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*The* Heart Surgery Forum®

# CONTENTS

## 4TH INTERNATIONAL MEETING OF THE ONASSIS CARDIAC SURGERY CENTER

Current Advances in Cardiac Surgery & Cardiology

NOVEMBER 30–DECEMBER 2, 2006

ATHENS, GREECE

**4th International Meeting of the Onassis Cardiac Surgery Center**
**Current Advances in Cardiac Surgery & Cardiology**

November 30, 2006

Dear Colleagues and Friends,

It is a great pleasure to welcome you to Athens and the 4th International Meeting of the Onassis Cardiac Surgery Center, which is scheduled to take place in the Athenaeum InterContinental Hotel from November 30 to December 2, 2006. We are proud to present a superb Scientific Program focusing on the "Current Advances in Cardiac Surgery and Cardiology" supported by internationally renowned leaders of our specialties. We anticipate many stimulating presentations generating substantial discussions during the Scientific Sessions.

Two years after hosting the highly successful 28th Olympiad, Athens combines the inspiring past with a renovated infrastructure that supports modern needs, including cultural activities, shopping, and entertainment. Our Social Program offers quality activities and unique expedition destinations. In this pre-Holiday season, the Commercial Center of Athens is worth visiting.

The Organizing Committee deeply thanks our main Sponsor, the Alexander S. Onassis Public Benefit Foundation, for providing continuous support for a high-quality International Congress and for sponsoring the Scientific Awards for the Best Presentations during our Meeting. We also thank all commercial exhibitors and sponsors who made this Meeting possible. And last but not least, we thank you, all the participants who with your attendance and participation make this Meeting successful in disseminating scientific knowledge and promoting high standards of medical care for the benefit of our patients.

We wish you a nice stay in Athens and look forward to a successful Meeting!

George M. Palatianos, M.D.
Chairman, Scientific Association
Onassis Cardiac Surgery Center
Chairman, Organizing Committee

Dennis V. Cokkinos, M.D.
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**4th International Meeting of the Onassis Cardiac Surgery Center**
**Current Advances in Cardiac Surgery & Cardiology**

## Program at a Glance

| Hours | Thursday, November 30, 2006 | | |
|---|---|---|---|
| 08:00-19:00 | Registration (Mezzanine) | | |
| 09:00-10:30 | Plenary Scientific Session I | CORONARY ARTERY DISEASE | *Ballroom II, III* |
| 10:30-11:00 | Coffee break • Poster & Commercial Exhibits Viewing | | |
| 11:00-11:30 | Lecture A | *Evidence-Based Guidelines for Best Practice CPB* | *Ballroom II, III* |
| 11:30-13:00 | Plenary Scientific Session II | ARRHYTHMIAS | *Ballroom II, III* |
| 13:00-14:00 | Lunch Break • Poster & Commercial Exhibits Viewing | | |
| 14:00-15:00 | Parallel Session 1 | MISCELLANEOUS A (includes Award Competition) | *Ballroom II, III* |
| | Parallel Session 2 | VALVE REPAIR | *VIP Room* |
| | Parallel Session 3 | NURSING FORUM | *Lamda Room* |
| | Parallel Session 4 | CORONARY ARTERY DISEASE | *Omega Room* |
| 15:00-15:30 | Coffee Break • Poster & Commercial Exhibits Viewing | | |
| 15:30-16:30 | Parallel Session 5 | MISCELLANEOUS B (includes Award Competition) | *Ballroom II, III* |
| | Parallel Session 6 | VALVES | *VIP Room* |
| | Parallel Session 7 | PHYSICAL THERAPY FORUM: PT IN THE ICU | *Lamda Room* |
| | Parallel Session 8 | IMAGING | *Omega Room* |
| 16:30-17:30 | Special Scientific Session | ROBOTICS | *Ballroom II, III* |
| | Parallel Session 9 | INVASIVE CARDIOLOGY | *VIP Room* |
| 17:30-18:00 | Satellite Lecture | *Prevention of Embolic Complication in High Risk Patients* | *Ballroom II, III* |
| 18:00-18:30 | Lecture B | *The Intraaortic Balloon Pump: An Essential Assist* | *Ballroom II, III* |
| 18:30-19:00 | Lecture C | *Specialty Training and Certification in Europe* | *Ballroom II, III* |
| 19:00 | Opening Ceremony • Welcome Addresses • Opening Lectures • Welcome Reception | | |

| Hours | Friday, December 1, 2006 | | |
|---|---|---|---|
| 08:00-20:00 | Registration (Mezzanine) | | |
| 09:00-10:40 | Plenary Scientific Session III | CONGENITAL | *Ballroom II, III* |
| 10:40-11:00 | Coffee Break • Poster & Commercial Exhibits Viewing | | |
| 11:00-13:30 | Plenary Scientific Session IV | VALVES | *Ballroom II, III* |
| 13:30-14:30 | Lunch Break • Poster & Commercial Exhibits Viewing | | |
| 14:30-15:00 | Lecture E | *Who Killed the Tailor of Paris? The Da Vinci Code of the Aortic Root* | *Ballroom II, III* |
| 15:00-16:00 | Parallel Session 10 | AORTIC ROOT SURGERY | *Ballroom II, III* |
| | Parallel Session 11 | HEART FAILURE A | *VIP Room* |
| | Parallel Session 12 | MISCELLANEOUS C | *Lamda Room* |
| | Parallel Session 13 | CONGENITAL A | *Omega Room* |
| 16:00-16:30 | International Scientific Committee Meeting • Coffee Break • Poster & Commercial Exhibits Viewing | | |
| 16:30-17:30 | Parallel Session 14 | AORTIC ANEURYSMS | *Ballroom II, III* |
| | Parallel Session 15 | HEART FAILURE B | *VIP Room* |
| | Parallel Session 16 | CURRENT CARDIOLOGY AND CARDIAC SURGERY TOPICS | *Lamda Room* |
| | Parallel Session 17 | CONGENITAL B | *Omega Room* |
| 17:30-19:00 | Plenary Scientific Session V | AORTIC ANEURYSMS | *Ballroom II, III* |
| 19:00-20:00 | Plenary Scientific Session VI | VASCULAR DYSFUNCTION | *Ballroom II, III* |
| 21:00 | Gala Dinner | | |

| Hours | Saturday, December 2, 2006 | | |
|---|---|---|---|
| 08:00-14:00 | Registration (Mezzanine) | | |
| 09:00-10:30 | Plenary Scientific Session VII | HEART FAILURE | *Ballroom II, III* |
| 10:30-11:00 | Lecture F | *Pressor Systems in Hypertension and Heart Failure: Clinical Implications* | *Ballroom II, III* |
| 11:00-11:30 | Coffee Break • Poster & Commercial Exhibits Viewing | | |
| 11:30-12:00 | Lecture G | *Polypharmacy in Heart Failure* | *Ballroom II, III* |
| 12:00-13:30 | Special Scientific Session | NOVEL TRENDS AND TECHNIQUES | *Ballroom II, III* |
| 12:00-13:30 | Satellite Symposium | *Breaking the Cardiovascular Disease Continuum: New Evidence on Ace Inhibition Sponsored by Servier* | *VIP Room* |
| 13:30 | Closing Remarks | | |

THIS IS A PRELIMINARY PROGRAM AT A GLANCE.
PLEASE REFER TO THE FINAL PROGRAM FOR THE FINAL VERSION.

# 4th International Meeting of the Onassis Cardiac Surgery Center
# Current Advances in Cardiac Surgery & Cardiology

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# Oral Presentations

## ORAL PRESENTATION 1
## MISCELLANEOUS A

****Competitor for the Best Oral Presentation Award****

### OP1. STENTLESS FULL ROOT AORTIC VALVE REPLACEMENT IS AS SAFE AS STENTED XENOGRAFT IMPLANTATION

E. Natour, J. Easo, Ph. Hoelzl, G. Spiliopoulos, M. Suedkamp, O. Dapunt
*Department of Cardiothoracic Surgery, Klinikum Oldenburg, Germany*

**Purpose:** The technically demanding full root aortic valve replacement necessitating coronary ostia reimplantation leads to controversial hesitation by some surgeons despite superior haemodynamics and excellent long term clinical performances of the stentless xenografts. To determine the justification, we compared our clinical data of stentless full root replacements with stented aortic xenograft implantations.
**Methods:** 645 patients undergoing isolated tissue aortic valve replacement (AVR) and AVR + ascending aortic replacement between 1999 and 2005 were identified, excluding reoperations and aortic dissections. The patients were divided in two groups: stentless full root replacement (n=121) and stented xenograft implantation (n=524).
**Results:** The stentless group was significantly younger (69,3y±11,6 vs. 74,42y±7,1) with a slightly lower mean additive Euroscore (5,2±2,6 vs. 6,07±2,5). Endocarditis was significantly higher among the stentless patients (7,5% vs. 2,6%) [p<0,05]. The necessity for additional bail-out coronary bypass surgery was not significantly higher when compared to the stented bioprostheses (3.3% vs. 0.8%). The longer aortic clamp time (87,8±24,4min vs. 52,3±18,5min) and perfusion period (120,6±41,4 vs. 72,7±30,8min) in the stentless group had no adverse postoperative consequences with comparable rethoracotomy rates (5,8% vs. 2,3%), perioperative myocardial infarction (2,3% vs. 2,6%) and permanent/transient neurological complications (8,3% vs. 9,6%). Temporary renal dysfunction was similar (1,7% vs. 4,3%). 30-day mortality was tendentially lower in the stentless group (1,7% vs. 4,2%; ns).
**Conclusion:** Our study results demonstrate that full root stentless valve implantation preserving porcine root integrity is a valuable option in aortic valve surgery. The technically more challenging operation including coronary ostia reimplantation does not correlate with increased perioperative morbidity and mortality.

****Competitor for the Best Oral Presentation Award****

### OP2. INCIDENCE OF PARAPLEGIA IN 274 PATIENTS WITH THORACIC ENDOGRAFTING

O. Preventza, G. H. Wheatley III, J. Williams, K. Hughes, V. Ramaiah, J. Rodriquez-Lopez, E. B. Diethrich
*Department of Cardiovascular and Endovascular Surgery, Arizona Heart Institute, Phoenix, Arizona, USA*

**Purpose:** Thoracic endografting, like open surgical repair, can be complicated by paraplegia. We reviewed our comprehensive thoracic endografting experience regarding the incidence and treatment of spinal cord neurologic events.
**Methods:** As part of a single site investigational device exemption protocol, 274 patients with thoracic aortic diseases underwent attempted delivery of a Gore thoracic endoprosthesis between February 2000 and July 2006.Indications for intervention included: atherosclerotic aneurysms (107/274, 39.1%), acute and chronic dissections (87/274, 31.8%), miscellaneous (46/274, 16.8%) and penetrating aortic ulcers (PAU) (34/274, 12.4%).
**Results:** Seven patients (7/274, 2.5%) developed either paraparesis (4/274, 1.4%) or paraplegia (3/274, 1.1%). The Female:Male ratio was 5:2, with an average age of 71.2 years. Six patients (6/7, 85.7%) had an aneurysm and 1 patient (1/7, 14.3%) had a PAU. One patient (1/7, 14.3%) had a prior open abdominal aortic aneurysm repair, and 6 patients (6/7, 85.7%) required coverage of more than 20cm of aorta. Cerebrospinal fluid drainage was instituted in all 3 paraplegic patients. Overall, 4 patients (4/7, 57.1%) recovered fully, 1 patient (1/7, 14.3%) experienced a partial recovery, and 2 patients (2/7, 28.6%) remained with significant neurological deficits.
**Conclusion:** Incidence of paraplegia in thoracic endografting is low.The risk appears to be associated with aneurysmal disease, female gender and long segment coverage of the descending thoracic aorta.

****Competitor for the Best Oral Presentation Award****

### OP3. MYOCARDIAL BRIDGE: SURGICAL OUTCOME AND MIDTERM FOLLOW UP

R. Parvizi, S. Hassanzadeh, H. Djavadzadegan, A. Sajjadieh
*Research Center of Cardiovascular Surgery, Tabriz Medical University, Tabriz, Iran*

**Purpose:** Myocardial bridge consists of muscle fiber bundle lining on epicardial coronary artery for variable

distance. Although presence of myocardial bridge is associated with benign prognosis, there is not a general consensus about therapeutic strategies in symptomatic patients whit myocardial bridge. We report results of surgery and long-term follow up in 26 patients who had disabling symptoms due to myocardial bridge refractory to medical therapy.
**Methods:** From 1999-2004, among 18800 patients who underwent coronary angiographies performed in Shahid Madani Heart Hospital, 290 (1.5%) had the angiographic diagnosis of myocardial bridge. Of them, 26 (9%) patients underwent surgical myotomy for treatment of myocardial bridge causing significant systolic arterial compression. Preceding angiography, all operated patients were examined with radionucleotide study that was positive for ischemia in 20 cases (76.9%). Data were collected via a questionnaire, and analyzed by SPSS Statistical programs.
**Results:** There was no mortality or major intraoperative complication. Post operative scintigraphic and angiographic studies demonstrated restoration of coronary blood flow and myocardial perfusion without significant residual compression of the artery in 25 patients. The remaining patient had recurrent anginal chest pain after operation; coronary angiography showed residual narrowing in LAD despite myotomy. This patient underwent CABG with LIMA to distal LAD. During 7-81 months of follow-up (mean: 34.2± 21) only two patients had symptoms of angina without significant residual coronary artery compression; their symptoms were controlled by medical treatment.
**Conclusion:** In conclusion, surgical relief of myocardial ischemia due to myocardial bridge can be accomplished with very low operative risk and excellent mid term results.

****Competitor for the Best Oral Presentation Award****

## OP4. SAFETY AND EFFICACY OF AORTIC ANNULUS PATCH ENLARGEMENT IN AORTIC VALVE REPLACEMENT

D. Tzertzemelis[1], J. Crockett[1], N. Mourtzis[1], S. Economidou[1], N. Panagiotopoulos[2], K. Markakis[1], V. Filias[1], M. Panagiotou[1]
*[1]Cardiac Surgery Department, [2]Intensive Care Unit, Athens Medical Center, Athens, Greece*

**Purpose:** We are examining the hypothesis that a technically demanding anti- PPM procedure: patch enlargement of the aortic annulus, increases operative morbidity and mortality.
**Methods:** We reviewed prospectively gathered data of all patients undergoing AVR (n=134) in our department between Nov 2002- July 2006. 13,43% of these patients needed an anti- PPM procedure in order to avoid severe PPM .We compared two groups; group A (n= 18) AVR pts with an anti-ppm procedure and group B (n=116) AVR pts without anti-ppm procedure.
Preoperative demographics of the two groups with respect to age, logistic Euroscores, QMMI %, diabetes, additional procedures, LVEF and preoperative gradients were similar. An expected difference in the percentage of smaller valves (≤ 21mm) 63.6%. vs 41.5% and female gender 50% vs 40% was observed in groups A and B respectively.
**Results:** Mean operative times for the two groups (A/B) were; ACCT: 143.9/120 mins and ECCT: 176.5/149.6min Morbidities were; Prolonged ventilation (0%/7%), stroke (0%/1%), neurocognitive dysfunction (8%/2%), reoperation for bleeding (0%/4%), open CPR (0%/1%) and 30-day mortality (0%/2%) respectively. Hospital stay was similar in both groups (10.73 group.A vs.10.27 group.B). Left ventricular mass regression was better in group.A (19.97 vs 6.15 in group.B).
**Conclusion:** Aortic annulus enlargement does not increase perioperative morbidity or mortality and provides significant LV mass regression. This procedure should be considered in selected AVR patients to avoid PPM.

****Competitor for the Best Oral Presentation Award****

## OP5. OPERATING ROOM EXTUBATION IN ADULT CARDIAC SURGERY WITH STANDARD ANESTHAESIA TECHNIQUE

G. Santise, S. Siacca, M. Di Martino, F. Pirone, A. Arcadipane, M. Parrinello, M. Pilato
*Department of Cardiac Surgery, ISMETT, Palermo, Italy*

**Purpose:** Early extubation in cardiac surgery has been advocated for care advantage and is cost saving. We present our experience with extubation in the operating room in 58 unselected adult cardiac surgery patient whose anesthesia protocol did not include remifentanyl and the risky epidural anesthesia.
**Methods:** Anesthesia protocol relied on induction with midazolam 5 mg, fentanyl 8-10 mcg/kg, etomidate or thiopental and cisatracurium. Routine monitoring was used for every patient; Swan Ganz was used only in patients suffering of pulmonary hypertension. Anesthesia was maintained with sevoflurane (propofol during the CPB), titrated to a Bispectral index between 40 and 60. A continuous infusion of tramadol, $MgSO_4$ and ketorolac (if creatinine clearance was within normal range) was started after CPB discontinuation and administered for 12 hours. Preoperative exclusion criteria were: EF lower than 35%, pulmonary hypertension (PAPm > 35 mmHg), poor pulmonary function (COPD). Intraoperative criteria were: bleeding, severe haemodynamic instability post CPB, poor respiratory function post CPB (hypoxia or hypercapnia) and hypothermia.

**Results:** Out of 174 consecutive cardiac procedures, 92 cases fulfilled the inclusion criteria and 58 patients were extubated in the OR in less than 20 minutes after skin closure. Mean Euroscore was 4.87 +/- 2.67. The procedures were 21 isolated CABG, 7 off pump CABG, 21 isolated valve operations, 3 combined operations, 3 procedures with circulatory arrest and 1 cardiac transplantation. One patient was reintubated for surgical re-exploration, one for respiratory failure.
**Conclusion:** Immediate extubation with the described protocol is a safe and feasible option in adult cardiac surgery with standard anaesthesia techniques.

## OP6. IS INSULIN-DEPENDENT DIABETIC PATIENTS SUITABLE FOR PERCUTANEOUS CORONARY INTERVENTIONS IN THE ERA OF DRUG-ELUTING STENTS?

D. V. Cokkinos, P. Karyofillis, V. Voudris, S. Thomopoulou, N. Plessas, C. Spargias, A. Manginas, G. Pavlides, S. Patsilinakos
*1st Cardiology Department, Onassis Cardiac Surgery Center, Athens, Greece*

**Purpose:** Encouraging results with drug-eluting stents (DES) have been reported in patients (pts) with coronary artery disease (CAD). In this prospective single center registry, we present our experience with the use of DES in everyday clinical practice of interventional cardiology in diabetic (DM) pts undergoing percutaneous coronary intervention (PCI).
**Methods:** A total of 559 consecutive pts (male 81%, mean age 65±9 years) that had been treated with DES were classified in 2 groups according to DM status: 1)DM treated with oral agents (471 pts, DMO); 2) DM treated with insulin (88 pts, DMI). The in-hospital results and clinical outcome during follow-up (11.45 ± 4 months, range 4-27) were obtained. Major adverse coronary events (MACE) during follow-up were considered death, myocardial infarction (MI), bypass surgery (CABG), target (TVR) and non-target (non-TVR) vessel revascularization.
**Results:** Clinical presentation of CAD, risk factor profile, previous MI or CABG, ejection fraction < 40%, PCI in total occlusion, and stenosis location and characteristics were not different between DMO and DMI pts; however female gender (31% vs. 17%, p=0.004), and 3-vessel disease (46% vs. 31%, p=0.01) were higher in DMI pts. PCI was performed to dilate 1.19 vessels/pt and 1.45 lesions/pt in the DMO and 1.19 vessels/pt and 1.62 lesions/pt in the DMI group. Two or three stent/vessel were implanted more frequently in DMI pts (36% vs. 26%, p=0.02). The clinical success rate (angiographic success without death, Q- wave MI, emergency CABG) was 99.6% in DMO and 98.9% in DMI pts. Non-Q-wave MI (defined as increases of CK-MB > 3 times normal), and bleeding complications were higher in DMI pts (11% vs. 6%, p=0.06, and 2% vs. 0%, p=0.03 respectively). There was one death (in DMI pts), and no case of stent thrombosis, or CABG before hospital discharge. Clinical follow-up has been completed in 555/559 (99%) pts; there were no differences in the incidence of death (1.5% vs. 3.5%), MI (0.4% vs. 1.2%), non-TVR (7.7% vs. 7.0%), or CABG (0.4% vs. 2.3%) between DMO and DMI pts. However there was a tendency for higher TVR in DMI pts (8.1% vs. 3.8%, p=0.07), and the MACE-free survival was 87.42% in DMO and 84.88% in DMI pts (p:ns).
**Conclusion:** The implantation of DES in pts with DMI is associated with excellent in-hospital and long-term results, comparable to those observed in DMO, despite a higher risk factor profile for in hospital complications and less favorable long-term outcome.

# ORAL PRESENTATION 2
# VALVE REPAIR

## OP7. AORTIC VALVE-SPARING OPERATIONS: THE ST. ANNA HOSPITAL EXPERIENCE

M. Cassese, G. Martinelli, A. Antonazzo, M. Braccio, A. Agnino, C. Baraldi, P. Greco, L. Tassone
*Department of Cardiac Surgery, St. Anna Hospital, Catanzaro, Italy*

**Purpose:** Aortic valve-sparing operations have provided very good clinical outcomes in aortic root and ascending aorta pathology associated with aortic valve insufficiency. Various techniques have been proposed to reproduce the anatomy of the aortic root. We report our experience with the reimplantation technique.
**Methods:** Between July 2001 and July 2006, 83 patients underwent aortic valve-sparing operations according to the David I technique. There were 71 male and 12 female patients. Nine patients suffered from Marfan's Syndrome and 11 had a congenital bicuspid valve. Type-A aortic dissection was present in 5 (6%). The Gelweave Valsalva(tm) prosthesis was used in 75 patients (90,4%).
**Results:** There were 4 in-hospital deaths: two of them were operated on for an acute aortic dissection . Six patients developed 3-4+ AI and 4 of these required late AVR. There were two late deaths. The 5-year survival for patients was 95.4% ± 2.6%.
**Conclusion:** Aortic valve-sparing operations show excellent results in patients electively operated for aortic root ectasia, while the results in acute aortic dissection are disappointing. Aortic cusps repair may lead to late aortic insufficiency. The new aortic conduit in the reimplantation technique allows the anatomic reconstruction of the aortic root with a physiological leaflets motion.

Long-term follow up is necessary to determine if this graft will enhance the function and increase the durability of the aortic valve.

## OP8. TEN-YEAR EXPERIENCE WITH THE ON-X PROSTHETIC HEART VALVE

P. Tossios, D. Reber, T. Wahle, J. Reichert, M. Fritz, A. Laczkovics
*Department of Cardiothoracic Surgery, Bergmannsheil University Hospital, University of Bochum, Germany*

**Purpose:** The On-X mechanical heart has a unique design and material different to all other existing valves and was first implanted in 1996 worldwide. This is the first ten year experience with this valve in aortic and mitral position.
**Methods:** Between September 1996 and December 2005, 459 patients (59% males) underwent 264 aortic (AVR), 164 mitral (MVR), and 31 double (DVR) valve replacements with the On-X heart valve. Preoperatively, 78.3% of patients were in NYHA class III or IV. In addition, 5% of AVR, 23% of MVR and 20% of DVR patients had had previous cardiac surgery. Concomitant surgery was performed in 43.6% of the patients. Mean age at implant was 62.7 years. The mean follow-up was 4.0 years (maximum 9.3 years), and cumulative follow-up was 1,692 patient-years with an overall follow-up rate of 98.7%.
**Results:** Early (<30-days) mortality was 9.1% (AVR 3.7%, MVR 14.0, DVR 29.0%), with valve-related mortality of 0.7% for all patients. At autopsy (n=13) all implants were intact. There were 82 late deaths (3.9%/pt-yr AVR, 5.9%/pt-yr MVR and 11.6%/pt-yr DVR). Based on guidelines criteria 35 of these deaths (43%) were possibly valve-related. Early total valve-related morbidity was 0.4%/pt-yr, 1.3%/pt-yr, 1.5%/pt-yr and late total valve-related morbidity was 2.0%/pt-yr, 3.8%/pt-yr and 3.3%/pt-yr for AVR, MVR, and DVR, respectively. There has been no case of structural valve failure. At the end of follow-up, 95% of survivors were in NYHA class I or II.
Conclusions: After almost one decade of clinical experience with the On-X mechanical valve, this prosthesis continues to be safe and effective.

## OP9. CONTINOUS CORONARY PERFUSION FOR VALVE CASES WITH SEVERE LV DYSFUNCTION

D. Dronamraju, S. Swamides, G. Balasubramani
*Department of Cardio-Thoracic Surgery, Sri Venkateswara Institute of Medical Sciences, Tirupati, India*

**Purpose:** 67 Patients with severe LV Dysfunction with valvular heart disease (31 MVRs / 6 OMV s / 16 A VRs / 14 DVRs) were operated using continuous coronary perfusion with Oxygenated blood from the Oxygenator over period of Two years. There were 41 males and 26 females aged between 36 to 56 years. Their L VEF ranged between 35 to 40%. The follow up period was between 6 months to 1 year. There were no major complications attributable to the method used - Mortality, air embolism. Follow up was done using 2D echo (at 3, 6, 9th postoperative months).
**Methods:** Midline sternotomy was used. Aortic cannulation / Bicaval cannulation used in majority of the cases except for A VR were two staged venous cannula utilized (Sarns, Calmed - USA). Patients were put on CPB and full flow achieved. Membrane oxygenator (Dideco, Polystan) were used in all the cases. After cross clamp applied oxygenator blood was given into Aortic route. In the cases were MVR / OMV, retrograde coronary perfusion used in patient undergoing A VR / DVR. Oxygenated blood was given into Aortic root. The flows between 250 to 300 m1 *I* min. Starr Edwards valve (MVR), Carbomedics for AVR were used. After the procedure was completed the chambers was closed and de-airing achieved via aortic root vent. All the cases are ventilated for 3-6 hrs. The ICU stay was between 36 to 48 Hrs with minimal inotrophic support. All the patients are discharged on the 7th post operative day. Four patients were reopened for bleeding. All patients required inotropic support.
**Results:** There was no mortality attributable to the method used. One patient died at the end of 6 months due to non-compliance of medications. This method bypasses cooling, rewarming, reperfusion time and injury.
**Conclusion:** This method of surgery in patients with LV dysfunction is a viable and physiological method producing good result.

## OP10. LEAFLET SUSPENSION AND SUBVALVULAR ANNULOPLASTY FOR REPAIR OF PROLAPSING AORTIC VALVE

H. Izumoto[1], K. Kawazoe[2], T. Oka[2], Y. Fukuhiro[2], S. Sano[1]
*[1]Department for Cardiovascular Surgery, Okayama University Graduate School of Medicine, Okayama, Japan, [2]Iwate Medical University, Morioka, Japan*

**Purpose:** In repairing prolapsing aortic valve, we have utilized combined techniques of subvalvular annuloplasty and leaflet suspension since 1999. Outcomes from such operation have not been determined yet. We reviewed short-term results to identify perioperative echocardiographic changes and the repair durability.
**Methods:** Nineteen patients underwent such operation from July 1999 to June 2002. Medical records were reviewed for perioperative changes in echocardiographic grade of aortic regurgitation (AR), changes in LVESD and LVEDD. All were interviewed to identify latest NYHA class, reoperation-free and survival rates.

**Results:** There were fifteen males and four females (60.7 years). Concomitant procedures include mitral repair in five, replacement of ascending aorta in two, and Yacoub's remodeling in five patients. After a mean follow-up of 40.1 months, all were alive with a mean NYHA class of 1.0. Echocardiographic AR grade at follow-up was 1.6 (pre-op grade 3.2) ($p<0.0001$). LVEDD was shortened to 5.2 cm from pre-op 6.2cm ($p<0.0001$). LVESD was 3.3 cm from pre-op 4.1 cm ($p<0.0001$). Follow-up; annulus size was shortened to 2.2 cm (pre-op 2.5) ($p<0.0001$). At 48 months, the reoperation-free rate was 88.9±7.4%. Two patients received reoperation. One patient had failed leaflet suspension. The other patient had failed mitral valve repair and needed the reoperation. Repaired aortic valve was replaced, although it was functioning well. The follow-up rate was 100% complete.
**Conclusion:** Repair of prolapsing aortic valve with leaflet suspension and subvalvular annuloplasty is a good technique and short-term results are satisfying.

## OP11. MITRAL VALVE REPAIR FOR DEGENERATIVE MITRAL VALVE INSUFFICIENCY INVOLVING THE ANTERIOR LEAFLET

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**Purpose:** In this retrospective study, the feasibility and the reliability of mitral valve reconstruction in patients with degenerative mitral insufficiency secondary to involvement of the anterior, or of both mitral leaflets, has been evaluated.
**Methods:** From January 1, 1996 to December 31, 2005 three-hundred and twenty-six consecutive patients with mitral insufficiency secondary to degenerative disease with prolapse of both leaflets (237 cases), or of the anterior leaflet alone (89 cases), underwent surgical correction. In 313 patients (96%) repair was accomplished by reconstruction of the chordae tendineae with polytetrafluorene (PTFE) sutures and implantation of a flexible annuloplasty ring. When the posterior leaflet was involved, a quadrangular resection and a sliding plasty were also performed. In 16 patients (4.9%) the repair was accomplished utilizing an "edge to edge" stitch. In 4 patients (1.2%) a prosthetic valve replacement was performed. All patients who underwent repair had either no regurgitation or trivial to mild incompetence at the end of the procedure.
**Results:** Hospital mortality was 0.9%. Follow-up ranged between 3 months and 8 years (average of 5.2 years) and was performed in 97% of the cases. No cardiac related late mortality was recorded; six patients (1.8%) presented a late failure of the repair which required a second procedure. In four patients (1.2%) repeat echocardiograms showed a stable moderate recurrent mitral insufficiency that, at present, does not require a correction. In the remaining patients echocardiogram demonstrates a trivial to mild mitral incompetence.
**Conclusion:** In the great majority of patients with mitral insufficiency with involvement of the anterior or of both mitral leaflets, a physiological single-orifice repair is feasible with low mortality and low medium-term recurrence rate. Repair utililizing an "edge to edge" stitch, may find an occasional indication in a minority of patients. Prosthetic valve replacement is only seldom necessary.

## OP12. TRICUSPID ANNULOPLASTY WITH RESORBABLE RING. EARLY RESULTS

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**Purpose:** The tricuspid valve remains a challenge to the surgeon despite statements to the contrary. Functionnal tricuspid regurgitation (TR), left uncorrected carries serious long-term consequences. Since 2004 we implanted the Kalangos biodegradable ring (Bioring AG, Switzerland) for tricuspid regurgitation. The aim of this study was to assess the short and medium term results achieved with this material. The particular ring has the advantage of being completely implantable (inserted) under the endocardium without the use of any sutures and it is absorbable in 6 months.
**Methods:** Thirty patients (14 men), aged 1 to 70 years (mean, 29 years) underwent a tricuspid annuloplasty with the Kalangos biodegradable ring for moderate to severe TR. The cause of the TR was Ebstein C anomaly (n=7), right atrium enlargement (n=6), rhumatismal origin (n=10), functional TR (n=5), and previous tetralogy of Fallot repair (n=2). The ring size used was 24 to 32. For sixteen procedures were the first operation and for the remaining a redo operation. All the tricuspid ring implantation procedures were carried out on a beating heart.
**Results:** There were no per-operative deaths. Two patients died during the early post-operative period from cardiac failure. Echocardiography at six months (patients=28) showed mild TR in 20 patients, mild to moderate in 7 patients and 1 patient required a re-repair procedure. No patient has symptomatic TR, significant tricuspid stenosis (mean gradient 2.5 mmHg), or tricuspid annuloplasty-related pacemaker implantation.
Conclusions: The tricuspid annuloplasty with the Kalangos biodegradable ring provides safe, fast and excellent relief of TR. Although echocardiographic TR tends to increase with time. Further studies and longer follow-up are mandatory in order to evaluate if the TR increases more after the ring being completely absorbed.

