In all of the postoperative study parameters, no significant difference was found between groups either in terms of mortality, left or right ventricular function, LVEF (62.98 +/- 2.65% vs 61 +/- 4.20 %); LVEDD (47.3 +/- 1.4 mm vs 46.1 +/- 2.6 mm); LVESD (30.8 +/- 1.7 mm vs 30.9 +/- 2.6 mm); TAPSE (15.78 +/- 0.88 mm vs 15.65 +/- 1.0 mm), S (10.58 +/- 0.47 cm/s vs 10.35 +/- 0.77 cm/s) respectively for group 1 and group 2.

Discussion/Conclusion: The short- and medium-term results of our study did not demonstrate the interest of preserving the subvalvular apparatus in mitral valve replacement surgery on pure or predominant rheumatic mitral stenosis; however, a longer follow-up is needed to evaluate the impact on either left or right ventricular function.

State of rheumatic fever in Algeria. Viewpoint of a cardiac surgeon
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A3

Background/Introduction: In Algeria prevalence of rheumatic fever(RF) has steadily decrease especially after the establishment of the national program against the RF in 1990; the national incidence decreased from 04.7 /100,000 in 2002 to 02.5 /100,000 in 2003, 02.3 /100,000 in 2004, 09.2 /100,000 in 2005, 02.1 /100,000 in 2006 and 01.0 /100,000 in 2007. However, the share of rheumatic patients requiring surgical treatment for valvular lesions has not changed, indicating the insufficiency of the modified Jones criteria.
Aims/Objectives: Our aim is to evaluate the sensitivity of the Jones criteria for the diagnosis of rheumatic fever in patients with rheumatic valve disease.

Method: 77 patients were operated for pure rheumatic mitral stenosis, from January 2009 to May 2012 at the cardiac surgery department of the EHU 1 November 54. The sex ratio was 0.33; the average age was 42.26 years 95% [39.84-44.68]. Rheumatic lesion was confirmed by pure stenotic lesion of the mitral valve.

Results: Only one patient of the 77 patients (1.3%) had a history of rheumatic fever diagnosed and treated; the remaining 76 patients (98.7%) who have never been diagnosed or treated for rheumatic fever, until the appearance of valvular lesions which indicated surgery.

Discussion/Conclusion: Despite the favorable results of the national program against the RF; However cardiac surgery departments are still receiving patients with valvular rheumatic lesions, which have never been diagnosed or treated, this testifies to the insufficiency of Jones criteria for the diagnosis of rheumatic fever, other criteria must be introduced for the diagnosis (echocardiography, biological); the aim being to reduce the socio-economic impact of this disease, and why not eradicate definitively rheumatic fever.

A5 Pulmonary parenchymal Castlemann tumor with fissural extension- a rare indication for pneumonectomy

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Background/Introduction: Castleman disease is a lymphoproliferative disorder of lymph tissue. Albeit benign there is a tendency to transform into lymphoma in some cases.

Aims/Objectives: We present a rare case of Castlemann tumour presenting as a solitary pulmonary tumor with extension into the oblique fissure on the left lung necessitating a pneumonectomy.

Method: A 20 year fit and well lady presenting with constant interscapular back pain of 4 months, left hilar shadow on chest roentgenogram and CT scan revealing a centrally based left hilar mass originating from left upper lobe. There was no evidence of mediastinal lymphadenopathy, secondaries or enlargement of lymph nodes in the rest of the body.

Results: Patient was taken up for surgery. Thoracotomy revealed a firm well encapsulated 4 cm4, highly vascular, mass in close relation to hilar structures, crossing the oblique fissure into the lower lobe and with no invasion of hilar structures, or mediastinal lymphadenopathy. The mass was removed en bloc with a pneumonectomy. Histopathology confirmed a hyaline vascular type of Castlemann tumor of lung.

Discussion/Conclusion: Isolated pulmonary parenchymal Castlemann disease is extremely rare and reported in less than 10 case reports worldwide. It commonly presents as a central mass and requires en bloc resection along with lobectomy/pneumonectomy. The potential for malignant transformation is justification for surgery albeit most cases are only diagnosed post resection. This is an important differential diagnosis for a well circumscribed, benign, centrally placed tumor of the lung and is a justifiable rare indication for pneumonectomy.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.
decision making faced during the procedure, leading ultimately to a favourable outcome.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A7

Metabolic manipulation in Dilated Cardiomyopathy: assessing the role of trimetazidine
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Background/Introduction: Altered substrate metabolism plays an important role in pathophysiology of heart failure (HF). Optimization of myocardial energy metabolism with metabolic modulators like trimetazidine (TMZ) allows more efficacious energy production.

Aims/Objectives: Although TMZ has been studied extensively in patients with ischemic HF, more data are needed on its role in dilated cardiomyopathy (DCM).

Method: 100 patients of DCM (mean age 47.7 yrs, NYHA class 2.17, LVEF 27.3%) were randomized to TMZ (20 mg tid, n = 50) vs conventional therapy (n = 50). Functional status, BNP & echocardiographic parameters were assessed at 3-6 months.

Results: Baseline characteristics were comparable among the two groups. At three months, patients on TMZ had significant improvement in mean NYHA class (2.25 vs 1.85, p = .001), 6 min walk test (349.7 vs 402 m, p = 0.001), LVD-36 score (25.5 vs 21, p = .001) and fall in BNP (744.7 vs 248.3 pg/ml, p = .001). This was accompanied by significant improvement in indexed LV end-diastolic-systolic (LVEDV, 87.1 ± 27.5 vs 78.5 ± 24.9 ml/m2, p = 0.0001) and LV end-diastolic volumes (LVEDV, 117.6 ± 29.3 vs 110.9 ± 27.4 ml/m2, p = 0.0001) and LVEF (27vs30.9%, p = .0001) along with reduction in LV wall stress (90.2 ± 18.9 vs 71.1 ± 13.2 dyn/cm², p = 0.0001). Other echocardiographic parameters also improved after three months of TMZ (E/A ratio, E/A VTI, Myocardial performance index) and TDI parameters (E/e septal, and E/e' lateral). Patients not on TMZ had no significant change in NYHA Class, LVD-36 scores, LV volumes or LVEF at 3 months although BNP levels & LV wall stress reduced, albeit to a lesser extent than TMZ. Patients on TMZ had further improvement in NYHA Class, 6 min walk test, BNP levels & all echocardiographic parameters at 6 months.

Discussion/Conclusion: Metabolic modulators like trimetazidine have a potential role to play in altering LV remodelling and improving LV function in DCM. In this study, benefit was noted by 3 months with further improvement at 6 months.

A8

Role of topical application of iced slush in the development of phrenic nerve palsy after cardiac surgery
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Background/Introduction: Phrenic nerve palsy (PNP) is a well-recognized complication after cardiac surgery which might occur as a result of topical myocardial cooling, direct injury or ischemia. It can result in deleterious respiratory effects especially in children and in patient with chronic obstructive pulmonary disease which adversely affect recovery and increase the length of ICU and hospital stay. Topical application of iced slush has been used for decades in hypothermic cardiac surgery, the effect of the direct contact between the iced slush and phrenic nerve might increase the incidence of nerve palsy and diaphragmatic dysfunction. Recently normothermic cardiac surgery has been employed largely to avoid the adverse effects of hypothermia.

Aims/Objectives: To prove the relation between topical myocardial cooling and phrenic nerve palsy.

Method: This study is a retrospective observational study looking at the incidence of phrenic nerve palsy in consecutive 196 cardiac surgery patients, 102 of whom had iced slush applied topically with moderate hypothermic cardiopulmonary bypass (28-32) -ICE group- and 94 had nothing applied with a normothermic cardiopulmonary bypass (37) - WARM group. Phrenic nerve palsy was suspected in patients with raised hemidiaphragm on Chest radiographs. Subsequent CXRs were taken prior to discharge and at the 6 week post-operative clinic for resolution.

Results: In the ICE group PNP was observed in 10.8% (11 of 102 patients) versus 0% (0 of 94 patients) in the WARM group (p = 0.0010), there were no significant difference between both groups regarding the mean age, preoperative respiratory risk factors, and aortic cross clamp time. Logistic Euroscore was 4.07% for the ICE group and 2.33% for the WARM group (p = 0.0016), total bypass time was 76.5 minutes for the ICE group versus 86 minutes for the WARM group (p = 0.016). Length of postoperative ventilation was significantly higher in the ICE group (7 hours) than the WARM group (5 Hours) (p = 0.054), length of ICU and HDU stay were similar in both groups.

Discussion/Conclusion: The use of iced slush during heart surgery might increase the incidence of postoperative phrenic nerve palsy with an impact on the length of postoperative ventilation.

A9

Excision of the primary in stage IV non-small cell lung cancer (NSCLC): A feasibility study
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A9

Background/Introduction: Benefit from resection of the primary tumour in stage IV renal and breast cancer has been demonstrated. This has never been shown in patients with stage IV lung cancer.

Aims/Objectives: To establish the feasibility of a trial in NSCLC we assessed the proportion of stage IV patients in whom video-assisted thorascopic (VAT) wedge resection of the primary lesion would be possible.

Method: A prospective lung cancer database was analysed to identify patients with stage IV lung cancer. Inclusion criteria included: WHO performance status of 0-2 and histologically confirmed NSCLC. Patients with cerebral metastases were excluded. The images of these patients were independently reviewed by two surgeons to determine the suitability for a VATS wedge resection of the primary lesion. Areas of discrepancy were resolved by a third senior reviewer.

Results: Over a 14-month period, 893 patients with stage IV lung cancer were identified. A sample of 300 consecutive patients (34%) with a performance status of 0-2 were analysed of which 30 were excluded as they did not fulfil the primary criteria. Thirty-six (16%) of the remaining 260 had histological confirmation and no cerebral metastases. A further 23 patients were excluded due to the size or location of the primary. Thirteen patients (5.6%); median age 70 years (IQR: 64-76 years) were found to be suitable for a VATS wedge resection and the most common cell type was adenocarcinoma (46%).

Discussion/Conclusion: A proposed trial of resecting the primary in stage IV NSCLC would be challenging as a busy unit would only have one candidate per month. This data will guide the design of a future multicentre trial.

