 1) Prenatal diagnosis of the ectopic heart including other intracardiac defects. 2) Immediate transfer of the infant preferably by Caesarian Section from the delivery room to the adjacent operating room thus avoiding initial infective processes. 3) Repair or palliation of concomitant intracardiac defects. 4) Immediate coverage of the heart with the infants own skin. 5) Careful postoperative intensive care.

Results: The authors present a series of patients which represent the complex forms of Ectopia Cordis. The only survivor at present in this series is an eight year old. His total repair resulted in the protocol as mentioned above with changes now in two conduits for the condition of double outlet right ventricle.

Conclusions: We present a classification of partial vs. total ectopia cordis above with changes now in two conduits for the condition of double outlet right ventricle.

CP-47
THE ROLE OF ECHOCARDIOGRAPHY PARAMETERS IN OPTIMAL MONITORING OF PATIENTS FOR TRANSCATHETER HEART VALVE IMPLANTATION PROCEDURES (THVI)
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Objective: Echocardiography is one of the most important instruments used for qualification and monitoring of high-risk patients with severe aortic stenosis (AS) for transapical and transfemoral valve implantation. Precise measurement of aortic valve annulus diameter (decisive for prosthesis size), severity and symmetry of calcifications, transvalvular gradients, LVOT narrowing because of LV hypertrophy, ejection fraction (EF) and value of AV area are detrimental values for valve designation. Parameters assessing correct valve position after implantation are valve area and degree of regurgitation (AR) after bal-

loon predilatation, effective orifice area (EOA) of implanted prostheses, cusps opening, gradient and degree of perivalvular leakage.

Methods: Using transthoracic and transoesophageal echocardiography (TTE and TEE) 6 THVI patients were analysed (5 females and 1 male) with mean age 78.16 years, BSA 1.72 m², logistic EuroSCORE 20.56% and STS score 18.7%. The mean preoperative EF was 50.5%, AV area: 0.68 cm², mean transvalvular gradient 65.9 mmHg and mean annulus diameter 22 mm in two patients with 20 mm we used 23 mm Edwards SAPIEN valves in four patients with annulus larger than 22 mm 26 mm balloon and valve).

Results: The intraoperative TEE revealed mean post balloon AV area exten-

sion over 0.28 cm² to 0.96 cm² (NS) with mild AR and without significant decrease of transvalvular gradients. After valve implantation mean prosthesis annulus relaxation using the 23 and 26 mm prostheses were 20 and 23 mm measured in long axis view of TTE and TEE echo. We observed only trivial perivalvular leakage in two patients. Mean gradient decreased to 12.5 mmHg (p<0.0001), EOA increased to 1.47 cm², (p=0.05) mean, EOA index of all our group was 0.836 cm²/m² (0.73 cm²/m² for 23 mm and 1.08 cm²/m² for 26 mm prostheses, respectively).

Conclusions: TTE and TEE examinations permit the very accurate monitoring of THVI procedures. Our echocardiography data has showed that despite of significant improvement of mean AVA and decreased transvalvular gradi-

ent, implanted valves expanded only to preoperatively measured annular diameter, what may result in moderate patient prosthesis mismatch (0.85-0.60 cm²/m²), which could influence on left ventricular function and mass reduction in the future. However, this hypothesis needs further clarifications. Transcatheter-based balloon dilatation of stenotic, severely concentric calcified aortic valve did not improve the sufficient AV opening in our material.

CP-48
A RARE CASE OF MITRAL VALVE INSUFFICIENCY DUE TO IDIOPATHIC SHORT CHORDAE OF THE MITRAL VALVE
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Objective: The idiopathic short chordae of the mitral valve is a rare situa-

tion resulting in significant mitral valve regurgitation. We present the case of a 26-year-old female with two children in which important mitral insuf-

ficiency due to short chordae of the mitral valve was discovered using the echocardiography.

Methods: No rheumatic etiology of the mitral valve regurgitation was discov-

ered. We operated the patient and we observed normal mitral valve leaflets with very short chordae tendineae and dilated annulus. First we tried to repair the mitral valve. We failed so we performed mitral valve replacement with a mechanical valve.

Results: We noted no postoperative complications. Conclusions: The idiopathic short chordae of the mitral valve is a rare situa-

tion resulting in mitral valve regurgitation. Its surgical therapy is mandatory when mitral valve insufficiency is significant.

CP-49
LONG-TERM SURVIVAL AND ECHOCARDIOGRAPHIC RESULTS IN PATIENTS WITH SUMIT CARBOMEDICS PROSTHETIC MITRAL VALVE
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Objective: Sumit Carbomedics prosthetic mitral valve had a very particular supra-annular design. It was retired from the market in 2002. The mid-term profile of patients with this prosthesis is unknown. The goal of the present study is to analyse the clinical and echocardiographic profile of patients with this prosthesis at a single Spanish institution.

Methods: From February 2000 to January 2002 a total of 60 patients with mitral valvulopathy (27 regurgitation, 4 stenosis, 29 both) were operated on and a Summit prosthetic valve was implanted. They constitute our study group. We have retrospectively analysed the preoperative risk factors, intraoperative findings, in-hospital and mid-term morbidity and mortality.

Results: Mean age was 62±11 years and 62% were female. The main eti-

ology of the valvulopathy was rheumatic (85%) and most of the patients were in functional class III-IV of the NYHA (86%). Left ventricular eje-

cution fraction was depressed in 15% and 90% had pulmonary hypertension. Surgery was multivalvar in 22 patients (18 aortic valve substitution and tricuspid valvuloplasty in 4) and in four patients CABG was simultaneously performed. The most frequent prosthesis diameters used were 27 (50%) and 29 mm (45%). Mean aortic clamping time was 80±30 min and time of extracorporeal circulation 101±38 min. Postoperative complica-

tions (major bleeding, renal failure, arrhythmia and respiratory infection) appeared in 30% of the patients. In-hospital mortality was 6%. There were no cases of neither early nor late-onset prosthetic valve endocarditis. In the follow-up echocardiogram, mean prosthetic valve effective area is
Objective: To determine the predictors of early and late mortality in patients with infective endocarditis (IE) after valve replacement surgery.

Methods: We studied retrospectively data of 172 IE patients over a period of 1998-2008 with mechanical valves prostheses only. The age varied from 22 to 65 (39.5±13.6). There were 21.51% of females and 87.5% males. Active IE was found in 50.58% of cases. Mean functional class NYHA was 3.23±0.59. Mean logistic EuroSCORE made up 3.91±0.59. Native valve IE was found in 160 (93.03%) and prosthetic IE in 12 (6.97%) cases. Single valve replacement was performed in 105 patients, including five cases of 2nd valve repair and seven reoperations. Multivalve replacement took place in 67 cases, including six cases of 3rd valve repair and five reoperations. Paravalvular and aortic root abscess was found in seven patients. Mean end-diastolic left ventricle size was 61.16±19.9 mm, mean end-systolic left ventricle size was 66.36±9.89 mm, mean left ventricle ejection fraction made up 52.5±9.27%. CPB average time was 131.2±9 min; global anoxia average time was 92±5.9 min.

Results: Mean mortality rate was 13.95% (24 patients). In-hospital death rate made up 6.39% (11 patients), early mortality rate (out-hospital death within a period up to one year) was 4.65% (8 patients); late mortality rate was 2.90% (5 patients). The cases of in-hospital death included: cardiopulmonary insufficiency (54.54%), rhythm disturbance (18.18%), postoperative bleeding (18.18%), acute insufficiency of cerebral circulation (9.1%). The early mortality profile includes cases of acute cardiovascular insufficiency and cardiopulmonary insufficiency - 25%, cases related to bleeding (ruptured aortic aneurysm) - 12.5%, fungal sepsis - 12.5%, sudden arrhythmic death - 37.5%, progressive heart failure - 12.5%. The late mortality profile includes cases related to: progressive heart failure - 60%, multiple organ failure - 20%, sudden arrhythmic death - 20%. Analysis of surgical outcomes revealed that the increased risk of mortality is associated with emergency surgery (due to the progressive strong heart failure), perioperative rhythm failure, multivalve impairment, dialysis-dependent renal failure, coronary artery disease, concomitant coronary artery bypass graft, and fungal sepsis.

Conclusions: The reported evidence of postoperative mortality predictors in infective endocarditis patients may be helpful for pre-surgical risk stratification.

Objective: Until recently, aortic stenosis (AS) has been considered as a passive process secondary to calcium deposit in the aortic valves. However, lately several authors have pointed out that risk factors associated with the development of calcified AS in the elderly are similar to those of coronary artery disease. Furthermore, some studies have demonstrated that degenerative AS shares histological findings with atherosclerotic plaques which have led to the suggestion that calcified aortic valve disease is a chronic inflammatory process similar to atherosclerosis. Nevertheless, exist discordant data with this theory and it is necessary to study this pathology. The aim of this study is to obtain the aortic stenosis valves proteomic profile and in addition, the identification of new biomarker diagnosis and prognosis and/or therapeutic target.

Methods: Aortic valves obtained from necropsies (control samples) or by surgery patients (AS) were homogenized in extraction protein buffer. Both samples were analyzed using 2D-DIGE and LC-MS/MS. Furthermore, AS and control leaflets were studied by immunohistochemical (IH) and Western blot (WB) analysis, using a panel of monoclonal antibodies specific for inflammatory and cytoskeletal/contractile proteins. The proteomic results were confirmed by WB and IH.

Results: Ten patients underwent aortic valve replacement due to severe stenosis with calcification of the leaflets, were compared with ten control valves obtained by necropsies. The result of 2D-DIGE analysis of the proteome of AS valves compared with control valves reveals the expression protein alteration in several proteins such as 27 Heat shockprotein, osteopontin, vimentin. To confirm the proteomic results several proteins were analyzed by Western blot and IH techniques. Furthermore, we have characterized the cellular composition of degenerative aortic stenotic valves by IH. The fibroa layer had a higher cellularity than spongiosa and ventricularis (elastic) and it was the principal layer which was damaged in the lesion.

Conclusions: In this work we have designed an experimental and reproducible methodology for proteomic analysis of valves. Proteomic 2-DE analysis of healthy aortic valves and valves with aortic stenosis was made feasible when CyDye DIGE Fluor minimal dyes was carried out and later using identification through liquid chromatography combined with mass spectrometry. In this study we have identified several proteins with different expression levels between both types of valves. Despite of good results obtained, it is necessary to continue this study to discover potential biomarkers of degenerative aortic stenosis in the near future.
CP-53  
A CASE OF PSEUDO-LOW LEFT VENTRICULAR EJECTION FRACTION IN MITRAL STENOSIS  
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Objectives: Since mitral stenosis does not create volume or pressure overload, the left ventricular function remains protected. In this case, a different type of progress was aimed to be presented.  

Methods: A 52-year-old male patient was admitted with complaints of dyspnea and palpitation. His ECG revealed atrial fibrillation. Echocardiographic investigation showed trivial mitral insufficiency, a severe mitral stenosis with a valvular surface area of 0.7 cm², left ventricular end-diastolic diameter (LVEDD) of 51 mm, left ventricular end-systolic diameter (LVESD) of 41 mm, global left ventricular ejection fraction of 30%, pulmonary arterial pressure of 80 mmHg, severe tricuspid regurgitation, mild aortic insufficiency and left atrial thrombus. It was thought that mitral stenosis should not have affected left ventricular contractility to this extent and coronary arteriography was performed. Coronary arteriography showed no coronary arterial lesion but confirmed the left ventricular ejection fraction as 30%. Left atrial thrombectomy, mitral valve replacement with 29 mm St. Jude mechanical prosthesis, tricuspid ring annuloplasty with 34 mm Kalangos ring were performed. Radiofrequency ablation for atrial fibrillation could not be performed since there was evident left atrial thrombus.  

Results: Control echocardiogram on 5th postoperative day revealed LVEDD as 57 mm, LVESD as 42 mm, pulmonary arterial pressure as 30 mmHg, mild tricuspid regurgitation and global LVEF as 53%.  

Conclusions: Ejection fraction as an indicator of left ventricular contractility also influences the prognosis. Acute rheumatic fever rarely may involve the myocardium. In this patient, LVEF has improved as a result of decreased preload during early postoperative period.

CP-54  
THE MITROFLOW BIOPROSTHESIS: CLINICAL AND HAEOMODYNAMIC EARLY OUTCOMES  
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Objective: We evaluate our early results with the Mitroflow pericardial valve.  

Methods: The study, which began in 2003 and ended in 2008 includes 131 who received a Mitroflow pericardial prosthesis to replace an aortic valve. The mean age of these patients was 76 and were in functional class II, 18.25% in III, 68.25% and 12.70% in IV. The follow-up, which was complete for all patients, had a mean duration of 2.4 years (44 days to 5.4 years), 318 patient/years.  

Results: Early mortality rates were 3.8%. Late mortality was 28 patients. Survival at 3.5 years was 68.6% (S.D.=0.05%). The linearized rate of major thromboembolism was 0.80% per patient-year; rate of major bleeding-events was 0.8% per patient-year. The rate of nonstructural dysfunction was 0.40% per patient-year. Rate of re-operation was 0.40%; rate of prostheses dysfunction was 0.40% per patient-year. Rate of endocarditis was 1.61%. Postoperative NYHA grade was I-II in 89.8%. Mean gradients (pressure/valve size) were 15 mmHg/19, 16 mmHg/21, 12 mmHg/23, 10 mmHg/25.  

Conclusions: The gradients and areas of this bioprosthesis are excellent. We detected no structural degeneration. Valve gradients and areas remained constant over the follow-up. The clinical and haemodynamics performance of the Mitroflow bioprosthesis was excellent throughout the follow-up.

CP-55  
BRAIN PROTECTION IN SURGICAL TREATMENT OF ACQUIRED VALVE DISEASES WITH NEUROLOGICAL DEFICITS  
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Objective: To present analysis of different methods of brain's protection during correction of acquired valve diseases in patients with previous neurological deficits.  

Methods: During 1 January 2000 to 01 August 2008, 2348 patients with pathology of isolated mitral valve (MV) and aortic valve (AV) were operated with CPB. The reasons of valve disease were: rheumatism, lipoidoses, atherosclerosis and others. Following methods of surgical treatment were used: MVR (n=2025), AVR (n=323). In the most cases myocardial protection was achieved with the use of ante-retrograde St. Thomas cardioplegia with addition of the blood (homemade) or in using only cooling blood cardioplegia. Previous brain damage with neurological deficits (cysts) were marked in 302 (12.9%) patients. There were 127 (42.1%) males, 175 (57.9%) females. Patients' age was 27-69 years (mean 53.1±13.2 years). NYHA class in all group were followings: II class - 3 (1.0%), III class - 67 (22.2%), IV class - 232 (76.8%) patients. This cagot we had divided on three groups: (group A) 51 patients were operated with using perfluorocarbon (perftoran) for brain protection only after cross-clamping of aorta in doses 200-300 ml, (group B) 13 patients operated with using perftoran for brain protection after beginning of operation during 30 min and always before CPB in the same doses, (group C) 87 patients were operated with using nimotop (50 ml during hole operation), (group D) 151 patients were operated without using any brain protection. In all group (n=302) CPB time was 98±18.6 min and cross-clamping 62.5±9.6. Ventilation support in ICU 7.4±2.4 h.  

Results: Hospital mortality was 2.3% (n=7/302), Respectively group A – 1.9% (n=1/51), group B – 0% (n=0/13), group C – 0.0% (n=0/87) group D – 4.0% (n=6/151). The reasons of deaths: heart failure (3), brain damage (2), pneumonia (2). Brain damage was marked only in group D (1.3% - 2/151). There were 7 (2.3%) temporary neurological events at the hospital period in all group (n=7/302) and all of them only in group D – 4.6% (n=7/151).  

Conclusions: Improved brain protection in patients with neurological deficits by using perftoran for better oxygenation (group A, B) and nimotop (group D) we had obtain better results and low risk in hospital period than in group D - without using brain support. The same results were marked for using perftoran at the beginning operation and after cross-clamping.

CP-56  
STENTLESS BIOPROSTHESIS – EARLY EXPERIENCE  
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Objective: This study aim was to investigate early and mid term clinical outcome after aortic and pulmonary valve replacement with stent less bioprosthesis: Medtronic Freestyle and Sorin Freedom.  

Methods: Between 2006 and 2008 a total of 24 patients were implanted with stentless bioprosthesis (20 Freestyle, 4 Freedom), for aortic position 23 patients and pulmonary position one patient, from which 10 patients with acute endocarditis and for two patients we performed an associated mitral procedure. Mean age was 67 (39-82). Twenty patients were NYHA III/IV. The surgical procedure used was a subcoronary technique in case of 21 patients and complete root replacement for the other three patients. Follow-up was two years in case of eight patients and one year for 10 patients.  

Results: The mean cardio-pulmonary bypass time was 110±15 min and aortic cross clamp time 80±15 min. Intraoperative mortality was 0%. At the early evaluation two patients were with aortic regurgitation I/II. After one year mean aortic ecocardiographic gradient was 17±5 mmHg and was improved compared to that at discharge. No significant aortic regurgitation occurred 1-2 years postoperative, one late endocarditis recurrence at two years postoperative.  

Conclusions: Use of the stentless bioprosthesis in aortic and pulmonary position could give well early and mid term results without specials intraoperative problems.

CP-57  
QUALITY OF LIFE AFTER MINIMALLY INVASIVE MITRAL VALVE REPAIR  
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Objective: Minimally invasive mitral valve repair represents an alternative to conventional, open surgery. The aim of this study was to assess quality of life (QOL) after endoscopic procedure in comparison with conventional operation for isolated mitral valve disease.
Methods: Thirty-four patients underwent minimally invasive mitral valve repair at our institutions between January 2007 and June 2008. Median preoperative functional class and degree of mitral regurgitation were 2 and 4, respectively. Carpenter-Edward annuloplasty ring and artificial chordae were used in all cases. Quality of life was assessed using the Short-Form 36 Health Survey Questionnaire (SF-36).

Results: There were no operative deaths and no perioperative complications in study group. No patient required concomitant intervention. Discharge time was 6.35±3.37 days. Comparison of preoperative and postoperative mean scores in the 34 patients from study group revealed an improvement in all dimensions of the SF-36 scale. All patients were satisfied with an aesthetically pleasing scar.

Conclusions: Minimally invasive mitral valve repair can be done safely with a high degree of patient satisfaction. The endoscopic procedure reduces operative stress and postoperative pain and accelerate postoperative recovery to a good quality of life.

CP-58 DIFFERENT SURGICAL STRATEGY IN TREATMENT OF ISCHEMIC MITRAL VALVE REGURGITATION

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Objective: Results of various types of mitral valve repair and midterm survival rates after surgical treatment of ischemic mitral insufficiency in addition to or without CABG was observed.

Methods: Using prospectively maintained database, patients with moderate to severe MR were divided continuously due to surgical strategy - 73 patients (30.1%) isolated CABG group (IsG) and 170 patients (69.9%) made up combined group (CG) in whom mitral valve reconstruction with different types of ring or flexible ring and band was performed. SPSS statistical program was used.

Results: Thirty days mortality rate was 5.7%. There are no difference in 1-year survival between groups (95.1% vs. 93.2%, P=0.05). In CG before operation indexes of EDV and ESV, local and global contractility, configuration of MV were impaired significantly in comparison with IsG. During follow-up we observed severe LV volume reduction only in CG, but their were still significantly larger than in IsG (EDV 85.2±25.1 vs. 64.3±19.8 ml/m²; ESV 53.2±20.5 vs. 35.6±13.4 ml/m²; P<0.05). The type of used annuloplasty did not influence recurrence of IMR in compare to rigid ring (OR and 95% CI for posterior pericardioc annuloplasty - 0.91 (0.20-2.91), P=0.89; for flexible undersized ring - 1.75 (0.38-8.11), P=0.47; for Geoform ring - 3.08 (0.53-13.82), P=0.17). Unfortunately IsG patients displayed more severe level of residual MR (OR and 95% CI 19.29 (6.3-58.6), P<0.001) and worse parameters of MV deformation (tenting area 1.87±0.46 vs. 1.5±0.6 cm², P=0.05).

Conclusions: The type of used annuloplasty used did not influence outcome. The risk of recurrence of MR on follow-up was related to severe postoperative mitral valve deformation. Patients after CABG only exposed less severe impairment of LV geometry but still have more severe level of residual MR. The influence of this occurrence will be in great interest in long-term follow-up.

CP-59 WHAT CAN I SPOIL PERFORMING MINIMALLY INVASIVE MITRAL VALVE SURGERY FROM RIGHT-SIDED MINITHORACOTOMY

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Objective: Since the introduction of minimally invasive approach for the mitral valve to the clinical practice in the last decade, this kind of approach became more or less routine for the isolated mitral valve surgery in many centers across Europe and US. In the presentation we want to approach became more or less routine for the isolated mitral valve surgery.

How to avoid or manage them. We conclude that even this relatively complicated operation could be performed safely especially after proper training in the experienced center.

CP-60 REPAIR OF MITRAL INSUFFICIENCY OF DYSTROPHIC, RHEUMATIC, OR MIXED ETIOLOGY WITH PTFE NEO-CHORDS

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Objective: In November, 2005 we introduced implantation of PTFE neo-chords for mitral insufficiency (IM) repair.

Methods: Since then, 52 IM repairs of non-isolated-ischemic etiology were performed. In 19 patients (36%), aged 37-73, 11 male, 8 female, with severe IM caused by prolapsed anterior or both leaflets and ring enlargement, artificial neo-chords and ring were implanted via median sternotomy with short skin incision. In 14 patients Duran elastic rings with chordal guide, and in five semi-rigid or rigid rings were used. In 12, from 1 to 4 neo-chords for anterior leaflet only, and in seven patients 4 to 7 chords for both leaflets were implanted. Final length of neo-chords was established after the ring had been implanted. Additional techniques were necessary to achieve good competency: closure of descending aortic papillary muscle defects – in 7, quadrantectomy of destroyed by endocarditis P2 – in 1, and short Alfieri stitch in commissural area - in one patient. Miscellaneous case required reimplantation of the ruptured head of postero-medial papillary muscle with buttressed neo-chord, simultaneously used for anchoring inferior part of prolapsed A2. The second neo-chord for superior aspect of A2, and SGB for RPL was necessary in this patient. Concomitant procedures were required: tricuspid annuloplasty in 11 patients (58%) on beating heart during reperfusion with rigid ring, or with Revueta method; AVR – in three patients; RF endocardial ablation in one; reduction plasty of LA – in one, and SGB aforementioned. TEE controls intraoperatively, and TTE before discharge, after six months, and every 12 months were performed. Oral anticoagulant was administered for three months. In 33 operated on in this period without prolapsed anterior cusp, ring implantation was adequate for repair, in eight with quadrantectomy of prolapsed P2 segment.

Results: In 18 patients very good result was achieved (efficacy 95%). In one with fibrotic cusps, conversion to MVR with sparing subvalvular apparatus was necessary. All but one patients are on sinus rhythm. Significant lowering of LV and LA dimensions were revealed in first postoperative week, and further during six months. There is no progress of any residual insufficiency.

Conclusions: Artificial neo-chords implantation enables caused by prolapsed anterior or both cusps IM repair, simultaneously conserving all coaptation area. It is suitable in more than 1/3 patients in our experience. Implantation of artificial ring is mandatory, however, in these cases would be insufficient for mitral repair as alone procedure. Additional and concomitant procedures, particularly tricuspid annuloplasty, are often required.

CP-61 AGGRESSIVE SURGICAL TREATMENT AND APPROPRIATE ANTIBIOTIC THERAPY CAN IMPROVE OUTCOME OF ACTIVE INFECTIVE LEFT-SIDE ENDOCARDITIS

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Objective: In this study we analyzed the data of patients suffering from active infective left-side endocarditis. As regular antibiotic regime showed no satisfying postoperative recovery we added a bactericidie antibiotic to improve outcome.

Methods: Between September 2006 and July 2007, 105 patients suffered from active infective endocarditis in our institution. We identified eight patients who could not be cured with regular intravenously admitted antibo
treatment (Vancomycin 2 g/d, Gentamicin 3 mg/kg/d and Rifampicin 900 mg/d). Therefore, Vancomycin was replaced by Daptomycin 6 mg/kg. The median age was 61 years (range 33-70 years) with a median logistic EuroSCORE of 68% (range 10-98%). Endocarditis involved the aortic valve in three, in four the mitral was involved and in one both valves. Five (62.5%) patients showed an abscess and in four (50%) patients this was the third surgery. Radical surgical debridment was performed. Patients were followed clinically, echocardiography and if needed multi-slice computed tomography.

Results: Follow-up was 100% completed. Aortic valve replacement was performed with a bioprosthesi in two and Ross procedure in other two patients. Mitral valve endocarditis was treated with a bioprosthesi in four. At the time Daptomycin was added to the antibiotic therapy, there was a significant decrease of the C-reactive protein seen within three days from 13.9±8.3 to 6.6±2.8 mg/dl (P=0.034). Leucocytes and procalcitonin also decreased, however not significant. Up to 12 months of postoperative follow-up there were no reinfections seen. Three complications occurred, one permanent pacemaker, one temporary right ventricular assist device was implanted and one suffered from deep surgical site infection which died.

Conclusions: Aggressive surgical treatment with appropriate antibiotic therapy can decrease mortality in high-risk active infective endocarditis patients.

CP-62
AORTIC VALVE REPLACEMENT COMBINED WITH CORONARY ARTERY BYPASS GRAFTING IN OCTOGENARIANS: PREDICTIVE FACTORS FOR OPERATIVE AND MID TERM RESULTS
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Objective: Aortic valve disease with concomitant coronary artery disease is increasingly common in octogenarians. Indications and results of the aortic valve replacement concomitant with bypass grafting are still debated in older patients because of high perioperative mortality.

Methods: Between January 2001 to June 2008, 127 combined aortic valve replacement (AVR) with concomitant coronary artery bypass grafting (CABG) were performed in patients older 80 years. The patients were studied retrospectively by collecting data from the hospital records.

Results: The mean age was 83±2.5 years, 86 were male. We analyzed the preoperative, intraoperative and postoperative risk factors for outcome. Preoperative factors. Low ejection fraction, chronic atrial fibrillation, NYHA III or IV, obesity, chronic renal failure, severe aortic regurgitation, three vessel disease, polivascularopathy were predictors of poor outcome. Intraoperative factors: clamping-time, extracorporeal circulation-time, incomplete revascularization were risk-factors for poor outcome. Postoperative factors: acute renal failure, long time ventilation, mediastinitis, neurological complication and postoperative infarction were risk factors for poor early and long-term results. The in-hospital mortality was 7.8% and the three-year follow-up showed a survival-rate of 73.3%.

Conclusions: AVR combined with CABG in octogenarians is a complex operation and postoperative management. A carefully evaluation of the preoperative risk factors is very important in term of the surgical indication. Afterwards in literature and in our experience the in-hospital mortality is still high over 6%. Moreover, surgery in “healthy” octogenarians may be performed with an acceptable risk. In the other patients we need further studies, may be randomized, to evaluate the better and safer strategy.

CP-63
SURGICAL TREATMENT OF ENDOCARDITIS
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Objective: Endocarditis represents a cardiovascular disease with high surgical mortality. Analysis of literature shows a range of outcomes and various determinants of early surgical mortality. We report the data of our series to show the determinants of early mortality (90 days postoperative).

Methods: This is a retrospective observational study. From January 2001 to September 2008, 31 patients affected by endocarditis underwent to a surgical treatment. Mean age was 55 years male; gender was predominant; 75% was native endocarditis and 25% prosthetic; fever (40%) was the most common symptom; congestive heart failure the most common indication for surgery (62.5%); preoperative embolization was 16% (all before diagnosis); vegetation were observed in 2/3 of patients; blood samples were positive in the 90% of cases; streptococcus was predominant pathogen, but in prosthetic endocarditis staphylococcus was the most frequent; 12% was emergent due to haemodynamic instability or uncontrolled sepsis; in 2/3 of cases, antibiotic therapy was administered for more than two weeks before operation.

Results: Early operative mortality (90 days) was 6% (2/31). One of the two patients dead had right heart endocarditis. In the left heart endocarditis we had 1 death (3%), a patient who needed emergent operation. Perioperative heart failure was 16%, acute respiratory and renal failure 10%, with complete recovery on discharge in almost all the cases; early recurrence 10%.

Conclusions: Small number of series is a limit, but we think that a complete antibiotic therapy for almost two weeks before operation is important to have good results. In our series no patient had embolization in the time between diagnosis and operation, but five had before diagnosis. Emergent operation and right side endocarditis were associated with early mortality.

CP-64
OUTCOME OF SIMULTANEOUS CAROTID AND CARDIAC SURGERY USING CARPOULMONARY BYPASS; OUR EXPERIENCE
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Objectives: Controversy continues about treatment of patients who require carotid endarterectomy and open heart surgery. The aim of this study is to evaluate our experience with patients who underwent simultaneous carotid endarterectomy and open heart surgery with cardiopulmonary bypass and moderate hypothermia.

Methods: From February 2003 to January 2009, 28 patients underwent simultaneous carotid endarterectomy and open heart surgery. Average age of the patients was 68 years; 16 of them (57.1%) were neurologically symptomatic, and 12 patients (43%) had bilateral carotid stenosis. All patients who underwent carotid endarterectomy had lumen diameter reduction of >90%, diagnosis was performed with ultrasound and angiography. Carotid endarterectomy was performed in conjunction with cardiopulmonary bypass with moderate hypothermia, hemodilution, and systemic heparinization. Intraluminal shunt was used in all patients with bilateral stenosis and previous ipsilateral stroke. In 19 patients CABG was performed, in eight patients aortic valve replacement and myocardial revascularization was done, in one patient mitral valve replacement was performed.

Results: Two patients (7.1%) died postoperatively due to sepsis and multiorgan failure. Two patients (7.1%) had postoperative stroke, one previously suffered stroke and other had occluded contralateral internal carotid artery. There were no postoperative complications regarding bleeding, time of ventilation or stay in ICU.

Conclusions: Our results suggest that simultaneous carotid and cardiac surgery using cardiopulmonary bypass is effective procedure with low mortality and postoperative morbidity, especially taking into account that all patients who underwent carotid endarterectomy had high grade stenosis over 90% of diameter.

CP-65
PROTECTION OF SPINAL CORD DURING THORACIC AND THORACOABDOMINAL AORTIC SURGERY USING EVOKED SPINAL CORD POTENTIAL, COLD BLOOD SPINAL CORD INFUSION AND MULTI-DETECTOR COMPUTED TOMOGRAPHY
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Objective: We have reported the efficacy transcranial motor-evoked potentials (Tc-MEP) and cold blood infusion to protect spinal cord during thoracic and thoracoabdominal aortic surgery. Multi-detector computed tomography (MDCT) was introduced to detect a critical intercostal artery preoperatively. We investigated the differences and efficacy of these three methods.
Methods: From January 1996 to November 2008, in 41 patients thoracic or thoracoabdominal aortic aneurysm operation were performed under the femoro-femoral cardiopulmonary bypass. These patients were divided into three groups by the method to detect a critical spinal cord supplying artery. Group M (n=14): Tc-MEP was recorded to evaluate spinal cord ischemia during the operation. Group MB (n=13): Tc-MEP and cold blood (4 °C, 300-450 ml) infusion into the clamped aneurysm were performed during the operation. Group MBC (n=14): Preoperatively intercostal artery flows into anterior spinal cord artery was detected by MDCT and Tc-MEP and cold blood infusion were performed during the operation. Amplitude and latency of Tc-MEP were recorded during the operation. The intercostal arteries in the aneurysm were detected when the Tc-MEPs amplitude decreased to below 50% of the baseline within 3 min after cold blood infusion. When the amplitude did not decrease, every intercostal artery in the aneurysm was ligated.

Results: In all cases, Tc-MEP was recorded satisfactory. However, it took more than 10 min to decrease the amplitude of Tc-MEP in Group M, the amplitudes changed significantly faster in Group MB and MBC within three minutes (P<0.05). Extracorporeal circulation time was tend to decrease in the successive terms and these times were significantly shorter than in Group MBC than Group M (162 min vs. 94 min, P<0.05). In all cases of Group MBC, an intercostal artery feeding into spinal cord was detected preoperatively by MDCT. In ten cases these intercostal arteries were included within the clamped aorta. In two cases Tc-MEP was decreased and the intercostal artery was reconstructed. In the other eight cases Tc-MEP was not decreased and the intercostal artery was ligated. No neurological deficit occurred in the all ten cases.

Conclusions: Cold blood infusion into the clamped segment of aorta accelerates Tc-MEPs changes and helps to detect critical intercostal artery in the segment. MDCT showed the connection of intercostals and anterior spinal cord artery. When the MEP value decrease, reconstruction of intercostal artery depended on MDCT. This method appears to be promising adjunct for detecting critical intercostals arteries and improving the operative results.

CP-66
APPROACH TO THE SURGICAL TREATMENT OF DISSECTION AND DISSECTING ANEURYSMS
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Objective: Dissection of arterial wall very often complicated uncontrolled hypertension, advanced arteriosclerosis or genetic disorders like Marfan Syndrome. According to localization dissection is divided into two types Stanford classification in which border line is left subclavian artery - in type B the primary entry is below, in type A above left subclavian artery. According to time – acute dissection last no longer than 14 days, after become chronic. Progress of dissection may leads to acute occlusion of coming of branches and acute ischemia legs or kidneys. Rapid development of endovascular surgery changed our approach to the treatment of dissection. At the moment the indications for treatment are acute symptomatic dissection type B causing ischemia of the legs or other organs or dissecting aneurysm or type A after cardiac operation of ascending aorta or arch. The method of choice is endovascular insertion of stent-graft to cover primary entry.

Methods: Between 2000 and 2008, 146 patient with aortic dissection were operated on in our Department. In majority 128 cases were type B, 54 acute among them 10 presented rupture.

Results: In our presentation we would like to show results of endovascular treatment and results of follow-up with secondary interventions in dissections and dissecting aneurysm. The closure of primary entry with stent-graft may results occlusion of false lumen and improvement blood flow, prevents expansion of aneurysm and peripheral ischemia.

Conclusions: According to our experience main indications for endovascular treatment of aortic dissection are as follow: 1. Acute dissection with symptoms of visceral, kidneys either peripheral ischemia. 2. Distension of aorta below entry tear with aneurysm development.
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Objective: The aim of this study is to emphasise the role of the preoperative anxiety on the postoperative delirium in patients after open heart surgery.

Methods: This study includes 164 patients. This is a cross-sectional and descriptive study. It was investigated in the cardiovascular surgery department during six-month. Voluntary patients who were chosen were older than 18 years old, have no historical data of psychiatric drug abuse, psychiatric illness. The intensive care delirium screening checklist (ICDC) that was used to investigate the delirium attitude were applied to the patients one day before and during three days after the surgery in once per day. ICDC consists of eight items. Every item was one point and the patient score four and up was accepted that patient was in delirium. State-Trait Anxiety Inventory ‘STAI’ T-2’ was applied to all patients one day before surgery. STAI scale has two different sections. State anxiety points of the patients were described as ‘the preoperative anxiety point’. STAI scale is a foursome Lycert type scale consisting of 40 items and its validity and reliability investigations have been made in previous studies.

Results: According to the STAI scale, generalized state points were generally high and when compared to the trait anxiety point averages, the difference between two items was meaningful (P<0.05). According to ICDC the number of the patients scoring four or higher was 12 (7.3%) on the first day, 31 (18.9%) on the second day, 46 (28.0%) on the third day, and these patients were accepted to develop delirium attitude. When the STAI-1 state point averages of the patients, developing delirium and not, were compared on the first and second day, it was seen that although the anxiety point averages of the patients occurring delirium were higher, the difference between was not statistically meaningful (P>0.05). On the third day the average points of the patients developing delirium were higher and the difference between them was meaningful (P<0.05). In terms of the trait anxiety points on each one of the three days the difference between the patients developing delirium and not was not meaningful (P>0.05). Postoperative hospitalization time of the patients developing delirium was longer and the difference between them was found to be meaningful (P=0.05).

Conclusions: Preoperative anxiety has a critical role on the delirium after open heart surgery.

CSF3-2
PREOPERATIVE SMOKING IS ASSOCIATED WITH MORE RESPIRATORY INFECTIONS, WOUND INFECTIONS AND HIGHER IN-PATIENT MORTALITY AFTER CARDIAC SURGERY
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Objective: Clinical trials in the last 10 years have shown higher incidence of postoperative complications in smokers at follow-up after cardiac surgery. Our aim was to determine if current smokers have any increase in mortality or morbidity in the in-patient population after cardiac surgery.

Methods: A retrospective review of prospectively collected data on all patients who had cardiac surgery at a large teaching hospital over a seven year period. Demographic details, preoperative smoking status and inpatient postoperative complications were recorded.

Results: Smoking data were available on 8099 patients in which the median age at patients age was surgery was 65 years. Male:female ratio 3:1 all groups. There were 815 smokers (10%), 3206 lifetime non-smokers (39.5%) and 4078 ex-smokers (50.5%). Risk of developing a respiratory tract infection was significantly higher in smokers (5%) than both non-smokers (2.2%, Fisher’s exact test) and ex-smokers (3.7%, P=0.13). The risk of chest infection was also higher in ex-smokers than that of non-smokers (P=0.0002). The risk of sternal wound infection was significantly higher in current smokers (3%) than in non-smokers (1.8%, P=0.049). In-hospital mortality was significantly higher in smokers (4.2%) when compared to ex-smokers (2.3%, P=0.03) and to non-smokers (2.8%, P=0.05).

Conclusions: Our study clearly demonstrates the detrimental effects of smoking on outcome after cardiac surgery. It shows that smoking cessation prior to cardiac surgery results in lower morbidity and mortality.

CSF3-3
A CLOSED PHOSPHORYLCHOLINE COATED CARDIOPULMONARY BYPASS CIRCUIT REDUCES INFLAMMATORY RESPONSE AND COAGULOPATHY FOLLOWING CORONARY ARTERY BYPASS GRAFTING OPERATION
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Objective: Cardiac surgery with cardiopulmonary bypass (CPB) induces an acute phase reaction that has been implicated in the pathogenesis of several postoperative complications. CPB also triggers the activation of the coagulation and fibrinolytic systems leading to coagulopathy and excessive peri-operative bleeding. The effects of a closed and completely phosphorylcholine coated circuit on the activation of coagulation, fibrinolytic and inflammatory systems have not been clearly elucidated. We tested the hypothesis that a closed and phosphorylcholine CPB equipment may be able to significantly reduce peri-operative release of Interleukin-6 (IL-6, as a marker of inflammatory response), pro-thrombin fragment 1-2 (PF-1.2, as a marker of thrombin generation) and Plasmin-Antiplasmin complex (PAP, as a marker of fibrinolytic activity).

Methods: In a prospective randomized controlled trial 40 patients requiring elective coronary artery bypass grafting operation were enrolled and randomly assigned to Physio Group (closed and phosphorylcholine coated CPB) or Standard Group (open and non-coated CPB). Blood samples were obtained preoperatively (T0), 30 min after starting CPB (T1), 15 min after aortic declamping (T2), 2 h after the end of CPB (T3) and in postoperative day 1 (T4) and day 5 (T5).

Results: Preoperative characteristics did not differ between groups. CPB priming volume was significantly lower (1516.6±400.4 vs. 1995±579, P=0.004) and peri-operative hemoglobin levels were higher (although not significantly) in the Physio Group. IL-6 levels were lower in the Physio Group and this difference was statistically significant at T2 (94.6±107.4 pg/ml vs. 292.4±457.18 pg/ml; P=0.04). PF-1.2 levels were significantly lower in the Physio Group (600.2±583.7 pmol/ml vs. 901±451.5 pmol/ml; P=0.05, at T2. 466.1±197.6 pmol/ml vs. 758.6±248.2 pmol/ml; P=0.003, at T3). PAP levels were also significantly lower in the Physio Group (362.2±362.1 ng/ml vs. 2226.7±1927.9 ng/ml; P=0.001 at T1, 652.8±408.8 ng/ml vs. 1283.5±627.7 ng/ml; P=0.005 at T2. 594.3±436.3 ng/ml vs. 1169±545.1 ng/ml; P=0.005 at T3). A significant reduction of cardiac Troponin I release was also observed at T3 (1.9±1.15 ng/ml vs. 3.95±3.3 ng/ml; P=0.02).

Conclusions: Our study demonstrates that the adoption of a closed and phosphorylcholine coated CPB equipment reduces the inflammatory response. The activation of the coagulation systems is also reduced and consequently the fibrinolytic response is strongly attenuated. Larger studies will be probably able to demonstrate clear clinical advantages.

CSF3-4
PROTECTIVE EFFECTS OF STEROIDS IN PATIENTS UNDERGOING CARDIAC SURGERY. RESULTS OF A META-ANALYSIS
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Objective: Cardiac surgery and cardiopulmonary bypass (CPB) induce an intense systemic acute inflammatory response contributing to postoperative morbidity. The prophylactic use of steroids as anti-inflammatory agents in CPB surgery has been tested in a large number of trials demonstrating good anti-inflammatory effects but never clear clinical advantages for the lack of adequately powered sample size. We performed a systematic meta-analysis to evaluate the effects of steroid treatment on mortality and morbidity following cardiac surgery.

Methods: Trial search was performed through Pubmed and Cochrane data-bases (from 1966 to October 2007). Among 102 clinical trials reviewed, 53 were considered suitable to be analyzed. Of 53 studies 32 (60.3%) were randomized double blind. The random effect model was used to perform each meta-analysis. Results obtained from randomized double blind trials are reported.
Objective: The impact of a microbial sealant to reduce surgical site infection in high-risk cardiac surgery patients

Methods: In total 291 consecutive patients undergoing cardiac surgery by a single surgeon at our institution from January 2006 until July 2008. The inclusion criteria for this study was a Fowler score of at least 10, which indicates a high-risk for SSI. Patients were divided into two groups. The control group (n=132) receiving standard institutional preoperative preparation whether the microbial sealant group (n=159) received additionally to the standard institutional preparation a microbial sealant, called In teguSeal. Pre- and peri-operative characteristics were evaluated for both groups. The endpoint of this study was freedom of superficial or deep SSI. Results: Follow-up was 100% completed. The preoperative risk score of the control and the microbial sealant group were similar, respectively 15.5±4.0 and 15.2±3.8 (P=0.513). Comparing pre- and peri-operative characteristics of both groups, a significant higher rate of carotid artery disease (P=0.022), diabetics (P=0.046) and the use of left internal mammary arteries during coronary bypass surgery (P=0.011) were seen at the microbial sealant group. All other pre- and peri-operative characteristics were similar in both groups. The clinical end-point showed a significant decrease of SSI in the microbial sealant group 2.5% (n=4) vs. the control group 7.6% (n=10), (P=0.045). Conclusions: This prospective study shows that the additional use of InteguSeal to standard institutional preoperative preparation reduces statistically significant the risk for surgical site infection in high-risk patients undergoing cardiac surgery.

Objective: Postoperative wound infection is an important cause of morbidity and occasional mortality after cardiac surgery. The aim of this prospective study was to evaluate the impact of a new microbial sealant on surgical site infections (SSI) in high-risk patients undergoing cardiac surgery.

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Objective: Complete revascularization (CR) during coronary artery bypass grafting improves patients outcome and survival. Sequential grafting and various configurations of composite grafts were used to achieve total revascularization. The aim of the study was to evaluate early and late outcomes of CABG patients using six or more bypasses in order to achieve complete myocardial revascularization.

Methods: We retrospectively reviewed the data of CABG patients operated on in our institution from 1 January 2000 to 31 December 2008. Sequential grafting and various configurations of composite grafts were used to achieve total revascularization. Clinical data were abstracted from medical records. Early and late outcomes of patients with multiple grafts used for revascularization were analyzed.

Results: From 1 January 2000 to 31 December 2008, 5486 patients underwent CABG procedure in the Vilnius University Heart Surgery Clinic. More than six grafts (6-12, average 6.6±0.7) were applied in 314 (6.9%) patients. The average age of patients was 64±9 years, left ventricle EF - 48±9% and EuroSCORE 3.2±2.5. Urgent procedures were performed in 17 (5.4%) cases. Internal thoracic artery grafts were used in 272 (85%) and radial artery grafts in 33 (12%) cases. Anterograde (100%) and retrograde (95%) tibial blood cardioplegia were used for myocardial protection. Aortic cross clamp time reached 82±15 min and CPB time – 124±24 min. Eight patients (2.5%) died during hospitalization. Early and midterm outcomes of the procedure were presented.

Conclusions: Aggressive complete myocardial revascularization is a safe procedure with acceptable mortality and morbidity despite prolonged intraoperative ischemia and extracorporeal circulation.
diabetics, but even in that case, we did not find mediastinal or sternal problems. We have a cohort of 70 patients from both groups with a follow-up at five years. They received a coronary angiography that shows mammary artery patency 100% and venous graft patency 70%.

Conclusions: The use of two mammary arteries for myocardial revascularization do not increase the risk of surgery, or the risk of sternal or mediastinal problems. The early evolution of these patients is very good and the patency of mammary artery excellent. About the long-term evolution of these patients, this study does not give enough information, because the follow-up today is very short, but we will see this in the future. The skeletonised technique of mammary artery prelevation requires a long artery conduit, to protect the sternum and to make possible sequent revascularization. For the best indications of this type of revascularization, another study focused on this problem is necessary.

C8-2
DOES OPCAB TECHNIQUE INFLUENCE THE OUTCOME OF CORONARY BYPASS SURGERY IN ELDERLY PATIENTS - RESULTS AND LONG-TERM FOLLOW-UP
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Objective: The aim of this study was to compare the results and rate of complications following bypass surgery using two surgical coronary revascularization techniques in elderly patients.

Methods: We analyzed 1128 consecutive patients over 65 years who underwent myocardial revascularization with (n=669, CCABG group) and without (n=459, OPCAB group) ECC from January 2003 to December 2005. Preoperative and postoperative variables were compared. The events: MI, stroke and death were described using the Kaplan-Meier estimate during long-term follow-up.

Results: The mortality rate was 2.8% (19/669) vs. 2.6% (12/459) in the OPCAB group. The incidence of complications CCABG vs. OPCAB: low cardiac output 36.2% (242/669) vs. 22.2% (102/459), P =0.001, IABP 6.7% (45/669) vs. 3.3% (15/459), P=0.05, MI 3.9% (26/669) vs. 3.5% (16/459), reoperations 4.2% (28/669) vs. 1.5% (7/459), P=0.05, neurological complications 12.3% (82/669) vs. 6.3% (29/459), P<0.001. ICU and hospital stays were longer in the CCABG group: 7.29 vs. 6.84 days in OPCAB P=0.001. The frequency of blood transfusion was significantly higher in the CCABG group: 334 (49.9%) vs. 121 (26.4%) P=0.001. The Kaplan-Meier estimate revealed a similar long-term survival rate: 90% vs. 88% in CCABG and OPCAB groups and 60% vs. 65% cardiac event-free rate.

Conclusions: OPCAB technique used in coronary bypass surgery in elderly patients provides better postoperative results in terms of postoperative complications rate.

C8-3
MECC - ANY ADVANTAGE IN CABG PATIENTS?
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Division of Cardiovascular Surgery, Medical University, Graz, Austria

Objective: The aim of this prospective study was to compare the perioperative clinical parameters between minimal extracorporeal circulation (MECC) and conventional extracorporeal circulation.

Methods: Utilizing the MECC system coronary revascularisation was performed in 144 randomised patients (mean age 69.5 years (43-86 years)) (group I). These patients were matched with the conventional perfusion method (group II, n=144), (mean age 69.1 (45.86 years)). In both groups patients with single CAD as well as emergency patients were excluded.

Results: There were no statistical differences in mean aortic clamping time (65±19.2 min vs. 70±11.5 min), mean extracorporeal perfusion time (111±28.1 min vs. 115±27.4 min), in the mean number of distal anastomoses, in amounts of donor blood units, as well as in levels of troponine, creatinine, CK, CK-MB, thrombocytes, leukocytes, hemoglobin, hematocrit measured after 6, 24, 48 h postoperatively. There was no 30-day mortality in both groups. Statistically significant differences were observed in lactate values (Intraoperative 0.84 vs. 1.39, 6 h postoperative 1.12 vs. 1.61, 24 h postoperative 1.41 vs. 1.61). There were significantly less ICU days in group I in comparison to group II (2.21 days vs. 2.60 days).

Conclusions: Lower lactate-levels (optimized perfusion) and the shorter ICU-stay presented the benefit of the MECC system correlating with less inflammatory response markers known from the literature. In our observation the MECC patient postoperatively is more active and alert, however an objective, conclusive and clinically well used parameter is still absent.

C8-4
CLINICAL EFFICACY OF EPTIFIBATIDE ADMINISTRATION IN PATIENTS WITH NSTE-ACS REQUIRING URGENT CABG. SIX MONTHS FOLLOW-UP STUDY
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Objective: Aggressive anti-aggregative treatment with aspirin, fractionated heparin and platelet GP IIb/IIIa inhibitors is an important strategy preserving myocardial microcirculation during mechanical reperfusion for myocardial ischaemia, particularly in patients undergoing CABG for NSTE-ACS, where the period of ischaemia and subsequent reperfusion is relatively longer. However, patients exposed to eptifibatide in the setting of urgent or emergency CABG may be at risk of increased bleeding. The aim of this randomised study was to evaluate the efficacy and safety of eptifibatide administration in the high-risk group of patients with NSTEACS, requiring CABG. The primary end point was MACCE defined as: cardiac related death, myocardial infarction, stroke and recurrence of angina pectoris symptoms in six months follow-up observation. The assessment of eptifibatide administration safety was based on the occurrence of bleeding complications.

Methods: In our study 120 patients with NSTEACS qualified for surgical revascularization were prospectively randomized into two groups. Sixty patients in the study group apart from routinely administered enoxaparine and aspirin received additionally eptifibatide (180 µg/kg bolus plus 2 µg/kg/min infusion) 24 h prior to surgery. The control group consisted of 60 patients who received only enoxaparine and aspirin before surgery. The CABG was performed in all patients 4 h after discontinuation of eptifibatide infusion. Results: The MACCE rate in six months follow-up was statistically higher in control group than in study group (8.3% vs. 3.3%, P=0.05). There were two deaths in study group with eptifibatide and five deaths in control group in six months follow-up. There was also a difference between both groups regarding perioperative MI (10.8% vs. 4.2%, P=0.05) and stroke incidence (3.1% vs. 0%, P=NS). There was no difference regarding blood loss and blood products transfusion (920 ml vs. 680 ml, P=NS).

Conclusions: This prospective randomized study proved that eptifibatide administration in patients with NSTE-ACS required CABG, reduced significantly MACCE rate on six months follow-up observation. The use of eptifibatide just before coronary artery bypass grafting is safe and does not increase postoperative bleeding.

C8-5
EFFICACY AND SAFETY OF ANTIFIBRINOLYTIC THERAPY IN CORONARY BYPASS SURGERY GRAFT SURFACE
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Objective: Controversies concerning the safety of prophylactic antifibrinolytic therapy, particularly aprotinin use in cardiac surgery exist. Aim of this study was to evaluate safety and efficacy of prophylactic aprotinin and tranexamic acid use in CABG.

Methods: Between June 2003 and July 2006, 791 patients were recruited for the prospective, randomized, double blinded, placebo controlled trial of preoperative use of Aspirin 300 mg one day before surgery in stable coronary artery disease. We present subanalysis of the data of 639 patients operated with the use cardiopulmonary bypass. Aprotinin was used in 127, tranexamic acid in 235 and no antifibrinolytic agent (control) was used in 277 patients. The application of antifibrinolytic drug and its type was left to operating surgeon who was blinded to preoperative aspirin/placebo use.

Results: There were no statistically significant differences between groups in preoperative data. CPB time in tranexamic acid group was shorter than in aprotinin and control groups (60±19 min vs. 68±22 min vs. 69±27 min; P=0.001). Aprotinin and tranexamic acid decreased postoperative bleeding to 777±57 ml and 769±333 ml, respectively vs. 985±486 ml in control group (P=0.001).