# ORAL PRESENTATION 3
# CORONARY ARTERY DISEASE

## OP13. THE Π-CIRQUIT PROCEDURE: A 5-YEAR EXPERIENCE

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**Purpose:** To assess early and midterm results in patients undergoing OPCAB, using the "Π" circuit technique.
**Methods:** Between 2/2001 and 11/2005, 1359 pts (85.3 % male, 14.7 female, mean ± SD age 64.85 ± 9.87y.) underwent isolated CAB with the use of Π-circuit, which is based on the following principles: i) Beating heart, ii) OPCAB, iii) Aorta non-touch, iv) Composite grafts. Comorbidities and coronary risk factors were recorded preoperatively.
**Results:** Preoperatively IABP was inserted to 27 unstable pts (2.0%). 212pts (15,6%) were operated on an emergently. In 821pts (60.4%) we bypassed more than two coronaries (3-6 distal anastomoses). Mean number of distal anastomoses was 2.75(0.92/pt. In 1192 pts (87.7%), bilateral mammaries were used. Composite grafts on LIMA were performed in 824 cases (60.6%), with a mean of 1.78(0.76 grafts on LIMA. Early postoperative complications were analyzed: acute renal failure 2.2%, pulmonary complications 6.0%, prolonged ventilation 2,9%, SWI 1.0%, artial fibrillation 20.1%. Postoperative use of IABP: 21 cases (1.5%). Overall hospital mortality 21pts (1.5%). The follow up lasts 7-64 months. 32pts underwent coronary angiography due to reccurence of the angina (2.3%). 15pts (1.1%) required additional PTCA in a mean time of 24(4 months after the procedure. 2pts reoperated at 18 and 21 months respectively, after the OPCAB, due to graft failure.
**Conclusion:** The low rate of postoperative complications, the ability to perform the method in all subgroups of the population, even in the high risk and the excellent results, indicate that the Π-circuit procedure can be the method of choice for myocardial revascularization

## OP14. CYTOKINE RELEASE IN PATIENTS UNDERGOING CARDIAC SURGERY WITH OR WITHOUT EXTRACORPOREAL CIRCULATION

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**Purpose:** The inflammatory response associated with cardiac surgery is thought to be mainly influenced by the use of extracorporeal circulation (CPB). A number of studies, with minor differences in their methodology, report different patterns of changes in pro-inflammatory cytokine release. The purpose of the present study was to compare circulating levels of TNF-α, IL-6, IL-8 and IL-10 in patients undergoing coronary artery bypass grafting with or without CPB at different time intervals quantitated by a novel methodology.
**Methods:** Twenty consecutive patients undergoing coronary artery bypass surgery with or without CPB were studied. There were no differences in the number of grafts and patient characteristics between the two groups. All patients received the same protocol of anaesthesia. Serum levels of TNF-α, IL-6, IL-8 and IL-10 were measured at induction of anaesthesia, at the end of the operation, at 6h and at 24h after the end of the operation. Cytokines in serum samples were assayed by the Upstate cytokine multiplex method using Luminex technology.
**Results:** As shown in Tables I and II there were no statistically significant differences between the two groups apart from the values obtained at the end of the operation. The TNF-α values remained very low in both groups. Additionally, there is a statistically significant increase of IL-6 from the control value, at the end of the operation, at 6h and at 24h in both groups.
**Conclusion:** These findings suggest that differences in pro-inflammatory cytokine release among patients undergoing coronary artery bypass surgery are produced by CPB but a lasting activation seems to be produced mainly by the surgical trauma.

**Table I. Mean and SEM values of IL-6 and IL-8 of the two groups in pg/ml.**

| | IL-6 | | | IL-8 | | |
|---|---|---|---|---|---|---|
| | With CPB | Without | | With CPB | Without | |
| Control | 6.1 (4.8) | 10.2 (4.5) | ns | 4.2 (1.35) | 5.23 (1.9) | ns |
| End of op | 193.3 (35.4) | 52 (9.7) | ns | 19.2 (4.6) | 8.1 (1.2) | p <0.05 |
| 6h post op | 165 (11.8) | 178.4 (23) | ns | 12.3 (1.9) | 18.37 (5.9) | ns |
| 24h post op | 104 (20.4) | 142.3 (25) | ns | 7.51 (4.28) | 14.8 (4) | ns |

**Table II. Mean and SEM values of IL-10 of the two groups in pg/ml.**

| | IL-10 | | |
|---|---|---|---|
| | With CPB | Without CPB | |
| Control | 1.2 | 1.2 | Ns |
| End of op | 28.4 (7.8) | 3.38 (1.7) | P<0.001 |
| 6h post op | 5.7 (2.1) | 4.16 (1.4) | Ns |
| 24h post op | 2.7 (0.4) | 12.8 (6.3) | Ns |

## OP15. CENTRAL NEURAXIAL ANAESTHESIA IN CARDIAC SURGERY: TWO DIFFERENT TECHNIQUES

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**Purpose:** There are many studies regarding the use of high thoracic epidural anaesthesia (HTEA) and of

intrathecal morphine (ITM) in cardiac surgery. The potential development of complications limits the use of HTEA. On the other hand, ITM presents some analogue benefits, with minor risks. We have compared these two techniques in cardiac surgery.
**Methods:** 150 patients have been randomly assigned; group ITM (n=75): intrathecal morphine 14 mcg·kg$^{-1}$ + 50 mcg of fentanyl; group HTEA (n=75): bupivacaine and alfentanil (0.15 and respectively 6 mcg/cm body length) in bolus followed by continuous infusion for 48 hours. General anaesthesia was accomplished with propofol, fentanyl and pancuronium in each group.
Measurements: Hypotension events (30% decrease in mean arterial pressure compared with basal levels or a mean blood pressure value ( 60 mmHg for ( 5 minutes) related to anaesthesia were recorded. Duration of postoperative mechanical ventilation (TMV), levels of $PaCO_2$ and $PaO_2/FiO_2$ , pain control (evaluated using visual analogue score ), cooperation to physiotherapy (using Prince Henry pain scale score) were recorded 4, 12 and 24 hours after surgery. Incidence of complications has been monitored.
Results and discussions: Demographic and intraoperative data were similar. Neither neurological events nor respiratory depression have been encountered. All evaluated parameters had similar values except those from the table. In order to obtain a good pain control in all 150 patients, in the ITM group mechanical ventilation was prolonged and the $paCO_2$ levels after extubation were higher. Hypotension events were present in both groups (20%), but only in the first 30 minutes after anaesthetic block and were easily controlled with vasoconstrictors. Nevertheless the HTEA group presents a subsequent hemodynamic stability at various surgical manoeuvres that could not be obtained among the ITM group, even with higher doses of fentanyl and propofol. In conclusion, HTEA provides an optimal intraoperative anaesthesia and postoperative analgesia; ITM provides an efficient postoperative analgesia (with longer TMV) without implying the potential risks of neuroaxial haematoma.

| | ITM | HTEA | p-value |
|---|---|---|---|
| TMV (hrs) | 5.11 ± 2.50 | 3.42 ± 1.86 | 0.001 |
| $pCO_2$ (mm Hg) | 47.4 ± 6.5 | 43.6 ± 7.2 | 0.001 |
| Fentanest (mcg/kg BW) | 8.24 ± 4.30 | 1.50 ± 0.82 | 0.001 |

## OP16. LEFT VENTRICLE ANEURISM PLASTY USING DUPLICATURE METHOD

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**Purpose:** The purpose of this study is to present our experience in surgical treatment of the patients with left ventricle aneurism using duplucature method.
**Methods:** From 2005 till July 2006 92 patients undergone coronary artery bypass grafting with resection and plasty of left ventricular aneurism. In 28 (30,4%) patients aneurism was resected with the following duplicature formation when free lateral left ventricular wall sutured to interventricular septum and overlapping with another margin. In 64 (69,6%) patients Dor or linear plasty was performed. All patients had Q-wave myocardial infarction with formation of left ventricle aneurism. Mean age of the patients in first group was 55,3 ± 6,7 years. 95,7% were male. Mean ejection fraction was 35% ± 8,5%. Mean left ventricle diastolic size was 65 ± 6,6 mm, systolic – 46 ± 4,3 mm. Mean left ventricle diastolic volume was 230 ± 36 ml, systolic – 118 ± 18 ml. Mean additive EuroSCORE was 8, logistic – 11,6%. Mean pulmonary artery pressure was 46 mm Hg.
**Results:** Mean ejection fraction increased from 35% ± 8,5% to 44% ± 5,4% ($p<0,05$). Mean left ventricle diastolic size decreased from 65 ± 6,6 mm to 57 ± 4,4 mm ($p<0,05$), systolic – from 46 ± 4,3 mm to 41 ± 3,8 mm ($p<0,05$). Mean left ventricle diastolic volume decreased from 230 ± 36 ml to 165 ± 28 ml, systolic – from 118 ± 18 ml to 76 ± 12 ml ($p<0,05$). Pulmonary pressure decresed to 34 mm Hg ($p<0,05$) in postoperative period. Inotropic support took place in 9 (32,1%) of the patients. Hospital stay was 16 ± 2 days. There were no hospital mortality in this group of patients while in group with Dor and linear plasty 4 (6,3%) patients died.
**Conclusion:** Coronary artery bypass grafting in patients with left ventricle aneurism plasty using dublicature method could be successfully performed with good results.

## OP17. SEQUENTIAL HYBRID CAROTID AND CORONARY ARTERY REVASCULARIZATION. SHARP TRIAL: IMMEDIATE AND MIDTERM RESULTS

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**Purpose:** The aim of the study is to assess the technical feasibility and safety of a sequential hybrid carotid artery stenting (CAS) and coronary artery bypass grafting (CABG).
**Methods:** Between February 2004 and May 2006, 60 (7.5%) out of 800 patients referred to our Department for CABG had significant concomitant coronary and carotid artery disease. Of these 37 patients (30 males), aged 54-88 (mean age 70,3±8.5) years, with high risk for combined or staged carotid endarterectomy-CABG or CAS -CABG operation were treated. All patients underwent CAS with distal filter protection. Aspirin 100 mg a day had to be started two days before the procedure. At the end of CAS, all patients were transferred to the operating room, where

the planned CABG interventions were performed with normothermic cardiopulmonary bypass. Clopidogrel (300 mg as a loading dose, followed by 75 mg a day for a month) was started in the Intensive care unit, 6 hours after the end of CABG, provided that bleeding from the thoracic drainages had stopped. All patients were followed-up every 6 months clinically and by ultrasonography (mean follow-up 10,3±5,3 months, range 1-22).
**Results:** All patients underwent successfully CAS. One patient had stroke and one patient a transient ischemic attack immediately after the CAS (5,4%). There were 2 (5,4%) in hospital deaths by cardiac failure. Event-free survival at the follow-up was 94,6%.
**Conclusion:** In patients with combined carotid and coronary disease at high surgical risk the proposed hybrid approach seems to be an alternative therapeutic strategy.

## OP18. COMBINED CARDIAC OPERATION AND CAROTID ENDARTERECTOMY: THE ST. ANNA HOSPITAL EXPERIENCE

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**Purpose:** Surgical treatment of concomitant cardiac operation and carotid disease is controversial because of the high risk of morbidity and mortality. Studies comparing staged versus combined coronary artery bypass grafting and carotid endarterectomy (CABG/CEA) report varying and often conflicting operative Results: We retrospectively reviewed short-term outcomes after carotid endoarterectomy combined with cardiac operation (CABG ± valve procedure).
**Methods:** From March 2002 to June 2006, 52 patients (30% female), mean age 72 years (range 56-88) were operated on for CEA and CABG (combined with valvular procedure in 32%). Preoperative mean euroscore was 7.3 (range 2-14), average EF 46±10.7%. Indication for CEA was considered the presence of preocclusive lesions of both internal carotid arteries (ICA) in asymptomatic patients or preocclusive disease of one ICA in patients who suffered of stroke or TIA. Three patients were operated under urgent condition for left main coronary artery disease.
**Results:** Perioperatively, there were 2 strokes for an overall rate of 3.8%. Of these, one patient died for an overall mortality rate of 1.9%. In both cases, a double valve procedure (aortic and mitral replacement) was performed in association with CABG and CEA. All but one survivor were discharged from the hospital to home.
**Conclusion:** Our results suggest that combined procedure (CABG/CEA) is safe and may in fact reduce the risk of adverse outcomes. Our morbidity and mortality rate were the same of CEA alone as described in the literature.

## OP19. REOPERATIVE CORONARY REVASCULARIZATION VIA LEFT THORACOTOMY

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**Purpose:** Median sternotomy is the most common incision for off pump coronary artery bypass surgery. Exposure is excellent for revascularization for left anterior descending and right coronary artery. Posterior coronary arteries can be revascularized by using stabilizing systems. In recent years, many patients who had undergone cardiac operation previously have been presented for redo coronary artery surgery. To avoid injury of patent old grafts and myocardium, a left anterior thoracotomy can be used. In this study, we present 15 patients who underwent repeat cardiac surgery via left thoracotomy.
**Methods:** We have performed 15 off pump coronary artery bypass grafting procedures via left thoracotomy from July 2001 through March 2006. There were 3 female and 12 male patients. Mean age was 62.7±9.5, ranging from 46 to 82 years. Previously performed operations were coronary artery bypass grafting in 12 patients and heart valve replacement procedures in 3 patients.
**Results:** Mini anterior thoracotomy has been performed in 8 patients and posterolateral thoracotomy in 7 patients. The left subclavian artery was used as an inflow vessel in 4 patients. For other 3 patients, internal thoracic arteries were used. In 7 patients, who had undergone posterolateral thoracotomy, the descending aorta was used as inflow vessel. No mortality and morbidity developed. The grafted vessels were 8 anterior descending and 7 circumflex coronary arteries.
**Conclusion:** As the overall experience with reoperative open heart surgery has increased, alternative strategies have evolved in an attempt to lower the operative risks, which exceed those of initial cardiac surgical interventions. In reoperative coronary artery bypass grafting, a left thoracotomy can be used safely to avoid a dangerous repeat median sternotomy.

# ORAL PRESENTATION 4
# MISCELLANEOUS B

## OP20. HEART LUNG TRANSPLANTATION FOR EISENMENGER S SYNDROME. EARLY RISKS AND COMPLETE LONG TERM FOLLOW UP

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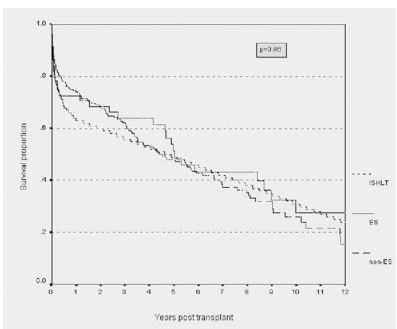
**Purpose:** Heart-lung transplantation (HLT) for Eisenmenger syndrome (ES) provides superior early and intermediate survival when compared with other forms of transplantation. It is however also perceived that this operative approach carries a higher morbidity and perioperative mortality.
**Methods:** We analyzed 263 patients who had undergone HLT at our institution during more than 15 years. Fifty-one consecutive patients with ES who underwent HLT, 33 (65%) with simple anatomy, were compared with 212 cases having HLT for other indications (non-ES).
**Results:** Patients with ES had greater postoperative blood loss and returned more frequently to the operating room for bleeding. Female sex was more prevalent in the ES group. There were 8 (16%) early deaths in the ES group compared with 27 (13%) in non-ES ($p$ = 0.65). There was no difference in One-, 5-, and 10-year overall survival between ES and non-ES ($p$ = 0.54) (figure). Among ES patients, previous thoracotomy, which was more prevalent in this group of patients, was a risk factor for hospital death. A subgroup analysis based on simple versus complex type of ES demonstrated younger age for complex vs simpler anatomy ES patients. It did not however show statistically significant differences in terms of postoperative course or early or late survival.
**Conclusion:** Heart-lung transplantation is a successful procedure for ES. With attention to high quality care and despite a greater frequency of risk factors and a more difficult operative course, early and late outcome with HLT can be comparable to non-ES recipients.




****Competitor for the Best Oral Presentation Award****

## OP21. STENTLESS VERSUS STENTED AORTIC VALVE BIOPROSTHESES. A PROSPECTIVE RANDOMISED TRIAL

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**Purpose:** We sought to demonstrate the superior haemodynamic profile of the Freedom Stentless aortic valve in a randomized trial.
**Methods:** 60-patients (mean age, 73 years) undergoing bioprosthetic AVR were randomized to either Sorin Freedom stentless (n=31) or Sorin More stented (n=29) valves. The primary endpoints were Left-Ventricular-Mass-Index (LVMI) reduction at 6 and 12 months. We then searched the literature for previous randomized clinical trials comparing stentless valves to conventional bioprostheses.
**Results:** There was no significant difference in baseline characteristics between the 2 groups. The stentless valve was associated with a lower postoperative gradient (PG 17(±12)mmHg vs. 31(±13)mmHg, p<0.0001) and greater effective orifice area index (EOAI) (1.1(±0.3)cm$^2$/m$^2$ vs. 0.8(±0.2)cm$^2$/m$^2$, p<0.0001). A highly significant reduction in left-ventricular-mass-index (LVMI) occurred by 6 months in both groups, and LVMI was significantly lower in the stentless group (LVMI 119(±39)g/m$^2$ vs. 135(±30)g/m$^2$, p=0.05). However, there was continued regression of left ventricular hypertrophy (LVH) in the stented but not in the stentless group, resulting in no significant difference in LVMI at 12 months (119(±36)g/m$^2$ vs. 126(±31)g/m$^2$, p=0.42).
**Conclusion:** The use of the Sorin Freedom stentless bioprosthesis for AVR results in lower postoperative gradient and greater effective orifice area compared to a Sorin More stented valve. This is associated with earlier regression of LVH.

****Competitor for the Best Oral Presentation Award****

## OP22. PERCUTANEOUS VALVE REPLACEMENT: A NOVEL LOW-PROFILE POLYURETHANE VALVED STENT

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**Purpose:** Percutaneous pulmonary valve implantation is emerging as an alternative or additional option for congen-

ital heart surgery. One major limitation of this technique is the large diameter of the delivery systems which is dependent on the size of the crimped valved stent which has to fit into the catheter. To date, catheters with an outer diameter of 18 French and larger are required for percutaneous valved-stent implantation. To circumvent size restrictions of percutaneous heart valves, we initiated a study using low-profile valved stents made of polyurethane.
**Methods:** Self-expanding nitinol valved stents (lengths 28 mm, diameter 24 mm) are comprised of three thin polyurethane leaflets (approximately 100-150 μm thick). The stent valves are produced in a dip coating technique. This valved stent fits into a 14 French delivery device. Transfemoral implantation in pulmonary position was evaluated in sheep weighing 36 ± 2 kg.
**Results:** The valved stents showed good echocardiographic and angiographic function after implantation and at the one month follow-up. During the implantation procedure, mean arterial blood pressure (MAP) dropped from 105.0 ± 2.6 mmHg (baseline) to 81.8 ± 7.8 mmHg ($p<0.05$). Computed tomography after one month confirmed orthotopic pulmonary position of valved stents. The peak-to-peak transvalvular gradient was 3.3 ± 1.1 mmHg initially, and 3.1 ± 1.7 mmHg at the follow up. At the one month follow-up, normal MAP values were observed (104.0 ± 6.4 mmHg).
**Conclusion:** These novel valved stents demonstrated good function in pulmonary position initially and after one month of implantation. Furthermore, delivery devices of small diameters can be used.

****Competitor for the Best Oral Presentation Award****

## OP23. ARGATROBAN AS AN ALTERNATIVE ANTICOAGULANT TO HEPARIN IN VENTRICULAR ASSIST DEVICE PATIENTS

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**Purpose:** The intravenous anticoagulant of choice for ventricular assist devices (VAD) is heparin. Alternatives to heparin include direct thrombin inhibitors. The use of argatroban in adult patients following VAD implantation has not been described.
**Methods:** A retrospectively review of thirty-three VAD patients in whom IV anticoagulation was performed. Twelve patients were postoperatively started on heparin, eight were converted to argatroban. Twenty-one patients were anticoagulated with argatroban. In all groups (i.e. heparin, heparin/argatroban, argatroban), the infusions were adjusted to maintain an aPTT between 60-80 seconds. The duration of infusion, coagulation profiles, PLT levels, transfusion requirements, episodes of hemorrhage requiring revision, thromboembolic events and HIT antibodies were measured.
**Results:** The majority of patients experienced thrombocytopenic reaction following VAD placement (83% with heparin, 80% with argatroban). The HIT antibody titer was observed in 7.7% of the heparin patients and 19.0 % of the argatroban patients. The amount of transfused PRBC per patient per day was not significantly different between any of the patient subgroups: heparin 1.66 units/day, argatroban 1.00 unit/day. The incidence of thromboembolic events was similar in both groups: heparin 15.38 %, argatroban 17.8%. There was no statistically significant difference in the number of major hemorrhagic episodes requiring open revision.
**Conclusion:** Argatroban served as a successful alternative anticoagulant to heparin in adult patients following VAD implantation. It may be considered for use in cases of confirmed or suspected HIT or may be initiated as the primary intravenous anticoagulant following VAD placement. Bleeding and thromboembolic complications between the two anticoagulants are comparable.

## OP24. THE ROLE OF PLASMALLEMAL AND MITOCHONDRIAL ADENOSINE TRIPHOSPHATE SENSITIVE POTASSIUM ($K_{ATP}$) CHANNELS IN THE BASAL MYOGENIC TONE OF VASCULAR SMOOTH MUSCLE IN HUMANS

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**Purpose:** To clarify the role of plasmallemal and mitochondrial ATP-sensitive potassium ($K_{ATP}$) channels in the myogenic tone of vascular smooth muscle in humans.
**Methods and Results:** Studies were conducted in organ baths using vessel rings with intact and denuded from endothelium. We tested HMR1098 and P1075 (plasmallemal $K_{ATP}$ channel blocker and opener respectively), 5-hydroxy-decanoate (5-HD) and Diazoxide (mitochondrial $K_{ATP}$ channel blocker and opener respectively). Length-tension relationships were constructed in the absence and presence of the maximum effective doses to evaluate drug interaction with transmural pressures.
In the isometric tension studies the $EC_{50}$ were -7.48+/-0.52, -5.18+/-1.12, -5.95+/-0.69 and –5.76+/-1.19 log (M) and the maximum changes in wall tension were 21.2+/-27% (p=0.03), -9.2+/-4.7% (p=0.002), -7.3+/-20.6% (p=0.24) and –8.0+/-18.5% (p=0.16) for HMR1098, P1075, 5-HD and diazoxide, respectively. In the length-tension studies, for the range of pressures from 60 to 100mmHg, HMR1098 caused a reduction in diameter by –4.8+/-2.3% (p=0.05), while P1075 and diazoxide an increase by 6.7+/-1.8% (p=0.009) and 9.2+/-3.8% (p=0.002), respectively. Endothelial denudation played no role in the observed diameter changes.
**Conclusions:** These data suggest that both plasmallemal and mitochondrial $K_{ATP}$ channels contribute in the development of the basal vascular myogenic tone and their function appears to be endothelium-independent.

# ORAL PRESENTATION 5
# VALVES

## OP25. MITRAL VALVE REPLACEMENT: TRENDS IN SURGEON PREFERENCE FOR MECHANICAL VALVES AT A SINGLE INSTITUTION

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**Purpose:** Between 1993-2003, 2033 patients underwent valve surgery at our institution. For mechanical valve replacement, structurally comparable bileaflet models [ATS Open-Pivot(r) (ATS) and St.Jude Medical (SJM)] were routinely used. Valve selection was surgeon preference. In this retrospective study, the influence of implant position on surgeon decision for prosthesis is analyzed.
**Methods:** Ten surgeons implanted a total of 1047 ATS or SJM valves in 1010 patients [657 male; 353 female; age: 62.9±12.7 [aortic valve replacement: (AVR): 772; mitral (MVR): 201; aortic+mitral (DVR): 37]. Preoperative demographics, NYHA-class and concomitant diseases of patients related to implantation site showed no significant differences between ATS and SJM subgroups.
**Results:** Ratio of MVR/AVR per surgeon: 1:4. Overall 11-year implantation ratio of ATS to SJM was 1:1 [49.2% vs. 50.8%; AVR: 0.78:1; MVR: 2:1 (p<0.001)]. In MVR, 168 (71.5%) ATS and 67 (28.5%) SJM-prostheses were implanted (p<0.001). The average increase of ATS implantations per year was 32.1% in mitral position. The adjusted survival rate for duration of implant in MVR at 5 years: ATS: 82.7%; SJM: 76.1% (p=0.272); at 10 years: ATS: 76.2%; SJM: 71.6% (p=0.507).
**Conclusion:** Despite their individual preference, SJM implanting surgeons have surprisingly migrated to ATS-valves in mitral, but not in aortic position, especially in advanced disease. This intuitive decision may be explained by lower housing profile of ATS-prostheses, allowing a reduced leaflet exposure with appropriate clearance of posterior wall when preserving subvalvular apparatus. However, the clinical outcome was not influenced by implant model. Our study could contribute to make more objective in-house decisions for valve implants.

## OP26. AORTIC VALVE REPLACEMENT IN DIFFERENT PARTS OF EUROPE; AN ECOLOGICAL STUDY/INVESTIGATORS GROUP OF THE EUROPEAN CLUB OF YOUNG CARDIAC SURGEONS

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**Purpose:** Relying on anecdotal observations, we investigated the hypothesis of the potential difference in the implanted aortic valve sizes, between patients native to the Mediterranean basin and those from Northern Europe.
**Methods:** 2711 patients (67±12 years, 1547 males) who underwent a first time single aortic valve replacement without concomitant procedure during the 2001-2004 time period, in Greece and Spain (South), Germany, United Kingdom and Denmark (North), were studied. Valve size and type, body surface area (BSA, in $m^2$) and technique of insertion, were recorded. Basic statistical tests and generalized linear models for fixed effects were used to evaluate the hypothesis under analysis.
**Results:** Mean valve size was smaller in Southern compared to Northern European patients (mean ±SD: 21.6±2.0 vs. 23.5±2.1 mm, p < 0.001). Valve size was larger in Denmark, United Kingdom, followed by Germany, Greece and Spain: (n, mean ±SD: 655, 23.7±2.0 vs. 826, 23.47±2.0 vs. 368, 22.94±1.9, 603, 21.67±2.1 and 248, 21.54±2.0 mm, respectively, p for trend < 0.001). Moreover, patients from the North were older (p<0.001), and had higher BSA (p<0.001). The prosthesis was mainly mechanical (57.5%) in patients from the South, while in North biological (56.8%). Fifty two% of patients from the South and 99% of patients from the North had their valve implanted in supranular position (p<0.001). After adjusting for age, sex, BSA, valve type, and insertion technique, patients from Southern Europe had smaller valve sizes implanted compared to those from Northern Europe (mean difference: -1.49±0.18 mm, p < 0.001).
**Conclusion:** This study showed a difference in implanted aortic valve sizes, between the participating Northern and Southern European countries.
Several questions could be raised, such as, probable geographical anatomic variation(s), or the presence of certain pathology.

## OP27. VALVE SURGERY THROUGH A RIGHT MINI-THORACOTOMY

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**Purpose:** Heart valve surgery through a mini-thoracotomy could become an appealing option for patients and

cardiologist if results yielded with this approach would be similar to those after full sternotomy.
From January 2002 to January 2006 a total of 70 patients (37 males and 33 females, range 30 - 83 years) have been operated through a mini-thoracotomy: 27 aortic valve replacements (AVR), 13 mitral valve replacements (MVRp), 19 mitral valve repairs (MVRc), 2 tricuspid valve replacements (TVRp), 2 double valve replacements (DVRp), 3 ASD closures, 2 double valve replacements plus tricuspid repair and 1 myxoma resection. Concomittant procedures were one bilobectomy for pulmonary carcinoma and one bypass graft on the right coronary artery.
**Methods:** All procedures were performed in general anesthesia with seperate lung ventilation (double lumen endotracheal tube) and high thoracic epidural analgesia. The mini-thoracotomy (6-8 cm) was performed in the 4th right intercostal space. Cardiopulmonary bypass was instituted via the groin vessels and the right jugular vein, target core temperature was 32°C. All procedures were performed under combined direct and video-assisted vision.
**Results:** Mean duration of the procedure, mean bypass- and mean cross-clamp-time were 225, 128 and 72 min. respectively. Perioperative mortality was 2.8% (2/70). All but one patient could be extubated in the operating room. Mean follow-up is 16.7 months. All but one pt that required reoperation for a paravalvular leakage had an optimal TEE result at 6 weeks after surgery.
**Conclusion:** The mini-thoracotomy approach seems to be a valid surgical technique for the treatment of even complex valvular pathology. Combined with a high thoracic epidural analgesia it accounts for a rapid functional recovery.

## OP28. TORONTO SPV VS SHELHIGH NR-2000PLUS STENTLESS AORTIC BIOPROSTHESIS: COMPARISON OF MID-TERM CLINICAL AND ECHOCARDIOGRAPHICAL DATA

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Purpose: We present mid-term clinical and echocardiographical data comparing two types of stentless aortic bioprostheses.
**Methods:** From 10/2000 to 03/2006, 100 patients underwent aortic valve replacement using stentless bioprosthesis. Forty-one patients underwent AVR using Toronto SPV valve (group A) and in 59 patients Shelhigh NR-2000Plus valve was implanted (group B). Concomitant CABG was preformed in 10 (24%) of patients in group A and in 22 (45%) in group B. Mean EUROScore was 5.1 (groupA) and 6.4 (groupB) (p=0.004).
**Results:** Mean follow-up time was 24.5 months in group A vs 18.1 months in group B. Freedom from endocarditis and structural valve deterioration at 1, 3 and 5 years was 100% for both groups, respectively. Mean size of implanted prostheses was 26.1 mm (groupA) and 23.9 mm (groupB) (p<0.001), respectively. Mean transaortic gradient at follow-up was 7.3 mmHg (groupA) vs 15.5 mmHg (groupB) (p=0.003). Mean regression of LV mass was 14 grams in group A and 16 grams in group B (p=0.116). Functional status improved in both groups over time from median class III to class I. However, no significant difference was noted between groups during mid-term follow up.
**Conclusion:** Both types of stentless bioprostheses show good hemodynamic properties, durability and clinical improvement at mid-term follow-up.

## OP29. AXILLARY CEREBRAL PERFUSION FOR ARCH SURGERY IN ACUTE TYPE A DISSECTION UNDER MODERATE HYPOTHERMIA AND WITHOUT CIRCULATORY ARREST OF THE BRAIN

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**Purpose:** Aortic arch surgery is associated with considerable mortality and morbidity especially in acute type A aortic dissection. Adequate brain protection is essential. We present our protocol for open aortic arch repair with continuous antegrade brain perfusion by means of direct cannulation of the right axillary artery, under moderate hypothermia in these patients.
**Methods:** 25 patients (17 men), with a mean age of 62.6(14.8 years underwent aortic repair extended to the arch for acute type A aortic dissection. The right axillary artery was used for arterial systemic and brain perfusion at a rectal temperature of 25-27°C.
**Results:** Mean duration of CPB and aortic cross-clamping was 241(55 and 155(72 min respectively. The mean duration of circulatory arrest of the lower body and brain perfusion was 39.7 (range, 24-55 minutes). All the patients survived the procedure and all but one was discharged from hospital. There were no other transient or permanent neurologic deficits. There were no local neurovascular complications.
**Conclusion:** The absence of any major permanent neurologic deficit or any visceral damages in our patients suggests that continuous moderate hypothermic cerebral perfusion, with an interval of circulatory arrest of the lower body, is adequate for acute type A aortic dissection surgery, allowing safe open repair of the distal aortic arch.

## OP30. SIX YEARS OF CONTEGRA ON RECONSTRUCTION OF THE RIGHT VENTRICULAR OUTFLOW TRACT: THE EUROPEAN EXPERIENCE

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**Purpose:** The valved conduit Contegra (bovine jugular vein) has already being implanted for 6 years by European surgeons in reconstructions of the right ventricular outflow tract with mixed Results:
**Methods:** We searched the relevant literature for the primary endpoints of operative mortality and morbidity and haemodynamic performance . We selected and analysed 12 series with 477 patients in total. Casemix and methodologies varied considerably . Descriptive Statistics were therefore deemed appropriate.
**Results:** Cumulative operative mortality was 2.9%. Cumulative operative morbidity was 36.9%. In follow-up, the annual prevalence of intraconduit stenosis was 8% and that of moderate to severe or severe regurgitation was 2.9%.
**Conclusion:** Aspirin following discharge from hospital appears beneficial for avoiding thrombotic and stenotic complications, yet the heterogeneity of the cohorts and the methods of reporting rend problematic any statistical inference. Based on that, we propose a 'Contegra baseline database'.