A10

15 year experience of endoscopic atraumatic coronary artery bypass graft (EndoACAB): a single centre experience of a tertiary referral centre
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Background/Introduction: EndoACAB is a relatively new procedure and remains uncommon, practiced only in specialist hospitals. This is mostly due to requirement of specialised instruments and lengthy learning curve. In this procedure, the left internal mammary artery (LIMA) is
harvested endoscopically and anastomosed to the left anterior descending (LAD) artery off pump through a small left micro-thoracotomy incision. There is a wide variation of the way this procedure is performed.

**Aims/Objectives:** In this study, we described our experience of performing this procedure over the last 15 years.

**Method:** The hospital cardiac surgery database (PATHS) was retrospectively reviewed. Patient characteristics and outcome including mortality and post-operative complication are reported.

**Results:** A total of 475 patients underwent this procedure from January 2000 to May 2015. Of these patients, 420 (88.4%) underwent the procedure on an elective basis, 52 (10.9%) on an urgent basis and 3 (0.63%) as emergency. There were 2 (0.46%) mortalities and 1 (0.2%) requiring reoperation for bleeding. Other documented complications include pleural and pericardial effusion requiring drainage, atrial and ventricular arrhythmias and permanent pacemaker insertion. There was 37 (7.8%) conversion to sternotomy and convention on pump CABG with the commonest reason being damage to IMA and severe adhesions in the left pleural cavity.

**Discussion/Conclusion:** Despite its technical challenge, EndoACAB can be performed reproducibly with excellent outcome. We advocate that this procedure should be offered to all suitable patients (single vessel LAD stenosis or multivessel coronary artery disease whereby the non-LAD coronaries are amenable to percutaneous intervention).

**A11 Endoscopic Conduit Harvest - A New Standard in Coronary Artery Bypass Surgery**

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**Background/Introduction:** Coronary artery bypass grafting (CABG) remains an index procedure in cardiac surgery. Despite the increasing use of arterial conduits, the great saphenous vein remains the most widely used conduit due to its ease of harvest, availability and versatility. Traditional open harvesting technique (OVH) is associated with significant wound-related morbidity and therefore an endoscopic minimally invasive harvesting technique is increasingly employed. In our institution, endoscopic vein harvest (EHV) is now performed as a routine and here we report our mid-term results.

**Aims/Objectives:** We review the results since the inception of this technique.

**Method:** EHV was introduced in our institution in November 2009. Data was collected from November 2009 to March 2014. This technique was introduced and performed initially by two consultants and subsequently, following training, by the surgical care practitioners (SCP). Currently, this technique is performed by one consultant and two surgical care practitioners.

**Results:** From November 2009 to March 2014, 2334 patients underwent CABG. Initially, in 2010, EHV was employed in 49% of patients. This steadily increases to 54% in 2011 and 73% in 2012. In 2014, 90% of the veins harvested were removed endoscopically.

Patients who underwent EHV have significantly lower rate of leg wound related complications compared to OVH (OVH 3% vs EHV 0.82%, p < 0.0001). There was no statistical difference in 30 days mortality between the two groups (OVH 3.5% vs EHV 2.2%, p = 0.07). Overall survival was 93.1% in OVH and 95.9% in EHV (p = 0.16). There was no difference in reoperation rate (p = 0.69).

**Discussion/Conclusion:** The introduction of EHV have no adverse effects on outcome and mortality in the short to medium term and significantly reduced the incidence of leg wound infections compared to traditional open harvesting technique.

**A12 Brompton and Harefield Infection Score (BHIS): A novel scoring system for detection and treatment of sternal wound infection**

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**Background/Introduction:** Sternal wound infection (SWI) is a significant complication that increases risk of mortality, prolongs hospital stay, and increases healthcare cost. In our institution, we developed a novel scoring system (Brompton & Harefield Infection Score - BHIS) to identify patients at high risk of developing SWI following cardiac surgery with sternotomy. Patients identified to have high BHIS score was then treated with prophylactic intervention package.

**Aims/Objectives:** We report our results of this novel intervention.

**Method:** The BHIS score is scored based on variables including female gender (2), diabetes (1) or Hba1c =>7.5 (%) (3), BMI >35 (2) and LVEF <45% (1). Patients were stratified into low risk (BHIS score 0-1), medium risk (BHIS score 2-3) and high risk (BHIS score 4 and above).

An intervention package was then developed for patients identified to have high BHIS score risk. The intervention package includes extended antimicrobial prophylaxis, standardized sternal closure, support wear (females), negative pressure dressing and patient education.

**Results:** Data was collected between November 2013 and May 2015. During this period, 811 patients underwent cardiac surgery requiring sternotomy. In the low risk group, 9 patients out of 542 patients (SWI rate 1.7 per 100 operations) developed SWI. In the medium risk group, 7 patients out of 210 patients (SWI rate 3.3 per 100 operations) developed SWI. In the high risk group (59 patients), 20 patients received prophylactic intervention. In this group, there was no SWI, whereas in the 39 patients who did not receive prophylactic intervention, there was 5 SWI (SWI rate 12.8 per 100 operations).

**Discussion/Conclusion:** The BHIS score is a novel scoring system for identifying patients at high risk of SWI. Patients identified to have high BHIS score and subsequently treated with prophylactic intervention are found to have reduced SWI rate.

**A13 The use of Tissue PatchTM to Reduce the Duration of Air Leak Following Lung Volume Reduction Surgery**

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**Background/Introduction:** Prolonged post-operative air leak is a recognised complication in patients receiving lung volume reduction surgery (LVRS). Some patients are transferred to a portable flutter-valve bag to facilitate discharge. TissuePatchTM is a synthetic absorbable self-adhesive film which acts as an adjunct to minimise air leak.

**Aims/Objectives:** Our aim was to see whether the use of TissuePatchTM would reduce post-operative air leak and the subsequent need for a drain in LVRS patients.

**Method:** We retrospectively analysed LVRS cases over a two year period performed by a single surgeon to minimise procedural heterogeneity. Patients were divided into two groups; group 1 received Tissue PatchTM as the staple line adjunct and group 2 did not.

**Results:** There were 26 cases in total (one excluded due to in hospital death); group 1=12 (2 bilateral procedures, 10=upper lobe procedures, median age 65); group 2=13 (all unilateral, all upper lobe procedures, median age 63). The median length of stay was 15 for both groups (p = 0.40). The median duration of air leak was 13 days for group 1 and 18 days for group 2 (p = 0.95). Only 2/12 (16%) in group 1 did not have full resolution of air leak and drain removal prior to discharge and were placed on a portable flutter-valve bag compared to 5/13 (38%) in group 2 (p = 0.64).

**Discussion/Conclusion:** We have observed a reduced trend in the number of patients being discharged with persistent air leak following LVRS with the concomitant use of Tissue PatchTM. A larger study is indicated which may demonstrate significant results.

**A14 Stomach pullup for burnt out esophagus, an experience of 44 cases**

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A14**
**Background/Introduction:** Gastric pull-up with cervical anastomosis is a safe procedure, which can be performed for the treatment of non-dilatable corrosive esophageal stricture.

**Aims/Objectives:** To determine the outcome of surgical management of Non-dilatable corrosive esophageal stricture.

**Method:** Computerized clinical records of forty four diagnosed corrosive esophageal stricture patients from March 2007 to Dec 2014 were retrospectively analyzed. Patient of all ages, both sexes, medically fit and corrosive stricture involving thoracic esophagus only were included in the study. Medically unfit patients and corrosive stricture involving the larynx, cervical esophagus and stomach were excluded from the study. Patients were registered through OPD. After necessary preoperative worup the patients were subjected to the surgical procedure.

**Results:** Out of 44 patients, 28 were male and 16 were female. Age ranges from 6 to 65 years with a median age of 21 years. Accidental ingestion was observed in 31 patients and Suicidal in 13. Acidic injury was specified in 19 patients whereas caustic ingestion n 25 patients. Average time between chemical injury and surgery was 4 weeks. In all cases we did esophagectomy and stomach was used as a conduit with gastroesophageal anastomosis in the neck. Morbidity was 3 (6.81%) including anastomotic leak in one and anastomotic stricture in two. Overal morbidity rate was 2 (4.54%) due to respirary failure.

**Discussion/Conclusion:** Good and satisfactory results can be obtained in 90% of the patients after gastroesophagoplasty for Non-dilatable corrosive esophageal stricture.

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**A15**

Management of Fire Arm Injury chest, an experience of 10,200 patients

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**Method:** An observational descriptive study was conducted in the department of Thoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar from June 2002 to Dec 2014. The record of all trauma patients that had fire arm injuries undergoing surgical intervention over a period of twelve years was reviewed.

**Results:** The study included 10,200 patients; all were having firearm injuries leading to hemopneumothorax. Male to female ratio was 2:1. All patients were initially managed with tube thoracostomy. 400/10200 (3.92%) patients underwent emergency Thoracotomy. Rest of the patients (i.e. 9801/10200 (96.07%) were hemodynamically stable and treated with low pressure suction and incentive spirometry. In 550/10200 (5.39%) patients which developed clotted hemothorax were evacuated successfully through thoracotomy. The mean time interval between injury and thoracotomy was 14.5 days (range between 11- 124 days). The mean volume of clotted hemothorax evacuated was 650 ml. The mean post-operative hospital stay was 5 days.

**Discussion/Conclusion:** Majority of fire arm injuries were successfully managed by chest intubations, observation and supported treatment. 400 patients required emergency Thoracotomy. 550 patients went into develop clotted Hemothorax requiring evacuation.

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**A16**

Early results of excision of 220 cases of primary chest wall tumors in 12 year period

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**Method:** 220 patients from June 2002 to Dec 2014 were retrospectively analyzed. Patients of all ages, both sexes and operable primary chest wall tumor were included. Clinical evaluation, routine investigations, chest radiographs, computed tomography and biopsy were done. Incisional biopsy was done for >5 cm mass while excisional biopsy was done in smaller tumors. Complete excision of the chest wall tumor with 5 cm free margin and one normal rib above and one normal rib below was done. Specimen was sent for histopathology. In skeletal reconstruction plastic surgeon was involved. Patients sent to oncologist for adjuvant therapy accordingly. One year follow-up were done.