Also number of patients requiring blood products transfusion postoperatively was smaller in both groups treated with antifibrinolitics: Red blood cells - 137 patients (49%) in control group vs. 37 patients (29%) in aprotinin and 61 patients (26%) (P=0.001) in tranexamic acid group; FFP 96 patients (35%) vs. 23 patients (18%) vs. 26 (11%) (P=0.001); control vs. aprotinin vs. tranexamic acid,

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respectively; platelets 14 patients (5%) vs. 6 patients (3%) vs. 1 patient (0.4%) (P=0.008; control vs. aprotinin vs. tranexamic acid, respectively). There was no difference in number of patients with troponin I level >0.5 mg/ml in all groups (P=0.5), however, more patients in control group had elevated level of CK-MB>125 U/l. 20 (7%) patients vs. 3 (2%) in aprotinin group and 8 (3%) in tranexamic acid group (P=0.046). Median (interquartile range) maximum postoperative creatinine level tended to be higher in aprotinin group: 1.13 (1.03-1.30) mg/dl vs. 1.10 (0.96-1.24) mg/dl in tranexamic acid group and 1.10 (0.99-1.25) mg/dl in control group (P=0.053). The median increase from preoperative value did not differ: 0.07 (-0.02-0.20) vs. 0.05 (-0.01-0.16) vs. 0.06 (-0.01-0.20) respectively (P=0.2).

Conclusions: Antifibrinolytic drugs administered prophylactically in CABG decreased the postoperative drainage and blood products requirements without increase of myocardial necrosis markers. Aprotinin slightly, but not statistically significantly, increased creatinine serum concentration.

C8-6
ANTISPASTIC EFFECTS OF CA²⁺ SENSITIZER LEVOSIMENDAN IN RADIAL AND THORACICA INTERNAS GRAFTS
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Objective: In younger CABG patients total arterial revascularisation should be aspired to. Surgical harvesting of arterial conduits causes arterial spasm and a reduced blood flow resulting in poor peri-operative results. We evaluated the effect of a novel Ca²⁺ sensitizer Levosimendan on in vivo radial artery (RA) and internal thoracic artery (ITA) flow and set this data in relation to observed hemodynamic changes. Our study is a prospective, randomized, double-blind, clinical trial with statistical power stratification for 15 patients per group.

Methods: Forty-five patients (32 males and 13 females) undergoing primary CABG, mean age of 58±3 years were enrolled in the study and randomized into three groups, each patient receiving a loading dose of Levosimendan (12 μg/kg/min), Dobutamine (5 μg/kg/min) and physiologic saline as control group (n=15 each). RA and ITA flows (in ml/min), aortic (AP), pulmonary artery (PAP), pulmonary capillary wedge (PCWP) pressures (in mmHg) and heart rates (HR in beats min⁻¹) were measured at baseline (T0), 5 (T1) and 10 min (T2) after test drug administration.

Results: Flows in ITA (15.4-22.4-30.1 vs. 19.6-21.5-22.6; P=0.000001*) and in RA (13.14-21.21-29.9 vs. 13.9-15.1-16.1; P=0.0000001*) significantly increased in Levosimendan vs. Dobutamin patients. Hemodynamics remained absolutely stable in Levosimendan and control groups, a statistically significant deterioration was found in Dobutamin patients.

Conclusions: Our in vivo study shows that during surgical harvesting, Levosimendan causes higher flows compared to Dobutamin in arterial grafts used for CABG. Ca²⁺ sensitizer produce a strong antispasmatic effect without causing negative hemodynamic changes in CABG patients.

C8-7
A SINGLE SYSTEM IDEAL FOR MINIMALLY INVASIVE HARVESTING OF BOTH RADIAL ARTERY AND SAPHENOUS VEIN: EVIDENCE OF SAFETY AND EFFICACY
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Objective: Minimally invasive vessel harvesting is becoming an important tool for CABG procedures. The devices available are particularly prone to radial artery or to saphenous vein harvesting but not for both. Aim of the study is to assess the safety and efficacy of a single system ideal for minimally invasive harvesting of both radial artery and saphenous vein.

Methods: Twenty patients were prospectively randomized. Radial artery were harvested conventionally in five patients (Group Rc) and endoscopically in another five patients (Group Re); the saphenous vein was harvested conventionally in five patients (Group Ve) and endoscopically in another five patients (Group Ve). To compare any possible grafts damage due to endoscopic technique, we assessed endothelium-dependent and endothelium-independent relaxation of graft segments to sequential doses of acetylcholine and nitric oxide donor in standard organ-chamber. Comparative endothelial histological studies were also performed. The endoscopic device, used for minimally invasive harvesting of both radial artery and saphenous vein, is a coupled system of antractor and vessel dissector with the Starion thermal ligating shears.

Results: Preoperative characteristic were similar between group Rc and Re; only group Ve had an older age in respect of group Ve (P=0.015). After the learning curve, harvesting time was similar in both groups (Ve: Ve=Ps; Rc: Re P=ns). The length of the graft harvested was similar between endoscopical and conventional groups (P=ns). Skin incisions were significantly smaller in the endoscopic groups and the patients satisfaction was higher in the endoscopic groups. No skin dehiscence was present in the endoscopic groups. The endothelium-dependent and endothelium-independent relaxation of graft segments did not show any statistical difference between the groups.

Conclusions: Although the number of patients is small, our study shows that this coupled system for endoscopic vessels harvesting does not alter radial artery and saphenous vein vasoreactivity and shows good results in term of time consuming and patient satisfaction. Sorin retractor and vessel dissector with Starion thermal ligating shears represent a single safe and efficacy system for minimally invasive endoscopic harvest of both radial artery and saphenous vein.

C8-8
REVASCULARIZATION OF ANTERIOR WALL OF THE HEART WITH RADIAL ARTERY
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Objective: The aim of the study is to analyze the results of CABG of LAD with radial artery comparing with traditional CABG of LAD with mammary artery. Methods: During last five years 72 patients were operated in our institution in which radial artery was used for LAD grafting. Control group consisted of 72 patients with mammary artery for LAD. Male gender was 84.7% and 85% in both groups. Mean age was 54.5 and 55.1. Angina of I-II class was in 11.1% and 9.2%, III class - in 58.3% and 56.6%, IV class - in 26.4% and 30.0%. Unstable angina was in 8.3% and 7.5%. Left main trunk disease was in 11.1% and 10.8%. Ejection fraction 30-50% was in 19.5% and 20.8%. Ejection fraction lower 30% was in 9.7% and 5.9% of the patients.

Results: The indications for LAD grafting with radial artery were the following: Atherosclerotic mammary artery lesion - 5 cases. Unsatisfactory mammary artery blood flow - 12 cases. Short length of mammary artery of very distal lesion of LAD 22 cases. Hemodynamic instability - 4 cases, when there was not enough time to harvest the mammary artery. Patients with superfluous body mass, older 65 years and with diabetes - 8 cases. Redo surgery with absent mammary artery - 11 cases. Operational trauma or dissection of mammary artery - 10 cases. Off-pump surgery was performed in 72.2% in one group and in 70.0% in two group. Endarterectomy with plasty was in 6.9% and in 7.5% (P=0.05). Sequential grafting - 11.1% and 15.0% (P=0.05). T-grafting - 2.8% and 11.6% (P=0.05). Mean number of distal anastomoses was - 3.1 and 2.7. Only autogaftiter grafting - 16.6% and 21.6% (P=0.05). Intraoperative ischemia in revascularization area - 0 and 1.6%. The bleeding - 2.8% and 3.2%. Intensive care unit stay - 1.5 and 1.6 days. Hospital mortality was 0 and 0.8%. Acute myocardial infarction during five years after operation - 1.4% and 2.5%. Angina recurrence during five years after operation - 1.4% and 1.6%. Angiography in postoperative period was performed in symptomatic patients in one group - all grafts were patent (P=0.05).

Conclusions: CABG with radial artery for LAD accompanied with good immediate and mid-term results and could be recommended for patients in which mammary artery use is impossible or undesirable.

C8-9
PROGNOSTIC IMPACT OF CHRONIC KIDNEY DISEASE ON LONG-TERM SURVIVAL AFTER ISOLATED OFF-PUMP CORONARY ARTERY BYPASS GRAFTING
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Objective: Less is known about the impact of chronic kidney disease (CKD) on long-term mortality after isolated off-pump coronary artery bypass grafting (CABG). The purpose of our study was to assess the impact of chronic kidney disease on long-term survival after isolated off-pump CABG.

Methods: In the past six years, we experienced 595 consecutive isolated CABG by one single surgeon. Except for one redo case, all patients underwent off-pump CABG without conversion to cardiopulmonary bypass during operation. After exclusion of patients with chronic dialysis (n=46), the study population consisted of 549 patients. CKD was defined prospectively according to the Modification of Diet and Renal Disease equation as an
pulmonary artery hypertension (PAH), which is seriously responsible for results of surgery. The present study analyze PAH validity and morbidity after repair of ASD in adults (like a single disease or as a part of complex malformations of IAS).

Methods: Our experience included 155 adults (16-51 years) underwent surgery for: ASD – in 128 patients (with concomitant anomalous pulmonary venous return - in 12); endocardial cushion defects (incomplete form) in 9; Lutembacher Syndrome in 15; ASD and MV replacement (rheumatic etiology) in 3. Mortality and morbidity were analyzed in three groups tied with PAH. I group (SPAP ≥50 mmHg) - included 61 patients (39.3%); II group (SPAP 50-75 mmHg) 56 patients (36.1%); III group (SPAP >75 mmHg) 38 patients (24.5%). Twenty-two patients with Ezenmenger syndrome (among all pool of 424 adults with ASD) were out of analyze. Types of repair performed in 128 patients with ASD: patch procedure in 92, including repair of associated anomalous right pulmonary venous return in 12; suture closure in 23; patch repair of ASD and concomitant VSD in 13 patients. Among 12 patients with anomalous right pulmonary venous return four patients, with supracardiac form, underwent repair using two-patch technique. Surgery for incomplete form of endocardial cushion defects in nine patients included suture repair of MV or TV cleft with patch of primary ASD. Eighteen patients underwent patch repair of secondary ASD and MV replacement, in all cases performed through ASD. Eight of them need in enlargement of secondary ASD for better exposure of MV. This group included 13 patients with Lutembacher syndrome and 3 - with associated rheumatic MV disease.

Results: One hundred and twenty-six patients made an uneventful recovery. Twenty-nine patients (18.7%) faced with complicated postoperative period. The rate of morbidity analyzed in three groups was 9.8% (SPAP ≤50 mmHg), 17.9% (SPAP 50-75 mmHg) and 34.2% (SPAP >75 mmHg). Postoperative complications included: leaking in 3.9%, cardiac failure in 3.9%, respiratory insufficiency in 3.2%, bleeding in 2.6%, wound complications in 1.9%, others - 1.9%. Analyze of morbidity spectrum in 29 patients revealed predominance of cardiac failure (20.7%) and respiratory insufficiency (17.2%), which were prerogative of II and III groups. Bleeding (13.8%) and wound complications (10.3%) predominantly in II and III groups. Leaking - routinely was tied with suture closure of ASD. Hospital mortality 1.3%.

Conclusions: The rate of morbidity definitely ties with PAH gravity. Patients with severe PAH need in nitrates infusion in post-pump and ICU period, followed with prolonged nitrates medication.
Methods: From five patients (patients) with RSA two had right - and one non-coronary sinus opened to the right atrium (RA). One of them, previously treated surgically (with recanalization), had two RSA orifices. Another patient had right RSA opened to RVOT and the fifth one (after previous surgical correction of Fallot Tetralogy) - left RSA opened to the pulmonary trunk. In the last case RVSA was very close to the origin of the left coronary artery. Mean age of patients was 32.2 (18–51) years, weight 78 (60–88) kg, QP/QS ratio 1.4 (1.3–2.2). In all patients after diagnostic catheterization attempt of transcather closure was undertaken. RVSA was crossed from arterial approach and arterio-venous loop was created. Thereafter from venous approach long transeptal sheath was placed and Amplatzer occluders were deployed under both fluoroscopy and TEE control. Mean fluoroscopy time was 22.4 (10–34.9) min.

Results: Six procedures were performed in five patients (in case with double RVSA during two subsequent sessions). The procedures were technically successful in all patients. There were seven devices implanted: six Amplatzer duct occluders (ADO i) sizes from 8/6 to 14/12 mm and 16 mm Amplatzer Atrial Septal Occluder (ASO). No early nor late embolization of the device occurred. In one patient (with left RSA) after deployment of ADO ST depression in ECG appeared, device was withdrawn and the procedure abandoned. In the patient with RSA opened to RVOT during the procedure and two following days premature ventricular extrasystoles were observed. In follow-up (mean 0.5, from 0.1 to 0.9 year) in all treated patients complete closure of RSA was confirmed in TTE.

Conclusions: Percutaneous closure of Ruptured Sinus Valsalva Aneurysm is feasible, although technically demanding procedure, which can replace surgical treatment.

C9-4 EXPERIENCE IN PERCUTANEOUS INTERATRIAL COMMUNICATIONS CLOSURE AFTER PREVIOUS CARDIAC SURGERY
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Objective: Atrial septal defect (ASD) makes 6-8% of congenital heart defects. Results of surgical correction are good with low mortality. Although 1-1.5% of patients have residual shunt requiring intervention.

Methods: In years 1996-2008 we performed 21 percutaneous residual ASD closure after cardiac surgery. First group - seven patients post surgical ASD closure and second 14 patients after cardiac surgery other than ASD closure with residual IAS shunt. Amplatzer Atrial Septal Occluders (ASO), Starflex umbrella systems, and coils were applied according to the routine technique.

Results: All procedures were successful without any complications. In the first group in seven patients - ASO devices 8-24 mm were used (in one patient Amplatzer Cribriformis Occluder). In second group primary surgery were Fallot and RVOTO correction (four patients), one patient after Ebstein anomaly, one after VSD, and one after TGA anatomical correction and one after CABG procedure. In 12 of 14 patients 5-30 mm ASO, in one case Star-Flex 33 mm and IMFWE-5-PDA-3 coil were used (the later in tuneliformis post-Fontan fenestration). Both patients with right-left shunt had significant rise in arterial blood saturation after procedure.

Conclusions: Percutaneous residual IAS shunts closure in patients after previous surgical ASD correction or other cardiac surgery procedures is technically feasible and probably treatment of choice.

C9-5 ANOMALOUS ORIGINS OF RIGHT OR LEFT CORONARY ARTERIES ASSOCIATED WITH AORTO PULMONARY WINDOWS
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Objective: The association of an aortopulmonary window (APW) and an anomalous origin of a coronary artery is an exceptional condition with pathophysiological specificities that make difficult its preoperative diagnosis. We report two new cases of APW with anomalous origin of either the right (RCA) or the left coronary artery (LCA) and discuss surgical options for their repair.

Methods: A 8-year-old female (17 kg) was admitted for an APW. The echocardiography identified the LCA in a normal position, but the origin of the RCA was not seen. Under normothermic cardiopulmonary bypass, after a vertical aortotomy, the left ostium was seen in the left sinus and the right ostium was located on the pulmonary side of the APW. The pulmonary trunk was transected and the RCA was excised with a large button of pulmonary artery wall. This defect was repaired with an autologus pericardial patch. The RCA was reimplanted in the right aortic sinus and the APW was closed with a PTFE patch. A 7-month-old boy (7 kg) was admitted for an APW. The echocardiography demonstrated a left ventricular dilatation, and a large APW with isosystemic pulmonary hypertension. No anomaly of coronary arteries was identified. Under normothermic cardiopulmonary bypass, a vertical aortotomy was performed and the LCA ostium was seen on the posterior wall of the pulmonary trunk. The repair consisted in a tunnel made of the equine pericardial patch used to close the APW, leaving the LCA ostium on the aortic side of this patch. A small PTFE patch was used to close the aortotomy.

Results: For both patients postoperative course were uneventful. Respectively, at two years and four months follow-up, patients are asymptomatic with normal ventricular functions. For the second patient, a postoperative CT-scan was performed and assessed the tunnel patency.

Conclusions: Both methods, reimplantation or rerouting by a patch are eligible for the repair of this very rare anomaly and decision is based on the relationship between the anomalous coronary ostium and the APW.

C9-6 BIDIRECTIONAL GLENN SHUNT WITHOUT CARDIOPULMONARY BYPASS IN INFANTS
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Objective: To analyze the results of the bidirectional Glenn shunt (BDG) without cardiopulmonary bypass (CPB) in infants.

Methods: From 2001 to 2008, 27 patients underwent the BDG without CPB in our center. The mean age was 7.8+3 months (3-12), mean weight - 7.1+1.9 kg (6.5-8.2). All patients underwent echocardiography and catheterization.

Results: For both patients postoperative courses were uneventful.

Conclusions: BDG could be an alternative to systemic-pulmonary shunt in infants with satisfactory sizes of pulmonary branches and superior vena cava. BDG without CPB is easy to perform and non-traumatic procedure if no additional intracardiac operation is needed.

C9-7 OFF-PUMP REVASCULARIZATION IN INFANTS WITH KAWASAKI DISEASE REPORT OF 2 CASES
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Objective: Kawasaki syndrome is general vasculitis of unknown origin. In most series 85% patients are younger than five years. Giant coronary artery aneurysms (CAA) develop in 0.27% of cases. The major complication of Kawasaki disease is myocardial infarction resulting in ventricular dysfunction and sudden death. The mortality rate is 22% after the first infarction 66% after the second and 87% after the third infarction. Surgical treatment is recommended for the children with the previous infarct, because prognosis following recurrent myocardial infarction is unfavorable. The operative treatment for Kawasaki disease has started in 1976 after the report of Kitamura. Results of surgery and long-term prognosis are favorable and the postoperative quality of life is markedly improved.

Methods: We present two cases of infants (3.5 and 3 years old) with Kawasaki disease with giant CAA post myocardial infarction. The diagnosis was confirmed by coronary angiogram. Transthoracic echo and thallium scintigraphy were also performed before the operation.

Results: One patient underwent successful off-pump revascularization with both internal mammary arteries, the second successful off-pump revascularization with one internal mammary artery combined with LV reshaping by atrio-metacardiorrhaphy. Postoperative course was uneventful. The patients were discharged from hospital on 22 and 15 days. They both remain in good clinical condition 26 and 17 months after operation.
Conclusions: In infants with Kawasaki disease off-pump revascularization is technically feasible and can be considered as a treatment option for these patients.

CV3-8
ISOLATED COARCTATION OF AORTIC ARCH AND SURGICAL PROCEDURES IN FIRST YEAR CHILDREN
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Methods: One hundred and five children from 3 days to 12 months have been operated with isolated aortic arch coarctation (72 males, 33 females). Body weight from 1.8 to 8.7 kg (mean 4.4 kg). In period from three days after birth to one month 47 (44.7%) children have been operated. Fifty-eight (55.3%) have been operated in one month to 12 months after birth. There were no pulsation at femoral artery in 74% and significantly decreased in 26%. Mean pressure gradient 60±15 mm. Surgical access in all patients - left lateral thoracotomy in 3th intercostals space.

Results: Follow-up to 14 years after surgery. In 23 (21.9%) successful result In patients with plastic of aortic arch by left subclavian artery. We ligated left subclavian artery proximal to vertebral artery. Mean clamp time of aortic arch was 25 min. In 82 (79.1%) patients we performed resection with end to end anastomosis. We mobilized aorta and its branches without ligation of intercostals arteries. Mean time of aortic clamp 21 min. In 9 (11%) patients with preductal coarctation were used extended anastomosis by means of incision of left subclavian artery and aortic arch, this technique allowed extended anastomosis to be performed. We used Prolen 7/0 and 6/0.

Conclusions: In children whose age is <12 months preferably to perform end to end anastomosis rather than isthmoplasty by left subclavian artery, because relapse is less often.

3rd Cardiovascular Session - Thoracoabdominal EVAR
May 2, 2009, 3rd Congress Day
11:30-13:00
CV3-1
CAROTID ARTERY STENOSIS AND CARDIAC SURGERY. A STAGED THERAPEUTIC STRATEGY TO AVOID POSTOPERATIVE STROKE
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Objective: High grade asymptomatic carotid artery stenosis (CAS) is one of risk factors of stroke complicating cardiac surgery. The treatment remains controversal. The purpose of the study was to review our results of a staged approach consisting in prophylactic carotid endarterectomy before cardiac interventions.

Methods: We retrospectively analysed the operative outcome of 173 consecutive patients (131 men and 42 women, mean age 71±17.5 years) who underwent staged carotid/caridiac surgery between 1996 and 2007. During this period, all cardiac patients were referred to ultrasonographic examination. In case of severe (>70%) CAS, carotid endarterectomy was performed first under loco-regional anaesthesia. Few days later, cardiac interventions consisted in coronary artery bypass in 66.5% of the patients, valve replacement in 12.7%, or both in 20.8%. Median EuroSCORE was 6 [0-17].

Results: Overall operative mortality was 6.9% (12 patients) of which 4 (2.3%) were cardiac related. No patient died before cardiac surgery. Perioperative stroke rate was 1.7% and none occurred during the staging interval. Postoperative myocardial infarction was 5.2% (9 patients); three during the staging interval and six after cardiac surgery. Independent predictors of death were controlateral carotid occlusion (P=0.03) and chronic obstructive lung disease (P=0.02). Predictive factors of myocardial infarction were tobacco (P=0.01), left ventricular dysfunction (P=0.001) and controlateral carotid occlusion (P=0.04). No predictive factor of stroke was identified.

Conclusions: Staged carotid endarterectomy before cardiac surgery is a safe and efficient strategy with low rate of perioperative stroke in an asymptomatic but high-risk population.

CV3-2
A SINGLE CENTRE EXPERIENCE OF COMBINED OPEN ABDOMINAL AORTIC ANEURYSM AND CARDIAC SURGERY
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Objective: Up to 80% of patients with abdominal aortic aneurysm (AAA) have coexisting cardiac disease. This creates a dilemma in the subset of patients with both symptomatic cardiac disease and significant AAA, but who are unsuitable for endovascular treatment for either pathology. The optimal management policy for this patient group remains undefined, though it has been the policy of our institution to perform open aneurysmorrhaphy and cardiac surgery as a one-stage combined procedure. We present our single centre series of combined cardiac and aortic aneurysm surgery in patients anatomically unsuitable for endovascular AAA repair.

Methods: All patients undergoing combined cardiac and open AAA surgery between June 2002 and December 2008 were analysed using a prospectively maintained database supplemented with case note review.

Results: Thirteen patients with a median age of 78 years underwent combined surgery. All aneurysms were infrarenal with a median diameter 7 cm (5.1-11), of which three were symptomatic. In all cases EVAR was unsuitable due to either hostile iliac or neck anatomy. Eleven patients underwent coronary artery bypass (CABG), one CABG plus aortic valve replacement and one patient aortic valve replacement only. All patients were operated on cardiopulmonary bypass (CPB) and received autologous cell salvaged blood. Median CPB and operative time was 182 (141-260) and 420 (360-490) min, respectively. There were two deaths: the first after 90 days from multi-organ failure and stroke, the second following three days from multi-organ failure. Complications comprised: four transient renal impairment; one transient jaundice; four pneumonias; one unstable sternum; and four arrhythmias with one patient requiring a permanent pacemaker. Two patients suffered transient diarrhoea but no other features of intestinal ischaemia. The remaining 11 patients are alive with a median NYHA score improvement from three to two at six months.

Conclusion: Simultaneous open repair of AAA and cardiac surgery is a feasible option for this high-risk and anatomically challenging patient group. Our series has a comparable mortality and morbidity to previous series of one- and two-stage procedures. Our experience highlights the need for close cooperation between vascular and cardiac teams not only in the planning and execution of surgery, but also during postoperative care to diminish morbidity and mortality.

CV3-3
MANAGEMENT OF CAROTID ARTERY DISEASE IN PATIENTS UNDERGOING CARDIAC SURGERY
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Objective: The incidence of major neurologic events in patients undergoing cardiopulmonary bypass ranges from 1% to 6%. The real cause of neurologic complications is unknown but is probably due to a combination of cerebral hypoperfusion, carotid embolic events, aortic embolic events, or micro-embolism from the bypass circuit. The aim of our study was to assess risk factors of associated cardiac and carotid artery disease, in order to give a correct indication to epiaraotic vessels screening and to surgical treatment, and to assess the clinical outcome of patients treated for combined cardiac and carotid artery surgery in our centre.

Methods: From January 1998 to April 2008, 79 consecutive patients underwent combined cardiac surgery and carotid endarterectomy in our centre. Epiatotic vessels screening was performed by duplex and color Doppler imaging, and by CT-scanning when needed. Indication to endarterectomy was given to any stenosis ≥70%. In all cases, carotid endarterectomy was performed during cardiopulmonary bypass at 25 °C by the same surgical operator.
team. Neurologic events within the first 30 days persisting more than 24 h were considered a perioperative stroke. Data were collected by a follow-up interview, physical examination and duplex and color Doppler imaging.

Results: Median follow-up was 5.1 years. Hospital mortality was 2.2%, 34.2% of operated patients had a contralateral carotid artery stenosis ≥50%. Six perioperative strokes (2.2%) were recorded; four of these (66.7%) occurred to patients with significant bilateral disease with untreated contralateral carotid artery. Twenty-two patients died during follow-up, 13 of them for cardiac events. Fifteen non-lethal cardiac events occurred during follow-up. No significant differences in terms of overall mortality, cardiovascular mortality, stroke and cardiac events were observed in patients older than 70 years, compared to the younger ones. Patients operated for heart valve disease had a lower overall mortality and cardiac events incidence, compared to CAGB patients. We found five cases of restenosis of treated arteries, none of them causing new neurologic events.

Conclusions: Despite the multifactorial origin of perioperative neurologic complications, restoring a normal blood flow through a stenotic carotid artery seems the best way to avoid neurological events in patients with associated cardiac and epiaortic vessels disease. The use of a combined approach with moderate hypothermia appears to be effective in reducing perioperative and long-term mortality and morbidity. A full treatment of cardiac and carotid disease without concerns for bilateral disease or patients’ age is protective against postoperative neurologic events.

CV3-4
THE PRELIMINARY RESULTS OF COMBINED CAROTID ENDARTERECTOMY AND OFF-PUMP CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH CAROTID AND CORONARY ARTERY DISEASE
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Objective: Carotid and carotid artery diseases frequently coexist and patients with concomitant significant disease of coronary and carotid arteries remain at high risk of perioperative stroke and myocardial infarction. The aim of this study was to investigate the effect of combined carotid endarterectomy (CEA) and off-pump coronary artery bypass grafting (off-pump CAGB) on patients with carotid and coronary artery disease.

Methods: Consecutive patients with carotid and coronary artery disease underwent one-stage unilateral CEA and off-pump CAGB between January 2002 and December 2007 in our heart institute. Perioperative complications including neurological events or major adverse cardiac events were assessed and follow-up was carried out.

Results: A total of 51 cases of isolated off-pump CAGB and unilateral CEA including 34 right and 17 left were performed. Mean blocked time of carotid artery in CEA was 25.5±7 min. Mean number of distal grafts per patient was 3.30±0.45. Mean ventilation time, ICU stay and postoperative hospital stay were 11.3±5.4 h, 2.1±0.9 days and 12.5±6.1 days, respectively. None of the patients had stroke or myocardial infarct and there was one perioperative death due to acute cardiac failure, with operative mortality of 1.96%. Follow-up was complete in 47 patients (92.16%). After mean follow-up of 39.5±12.5 months (6-73 months), none of patient manifested with stroke, new anngia or new-born cardiac infarct and there was also no late death.

Conclusions: Concomitant off-pump CAGB and CEA is a safe and effective procedure in selective patients with significant carotid and coronary artery disease.

CV3-5
NEW STRATEGY FOR THE EXTENSIVE THORACIC AORTIC ANEURYSM USING THE SECOND-STAGED TEVAR
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Objective: Extended thoracic aortic aneurysms are extremely burdensome to treat due to their surgical complexity, so the incidence of devastating postoperative complications is extremely high. The elephant trunk technique (ET) for these aneurysms has been adopted worldwide. However, ET required invasive second-stage operation with left thoracotomy to complete the procedure, and there are even a considerable number of patients who do not survive to the second operation. So, we introduced the thoracic endovascular aortic repair (TEVAR) for the second operation following aortic arch replacement. We elucidated the safety and effectiveness of extensive thoracic aortic aneurysms with TEVAR.

Methods: Three hundred and eighty-one cases of TEVAR were conducted from January 1993 to September 2008. In these cases, TEVAR for second-stage operation was performed 40 cases. The average age of patients was 68.8 years old. Preoperative complications included nine cases of coronary artery disease, three cases COPD, four cases of renal failure. For the first operation, 29 patients received open stent grafting technique (stent grafting into descending aorta through the opened aortic arch: OSG), and ET was performed in 11 cases. Sixteen patients (40%) were performed cerebrospinal fluid (CSF) drainage to prevent postoperative paraplegia.

Results: All procedure was completed successfully and there was no operative death. A mortality rate is 91% within three years. The mean of operation time of the TEVAR was 128 min after OSG method, 153 min after ET. The mean length of stent graft was 174 mm (120±30). There was incidence of postoperative paraplegia. The mean length of ET grafts was 85 mm (40±200 mm). We had trouble with inserting stent-grafts to ET grafts because it was difficult to locate the distal end of the ET grafts. Three patients occurred type 3 endoleaks after 28 months, 34 months, 50 months of these operations. One patient with ET occurred type I endoleak after 21 months after at the distal side of the stent graft, and all of these endoleaks diminished with re-TEVAR.

Conclusions: We obtained satisfactory results by second-staged operation with TEVAR for extended thoracic aortic aneurysms. This procedure might be one of the standard surgeries for extended thoracic aortic aneurysms.

CV3-6
ANOMALIES AND VARIANT ANATOMY OF THE AORTA AND SUPRA-AORTIC VESSELS: ADDITIONAL CHALLENGES WITH HYBRID PROCEDURES
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Objective: Endovascular or hybrid approach to the aortic arch aneurysms is nowadays an appealing solution for selected patients. The technical challenges of graft deployment, such as proximity to the great vessels and arch tortuosity, have been and remain a focus of device engineering. Recently, repair of aortic arch aneurysms has been accomplished using both ‘hybrid’ and totally endovascular techniques. Lengthening the branchless descending thoracic aorta is becoming an established and accepted strategy for expanding the applicability of stent-graft repair. Aim of this retrospective, single center, study is to evaluate the technical and clinical success recorded in complex anatomical settings of endografting.

Methods: Seventy-three patients were treated for thoracic aorta aneurysms with a stent-graft, the aortic arch was involved in 31 cases (no urgent patients). In these series were included 23 case of normal aortic arch anatomies (NA) and eight of complex variants (CA): four cases of bovine arch, three aberrant right subclavian artery and one case of isolated origin of all the supra-aortic trunks. Limited to NA, ‘zone 0’ was involved in 4 cases, ‘zone 1’ in 3 and ‘zone 2’ in 16.

Results: Endograft positioning was technically successful, with no surgical conversion in all cases. Demographics and clinical features, were comparable in both groups. The P-value was not statistically significant. The 30 days mortality rate was 4.3% (1 fatal stroke) in NA group and 12.5% (1 myocardial infarction) in CA group. One patient in NA group suffered for an iliac artery rupture during retrieval of the delivery system. The patient treat immediately with endovascular clamping by an aortic occlusion balloon and an iliac-femoral bypass (ePTFE), Peri-operative major complications occurred in four patients in NA group and in two in CA group. No cases of paraplegia or paraparesis were recorded in both group.

Conclusions: Complex anatomy of the arch and the supra-aortic trunks could increase the technical difficulty of endovascular exclusion of the aneurysm and could require complex debranching of the supra-aortic vessels necessary to obtain an adequate landing zone and to preserve the brain and spinal cord perfusion. However, in our experience complex anatomy not represent a predictive factor in term of peri-procedural major adverse events.

CV3-7
OFF-PUMP TREATMENT OF AORTIC ARCH ANEURYSM OF VARIOUS TYPES: THE HYBRID TECHNIQUE
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Objective: To determine the possibility of hybrid technique in management of patients with aortic arch aneurysms.

Methods: Three hundred and eighty-one cases of TEVAR were conducted from January 1993 to September 2008. In these cases, TEVAR for second-stage operation was performed 40 cases. The average age of patients was 68.8 years old. Preoperative complications included nine cases of coronary artery disease, three cases COPD, four cases of renal failure. For the first operation, 29 patients received open stent grafting technique (stent grafting into descending aorta through the opened aortic arch: OSG), and ET was performed in 11 cases. Sixteen patients (40%) were performed cerebrospinal fluid (CSF) drainage to prevent postoperative paraplegia.

Results: All procedure was completed successfully and there was no operative death. A mortality rate is 91% within three years. The mean of operation time of the TEVAR was 128 min after OSG method, 153 min after ET. The mean length of stent graft was 174 mm (120±30). There was incidence of postoperative paraplegia. The mean length of ET grafts was 85 mm (40±200 mm). We had trouble with inserting stent-grafts to ET grafts because it was difficult to locate the distal end of the ET grafts. Three patients occurred type 3 endoleaks after 28 months, 34 months, 50 months of these operations. One patient with ET occurred type I endoleak after 21 months after at the distal side of the stent graft, and all of these endoleaks diminished with re-TEVAR.

Conclusions: We obtained satisfactory results by second-staged operation with TEVAR for extended thoracic aortic aneurysms. This procedure might be one of the standard surgeries for extended thoracic aortic aneurysms.
Methods: In the RSPC 'Cardiology' 15 cases of aortic arch aneurysm had been operated using the endovascular grafts within the period 2005-2008. Ten cases (Type I dissection) of combined operation: prosthetic replacement of aortic valve, aortic arch (Borst technique), fixation of distal part of 'trunk of elephant' with an endograft. Five patients had endovascularly repaired distal aortic arch due to saccular aneurysm followed by brachycephalic arteries (BCA) debranching. All the patients were males of 62±4.2 years. The off-pump endovascular management strategy was based on the evaluation of zones according to Ishimaru classification. The covered part of stent graft was settled with 'superfluity' of 1.0-1.5 cm depending on type of BCA rerouting. Zone I was operated from mini-sternotomy approach to ascending aorta. For Zone II supraclavicular approach was used. In cases of cardiopulmonary bypass the Borst technique was used.

Results: Mean fluoroscopy time was 36±12 min with radiation exposure dose of 98 Gy/cm². Mean surgical phase duration was 153±20 min. Endovascular phase duration was 80±12 min. One patient developed intraoperative stent dislodgement during the proximal portion balloon fixation that required additional stent graft implantation. No complications of BCA debranching were found in these patients in early postoperative period. No situations requiring either conversion to CPB and/or intervention cancellation due to any technical difficulties took place. The patients were discharged at the mean time of day 7. Long-term results from all the patients were monitored for 3 months-3 years (mean of 1.2 years). Neither cases of stent migration nor proximal landing zone failure or other 'endoleaks' have been noted. One patient with phrenic nerve trauma reported of modest breathing-related chest discomfort due to high left diaphragm cupula position. The other case was an unstable region of minirsternotomy approach six months after the reconstruction requiring a repeated osteosynthesis. This complication developed on a background of chronic continuous bronchitis with a severe cough syndrome. 

Conclusions: This type of reconstruction provides reduction of lethality and complications incidence in the postoperative period. An obtaining of optimal technical result, both in surgical and endovascular phases, will exceed the range of indications for the treatment of saccular aneurysms of aortic arch with BCA orifices involvement. However, to support the given statement, further data collection is to be performed.

CV3-8 SUPRAAORTIC TRANSPOSITIONS FOR COMBINED VASCULAR AND ENDOVASCULAR REPAIR OF AORTIC ARCH PATHOLOGY
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Objective: Supraaortic transpositions in various extents followed by endovascular stent-graft placement are now an established tool in the treatment of various pathology affecting the aortic arch. Results remain to be determined, however.

Methods: From 1996 to 2007, 73 patients (median age 71 years) presented with aortic arch pathology (atherosclerotic aneurysms n=42, type B dissections n=9, penetrating ulcers n=17, traumatic lesions n=2, aneurysms based on chronic obstructive pulmonary disease n=3). Strategy for distal arch disease was subclavian-to-carotid transposition (n=24) or autologous double vessel transposition via upper hemisternotomy (n=36). For entire arch disease, total supra-aortic rerouting with a reversed bifurcated prostheses was applied (n=13). Endovascular stent-graft placement was performed on 37 patients. Results: In-hospital mortality was 6.8% (n=5). Persistent early type I and III endoleak rate was 9.6%. Persistent late type I and III endoleak rate was 5.6%. Overall actuarial survival was 90%, 86% and 72% at 1, 3 and 5 years. Mean follow-up is 37 months (1-120 months). Early and late endoleak formation was independently predicted by the number of prosthess (early OR 2.10; P=0.0003, late OR 2.016; P=0.012) whereas logistic EuroSCORE reached borderline significance regarding late endoleaks [OR 2.1; P=0.095]. An earlier year of implantation reached borderline significance predicting survival [OR 1.9; P=0.062]. Furthermore, survival was independently predicted by higher logistic EuroSCORE levels [OR 1.8; P=0.020]. Interestingly, type of arch rerouting did not influence endoleak formation and survival [OR 0.9; P=0.812].

Conclusions: Results after supraaortic transpositions in various extents followed by endovascular stent-graft placement for the treatment of various pathology affecting the aortic arch are promising. Endoleak formation is directly related to the number of prosthess and may be reduced by longer distal revascularization. Each type of arch rerouting, irrespective of extent, has turned out to be effective. Therefore, extended applications of these combined treatment strategies substantially augment the therapeutic options.

CV3-9 SINGLE CENTER EXPERIENCE IN THE MANAGEMENT OF 90 PATIENTS WITH THORACIC AORTIC PATHOLOGIES
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Objective: To analyze the outcomes of patients suffering from various thoracic aortic pathologies in the endovascular area.

Methods: In the period between 2004 and 2008, 90 consecutive patients with a broad range of aortic pathologics conditions were treated in our department. There were 14 patients with aortic ischemus rupture, 5 aortic type B dissections, 7 thoraco-abdominal aneurysms and 62 thoracic aortic aneurysms (53 non-ruptured and 9 ruptured). Additionally, two patients showed mobile thrombus and penetrating ulcer, respectively. All patients underwent endovascular repair of the thoracic aorta. In case of thoraco-abdominal aneurysms, patients were treated by hybrid management (debranching of abdominal aorta and retrograde bypass grafting to the visceral arteries and endovascular repair of thoracic aorta).

Results: The procedural success rate was 97.7%. The 30-day mortality rate in the acute treated group was 36%. In contrast, the mortality rate in the elective group was estimated by 9.23%. Paraplegia was registered in 5.5% of the patients. The endoleak rate was observed in 4.4% of patients. Stent collapse was diagnosed in 2.2% of the patients. Renal function impairment showed 12% of the cases.

Conclusions: Endovascular management of thoracic aortic pathologies without or with rupture can be performed with low morbidity and mortality rates.
after EVAR, above all after failed secondary endovascular correction, an aggressive treatment in fit patients allows outcomes similar to those of primary OR. The correct indication for primary EVAR can permit to reduce incidence of conversion to OR.

V7-2
MANAGEMENT OF THE UNRUPTURED EXPANDING ABDOMINAL AORTIC ANEURYSM
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Objective: To assess the potential benefit of emergency operation for the group of patients with an acutely expanding aneurysm.

Methods: Nineteen patients (mean age 71 years; range 60-84 years) with unruptured expanding abdominal aneurysm were reported. Expansion rate was assessed by ultrasonography and/or CT-scan. Conventional surgical repairs were performed (2002-2007) when the unruptured abdominal aortic aneurysm reached 5.0 cm, and expanded rate was more than 0.5 cm in a 6-month period or developed symptomatic clinical course.

Results: The clinical course of 19 patients with a unruptured expanding abdominal aortic aneurysm was compared with 117 patients undergoing elective abdominal aortic aneurysm resection, and 34 patients having operation for a ruptured abdominal aortic aneurysm. There were no statistically significant differences (P>0.05) in mortality rate for abdominal aortic aneurysm on the basis of indication for surgery (unruptured asymptomatic but with evidence of enlargement, 4.9%; and unruptured symptomatic, 7.2%), but emergency operations had a mortality rate more than five times greater than the 5.1% after elective procedures (P<0.008).

Conclusions: Our findings emphasize the need for early and aggressive treatment of abdominal aortic aneurysm in the elective setting, even in the patient at high-risk, and suggest that the preoperative assessment and modification of risk factors is important to prevent the cardiac, cerebrovascular, pulmonary, and renal complications.

V7-3
OPEN AORTIC SURGERY AFTER EVAR PRESERVING THE ENDOGRAFT: OUR EXPERIENCE AND REVIEW OF THE LITERATURE
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Objective: Although the initial complication rate for infrarenal EVAR is lower than open surgery, long-term follow-up data have confirmed the need for continued surveillance and secondary interventions to achieve complete exclusion. Secondary conversions are needed for a variety of reasons, including endoleaks that are not amenable to endoluminal therapy, graft infection, rupture, migration and limb thrombosis. The rate of secondary conversions has been reported as 0-9% in EVAR series and the risk increases over time. Complete graft removal is considered to be the goal, but incomplete removal is sometimes necessary. In literature few reports describe hybrid reconstruction using sections of well incorporated grafts.

Methods: We describe two cases of hybrid reconstruction sewing a Dacron graft into the endograft. The first was an early conversion in the 7th postoperative day for rupture of the anterior extraeura wall of the aorta due to stents located on the outside of the graft material; the approach was midline transperitoneal with a supravisceral clamping; a Dacron tube graft was interposed sewing distally into the stent graft main body with expant of the suprarenal fixation stents. The second case was a late conversion (4 years after EVAR) needed for aneurysm evolution of the left common iliac artery landing zone; proximal clamping was achieved with a compliant balloon and a bifurcated Dacron graft was sewn proximally into the stent graft and distally to both the external iliac and the ligated sacs.

Results: Both cases were treated successfully. The postoperative period was free of complications. The two patients in the follow-up remain without complications associates with the endograft remnants.

Conclusions: With the large number of endografts being implanted worldwide, the problem of delayed conversion to open repair will only increase in importance. The removal of aortic endograft is technically challenging. In many cases complete endograft removal might be unnecessary and might unduly complicate the procedure. Preservation of part of the endograft is possible and feasible in some patients and this simplifies the operative approach and reduces the amount of dissection required and the average time for the procedure.

V7-4
GIANT ABDOMINAL AORTIC ANEURYSMS: CLINICAL SIGNIFICANCE AND SURGICAL MANAGEMENT
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Objective: With increasing age of the general population, a higher awareness of the disease, better screening methods and the option of less invasive therapeutic strategies, the incidence of abdominal aortic aneurysms (AAA) is rising steadily. Giant (≥8 cm) abdominal aortic aneurysms (GAAA) is nowadays a rare event. The authors report about 25 patients with GAAA and about the midterm outcome of large aneurysms.

Methods: From October 2001 to November 2008, 25 individuals underwent AAA open surgery, 3 women and 22 men with giant AAA including 14 emergency operations. Demographic and aneurysm-specific data, comorbidities, operative morbidity, mortality, and late outcomes were analyzed. Social, cultural and economic factors were associated with GAAA patients and a great familial predisposition (9 patients/25), a high incidence of current smokers and a high incidence of chronic obstructive pulmonary disease were observed. All patients were successfully operated in four cases using an aortoiliac Y-graft bypass technique, in 20 using an aorto-aortic graft and in one case using a aorto-bifemoral bypass. In all cases a Cell saver technique was used during the surgical procedure.

Results: Seven patients died during intensive care after emergency surgical procedure, four of these died of multi-organ failure and three of myocardial infarction. Eighteen patients had good postoperative outcome. In our experience procedure-related outcomes showed significant differences in operative blood loss and length of hospital stay compared with AAA <8 cm patients, both in elective surgery. The mean follow-up period was 26 months (1-72); three patient died on cardiological disease respectly after two, six and eight months from surgical intervention, and one patient died after one year of vascular cerebral disease.

Conclusions: The midterm outcome of large aneurysms after EVAR was associated with increased rates of aneurysm-related death, unrelated death, and rupture. Surgical open treatment of Giant AAAs has shown that it can be performed safely and effectively. Anyway Aneurysms with greater diameter are related to a higher risk of perioperative death after surgical emergency operation, a shorter life expectancy, a higher risk of rupture and aneurysm-related death.

V7-5
OPEN REPAIR OF AORTOILIAC ANEURYSM: THE ROLE OF DIRECT REVASCULARIZATION OF HYPOGASTRIC ARTERIES
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Objective: The aim of the study was to assess immediate and mid-term results of hypogastric artery bypass as a concomitant procedure to preserve pelvic circulation during open treatment of abdominal aorto-iliac aneurysm. Methods: Clinical data of 69 patients (average age 70.4±8.1 years), treated between January 2005 and November 2008 with bifurcated graft during open repair for their unruptured abdominal aortic aneurysm, were reviewed. Twenty-four patients received 30 hypogastric artery bypass (HAB), using a aorto-bifemoral bypass. In all cases a Cell saver technique was used during the surgical procedure. Results: Seven patients died during intensive care after emergency surgical procedure, four of these died of multi-organ failure and three of myocardial infarction. Eighteen patients had good postoperative outcome. In our experience procedure-related outcomes showed significant differences in operative blood loss and length of hospital stay compared with AAA <8 cm patients, both in elective surgery. The mean follow-up period was 26 months (1-72); three patient died on cardiological disease respectly after two, six and eight months from surgical intervention, and one patient died after one year of vascular cerebral disease.

Conclusions: The midterm outcome of large aneurysms after EVAR was associated with increased rates of aneurysm-related death, unrelated death, and rupture. Surgical open treatment of Giant AAAs has shown that it can be performed safely and effectively. Anyway Aneurysms with greater diameter are related to a higher risk of perioperative death after surgical emergency operation, a shorter life expectancy, a higher risk of rupture and aneurysm-related death.

V7-6
V7-6
FAST TRACK PROTOCOL IN THE SURGERY OF ABDOMINAL AORTA: OUR EXPERIENCE
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Objective: The use of fast track protocols is rapidly spreading to many surgical fields. In fact these protocols have been developed in vascular surgery too: these consist in modifying certain surgical and anaesthesiologic habits. For surgery of the abdominal aorta in our surgical unit, a protocol has been developed that does not change our surgical technique which is simple, reproducible and applicable to all patients undergoing abdominal surgery. The end points were the canalisation of the alveus and the return to normal physiological functioning required before hospital discharge.

Methods: Our protocol foresees the removal of the SNG at the end of surgery, early feeding (day 0), introduction of a high protein diet from day 1, early mobility and physiotherapy. Spontaneous recovery of the peristalsis is guaranteed after removal of the SNG, on removal of postoperative morphine from food and by early mobilisation. The passage was favoured by the introduction of prokinetic drugs. A total of 131 patients were enrolled in the study. From September 2007 to December 2008, 79 patients were enrolled into our protocol (FT) and compared retrospectively with 52 patients submitted to traditional aortic surgery. Patients operated in emergency were also included. We carried out a prospective pilot study by positioning a peridural catheter (blended anaesthesia) in 12 patients: the change in the anaesthesiologic routine resulted difficult and, furthermore, determined longer operating times. There were no changes to the surgical technique: transperitoneal laparotomic approach, infiltration of the fascia and subcutaneous long, half-life anaesthetic.

Results: A statistically significant difference was demonstrated by the early appearance of peristalsis, patency of the alveus to gases and feces (P<0.001). In the FT group there were eight cases of delayed canalisation (a unique case of reoperation for intestinal occlusion from volvulus in patient operated for inflammatory AAA; the other seven cases resolved with supplemental water therapy and SNG): in this case, no significant differences were noted with the control group (χ-test). The FT patients were discharged from hospital on day 5.2 and those of the control group on day 8.9 (P<0.01).

Conclusions: Fast track surgery represents the future of surgery, not only in terms of reduced costs and hospital stay, but mainly in the improvement of patient outcome. Our series demonstrates how a simple and reproducible protocol, without changes to surgical technique, can reduce surgical stress and complications with a faster hospital discharge and improved functional and organic recovery.

V7-7
OPEN REPAIR OF ABDOMINAL AORTIC ANEURYSM: CHANGING THE PATIENTS AND THE SURGICAL STRATEGIES IN THE ENDOVASCULAR ERA
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Objective: To review our experience with open repair (OR) of abdominal aortic aneurysms (AAAs) before and after the introduction of EVAR, paying particular attention to the impact of evolving patient clinical characteristics and increasingly complex open procedures on perioperative outcomes.

Methods: Between January 1994 and August 2007, 1327 consecutive elective ORs for AAA were performed at our institution. Patients operated on from 1994 to 1999 (pre-endovascular era, 693 interventions, group 1) were retrospectively compared with those undergoing OR from 2000 to 2007 (endovascular era, 634 interventions, group 2) to evaluate for significant differences in patient demographics, surgical strategies and perioperative (>30 day) results. In addition, patients undergoing endovascular AAA repair during the same period as group 2 were analyzed to evaluate for differences in comorbid conditions (338 endovascular interventions, group 3).

Results: Patients in Group 1 were more likely to be smokers, have diabetes, coronary artery disease (CAD) and peripheral arterial obstructive disease (PAOD). Patients in Group 2 had significantly higher percentages of hypertension, hypercholesterolemia, chronic obstructive pulmonary disease (COPD) and obesity than patients in Group 1. Patients in the endovascular group were similar to those of Group 2, except for an increased incidence of diabetes, CAD, and patients older than age 80. The magnitude of the open AAA repair increased during the endovascular period. Suprarenal aortic cross-clamping was required in 0.3% of cases in Group 1 compared to 5.2% of patients in Group 2 (P<0.001). Patients in Group 2 undergoing open AAA repair in the endovascular era had higher rates of renal and hypogastric revascularizations compared to group 1 (renal 5.2% vs. 1%, P<0.001; hypogastric 6.3% vs. 0.4%, P<0.001). Morbidity rates and hospital stay were higher in group 2 vs. group 1 (8.8% vs. 5.8%, P=0.3 and 10.3 vs. 7.1 days, P=0.001). Overall 30-day mortality rate was higher in patients of Group 2 vs. Group 1 (2.4% vs. 1%, P=0.05). The 30-day mortality rate was 0.9% in patients undergoing EVAR (group 3).

Conclusions: Patients undergoing OR of their AAAs during the endovascular era have different clinical characteristics with respect to those operated on in the pre-endovascular era. The diffusion of endovascular techniques in AAA repair seems to leave a more complex open surgical procedure than in the past with resultant longer hospital stays, and higher morbidity and mortality rates.

V7-8
ABDOMINAL AORTIC ANEURYSM FOLLOWING HEART TRANSPLANTATION
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Objective: The aim of this retrospective study is to assess the occurrence of abdominal aortic aneurysm after heart transplantation.

Methods: During the last twenty years, 310 patients received heart transplantation in our institution. Among these, 12 patients (4%) aged 65-69 years were treated for an abdominal aortic aneurysm: 6 patients (50%) presented an isolated localization to the infra renal aorta, 4 patients (33%) an extended localization to iliac arteries and 2 patients (17%) presented an exclusive iliac arteries localization. The average diameter of the aneurysms at the time of intervention was 62.3 mm. The average diameter in patients operated in emergency was 105 mm. The average time between heart transplantation and aortic surgery was 89 months. For all patients the aortic disease was not present at the moment of pre-transplant assessment (echo-Doppler). The half of aneurysmatic lesions were thin-walled with a spindle-shaped morphology presenting multiple lobes in a context of a megadolicho arterial system.

Results: Follow-up was 100% complete (average 56.7 months). Ten patients were surgically treated and two patients received endovascular treatment using a bifurcated aortic endoprosthesis. Hospital mortality was 16.6%. Digestive morbidity was 30%, represented by four patients in which resumption of intestinal transit occurred after more than ten days. The average hospital stay was 19 days. Two patients (16.6%) died during follow-up for neoplastic causes.

Conclusions: In our experience abdominal aortic aneurysms occurred in heart transplanted patients seems to be similar for incidence and evolution to general population. In spite of the immunosuppressive treatment, incidence of infections does not increase. However, this treatment seems to affect lesion morphology.

V7-9
UNUSUAL FORMS OF RUPTURED ABDOMINAL AORTIC ANEURYSMS
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Objective: More than 95% of abdominal aortic aneurysms rupture into retroperitoneal space. In rare cases abdominal aortic aneurysms rupture into inferior vena cava with aorto-caval fistula formation, or into duodenum with formation of primary aorto-duodenal fistula, as well as chronic contained rupture. The aim of this study is presentation of our personal experience with unusual forms of ruptured abdominal aortic aneurysms.