# ORAL PRESENTATION 6
# PHYSICAL THERAPY FORUM: PT IN THE ICU

## OP31. POST HEART SURGERY AND CARDIAC FAILURE PATIENTS ON LONG-TERM MECHANICAL VENTILATION: PHYSIOTHERAPIST'S INTERVENTION; THE RIGHT TO SPEAK AND EAT

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**Purpose:** Speech and swallowing are important determinants of quality of life for patients on long-term mechanical ventilation. The purpose of this study was to assess methods and techniques that could restore phonation and swallowing for these patients.
**Methods:** Seventeen patients (12 post heart surgery, 5 with heart failure) on long-term mechanical ventilation underwent clinical evaluation of the swallowing function by a physiotherapist followed by endoscopy by an ENT surgeon. Four of the patients underwent a Videofluroscopic Swallowing Study (VSS) by the radiologist. On those patients whose swallowing function was fully operative we added a speech valve to the ventilation system or modified the ventilation conditions.
**Results:** All of the patients had a dysfunction of the swallowing system of different etiology and topography. On 12 of them a specific set of swallowing exercises was performed and 5 patients underwent a gastrostomy. Four of the twelve patients showed an improvement of the quality of their voice thanks the use of a speech valve and the other eight patients thanks to the modification of the ventilation conditions.
**Conclusion:** The collaboration between physiotherapists, ENT surgeons, radiologists and intensivists, was the key for the diagnosis and management of phonation and swallowing disorders of patients on long-term mechanical ventilation.

# ORAL PRESENTATION 7
# IMAGING

## OP32. TISSUE DOPPLER IMAGING ANALYSIS OF RIGHT VENTRICULAR FUNCTION BEFORE AND AFTER TRANSCATHETER CLOSURE OF ATRIAL SEPTAL DEFECT

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**Purpose:** Purpose of the Study: Patients with an atrial septal defect (ASD) have long-standing right ventricular dilation and dysfunction. We used Tissue Doppler Imaging (TDI) to assess right ventricular systolic and diastolic function in patients with ASD before and after closure with the Amplatzer septal occluder.
**Methods:** 52 pts with ASD secundum, mean age 25yrs (5-63), 19 male and 33 female underwent transcatheter closure of their ASD with an Amplatzer septal occluder. ASD size was 8-34 mm by echocardiography and mean Amplatzer size was 22mm (8-40). After conventional echocardiographic assessment, pulsed TDI was obtained from the apical 4-chamber view at the basal RV free-wall-tricuspid annular junction. The following measurements were made: peak early systolic myocardial tissue velocity (e), peak late systolic myocardial tissue velocity (a), e/a ratio, peak systolic myocardial tissue velocity (s). Tricuspid annular motion was measured by M-Mode echocardiography in the 4-chamber view.
**Results:** See Table.

**Conclusion:** There is dramatic improvement in both systolic and diastolic right ventricular function, measured by TDI indices the next day after transcatheter ASD closure, even in pts with long-standing RV dysfunction. Very high myocardial tissue velocities tend to normalize soon after the device placement. This is probably due to the sudden relief from the long-standing volume overload of the right ventricle secondary to the abrupt removal of the left to right shunt.

| Results | Pre-Amplatzer | Post-Amplatzer | p |
|---|---|---|---|
| E (cm/sec) | 19±2 | 16±2 | <0.01 |
| A (cm/sec) | 15±4 | 11±4 | 0.05 |
| E/A | 1.37±.25 | 1.45±2 | NS |
| S (cm/sec) | 18±2 | 16±2 | <0.01 |
| TV M-Mode (mm) | 33.7±6 | 25.2±3 | <0.02 |

## OP33. MAGNETIC RESONANCE EVALUATION OF ATRIAL SEPTAL DEFECT AND OF VENTRICULAR CHANGES INDUCED BY TRANSCATHETER CLOSURE

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**Purpose:** Magnetic resonance imaging assessment of secundum atrial septal defect (ASD) and the effect of transcatheter closure with atrial septal occluder in right and left ventricular volume and function.
**Methods:** 30 patients (5 males, 25 females) aged 7-58 years with secundum ASD were imaged prior and 4-8 months after interventional ASD closure with atrial septal occluder on a 1.5T scanner using a dedicated phased-array cardiac coil. MRI evaluation included ASD size and location before occlusion and RV and LV volume and ejection fraction and aorta and pulmonary aretry flow measurements before and after closure.
**Results:** ASD occlusion significantly ($p<0.05$) decreased RV end-diastolic volume (EDV) from 208±74 to 146±53ml, RV end-systolic volume (ESV) from 86±34 to 65±32ml, pulmonary stroke volume (SV) from120±39 to 78±19ml and pulmonary to systemic flow ratio (Qp/Qs) from 1.85±0.53 to 1±0.06ml. ASD closure significantly ($p<0.05$) increased LVEDV from 109±34 to 118±34ml, RVEDV/LVEDV from 1.97±0.63 to 1.22±0.20 and systemic stroke volume from 67±22 to 78±19ml. RVEDV correlated significantly with ASD size and Qp/Qs ($r = 0.7$, $p = 0.0002$) and balloon stretched ASD size at catheterization ($r = 0.55$, $p = 0.0084$).
**Conclusion:** RV size in ASD correlates with its size and Qp/Qs. Transcatheter occlusion of ASD results not only in reduction of RV volume overload and pulmonary SV but also in increased LV EDV and systemic SV, thus inducing biventricular improvement in size and function.

## OP34. COMPARISON OF MICROEMBOLI GENERATION BETWEEN CARDIOPLEGIA AND INTERMITTENT CROSS-CLAMP FIBRILLATION DURING CORONARY SURGERY

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**Purpose:** The use of intermittent cross-clamp fibrillation (ICCF) as a myocardial protection technique is thought to generate more microemboli (ME) than cardioplegia (CA). This study compares the two myocardial protection techniques in the generation of microemboli occurring during coronary artery surgery .Increased release of ME have been associated with cerebral injury.
**Methods:** Out of n=200 patients who were randomised to undergoing non-emergency coronary artery surgery The complete microemboli data on cardioplegia group (n=83) and intermittent cross-clamp fibrillation group (n=82) were analysed.
**Results:** Using transcranial Doppler (TCD) the microemboli generated during surgery were analysed during various surgical events (Table).
**Conclusion:** This study failed to show significant difference in the increased generation of microemboli between intermittent cross-clamp fibrillation and the cardioplegia group. It could therefore be argued that the generation of ME has to be multifactorial.

| Surgical event | ICCF (n=82) | CA (n=83) | *P*(2-tailed) |
|---|---|---|---|
| Cannulation | 2.20 (2.6) | 2.57 (3.1) | .629 |
| ICPB | 12.26 (17.3) | 15.22 (16.4) | .121 |
| x-clamp on | 10.10 (15.6) | 11.61 (16.3) | .519 |
| x-clamp off | 5.01 (12.4) | 1.67 (3.6) | .031 |
| Top-end on | 7.12 (12.4) | 8.86 (19.2) | .959 |
| Top-end off | 6.80 (8.8) | 8.59 (11.0) | .254 |
| CCPB | 0.09 (0.6) | 0.11 (0.6) | .996 |
| Decannulation | 0.71 (1.3) | 1.02 (1.6) | .085 |
| 15 min post | 0.74 (1.3) | 1.30 (2.6) | .058 |
| Spontaneous | 183.03 (312.4) | 182.98 (247.8) | .658 |
| Total ME | 228.1 (352.5) | 233.9 (283.9) | .563 |

iCPB= initiation of cardiopulmonary bypass, x-clamp= cross clamp, cCPB= cessation of cardiopulmonary bypass,

# ORAL PRESENTATION 8
# INVASIVE CARDIOLOGY

## OP35. ACUTE AND MID-TERM RESULTS OF DRUG-ELUTING STENTS IN THE TREATMENT OF BYPASS GRAFT LESIONS

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**Purpose:** Percutaneous coronary intervention (PCI) in patients (pts) with bypass graft lesions (BGL) is associated with an increased rate of subsequent adverse events. Encouraging results with drug-eluting stent (DES) have been reported in pts with native coronary artery disease (CAD). In this prospective single center non-randomized study we assess the short- and long-term results of DES in pts with BGL.
**Methods:** Forty-three consecutive pts that had been treated with DES were compared with 40 consecutive pts treated with bare metal stent (BS). The in-hospital results and clinical outcome during follow-up (22.48 ± 9.4 months, range 4-38) were obtained. Major adverse coronary events (MACE) during follow-up were considered death, myocardial infarction (MI), CABG, target and non-target vessel PCI.
**Results:** Clinical presentation of CAD, risk factor profile, previous myocardial infarction (MI), ejection fraction < 40%, and stenosis location and characteristics were not different between DES and BS pts; however the incidence of diabetes mellitus was higher in DES pts (51% vs. 25%, p=0.02). PCI was performed to dilate 45 saphenous vein grafts (SVG), or arterial conduits using sirolimus (90%) or paclitaxel (10%) DES, and 43 SVG or arterial conduits using BS. In addition 15 native vessels were dilated in the DES and 8 in the BS group. The number of stent /pt was 1.67 ± 0.75 in the DES and 1.58 ± 0.75 in the BS group (p=ns). Use of IIb/IIIa inhibitors and distal embolization protection device were 21% and 14% in the DES and 25% and 20% in the BS pts (p=ns). The clinical success rate (angiographic success without death, Q- wave MI, CABG) was 98% in the DES and 100% in the BS (p=ns). In-hospital complications included sub-acute thrombosis and non-Q-wave MI (defined as increases of CK-MB > 3 times normal) (0% vs. 2,5% and 2.3% vs. 2.5% in the DES and BS pts respectively); there was also one (2.3%) Q-wave MI in the DES group. Follow-up angiography was performed in 26% and 23% of pts in the DES and BS group with a similar in-stent restenosis rate (33%). Clinical follow-up was obtained in all pts. There were no differences in death (2.3% vs. 0%, p=ns), MI (2.3% vs. 5%, p=ns) or any revascularization (18% vs, 13%, p=ns) in the DES and BS group of pts and the MACE free survival was 79% and 85% respectively (p=ns).
**Conclusion:** The implantation of DES in pts with BGL is associated with similar in-hospital and long-term results, compared to those treated with BS, despite a higher incidence of diabetes mellitus in DES pts.

## OP36. TRANSCATHETER CLOSURE OF CORONARY ARTERY FISTULA USING THE NEW AMPLATZER VASCULAR PLUG

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**Purpose:** To report our initial experience using the AMPLATZER(r) Vascular Plug for closure of coronary artery fistulas.
**Methods:** Three patients (age: 3, 13, 14 years) were presented with coronary fistulas (pulmonary-to-systemic flow ratio: 1.5-3). Two fistulas arising from the proximal right and left coronary artery (maximal diameter: 9 and 10 mm) had their narrowest diameter (6 mm) proximal to the entrance into the right atrium via a saccular aneurysm. The third fistula (maximal diameter: 16 mm) with its origin from the circumflex coronary artery entered the right atrium with nearly unrestricted flow (narrowest diameter: 8 mm).
**Results:** AMPLATZER(r) Vascular Plugs (self-expanding, cylindrical device made of Nitinol wire mesh and available from 4 to 16 mm in diameter) were chosen with diameter twice the narrowest segment of the fistula (12, 12 and 16 mm). An arterio-venous loop was established through the fistula by snaring an exchange guide wire. From the femoral vein via a 7 or 8 French guide catheter, all plugs were placed at the narrowest segment of the fistula leading to immediate complete closure of 2 fistulas. The third patient with a fistula of the circumflex coronary artery who received the largest plug had a residual flow but showed a complete occlusion 12 months post procedure.
**Conclusion:** The AMPLATZER(r) Vascular Plug proved safe and effective for transcatheter closure of moderate- to large-sized coronary fistulas, offering an alternative to heart surgery or coil occlusion techniques.

## OP37. PERVENTRICULAR DEVICE CLOSURE OF VENTRICULAR SEPTAL DEFECT ON THE BEATING HEART

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**Purpose:** Surgical repair of muscular ventricular septal defects (MVSDs) is associated with significant at times morbidity and mortality. Approaches from the right side of the heart may not allow adequate defect visualization and a left venriculotomy can result in long term ventricular dysfunction, arrhythmias, residual shunts and apical aneurysms. The interventional percutaneous approach is also limited by vascular access problems in small infants weighing < 5-6 Kg and in older children who have often had many interventional procedures. This report describes our initial experience with intraoperative device closure of muscular ventricular septal defect without cardiopulmonary bypass in a 4 month baby weighing 4.5 Kg.
**Methods:** The heart was approached through a median sternotomy and under continuous transesophageal echocardiography (TEE) guidance an Amplatzer VSD device was deployed at the VSD site through the appropriate catheters. TEE study confirms proper device position. The time needed to close the VSD and position the device was less than 20 minutes.
The advantages of this technique over standard surgical techniques include:
The real-time feedback obtained by continuous TEE monitoring during perventricular device closure, avoidance of cardiopulmonary bypass.
In the presence of associated cardiac lesions, marked reduction in CPB and myocardial ischemia time and avoidance of any ventricular incision or muscle transections.
**Conclusion:** Perventricular closure of muscular ventricular septal defects is safe and effective. It could become the treatment of choice for any infant with muscular ventricular septal defects or any child with muscular VSD and associated cardiac defects.

## OP38. CONTRAST-INDUCED NEPHROPATHY IN PATIENTS WITH RENAL DYSFUNCTION UNDERGOING A CORONARY PROCEDURE AND RECEIVING LOW OSMOLAR VERSUS ISO-OSMOLAR CONTRAST MEDIA

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**Purpose:** Although the superiority of low-osmolar over high-osmolar contrast agents in prevention of contrast-induced nephropathy (CIN) is generally accepted, the suggested by some studies superiority of iso-osmolar over low-osmolar agents requires confirmation. We examined the incidence of CIN according to the type of contrast agent used in a randomized study of ascorbic acid for CIN prevention.
**Methods:** A total of 222 patients with baseline serum creatinine (1.2 mg/dL undergoing a coronary procedure were randomized to receive ascorbic acid or placebo and were eligible for the current evaluation. The iso-osmolar agent iodixanol was utilized in 144 patients, low-osmolar non-ionic agents in 78 patients (iomeprol, n=40; iobitridol, n=30; iopentol, n=8). CIN was defined by an absolute serum creatinine increase of (0.5 mg/dL or a relative increase of (25% measured 2 to 5 days after the procedure.
**Results:** The groups of patients who received iso-osmolar and low-osmolar non-ionic agents were well balanced in terms of demographic, clinical and procedural characteristics. The overall CIN incidence was 14.6% for the iso-osmolar iodixanol versus 14.1% for the combined low-osmolar non-ionic agents (iomeprol 10%; iobitridol 10%; iopentol 50%). For iodixanol, the incidence of CIN was 7.4% for patients randomized to ascorbic acid and 21.6% for placebo (p=0.02). The corresponding incidences for the low osmolar non-ionic agents were 9.1% and 20.6%, respectively (p=0.19).
**Conclusion:** No differences in CIN incidence were apparent among patients receiving non-ionic iso-osmolar iodixanol and non-ionic low osmolar contrast agents. The preventative effect of ascorbic acid was also similar.

## OP39. CRYOABLATION IN PAROXYSMAL ATRIAL FIBRILLATION

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**Purpose:** Pulmonary vein (pv) ostia cryo-ablation (abl) has been introduced as a safe and effective alternative therapeutic approach with a reduced risk of thromboembolism, in patients (pts) with atrial fibrillation (AF). We report our experience of cryo-abl in paroxysmal AF.
**Methods:** Twenty-two patients (51.7±9.2 years) with drug refractory idiopathic paroxysmal AF were included. Mean duration of AF was 18±3 months. Pts underwent an abl procedure with an artic circular catheter at the ostia of the pvs. We used single 4-minute freezing cycles at each pv. When electrical signs were not eliminated, a second application was performed. Follow-up was performed every 2 months.
**Results:** Procedure and fluoroscopy time was 126.3±11.5 and 25.2±8.1 min, respectively. The total number of applications was 6.5±2.0 with a duration of

16.5±6.7 min. The lowest tissue temperatures at the proximal and distal pole of the catheter were -73.8±6.7°C and -70.5±21.3°C while in 3 patients good contact of the catheter was not achieved. There was 1 major complication (tamponade). At discharge 20 pts were in sinus rhythm. Patients were followed up for 16.3±6.7 (2-29) months. Total success was noted in 13 pts (61%) and a significant reduction in monthly episodes was shown in 6 (12%). In 1 pt AF became chronic.
**Conclusion:** Cryo-abl is a therapeutical approach for pts with AF with major advantages. It seems to be an effective, safe method with low fluoroscopic time. The initiation of catheters with better contact to the pv ostia could be promising in the future.

## OP40. RADIOFREQUENCY ABLATION OF INSCESSANT VENTRICULAR TACHYCARDIAS IN ISCHEMIC CARDIOMYOPATHY

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**Purpose:** The purpose of this study was to report our experience regarding the long-term prognosis of patients (pts) with ischemic cardiomyopathy (ICM) who underwent an ablation procedure due to incessant ventricular tachycardia (IVT).
**Methods:** Twenty-eight consecutive pts (men, 66.9±9 yrs) with IVT and a history of an old myocardial infarction (10 anterior, 18 inferior were included in the study. Their mean ejection fraction was 26.6±4.1%. Three pts had a history of coronary revascularization. All pts received optimum therapy and ongoing ischemia was excluded prior to the procedure. We used conventional entrainment techniques in 14 pts and the non-contact (ENSITE) system in the other 14 pts. The procedure and fluoroscopy time were 179±50 min and 35±13 min, respectively. Mean RF applications were 15±6. Defibrillators (ICDs) with Holter abilities were implanted in all pts.
**Results:** RFA was considered successful in all pts with termination and no re-induction of IVT. In a follow-up of 40±25 (2-106) months 10 pts died (38%) of pump failure. Nine pts (50%) out of 18 who survived were free of VTs and 9 pts had a total of 1.8±1.2 (1-5) fast VTs (cycle: 210±13 msec) which were successfully terminated by the ICDs. No recurrences were observed.
**Conclusion:** It seems that that the prognosis of pts with ICM who have undergone RFA due to IVT is generally poor. Pump failure seems to be the major cause of death. Due to recurrence of hemodynamically unstable ventricular arrhythmias, ICD implantation should be considered in all pts with IVT, irrelevantly to ablation outcome.

# ORAL PRESENTATION 9
# AORTIC ROOT SURGERY

## OP41. AORTIC ROOT SURGERY: LONG-TERM RESULTS AND RISK FACTORS

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**Purpose:** Aim of our investigation was to compare early and late results of the Bentall operation with root remodeling and aortic valve reimplantation.
**Methods:** From January 1994 to December 2005, 239 consecutive patients (57.5(15 years) with dilated aortic root and aortic valve dysfunction were submitted to the Bentall operation (n=166) when aortic valve was diseased, or to Yacoub (n=31) or David (n=42) procedures. Patients were followed for 33(23 (range 3-120), 69(25 (range 42-106) and 37(10 (range 3-60) months after the Bentall, Yacoub or David operation, respectively.
**Results:** Seven patients (2.9%) died during hospitalization. Risk factors for early mortality were: peripheral vascular disease, higher NYHA class, previous cardiac operation ($p<0.05$). 5/72 patients (6.9%) following aortic valve sparing procedures were affected by mild-to-moderate residual aortic regurgitation; they were younger (38(22 vs 57(15 years, $p=0.017$), with larger aortic annulus (32.6(0.3 vs 30.4(4 mm, $p=0.001$) and smaller tubular graft diameter (27.6(1.6 vs 29.3(1 mm, $p=0.002$). Reoperation was required in these patients and in one further Marfan patient due to prolapse of an aortic cusp. Freedom from late death was 91(3% at 120, 93(5% at 102, 97(3% at 54 months, ($p=0.6$), and freedom from reoperation was 98(1% at 120, 85(7% at 102, 90(5% at 54 months, ($p=0.02$), after Bentall, Yacoub and David operations, respectively. A smaller graft diameter was the only independent risk factor for residual valve insufficiency and reoperation ($p=0.02$).
**Conclusion:** Aortic root surgery is feasible with low mortality, good survival and satisfactory freedom from reoperation. Residual valve dysfunction following valve sparing procedures might be related to a prosthesis – annulus mismatch causing leaflet prolapse.

## OP42. EXTENDING THE INDICATIONS FOR AORTIC ROOT REPLACEMENT: STRIVING FOR THE BEST OR ASKING FOR TROUBLE?

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**Purpose:** In several surgical scenarios, replacing the aortic root seems prognostically reasonable even when the formal criteria with regard to the dimensions of the ascending aorta are not met. Such an aggressive strategy would only be justified, if it would not significatively increase surgical risk. Aim of this retrospective, case-matched study is to compare early surgical outcomes after aortic valve or aortic root replacement (modified Bentall procedure).
**Methods:** Two patient groups, IAVR (isolated aortic valve replacement, n=51) and MBENT (modified Bentall, n=43) operated upon between 2001 and 2005 were matched for age, left ventricular ejection fraction (LVEF), NYHA class and Euroscore. Compared were early mortality, reexploration for bleeding, stroke, pacemaker implantation, length of stay (LOS) in intensive care unit and in hospital.
**Results:** Differences bewteen match criteria were not statistically different: for IAVR and MBENT respectively, mean ages was 69.4 vs. 66.9, the male/female ratio was 0.8 vs 0.5, mean LVEF was 59.4 vs 59.9, percentage of pts in NYHA class >II was 19 vs 25 and mean Euroscore was 10.6 vs 11. For IAVR and MBENT respectively, early mortality was 3.9 vs 0 (ns), median ECC time 82 vs 122.4 min (ns), mean aortic cross clamp time 54.8 vs 77.4 ($p<0.05$), reexploration rate 4.8 vs 0 (ns), stroke rate 3.9 vs 5.9 (ns), pacemaker implant rate 7.8 vs 7.0 (ns), mean LOS in ICU 2.6 vs 2.5 days (ns) and in hospital 10.7 vs 11.3 (ns).
**Conclusion:** In this subset of matched patient groups surgical results of both procedures are similar. The more complex procedure does not seem to increase per se the operative risk. Therefore a more liberal replacement of the aortic root under specific and yet to be defined circumstances appears justified.

## OP43. AORTIC ROOT SURGERY WITH THE MODIFIED BENTALL PROCEDURE. 12 YEARS EXPERIENCE OF A SINGLE UNIT

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**Purpose:** Replacement of the aortic valve and aortic root in a variety of pathological conditions is commonly effected with the modified Bentall procedure
**Methods:** From September 1993 to December 2005 216 consecutive patients were operated on in our unit with the modified Bentall procedure with the coronary ostia button technique. The aortic pathology requiring aortic root replacement was chronic aneurysm in 162 patients, chronic dissection in 8 patients, acute aortic dissection in 23 patients.23 patients underwent emergency operations whereas 193 were elective. Concomitant bypass grafting was performed in 44 patients, MVR in 6 patients and left main arterioplasty in 4 patients.33 patients had undergone previous cardiac surgery.
**Results:** Male to female ratio was (174/42). The mean age was 58,46 months at the time of the operation. Deep hypothermic circulatory arrest was utilised in 28 patients for replacement of the distal ascending aorta and aortic arch. 30 day survival was 94.5% (95,6% for elective cases and 80% for emergencies). Risk factors for 30 day mortality were emergency surgery, increased patient age, peri-operative bleeding requiring re-exploration and/or open sternum technique occurred in 10 of our patients (4,84%). Myocardial dysfunction led to insertion of an IABP in 15 patients. 16 patients required a permanent pacemaker. At mean follow up of 76 months actuarial survival was 88 % and at 100 months 84%.
**Conclusion:** Aortic valve and root replacement with composite valved graft and ostial re-implantation is a safe technique with good long-term results

## OP44. THE NICKS - NUNEZ POSTERIOR ENLARGEMENT IN THE SMALL AORTIC ANNULUS: IMMEDIATE - INTERMEDIATE RESULTS

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**Purpose:** To avoid prosthesis – patient mismatch, posterior enlargement of the small aortic annulus using the Nicks-Nunez surgical approach was performed in fifteen patients and the immediate-intermediate results are reported retrospectively.
**Method:** During the period November 1995 to June 2005, 220 patients underwent aortic valve replacement (AVR) for primary aortic stenosis (AS). Fifteen patients (15/220 – 6%), all women, 40-76 years old (mean age 65.8 y) with AS, underwent AVR applying the Nicks-Nunez posterior enlargement of the small aortic annulus with an effective aortic valve area $0.7 \pm 0.2$ cm$^2$. The defect after the enlargement was closed with autologous pericardium in four and synthetic graft in eleven patients. The follow up period was 5-120 months (mean 61.5 months).
**Results:** There was no operative or hospital mortality. Serial follow-up transthoracic echos have shown statistically significant improvements in left ventricular – intra-

ventricular septum thickness (LVIVS) (16.5 ± 1.3 mm vs 14.3 ± 1.7 mm, p <0.01), left ventricular posterior wall thickness (LVPWT) (16.7 ± 1.4 mm vs 14.5 ± 1.8 mm, p < 0.01), left ventricular (LV) mass/gr (415 ± 33 vs 388 ± 41, p < 0.01), peak gradient (98 ± 10 mmHg vs 48 ± 7 mmHg, p < 0.001) and in mean gradient (58 ± 10 mmHg vs 22 ± 8 mmHg, p < 0.001). The functional aortic valve orifice postoperatively was 1.4 ± 0.5 $cm^2$. The ejection fraction (EF) and the left ventricular end-diastolic pressure (LVEDP) were unchanged.
**Conclusions:** Immediate and intermediate results reveal the safety of the procedure and the significant functional and anatomical improvement of the left ventricle. Although the number of patients is small, female patients, small or large, seem to be the usual candidates for this procedure.

# ORAL PRESENTATION 10
# HEART FAILURE A

## OP45. STEM CELLS IMPLANTATION AND CABG IN PATIENTS WITH MYOCARDIAL INFARCTION: PRELIMINARY DATA OF A PROSPECTIVE, DOUBLE-BLIND, RANDOMIZED, PHASE-II CLINICAL TRIAL

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**Purpose:** Implantation of autologous bone marrow stem cell into the infarcted myocardium has been proposed as novel treatment of ischemic cardiomyopathies. We designed a double-blind randomized (1:1 versus placebo) phase-II clinical trial to determine if EF, LVESV, LVEDV and clinical outcome differ statistically between the 2 groups.
**Methods:** From March 2004 to June 2006, 40 patients (age, 65.64±6.71 years) were enrolled in the study. Inclusion criteria were: age 18-76 years, EF lower than 35%, recent (1-6 months) anterior MI with multi-vessel disease, anterior left ventricle akinesia at dobutamine-stress echocardiography.
Cells suspension (30.0x $10^6$ cells) was prepared and randomized the day of surgery. As standard CABG was ultimated, stem cells were implanted by multiple 26 gouge needle injections into the anterior wall tangentially to the heart surface to minimize "channel leakage".
**Results:** Preoperative mean NYHA class was 2.90±0.73, LVESV in ml (mean±SD), LVEDV, and EF (%±MSE) were 112±40, 161±51, 30.21±4.39 by angiography and 108±43, 151±51, 28.81±4.92 by echocardiography, respectively. Postoperatively, 1 pt died for lung failure due to severe COPD. At follow-up (mean 18 months, range 2-25), mortality rate was 5.1% (2 pts, 1 not cardiac-related). Mean NYHA class decreased to 1.5±0.97; angiographic and echocardiography follow-up demonstrated a LVESV, LVEDV, and EF at 89±29, 141±32, and 39±9, respectively, and 91±38, 147±51, and 34.32±6.37, respectively (p<0.01).
**Conclusion:** Although still ongoing, the study results show that the procedure is feasible and safe. Preliminary data demonstrate a significant improvement of examined variables. Once ultimate, the study will appropriately estimate clinical usefulness of cell therapy.

## OP46. MECHANICAL CIRCULATORY ASSISTANCE AS A BRIDGE TO TRANSPLANTATION. THE ONASSIS CARDIAC SURGERY CENTER EXPERIENCE

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**Purpose:** Although heart transplantation remains the gold standard for patients in end-stage heart failure, its widespread application is limited by the worldwide shortage of donors, especially acute in Greece. Therefore, certain ventricular assist devices (V.A.D.s) have been employed as a bridge to transplantation.
**Methods:** Between February 2003 and May 2006, 18 patients (17 male, 1 female) with a median age of 36.5 yrs (range: 11-62) were supported by V.A.D.s. Patients had either dilated (66.6%) or ischemic (33%) cardiomyopathy and preoperatively were hypotensive (mean systolic BP=90±15 mmHg) with elevated filling pressures (right atrial pressure=14±8mmHg; pulmonary capillary wedge pressure=29±8mmHg) despite inotropic support (98%) and intraaortic balloon assistance (55.5%).
**Results:** The cardiac index improved to an estimated pump flow of 4-6.5 L/min. Median duration of mechanical support was 189 days (longest 365 days, 7 patients>9 months). There were three device-related complications: 1 inflow conduit valve endocarditis, 1 inflow device occlusion and 1 inflow conduit rupture. Adverse events included perioperative bleeding (21%) and driveline infection (n=9).Two patients sustained cerebral bleeding and there was one episode of T.I.A. One patient after 3 month support with an implantable Berlin Heart

(INCOR) survived its Novacor replacement along with perioperative right ventricular Levitronix support. Of the eighteen patients, fifteen (83.3%) survived, seven of which were transplanted (4L.V.A.D.s, 3 BiV.A.D.s).Eight continue with an excellent quality of life, while three (16.6%) died on the device. Three months after implantation improvement was documented by submaximal exercise performance and 94% of the patients were in Class I-II NYHA.
**Conclusion:** The use of ventricular assist devices in patients with end-stage heart failure averts imminent death and improves overall candidacy for eventual transplantation.

## OP47. LEFT VENTRICULAR RECONSTRUCTION FOR ISCHEMIC CARDIOMYOPATHY: THE S. ANNA HOSPITAL EXPERIENCE

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**Purpose:** Interest in reconstructive surgery for ischemic cardiomyopathy has increased. This study reports experience achieved with ventricular reconstruction in patients with left ventricular wall thinning.
**Methods:** From March 2002 to June 2006 180 (31% female, mean age 67, 7 range 47-84) patients were operated on for left ventricular reconstruction by Dor procedure (LVR). Preoperatively mean euroscore was 5,73 (range 2-15), 83% were in symptom class III or IV and 10% required mechanical support with IABP before surgery. Average EF was 33% (range 20-55). Mitral regurgitation was mild or more in 60%. Operative procedures included CABG in 92%, a mitral valve procedure in 6 % and ventricle reconstruction alone in 8%.
**Results:** In-hospital mortality was 8%. Perioperative support included IABP in 23% and inotropic drugs in 68%. Postoperatively 1 patient was schedule for heart transplantation. Eight patients received an implantable cardioverter-defibrillator for ventricular tachycardia or resinchronization therapy. At early follow-up 2 patients required mitral valve repair for raised mitral regurgitation (untreated at first procedure) from grade 2 to 4. Among survivors, symptom class improved in 75% of patients. Average increase in ejection fraction postoperatively was 11%± 8%.
**Conclusion:** Wall thinning is a simple and effective criterion for patient selection; LVR can be performed with acceptable operative mortality and provides good control of symptoms. In our experience it should be always considered in all patients with coronary disease and poor left ventricular function with wall thinning and should always be associated with extensive coronary revascularization and mitral repair when necessary.

## OP48. RELATIONSHIP BETWEEN PLASMA B-TYPE NATRIURETIC PEPTIDE (BNP) AND VENTRICULAR FUNCTION IN ADULT CARDIAC SURGICAL PATIENTS

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**Purpose:** The purpose of this study was to analyze plasma concentrations of BNP during perioperative period in patients undergoing adult cardiac surgery, and to explore the relationship between plasma BNP concentrations and various clinical parameters.
**Methods:** Thirty patients who underwent adult cardiac surgery by a single surgeon were enrolled in this study between June 2004 and March 2005. Mean age was 54.5 ± 17.1 years. There were 17 women and 13 men. Measurement of plasma BNP concentration was performed at preoperative, immediate postoperative day, postoperative 1st, 2nd, 4th and 7th day.
**Results:** At postoperative 1st day, BNP level became significantly increased ($p = 0.004$). The concentrations had returned to baseline values by 7th day postoperatively. The preoperative BNP level correlated with the left ventricular ejection fraction and age. The BNP level at 24 hours after surgery correlated with left ventricular end diastolic dimension and preoperative BNP levels.
**Conclusion:** Theses results showed that the plasma BNP concentration were elevated remarkably and abruptly after cardiac surgery and reflects temporary ventricular dysfunction. Patients with preoperative left ventricular dysfunction and high BNP levels must be managed aggressively after cardiac surgery.