**Results:** Out of 220 patients, 143 were male and 77 were female, age ranges from 9-80 years with a median of 27.8 years. 151 patients experienced painless mass and 69 patients painfull mass.113 chest wall masses presented on right side, 70 left sided and 3/1on sternum. Sizes were <3 cm 76, 3-5 cm 92, 5-10 cm 30, >10 cm 08. Chest wall resection and primary closure was done in 107 cases while in 113 cases resection and reconstruction done using marlex mesh alone in 98 cases and reinforced with methyl methacrylate in 15cases. Histologically Chondrosarcoma was reported in 61.5%, Fibrosarcoma in 25%, Ewing sarcoma in 11.5% while 2% specimens were reported as chondroma. Postoperative flail observed in 8cases, 5 patients died despite prolonged ventilation. All patients referred to oncologist post operatively. One year follow up of all 215 alive patients were tumor free.

**Discussion/Conclusion:** Primary chest wall tumor can be safely managed by resection and primary closure or chest wall reconstruction and are associated with long term survival.

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**A17**

Primary Repair of Oesophageal Perforation, An experience of 54 cases

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**Method:** 54 patients who underwent primary repair of Oesophageal perforation from June 2002 to May 2014 were retrospectively analyzed. Patients of all ages, both sexes and benign thoracic oesophageal perforation were included. Malignant oesophageal perforation, benign cervical and abdominal oesophageal perforation cases were excluded from the study. Patients were admitted through emergency department as a referred case after 12 hr of incident. Immediate management was resuscitation and chest intubation, kept in ICU. Contrast study was done after stabilization usually after one week. Procedure includes separate closure of mucosal and muscle layer by continuous suturing after refreshing the margins and buttressing the anastomotic area with intercostal muscle flap, followed by feeding jejunostomy. Feeding through jejunostomy tube started on second post-operative day, while contrast study was done on 7th post-operative day. Six months follow-up was done in all cases. Variable measured was postoperative leakage, stricture formation, morbidity and mortality.

**Results:** Out of 54 patients, male to female ratio was 2:1, age ranges from12 to 65 years with a median age of 38 years. Perforation was caused by iatrogenic instrumentation in 45 patients, trauma in 6 and ingested foreign bodies in 4. In all patients initial chest x ray was done, location of perforation was confirmed by gastrograft study involving upper third thoracic esophagus in 12 cases, middle third 18 and lower third in 24 cases. 7 patients developed postoperative leaks 3 patients died due to respiratory complications and 1 patient died due to myocardial infarction.
At 6 months follow-up, all 51 surviving patients were able to eat a normal diet.

Discussion/Conclusion: Primary repair and tissue reinforcement of benign oesophageal perforation is safe in early cases and obviates the need for a second operation.

A18
How the surgical treatment of lung cancer in the UK has evolved over the last two decades - An illustrative surgeon’s experience
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Background/Introduction: The status of lung cancer surgery in UK has seen many changes over the last 20 years, with innovations in surgical technique and investigatory modalities together with significant organisational changes.

Aims/Objectives: To assess how these changes have impacted on an individual surgical practice spanning this era.

Method: We have retrospectively reviewed a single-surgeon practice from consultant appointment to present (1997-2015). We studied 1171 consecutive lung cancer operations: 962 lobectomy, 250 extended lobectomy, 57 pneumonectomy 296 sublobar, 43 open/close. Additionally, 710 surgical staging procedures were performed. We analysed trends with time in type of procedure; approach used (VATS/Open); open/close rates and in-hospital mortality.

Results: 1566 anatomic resections were performed (87 cases/year, 67-130). The following trends were observed:

1) Related to the disease itself.
   - A significant decrease in pneumonectomy rates (p < 0.001).
   - An inversely proportional, increasing use of sleeve-resections (p = 0.088).
2) Related to surgical technique.
   - An increasing number of anatomical segmentectomies (p < 0.001).
   - Stable rates of non-anatomical wedge resections (mean 6.3%, p = 0.908).
   - An increasing proportion of VATS resection, both for lobectomies (p < 0.001) and segmentectomies (34.1 vs.14.6%, p < 0.001).
3) Related to healthcare system.
   - A significant decrease in use of surgical mediastinal staging, particularly after 2010 (p < 0.001).
   - A significant decrease in-hospital mortality (mean 5.8%, p = 0.004).
   - A significant reduction of open/close rates, particularly after 2004 (4.8 vs. 0.65%, p < 0.001).

Discussion/Conclusion: There has been significant evolution in lung cancer surgery over the last two decades, which is reflected in this individual surgeon’s practice. Whilst increased surgical experience may partly explain the changes, most important factors include: a change in the proportion of central squamous and peripheral adenocarcinomas; earlier tumour detection, facilitating more VATS and lung-sparing surgery; improved perioperative care and use of lesser resections, reducing mortality; new techniques in staging (CT-PET,EBUS) reducing the need for surgical staging and the number of futile thoracotomies.

A19
Implementing an Advanced Thoracic Surgery Program in Rural Haiti: Challenges of High Complexity Surgery in a Low Income Country
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A19

Background/Introduction: Recently, the Lancet Commission on Global Surgery estimated that 5 billion people lack access to surgical care. While barriers of funding, training, staff and resources are substantial, demand for surgical care is immense in Low Income Countries. For the last two years the Hôpital Universitaire de Mirebalais (HUM) in Haiti has provided surgical care to over 4,000 patients. Recently a pilot trial of advanced thoracic surgery has been established.

Aims/Objectives: As a demand for cardiothoracic surgical care becomes pressing, an increasing importance will be placed on the documentation of the successful implementation and the challenges of advanced surgical intervention in low-income settings. This is of particular importance in areas of endemic TB and iodine deficiency.

Method: This is a retrospective review of 10 recent complex thoracic cases, including VATS, performed in a rural Haiti. Outcomes, length of stay complications, staffing requirements, infrastructural limitations were recorded through chart review and provider interviews.

Results: 10 patients are presented from the pilot program including massive mediastinal goiter with vascular involvement, 4 bronchopleural fistulae and empyema, chest wall sarcoma and reconstruction, flail chest with pulmonary contusion and 3 thoracotomies for trauma related hemorrhage. All non-emergent cases were presented for review through online portals with allied academic medical centers in the United States for diagnosis, pathology review, and collaborative planning of surgical procedures. Approaches included median sternotomy, video assisted thoracic surgery, and posterolateral thoracotomy. One perioperative death occurred in a multi-trauma patient but no elective procedures were associated with major adverse event. Intensive care monitoring, consistent single lung ventilation, blood bank issues, and airway management/ bronchoscopy were infrastructural limitations noted.

Discussion/Conclusion: While resources are inequitably distributed across the globe, burdens of surgical disease are great in low income countries. Proper patient selection, infrastructural support and acute care services are required for success. Informatic tools such as online collaboration, and telemedicine will likely aid in overcoming staffing and operative planning issues. With careful implementation complex thoracic procedures can be performed in low income settings with good perioperative outcomes.

A20
Pre-operative carotid artery screening in patients undergoing coronary artery bypass grafting
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Background/Introduction: Stroke remains the major non-cardiac complication of coronary artery bypass surgery (CABG). Severe carotid artery disease is associated with a fourfold increase in the risk of post-operative stroke and this is the rationale for offering pre-operative carotid artery screening to these patients.

Aims/Objectives: We aim to assess the compliance with the ESC/EACTS guidelines for Myocardial Revascularisation (2014) regarding pre-operative carotid artery disease screening and estimate the clinical impact of adhering only to class-I evidence-based recommendations.

Method: The medical records of all the patients who underwent CABG in our unit between 1st November and 31st December 2014 were retrospectively reviewed.

Results: A total of 506 patients underwent CABG during the study period and 492 were included for analysis. 203 carotid artery Doppler ultrasound scans were performed. CAD screening was performed in 63/115 of the patients who met with class-I recommendations (history of stroke/transient ischaemic attack or carotid bruit) and 184/440 of the patients who met with class-IIa recommendations (age over 70 years and/or peripheral artery disease and/or multi-vessel coronary artery disease).

There were 2 post-operative strokes, both in patients without CAD detected on pre-operative screening. Asynchronous carotid artery revascularisation was performed in 5 patients (4 prior to and 1 following CABG). Restricting carotid artery screening to class-I evidence-based recommendations criteria would have decrease the number of Doppler ultrasound scans from 203 to 115, without missing patients with CAD who actually required revascularisation.

Conclusion: Adherence to class-I evidence-based recommendations for carotid artery screening would generate major efficiency savings and streamline pre-operative assessment of patients undergoing CABG.
A21

Fate of Tricuspid Valve Five Years after Left Heart Valve Replacement
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):1A21

Background/Introduction: Residual functional tricuspid regurgitation can cause significant symptoms after a successful left heart valve replacement surgery. There is more evidence towards repairing moderate tricuspid valve regurgitation of late.

Aims/Objectives: We analysed the fate of Tricuspid valve at the end of five years after a left heart valve replacement irrespective of whether they had undergone a concomitant TV repair or not during the initial surgery.

Method: Between January 2008 and December 2009, 200 patients who had undergone a left heart valve replacement were analysed for the degree of TV regurgitation at the end of five years. 162 patients had undergone a Mitral valve surgery and 38 patients had undergone a double valve replacement. Group I - 40 patients had a concomitant TV repair (Modified de Vaga’s annuloplasty) during the primary surgery and Group II 160 patients did not have a concomitant TV repair.

Results: In Group I, of the 40 patients, 4 patients (10%) underwent TV repair for moderate TV regurgitation, and all the 4 patients had trivial to mild TV regurgitation. 36 patients underwent TV repair for severe regurgitation, of these patients, 30 patients (83.3%) had trivial to mild residual TV regurgitation, while only 6 patients (16.6%) had moderate to severe TV regurgitation. In Group II, of the 160 patients, 58 patients (36.2%) and 16 patients (10%) had moderate and severe TV regurgitation which was left un-corrected. Of the 58 patients who had moderate TV regurgitation, 20 patients (34.4%) had moderate regurgitation and 4 patients (6.8%) had severe TV regurgitation at the end of five years. Of the 16 patients who had severe TR addressed during the initial surgery, 8 patients (50%) had moderate to severe TV regurgitation at the end of five years.

Discussion/Conclusion: A concomitant Tricuspid valve repair is recommended during a left heart valve replacement, if the degree of Tricuspid regurgitation is moderate. This helps in alleviating the symptoms of residual tricuspid valve regurgitation on long term follow up.