Methods: Out of 506 patients with ruptured abdominal aortic aneurysm 41 patient had unusual form and were included in this prospective study. Eleven patients had chronic contained rupture, five primary aorto-duodenal fistula and 25 aorto-caval fistula.

Results: The correct preoperative diagnosis was established in six cases with chronic contained rupture, two with primary aorto-duodenal fistula and 13 with aorto-caval fistula. The replacement of abdominal aortic aneurysms was performed in eight cases using tube graft while at 33 patients bifurcated graft was used. At aorto-duodenal fistula duodenal defect was transversally closed using two layers standard suture technics. Fistula excision
followed in four cases. In one case partial duodenal resection followed by duodenoo-jejunoanastomosis with Brown entero-entero anastomosis. All 11 operated patients with chronic contained rupture survived, 3 of 5 patients (60%) with aorto-duodenal fistula died during the first 30 postoperative days due to multi organic system failure. Two survived patients had axillofibromial bypass. Death during the first 30 postoperative days after surgically treated aorto-caval fistula occurred at 5 patients (20.0%) due to: bleeding-1, multi organic system failure-2, myocardial infarction-1 and left colon gangrene-1 patient. Outcome outcomes happened due to misdiagnosed and patients with hemorrhagic shock at the moment of admission.

Conclusions: Unusual forms of aneurysmal rupture require special diagnostic and therapeutic approach to prevent serious/fatal complications. Diagnosis and treatment are the simplest at chronic contained rupture, while the most complicated at aorto-duodenal fistula.

V7-10
PLASMA ENDOTHELIN LEVELS AS A MARKER OF ABDOMINAL AORTIC ANEURYSMS GROWTH
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Objective: Endothelin (ET 1) is a contracting factor producing by endothelial cells into the vascular lumen and wall. Its physiological plasma levels are low. Changes of endothelium are very important factors for destruction and remodeling of abdominal aortic wall during the aneurysm formation. It can be expected that plasma levels of ET 1 will be dependent on this process. The aim of this prospective non-randomized study was to evaluate the role of ET 1 for aneurysm diameter and symptomatology.

Methods: One hundred and twenty-two consecutive patients of average age of 68.6 (range 51-87) with AAA were examined. Plasma levels of ET 1 (pg/ET) were determined using multiplex analysis. ET 1 were evaluated in patients with small (<5 cm) group I, large (>5 cm) group II, asymptomatic - group III, symptomatic - group IV and whole group of patients with abdominal aortic aneurysms (AAA) - group V. ET 1 were also compared in patients with AAA, peripheral arterial occlusive disease - group VI and group of healthy volunteers of similar age - group VII. Statistical analysis was performed by non-parametric Wilcoxon test and cut off levels for sensitivities and specificities.

Results: A highly significant difference (P<0.0001) was found between ET 1 levels in the whole group of AAAs (group V - 28.3±10.4 pmol/l) and control group (group VII - 7.9±3.2 pmol/l). ET 1 in patients with small (group I - 19.4±10.3 pmol/l) was significantly different from patients with large AAAs (group II - 31.2±11.2) - P<0.01. The highest ET 1 levels in AAA subgroups were found in symptomatic and large, the lowest in asymptomatic and small AAAs. No statistical difference was found between symptomatic and asymptomatic AAAs (III+IV).

Conclusions: ET 1 probably play an important role in the process of abdominal aortic wall destruction and AAA development. Further studies are required to determine whether evaluation of ET 1 levels will have predictive clinical value for the expansion rate of AAA.

Acknowledgement: The study was supported by Collaborative Project - FAD No. 200647 (FP7-Health - 2007-A).

V8-2
INDUCTION OF THROMBOSIS OF THE THORACIC ANEURYSM SAC WITH THE APPLICATION OF RADIOFREQUENCY
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Objective: This was an experimental study of endovascular aortic surgery for abdominal aortic aneurysm. The effect of the induction of thrombosis of the thoracic aortic aneurysm sac with radiofrequency in a canine model of sac aneurysm. Purpose: To determine the efficacy of the induction to thrombosis of the thoracic aneurysm sac as prevention of endoleaks after endovascular treatment.

Methods: Six dogs with induction for radiofrequency clotting blood sac of performed aneurysm and treated with stent-graft was used in the experiments in comparison with historical group of four dogs only with thoracic aneurysm treated with stent-graft. Radiofrequency was applied to each nodule for 1 min at 127 mA±33 (mean±S.D.) (tip temperature, 92 °C±2). IVUS ultrasonography and histology study are used for the evaluation of the method.

Results: The results show the efficacy of the radiofrequency system and it is possible the discussion of the standard clinical application. Conclusions: Endovascular repair of thoracic aortic aneurysms is dependent on the successful exclusion of the aneurysm from arterial circulation. Grow of the aneurysm is originated from retrograde flow into the sac. This study demonstrates the use of radiofrequency induce thrombosis in a canine model of sac aneurysm. A Ultrasound IVUS enabled the weekly and a month detection of coagulation blood after radiofrequency treatment in aortic aneurysm sac. This approach may be a strategy for future prevention of endoleaks.
Methods: One hundred and four patients with occlusive arterial disease of lower extremities were randomly assigned to be given immediately before clamping 100 IU/kg of nadroparin or UFH. Critical limb ischemia was the indication for surgery in 46 (44.23%) cases. We performed femoro-popliteal bypass above-knee in 65.38%, and below knee in 18.27%. Femoro-tibial reconstructions were performed in 8.66% and other variants of reconstruction in 7.69%. In above-knee bypasses polytetrafluoroethylene (PTFE) grafts were used in 90.56% of procedures, autologous venous transplants in 8.11%. In below knee anastomoses PTFE, autologous vein and combined method were employed in 21.05%, 31.58% and 47.37%, respectively. Femoro-tibial reconstructions required only vein in 72.73% of cases and combined variant in all the others. Pre-, intra- and postoperative coagulation and aggregation parameters were evaluated. Early thrombosis rate, blood loss volume and time of hemostasis from the end of reconstruction to wound closure were examined. On the 2-3 day after the procedure control duplex study of the involved region was performed to reveal possible haemorrhagic complications.

Results: Coagulation parameters, including fibrinolytic activity, activated partial thromboplastin time, thrombin time, prothrombin ratio, factor XIII, antithrombin III level as well as aggregation parameters were comparable or better in the LMWH group. The frequency of additional anticoagulant injection or protamin neutralization is lower in case of weight-adjusted LMWH dosage. There were no intra- or postoperative thromboses in the LMWH group in comparison with 4 (8%) in the UFH group (P<0.05). Mean intra-operative blood-loss in LMWH group was 178.33±17.17 ml (80-900), in UFH group 273.02±27.09 ml (100-1000) (P<0.01). Time needed to provide hemostasis after the reconstruction and hematoma formation rate after surgery all appeared to be significantly lower in the LMWH group.

Conclusions: Intraoperative LMWH usage affords to decrease the rate of early thrombotic and haemorrhagic complications after infrainguinal vascular reconstructions. Intraoperative blood loss volume is also significantly reduced as well as the time of hemostasis after the reconstruction. LMWH are more effective and safe than UFH in infrainguinal vascular reconstructive surgery.

V8-6
PREVIOUS OPERATIONS AND PROSTHESIS ARE RISK FACTORS OF ARTERIO-VENOUS FISTULA INFECTION AND RELATED SEPTIC BLEEDING
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Objective: Bacteraemia and sepsis is second cause of death in patients on dialysis. Immunosuppressive effects of advanced renal failure combined with repeated percutaneous intravascular intervention required for haemodialysis, provide an environment conducive to the development of infection. Use of dialysis catheters is a major risk factor in the development of infection, but infections of arterio-venous fistula (AVF) with risk of septic bleeding remain very serious and complicated problem.

Methods: Between 1 January 2004 and 31 December 2007, total 289 AVF operation were performed in our department. AVF infections resulted in septic bleeding occurred in five patients. Characteristic of patients and history of AVF were compared between infected and non-infected groups.

Results: All infected patients have PTFE arm fistula. Two hundred and thirty-eight patients from non-infected groups have native vessels AVF, 51 (17.6%) patients from non-infected groups have native vessels AVF, 51 (17.6%) patients from infected group have PTFE arm fistula. Patients from infected group had more previous AVF operations than patients from non-infected group (3.6±0.55 vs. 1.6±0.08, respectively) (P<0.05), especially in region of infected AVF (3.4±0.55 vs. 1.3±0.06) (P<0.05). In every case we tried to preserve vascular access by reconstruction of infected vessel or graft with fragment of saphenous vein or tissue. Autologous AVF were successful in four patients (80%), in remaining patient reconstruction of brachial artery alone was performed. Infection was successfully treated in all patients.
Objective: The aim of this paper is to assess predictors of durability of femoro-popliteal bypasses, on the basis of the results reached in practice and those from medical literature. Methods: Methods applied were the documentation study method and the comparison method. Results: In 131 patients 147 femoro-popliteal bypasses were made. One hundred and four bypasses were made through the large saphenous vein whilst 43 bypasses with prosthesis. In 115 patients the femoro-popliteal bypass was made through the saphenous vein and four bypasses were made through the large saphenous vein whilst 43 bypasses with prosthesis. In 115 patients the femoro-popliteal bypass was made through the large saphenous vein, out of which 26 had been made through the saphenous vein and 22 with prosthesis. Examining technical literature and treating our examinees by graded regression analysis we have determined the predictors of durability of femoro-popliteal bypasses, and divided them into three groups: 1. predictors of fast occlusion of bypasses; 2. predictors of longer durability of bypasses; 3. predictors not influencing the duration of bypasses. Independent predictors of larger amputation were determined separately. Conclusions: In patients affected by occlusive disease in the femoro-popliteal segment, from their age, sex, establishing if they assume hormone substitutional therapy, level of circulation insufficiency, weak draining index determined preoperatively, and type of femoro-popliteal bypass made (whether made through the large saphenous vein or with prosthesis and whether the bypass was made on the upper or the lower leg) the durability of femoro-popliteal bypasses can be predicted.

Objective: To study the results of surgical treatment of atherosclerotic aneurysms of peripheral arteries. Methods: From 1983 up to now, 68 patients with atherosclerotic popliteal and femoral aneurysms were surgically treated in our department. Most of them were males - 97%. Mean age of the patients was 60.8. In 40% cases there was combination with infrarenal aneurysm, in 30% cases there were bilateral aneurysms of popliteal arteries, in 10% - bilateral aneurysms of femoral arteries, in 10% - bilateral aneurysm of both popliteal and femoral arteries. Mean diameter of femoral aneurysm was 21.3±6.6 mm, of popliteal aneurysm - 22.5±12.12 mm. Indications to surgery were: symptomatic aneurysm or aneurysm diameter more than 2 cm. In case of popliteal aneurysm we prefer to do aneurysm resection and prosthesis implantation - 57%, in 38% cases of femoral aneurysm we combined that procedure with infrarenal surgery. In 90% cases we used PTFE prostheses.

Methods: Between January 2007 and October 2008, we have used 28 silver impregnated prosthesis (Intergard Silver-intervascular) in the following positions: axillo-femoral 1, axillo-bifemoral 4, aorto-bifemoral 8, aorto-femuro-popliteal 3, femuro-popliteal proximal 5, femuro-popliteal distal 4 and femuro-femural crossover 1. We have replaced one single infected graft (axillo-femoral) - infection with E. coli (gram -), replacement in situ, the other indications were in patients with high-risk of infection: trophyc lesions (16 patients), generalized psoiyasys (3 patients), emergency surgery (2 patients).

Results: No infectious complications with the use of silver impregnated grafts. All the pontages are functional, with a follow-up period of 2-12 months (mean 4 months).

Conclusions: Treatment of vascular prosthesis infections must be established individually. In-situ reconstruction with the infection-protected silver Dacron prostheses in conjunction with wound debridement and systemic antibiotic administration is a new approach that promises to be successful. Bigger and longer follow-up series are need in order to confirm this preliminary results.
OF ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSMS WITH DIFFERENT PATIENTS BUT SAME RESULTS: MID-TERM COMPARISON

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Objective: Endovascular aneurysm repair (EVAR) is being performed with increasing frequency worldwide. Each patient and each abdominal aortic aneurysm (AAA) have unique characteristics. A variety of endografts and different configurations are available to conform to each anatomy, for best long-term results. A protocol of endovascular treatment for AAA was established in our department. Patients with difficult anatomy in terms of proximal aortic neck were treated with the Zenith device, while patients with easier anatomy of proximal aortic neck were treated with the Excluder device. The aim of this study is to present mid-term result of this protocol.

Methods: Between January 2004 to February 2007 out of 235 consecutive patients, 124 underwent EVAR at a single Department (mean age 71 years, mean AAA diameter 5.9 cm). Patients with difficult aortic neck (length between 10 to 20 mm, and/or severe calcifications or thrombosis, and/or angulations <60º) were treated with the Zenith device according to the protocol. Patients with easier aortic neck anatomy (length >20 mm, absence of severe calcifications or thrombosis, angulations >60º) were treated with the Excluder endograft according to the protocol. All patients underwent computed tomography scanning before discharge, at 6 and 12 months, and annually thereafter. All data were prospectively collected.

Results: Absolute technical success was achieved in 118 (95.2%) cases. One open conversion was necessary due to technical failure, one endograft thrombosis lead to axillo-bifemoral bypass, while four leg cannulation failures led to aortounilac conversions. No device related complication, no migration and no renal deterioration have emerged so far. No secondary intervention was required. The aneurysm size has not increased in any of our patients. There was statistical significant difference in the quality of the aortic neck anatomy between the two groups. However, there was no statistical significant difference in the perioperative outcome of the patients in terms of morbidity and mortality. There were no statistical significant differences in the mid-term comparison of the two groups using the Kaplan-Meier survival functions and the Log Rank (Mantel Cox) test, in terms of mortality, graft migration and endoleak. Post-implantation fever was found significantly higher in the Zenith-treated patients (P=0.042).

Conclusions: Aneurysms with different difficulty, in terms of EVAR suitability, achieved similar good results with appropriate endograft selection. Endograft configuration orientated to patient's individual anatomy is the hallmark of EVAR success. Choosing the right endograft device and the suitable device configuration, is often essential for procedural and long-term safety.

V8-13
ISOLATED Iliac ANEURYSMS: SIX-YEAR EXPERIENCE
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Objective: The objective of this study is to review our experience with isolated iliac aneurysms in the last six years. Methods: The medical records of patients who underwent treatment for isolated iliac artery aneurysms were retrospectively reviewed, to obtain information on patients' demographics, risk factors, type of treatment and outcome. Results: A total of 11 patients with 16 aneurysms, all men, with a mean age of 69±6 years were treated. The mean diameter was 3.7±1.0 (3.5 cm±1.1 elective repair; 5.6±3.5 emergency cases). Eight (72.7%) had elective operations, and one endovascular repair. Analysing the risk factors, it was evident that the hypertension was the most prevalent and the diagnosis of aneurysm was done 10 years sooner in the smoker patients. There was no postoperative death in this series. The mean follow-up period was of 21 months, and during it, one patient developed a non-infection anastomotic aneurysm of common femoral artery, one died with a mycocardial infarction and another was lost.

Conclusions: In this small study, both surgical and endovascular treatment, can be accomplished with very low morbidity and mortality.

V8-14
IMPACT OF ATHEROSCLEROTIC RISK FACTORS ON THE EXTENT OF ARTERIAL OCCLUSIVE DISEASE AMONG ARAB PATIENTS. A HOSPITAL BASED STUDY
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Objective: Although the risk factors for atherosclerosis have been identified, their impacts on the extent of arterial occlusive disease among Arab population have not been studied before.

Methods: A case control study was undertaken on consecutive series of Arab patients over one year. The study comprised two patients groups: Atherosclerotic group which included patients aged 40 years and older admitted with peripheral, carotid or coronary artery disease and the control group; patients admitted to one of the general surgical units and were free from atherosclerotic disease. All patients underwent evaluation of risk factors for atherosclerotic and systemic study of the vascular tree. Correlation and association was checked between prevalence of these factors and the extent of atherosclerotic disease into different territories.

Results: Two hundred and fifteen patients in the atherosclerotic group and 191 patients in the control group were included in this study. There was significant correlation between incidence of risk factors and risk and extent of atherosclerosis. In age, sex and nationality-adjusted logistic regression analysis, combination of some risk factors augmented the risk and extent of atherosclerosis e.g. diabetes alone increased the risk of atherosclerosis slightly in one affected system (OR 2.28, 95% CI 1.9-2.7) while combination and accumulation of diabetes, smoking and dyslipidemia resulted enhancing this risk (OR 7.4, 95% CI 2.5-22.4).

Conclusions: The risk factors of atherosclerosis increase its incidence and extent into different territories.

V8-15
LONGITUDINAL OR TRANSVERSE: WHICH IS THE IDEAL INCISION FOR UPPER LIMB AUTOLOGOUS VASCULAR ACCESS?
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Objective: To determine whether wound infections associated with upper limb arterio-venous fistula (AVF) surgery are more commonly associated with transverse or longitudinal incisions.

Methods: A single centre retrospective cohort analysis, examining data over a four year period (November 2004-2007). Transverse and longitudinal incisions were used at the discretion of the operating surgeon. Wound infection rate was assessed clinically at one and six weeks postoperatively.

Results: Two hundred and eighty-six autologous AVF procedures (57% men) were performed. Fifty-nine (20.6%) used longitudinal incisions. The groups did not differ by age (P=0.95) or diabetic status (P=0.23). There were 17 (5.9%) infections. Most common organisms were Staphylococcus aureus (33.3%), Streptococcus spp. (13.3%) and Klebsiella oxytoca (6.7%). There was no significant difference in the wound infection rate between the longitudinal (3.4%, 2 cases) and transverse incision groups (6.6%, 15 cases) (P=0.35). Neither age nor diabetes increased wound infection rate by type of incision (OR 2.16; 95% CI 0.48, 9.79, P=0.26, transverse vs. longitudinal).

Conclusions: These data do not show a wound infection rate advantage for either incision type. The ongoing practice of incision according to surgeon preference is justifiable. The author’s current preference is for longitudinal incisions, as we believe that this provides a better cosmetic outcome, results in less postoperative pain and has less potential for nerve injury and lymphatic disruption.

V8-16
THE BENEFITS OF USING A SCORING SYSTEM IN THE MANAGEMENT OF PATIENTS WITH CAROTID DISEASE
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Objective: Recent studies have highlighted delays in the management of patients with carotid disease, from diagnosis to surgical management. Mean delays of 173 days from initial presentation to surgery were reported. It was suggested that the application of the ABCD2 scoring system may
have benefits in shortening those delays and prioritise the high-risk patients. To audit the management of patients with suspected carotid disease following the introduction in our unit of the ABCD2 scoring method.

Methods: Retrospective data analysis of consecutive patients presenting with suspected carotid disease to our unit.

Results: Twenty consecutive patients were included in this study. Their mean age was 66.2 years (range 49–80). Over 2/3rd of the patients were men. Seven patients (35%) had a ABCD2 score of 1–3 (low risk), 10 patients (50%) had a score of 4–5 (moderate risk) and three patients (15%) had a score of 6–7 (high-risk). The average delay in obtaining initial carotid duplex scan was 21.75 days, (low risk 35.7 days, moderate risk 15.6 days and high-risk 7.6 days). The average delay between vascular review and carotid endarterectomy (CEA) was 54.65 days (range 6–264 days). This average delay for low, moderate and high-risk group was 57.7, 55.7 and 44 days, respectively. The average delay between the initial presentation and CEA was 73.9 days (range 12–330 days). This average delay for low, moderate and high-risk group was 68.8, 83.1 and 54.3 days, respectively. None of the patients in high-risk group developed a cerebrovascular event within the 90 day period. Only one patient out of three in high-risk group had a CEA with two weeks of the initial presentation.

Conclusions: The application of the ABCD2 scoring method in our unit has resulting in shortening the delays in the management of patients with carotid disease. However, some of the current delays still fall short of the ideal management for those patients and work is continuing to improve those results.

V8-17

ANATOMICAL VARIANTS AND CLINICAL MANIFESTATION OF INBORN ANOMALIES OF THE INFERIOR VENA CAVA

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Objective: It was early in the 20th century that the marked variation in the anatomy of the inferior vena cava (IVC) and its tributaries was first evaluated. The development of the computed tomography (CT) and ultrasound scanning of the abdomen, accurate visualization of the retroperitoneum has been made possible detection and assessment of this venous anomalies. Aplasia of the inferior vena cava is a relatively rare congenital pathology. This problem has a particular significance because of development of illo-femoral venous thrombosis and chronic venous insufficiency. Aim of research is to determine the anatomical variants and clinical manifestation of congenital anomalies of the inferior vena cava.

Methods: Fifteen men with congenital anomalies of the inferior vena cava were included in the study. An average age is 32.6±2.34 years (range, 17–55 years). The medical records and imaging studies (Duplex scanning, spiral non-enhanced and contrast-enhanced computed tomography with use of axial sections and their three-dimensional reconstructions, magnetic resonance imaging, pelvic phlebography, retrograde cavography) data of these patients were analyzed.

Results: In 10 patients the disease was first clinically presented by peripheral thrombosis (lower extremity pain, edema of the shin and thigh), in five patients congenital anomaly manifested by temperature rise, chill and subsequent edema of both legs. After accident of deep vein thrombosis or leg swelling in 3.5–12 months the dilated veins appeared on abdominal wall in all patients (mainly on the right side). In 2–2.5 years disease was complicated by the development of trophic ulcer of the lower legs (in one of the patients in both legs). Evaluation with revealed the hypoplasia of the infrarenal segment of the IVC in five patients, abnormality of infrarenal, renal, partly suprarenal regions in four others, two patients had almost all vena cava absence. Two men were diagnosed with other congenital malformations (pulmonary artery stenosis, duplication of the pyelocaliceal system) also.

Conclusions: Congenital interruptions of the inferior vena cava are first clinically presented by deep vein thrombosis or chronic venous insufficiency. An anomaly of this vessel should be suspected if thrombosis involving the iliac veins is seen in patients 30 years of age or younger. A thorough investigation with spiral computed tomography is needed to complete the evaluation of these patients.

V8-18

CRITICAL LIMB ISCHEMIA: A PROSPECTIVE REGISTRY IN A CENTER OF VASCULAR SURGERY

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Abstracts/Interactive CardioVascular and Thoracic Surgery S75

Objective: Patients affected by critical limb ischemia (CLI) represent complex and high-risk clinical problem, and a multidisciplinary approach is often demanded. The amputation rate in patients affected by CLI is still high. Aim of the study was to evaluate the amputation rate, the peri-operative mortality and the clinical improvement.

Methods: This is a prospective registry lasting from January 2006 to December 2008. We include all consecutive patients treated for CLI. Patients with acute limb ischemia and supra-inguinal lesion were excluded. A careful preoperative Duplex scan (DS) were performed in each patient, including the ABI index measurement. Then an intra-procedural angiography in the operating-theatre pointed out our revascularization strategy: a surgical (SP) or an endovascular (EP) single revascularization or a combination of them (Hybrid Procedure-HP). A clinical and DS follow-up was attempted at 1, 3, 6, 9 months and then every six-month.

Results: We analysed 366 patients and 403 limb revascularizations. The mean follow-up period was 197 (3–675) days. Fifty-nine amputations were performed (44 minor, 74.4% and 15 major, 25.6%) and the peri-operative mortality of this subgroup of patients was 8.47% (5 patients). We performed 71 (17.5%) SP, 219 EP and 113 (27.5%) combined (HP) revascularizations. The 30-days mortality in non-amputated patients was of five patients (1.2%). Preoperative ABI was 0.32 (0.15–0.47) while postoperative it was 0.73 (0.53–1.05), 90.43% of all patients experienced an enhancement or a no modification of their clinical condition.

Conclusions: The patient affected by CLI needs a tailored surgical approach. CLI has to be treated in center of Vascular Surgery. Because the Vascular Surgeon is the operator most familiar with the pathology, the anatomy, haemodynamics and the correlation between US findings and lesion characteristics. The different techniques appear safe and effective in terms of clinical improvement and limb salvage. We need long-term randomized prospective study to prove the true effectiveness of different techniques.

V8-19

SURGICAL TACTICS IN CRITICAL LEG ISCHEMIA IN PRESENCE OF FOOT INFECTION

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Objective: The goals of our investigation are: Establishing surgical tactics and sequence in presence foot infection affecting patients with CLI. Identifying importance of surgical tactics option on promptness operative wound sanction and overall mortality.

Methods: In exploration have been included 87 patients with 93 extremities in CLI treated on Clinic for vascular surgery KV Vojvodina in 2006 and 2007. In examination where included only those patients with CLI in the presence of foot infection. For the all patients included in study, where filled diagnostic therapeutic protocol, with all data necessary for this investigation. Two groups were formed depending on initial outcome. First group were patients with early ‘high’ amputation and this patients were control group. The second group were patients in which we were done revascularization and surgical eradication of infection. It had been set three tactical models and according to them were formed three subgroups. RI subgroup: A patients with primary done minor amputation or incision on foot and couple days later revascularization of the extremity. This way surgical procedure are become ‘clean’ operation and origin of infection is eradicated. RII subgroup: Amputation and/or incision simultaneously with revascularization (miniamputation or incision are done at the end of revascularization procedure). RIII subgroup: Amputation/incision are done three days after revascularization procedure (after demarcation region of revascularization).

Results: In group I dominated older patients, advanced infections with a lot of concomitant comorbidities. In group II were dominated patients with better quality of arteries, with more local an easy regional infections and in lower stadium of concomitant diseases. If one analyzed separately subgroups one can say that the best results were in RII and partly in RIII subgroups while the worst results are in the RI subgroup. The best graft patency were noted in RII subgroup after that in RI and the worst graft patency is in RIII subgroup. Extremity survival is best in RII subgroup. The best survival is in RI subgroup.
Conclusions: 1) It is been established that exists statistically significant influence of factors as: quality of arteries, infection and concomitant comorbidities. The second choice of surgical tactics in treatment of patients with CLI in presence of foot infection, 2) It is confirmed that in patients with diabetics and not clearly limited and incapsulated foot infection, better results are achieved by surgical eradication source of infection couple days before revascularization procedure.

V8-20
CAROTID ARTERY STENOSIS IN PATIENTS WITH PERIPHERAL ARTERY OCCLUSIVE DISEASE (PAOD) AND/OR ABDOMINAL AORTIC ANEURYSM (AAA)
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Objective: The aim of this study is to define the frequency of existence and grade of asymptomatic carotid artery stenosis among patients with peripheral artery occlusive disease (PAOD) and/or abdominal aortic aneurysm (AAA); and to determine the relationship between the ratio of changes of arteriosclerosis in the vessels of lower limb and carotid arteries, especially in the internal carotid artery (ICA).

Methods: Six hundred and fifty-one patients with peripheral artery occlusive disease (PAOD) and/or abdominal aortic aneurysm (AAA), however, without any symptoms of the decrease of the cerebral perfusion, treated in the General and Vascular Surgery Ward, underwent ultrasonographical verification to estimate the progression of the arteriosclerosis in carotid arteries. The ratio of stenosis was determined on the basis of acclaimed ultrasonographic criterion; moreover the examination was performed by the same person. The criterion were the following: the evaluation of the increase of blood flow in the internal carotid artery >130 cm/s and/or morphological structure of the atheroma - stenosis >50%.

Results: Among 174 (26.9%) patients suffering from lower limbs arterial scle-rosis (PAOD) and/or abdominal aortic aneurysm (AAA) the internal carotid artery stenosis >50%, among 107 (16.5%) the stenosis >70% was observed. Bilateral internal carotid artery stenosis >50% was reported among 65 patients (11%).

Conclusions: A relatively high correlation between lower limbs arterial scle-rosis (PAOD) and abdominal aortic aneurysm (AAA) to the appearance of sclerotic changes in the internal carotid arteries was reported in the course of this study. Therefore, it is advisable to perform control examinations among patients with verified peripheral arterial occlusive disease (PAOD) and/or abdominal aortic aneurysm (AAA) as well as those patients who underwent surgical procedures with existing severe risk factors. Control examinations among those patients enables more efficient and quicker diagnosis of the internal carotid artery stenosis, and therefore allows the appropriate treatment to be introduced a lot faster. Moreover, it prevents the patient from suffering from ischemic stroke.

V8-21
THE IMPACT OF INTRODUCING AN ENDOVENOUS LASER SERVICE ON HOSPITAL DAYCASE RATES AND PATIENT SATISFACTION
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Objective: Endovenous laser therapy (EVLT) was introduced as a new service at a large teaching hospital 18 months ago. The primary objective of this study was to evaluate the potential for improving daycase rates for patients with varicose vein by introducing EVLT. We also evaluated differences in recovery time and patient satisfaction between patients undergoing EVLT and those undergoing traditional surgery.

Methods: Fifty patients (56 limbs) with mean age of 54 (range 20-82) underwent EVLT between October 2007 and November 2008. A similar group of age and sex matched patients (n=50) who had traditional surgery during the same period were identified. The two groups were also matched for primary or recurrent veins. A telephone questionnaire was conducted and patients in both groups were questioned to evaluate recovery time and patient satisfaction. Patients were specifically asked about how long it took to return to normal daily activities, work and usual exercise routines.

Results: Duplex ultrasound at six weeks confirmed successful closure of the treated vein in all patients who had EVLT. Twenty-three (46%) patients who had EVLT would have required overnight stay had they undergone traditional surgery according to our daycase protocol. Patients undergoing EVLT returned to daily activities, work and exercise at significantly shorter time than those undergoing traditional surgery (P=0.05) with over twice as many patients returning back to work at 4 and 10 days. However, there was no significant difference in patient satisfaction between the two groups.

Conclusions: The introduction of an EVLT service significantly improved our daycase rates for varicose veins. EVLT was particularly useful for treating high-risk patients under local anaesthetic. Patients treated by EVLT returned to work and daily activities much faster than those having traditional surgery. Although patient satisfaction was similar by either treatment modality, EVLT offered a significantly faster recovery time and hence better quality of life in the short-term.

V8-22
CAN LIMB SALVAGE BE PREDICTED IN VASCULAR GRAFT INFECTIONS? THE ROLE OF MICROBIAL CULTURE
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Objective: Vascular graft infection is a serious clinical problem with catastrophic consequences. Both Gram positive and Gram negative bacteria are a major cause of graft infections, especially in groin wounds, although bacterial culture results from the wound may be unpredictable. This study aims to look at the outcome in patients with groin wound infections in association with underlying prostatic arterial grafts, comparing those who had positive yields from culture studies to those with negative results.

Methods: A retrospective review of patients over an 8-year period from 2000 onwards was carried out in a tertiary referral unit under one specialist. Data was extracted from case records and hospital microbiology database. Bacteriology of the wound samples as confirmed by culture results was recorded and outcome determined. The primary outcome measure was limb salvage.

Results: A total of 23 patients were treated for vascular graft infection with groin wound debridement, lavage and graft preservation. Intra-operative samples were sent for microbiological analysis in all patients. Fourteen patients (61%) had a positive culture result and 9 (39%) negative. Amongst those 14 with positive cultures, 5 (37%) were associated with graft failure; of these, 2 (40%) culminated in major limb amputation, both having had MRSA infection; there were two postoperative deaths (40%) among those five patients. In the group with negative cultures, graft salvage and wound healing was possible in all, with no deaths or major limb amputations recorded in this group.

Conclusions: Patients with negative culture results from groin wound infections had better outcomes, with 100% graft preservation, limb salvage and survival. Positive culture results, especially MRSA, were associated with greater morbidity and mortality. Such patients should be counselled about the risk of requiring major limb amputation.

Cardiac Posters 3 - Aorta, Arrhythmia, Experimental, Heart Failure and Cardiovascular
May 2, 2009, 3rd Congress Day
11:30-13:00

CP-67
SURGICAL TREATMENT OF AORTIC ANEURYSMS WITH ADDITIONAL CARDIAC PATHOLOGY
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Objective: The aim of the study is to present our experience and results of surgical treatment of aortic aneurysms with additional cardiac pathology in 85 patients. This study includes mitral valve replacement, aortic valve replacement, and associated cardiac surgery.

Methods: From 2000 to 2007, 85 patients with aortic aneurysms were operated. In 25 patients (29.4%) additional operation was performed. In 8 (9.4%) patients mitral valve replacement was performed, in 2 (2.4%) - mitral valve plasty and in 15 (17.6%) additional CABG was done. Mean age of the patients was 54±18 years. 18 (72%) were male. All patients had ascending aorta aneurysm with mean diameter of 8.0 cm (5.5-10.5 cm). In 23 (92%) patients Bentall-deBono-Kouchoukos procedure was performed. In 2 (8%) patients we
made aortic valve plasty with upper coronary aorta replacement. In all case we used blood-based cardioplegia. Deep hypothermia and circulatory arrest were used in 2 (8%) and 23 (92%) operations were performed with moderate hypothermia. All patients were divided into two groups: one consisted of 60 (70.6%) patients with isolated ascending aorta replacement and two group - 25 (29.4%) patients with additional procedures.

Results: Mean aorta cross clamp in one group was 93.8 min, in two group - 119.4 min. Mean bypass time was 133.3 min and 159.5 min accordingly. Twenty-four hour drainage bleeding was 485 and 517 ml. Inotrop support time and doses were higher in two group. Mean intensive care unit stay was 4.6 and 6.2 days in both groups. six (10%) of the patients of one group died from heart failure. Four of them were with acute aortic dissection. Two (8%) patients died in two group. Mean hospital stay was 21.2 and 24.7 days in both groups. There was no aortic aneurysm recurrence or valve dysfunction in follow-up period up to eight years.

Conclusions: Ascending aorta replacement complicated with additional cardiac pathology could be successfully performed with good immediate and follow-up results despite longer operative time and recovery.

CP-68
CARDIOVASCULAR PROCEDURES IN MARFAN SYNDROME: EARLY AND LATE RESULTS
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Objective: Marfan syndrome is a disease known to be affecting survival by means of cardiovascular system involvement. The main purpose of surgical therapy is to detect the cardiovascular involvement and to avoid fatal complications. We made an analysis on the Marfan patients operated in our clinic to find the risk factors for early and late outcome.

Methods: We operated 62 Marfan patients between February 1987 and October 2008. Forty-five were males (72.6%) and 17 were females (27.4%). The average age of the patients was 31.5±9.9 (11-56) years. Seventy-five surgical interventions were performed. 11 reoperations were made for nine patients (14.5%). The most frequently performed procedure was aortic root replacement on 46 patients (74.2%). For the 11 patients (20%) with mitral regurgitation, valvular replacement was performed on seven and an annuloplasty was done on four.

Results: Early mortality was 3.2% with two patients. Survival rates for 1, 5 and 13 years were 91.9±3.9%, 88.0±5.3% and 65.2±14.8%. No risk factors were significantly related with the early mortality. Risk factors were analyzed for their effect on survival by means of univariate and multivariate analyses. Emergency operation (P<0.05) and reoperation (P<0.05) were found to be significant risk factors with univariate analysis whereas multivariate analysis showed emergency operation (P<0.05) as the only risk factor. The most frequently encountered complication was arrhythmia in 12 patients (19.4%).

Conclusions: Marfan syndrome patients must be followed carefully for cardiovascular involvement. Although surgery is associated with improved survival, emergency operations may decrease life expectancy.

CP-69
ACUTE AORTIC DISSECTION AFTER PREVIOUS CORONARY ARTERY BYPASS SURGERY
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Objective: Acute aortic dissection is a rare but potentially fatal complication of coronary artery bypass surgery. Its frequency is as high as 0.16% of cases after cardiac surgery with cardipulmonary bypass, and may occur at any time, ranging from immediate intraoperatively or after discharge to years postoperatively.

Methods: A 61-year-old male, who had undergone on-pump triple coronary artery bypass grafting (LITA to LAD, saphenous vein grafts to CX-OM and RCA-PDA, respectively) 11 months previously in another hospital, was referred to our hospital with acute aortic dissection suspicion. In emergency department, on examination, his vital signs were unstable. He had angina pectoris, severe back pain with markedly high blood pressure of 230 mmHg, and respiratory distress. The right femoral pulse was absent. There was mediastinal enlargement on chest radiography. Transesophageal echocardiography showed a grade-4 aortic regurgitation and an intimal flap in the ascending aorta. An emergency CT-scan revealed an aortic dissection from the ascending aorta to the iliac arteries.

Results: The patient underwent emergency reoperation. The right axillary artery was prepared for arterial inflow. A redo median sternotomy was performed, adhesions were divided, and injury to LITA and saphenous grafts were avoided. Bicaval venous cannulation was set up. Cardiopulmonary bypass was instituted. The entry of the dissection was located at the proximal anastomosis site of the saphenous vein graft (SV to CX-OM). The intimal flap was thick and friable, indicating that the dissection had occurred recently. Under circulatory arrest with retrograde cerebral perfusion, the patient underwent replacement of the ascending aorta with a 28 mm Dacron tube graft, resuspension of the aortic valve, and reimplantation of the saphenous vein grafts. The postoperative course was smooth and the patient was discharged on the 8th postoperative day.

Conclusions: Satisfactory surgical results in the management of this potentially lethal complication can be achieved with early diagnosis and rapid repair. Patients at risk should undergo alternative techniques without side-clamping of the aorta.

CP-70
DELAYED PRESENTATION OF A GIANT ASCENDING AORTIC ANEURYSM FOLLOWING AORTIC VALVE REPLACEMENT: A CASE REPORT
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Objective: Ascending aortic aneurysms as large as requiring surgical intervention following aortic valve replacement are very rare. In these cases, serious complications with the possibility of rupture or dissection warrant surgical intervention. However, surgical repair of giant ascending aortic aneurysm which defined as an aneurysm more than 10 cm in diameter is a technical challenge and carries a high morbidity and mortality.

Methods: In the present case, a 28-year-old man who underwent aortic valve replacement with a prosthetic valve for aortic regurgitation about 10 years ago was diagnosed with a giant ascending aortic aneurysm about 16 cm in diameter in follow-up. The operation was performed via median sternotomy under cardipulmonary bypass, established by cannulation of the right femoral artery and right atrium via the right femoral vein.

Results: The prosthetic valve was intact. Bentall procedure was performed. The aneurysm of the ascending aorta was resected and implanted with a 34 mm Hemashield woven graft associated with the left and right coronary artery button implantation. Histological findings of the aortic aneurysm wall showed cystic medial necrosis.

Conclusions: The postoperative course was uneventful and postoperative examination demonstrated good surgical results.

CP-71
SURGICAL APPROACH FOR AORTIC ROOT ANEURYSM AND AORTIC VALVE DISEASE IN A PATIENT WITH MARFAN SYNDROME AND PECTUS EXCAVATUM
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Objective: The treatment of cardiac disease is challenging and can lead to higher rate of complications in patients with pectus excavatum. Surgeons continue to debate the best timing for repair of chest deformities in patients who need cardiac surgery. Some physicians advocate concurrent procedures, others believe that the chest deformity should be corrected in a later operation. We describe the case of a patient with aortic root aneurysm and aortic valve disease in which the surgical approach was led by the chest deformity.

Methods: A 56-year-old male with a kyphoscoliosis and ‘pectus excavatum’ was referred to our department for the evaluation of growing dyspnea (NYHA class II) in the last months. The transthoracic echocardiography demonstrated a severe aortic valvular insufficiency associated to a dilatation of the aortic root. Marfan’s syndrome was diagnosed and confirmed by genetic testing for the screening of the FB1 gene. The computed tomographic scan of the chest and the 3-dimension reconstruction of the aorta by means of multi-slice computed tomography (MSCT) documented a displacement of the heart and the great vessels into the left hemithorax. Pectus deformity and associated kyphoscoliosis were demonstrated by sagittal scans. The lower sternal body and the xiphoid process were 2 cm far from the spine. The ascending aorta and the heart were close to the left anterior/lateral thoracic wall.
Results: The patient was scheduled for surgery and underwent Bentall’s operation. A partial upper sternotomy was performed first. The sternum was divided from the manubrium to the 3rd intercostal space. However, this provided insufficient surgical exposure, so the sternal incision was angled toward the 5th rib. The pectoral muscle over the 4th rib was divided to expose the cartilage, and the 4th rib was resected from the chondrosternal junction to the chondrocostal junction. This combination of procedures provided an excellent operative field, even with the heart and the dissected ascending aorta shifted to the left chest. Cardiopulmonary bypass was established by cannulating the aortic arch and the right atrium. The replacement of the aortic valve and the aortic root was performed in a classical fashion. The postoperative stay was uneventful and the patient was discharged on the seven postoperative day.

Conclusions: Our experience with this patient who had Marfan syndrome and severe pectus excavatum suggests that partial upper sternotomy combined with left anterior thoracotomy can enable optimal exposure and treatment of aortic root aneurysm.

CP-72 VALVE-SPARING OPERATION IN PATIENTS WITH ASCENDING AORTA ANEURYSMS WITH AORTIC INSUFFICIENCY
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Objective: To evaluate the results of aortic valve-sparing operation in patients with ascending aortic aneurysms with aortic insufficiency. Methods: From 2003 to 2008 performed 140 operations in patients with ascending aortic aneurysms. Valve-sparing operations were performed in 53 patients. Age was 15-70 years (50±12). There were 42 males (80%) and 11 females (20%). Minimal ejection fraction was 42% (50±3%). Thirty-five patients underwent supracoronary ascending aorta replacement, 17-replacement of the ascending aorta and non-coronary sinus (Wolf procedure), 12-extraavalvar replacement of the ascending aorta with reimplantation of coronary ostia (David procedure, Seattle modification). In 15 cases the operations was performed for urgent indications (acute aortic dissection). In five patients the intervention was extended onto the aortic arch. In all cases for reconstruction of aortic root we used vascular prosthesis Vascutec. The immediate result of valve-sparing operation evaluated by TEE.

Results: Hospital mortality was 5.6% (3 patients). Two patients - multigrans failure, one patient - stroke. After six months one patient with Marfan syndrome underwent replacement of aortic valve after David procedure. The reason was aortic insufficiency III stage. The others patients - In five years period we have not met aortic regurgitation more than one stage. Conclusions: Aortic valve-sparing operation in patients with ascending aortic aneurysms with aortic insufficiency is operation of choice. This operation allow to reconstruct of aortic valve functional. Mid-term results are stable.

CP-73 SURGERY OF ASCENDING AORTA ANEURYSMS IN PATIENTS WITH MARFAN SYNDROME: 5 YEARS EXPERIENCE
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Objective: The aim of this study is to analyze a mid-term outcomes of ascending aorta aneurysms in patient with Marfan syndrome. Methods: From 2003 to 2008 28 patients with Marfan syndrome have undergone surgery of ascending aortic aneurysms. Mean ages 33±12 (from 14 to 52 years), Male - 18 (65%), Female - 10 (25%). Aortic regurgitation was present in 6 patients (21%) - III stage, in 3 (11%) - IV stage, mitral regurgitation IV stage - 1 patient. Minimal ejection fraction was 42% (50±5%). I type aortic dissection (De Bakey) was found in 12 patients (43%). Patients with acute (9 patients) aortic dissection underwent urgent surgical treatment. All patients had a characteristic phenotype of the syndrome which has been confirmed by geneticist. Twenty-seven patients were performed Bentall procedure, 1 patient - David procedure, concomitant procedure - replacement of mitral valve. Brachiocephalic trunk was implanted into the true aortic lumen in two cases with rupture of brachiocephalic trunk. Valve conduit Medinge-2 with Vascutec was used in the Bentall operation. Heart valve Medinge-2-31 was used in mitral valve replacement. Mean cross-clamp duration was 82±127 (67-108 min). Mean pump time was 101±14 minutes (80-120 min).

Results: Hospital mortality was 1 patient (3.6%). One patient had reoperation due to aortic valve incompetence after David procedure. Post-operative survival rate were 100% in five years.

Conclusions: The result of surgery of ascending aorta aneurysms in patient with Marfan syndrome was acceptable. Bentall procedure is gold standard for patients with Marfan syndrome. We should be approached carefully to David’s operation at the given category of patients.
left ventricle size was 39±3.8. Mean aorta diameter was 56±15 mm. Mean EuroSCORE was 29.6%.

Results: Sternotomy was performed in 10 patients. Transverse sternotomy with double side thoracotomy was performed in two patients. Ascending aorta aneurysm was in seven patients, aortic arch and descending aorta – 3 patients, aortic arch and ascending aorta – 2 patients. Acute aortic dissection was in 10 patients. All operations were performed under deep hypothermia of 25 °C. Mean 24 h postoperative bleeding was 580±130 ml. Artificial blood flow time was 155±45 min. Aorta cross clamping time was 95±25 min. Hospital mortality was 16.6% (2 patients). There were no neurologic complications.

Conclusions: Operations due to thoracic aorta aneurysms with brachiocephalic trunk cannulation could be successfully performed without deep hypothermia even in open distal anastomosis formation and without additional wounds for peripheral arteries access and neurologic complications.

CP-76
SURGICAL ASPECTS OF AORTIC DISSECTION AND DISSECTING AORTIC ANEURYSM TREATMENT? OUR EXPERIENCE
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Objective: Acute aortic dissection due to its high mortality rate poses great challenge in terms of timely diagnostics and surgical treatment. Diagnostic algorithm should be based on clinical evaluation and implementation of different imaging techniques. Determination of correct diagnosis is of great importance as well as urgent surgical treatment. The objective of this study was to evaluate clinical course and surgical treatment of aortic dissections and dissecting aortic aneurysms.

Methods: Retrospective study which included 82 patients treated, between the period of 1999 and September 2008, in Institute of cardiovascular diseases of Vojvodina.

Results: Group of 82 patients treated of aortic dissection or dissecting aortic aneurysms was comprised of 66% of males. Positive trend of increase of number of operated patients per year was observed. Only 12.19% of patients did not have any pain in chest or in interscapular region as initial symptom of disease onset, and in all of these patients chronic dissection was diagnosed. In around ⅓ of patients De Bakey type I aortic dissection was diagnosed. In approximately 80% of patients, interposition of tubus graft with/without aortic valve replacement or myocardium revascularization was performed. Immediate perioperative mortality rate was 19.52%. Surgical treatment of aortic dissection was performed as redo operation in three patients.

Conclusions: Diseases of aorta significantly figure in overall cardiovascular mortality. Acute diseases of aorta impose timely diagnostics and urgent surgical treatment. Our results in terms of mortality rate are comparable with results of other authors.

CP-77
THE RISK OF MACCE AFTER SURGICAL ABLATION OF ATRIAL FIBRILLATION 4-YEAR DATA FROM PROSPECTIVE REGISTRY
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Objective: Imbalance between autonomic nervous system compartments (ANS) – vagal and adrenergic – may initiate and perpetuate atrial fibrillation (AF). Surgical ablation of AF (pulmonary vein isolation component) may change impact of ANS on atrial substrate. The aim of the study was to explore sympathetic and vagal heart innervation profile in long-term observation after surgical AF ablation.

Methods: There were 75 patients who underwent surgical ablation of intermittent or permanent AF as concomitant or stand-alone procedure prospectively included. Preoperatively, at discharge and after 3, 6, 12, 24 months after ablation patients were examined including high definition spectral analysis of heart rate variability (HRV).

Results: At discharge LF power (ms²) was reduced in comparison to preoperative value (308±214 vs. 130±134, P<0.01). After 3, 6, 12, 24 months sympathetic power raised (respectively: 213±313, 183±133, 243±277, 291±398) with no difference to preoperative value after 12 and 24 months (P=0.17). At discharge HF power (ms²) was reduced in comparison to preoperative value (410±336 vs. 234±202, P<0.009). However, after 3, 6, 12, 24 months there was no difference to preoperative value, respectively: 373±596, 288±221, 326±323, 517±638 (P=0.05). After 24 months HF power was significantly higher than LF power (P<0.01).

Conclusions: Surgical ablation results in significant initial sympathetic and vagal denervation. However, sympathetic reinnervation is complete after 12 months. Vagal suppression is lost after 3 months and it provides oncoming relative vagal dominance. After 12 months reversal heart autonomic innervation leads to asymmetry of vagal and adrenergic tone.

CP-78
REVERSAL OF VAGAL AND ADRENERGIC TONE AFTER SURGICAL ABLATION OF ATRIAL FIBRILLATION? ASYMMETRY OF VAGAL AND ADRENERGIC TONE
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Objective: Imbalance between autonomic nervous system compartments (ANS) – vagal and adrenergic – may initiate and perpetuate atrial fibrillation (AF). Surgical ablation of AF (pulmonary vein isolation component) may change impact of ANS on atrial substrate. The aim of the study was to explore sympathetic and vagal heart innervation profile in long-term observation after surgical AF ablation.

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CP-80
IRRIGATED RADIOFREQUENCY MODIFIED MAZE PROCEDURE IN PATIENTS WITH PERMANENT ATRIAL FIBRILLATION UNDERGOING CARDIAC SURGERY FOR RHEUMATIC HEART DISEASE (ONE YEAR FOLLOW-UP)
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Objective: Atrial fibrillation is the most common sustained arrhythmia and its incidence is higher in countries with a high prevalence of rheumatic heart disease. In order to evaluate the result of RF ablation in rheumatic candidates of valve surgery with chronic AF, who are hard to convert to NSR, we reported one year follow-up of RF ablation in this group.

Methods: Between February 2007 and August 2008, 38 patients with documented permanent AF, preexisting for more than one year and concomitant RHD underwent modified maze saline irrigated RF ablation in conjunction with the surgery for their organic heart disease. Patients data are as following, mean age (50 years), male to female ratio (13/25), mean EF (48%), mean LA diameter (5.6 cm) and mean duration of AF was 3.4 years. History of CVA was present in 13% and CMVC was performed in 10% and PTMC in 3% primary RHD and corresponding surgery was MVR + AVR or MVR. There were a total number of 46 patients who were operated for RHD and 12 patients after CABG operations with and without cardiopulmonary bypass, 11 of whom had AF. All patients had been treated with atrial fibrillation drug therapy, of the mean AF duration time was 36 months. Mean left atrial diameter was 55 mm.

Results: Thirty-five cases (95%) returned to sinus rhythm at operating room, but one case sustained AF, which could not be treated by cardioversion. Four of 35 sinus rhythm cases returned to AF in hospital, but 2 of 4 cases recovered sinus rhythm by cardioversion. Three of 35 cases showed atrial tachycardia (AT) after Maze procedure. These atrial arrhythmias decrease the success rate of Maze surgery. We performed the prospective perioperative arrhythmia control study to improve the results of the Maze surgery.

Conclusion: RF ablation is a safe procedure which can be done concomitantly with cardiac operations in RMD. The low success rates may be attributed to the disease nature. Males are at increased risk of early AF recurrence but no significant risk factors for late recurrence have been found.

CP-81
RADIOFREQUENCY ABLATION FOR ATRIAL FIBRILLATION IN RHEUMATIC VALVULAR DISEASE
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Objective: We have analyzed the results of RF ablation surgery for AF performed in rheumatic mitral disease (RMD) and analyzed the factors to affect the outcome.

Methods: RF ablation was performed on 66 patients with AF rhythm who were operated for RMD. Twenty-one (31.8%) were male and 45 (68.2%) female. The average age of the patients was 51.6±10.0 years (32-76). The mean EuroSCORE of the patients was 2.5±1.1. The mean duration of atrial fibrillation was 47±30.4 months (12-192). We used bipolar probe in 10 (15.2%) and unipolar probe in 56 (84.8%) patients. Results: All patients were operated on CPB with mean durations of 102.9±28.0; 77.8±24.9 and 190.8±49.6 min of perfusion, cross-clamp and total operation times, respectively. The mean durations of ICU stay and hospitalization were 2.50±0.94 (0-6) and 8.1±2.6 days (0-15), respectively. Two patients died postoperatively (3.0%) and 3 died in the follow-up period (4.7%). Postoperatively one patient (1.5%) required pacemaker implantation. In the immediate postoperative period 24 patients (36.4%) had AF but six of them returned to the normal sinus rhythm by the time were discharged. Six patients (12.5%) had AF during the follow-up period. Four-eight patients (72.7%) were discharged with normal sinus rhythm. The mean duration of follow-up with sinus rhythm is 15, 1±15, 2 months (0-59). No significant risk factor was found as significant for AF recurrence and for discharge in AF rhythm. For early AF recurrence male sex was a significant risk factor (P=0.028) with an odds ratio 8.627 (CI 95%, 1.261-59.006).