## OP49. TEN YEARS OF HEART TRANSPLANTION IN A LOW ORGAN DONATION ENVIRONMENT

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**Purpose:** Indications of heart transplantation have expanded with the addition of patients on assist devices and those hitherto deemed inoperable due to pulmonary hypertension, further taxing the already limited Greek donor pool (6 donors p.m.p).
**Methods:** Fifty patients with an ejection fraction of 18±7% underwent heart transplantation, from April 1996 to July 2006, at the Onassis Cardiac Surgery Cen-

ter applying international selection criteria. The cause of end-stage heart disease was dilated (n=32), ischemic (n=12) or valvular cardiomyopathy (n=6). The median patient age was 38 years (range 14-62 years). There were 38 male and 12 female patients. Seven patients (14%) underwent insertion of a V.A.D., while 19 (38%) received continuous outpatient inotropic support combined with an implantable cardioverter defibrillator before transplantation. Fifteen patients had a total of 21 previous cardiac operations. The mean interval between listing and transplantation was 146 days (range 0 to 744 days). Graft preservation was effected using H.T.K. cardioplegia and orthotopic heart transplantation was performed using the biatrial technique. The median donor age was 27 years with a mean donor ischemic time of 207 minutes.
**Results:** Thirty day mortality was 4% caused by perioperative bleeding (n=1) and pneumonia (n=1). Causes of late death were cardiac allograft vasculopathy (n=1) and lymphoma (n=2). Freedom from acute rejection after 5 years was 8%, on triple immunosuppression and induction therapy, diagnosed by endomyocardial biopsy. Seven patients have documented graft vasculopathy; 1-8 years post transplantation. Actuarial survival is 96%, 96% and 70% at one; five and ten years, respectively and all survivors are in class I-II of N.Y.H.A.
**Conclusion:** The results of our ten-year experience are gratifying in relation to early and late mortality. Our data demonstrate that heart transplantation, even infrequently performed, affords vastly improved survival and quality of life.

# ORAL PRESENTATION 11
# MISCELLANEOUS C

## OP50. RETROGRADE PULMONARY PERFUSION IMPROVES RESULTS OF PULMONARY EMBOLECTOMY FOR MASSIVE PULMONARY EMBOLISM

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**Purpose:** Mortality for pulmonary embolectomy for acute massive pulmonary embolism remains around 60% when the operation is performed in critically ill patients. The causes of death have generally been attributed to right heart failure secondary to persistent pulmonary hypertension, intractable pulmonary edema and massive parenchymal and intrabronchial hemorrhage. There is clinical and experimental evidence that venous air embolism causes severe and even lethal damage to the pulmonary microvasculature and to the lung parenchyma secondary to the release of endothelium-derived cytokines. Entrapment of air in the pulmonary artery during pulmonary embolectomy may thus contribute in determining the poor outcome of these patients. Retrograde pulmonary perfusion facilitates removal of residual thrombi from peripheral pulmonary artery branches and fills the pulmonary artery with blood thus preventing pulmonary air embolism.
**Methods:** We have associated retrograde pulmonary perfusion to standard pulmonary embolectomy in a series of twenty-one critically ill patients. Nineteen patients with acute severe hemodynamic and respiratory compromise were referred for urgent or emergent surgical pulmonary embolectomy with a diagnosis established by means of an echocardiogram and a pulmonary angiogram. Two patients who had a cardiac arrest in the ward underwent emergency surgery on the basis of the clinical picture alone. Under cardiopulmonary bypass and aortic cross-clamping, following extraction of the thrombotic material from the pulmonary artery, retrograde pulmonary perfusion was carried out via a cannula inserted into the left atrium and connected to the arterial line. The pulmonary arteriotomy was closed when all residual thrombi and air bubbles were eliminated and the patients were weaned off cardiopulmonary bypass in a standard fashion.
**Results:** There was no mortality and all patients were discharged from the hospital without any major postoperative complications.
**Conclusion:** Retrograde pulmonary perfusion may contribute to decrease mortality and morbidity in pulmonary embolectomy for massive pulmonary embolism.

## OP51. A SIMPLE AND ROBUST STATISTICAL TOOL FOR PERFORMANCE MONITORING IN CARDIAC SURGERY: VARIABLE LIFE EUROSCORE ADJUSTED GRAPH

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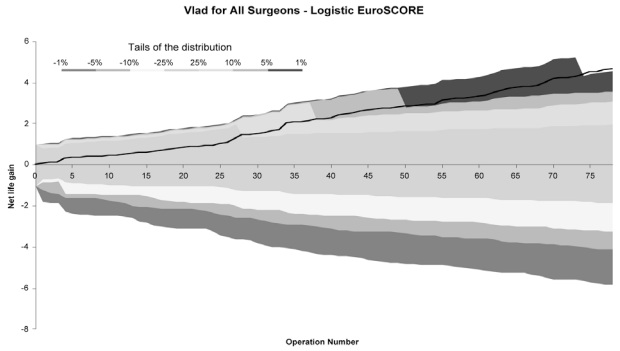
**Purpose:** Quality control has reached cardiothoracic surgery long before many other specialties or healthcare management fields in general. Bayesian stratification models are a novel means of surgical performance monitoring. We are assessing here the use of Euroscore predicted Variable life adjusted (VLAD) curves in cardiothoracic surgery.
**Methods:** All patients operated by the same surgeon over a fixed period of time were prospectively enrolled in the study. Their simple and logistic Euroscore were calculated and they were entered into a spreadsheet electronic database where their vlad mortality relative risk

was calculated through a simplified mathematical equation (University College London biostatistical dept.).
**Results:** 79 consecutive patients were enrolled in the study. Mean age of 72 and mean euroscore of 5,14. Mean hospital stay of 6,2 days. Peri-operative mortality (30 days) was 0 %. The predicted relative mortality risk adjusted for the euroscore was calculated for each patient. A graph was created based on logistic Euroscore. It included the predicted cummulative peri-operative survival; the actual peri-operative survival as well as the % confidence limits (i.e standard deviations) (graph 1).
**Conclusion:** The calculation and graphical depiction of the variable life (Euroscore) adjusted curve provides a useful tool for monitoring surgical performance. The addition of confidence limits in the graph provides a simplified visual analogue for continuous monitoring.




## OP52. MUSIC LISTENING DURING HEAD-UP TILT TESTING IN NEUROCARDIOGENIC SYNCOPE

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**Purpose:** The aim of this study was to examine the effects of music on the outcome of head-up tilt-tests (HUT) in patients (pts) with neurocardiogenic syncope (NCS).
**Methods:** We studied 30 pts with a clinical history of NCS and a positive HUT with clomipramine challenge. All pts repeated the HUT 2 days after. Fifteen pts repeated the HUT while listening to relaxing music via headphones. Epinephrine, norepinephrine, prolactin and cortisol levels in the plasma were measured during both tests, at baseline (1), syncope or end of the test (2) and 10th min of recovery (3).
**Results:** Ten (66.6%) from the music group and 3 pts (20%) from the group without music had a negative second HUT ($p<0.05$. Music normalized the sympathoadrenal imbalance noticed during positive HUTs. This was expressed through the increase in norepinephrine during negative HUTs while listening to music. Cortisol and prolactin which showed an approximate two fold increase during positive HUTs did not rise significantly when tests with music listening became negative (Table 1).
**Conclusion:** Music seems to modify the neuroendocrine profile related to NCS and it may also alter the response to tilt-testing.

| | 1st positive HUT (N=15) | 2nd negative HUT with music (N=10) | | 1st positive HUT (N=15) | 2nd negative HUT with music (N=10) |
|---|---|---|---|---|---|
| (1) Epinephrine, (pg/ml) | 14.0±14.9 | 15.5±15.7 | (1) Cortisol (pg/ml) | 4897±2912 | 3498±1650 |
| (2) Epinephrine | 33.7±16.3* | 29.1±13.0* | (2) Cortisol | 9227±3377* | 5543±3354 |
| (3) Epinephrine | 20.1±13.9 | 18.6±14.4 | (3) Cortisol | 5703±3162 | 3682±1486 |
| (1) Norepinephrine (ng/ml) | 2.2±2.5 | 1.1±0.8 | (1) Prolactin (μIU/ml) | 150±131 | 131±75 |
| (2) Norepinephrine | 1.5±2.5 | 5.1±3.4* | (2) Prolactin | 300±242* | 193±110 |
| (3) Norepinephrine | 1.6±2.5 | 2.6±3.1 | (3) Prolactin | 228±200 | 164±86 |

*: $p<0.05$ vs baseline (1)

## OP53. A COMBINED THERAPEUTIC APPROACH TO NEUROCARDIOGENIC SYNCOPE

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**Purpose:** Multiple mechanisms have been implicated in the pathophysiology of neurocardiogenic syncope (NCS). We tested the efficacy of a therapeutic strategy that could block both central and peripheral factors in patients (pts) with NCS.
**Methods:** Twenty-five pts (38.2±14.5 years, 9 men, 15 females) with a clinical history of NCS were included and randomly (1:1) received the combination of a serotonin reuptake antagonist (SSIR- fluoxetine 20 mg per day) and a beta- blocker (atenonol 12.5- 25 mg per day) or placebo. Pts included had a positive head-up tilt test (HUT) and >5 total syncopal spells or 2 episodes in the previous 6- months.
**Results:** Thirteen pts received the combination of fluoxetine-atenolol and 12 placebo. There was one withdrawal. We followed-up our pts for a period of 9±3.6 (2.5 to 14.5) months. Syncopal episodes 6 months prior to inclusion were 3.3±2.5 in the fluoxetine-atenolol group and 2.7±1.5 in the placebo group (p: ns) and decreased significantly in both groups during follow-up (0.3±0.6 in the fluoxetine-atenolol group and 1.2±1.0, in the placebo group, $p<0.05$). Ten (76.9%) pts remained free of syncope in the fluoxetine-atenolol group and 4 (36.3%) in the placebo group. Kaplan-Meier analysis with respect to the first recurrence of syncope revealed that fluoxetine-atenolol was more effective than placebo (Log-Rank test p=0.035). One pt from each group had a pacemaker implanted.
**Conclusion:** Primary results show that a combined therapeutic strategy that blocks both central and peripheral mechanisms, implicated in the pathophysiology of NCS, might be very promising.

## OP54. DELAYED STERNAL CLOSURE FOR UNTREATABLE POSTCARDIOTOMY SHOCK: A SAFE AND EFFECTIVE OPTION

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**Purpose:** Open chest (OC) and subsequent delayed sternal closure (DSC) has been described as a useful method in the treatment of the severely impaired heart after cardiac surgery. Aim of this retrospective study was to evaluate mortality for OC management at our center.
**Methods:** Prolonged OC was used in 26 adult cardiac operations (less than 1% of the all procedures). Indications were extreme cardiac dilatation with postoperative low cardiac output (60%) and uncontrollable mediastinal haemorrhage (40%). OC/DSC were used proportionally more frequently after combined cardiac surgery (77,7%) than CABG alone (1 patient) or valve operation (2 aortic valve replacement and Mitral procedure). An emergent procedure as performed in 8 patients: 4 for a type A aortic dissection, 4 for a postinfarction septal defect.
**Results:** Fourteen patients died: 2 before DSC, 12 after DSC at 11 days after OS. Multi organ Failure was the most frequent cause of death. Among survivors (65% of those with mediastinal haemorrhage) DSC was carried out at 20 hours after OC. All patients (12) discharged at home from the hospital was in NHYA functional I. at follow-up only one patient died for Congestive heart failure at 452 days. Two patients had wound infection, no one suffered for sternal osteomyelities or mediastinal infection.
**Conclusion:** In our experience morbidity and mortality related to OC/DSC have proved acceptable in this high-risk group. DSC was useful in patients with postcardiotomy shock with a relatively low incidence of sternal complications.

## OP55. LATE CLINICAL RESULTS AFTER AORTIC VALVE REPLACEMENT WITH CONCOMITANT CORONARY ARTERY BYPASS SURGERY

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**Purpose:** The benefit of concomitant coronary artery bypass grafting (CABG) in patients undergoing aortic valve replacement (AVR) is still under debate. In an effort to contribute to this discussion, we analysed our data of patients after AVR-CABG.
**Methods:** Between 01/1994 and 10/2000 238 patients underwent combined AVR (mechanical prosthesis) and CABG at our department. Follow up was 90.7% complete (n:216).
**Results:** There were 175 men (73.5%), 63 women (26.5%) (mean age:66.16y, range:35.4-86.7y). A mean of 2.05±1.03 bypasses/patient (range:1-5) were performed. Cumulative duration of follow up is 813 patient-years (maximum:7.6y). 222 patients (93.3%) were preoperatively in NYHA class III and IV. Early mortality (30d) rate was 5.9% (n=14) and was significant higher in patients of female gender:12.7% p:0.0073, aged ≥70y:11.7% p:0.0085, with NYHA class IV: 17.65% p:0.0165 and with previous cardiac surgery: 33.3% p:0.015. 21 patients (9.7%) died during the follow up, which resulted in a cumulative survival rate at 7.6y of 84.2%.With regard to age, gender, valve lesion, NYHA class, size of the prosthesis and EuroSCORE the survival rate at 7.6y was: age <70y:88.23% vs. age ≥70y:75.05% p:0.055, male:90.45% vs. female:71% p:0.012, stenosis:86.05% vs. regurgitation:93.1% vs. mixed:76.05% p:0.72, NYHA III:88.01% vs. IV:66.9% p:0.025, prosthesis-size ≤21mm:79.3% vs. prosthesis-size ≥23mm:86.6% p:0.19 and EuroSCORE≤4:90% vs. 4>EuroSCORE≤8:88.6% vs. EuroSCORE>8:65.5% p:0.0015. 80.2% of survivors were postoperatively in NYHA class I or II.
**Conclusion:** AVR-CABG, performed in patients aged<70y, of male gender and in NYHA class<IV, is a treatment with satisfactory surgical results and long term survival. EuroSCORE>8 is an important predictor for poor longterm outcome after AVR-CABG surgery.

# ORAL PRESENTATION 12
# CONGENITAL A

## OP56. LONG-TERM ORAL BOSENTAN THERAPY IN PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION RELATED TO CONGENITAL HEART DISEASE: A 2-YEAR STUDY

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**Purpose:** To evaluate the long-term clinical and exercise effect of chronic oral administration of the nonselective endothelin receptor antagonist bosentan in patients with pulmonary arterial hypertension (PAH) related to congenital heart disease (CHD).
**Methods:** 19 of the 21 patients in the preceding prospective nonrandomised open clinical study with bosentan therapy in PAH related to CHD aged 22±3 years (13 with Eisenmenger syndrome) in World Health

Organisation (WHO) Class II-IV and oxygen saturation 87±2 % received bosentan therapy for 2.4±0.1 years with clinical and exercise evaluation at baseline, 16 weeks and 2 years of treatment and hemodynamic assessment at baseline and 16 weeks.
**Results:** All patients remained stable with sustained subjective clinical and WHO Class improvement ($p<0.01$) at 16 weeks and 2 years of therapy without significant side effects or changes in oxygen saturation. After the initial 16 week improvement ($p<0.05$) in peak oxygen consumption and exercise duration at treadmill test, and walking distance and Borg dyspnoea index at 6-min walk test, all exercise parameters appeared to return to their baseline values at 2 years of follow-up.
**Conclusion:** Long-term bosentan therapy in patients with PAH related to CHD is safe and induces clinical stability and improvement, while the objective exercise values appear to slowly return to baseline. Larger long-term endothelin receptor antagonism studies including quality of life assessment are needed to evaluate the therapeutic role of bosentan in this population.

## OP57. LATE REOPERATION AFTER COMPLETE REPAIR OF TETRALOGY OF FALLOT

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**Purpose:** Despite successful prior repair of Tetralogy of Fallot (TOF), long term follow up reveals significant residual or progressive lesions which lead to symptoms, impaired right ventricular function and thus need for reoperation. This study presents our experience in patients who required reoperation post complete TOF repair.
**Methods:** Twenty five (25) patients (age 20±15.9, median 15 years) with previously complete repair of TOF (performed elsewhere in all cases), required reoperation for significant residual defects. Time since original repair was 11.4±8.5 (median 9) years. Fifteen patients (60%) were in NYHA class III, eight (32%) in class II and 2 (8%) were asymptomatic preoperatively. Residual defects, for which intervention was necessary, were: Residual ventricular septum defect (VSD) in 11pts, severe stenosis of right ventricular outflow tract (RVOT) in 5pts, stenosis of right ventricle (RV) to pulmonary artery (PA) conduit in 2 pts and severe pulmonary valve insufficiency in 10pts. Surgical repair included: VSD closure (11pts), RVOT resection (5pts), and pulmonary valvotomy (1pt), placement of new or replacement of dysfunctional RV to PA conduit in 14 cases (2 homografts, 12 Contegra(tm) type xenograft), ASD closure (6pts) and tricuspid valvuloplasty (1pt).
**Results:** There was no death in this series. Mean ITU stay was 2.9±1.7 (median 2) days and hospital stay 8.3±1.9 (median 7.5) days. There were no major post operative complications. At follow up of 24-62 months, all patients are well (NYHA class I-II), in sinus rhythm, free of any cardiac medication and of residual defects by echocardiography.
**Conclusion:** Late reoperation, which may be necessary after TOF repair, can be achieved with minimal morbidity. Follow up for these patients is demanding, as adverse effects may occur with deleterious results.

## OP58. MITRAL VALVE STATUS DEFINES LONG TERM OUTCOME AFTER CORRECTION OF PARTIAL ATRIOVENTRICULAR SEPTAL DEFECT

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**Purpose:** Mitral valve (MV) repair is an essential compound of the surgical correction of partial atrioventricular septal defect (PAVSD) in order to preserve native valve and left ventricular function. This study evaluates the results of this approach in our unit.
**Methods:** Between September 1997 and August 2006, 69 patients aged 0.6-64 (median 6) years, presented to our unit for repair of PAVSD. Of these, 5 patients had double orifice MV and 64 anterior leaflet cleft. Echocardiography showed 1.5±0.7 mean mitral regurgitation (MR) score and radiography increased (0.54±0.06) cardiothoracic ratio (CTR). All patients underwent closure of the primum septal defect with pericardium and the majority, MV repair.
**Results:** There was no operative death. Median ICU and hospital stay was 2 and 8 days respectively. Mean MR score decreased to 1.05±0.7 ($p=0.01$). Also a significant reduction in heart size (CTR: 0.53±0.05, $p=0.01$) was noted early postoperatively. At 60±31 months follow-up 2 patients aged 10 and 29 months with severely dysplastic valves developed severe (4+) MR and congestive heart failure. They underwent MV replacement without significant improvement and both died 3 months later. All other patients retain satisfactory MV function (MR 1.06±0.7) remaining in excellent clinical condition.
**Conclusion:** Correction of PAVSD with concomitant MV repair has been achieved with no mortality, low morbidity and excellent mid-term results in this series with preservation of valve function in most cases. However, the function of severely dysplastic valves may deteriorate, and the long-term risk remains to be determined, especially in infants and small children requiring valve replacement.

## OP59. ETIOLOGY AND MANAGEMENT OF CHYLOTHORAX FOLLOWING PEDIATRIC HEART SURGERY

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**Purpose:** Review of our experience with the management of chylothorax following congenital heart surgery.
**Methods:** Between 9/1997-8/2006, of 1341 pediatric patients undergoing correction of congenital heart disease in our institution, 18 (1.3%) developed chylothorax postoperatively. Surgical procedures included tetralogy of Fallot repair in 10 patients, ventricular septal defect closure (1), atrial septal defect with pulmonary stenosis repair (1), Fontan procedure (3), coarctation of the aorta repair (1), aortopulmonary shunt (1) and ligation of patent ductus arteriosus in one patient. All patients followed a therapeutic protocol including complete drainage of chyle collection and controlled nutrition. Somatostatin was used adjunctively in six (33.3%) patients. Surgical intervention was reserved for persistent lymph leak, despite maximal therapy. Following resolution of chylothorax, a medium-chain triglyceride diet was implemented for six weeks.
**Results:** There was no death. Fifteen patients (83.3%) responded to conservative therapy. Lymph leak ranged from 2.5 to 14.7 ml/kg/day for 8-42 days. Three patients with persistent drainage required thoracotomy with pleurodesis to achieve resolution, in two of which previously attempted chemical pleurodesis with doxycycline proved ineffective. Duration of lymph leak in this subgroup ranged from 24 to 47 days with 5-8.7 ml/kg per day output.
**Conclusions:** Postoperative chylothorax is an infrequent complication of surgery for congenital heart disease and can occur even after median sternotomy in the absence of pathologically elevated venous pressure or Fontan circulation. Although hospitalization can be prolonged, conservative therapy is effective in most cases, while surgical pleurodesis proved successful in the refractory cases.

# ORAL PRESENTATION 13
# AORTIC ANEURYSMS

## OP60. THORACOABDOMINAL ANEURYSM REPAIR USING A FOUR-BRANCHED THORACOABDOMINAL GRAFT

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**Purpose:** Revascularization of the visceral arteries during thoracoabdominal aneurysm repair is usually performed by a side-to-side anastomosis between the prosthetic tubular grafts, containing all visceral branches, except for the left renal artery, which is reimplanted separately. Experience with the Crawford extent IV thoracoabdominal aneurysm repair using a prefabricated four-branched tubular graft, is described.
**Methods:** A four-branched tubular aortic graft was used for repair of Crawford extent IV thoracoabdominal aneurysm in three patients, one woman and two men (69, 68 and 57 years old). Aneurysm size was 6.2- 8.2- and 11cm, respectively.
**Results:** The postoperative course was uneventful, except for one patient who required prolonged ventilatory support (4 days) due to his severe COPD. All abdominal organs showed normal function. Computed tomographic angiography before discharge revealed normal contrast filling of the four side branches without any torsion or compression. Uneventful follow-up extends now 6 to 12 months.
**Conclusions:** We believe that the separated graft technique is a valuable alternative to the more classic patch reimplantation technique, as it permits sequential artery reattachment and earlier restoration of blood flow, eliminates pseudoaneurysm formation and finally allows creation of tension free anastomoses obviating early bleeding.

## OP61. COMBINED SURGICAL AND ENDOVASCULAR TREATMENT OF AORTIC TYPE A DISSECTION

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**Purpose:** We describe a combined approach for treatment of a type A aortic dissection with surgical repair of the ascending aorta and transluminal stenting of the descending aorta hence minimizing the consequences on the untreated aortic arch and descending aorta.

**Methods:** from December 2002 to June 2003, 5 consecutive patients (4 men and 1 woman) suffering from type A aortic dissection were treated with resection of the ascending aorta or aortic hemi-arch. Prior to the open distal aortic anastomosis the Endofit( endovascular graft (Endomed inc, 10220 South 51st Street, Suite 1, Phoenix, AZ 85044, USA), was deployed under direct vision distally to the origin of the left subclavian artery.
**Results:** Intraoperative stent graft placement was successful in all patients. There was no hospital mortality. Early results were satisfactory with a completely thrombosed false lumen in two patients and a partially thrombosed false lumen in three patients, 10 days after operation. Follow-up CT scan showed a completely thrombosed false lumen in four patients and a partially thrombosed false lumen in one patient.
**Conclusion:** This study shows that combined surgical and endovascular treatment of acute type A dissection is a feasible option but further evaluation is necessary.

## OP62. TYPE-A ACUTE AORTIC DISSECTION AFTER PREVIOUS CORONARY ARTERY BYPASS SURGERY

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**Purpose:** Risk of repairing acute aortic dissection after previous coronary bypass procedures has not been described clearly. This study aims to re-evaluate the tecniqual perioperative approches in type-A acute aortic dissections after coronary bypass operations.
**Methods:** Between August/2003 and March/2006 five patients underwent reoperations for type-A acute aortic dissections after coronary bypass surgery in our center. All patients were men and the mean age was 58.4±13.5 (38-72) years. Median interval between the previous and the second operation was 16±5.1 months (3-24). The entry sites of all dissections were partial occluding clamp place. Supracoronary graft replaced to the four of the patients and hemiaortic arch replacement was done in one patient. Retrograde cerebral perfusion was performed in three patients and deep hypothermic total circulatuar arrest established in all cases during distal anastomosis.
**Results:** There was no mortality in our small group and all patients discharged in 8-17 days. There was no evidence of coronary ischemia and end organ malperfusion after the operation. In one patient, left hemiparesis is developed at the first postoperative day but than resolved in three days following the surgery.
**Conclusion:** These patients should be performed emergency operation and should be solved coronary problems optimally. While performing proximal anastomosis, we advise to avoid using of partial occluding clamp.

## OP63. ENDOVASCULAR VERSUS OPEN REPAIR FOR BLUNT THORACIC AORTIC INJURY

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**Purpose:** During the last decade, endovascular stenting (EVS) has been increasingly used as an alternative treatment modality or in a complimentary fashion with surgical treatment for the management of thoracic aortic disease. The aim of this study was to present the results of endovascular stenting repair after blunt thoracic aortic trauma.
**Methods:** A review of a tertiary trauma center registry identified all patients who suffered blunt thoracic aortic injury from 2001 to 2006. All patients were emergently subjected to either open repair with partial femorofemoral CPB and synthetic graft interposition or EVS of a blunt thoracic aortic injury. Type of injury, concomitant injuries, several clinical factors and outcome was recorded and analyzed.
**Results:** In 12 patients open repair was performed. Their age ranged from 18 to 41 years (mean: 26.1 years). This group included 11 male (92%) and 1 female (8%). Early mortality rate was 8%, paraplegia rate was 8% and incidence of recurrent laryngeal nerve injury was 17%.
In 17 patients EVS was conducted. In all cases a Talent stent graft 38x38x110 was inserted through right femoral artery. Their age ranged from 20 to 78 years (mean: 37.8) and were all male. Early mortality rate was 12%. No incidence of paraplegia or of recurrent laryngeal nerve injury was recorded. Comparison between groups for mortality and complications showed no statistical significant difference (p=0.57 and p=0.88 respectively). However, severe concomitant injuries were more frequently present among EVS group (p=0.002).
**Conclusion:** Although postoperative mortality and morbidity between open and endovascular repair were comparable, EVS can be considered as a safe and less invasive treatment modality for blunt thoracic aortic injury in the therapeutic algorithm of the high risk patient.

## OP64. EARLY AND MID-TERM RESULTS OF MYOCARDIAL REVASCULARISATION USING BILATERAL INTERNAL THORACIC ARTERIES. SINGLE UNIT'S 12 YEAR EXPERIENCE

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**Purpose:** We assessed the balance of the peri-operative risk against the potential long term benefits of increased

life expectancy in 1.407 consecutive patients who underwent CABG with the use of bilateral internal thoracic arteries (BITA) by the same surgical team.
**Methods:** Between July 1993 and December 2005, 1407 patients underwent coronary artery bypass grafting receiving both internal thoracic arteries. Young age and previous surgery with lack of alternative conduits were the main indications. There were 38 combined procedures (valve surgery, resection of aortic aneurysms, arterioplasty of the LMCA) and 41 re-operations.
Standard cardiopulmonary bypass with cold blood cardioplegic arrest was used. All right thoracic arteries were anastomosed as free grafts. Saphenous vein and/or radial artery was utilised when more than 2 grafts were required. The LITA was used for the LAD artery and the RITA for the larger intermediate or marginal branch of the circumflex artery.
**Results:** There were 1345 males. Mean age of 57.8± 6.6 years. 30% of the patients had E.F<45%.
30 day mortality was 0.57% (8 patients). Major complications were recorded at 1.3%, including 6 patients (0.4%) with deep sternal wound complications and mediastinitis. Follow-up is currently available on 1263 (90%) of these patients. At mean follow-up of 7 years 90% of them remain in NYHA class I.
**Conclusion:** Early and mid-term results are excellent. Probability for re-hospitalisation, re-operation and unexpected late death is extremely low. This strategy of revascularisation maximises all the long term benefits with minimal early morbidity and morbidity risk.

# ORAL PRESENTATION 14
# HEART FAILURE B

## OP65. TEMPORAL CHANGES IN CARDIOPULMONARY EXERCISE TEST IN PATIENTS WITH DILATED AND ISCHAEMIC CARDIOMYOPATHY AND HEART FAILURE IN THE B-BLOCKER ERA

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**Purpose:** Cardiopulmonary exercise (CPEx) is used for the objective evaluation of heart failure (HF) patients (pts). The introduction of β-blockers in HF has improved survival in both dilated (DCM) and ischemic cardiomyopathy (ICM) pts. The aim of the study was to investigate any differences in the changes of the CPEx parameters during follow-up studies in HF pts with DCM or ICM.
**Methods:** Seventy pts with HF (45 DCM pts-Group 1, 25 ICM pts-Group 2), randomly referred for CPEx more than once during the last 3 years were included. All were under optimal treatment (β-blockers, ACE inhibitors). CPEx test (Dargie protocol) was carried out. Maximal $O_2$ consumption ($VO_2$ max), maximal $CO_2$ production, maximal ventilation (VE) and %$VO_2$max achieved to $VO_2$max predicted (%$VO_2$max pred) were estimated in all pts and tests.
**Results:** Group 1 pts were younger (44.6±16.2 vs. 59.2±10.9, p<0.001) without difference in LV ejection fraction (28±8 vs. 29±7%, p=ns). The time between first and last test was similar in both groups (11.4±8.2 vs. 10.9±7.5 months, p=ns). There was a difference between the two groups in $VO_2$ max (19.7±5.6 vs. 17.1±4.2 ml/kg/min, p<0.001), in VE (63.5±21.8 vs. 57.2±16.3 L/min, p<0.05) and in the %$VO_2$max pred (58.1±17.8 vs. 53.5±11.3 %, p<0.05). During follow-up, only in 16/45 (35%) of Group1 pts and in 8/25 (32%) of group 2 $VO_2$max showed an increase (p=ns). No difference was detected between groups in the decrease of $VO_2$max (-1.8±3.7 vs. -1.1±3.4 ml/kg/min), VEmax (-2.24±26.1 vs. -2.99±12.9 L/min), %$VO_2$max pred (-4.5±12.1 vs. -2.4±9.6 %), and the rate of this decrease ($VO_2$ max, -0.2±0.7 vs. -0.1±0.5 ml/kg/min/month, VEmax, -0.52±8.1 vs. -0.15±2.51 L/min/month, and %$VO_2$max pred, -0.44±2.25 vs. -0.17 ± 1.45 %/month).
**Conclusion:** Pts with HF and optimal treatment are expected to have similar changes in CPEx parameters irrespective of the aetiology (DCM or ICM).

## OP66. REGENERATIVE POTENTIAL OF A CD34+ SUBPOPULATION OF BONE MARROW-DERIVED STEM CELLS FOR ISCHAEMIC HEART DISEASE

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**Purpose:** Multiple types of stem cells are currently being investigated as a potential therapeutic option for myocardial repair at the cellular level. Underlying mechanisms of observed functional improvement -at the experimental as well as clinical setting- continue to remain unknown. Cells expressing early cardiac markers have been identified within a subpopulation of bone marrow-derived stem cells; isolation and expansion of these cells *in vitro* prior to cellular transplantation may provide an alternative to crude preparations and maximise clinical effect.
**Methods:** G-CSF mobilised peripheral blood progenitor cell samples were obtained from leukapheresis in excess of clinical requirements. Following separation of the CD34+ via positive cell selection the candidate subpopulation of interest is isolated via adherence to tissue culture

plastic. Cells were analysed with PCR, microarray, immunocytochemistry, western blot and flow cytometry for endothelial and cardiac markers. *In vitro* differentiation studies were also carried out. Finally, cells labelled with iron oxide nanoparticles were injected in the peri-infarct area of rats having suffered myocardial infarctions.
**Results:** Positive expression for specific cardiac as well as primitive and mature endothelial markers was detected. These findings were further verified via demonstration of protein expression. In vitro culture under pre-defined conditions was also indicative of directional differentiation potential. Expression of homing to injury receptors was shown. Finally preliminary animal work showed evidence of engraftment as well as functional improvement (assessed by MRI and histology).
**Conclusions:** In conclusion, the proposed candidate stem cell subpopulation may provide an expandable autologous multipotent population for myocardial cellular transplantation.