A22

Video-thoracoscopic resection of lung metastases using the Nd:YAG Laser LIMAX® 120
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):1A22

Background/Introduction: In general, resection of pulmonary metastases by laser is performed by means of a thoracotomy. As an alternative, we developed a video-assisted technique that allows palpating of the entire lung as well as resection of the pulmonary metastases by laser.

Aims/Objectives: We report our first experiences with this technique.

Method: 10 patients (7 ca, 3 cv; age: 22 - 83 years) were diagnosed with pulmonary metastases of different primary tumours. The procedure begins with creation of a mini-thoracotomy at the level of the 5th ICR, approximately 4 cm in length. No rib retractor is applied, but wound protection film (Applied Medical, CA, USA) is used. Through a basally applied trocar, the video thoracoscope is introduced. Then the pulmonary ligament is cut and video-assisted radical mediastinal lymphadenectomy is performed. The entire lung is then palpated through the mini-thoracotomy. The respective lung metastases are identified and resected under thoracoscopic control with the Nd:YAG laser LIMAX® 120 (Gebrüder Martin & Co. KG, Tuttingen, Germany). To this end, under visual control a hand piece with a focus distance of 3 cm is introduced at a laser power of 80 watts. Deeper parenchymal lesions are closed under video-thoracoscopic control with a monofilament suture (PDS 4-0). Usually only one intercostal drainage with additional holes is necessary. The mini-thoracotomy is closed by one pericostal suture.

Results: The mean duration of the surgical procedure was 90 minutes. On average, 2 lung metastases per patient were removed. Histologically, the resection margins were always clear. The postoperative courses were unimplicated; the intercostal drainages applied could be removed median on the 4th (range 3 to 6) postoperative day. All patients could be discharged symptom-free between the 5th and 6th postoperative day. Control by thoracic CT scanning after 3 months showed no evidence of pulmonary metastases.

Discussion/Conclusion: Using the Nd:YAG laser LIMAX® 120, pulmonary metastases can be removed safely and in sano by a video-assisted procedure. Thoracotomy can thus be avoided. Nevertheless, the surgical technique described by us meets the requirements of modern metastasis surgery.

A23

Removal of multifocal neuroendocrine lung tumours with a LIMAX® 120 Nd:YAG laser: case report
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A23

Background/Introduction: Multifocal neuroendocrine lung tumours are rare. When they are nonetheless diagnosed there is uncertainty as to how treatment should proceed. We present such a case. Our decision was to surgically remove all the lung foci visible on thoracic computer tomography.

Aims/Objectives: The patient was a 69-year-old woman. Computer tomography of the thorax carried out after a road traffic accident revealed bilateral lung foci measuring up to 1.5 cm. The patient showed no lung symptoms.

Method: A transbronchial biopsy was not able to clarify the cause of the foci. Two of the lung foci were removed by non-anatomical resection using video thoracoscopy. Histological examination of the material surprisingly revealed two typical carcinoid tumours (Ki67 index < 1%). As all the remaining foci were considered to be resectable the interdisciplinary tumour board recommended resection of all lesions. We performed open bilateral resection on a total of 14 foci (six in the right lung and eight in the left). Each of the lung foci was removed non-anatomically in sana with the LIMAX® 120 (Gebrüder Martin & CoKG, Tuttingen, Germany) diode-pumped Nd:YAG laser. Radical mediastinal lymphadenectomy was also carried out bilaterally. None of the X removed lymph nodes showed metastatic foci. The operations were carried out 4 weeks apart. Postoperative complications did not occur.

Results: Three years later, imaging revealed neither local recurrence nor new lung foci.

Discussion/Conclusion: Multifocal neuroendocrine lung tumours are often diagnosed coincidentally. If they appear to be resectable, the goal should be non-anatomical resection of all foci. The Nd:YAG laser LIMAX® 120 is special suitable for this, even with a large number of tumours. In the most favourable case a lasting cure can be achieved.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A24

Tao TAVI + OPCABG: a new hybrid option
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A24

Background/Introduction: Hybrid surgical approaches are gaining popularity. Minimally invasive aortic valve replacement and percutaneous coronary intervention (PCI) is well documented. We wanted to explore the feasibility of trans-catheter aortic valve implantation (TAVI) and off pump coronary artery bypass grafts (OPCAB).

Discussion/Conclusion: Aiming to not only replace the diseased aortic valve but also to perform CABG at the same setting, we propose the new hybrid approach: where AoTAVI is performed using a Transfemoral catheter (Medtronic CoreValve) and the left coronary ostia is crossed with a Speculum dilator and then CABG is performed using OPCAB surgery.
Aims/Objectives: We proposed that in TAVI patients where PCI is not possible or has failed, trans-aortic TAVI with concomitant OPCAB would be a suitable alternative.

Method: A 77 year old man admitted following an out of hospital cardiac arrest was found to have an occluded left anterior descending (LAD) artery, a patent stent in a dominant circumflex and a small diseased right coronary. Past medical history included myocardial infarctions on four occasions, PCI, and severe left ventricular failure. Echocardiography demonstrated severe, calcific aortic stenosis and poor left ventricular function. The multi-disciplinary team recommended TAVI. Work up identified abdominal aortic aneurysm which precluded trans-femoral TAVI approach. A perfusion scan confirmed viable myocardium in the LAD territory. He was put forward for trans-aortic TAVI with OPCAB surgery (left internal mammary artery to LAD).

Results: The procedure was performed as planned without any complications. Post-operative echocardiogram confirmed a well-placed valve. The patient was treated for a chest infection and discharged home on 8th post-operative day. He was seen at the outpatient clinic at 6 weeks and was asymptomatic and with good exercise tolerance.

Discussion/Conclusion: Trans-aortic TAVI and OPCAB is a potential alternative to conventional aortic valve replacement and coronary artery bypass surgery as well as the hybrid approach of minimally invasive aortic valve replacement and PCI.

A26 Sutureless bioprosthesis may increase postoperative atrial fibrillation after aortic valve replacement

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Background/Introduction: Benefits of sutureless aortic valve replacement (AVR) have been established. Most western centres have reported advantages in reduced cardiopulmonary bypass, cross clamp, ventilation, and postoperative recovery time. It has established a role in moderate to high-risk surgical patients requiring an AVR. However, the incidence of postoperative atrial fibrillation (POAF) in sutureless AVR is less known.

Aims/Objectives: Investigate the incidence of POAF after sutureless AVR and compare that with the rate of POAF after sutured AVR.

Method: From January 2001 to January 2015, 1417 AVR cases were performed. Demographic and perioperative data were collected prospectively. A total of 188 patients were excluded from analysis due to a preoperative history or incomplete data. We compared the rate of POAF after sutureless and sutured AVR cases overall and in subgroups divided by access (FS - Full Sternotomy; PS - Partial Sternotomy; MT - Mini-Thoracotomy). The incidence of POAF was identified by continuous cardiac monitoring.

Results: A total of 1229 patients (604 females) were included in the analysis. The incidence of POAF in sutureless and sutured AVR cases was 35.8% and 29.5% respectively. The odds ratio for POAF was 1.33 (95% CI: 1.03-1.73; p = 0.031) with a sutureless valve. In subgroup analysis, POAF rates in the MT group for sutureless and sutured AVR were 33.1% and 22.0% respectively (OR 1.76 95%CI: 1.19 - 2.59; p = 0.004). POAF rates in the PS group for sutureless and sutured AVR were 50.9% and 33.3% respectively (OR 2.07 95%CI: 1.13-3.80; p = 0.019). FS had similar rates of POAF in both groups - sutureless 30.4% and sutured 32.3%.

Discussion/Conclusion: Sutureless AVR is an important surgical option with proven advantages in moderate to high-risk patients. Prevention of POAF should be considered in patients whom a sutureless AVR is performed.

A27 Right Coronary Artery - Looped, Astray and Muzzled: A case report

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Background/Introduction: The right coronary artery (RCA) arises from the right aortic sinus. In its course in relation to the atroventricular groove (AVG), it is submerged in the adipose tissue of the epicardium. It continues towards the posterior interventricular groove often crossing the crux of the heart.

Aims/Objectives: To trace the RCA and determine the variation in its course.

Method: The heart of a well embalmed male cadaver is dissected to trace the RCA in the right AVG. The branches are traced to determine the variation in the course of the RCA.

Results: During the exposure of RCA, the right AVG was found unoccupied. Further probing did reveal the atrial branches bearing a proximal origin, but
no ventricular branches in the right AVG. On tracing the atrial branches to their origin, the RCA was visible. The RCA had a normal origin from the right aortic sinus. Soon after, instead of being submerged in the adipose tissue, it produced a unique pattern of looping with two corners and the loop rose above the surface of the heart. The space underneath the loop was filled with adipose tissue. The RCA then exited the AVG and went astray into the myocardium of the right ventricle. Within the wall of right ventricle, the artery initially pursued a superficial course giving rise to ventricular branches in the direction of the left ventricle. Few of the ventricular branches produced elevations on the surface of the right ventricle. For the further part, the RCA did not enter the AVG and hence did not reach the apex. Due to its intra-myocardial course, the right marginal artery was not seen on the surface of the heart. The coronary sinus was the sole relation to the AVG.

Discussion/Conclusion: In this case, the RCA and its ventricular branches appear muzzled by the myocardium of the right ventricle. Such a variation in the course of RCA accompanied by the unique looping pattern is rare. It may pose a tough challenge to the radiologists and cardiologists in performing various procedures such as coronary stenting involving the RCA.

A28

Right Thoracotomy Minimally Invasive AVR: Use of Preoperative CT Scan to Plan Incision

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Background/Introduction: Aortic valve surgery through a right anterior mini-thoracotomy (MT) has demonstrated excellent short-term and long-term-term results, becoming a feasible alternative to the sternotomy approach. Widespread use is limited by unpredictable exposure of the aortic valve. Current use of CT measurements of the aorta to the sternum is not reliably predictive of exposure and frequently excludes patients from a minimally invasive approach.

Aims/Objectives: Use of TAVR CT scan imaging to identify the both the position and orientation of the aortic valve should predict the location of the incision.