Conclusion: RF ablation is a safe procedure which can be done concomitantly with cardiac operations in RMD. The low success rates may be attributed to the disease nature. Males are at increased risk of early AF recurrence but no significant risk factors for late recurrence have been found.

CP-82
PERIOPERATIVE ARRHYTHMIA CONTROL IMPROVES THE RESULTS OF MAZE SURGERY
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Objective: Many reports describe early high recurrence of atrial fibrillation (AF) or atrial tachycardia (AT) after Maze procedure. These atrial arrhythmias decrease the success rate of Maze surgery. We performed the prospective perioperative arrhythmia control study to improve the results of the Maze surgery.

Methods: We performed the simplified Maze procedure using bipolar RF surgical device (AtriCure, Centurymedical). The procedure consists of whole pulmonary veins isolation, linear ablation towards mitral valvular isthmus (AF treatment) and linear ablation towards tricuspid isthmus plus linear ablation between mitral and inferior vena cava. In addition to this procedure, we performed perioperative arrhythmia control using overdrive pacing and early cardioversion. The prospective study was performed under three principles, 1) direct cardioversion (50-100 w) to cases with recurrence of sustaining AF in ICU or hospital, 2) antiarrhythmic drugs for two weeks, then cardioversion to cases with recurrence of paroxysmal AF or sustaining AT, 3) stop antiarrhythmic drugs within three months after surgery in cases with sinus rhythm. Thirty-six cases with chronic AF and organic heart disease were enrolled in this study. Thirty-two cases had valvular heart disease and four cases had organic left atrial thrombus. Mean AF duration time was 36 months. Mean left atrial diameter was 55 mm.

Results: Thirty-five cases (95%) returned to sinus rhythm at operating room, but one case sustained AF, which could not be treated by cardioversion. Four of 35 sinus rhythm cases returned to AF in hospital, but 2 of 4 cases recovered sinus rhythm by cardioversion. Three of 35 cases showed AT and received catheter ablation, resulted in 2 sinus rhythm and 1 sustaining AT. Late results showed 33 sinus rhythm cases (92%) and 3 AF cases. Comparing this study with our past Maze or left atrial Maze procedure (118 cases), AF free rate of this new protocol improved from 75% to 92%.

Conclusion: Perioperative rhythm control is important as well as theoreti
cal AF surgery. The most important procedure of the Maze procedure was definite box isolation of whole pulmonary veins.

CP-83
ATRIAL FIBRILLATION AFTER CORONARY ARTERY BYPASS GRAFTING: COMPARISON BETWEEN ON-PUMP AND OFF-PUMP SURGERY
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Objective: The purpose of the study was to evaluate the occurrence of AF in patients after CABG operations with and without cardiopulmonary bypass, together with its predictors and outcomes.

Methods: The study population consisted of 1052 patients who underwent open cardiac surgery between January and December 2005 at the National Heart Institute, Kuala Lumpur. There were a total number of 1052 patients, 832.3% of them were males with a mean age of 58.2±8.8 years. The major
city of cases (97.6%) were done on-pump whereas off-pump cases constitute only 2.4%.

Results: The incidence of postoperative AF was 17.5% with a mean onset of 0.8±0.5 postoperative days. The following were found to be predictors of postoperative AF: Malay race, advancing age, documented preoperative arrhythmia, atrial dilatation, poor ejection fraction, concurrent valve
surgery, prolonged cross-clamp time and increasing bypass time (P<0.05). Off-pump CABG (OPCABG) showed a strong trend though not statistically significant (P=0.05) with the peak of incidence observed on the 2nd POD (39.9±12.8 h). Postoperative mean ICU, HDU and hospital stay were higher in AF group as were morbidity events and hospital mortality (P<0.001).

Conclusions: Atrial fibrillation after cardiac surgery occurs in approximately one-fifth of patients and is associated with an increase in adverse events in all measurable outcomes of care. We found a strong trend in AF incidence in OPCABG with different timing of occurrence of AF in the two groups suggesting different AF triggering factors.

CP-84
IDENTIFICATION OF PROTEINS POTENTIALLY INVOLVED IN MYOCARDIAL HOMING OF MENCESCHYAL STEM CELLS
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Objective: Mesenchymal stem cells (MSCs) have the ability to home to ischemia zone after acute myocardial infarction (AMI).

Methods: In this study, differential proteomics was utilized in border zone, main target of MSCs homing, to study proteins differentially expressed after AMI, identifying functional proteins potentially involved in myocardial homing of MSCs.

Results: AMI was induced by the ligation of left anterior descending coronary artery in rats. Dynamic observation was performed on histopathological evolution in hearts after AMI. Meanwhile, myocardial protein from border zone was extracted and separated in two-dimensional gel electrophoresis. Corresponding with myocardial homing of MSCs, forty-one spots were cut off and processed in MALDI-TOF-MS. Eventually, thirty-two spots were identified, representing 29 proteins, which were divided into five functional groups: oxidative stress, intracellular signal transduction, cytokine production, energy metabolism and sarcomere and cytoskeleton. The proteomics results were further validated by western blot and immunohistochemistry.

Conclusions: Functional proteomic analysis on these identified proteins proposed that oxidative stress, cytokine production and several signal transduction pathways including semaphorins-plexins/CRMP-2 pathway and PI3-K/Akt pathway may potentially involved in myocardial homing of MSCs after AMI.

CP-85
COMPARISON OF EFFECTS OF FURNIDIPINE AND ITS METABOLITES IN RAT’S ISOLATED WORKING HEART MODEL
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Objective: 1,4-dihydropyridines, belonging to the class of ‘privileged structures’, are known to protect the heart from stunning, ischemia and ventricular arrhythmias and mainly used in hypertension. Many studies showed cardio-protective activity of main metabolite of furnidipine (M2).

The aim of this study was to compare the continuous infusion of parent drug, furnidipine, with its two active metabolites (M2; M3) in rat’s isolated working heart model.

Methods: The following parameters were measured and calculated during 1 h of the experiment: heart rate (HR), preload pressure (PP), aortic systolic (AoS) and diastolic pressures (AoD), as well as their maximum rate of increase or decrease (<dp/dt>, respectively, aortic (Af) and coronary flow (CF), oxygen and carbon dioxide partial pressures (pO2, pCO2) and pH values in pulmonary effluent, myocardial oxygen consumption (MVO2).

Results: At first, the optimal dose of M2 (10-7M) was estimated from a dose-dependent curve and afterwards it was compared with equivalent doses of both remaining substances. In the second part of study effect M2 (10-7M) on heart in low flow, regional and global ischemia were compared in the same model. Furnidipine significantly reduced AoD and AF values in comparison to control group, but only M2 caused significantly higher CF increase and AF decrease in comparison to furnidipine, which were its most important and differentiating effect. The cardio-depressant potency of both metabolites is overcome by advantageous vasodilatatory effect. In the ischemia models the most effects were observed in low flow model (significantly increase CF, MVO2, AF, AoS, AoD, <dp/dt> and >dp/dt in ischemia and reperfusion part of study).

Conclusions: The obtained results allow to claim that the metabolites vs. furnidipine possess a beneficial influence. Furnidipine evoked slighter vasodilatory effect than both metabolites; the distinct flow shift from aorta into the coronaries was observed after M2 and to a lesser extent after M3. M2 evoked clear cardio-protective effect in low flow ischemia model. M2, being a final product, easier to control and at the same time a precursor of the new chemical class of therapeutics, is promising as a new cardio-protective agent.

CP-86
MYOCARDIAL REGENERATION BY LOW ENERGY SHOCK WAVE THERAPY? AN IN-VITRO EXAMINATION
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Objective: Transthoracal application of shock waves (SW) is shown to augment myocardial vascularization in a porcine model of myocardial infarction. SW even cause relief of angina symptoms in human patients with severe coronary artery disease. The underlying mechanism remains largely unknown.

Methods: Endothelial cells and fibroblasts were established from rat hearts. Additionally, H9C2-cardiomyocytes were used. A water bath was designed to avoid disturbing physical effects. Adherent cells in cell culture flasks filled with culture medium were dunked into the bath. SW (0.15 mJ/mm²) were applied. Analysis were performed over a period of seven days.

Results: SW stimulate every cardiac cell type to a different extent. Each cell type reacts at another timepoint. The distance between applicator and cells, as well as the energy flux density have an influence on the cells’ behaviour. Between days 4 and 5 the duplication time of treated cells was significantly higher compared to controls. Significant differences in the gene expression of MMPs, TIMPs and collagen were shown. Treated cells do alter their cytoskeleton (Vimentin, Tubulin, beta-Actin), show significantly more proliferation (Ki-67) and changes in the expression of adhesion molecules (CD31) as well as connexins 40, 43, 45. No apoptosis was found in the treatment group.

Conclusions: SW activate proliferation of cardiac cells. Moreover, cells alter the assembly of microfilaments, thus seem to ameliorate cell migration. Changes of the MMP and TIMP levels and the expression of adhesion molecules seem to be strongly involved in the SW tissue regenerative effect on ischemic myocardium.

CP-87
END STAGE HEART FAILURE MEDICATIONS AND MECHANICAL TREATMENT FOR ADULT HEART TRANSPLANT CANDIDATES
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Objective: Heart failure (HF) is life threatening pathology. After establishing HF diagnosis 50% of patients died during first four years and in case of severe HF - 50% during the first year. HF treatment is complex: drug administration, connection of assisted devices and heart transplantation.

Methods: Patients suffering from severe HF are included in heart transplant list. From 1999 when mechanical circulatory support systems (MCSS) started till 2008, number of recipients reached 120 (13 females, and 107 males); 17 – due to ischemic cardiomyopathy, 2 - hypertrophic cardiomyopathy, 101 - dilatative cardiomyopathy. Age was 19-65 years (mean 42 years). Left ventricle ejection fraction (LVEF) all of them was <20%. All patients received corresponding drug’s treatment - AKF inhibitors, diuretics, BAB, aldosterone antagonists, glycosides, sometimes positive inotropic agents (Levozmendan), antiarrhythmic drugs. Majority of patients received intravenous adrenomimetics therapy (Dobutamine, Dopamine, Epinephrine). All of them were treated with anticoagulants or antiagregants to avoid thromboembolic complications.

Results: Under drug administration 17 patients received heart transplant, 16 patients had intraaortic balloon counterpulsation before HTx. Died 39 patients from the waiting list, 18 patients recovered (LVEF improved) and were discharged from recipient’s list after resynchronizing therapy or after drug administration and changing way of life. LVEF for these recipients reached ~40%. Four patients were removed from waiting list due to contra-indications to HTx. Actually 19 patients are on the waiting list. MCSS were connected to 30 recipients as a bridge to HTx and five of them to destination treatment.
therapy. Six recipients with MCCS are on waiting list to HTx. Eleven recipients who were on MCCS were transplanted.

Conclusions: Using complex HF treatment: 1. Patients mortality diminished almost by 51% and increased the possibility to receive donor’s heart; 2. 15% of patients’ situation slightly improved and they do not need heart transplantation.

**CP-88**

**POSTINFARCTION LEFT VENTRICULAR PSEUDONEURYSMS: SURGICAL TREATMENTS**


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Objective: Left ventricular pseudoneurysms is a rare but serious complication of acute myocardial infarction. It is under debate whether surgical intervention is mandatory in asymptomatic patients. The aim of this study was to present our experience based on surgical treatments.

Methods: Ten consecutive patients who underwent left ventricular pseudoneurysm operation between 1 January 1995 and 1 November, 2008 included in to study. There were six male, four female patients. Mean age was 64.1±6.48 years. All patients had performed coronary angiography and echocardiography. Three anterior and seven posterior aneurysms was detected. Left ventricular pseudoneurysm was repaired with a synthetic patch by the remodeling ventriculoplasty method of Dor in all patients. Coronary revascularization was performed if necessary.

Results: The mean duration from myocardial infarction to diagnosis of the left ventricular pseudoneurysm was 12.6±11 days. Additional coronary bypass surgery in seven patients. Median coronary bypass grafts was 1.3 in seven patients. Early mortality was developed in 1 patients (10%). The mean intensive care unit stay was 3.70±1.2 days. In the mean follow-up 40.7±4±14.36 months. Another patient was developed mortality in six months postoperative period due to cerebral hemorragy. Other seven patients who were alive, six patients in NYHA class I, II, and one patient was in III because of prexisting left ventricular dysfunction. Transesophageal echocardiography was showed increased EF.

Conclusions: Early surgical intervention is essential for patients with large or expanding left ventricular pseudoneurysms due to high propensity of fatal rupture. Associated CABG may reduce early mortality.

**CP-89**

**DIFFERENT ROLE OF ADVANCED GLYCATION END-PRODUCTS (AGE) IN PATHOLOGY OF TRANSPLANTED HEART IN PATIENTS WITH OR WITHOUT DIABETES MELLITUS TYPE 2 (DM)**

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Objective: Abnormal glycaemia in orthotopic heart transplant (OHT) recipients may accelerate a process of non-enzymatic conjugation of glucose in cardiac tissues, resulting in AGEs formation. However, role of AGEs in development of typical complications after OHT - acute rejection (AR) and coronary vasculopathy (CAV) is unknown. Aim of the study was to localize their presence with severely complicated ischemic heart disease with acceptable results.

Methods: Occurrence of AGEs was similar in both groups – cardiocytes 74% ± 6.3%, stroma 34% vs. 33%, connective tissue 14% vs. 9%, and capillaries 32 vs. 33% - in DM vs. non-DM patients, while intensity of staining was on-significantly higher in DM subjects. Overall number of AR episodes and mean EMB score were significantly correlated with AGE presence in cardiocytes (r=0.31/0.25, P=0.017/0.049, Spearman test), but only in DM group. There was no any significant relation between AGES occurrence and CAV diagnosis in DM patients, while time free from any angiographically confirmed CAV, and significant CAV (need for angioplasty, myocardial infarction, or death) was significantly longer in non-DM patients with AGES in cardiomyocytes and/or capillaries (P=0.017/0.014/0.03/0.014, respectively, log-rank test).

Conclusions: AGES presence plays different roles in OHT recipients with and without DM. AGES occurrence in DM subjects is related to AR, but do not predict CAV, while in non-DM patients it is note correlated with AR, but prolongs freedom from CAV.

**CP-90**

**CARDIAC RESYNCHRONIZATION THERAPY AS AN ADJUNCT TO CONVENTIONAL SURGICAL TREATMENT FOR HEART FAILURE**


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Objective: The aim of this study was the evaluation of the benefits of cardiac resynchronization therapy as an adjunct to conventional procedures in patients undergoing surgery for heart failure.

Methods: Twenty-one severely symptomatic patients (15 men and 6 women, with a mean age of 71±8 years) with advanced cardiomyopathy, QRS duration ≥130 ms and/or mechanical dysynchrony demonstrated at Tissue Doppler Imaging, underwent isolated or combined coronary artery revascularization and mitral valve overreduction. In all patients an epicardial lead was secured to the left ventricular wall at the end of the procedure and its extremity brought into a subclavian pocket. In six patients a resynchronization device was implanted at the time of surgery; in ten it was implanted at a later date while the remaining five patients are still awaiting implantation.

Results: Follow-up is 100% complete. One patient died of low-output syndrome postoperatively. There was one non-cardiac late death. Nineteen patients were alive at a mean follow-up of 24.6±15.2 months (4–46 months) since the surgical procedure. There were no subsequent hospital admissions after hospital discharge. NYHA functional class and left ventricular performance were significantly and lastingly improved when cardiac resynchronization therapy was added to the surgical procedure [EF increased from 24.8% to 34.4% at FU in patients who underwent surgery alone, from 25.7% to 44.5% (FU in patients with CRT (P<0.01)].

Conclusions: With the limitations inherent to the small number of patients and the relative short duration of the follow-up, this study shows that patients with dilated cardiomyopathy and left ventricular dysynchrony in whom surgical correction is indicated, may benefit from Cardiac Resynchronization Therapy using a resynchronization device connected to an epicardial lead secured to the left ventricle at the time of surgery.

**CP-91**

**CABG PATIENTS WITH SEVERELY COMPROMISED ISCHEMIC HEART DISEASE**

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Objective: The aim of the study is to present our experience in operative treatment of the patients with coronary atherosclerosis with ischemic mitral insufficiency and left ventricle aneurysm.

Methods: During last six years 43 patients were operated. In all patients CABG was performed with left ventricle aneurysm plasty and correction of mitral insufficiency. All operations were performed with aorto-pulmonary bypass with simultaneous anto-retrograde cardiopilia. Mean age of the patients was 55.4±6.9 years. Seventy-nine percent were male. Mean ejection fraction was 29.3%. Mean diastolic left ventricle volume was 265 ml. Mean systolic pulmonary pressure was 48 mmHg.

Results: Mean number of distal anastomoses was 2.7. In 29 patients mitral valve plasty was performed using a tape of Goretex-like material ‘Ecoflon’ of Russian manufacture. In 27 patients Menicanti papillary muscle placentation was performed. In 7 patients mitral valve replacement was done. Dor left ventricle aneurysm plasty was performed in 8 patients, in 19 patients linear plasty was done and in 14 patients left ventricle aneurysm correction was performed using overlapping method. Three patients needed post infarction interventricular septal defect closure. In postoperative period mean ejection fraction increased to 40% (P<0.05). End diastolic volume decreased to 145 ml (P<0.05). Pulmonary hypertension decreased to 36 mmHg. Six patients needed intraaortic balloon counterpulsation. There was no significant mitral regurgitation in postoperative period. Hospital mortality was 3% (7%).

Conclusions: The use of modern techniques of CABG, left ventricle reconstruction with mitral valve plasty with papillary muscle placentation, use of simultaneous anto-retrograde cardiopilia allow to operate the patients with severely complicated ischemic heart disease with acceptable results.
Objective: We here report our experience of an hybrid approach combining open debranching of the visceral arteries with stent grafting of the thoracoabdominal aorta in three patients rejected for open repair of a thoracoabdominal aneurysm (TAA) because of severe chronic pulmonary insufficiency.

Methods: These three patients were treated between February 2002 and July 2008. There were two men and one woman aged 68, 73 and 71. All three patients presented with a TAA type I. Two of them had a previous infrarenal aneurysmectomy. Aneurysm diameters were 70, 65 and 61 mm and a significant increase of these diameters had been shown in all cases. The three patients suffered from severe COPD. FEV1 were 0.7 l (25% of predicted normal value) and 0.9 l (45%). One patient suffered also from cardiac insufficiency (UEF 26%). The three patients were treated electively. They were operated under general anaesthesia in a supine position. An epidural catheter was placed in all patients for perioperative cerebrospinal fluid drainage and postoperative analgesia. The three patients were operated through a midline laparotomy. A retrograde revascularization followed by proximal ligation of the visceral arteries (superior mesenteric artery and celiac trunk) in three patients, renal arteries in two patients) was performed using PTFE grafts from the infrarenal aorta (1 patient) or prosthesis (2 patients). After debranching of the visceral arteries thoracic stents grafts (Talent Medtronic – 1 patient and TAG Excluder – 2 patients) were deployed from the infrarenal aorta or prosthesis (2 patients) or the suprarenal aorta (1 patient) up to the origin of the left subclavian artery in the three patients. Results: The operations were effectively completed. Operation times were 480, 520 and 300 min. Stays in ICU were 2.5 and 17 days. One patient had a delayed paraplegia 4 h postoperatively that resolved without sequelae after treatment combining restoration of CSF drainage, raising blood pressure and systemic anticoagulation. One other patient experienced unstable angina with pulmonary oedema requiring PTCA stenting of a Circumflex artery. This patient also developed a bronchopneumonia requiring prolonged mechanical ventilation. Stays in hospital were 16, 11 and 32 days. All three patients underwent postoperative CT-scan re-evaluation before discharge, after three months and then every six months. No leak, no increase of the dimensions of the excluded aneurysmal sac and no occlusion of a visceral graft was observed during follow-up. One patient died three years after the hybrid procedure in the postoperative course of a palliative operation for colon cancer. Two patients are alive and asymptomatic three years and six months after the hybrid operation. Conclusion: We believe that the hybrid technique we have used is an effective technique for treatment of patients with TAA who are not suitable for conventional repair.

Objective: Aortic arch aneurysm/dissection when operated in emergency presents considerably high-risk of complications. Hybrid treatment using both surgical and endovascular methods can decrease the complication rate in this difficult group of patients. Hereby we present three effective methods of treatment using both stent graft and extra corporeal circulation.

Methods: We have analyzed the effectiveness of three operative techniques planned for solving the following problems: 1) acute type A dissection involving arch and descending thoracic aorta with entry in ascending aorta or arch but not descending aorta; 2) true aneurysm of the aortic arch treated in emergency due to haemoptysis (EuroSCORE logistic 62.85%) and 3) acute type A dissection in patient previously operated due to aortic and mitral valve disease.

Results: For the solution of the first problem replacement of the ascending aorta and aortic arch with the branched prosthesis with stent graft implantation from the operative field into dissected descending aorta was performed. Revascularization of the carotid arteries was achieved through direct anastomosis of the graft branches with native arteries. Second problem was successfully solved with aortic arch debranching with stent graft implanted from the femoral access after revascularization of supraaortic vessels with trifurcated prosthesis anastomosed proximally with ascending aorta. Third problem was solved with ascending aorta replacement with hemiarch open anastomosis with Kazui technique for perfusion of the head and stentgraft implantation into dissecting aorta. Revascularization of the carotid arteries was achieved through prostheses anastomosed end to side with both carotid arteries, used as arterial blood supply during extracorporeal circulation and anastomosed at the end of the procedure with ascending aorta. All the three patients survived the procedures and were successfully discharged from the hospital.

Conclusion: Capability of using both surgical and endovascular methods for solving acute problems in aortic arch can widen the range of the patients successfully surviving the procedure. It is especially important in the group of patients with high surgical risk and/or treated due acute type A dissection.

Objective: A unique technique of repairing a pseudoaneurysm of descending thoracic aorta with a partial clamp without cardiopulmonary bypass is demonstrated.

Methods: A 73-year-old female with CAD, gastrointestinal bleeding (hemoglobin 7.2 g/dl), RF (creatinine 2.6 mg/dl) and CHF (BNP 883 pg/ml, EF 30%) was diagnosed with a 5.9 cm descending thoracic aortic pseudoaneurysm. Angiography revealed severe hypertension (242/135 mmHg), 95% left renal artery stenosis, >95% bilateral internal carotid artery stenosis and 90% left subclavian artery stenosis. Endografting was not possible because of poor access. After coagulation of gastric telangiectasias and PTCA of renal artery, an open repair was performed without crossclamp, to minimize the risk of bleeding, stroke and worsening RF. Using 5000 units of heparin, a partial clamp was applied to the base of the aneurysm through left thoracotomy. The aneurysm sac was excised to reveal a 2.5 cm rupture of the aorta. This was repaired with a dacron patch.

Results: The patient was discharged on POD 9. She is well 15 months later, having undergone subclavian artery stenting and bilateral carotid endarterectomies.

Conclusion: This approach patch repair of descending thoracic aorta can be useful in a select high-risk patient population.
Objective: The longevity of the homograft valve in pulmonary position after the Ross procedure is limited owing to homograft stenosis. Little is known about the effect of homograft stenosis on right ventricular (RV) function. Our aim was to assess RV and homograft function by using magnetic resonance imaging (MRI) and echocardiography (Echo).

Methods: Twenty patients (female = 9, male = 11 mean age±SD. years 32.3±8.3) were studied 8.6±3 years after surgery. Ross patients were recruited from our database of 77 Ross patients. MRI standard velocity-encoded, multislice, multiphase imaging sequences were used to assess RV function, RV mass and homograft diameter and morphology. M mode echocardiography (TAPSE – Tricuspid Annulus Plane Systolic Excursion) and Doppler Tissue Image (DTI) studies of the tricuspid annulus (myocardial velocities during systole – S’ and early diastole – E’) were performed for RV systolic and diastolic function. Peak flow velocity across the homograft valve (PV Vmax) was assessed by using Doppler echocardiography.

Results: Minor degrees of homograft stenosis (PV Vmax between 1.5 and 3 m/s) were found in 18 of 20 patients. In two patients homograft stenosis was severe with PV Vmax 5.5 m/s and 4.5 m/s. RV systolic function remained unaltered: DTI systolic velocity (S’) was 11.8±3.4 cm/s, TAPSE – 19.2±4.6 mm and MRI RV EF – 49.4±9.2%. RV diastolic function was slightly decreased: DTI systolic velocity E’ was 12.3±2.7 cm/s. RV mass was increased as showed MRI RV mass index – 28.2±6.4 g/kg. Peak flow velocity across the homograft valve correlated with RV mass index (r=0.8, P<0.0001). Two patients with severe homograft stenosis were selected for Percutaneous Pulmonary Valve Implantation (PPVI) on the basis of 3D assessment of the RVOT with MRI.

Conclusions: 1. RV hypertrophy with preserved good RV systolic function and slightly decreased RV diastolic function are observed in patients after the Ross procedure even in absence of overt homograft stenosis. 2. MRI and Echocardiography can be complement each other methods for RV and homograft assessment after the Ross procedure. 3. MRI can be good method for RVOT morphology and diameter assessment and selection for PPVI in post-Ross procedure patients.

C10-2
CONGENITAL ISTHMUS COARCTATION AND ASCENDING AORTIC ANEURYSM SURGERY: PAST, PRESENT AND FUTURE
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Objective: Ascending aortic aneurysm or dissecting aneurysm with aortic coarctation is a life-threatening condition. The choice of the specific procedure that is performed depends on different parameters. The aim of the present study was to assess the different approach, evolution and results of surgical strategy for the ascending aorta replacement combined with ischemic aortic coarctation correction.

Methods: Between 1996 and 2008, 63 patients (44 males, mean age of 31±4.1 years) underwent surgical treatment for ascending aortic aneurysm and ischemic aortic coarctation. Eighteen patients (single-stage group) in severe cardiac and coarctatic conditions underwent simultaneous ascending aorta replacement and aortic coarctation correction. Sixteen patients (two-stage group) were successfully treated with a two-stage operation. The first stage consisted in the correction of a dominant pathology; the second procedure was performed 7.1±4.9 months later. Twenty-three patients, who underwent first-step correction for coarctation, were not included into the study. They were claimed to potential second step - ascending aorta replacement. Twenty-nine patients underwent surgery late after coarctation correction (in average - 16.8±6.2 years). Repair of the ascending aortic aneurysm was performed with Bentall-DeBono technique and supracoronary graft repair. Aortic coarctation repair included end-to-end anastomosis, synthetic patch, and ascending-descending aorta bypass graft. Bilateral perfusion was applied as alternative to ordinary cardiopulmonary bypass.

Results: Overall hospital mortality was 6.5%, with no significant difference between groups. Mortality was due to multiple organ failure, distal aortic rupture, neurological complications.

Conclusions: Surgical approach with simultaneous and two-stage operations (depending on the degree of anatomic and hemodynamic abnormality) for the treatment of ascending aortic aneurysm associated with ischemic aortic coarctation showed good immediate and follow-up results.

C10-3
AORTIC VALVE SPARING ROOT REMODELING WITH SEPARATE PATCHES TECHNIQUE
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Objective: In July 2006 we introduced Dr. Urbanski aortic valve remodelling technique described in 2005 in 20 patients. Methods: Twenty patients with complicated aortic root pathology suitable for this remodelling type were operated on until now, 14 male, 6 female, aged 27–73, including five with de Bakey type I dissection, 18 patients with severe, one with moderate, and one without IA. Logistic EuroSCORE ranged from 4.65 to 59.45, 12.79±3.86% on average. In 18 patients, non-coronary Valsalva sinuses were replaced, including four dissected, and in six also right coronary ones with separate patches. Reduction plasty of remaining one or two sinuses was required in seven. Dissected left sinus was patched in one patient, who required hemiarch distally. Remaining dissected Valsalva Sinuses were repaired on sino-tubular junction (or rather sino-prosthesis junction) level with external strips buttressing. Button technique was used for coronary orifices reimplantation. El Khouri reinforcement of three cusps was necessary in two, and on one cusp in one, and subcommissural annuloplasty in four patients. Supraaortic implanted repair of ascending aorta prosthesis of the chosen diameter completed all operations. During this period 58 patients, including 13 with dissection required different operative methods.

Results: In 17 patients, including these with dissections, very good early results were achieved. In 73-year-old patient cusps occurred fibrotic and shortened, and Bentall technique was used. In two the result on intraoperative TEE was inadequate (IA grade II), and conversion to AVR was necessary. Eighteen patients were discharged home. One patient with four month old chronic de Bakey type I dissection, diabetes, and arterial hypertension, despite technically good result died on postoperative day 1 from renal and multiorgan failure (mortality 5.8%). One patient with severe COPD unable to be weaned from ventilator was hospitalized in pulmonary ICU. During follow-up from 8-24 months IA reoccurred in one patient.

Conclusions: Dr. Urbanski technique: deals with every component of functional aortic annulus, allows individualized reconstruction of aortic root prosthesis according to the given patient pathology, permits to spare all good quality tissue, gives very good view of the valve and allows complete procedures on cusps precisely, is particularly indicated when not all sinuses have to be exchanged; in our experience was appropriate in 1/4 cases from the entire spectrum of aortic root pathologies from less symptomatic to dissections. Therefore, the efficacy is high, mortality and complication rate acceptable, and results are promising.

C10-4
AORTIC ROOT SURGERY FOR AORTIC DISSECTION IN PATIENTS WITH MARFAN SYNDROME: STRATEGY OF CONCOMITANT ARCH OPERATION
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Objective: Although surgical outcome of transverse arch replacement (TAR) is recently improved, the indication of TAR for aortic dissection in patients with Marfan syndrome is still controversial. The aim of the study is to evaluate the residual dissection after the aortic root replacement in Marfan syndrome patients with aortic dissection.
Methods: Since 1979, 50 patients with Marfan syndrome have undergone aortic root replacement (mean age: 36.6±8.9, 26 male). Thirty-six had DeBakey I aortic dissection (15 acute and 21 chronic), and 14 had DeBakey II aortic dissection (4 acute and 10 chronic). For the patients with DeBakey I aortic dissection, 23 TAR were performed and 13 had only ascending replacement.

Results: The hospital mortality rate was 8.7% (2 of 23) in cases with TAR and 11.1% (3 of 27) in cases without TAR, respectively, and there was no significant difference between the two groups (P=0.78). Among the survivors of the DeBakey I cases without TAR (n=11), 3 cases (42.9%) in group of chronic dissection (n=7) required TAR as a late reoperation, however, none in group of acute dissection (n=4) showed the dilatation of aortic arch and required TAR in the follow-up periods (7.1±3.4 years).

Conclusions: The surgical result of aortic root replacement in Marfan syndrome patients with aortic dissection was acceptable, and only concomitant ascending aortic replacement was durable in major cases. The concomitant TAR could be performed safely, however, it might not be mandatory in all cases.

C10-5 SURGICAL TREATMENT OF AORTIC ANEURYSMS IN PATIENTS WITH MARFAN SYNDROME (24 YEARS EXPERIENCE)
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Objective: Marfan syndrome is a relatively common heritable disorder of connective tissue that affects numerous organ systems, but the most severe complications are aortic aneurysm and dissection. A variety of medical and surgical approaches are available for managing the cardiovascular complications. Now, in connection with increasing possibilities of the surgeon, actual there is a question on time and a method of surgical intervention on an ascending aorta at Marfan’s patients. Purpose of presentation: description of our experience and the particularities of surgical treatment of ascending aortic aneurysm in patients with Marfan syndrome.

Methods: From 1983 to September 2008 surgical correction of ascending aortic aneurysm was performed in 150 Marfan’s patients. There were 90 (60%) men and 60 (40%) women; their mean age were 31.7±10.5 years (5–56 years). Aortic dissection was diagnosed in 67 patients: De Bakey type I - in 47.7%; and De Bakey type II in 52.7% of them. In acute stage was operated 15 patients. The correction of aortic aneurysm consisted in replacement of ascending aorta in accordance with Bentall-DeBono technique in 90.7%; Cabrol technique in 5.3% (used to 1990); and David-I in 4% of patients. In 23 courses according interventions on AV-valves were use.

Results: Total hospital mortality was 9.3% (14 patients), thus greatest mortality was marked in 80 years of the last century. The main causes of death were: acute heart failure, multi-organ failure, septic complications, and cerebral circulation disturbances. Mean duration of the follow-up was 8.3±4.4 years (6 months to 24 years). In the long-term after surgery on the ascending aorta 26 patients underwent reoperation. The indications to repeated operation at 12 patients were dysfunction of the conduit or severe insufficiency of the other valves, and at 14 - expressed expansion of the unoperated parts of aorta.

Conclusions: 1. After the operations on the ascending segment of the aorta the Marfan’s patients should be followed with a particular attention to the state of distal aortic segments. 2. While performing surgery for chronic aortic aneurysm type I the preference should be given to radical techniques. 3. In patients with Marfan syndrome accompanying an aneurysm of an ascending aorta mitral insufficiency of 2nd and more degrees demands one-stage surgical correction.

C10-6 TREATMENT OF SYMPTOMATIC CORAL REEF AORTA BY ENDOVASCULAR STENT-GRAFT PLACEMENT
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Objective: Stenosis of the aorta, in particular at the thoracoabdominal transition, is extremely rare. In symptomatic patients, treatment options include conventional surgical repair, endografting, and open repair. Endovascular stent-graft placement is the treatment modality of first choice in various acute and chronic thoracic and abdominal aortic pathologies. The procedure points out its merits especially in the elderly as well as in multimorbid patients who are generally more frail and have a diminished physiologic reserve when compared with their younger counterparts.

Methods: We report on two patients having been referred to our center for treatment of hemodynamically significant symptomatic stenosis of the aorta at the thoracoabdominal transition (coral reef aorta) having caused abdominal angina with significant weight loss as well as intermittent claudication. Both patients underwent successful transfemoral endovascular stent graft placement.

Results: Completion CT-scans before discharge in both patients revealed stent-grafts in place, restored antegrade distal perfusion as well as already advanced expansion of the stent-grafts. Patients were discharged five and six days after stent-graft placement and were free of symptoms with regular findings at a 6-month follow-up completion CT-scan.

Conclusions: Endovascular stent-graft placement is the treatment modality of first choice in various acute and chronic thoracic and abdominal aortic pathologies. However, little experience exists with regard to the treatment of a coral reef aorta. Stent-graft placement may be limited by the lack of self-expanding capacity of the graft itself thereby not enabling sufficient restoration of antegrade perfusion. Furthermore, detachment of atherosclerotic debris may cause deleterious consequences via distal embolization in respective of the affected region. Finally, due to the location of the lesion at the thoracoabdominal transition and the anatomical proximity to the spinal cord supplying vessels, paraplegia may occur after stent-graft placement. Therefore, cerebrospinal fluid drainage in advance may serve as protective measure against this dreadful complication. All these potential adverse events have not been observed in these two patients. Nevertheless, a careful and critical case-by-case evaluation is mandatory.

C10-7 VOLATILE ANESTHESIA IN MANAGEMENT SURGICAL REPAIR OF THORACIC AORTA
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Objective: The aim this study was to assess the efficacy of Sevorane technique of anesthesia during surgical repair of thoracic aorta.

Methods: Beginning from December 2003 to July 2008 were operated more then 6000 patients, and 38 patients from them were underwent surgical repair of thoracic aorta. We compared two groups patients underwent surgical repair of thoracic aorta. We compared two groups patients underwent surgical repair of thoracic aorta. We compared two groups patients underwent surgical repair of thoracic aorta. We compared two groups patients underwent surgical repair of thoracic aorta.

Results: It has been show that in Sevorane group time of stay in ICU decrease significant (P<0.05); leukocytes count 8.8±1.2 vs. 14.2±2.3 μl/l. We used one-lung ventilation. For BP monitoring we used a radialis and a femoralis at the same time. In Sevorane group anesthesiology was induced with Sevorane1 1.7-2.1 MAC, Pipercuronium 0.03 mg kg–1; maintainance of anesthesia was 1.5-2.1 MAC Sevorane2; maintenance of anesthesia during CPB was 1.0-1.3 MAC Sevorane3. Volatile anesthetic was delivered into oxygen in composition of gas mixture. In control group anesthesia during surgery maintained by a continuous infusion of Fentanyl 5 μg kg–1 h–1 and Propolop 2 mg kg–1 h–1, Pipercuronium 0.03 mg kg–1. Postoperative analgesia was achieved by Fentanyl (PCa) [Perfusor®M] 0.5 μg/kg/min, and lockout – 30 min. We assessed the time respiratory support, duration of stay in ICU, necessity and duration inotrope therapy, determined the intraoperative BIS, hemodynamic profile, biochemical tests such as intra- and postoperative levels of glucose, lactate, creatinine, urea, and leukocytes count.

Results: It has be show that in Sevorane group time of stay in ICU decrease 6.3±1.6 h vs. 18.2±1.5 h (P<0.05); time respiratory support 58±16 min vs. 880±25 min (P<0.05), significantly decreased necessity of inotrope therapy 2% vs. 15% (P<0.05), and it duration; reduced manifestations of systemic inflammatory response, postoperative leukocytes count 8.8±1.2 vs. 14.2±2.3 μl/l, lactate level 2.3±1.8 mmol/l vs. 5.7±1.8 mmol/l. Conclusions: Our results indicated that use of Sevorane technique in patients underwent surgical repair of thoracic aorta, has more clinically significant...
cardioprotective effects then fentanyl - propofol technique; permits to reduce time of respiratory support, duration of stay in ICU and as a result - better clinical outcome.

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C11-1
ADDITIVE EFFECTS OF INHALED VASODILATORS FOR WEANING FROM CARDIOPULMONARY BYPASS DURING LVAD IMPLANTATION
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Objective: Insertion of an implantable left ventricular assist device (LVAD) complicated by early right ventricular (RV) failure has a poor prognosis. Right heart failure can occur quickly and is difficult to manage once it becomes severe.

Methods: A retrospective analysis was performed in 44 patients with pulmonary hypertension during LVAD implantation. Twenty-two patients with a dilated cardiomyopathy (DCM) and 15 patients with an ischemic cardiomyopathy (ICM) were included. Four patients required an extracorporeal membrane oxygenation (ECMO) and five patients were treated with an intraaortic balloon pump (IABP) preoperatively.

Results: Thirty-three patients were treated with inhaled vasodilators to prevent right ventricular failure after LVAD implantation. Six patients were treated with nitric oxide (iNO) and 23 patients with Iloprost. Four patients received initially a combination of iNO and Iloprost. Two patients required ECMO and two patients mechanical right heart support for successful weaning from cardiopulmonary bypass (CPB).

Conclusions: Right ventricular failure during LVAD implantation is an acute life threatening situation. Inhaled Iloprost and iNO are useful adjuncts in the management of LVAD patients with imminent right heart failure.

C11-2
SERIAL QUANTITATIVE CORONARY ANGIOGRAPHY IN THE ASSESSMENT OF TRANSPLANT CORONARY ARTERY DISEASE
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Objective: Transplant coronary artery disease (TxCAD) is one of the major cause of late death following cardiac transplantation (OHT). The objective of this study was to compare qualitative coronary angiography with quantitative coronary angiography (QCA) in the assessment of TxCAD in population of heart transplant recipients, who survived at least five years after transplantation and followed up to 15 years.

Methods: From 1991 to 2000, 142 coronary angiograms (CAG) from 72 recipients were reviewed to determine the prevalence and severity of TxCAD (2 CAG for each patient). The time from first to second assessed CAG was 47±20 months. TxCAD onset was defined as any narrowing seen at coronary angiography and severe TxCAD was recognized, when coronary events including myocardial infarction, coronary revascularizations and coronary death, were registered in follow-up. Changes in percent diameter stenosis (DS) and minimum lumen diameter (MLD) were measured by QCA.

Results: TxCAD was recognized in 57 recipients and severe disease occurred in 30 of them. The cumulative incidence of TxCAD assessed angiographically was 24%, 5 years after OHT and 50%, 10 years after OHT. QCA analysis revealed significant decrease in coronary artery luminal diameter and significant progression of lesion diameter in patient with TxCAD, especially with severe TxCAD. The loss of MLD was greater in patients with TxCAD compared to patients without TxCAD (0.18±0.57 mm vs. -0.06±0.37 mm, P<0.01) and in patients who developed severe TxCAD compared to patients with mild TxCAD (0.31±0.72 mm vs. 0.04±0.30 mm, P=0.005). Progression of DS also was greater in patients with TxCAD compared to patients without TxCAD (13.63±22.48% vs. -1.40±10.01%, P=0.001) and comparing patients with severe and mild form of the disease (27.19±26.24% vs. 2.21±8.93%, P=0.001). Significant differences in QCA measures related to the onset of TxCAD were seen in proximal segments of left anterior descending coronary artery and right coronary artery compared to significant differences in QCA measures related to severity of TxCAD, which were present also in medium and distal segments of these arteries.

Conclusions: Changes of minimum lumen diameter and diameter stenosis were related to onset of TxCAD and “hard” coronary events, including coronary death. QCA measures may be better surrogate endpoints for severe TxCAD according to significant differences in distal segments of coronary arteries.

C11-3
LONG-TERM SUPPORT ON HEART ASSIST DEVICES
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Objective: The number of patients with cardiovascular diseases and end-stage heart failure (HF) is dramatically increasing worldwide. Prevention of HF does not give expected results. The World Heart Federation says that cardiovascular diseases in the 21st century will increase up to 137% with male patients and 120% with female patients starting from today to 2020 worldwide. Heart transplant (HTx) can be an effective method to patients with end stage heart diseases. However, its application is extremely limited due to the storage of donor hearts. Fortunately, mechanical circulatory support systems (MCSS) today are effective helpful to HF patients.

Methods: Forty-nine patients - 41 males and 8 females - were connected to MCSS. Twenty-five of them as a bridge to HTx, 11 - for destination therapy, 10 - for postcardiotoxic HF, 3 - for bridge to recovery. The age of patients was from 14 to 76 years. All patients were with low cardiac output index. It was 1.8±0.5/min/m². Small left ventricle ejection fraction from 10% to 22% and large left ventricle diastolic diameter from 6.3 to 7.9 mm. All patients were on maximal doses of inotropic drugs, diuretics and most of them were on intraaortic balloon pump support. There were used pulsatling and axial blood flow MCSS.

Results: Duration on MCSS was from 12 to 1097 days, total cumulative years - 22. Eighteen recipients were successfully transplanted (37%). Thirteen recipients (26%) died on MCSS because of sepsisemia - 3 (6.1%), stroke - 4 (8.2%) and 6 (12.2%) patients died because of multiorgan damage. Four patients (8%) are on the waiting list. All of them are at home and have normal social life.

Conclusions: The MCSS are important for patients whom other medical measures cannot help.

C11-4
ILOPROST FOR BRIDGING TO HEART TRANSPLANTATION?
A RETROSPECTIVE ANALYSIS
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Objective: Irreversible increase of pulmonary pressure and resistance (PVR >240 dyng*cm⁻² and TPG <15 mmHg) is regarded to be a contraindication for orthotopic heart transplantation (eHTX).

Methods: We retrospectively reviewed the files of 51 pretransplant patients. (38 male/13 female) treated with inhaled iloprost from October 1999 to May 2008. Mean age was 54 years (21-70 years). All patients exceeded the indication of blood flow MCSS.

Results: Duration on MCSS was from 12 to 1097 days, total cumulative years - 22. Eighteen recipients were successfully transplanted (37%). Thirteen recipients (26%) died on MCSS because of sepsisemia - 3 (6.1%), stroke - 4 (8.2%) and 6 (12.2%) patients died because of multiorgan damage. Four patients (8%) are on the waiting list. All of them are at home and have normal social life.

Conclusions: The MCSS are important for patients whom other medical measures cannot help.
first time. No severe side effects were observed. Fourteen patients have been transplanted (oHTx) already successfully.

Conclusions: Inhaled iloprost therapy may decrease pulmonary pressure and resistance prior to heart transplantation and improve cardiac index. Transplantable conditions can be achieved in selected patients.

C11-5 EXTRACORPOREAL LIFE SUPPORT AS RESCUE THERAPY FOR SUDDEN CARDIAC ARREST DEATH
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Objective: Sudden cardiac death cause as much as 300,000-400,000 deaths annually and account for almost 63% of all cardiac death. For out-of-hospital cardiac arrest, poor survival is usually reported (~10%) due to the difficulty in quickly restoring adequate circulation. For in-hospital cardiac arrest a slightly better survival is reported (around 20%). Extracorporeal life support (ECLS) represents an alternative method for patient not responsive to conventional cardiopulmonary resuscitation. The aim of this study is to evaluate our preliminary experience using ecls as rescue therapy for patients with out or in-hospital not responsive sudden cardiac arrest.

Methods: Between January 2007 and November 2008, six in-hospital and eight out-of-hospital ECLS procedure were performed in patient presenting with cardiac arrest receiving prompt CPR and showing no spontaneous recovery after 30'. Femoral veno-arterial ECMO was set up during CPR. In all patients mild hypothermia was also induced. The mean age was 53.5±8.9 years. The average time of external cardiac massage was 53.3±17.4 min. Results: Successful resuscitation was restored in all patients. One patient was treated with primary PTCA and hypothermia was weaned off the pump with a good recovery of left ventricular function (EF 60%); four patients were bridged to cardiac transplantation, respectively after 24, 48, 72 h and 14 days and are still alive; two patients were bridged to a ventricular assist device but died nine days post VAD implant due to MOF (one patient) and cerebral hemorrhage (one patient); six patients were disconnected from extracorporeal circulation because of brain death (3/14), intestinal ischemia (2/14), left ventricular rupture (1/14) or cannulation problem (1/14).

Conclusions: Cardiac arrest remains associated with high mortality rate, even following ECLS rescue, especially if the arrest occurred out of hospital. ECLS, however, could be effective in improving outcome especially if prompt CPR is applied. Our initial results encourage the wider application of ECLS for refractory cardiocirculatory arrest in selected patients with particularly attention to improve the neurologic outcome using hypothermia.

C11-6 TOTAL CARDIAC UNLOADING WITHOUT AUGMENTATION FOR BEATING HEART LVAD IMPLANTATION
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Objective: The traditional approach for Left Ventricle Assist Device (LVAD) implantation with trans-apical outflow cannula includes central cardiopulmonary bypass (CPB), aortic cross-clamping and cardioplegic arrest or electrically induced ventricular fibrillation. Recently, remote cannulation with augmentation of the venous drainage has also been recommended. We describe our experience on beating heart LVAD implantation relying on peripheral venous drainage with self-expanding cannulas gravity drainage.

Methods: Five consecutive patients requiring LVAD implantation underwent peripheral cannulation using a self-expanding cannula for passive venous drainage. One patient was re-operated (6 procedures) because of an external cable damage requiring machine replacement. The implantations were performed without aortic cross-clamping and on the beating heart, after total unloading (flat arterial line, no aortic valve opening in the TEE). Either the Heartmate II (4/6) or the Thoratec IVAD (2/6) were used as bridge to transplantation.

Results: All procedure succeeded (6/6) on the beating heart without cardiopulogia or other artifacts. The mean age was 52.66±7.53 years (range 43-62), they were all male, the mean body surface area was 1.89±0.26 m² and the mean calculated target pump flow was 4.5±0.26 l/min. The mean achieved pump flow was 5.4±0.55 l/min (119.6% of the calculated flow). Complications related to air embolism were not detected and there were no neurological events or cannula-related complications. Thirty-day mortality was 0%; 1/5 patients was transplanted and discharged; 3/5 patients are on the waiting list and one patient died late from multi-organ failure.

Conclusions: Optimal ventricle drainage with self-expanding cannulas allows for beating heart LVAD implantation without augmentation and provides more than target pump flow (119%) without active suction. Total flow is achieved by peripheral cannulation and additional cannulas in the thorax can be avoided, a fact very helpful specially when a clamshell approach is recommended by a previous tracheotomy (one patient).

C11-7 LEVITRONIX CENTRIMAG AS TEMPORARY MECHANICAL SUPPORT IN POSTCARDIOTOMY CARDIAC SHOCK
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Objective: A variety of cardiac assist options are necessary to meet different clinical settings when a mechanical circulatory support is indicated. Postcardiomyotomy cardiogenic shock occurs in up to 1-2% with poor prognosis. Levitronix CentriMag is a novel magnetically levitated bearingless centrifugal pump designed for short-term mechanical support. We reviewed our experience with the device focusing on patients in the postcardiomyotomy clinical scenario.

Methods: Between February 2004 and November 2008, 31 consecutive adult patients were supported with Levitronix at our institution. Fourteen patients underwent CentriMag implantation due to postcardiomyotomy cardiogenic shock (9 men; age 61.4±12.5, range: 35-76 years). Cardiac surgery procedures before mechanical support placement were: coronary bypass grafting in five cases, valve surgery in five cases, heart transplantation followed by primary graft failure in two cases, and HeartMate II LVAS implantation followed by right ventricular assist device in one.

Results: Mean support time was 9.7±6.9 days (range: 3-19 days). A biventricular configuration (BVAD) was established in five cases, right ventricle only was supported (RVAD) in six patients and left (LVAD) in three. Overall thirty-days mortality was 35.7% (5 patients). Two patients on BVAD were re-transplanted. Nine patients (64.2%) were weaned from support (RVAD patients=5, LVAD patients=3, BVAD patients=1). RVADs removal was performed through a right mini-thoracotomy without reopening the sternum. Eight patients (57.1%) were successfully discharged home (RVAD patients=4, LVAD patients=3, BVAD patients=1). Bleeding requiring re-operation occurred in five (35.7%) cases and cerebral haemorrhage in two (14.3%). There were no device failures.

Conclusions: Temporary support with Levitronix CentriMag proved effective in patients in postcardiomyotomy cardiogenic shock therefore reducing the costs involved. The device is easy to manage and can be handled on the ICU by nurses.

C11-8 BRIDGE TO HEART TRANSPLANTATION WITH MID TO LONG-TERM VAD MECHANICAL SUPPORT
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Objective: Lack of response to medical treatment and shortage of organs for cardiac transplantation (HTx) are limitations for an effective treatment of patients with end-stage heart failure. Currently, in unstable patients, Ventricular Assist Devices (VAD) offer a successful bridge to HTx. We report our experience with mid to long-term pulsatile and continuous flow VADs.

Methods: Between March 2002 and November 2008, 35 transplantable adult patients were supported on mid to long-term VAD at our institution. LVAD support (Group A) was established in 24 patients (18 HeartMate II LVAS: 15 men, age 50±9.6 (range 31-64) years; 6 HeartMate I XVE LVAS: 5 men, age 52.5±9.1 (range 38-61) years). BVAD support (Group B) was established in 11 patients (9 Thoratec paracorporeal: 7 men, age 46.5±11.9 (range 23-63) years; 1 Thoratec implantable: man, 42 years; 1 CardioWest Synchrona TAH: man, 48 years). Indication at implantation were: ischemic cardiomyopathy (CMP) in 17 patients, idiopathic CMP in 16, restrictive CMP in 1, and post-myocarditis CMP in 1.
Results: Mean support time was 220±210.5 days in Group A (range: 1-665 days) and 85±72.6 days in Group B (range: 8-235 days). Early (30-days) mortality on VAD support was 28.5% (10 patients), five patients were in Group A and five patients in Group B, with multiple organ failure as main cause of death. Bleeding requiring re-operation occurred in 11 (31.4%) patients (7 Group A, 4 Group B) and cerebral haemorrhage in 3 (8.5%) patients (1 Group A, 2 Group B). There were three drive line infection (Group A) and one device failure (HeartMate I LVAS). Nineteen patients (54.2%) were transplantated (14 Group A, 5 Group B) and four patients (11.4%) are at home on the waiting list for transplantation. At follow-up survival rate after Htx is 63.1% (8 patients Group A, 4 patients Group B).

Conclusions: According to our experience, long-term VAD support still proves to be successful as bridge to Htx. End-stage heart failure patients benefited well from either pulsatile and non-pulsatile VADs. Good mid to long-term results can be achieved by means of nowadays technology.