## OP67. PERIPHERAL BLOOD FLOW CHANGES DURING HEAD UP TILT TESTS IN PATIENTS WITH DILATED CARDIOMYOPATHY

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**Purpose:** The purpose of the present study was to study peripheral blood flow changes during head-up tilt-tests (HUT) in patients (pts) with dilated cardiomyopathy and syncopal episodes.
**Methods:** Twenty-two pts, 18 men and 4 women with a mean age of 58.5±9.7 years with dilated cardiomyopathy (left ventricular ejection fraction (40%) and syncopal episodes were included in the study. Sixteen pts had implanted defibrillators and 2 biventricular pacemakers. All pts underwent a HUT with a clomipramine challenge. Forearm plethysmography was performed during the HUT. Measurements were obtained at baseline, during tilting and after recovery to supine position (baseline, 2.5, 5, 7.5, 10, prior to syncope or end of test and recovery). The cuff was inflated to a preset pressure of 50 mmHg in 25 seconds.

Forearm blood flow during tilting

| | Baseline (ml/100 ml/min) | 2.5 min (ml/100 ml/min) | 5 min (ml/100 ml/min) | 7.5 min (ml/100 ml/min) | 10 min (ml/100 ml/min) | Before end of HUT (ml/100 ml/min) | Recovery (ml/100 ml/min) |
|---|---|---|---|---|---|---|---|
| Negative HUT | 2.3±0.5 | 1.9±0.4 | 2.0±0.3 | 1.8±0.5 | 2.3±0.9 | 1.9±0.4 | 2.3±1.0 |
| Positive HUT | 2.3±0.2 | 1.7±0.6 | 1.5±0.6 | 1.7±0.5 | 2.0±1.2 | 0.5±0.0* | 2.2±0.4 |

*p<0.05 compared to baseline

**Results:** Eleven (50%) pts had a positive HUT during the 12.1±4.4 min of the test. There were no major differences in medication between the two groups. Flow changes were not significant and did not differ between groups during the first minutes of the test. Abrupt decrease in flow was noted prior to syncope.
**Conclusion:** Blunted peripheral reflexes seem to be present in pts with in pts with dilated cardiomyopathy once no significant fluctuations are noted during HUT.

## OP68. CK-MB RELATIVE INDEX AS PREDICTOR OF MORTALITY IN ADULT PATIENTS ON EXTRACORPOREAL MEMBRANE OXYGENATION SUPPORT FOR POSTCARDIOTOMY CARDIOGENIC SHOCK

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**Purpose:** Extracorporeal membrane oxygenation (ECMO) has demonstrated limited success in therapy of adult postcardiotomy cardiogenic shock. The aim of this study is to determine the predictors for mortality of non-transplantation patients on ECMO support.
**Methods:** During a 9-year period 32 patients (mean age 55.4 ± 11.9; from 30 to 75 years) with ECMO support for postcardiotomy cardiogenic shock were included in this study. 18 pts who died without weaning were defined as group I (n=18). The others, including 8 pts weaned and survived and 6 pts weaned but died in hospital were defined as group II (n=14).
**Results:** The following variables were significantly different between the two groups: blood lactate and CK-MB levels 48 hours after ECMO initiation ($p < 0.01$ and $p = 0.001$ respectively) and the CK-MB Relative Index as the ratio of CK-MB to total CK ($p < 0.001$). Logistic regression identified that only the CK-MB Relative Index 48 hours after ECMO initiation was associated with mortality on ECMO therapy ($p = 0.011$, odds ratio = 1.219, 95% confidence interval: 1.046 to 1.421). At a cut-off value of 11.26% for CK-MB Relative Index, the predicted probability of mortality was 50%.
**Conclusions:** For adult non-transplantation patients with postcardiotomy cardiogenic shock, the CK-MB Relative Index 48 hours after ECMO initiation can be a feasible predictor of mortality on ECMO support. This might be a useful tool for considering a patient either for continuation of ECMO or alternative therapies.

# ORAL PRESENTATION 15
# CONGENITAL B

## OP69. SURGICAL TREATMENT OF CONGENITAL HEART DISEASE IN ADULTS: THE OCSC EXPERIENCE

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**Purpose:** This study summarizes our surgical experience with the treatment of adults with congenital heart disease (CHD).
**Methods:** From 9/1997-8/2006, 319 consecutive patients, aged 18-75 years with CHD presented for surgery to our unit. Principal diagnoses included septal defects in 215 patients, anomalous pulmonary venous return in 2, left heart lesions (50), right heart lesions (21), tricuspid atresia/single ventricle (4), lesions of the thoracic arteries and veins (26) and complex heart disease in 1 patient. Forty-one patients (13%) had 1 to 3 prior surgical procedure(s), while 3 (0.95%) were admitted as emergencies. One patient had suffered prior MI, 3 a stroke, 2 endocarditis and 3 patients had developed pulmonary hypertension (PHT). One hundred seventy patients (53%) were symptomatic and 40 (12.5%) had an established severe rhythm disturbance. Chromosomal anomalies were identified in 12 (3.8%) and diagnostic catheterization was required in 188 (59%) patients. All patients underwent complete surgical correction.
**Results:** There were two early deaths (0.62%). Complications occurred in 54 patients (16.9%) and included postoperative haemorrhage (7), stroke (3), pneumothorax (14), AF (22), CHB requiring permanent pacemaker implantation (2), endocarditis (1), wound dehiscence (1), pericardial (7) or pleural (3) effusion requiring drainage and peripheral neuropathy (1). Median ICU and hospital stay were 1 and 7 days, respectively. Two late deaths (0.63%) occurred in patients with AF and PHT. At mean follow-up of 61±28 months, all other patients are well with resolution or significant improvement in their symptoms.
**Conclusion:** Despite the long term deleterious effects of untreated or residual/recurrent congenital heart lesions in adult patients, surgical correction can be achieved with low mortality and acceptable morbidity. Most significant complications are related to arrhythmias.

## OP70. EARLY AND MIDTERM RESULTS OF SURGICAL REPAIR OF COMMON ARTERIAL TRUNK

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**Purpose:** Repair of common arterial trunk (CAT) in the neonatal and early infant period has become a standard practice in many centers. We report our experience on early surgical repair of CAT.
**Methods:** From 7/1993 to 12/2005, 30 patients with median age 28 (range, 11-127) days, and median body weight 3.1 (range, 2.6-5.9) kg, underwent total repair of CAT (n=29), or palliation (n=1, with disconnected small pulmonary arteries). The anatomical type of CAT was: A1-2, 27; A3, 1; A4, 2. Right ventricular outflow tract (RVOT) was reconstructed with an aortic (n=7) or pulmonary homograft (n=8), or a bovine (Contegra(tm)) (n=11) or porcine (Shelhigh(tm)) valved xenograft (n=3). Follow-up ranged from 7 to 156 (mean, 75) months and was complete for all patients.
**Results:** There was one postoperative death due to sepsis (in-hospital mortality, 3.3%). One more patient died suddenly 2 months after surgery (6-year actuarial survival, 93.4%). Of the 28 midterm survivors, 14 (50%) underwent 30 interventional procedures including percutaneous balloon dilation +/- stenting for RVOT or branch pulmonary artery obstruction. Eight of them (23%) were reoperated on for right ventricle-to-pulmonary artery conduit replacement (n=8), and aortic valve regurgitation (n=1, 3.4%). The overall freedom from any reintervention at 6 years was 50%. Aortic valve regurgitation was trace in 15 patients, mild in 8, moderate in 4. All but one midterm survivors (26/27) had good ventricular function.
**Conclusion:** CAT repair can be performed during neonatal and early infant period with very low perioperative mortality and satisfactory midterm morbidity; the latter is mainly attributed to RVOT reconstruction. Interventional cardiac catheterization delays inevitable conduit replacement.

## OP71. STENT IMPLANTATION FOR NATIVE AND RECURRENT COARCTATION OF THE AORTA IN THE ADULT. RESULTS AND LONG-TERM FOLLOW UP

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**Purpose:** In the last decades, stent implantation has been proposed as a reliable option for the treatment of coarc-

tation of the aorta. The purpose of this study was to review our experience with stent treatment of coarctation of the aorta

**Methods:** Between December 2002 and May 2006, 18 consecutive patients (11 males and 7 females, 17-64 years old (37±16 years, median 38 years) underwent cardiac catheterization for native (n=12) or recurrent (n=6) coarctation of the aorta. Indication was hypertension with blood pressure (BP) 174±28mmHg under 2-4 antihypertensives, BP 205±32mmHg at exercise and or Holter monitoring and anatomy or other diseases precluding surgery.

**Results:** Nineteen stents were implanted. Follow up consisted of clinical evaluation, echocardiography, exercise test, Holter monitoring and chest spiral CT. Peak systolic gradient dropped from 54±22 to 7±6mmHg. The diameter of the coarcted segment increased from 9±3 to 19±3mm. In our series, no death occurred during or after the intervention during the follow up period. Severe complications did not occur. Minor complication rate was 5% (one small aneurysm in the femoral region with spontaneous thrombosis). One patient underwent re-dilatation of an implanted stent. All patients reduced (n=5) or stopped (n=13) antihypertensive medications.

**Conclusion:** Stenting of coarctation/re-coarctation of the aorta, in our experience, presents a safe alternative treatment without significant short-mid term complications.

## OP72. PRESERVATION OF RIGHT VENTRICULAR FUNCTION AFTER TRANSATRIAL/ TRANSPULMONARY REPAIR OF TETRALOGY OF FALLOT: AN EIGHT-YEAR EXPERIENCE

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**Purpose:** Although surgical repair of Tetralogy of Fallot (TOF) with low mortality and morbidity is well established, increasing awareness of the development of late adverse events (including severe pulmonary valve insufficiency (PI), residual/recurrent right ventricular outflow tract obstruction (RVOTO) and right ventricular (RV) dysfunction leading to symptoms, reoperation, or death ) has fuelled the debate as to the optimal surgical method of TOF repair: transventricular versus transatrial/ transpulmonary (TA/TP), which emphasizes maximal preservation of RV function. This study evaluates surgical results, reoperation and RV functional outcome after TA/TP repair of TOF over an eight-year period.

**Methods:** Between 9/1997 – 10/2005, 175 consecutive patients with TOF, aged 15 days-56 years (median 1,5 years), were referred to our department for surgical treatment. Of these, 161 patients had complete TA/TP repair in one stage, 9 patients had a shunt (6 Blalock-Tausig and 3 Waterstone) in other centre originally and were complete repaired in second stage in our department. Finally 4 out of 5 patients, who had initially undergone a Blalock-Taussig shunt in our department, had a complete repair in second stage. All 174 patients had ventricular septal defect closure and RVOT resection; in 151 patients the main pulmonary artery (PA) was enlarged by using autologous pericardium which extended to repair PA branch stenosis in 31 and to enlarge the pulmonary valve ring in 141 patients. A monocusp autologous pericardial valve was inserted in 14 patients. All patients underwent pre-discharge echocardiographic (ECHO) evaluation. Serial follow up included both clinical and ECHO assessment.

**Results:** There was no early or late death. One patient required early (postop day 4) reoperation to relieve residual RVOTO. Median ICU and hospital stay were 3 and 11 days, respectively. At hospital discharge, most patients (94%) had up to moderate PI (1+ in 63.8%, 2+ in 30.6%), up to mild tricuspid insufficiency (90%), and normal or mildly reduced RV function in 99%. Mean RVOT gradient was 13.7±13mmHg, median 10 mmHg. One patient required late reoperation (5.5 years postoperatively, mitral repair) for progressive mitral insufficiency. At latest follow up (100% complete, mean 3.4 years), all patients were in NYHA class I or II. Echocardiographically, 69.9% of patients had none to mild PI, and 24.5% moderate PI. None to moderate TI was noted in 96% of patients whereas RV function was normal in 93.2% and mildly impaired in 6.13% of the patients.

**Conclusion:** TA/TP repair of TOF in this series is associated with no mortality and minimal reoperation rate. Furthermore, in medium term follow up, PI remains modest, while the absence of significant RVOTO and the stability of good RV function provide hope for reduced long-term adverse event rates. Truly long-term follow up is necessary to confirm these findings.

## OP73. EVALUATION OF EARLY PEDIATRIC CARDIAC SURGERY MORTALITY RATES

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**Purpose:** Numerous studies in the past 2 decades have documented significant inverse relationships between adverse outcomes for certain types of patients and the amount of experience providers have in treating those patients.

For the most part, in-hospital or short-term mortality has been used as the measure of adverse outcome, although

complications of treatment and hospital length of stay have also been used. The purpose of this study is to evaluate early mortality (in OR & ICU), its probable causes.
**Methods:** OBJECTIVE: Evaluation of early mortality rates in pediatric cardiac surgery Design: Population-based prospective cohort study using a clinical database. Setting: TEHRAN RAJAIE heart center
Patients: All children undergoing congenital heart surgery in RAJAIE heart center from 2003 to 2004.
Main Outcome Measures: Early (ICU&OR) mortality rates. Results: 836 CASES 475 OPEN HEART SURGERY 361 CLOSED HEART SURGERY EARLY MORTALITY (OR&ICU) 49 CASES (5.8%) (5 in OR& 44 in ICU) Probable cause of mortality
1) LOW C.O STATE (45%)
2) DIC &BLEEDING (24%)
3) ARF (15%)
4) PNEUMOTHORAX &RESPIRATORY FAILURE (10%)
INFECTION (6%) 5)
**Conclusion:** 1) Evaluation and re evaluation of angiographic data & careful angiography.
2) Involving experienced pediatric cardiac surgeons and improvement in techniques.
3) Re-think the training in pediatric cardiac surgery, anesthesia, CPB & nursing
4) Early peritoneal dialysis for ARF after pediatric cardiac surgery
5) Use of bedside blood tests for faster diagnosis of hypoxemia and early treatment of problem.
6) Total correction versus palliative and step by step surgery.
7) Use of various scoring systems for evaluation and selection of patients.

# Posters

****Competitor for the Best Poster Award****

## P1. CATHETER-BASED TRANSENDOCARDIAL DELIVERY OF STROMAL CELL DERIVED FACTOR 1α (SDF-1α) IN A MODEL OF MYOCARDIAL INFARCTION IN PIGS ENHANCES ANGIOGENESIS

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**Purpose:** After myocardial infarction (mi) bone-marrow stem-cells (sc) home to ischaemic areas improving myocardial regeneration and angiogenesis. SDF-1α is critical for sc homing to infarcted areas, increasing the recruitment. The effect of delivering SDF-1α directly into the infarct region on left ventricular function and perfusion was investigated in a german landrace pig model.
Two weeks after induction of mi in the distal LAD via microembolization, animals underwent catheter-based transendocardial injection of SDF-1α into the periinfarct myocardium or sham-intervention. Electromechanical mapping (EMM) using NOGA™ and myocardial perfusion imaging (Tc99m-SPECT) of the left ventricle were performed two and seven weeks after mi. Infarct size was assessed by tetrazolium staining. Immunohistochemical-immunofluorescence staining was performed, analyzing vessel density and collagen content.
Perfusion did not change in both groups. Ejection fraction and stroke volume (EMM) decreased in SDF-1α animals and increased in controls (difference $p=0.05$ for ejection fraction and $p<0.05$ for stroke volume). Linear local shortening (EMM) did not change in controls (11.4±1.3% to 11.5±0.5%) but decreased in SDF-1α treated animals (12.1±0.9% to 8.4±0.9%, $p<0.05$, $p<0.05$ for difference between groups).
This study showed that the strategy to augment stem cell homing by catheter-based transendocardial delivery of SDF-1α in a model of mi increases angiogenesis in the periinfarct area. However, perfusion and infarct size were unaffected and function deteriorated. Although SDF-1α is promising, further studies are necessary to study angiogenesis and myogenesis strategies for myocardial regeneration.

| | SDF-1 (n=12) | Controls (n=8) | P |
|---|---|---|---|
| Vessel density | 349±17/mm$^2$ | 276±21/mm$^2$ | <0.05 |
| Collagen content | 32±5% | 61±6% | <0.005 |
| Infarct size | 8.9±1.2% | 8.9±2.6% | ns |

## P2. OUR RESULTS OF SUBCLAVIAN ARTERIAL CANNULATION WITH GRAFT IN ASCENDING AORTIC OPERATIONS

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**Purpose:** To investigate results of cannulation of right subclavian artery with graft in ascending aortic operations and continue brain perfusion.
**Methods:** This study included the 22 patients on whom we performed arterial cannulation with No 8 graft. 16 of the 22 patients were male and 6 of the 22 patients were female. 10 of the patients had type-A acute aortic dissection and 4 of the patients had chronic type-A dissection. In addition 8 of the patients had ascending and arc aneurysm. We performed right subclavian arterial cannulation, deep hypothermic circulatory arrest and antegrade cerebral perfusion in all patients.
**Results:** Mean age was 62.1±11.2. The mortality in this study was 4 of the 22 patients. Two of the four patients had a low cardiac output and the other two had permanent cerebral problems. Three patients had temporarily neurological problems. We provided sufficient arterial flow with right subclavian artery cannulation and also we did not come across any perfusion problems during operation. We had no brachial plexus injury, axillary artery thrombosis or local infection after operation.
**Conclusion:** Subclavian arterial cannulation with graft is a safe procedure and also it can be used easily in ascending and arcus aortic operations.

## P3. ALTERNATIVE CANNULATION SITE FOR ACUTE AORTIC DISSECTIONS

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**Purpose:** Acute proximal aortic dissection is devastating disease. Often finding is cardiac tamponade, severe aortic insufficiency, dissection of right coronary artery and homodynamic instability.
**Methods:** During last ten years we operated on 115 pts for acute aortic dissections. In majority of cases we used femoral cannulation. 3 pts had severe neurological deficit

and failed to wake up after operation most probably because of brain malperfusion. Recently, we started to use heart apex as inflow site.
**Results:** In 8 cases we didn't have any neurological or other problems with this strategy. Our approach was to use this site for quick, easy but at the same time reliable way for establishing CPB. Having physiological blood flow, we believe, will minimize possibility of malperfusion syndrome.
**Conclusion:** We believe that heart apical cannulation is safe, reliable and efficient method and advantageous compared to others especially in avoiding malperfusion phenomenon.

## P4. SPONTANEOUS AORTIC ARCH RUPTURE WITH PSEUDOANEURYSM AND CHRONIC CARDIAC TAMPONADE DEVELOPMENT

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**Purpose:** Spontaneous aortic rupture, without any history of previous thoracic trauma, infection or acute thoracic pain is an extremely rare and potentially life-threatening event. It's diagnosis, in the absence of acute symptoms, is usually delayed and relies on secondary signs. While the etiology is atherosclerotic in most cases, the exact mechanisms of rupture have only recently been uncovered. Treatment may be surgical, endovascular or by a combined procedure, according to the anatomy, location and expertise of the medical team. In the following, we present a case of spontaneous aortic arch false aneurysm that was treated surgically in our department. We discuss the etiology of this entity, the pathological processes involved and optimal treatment for these critically ill patients.

## P5. MASSIVE HEMOPTYSIS DUE TO PRIMARY AORTOBRONCHIAL FISTULA TREATED SUCCESSFULLY WITH ENDOVASCULAR STENTING: REPORT OF TWO CASES

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**Purpose:** Aortobronchial fistula (ABF) is an extremely rare and potentially lethal complication of aortic aneurysmal disease. Most reported cases of ABF occurred postoperatively, after the implantation of a prosthetic vascular graft in the thoracic aorta. Primary ABF, i.e. without history of surgical intervention, between descending aortic aneurysm and the bronchial tree are even more uncommon.
**Methods:** A 61 and 69 year old men presented at the emergency department with massive hemoptysis and dyspnea. Chest computed tomography with intravenous contrast enhancement and aortography disclosed an ABF at left main bronchus associated with a penetrating ulcer of descending aorta, 3 cm distally of the origin of an aberrant right subclavian artery, in the first case and a ruptured aorta with known chronic type B aortic dissection in the second one. Bronchoscopy confirmed the diagnosis.
**Results:** The right main bronchus was intubated and the patients were immediately transferred to the angiography suite, where a Talent stent graft 38x38x110 was inserted by a right femoral approach in both cases. The recovery was uneventful without any septic complication or need for endobronchial stent. Follow-up at 21 and 31 months respectively, has shown that no complication or recurrent hemoptysis has occurred and the computed tomographic scans and ultrasound scans are satisfactory.
**Conclusion:** This preliminary experience has pointed out that endovascular stenting can be considered as an effective and less invasive treatment modality for the management of ABF in the unstable patient.

## P6. ARTERIAL OCCLUSION AFTER RADIOTHERAPY FOR CANCER

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**Purpose:** Arterial occlusion due to radiotherapy is a rare but an important ischeamic situation in the exposed extremity. Radiation arteriopathy usually develops between 6 and 20 years after the radiotherapy. In this study, two arterial occlusion cases due to radiotherapy have been presented.
**Methods:** In our clinic, two arterial occlusion cases according to radiotherapy have been surgically treated between the dates March 2001 and May 2006. One of the patients was a 50-year-old female with mammarian cancer who got right mastectomy and radiotherapy 7 years earlier. The patient applied to our clinic with right upper extremity ischemia. A selective upper extremity angiography showed right subclavian artery occlusion. The second patient was a 60-year-old male with scrotum cancer who got radiotherapy to inguinal region 20 years before. The patient applied to our clinic with right lower extremity ischemia and diameter increase. Right external iliac, right common and superficial femoral artery occlusions were seen in the selective lower extremity angiography. Both patients were surgically treated and got arterial revascularization with PTFE grafts.
**Results:** Both patients were operated successfully, and had no postoperative complications. The female patient

applied to our clinic two years later with right upper extremity intermittent claudication. A selective angiography showed highly atherosclerotic and occlusive distal arterial bed in the extremity and a patent graft. The patient was treated medically.
**Conclusion:** The arterial injury of the extremities that develops after radiation therapy may cause ischemic signs of variable degrees. Reconstructive surgical vascular interventions are suggested for the ischemic symptoms and to prevent amputation of the extremity.

## P7. ASSESSMENT OF RELATIONSHIP BETWEEN CEREBRAL OXYGEN SATURATION CHANGES DURING CARDIAC SURGERY AND POSTOPERATIVE NEUROLOGIC COMPLICATIONS

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**Purpose:** Measurement of cerebral oximetry is one of the monitoring methods of cerebral regional circulation, especially in cardiac surgery with CPB. The aim of this study is to find the association between cerebral oximetry and postoperative cognitive disorders and neurologic complications.
**Methods:** 72 adult patients ASA class II-III who underwent cardiac surgery with CPB (on-pump) (n=24) and without CPB (off-pump)(n=24) and valve replacement surgery (VR group)(n=24) were studied .Patients were assessed by Mini Mental State Examination(MMSE) before and 24 hours after surgery. Cerebral oximetry was measured before and after induction of anesthesia and during operation with 15 min intervals and bilaterally.
**Results:** The instances of reduction in cerebral oximetry which were over 20% were 57% in on-pump, 29% in off-pump , and 49% in VR group, but the differences were not significant(p=0.113).Differences of this frequency between the on-pump and the off-pump groups was significant(p=0.042).Cerebral oximetry variations in repeated measurements during operation were significant in both on-pump and off-pump groups(p=0.0001) but not in VR group (p=0.075).The instances of reduction in MMSE which were over 20% after operation in comparison with before surgery were 8% in on-pump, 4% in off-pump, and 4% in VR group. There was not any association between decrease in cerebral oximetry, postoperative MMSE score, and neurologic complications (p=0.264 and p= 0.740 respectively).
**Conclusion:** Although there were some variations in cerebral oximetry in repeated measurements during operation, the incidence of abnormal decrease was low in all study groups. The off-pump patients had lower incidence of abnormal decrease in both cerebral oximetry and postoperative neurocognitive disorders in comparison with the other two groups, but these differences were not statistically significant.

## P8. ANTERIOR APPROACH INTERNAL JUGULAR VEIN CATHETERISATION: A COMPARATIVE STUDY VERSUS CONVENTIONAL INTERNAL JUGULAR VEIN APPROACH

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**Purpose:** Internal jugular vein cannulation has become one of the most commonly attempted central lines used in the operating rooms as well as in critically ill patients. There are three approaches to internal jugular vein (posterior, conventional, and anterior).
**Methods:** We randomly studied 200 patients who underwent percutaneous internal jugular vein cannulation with anterior approach (100 patients) or conventional internal jugular approach (100 patients). The parameters observed included success rates, complications, flow and waveform characteristics and the acceptability of the technique both to the operator and the patient.
**Results:** There were no significant differences between the two groups. First attempt success and failure were the same in the two groups. Easiness for the operator was higher in anterior approach (p=0.02). The number of complications [arterial puncture (3-2)-pneumothorax (0-0)-hemothorax (0-0)] - weren't different in the two groups. There were 2 significant differences in flow and waveform characteristics between the two groups. However, the anterior approach was associated with greater patient comfort (p<0.00001) but difficult fixation. Kinking in CXR in ICU was higher in anterior approach group (p<0.0001).
**Conclusion:** We recommend anterior approach for internal jugular vein CVP line placement in cardiac surgery by experienced cardiac anesthesiologists.

## P9. MONOPOLAR RADIOFREQUENCY ABLATION FOR THE SURGICAL TREATMENT OF ATRIAL FIBRILLATION IS RELATED TO POSTOPERATIVE ATRIAL FLUTTER

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**Purpose:** Postoperative atrial flutter is a complication of Maze procedure with radiofrequency [RF] ablation. The causes of postoperative flutter are not well defined. We analyzed our experience to assess correlation of postoperative atrial flutter with mode of RF ablation [monopolar or bipolar].
**Methods:** RF ablation of atrial fibrillation [AF] was performed in 138 patients from October 2001 through May

2006. Monopolar radiofrequency ablation was used in group 1 [65 patients]. The combination of bipolar radiofrequency and cryoablation was used in group 2 [75 patients]. Majority of the patients (n 118, 86%) were preoperatively in permanent or persistent AF. Mean follow-up was 16 ± 6 months.
**Results:** There were three hospital deaths (2.5%). All survivors were in functional class I – II. 113 patients (81%) were in sinus rhythm at the end of follow-up. In group 1, eleven patients (17%) had atrial flutter during the follow-up; in 8 cases it was left atrial flutter. It was significantly different in group 2, where only one patient developed atrial flutter (1.4 %) [$p < 0.05$].
**Conclusions:** Higher rate of postoperative atrial flutter was noted to be associated with monopolar radiofrequency ablation in comparison to use of hybrid bipolar ablation and cryoablation. Atrial flutter had a predominantly left-sided origin.

## P10. TEMPERATURE-CONTROLLED UNIPOLAR AND IRRIGATED BIPOLAR RADIOFREQUENCY ABLATION FOR THE TREATMENT OF CHRONIC ATRIAL FIBRILLATION: RESULTS OF SIX YEARS EXPERIENCE

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**Purpose:** The safety, effectiveness and handling of unipolar temperature-controlled and irrigated bipolar radiofrequency ablation for the treatment of chronic atrial fibrillation were evaluated.
**Methods:** This prospective study included 120 patients who had concomitant anti arrhythmic procedure, between April 2000 and April 2006 using radiofrequency ablation. Unipolar temperature-controlled radiofrequency ablation was used mainly during mitral valve reconstruction or replacement to facilitate endocardial lesions in the left atrium. Irrigated bipolar radiofrequency ablation was used to treat paroxysmal atrial fibrillation through pulmonary vein isolation in patients undergoing CABG and aortic valve replacement.
**Results:** The postoperative mortality was 4.2%, lower than the estimated EuroSCORE 5.85%. There were no procedure-related complications like esophageal perforation, stroke, bleeding etc. Postoperative atrial fibrillation is common affecting 65% of the patients. After a mean follow up of 35 months, freedom from atrial fibrillation was 78%. A pacemaker was implanted in 5 patients. Risk factors for procedure failure were permanent atrial fibrillation, duration of preoperative atrial fibrillation and thyroid disease. The time required to perform the ablation was 3.5 minutes with the bipolar and 6.1 minutes with the unipolar radiofrequency devises.
**Conclusion:** Radiofrequency ablation is a safe, effective and rapid procedure for the treatment of patients with chronic atrial fibrillation undergoing heart surgery.

## P11. MULTISLICE CT CORONARY ANGIOGRAPHY (MSCTA) PROVIDES HIGH QUALITY NON-INVASIVE VISUALIZATION OF CORONARY ANATOMY, CONGENITAL AND ACQUIRED CORONARY LESIONS AND CORONARY GRAFTS

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**Purpose:** The purpose of our study is to investigate the role of MSCTA in certain cardiac surgery patients and compare its' imaging results with invasive classic coronary angiography (CCA).
**Method:** We studied CCA and MSCTA in four coronary patients who were considered to have diagnostic problems:
- a 49-year old male with severe left-main disease.
- a 26-year old male with an anomalous origin of the RCA from the left sinus of Valsalva
- a 68-year old male with a left anterior descending to pulmonary artery fistula.
- a 67- year old male with a previous cabg x3 and severe aortic stenosis .

In two other cardiac surgery patients, with pathology of the aortic root and aortic isthmus, the high quality imaging of MSCTA provided the necessary information (making the CCA unnecessary).
**Results:** The left main disease and the intramural course of the anomalous RCA were detected only by MSCTA. Information about the origin and the end of the coronary fistula, the exact location of the Lima graft and the proximity to the sternum in redo cases was better provided by MSCTA than with CCA.
**Conclusion:** Multislice CT Angiography is a valuable tool in everyday cardiac surgery practice. It provides excellent visualization of left main and congenital coronary lesions and effective non-invasive assessment of the position and patency of the coronary grafts and proximal coronary anatomy.

## P12. SURGICAL TREATMENT OF COARCTATION OF THE AORTA IN NEONATES

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**Purpose:** *The aim of this study* is to demonstrate surgical techniques used for repair of coarctation of the aorta (CoA) in neonates (1-30 days) in our department during the last 5years.

**Methods:** 40 neonates (21male, 19female), aged 3-30days (mean age 18,1days) and weight 1,4-4,0kg (mean weight 3,047kg) underwent repair of CoA using different techniques.
**Results:** 33 neonates (18m, 15f) underwent resection and end to end anastomosis. 5 neonates underwent pulmonary artery banding (PAB). The ischemic period was 14 – 29 min. 5 neonates (3m-2f) underwent subclavian artery flap aortoplasty. 4 underwent PAB. The ischemic period was 19-44 min. 2 neonates (1m-1f) underwent Contegra patch aortoplasty. One underwent PAB. The ischaemic period was 27-47 min.
No death and no complications have been recorded in this series. The hospitalization stay was 7-15days
**Conclusion:** All three techniques used are considered safe and effective and the application of each technique depends on the specific anatomy of each case

## P13. UNUSUAL ANATOMIC VARIATIONS OF TOTAL ANOMALOUS PULMONARY VEINS RETURN (TAPVR). DIAGNOSIS AND SURGICAL TREATMENT

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**Purpose:** It is presented our experience in diagnosis and surgical treatment of unusual anatomic variations of TAPVR.
**Methods:** Nine neonates (6M-3F) underwent surgical treatment, aged 16-139 days and body weight 2, 8-5, 3kg. They presented with cyanosis, respiratory tract infections and congestive heart failure. Diagnosis was established by cardiac echo, cardiac catheterization and intraoperative. Surgical techniques deployed according to intraoperative findings.
**Results:** All patients received postoperative (NO) Nitric Oxide. The P.I.C.U stay was 4-8 days and the hospital stay was 8-26 days. Their post surgical recovery was uneventful. During the follow-up period (4-20months) all patients are alive and well, under no medication and without evidence of pulmonary vein obstruction.
**Conclusion:** Even unusual anatomic variations of TAPVR are successfully treated. NO administration postoperative improves surgical results.