Method: All isolated aortic valve procedures are approached through a MT. From January 2013 to October 2014, 100 consecutive miniAVR patients were evaluated by TAVR CT scan imaging and the orientation of the aortic valve annulus was determined. Based on these results, the right thoracotomy was positioned medially, midclavicular or lateral. Intraoperative and 30 day results were analyzed and compared to the 50 prior mini-AVRs. All patients received HTK (histadine-tryptophan-ketoglutarate) cardioplegia. Results: Median patient age was 68 years (range: 44-89), 21 patients were 80 years or older, 3 patients had reoperative aortic valve surgery and 14 had undergone sublobectomy. Patients in both surgical methods were similar regarding age, gender, height, presence of COPD and preoperative pulmonary function tests (PFTs). When compared to sublobectomy at the end of follow-up, patients with lobectomy had significant decline in median of FVC (observed: 1.9 L vs. 2.65 L, p < 0.001; and % predicted: 53.8% vs. 74.64%, p < 0.001) and FEV1 (observed: 1.78 L vs. 2.33 L, p < 0.001; and % predicted: 68.5% vs. 83.79%, p < 0.001). There was insignificant difference in overall score and in isolated 8 domains of SF36 (physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role and mental health) between both groups. Preoperative FEV1 and FVC were significantly correlated with overall HRQOL.

Discussion/Conclusion: Sublobectomy results in better preservation of pulmonary functions than lobectomy for management of stage I NSCLC, with no significant difference in HRQOL two years after resection. Sublobectomy should be considered for patients with preoperative poor PFTs.

A30

A rare case of Cytomegalovirus enteritis in a 65 year old immunocompetent Caucasian male following cardiac surgery

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Background/Introduction: Cytomegalovirus (CMV) enteritis post coronary artery bypass grafting (CABG) has been previously reported but never in an immunocompetent patient not on steroid therapy preoperatively.

Aims/Objectives: CMV enteritis must be considered and actively sought in immunocompetent patients who develop GI complications post CABG. Method: A MEDLINE literature search and manual review of the bibliographies of relevant papers failed to identify any other histologically proven case of post CABG CMV enteritis (Figure 1) in a patient who was immunocompetent, not on steroid therapy preoperatively and whose vasorelaxation was done on a beating heart.

Results: A 65 year old immunocompetent gentleman presented with signs/symptoms of crescendo angina and an elevated troponin (297ng/L). Angiography showed triple vessel disease and severe left ventricular dysfunction. Cardiac Magnetic Resonance Imaging demonstrated some reversibility but a low ejection fraction of 20%. He underwent urgent CABG, and as per protocol was admitted to the cardiac intensive care unit (CICU). Postoperatively, he developed multiple complications including lower and upper gastrointestinal (GI) bleeding, acute abdomen and dialysis resistant lactate acidosis. Due to his abdominal symptoms/signs, he underwent a laparotomy, resection of 82 cm of necrotic perforated small bowel and fashioning of an end ileostomy. Histology proved the aetiology of his abdominal symptoms/signs was CMV enteritis.

Discussion/Conclusion: 1. Consider CMV enteritis in immunocompetent patients who have complicated cardiac ICU stay and signs and symptoms such as abdominal pain, watery or bloody diarrhoea, bleeding, obstruction, toxic megacolon, perforation and fistula formation.
2. Have a high index of suspicion for CMV enteritis in patients on steroids pre-operatively who have complicated ICU recovery and shows the above signs and symptoms.

3. As mortality for CMV enteritis can be as high as 80%, early diagnosis and treatment are crucial.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A31

Rare case of Fungal Endocarditis secondary to a perforated diverticulum
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Background/Introduction: Fungal endocarditis (FE) is a subtype of Infective Endocarditis (IE) which although rare carries a high mortality rate of 56% despite aggressive treatment (2). It manifests clinically with pyrexia, changing or new heart murmurs, dyspnoea, malaise, heart failure, emboli, finger clubbing and the classical textbook signs.

Aims/Objectives: In the past, the diagnosis was often not made until post-mortem examination. Several factors positively and negatively impact our ability to diagnose FE. Because of the rarity of IE and the non-specific symptoms there is often a low index of suspicion for it. Blood cultures are less sensitive for fungi and commonly negative. However, the large vegetations that characterize this illness seem to increase the sensitivity of TTE. Additionally, because fungal vegetations tend to be large they are more likely to embolise leading to systemic complications.

Method: This patient was a 75 year old man with a background history of hypertension, hypercholesterolaemia, Type 2 Diabetes Mellitus, left nephroureterectomy, COPD and a PPM for complete heart block. He presented to hospital a year ago with a perforated diverticulum. He underwent colectomy and loop ileostomy however he had a stormy post-operative course.

Results: In terms of management, the Mayo Clinic has published recommendations when device related endocarditis is suspected. These include that TOE rather than TTE should be carried out when blood cultures are positive, as there is superior of specificity, 90% versus 30% respectively. Expedient removal of hardware during an episode of cardiac device related endocarditis is essential to the overall successful management of this serious problem. Additionally these patients need prolonged treatment with IV antifungals guided by sensitivities, presence or absence of positive blood cultures and clinical condition.

Discussion/Conclusion: In this unique case the patient’s IE was secondary to a perforated diverticulum eight months previously at which time Candida Albicans was first isolated. As a portal of entry for Candida, a perforated bowel is rare but not unheard of. In conclusion, combined medical and surgical management are fundamental to achieving a successful outcome for this condition, to prevent complications such as embolisation and sepsis.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A32

Three-year outcomes with left ventricular assist devices in country with restricted heart transplantation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A32

Background/Introduction: As a consequence of limited donor availability, there has been a growing interest for alternative strategies, such as left ventricular assist devices (LVAD) as either a bridge to transplantation (BTT) or as destination therapy (DT) for the treatment of the advanced heart failure. The heart transplant program in Kazakhstan is in a nascent stage and therefore patients that are determined to be BTT are expected to have an extended duration of LVAD support.

Aims/Objectives: The objective of this study was to determine outcomes of patients with left ventricular assist devices in county with restricted transplantation.

Method: We analyzed outcomes for 135 patients between November 2011 and November 2014 (mean age=50.5 ± 13.5 years old; HeartMate II=95 (70.4%), HeartWare=40 (29.6%)). The median duration of support is 474 ± 329.4 days.

Results: In 75 patients (55.6%) the LVAD is used as a BTT and in 60 (44.4%) as a DT, but only 3 of 135 LVAD patients were transplanted. Before 30 days after implantation of LVAD right ventricular failure (n = 20, 14.8%), renal failure (n = 19, 14.1%) and bleeding (requiring reoperation = 10, 7.4%, requiring transfusion of packed red blood cells ≥2U = 23, 17.0%) were the most common adverse events. After 30 days driveline infections (n = 46, 34.1%) and strokes (n = 33, 24.4%) were the most common complications. Cumulative survival rates at 1, 6 months, 1, 2 and 3 years after LVAD implantation is 93%, 86%, 77%, 62% and 51% accordingly. Older age and more acute INTERMACS profiles were related to reduced survival.

Discussion/Conclusion: The Center’s experience shows that LVADs can be implanted as an alternative to heart transplantation with the outcomes that are comparable to those in existing world centers of excellence.

A33

Ascending aortic cannulation for Stanford type A acute aortic dissection
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A33

Background/Introduction: The real benefit of alternative cannulation technique for repair of acute type A aortic dissection remains controversial.

Aims/Objectives: We evaluated our results of ascending aortic cannulation compared with femoral cannulation in acute type A aortic dissection.

Method: From January 2000 to December 2014, 121 patients were operated on for acute type A aortic dissection. Cannulation was accomplished in 79 patients through the ascending aorta and 42 patients through the femoral artery.

Results: Patient characteristics such as preoperative complications and shock status were almost similar between the groups. Although intraoperative parameters such as total cardiopulmonary bypass time, hypothermic circulatory arrest time, minimum bladder temperature and percentage of total arch replacement were also similar between the groups, ascending aortic cannulation significantly reduced arterial pressure on cardiopulmonary bypass circuit (156±39 vs 169±40 mmHg, p < 0.05), core-cooling time (33±10 vs 39±7 min., p < 0.01) and operation time (325±72 vs 357±96 min., p < 0.05). There were no significant differences in postoperative 30-day mortality and in-hospital mortality between the groups. However, incidence of temporary neurological dysfunction (4.0 vs 21.4 %, p < 0.05) and respiratory failure (4.0 vs 21.4 %, p < 0.05) as postoperative complications were significantly lower in the aortic cannulation group, although the incidence of stroke and renal failure did disclose any differences between the groups. Moreover, ascending aortic cannulation significantly reduced the hospital stay (26±10 vs 41±32 days, p < 0.01).

Discussion/Conclusion: The ascending aortic cannulation for repair of acute type A aortic dissection can be advantageous to rapid cooling after the establishment of cardiopulmonary bypass. It might offer benefit on the incidence of postoperative complications and the length of hospitalization in patients with of acute type A aortic dissection.
A56

Primary Pericardial Angiosarcoma: A Case Report and Review of Literature

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Background/Introduction: 58-year-old diabetic, ex-smoker with shortness of breath, recurrent pericardial effusion with impending cardiac tamponade was diagnosed with a pericardial mass on computed tomography, underwent surgical resection (partial pericardiectomy). Histopathology and immunohistochemistry clinched the diagnosis of Pericardial Angiosarcoma. He refused further treatment.

Aims/Objectives: To augment our understanding of Cardiac and Pericardial Angiosarcoma and formulate a proper investigation workup plan including imaging modality of choice and multi-modality management plan.

Method: PubMed and Google were searched for primary references using the terms “Cardiac Angiosarcoma” “Pericardial Angiosarcoma” “Treatment of Angiosarcoma” and “Newer Therapies in Angiosarcoma”. The Case Reports, Case Series and Review articles obtained were thoroughly reviewed.

Results: Shortness of Breath remains the most common symptom with Trans Thoracic Echocardiography as Investigation of Choice, but Computed Tomography(CT) and Magnetic Resonance (MRI) being of more yield. The disease shows a distinct male preponderance with 64.2% being male. Mean age of presentation being 44.15 ± 19.65 years. Surgical Resection - alone or in conjunction, was done in 85.7% (reviewed in Table 1), 1 patient was managed conservatively, 1 patient refused treatment. Novel treatments have shown promise demanding further research.