C11-9
PREOPERATIVE INDIVIDUAL NEUTROPHIL TRANSENDOTHELIAL MIGRATION POTENTIAL ASSESSMENT: A PREDICTIVE MARKER OF EARLY REJECTION GRADE POST HEART TRANSPLANTATION
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Objective: Heart transplant remains the gold standard treatment for end stage heart failure. Success of transplantation is affected by allograft rejection, widely known as a lymphocyte mediated process. Recent studies suggest that neutrophils may also play a contributory role. Neutrophils are the first cell to infiltrate cardiac allograft, are implicated in systemic inflammatory response and can act as antigen presenting cell. We hypothesised that the severity of heart transplant rejection can be predicted through assessing individual transendothelial migration potential, and this potential may play a more significant role than previously thought in contributing to cardiac allograft rejection. This may also prove to be a novel tool to compliment the biopsy procedure in detecting rejection.

Methods: Patients (n=11) were recruited from the active heart transplant list. Preoperative venous blood samples were stained with antibody to neutrophil adhesion molecule (CD11b, CD62L and PSGL-1) before and after in-vitro stimulation with PMA (1 ng/ml), LPS (1 ne) neutrophil adhesion molecule (CD11b, CD62L and PSGL-1) before and this potential was then correlated with surgically induced neutrophil response was also assessed using intra-operative blood sample. Preoperative artificially stimulated neutrophil response was then correlated with surgically induced neutrophil response and rejection grade of the first endomyocardial biopsy sampled 10 days postoperatively.

Results: Neutrophil adhesion molecules are upregulated following artificial stimulation. An inter-individual variation in preoperative artificially stimulated neutrophil response was demonstrated. Preoperative artificially stimulated neutrophil response correlated with surgically induced neutrophil response. Preoperative neutrophil surface CD11b expression following in-vitro stimulation correlated with rejection grade detected in the first endomyocardial biopsy performed (P=0.677, P>0.021).

Conclusions: Preoperative artificially stimulated neutrophil response stimulates surgically induced neutrophil response and predicted rejection grade in the first post transplant endomyocardial biopsy. This suggests that neutrophil may play a more significant role than previously thought in contributing to cardiac allograft rejection. This may also prove to be a novel tool to compliment the biopsy procedure in detecting rejection.

9th Vascular Scientific Session - Research and Miscellaneous
May 2, 2009, 3rd Congress Day
14:30-16:00

V9-1
FATE OF LEFT KIDNEY AFTER LEFT RENAL VEIN DIVISION DURING MANAGEMENT OF AORTIC OCCLUSIVE DISEASE
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Objective: Left renal vein division (LRVD) has been used as a technical aid to gain exposure to the peri-renal aorta and to control bleeding in abdominal aortic operations. A few retrospective series studied the effects of such division on the overall renal function with contradicting results. The aim of this study is to assess the effect of such division on the left kidney during the management of aortic occlusive disease.

Methods: A prospective study was undertaken on all patients that had abdominal aortic bypass surgery for juxta-renal aortic occlusive disease, scheduled between October 2003 and September 2007. Renal function was assessed by measuring serum creatinine (mg/si.S.D.) and creatinine clearance (ml/mins.5.D.) preoperatively and postoperatively up to 14 days in patients who had LRVD and patients who had left renal vein intact (LRVI) which served as control. Left kidney was assessed preoperatively by performing abdominal computed tomography angiography (CTA) and postoperatively with either ultrasonography (US) or CTA depending on the serum creatinine level.

Results: Thirty-two patients were included in this study. Six patients had LRVD. There was no statistically significant difference between the LRVD and LRVI groups as regard mean serum creatinine, preoperatively (LRVD 1.05±0.31 vs. LRVI 1.08±0.21, P=0.38) and 14th day postoperatively (LRVD 1.15±0.31 vs. LRVI 1.09±0.24, P=0.34), and mean creatinine clearance, preoperatively (LRVD 94±17.4 vs. LRVI 97.9±11.1, P=0.31) and 14th day postoperatively (LRVD 88.8±13.1 vs. LRVI 94.3±6.7, P=0.11). CTA and US showed postoperative early diffuse swelling and congestion of the left kidney in four cases that had LRVD, which reverted to normal at 14th day postoperatively.

Conclusions: Selective LRVD during aortic occlusive surgery does not compromise the left kidney.

V9-2
FEMOROPOPLITEAL VASCULAR RECONSTRUCTION BELOW KNEE WHEN GREATER SAPHENOUS VEIN IS UNAVAILABLE: EPITFE OR BIOSYNTHETICS PROSTHESIS (OMNIFLOW II)
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Objective: Different types of vascular graft are available for femoropopliteal vascular reconstruction: beside the autologous greater saphenous vein there is vascular prosthesis of PTFE and collagen graft. The aim of this study is to compare advantage and patency rates of the bilateral vascular prosthetic reconstruction and ePTFE, having in mind valid alternative of the autologous greater safe

V9-3
INFECTED FEMORAL ARTERY PSEUDOANEURYSMS: LIGATION ALONE IS STILL THE BEST POLICY
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Objective: Femoral popliteal pseudoaneurysms. The management of infected femoro-popliteal pseudoaneurysms is controversial, and is based on a variety of factors. The current treatment of choice is ligation of the feeding artery, however some studies have suggested that exclusion of the infected graft with an interposition graft may be a better option. This study reviewed the records of all patients with infected femoro-popliteal pseudoaneurysm at our unit over the last 15 years and examined the factors associated with recurrence and outcome.

Methods: The charts of all patients with infected femoro-popliteal pseudoaneurysms were reviewed. The clinical presentation, associated factors such as diabetes, tobacco use, and the presence of an underlying infection were recorded. The treatment options utilized, including ligation, excision of the infected pseudoaneurysm with interposition grafting, and amputation, were also noted.

Results: A total of 29 patients were identified with infected femoro-popliteal pseudoaneurysms. The average age of the patients was 57 years, and 19 were male. All patients presented with pain and swelling in the affected limb. The mean duration of symptoms before presentation was 8 weeks. The most common associated factors were diabetes (n=15) and tobacco use (n=18). All patients were treated with ligation of the feeding artery, and 22 patients underwent excision of the infected pseudoaneurysm with interposition grafting. Amputation was performed in 4 patients due to infection extending into the underlying bone.

Conclusions: Ligation of the feeding artery is the preferred treatment option for infected femoro-popliteal pseudoaneurysms. There was no difference in recurrence rates between those treated with ligation alone and those treated with ligation and interposition grafting. Amputation was necessary in 4 patients due to infection extending into the underlying bone.
Objective: Infected femoral artery pseudoaneurysm (IFAP) is a well recognised complication of intravenous drug abuse. There has been controversy over surgical management, options being ligation alone or repair and reconstruction of the artery. Use of synthetic or antilogoous grafts to revascularisation in such cases is complicated by the presence of sepsis and unavailability of autologous venous conduit. We present the combined results in two major vascular units in order to answer the question: ligation or reconstruction?

Methods: Retrospective 10-year (May 1995-2005) review of the management of all cases of IFAP secondary to drug abuse at two tertiary vascular units was performed; case notes were reviewed and details retrieved with regard to operative surgery, outcome and complications. The outcome measures of importance were limb salvage and mortality.

Results: Twenty-six operations for IFAP were performed during this period (19 males and 7 females, mean age 34.2 years, range 15-59). Presenting symptoms were painfull mass (21), infection (19) and haemorrhage (9). Seventeen patients underwent a diagnostic duplex scan on admission, and it is of interest that deep vein thrombosis was identified in all. The Common Femoral Artery was involved in 19 patients and the Superficial Femoral and Deep Femoral Arteries in 14 and 15 patients, respectively. Primary ligation of the arteries was performed in 17 cases, whilst reconstruction with vein or prosthetic material was performed in three and five patients, respectively. One patient underwent primary closure but this artery later occluded, as did two prosthetic and one venous interposition grafts. There were no deaths, though nine patients required further surgery for wound lavage (13), debridement (2), arterial ligation (1) and major limb amputation (3). Mean length of inpatient stay was 14 days (range 6-55). The mean follow-up time was 5.6 months (range 0-66). Ten patients attended follow-up with nine having moderately disabling claudication (13 failed to attend follow-up).

Conclusions: Altogether, 18 patients (69.2%) underwent femoral artery ligation, and three of eight interposition grafts occluded, with limb loss in only three patients (15%). Ligation alone with excision of infected pseudoaneurysm in drug addicts without concomitant revascularisation remains the optimal management of IFAP.

V9-5
BALANCE ASSESSMENT IN CLAUDICANTS: HIGH INCIDENCE OF VESTIBULAR DYSFUNCTION
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Objective: Improving functional outcomes of elderly, at risk, populations are of enormous public health importance. Falls, in particular, are associated with morbidity and mortality, with impaired balance recognised as a specific risk factor. Intermittent claudication is a common problem in the elderly affecting approximately 5% of the population over the age of 50. The aim of this study was to assess the incidence and aetiology of impaired balance in claudicants and to assess patients’ insight into their own risk of falling.

Methods: Sixty-eight claudicants (50 men), median age of 71 (IQR 68-76) years, underwent objective balance assessment, using computerised dynamic posturography, which incorporates the Sensory Organization Test (SOT) and Motor Control Test (MCT). SOT determines body sway relative to the maximum limits of stability under different sensory conflict conditions to assess the contribution of each sensory system. MCT involves anterior and posterior translations of the patient’s support surface and assesses the timing, strength and symmetry of the lower limb response.

Results: Overall 29 (43%) claudicants demonstrated abnormal balance using the composite equilibrium SOT score. Vestibular dysfunction occurred in 50% of all claudicants. Abnormalities of somatosensory (20%), visual function (25%) and preferential reliance on inaccurate visual cues (22%) were less common. Prolonged MCT latency times were uncommon (n=14) and were evenly distributed between those with normal (n=7) and abnormal (n=7) balance. Abnormal response strength to force plate translation occurred in 31/63 patients, but predominantly during forward translations (n=29 vs. n=4). There was a significant difference in history of falling between claudicants with abnormal and normal SOT scores (P=0.001), with more abnormal SOT patients having fallen in the past year (OR 9.4), however no correlation between fear of falling and composite SOT score was found (Spearman rank correlation r=0.196, P=0.117).

Conclusions: Impaired balance, particularly secondary to vestibular problems, is very common in claudicants and may predispose to a high incidence of falls. Claudicants with abnormal balance are more likely to have a history of falls but do not show increased fear of falling, thus potentially rendering these patients at greater risk of falling due to overconfidence or reduced awareness of hazards.
P-value <0.05). Moreover, analysis with HDL-C levels revealed a similar interaction of R218 allele on the -LV haplotypic background resulting in the RLV haplotype to cause decreased levels of HDL-C (-0.08 (-0.14 to -0.02)); P-value <0.01).

Conclusions: This study reports a novel association of ABCA1 gene with ischemic stroke and indicates that the RLV haplotype is associated with increased risk of disease. These results warrant replication in other populations and additional studies to elucidate the underlying biological mechanisms.

V9-7
THE BIOLOGICAL EFFECT OF PLATELET RICH PLASMA CONCENTRATE ON HUMAN EPIDERMAL KERATINOCTYE AND DERMAL FIBROBLAST MAY HAVE TISSUE REGENERATION IMPLICATIONS
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Objective: Platelet rich plasma is a biologically active secretory protein, which enhances tissue repair mechanism through chemotaxis, cell proliferation, migration and extra cellular matrix deposition activities. The purpose of this study was to evaluate the biological effect of platelet rich plasma (PRP) on human epidermal keratinocyte and dermal fibroblast (HDF) as a module to delineate its regenerative properties.

Methods: PRP and platelet poor plasma (PPP) were prepared from human whole blood using the platelet concentrate collector system (PCCS). PCS5 on the average increases platelet concentration 6-8 times the baseline value. The PRP and PPP were activated with human thrombin to release platelet-derived growth factors stored in the alpha granules. The supernatant from PRP and PPP were then used in in-vitro tissue culture experiments. The effects of the different concentrations (5%, 10%, 25% and 50%) of the supernatant from PRP in culture media were tested on primarily cultured cells. The primary HEK and HDF cells were extracted and cultured from redundant tissue sample obtained after reconstructive surgery. A keratinocyte cell line (Neb-1 cell) was also tested similarly. Alamar-blue colorimetric technique was used for proliferation assay. Cell migration and chemo-attraction effect were assessed using scratch and trans-well migration assay techniques, respectively.

Results: The stimulatory effect of PRP and PPP on cell proliferation appears the same on all cell types. After adjusting for the cell types, repeated measures of analysis for proliferation assay showed P-value of 0.7. The chemo-attraction effect was most marked when fibroblast was treated with 25% PRP, whereas HEK and Neb-1 cell showed a lesser effect when compared with the control experiment. The P-value on univariate analysis for trans-well assay for Neb-1 cell, HK and HF were 0.87, 0.18 and 0.14, respectively. The effect observed with scratch assay appear to be dose dependent, with the most marked effect noticed at 50% PRP. Interestingly, PPP also showed a positive migratory effect. Using ANOVA analysis, the P-values for Neb-1 cell and HK were 0.8 and 0.9, respectively, which is not statistically significant.

Conclusions: Although, the demonstrated biological effect failed to reach statistical significance, we believe that comparison of a larger number of experimental repeats may emphasise the potential therapeutic implication of PRP in accelerating the healing of cutaneous ulcers.

V9-8
EFFECT OF ANASTOMOTIC LENGTH ON THE DEVELOPMENT OF INTIMAL HYPERPLASIA IN THE DISTAL ANASTOMOSIS OF BYPASS GRAFT
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Objective: Many hemodynamic factors have been proved to be associated with intimal hyperplasia at the distal anastomosis of arterial bypass graft. However, the relationship between the length of anastomosis and development of such complication has not been studied before. The aim of this study is to assess this relationship at the distal anastomosis with Dacron graft.

Methods: Material and Methods: Sixteen femoro-popliteal bypass using 6 mm Dacron grafts were performed in eight German Shepherd dogs using four distinct anastomotic techniques (4 groups) in randomized sequence. All anastomoses were end to side with anastomotic length 3, 3.5, 4 and 4.5 times the internal diameter of the artery, respectively. The vessels were harvested at six months after the operation and specimens were processed for histological studies. Quantitative analyses were performed to assess the extent of intimal hyperplasia (means±S.D.) at the heel, toe and mid-zone of the graft.

Results: Light microscopy revealed significant decrease in intimal hyperplasia at the heel with increasing the length of anastomosis (595±109 µm vs. 443±129 µm vs. 185±81 µm vs. 168±84 µm; P=0.001 at group 1, 2, 3 and 4, respectively). The same observation was at mid-zone of the bed (56x±155 µm vs. 432±87 µm vs. 192±88 vs. 109±46; P≤0.001 at group 1, 2, 3 and 4, respectively) and at the toe (581±131 vs. 394±35 vs. 266±162 vs. 136±73, P=0.001 at group 1, 2, 3 and 4, respectively).

Conclusions: The present study showed that the length of the anastomosis is one of the hemodynamic factors that involved in the development of intimal hyperplasia. The anastomatic techniques that resulted in the least intimal hyperplasia were end to side with length 4 or 4.5 times the internal diameter of the artery.

10th Vascular Scientific Session - Vascular Access and Veins
May 2, 2009, 3rd Congress Day
14:30-16:00

V10-1
PERCUTANEOUS GLUE INJECTION FOR THE TREATMENT OF PSEUDOANEURYSM AFTER CATHETERIZATION
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Objective: In the last few years, coronarography and arteriography have been increasingly employed, permitting, thanks to the introduction of new devices, the percutaneous treatment of a large number of pathologies which previously would have received only surgical treatment. At the same time, complications like haematomas or pseudoaneurysms (PSA), which may occur during sheath removal, have become more frequent, ranging from 3.2 to 8%, because antiplatelet therapy or anticoagulation has become more common, often necessitating the employment of larger sheaths. The most employed technique used to resolve PSA remains surgery; although complications like nerve injury, lymphocele and haematoma are of common occurrence. Non-surgical alternatives, like ultrasound-guided PSA compression repair, coil embolisation, or the more popular percutaneous thrombin injection, cannot be used in all cases. Furthermore, in cases of large PSA, such treatment transforms it into a non-pulsating mass, leaving in place nerve and vein compression.

Methods: We fixed as our primary objective the occlusion of the PSA arterial hole, independent of the neck length and of the arterial hole and PSA diameter, and, as a secondary objective, the suctioning of the PSA at the end of arterial whole occlusion in cases of large PSA.

Results: We report our experience in 37 PSAs using N-butyl-2-Cyanoacrylate (Glubran 2). This technique has also been highly efficacious in three cases of acute PSA rupture. No complications occur.

Conclusions: N-Butyl-2-Cyanoacrylate is rarely used for peripheral pseudoaneurysms but our experience, even if limited to a small number of patients, has shown how it could be employed with success in all types of PSAs, independent of the diameter, neck length and arterial whole diameter. In the three cases of broken PSA, the glue permitted the stoppage of the bleeding without the necessity of surgery. One other important aspect is the possibility of sucking the PSA after the glue has closed the arterial hole, immediately reducing nerve and vein compression. N-Butyl-2-Cyanoacrylate revealed really effective in percutaneous PSA treatment. However, it is necessary that this procedure be performed in a large number of cases of PSA before it is possible to make any real comparison with thrombin treatment, especially regarding the incidence of complications, kinds of treatable PSA and the cost of treatment.

V10-2
OUTCOME OF IMPLANTABLE VENOUS ACCESS
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Objective: Regarding improvements in current treatment of the patients who need long-term chemotherapy or hyper alimentation, the use of central venous catheters with low complications is very important. Although the use of Totally Implantable Venous Access Devices (Port Catheter) with the patients who need long-term chemotherapy or hyper alimentation has improved the outcome of treatment, the advantages and complications of these catheters have not been yet studied.

Methods: In a prospective descriptive-analytic study 100 patients have been operated for catheter implantation in Al-Zahra hospital in 2006-2007. Under local anesthesia an exploration of internal jugular vein was performed. Following that, a catheter was inserted upwards through a subcutaneous tunnel in 3rd or 4th inter costal space medial to mid-clavicle line. After that all patients were followed for six months to one year and the frequency of the immediate (until 24 h after surgery) early (until 7 days) and late (after 7 days) complications and rate of patients’ satisfaction were evaluated. χ² and Independent t-test were used to compare the complications in age and gender groups.

Results: Fifty-six males and 44 females (100 patients) were studied. The mean age of the patients was 45.1 ± 7.3 years. From immediate complications in 8 patients (5 males and 3 females) bleeding was noted. In 3 patients (1 male, 2 females) haematoma, in 1 patient (male) pneumothorax and in 2 patients (1 male, 1 female) inability to pass the catheter were occurred. In one patient (male) the skin changes of the site of reservoir (wound dehiscence) was noted as an early complication. In follow-up period 7 patients died (5 females 2 males) and excluded from the study. From late complications rotation of the reservoir and port was noted at 2 patients (1 male, 1 female). Necrosis of the skin and exposure of the reservoir occurred in 5 patients (3 males 2 females). Persistent pain of reservoir site was at 4 patients (1 male 3 females). Complications had no significant difference between males and females (P-value > 0.05). 77.4% of patients were satisfied with port catheter.

Conclusions: Placement of Totally Implantable Venous Access Devices (Port Catheter) in the patients who need long-term chemotherapy is feasible. These catheters have no external component and so the body image is preserved and the patients are fully comfortable without any restriction of their activity. We recommend usage of these devices routinely with all patients who need long-term chemotherapy and hyper alimentation.

V10-4 CRYOPRESERVED VESSELS IN HAEMODIALYSIS ACCESS: A SINGLE CENTER PILOT STUDY
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Objective: The call-back of all biological grafts (bovine mesenteric vein and bovine ureter) used in the past for prosthetic vascular access in hemodialytic patients has led to find an available alternative biological graft like a cryopreserved vessels. The aim of this prospective randomized study was to compare the patency of prosthetic vascular access performed using cryopreserved saphenous vein (SV) vs. cryopreserved external iliac artery (EIA) both covered by metal mesh to avoid late vessel dilatation.

Methods: From January 2006 to June 2007, 30 patients were enrolled in a randomized pilot clinical study. In 15 patients we have used VGS in the other 15 AIE. The patients excluded from renal transplantation and without available autologous vessels were included in the study. Physical examination, duplex scan and Angiography were performed before the operation. The graft, covered by metal mesh, was prepared on the bench immediately before the implantation. Duplex scan was performed at 1-3-6-9-12 month during the follow-up. Bypass occlusion and stenosis at 70% were considered clinical failure.

Results: The early primary and secondary patency rate was 93% and 100%, respectively in both groups. At the 25-months follow-up (18-34 m) the primary patency was 65%, 5% in SV group and 62%, 8% in EIA group; the secondary patency rate was 85%, 7% in SV and 82%, 9% in EIA. We did not observe any graft dilatation; both SV and EIA were easily used after 15-21 days and the haemostasis after the puncture was always fast. We do not observe infection or rejection of the graft.

Conclusions: Both cryopreserved vessels, SV and EIA represent a good biological material for difficult vascular access for haemodialysis.

V10-5 DOES INCREASING ENERGY DELIVERY DURING ENDOVASCULAR LASER THERAPY AFFECT COMPLICATION RATES OR POST-PROCEDURAL MORTALITY?
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Objective: Meta-analysis has shown Endovascular laser therapy (ELT) for varicose veins to have the best duplex outcomes of any current treatment up to five years. The amount of energy delivered to the vein is critical in inducing permanent closure. Successful ablation becomes more common with increasing energy. The concern with increasing energy delivery is the potential increase in complication rates and the amount of peri and post-operative pain, having a negative impact on quality of life (QoL). The aim of this study was to assess the effect of increasing energy on pain, QoL and complication rates.

Methods: Two hundred and thirty-three patients underwent ELVT under local anaesthetic. Total laser energy delivered varied from 668-5482 J (mean 2765, S.D. 1044), linear energy delivery from 44.5-158.4 J/cm (mean 89.6, S.D. 21.4), energy delivery to the surface area of the vein from 134.7-944.8 J/cm² (mean 401.2, S.D. 139.2) and energy delivery to the volume of vein treated varied from 3759.8-125 976.6 J/cm³ (mean 24 004.9, S.D. 14 188.0). Outcomes: QoL – Disease specific (Abderdeen Varicose Vein Questionnaire – AVQ), Generic (Short Form-36 – SF-36 and Euroqol – (EQ5D) (all measured at baseline, 1, 6 and 12 weeks) and domain specific (Visual analogue pain scores days 0-7). Objective venous scoring (Venous clinical severity score – VCSS) Time to return to work and normal activity. Patient satisfaction (Visual analogue scale). Complications: Results: Patients saw significant improvements in QoL and VCSS with treatment. Recovery was swift and patient satisfaction high. The greatest effect on post-procedural QoL was of course, pre-procedural QoL (<0.001). There was no clinically significant correlation between energy utilised and any of the outcomes. The strongest correlation was found between area energy density and SF-36 bodily pain scores at six weeks (r=-0.272, P<0.001), but...
only 7.4% of the variance in BP at 6 weeks is due to increasing energy delivery. Minor complications were seen in 8.7% (infection 1.2%, haematoma 0.4%, sensory disturbance 3.7%, pigmentation 1.7%), there were no major complications. Energy delivery was not shown to have any significant effect.

Conclusions: Within the range utilised, there is no evidence that increasing laser energy delivery during EVLT increases pain, worsens QoL, or increases complication rates.

V10-6
IS A RADIO-CEPHALIC ARTERIOVENOUS FISTULA THE BEST CHOICE FOR PERMANENT ACCESS IN ELDERLY PATIENTS?
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Objective: Elderly patients commonly have poor quality vessels and multiple co-morbidities, both of which result in higher arteriovenous fistula (AVF) failure rates. This study investigates whether radio cephalic (RC) AVFs fall more commonly in elderly than in younger patients.

Methods: A retrospective analysis of consecutive autologous AVF procedures performed over a 4-year period (November 2004–2007). Patients were divided according to age: those under 65 (n=146, median age 46), and those 65 and over (n=103, median age 74). Duration of initial fistula patency was compared between the groups.

Results: Two hundred and forty-nine patients had surgery to create autologous AVF (61% male, age range 19–92 years). Diabetes was the most common etiology for renal failure in both groups (23% and 43%, respectively). The initial access procedure was RC AVF in 34% and 22% in those under 65 and over 65, respectively (P=0.23). AVF failure was seen in 28% of those under 65 and in 18% of those 65 and over. Occluded RC AVFs accounted for 53% of all failures. RC AVFs were more likely to fail in those aged 65 and over (53%) (OR 0.69 (0.30–1.62)) compared to those under 65 (29%) (OR 5.80 (1.81–18.58)). Diabetes and gender did not act as confounding variables.

Conclusions: RC AVF is more likely to fail than a more proximal AVF. This failure is more common in patients over 65 years old. We therefore suggest the initial use of more proximal AVFs in elderly patients.

V10-7
ILIIFORMORAL THROMBOSIS: STRUCTURE AND ETIOLOGY ASPECTS REVEALED BY MEANS OF THE SPIRAL COMPUTED TOMOGRAPHY
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Objective: Iliofemoral thrombosis (IFT) is a significant cause of morbidity. The aim is to investigate location and origin of thrombus, etiologic factors for this disease.

Methods: Ninety-eight patients with IFT were studied with colour Doppler sonography, spiral non-enhanced and contrast-enhanced computed tomography with use of axial sections and their three-dimensional reconstructions in 2002-2006 years.

Results: There was 32 (32, 7%) female, 66 (67, 3%) male patients. Mean age was 46, 8 years (range, 19-86). Forty-nine (50%) patients had left-sided IFT, 29 (29, 6%) right-sided IFT and 20 (20, 4%) in both extremities. In 72 (73, 5%) patients IFT was primary, in 8 (8, 2%) patients recurrent, in 18 (18, 3%) others IFT developed three and more times. Disease duration varied from 1 to 45 days (av. - 6, 6 days). IFT developed on outpatient basis in 86 (87, 8%) cases, at the hospital - in 12 (12, 2%) cases. Idiopathic IFT was documented in 51 (52%) patients. IFT accidents were provoked by operation/truma - 21 (21, 4%), inferior vena cava anomalies - 7 (7, 1%), tumour - 3 (3, 1%), long bed rest/hemiparesis - 3 (3, 1%), pregnancy - 2 (2%), femoral vein inflammation - 2 (2%). Thrombus origin was central (iliac vein) in 80 (81, 6%) cases, peripheral - in 14 (14, 3%) cases; in 4 patients this parameter was not determined. In 68 (89, 5%) patients with central thrombosis iliac vein compression was the main cause of disease development. In 12 (12, 2%) cases thrombus located in common and/or external iliac veins, in 15 (15, 3%) cases thrombus was in iliac and femoral veins, in 64 (65, 3%) patients clot extended to iliac, femoral and popliteal veins; in 22 (22, 4%) patients thrombus extended to inferior vena cava. In 12 (12, 2%) patients pulmonary embolism occurred.

Conclusions: The main cause of IFT is disorder of iliac veins patency. Spiral computed tomography can demonstrate abnormalities, which may contribute to the development of thrombus.

11th Vascular Scientific Session - Peripheral 2
May 2, 2009, 3rd Congress Day 14:30-16:00

V11-1
ENDOVASCULAR INTERVENTION FOR TREATMENT OF CLAUDICATION IS NOT COST EFFECTIVE
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Objective: Endovascular intervention (EVI) for treatment of claudication is on the rise. The purpose of this study was to examine standards for intervention, clinical outcomes and the costs of the EVI for claudication.

Methods: The medical records of all EVI performed at University Health Centre during 2006 were reviewed. Financial data was obtained from the Health Centre’s Department of Finance and from physician billing ledgers. Symptom improvement, functional capacity and re-intervention were tracked during a 2-year follow-up period and financial data was recorded. Statistical analysis was completed using SPSS.

Results: Ninety-one (33%) limbs were treated for claudication: angio-plasty (18%), arterectomy (33%) and stent (47%). Sixty percent of patients were >65 years of age and 57% were smokers. Follow-up ranged 13–30 months. Significant improvement in ABI was noted [0.65±0.21 vs. 0.79±0.21 (P=0.001)]. Symptom improvement occurred in 49% increasing to 68% following re-intervention. The mean time to re-intervention was 14.9±8 months. The 24 month re-intervention free rate was 61%. Need for re-intervention did not differ significantly by procedure (P=0.26) nor did symptom improvement (P=0.17). Atherectomy and stenting were significantly more expensive than angioplasty (P=0.005). EVI expenditure at two years was $13,886 in contrast to estimated costs for combined supervised exercise and pharmacotherapy ($4523).

Conclusions: Symptom improvement following EVI was only modest (49%) without re-intervention, which was necessary for nearly 40% within two years. EVI was three times more expensive than estimated costs for supervised exercise and pharmacotherapy and may not represent fiscally prudent spending. Given the global socioeconomic implications, careful deliberation of standards of practice is merited for this costly elective procedure.

V11-2
THE ROLE OF ARTERIAL AND VENOUS SHUNTING IN THE COMPLEX VASCULAR TRAUMA OF THE ARTERIES OF THE LOWER LIMB
A. Siani, R. Antonelli, R. Gabrielli, A. Giordano, F. Accrocca, G. Marucci
Vascular and Endovascular Surgery Unit, Civitavecchia, Roma, Italy

Objective: Complex lower limb vascular injuries are associated with a high degree of limb loss and high mortality rate. Despite successful arterial repair and advance in intensive care support, traumatic ischemia and reperfusion injury are conditioning high incidence of limb loss and the systemic inflammatory response and multiple organ dysfunction syndromes can lead to a high mortality rate. A new policy centred on early intra-luminal shunting of both artery and vein, restoring arterial inflow and venous outflow, seems to reduce total ischemic time, complications, recurring operations, amputation, and hospitalization. The aim of this study is to determine the possible benefits of routine use of a temporary intraluminal arterial shunt in patients with complex vascular trauma of the arteries of the lower limb.

Methods: From June 2001 to October 2008, 13 complex blunt and penetrating vascular trauma, with arterial, venous and bone involvement that required stabilization, with complete lower limb ischemia or bleeding were subjected to emergency operation. Over four years seven artery injuries (4 popliteal, 3 superficial femoral arteries) were managed with insertion of a shunt at the initial phase of the operation (group B). Data from these procedures were analyzed and compared with collected data from six complex vascular trauma (4 popliteal, 2 superficial femoral arteries), treated without shunt during the preceding three years (group A).

Results: Comparisons between the group A and group B showed that early shunting of both artery and vein in both penetrating and blunt injuries
significantly reduced the incidence of fasciotomies, contracture, nerve palsy, postoperative complications, recurring operations and the incidence of amputation and the mortality rate ($P<0.05$). Mean ischemic time for preoperative, intraoperative, and total ischemic time in the group A and B were recorded and difference was significant for intraoperative ($P<0.05$) ischemic time.

Conclusions: The use of early shunting of artery and vein after lower limb trauma can lead to great advantage in terms of significant improved outcomes, reducing total ischemic time, ischemic contracture, need to fasciotomy, ischemic nerve palsy and amputation and mortality rates. We recommend a routine use of shunts in all cases of complex vascular trauma with synchronous involvement of the artery, the vein and the bone significant for intraoperative ($P<0.05$) and total ($P<0.05$) ischemic time.

V11-3
INFRAGENICULATE ARTERIAL RECONSTRUCTION USING ARM VEIN IF NO SUITABLE SAPHENOUS VEIN IS AVAILABLE
Department of Surgery, Vascular and Endovascular Surgery, Regensburg, Bayern, Germany

Objective: The use of arm veins for autologous infrageniculate arterial conduits was assessed for patency rates, limb salvage rates and complications.

Methods: In our department overall 36 below knee arterial reconstructions using cephalic or basilic vein were performed between years 2000 and 2007. In 25 cases only superficial veins (arm vein or arm vein plus saphenous vein), in nine cases PTFE and arm vein were used for reconstructions. In further two cases arterial allograft or deep vein was used together with arm vein. The majority of the patients presented with chronic limb ischemia with rest pain or tissue loss (28 cases). In seven cases acute limb threatening ischemia was evident. One patient had bacterial infection of a pre-existing PTFE-graft. The 27 male and 9 female patients were on average 71 years old.

Results: Limb salvage rate reached 83% over the whole monitored period. Secondary patency rates were 91%, 7% after one year and 71, 4% after two years for reconstructions using vein grafts (arm vein and composite arm/saphenous vein). When artificial grafts and arm vein were used as composite conduits only one out of seven reconstructions (14%) remained patent for longer than one year. Perioperative mortality was 6% (2 of 36 patients).

Conclusions: Using arm vein for infrageniculate bypassing in limb threatening ischemia is an option for arterial reconstruction with autologous material in patients that already underwent multiple vascular reconstructions who do not have suitable saphenous vein. Reconstructions with arm vein show favourable patency and limb salvage rates even in high-risk patients. Conduits out of PTFE and arm veins show unsatisfactory patency rates.

V11-4
VALUE AND RESULTS OF RETROGRADE ILIAC ARTERY ENDARTERECTOMY IN PATIENTS SUFFERING FROM ARTERIAL OCCLUSIVE DISEASE
Department of Vascular Surgery, Uniklinik Regensburg, Regensburg, Germany

Objective: The surgical therapy procedures by patients with stenosis or occlusion of external iliac artery stand often in competition to less invasive interventional procedures.

Methods: The aim of this study was to evaluate an outcome of the patients after the retrograde iliac endarterectomy which was treated at the University Clinic of Regensburg from 1996 to 2006 concerning the perioperative success, necessary additional interventions and postoperative results. Moreover, the patients were examined concerning the operating results.

Results: Retrograde endarterectomy was the planned procedure in 123 patients (129 procedures). In 27 patients (21%), technical issues precluded the completion of the retrograde endarterectomy and a bypass was performed. Successful retrograde iliac endarterectomy was performed in 102 (79%) patients. A stent implantation was necessary in 65 patients. From those, in 30 patients this was implanted directly perioperatively, 19 received the stent secondary within the first four weeks and in 16 patients it was performed at a later time due to a restenosis. Complications: in two patients it came to the perforation of external iliac artery with following conversion, in three cases it came to a hemodynamic effective dissection and two patients had to be reoperated due to a postoperative bleeding. The mean follow-up was 30 (1-116) months. Eighteen patients were deceased, 74 could be included in the follow-up examination with a secondary patency of 93% at 30 months. The amputation rate amounted to 8% and the reoperation rate 3%. Conclusions: Retrograde endarterectomy in combination with a stent implantation is a viable and durable alternative to standard bypass procedures. It has equivalent patency to published results of bypass or endovascular procedures of the external iliac arteries.

V11-5
THE EFFICACY OF ENDOLUMINAL TREATMENT OF TRANSPLANT RENAL ARTERY STENOSIS
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Objective: Transplant renal artery stenosis (TRAS) is a known complication of kidney transplantation and an important factor which may lead to insufficiency of the transplanted organ. Several factors may influence its development such as, stenosis in the anastomotic region, immunosuppression and other drugs, acute rejection, vasculitis and donor vascular disease. With the constant lack of organs for transplantation extending the function of the transplanted organ is of paramount importance. The aim of the study is to compare the efficiency of two different endovascular methods, angioplasty and primary stenting in relation to long-term postprocedural patency.

Methods: Forty-six recipients (8 female and 38 male patients with a mean age of 53±2 range from 24 to 69 years) were treated endoluminally because of diagnosed transplant renal artery stenosis with full clinical presentation. All patients underwent Doppler ultrasound screening. Assessment included the peak systolic velocity (PSV), resistance (RI) and pulsatile (PI) indices. Patients with PSV ≥200 cm/s and clinical presentation were qualified for intervention. In cases where angiography confirmed the initial diagnosis angioplasty was usually attempted first. The following indications were considered for primary stenting: lack of vessel susceptibility to angioplasty (strong elastic recoil), short ostial stenosis non-susceptible to angioplasty and a tortuous renal artery which caused insufficient kidney perfusion.

Results: Forty-six patients underwent a total of 58 endovascular procedures for transplant renal artery stenosis. All procedures, except two of them, ended with full technical success. Restenosis occurred after 24.1% interventions, after angioplasty in 27.27% cases and after primary stenting in 20% cases. Of these, 11 (25%) patients required a secondary endovascular procedure in order to correct the stenosis. Statistically, in long-term observation, angioplasty was proven to be superior in providing renal artery patency compared to primary stenting ($P<0.0067$). Also, a long-term tendency was shown involving the resolution of residual stenosis after angioplasty alone. In primary stenting a similar but reverse tendency has been observed with long-term observation increasing the chance of restenosis.

Conclusions: In the endovascular treatment of transplant renal artery stenosis, even though primary stenting shows a higher short-term patency rate, in long-term observation angioplasty has a significantly higher patency rate.

V11-6
PROLONGED ACUTE LOWER LIMB ISCHEMIA
M. Platon Kacanski, J. Pasternak, V. Popovic, D. Nikolic
Clinical Centre Vojvodina, Novi Sad, Serbia

Objective: The aim of this study is to analyze the early results of the surgical treatment of the acute lower limb ischemia. Furthermore, also the prevention and treatment of the reperfusion injuries is observed.

Methods: In a four-year period of time, on Clinic for Vascular and Transplantation Surgery Clinical Centre of Novi Sad a retrospective study and analysis were performed. Two hundred and eighteen patients with acute lower limb ischemia were treated. Out of total, 66 patients had signs of long-term observation increasing the chance of restenosis.

Results: Embolism was the main cause of the occlusion in 57 (5%) patients while 42 (5%) had acute thrombosis. Male patients are obviously the dominant

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V11-7
TISSUE ENGINEERING IN VASCULAR SURGERY - NEWS FROM THE IN-VITRO ENDOTHELIALIZATION
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Objective: Based on a randomized study that showed a significantly superior patency rate of in-vitro endothelialized ePTFE grafts, we investigated whether it was feasible to provide autologous in-vitro endothelialization as a routine procedure at a non-tertiary institution to all patients needing an infra-inguinal bypass who had no suitable saphenous vein available.

Methods: Over a period of 15 years 310 consecutive patients (age 64.7±8.6) received 341 endothelialized ePTFE grafts (308 femoro-popliteal: 153 above knee (AK) and 155 below knee (BK) and 33 femoro-distal). Autologous endothelial cells were harvested from short segments (3.9±1.1 cm) of subcutaneous veins (80.0% cephalic; 11.0% basilic; 1.8% external jugular and 7.2% saphenous) grown to mass cultures within 20.3±7.2 days and confluent lined onto fibrin glue-coated ePTFE grafts. The graft diameter was 6.6 mm (73.6%) or 7 mm (34.4%). The procedure-related delay for graft implantation was 28.1±7.7 days. Growth failure prevented 2.6% of patients from receiving an endothelialized graft. Mean observation period was 9.6 years. Primary patency was obtained from Kaplan-Meier survivorship functions. Explants for morphological analysis were obtained from seven patients.

Results: The overall primary patency rate of femoro-popliteal grafts was 68.8% at 5 years (68.0% AK vs. 70.5% BK) and 60.5% at 10 years (59% AK vs. 64% BK). Primary patency of 7 mm vs. 6 mm grafts was 78% and 62% at 5 years and 71% and 55% at 10 years. The difference between the two groups was statistically significant (log rank test P=0.023; Breslow test P=0.017).

Stage I vs. II/III patients showed five year patency of 67% vs. 73% (N.S.) and 10 year patency of 61% vs. 53% (N.S.). The primary patency of femoro-distal grafts was 52.3% at 5 years and 35.9% at 10 years. The limb salvage rate was 94% (fem-pop) vs. 86% (fem-distal) at 5 years and 89% vs. 71% at 10 years. All retrieved samples showed the presence of an endothelium after 38.9±17.8 months.

Conclusions: Autologous in-vitro endothelialization was shown to be a feasible routine procedure at a non-tertiary hospital. Explants confirmed the presence of an endothelium years after implantation while the primary patency in the particularly challenging subgroup of patients without a suitable saphenous vein resembles that of vein grafts.

Vascular Posters 1
May 2, 2009, 3rd Congress Day
14:30-16:00

VP-1
HEPATOCELLCARCINOMA ON CHRONIC BUDD-CHIARI SYNDROME: CASE REPORT OF A LIVER TRANSPLANTATION WITH RECONSTRUCTION OF THE INFEROI VENA CAVA
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Objective: Management of Budd-Chiari syndrome, from simple medical treatment to liver transplantation, depends on the acute and chronic evolution of the disease and on the degree of hepatic insufficiency. Herein we have reported the case of 40-year-old man who underwent hepatic transplantation with reconstruction of the supra hepatic inferior vena cava (IVC) using the donor’s infra hepatic IVC.

Methods: This Budd-Chiari syndrome due to a congenital caval diaphragm was diagnosed at 17 years of age. Despite several procedures (resection of this diaphragm, prosthetic replacement of the supra hepatic IVC, endo-vascular approach and a peritoneo-jugular LeVeen shunt) the recurrence of the Budd-Chiari syndrome led to cirrhosis and development of two lesions of hepatocellular carcinoma. A hepatic transplantation was decided and we planned to recover the entire infra hepatic vena cava of the donor to reconstruct the hepatic venous drainage to the right atrium. Surgery was difficult due to previous thoracic and abdominal procedures. An ex vivo reconstruction of the IVC was achieved with the donor infra hepatic IVC graft, anastomosed to the supra hepatic IVC. After a redo sternotomy and a radial phrenotomy the hepatic graft was implanted with a venous drainage achieved by an anastomosis between the new supra hepatic IVC and the right atrium under lateral clamping without cardio pulmonary bypass.

Results: The patient’s condition improved and the liver function normalized in three days. Hospital stay was three weeks. At 14 months after transplantation, the patient is in good condition without evidence of recurrence.

Conclusions: This case emphasized the importance of timing of liver transplantation vs. other treatments in cirrhosis secondary to Budd-Chiari syndrome, and the good results of fresh donor’s vena cava to reconstruct supra hepatic venous drainage.

VP-2
EARLY OUTCOME OF OPEN STENT-GRAFT TREATMENT FOR DISTAL AORTIC ARCH ANEURYSM AND AORTIC DISSECTION
H. Masayoshi, Y. Tomonori, A. Hiroshi
Osaka Mishima Emergency and Critical Care Center, Takatsuki, Osaka, Japan

Objective: The aim of this study was to investigate early outcome for open stent-graft (OSG) treatment, which was introduced as a less-invasive technique for thoracic aortic aneurysm and dissection, and to clarify the validity and indications for this treatment.

Methods: Subjects were 18 patients who underwent OSG treatment over a 7-year period from January 2002 to December 2008 (mean age: 67.8 years old; 16 males, 2 females). There were six cases with distal aortic arch aneurysm (including 1 rupture case, 1 case of aortoesophageal fistula, and 1 case of aortic valve stenosis), 1 case with ruptured aneurysm of the descending aorta, 2 cases with acute type-A aortic dissection accompanied by aneurysm of the aortic arch, 7 cases with acute type-B aortic dissection accompanied by aneurysm of the aortic arch (including 3 ruptured cases) and 2 cases of chronic B-type dissecting aneurysm (including 1 ruptured case and 1 case of aortoesophageal fistula). Emergency operations were performed in 5 cases (27%). OSG treatment were performed under retrograde cerebral perfusion plus deep hypothermic circulatory arrest (DHCA) until 2004 (7 cases), and selective cerebral perfusion by bilateral axillary arteries perfusion plus DHCA after 2005 (11 cases). The proximal side of the stent graft was sutured in all cases.

Results: Of five patients who underwent emergency surgery, 3 (1 with ruptured aneurysm of the aortic arch, 1 with ruptured chronic type-B dissecting aneurysm, and 1 with ruptured aneurysm of the descending aorta) died of multi-organ failure. Of 13 patients who underwent elective surgery, one case with distal aortic arch aneurysm accompanied by aortoesophageal fistula died of sudden hemoptysis 40 days after surgery. Concerning complications, paraplegia was observed in one patient who had previously undergone endovascular abdominal aortic aneurysm repair and was operated under DHCA. No leak was observed in all surviving cases, and postoperative intra-aneurysm thrombosis was favourable.

Conclusions: The initial results of OSG treatment were satisfactory, considering that there was no death case except for rupture cases in the initial stage of the OSG treatment and cases with aortoesophageal fistula, and there was no case in which paraplegia was observed as a complication after 2005.

VP-3
ACUTE ABDOMINAL AORTIC OCCLUSION RESULTING IN LOWER LIMB PARALYSIS
S. Yavuz, M.T. Goncu, C. Eris, M. Sezen, Y. Ata, T. Turk
Bursa Yusuf İhtisas Education and Research Hospital, Bursa, Turkey

Objective: Management of Budd-Chiari syndrome, from simple medical treatment to liver transplantation, depends on the acute and chronic evolution of the disease and on the degree of hepatic insufficiency. Herein we have reported the case of 40-year-old man who underwent hepatic transplantation with reconstruction of the supra hepatic inferior vena cava (IVC) using the donor’s infra hepatic IVC.

Methods: This Budd-Chiari syndrome due to a congenital caval diaphragm was diagnosed at 17 years of age. Despite several procedures (resection of this diaphragm, prosthetic replacement of the supra hepatic IVC, endo-vascular approach and a peritoneo-jugular LeVeen shunt) the recurrence of the Budd-Chiari syndrome led to cirrhosis and development of two lesions of hepatocellular carcinoma. A hepatic transplantation was decided and we planned to recover the entire infra hepatic vena cava of the donor to reconstruct the hepatic venous drainage to the right atrium. Surgery was difficult due to previous thoracic and abdominal procedures. An ex vivo reconstruction of the IVC was achieved with the donor infra hepatic IVC graft, anastomosed to the supra hepatic IVC. After a redo sternotomy and a radial phrenotomy the hepatic graft was implanted with a venous drainage achieved by an anastomosis between the new supra hepatic IVC and the right atrium under lateral clamping without cardio pulmonary bypass.

Results: The patient’s condition improved and the liver function normalized in three days. Hospital stay was three weeks. At 14 months after transplantation, the patient is in good condition without evidence of recurrence.

Conclusions: This case emphasized the importance of timing of liver transplantation vs. other treatments in cirrhosis secondary to Budd-Chiari syndrome, and the good results of fresh donor’s vena cava to reconstruct supra hepatic venous drainage.
Objective: Acute occlusion of the abdominal aorta, although infrequent occurrence, is a surgical emergency associated with high morbidity and mortality. At the time of presentation, because of the findings other than limb ischemia the clinician may be misled and the diagnosis may be delayed due to initial referral to a neurologist or an orthopaedic surgeon.

Methods: A 44-year-old man was admitted to another hospital with the sudden onset of bilateral extremity pain and paresthesia. The patient was initially referred to a neurologist. Because of increasing mottled and cool in his skin from umbilicus to feet, he was presented to our hospital with a high suspicion of arterial occlusion.

Results: He had paralysis on presentation which misled the treating physician although symptoms of acute ischemia were present. The patient was unable to walk. He was in obvious discomfort. On examination his skin was a bluish mottled appearance from the umbilicus to the feet. The legs were cold. His radial pulses were regular and tachycardic. No femoral pulses were absent. The patient was taken to the operation 18 h after initial presentation. Bilateral transverse fasciotomy was performed with a Fogarty balloon catheter in a retrograde fashion. Abundant amounts of fresh and organized thrombus were removed from both sides. In both lower extremities, a four-compartment fasciotomy was performed. Postoperatively, the dorsalis pedis pulse was palpable bilaterally. The patient died by the cause of the reperfusion and compartment syndrome two days after the operation.

Conclusions: Acute abdominal aortic occlusion remains as a vascular emergency requiring early recognition and rapidly surgical intervention to prevent loss of life or limb. In differential diagnosis, it should be considered in a patient with sudden neurologic deficit.

VP-6
COMPARISON BETWEEN COST-EFFECTIVENESS OF CONVENTIONAL AND ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSMS: ELEVEN-YEAR OUTCOMES
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Objective: Randomised clinical trials demonstrated endovascular aneurysm repair has lower perioperative morbidity and mortality than conventional surgery repair. The widespread introduction of EVAR implicated a considerable increase in sanitary costs. Our aim was to analyse long-term cost effectiveness associated with both EVAR and OR.

Methods: Between 1997 and 2008, 373 patients underwent elective treatment of infrarenal AAAs, 204 with OR and 169 with EVAR at our university hospital. Patients were regularly followed up at 1, 6, 12 months, and every 12 months thereafter in the EVAR group, and at 3, 12 months, and yearly thereafter in the OR group. We enrolled 108 patients treated between 2005 and 2008 (58 OR, 50 EVAR) to study operative costs and 265 patients operated between 1997 and 2004 (146 OR, 119 EVAR) to analyse follow-up costs (minimum 48, maximum 133, medium 78.2 months).

Results: OR is burdened by higher hospitalisation, 30-day operative morbidity and mortality than EVAR (respectively 13 days vs. 6 days, 33% vs. 10%, 2.5% vs. 0.4%). This early advantage of EVAR over OR is lost by medium long-term follow-up, where reinterventions and aneurysm-related mortality were 35.3% and 4.1% for EVAR vs. 15.7% and 2.5% for OR. Total hospital costs were significantly greater for EVAR than for OR (£13240 vs. £7300), since over 50% of the cost is due to the increased fees for endograft. The average follow-up cost per year after EVAR was £717 vs. £110 after OR. At 11 years of follow-up, the overall cost discrepancy increased at £21127 for EVAR vs. £8617 for OR.

Conclusions: In literature most of the Authors are in agreement on the short-term advantages of EVAR over OR for mortality, morbidity, length of hospital stay and cost of hospitalisation.
Objective: Morphological anomalies of the extracranial Internal Carotid Artery (ICA) cause symptomatic cerebrovascular insufficiency in 4%-16% of the cases. We evaluated different techniques of treatment and macroscopic and microscopic features of extracranial ICA, eventually affecting the surgical approach.

Methods: From January 2000 to December 2008, 32 out of 341 revascularized patients (9.3%), were operated upon because an ICA anomaly. They were 26 symptomatic patients and 6 asymptomatic. Four patients were treated by ICA resection and termo-terminal reanastomosis, 3 patients had a resection and reanastomosis of the Common Carotid artery (in 2 patients of them it was associated an ICA resection and termo-terminal reanastomosis), 5 patients had an ICA transaction and reimplantation at the level of the carotid bulb, 2 patients underwent ICA resection with termo-terminal reanastomosis and TEA by Chevalier technique, 1 patient was treated by Common carotid TEA reversion and resection by Etherege technique, 11 patients had the ICA straightening by section at the bulb completed by everolimus and TEA, 2 patients underwent ICA resection without TEA but one case, and reimplantation. In 1 patient it was not performed the ICA shortening but a TEA with patch closure, 5 patients were treated by PTA and stent of the atheroscleotic stenosis. In 16 cases a segment of ICA was resected and 9 of them underwent histological examination. In 3 cases one more segment was also obtained from common carotid artery (CCA) and all these specimens were histologically examined. Patients were followed-up through three years.

Results: In the postoperative period no patients died but one patient, of PTA group, suffered a TIA. Matching preoperative clinical findings with postoperative neurologic deficits, we found out significant better results in surgical vs. endovascular group (100% vs. 83.3%) (P=0.03) and in absence of complications (%CA occlusion (100% vs. 50%) (P=0.0001). The histological examination of ICA specimens showed a reduction of elastic fibers and muscular cells with a compensative increase of connective fibers. During the follow-up there was not any dead nor neurologic deficits.

Conclusions: At our knowledge this is the first study focused on ICA anomalies, comparing histological features of CCA and ICA specimens coming from the same affected carotid axis. The results show both elastic and muscular quota, substituted by loose connective tissue, configuring a metaplasia of tunica media limited to the ICA. If these macroscopic and microscopic aspects of ICA anomaly will be confirmed by further patients enrolment, this could condition the revascularization techniques.

Objective: To determine the safety and effectiveness of diode laser ablation (1080 nm, 25 W) for the treatment of congenital venous malformation.

Methods: Twenty-one patients with VM, mean age 25.1±8.29 years, underwent US-guided diode laser treatment. There were 4 men and 17 women. The lesions were located on the face (n=3), neck (n=1) face and neck (n=2), thorax (n=1), thigh (n=14). Diagnosis was made with typical clinical findings - duplex scanning and MR-tomography.