## P14. SUCCESSFUL SURGICAL MANAGEMENT OF TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION

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**Purpose:** Surgical management of total anomalous pulmonary venous connection (TAPVC) remains challenging.
**Methods:** The records of all 14 patients with diagnosis of TAPVC who underwent surgical repair at our center from 2/99 through 4/06 were reviewed. Results are reported as mean ( SD.
**Results:** Twelve patients underwent primary repair at our center and two had repair following initial surgery at other institutions. Mean age of the primary repair cohort was 64.3 ( 84.15 days. Weight was 3.9 ( 1.3 kg. Seven patients had type II TAPVC, 3 had type I and 2 had type III. Type II cases were repaired by unroofing the coronary sinus. Type I and III cases were repaired by ligation and division of the ascending or descending vein and anastomosis of the confluence to the left atrium. There was one operative death. Early complications included arrhythmias in 1/12 patients, sepsis occurred in 2 and suspected thrombus attached to the atrial septum in one. Duration of mechanical ventilation was 6.8 ( 4.6 days, ICU stay was 15.9 ( 10.1 days and hospital stay was 23.0 ( 11.5 days. One patient died 5 months after his surgery due to diffuse stenosis of the intrapulmonary veins. There are no other late complications for a mean follow-up time of 3.9 ( 2.7 years. Two cases of recurrent obstruction following neonatal surgery at other centers were repaired successfully.
**Conclusions:** Surgical management of TAPVC is successful in most cases. Morbidity and mortality are related to pulmonary hypertension.

****Competitor for the Best Poster Award****

## P15. EFFECTS OF MUSIC LISTENING ON ANXIETY AND MOOD PROFILE IN CARDIAC PATIENTS UNDERGOING EXERCISE TESTING

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**Purpose:** The aim of the present study was to examine the effects of music listening on anxiety and mood in patients (pts) undergoing exercise testing.
**Methods:** Sixty pts, (age 59(10, range 33-76 yrs), 32 (53%) with coronary artery disease who underwent exercise testing on the Bruce protocol, were randomly assigned to a control (CG) (n=30) or an experimental group (EG) (n=30). Pts completed the State-Trait Anxiety Inventory (STAI) and the Profile of Mood States (POMS-Brief Form) questionnaires prior to intervention (phase A). During the exercise test, EG patients listened to a music CD of their preference whereas CG patients did not. After the end of the test (phase B), all pts completed the State form of the STAI and POMS-Brief form. EG pts were additionally asked to complete an evaluation questionnaire on the music intervention they received.

**Results:** Interaction of time and group showed a significant within-subjects effect on mood (F=4.286, p<0.05). Mean scores for the items "active" and "energetic" in POMS differed significantly in phase B across groups (F=8.231, p<0.01 and F=4.279, P<0.05 respectively) with the EG being more "active" and "energetic" compared to CG. A negative result for myocardial ischemia was more frequently detected in EG compared to CG (p<0.01). Significant within-group differences favouring music listening were revealed in EG for the following POMS factors: tension-anxiety (p<0.001), depression-dejection (p<0.05) and anger-hostility (p<0.05). In addition, there was a significant negative correlation between state anxiety scores in phase B and duration of the exercise test (r=-0.354, p<0.01). A positive significant correlation was detected between trait and state anxiety scores (r=0.475, p<0.01).
**Conclusion:** Music exhibits a positive effect on mood changes motivating pts undergoing exercise testing and influence the diagnostic outcome of the test. Music may act as a pleasant distracter during exercise testing settings possibly by diverting patients' attention from the medical procedure and relieving tension.

****Competitor for the Best Poster Award****

## P16. THE EFFECT OF PHYSICAL ACTIVITY ON THE RISK OF SHORT-TERM CARDIAC EVENTS IN PATIENTS WHO HAD AN OPEN- HEART SURGERY

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**Purpose:** The aim of this work was to examine the effect of physical activity on the risk of short-term cardiac events in patients who had an open-heart surgery.
**Methods:** We enrolled 97 consecutive patients undergoing scheduled open-heart surgery in our hospital; 76 were men (61±13 years) and 21 were women (66±1 years). The levels of daily physical activity measured in all patients, while the intension of the activities was measured with a special scale (range 0-12). Various clinical and biological characteristics were also measured in all patients. Multiple logistic regression models were used to assess the role of physical activity on the end-point (i.e. death or re-hospitalization in the first 30 days after discharge), after adjusting for various potential confounders.
**Results:** No patient died during the hospitalisation, while 11patients (11.3%) were re-hospitalised for a cardiac event in the first 30 days after the operation. Physical activity was reported by 64% of the patients. Multiple logistic regressions revealed that 8% (or 1/12) increase in the physical activity scale was associated with 26% (95% CI 1% to 47%) lower risk of re-hospitalization, irrespective from the traditional risk factors.
**Conclusion:** Increased physical activity was related to lower risk of re-hospitalization in patients who had an open-heart surgery. Our findings strengthen the cardio protective role of physical activity even in severe conditions.

## P17. PREOPERATIVE THROMBOLYSIS IMPROVES LONG-TERM SURVIVAL AFTER CORONARY ARTERY BYPASS GRAFTING: ARE MEN DIFFERENT FROM WOMEN?

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**Purpose:** CABG is frequently used after thrombolytic therapy. We have shown that 5-year survival was improved in CABG patients subjected to thrombolytic therapy within 7 days before surgery compared to those without thrombolysis. We aimed to determine these findings at 10 years of follow-up and to compare men and women because current reports have shown that different independent predictors affect long-term survival in each sex.
**Methods:** We studied 4,140 consecutive patients (2,843 men and 1,297 women) who underwent isolated CABG between 1992 and 2003. Long-term survival data were obtained from the National Death Index. Multivariable Cox regression analysis was performed to determine independent predictors for long-term mortality in the entire database and in men and women separately. All available preoperative, intraoperative and postoperative risk factors were considered as possible independent predictors.
**Results:** There were 20 preoperative, 1 intraoperative and 7 postoperative independent predictors for long-term mortality. Thrombolytic therapy within 7 days before CABG was an independent predictor for long-term mortality in the entire database (HR 0.57, 95%CIs 0.41-0.77; P<0.001) and 10-year risk-adjusted survival rates were 79% and 68% in patients with and without thrombolysis respectively. This finding was also confirmed in men (HR 0.55, 95%CIs 0.38-0.79; P=0.001) where 10-year risk-adjusted survival rates were 80% and 71%. However, these results were not confirmed in women (HR 0.51, 95%CIs 0.26-1.01; P=0.054).
**Conclusion:** Patients undergoing CABG subjected to thrombolytic therapy within 7 days prior to surgery demonstrated increased 10-year survival. However, this was statistically significant only in men. Further studies are needed to shed light in the potential mechanism of this beneficial effect of thrombolysis which occurs selectively in men.

## P18. ABSTRACT WITHDRAWN

## P19. IMPLANTABLE CARDIOVERTERS DEFIBRILLATORS IN CHILDREN AND YOUNG ADULTS WITH CONGENITAL HEART DISEASE

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**Background:** Implantable cardioverters defibrillators (ICDs) are a life-saving therapy in adults with acquired heart disease. Experience in children and young adults with congenital heart disease (CHD) is limited.
**Purpose:** To summarize the experience with ICDs in children and young adults with CHD in our center.
**Methods and Results:** Fifteen patients (4 females), 5-34 (20±8,6) years of age, received an ICD from 10/1997-7/2006. Underlying diagnoses were dilated cardiomyopathy (3), hypertrophic cardiomyopathy (2), long QT syndrome (2), catecholaminergic polymorphic ventricular tachycardia (VT) (2), arrhythmogenic right ventricular cardiomyopathy (2), tetralogy of Fallot (2), Ebstein's anomaly (2). Previous operations included repair of tetralogy of Fallot (2), Fontan operation (1), tricuspid valve replacement (2) and pacemaker implantation (2). Indications for implantation were: cardiac arrest (3), syncope (4), sustained VT (5), malignant family history (1), high-risk hypertrophic cardiomyopathy (2). Implantation was endocardial in 13 and epicardial in 2 pts. Ten pts received a dual chamber and 5 pts a single chamber device. Defibrillation threshold was 10-15 J in all pts. Acute complications included prolonged ventricular fibrillation (VF) (1) and pneumothorax (1). One pt died 24 hrs after implantation from VF storm. During follow-up for 1 month-8 years, 5 pts received appropriate therapies for VT/VF. There were no chronic complications and all pts are alive and stable.
**Conclusion:** ICDs can be used successfully for the treatment of malignant ventricular arrhythmias in children and young adults with CHD with acceptable safety and efficacy.

## P20. THE USE OF Π-CIRCUIT IN ACUTE CORONARY SYNDROME: EARLY OUTCOME AND MID-TERM RESULTS

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**Purpose:** To evaluate the effectiveness of OPCAB aorta non-touch technique as method of choice for patients with acute coronary syndromes requiring emergency surgical revascularization.
**Methods:** From 2/2001 to 11/2005, 1359 patients (pts) underwent OPCAB with aorta non-touch technique (mammaries mobilization and π-cirquit). 212 pts (15.6%) were operated emergently. Data were collected prospectively and reviewed retrospectively. Elective vs emergency cases, are compared for pre-, intra- and postoperative variables by using Fisher's exact test, Chi-Square test, Kaplan Mayer method and Cox Regression analysis.
**Results:** Emergencies were in a greater proportion males (p=0.027) and octogenarians (p=0.031). Elective cases had better LV performance (p=0.0005) and were more obese (p=0.004) and hyperlipidemic (p<0.0005). Preoperatively use of IABP was more common for the emergency group (p<0.0005). Other preoperative risk factors were similar. The use of IMAs, the mean number of distal anastomoses (2.7±0.9 vs 2.7±0.9), the number of sequential anastomoses and the completeness of revascularization were similar. No difference for morbidity rates was detected (sternal wound infection, TIA, renal failure, pulmonary complications, prolonged ventilation, atrial fibrillation, postoperative MI, postoperative IABP insertion, urinary retention, GI and psycho complications). In-hospital mortality was greater for the emergency group (0,9 % vs 5,2%, p<0.0005), but the 5 days mortality was similar. Follow up was for 7-64 months. Survival and cardiac-event free period favored elective cases (p=0.0005).
**Conclusion:** OPCAB with aorta non-touch technique can be the method of choice for patients with acute coronary syndromes requiring emergency surgical revascularization and is accomplished with acceptable morbidity and mortality rates.

## P21. ROUTINE USE OF THE Π-CIRCUIT TECHNIQUE FOR CORONARY REDO'S: EARLY OUTCOME AND MIDTERM FOLLOW UP

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**Purpose:** Off pump redo CABG may decrease the morbidity/mortality associated with the redo procedure. The off pump variant with no aortic manipulation may further decrease morbidity/mortality. The aim of the study is to evaluate the feasibility/effectiveness of OPCABG with no aortic manipulation as the method of choice for patients (pts) requiring redo bypass.
**Methods:** From 2/2001 to 11/2005 1359 pts underwent OPCABG with no aortic manipulation and use of the π-circuit. 1281 pts (Group A) underwent primary CABG

and 78 pts had a redo (Group B). The groups were compared for pre-op, intraoperative and postoperative variables with Fisher's exact, Chi-Square test, Kaplan-Mayer method and Cox regression analysis.
**Results:** The groups were comparable with regard to age, emergency status of the operation, age>80 yrs, and comorbidities.There were more pre-operative IABPs in the redo group (P<0.001). Cholesterol levels were lower. There were fewer sequential and distal anastomoses, fewer arterial grafts from the LIMA, fewer anastomoses on the anterior/lateral walls (P<0.005). Post-op there were fewer arrhythmias in redo patients (P<0.028).The groups were comparable regarding length of stay, stroke, sternal wound infections, cognitive disturbances, post-op IABP, re-operation (bleeding/MI). There were 21 in-hospital deaths (1.5%). There was no significant difference in in-hospital mortality between the groups. There was no difference in all cause-mortality but cardiac death was more frequent in the primary CABG group (P<0.002); follow-up period was from 7-64 months.
**Conclusion:** In redo cases, OPCABG with no aortic manipulation is a safe procedure that can be performed as procedure of choice with minimal mortality and morbidity.

****Competitor for the Best Poster Award****

## P22. CHRONIC CONSUMPTION OF ALCOHOL INCREASES THE RISK OF SHORT-TERM CARDIAC EVENTS IN PATIENTS WHO HAD AN OPEN-HEART SURGERY

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**Purpose:** The aim of the work was to evaluate the influence of chronic consumption of alcohol on the short-term outcome (28-day) of patients who had an open-heart surgery.
**Methods:** We enrolled 97 consecutive patients undergoing scheduled open-heart surgery in our hospital; 76 were men (61(13 years) and 21 were women (66(11 years). Based on a semi-quantitative food-frequency questionnaire, it was estimated the consumption of alcohol (no alcohol, 1-2 glasses of wine, 3-4 glasses of wine, and > 4 glasses of wine, 1 glass of wine = 12g ethanol). Various clinical and biological characteristics were also measured in all patients. Multiple logistic regression models were used to assess the role of consumption of alcohol on the primary end-point (i.e. death or re-hospitalization in the first 30 days after the exit from the hospital), after adjusting for various potential confounders.
**Results:** No patient died during the hospitalisation, while 11 patients (11, 3%) were re-hospitalised for a cardiac event in the first 30 days after the operation. Consumption of alcohol reported by 83% of the patients. Multiple logistic regression showed that compared to moderate consumption (1-2 glasses of wine or 12-24g ethanol), the chronic consumption (4 or more) wineglasses per day was associated with 4.1 higher risk of re-hospitalization. (95% CI 1.35 – 12.75, p = 0.013), irrespective of the traditional risk factors.
**Conclusion:** We observed that chronic increased consumption of alcoholic beverages (4 or more wineglasses per day) was associated with an increased risk of short-term recurrent cardiac events in patients who had an open-heart surgery.

****Competitor for the Best Poster Award****

## P23. THE LONG-TERM COFFEE CONSUMPTION IS RELATED TO THE IN-HOSPITAL MORTALITY AND THE 30-DAY OUTCOME OF PATIENTS WHO HAD AN OPEN-HEART SURGERY

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**Purpose:** In contrast to the moderate coffee consumption, the increased one is considered to be a major risk factor for developing coronary heart disease. The purpose of this work was to investigate the relationship between the long-term coffee consumption and the outcome of patients who had an open-heart surgery.
**Methods:** We enrolled 97 consecutive patients undergoing scheduled open-heart surgery in our hospital; 76 were men (61±13 years) and 21 were women (66± 11 years). Based on a semi-quantitative food-frequency questionnaire, coffee consumption was estimated (not at all, 1-2, 3-5, >5cups of coffee-1 cup of coffee= 60gr.caffeine). Clinical and biological characteristics were also measured. Multiple logistic regression models were used to assess the role of coffee consumption on the outcome (death or re-hospitalization during the first 30-day after discharge).
**Results:** 11 patients (11.3%) were re-hospitalized for cardiovascular reasons during 30-days after the surgery. Coffee consumption was reported by 91% of patients who had an event and by 85% of patients who had not an event (p = 0.59). Multiple regression analysis showed that the quantity of coffee is the main factor contributing to the development of an event: Compared to no or moderate consumption (<2 cups), increased consumption (i.e. 3 or more cups of coffee daily) is associated with 2.7-times higher risk to be re-hospitalized, taken into account various potential confounders (p < 0.001).
**Conclusion:** We found that increased coffee consumption (>3 cups daily) is associated with an increased risk of re-hospitalization 30-days after an open-heart surgery, showing thus the detrimental effects of the increased caffeine intake to the cardiovascular system.

## P24. LONG-TERM SURVIVAL AFTER CABG IN PATIENTS WITH LOW LEFT VENTRICULAR EJECTION FRACTION: HAVOC SCORE ARTERIAL GRAFTS AND POSTOPERATIVE COMPLICATIONS

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**Purpose:** We have shown that 5-year survival after CABG in patients with ejection fraction ≤25% can be accurately predicted by 5 preoperative risk factors: past congestive Heart failure, Age, peripheral Vascular disease, emergent Operation and Chronic obstructive pulmonary disease (HAVOC score). We aimed to develop a multivariable model to forecast 10-year survival in such patients including also intraoperative and postoperative variables.
**Methods:** We retrospectively evaluated 587 consecutive patients with ejection fraction ≤25% who underwent CABG from 1992 to 2003. Multivariable Cox regression analysis was performed to construct a predictive score for long-term mortality including HAVOC score and parameters such as 2 or more arterial grafts and major postoperative complications.
**Results:** The estimated 10-year survival rates of the HAVOC score quartiles were 61.0%, 50.3%, 32.3% and 21.4% (P<0.0001). The estimated 10-year survival rates of the new score quartiles (HAVOC, 2 or more arterial grafts, intraoperative stroke, myocardial infarction, deep sternal wound infection, sepsis and/or endocarditis, renal failure and respiratory failure) were 64.2%, 47.9%, 37.5% and 15.7% (P<0.0001). The odds of death in the highest-risk quartile were 4.7- and 7.6-fold higher than the odds of death in the lowest-risk quartile in the HAVOC score and the new score respectively.
**Conclusion:** We developed a model that has better discriminatory ability than HAVOC score alone in predicting 10-year survival in CABG patients with severe ischemic cardiomyopathy. The use of 2 or more arterial grafts improves long-term survival and should not be denied in these patients, while strategies for the reduction of major postoperative complications may further improve long-term survival.

## P25. CORONARY SURGERY IN DIALYSIS DEPENDING PATIENTS WITH END STAGE RENAL FAILURE WITH AND WITHOUT EXTRACORPOREAL CIRCULATION

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**Purpose:** Coronary artery bypass grafting (CABG) in patients with dialysis depending end stage renal failure (ESRF) has become the standard treatment for CAD in this patient group, but is still considered as a risk procedure due to increased mortality and morbidity. The avoidance of extracorporeal circulation in dialysis depending patients seems to be an attractive alternative. This retrospective study analyzed and compared our experience with CABG surgery with and without extracorporeal circulation in dialysis depending patients with ESRF.
In a retrospective study we analyzed our clinical results of isolated CABG in 73 dialysis depending patients with ESRF with and without the use of extracorporeal circulation. The on-pump group comprised 43 patients (7 female and 36 male, 65 ± 7.3 years) and the off-pump group included 30 patients (4 female and 26 male, 67 ± 7.2 years).
Demographic and preoperative data were comparable in both groups. Overall hospital mortality rate was 4.2% (n=3), two patients (4.6%) in the on-pump group and one patient (3.3%) in the off-pump group died due to non cardiac reasons. Morbidity was comparable in both groups. The mean number of grafts was 3.1 ± 0.9 in the on-pump group and 2.9 ± 0.8 in the off-pump group.
In the follow-up 13 patients (30.2%) of the on-pump group died, nine of these patients (69.2%) due to cardiac reasons , eight patients (26.7%) of the off-pump group died, most due to cardiac reasons (n=5, 62.5%).
CABG in patients with dialysis depending ESRF can be performed with good clinical results and low morbidity with two different surgical approaches. Midterm results are still affected by cardiac events.

## P26. EFFECTS OF AUTOLOGOUS BLOOD TRANSFUSION ON INFLAMMATORY RESPONSE AND HOMOLOGOUS BLOOD TRANSFUSION REQUIREMENTS IN PATIENTS UNDERGOING CARDIAC SURGERY ON- VS OFF-CARDIOPULMONARY BYPASS

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**Purpose:** Systemic inflammatory response (SIR) may follow cardiopulmonary bypass (CPB). The adverse inflammatory effects are reduced in off-pump surgery. Autologous cell saver blood transfusion (CSBT) is used increasingly in cardiac surgery, but the blood collected and processed is rich in pro-inflammatory molecules. In this randomised controlled study we investigated the effects of autologous CSBT on SIR and homologous transfusion requirements in patients undergoing surgery on-versus off-CPB.
**Methods:** 40 patients were randomised into 2 groups: A) On-CPB with CSBT and B) Off-pump with CSBT.

Blood samples were obtained pre-, intra- and up to 24h post-op. Neutrophil expression of CD11b and plasma levels of interleukin-6 (IL-6), interleukin-10 (IL-10) and lactoferrin, volume of CSBT, post-op blood loss and homologous transfusion were measured. Homologous blood was transfused when Hb concentration was>8g/dl post-op.
**Results:** The two groups were well matched. CD11b neutrophil expression increased significantly in group A intra-op from pre-sternotomy expression as it was measured with relative fluorescence intensity (RFI), p<0.001. IL-6 plasma concentrations increased significantly at 3h post-op in both groups (p<0.001) with no difference between the groups. Lactoferrin increased significantly in group A intra-op (p<0.05) and IL-10 rose significantly in group A post-op (p<0.05). Cell saved blood showed a significant elevation of CD11b expression, IL-6, IL-10 and lactoferrin concentrations but transfusion of this blood did not result in an upregulation of inflammatory mediators. Post-op blood loss and volume of homologous blood transfusion were not significantly different between the groups.
**Conclusion:** CPB causes a significant increase in plasma levels of inflammatory mediators. Salvaged mediastinal blood contains high levels of CD11b expression and cytokine concentrations but its autologous transfusion does not have systemic consequences.

## P27. LEFT VENTRICLE ANEURYSM POST MYOCARDIAL INFARCTION – GEOMETRICAL RECONSTRUCTION GUIDED BY TRISVAR MANNEQUIN

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**Purpose:** In patients with coronary artery disease and post-infarction aneurysm formation with low ejection fraction and severe simptomatic, geometrical reconstruction with revascularization is the best option. This study reports our results achieved with left ventricle reconstruction using a TRISVAR Manneqiun guided technique.
**Methods:** Between 2003-2006 we performed over 1055 open heart procedures, coronary artery bypass grafts in 468 patients. From this 21 patients presented left ventricle aneurysm, age between 30-74 years old, male 16 (52,40%), female 5 (23,80%), diagnosed after clinical presentation for dispneea angina, using ECG, echocardiography, confirmed by angiography the coronary artery disease and magnetic resonance imaging or scintigraphy to assess the myocardial viability. All the patients have been operated in normothermia, performing in all suitable situation myocardial revascularization, mitral valve repair when the regurgitation is severe and left ventricle resection-reconstruction using TRISVSAR Mannequin, endovascular patch placement for the best shape and function result.
**Results:** Operative mortality rate was 4,7% (1 patient). The follow-up of the patients at 3-6 months postoperative we measured and compared the results of echocardiography, left ventricle configuration, diameters, volume, mitral valve function and ejection fraction which improved with 10% after six months. All the patients were in better clinical condition improving one or two NYHA class.
**Conclusion:** Left ventricle reconstruction after myocardial infarction and remodelling destruction of the normal geometry, in a complex technique with revascularization and very often mitral valve reconstruction or replacement is a very challenge surgery but only one except cardiac transplantation for better patient's evolution. The TISVAR Mannequin guide the surgeon to achieve properly shape, position of the new apex and circular patch suture.

## P28. RISKS OF MORBIDITY AND MORTALITY AFTER CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH DIALYSIS DEPENDENT RENAL FAILURE

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**Purpose:** To evaluate the short- and mid-term follow-up of patients with end stage renal failure after coronary artery bypass grafting (CABG).
**Methods:** We retrospectively reviewed 50 patients (pts) on dialysis (40 male, 10 female, mean age 62,3 ± 10,5 years, range: 33,8-81,75y) who underwent CABG in our department between 1992 and 2002.
**Results:** A mean of 3.3±1.06 bypasses/pt (range: 1-5) were performed; 25 patients (50%) became both internal mammary arteries (bIMA), 19 patients (38%) received single IMA for grafting. Follow-up was complete in 46 patients (92%). Early (30-days) mortality rate was 12% (n:6).One pt. (2%) developed mediastinal bleeding. None of the patients developed unstable sternum or wound healing complications. Cumulative duration of follow-up is 152.8 py. (maximum:8.4y, mean:3,8y). There were 13 late deaths (41,3%); 1 due to cardiac, 8 because of non cardiac and 4 due to unknown causes. Survival rates were 78,3±6%, 55,5±8,5% and 40±11,6% at 1, 4 and 8,4 years, respectively. BIMA-patients showed at 7.4y higher survival rates (61.7%) than patients with saphenous veins grafts (16.66%) (p=0,236). Median time to death after discharge was 35 months (range:2-87

months). 10 patients (21.8%) underwent postoperatively kidney transplantation. 92.5% of hospital survivors (37 out of 40 patients) showed improved functional status.
**Conclusion:** CABG may be performed in dialysis patients with increased but acceptable morbidity and mortality with excellent symptomatic relief. The use of arterial grafts especially both of the IMAs provides higher mid-term survival rates without increased peri-operative complication rates. However, limited long-term survival suggests further examination of this patient population.

## P29. FEMALE GENDER AND CABG SURGERY: THE S. ANNA HOSPITAL EXPERIENCE

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**Purpose:** Compared to men, women undergoing coronary artery bypass grafting appear to have a higher morbidity and mortality, particularly in the perioperative period. This study was designed to answer the questions of whether such differences in clinical outcomes between men and women still exist with improvements in surgical techniques and perioperative care.
**Methods:** From April 2002 to June 2006, 1382 consecutive patients underwent isolated CABG at the S. Anna Hospital; patients undergoing concomitant valvular procedures were excluded. Women represented 23.5% of patients. Compared with men, women were older (70.5 versus 65.9 years), and had less urgent surgical interventions (20.1% versus 22.06%), a higher incidence of IDDM (46.9% versus 21%), lower body surface area (1.73 ± 0.18 $m^2$ versus 2.03 ± 0.19 $m^2$), and hematocrit (31.7% ± 3.9% versus 36.2% ± 3.9%). Ejection fraction, incidence of previous myocardial infarction, chronic obstructive pulmonary disease, left main disease, renal insufficiency, extent of coronary disease, and preoperative IABP were similar. Also in women we have extensively utilized bilateral internal mammary arteries (70% versus 75%). Perioperative blood glucose levels was never > 150 mg/dL, intraoperative hematocrit levels were always above 24%.
**Results:** There were no statistical differences in the incidence of postoperative death (2.6% versus 2.7%), myocardial infarction (0.72% versus 0.79%), or cerebrovascular accident/transient ischemic attack (0.7% versus 0.3%) between women and men.
**Conclusion:** The incidences of death, perioperative myocardial infarction and cerebrovascular accident/transient ischemic attack after CABG with mostly arterial conduits, in women and men were not statistically significant.

## P30. EARLY AND MID-TERM RESULTS OF MYOCARDIAL REVASCULARISATION USING BILATERAL INTERNAL THORACICARTERIES. SINGLE UNIT'S 12 YEAR EXPERIENCE

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**Purpose:** We assessed the balance of the peri-operative risk against the potential long term benefits of increased life expectancy in 1.407 consecutive patients who underwent CABG with the use of bilateral internal thoracic arteries (BITA) by the same surgical team.
**Methods:** Between July 1993 and December 2005, 1407 patients underwent coronary artery bypass grafting receiving both internal thoracic arteries. Young age and previous surgery with lack of alternative conduits were the main indications. There were 38 combined procedures (valve surgery, resection of aortic aneurysms, and arterioplasty of the LMCA) and 41 re-operations.
Standard cardiopulmonary bypass with cold blood cardioplegic arrest was used. All right thoracic arteries were anastomosed as free grafts. Saphenous vein and/or radial artery was utilised when more than 2 grafts were required. The LITA was used for the LAD artery and the RITA for the larger intermediate or marginal branch of the circumflex artery.
**Results:** There were 1345 males. Mean age of 57.8± 6.6 years. 30% of the patients had E.F<45%.
30 day mortality was 0.57% (8 patients). Major complications were recorded at 1.3%, including 6 patients (0.4%) with deep sternal wound complications and mediastinitis. Follow-up is currently available on 1263 (90%) of these patients. At mean follow-up of 7 years 90% of them remain in NYHA class I.
**Conclusion:** Early and mid-term results are excellent. Probability for re-hospitalisation, re-operation and unexpected late death is extremely low. This strategy of revascularisation maximises all the long term benefits with minimal early morbidity and morbidity risk.

## P31. SURGICAL OPTION FOR DIFFUSE CORONARY ARTERY DISEASE

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**Purpose:** 57 patients underwent coronary endarterectomy as part of CABG over a period of 7 years. Of these, 42 were males and 15 Males. Their age ranged between 45 and 68 Years. 40 were diabetics. 34 had sever LV dysfunction (EF < 30%). 46 patients underwent routine

surgery, remaining 11 emergency surgery. Endarterectomy was performed for LAD, RCA and circumflex artery in 27, 16 and 14 respectively. IABP used in 14 patients. 4 patients died in the immediate post operative period due to low cardiac out put and rhythm disturbances. The follow up period was 6 month to 3 years. 2 patients died after 6 months due to MI and rhythm disturbances. Follow up was clinical, 2-D Echo, X-Ray and ECG. Endartercetomay on its own or as an adjunct to CABG is a viable option in cases with diffuse coronary artery disease.
**Methods:** 57 Patients underwent coronary Endarterectomy as an adjunct with coronary bypass surgery. Under G.A all patients are connected to CPB with 2 stage single venous cannula and ascending arterial return (SARNS, CALMED-USA). Membrane Oxygenator used in all patients (Dideco, Polystan). Ante grade cold blood cardioplegia was used in all patients. Coronary Endarterectomy performed in LAD, RAS and Circumflex artery in 27, 16 and 14 respectively. Complete Endartercetomay performed as and when necessary. Saphenous vein used in 47 patients and IMA in 11 patients. IABP support was required in 4 patients. Post operative stay in the ICU was between 48 and 72 Hrs. Adrenaline, Nor-Adrenaline and Dopamine was used. Lignocaine or Cardarone were used to control rhythm disturbances. Re-operation was performed for bleeding in 6 patients.
**Results:** 4 out of 57 patients died in the immediate post operative period due to low cardiac output and rhythm disturbance. 2patients died at the end of 6 months due MI. at the end of one year 10 patients developed grade one angina. The remaining patients at the end of 3 years needed anti-failure and anti-anginal medications.
**Conclusion:** Coronary Endarterectomy is a viable option in patients with diffused artery disease was maximal medical therapy did not produce the relief. This procedure can be performed along with the CABG as adjunct with acceptable mortality in patients who otherwise were considered not for surgery.

## P32. MORTALITY AND RISK FACTORS IN CORONARY ARTERY SURGERY IN PATIENTS OLDER THAN 70 YEARS

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**Purpose:** To assess the differences on atherosclerosis risk factors and hospital mortality in patients older than 70 years in whom a CABG was performed.
**Methods:** Prospective observational study of 1000 consecutive patients in a University Hospital undergoing CPB to perform a CABG. Off-Pump procedures were excluded. Atherosclerosis risk factors and hospital mortality were prospectively collected. The SPSS pack (SPSS 11.0 inc. Chicago IL.) was used for statistical analyses. P values < 0.05 were considered significant.
**Results:** Patients older than 70 years were 36.6 %, and the rest were the youngest group. The mean age was 74.3 years for elderly and 53.8 for the youngest group. Higher atherosclerosis risk factors in the elderly group were hypertension (65 vs 49%, p< 0.001), diabetes (41 vs 30%, p< 0.001) and females (45 vs 31%, p< 0.001). Lower atherosclerosis risk factors in the elderly group were hypercholesterolemia (29 vs 45%, p< 0.001), smoking (40 vs 61%, p< 0.001) and obesity (20 vs 43%, p< 0.001). Hospital mortality was 7.1 in elderly and 2.9 in the youngest group (p< 0.01).
**Conclusion:** Elderly patients undergoing CABG procedures showed a higher incidence of hypertension, diabetes and females, with a lower incidence of hypercholesterolemia, smoking and obesity. His hospital mortality is greater than the young patients as an independent prediction factor.