Discussion/Conclusion: Cardiac and Pericardial angiosarcoma are rare, aggressive neoplasm often presenting late with loco regional metastasis, thus jeopardising operability and prognosis. Echocardiography is used most commonly, in addition HRCT(High Resolution CT) and MRI have been used for better cross sectional imaging. And 18 FDG PET-CT (Positron Emission Tomography - Computed Tomography) apart from being an useful adjunct, possibly would become the imaging modality of choice in coming decades. Surgical Resection - alone or in conjunction, remains the most commonly used treatment modality. Novel treatments with monoclonal antibodies and chemotherapeutic agents have shown excellent results and merit further research.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A35

Hybrid Management of Stenosed Bicuspid Aortic Valve with Associated Coarctation of Aorta in an Adult: A Case Report

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Background/Introduction: Isolated coarctation of aorta is usually diagnosed and treated surgically in most of patients during childhood, but optimal management strategies for adult patients with coarctation of aorta associated with stenosed bicuspid aortic valve are controversial.

Aims/Objectives: We aim to treat such rare patients successfully by less invasive two staged hybrid management.

Method: We report a case of 18 years old female with history of dyspnoea on exertion since 4 years, with complaints of headache and bilateral lower limb claudication, clinical findings revealed no characteristic clinical feature of Turner syndrome, on examination femoral pulses were delayed and diminished bilaterally, laboratory examination were unremarkable with negative karotyping for Turner syndrome, chest x-ray showed enlarged cardiac silhouette with rib notching, echocardiography revealed severely stenosed bicuspid aortic valve with left ventricular hypertrophy, descending aortogram showed post ducal coarctation and collaterals, pressure analysis revealed gradient of 70 mmHg across coarctation. She underwent successful hybrid approach with percutaneous catheter balloon coarctoplasty (PCBC) with stenting in the first stage, followed by surgery for aortic valve replacement in the second stage.

Results: Post operatively she was asymptomatic and had uneventful recovery after each stage of management, post-operative echocardiography findings were within acceptable limits, and at 6 months follow up the mean echocardiographic aortic arch gradient was within acceptable limits.

Discussion/Conclusion: Two staged hybrid approach of (PCBC) with stenting for coarctation of aorta and aortic valve replacement for coexistent stenosed bicuspid aortic valve is a safe, less invasive and can be effective alternative to complete surgical approach, if done meticulously.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.
venous pressure with subsequent impairment liver function. Hepatic function has been proposed as an indirect index of cardiac failure in constrictive pericarditis. A non-invasive liver function monitoring system, "The LIMON test", has been developed to measure indocyanine green elimination (ICG) by pulse spectrophotometry. Indocyanine green hepatic clearance rate (PDR) and ICG 15-min retention (R15) are proportional to liver function. 

Aims/Objectives: The aim of this study is to evaluate the efficacy of ICG to assess the hepatic function of patients with constrictive pericarditis who are undergoing to surgical pericardiectomy.

Method: From 2010 and 2014 ten patients with constrictive pericarditis, who underwent surgical pericardiectomy in our Institution, were enrolled in this prospective observational study. Mean age was 67.7 years. EF% was 57.5. Liver function was examined by "Limon Test" preoperatively and six months after surgery. Serum liver function tests were also measured on the same day.

Results: Both right and left atrial pressures decreased after surgery (Right pressure from 17.1 ± 1.4 mmHg to 8.7 ± 1.5 mmHg; Wedge from 17.8 ± 3.6 mmHg to 10.7 ± 3.5 mmHg). PDR increased from 9.6 ± 11.9 to 18.3 ± 4.2 (p = 0.0156). Conversely, R15 decreased from 26.4 ± 6.3 to 8.94 ± 6.7 (p = 0.0016). Perioperative mortality occurred in the patient with the most low pre-operatively PDR level (2.8) and the most high level of R15 (R15=68). Serum liver function test were similar between pre and post-op: aspartate aminotransferase 34.5 ± 12U/L vs 33 ± 8U/L; Bilirubine 1 ± 0.4 mg/dL vs 1.4 ± 0.2 mg/dL; alkaline phosphatase 99 ± 59U/L vs 77 ± 23U/L (p = n.s.).

Discussion/Conclusion: LIMON test can be proposed to preoperatively assess the hepatic function, instead of current liver function tests and as predictor of perioperative mortality in cardiac surgery. Larger sample size are needed in order to confirm these findings.

A39
A 53-Year-Old Cyanotic Woman without Clubbing Fingers
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A39

Background/Introduction: Double-Chambered right ventricle (DCRV) is rare in patients with congenital heart disease, and even rare in the adults.

Aims/Objectives: We report a case of subarterial ventricular sepal defect (VSD) with DCRV in a 53-year-old lady presented with cyanosis and exercise intolerance without clubbing fingers. We also review the available reports in the literature for a concise summary of the rare condition.

Method: A case report and literature review.

Results: This patient had serial preoperative examinations including transthoracic and transesophageal echocardiographies, and cardiac catheterization before undergoing cardiac surgery for reconstruction of right ventricular outflow tract and repair of aortic and tricuspid valves. She had an uneventful postoperative course and remained asymptomatic afterward. Patients of similar conditions had been rarely reported with various presentations while the surgical results are excellent in most.

Discussion/Conclusion: Double-Chambered right ventricle in the adult is a rare condition and can mislead the diagnosis into Eisenmenger Syndrome, while the two have extremely different prognosis. Our report demonstrates a successful surgical treatment of a patient with VSD and DCRV. Review of literature would raise the caution of clinicians about the diagnosis and pathophysiology of this condition.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A40
Successful rescue of the ruptured chronic B dissecting aneurysm after endovascular stent-graft with supraclavicular carotid artery graft cannulation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A40

Background/Introduction: The thoracic endovascular repair (TEVAR) has been developed to cover the primary entry in the chronic dissecting aneurysm. The TEVAR is useful in the life-threatening condition of type B dissection with rupture or malperfusion.

Aims/Objectives: After a failed endovascular repair, complications are rare, but fatal, thus requires a surgical conversion. We report a case in which the prepared carotid cannulation saved the ruptured chronic dissecting aneurysm.

Method: A 44-year-old patient underwent the TEVAR with chimney technique of left subclavian artery in a life-threatening situation of type B chronic dissecting aneurysm with rupture. A follow-up CT scan showed the proximal type I endoleak with high pressurized aneurysm 5 days later. The graft explanation and open repair were performed emergently. Via a left supraclavicular incision, the end-to-side graft cannulation in left carotid artery and the carotid-to-subclavian bypass were performed for a proximal antegrade perfusion and a salvage of left subclavian artery. The femoro-femoral bypass was prepared in the left inguinal area. As soon as the left thoracotomy was performed, the stented descending aorta ruptured. CPB was instituted with the left common carotid artery and the femoro-femoral bypass. The operative fields were secured with digital compression and a cross-clamping on the mid-thoracic aorta. Fortunately, the proximal perfusion was achieved with digital compression, balloon occlusion and aortic clamping on the distal arch after the thoracic stent-graft and the chimney graft were explanted. The ruptured dissecting aneurysm was reconstructed using an interposition of graft.

Results: The postoperative course was uneventful without any mental change or spinal injury. The survived patient was in a good condition during the follow-up of 7 months.

Discussion/Conclusion: The additional cannulation of end-to-side graft in left carotid artery would be a life-saving tool in the complicated condition like impending rupture of descending thoracic aortic aneurysm.
A41 Experience in reverse sequence procedures for esophageal cancer surgery
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A41

Background/Introduction: Despite different surgical techniques, conventional
approaches for esophageal cancer surgery comprise of tumor resection followed by
esophageal reconstruction.
Aims/Objectives: Been a high volume cancer center, we aim to investigate the
efficacy and safety of reverse sequence procedures (reconstruction first
followed by resection) in treating esophageal cancer patients.
Method: Being a high volume cancer center, we aim to investigate the
efficacy and safety of reverse sequence procedures (reconstruction first
followed by resection) in treating esophageal cancer patients.
Results: After excluding 13 conversions (5 in reverse group, 8 in non-reverse
group), the operation time, blood loss, and retrieved lymph nodes number,
cervical anastomotic leak, and hospital stay were 486.6 vs. 506.3 min (p =
0.004), 420.1 vs. 286.7 cc. (p = 0.012), 37.4 vs. 29.6 (p = 0.002), 20 vs. 15
cases (p = 0.008), and 14.4 vs. 17.0 days (p = 0.034), in reverse group and
non-reverse group, respectively. There were 2 hospital mortalities, complete
pathologic response was obtained in 44 of the 119 neoadjuvant patients
(37%), and the cumulative 5-yr survival rates were 45.3%.
Discussion/Conclusion: Reverse sequence MIE is an efficient and safe
procedure in treatment of esophageal patient cancers, which also greatly
facilitates the procedure of esophagectomy.

A42 Left-handed Surgical Instruments - A Guide for Cardiothoracic Surgeons
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A42

Background/Introduction: For ease of use and to aid precision, left-handed
instruments are invaluable to the left-handed surgeon. Although they
eexist, they are not available in many surgical centres. As a result, most
operating theatre staff (including many left-handers) have little knowledge
of their value or even application.
Aims/Objectives: With specific reference to cardiac surgery, we explain how
these instruments differ from right-handed ones, why they are essential and what is required in a ‘standard set’ - with tips on use.
Method: This review draws on the knowledge and experience of left-handed
consultant surgeons, left-handed trainees and the theatre team.
Results: Clear explanations with diagrams and photos are used to illustrate the
differences of the most commonly used surgical instruments. We demonstrate how this affects needle and tissue handling, as well as performance. Tips are also given for scrub nurses on handling and loading left-handed instruments. We recommend a standard set that will allow Cardiothoracic Units to provide the essentials to any incoming left-hander.
Discussion/Conclusion: For the left-handed surgeon, left-handed instruments are a pleasure to use. Subtle differences in design make a big difference to performance. This review is useful for left-handers, but also the right-handers that train and work with them.