Results: A total of 31 procedures were performed in 21 patients. The rate of total delivered energy is from 600 to 10,800 J (mean 4600±820 J). Mean linear endovenous energy density (LEED) was 130.6±92 J/cm2. All procedures were technically successful. The mean interval between sessions was 3-5 months. Clinical success rate for treating the symptoms of pain and activity limitation was 100%. The follow-up period ranged from 6 to 24 months with a mean of 9 months. Six cases showed an excellent response (>90%), nine cases a moderate response (25-50%) and in six cases there was no improvement. The final outcome showed no significant morbidity or mortality.

Conclusions: Endoluminal laser therapy is a minimally invasive method that may offer less systemic and local morbidity than chemical sclerotherapy in the treatment of venous malformations. This less invasive method can minimize the complications of conventional surgery.

Objective: The aortic graft infection is one of the most dangerous complications in surgery of abdominal aorta following 0.4-3.1% of aortic and aorto-femoral reconstructions with high mortality (20-75%) and morbidity. Standard of the treatment of this condition does not exist until now. Usual treatment includes removal of the infected graft, followed either by extra-anatomic reconstruction or by in situ bypass grafting with synthetic or biological grafts. The aim of this study was to analyze the use of extra-anatomic bifurcated aorto-femoral grafts in treatment of this often fatal condition.

Methods: Between January 2001 and September 2008, 14 patients were treated for aortic graft infection. All patients previously had aortobifemoral bypass operation for aortoiliac occlusive disease using bifurcated vascular graft. Mean interval between the primary operation and the reoperation was 1.9 years (range 0.5-11). In four cases we made emergency operation because of bleeding from ruptured distal anastomosis. In all cases complete prosthetic excision followed by debridement of the infected site was performed. In two cases revascularization was not performed due to bad general condition of patient. In other 12 patients prosthetic excision and debridement were followed by revascularization (extra-anatomic aortobifemoral bypass

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grafting) with gelatin-sealed Dacron graft impregnated with Rifampcincin. The surgical approach was retroperitoneal. Side branches of prosthesis were drawn in non-infected area to the lateral surface of the thigh through the preparation holes in iliac bones and anastomosed with the superficial femoral artery in its distal part. Postoperatively patients received imipenem and fluconasol for 9-15 days (mean - 11.6 days).

Results: Thirty-day mortality was 28.6% (4 patients). Both patients in who grafts were excised without any debridement procedure dead on the 3rd and 7th days after surgery. Graft occlusion in the early postoperative period occurred in 2 from 12 grafts (16.7%) and was successfully treated with thrombectomy. In one case the excision of graft and major amputation were required due to recurrence of infection and heavy general condition of patient. Amputation also was performed in one patient without revascularization procedure. Two patients underwent reoperations for recurrent graft infections (in one case - graft excision with axillo-bifemoral bypass, in other - excision of the infected branch with major amputation) in terms 6 and 25 months after operation.

Conclusions: Prosthetic graft infection after aortic surgery is a devastating complication with high morbidity and mortality rates. We believe that extra-anatomic aortobifemoral bypass grafting is an acceptable option for treatment of these patients.

**VP-11**

**TEMPORAL ARtery BIOPSIES: A ROLE FOR THE VASCULAR SURGEON?**

C. Wilson, A. Brown, P. Dunlop
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Objective: Temporal artery biopsy (TAB) is considered by many physicians to be the ‘gold standard’ for diagnosis of temporal arthritis. Traditionally TAB has been performed by a multiplicity of surgeons (ENT, MaxFax, general, ophthalmology and vascular) on an ad hoc basis. This work aimed to clarify the current status of TAB and role of the vascular surgeon in service delivery.

Methods: We performed a retrospective computer database review of TAB between January 2001 and October 2007; reviewed the literature, discussed the results and then offered a vascular surgery led service from December 2007. A re-audit was then performed in July 2008.

Results: Over the first time period data was available on 66 biopsies performed at our institution, compared with 15 in the second. The positive biopsy rate in the first period was only 6.1%, with the length of artery removed dependent on the operator (P=0.004, range 0.25 mm; P=0.004, ANOVA). After the initiation of a vascular surgery led service a number of quality indicators were improved: length of biopsy (median 15 vs 7 mm; P=0.001, Mann-Whitney), positive biopsy rate (20% vs. 6.1%; P=0.11, Fisher’s) and ‘no artery’ biopsies (0% vs. 8%; P=NS). We could discern no consensus from the current literature as to exactly who benefits from TAB on.

Conclusions: Vascular surgeons may be ideally placed to supervise the delivery of TAB in a hospital setting. However, there continues to be controversy as to the value of TAB. Our current policy is not to refuse a reasonable request from a hospital consultant.

**VP-12**

**COMPARISON OF DETECTION OF FDG-PET AND 99mTc-HMPAO LABELLED LEUKOCYTE SCINTIGRAPHY FOR A CASE OF AN AORTIC GRAFT INFECTION**

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Objective: To compare FDG-PET and 99mTc-HMPAO Labelled Leucocyte Scintigraphy for the diagnosis of a vascular graft infection.

Methods: A 47-year-old male patient, with a known Behçet syndrome for 10 years underwent an aorto-bifemoral bypass graft procedure for an infrarenal abdominal aortic aneurysm, followed by several other bypass graft procedures because of thrombosed prosthesis. A couple of months later after the last reoperation, two abcesses appeared on the femoral triangle escorted with a biological septic syndrome (CRP: 110 mg/l, Leucocytes: 14000 giga/l).

An aortic graft infection was suspected.

Results: A 99mTc-HMPAO labelled leucocyte scintigraphy did not show any pathological leucocyte uptake. This unexpected result lead to perform a 18 FDG PET-CT. This exam showed a metabolic uptake around and all along the vascular graft. All the prosthesis was removed by thoracolaparotomy and was changed for a silver aorto-bifemoral bypass graft. Bacteriological examination revealed a Staphylococcus aureus. One month after surgery, the patient was healthy and not infected (CRP=11 mg/l; Leucocytes=8300 giga/l).

Conclusions: The FDG-PET-CT seems to be a promising technical method for infection diagnosis in particular cases. However, the 99mTc-HMPAO labelled leukocyte scintigraphy remains the gold standard for the diagnosis of prosthesis infections since the two techniques have not been compared in vascular graft infection.

**VP-13**

**HEPATIC ARTERY ANEURYSM**

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Objective: Hepatic artery aneurysm are almost 20% of splanchnic artery aneurysm. Most hepatic artery aneurysm are incidental findings on computer tomography, magnetic resonance imaging or arteriography, or diagnostic ultrasound. In case of symptoms, they are abdominal pain, gastrointestinal bleeding, jaundice or haemobilia. The purpose of this study is the presentation of a single case of common hepatic artery aneurysm.

Methods: We report a case of occasional finding of hepatic artery aneurysm. The aneurysm was 12x10 cm of diameters and it arises 3 cm below the emergency of the celiac artery. The patient was 74-year-old, smoker and he was affected of: concomitant abdominal aortic aneurysm (diameter 4.5 cm), hypertension, chronic obstructive pulmonary disease and diabetes. The patient was submitted to ultrasound diagnostic and computer tomography.

Results: Through a bilateral subcostal incision, we performed aneurysmectomy and end-to-end reconstruction. We did not contemporary repair the aortic aneurysm. At the end of intervention the patient was recovered in our division without intensive care. The postoperative management was regular in despite of fever treated by antibiotic therapy (the haemoculture gave negative result). The patient was discharged in eight postoperative day. At six months follow-up, we evaluated the patient with ultrasound and we documented good result of intervention and invariated dimension of the abdominal aortic aneurysm.

Conclusions: Aneurysms and pseudoaneurysms of the hepatic artery are incidental findings during examinations for palpable abdominal mass, abdominal pain, or during intervention on bile duct. Operative intervention is the elective treatment, but current catheter-based techniques are another potential option for the management of anatomically appropriate hepatic artery aneurysms.

**VP-14**

**A PLANNED AND ORGANIZED NURSING CARE DECREASES MORBID COMPLICATION AND MAY SAVE THE PATIENT’S LIFE**

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Objective: Mobilization is very important issue in patient with dilated cardiomyopathy. If these patients need to be hospitalized and intra-aortic balloon pump must be used, they have to stay in bed with limited mobility. In this circumstance; extra exercise, much more care and delicate hygienic protocol are necessary to increase peripheral circulation and tissue perfusion. Our presentation is about the efficiency of planned nursing care for patient who has large skin wound on upper part of the both feet and wet lesion within right foot fingers.

Methods: The patient had been hospitalized for four months in the cardiovascular department. An intensive nursing care including twice a day feet wash and passive exercises in bed was given. No other treatment or medication was suggested or implemented by physicians. Pulse, coloring, swelling, loss of sense, loss of motor function and status of infection has been checked twice a day. Pain and sensitivity of extremities was evaluated by visual analogue scale per each day.

Results: This supportive care showed good results after ten day, and the lesions diminished on both feet. The patient perceived lower pain and sensitivity, but itching remained.

Conclusions: Although to treat the low cardiac output is very important during these patients should be stay in intensive care unit with intraaortic balloon pump and limited mobilization, a planned and organized nursing care is also necessary to decrease morbidity complication. We would like to
discuss that a planned and organized nursing care is always necessary for these very delicate patients.

VP-15
THE USAGE OF ILOMEDIN IN CRITICAL LEG ISCHEMIA
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Objective: We have investigated the effects of iloprost on critical leg ischemia, recovery ulcer, removing pain, and decreasing the level of amputation who has poor or no distal arterial flow on angiography.

Methods: Between October 2004 and December 2008 years iloprost treatment was applied to 30 men and 14 women and 54 occlusive arterial disease. The average age of the patients were 62.5±6.78. Seventeen patients who had diabetic patients wounds were examined a separated group. Diagnosis was made by colour Doppler USG and peripheric angiography. Iloprost was started at the dosage of 0.5 ng/kg/dk and (who tolerated) gradually increased to 2 ng/kg/dk. Iloprost was given 21 days. Pain scoring value, wound diameter measurement, in patients with ulcer and ABI measurement was evaluated before treatment and after treatment 21 days and done, three months. In diabetic group ulcer wounds were localized on both feet at four patients, on right foot of five patients, on left foot of eight patients. In non-diabetic group ulcer wounds of six patients were localized on right foot, on left of four patients.

Results: After iloprost treatment, in diabetic group complete progress in 12 patients (70-59, partial progress 5%, 17.7 were) seen. At the end of the three months no progress in ulcer in three patients was seen and the treatment has been accepted as unsuccessful. In non-diabetic group complete progress in 21 patients, partial progress in three patients were determined at the end of the 21 days. The treatment had been unsuccessful in three patients. Increasing in the average ABI and decreasing in pain scoring of the patients were seen between the first and three months.

Conclusions: Iloprost can be an option to use treatment, because of the reasons to reduce the general mortality ratio and amputation level nearby lesening the ischemic ulcer lesion and recreation pain and compensating the analgesic necessity in critical leg ischemia.

VP-16
ENDOSCOPIC THORACIC SYMPATHECTOMY FOR PATIENTS WITH CRITICAL ISCHEMIA OF UPPER EXTREMITIES
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Objective: Despite the sympathectomy was initially proposed for treatment of vascular diseases of the extremities, the predominant indication for videothoracoscopic sympathectomy today is palmar and axillary hyperhidrosis.

In our practice last years we use this operation to treat patients with critical ischemia of upper extremities. The objective of this study is to report the experience with use of videothoracoscopic sympathectomy for treatment critical upper limb ischemia in patients suffering from vasomotoric disorders.

Methods: Between March 2006 and July 2008, 10 patients suffering from vasomotoric disorders (Raynaud’s phenomenon) underwent videothoracoscopic sympathectomy. In all cases indication for surgery was critical limb ischemia (rest pain - in 7 patients, ulcerations on the distal phalanges of fingers - in 3 patients) intractable for conservative treatment. Patients age was 46.3 years (range 32-64 years), all patients were males. Palmar thermometry was used for intraoperative success control of surgery. Results were evaluated one week and four months after surgery. Mean follow-up period was 6.5 months (range 0-14 months).

Results: There was no mortality in our patients. The postoperative effect with rise of the hand’s temperature was registered in 80% of cases (all patients with rest pain and one patient with ulcerations). In two patients with necrotic changes of fingers palmar thermometry did not register any rise in temperature. It was associated with bad long-term result - in both cases amputations of fingers were made in two and five months due to intractable pain and progressive necrotic changes of tissues. Compensatory sweating was 30%. No cases of Horner’s syndrome, pneumothorax, hemothorax or quillothorax were registered. Long-term results were satisfactory in 70% of cases (stabilization of disease course with healing of ulcerations and relief of rest pain) and were strongly associated with positive result of intraoperative palmar thermometry.

VP-17
ENDOTHELIN RECEPTOR BLOCKADE BY TEZOSENTAN AMELIORATES ABDOMINAL AORTIC ISCHEMIA-REPERFUSION-INDUCED MYOCARDIAL INJURY
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Objective: Endothelin is both a potent vasoconstrictor and an important mediator of ischemia-reperfusion (IR) injury. Therefore, the potential role of endothelin receptor antagonism in IR-induced-tissue injury carries great interest. The purpose of this study was to examine the effect of tezostean, an endothelin receptor antagonist, on myocardial injury induced by abdominal aortic IR in rats.

Methods: Thirty-two Wistar rats were randomized into four groups (n=8) as follows: Control (sham laparotomy), aortic IR (120 min ischemia and 120 min reperfusion), aortic IR-tezostean (10 mg/kg intravenous injection before ischemia plus continuous 1 mg/kg/h intravenous infusion during 120 min ischemia and 120 min reperfusion), and control-tezostean.

Results: Biochemical analyses showed that aortic IR significantly increased (P<0.05 vs. control) the plasma levels of troponin-I, interleukin-6 and tumor necrosis factor-alpha, and the myocardial tissue levels of malondialdehyde, superoxide dismutase and catalase, whereas tezostean significantly decreased (P<0.05 vs. aortic IR) these same factors. Histological evaluation similarly showed that aortic IR significantly increased (P<0.05 vs. control) myocardial disorganization, myofibre swelling and myofibre eosinophilia in myocardial tissue samples, whereas tezostean significantly decreased (P<0.05 vs. aortic IR) these factors.

Conclusions: The results of the present study indicate that tezostean has protective effects against myocardial injury induced by abdominal aortic IR in rats. We think that the mechanisms underlying this protective effect of tezostean involves the reduction of oxidative stress and subsequent lipid peroxidation, the inhibition of systemic inflammatory response, and acting cytoprotective on myocytes after aortic IR.

VP-18
BIOMODIFICATION OF VASCULAR SUTURE PREMICON® (B. BRAUN MELSUNGEN AG, GERMANY) WITH VASCULAR ENDOTHELIAL GROWTH FACTOR
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Objective: There is some evidence - based on experiments conducted on animals - that topical application of Vascular Endothelial Growth Factor (VEGF) in the suture line of vascular anastomosis, accelerates healing and prevents formation of neointima and thrombus. Therefore, the aim of our study was to perform nanotechnological biomodification of the vascular suture, enabling binding of VEGF into its surface.

Methods: We performed the series of in vivo experiments and developed our own method of attaching VEGF to vascular suture PremiCon® (B. Braun Melsungen AG, Germany). To evaluate the effects of nanobiodomi-

fied sutures in vivo, we performed the series of experiments in 14 rabbits. In every rabbit both groins were opened and femoral arteries exposed. Bilaterally femoral arteries were sutured axially, with single vascular suture. Left femoral artery was sutured by the suture with nanotechnologically modified surface with VEGF attached. Right femoral artery was sutured by the suture with biomodified surface only, without binding of VEGF. In the last four rabbits, right femoral artery was sutured with ‘naked’, unmodified suture, serving as the control group. Animals were sacrificed at the day 14 after surgery and the sutured arteries were harvested. Specimens were submitted for histopathological, immunohistochemical and transmission electron microscopy evaluations.
Results: No significant differences in histological appearance between all study groups were observed. The location and intensity of immunostaining for native VEGF in tissues was as well similar in all rabbits regardless the study groups. However, preliminary, promising results from transmission electron microscopy were obtained, pointing on beneficial effects of artificially VEGF coated sutures on the process of healing in mechanically injured artery wall. Moreover, our nanotechnological coatings of the sutures surface did not produce histologically apparent tissue reactions different to those caused by unmodified sutures.

Conclusions: VEGF coated vascular sutures may have potential to improve the healing of vascular anastomosis. 2. Since our biourface modification did not evoke any biological toxicity we assume that it could be safely used in experimental studies and could serve as the platform for attachment of other bioactive substances for further research.

VP-19
THE PERITONEAL GRAFT USED AS A PART OF JUGULAR ARTERY IN SHEEP MODEL. THE ROLE OF STROMAL CELL-DERIVED FACTOR-1 (SDF-1) IN ENDOHELIALIZATION OF OBTAINED VASCULAR PROSTHESIS
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Objective: Aim of the study was to obtain a peritoneal graft in a big animal model. We assumed that the smooth inner surface of the cylinder after catheter removing could be a potential surface for endothelialisation induced by the cells circulating in blood. We hypothesized, that local administration of SDF-1 (stromal cell-derived factor-1) would induce the settling of precursor cells in the inner layer of the prosthesis and their differentiation to mature endothelial cells. The role of this chemokine is the recruitment of endothelial precursor cells from the bone marrow.

Methods: The study was performed in eight male sheep. First, a fragment of Foley’s urinary catheter was implanted into peritoneal cavity. Next, after three weeks of incubation, a cylinder consisting of the catheter and surrounding tissue was obtained. After catheter removal, randomly, a half of peritoneal prostheses were incubated in SDF-1 solution (examined group), the remaining were incubated in a solution without SDF-1 (control group). Subsequently, grafts were used as end-to-side anastomoses to the vessels of the left external iliac artery. We hypothesized that the smooth inner surface of the cylinder after catheter removing, randomly, a half of peritoneal prostheses were incubated in SDF-1 solution (examined group), the remaining were incubated in a solution without SDF-1 (control group). Subsequently, grafts were used as end-to-side anastomoses to the vessels of the left external iliac artery.

Results: The number of VEGF secreting cells in intima layer was 53.1±5.6% expressing cells.

Conclusions: Local administration of SDF-1 increases endothelialization rate and the percentage of Intraluminal Thrombus (ILT) in 3D-reconstructed aneurysm models. However, these calculations did not take into account the influence the AAA geometric factors can have on this correlation. Results: A statistically significant positive correlation was observed for the relationship between the percentage reduction of PWS (%PWS) and the relative ILT volume (Spearman’s r=0.5, P<0.03). However, %PWS was not strongly correlated with ILT%, after controlling for the difference in geometry parameters with partial correlation testing (Spearman’s r=0.413 with P=0.112 for the relationship between %PWS - ILT%).

Conclusions: AAA geometric parameters seem to influence the way that ILT affects the level of PWS reduction, since %PWS was not significantly correlated with ILT%, after taking into consideration the presence of the geometry parameters. These findings depict the importance that geometry can have in the determination of PWS values and consequently the estimation of rupture risk. They also underline the need for consideration of the geometric parameters in models of AAA rupture risk prediction.
MNCs showed a marked activity in graft B. Histologic and SEM results showed increased cellular deposition on anti-CD34-coated grafts confirming the findings of cell radio-labelling. Conclusions: Anti-CD34-coated ePTFE grafts bind significantly more cells (MNCs)/platelets than their uncoated counterparts confirming the bioactivity of the antibody. This process is time dependent and matches the morphologic results. Anti-CD34 coating may enhance temporal and spatial endothelialisation of vascular grafts and thus possibly improve clinical results.

VP-22
CLINICAL AND SUBCLINICAL VARICOCELE INCIDENCE IN PATIENTS WHO ARE OPERATED ON WITH THE DIAGNOSIS OF PRIMARY VARICOSE VEIN
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Objective: To analyze the incidence of clinical and subclinical varicocele in patients who operated on with the diagnosis of primary varicose vein.

Methods: A total of 50 patients who were operated on with the diagnosis of primary varicose vein between January 2007 and September 2008 were evaluated by the department of Urology. Clinical varicocele was checked up in every patient by physical examination. Clinical varicocele was considered as three grades as I, II and III. Also every patient was evaluated by ultrasound in terms of the evidence of subclinical varicocele, and subsequently considered in three grades as type I, II and III reflux patterns.

Results: The average aged in patients was 38.4 years (18-67 years). Right lower limbs were affected from the venous disease in 28 patients, whereas left lower limbs in 13 and both lower limbs in 19 patients and stripping was performed. Of the patients, 39 were married and 11 were single: 15 (30%) of them had a familial history of varicose vein. A total of three patients had a history of infertility and one of them had been treated and subsequently had a baby. Of the rest two patients, one of them had left undescribed testis and the other had atrophy in his testis; both of them had no babies. During the examination of varicocele, five of the patients who underwent right saphenous vein stripping had no clinical sign of varicocele in both right and left testes whereas the rest of 13 patients had varicocele with different levels. Doppler ultrasound revealed different grades of reflux flow in these patients. Clinical varicoceles seen predominantly in left testis with different levels were detected in patients who underwent left saphenous vein stripping. Also Doppler ultrasound revealed reflux flow with different grades. Clinical varicoceles associated with reflux flow with different grades predominantly seen in left testis were detected in patients who underwent bilateral saphenous vein removal.

Conclusions: Clinical or subclinical varicocele may be highly encountered in patients who require saphenous veins removal due to severe venous disease. Especially left testis are affected a bit more. However, these types of varicocele do not cause infertility in most of the patients. Nevertheless, infertility problem in subsequent years may be seen in especially young patients who operate on with the diagnosis of venous disease and they should beware of such condition.

VP-23
TREATMENT OF PATIENTS SUFFERING FROM DYSPLASIA OF SUPERFICIAL VEIN UPPER AND LOWER EXTREMITIES
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Objective: the aims of this study were improving the results of treating the patients with this pathology.

Methods: From 2002 to 2007, 42 patients (12 males and 30 females, average age 25 years old) were treated in our hospital. In 27 cases pathology was located only on one lower extremity, in three cases venous malformation was on both lower extremities, in 12 cases dysplastic veins located on one upper extremity. All these patients were provided with the procedure of spiral computed ascending phlebography with contrast examination of the vein, duplex ultrasound, analysis of the blood of haemostasis. After these examination 10 patients were operated and then sclerotherapy was performed, 32 patients were performed only sclerotherapy. After treatment all these patients used compressive stocking wear (II-III compression class), took phlebotonic 2–3 times a year, every course lasting 2-3 months.

Results: Thirty-five patients showed good results of treatment, seven patients - satisfactory results. No cases of unsatisfactory results appeared. Treatment of patients suffering from dysplastic superficial veins requires stage by stage, complex approach, permanent examination in dynamics.

12th Cardiac Scientific Session - Valve 3
May 2, 2009, 3rd Congress Day
16:30-18:00

C12-1
KIDNEY INSUFFICIENCY IN PATIENTS WITH AORTIC VALVE DISEASE
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Objective: To analyze which factors cause kidney damage in patients with aortic valve disease.

Methods: From 1 January 2007 to 31 December 2007, 104 patients in National Institute of CVS named by M.M. Amosov with aortic valve pathology (aortic insufficiency - 29 patients, aortic stenosis - 75 patients) were consecutively operated. There were 82 (78.9%) females and 22 (21.3%) males. Patients’ age was 18-73 years (mean 54.8±12.6). Kidney function was estimated by calculating glomerular filtration level (GFR) by MDRD (Modification in Diet in Renal Diseases) formula, considering serum creatinine, blood urea nitrogen, age, sex and blood albumins. Forty-five patients (43.3%) had critically decreased GFR (>60 ml/min/1.73 m 2) and 59.3% (32/54) with BMI ≥ 25 kg/m 2, 40.0% (n=30/75) had critically decreased GFR (≥60 ml/min/1.73 m 2) in opposition to patients with aortic stenosis – 40.0% (30/75) and 38.8% (n=24/62) of patients of III NYHA FK ≥ 95 mmHg ≥ 25 kg/m 2, 50.0% (n=21/42) of patients of IV NYHA FK ≥ 95 mmHg ≥ 25 kg/m 2, 44.4% (n=20/45) with AH had critically decreased GFR an 39.0% (n=23/59) without AH (P=0.05). EV/S ≤ 60 ml/m 2 and critically decreased GFR had 57.8% (17/19) of patients, EV/S > 60 ml/m 2 had 40.1% (34/83) (P=0.005). 37.5% (15/40) of patients with BMI ≥ 25 kg/m 2 had signs of kidney insufficiency and 59.3% (32/54) with BMI ≥ 25 kg/m 2 (P=0.05).

Conclusions: There are following risk-factors of kidney insufficiency in patients with aortic valve pathology: aortic insufficiency, average AP ≥ 95 mmHg, IV FK of heart failure by NYHA classification, AH, BMI ≥ 25 kg/m 2, EV/S > 60 ml/m 2.

C12-2
ROSS OPERATION 2007
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Objective: The purpose of this prospective study was to evaluate the short-term survival and functional outcome after Ross procedure in association with concomitant procedures during the year 2007.

Methods: From January 2007 to December 2007, 91 patients (21 females, 70 males) with a mean age of 57.3±11.13 years (range, 0.1-74), underwent aortic valve replacement with a Ross procedure in our institution (stenosis 65.9%...)
regurgitation 18.7%; mixed 15.4%). Seven patients (7.7%) suffered from endocarditis and in 8 patients (8.8%) the Ross operation was a re-do procedure. Forty-four patients (48.4%) underwent Ross procedure in association with concomitant procedures, which included predominantly bypass surgery, mitral valve procedures and ascending aorta procedures. Results: Mean cardiopulmonary bypass and aortic crossclamp times were 147±31 min (range, 87–246) and 124±26 min (range, 73–195), respectively. Mortality was 1.1% at 30 days and 2.2% at 12 months of follow-up. Neo-aortic gradient decreased from 5.1±2.23 mmHg at discharge to 3.2±1.03 mmHg during follow-up (P<0.05). Mean gradient of the tissue-engineered pulmonary valve was 2.8±1.59 mmHg and 2.7±1.18 mmHg, respectively. Echocardiographic examination of the neo-aortic valve competence at 12 months, revealed no or trivial aortic valve regurgitation in 80 patients (88%) and mild (≤1°) regurgitation in 11 patients (12%). No patient required reoperation on the autograft during follow-up and two patients (2.2%) on the right ventricular outflow tract. At 12 months of follow-up all patients enjoyed normal social interaction with New York Heart Association functional class I and II.

Conclusions: The Ross operation can be offered as an alternative to standard prosthetic aortic valve replacement with excellent outcome also in association with concomitant procedures. Long-term follow-up is necessary to evaluate the durability of the operation.

C12-3 CMR ASSESSMENT OF LV MASS REGRESSION AND SEGMENTAL THICKNESS AND THICKENING IN RANDOMIZED TRIAL COMPARING STENTLESS AND STENTED AORTIC VALVE REPLACEMENT

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Objective: Early regional performance and hypertrophy regression after stentless aortic valve replacement is still incompletely characterized. Methods: In 26 patients randomly assigned to stented - (Mosaic™) and stentless-(Freestyle™) aortic valve replacement, according to ASSERT trial protocol, three parallel short-axis images at the level of papillary muscles, midventricular and mitral valve were obtained with 1.5 T CMR scanner, before, one month and one year after operation. Cine images were obtained using a echo gradient sequence. Each slice was divided into eight segments. Effectively, segmental division of LV was achieved. From each of these elements end diastolic thickness and fractional thickening were calculated. Correlation between the preoperative segmental thickening with the amount of segmental LV mass regression was assessed. LV mass, LVED and LVSD were compared between groups.

Results: In stentless group, significant reduction in left ventricle mass and LVED were noticed, respectively: P=0.003, and P=0.05. In stentless group significant improvement in segmental thickening of anterior infero-septal and septal segments were observed: respectively P=0.002, P=0.006 and P=0.004, as well as septal and inferior segments thickness reduction: respectively: P=0.05 and P=0.008. The group of segments with the mass regression grater than 10% has significantly (P=0.001) grater preoperative thicknessing with the Spearman rank=0.402. Conclusions: There are evidences of overall and segmental mass and LV volumes reduction together with thickening improvement in favour of stentless group. Perhaps, preoperative segmental thickening is the reliable predictor of regional LV mass regression after AVR.

C12-4 AORTIC VALVE REPLACEMENT WITH EJECTION FRACTION OF LEFT VENTRICLE <0.3

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Objective: To study peculiarities of surgical treatment in patients with aortic valve disease (AVD) with low contractility of left ventricle.

Methods: During 1 January 2000 to 1 August 2006, 1511 patients with isolated pathology of AVD in National Amosov's Institute of Cardiovascular Surgery was operated. 61 (4.0%) of them had ejection fraction (EF) of left ventricle (LV) <0.3. There were 57 (93.4%), males, 4 (6.6%) females. Patients' age was 21-69 years (mean 44.6±5.8 years). Predominant AVD was aortic stenosis (n=49) (group A) in opposite to combined aortic valve disease without prevalence (n=9) (group B) or aortic insufficiency (n=3) (group C).

All patient were in IV NYHA class. Left ventricle mass index (g/m²) in group A was 279.4±32.8, in group B - 342.4±68.8 and in group C - 325.4±27.4 (P<0.05). Preoperative segmental LV mass index (g/m²) in group in A was 82.4±9.8, in group B - 119.4±14.2, and in group C - 131.2±14.3 (P<0.05). All operations were performed with moderate hypothermia (27-30 ºC) and combined antiretrograde cardioplegia, including 35 patients with addition of perfotran of 200-300 ml.

Results: Hospital mortality was 1.6% (n=1/61). There were no correlation between frequency of complications and EF LV, left ventricle mass index, time of anoxia. Increase of EF of LV on 9-11 day after operation was in group A -39.6%, in group B -11.5% and in group C -1.1% (P<0.05). In group A higher increase of EF LV was marked with ESV/S -98 ml/m²±51.2%, than with ESV/S -99 ml/m²±39.4% (P<0.05). In patients with mass index of LV >398 g/m² EFU was increased -32.9%, than in patients with mass index of LV <398 g/m²±57.4% (P<0.05). Only in two (3.3%) cases EF LV returned to the normal (0.59 and 0.67) (all in group A).

Conclusions: Correction of AVD with EF LV <0.3 is not accompanied with high-risk at the hospital period. Normalization of EF LV is better in group A, than in group B and C, that is why operation in these groups must be performed earlier, when EF LV is not low - in II-III NYHA class.

C12-5 REGRESSION OF LEFT VENTRICULAR MASS AFTER AORTIC VALVE SURGERY IN ISOLATED AORTIC STENOSIS AND ISOLATED AORTIC INSUFFICIENCY


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Objective: The aim of our study was to assess the time course and extent of regression of left ventricular mass after aortic valve surgery in aortic stenosis and aortic insufficiency during several follow-up periods.

Methods: Retrospective analysis of echocardiographic data was collected preoperative, postoperative A (within 6 months), postoperative B (within 1 year), postoperative C (2–4 years), postoperative D (after 4 years) in 28 patients (19 males, 9 females, mean age 59±13.3 years, mean body surface area 1.71±0.16 m²) with aortic stenosis and 26 patients (15 males, 11 females, mean age 55.8±11.3 years, mean body surface area 1.64±0.19 m²) with aortic insufficiency from 2002 through 2007. We studied regression of left ventricular muscle index (LVMI) of 28 patients in whom prosthes size below 19, 21, over 23 mm had implanted to replace stenotic aortic valves.

Patients with combined surgery and infective endocarditis were excluding.

Results: At the preoperative study LVMI was greater in those patients with aortic insufficiency (248±138 g/m², P=0.041) than in those with aortic stenosis (185±47 g/m²). At the postoperative study, LVMI in patients with aortic stenosis were regression as postoperative A (150±45 g/m², compare than preop, P=0.036), postoperative B (136±37 g/m², compare than postoperative A, P=0.08) and postoperative C (125±36 g/m²), postoperative D (121±28 g/m²) periods were not regression significantly than postoperative A period. No significant difference was observed between preoperative and postoperative LVMI in prosthes size 19 mm (n=4, 153±23 g/m² vs. 116±37 g/m²), but there are significant differences were observed regression of LVMI in prosthes size 21 mm (n=11, 180±52 g/m² vs. 112±33 g/m², P=0.028), 23 mm (n=13, 202±47 g/m² vs. 155±38 g/m², P=0.005). In patients with aortic insufficiency, LVMI were regression postoperative A (191±63 g/m², compare than preoperative, P=0.024), postoperative B (123±37 g/m², compare than postoperative A, P=0.001) and postoperative C (121±67 g/m²) postoperative D (99±4 g/m²) periods were not regression significantly than postoperative A period.

Conclusions: The regression of LVMI after aortic valve surgery in aortic stenosis and aortic insufficiency developed significantly within one year. At the late postoperative study, there were no longer any significant differences in LVMI. There are significant regressions of LVMI in over 23 mm prosthes for aortic stenosis after one year.

C12-6 IMPACT OF PROSTHESIS-PATIENT MISMATCH ON SURVIVAL AFTER AORTIC VALVE REPLACEMENT IN OCTOGENARIANS

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Objective: We pretend to evaluate impact of prosthesis-patient mismatch (PPM) (defined as an effective orifice area <0.80 cm²/m²) and cardiac
C10-7 RIGHT VENTRICULAR DYSFUNCTION IN RHEUMATIC VALVULAR HEART DISEASE: INDICES, INCIDENCE AND PROGNOSIS
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Objective: Right ventricular function is known to affect the outcome in valvular heart disease, but less is known about the relations between different indices of right ventricular dysfunction (RV), their effect on outcome and prognostication based on proBNP estimation.

Methods: Seventy Patients of mitral valve replacement between April 2007 and April 2008 for predominant mitral stenosis were included in the study. They were segregated by right ventricular systolic pressure (RVSP), into <40 mmHg (group I n=16) and >40 mmHg (group II n=54).

Results: There is 100% follow-up for six months; there were two early mortality, one in each group. Echocardiographic parameters of LVES, LVEF did not change significantly after operation in both the groups. LV improved significantly in group II (P=0.006 and II,0.0001). RVSP reduced significantly in group II (P=0.0001) with no change in group I. There was reduction in pro BNP in both groups (I, P=0.002 and II, P=0.0001). RV dysfunction parameters of Tricuspid Annular Plane Eccrusion (TAPSE), Myocardial Performance Index (MPI), RV descent and Tricuspid valve annular shortening (TV shortening) were altered in both the groups.

Conclusions: The results of studies indicate that RV dysfunction is related to long-term mortality and outcome in patients with LV dysfunction. RV dysfunction parameters can be used as predictors in clinical practice for better outcome.
Objective. 1. In patients with aortic stenosis (AS) and hypertension, a diastolic and longitudinal systolic dysfunction appear due to the left ventricular (LV) remodelling. 2. Beta-blockers and the angiotensin II receptor blockers are anti-hypertensive agents which can be involved in controlling the LV remodelling. On this background we want to assess the influence of telmisartan and carvedilol on the systolic and diastolic LV function in patients with hypertension and aortic valve replacement (AVR) for AS.

Methods. In 28 patients (age: 67.7 ± 6.7 years, 18 men), with hypertension and AS (aortic valve area: 0.8 ± 0.2 cm²; maximal pressure gradient: 116 ± 12 mmHg; mean pressure gradient 62.19 mmHg) the systolic and diastolic myocardial velocities were evaluated by trans-thoracic and tissue doppler echocardiography before and six months after treatment with telmisartan (T group) 80 mg/day (16 patients) or carvedilol (C group) 25 mg/day (12 patients).

Results. Six months after AVR, BP significantly decreased both in the C group (systolic BP: from 165 ± 11.6 to 112 ± 6.7; P < 0.01; diastolic BP: from 101 ± 4 to 82 ± 4.6 mmHg; P < 0.0001) and in the T group (systolic BP: from 169 ± 8 to 125 ± 5.2 (P < 0.0001); diastolic BP: from 103 ± 6 to 68 ± 3.8 (P < 0.0001). In the C group a significant increase of the longitudinal peak diastolic velocities (LPDV) was seen after six months in septum (from 0.102 ± 0.04 m/s to 0.137 ± 0.03 m/s; P < 0.024) but not in the free wall (from 0.111 ± 0.05 m/s to 0.140 ± 0.04 m/s; P = 0.131). In the T group the LPDV significantly increased both in the free LV wall (from 0.110 ± 0.03 m/s to 0.157 ± 0.04 m/s; P < 0.001) and in septum (from 0.100 ± 0.06 to 0.147 ± 0.05 m/s; P = 0.004). The longitudinal peak systolic velocities (LPSV) non-significantly increased in the C group: from 0.09 ± 0.06 m/s to 0.102 ± 0.04 m/s (lateral wall, P = 0.370) and from 0.07 ± 0.03 m/s to 0.104 ± 0.05 m/s (septum, P = 0.356). In the T group the LPSV significantly improved both in the lateral wall (from 0.08 ± 0.02 m/s to 0.128 ± 0.04 m/s; P < 0.0001) and in septum (from 0.07 ± 0.04 m/s to 0.114 ± 0.03 m/s; P = 0.001).

Conclusions. Telmisartan seems to induce a better improvement of the LPDV and LPSV in hypertensive patients with aortic stenosis compared with carvedilol.

13th Cardiac Scientific Session - Arrhythmia and Miscellaneous
May 2, 2009, 3rd Congress Day 16:30-18:00

C13-1
THE INCIDENCE OF POSTOPERATIVE STERNAL WOUND COMPLICATIONS IN CARDIAC SURGERY IN PATIENTS UNDERGOING CONVENTIONAL STERNAL CLOSURE WITH STANDARD STAINLESS STEEL WIRES VS. THERMO-REACTIVE NITINOL CLIPS
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Objective. Deep sternal wound complications after cardiac surgery have an incidence of 0.5-8% and carry a significant mortality. The technique of sternal closure is an important factor affecting the incidence of dehiscence and wound infection. The aim of this study was to evaluate the effect of thermo-reactive nitinol clips on the incidence of postoperative sternal wound complications

Methods. Over a one-year period 1119 consecutive patients underwent major cardiac surgery via median sternotomy in our centre. The case notes of these patients were retrospectively reviewed. Sternal closure was performed using nitinol clips in 233 patients (Group I) and standard stainless steel wires in the remaining 884 patients (Group II). The mean values for risk factors between Group I and Group II were, respectively; age 70.1 ± 10.9 and 67.1 ± 12.9 year (P = 0.01), EuroSCORE 6.5 ± 3.4 and 6.0 ± 3.5 (P = 0.07), body mass index (BMI) 29.5 ± 6.1 and 27.5 ± 6.1 (P = 0.01), diabetes 19.2% and 16.8% (P = 0.01) and pulmonary morbidity 17% and 11% (P = 0.01). The two groups were comparable in terms of gender, left ventricular function and reoperations. The elective cases in Group I represented 40% in comparison to 54% in Group II.

Results. The overall incidence of deep sternal wound complications was 2.2% (25/1119). The incidence was higher in Group II (2.3%) compared to Group I (1.7%) (P = 0.8). Mechanical sternal dehiscence without infection occurred in two patients in Group II. All patients in both groups needed further procedures (average 1.96/patient) which included sternal rewiring or application of vacuum pump or plastic reconstruction. Mortality, related to sternal wound complications, in Group II was 14% (3 out of 21) whereas in Group I there was no death (non significant).

Conclusions. Despite a higher risk profile, patients undergoing sternal closure with nitinol clips had a lower incidence of deep sternal wound complications and a lower mortality related to them compared to patients undergoing conventional sternal closure. A randomized study to further evaluate the possible advantages of nitinol clips in cardiac surgical patients is warranted.

C13-2
TRAINING THE SURGEONS FOR FUTURE GENERATION: THE PHILOSOPHY FOR AN EXCELLENT OUTCOME IN CARDIOTHORACIC SURGERY
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Objective. In a field where outcome is increasingly scrutinised, the training of a cardiothoracic surgeon is laborious, highly demanding and time-consuming. However, a high commitment to training shall remain the key philosophy to maintain an excellent outcome for the future generation, without the fear that it will jeopardise surgical result. We evaluated the outcome of surgical training in a single teaching cardiothoracic centre over a 5-year period (2003-2008).

Methods. All patients, training and outcome data were prospectively recorded. Trainees (under single trainer-PKS) were divided into three groups, A: trainees performed part procedure; B: trainees as the first surgeon (assisted) and C: independent trainees. Outcome measures included (i) training: operative experience, academic output and (ii) safety aspect: postoperative morbidities, mortality. The control group was wholly operated by trainer.

Results. A total of 973 patients were reviewed (Group A-577, B-179, C-65). Group A performed: 611-sternotomy, 619-sternal wiring, 445-LIMA harvesting, 418-cardiopulmonary bypass, 70-proximal anastomosis, 24-distal anastomosis; Group B: 165-CABG, 5- AVR, 1-MVR, 1-CABG/AVR, 1-CABG/ASD, 2-CABG/LV aneurysmectomy, 3-Type A aortic dissection repair, 1-CABG/AVR; Ascending aortic replacement and Group C: 48-CABG, 1- AVR, 1-MVR, 1-CABG/ AVR, 1-ASD closure. Postoperative morbidities were low in all groups: bleeding 1.5-2.9%, re-operation for graft problem 0-0.1%, sternal rewiring 0-0.6%, stroke 0-1.7%, and dialysis 0-0.4% (PNS). The mortality rates (in-hospital: 0-3.1 and 30-day: 0-3.1%) were comparable with control group (PNS).

Trainees’ academic output during the defined period included 22 conference abstracts and publication of 21 papers in peer-reviewed journals.

Conclusions. A comprehensive, high volume training cannot be achieved safely without any compromise in surgical results. Therefore, the commitment to provide training shall remain the key philosophy in cardiothoracic surgery as excellent training can be only associated with an excellent result for the future generation.

C13-3
FAST-TRACK RECOVERY: THE OUTCOMES OF FIVE YEARS: EARLY EXTRUCTION PRACTICE POST CARDIAC SURGERY
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Objective. The conventional practice to ventilate patients in the intensive care unit (ICU) following routine cardiac surgery consumes a considerable proportion of a limited resource pool. An early extubation practice in targeted patients is cost-beneficial, but safety outcome data is imperative to encourage a wider practice. We evaluated the outcome of our fast-track practice in a single regional, teaching cardiothoracic centre.

Methods. All operative and fast-track data was prospectively collected in our database. A total of 410 (39.2% of 1047 patients; single surgeon, PKS) was targeted for fast-track recovery in a 5-year period (2003-2008). Selection criteria were: age >70, good/satisfactory LV function and normal pre-operative plasma creatinine, no history of diabetes or cerebrovascular disease. Patients were transferred to recovery room, extubated as soon as their haemodynamic and ventilation parameters met a defined protocol and transferred to high dependency unit (HDU).

Results. There were 395 (81.6%) males and 76 (18.3%) females (mean age 63.03 ± 9.1 years; mean EuroSCORE 2.5 ± 1.9). The majority (395, 95.1%)
underwent CABG (and aortic valve replacement in 19, 4.6%), of which 378 (91.1%) were elective, and 37 (8.9%) were urgent (in-patient referrals). Some 62 (15.9%) patients were not successfully fast-tracked because of a variety of reasons: lack of HDU bed 19 (4.6%); lack of HDU staff 30 (7.2%); respiratory causes (hypoxia, hypercarbia, respiratory failure) - 5 (1.2%); low blood pressure - 3 (0.7%); and other causes* 9 (1.4%). The median (interquartile range) postoperative intubation time was 106 min (30-165) and median hospital stay was 5 days (4-6). Postoperative morbidities included: IABP use (3, 0.7%), reexploration for bleeding (8, 1.9%), reoperation for graft problem (1, 0.2%), sternal rewiring (3, 0.7%), transient stroke (2, 0.5%), permanent stroke (2, 0.5%), dialysis (3, 0.7%), readmission to ICU (3, 0.7%). The in-hospital mortality was 3 (0.7%) and 30-day mortality was 2 (0.5%).

Conclusions: Early extubation practice is associated with a low postoperative morbidity and mortality. Fast-track recovery in targeted patients is therefore safe following adult cardiac surgery. Its implementation is recommended to a wider practice.

*Other causes: Heart Block 1, Confusion 2, Excess Inotrop use 2, Lack of CITU bed 1, oliguria 1, high K+ 2.

C13-4
NEAR-INFRARED SPECTROSCOPY (NIRS) MONITORING AND CEREBRAL PROTECTION DURING PULMONARY ENDARTERECTOMY
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Objective: Pulmonary endarterectomy (PEA) is the treatment of choice for chronic thromboembolic pulmonary hypertension. To achieve complete endarterectomy pulmonary bypass with circulatory arrest is generally required. The best strategy for cerebral protection, however, is still debated. We present our experience using NIRS-guided intermittent circulatory arrest.

Methods: Over 14-year period 182 PEA were performed at our Division. Strategy of cerebral protection has changed over the years. In the latest 65 patients (representing the population of present study) we applied intermittent hypothermic circulatory arrest, with continuous NIRS monitoring used to optimize the duration of arrest and reperfusion periods. NIRS monitoring patterns (mean value, mean value during DHCA, minimum value during DHCA, time of reperfusion) were analyzed for both channel (right and left) and correlated with postoperative cerebral complications.

Results: Eleven patients (16.5%) presented transient neurological impairment (TNI) during early postoperative course (with full recovery in all patients before discharge). Mean total CPB and circulatory arrest time were 303±78 and 56±25 min, respectively with no significant prediction of postoperative TNI. Conversely, the number of arrest periods was significantly different in patient presenting TNI compared to control group (4.6±2.3 and 3.5±1.4, respectively). NIRS monitoring analysis revealed significant differences in patients who experienced TNI. Overall mean value of cerebral saturation did not differ in patients with or without TNI (55±8 and 56±9; 60±7 and 60±8 for L and R channel, respectively). Mean cerebral saturation during DHCA at L channel, however, was significantly different in patients with TNI compared to those without TNI (38±8 and 45±11, respectively, P=0.002). Similarly maximum drop of cerebral saturation during DHCA compared to baseline at L channel was significantly different in patient with TNI compared to those without TNI (71±10 and 63±11, respectively, P=0.04).

Conclusions: Intermittent circulatory arrest under NIRS guide can optimize cerebral protection during PEA. Analysis of continuous NIRS monitoring showed that cerebral saturation at L channel during circulatory arrest, can be predictors of postoperative TNI. Patients at high-risk of postoperative TNI can be, therefore, identify during surgery.

C13-5
CAN USE OF INTEGUSEAL* IMPROVE CLINICAL OUTCOME AND REDUCE PREVALENCE OF SURGICAL SITE INFECTION?
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Objective: Surgical site infections (SSI) in cardiac surgery represent a critical set of clinical problems, often with underestimated potential of serious impact on patient morbidity and mortality. This single center prospective observational unmatched case-control study was performed to evaluate the benefit of adding the microbial sealant Integuseal* to the standard perioperative SSI controls.

Methods: Prospective observation of study population consisting of 684 consecutive cardiac surgery patients operated on between February 2007 and October 2008 with the use of Integuseal* microbial sealant. The prevalence of SSI in the study population was compared with that of a sequential unmatched case-control of 407 patients operated between January 2006 and January 2007. Both the sternal wound and if utilized vein harvest incisions were included in the evaluation of SSI.

Results: The prevalence of SSI in the control group was 4.18% (17/407). The average age in the infected group was 63.5 years, male to female ratio was 11/6 and the majority underwent CABG procedure (68.8%). Postoperative hospital stay was 24.2 days (11-44). Distribution of the SSI type, according to the depth of infection was 6/17 (35.3%) superficial, 6/17 (35.3%) deep incisional and 5/17 (29.4%) in the organ space subgroup. Mortality due to SSI was 35.3% (6/17) with the majority of the deceased patients from the organ space SSI subgroup 66.7% (4/6). In contrast the prevalence of SSI in study population was reduced to 1.6% (11/684), (P=0.0158). The average age in the infected group was 59.5 years, male to female ratio was 6/5, and again the majority of them underwent CABG procedure (54.6%). Average postoperative hospital stay was 26.8 days (12-37). Prevalence of SSI type, according to the depth of infection was 7/11 (63.6%; P<0.0001) in superficial, 4/11 (36.4%; P=0.6478/NS) in deep incisional and 0/11 (P=0.0001) in organ space subgroup. Mortality due to SSI was zero in all subgroups of the study population (P=0.0001).

Conclusions: Adding the microbial sealant Integuseal* to standard perioperative SSI control techniques reduced the SSI prevalence resulting in a statistically significant difference (P=0.0158). Moreover, we observed a shift in the type of SSI according to its depth towards less serious forms. Organ space SSI and death due to SSI did not occur in study population at all (P=0.0001). The microbial sealant appears to have played an important role.

C13-6
PROSPECTIVE RANDOMIZED ANALYSIS WITH 90 DAYS FOLLOW-UP PERIOD SHOWS PREVENTION OF MEDIASTINITIS WITH A NEWLY DESIGNED THORAX SUPPORT VEST
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Objective: Sternum infection remains one of the primary causes of postoperative morbidity and mortality after median sternotomy. We report the clinical efficacy for primary reinforcement of the sternum with a new design of thorax support vest.

Methods: A prospective randomized study including 455 patients was started in September 2007 to evaluate the effectiveness of the Postorax® sternal vest (Epple Inc., Vienna, Austria). One hundred and seventy-five patients were treated with the sternum dressing postoperatively (group A) and 280 patients did not receive the vest (group B). Several clinical and operative data were evaluated. All patients were recorded using the STS risk scoring data were evaluated. All patients were recorded using the STS risk scoring. We report the STS risk scoring analysis for mediastinitis after cardiac surgery.

Results: The median age and gender distribution were comparable in both groups. Preoperative data like renal failure, chronic obstructive pulmonary disease, peripheral artery disease, and myocardial infarction were not significant. There were more patients with diabetes in group A (39.4% vs. 31.4%, χ²-Test P=0.08). 52.4% underwent coronary bypass grafting, 17.2% aortic valve replacement, 7.1% mitral valve repair and 23.3% concomitant cardiac procedures. The median risk factor analysis (8.9±4.7 vs. 8.8±4.9), body mass indices (27.7±4.7 vs. 27.8±4.3), and logistic EuroSCORE (5.2±5.4 vs. 5.0±5.4) were comparable. In the follow-up period up to 90 days, in group B we observed 5.4% sternal infections, and in group A 0.6% (Fisher’s exact test P=0.006).

Conclusions: The use of the Postorax® sternal vest shows a favourable outcome for resistance of sternum instability after cardiac surgery. A significant difference between the vest group and non-vest group was observed in the 90 days follow-up period.
Objective: Atrial fibrillation is the most common cardiac rhythm disturbance causing increased morbidity and mortality. Despite the development of minimally invasive/endoscopic techniques and the availability of different energy sources for treatment of lone atrial fibrillation, the efficacy and the mid-term results of these procedures is unknown.

Methods: Since December 2003 to August 2008, 41 drug-resistant symptomatic patients with lone atrial fibrillation underwent minimally invasive/endoscopic surgical ablation. There were 35 men (85.4%) and 6 females (14.6%) with a mean age of 62.0±11.6 years (range 30-85) who suffered of a long-standing atrial fibrillation (mean AF duration 79±40 months). Among them, 31 Patients (75.6%) had paroxysmal and 10 (24.4%) had permanent atrial fibrillation. Preoperative mean LA dimension was 46.6±8 mm. Left atrial isolation was achieved by means of pulmonary veins encircling (box lesion) and was performed in thoracoscopy in 31 patients (75.6%), while mini-sternotomy was performed in 10 cases (24.4%). The box lesion was obtained with the use of microwave device or monopolar radiofrequency device. Most of the procedures (37 patients, 90.2%) were performed with epidural anesthesia on awake patient in spontaneous breathing.

Results: There were no hospital deaths nor major postoperative complications except one patient who had an embolic cerebro-vascular accident on 4th postoperative day (full recovery). Mean postoperative length of stay was 2.1±1.2 days. Mean follow-up (100% complete) was 37.6±19.2 months (range 2-58). There were no late deaths. At 1-year follow-up 37 patients, (90.2%) were in sinus rhythm. At the mean follow-up (37.6 months) 34 patients (82.9%) were in stable sinus rhythm confirmed by Holter-ECG. Sinus rhythm restoration rate in patients affected by paroxysmal atrial fibrillation was higher (87.1%) than in those affected by the permanent form. At the end of the follow-up 45.8% of patients were no longer taking warfarin nor antiarrhythmic drugs.