## P33. LIFE QUALITY OF CARDIOLOGIC PATIENTS BEFORE AND AFTER REVASCULARIZATION WITH STENT PLACEMENT

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**Introduction:** Revascularization of obliterated coronary arteries after Angioplasty and placement of covered or not stents is considered to be spearheading in surgical treatment of the coronary disease. The amelioration of cardiologic patients' life quality is the final objective of the holistic nursing approach. Studies regarding the life quality of the patients in question are few.
**Purpose:** The objective is the corporal, social, thymic and affective appreciation of the cardiologic patients' life quality which relates to health.
**Methods:** 30 patients with subjacent heart disease, the coronary disease, were subjects of the study. They were asked by phone two weeks before and two weeks after revascularization. The Greek version of Macnew questionnaire was used (about the cardiologic patients' health status and life quality).
**Conclusion:** The answers to the questionnaire shall be evaluated and examined (qualitative and quantitative analysis, distribution). Research continuation in a greater sample shall allow the examination of possible factors predicting the result of patients' situation before and after revascularization and mainly the planning of the nursery action during the restoration period. Results are expected at the end of September 2006.

## P34. ABSTRACT WITHDRAWN

## P35. THE INTERNAL THORACIC ARTERY AS A GRAFT IN CORONARY REVASCULARIZATION: PEDICLED VS. SKELETONIZED

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**Purpose:** The skeletonization of internal thoracic artery (ITA) has been proposed to increase its length and consequently to facilitate the construction of sequential bypass anastomoses. In addition, skeletonization of the ITA is performed to reduce the incidence of sternotomy wound infections especially among diabetic patients. To evaluate the effectiveness of ITA skeletonization, we reviewed our experience with this conduit in coronary revascularization operations.
**Methods:** From 1/2003 to 6/2006, 937 patients (694 male, 243 female) underwent isolated coronary artery bypass in our Department. Of them, 787 (84.0%) had an elective operation whereas the remaining 150 (16.0%) were operated emergently. Cardiopulmonary bypass was used in 804 cases; the remaining 133 had off-pump coronary bypass (OPCAB). Standard operative techniques were used.
**Results:** The left ITA was used as a pedicled graft in 750 cases (80.0%) and as skeletonized graft in 187 cases (20.0%). When skeletonized, the ITA was used as sequential bypass graft in 45 patients (24.1%) but when pedicled, in 112 patients (14.9%). No difference in postoperative morbidity was observed. There were no sternal infections. There was no difference in symptomatology at follow-up.
**Conclusion:** Skeletonization of the ITA is a useful technique for construction of sequential bypass grafts in coronary revascularization operations.

## P36. AUTONOMIC FUNCTION TESTS IN CHILDREN AND ADOLESCENTS WITH TYPE-1 DIABETES MELLITUS

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**Purpose:** Comparison of the diagnostic power of several autonomic function tests in paediatric patients with type-1 diabetes mellitus and no clinical signs of neuropathy.
**Methods:** Autonomic function was tested applying the "classical four" tests: Valsalva, 30:15 heart rate and blood pressure response to standing, deep controlled breathing. Additionally, high- (HF), low-frequency (LF) band heart rate variability (HRV), and baroreflex sensitivity (BRS) were acquired using the non-invasive Task-Force-Monitor (CNSystems, Austria).20 patients, 10 age-matched healthy youths.
**Results:** At least one "classical" cardio-respiratory test was pathologic in 70% of the diabetic patients and in 60% of the healthy control group. A combined abnormal result of HRV and BRS was only detected in 6 (30%) diabetic patients. In this subgroup mean diabetes duration was shorter (6,6 years) and mean HbA1c was lower (7,7%) compared to the overall diabetes group (7,1 yrs, 8,2%).
**Conclusion:** Cardiac autonomic neuropathy (CAN) is known to be a frequent late complication in patients with type 1 diabetes mellitus. The "classical" cardio-respiratory reflexes are not specific and little useful in the paediatric age group. We recommend to use more advanced tests (e.g. HRV; BRS) as this is also becoming more established in adults. In this pilot study we could not demonstrate a significant correlation between pathologic autonomic tests and the duration of the disease or the quality of metabolic control. The clinical relevance of pathologic autonomic tests as a possible screening method for subclinical CAN in paediatric diabetics is still unclear. Further research and long term follow up is necessary.

## P37. CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH LOW EJECTION FRACTION

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**Purpose:** Patients with low left ventricular ejection fraction (EF) undergoing coronary artery bypass grafting (CABG) are at increased risk of postoperative morbidity and mortality. This study assessed the clinical outcomes in a consecutive series of patients with low EF undergoing CABG at this institute.
**Methods:** Data of 3,021 consecutive patients undergoing isolated CABG from January 1995 to September 2005 were reviewed. Patients with either acute myocardial infarction or received operations other than CABG were excluded. Sixty-two patients with preoperative left ventricular EF less than 30% (mean 21.9±4.6%) received CABG for more than one year were identified and their data analyzed. The patient's preoperative characteristics, surgical results, long-term survival and functional status were obtained.
**Results:** 52 males and 10 females were enrolled in this study. Their mean age was 63.3±8.9 years. The average number of distal anastomosis was 3.3±1.2. The surgical mortality and hospital mortality was 3.2% and 6.5%,

respectively. Survival with free from cardiogenic death at 1,3,5 and 10 years was 91.9%, 86.6%, 78.5%, and 68.0%, respectively. Survival with free from any causes of death at 1,3,5 and 10 years was 91.9%, 81.6%, 66.1%, and 40.8%, respectively. The timing of left ventricular functional recovery after revascularization was around 3 to 8 months.
**Conclusion:** Through careful patient selection, intraoperative management, and postoperative care, CABG may offer encouraging survival and improve life quality in patients with low EF.

## P38. RELATIONSHIP BETWEEN PLASMA ADIPONECTIN, PRO-INFLAMMATORY CYTOKINES, N-TERMINAL PRO BNP LEVELS AND FUNCTIONAL STATUS IN PATIENTS WITH CHRONIC HEART FAILURE

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**Purpose:** Circulating cytokines and NT-proBNP are known to be associated with disease severity, exercise capacity and prognosis in chronic heart failure (CHF). We investigated whether a recently discovered adipocyte-specific cytokine, adiponectin, also correlates with exercise intolerance and dyspnea in CHF.
**Methods:** Thirty-nine patients, age 52.7(2.1 yrs, NYHA II (n=33) and III (n=16) with body mass index (BMI) of 28.6±0.8 (kg/m$^2$) and an LVEF of 28±3%, were tested. Blood sampling for measurement plasma levels of tumor necrosis-alpha (TNF-α), soluble TNF receptors I (sTNF-RI), interleukin-6 (IL-6), adiponectin, C-reactive protein (CRP) and NT-proBNP, were taken. Exercise capacity was assessed by ergospirometry and the 6-min walk test, while dyspnea by the Borg scale at the end of the walk
**Results:** Significant correlations were detected between sTNF-RI and NYHA (r=0.394, p=0.013), peak$VO_2$ (r=-0.470, p=0.003), $VE/VCO_2$ (r=0.41, p=0.009), adiponectin (r=0.423, p=0.007), CRP (r=0.384, p=0.016), NT-proBNP (r=0.483, p=0.002) and BMI (r=-0.401, p=0.01). IL-6 significantly correlated with NYHA (r=0.334, p=0.038), peak$VO_2$ (r=-0.349, p=0.029) and dyspnea (r=0.332, p=0.039). CRP correlated with LVEF (r=-0.348, p=0.03). NT-proBNP correlated with NYHA (r=0.658, p=0.001), LVEF (r=-0.419, p=0.008), peak$VO_2$ (r=-0.621, p=0.001), $VE/VCO_2$ (r=0.571, p=0.001), anaerobic threshold (r=-0.598, p=0.001), walking distance (r=-0.377, p=0.018) and dyspnea (r=0.587, p=0.0001). Adiponectin correlated with NYHA (r=0.384, p=0.001), peak $VO_2$ (r=-0.502, p=0.001), $VE/VCO_2$ (r=0.365, p=0.022), treadmill exercise time (r=0.327, p=0.04), anaerobic threshold (r=-0.428, p=0.007), walking distance (r=-0.412, p=0.009), dyspnea (r=0.421, p=0.008), BMI (r=-0384, p=0.02) and NT-proBNP (r=0.488, p=0.002).
**Conclusion:** Our findings indicate a potentially important role of this cytokine as a marker of disease severity and inflammatory activity in CHF.

## P39. NT PRO BNP AS A MARKER FOR DETECTING LOW FUNCTIONAL CLASS PATIENTS AND CANDIDATES FOR CARDIAC TRANSPLANTATION. LINEAR CORRELATION WITH EXERCISE TOLERANCE

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**Purpose:** NT Pro BNP plasma levels have been associated with indices of LV function and aerobic capacity in heart failure. The aim of our study was to use NT Pro BNP for prediction of low functional class patients and also to detect candidates for cardiac transplantation.
**Methods:** We studied 100 patients with impaired left ventricular function. Mean Left Ventricular Ejection Fraction (LVEF) was 35±9 %. Blood samples for NT Pro BNP assessment were taken at baseline, during treadmill exercise testing. LV cavity diameters, left atrial (LA) size and LVEF were measured by echocardiography.
**Results:** NT Pro BNP plasma levels correlated significantly with peak $VO_2$ (r =-0.77, p<0.001). LVEF correlated well with NT Pro BNP (r =-0.67, p<0.001). NT Pro BNP plasma levels correlated strongly with NYHA (r = 0.70, p< 0.001). NT Pro BNP values >335 pg/ml, showed 83% sensitivity and specificity of 76% for detecting $VO_2$ values below < 20 ml/kg/min (AUC=86%, p<0.001). NT Pro BNP plasma levels > 1110 pg/ml showed 83% sensitivity and specificity 82% for detecting $VO_2$ < 14 ml/kg/min (AUC=90%,p<0.001). NT Pro BNP plasma levels > 1510 pg/ml showed 87% sensitivity and specificity 81% for detecting $VO_2$ < 10 ml/kg/min (AUC=90%,p<0.001). NT Pro BNP plasma levels > 680 pg/ml showed 91% sensitivity and specificity 73% for detecting LVEF <28% (AUC=86%, p<0.001).
**Conclusion:** NT Pro BNP plasma levels correlate both with LVEF and aerobic capacity, can predict low functional cardiopulmonary exercise capacity in patients with impaired left ventricular function and is useful to detect candidates for cardiac transplantation.

****Competitor for the Best Poster Award****

## P40. INSPIRATORY MUSCLE TRAINING IMPROVES QUALITY OF LIFE, ASSESSED BY 3 DIFFERENT QUESTIONNAIRES AND FUNCTIONAL STATUS OF CHRONIC HEART FAILURE PATIENTS

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**Purpose:** The effects of inspiratory muscle training (IMT) on quality of life (QoL) and exercise capacity in patients with chronic heart failure (CHF) have been inadequately studied.
**Methods:** We investigated 35 patients, NYHA II-III and LVEF 24(1%. Training group (TG, n=20) trained at 60% of sustained maximal inspiratory pressure (SPimax) and control group (CG, n=15) at 15%, using a computer software, 3/week for 10 weeks. Pre- and post-IMT, pulmonary function was assessed by spirometry, exercise capacity by ergospirometry and the 6-min walk test (6MWT) while dyspnea by the Borg scale after the 6MWT and QoL by 3 questionnaires, a) the Specific Activity Questionnaire (SAQ), b) the Left Ventricular Dysfunction-36 (LVD-36) and c) the Minnesota Living with Heart Failure (LIhFE).
**Results:** TG increased inspiratory muscle strength (Pimax, 111(6.8 vs. 83(5.7 $cmH_2O$, p<0.001), endurance (SPimax, 527(513 vs. 367(411 $cmH_2O/secx10^3$, p<0.001), peak$VO_2$ (17.8(1.2 vs. 15.4(0.9 ml/kg/min, p<0.005) and walking distance (433(16 vs. 367(22 m, p<0.001). Dyspnea was reduced (9(0.48 vs. 10.5(0.67, p<0.005) and QoL scores were all improved, SAQ (6.1(0.3 vs. 5.7(0.3, p<0.05), LVD-36 (33.8(3.8 vs. 41.1(4.1, p<0.005) and LIhFE (21.1(3.5 vs. 25.2(4, p<0.01). Significant correlations were detected only between percent decrease in dyspnea and improvement in SAQ (r = -0.63, p<0.005), and increase in 6MWT with improvement in LVD-36 (r = -0.56, p<0.01). CG increased only Pimax (86.6(6.3 vs. 78.4(6.9 $cmH_2O$, p<0.05).
**Conclusion:** IMT improves QoL and exercise capacity in CHF, while use of more than one questionnaire may depict in a more global way the influence of an intervention on QoL.

## P41. PLASMA ADIPONECTIN POSITIVELY CORRELATES WITH N-TERMINAL PRO BRAIN NATRIRETIC PEPTIDE ONLY IN PATIENTS WITH SEVERE CHRONIC HEART FAILURE

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**Purpose:** The adipocyte adiponectin is emerging as a marker of disease severity in patients with chronic heart failure (CHF). We sought to investigate the relationship between plasma adiponectin, N-terminal pro brain natriuretic peptide (NT-proBNP) and left ventricular ejection fraction (LVEF) in patients with CHF grouped according to New York Heart Association (NYHA) functional class.
**Methods:** Sixty-one patients, age 60(2 yrs, (mean(SEM), NYHA II/III and a LVEF 29(1% were tested. Blood sampling for measurement of plasma adiponectin and NT-proBNP were taken.
**Results:** In all 61 patients, plasma adiponectin levels were 23.8(2.5 mg/ml and NT-proBNP 1130.2(201.9 pg/ml. In patients of NYHA II (n=27) with age 57(2 yrs, plasma adiponectin was 19.5(1.9 mg/ml, NT-proBNP, 656.6(186.7 pg/ml and LVEF 31(2%. In patients of NYHA III (n=34), with age 63(2 yrs, plasma adiponectin was 26.8(1.5 mg/ml, NT-proBNP, 1506.3 (318.6 pg/ml and LVEF, 27(2%. In the 61 patients, adiponectin positively correlated with NT-proBNP (r=0.328, p=0.01). NT-pro BNP correlated with LVEF (r=-0.367, p=0.004). In NYHA II patients, no correlations were detected between adiponectin and NT-proBNP or LVEF. NT-pro BNP correlated with LVEF (r=-0.390, p=0.04). In NYHA III patients, adiponectin positively correlated with NT-proBNP (r=0.357, p=0.038). NT-proBNP correlated with LVEF (r=-0.347, p=0.048).
**Conclusion:** Although plasma adiponectin seems to positively correlate with NT-ProBNP in patients with CHF of NYHA II and III, this only holds true for patients of NYHA class III with higher adiponectin and NT-proBNP plasma levels.

## P42. NEUROENDOCRINE CHANGES DURING HEAD UP TILT TESTS IN PATIENTS WITH DILATED CARDIOMYOPATHY

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**Purpose:** The purpose of the present study was to study neurohormonal changes during head-up tilt tests in patients (pts) with dilated cardiomyopathy and syncopal episodes.
**Methods:** Twenty-two pts, 18 men and 4 women, with a mean age of 58.5±9.7 years with dilated cardiomyopathy (left ventricular ejection fraction (40%) and syncopal episodes were included in the study. Sixteen pts had implanted defibrillators and 2 biventricular pacemakers. All pts underwent a head-up tilt test (HUT) with a clomipramine challenge. Blood samples for the measurement of epinephrine and norepinephrine in the plasma

were drawn at baseline (1), 2nd (2), 10th (3) min of tilting and at the end of the test (4).
**Results:** Eleven (50%) pts had a positive HUT during the 12.1±4.4 min of the test. There were no major differences in medication between the two groups with a positive and negative HUT. Neurohormonic changes in positive and negative HUT groups are shown in the table. Epinephrine levels increased significantly ($p<0.05$) in pts with a positive HUT while norepinephrine did not show significant changes.
**Conclusion:** Sympathoadrenal imbalance seems to participate in the pathophysiology of positive HUT in patients with dilated cardiomyopathy and syncope.

| | Epinephrine and norepinephrine during tilting | |
|---|---|---|
| | Positive HUT (N=11) | Negative HUT (N=11) |
| (1) Epinephrine (pg/ml) | 51.3±82.7 | 25.4 ±21.9 |
| (2) Epinephrine (pg/ml) | 40.8±31.2 | 26.8±30.2 |
| (3) Epinephrine (pg/ml) | 155.8±170.8* | 49.2±39.5 |
| (4) Epinephrine (pg/ml) | 115.4±98.4 | 82.2±84.8 |
| (1) Norepinephrine (ng/ml) | 2.7±2.5 | 4.8±3.7 |
| (2) Norepinephrine (ng/ml) | 2.9±5.4 | 4.6±6.4 |
| (3) Norepinephrine (ng/ml) | 7.8±3.8 | 10.3±9.3 |
| (4) Norepinephrine (ng/ml) | 4.7±3.8 | 14.6±13.4 |

*: $p<0.05$ compared to baseline

## P43. MAXIMAL INSPIRATORY PRESSURE AS A DETERMINANT OF EXERCISE CAPACITY IN PATIENTS WITH CHRONIC HEART FAILURE

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**Purpose:** We investigated whether maximal inspiratory pressure (MIP) is decreased in patients with chronic heart failure (CHF) and whether it can determine exercise capacity.
**Methods:** We studied 53 male patients (pts), NYHA II/III, age 58.3(10.4 (mean(SD), weight (wt) 86.7(17.5 kg, with an LVEF of 26(8%. Patients performed a cardiopulmonary exercise test and the 6-min walk test. MIP was assessed at the first sec of inspiration at residual volume using an electronic pressure manometer, while resting lung volumes by spirometry. MIP measured, was compared to normal predicted value according to the Baltimore Longitudinal Study equation for men: MIPn = 126-1.028 x age + 0.343 x wt (kg).
**Results:** MIP was significantly decreased compared to normal predicted value (83.9( 23.8 vs. 95.8(14.7 $cmH_2O$, $p<0.001$). MIP was significantly correlated with age ($r = -0.4$, $p<0.005$), wt ($r = 0.4$, $p<0.001$), NYHA classification ($r = -0.5$, $p<0.001$), FVC ($r = 0.4$, $p<0.005$), walking distance ($r = 0.5$, $p<0.001$) and peak $VO_2$ ($r = 0.6$, $p<0.001$). Linear regression analysis identified a significant association between MIP and peak $VO_2$ ($p<0.001$) while calculated regression equation between MIP and peak $VO_2$ adjusted for age and wt, equals: $VO_2 = 3.57 + 8.769 \times 10^{-2} \times MIP + 4.932 \times 10^{-2} \times age + 2.63 \times 10^{-2} \times wt$ (kg).
**Conclusion:** MIP was found to be decreased in pts with CHF. A reference equation for determining peak $VO_2$ in male pts with CHF according to MIP, age and weight is reported.

## P44. IMPROVEMENT IN EXERCISE CAPACITY AFTER INSPIRATORY MUSCLE TRAINING DOES NOT CORRESPOND TO AN IMMUNE RESPONSE IN CHRONIC HEART FAILURE PATIENTS

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**Purpose:** We sought to assess the effects of inspiratory muscle training (IMT) on plasma cytokines, C-reactive protein (CRP) and the soluble apoptosis mediators Fas (sFas) and Fas ligand (sFasL) in chronic heart failure (CHF).
**Methods:** Thirty-eight patients with CHF, NYHA II/III, were assigned to either a training (TG, n=15) or a control group (CG, n=23) in an age, sex and NYHA class-matched study design. TG exercised at 60% of sustained maximal inspiratory pressure (SPImax) while CG at 15% of SPImax, 3/week for 10 weeks. Plasma levels of tumor necrosis-alpha (TNF-α), soluble TNF receptor I (sTNF-RI), interleukin-6 (IL-6), CRP, sFas and sFasL were measured at baseline and post-IMT. Exercise capacity was assessed by a cardiopulmonary exercise test and the 6-min walk test (6MWT) while dyspnea by the Borg scale after the 6MWT.
**Results:** TG improved inspiratory muscle strength (PImax), (105.1±4.9 vs. 79.8±4.7 $cmH_20$, p=0.001), SPImax (504.5(39.7 vs. 312.5( 26.5 $cmH_20/s/10^3$, p=0.001), peak oxygen consumption (19.4±1.1 vs. 17.3±0.7, ml/kg/min, p=0.002), 6MWT distance (404.3±11.9 vs. 378.2±10.4 m, p=0.002) and dyspnea (8.0±0.4 vs. 9.2±0.4, p=0.002). Circulating TNF-α, sTNF-RI, IL-6, CRP, sFas and sFasL were not altered. CG increased only the PImax (90.3±5.9 vs. 80.2±5 $cmH_20$, p=0.003).
**Conclusion:** IMT-induced improvement in functional status was not associated with an anti-inflammatory effect in CHF.

## P45. CHRONOTROPIC RESPONSE INDEX (CRI) IS ASSOCIATED WITH FUNCTIONAL CAPACITY AND NT PRO BNP LEVELS IN HEART FAILURE

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**Purpose:** Brain Natriuretic Peptide (BNP) levels correlate with functional capacity in heart failure (HF) patients (pts). Its also known that autonomic dysfunction and baro-chemo reflex balance play a role in conditioning exercise tolerance and chronotropic competence in HF. In this study we examined the relationship between NT Pro BNP and heart rate (HR) response during cardiopulmonary exercise testing (CPX).
**Methods:** We studied 60 pts (58±14 yrs) with HF, and LV ejection fruction 35±12%, who underwent treadmill CPX using the Durgie protocol. HR response was assessed by chronotropic response index (CRI) which is calculate by the formula CRI= (peak HR- rest HR/220-age-rest HR) x100 (%). Blood samples for NT Pro BNP assessment were taken at rest and peak exercise.
**Results:** Overall peak $VO_2$ achieved was 18±5 ml/kg/min and CRI was 69±24% (normal value > 80%). CRI correlated both with peak $VO_2$ ($r=0.54$, $p<0.001$) and $VE/VCO_2$ ($r=-0.35$, $p<0.05$). Peak $VO_2$ correlated strongly with NT Pro BNP at rest ($r=-0.62$, $p<0.001$) and peak exercise ($r=-0.68$, $p<0.001$). Peak mean arterial pressure correlated both with peak exercise ($r=-0.54$, $p<0.01$) as well as baseline NT Pro BNP ($r=-0.42$, $p<0.01$). CRI correlated well with NT Pro BNP both at rest ($r=-0.40$, $p<0.01$) and peak exercise ($r=-0.48$, $p<0.01$).
**Conclusion:** In pts with HF, CRI correlates well both with functional capacity derived from CPX and also NT Pro BNP levels. These findings may support the routine use of CRI as a simple non invasive marker of HF severity.

## P46. THE ACUTE AND LONG-TERM EFFECT OF DRUG-ELUTING STENT AND STATIN TREATMENT ON SERUM LEVELS OF INFLAMMATORY AND CARDIAC NECROSIS MARKERS IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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Background: Inflammatory and immune mechanisms are involved in the pathophysiology of atheromatous plaque disruption. We evaluated the serial changes of serum levels of inflammatory and cardiac necrosis markers in coronary artery disease patients (pts) undergoing percutaneous coronary intervention (PCI).
**Methods:** Serum levels of high-sensitivity C-reactive protein (h-CRP), metalloproteinase 9 (MMP-9), tissue inhibitor of metalloproteinases 1 (TIMP-1), neopterin (NEO), as well as creatine kinase (CK), its CK-MB fraction and troponin-I (Tn-I) were measured in 120 consecutive pts (male 103, mean age 62± 10) with stable angina undergoing PCI. Diabetes mellitus was present in 23%, and hypercholesterolemia in 87% of pts [69% of them were receiving statin treatment (ST)]. Blood samples were taken pre-, 24-h post-PCI and at 13.8±3.5 months later [follow-up (FU)].
**Results:** PCI was attempted in 140 vessels to treat 185 lesions, using sirolimus-eluting (SES, n=78 pts) or bare metal (BS, n=42 pts) stents. There were no differences in demographics, risk factors profile, clinical symptoms, or angiographic characteristic of stenosis between two groups. Cardiac necrosis markers measurements post - PCI showed no differences in patients treated with SES compared to those treated with BS; no differences were observed according to ST. In pts receiving ST pre-PCI serum levels of h-CRP (3.99±5.98 mg/L vs 5.13±6.58 mg/L, p=0.02) and NEO (10.94±10.0 nmol/L vs 12.26±5.7 nmol/L, p=0.03) were lower compared to pts without treatment. Serum levels of h-CRP, MMP-9, and TIMP-1 increased 24-h post-PCI both in pts treated with SES and BS ($p<0.001$); these changes were not affected by ST. However 24-h post-PCI MMP-9 levels were lower in pts treated with SES ($p<0.01$). During FU (99% of pts were on ST, 61% on combined antiplatelet treatment) a significant decrease was observed in h-CRP, MMP-9, and TIMP-1 serum levels ($p<0.001$, ANOVA for repeated measurements); these changes were not different between SES and BS pts.
**Conclusion:** ST pre-PCI is associated with a significant reduction in specific inflammatory markers, suggesting the interrelationship between inflammation and statin use. There were no differences in serum levels changes of inflammatory markers 24h post-PCI, and at long-term FU in pts treated with SES or BS The greater increase in MMP-9 observed with BS 24 hours post-PCI might be due to greater tissue damage.

## P47. RESULTS OF CORONARY ANGIOPLASTY USING DRUG-ELUTING STENT IN DIABETIC PATIENTS WITH SILENT ISCHEMIA; COMPARISON WITH SYMPTOMATIC DIABETIC PATIENTS

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**Purpose:** Encouraging results with drug-eluting stents (DES) have been reported in patients (pts) with coronary

artery disease (CAD). The effectiveness of DES in diabetic (D) pts is controversial. In this prospective single center registry, we assessed the short- and long- term results of DES in D with silent ischemia (Si) undergoing percutaneous coronary intervention (PCI), compared to symptomatic (Sx) pts.
**Methods:** A total of 559 consecutive pts (male 81%, mean age 65+9 years) that had been treated with DES were classified in 2 groups according to presence of anginal symptoms pre- PCI: 1)D with Si (154 pts); 2) D with Sx (405 pts). The in-hospital results and clinical outcome during follow-up (11.45 ± 4.1 months, range 4-27) were obtained. Major adverse coronary events (MACE) during follow-up were considered death, myocardial infarction (MI), bypass surgery (CABG), target (TVR) and non-target (non-TVR) vessel revascularization.
**Results:** Sx pts were older (65±9 vs. 62±9 years, p<0.001), female gender (24% vs. 6%, p<0.001) and had a higher incidence of previous CABG (22% vs. 4%, p<0.001) and multivessel disease (73% vs. 58%, p<0.001); Si pts were current smokers (71% vs. 57%. P<0.005) and had a higher incidence of previous MI (57% vs. 38%, p<0.001). Clinical presentation of CAD, ejection fraction < 40%, PCI in total occlusion, and stenosis location and characteristics were not different between Sx and Si pts. The clinical success rate (angiographic success without death, Q- wave MI, emergency CABG) was similar (99.3% in Sx and 100% in Si pts) and no sub-acute thrombosis case occurred before hospital discharge. At clinical follow-up (99% pts) there were no differences in the incidence of death (2% vs. 1.3%), MI (0.7% vs. 0%), TVR (3% vs. 2.0%), or CABG (0.7% vs. 0.6%) between Sx and Si pts; however there was a higher rate of non-TVR in Sx pts (9% vs. 3.9%, p=0.04), while MACE-free survival was 85.04% in Sx and 92.21% in Si pts (p=0.05).
**Conclusion:** The implantation of DES in D pts is associated with excellent in-hospital and long-term Results: However Sx pts present a higher risk factor profile and need more re-intervention at long-term follow-up.

****Competitor for the Best Poster Award****

## P48. ILOPROST FOR PREVENTION OF CONTRAST-MEDIATED NEPHROPATHY IN HIGH-RISK PATIENTS UNDERGOING A CORONARY PROCEDURE

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**Purpose:** The prevention of contrast-mediated nephropathy (CMN), which accounts for considerable morbidity and mortality, remains a vexing problem. Contrast induced renal vasoconstriction is believed to play a pivotal role in the CMN mechanism. The aim of this pilot study was to examine the safety and efficacy of two doses of the prostacyclin analogue iloprost in preventing CMN in high-risk patients undergoing a coronary procedure.
**Methods:** Forty-five patients undergoing coronary angiography and/or intervention who had a serum creatinine concentration: 1.4 mg/dL were randomized to receive iloprost at 1 or 2 ng/kg/min or placebo, beginning 30-90 minutes before and terminating 4 hours after the procedure. CMN was defined by an absolute increase of serum creatinine: 0.5 mg/dL or a relative increase of: 25% measured 2 to 5 days after the procedure. Study drug infusion was discontinued in 2 patients in the low-dose iloprost group due to flush/nausea and in 5 patients in the high-dose group due to severe hypotension.
**Results:** The mean creatinine concentration change in the placebo group (0.02 mg/dL) was unfavourable compared to that in the low-dose iloprost group (–0.11 mg/dL; p=0.08) and high-dose iloprost group (–0.23 mg/dL; p=0.048). The difference between the absolute changes in creatinine clearance was favourable compared to placebo for both the low (mean difference 6.1 mL/min, 95%CI –0.5 to 12.8 mL/min, p=0.07) and the high-dose iloprost group (11.8 mL/min, 95%CI 4.7 to 18.8 mL/min, p=0.002). Three cases of CMN were recorded; all in the placebo group (p=0.032).
**Conclusion:** The results of this pilot study suggest that prophylactic administration of iloprost may effectively prevent CMN, but higher dosages are connected with substantial tolerability issues.

****Competitor for the Best Poster Award****

## P49. INFLUENCE OF RESPIRATORY MUSCLE TRAINING ON EXERCISE CAPACITY IN HEART TRANSPLANTATION AND CHRONIC HEART FAILURE PATIENTS

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**Purpose:** We investigated the effects of inspiratory muscle training (IMT) on exercise capacity and dyspnea in Heart Transplantation (HTx) compared to chronic heart failure (CHF) patients.
**Methods:** Using an age and sex-matched controlled study, we studied a HTx group (n=9, age, 44(12 yrs), 1>year post-HTx, with a LVEF of 58(6%, and a CHF group (n=9, age, 47(6 yrs), NYHA II and an LVEF 31(9 %. All patients were trained at 60% of sustained maximal

inspiratory pressure (SPimax), 3/week for 10 weeks. Pre and post-IMT, pulmonary function was assessed by spirometry, exercise capacity by treadmill testing and the 6-min walk test while dyspnea by the Borg scale at the end of the walk.
**Results:** Post-IMT, the HTx group increased inspiratory muscle strength (Pimax, 123.9(19.6 vs.102.1(16.5 $cmH_20$, p=0.002), SPimax (583(176 vs. 405(149, $cmH_20/sec/10^3$, p=0.018), FVC (101.6(11.8 vs. 98.8 (8.3 Lt, p=0.028), peak$VO_2$ (22.7( 2.5 vs. 20.1( 4.5, ml/kg/min, p=0.048) and walking distance (560(45.9 vs. 476.9(51.4, m, p=0.003). The CHF group increased Pimax (121.7(36.6 vs. 87.9(27.6, $cmH_20$, p=0.002), SPimax (655(259 vs. 417(210, cmH20/sec/$10^3$, p=0.001) and FVC (107.4 (7.4 vs. 102.6(5.1, Lt, p=0.036). Peak$VO_2$ (21.7(4.4 vs. 17.8(2.4, ml/kg/min, p=0.01), walking distance (458.9(71.1 vs. 415.9(56.9 m, p=0.001) and dyspnea (8.2(1.3 vs. 9.9(1.4, p=0.000) were dramatically improved in this group. However, comparison between groups showed a statistically significant difference only for dyspnea (p=0.003).
**Conclusion:** IMT improves exercise capacity and indices of pulmonary function in both HTx and CHF patients. A marked decrease in dyspnea was noted only in CHF patients.

## P50. Z MINI-STERNOTOMY FOR AORTIC VALVE REPLACEMENT

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**Purpose:** To present Z mini-sternotomy´s possibilities in patients undergoing aortic valve replacement.
**Methods:** Five patients underwent aortic valve replacement using Z mini-sternotomy. Patients age varied from 33 to 50 years, 3 men and 2 women. The following parameters were analyzed: 1) surgical features of Z mini-sternotomy, 2) possible variation of canulation of the ascending aorta and right atrium and drainage of the left ventricle, 3) the place of aortotomy and visualization of aortic valve. For the definition of the aortic root localization, the following methods were used: X-rays, spiral computer tomography and ascending aortography in order to exclude accompanying coronary arteries pathology.
**Results:** There was no mortality, no procedure-related morbidity and no necessity converting in midline sternotomy incision. The mean cardiopulmonary bypass time was 100,5 ± 30,3 min and the cross-clamp time of 70,5± 25,4 min.The mean length of stay in the hospital was 8 ± 3 days. There were defined indications for aortic valve replacement through Z mini-sternotomy.
**Conclusion:** The preference of the Z mini-sternotomy than other ones depends on aortic root topography to the chest.