A43 Left-handed Cardiac Surgery: Tips from set up to closure for Trainees
and their Trainers
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Middlesbrough, UK
Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A43

Background/Introduction: There are certain barriers which left-handed
surgeons can face when training but these are not necessary and often
perpetuated by a lack of knowledge. Most obstacles have been encountered and overcome at some point but unless recorded and disseminated they will have to be resolved repeatedly by each trainee and their trainers.
Aims/Objectives: This review highlights the barriers faced by left-handed
trainees in cardiac surgery and gives practical operative advice for both
trainers and trainees to help overcome them.
Method: We have drawn on the knowledge and experience of left-handed
consultant surgeons as well as left-handed trainees and the right-handed Consultants who train them.
Results: We provide advice on planning and engaging the theatre team. The
main components of a standard cardiac operation from opening to
closure are considered as well as conduit harvest. Assisting others and
emergencies are also discussed. This is followed by information on working with right and left-handed trainers.
Discussion/Conclusion: Barriers to the progress of the left-handed
trainees exist. At times they can seem insurmountable, especially when working in isolation from other left-handers. However, they can be easily removed with the co-operation of others. Both right and left-handers can make good trainers. Providing information on proven left-handed training practices will accelerate the process and enhance training.

A44 Mitral valve repair in fibroelastic deficiency
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A44

Background/Introduction: Fibroelastic deficiency (FED) in the mitral valve
might be challenging in certain patients. Leaflets are thin and ruptured
chordae are often present. The number of techniques to be applied might
be numerous and compromise long-term results.
Aims/Objectives: To evaluate long-term results in the setting of mitral
valve repair (MVR) for fibroelastic deficiency since our shift towards non-
resective techniques from Carpentier’s classical repair options.
Method: Single-institutional retrospective study with echocardiographical
and clinical follow-up performed between 2005 and 2014. End-points
observed were mortality and freedom from mitral insufficiency >II/IV.
Results: 158 patients were considered to have FED and had MVR in our
institution from 2005 to 2014. Mean follow-up was 1468 days. Mean age
was 65.8 years. Preoperative functional status (FS) was NYHA III-IV in 61
patients (38.6%). There were 4 in-hospital deaths (4/158) none of them in the operating
room (OR) 6 out of 158 left the OR with >2+ mitral insufficiency (MI).
At discharge there were 15 deaths. Actuarial survival was 89.6% (13 deaths/154).
Freedom from >2+ MI was 92.8% (119/139) with 6 patients being reoperated during follow-up (4 underwent MV replacement and 2 cardiac
transplantation). Freedom from FS >III+ was 132/139.
No endocarditis were observed during follow-up.
Discussion/Conclusion: Long-term results for FED mitral valve repair
seem to be excellent being apparently the primary option for these
patients. Endocarditis and thromboembolic events appear to be almost
forgotten in this setting.

A45 Ablation Via the Left Atrial Appendage
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A45

Background/Introduction: Despite its proven efficacy, the left atrial
lesion set of the Cox-maze III operation is not universally employed
during coronary artery bypass or aortic valve surgery for patients with
atrial fibrillation, in part due to the surgeon’s reluctance to add bicaval
cannulation and a left atriotomy not needed for the primary procedure.
Aims/Objectives: To describe a less invasive technique to create a complete lesion set encircling all pulmonary veins and a connecting lesion to the mitral annulus that does not require bicaval cannulation or an atriotomy in addition to amputation of the left atrial appendage.

Method: Fourteen consecutive patients with long term and short term persistent atrial fibrillation were the basis of this report. On full cardiopulmonary bypass, radiofrequency clamps were applied to the epicardial left atrial tissue surrounding the right and left pulmonary veins, separately. The left atrial appendage was amputated on the arrested heart. Via that defect, an epicardial to endocardial radiofrequency ablation lesion was created with the clamp to the left superior pulmonary vein, then to the right superior pulmonary vein. A cryothermy catheter was then placed to create an endocardial lesion from the left inferior pulmonary vein ablation mark, along the posterior left atrial floor, to the right inferior pulmonary vein. The catheter then connected that floor lesion to the mitral valve annulus at P2-P3. Right atrial lesions were performed in 8 patients in the manner described for the Cox-maze IV operation.

Results: By EKG and symptoms, all 14 patients were free of atrial fibrillation at a mean follow up of 11 months (range 3-17 months). There was no mortality in this cohort either at operation or during follow up and no complications from left atrial access.

Discussion/Conclusion: The amputated left atrial appendage stump can be used as a window to create a full pulmonary vein box lesion set and connecting lesion to the annulus of the mitral valve. This simplified technique could allow more wide spread use of the left atrial Cox-maze III lesion set in concomitant atrial fibrillation ablation procedures. Further study will be needed to assess the durability of this approach.

**Table 1 (abstract A48)**

<table>
<thead>
<tr>
<th>Volume (ml)</th>
<th>Median survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;300 ml</td>
<td>2.25 years</td>
</tr>
<tr>
<td>301-600 ml</td>
<td>1.62 years</td>
</tr>
<tr>
<td>601-900 ml</td>
<td>1.06 years</td>
</tr>
<tr>
<td>&gt; 900 ml</td>
<td>0.9 years</td>
</tr>
</tbody>
</table>

Tumor volume is an important measure and is complimentary to TNM staging.

**A49**

Hybrid Management in patients with complex aortic pathology - single center experience

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A49

Background/Introduction: Some cardio-vascular diseases are still a therapeutic challenge. They cannot be treated only by surgeons or only by interventional cardiologists. These difficult cases need a combined team and combined procedure - so called "Hybrid procedure".

Aims/Objectives: The objective of this presentation is to provide an overview of the experience of our center with hybrid management of high risk patients with complex aortic pathology.

Method: From 2003 to 2015 a total number of 84 patients, 63 male and 21 female with average age 51.7 years (from 26 to 86 years), underwent hybrid management of complex aortic pathology. Patients were divided in 5 groups: Group 1: Hybrid aortic debranching in 12 pts (for Aortic dissection type B with retrograde arch dissection in 10 patients and Aortic re-dissection type A after surgical treatment - 2 patients); Group 2: TEVAR after conventional surgery- 47 patients (for treating Aneurysm after patch correction for coarctation - 13 patients and Re-dissection after ascending aorta or arch surgery - 34 patients); Group 3: Conventional surgery after TEVAR - 13 patients (Second-stage procedures: Bentall/DeBono - 4 patients; Wheat - 2 patients; Arch replacement - 3 patients; Surgery for complications - 4 patients: Aneurysm sac rupture - 2 patients. Severe endoleak “type 1” - 1 patient. Acute severe limb ischemia due to left a. subclavia closure - 1 patient); Group 4: Bentall/DeBono procedure plus TEVAR (single stage) - 1 patient; Group 5: Second-stage TAVI after coronary surgery-11 patients.

Results: One patient died in Group 1, because of aortic rupture. Two patients died in Group 2 TEVAR after conventional surgery, because of aortic dissection complications - one from intestinal ischemia and one from bronchomalacia. Multiple organ failure is cause of death in three patients from group 3 and one patients in group 2. One patient in Hybrid arch debranching group received stroke. All other patients had uneventful recovery and were discharged home.

Discussion/Conclusion: Our experience shows that hybrid management in patients with complex aortic pathology is a reasonable approach for management with acceptable morbidity and mortality. Hybrid management could be recommended as optimal treating strategy for high risk patients.
**Method:** Between 2008 and 2015 a total number of 67 TAVI were implanted in 64 patients in our center. The average age of the patients was 76 years (between 64 and 85). There were 41 female and 23 male patients. The average EuroSCORE was 27.31% (between 13.2% and 47.4%), while the average STS score was 9.42% (between 4.1% and 24.2%).

**Results:** In five patients we had intraprocedural complications, which require attention.

1. Localized aortic root rupture with formation of subaortic intracardiac fistula, after transaortic implantation. Since the fistula was blind-ended no further interventions were made right after the complication was detected. However on 14th postprocedural hour another angiography was performed, because of signs of STEMI. It revealed compression of RCX by the fistula. Balloon dilatation was performed with excellent result.

2. We experienced intraprocedural partial valve dislocation in LV after TAVI implantation with subclavian access. After unsuccessful attempt for repositioning the valve a second valve was implanted in valve-in-valve fashion in order to stabilize the displaced one. The result was excellent.

3. Total intraprocedural valve dislocation into the LV after transapical implantation. Since the valve was in the LV all attempt for repositioning were unsuccessful. Finally it was removed through the LV apex, without using of extracorporeal circulation. A subsequent successful transfemoral implantation was performed, during the same procedure.

4. Two patients had LV perforation complicated with huge pericardial effusion as a result of stiff wire manipulation during transfemoral approach. Urgently these patients received sternotomy for LV suture. All five patients recovered uneventfully and were discharged home.

**Discussion/Conclusion:** Here we report five successfully managed intraprocedural complications of TAVI. Complication awareness is crucial for their early detection and successful treatment. Increasing the experience will decrease the overall number of complications.

**A52**

**Surgery of diaphragm paralysis in patient with severe dyspnea after coronary artery bypass grafting with aortic valve replacement**

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**Journal of Cardiothoracic Surgery** 2015, 10(Suppl 1):A52

**Background/Introduction:** Unilateral diaphragm paralysis is an often not recognized cause of dyspnea especially after cardiac surgery procedures. In some cases diaphragm paralysis disables to wean patient from ventilation. Surgical treatment of unilateral diaphragm paralysis has been described in case reports and in small series since 1985.

**Aims/Objectives:** We present a 56-years-old female with left phrenic nerve paralysis after coronary artery bypass grafting with aortic valve replacement.

**Method:** The patient was extubated in 6 hours after the operation. During next two days progressive dyspnea was observed and patient became ventilation dependent. Six attempts to wean patient from ventilator failed. Elevation of diaphragm up to the 3rd rib have been registered. Since there was no improvement after respiratory muscle training, plication of the hemidiaphragm was performed by a left thoracotomy.

**Results:** The patient improved with regard to respiratory complaints and lung function. Extubation have been performed in 12 hours after diaphragm plication. In 3 days patient was transferred from ICU and later on discharged from the hospital free from dyspnea, angina and heart insufficiency. Their quality of life is greatly improved. The patient is now in follow up for 4 months.

**Discussion/Conclusion:** The success of surgical treatment depends on preoperative selection of patients. It is necessary to exclude all other reasons responsible to dyspnea. Although comparison of the available data of diaphragm plication seems an effective and safe procedure for patients with symptomatic, acquired unilateral diaphragm paralysis.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

**A53**

**Minimally invasive aortic valve replacement through a right anterior minithoracotomy**

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**Journal of Cardiothoracic Surgery** 2015, 10(Suppl 1):A53

**Background/Introduction:** The Aortic valve has been traditionally approached through a median sternotomy. However, significant advances in technology have allowed for Aortic valve surgery to be performed using progressively smaller incisions including the minithoracotomy and hemisternotomy.