Conclusions: Minimal invasive surgical treatment of atrial fibrillation proved to be feasible and safe with minimal risk for the patient. The ‘box lesion’ proved to be an effective ablation pattern with a high rate of stable restoration of sinus rhythm even at mid-term follow-up. The use of high thoracic epidural anesthesia and the avoidance of mechanical ventilation made the minially invasive endoscopic techniques feasible even in a ‘day surgery’ environment.

C13-9

BIOCHEMICAL AND ECHOCARDIOGRAPHIC RESULTS OF SURGICAL RADIOFREQUENCY ABLATION IN PATIENTS WITH PERMANENT ATRIAL FIBRILLATION. OWN EXPERIENCE

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Objective: Atrial fibrillation (AF) is often associated with coronary heart disease, mitral valve failure and arterial hypertension. Decreased left ventricle ejection fraction (LVEF) is one of the most important results of AF which can be caused both by the absence of atrial systolic function and irregular ventricular rhythm. Elevated serum levels of atrial natriuretic peptide (ANP) can be recognized as a result of AF. It is reported that sinus rhythm (SR) restoration leads to significant improvement of LVEF and normalizes ANP levels. Aim of the study was to evaluate changes in ANP serum levels and echocardiographic parameters after surgical radiofrequency ablation of AF.

Methods: The study group comprised 71 patients (mean age 66.3±6.1) with permanent atrial fibrillation lasting more than six months and concomitant mitral valve failure. Radiofrequency ablation in the left atrium was performed as an additional procedure to mitral valve surgery. During follow-up visits 24 h ECG and echocardiography were used to assess the effectiveness of radiofrequency ablation. Serum levels of ANP were measured before and on the first two days after the procedure.

Results: In early postoperative period sinus rhythm was restored in 45 (63.3%) patients (SR group). The rest of patients suffered from AF during in-hospital period (non-SR group). Preoperatively ANP serum levels were within normal ranges in both groups. Postoperatively mean ANP concentration decreased only in SR group but not in non-SR group. Moreover, the mean SR after the second postoperative day in non-SR group was markedly higher. In one-year observation the number of patients with SR increased to 50 (70.4%). Control echocardiography proved significant increase in LVEF and decrease in left atrium diameter as well as in its area within this period.

Conclusions: Sinus rhythm restoration leads to significant decrease in ANP concentration in early postoperative period. Postoperatively the lack of sinus rhythm may be associated with increased ANP levels. The maintenance of SR within one-year follow-up leads to significant increase in LVEF and decrease in left atrium size.

C13-10

SUCCESSFUL SURGICAL ABLATION OF ATRIAL FIBRILLATION REDUCES RISK OF LATE MAJOR ADVERSE CARDIAC AND CEREBROVASCULAR EVENT

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Objective: The study was designed to assess the effect of surgical ablation of atrial fibrillation (AF) on the risk of major adverse cardiac and cerebrovascular event (MACCE) and hospitalization in long-term follow-up.

Methods: There were 215 patients at mean age of 63.7±10.1 years who underwent surgical ablation of intermittent 132 (61.4%) or permanent 83 (38.6%) AF as concomitant 198 (92.1%) or stand-alone procedure 17 (7.9%) included to the prospective registry. Patients were followed 3, 6, 12, 24 months after ablation including echocardiography and Holter ECG.

Results: Patients were divided into two groups in terms of occurrence of electrocardiographically confirmed AF event at any time point. The risk of MACCE free survival rate was compared between sinus rhythm (SR) and AF groups at following time points, respectively: after 3 (98% vs. 98.9%), after 6 (98% vs. 94.2%), after 12 (94.6% vs. 91.7%), after 24 months (90.6% vs. 90.1%). Difference significance started from 6 months (P<0.05) and was lost after 24 months (P=0.4). Hospitalization free survival rate was compared between SR and AF groups at following time points, respectively: after 3 (89% vs. 81.3%), after 6 (77% vs. 59.8%), after 12 (61.8% vs. 43.2%), after 24 months (38.9% vs. 9.9%). Difference significance started from 6 months (P<0.01) and lasted till 24 months time point (P<0.01).

Conclusions: Successful surgical ablation of AF reduces risk of late MACCE.
C14-1
LOCAL MYOCARDIAL STRESS AND FUNCTION BEFORE AND AFTER SURGICAL INTERVENTION FOR ISCHEMIC CARDIOMYOPATHY: ASSESSMENT WITH MULTIDETECTOR COMPUTED TOMOGRAPHY AND NOVEL SOFTWARE SYSTEM
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Objective: End-systolic local myocardial stress is an important index of afterload, though it is very difficult to measure in clinical settings. We developed novel software system using multidetector computed tomography (MDCT), which allowed us to estimate local circumferential myocardial stress of the infarcted ventricle. In this pilot study, we investigated end-systolic local stress before and after combined surgical ventricular restoration, undersited mitral anuloplasty and complete coronary revascularization in patients with ischemic cardiomyopathy (ICM).

Methods: The MDCT angiography was performed in 21 patients with ICM (age 65±10 years) before and 9±4 months after surgery. The 38 healthy subjects (mean age: 64±10 years) were also examined to serve as controls (age 64±11 years). MDCT images (13-2-chamber views) were acquired as AVI files, transferred for offline analysis with our software and analyzed using Jain’s method to estimate end-systolic local stress in 12 non-infarcted segments, excluding the five infarcted apical segments, based on AHA/ASE segmentation criteria. End-systolic pressure was obtained from calibrated carotid pulse tracing measured just before the CT angiography.

Results: Global EF was remarkably lower in ICM patients compared with control subjects (21±10 vs. 63±6%; P<0.001). End-systolic local stress in each segment was significantly higher in ICM patients than in the controls (P<0.001 in all segments). Postoperatively, global EF increased significantly but still remained low (EF 36±9%; P<0.001), while end-systolic local stress decreased in all segments but still remained high (P<0.001 in all segments). The magnitude of decrease in the end-systolic local stress in the basal inferoseptal non-infarcted segment was most significantly related to the extent of increase in global EF in ICM patients (r=−0.82, P=0.0001). Thus, surgical afterload reduction may favorably affect postoperative improvement in ejection performance, though alteration in contractility was not evaluated in the study.

Conclusions: The present results suggest that our newly developed software system using MDCT may be useful to assess local circumferential stress in patients with ICM before and after surgical correction.

C14-2
LONG-TERM ECHOCARDIOGRAPHIC RESULTS OF RESTRICTIVE MITRAL ANNULOPLASTY FOR FUNCTIONAL MITRAL REGURGITATION ASSOCIATED WITH LEFT VENTRICULAR DYSFUNCTION
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Objective: Although restrictive mitral anuloplasty (RMA) is currently considered the most reproducible technique for functional mitral regurgitation (MR), data on mid-term functional and hemodynamic benefits are scarcely reported. We present 5-year echocardiographic results of RMA for functional MR associated with left ventricular (LV) dysfunction.

Methods: From 1999 to 2008, 49 consecutive patients (aged 62±9.4) with functional mitral regurgitation associated with LV dysfunction (ejection fraction <40%) underwent undersized RMA. Cardiac catheterization was examined at baseline and at one month after surgery. Serial echocardiograms were performed to evaluate residual MR, LV end-diastolic dimension (DD), ejection fraction (EF), tenting height, coaptation length and systolic pulmonary arterial pressure estimated by flow velocity of tricuspid regurgitation at baseline, discharge, and annually thereafter.

Results: Significant reduction of LV volume and decrease of LV end-diastolic pressure were showed in cardiac catheterization at one month after surgery (LVEDV from 227±45 ml to 172±44 ml; LVEF from 51±13 ml to 100±46 ml; LVEDP from 19±7 mmHg to 12±3 mmHg). Significant improvements in LV systolic function (EF from 31±8, 39±13% at discharge, 45±15 at one year, 45±16% at three years, to 40±72% at five years after surgery) and LV reverse remodeling (Dd from 68±6 mm, 61±7 mm at discharge, 60±7 mm at one year, 63±8 mm at three years, to 64±8 mm at five years after surgery) were showed by serial echocardiographic studies. Significant improvement in hemodynamic state in terms of decrease of systolic pulmonary arterial pressure was also showed (systolic pulmonary arterial pressure from 57±20 mmHg, 34±8 mmHg at discharge, 37±11 mmHg at one year, 39±19 mmHg at three years, to 42±21 mmHg at five years after surgery). No recurrence of significant MR was confirmed at a one-year follow-up examination and late recurrence of significant MR (>grade 2) were detected in four patients. Tenting heights at baseline were longer in patients presenting recurrence of late MR than those who presented no residual MR (12±4 vs. 8±2, P<0.01). Clinical symptoms in patients who presented no residual MR improved by NYHA class (3.4±0.6 vs. 5±0.7, P<0.01).

Conclusions: The present study supported that correcting of functional MR resulted in continuous improvements of LV function and hemodynamic state in most patients even at five years after surgery.

C14-3
STRATEGY FOR THE EXTENDED DEEP PULMONARY HYPERTENSION AFTER PULMONARY THROMBOEMBOLARCTERY FOR CHRONIC PULMONARY THROMBOEMBOLISM
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Objective: Surgical treatment for chronic pulmonary thromboembolism (CPTE) is considered curative and greatly superior to medical therapy. We performed pulmonary thromboendarterectomy in the patients with CPTE from 2001. Most of the operation was successful, but in some of the cases deep pulmonary hypertension exist even after surgery. In this fatal condition, failed to wean from extra corporeal circulation, we tried to introduce a percutaneous cardiopulmonary support (PCPS) device. The aim of this paper is to evaluate the efficacy of postoperative PCPS use for CPTE patients.

Methods: From August 2001 to September 2008, 73 with CPTE underwent pulmonary thromboendarterectomy in our institute. We reviewed perioperative hemodynamic data and outcome in the patients required PCPS device (CAPIDOX emergency bypass system; Terumo Inc, Tokyo, Japan) just after operation. Our PCPS circuit consists of a centrifugal pump, a hollow-fiber microporous membrane oxygenator, and percutaneous thin-walled cannulas. All blood-contacting surfaces of both systems were coated with heparin.

Results: In 23 cases, we used PCPS just after operation. We continued to support the circulation by a PCPS device after returning to the intensive care unit, and survived successfully weaned from PCPS and saved lives in 13 cases (56.5%). The hemodynamic parameters were significantly improved after surgery: mean pulmonary arterial pressure was decreased from 53.7 to 27.0 mmHg, pulmonary vascular resistance from 1106 to 350 dyne/s¹/cm⁵, and cardiac index was increased from 2.09 to 3.10 l/min/m².

Conclusions: PCPS was effective for CPTE patients with extended deep pulmonary hypertension after pulmonary thromboendarterectomy.

C14-4
SURGICAL VENTRICULAR RESTORATION IMPROVES TEN-YEAR SURVIVAL IN PATIENTS WITH ANTERIOR INFARCTION CONGESTIVE HEART FAILURE
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Objective: Congestive heart failure (CHF) may be caused by late left ventricular (LV) dilatation following anterior infarction. Surgical ventricular restoration (SVR) aims at improving cardiac function by normalization of LV shape and size. Recent studies indicate that SVR is highly effective with an excellent 5-year outcome in patients with ischemic dilated cardiomyopathy. The aims of this study were to identify predictors for early and long-term mortality and to investigate changes in functional status after SVR.

Methods: Pre- and postoperative data were collected for 96 consecutive patents (mean age: 63±8.9 years; men: 76%), who underwent SVR for postinfarction left ventricular aneurysm or ischemic dilated cardiomyopathy in one single center. Survival and risk factors for early and late mortality were analyzed by using multivariable models.
Results: Mean preoperative NYHA class was 3.1±0.8. LV preoperative data were: mean EF 33.4%, mean EDV 210±26, mean ESV 190±22, mean LV ejection range 49±6%. Indications for SVR were: angina (25%), CHF (20%) and angina+CHF (5%). In 82 patients SVR was associated to CABG (86%) and mitral valve surgery (MVS) (7%). Early mortality was 5.2% (2.7% in ≤30% EF, 7% in EF ≤30% and 16% in SVR+MVS patients). At 1, 5 and 10 years actuarial survival was in EF >30% vs. EF ≤30% patients 95%, 80%, 85% and 88%, 80% and 50%, respectively. At 82–46 months follow-up late mortality was 42% in patients ≥75 years and 10% in patients <75 years (P=0.001), mean NYHA class was 1.7±0.6 (P=0.001) and mean EF was 40.6 (P=0.001). Early postoperative LV data improvements were still present at late follow-up.

Conclusions: Severe CHF secondary to postinfarction left ventricular remodeling can be reversed by SVR, with excellent ten-year outcome in terms of mortality and sustained improvement of functional parameters. We found a strong association between long-term mortality and both increasing age and low EF.

C14-5

CHRONIC ISCHEMIC CARDIOMYOPATHY: THE ROLE OF AUTOLOGOUS BONE MARROW MONOUNCLEAR CELLS AS PART OF A NOVEL TREATMENT APPROACH

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Objective: To propose an alternative treatment for end-stage ischemic cardiomyopathy consisting of off-pump revascularization of ischemic areas, external reshaping of the LV in order to restore near normal geometry and autologous bone marrow-derived mononuclear cell (BM-MNC) implantation.

Methods: Forty-seven patients (mean age 58±8.9 years) underwent the above procedure. All patients were NYHA III-IV and four were transplant candidates. They underwent standard laboratory evaluation, transthoracic echocardiography, dipyridamole thallium scintigraphy (DTS) and cardiac MRI preoperatively and at 3, 6 and 12 months postoperatively. After revascularization and external LV reshaping, BM-MNCs were injected into predetermined peri-infarct areas where revascularization was impossible.

Results: Forty-five patients survived during a follow-up period of 3-37 months. Ejection fraction improved from 21.7±7.4% to 30.6±6.9%, 36.5±4.3% and 37.7±4.2% at 3, 6 and 12 months, respectively. Left ventricular end-diastolic diameter was reduced from 66.1±4.9 mm to 62.6±3.9 mm, 60.5±2.9 mm and 59.3±4.2 mm, respectively. Previously non-viable areas on DTS were found to contain viable tissue and MRI showed hypoenhancement in previous akinetic areas. NYHA class improved to I-III. No significant arrhythmias were noted during the follow-up period. One patient died due to low cardiac output and severe patient died due to septic shock.

Conclusions: Combined off-pump surgical treatment and autologous bone marrow mononuclear cell transplantation for end-stage ischemic cardiomyopathy is safe and feasible and appears to improve the patients’ functional status.

C14-6

SHORT AND LONG-TERM EFFECTIVENESS OF SURGICAL TREATMENT OF LEFT VENTRICULAR ANEURYSMS IN PATIENTS WITH EJECTION FRACTION OF 30% OR LESS

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Objective: Surgical methods to restore left ventricular size and shape, such as mitral valveplasty for mitral valve regurgitation, postinfarction akinetic scar exclusion, partial left ventriculotomy, endoventricular patchplasty and other operations, are being evaluated for the treatment of end stage heart failure. Left ventricular aneurysmectomy is a surgical technique to overcome the dyssynchronous malfunction of the heart after myocardial infarction. The aim of this study is to evaluate the results of two specific surgical techniques (linear ventriculectomy vs. endoventricular patchplasty) in patients with severely depressed pump function as well as the influence of revascularization in left ventricular aneurysmectomy.

Methods: Between 1995 and 2006, 73 patients (21 women, 52 men) with severe left ventricular dysfunction were operated on for post-infarction left ventricular aneurysm. Twenty-four patients underwent linear ventriculectomy (group A) and 49 endoventricular patchplasty (group B). Preoperative and postoperative left ventricular ejection fraction and early mortality were studied. Retrospective analysis of medical files and preoperative and postoperative echocardiographic results were done. A multivariate regression analysis was done to determine variables associated to ejection fraction changes.

Results: Mean periprocedural follow-up was 567.87 days (range 7-689 days). Mean age was 67.7±10.80 (30-83). All aneurysms were anterior. The ejection fraction increased from 24.17±6.01% to 37.71±7.98% in group A and from 24.22±6.22% to 42.11%±7.14% in group B. All patients underwent concomitant coronary artery bypass grafting; The left anterior descending coronary artery was revascularized in 17 patients of group A (70.80%) and 36 of group B (73.50%); 7 patients of group A (29.20%) and 4 of group B (8.20%) suffered of low cardiac output syndrome. Hospital mortality in group A was 12.50%, in group B was 8.16%. Six months survival was 79.20% in group A and 89.80% in group B. Adjusting for age, gender, surgical technique, preoperative ejection fraction, revascularization left anterior descending coronary artery and New York Heart Association class in a multivariate linear regression model, was observed that independent variables in the prediction of ejection fraction increase were gender (male, P≤0.05) and surgical technique (P≤0.05).

Conclusions: Both techniques achieved satisfactory result regarding early mortality, morbidity and postoperative ejection fraction. Increased of ejection fraction and short-term survival was higher after endoventricular patchplasty with concomitant coronary artery bypass grafting of postinfarction left ventricular anterior aneurysm in patients with ejection fraction ≤30. Gender (male) is an independent variable in the prediction of ejection fraction increase (P≤0.05).

C14-7

DYNAMIC REPAIR OF END STAGE VENTRICLE WITHOUT VENTRICULECTOMY! A NOVEL APPROACH

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Objective: To propose an alternative treatment for end-stage ischemic cardiomyopathy consisting of off-pump revascularization of ischemic areas, external reshaping of the LV in order to restore near normal geometry and autologous bone marrow-derived mononuclear cell (BM-MNC) implantation.

Methods: Forty-seven patients (mean age 58±8.9 years) underwent the above procedure. All patients were NYHA III-IV and four were transplant candidates. They underwent standard laboratory evaluation, transthoracic echocardiography, dipyridamole thallium scintigraphy (DTS) and cardiac MRI preoperatively and at 3, 6 and 12 months postoperatively. After revascularization and external LV reshaping, BM-MNCs were injected into predetermined peri-infarct areas where revascularization was impossible.

Results: Forty-five patients survived during a follow-up period of 3-37 months. Ejection fraction improved from 21.7±7.4% to 30.6±6.9%, 36.5±4.3% and 37.7±4.2% at 3, 6 and 12 months, respectively. Left ventricular end-diastolic diameter was reduced from 66.1±4.9 mm to 62.6±3.9 mm, 60.5±2.9 mm and 59.3±4.2 mm, respectively. Previously non-viable areas on DTS were found to contain viable tissue and MRI showed hypoenhancement in previous akinetic areas. NYHA class improved to I-III. No significant arrhythmias were noted during the follow-up period. One patient died due to low cardiac output and severe patient died due to septic shock.

Conclusions: Combined off-pump surgical treatment and autologous bone marrow mononuclear cell transplantation for end-stage ischemic cardiomyopathy is safe and feasible and appears to improve the patients’ functional status.

C14-8

TOTAL CONGENITAL CARDIAC RESYNCHRONIZATION THERAPY SYSTEM IMPLANTATION IN PATIENTS WITH HEART FAILURE UNDERGOING CABG

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Objective: To propose an alternative treatment for end-stage ischemic cardiomyopathy consisting of off-pump revascularization of ischemic areas, external reshaping of the LV in order to restore near normal geometry and autologous bone marrow-derived mononuclear cell (BM-MNC) implantation.

Methods: Forty-seven patients (mean age 58±8.9 years) underwent the above procedure. All patients were NYHA III-IV and four were transplant candidates. They underwent standard laboratory evaluation, transthoracic echocardiography, dipyridamole thallium scintigraphy (DTS) and cardiac MRI preoperatively and at 3, 6 and 12 months postoperatively. After revascularization and external LV reshaping, BM-MNCs were injected into predetermined peri-infarct areas where revascularization was impossible.

Results: Forty-five patients survived during a follow-up period of 3-37 months. Ejection fraction improved from 21.7±7.4% to 30.6±6.9%, 36.5±4.3% and 37.7±4.2% at 3, 6 and 12 months, respectively. Left ventricular end-diastolic diameter was reduced from 66.1±4.9 mm to 62.6±3.9 mm, 60.5±2.9 mm and 59.3±4.2 mm, respectively. Previously non-viable areas on DTS were found to contain viable tissue and MRI showed hypoenhancement in previous akinetic areas. NYHA class improved to I-III. No significant arrhythmias were noted during the follow-up period. One patient died due to low cardiac output and severe patient died due to septic shock.

Conclusions: Combined off-pump surgical treatment and autologous bone marrow mononuclear cell transplantation for end-stage ischemic cardiomyopathy is safe and feasible and appears to improve the patients’ functional status.
Objective: Systolic dyssynchrony as an indication for cardiac resynchronization therapy is present in a considerable subset of patients with congestive heart failure undergoing surgical coronary revascularization. Coronary artery bypass grafting (CABG) offers an optimal setting for totally epicardial cardiac resynchronization system implantation. Aim of the study was the assessment of cardiac resynchronization therapy (CRT) with use of epicardial leads in patients with congestive heart failure undergoing CABG.

Methods: Twenty patients with congestive heart failure and systolic dysynchrony, scheduled for CABG were enrolled in the randomized single-blind, single-centre, cross-over study. During the CABG procedure all patients underwent a CRT system implantation with the use of bipolar epicardial leads. Subsequently patients were randomly assigned to the group with CRT on (CRT+) or CRT off (CRT-). After 3-months follow-up, several clinical parameters were analyzed in both groups: the heart failure stage according to the New York Heart Association (NYHA) classification, exercise performance according to the 6-min walk test, and quality of life basing on the Minnesota questionnaire. Following echocardiographic parameters were also analyzed: left ventricular ejection fraction (LVEF), left ventricular size, mitral regurgitation and parameters of dysynchrony.

Results: The surgical procedure was performed in all patients according to the study protocol. One patient died in the early postoperative period, consequently 19 patients underwent randomization. After 3-months follow-up, the number of patients in whom the heart failure stage according to NYHA improved by two classes was significantly greater in the CRT+ group compared with the CRT- group (12 patients vs. 2 patients, P=0.033). In the CRT+ group comparing with the CRT- group a significantly longer mean distance of the 6-min walk test (471.4±136.6 m vs. 376.4±139.9 m; P=0.047) and a significantly better quality of life (18.8±18.7 patients vs. 36.6±19.8 patients; P=0.003) were noted. The echocardiographic parameters revealed in the CRT+ group comparing with the CRT- group an improved LVEF (40.2±6.1 vs. 33.9±6.1; P=0.001), smaller left ventricular end-systolic volume (121.4±35 ml vs. 142.9±31 ml; P=0.04) and reduced mitral regurgitation expressed as mitral regurgitant jet area to left atrial area ratio (17.9±8.0 vs. 25.3±9.7; P=0.026) and significant improvement of all parameters of systolic dysynchrony. Adverse events (including one death) occurred in four patients (20%) and were noted in the early postoperative period (until five days post-surgery).

Conclusions: Cardiac resynchronization therapy with the use of totally epicardial system implanted during CABG is associated with additional improvement of clinical and echocardiographic parameters in patients with ischemic congestive heart failure and systolic dysynchrony.

C14-9
DUAL SOURCE COMPUTED TOMOGRAPHY IN HEART TRANSPLANT RECIPIENTS
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Objective: Dual Source Computed Tomography (DSCT) is a promising method for diagnosis of the coronary artery, despite rapid or irregular heart rhythm. The aim of the study is to present our experience in applying DSCT in evaluation of coronary artery in transplanted heart.

Methods: We included 15 (3 women and 12 men) patients at average age was 73 (66–84) years, seven males and one female. Mean transverse diameter was 6, 8 cm (5, 2–9, 0). Diagnostic procedure was ultrasound, computed tomography (CT) and intravenous urography. Preoperative findings were abdominal pain, fever and increased erythrocytesedimentation rate in all patients. All patients underwent surgery with medianic incision and peritoneal access. In seven cases with a straight Dacon graft and one...
case with bifurcated Dacron graft. Empiric steroid treatment was associated in all cases for at least 60 days after surgery.

Results: Macroscopic findings of IAAA were a thick, white/gray, inflammatory wall involving fourth duodenal portion and in a case left ureter. No 30-days mortality was occurred. Main compliance was represented by a case of acute oedematous pancreatitis, treated with conservative therapy. Histological examination of aneurysmatic wall demonstrated presence of lymphocyte and mononuclear infiltrate. The case of hydronephrosis was treated with conservative therapy. In all cases we had regression of abdominal pain, fever and ESR. We had a case of late mortality (6 years) for chronic renal failure not linked to surgery.

Conclusions: Controversy exists about the real pathogenesis of IAAA. It shows a predilection for male, current smoke, familial tendency and a premature incidence. Current understanding favours for an immune-mediated hypothesis of IAAA. The parietal flogistic process can involve adjacent structures, in particular ureters, duodenum and major retroperitoneal veins. Literature reports rupture rate of IAAA similar to AAA. Walker tried associated to CT allow preoperative diagnosis. Recent series show that mortality and morbidity rates are similar to AAA. EUROSTAR data demonstrate a reliability of EVAR repair, in terms of short outcomes, with results similar to AAA, this approach do not allow the biopsy and so certain diagnosis. IAAA, having the same rupture rate of AAA, needs the same preventive treatment. OPEN or EVAR treatment should be chosen with the same criteria of AAA even if EVAR has no possibility of biopsy. Furthermore, there are no data about regression of retroperitoneal fibrosis after EVAR. Also the premature onset of IAAA should be considered in the choice of treatment.

V12-2
ARMY CENTER FOR CARDIOVASCULAR DISEASES
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Objective: The development of biomaterials to replace or bypass arterial segments has revolutionized the management of arterial disease. Infection of a vascular prosthesis is a relatively uncommon complication of vascular surgery (1·6% with an average of 2.1%). The risk factors for graft infection can be divided into three categories: contamination of the graft, altered host defence and systemic factors. The success of using the new graft is his capability to resist to the reinfection.

Methods: Between January 2007 and October 2008 we have used 28 silver impregnated prostheses (Intergard Silver-Intervascular) in the following positions: axillo-femoral 1, axillo-bifemoral 4, aorto-bifemoral 8, aorto-femoro-popliteal 3, femoro-popliteal proximal 5, femoro-popliteal distal 4 and femoro-femoral crossover 3. We have replaced one single infected graft (axillo-femoral)-infection with E.Coli (gram negative), the ‘in situ’ replacement, the other indications were in patients with high-risk of infection: trophic lesions (6 patients), generalized porositis (3 patients), emergency surgery (2 patients).

Results: No infectious complications with the use of silver impregnated grafts occurred. All the bypasses are patient, during a follow-up period of 2-12 months (mean 4 months).

Conclusions: Treatment of vascular prosthetic infections must be established individually. In-situ reconstruction with the infection-protected silver Dacron prosthesis in conjunction with wound debridement and systemic antibiotic administration is a new approach that promises to be successful. Greater series and longer follow-up period are necessary in order to confirm these preliminary results.

V12-3
THE NATURAL HISTORY OF ‘SMALL ANEURYSMS’ OF ABDOMINAL AORTA IN PROSPECTIVE STUDY
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Objective: Aneurysms are most commonly situated in the abdominal part of aorta. There is most often observed thrombus in the sac of the aneurysm and the influence of which on the development of the disease is not eventu-ally explained. The aim of this prospective examination was the investiga-tion of the development of a disease with the consideration of variable data (the size of the aneurysm, thickness of thrombus).

Methods: In the years 2005-2007 a group of 60 patients with abdominal aorta aneurysm in non-surgery size was examined. The patients were controlled every three months. The average time of observation was two years. The main method of examination was ultrasonographic examination. In questionable cases or after reaching a surgery size, the CT examination was performed. Results: Among the patients with the initial diameter of the aneurysm up to 4 cm the increase of diameter >10 mm was observed at 3 patients, 6-10 mm at 8 patients, and 4.5 at 4 patients and at the remaining 11 patients the growth in the diameter of an aneurysm was not observed. In the group of patients with diameter more than 4 cm the growth >10 mm was observed at 2 patients, 6-10 mm m at 15 patients, and 4-5 mm at 6 patients. At 11 patients there was no growth. Intravascular thrombus was observed at 39 patients. In a group of patients with diameter >4 cm the parietal thrombus was observed in 28 cases. In a group up to 4 cm diameter – in 11 cases. Among the patients having aneurysms with the wall thick up to 3 mm at 4 occurred the increase in the wall thickness and in 2 cases a decrease of wall thickness was observed. At patients having the wall thick >3 mm the decrease of thickness occurred in 6 cases. The surgery size of the aneu-rysma was reached at nine patients. At all operated patients intravascular thrombus with greatest sizes was observed. At five of them the growth of thrombus thickness occurred.

Conclusions: 1. The presence of intravascular thrombus does not prevent the growth and the risk of the aneurysm rupture. 2. It does not seem likely that the thickness of an aneurysm wall is significant when predicting the aneurysmatic growth. 3. Periodical ultrasonographic examination enables to define the optimal moment for the surgery of a person with an aneurysm of abdominal aorta.

V12-4
TRENDS IN SURGERY FOR RUPTURED ABDOMINAL AORTIC ANEURYSM IN A WELL-DEFINED CATCHMENT AREA OVER 21-YEAR PERIOD
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Objective: The purpose of this study was to evaluate the trends in presenta-tion and surgical treatment of ruptured abdominal aortic aneurysm (rAAA) in a well defined catchment area over 21-year period.

Methods: The demographic data of all patients admitted in the years 1987-2008 to the tertiary referral vascular centre because of rAAA were ana-lyzed. The number of all patients treated in the same because of abdominal aortic aneurysms (AAA) was documented and the ratio rAAA: AAA ratio was calculated.

Results: In the observation period constant increase in number of patient hospitalized because of AAA and rAAA were noted. There was also increase in rAAA: AAA ratio from 0, 08 to 0, and 33. The in-hospital mortality rate decreased from 70 to 40% when the patients treated in the years 1987-2000 were compared to those treated in the years 2001-2008. Conclusions: The increasing rAAA: AAA ratio reflects too low detection rate of asymptomatic medium and large AAA and too low number of elective AAA repairs. It seems that further decrease in AAA related death can be achieved by adequate screening programs and increase in number of elec-tive AAA repairs.

V12-5
SEVERE POSTOPERATIVE INFECTIVE COMPlications AFTER ENDOVASCULAR PROSTHESIS IMPLANTATION
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Objective: The aim of the following paper is to present the cases of severe postoperational complications after intravascular prosthesis implementation conducted in the years 2003-2007.

Methods: In the years 2003-2007 at our Ward there has been 96 operations of endo-vascular prosthesis implementation performed due to the abdominal and thoracic aortic aneurysm, as well as iliac arteries. After these procedures two cases of severe infections were observed (2% of treated patients).

Results: During the performed endovascular procedures two cases of serious complications were reported: infection of the femoral artery area which led to its wall destruction; and infection of the bifurcated stent graft implanted to the abdominal aortic aneurysm which led to the destruction of the abdominal aortic wall. The patient died due to the infectional and hemorrhagic complications.
Conclusions: Endovascular prosthesis implantation procedures are an alternative method for patients with co-existing illnesses, which may increase the risk of an open surgical intervention. The presented complications appear rarely, however, involve a great risk for the patient’s life due to the lack of effective treatment possibilities in case of prosthesis infection. It is advisable to remain extremely carefully in the qualification process, especially in cases of patients with inflammatory abdominal aortic aneurysm.

V12-6 
EVAR WITH EXCLUDER STENT GRAFT - FIRST ONE-YEAR EXPERIENCE IN MILITARY MEDICAL ACADEMY
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Objective: These results reflect a one-year experience with Excluder stent graft in Military Medical Academy. We have treated 21 patients with AAA.

Methods: There are approximately 1000 new AAAs diagnosed each year in Serbia. There is an evaluation of more than 3000 undiagnosed AAAs in Serbia. For traditional elective open surgery our experience is 3-5% mortality rate. We discuss general anaesthesia and the fact that the procedure takes 2-4 h, depending if it is a straight tube graft or an aortobifemoral bypass graft, a 1-2 days intensive care unit stay, 10-14 days hospital, plus 12-weeks: In a recovery period after hospitalization. Approximately 40% of patients with ruptured AAAs die prior to admittance to the emergency department. Patients presenting to the emergency department with ruptured AAAs, still have approximately 40-50% chance of suffering operative mortality. In our experience the most common early complications of AAAs are: myocardial infarction, pneumonia, renal failure and insufficiency, colonic ischemia and graft infection. Late complications are: incision hernias, impotence, lymphocele, ischemia of legs and intestinal occlusion.

Results: Between January 2008 and December 2008, 21 male patients with AAA, aged between 50 and 86 years were treated with the EXCLUDER stent graft. The largest diameter of AAA was 81 mm, and the smallest AAA was 51 mm. Five patients had concomitant aneurysm of one or both common iliac arteries. Four patients had subtotal stenosis of external iliac artery, and were treated with balloon dilatation. One patient had a dilated mesenteric inferior artery (more than 7 mm) and required embolisation of artery to prevent endoleak type II before starting Excluder procedure. All EVAR were performed in the operating room through surgically exposed femoral arteries. There is no mortality and morbidity rate. The procedure requires 1-2 h in general anaesthesia, followed by 4 h postoperative monitoring: the total hospital stay was 2-3 days. Recovery period was seven days, and after that they resumed a normal life. The patients have been followed for six months and during that time no aneurysm ruptures, limb occlusions, graft infections; graft migrations, endoleaks, or peripheral embolisations have been detected.

Conclusions: The ultimate goal of AAA stent graft treatment is to prevent death and rupture, especially for a patient with cardiac, lung and renal morbidity. Endovascular repair of abdominal aortic aneurysms (EVAR) has currently become the treatment of choice for the patients.

V12-7 
MODERN DIGITAL CONTRAST-ENHANCED ULTRASONIC DIAGNOSTICS EVALUATION OF PERFUSION AND HAEMODYNAMICS OF PERIPHERAL ANEURYSMS
Department of Vascular and Endovascular Surgery, Regensburg, Germany

Objective: Evaluation of new ultrasonic techniques to measure perfusion and haemodynamics in peripheral aneurysms.

Methods: In a pilot study of ten patients peripheral aneurysms of the popliteal and superficial femoral artery were examined through high definition multifrequency linear ultrasonic modalities (Siemens Antares, GE Logiq 9L) with 5-16 MHz linear transducers. The documentation was done with Sono-CT/C-beam technique, Specie Reduction Imaging (SRI), Tissue Harmonic Imaging (THI), Panorama- or Siescape and 3D imaging. Measuring of flow was performed through colour coded Duplex sonography, Power doppler and contrast enhanced 3D B-Flow (CHI, low MI-0, 2, Sonovue 5 ml bolus injection). Reference was performed through contrast-enhanced Spiral CTA (16 line multislice CT, Sensation 16, Siemens).

Results: The visualization of the aneurysm in 3D B-flow can be optimized through the combination of Sono-CT with THI and SRI. The assessment of aneurysm dimension is done only with a combination of panorama- and 3D imaging, with advantage for Real time 3D imaging. For evaluation of haemodynamics colour coded Duplex sonography is essential. An artefact free imaging of aneurysm perfusion and determination of thrombotic material can surely only be done with CHI. CHI also has advantages when control is done after stent graft application in order to evaluate the position of the stent graft.

Conclusions: High frequency linear ultrasonic contrast-enhanced techniques give new chances and possibilities for determining functional stent position and evaluation of the rest perfusion of the aneurysm after intervention.

V12-8 
CRITICAL ANALYSIS OF INDICATIONS AND OUTCOMES OF SURGICAL TREATMENT FOR ELONGATED INTERNAL CAROTID ARTERY
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Objective: Although there is a lot of evidence which justify surgical treatment of symptomatic internal carotid artery (ICA) elongation, postoperative clinical benefit in some patients is still uncertain. The aim of this study is to investigate an efficacy of surgical correction of elongated ICA in reducing cerebrovascular symptoms.

Methods: Retrospective and prospective study included 226 patients (153 females and 73 males; mean age 64 years) diagnosed with ICA kinking/coiling and significant hemodynamic insufficiency, confirmed by ultrasonography. All patients were surgically treated, with follow-up from 1 month to 7 years. They were pre- and postoperatively evaluated for the presence of hypertension, cerebrovascular diseases and equivalent subjective cerebrovascular symptoms.

Results: Hypertension was preoperatively diagnosed in 80% patients. There was no correlation between occlusive or aneurysmatic disease of peripheral arteries and ICA kinking/coiling. Perioperatively, the backflow was excellent in 87% and pulsative in 11% patients, while only 3 patients (2%) had poor backflow. The overall incidence of cerebrovascular symptoms (CVI, RIND, TIA) was significantly lower after surgical reconstruction, respectively CVI 6/46 (P=0.00), RIND 4/19 (P=0.004), TIA 8/62 (P=0.00). All six patients with postoperative cerebrovascular insult (5 immediately after the surgery and 1 one month later) also had one CVI prior surgery. Patients solely with preoperative dizziness and headache still remained symptomatic after surgical reconstruction in actually 50% of cases. Cardiorespiratory complications occurred in one patient and four patients had haemostatic redo-procedures. There were no lethal outcomes.

Conclusions: To our knowledge, this is the largest published series of surgically treated internal carotid artery kinking/coiling cases. Hypertension is significant co-morbidity in patients with ICA elongation. While surgical correction of ICA elongation is undoubtedly beneficial procedure for patients with explicitly cerebrovascular ischemic symptoms (CVI, RIND, and TIA), minor symptoms like headache and dizziness are questionable indications for operative treatment.
Results: Twenty-three patients were treated using the LAGP procedure (mean age 73 years, range 57-90). Of these 23, infected grafts were salvaged in 16 (69.5%) for a minimum known median duration of eight months (range 3-16 months) before being discharged from follow-up. A total of 43 lavages were undertaken in theatre for 16 patients (median 2; range 1-7); local anaesthesia was used in 20 lavages (46.5%), general anaesthesia in 22 (51.1%) and spinal in 1 (2.3%). Five of 23 patients had excision of graft as a primary procedure; of these, two required major limb amputation. At follow-up, 14 of 16 patients (87.5%) were asymptomatic, with healed groin wounds and required no further revascularisation procedures; 1 patient underwent re-do bypass for rest pain after 34 months; 1 patient was lost to follow-up. The median follow-up for all 16 patients was 12 months (Range 2-36 months).

Conclusions: Lavage-Assisted Graft Preservation technique is a valuable tool to treat infected vascular grafts and preserve limb perfusion. This has proven beneficial in salvaging grafts and therefore limbs in the majority of our patients.

V12-10
ISOLATED ANEURYSMS OF THE ILLIAC ARTERIES PRELIMINARY RESULTS OF SCREENING
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Objective: Isolated aneurysms of the iliac arteries (IAAs) are rare, <2% of all intrabdominal aneurysms. Most of the IAAs are asymptomatic and associated with significant morbidity and mortality when rupture occurs. We present our experience about the presentation, distribution, treatment and outcome of patients with IAAs.

Methods: During abdominal aortic aneurysm screening in our department from April 2007 to February 2008 we screened 1667 patients with mean age of 76 years. Subject with IAA of 1.2-2.9 cm diameter would be followed-up once years and patients with a 3.0 or greater IAA would be treated. Results: One hundred and forty-four (8.63%) IAAs were found: 30 in the right iliac segments, 27 left iliac segments, and 87 bilateral iliac segments. All the iliac artery aneurysms had been asymptomatic. Out of 144 patients with IAAs only five underwent a successful treatment with endovascular repair. No perioperative mortality occurred. The mean follow-up was 12 months and during this period we did not observe any case of endoleak. The follow-up of the other 139 patients is in progress.

Conclusions: Our study confirms the low incidence of IAAs according to the literature data. Our good results of the early endovascular treatment enables us to emphasise screening of the IAAs. This police allows to prevent rupture of this aneurysm which is associated and high mortality and morbidity.

V12-11
TREATMENT OF CHYLOUS ASCITES
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Objective: Chylous ascites is defined as an accumulation of lymphatic fluid from the lymphatic vessels in abdominal cavity. It is a rare but potentially devastating and morbid complication of abdominal aortic surgery. Untreated it can be fatal, with patients dying from severe fluid and electrolyte abnormalities, malnutrition, and overwhelming infections, including peritonitis.

Methods: On 1 January 1996, a comprehensive data base was created that prospectively recorded pertinent information on all patients with chylous ascites after abdominal aortic surgery evaluated at the Clinic for Vascular and Transplant Surgery, Clinical Centre Vojvodina in Novi Sad. These data were analyzed retrospectively. During this 10-year period, consecutive patients with chylous ascites after abdominal aortic surgery were evaluated using a standardized protocol.

Results: From 1996 to 2006, we treated eight cases of chylous ascites after operations on the abdominal aorta. Seven of them were males and one female, with a mean age of 64 years (range: 46-82 years). Five cases (62.5%) occurred after abdominal aortic aneurysm resection, 2 (25%) after aorto-bifemoral bypass for occlusive disease, and 1 (12.5%) after resection of infected aortic grafts. Abdominal distention was the most common presenting symptom, occurring in seven of eight patients. The mean time from aortic operation to the development of symptoms was 15.5 days (range: 11-35 days). Diagnosis was confirmed by abdominal ultrasound and paracentesis, which yielded lipemc, sterile fluid in all patients. Therapeutic paracentesis was not successful when used alone, but, when combined with a medium-chain triglyceride (MCT) diet or total parental nutrition (TPN), it resulted in resolution of chyloperitoneum in two patients (25%). TPN alone or with paracenteses and/or diuretics was successful in two (25%) patients. Percutaneous shunt resolved chyloous ascites in one patient not responding to diet and/or TPN. Operative ligation of the injured lymphatic channel was successful in all 3 (37.5%) patients treated by laparotomy when no operative efforts failed. Chyloperitoneum resolved in all but 1 (12.5%) patient. There was no death directly related to chylous ascites.

Conclusions: We reached the following Conclusions: (1) Chylous ascites is a rare complication of aortic surgery; (2) The diagnosis is easily confirmed by paracentesis; (3) Nutritional intervention remains the mainstay of no operative treatment; (4) Repeated paracentesis should be avoided because several reasons; (5) Surgery is undertaken when conservative therapies fail; (6) Contraindications to surgical correction of chylous ascites are based on the patient’s co-morbidities and his or her ability to tolerate surgery.

V13-1
LONG-TERM RESULTS OF BELOW-KNEE BYPASS REvascularisation WITH OMNIFLOW II GRAFTS
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Objective: In literature the three years patency rate of Omniflow II grafts (sheep collagen prostheses) in below-knee position were reported with 55.4% in good and 35.3% in unfavourable vascular periphery. Infection rate was 0% and an aneurysm occurred only in three patients (1.1%). Clinical routine showed a very different beast: high incidence of early thrombosis and many late graft aneurysms. That is the reason why most of the cardiovascular centres did not use this graft any longer.

Methods: From 1989 to 2003 a total of 198 patients underwent lower limb revascularization with Omniflow II graft in below-knee position at our centre. Patients were predominantly male (113 patients, 57%), with a mean age of 68. Female patients (85 patients, 43%) were in average four years older.

Results: Analysis of this data, concerning long-term patency rate and incidence of aneurysm, show high incidence of early thrombosis and many late graft aneurysms.

Conclusions: Because of high incidence of early thrombosis and late graft aneurysms in our opinion Omniflow II is just an alternative graft for other patients and only in below-knee position. In other cases polytetrafluoroethylene or other synthetic grafts should be preferred.

V13-2
MICROcirculatory equivalents of PHENOMENON ‘NO-REFLOW’
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Objective: Activity. Reperfused syndrome in different anatomical regions is usually accompanied by one of the following phenomena: normoperfusion, hyperperfusion and hypoperfusion (‘no-reflow’). The most inauspicious events such as the long-term hyperperfusion and ‘no-reflow’ are associated with development of such universal processes as syndrome of local inflammatory response (SIRS) and a syndrome of systemic inflammatory response (SIRS). SIRS quite often leads to polyorganic insufficiency which makes worse significantly the results of all revascularization operations. Working hypothesis. The leading role in reperfused disorders of local tissue
perfusion belongs to the main effectors of inflammation such as leukocytes as well as leukocyte and thrombocytic conglomerates which block up microvasculature. Thus, stable secondary tissue hypoxia is developing, gradually leading to breakdown of power supply sources and to extension of damage zone. The purpose is to model experimentally the processes of tissue ischemia and reperfusion and to demonstrate the role of leukocyte conglomerates in development of stable disorders of tissue microcirculation.

Methods: In this experiment males of Vistar rats (m-rats) weighing from 290 to 330 g were used. After a single-use narcotization with Cretan at a rate of 125 mg per 100 g of rat’s weight lethal arterial from both rats’ sides were picked out in order to grasp them over. Then a catheter for infusion with Heparin at a rate of 50 units per 100 g of rat’s weight was introduced into the first ileal artery, while another one was kept on being grasped over in order to create experimental ischemia. On the investigating posterior extremity skeletal muscles were uncovered for microscopic visualization of microvasculature. Vital microscopy was done with the help of a microscope Lumam-1; the image was followed with the help of a colour video-camera TS-6020 PSC (Japan) and then it was transferred to a video-tape-recorder Panasonic NV-SD 225 EU (Japan) and to a computer Intel Pentium 4 using a video-locking card Pinnacle for the following processing. Resolution of a monitor (according to a chosen epiobjective) was 1.000 or 2.000 times.

Calibration of measurements was done with the help of a standard object-micrometre-1 with division of 10 µm. The study of dynamics of leukocytes adhesion to micro vascular endothelium of posterior extremities muscles during different stages of ischemia and reperfusion was included into the task of the experimental investigation with the help of the method of vital contact optical microscopy. A number of adhered leukocytes in venous capillaries of each rat were evaluated within three visual fields of the same length and diameter after artificially created ischemia during 30 min, an hour, and two hours and after the beginning of the reperfused period during 30 min, an hour and two hours.

These leukocytes which had not moved with blood flow during <30 s were considered to be adhered.

Results: Provided there was the norm, no occurrence of leukocytes adhesion on vascular walls and muscles capillaries of rats’ posterior extremities were observed. A number of leukocytes passing through venous capillaries increased considerably at ischemia during 30 min and at reperfusion period during 30 min, an hour and two hours. Some of leukocytes had fixed to endothelium quite precariously, and then they were taken away with blood flow. Frequency of stable adhesion occurrence of leukocytes reached 5, 0 2, 2 for 290, 277, 8/13, 1, 3, 4 µm of a capillary. As ischemia developed for an hour and etc. as well as during reperfusion at period of the same time intervals, a number of leukocytes which were fixed not only to vascular walls but also to each other increased. Those ones formed leukocyte conglomerates capable to occlude at first a venule lumen and then a capillary one and an arteriole one. Frequency of stable adhesion occurrence of leukocytes reached 9, 1, 8 for 299, 2 58, 4/13, 4, 3, 8 µm of a capillary. Under conditions of created 2-hour ischemia and during observation at reperfused period, a number of leukocytes were maximum. Within a visual field venous capillaries with the absolute stoppage of direct blood flow were often identified, sometimes there were only chaotic diversely-directed low-flow and motion of erythrocytes and leukocytes. Frequency of stable adhesion occurrence of leukocytes reached 15, 0 3, 4 for 301, 2 67, 5/14, 2 4, 1 µm of a capillary.

Conclusions: The investigation carried out accounts for abrupt disorders of microcirculation under the conditions of ischemia and reperfusion by adhesion of polymorphonuclear leukocytes as well as of leukocyte and thrombocytic conglomerates to micro vascular endothelium that leads to stasis of erythrocytes in capillaries and venules. Thus, the key role of effectors in development of post-ischemic microcirculatory disorders is played by polymorphonuclear leukocytes as well as by their conglomerates with thrombocytes.

V13-3 HYBRID TREATMENT OF AORTIC ARCH ANEURYSM WITH ABERRANT SUBCLAVIAN ARTERY: KOMMERELL’S DIVERTICULUM M. Menegolo, S. Lepidi, L. Ferretto, M. Antonello, F. Frigatti Division of Vascular and Endovascular Surgery, University of Padua, Padua, Italy

A 52-year-old patient came to our view for thoracic back pain. In his history he presented hypertension, smoke and severe COPD. Dysphagia was not reported. The thoracic radiography showed an enlargement of the aortic arch extended to the upper right mediastinum. An angio MR scan, performed immediately, and an angio CT with 3D reconstruction, performed later, showed an aberrant right subclavian artery because of the presence of a Kommerell’s Diverticulum’s 4.5 cm large in diameter. Common carotid arteries were originated individually from the aortic arch. The ascending aorta was regular and no compressions of the trachea and oesophagus were evidenced. The open surgery approach was one of the options, but, because of the severe chronic obstructive pulmonary disease, the technique chosen was a two steps hybrid treatment. A sternotomy was necessary to perform a bypass from ascending aorta to right and left common carotid arteries (PTFE 10 mm-8 mm) and a PTFE bilateral carotid-subclavian bypass. The subclavian arteries were ligated immediately before the origin of vertebral arteries. 48 h later an endoprosthesis (Zenith TX2, 32 mm) was placed, via femoral artery, to cover the arch, deployed immediately after the bypass ostium (landing zone 0), with the complete exclusion of the origins of supra-aortic trunks and also of the Kommerell’s Diverticulum’s. A postoperative angiography confirmed the adequate perfusion of supra-aortic trunks, the complete exclusion of the Kommerell’s Diverticulum’s and the reduction of its diameter. Postoperative outcome was regular and the patient was discharged seven days after.

V13-4 MANAGEMENT OF PELVIC ARTERIOVENOUS MALFORMATIONS: SURGERY OR EMBOLISATION? D.J. Malde1, F. Curran2, M. Welch1 1Wythenshawe Hospital, Manchester, UK; 2Stepping Hill Hospital, Stockport, UK

Objective: Pelvic Arteriovenous Malformations (PAM) may be congenital or acquired. True Pelvic Arteriovenous Malformations are congenital anomalies which can be asymptomatic or present with symptoms ranging from pelvic pain to congestive cardiac failure and life threatening haemorrhage. They remain one of the most difficult forms of vascular disease to manage. We present our experience of a case of Pelvic Arteriovenous Malformation managed by endovascular mean, together with a review of the literature to identify current opinion as to optimal management of this unusual condition.

Methods: A 33-year-old female had her symptomatic Pelvic Arteriovenous Malformation successfully treated by endovascular embolisation. A thorough review of the literature (1980–2008) was performed and we identified 30 papers describing management of 108 cases. We discuss results with a focus on presenting signs and symptoms, investigation, management, outcome and follow-up.

Results: The 33-year-old female underwent embolisation with polyvinyl alcohol foam particles leading to complete symptomatic relief. She had asymptomatic recurrence which was managed conservatively while she successfully gave birth to her second child. Following literature review, 108 patients with Pelvic Arteriovenous Malformations were identified; ratio of female to male was 2.1, with a mean age of 41.4 years in men (range 18-78) and 37.3 years in women (range 9-70). The most common presenting symptoms were pulsatile mass (28.2%) and pain (25.3%). The most common artery involved was the internal iliac 64.9% (unilateral 41.9% and bilateral 23%). Embolisation or surgery alone was performed in 72 and seven patients, respectively. Twenty-three patients had both embolisation and surgery. Ten asymptomatic cases were initially managed conservatively, 4 (40%) subsequently underwent embolisation. Most common embolisation agents used were N-butyl (NBCA) and Isobutyl (IBCA) cyanoarcylate adhesives (55.1%), coils (20.2%), ethanol (18%) and gelfoam (15.7%). The mean attempts at embolisation were 2.3 per patient. Symptomatic relief and symptomatic recurrence rates were as follows: 88.9% and 24.3% in embolisation alone, 100% and 11% in surgery alone and 100% and 0% in patients treated with both surgery and embolisation. The mean period of follow-up was 37.5 months (range 0-204).

Conclusions: Surgical excision of Pelvic Arteriovenous Malformations appears to be rarely indicated, embolisation being the treatment of choice. The anatomical characteristics of Pelvic Arteriovenous Malformations are diverse, and we would emphasise the need for an individualised approach to each case, developed jointly by the surgeon and interventional radiologist.