## P51. ENDOSCOPIC SAPHENECTOMY IN CORONARY BYPASS SURGERY

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**Purpose:** Traditional open long saphenous vein extraction technique used in coronary artery bypass graft surgery, is the primary cause of postoperative leg wound complications. Although a number of minimally invasive harvesting equipments are commercially available in the market, they significantly increase the operation costs and are not always possible to be used in all clinics worlwide. In our clinic, we first used a conventional laryngoscope for this reason and then endoscope for minimally invasive harvesting. Then we evaluated the intraoperative datas, effectiveness and applicability of these techniques and the quality of the harvested vein.
**Methods:** 45 patients admitted for elective coronary artery bypass grafting requiring long saphenous vein harvest were prospectively randomized into three groups; either minimally invasive technique using laryngoscope (laryngoscopic), endoscope (endoscopic) or traditional (open) saphenous vein harvest group. A modified bridging technique in which tissue retraction and illumination is achived with a sterilized laryngoscope was used for minimal invasive non-endoscopic harvesting. Karl-Storz Endoscopic equippment was used for endoscopic harvesting. Smooth muscle contractile function was tested in vitro using an organ chamber on vein segments exposed to 80 mM KCl. The endothelial function of the veins was assessed with acethycholine. Morphology of the vessel segments was examined with the light microscopy.
**Results:** There were no statisticaly significant difference in both harvest times and length of the vein harvested by three techniques. Total length of the incision in the laringoscopic and endoscopic group was significantly shorter than in the open group. In follow-ups, no significant complications regarding wound dehiscence, infection, cellulitis, or major hematoma occured in three groups. Pain and leg edema was significantly less in two minimal invasive groups comparing with the open group. There was no significant difference in response to both acethycholine and 80 mM KCl between taken with the laryngoscope and endoscope compared with the traditional open tecnique. Similarly, histological examination of vessel segments harvested with the laryngoscope and endoscope was unable to show any significant damage to the vessel wall.
**Conclusion:** Minimal invasive saphenous vein harvesting using laryngoscope and endoscope can be applied efficiently and succesfully with a satisfactory speed and significantly reduces postoperative leg pain and wound complications, resulting high patient satisfaction and comfort. Our pharmachological and histological studies also demonstrates that laryngoscopic and endoscopic saphenectomy does not harm the harvested graft and

yields biologically and morphologically intact veins. But, fully endoscopic technique seemed to be more practical, technologic and yet easily affordable comparing to the laryngoscopic technique.

## P52. IS THERE A DIFFERENCE IN PLATELET ACTIVITY AFTER OFF-PUMP VS. ON-PUMP CABG SURGERY?

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**Purpose:** Hypercoagulability after off-pump coronary artery bypass grafting (CABG) as a one of possible causes of early graft failure is often discussed. We assessed platelet activity after off-pump and on-pump CABG surgery.
**Methods:** Twelve off-pump and twelve on-pump surgeries were performed in a prospective randomized study. Blood samples were drawn before surgery, immediately postoperatively, on days 1, 2, 5 and 30 after surgery. Platelet activity was determined by membrane expression of platelet antigen CD41 (part of GpIIb/IIIa integrin), CD42 (von Willebrand factor receptor) and CD 62P (P-selectin) by flow cytometry as mean fluorescence intensity (CD41, 42b) or % of positive cells (CD62P). Platelet aggregability was measured by arachidonic acid (ARA)-aggregometry.
**Results:** Baseline characteristics and intraoperative variables were comparable in both groups, except for surgery duration and age. Post-operative membrane antigen expression was significantly and transiently increased in off-pump and decreased in on-pump CABG compared with preoperative values. Maximum difference of antigen expression in the off-pump was observed for CD41 on day 5 (12.2±0.8 vs. 11.7±0.9, p<0.05), for CD62P on day 2 (2.5±1.5 vs. 1.0±0.5, p=<0.05) and for CD42 on day 2 (12.4±1.5 vs. 12.2±1.4, p=N.S.). In the on-pump, maximum difference was on day 5 for all measured antigens (CD41: 11.1±0.6 vs. 11.9±0.9, p<0.05; CD42b: 11.7±1.2 vs. 12.2 +1.1, p<0.05; CD62P: 1.3±0.4 vs. 1.4+0.4, p=n.s.). No changes to preoperative values were evident in both groups on day 30. Platelet ARA-aggregation was significantly decreased immediately after operation and on day 1 in both groups (-70%, p< 0,05) and the decrease was sustained until day 30. However, there was a surprisingly transient increase of ARA aggregation on day 2 compared to day 1 in off-pump surgeries.
**Conclusion:** The platelet hyperactivity determined by membrane expression of platelet antigen seems to be present in early post-operative period in off-pump, but not in on-pump CABG surgery. Standard antiplatelet therapy with aspirin seems to be insufficient in early post-operative period in off-pump CABG surgery.

****Competitor for the Best Poster Award****

## P53. TRIPLE VALVE SURGERY IN THE MODERN ERA

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**Purpose:** Triple valve surgery is a complex procedure which carries a reported operative mortality of 25% and a 10-year survival of 40%.We examined the surgical results of our Department over a 10-year period.
**Methods:** A total of 41 consecutive patients with a median age of 63 years underwent triple valve surgery from October 1996 to July 2006.The most common cause of aortic and mitral valve replacement was rheumatic heart disease (80.5%), followed by prosthetic valve dysfunction (19.5%). Tricuspid valve disease was due to functional regurgitation in 82% of the patients. Ninety percent of the group were in New York Heart Association class III-IV and 22% had had a previous cardiac operation. Procedures consisted of 41 aortic replacements, 40 mitral valve replacements and 1 repair, and the tricuspid procedures of 39 repairs and 2 replacements.
**Results:** Operative mortality was 4.87% (n=2). Survival at 5 and 10 years was 9.75% and 7.31%, respectively. Eighty-five percent of the patients were in New York Heart Association class I and II at their most recent follow-up. Ten- year freedom from thromboembolism was 96%, from anticoagulation-related hemorrhage 88% and from endocarditis 0%. There were no reoperations due to prosthetic complications.
**Conclusion:** Patients with advanced rheumatic valve disease and prosthetic valve dysfunction requiring triple valve surgery present a substantial operative risk. However, compared with historic reports current results (primary and reoperative) have vastly improved. Although early mortality is not negligible, long-term and event-free survival are comparable to those of patients undergoing single valve replacement.

## P54. PREVENTION OF UPPER ARM VENOUS THROMBOSIS IN POSTOPERATIVE PATIENTS WITH THE USE OF CENTRAL LINE, THREE-LUMEN CATHETER

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**Purpose:** Many patients after open-heart surgery develop catheter-related upper limb venous thrombosis during the postoperative hospitalization. To prevent this

complication, we started keeping the intraoperatively inserted central venous catheter (three-lumen) in the immediate postoperative period thus abating the need for peripheral vein catheter.
**Methods:** Prior to the use of the central venous catheters on the nursing floors, special training of our nursing personnel took place. During a six-month period, we prospectively examined daily each of 100 consecutive postoperative patients with a central vein catheter for signs and symptoms of venous thrombosis, and compared them to 100 postoperative patients who were hospitalized with a peripheral venous catheter.
**Results:** There was no significant difference in age, gender, diagnosis or operation performed between the two groups. Upper limb catheter-related thrombosis presented with local signs of irritation, fever, difficulty in feeding, irritability, and prolongation of hospitalization. The incidence of upper limb venous thrombosis was 5% among the patients with a peripheral catheter, and zero among the patients with only a central catheter. Keeping in place the central three-lumen catheter during the postoperative period was associated with no cases of upper limb venous thrombosis, was well tolerated by the patients and did not cause any bleeding, infection or other type of complications.
**Conclusion:** Following proper nursing training, the use of a central venous catheter instead of peripheral lines in the postoperative patients prevented effectively the occurrence of upper limp venous thrombosis.

## P55. PROSTHETIC VALVE ENDOCARDITIS: IMPACT OF SURGICAL TREATMENT

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**Purpose:** Surgical therapy of prosthetic valve endocarditis (PVE) is still associated with high mortality up to 80%. Further risk analysis and characterization of clinical features are of importance for further improvement of surgical Results: The aim of this retrospective study was a risk analysis concerning clinical features of the pre-, intra and postoperative period.
Between 02/97 and 12/2004 70 patients (52 male, 18 female, age 62 ± 11 years) were referred for surgical therapy of prosthetic valve endocarditis in our institution. This included 16 patients with early PVE and 54 patients with late PVE. Preoperative, intraoperative and postoperative features were evaluated on their influence on the early postoperative course and the mid-term follow-up.
Aortic valve was infected in 41 patients (58.6%) and mitral valve in 15 patients (21.4%), double valve affection was recorded in 14 pts (20.0%).
Staphylococci (n=36, 51.4%) and streptococci (n=9, 12.9%) and others (n=24, 14.5%) were identified as causative agents in blood cultures.
The overall hospital mortality rate was 20.0% (n=14), during the follow-up (mean follow up 3.3 ± 2.5 years) further 11 pts (15.7%) died. The overall-mortality was 35.7%:
Main predictor for hospital mortality were preoperative heart failure (p=0.01) and staphylococci infection (p=0.01). Predictors of overall mortality were staphylococci infection (p<0.01), heart failure (p=0.02) and abscess formation (p=0.02).
Surgical therapy of prosthetic valve endocarditis is still associated with quite high mortality in the early and mid-term follow-up. Predictors of outcome include preoperative risk constellation (heart failure, staphylococci infection).

## P56. LEVOSIMENDAN (LS) INFUSION IN ICU PATIENTS SUPPORTED BY IABP AFTER CORONARY ARTERY BYPASS SURGERY (CABG)

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**Purpose:** To investigate the utility of LS in ICU patients supported by IABP after CABG.
**Methods:** 20 consecutive patients receive LS after CABG. Infusion rate was 0.1-0.2μg/kgr/min for 48 hours, without loading dose, beginning 24 hours postoperatively, when IABP subtraction and de-escalation of classical inotropes were not possible. We investigated the safety of LS, haemodynamic profile, change of left ventricular ejection fraction (LVEF) and BNP plasma levels and LS effect on IABP dependency and patients' outcome.
**Results:** LS did not provoke arrhythmiogenic activity. It was well tolerated with the simultaneous infusion of low dosage of norepinephrine, when required (30% of patients). We confirmed: significant decrease in systemic vascular resistance (-26.39%), amelioration in cardiac index (+30.77%) and stroke volume (+28.03%), diminution of PCWP and CVP (-19.26%, – 17.6%, correspondingly), increase in SvO2 (+8.30%) and in perfusion pressure of coronary arteries (14.76%), as a consequence of LS antiischemic properties. We also noticed increase in LVEF (+26.58%) and reduction in BNP plasma levels (-53.37%). Patients became independent of IABP and high doses of inotropes within 3 days after the completion of LS infusion. Mechanical ventilation duration was 30.20 hours, ICU and hospital stay was 9.74 and 16.42 days respectively. 2 patients died of MODS. The rest had a good outcome of 6 months.
**Conclusion:** LS constitutes a promising inotrope, safe after CABG with direct and prolonged beneficial effect. We propose it as inotropic agent of choice after CABG to avoid the use of high and probably dangerous doses of conventional inotropes and to secure the earlier IABP subtraction, with good patients' outcome.

## P57. ACUTE RENAL FAILURE AFTER CORONARY ARTERY BYPASS, INCIDENCE AND RISK FACTORS

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**Purpose:** Acute renal failure after cardiac surgery is associated with a high morbidity and mortality, particulary when associated with hemodialysis, the aim of the study was to identify the incidence and risk factors of acute renal failure (ARF) in patients undergoing myocardial coronary bypass surgery with extra corporeal circulation
**Methods:** The clinical and laboratory variables of 589 consecutive patients undergoing isolated coronary artery bypass grafting between April 2004 and April 2006 were retrospectively analyzed.
**Results:** Of the 589 consecutive patients, 129 (21/9%) patients developed acute renal failure (ARF, defined as the coincidence of post – CABG cr > or = 2.1 mg /dl and > 2 times pre – CABG cr)
The risk factors associated with post operative ARF were: advanced age (p=0.00), diabetes mellitus (p=0.007), hypertension (p=0.001), prolonged pump time (p=0.000), A high degree of hemodilution after CABG (p=0.000)
A low amount of pump flow (during the tempreature of body is at the lowest level) (p=0.007)
**Conclusion:** Cardiopulmonary bypass is associated with significantly increased risk of acute renal failure following isolated coronary artery bypass surgery. Recognizing risk factor permits the timely institution of proper treatment. Which is the key to reducing untoward outcomes?

## P58. EARLY AND LATE RESULTS OF PERICARDIECTOMY FOR RADIATION-INDUCED CONSTRICTIVE PERICARDITIS

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**Purpose:** Aim of this study was to review our institutional experience with operation for radiation-induced constrictive pericarditis and to focus on the early occurrence of low cardiac output syndrome and on late survival and functional outcome.
**Methods:** Fifteen patients (7 men / 8 women, median age: 47 years, range: 32-68 years) who underwent operation for radiation-induced constrictive pericarditis were included. All had hemodynamically significant pericardial constriction preoperatively. Preoperative disability was categorized according to the NYHA method. Preoperative investigations included echocardiography, computed tomography and cardiac catheterization. Records were reviewed with attention to primary malignant disease, clinical features, preoperative investigations, early postoperative course and long-term survival. Pericardiectomy was performed through a left anterolateral thoracotomy (11/15) or a median sternotomy (4/15).
**Results:** At the time of diagnosis, 4 patients were in Class II NYHA, 9 were in Class III and 2 in Class IV. Breast carcinoma, lung cancer and lymphoma were the underlying primary malignant diseases. All patients had clinical evidence of pericardial constriction. The commonest physical signs were increased jugular venous pressure (100%), hepatomegaly (65%), peripheral edema (50%) and ascites (30%). Postoperatively, 33% of patients (5/15) had evidence of low cardiac output. One patient died within 30 days after operation (low cardiac output and respiratory infection). Fourteen patients survived from 3-61 months, free of cardiac symptoms and their death was related to the progression of the underlying malignancy. No patient required reoperation for recurrent constriction. Long-term survival was not significantly influenced by the disability class preoperatively.
**Conclusion:** Pericardiectomy is a life-saving procedure for radiation-induced constrictive pericarditis in oncology patients with acceptable Results: Left anterolateral thoracotomy is the recommended approach as it offers superior exposure to the anterolateral and inferior aspects of the left ventricle with minimal manipulation and retraction of the heart and is well tolerated by most patients. When pericardial constriction is diagnosed, early pericardiectomy is recommended before permanent myocardial damage.

## P59. EFFECTIVENESS AND SAFETY OF THE VACUUM-ASSISTED DEVICE CLOSURE SYSTEM FOR THE TREATMENT OF POST-STERNOTOMY MEDIASTINITIS

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**Purpose:** Post-sternotomy mediastinitis remains a serious cause of postoperative morbidity and mortality. Vacuum-assisted closure (VAC) is based on the application of negative pressure by controlled suction to the wound surface.
**Methods:** Management of sternal infections is based on prompt surgical debridement, serial quantitative wound

cultures and use of VAC system. When systemic signs of infection and quantitative cultures indicate the resolution of local infection, regional muscle flap or primary wound closure was performed. A retrospective review of 43 patients (30 men and 13 women, mean age: 63,5 years) with sternal wound complications who treated with the above mentioned technique over a 5-year period, was performed.
**Results:** The infection was noticed between postoperative days 7 and 37, at which time the wounds were opened and debrided. Median duration of VAC and hospital stay were 16,5 days (interquartile range:9,1-41,2 days). This was related in part to the use of intravenous antibiotics. Nineteen out of 43 patients required only sternal debridement, followed by wound vacuum therapy and closure by secondary intention, while the remaining 24 had an additional procedure. Fifteen outof the 24 patients underwent primary wound closure and 9 had a pectoralis flap. Complete healing was achieved in 41 patients (95,3%). In-hospital mortality was 2,3% (1/43 patients due to right ventricular rupture). There were no VAC-device related complications.
**Conclusion:** VAC system offers an effective and safe means of managing patients with post-sternotomy mediastinitis.

## P60. ASSESSMENT AND SIGNIFICANCE OF INTRA-ABDOMINAL PRESSURE IN MONITORING OF PATIENTS UNDERGOING OPEN HEART SURGERY

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**Purpose:** The excessive increase in intraabdominal pressure (IAP) adversely affects function of visceral and intrathoracic organs, mainly due to mechanical interference with respiratory (elevated diaphragm) and hemodynamic function (venous return). Cardiovascular, respiratory, renal and metabolic functions may be disturbed and Abdominal Compartment Syndrome (ACS) may develop. IAP is rarely measured in clinical practice (normal values 0-5 mmHg) and there are no reports of the assessment of IAP and frequency of ACS in patients undergoing heart surgery.
Therefore our group tested patterns of IAP, estimated frequency of ACS and evaluated role of IAP monitoring in cardiac surgical setting.
**Methods:** 25 patients consented to take part in the study. IAP was measured indirectly using Kron's method (in the range between 5 and 50 mmHg IAP equals intravesical pressure (IVP)). Cystomanometry is relatively safe, non-invasive, inexpensive and rialable method of IAP monitoring. In each case four measurements were taken: (1) before-, (2) after induction of anesthesia, (3) imediately after arrival to ICU and (4) in the first postoperative day.
**Results:** We observed an increase in IAP in all three time points, when compared to baseline (IAP1 8,92 ± 2,87; IAP2 10,76 ± 3,38, IAP3 12,28 ± 4,15 and IAP4 16,08 ± 3,56. In each case $p<0,05$). In most cases increased IAP values did not adversely influenced patients' condition, although in those few, in whom an increase was severely marked (>20 mmHg), more morbidity was observed and postoperative care was prolonged. No mortality was noted. In no case IAP values exceeded 25 mmHg, which indicates garade III ACS and may require decompression.
**Conclusion:** 1. In every patient an increase of IAP was observed. 2. IAP measurement is an useful test that allows to define groups of patients where special vigilance is required. 3. Intra-abdominal pressure seems to be an interesting parameter in monitoring patients undergoing cardiac surgery although further studies are required in order to fully appreciate its usefulness in clinical setting.

## P61. EVOLUTION OF ROUTINE IMMEDIATE EXTUBATION OF THE ELDERLY PATIENT UNDERGOING OPCAB SURGERY IN THE COMMUNITY HOSPITAL SETTING

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**Purpose:** We evaluated the evolution of techniques that allowed immediate extubation (IE) versus postoperative extubation (PE) in the majority of patients ≥ 70 y.o. undergoing OPCAB at a community hospital.
**Methods:** All patients ≥ 70 y.o. undergoing OPCAB during a 2 year period were evaluated (112 patients). A number of techniques were utilized to minimize perioperative pain. Patients were divided into 2 periods: Implementation phase (12/1/03-7/31/04); Adoption phase (8/1/04-12/31/05). We compared STS risk and postoperative course in IE, PE and reintubated patients.
**Results:** Implementation phase: 24/51 patients (47%) had IE. Average age=77. STS risk in IE versus PE group was 3.55% versus 4.19%. Reintubation occurred in 5/24 IE patients (20.3%) versus 3/27 PE patients (11.1%). Reintubated IE patients were more likely to have CHF and DM, but their STS risk was not significantly different (3.8%). The mean LOS was 18.6 days in this group. Adoption phase: 39/61 (64%) had IE. Average age=76. IE versus PE STS risk was 2.0% versus 6.06%. Reintubation occurred in 3/39 (7.7%) of the IE group and none of the PE group. Postoperative LOS was 6.7 days in the IE group versus 8.0 in the PE group.
Risk factors not affecting IE: smoking history, obesity, COPD and CRF. Risk factors affecting IE: preoperative IABP, diabetes, CHF and EF<35%.

**Conclusion:** IE in elderly patients undergoing OPCAB can be safely performed. A multidisciplinary approach to perioperative pain management and appropriate patient selection are required. Commitment from anesthesia, ICU nursing and respiratory therapy is imperative.

## P62. TWO CASES WITH GIANT TUMOR, RARELY LOCATION AT ANTERIOR CHEST WALL

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**Purpose:** Angiosarcomas are rare malignant tumors originating from vascular endothelium and immitating the vascular structure. Although sarcomas are occasional after irradiation, there are angiosarcomas developed after radiotherapy for different type malign tumors. The period between radiotherapy and sarcoma development is very variable and generally over 10 years.
**Methods:** Although it is frequent at abdominal wall, desmoid tumor is a rare primary tumor at chest wall. These benign tumors do not metastize, develop rapidly and agressively invade the adjacent tissues. After surgical resection local recurrence is not infrequent so, planning radiotherapy is a therapy stage.
**Results:** In this study we evaluated a giant angiosarcoma at right anterior hemithorax upper quadrant in a 30 years old patient which we thought to develop in late period after radiotherapy performed for Hodgkin disease 13 years before and totally extirpated with surgery, and radical resection of a giant desmoid tumor which infiltrated brachial plexus at right anterior chest wall and its diagnosis and therapy modalities.

## P63. MOUSE EMBRYONIC STEM CELLS ENGRAFT IN ISCHEMIC HEART MUSCLE, AND INDUCE A RECIPIENT SPLENOCYTE CYTOKINE RESPONSE

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**Purpose:** The potential of embryonic stem cells (ESC) to engraft into tissues and develop target-specific progeny is controversial. Their immunogenicity is unclear. We studied their engraftment and their immunogenicity following injection into injured myocardium.
**Methods:** We injected GFP+ undifferentiated mouse ESC from sv129 $H2^b$ donors into ischemic myocardium following coronary artery ligation in allogeneic (BALB/C, $H2^d$), syngeneic, and SCID recipients. Timeline studies for donor cell engraftment and host response were performed in 4 groups of allogeneic recipient mice. Heart function was assessed with echocardiography (15MHz).
**Results:** We show that ESC form colonies within host tissue and express cardiac cell markers. They trigger infiltration of host CD-3+ T cells and CD-11c+ dendritic cells in allogeneic immunocompetent hosts, and promote expansion of proinflammatory T cells and TNF-α. Nuclear polymorphism and cell dysplasia occur over time in vivo. Transplanted mESC engraft and form atypical cells consistent with tumors. Conclusions: We speculate that cardiomyogenic progeny of ESC may be useful in repair of ischemic myocardium. Inflammatory/immune host responses will need to be controlled for a robust and sustained myocardial restoration.

## P64. POSTCARDIOTOMY MECHANICAL SUPPORT IN ACUTE HEART FAILURE AND IN ACUTELY DECOMPENSATED CHRONIC HEART FAILURE (CHF)

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**Purpose:** We present comparative results of temporary perioperative left ventricular assistance with a rotary pump, in acute heart failure and decompensated CHF.
**Methods:** Between August 2001 and August 2004, 11 patients where supported by the TandemHeart percutaneous LVAD. The major indication for support was failure to wean from CPB. Patients were classified into 2 groups. Patients in group A (n=7) underwent heart failure surgery and acute heart failure occurred due to perioperative decompensation of end stage CHF. Patients in group B (n=4) underwent CABG, and acute heart failure occurred due to perioperative acute coronary syndrome. The mean preoperative LVEF was lower in group A (p=0.001), evolving preoperative MI and previous IABP insertion were more common in group B (p=0.024, p=0.015).
**Results:** The weaning (100% in A vs. 25% in B, p=0.024) and survival rates (71.42% in A vs. 25% in B) were higher in group A. Preoperative evolving MI was predictor of poor outcome. The mean initial flow above the pump flow (due to residual cardiac function) was higher in group A (p=0.01). The mean pump speed (initially and during support) was higher in group B (p=0.039 and 0.009).
**Conclusions:** Acute heart failure due to extensive MI is not easily reversible even with revascularization and LVAD support. Short-term support in combination with heart failure surgery can be beneficial in selected patients with CHF. Longer mechanical support to allow cardiac reverse remodeling could have been beneficial for patients with CHF that were weaned but did not survive to discharge.

## P65. SELECTIVE ANTEGRADE CEREBRAL PERFUSION THROUGH THE RIGHT AXILLARY ARTERY IN THE SURGICAL MANAGEMENT OF ACUTE TYPE A AORTIC DISSECTION

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**Purpose:** Perfusion through the right axillary artery is an alternative for arterial canulation that avoids manipulation of the ascending aorta or aortic arch and provides antegrade blood flow during surgery for acute type-A aortic dissection.
**Methods:** From January 2000 through June 2006, thirty two patients (6 female-26 male) underwent right axillary artery canulation through a side-graft, for acute ascending aorta dissection. All operations were performed with the aid of hypothermic extracorporeal circulation (22-25$^{o}$C), selective cerebral perfusion (SCP) and systemic circulatory arrest, allowing open distal anastomosis in all cases. Then, CPB was stopped and the arch was opened and inspected from inside. CPB was started again and arch branches were clamped from right to left under observation for back flow. If there was no back flow from the left common carotid artery, bilateral antegrade cerebral perfusion was established via the left common carotid artery.
Twenty four patients underwent ascending thoracic aorta replacement (ATA) with or without hemiarch replacement or aortic valve replacement- resuspension. Eight patients underwent Bentall procedure and four patients underwent total arch replacement.
**Results:** Two patients died intraoperatively due to diffuse bleeding , one patient died intraoperatively due to low cardiac output and two patients died later in the ICU, due to multiple organ failure. One patient had permanent neurological deficit postoperatively (1 of 29; 3.4%) and three patients suffered temporary neurologic dysfunction. All other patients were discharged in good condition.
**Discussion:** The low incidence of permanent neurologic complications in our patients suggests that the SCP through axillary artery is an adequate brain protection method for acute type-A aortic dissection surgery, allowing safe open repair of the aortic arch.

## P66. RENAL TUMORS WITH CAVOATRIAL EXTENSION. OUR EXPERIENCE

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**Purpose:** Renal tumors invade the inferior vena cava in 5-15% of the cases and extend to the cardiac cavities in as much as 4-10%. The aim of this study is to present our experience from 4 cases treaded with radical excision of renal tumors with cavoatrial extension and their mid-term results.
From May 2003 to July 2006 we treaded 4 patients suffering from renal tumor with cavoatrial extension. They were 3 men and 1 woman aging from 65-71 years (mean 68). The first symptom has been haematouria in two cases dyspnoea in one and leg oedema in one case. The extension of the disease was type IV in three cases and type III in one while the histology was renal cell cancer in all of them.
**Methods:** The technique we used in all cases was nephrectomy along with simultaneous cavotomy and atriotomy udder deep hypothermic circulatory arrest.
**Results:** There was no mortality; the mean blood loss was 850 ml and the mean hospital stay 9 days. All patients remain alive and free of recurrence until today with a cumulative follow up of 110 months.
**Conclusion:** Radical nephrectomy with excision of the cavoatrial tumor-thrombus can be achieved safely under deep hypothermic circulatory arrest providing satisfactory morbidity and survival of the patients.

## P67. EARLY RESULTS OF THE FIRST CLINICAL IMPLANTATION OF A NEW LVAD, AS A BRIDGE TO RECOVERY, AFTER HEART FAILURE SURGERY

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**Purpose:** We report the early results of the first worldwide clinical implantations of a new LVAD (WorldHeart Rotary Pump, WorldHeart Inc), as a bridge to recovery, in combination with heart failure surgery.
**Methods:** Two patients have been enrolled in this single centre, non-blinded, non-randomized, prospective pilot study, since March 2006. They were in end stage CHF, due to idiopathic dilated cardiomyopathy (functional class IV, LVEF 20%). The patients underwent heart failure surgery and mechanical support, for 3 months postoperatively. Cardiac resynchronization therapy was also initiated early postoperatively.

**Results:** There was no mechanical failure or pump related life threatening adverse events. Infections were minor and successfully treated. Haemolysis indices exceeded on rare occasions double the preoperative levels and had no clinical impact. Hepatic dysfunction was minimal and transient. There was no incidence of thromboembolism, bleeding, arrhythmia, neurologic or renal dysfunction, or any reason for early device removal. Both patients survived to explant. On both patients functional recovery of the LV was demonstrated post-explantation. The first patient survived to discharge and remains (71 days post explantation) in NYHA class I. The second patient is making a good recovery (being transferred to the ward on the 2nd day post-explantation).
**Conclusions:** The experimental device appears to be safe and effective. It has succeeded to unload the LV and support the circulation. Early functional recovery with combined therapy was achieved in both patients. Long term follow up is needed to investigate whether lasting cardiac recovery can be achieved in selected patients with end stage CHF.

## P68. CLINICAL EXPERIENCE WITH THE ATS MECHANICAL BI-LEAFLET VALVE

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**Purpose:** To evaluate the effectiveness of the new mechanical bi-leaflet valve ATS, we reviewed our experience with this prosthesis from 6/1995 to 12/2004.
**Methods:** Replacement of cardiac valve(s) with the ATS mechanical valve prosthesis was performed in 280 patients (133 females) by our Department. Of them, 103 had aortic valve replacement (AVR), 141 mitral valve replacement (MVR), and 36 both aortic and mitral valve replacements (DVR). All patients had severe valve pathology confirmed by echocardiographic evaluation and cardiac catheterization preoperatively. Patients' age ranged from 22 to 80 years; mean age was 60.2±10.11 years. Postoperative oral anticoagulation was prescribed for all patients.
**Results:** Operative (30-day) mortality was 4 patients after AVR (1.4%), 5 after MVR (1.8%), and 2 after DVR (0.7%). Follow-up ranged from 3 to 120 months. Valve thrombosis or structural valve dysfunction were not observed. Anticoagulation-related hemorrhage was seen in 2 patients (0.7%) during follow up. Late thromboembolism was seen in one patient with a dilated left atrium following MVR (0.7%), despite adequate anticoagulation levels, necessitating valve replacement with a bioprosthetic valve. Postoperatively, 172 patients (61.4%) were free of symptoms. Echocardiographic data showed satisfactory valve performance and EF 57±9.6% in our patients. Paravalvular leak was seen in 3 patients (1.07%).
**Conclusion:** Overall, the ATS valve performed satisfactorily in both the aortic and mitral positions.

## P69. AORTIC VALVE REPLACEMENT WITH A STENTLESS VALVE BIOPROSTHESIS

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**Purpose:** To evaluate the effectiveness of the stentless Cryolife-O'Brien (COB) valve as an aortic valve substitute in small aortic roots, we reviewed our experience consisted of 130 patients who received this stentless prosthesis from 2/1995 to 12/2002.
**Methods:** 67/130 patients (51.5 %) had a small aortic annulus measuring ≤21mm in diameter. The indication for aortic valve replacement was aortic stenosis (n=55), aortic regurgitation (n=1) or mixed lesion (n=11). The patients' age ranged from 59 to 84 years. There were 10 male and 57 female patients. AVR was performed in each patient with cardiopulmonary bypass at 28 degrees C and cold blood cardioplegia. Following resection of the aortic leaflets and debridement of the aortic annulus, the aortic annular diameter was measured with Hegar dilators. Aortic annuli were measuring 19mm (n=27) and 21mm (n=40); implanted valve size was 21mm and 23mm, respectively. Postoperatively, the patients were prescribed coumarinic anticoagulation for three months and were followed-up with periodic clinical and echocardiographic evaluations.
**Results:** Surgical (30-day) mortality was 2 patients (3.07%, 1 died of ARDS and 1 of pulmonary embolism). Follow-up ranged from 1 to 102 months. There were 2 late deaths of cerebral bleeding secondary to erroneous anticoagulation. Replacement of the implanted valve was necessitated in 2 patients due to valve-patient mismatch. Thromboembolism, endocarditis or structural deterioration of the implanted valve was not observed. Mean pressure gradient was 10± 3mmHg and 11± 5mmHg at 1 and 5 years respectively and the EF was > 50% - at 5 years of follow-up.
**Conclusion:** The stentless COB valve is an effective aortic valve substitute in patients with small aortic annulus.

## Author Index with Reference to Abstract Numbers