V13-5 THE LONG-TERM OUTCOME OF PATIENTS PRESENTING TO A CLAUDICATION CLINIC WITH LEG PAIN A. Abbas, O. Ehsan, M. Jameel, A. da Silva Wrexham Maelor Hospital, Wrexham, Wales, UK

The term ‘Claudication’ is used to describe the pain which occurs when there is a reduction in blood flow in leg arteries. This can occur as a result of atherosclerosis, the accumulation of fatty plaques in the walls of blood vessels. These plaques can cause narrowing of the vessel lumen, reducing the amount of blood that can flow through it. As a result, people with Claudication may experience pain or discomfort in the legs when they walk or exercise, which improves when they stop. This condition is often caused by atherosclerosis, which is a build-up of plaque in the arteries. Over time, this can lead to narrowing of the blood vessels, reducing the amount of blood flow to the legs. This can cause pain and discomfort when walking or exercising, which is commonly referred to as Claudication.

Cases of Claudication can be categorized into two main types: intermittent claudication and chronic ischaemia. Intermittent claudication is characterized by pain or discomfort in the legs that occurs during physical activity and then resolves when the activity stops. This type of Claudication is usually caused by a relatively mild narrowing of the blood vessels, which can be reversed with lifestyle changes or medical treatments. Chronic ischaemia, on the other hand, is associated with more severe narrowing of the blood vessels, which can lead to permanent damage to the muscles and nerves in the legs. This type of Claudication is often caused by more advanced cases of atherosclerosis, which may require more extensive treatment, such as surgery or angioplasty.

There are a range of treatments available for Claudication, depending on the severity of the condition and the underlying cause. These can include lifestyle changes, such as smoking cessation, a healthy diet, regular exercise, and weight loss. Medical treatments may also be used, such as medications to lower cholesterol levels and blood pressure, and antiplatelet drugs to prevent blood clots from forming. In more severe cases, surgery or angioplasty may be necessary to improve blood flow to the legs. The long-term outcome of patients presenting to a Claudication clinic with leg pain can vary, depending on the severity of the condition and the effectiveness of the treatment. In some cases, the symptoms may improve significantly or even disappear with appropriate treatment. In other cases, the symptoms may persist or worsen, requiring further intervention.

The long-term outcome of patients presenting to a Claudication clinic with leg pain can be impacted by various factors, including the severity of the condition, the effectiveness of the treatment, and the patient's overall health and lifestyle. It is important for patients to work closely with their healthcare providers to develop a plan that addresses their specific needs and goals. This may involve ongoing medical management, lifestyle changes, and regular monitoring of progress to ensure the best possible long-term outcome.
Objective: Intermittent claudication (IC) is the main presenting symptom of peripheral arterial disease (PAD). Most epidemiological studies report natural history of IC but, very few studies report long-term follow-up. Our aim is to assess the long-term outcome of patients referred with suspected IC.

Methods: This was a prospective study of all patients presenting to a Claudication clinic between 1996 and 2000. The details of all patients were entered into a database by a consultant vascular surgeon. After clinical review all patients were coded according to their diagnosis as PAD or not. All patients diagnosed with PAD were given best medical treatment. Outcome measures studied were risk factors, level of disease, clinical progression of disease and final management options. A locally constructed preformed was designed to record the outcome measures.

Results: A total of 297 patients were seen with suspected IC over a 48 months period in vascular clinic and only 194 had confirmation of diagnosis of peripheral arterial disease. Seventy-six had venous disease, osteoarthritis, muscle cramps, back pain, polymyalgia rheumatic, lumbar spondylolisthesis, spinal stenosis; Raynaud’s or muscular pain and 27 were lost to follow-up. Mean follow-up for claudicants was 7.4 (range 10 months-11.6 years) years. The male to female ratio was 1.13:1 and the mean age at initial presentation was 66.7 years. Hypertension (45.3%) was most common risk factor followed by hyperlipidaemia (48%). Forty-four patients were diabetics (22.7%) and 79 (40.7%) were smokers. The average ABPI in different groups showed that it was close to normal in patients treated conservatively and was falsely raised in patients who were diabetics. Fifty-seven patients died during follow-up (10 months to 10.2 years). Fourteen patients had amputations and out of these nine patients had a major amputation (4.6%). Aorto-iliac, femoro-popliteal and crural disease was present in 43.3%, 67.5% and 24.7% patients, respectively. Conservative management was successful in 59 patients. Fifty-six patients were managed by angioplasty alone, 18 patients had angioplasty and surgery, whereas 22 patients had only surgical revascularisation. The mean length of time from the diagnosis to patients requiring intervention was 1.9 years.

Conclusions: In this series conservative management succeeded in just 30.4% of patients. Although some patients required early revascularisation (36%), others required intervention much later (39%). PAD is a chronic condition, which may require additional interventions in the long-term. Health policies should reflect appropriate resource allocation to take account of this fact.

V13-6
11-YEARS FOLLOW-UP IN AORTIC ENDODVASCULAR REPAIR: RESULTS OF PERSONAL EXPERIENCE AND COMPARISON WITH DATA OF LITERATURE
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Objective: To analyze results of long-term follow-up in patients undergone EVAR.

Methods: Between 1994 and 2008, 250 Abdominal Aortic Aneurysms were treated with endovascular techniques in our Institute. We enrolled 115 cases (treated with Talent, AneuX and Gore devices) with 6-years mean follow-up: in particular minimum, mean and maximum were 48, 68 and 127 months, respectively. At our knowledge any other study in literature has got a period as long as this. Anglo-CT was conducted at one, three, six months, respectively. At our knowledge any other study in literature has got a period as long as this. Angio-CT was conducted at one, three, six months, respectively. At our knowledge any other study in literature has got a period as long as this. Angio-CT was conducted at one, three, six months, respectively. At our knowledge any other study in literature has got a period as long as this. Angio-CT was conducted at one, three, six months, respectively.

Results: The primary technical success rate was 100%. We performed two reinterventions: one due to aneurysm progression (10 mm) observed in 22 cases (19%). Significant growth (5 mm) of sac diameter occurred in 30 patients (26%). 43 reinterventions were necessary in 32 patients (27%) 27 endovascular and 16 surgical procedures of which 13 conversions. Ruptures were 6% (5%); aneurysm-related mortality was 5% while the general one was 22%.

Conclusions: For specific anatomic conditions EVAR is safe and effective-ness in short-term follow-up. In our long-term experience high incidence of complications clearly reduced initial benefits: problems can occur at any moment after the procedure; closed and long follow-up is necessary but often difficult both for the specialist and the patient. Quality of life does not seem better then that of patients undergone traditional laparotomy. Finally, endovascular technique and its postoperative management are very expensive. As yet explained we used second generation endorafts and probably last generation will offer better outcome. Anyway results of our study suggest that the indications for endovascular repair should be extremely restricted.

V13-7
TEMPORAL TRENDS IN SURGICAL TREATMENT OF RENOSTENOSIS AFTER 7233 CAROTID ENDARTERECTOMY PROCEDURES
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Objective: The aim of this paper was to review incidence of restenosis after carotid endarterectomy (CEA) in 7233 patients, in early vs. late, period of CEA surgery.

Methods: From January 1991 to December 2007 a total of 7233 primary ECEAs were performed for high-grade carotid stenosis. Group A consisted of 1714 patients operated from 1991 to 1997, and Group B of 5519 patients operated from 1998 to 2007. Follow-up included routine clinical evaluation and non-invasive surveillance, with duplex-scanning at one month after surgery, after six months and annually afterwards.

Results: In group an angiography was used for final diagnosis in 78% of patients. In group B, Duplex scan was performed in 82% of patients and angiography in only 18% (P <0.001). Clamping time was shorter in the later group (12.4±3.1 vs. 14.5±4.1 min, P<0.01). Intraoperative shunting and regional anaesthesia were rarely performed in both groups (1.4% vs. 0.4%, P<0.01, and 2% vs. 0.3%, P<0.001). There was a lower rate of no significant restenosis (<50%) in group B (2% vs. 5%, P<0.01), but incidence of restenosis >50% was identical between the groups (5.5% for both). Only 3% of patients in Group A and 0.6% in Group B were asymptomatic, with 23% and 47% of them having preoperative stroke, respectively. Total and neurological morbidity was significantly higher in group A than in group B (6.41%±0.4% vs. 4.81%±0.53%, P<0.001, and 2.14%±0.31% vs. 1.23%±0.29%, P<0.001, respectively). Total mortality was also higher in group A than in group B (1.92%±0.24% vs. 1.36%±0.50%, P<0.05), but although there was a trend toward lower neurological mortality it did not reach statistical significance (1.04%±0.5% vs. 0.57%±0.25%, P<0.074).

Conclusions: Our data show that CEA is a reliable surgical technique for the treatment of recurrent atherosclerotic carotid disease. Temporal trends in our patients demonstrated decline in perioperative mortality and morbidity, despite higher incidence of preoperative stroke.

V13-8
INFRAPROPLITEAL ANGIOPLASTY AND STENTING IN CRITICAL LIMB ISCHEMIA
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Objective: Evaluation of infrapopliteal implanted Carbofilm-coated stents (In Peria Carbotend, Sorin Bionmedica) in patients with critical limb ischemia.

Methods: In this prospective study we implanted 48 stents in 42 patients with critical limb ischemia (rest pain in 22, major and minor tissue loss in 20 patients) in 38 peripheral arteries (TASC-classification Type A 22, Type B 10, Type C 6). The patients were evaluated clinically and by Colour Duplex-Doppler Ultrasound 1, 3 and 6 months postoperatively. Results: The primary technical success rate was 100%. We performed two amputations shortly after stenting because of progreident infection in patients of Rutherford eight classification. Five target artery occlusions (after 1, 3 and 3 after 4 months) were treated with femoro-distal bypass. After six months, in all other patients, the primary patency rate was 71%. All patients were in Rutherford class 1-5 and the wound healing was completed in 15 cases.

Conclusions: Infrapopliteal angioplasty and stenting in critical limb ischemia is effective and to recommend technique, particularly in patients with severe co-morbidities and is an important less-invasive alternative to open surgery.
V13-9
CAROTID FALSE ANEURYSM DUE TO A FRACTURED STENT
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Objective: Carotid stent fracture has been reported as a late complication after Carotid Artery Stenting (CAS) by few Authors. To our best knowledge stent fracture has been reported as a cause of restenosis but never as a cause of pseudoaneurysm. We report the case of a huge false aneurysm (5 cm) in a patient with two carotid stents implanted stents (one of which was fractured) implanted for post-Carotid Endarterectomy (CEA) restenosis.

Methods: A 66-year-old man was found to have an asymptomatic left carotid restenosis seven years later CEA. He underwent left CAS in another centre. Two nitinol stents were deployed to correct the long restenosis (Exponent; Medtronic® 9×30 and 9×40 mm). Seven months later he complained about a pulsating, latero-cervical huge mass, which had developed rapidly two weeks prior. Duplex ultrasonography, angio MRI and cervical plain radiography showed the presence of multiple fractures of proximal stent with a concomitant huge pseudoaneurysm of the left ICA.

Results: We first planned to exclude the pseudoaneurysm using a cover stent. This endovascular attempt failed because we were unable to correctly cannulate the ICA; when we cannulated the proximal stent we had the impression it was dislodged inside the pseudoaneuysmatic sac and was impossible to re-line the stents. The procedure was converted to a surgical removal of both stents and arterial reconstruction by CCA-ICA bypass. At that moment the complete disruption of stent mesh of the previous Dacron patch was evident. The postoperative period was uneventful (no cranial nerve palsy) and the patient was discharged five days after surgery.

Conclusions: Carotid false aneurysm may be an expected complication after CAS for post-CEA restenosis. Rupture of the Dacron patch may be due to the radial force of stent over the previous suture line, aggravated by the irregular conformation (fish scale) of open cell design in the central segment and the sharp edges of fractured stents. A word of caution should be said for CAS in case of restenosis post-CEA and patch, in particular if a stent with this kind of variable geometry (open cell design in the middle) is implanted. This case underlines a regular check-up after CAS for post-CEA restenosis, with plain radiography in addition to duplex US for early detection of stent fractures which could potentially cause a similar complication.

V13-10
A NEW ALTERNATIVE IN TREATMENT OF VARICOSE VEINS: LIGATION PLUS FOAM SCLEROTHERAPY
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Objective: Although some new alternatives, such as laser and radiofrequency ablation techniques in treatment of lower extremity varices have advantage of performing with local anaesthetic application, they need Doppler ultrasonography as equipment and have potential of residual sapheno-femoral reflux, because of incomplete ablation of all side branches in the sapheno-femoral junction. The aim of the present study is comparatively evaluate the effectiveness of a new alternative-ligation plus foam sclerotherapy which is also available with local anaesthetic application, with that of classic stripping technique.

Methods: Seventy-two and 52 patients who had undergone classic stripping and foam sclerotherapy, respectively because of incomplete ablation of all side branches in the sapheno-femoral junction. The aim of the present study is comparatively evaluate the effectiveness of a new alternative-ligation plus foam sclerotherapy which is also available with local anaesthetic application, with that of classic stripping technique.

Results: The technique of operation has no significant effect on postoperative symptoms, Doppler findings, and CEAP class. There is no significant difference between effectiveness of foam sclerotherapy and stripping. The predictors of postoperative CEAP class were bilateral lower extremity varices (P=0.001) and prior deep vein thrombosis (DVT) (P=0.001). There was no significant predictor for postoperative deep vein incompetence. Two-year symptom-free survivals were 67%±0.8 and 58%±0.8 in foam sclerotherapy and stripping groups, respectively, and there was no significant difference between two groups (P=0.706).

Conclusions: The safety and the efficiency of ligation plus foam sclerotherapy as a new alternative technique making possible daily surgery are not different than those of classic stripping. The predictors of postoperative symptom recurrence, clinical and Doppler examination findings depend on each patient.
Objective: The purpose of this study was to determine information about the knowledge and attitudes of cardiologists and cardiovascular surgery nurses about pain management.

Methods: This was a descriptive study. The sample consisted of 53 voluntary nurses who employed in cardiology and cardiovascular surgery units a large training and research hospital. A pain questionnaire was used to measure the nurses’ pain management knowledge and attitudes. The questionnaire included 16 structured and True-False answered items and was developed by researchers by using The Nurses’ Knowledge and Attitudes Survey Regarding Pain. Data were analyzed by using descriptive statistics, t-test and Kruskal-Wallis analysis.

Results: The mean age of the nurses was 27.4±11.29 years (range: 22–45), all nurses were registered nurses, and mean nursing experience was 11.2±7.32 years (range: 1–26). The average correct response rate was 41.11%, with rates ranging from 6.18% to 62.59% for each item. Among the 16 pain knowledge questions assessed, the mean number of correctly answered questions was 8.4±4.12, with a range of 3–14 items correctly answered. When data were controlled for age group, educational level, and years of nursing experience, there were no statistically significant difference in the pain knowledge scores between nurses’ characteristics (P>0.05).

Conclusions: The results support the concern of inadequate knowledge and attitudes in relation to pain management. It is suggested that basic and continuing education programs may improve knowledge level of nursing about pain management.

CP-96
POSTOPERATIVE PAIN AND PATIENTS’ REQUIREMENTS FOR PAIN MANAGEMENT AFTER CARDIAC SURGERY: A QUALITATIVE STUDY
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Objective: The aim of this study is to describe patients’ experiences and requirements for postoperative pain management after cardiac surgery.

Methods: A qualitative design was adopted by using semi-structured interviews. Interviews were conducted with 10 patients within 2–3 weeks after discharge from their first elective cardiac surgery in a training and research hospital in the time frame 1-30 December 2008. The interview guide covered the themes: (1) patients’ postoperative pain experiences, (2) use of analgesics for pain management, and (3) their requirements on pain management after their discharge. Interviews lasted 20-30 min and were conducted as first application after patients’ discharge in the outpatient section of the cardiovascular surgery department. Qualitative content analysis was used for identifying themes.

Results: The mean age of the patients was 62.4 years (S.D.=8.31), seven were males. Six patients underwent coronary artery bypass graft (CABG), three valvular repair or replacement, one both CABG and valvular surgery. All patients had median sternotomy. Six patients reported that they had pain while in the ICU and three patients reported that they had pain while in postoperative unit and two patients did not remember their pain experiences while in the hospital. Patients have explained mild to moderate postoperative pain while in ICU. The patients reported that the worst pain they had experienced in the hospital was during coughing, moving and removing tubes. Four patient reported nearly no pain experience, six patients reported pain during some daily activity after being back home. Although patients were informed on pain management during their discharge, they could not remember the details of information given afterwards. They reported that they avoided using pain medications at home. They recommended that it would be useful to be provided with written material on pain management. Conclusions: Patients need more individualized information to improve self-management in early period after discharging from hospital. More specific and written informative documents may be useful for pain management at home.

CP-97
RESHEDULED ELECTIVE SURGERY DOES NOT INFLUENCE OUTCOMES OF CABG PATIENTS
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Objective: An increasing number of high-risk patients and limited intensive care unit resources had led to delays and rescheduling of elective cardiac surgical procedures. The aim of our study was to evaluate the impact of rescheduling of surgery on patients outcomes.

Methods: We retrospectively reviewed the data of 1075 consecutive elective coronary artery bypass patients operated on between 1 November 2006 and 31 October 2008 in our institution. Outcomes of patients whose surgical procedure was rescheduled were compared with the outcomes of patients operated on according to the surgical schedule. Mortality and major adverse events: cardiac (myocardial infarction and low cardiac output syndrome), neurological (stroke, coma and delirium), pulmonary (prolonged mechanical ventilation and reintubation) and renal (renal failure requiring hemofiltration or dialysis) were compared between the two groups.

Results: During this 24 months period elective surgery was rescheduled for 127 patients. The main reason for the rescheduling of surgery was the lack of available ICU beds. One patient developed fatal myocardial infarction the same day surgery was delayed and was excluded from further analysis. There were no significant difference in mortality rates between the two groups (3.2% in patients with delayed surgery vs. 2.0% in patients operated on according to the schedule). Major morbidity occurred in the similar amount of patients in both groups: cardiac – 7.1% vs. 7.7%, neurological – 6.3% vs. 6%, pulmonary – 11.9% vs. 9.9% and renal – 1.6% vs. 1.1%. Mean postoperative ICU length of stay was 2.0 days in cases when surgery was rescheduled vs. 2.2 days in on time operated patients.

Conclusions: Despite unpleasant and irritating feelings patients have after the rescheduled and delayed elective surgery it does not have a negative impact on mortality and major morbidity of patients undergoing coronary artery bypass grafting procedures.

CP-98
EFFECT OF STERNOTOMY AND PERICARDIOTOMY ON LEFT VENTRICULAR MASS IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS SURGERY
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Objective: Sternotomy and pericardiotomy is a standard approach as a part of open heart surgery. However, a little information is known how this surgical approach affects the left ventricular mass in the clinical practice. We conducted a prospective study in order to investigate the effect of sternotomy and pericardiotomy on left ventricular end-diastolic and left ventricular mass in cardiac surgical patients with normal left ventricular systolic function.

Methods: We studied 32 patients (12 females and 20 males, mean age; 59±11 years) undergoing first-time elective coronary artery bypass surgery. The pericardium was left widely open all patients. One day before and six weeks and six months after coronary artery bypass surgery, we measured left ventricular end-systolic volume, end-diastolic volume, stroke volume, ejection fraction, end-systolic circumferential wall stress, and left ventricular mass by two-dimensional and Doppler echocardiography and concomitantly arterial pressure by non-invasive method.

Results: Left ventricular end-diastolic volume index increased from 55±8 ml/m² preoperatively to 67±10 ml/m² at six weeks (P=0.05) and 70±12 ml/m² at six months (P=0.05). There was a significant difference between six weeks and six months values (P=0.05). Left ventricular mass index increased from 115±25 g/m² preoperatively to 132±21 g/m² (P=0.05) at six weeks and to 135±23 g/m² at six months (P=0.05). There was no important change between six weeks and six months values (P=0.05). There were no statistically significant changes in left ventricular end-systolic volume, end-systolic circumferential wall stress, and systolic or diastolic blood pressures (P>0.05).

Conclusions: This study has shown that sternotomy and pericardiotomy increase left ventricular end-diastolic and left ventricular mass in patients with normal cardiac function undergoing coronary artery bypass surgery in the early and late postoperative period.

CP-99
MINIMALLY INVASIVE VIDEO-ASSISTED SURGERY FOR LEFT ATRIAL MYXOMA RESECTION
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Objective: The aim of this study was to assess the surgical results and the benefits to the patient of a minimally invasive video-assisted approach for left atrial myxoma resection.

Methods: Between September 1998 and January 2008, 11 patients (mean age, 59±16 years; 81 female) underwent surgery for left atrial myxoma...
Objective: Left ventricular rupture is an often lethal complication of acute myocardial infarction. However, there are cases that begin subacute or chronic due to adhesions formation within the pericardium. In these cases it is almost always possible to identify in the patient's history the cause leading to pseudoaneurysm formation such as acute myocardial infarction, previous cardiac surgery, trauma or infection. Symptoms include dyspnea, angina, arrhythmias or thromboembolism. We present a case that came to our attention without a history of myocardial infarction and with a completely unremarkable ECG. The patient was successfully treated with Port-Access technique (Heartport, Inc., Redwood City, California).

Methods: A 56-year-old man presented at our emergency department for a severe dyspnea. ECG was normal. A CT-scan showed a giant (7 by 8 cm) pseudoaneurysm of the left ventricular free wall. This was confirmed by echocardiography that disclosed an associated mild mitral regurgitation secondary to lateral papillary muscle displacement. At coronary angiography the obtuse marginal branch was occluded. At operation, after peripheral cannulation, the pseudoaneurysm was exposed through a small left thoracotomy at the fourth interspace. Once on CPB the apical pericardium was harvested and treated with glutaraldehyde for subsequent patching. The aorta was then clamped with the EndoClamp and cardioplegia done through it. The wall of the pseudoaneurysm was opened and resected after removal of clots. An oval patch of 2×4 cm was used to close the ventricular cavity and the remnant of the pseudoaneurysm was closed over the patch. After intra-aortic balloon insertion, the patient was easily weaned from CPB.

Results: The postoperative course was uneventful and the patient was discharged on the sixth postoperative day with an echocardiographic ejection fraction of 45% and a trivial residual mitral regurgitation.

Conclusions: The small left anterior thoracotomy is a good approach for antero-apical aneurysm and pseudoaneurysm of the left ventricle. In this case, despite its lateral position, the pseudoaneurysm was successfully closed with an excellent exposition. But in aneurysms and pseudoaneurysms of the free wall it is of utmost importance to obtain a good hemostasis before weaning CPB, because from this access it may be very difficult to pass additional stitches. The pseudoaneurysmal neck is frequently circular in shape but it should always closed with an oval patch to restore the normal ventricular morphology and the position of the lateral papillary muscle.

Abstracts/Interactive CardioVascular and Thoracic Surgery

**CP-100**

**POSTOPERATIVE PROGNOSIS IN CARDIAC TUMORS ON THE BASIS OF MATERIAL OF 110 PATIENTS**


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Objective: Between 1986 and 2008, in our department 110 were referred to surgery because of suspicion of cardiac tumor (myxoma) in left (98 patients) or right atrium (12 patients). In this group women were major-

Results: The average time needed for cross-clamping was 48±32 min, with a mean CPB time of 91±63 min. There were no early or late hospital deaths. Postoperative histologic evaluation confirmed the diagnosis of atrial myxoma in all cases. Surgical revision for bleeding was performed in one patient. Mean intensive care unit and hospital stay were three and nine days, respec-

Conclusions: Minimal invasive video-assisted surgery for left atrial myxoma resection is a safe, reproducible and cosmetic operation and can be consid-

Material and methods: The essential method in diagnostics and monitoring of patients with cardiac tumor was transthoracic echocardiography, in some cases transoesophageal echocardiography.

Results: All patients were operated with a good early result. The diagnosis of myxoma was confirmed by histo-pathological examination in 106 patients. In four patients the histo-pathological examination allowed to diagnose malignant tumors (leiomyosarcoma, myxosarcoma, fibrosarcoma) with a very poor prognosis because none of those patients survived a year after the operation. In one of those patients, a tumor occurred metastases coming from a neoplasm of respiratory system. The long-term follow-up of patients with myxomae was very good; during five years there was only one case of a relapse and no death was observed.

Conclusions: Due to the great risk of a complete obstruction of atrio-ventricular ostium or occurrence of embolic complication, a tumor of the LA or RA is an indication for urgent surgery. The early and long-term outcomes of surgical treatment of a cardiac tumor are excellent, provided it is a myxoma. Indication for surgery in a malignant tumor, should be con-

**CP-102**

**EVALUATION OF RISK FACTORS FOR ADVERSE OUTCOMES OF PATIENTS UNDERGOING LEFT VENTRICULAR RESTORATION PROCEDURES**

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Objective: Surgical treatment of post infarction left ventricular aneurysm is still a challenge for the cardiac surgeons. Although results of Dor procedure are widely discussed, identification of risk factors could improve outcomes of this procedure. The aim of this study was to evaluate our clinical experience of this procedure and determine risk factors for in-hospital mortality.

Methods: After institutional ethical committee approval we retrospectively reviewed prospectively collected data of 100 patients (79 males/21 females) operated on in our institution from 1 January 2000 to 31 December 2008. All patients underwent Dor procedure combined with coronary artery bypass grafting and were operated by the same group of surgeons. Mean age of the patients was 64.8±9.5 (42-80) years. Short-term outcomes were examined and risk factors for in hospital mortality were identified.

Results: Dor procedure was performed in 100 patients (1.9% of all on-pump CABG patients operated on in our institution during this time frame). Crude mortality rate was 6%. Preoperative risk profile, intraoperative data were compared between survivors and non-survivors. Higher EuroSCORE (9.3±1.5 vs. 6.1±2.6 P=0.0180), longer operation (347±91 min vs. 242±62 min. P=0.0030) and cardiopulmonary bypass (192±55 min vs. 132±38 min, P=0.0161) time and percentage of patients operated on emergency basis (33.3% vs. 2.5% P=0.0077) was found in non-survivors.

Conclusions: Higher EuroSCORE, longer operation and cardiopulmonary bypass time and emergency surgery are risk factors that increase risk of in-hospital mortality. The Dor procedure with myocardial revascularization can be performed with acceptable mortality in this high-risk group of patients.
CP-103 MODERN PERI-OPERATIVE MANAGEMENT PROVIDES EXCELLENT OUTCOMES FOR JEHOWAH’S WITNESS PATIENTS AFTER CARDIAC SURGERY

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Objective: Surgery in Jehovah witness patients remains an ethical challenge, especially in the cardiac surgery setting. We sought to address whether modern multi-disciplinary perioperative management strategies, contribute to surgical outcomes in these patients.

Methods: From 2000 onwards, fifteen Jehovah witness patients underwent cardiac surgery at our institution. Male gender was predominant (64%). Mean age was 63±17 years and preoperative EuroSCORE was 6 (±2). Mean preoperative haemoglobin (Hb) was 14.5±2 g/dl, in patients with Hb<12 g/dl (n=3), preoperative haematological stimulating treatments were implemented. Only senior surgeons performed coronary revascularization (n=7), Valve-in-Valve surgery (n=2). Off-pump procedure remained the method of choice for patients requiring a bypass procedure (n=5). A retrospective database analysis was performed, with Institutional review board approval.

Results: All patients survived the operation and no blood transfusion was administered. Cell saver mean transfused volume was 481±102 ml and synthetic plasma substitutes (Hydroxyethyl-Starch and Ringer’s Lactate, mean volume 866±381 ml) were used in all patients. Use of intraoperative synthetic hemostaticas was composed of Arista™ (29%), Tabotamp Nu-Knit™ (29%), fibrin glue (21%), Coseal™ (14%) and Vivostat™ (7%). Mean pre-discharge synthetic plasma substitutes was composed of Arista™ (29%), Tabotamp Nu-Knit™ (29%), fibrin glue (21%), Coaseal™ (14%) and Vivostat™ (7%). Mean pre-discharge Hb and haematokrit were 10.5±3 g/dl and 32±3%. Only two patients required an additional day in the intensive care unit, no complications occurred postoperatively and overall mean length of stay was 7±1 days.

Conclusions: Modern peri-operative management leads to excellent outcomes in Jehovah witnesses patients. Combined efforts in regard to preoperative haematological parameter optimization, effective intraoperative volume management, senior surgical staff and modern surgical techniques make this possible.

CP-104 CANNULATION OF THE INNOMINATE VEIN AS PART OF RIGHT ATRIAL ISOLATION IN ADULT CARDIAC SURGERY: IS IT SAFE AND REPRODUCIBLE?

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Objective: Innominate vein cannulation is generally used as venous access in congenital heart surgery or to assisted drainage for minimally invasive valve surgery. We report on our experience with innominate vein cannulation as part of bivacaval drainage in the setting of adult cardiac surgery.

Methods: After obtaining adequate exposure of the innominate vein, a purse is performed on its anterior aspect with a monofilament 5/0. A vertical incision is performed on its anterior aspect with a monofilament 5/0. An additional incision is performed toward the superior vena cava. The cardiopulmonary bypass is then insti-
tuted and the maximum flow provided by the innominate vein is noticed. Once the flow reaches up to 50%, the inferior caval venous cannula is placed achieving the total venous drainage.

Results: During 2008, 58 patients (mean age 45.9±15.2, female 57%) underwent various types of adult open cardiac surgery using current bivacaval can-
nulation. The mean body surface area was 1.68 m². The mean theoretical perfusion flow and mean flow provided by innominate vein were 3970 and 2620 ml/min (66.4% of theoretical flow) respectively. The mean central venous pressure (CVP) was 6±2 mmHg during cardiac arrest. There was no hospital death. One patient underwent reoperation for bleeding unrelated to innominate vein cannulation. None of the patients suffered neither neuro-
logic nor neurocognitive disturbances postoperatively.

Conclusions: Innominate vein cannulation is a safe and reproducible method for right atrial isolation in adult cardiac surgery. It provides an unfolded surgical field with enhanced superior vena cava and atrial exposure.

CP-105 ACUTE KIDNEY INJURY STAGING IN POST CARDIAC SURGICAL PATIENT - A STRONG PREDICTOR OF PROLONGED HOSPITAL STAY AND RENAL REPLACEMENT THERAPY

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Objective: To identify the incidence of acute kidney injury (AKI) following cardiac surgery and to investigate whether AKI staging could predict patient outcome or need for renal replacement therapy (RRT).

Methods: Data was retrospectively collected for 638 patients who underwent cardiothoracic surgery in 2008. The stage of AKI was calculated based on increments in creatinine from the baseline value. Results: The mean age and male-female ratio were 70.96 (±7.41) years and 2:4:1, respectively. Forty percent had diabetes, 20% had peripheral vascular disease and 75% had hypertension. The mean baseline creatinine eGFR and eGFR were 1.47 (±0.35) mg/dl and 48.68 (±12.82) ml/min/1.73 m². Patients with existing renal insufficiency were identified as CKD. The procedures included CABG (44.6%), CABG+valve surgery (24.8%) and valve alone (21.6%). The small incidence of AKI was 11.4% (75/638), AKI staging identified 41.3% (31/75) developed stage 1, 46.7% (35/75) developed stage 2 and 12% (9/75) developed stage 3. Multivariate analysis did not show any difference between age, hypertension, CKD stage, type of surgical procedure or LVEF across the stages of AKI. Chi-squared analysis showed an increased need for RRT across stages of AKI (P=0.046). Multivariate analysis demonstrated patients with stage 3 AKI had 18.17 days longer hospital stay compared to stage 1 AKI (P=0.043). Patients who needed RRT had a hospital stay 21 days longer than those who did not (P=0.001). There was no statistical significant mortality difference across the stages of AKI. Conclusions: AKI staging postoperatively identified patients with a statistically significant increased risk of requiring renal replacement therapy and requiring increased hospital stay.

CP-106 RETROSPECTIVE ANALYSIS OF STERNAL WOUND INFECTION RATES USING DERMABOND® IN CARDIAC SURGERY PATIENTS

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Objective: This study compares the rate of sternal wound infections when utilizing topical Dermabond® (Ethicon, Inc.) (2-ocetyl cyanoacrylate) wound adhesive vs. a dry sterile dressing (DSD) after subcuticular skin approxima-
tion of sternal wounds during cardiac surgical procedures.

Methods: Medical records of 500 patients who underwent a median sternotomy for cardiovascular disease at a single institution were retrospectively reviewed. These patients received a subcuticular suture closure with sterile gauze pads and paper tape as a wound dressing (control group, prior to 2002) or Dermabond® adhesive applied (Dermabond® group, after 2004) to their incisions after subcuticular wound closure. Patients who expired prior to initial discharge secondary to complications other than wound infections were excluded from this study. Wound complications were identified as any deviation in standard wound care. These complications were separated into superficial sternal infections which constituted infections not involving the bone, and deep wound infections which involved bony structures.

Results: Overall sternal wound infection rates for the control (3.2% (8/250)) and Dermabond® (1.4% (6/430)) groups were statistically similar. There was also no significant difference in type of wound infection for each group. Dermabond® patients were slightly younger in comparison to controls, but were a clinically higher risk group with a significantly greater average body mass index (average BMI 32.5 ± 29.5) and an increased incidence of diabe-
tes mellitus (46% vs. 36%).

Conclusions: The sternal wound infection rates were similar when compar-
ing Dermabond® dressings to DSD, despite the higher risk wounds in the Dermabond® population. The benefits of decreased wound disruption with dressing changes, visibility of the wound while healing, ease of application, and an accepted physical barrier to wound irritants may make Dermabond® an attractive alternative to DSD.

CP-107 BILATERAL FOOT DROP AS A PERIPHERAL NEUROLOGIC COMPLICATION AFTER CORONARY ARTERY BYPASS GRAFTING

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Objective: Bilateral foot drop as an early complication of peripheral nervous system after coronary artery bypass grafting has been rarely reported. Foot drop may result from pressure on the peroneal nerve as it wraps around the fibula. It is usually less severe than other postoperative cardiac complications but it leads to an additional clinical disability.
Methods: A 71-year-old man had undergone standard coronary artery bypass grafting using the left internal thoracic artery and three separate vein grafts. No patient had concomitant pathology. He was diabetic and hypertensive in the past.

Results: On postoperative first day examination, there was a loss of motor function during ankle dorsiflexion and a loss of sensory function on the lateral aspect of his leg in both lower extremities. The clinical, electromyographic and nerve conduction studies confirmed bilateral common peroneal nerve palsy. A physical therapy was started immediately and then the patient underwent to the rehabilitation program. The patient remains well nine months after the operation. His recovery from this complication was satisfactory clinically.

Conclusions: Peripheral nervous system complications are likely to relate either to the intraoperative posturing technique for access to the saphenous vein and/or the upright posture used to nurse patients in the immediate postoperative period. These complications are usually transient, and lasting disability is infrequent occurrence. But they may result in serious problems for the surgeon and the patient in view of forensic. Cardiovascular surgeon should inform the patient about the possibility of nervous lesions caused by the positioning.

CP-108
A MODIFIED 'REVERSED-J-SHAPED' STERNAL SKIN INCISION IN A PATIENT WHO UNDERWENT CORONARY ARTERY Bypass Operation CONCOMITANT WITH TRACHEOSTOMY
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Objective: Tracheostomy concomitant with median sternotomy is known to increase the risk of sternal and mediastinal infections. We report a patient who underwent tracheostomy concomitant with coronary artery bypass grafting (CABG) operation using modified ‘reversed J-shaped’ median sternal skin incision and full sternotomy to decrease the risk of sternal infection.

Methods: A 59-year-old male patient with unstable angina and the diagnosis of coronary artery disease was hospitalized for CABG. Intraoperative intubation was predicted to be difficult during routine preoperative examination by anesthesia. During anesthesia induction for CABG, intraoperative intubation could not be done by neither conventional method nor using flexible bronchoscopy. It was decided to perform tracheostomy concomitant with CABG three days later. After tracheostomy, a median linear sternal skin incision was made from the inferior of manubrium sterni through xifoid process. The proximal part of the incision was extended from the inferior part of manubrium to 4 cm lateral to the sternal edge in a ‘reversed J-shaped’ fashion and a full sternotomy was done. CABG to four vessels was done without any complications. Tracheostomy carulla was removed on the third postoperative day and the resultant defect was repaired. There was no any complication and the patient was discharged on the postoperative seventh day.

Results: Sternal infections such as deep surgical wound and mediastinal infections developing due to tracheostomy and decreases the incidence of tracheostomy related injuries. The skin incision we performed provides benefits such as keeping dissection of subcutaneous tissues adjacent to tracheostomy and decreases the incidence of tracheostomy related injuries. The skin incision we performed provides benefits such as keeping dissection of subcutaneous tissues and tracheostomy related injuries in minimum, and ensuring adequate surgical exposure.

Conclusions: In open heart operations via median sternotomy, the distance from the tracheostomy incision to the sternal skin incision should be enough to minimize the risk of mediastinal infection. We think that modified ‘reversed-J-shaped’ sternal skin incision may be used in open heart surgery that requires tracheostomy.

CP-109
A CASE OF RIGHT ATRIAL HYDATID CYST INTERRELATED WITH TRICUSPID SEPTAL LEAFLET AND SEPTUM: CASE REPORT
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Objective: Hydatid Cyst, a parasitic infection caused by Echinococcus granulosus still remains an important health problem in Turkey. Cardiac hydatid cyst is uncommon and accounting for 0.4-2% of all hydatid infections. Right atrium and right ventricle are a very rare sites for cardiac involvement. We present a case of cyst hydatid located in adjacent to tricuspid annulus.

Methods: A 21-year-old male with the symptoms of palpitation and atypical chest pain admitted to our clinic. Transthoracic echocardiography (TTE) revealed a heterogeneous cystic mass with calcified margins of 3×1 cm in diameter located in the right atrium and right ventricle. Cystic mass was adjacent to septal leaflet of tricuspid cusp and appeared protruding from the posterior wall of the right atrial. The patient was operated by using cardiopulmonary bypass through a median sternotomy and right atrial incision approach. A cystic mass adjacent to septal leaflet of tricuspid annulus and protruding into posterior wall of the right atrium was noted. The cyst was opened and excised. Germinative membrane was removed an black. Cavity layered by fibrous membrane was not closed. There was no postoperative complication.

Results: When possible, total enucleating of the cyst is the best technique. However, fibrous capsule may not be removed easily and the size of the cyst may preclude cyst removal due to disruption of ventricular or valve function, depending on the location. Particularly, cysts localized to septum may cause conduction disturbances and complete atrioventricular block. In this circumstance, decompression by drainage may be the most appropriate and the most judicious.

Conclusions: We think that the large cyst cavity interrelated with forbidding cardiac structure may leave open in cardiac hydatid cysts patients that required open heart surgery.

CP-110
IDIOPATHIC CHRONIC HEMORRHAGIC PERICARDITIS
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Objective: Pericardial diseases imitate more common cardiac diseases and therefore can be difficult to diagnose. New diagnostic techniques have improved the sampling and analysis of pericardial fluid and allow a comprehensive diagnostic approach.

Methods: Our case was a 62-year-old male. He had been suffering from dyspnea for three months. He had been evaluated at another health facility and referred to our clinic for surgery with a diagnosis of pericardial cyst. His transthoracic echocardiographic examination revealed a cystic mass of 9.7×4.5 cm that compressed the right ventricle from outside, consisted of some solid components and originated from the free margin of the right ventricle. Thorax CT showed an encysted collection of fluid with diffusely thickened wall, located to the right antero-inferior of the heart, 4.9 cm in diameter, and fusiform in shape. This loculated pericardial fluid was compressing the right atrium and the right ventricle. Moreover, diffuse thickening of pericardium was prominent. In differential diagnosis, pericardial cyst or pericarditis was also considered. He underwent operation.

Results: Pericardial cyst invaded the anterior wall of the right ventricle and pericardium was extensively adhering and thickened. Following the incision and drainage of the cyst, due to the invasion of the right ventricle by the posterior cystal wall, cannulation of right femoral vein, superior vena cava and ascending aorta was performed and cardiopulmonary bypass initiated. Total excision of the cyst was performed. Right ventricular wall has thickened and was like parchment paper in quality. A polytetrafluoroethylene patch of 4×5 cm was inserted into the anterior wall of the right ventricle. During the 1st postoperative month, the functional capacity of our patient improved dramatically and he was in NYHA functional class I. Control echocardiogram postoperatively identified that cystic image anterior to the right ventricle disappeared and the patch inserted apically could be visualized.

Conclusions: A pragmatic clinical and scientific approach for improved diagnosis of pericardial diseases is outlined.
Objective: Although decrease in incidence of pulmonary tuberculosis recently reduced the incidence of chronic constrictive pericarditis developing due to tuberculosis, tuberculosis still plays a role of as much as 10% in the etiology of pericarditis. It also reflects many complications developing secondary to constriction.

Methods: Our case was a 38-year-old male. He was suffering from dyspnea, fatigue, chest pain, ascites and palpitation increasing in intensity for the last two months. He was still receiving a combined antibiotic regimen against pulmonary tuberculosis which was diagnosed eight months ago.

Results: Two dimensional colored Doppler echocardiography revealed diffuse pericardial calcification and fresh thrombus within dilated hepatic veins. Abdominal ultrasound showed hepatomegaly beside massive portal vein thrombosis. He was consulted by the Department of Gastroenterology and an anticoagulation therapy with low molecular weight heparin was initiated at an optimal dosage aimed at the portal vein thrombosis. Our surgical approach was a successful pericardiectomy. He was discharged after complete recovery.

Conclusions: Constrictive pericarditis typically demonstrates itself with long-lasting and insidious symptoms and signs secondary to systemic venous congestion. Recently, it is observed obviously that number of cases proceeding severely due to secondary complications reduced with the early diagnosis and appropriately planned surgical therapy.

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**CP-112**

**UNUSUAL METASTASIS OF THE PAPILLARY THYROID ADENOCARCINOMA**

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Floating thrombus in the ascending aorta is rare and its association with papillary thyroid adenocarcinoma has not been documented. We report a case of a 64-year-old man who was referred to our emergency unit because of suspected type A aortic dissection. Computerized tomography and transesophageal echocardiography revealed a floating thrombus in the aneurysmatically ascending aorta. The thrombus was removed with the dilated aorta. Although the aortic wall was macroscopically normal, histological examination revealed metastatic papillary adenocarcinoma.

**CP-113**

**IMPACT OF NEGATIVE PRESSURE PRIMARY WOUND CLOSURE AFTER CORONARY ARTERY BYPASS SURGERY**


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Objective: Surgical site infection (SSI) is an infrequent but devastating complication after CABG. Deep sternal wound infections and mediastinitis are associated with increased mortality, prolonged hospital stay, and increased cost. We started infection control interventions which consist of the irrigation of sternal bone marrow and fat layer, sternal stabilization with a sternal fixation pin, and the negative pressure wound closure with thermocauterisation basis tumor is safety method for tumor basis solving. We analyzed whether solving myxomas basis has influenced on recurrence. We used two surgical procedures for solving basis of myxoma: 1. Excision full tissue basis if the basis was bigger than 1 cm and 2. Thermaocauterization basis if it was smaller than 1 cm.

Methods: In Institute for Cardiovascular Diseases, Clinical Centre of Serbia from 1980 to 2009 years 73 patients with cardiac myxoma were operated, (68.5% women, 31.5% men) with cardiac myxoma were operated. Mean age 47.5 years (range 4-65 years). The diagnosis was made according to clinical presentation, electrocardiographic, echocardiographic and cardiac catheterization. Excision basis was made in 52.05% and thermoacauterization in 47.9% patients. All the patient were followed up on an outpatient basis at regular intervals. They underwent clinical examination, chest x-ray, electrocardiography and echocardiography. Follow-up period was 9 months to 29 years (mean 9.7 years).

Results: In 49 (67.1%) patients myxoma was localized in left, while in 14 (19.2%) it was found in right atrium an 1 (1.3%) was found in left ventricular average size was 5.8-3.8 cm. Racemose forms predominantly in the left (92.2%) and globose in the right (85.7%). Fatigue was the most common general (84.8%) and dyspnea the common cardiacological symptoms (74.9%). Preoperative embolic events were presents in 8 patients (4 pulmonary, 4 systemic). Surgical approaches were in 49 (67.1%), via left atriotomy 10 (19.2%), through right atriotomy and 10 (13.7%) biatrial approach. Surgical treatment applied, regardless of different approaches and basis solving, resulted in excellent functional improvements and had no influence on new postoperative arrhythmias. Early (98.6%) and late survival rates (91.6%) were excellent. We reoperated one patient after five years because she had mitral valve insufficiency. There was no recurrence during follow-up period.

Conclusions: Our results facilitate the conclusion of higher biocompatibility of both MPCs generally with significant lower side effects of CPB.
Objective: The drainage after cardiac surgery is classically assumed by placing large bore tubes in the mediastinum and pleura. The latter are associated with a myriad of adverse effects such as requiring major analgesic, reducing early patient mobilization, possible local interferences with coronary grafts, necessitating an external vacuum disposal, risk of iatrogenic pneumothorax at the time of removal, and surinfection through their skin scars. We report on our surgical experience using an alternative method of drainage consisting on placing small French 12 and 14 drains into pleura mediastinal spaces after adult cardiac surgery.

Methods: During April 2007 to November 2008, 225 patients underwent various adult cardiac surgery procedures (CABG: 162; valve procedure: 42; ASD closure: 20; heart tumor: 1). The mean age was 54.0±13 with 39% of the patients being female. The mean logistic EuroSCORE was 5.5±5.5. Eight-nine patients (37.8%) were operated urgently: 24% and 43% of the patients were treated by clopidogrel or effective anticoagulation therapy, respectively; and 23% of the patients were opioid addicted. At the end of the procedure, the Hemovac drains were placed accurately as follows: 1) Two French 12 drains are placed over the diaphragmatic aspect of the pericardium. The oblique sinus is opened so that hindering the possibility of local tamponade on the right atrium. 2) Two French 12 drains are placed in the retrosternal space. 3) Each pleural cavity is drained by a French 14 drain placed over the diaphragm into the posterior costophrenic angle.

Results: Two hundred and twenty-five pericardial and 132 pleural cavities were drained. There were 5 (2.2%) hospital deaths unrelated to the drainage malfunction. The mean drainage volume and drainage time were 822.4±892 ml (range 50 to 2000) and 2.7±4.1 days, (from 1 to 14) respectively. Twelve patients (5.3%) of patients were operated on for postoperative bleeding with a mean drainage volume of 2159 ml. The rate of early tamponade was 1.3% (3 patients). At discharge 207 patients (92%) had none to mild residual pericardial effusion and 3 patients (1.3%) underwent reoperation for delayed tamponade associated with coagulopathy. Nine patients (6.8% of drained pleural cavities) required secondary thoracic drainage. Of 167 non-addict patients, 159 (95%) do not require any pain-killer, and drain removal was painless in all cases.

Conclusions: Using small flexible vacuum drains is safe and efficient that can replace classical large bore drains in adult cardiac surgery.

Objective: Surgical bleeding following coronary arteries bypass graft (CABG) increases morbidity and mortality. Aprotinin reduces surgical bleeding but its safety was recently questioned. We completed a randomized placebo controlled double blind study, in which 24 patients who underwent CABG received a single dose aprotinin or placebo.

Methods: Functional status of blood platelets was monitored in perioperative period using a method of platelets activation in the whole blood and immunostaining at the patient’s bedside. Expression of platelets’ selectin P and CD63 was carried out during CABG. The platelet’s life span was calculated using the method of platelets appearance in the peripheral blood in patients without antiplatelet therapy. Platelet’s immunostaining was carried out in all patients before induction of anesthesia and at 12, 24, 48, 72 and 96 hours postoperatively.

Results: In patients who received aprotinin the platelet’s life span was significantly increased (P=0.005). The mean cellular response of platelets to ADP was increased significantly (P<0.01). The concentration of ADP-induced platelet aggregation in patients who received aprotinin was significantly increased (P=0.001). No significant differences were found in the mean cellular response to ADP in platelets from patients who received placebo.

Conclusions: Interaction of aprotinin treatment with ADP pathway of platelets activation is an attractive hypothesis supported by our data. Aprotinin prevents inhibition of blood platelets reactivity to ADP postoperatively and reduced bleeding. The single dose regimen of aprotinin did not bring adverse events and did not inhibit platelets activation by protease activated receptor-1.
Methods: This knowledge takes us to the study with two groups of patients. First group includes 307 consecutive patients with gentamicin sponge use and second group (307 consecutive patients) without gentamicin sponge use. Gentamicin sponge has been applied between edges of sternum just before the sternotomy closure. The sternotomy has been closed in the same way in both groups, six or seven wires. Primary endpoint of this study has been following of sternal wound infection incidence, particularly mediastinitis.

Results: Incidence of sternal wound infection in gentamicin group has been 4% and mediastinitis 1.3% (4 patients), in control group 6% sternal wound infection and 2.3% mediastinitis (7 patients). This results are statistically significant.

Conclusions: The results promis decreasing of postoperative sternal wound infection with the use of this simple method, which influenced not only morbidity and mortality, but also the cost-benefit effect.

CP-120
MUPIROCIN TREATMENT IN NASAL CARRIERS OF STAPHYLOCOCCUS AUREUS PREVENTS SURGICAL SITE INFECTIONS
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Objective: Surgical wound Infections are a serious problem in open heart surgery. Significant mortality and morbidity caused by infection is associated with prolonged hospitalization. The most common pathogens are staphylococcus species. Nasal carriers of staphylococcus (S.) aureus have an increased risk of surgical site infection. Treatment with mupirocin ointment can reduce the rate of nasal carriage and may prevent postoperative S. aureus infections.

Methods: descriptive study - prospective observational. The aim of the research was to determine the incidence of nasal carriers of S. aureus in population, to evaluate the efficacy of eradication with mupirocin, and to observe the possible prevention of the surgical site infection and specifically sternal infections. Protocol: Staff and each patient undergoing cardiac surgery was screened by nasal culture for the presence of S. aureus, meticillin resistant or sensible (MRSA-MSSA). Cotton swabs in the anterior vestibules of each naris were obtained when the patients were scheduled for operation. If S. aureus was isolated, it was administered mupirocin ointment three times daily for up to five days. In urgent and emergent operation the patients were cultured for screening. Duration of the study: 2 years.

Results: We observed: an incidence of S. aureus carriers of 8% and MRSA <2%; eradication of the nasal carriers by mupirocin was effective, surgical site infection have been significantly decreased in the years in which mupirocin treatment of the carriers was introduced.

Conclusions: Mupirocin was effective in eradicating nasal S. aureus. The eradication of the pathogen in the nose is associated with a significant decrease in surgical site infections in our experience.

CP-121
APPLICATION OF THE MYOCARDIAL CONTRAST ECHOCARDIOGRAPHY FOR THE ASSESSMENT OF CARDIAC PERFORMANCE IN THE PERIOD AFTER CARDIAC SURGERY
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Objective: Myocardial contrast echocardiography (MCE) improves quality of standard echocardiography. Value of MCE during early postoperative period after CABG has not yet been established. We aimed to evaluate the accuracy and safety of MCE applied for the assessment of LV function in patients after CABG in the setting of cardiosurgery postoperative unit (CPU) in comparison with conventional transthoracic echocardiography (TTE).

Methods: Twenty-eight consecutive patients, after CABG treated at CPU with technically difficult TTE were prospectively studied. Echocardiographic contrast agent was administered as an iv bolus (2 ml per patient). Improvement of the quality of echocardiographic imaging was assessed by the number of LV segments possible to evaluation. EDV, ESV and EF was calculated and compared with standard TTE and after contrast administration.

Results: There was no side effect after contrast administration. Number of LV segments visualised after MCE increased from 11.5± to 17 segments in all patients (32.3% of improvement). LV volumes were larger and EF significantly higher after MCE in comparison to standard TTE (EDV 120 ml vs. 98 ml; ESV 75 ml vs. 65; P<0.05; EF 50±12 vs. 39±11; P<0.5). In patients after surgical LV restoration MCE enabled to assess LV geometry, patch localization and the presence of LV thrombus.

Conclusions: MCE is an uncomplicated and safe method of LV assessment and is useful at a bedside in the setting of the CPU. Our results demonstrate the effectiveness of MCE in an improvement of the diagnostic yield of TTE studies. Indications for MCE should be extended.