**Aims/Objectives:** To review the results of minimally invasive aortic valve replacement (AVR) through a right anterior minithoracotomy.

**Method:** From July 2011 to January 2014, a total of 84 patients with isolated aortic valve disease (rheumatic in 62 patients, degenerative in 14 patients, congenital in 8 patients) underwent AVR through a right anterior minithoracotomy approach in the third intercostal space with a groin incision for femoral cannulation.

**Results:** The mean age was 41.4 years (ranging from 19 to 74 years). 58 patients were male. Mean duration of cardiopulmonary bypass time and aortic cross-clamp time was (82 ± 23) minutes and (53 ± 16) minutes, respectively. 2 patients required conversion to median sternotomy. The mean hospital stay was 4 ± 1 day. Follow-up was performed in all patients for a period of 15 ± 6 months postoperatively. A good recovery was obtained in all patients.

**Discussion/Conclusion:** Minimally invasive aortic valve replacement though the right anterior minithoracotomy approach is safe and feasible with reduced postoperative recovery time.
A54

“In-house” versus “home” rehabilitation programme following cardiac surgery: A service evaluation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A54

Background/Introduction: Cardiac rehabilitation is the process by which patients with cardiac disease are supported to achieve optimal physical and psychosocial health. Exercise training is a core element of cardiac rehabilitation. At our institution, there are two different rehabilitation programmes available to patients who have undergone cardiac surgery: Firstly, there is the “in-house” (IH) hospital-based programme, secondly, the “Road to Recovery” (R2R) home programme.

Aims/Objectives: Our objective was to compare patient results and potential to improve exercise tolerance after cardiac for both rehabilitation programmes.

Method: We included all patients entering either rehabilitation program following cardiac surgery from January 2012 to date. We recorded patient demographics and patients’ performance at their first and final exercise session. Metabolic equivalents (METs), minutes-performed, maximum and resting heart rate and rate-pressure-product were noted.

Results: 134 patients were enrolled into the IH program, 32 patients chose the R2R program. Among the IH patients there were 108 (81%) male and 26 female (19%); among the R2R program patients there were 23 male (71%) and 9 female (28%).

There was no significant difference between the groups with regards to the METS pre-rehab (p = 0.47). Patients in both groups increased their exercise capacity significantly during the rehabilitation process when the METS and maximal age adjusted predicted heart rate before and after the rehabilitation process were compared. The IH group also showed significantly improved resting heart rate, RPP, length of exercise tolerated (mins).

Discussion/Conclusion: In summary, both rehabilitation pathways seem to equally improve fitness after cardiac surgery and our data indicates that the home R2R rehabilitation model is equivalent to the hospital-based programme. After cardiac surgery, all patients should be offered the possibility of taking charge of their own rehabilitation at home. This should be done with telephone mentoring and follow-up from a rehabilitation centre. Such a programme would avoid travel cost and time for patients as well as motivating them to take their progress into their own hands.

A56

Neurological risk in urgent valve replacement cardiac surgery for infective endocarditis with cerebrovascular complications - a case series
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A56

Background/Introduction: The indications for urgent valve replacement in patients with infective endocarditis (IE) include uncontrolled infection, recurrent emboli, valve dysfunction and cardiac failure. The optimal timing of this surgery when IE is complicated by cerebrovascular events (such as cerebral infarction or haemorrhage) is controversial, largely due to the escalated risk of perioperative intracranial bleeding, given that the patient is fully anticoagulated and on cardiopulmonary bypass for the procedure. While current guidelines suggest waiting at least 2 weeks between the diagnosis of stroke and surgery, with a deteriorating clinical condition valve surgery might be beneficial if done earlier.

Aims/Objectives: The aim of this study was to investigate clinical and neurological outcomes with early valve replacement surgery (within 10 days) following a stroke, in a series of consecutive patients with IE.

Method: This was a single-centre retrospective analysis of 17 out of 47 patients requiring surgery for IE between 2011 and 2014 at a tertiary cardiac centre, who also had either ischemic or haemorrhagic cerebrovascular complications. Time on bypass and hence on full anticoagulation was taken as one measure, amongst others, of surgical risk. Neurological risk and outcomes pre- and post-operatively were assessed using the National Institute of Health Stroke Scale and the Glasgow Outcome Score (GOS).

Results: All 17 patients underwent cardiac valve surgery within 10 days of the diagnosis of stroke (14 patients at/= 7 days). Mortality within the immediate postoperative period was 12%. The remaining 15 patients exhibited good neurological recovery in the immediate post-operative period with a GOS score of 3 or above. Further analysis of followup where available demonstrated significant improvements in neurological function with several patients returning to full functional capacity and independent living. There was no correlation between duration of cardiopulmonary bypass and neurological outcomes.

Discussion/Conclusion: While the sample size of 17 patients in this study is small, largely due to the relative rarity of IE requiring cardiac surgery and also having a cerebrovascular complication, it does show that urgent valve replacement surgery in this clinical situation is possible within the acute period following the intracranial event without compromising neurological function and can be potentially life saving.

A57

Performance of EuroSCORE II in octogenarians with comorbidities undergoing aortic valve replacement
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A57

Background/Introduction: EuroSCORE II is being used to select high-risk patients who are candidates for transcatheter procedures. The majority of these patients are octogenarians with comorbidities. However, to date, no studies have evaluated the performance of EuroSCORE II in octogenarians with renal insufficiency or left ventricular dysfunction.

Aims/Objectives: To know the performance of EuroSCORE II in octogenarian patients with severe renal insufficiency and ventricular dysfunction who undergo traditional aortic valve replacement.

Method: All octogenarians who underwent aortic valve replacement between 2009 and 2015 in our center were analyzed. Creatinine clearance was assessed using Cockroft-Gault formula as recommended for authors of EuroSCORE II. Severe renal insufficiency was considered when the creatinine clearance was <50 ml/min as indicated in EuroSCORE II. Ventricular dysfunction was considered when the left ventricular ejection fraction was <50%. Discrimination was evaluated by the area under the receiver operating curve (A ROC) and for calibration value of p for Hosmer-Lemeshow test and risk adjusted mortality ratio (RAMR) were calculated.

Results: 482 octogenarian patients underwent traditional aortic valve replacement during the study period. Between these patients, 120 (24.9%) had severe renal insufficiency and 76 (16.2%) had left ventricular dysfunction. 18.3% of patients with severe renal insufficiency and 17.9% of patients with ventricular dysfunction died. Discrimination was very good in both subgroups with an AROC of 0.88 and 0.85 for patients with renal insufficiency and left ventricular dysfunction respectively. However, calibration was poor. Hosmer-Lemeshow test showed a value of p = 0.02 and 0.075 for patients with renal insufficiency and ventricular dysfunction and RAMR showed much more observed mortality than expected (RAMR = 18.3/8.9 = 2.05 and 17.9/11.4 = 1.6) Logistic EuroSCORE showed the best calibration accuracy.

Discussion/Conclusion: Using the formula recommended for EuroSCORE II, 25% of the octogenarians undergoing aortic valve replacement have severe renal insufficiency, in these patients and in those with left ventricular dysfunction EuroSCORE II is able to accurately distinguish patients at high surgical risk. However, EuroSCORE II underestimate the real risk of octogenarians with these risk factors and the logistic EuroSCORE has the best calibration accuracy.

A58

Concomitant procedure for coronary artery disease and aortic iliac vessel block with an non - healing ulcer over the foot
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A58
Background/Introduction: The prevalence of Coronary artery disease (CAD) in patients with peripheral vascular disease (PVD) varies widely from 28% to 94% in published reports.

Aims/Objectives: We share our experience with a concomitant procedure for coronary artery disease and peripheral vascular disease using an artificial conduit from ascending aorta to peripheral vessel in a single sitting.

Method: Records of 41 patients who underwent cardiac and peripheral vessel revascularisation between January 2009 and January 2014 were retrospectively analysed. All patients had diseased abdominal aorta with claudication pain and non-healing ulcer over the foot and a coronary angiogram showing either a triple vessel disease (27) or a double vessel disease (14). All patients underwent coronary artery bypass grafting and aorto-bifemoral grafting in a single sitting.

Results: Post-operative Doppler study showed good peripheral blood flow in all patients. Patients were relieved from rest pain and non-healing ulcers were converted to healing ulcers and limb salvage was possible in all patients. Four patients had pericardial effusion due to weeping of graft, which was drained with the help of pig tail catheter. Two patients had serous collection at the inguinal site which required drainage. These complications did not compromise the hemodynamics of the patient in the form of cardiac tamponade or limb ischemia.

Discussion/Conclusion: Single sitting for CAD and PVD revascularization has reduced morbidity, is easy to perform, cost effective and reduced hospital stay. 

A59 Clinical performances of the EuroSCORE II in a single-centre, contemporary cardiac surgical cohort

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)A59

Background/Introduction: Risk adjusted perioperative mortality rate following cardiac surgery has been widely used as an indicator of quality of care as well as for comparison of outcomes among institutions and surgeons.

Aims/Objectives: We aimed to compare and validate the original EuroSCORE risk stratification models with renewed EuroSCORE II model in a contemporary cardiac surgical practice at our institution.

Method: The additive, logistic and EuroSCORE II data on 1864 consecutive patients undergoing adult cardiac surgery during 2012, were stored in the institutional database. Discriminative power of the EuroSCORE models was tested by calculating the area under the receiver operating characteristic curve (AUC). The calibration of the models were assessed by the Hosmer-Lemeshow statistics, and with the observed to expected mortality ratio. Patients with EuroSCORE II values of 0.5-2.49, 2.5-5.99%; 6.0-9.99%; and ≥ 10% were defined to be low, moderate, high and very high perioperative risk, respectively.

Results: Excellent discriminatory abilities of all EuroSCORE models were confirmed (all AUCs > 0.80, without the differences being statistically significant). The in-hospital overall mortality was 3.65%, with predicted mortalities according to additive EuroSCORE, logistic EuroSCORE and EuroSCORE II of 5.14, 6.60% and 3.51%, respectively. Observed to expected (O/E) mortality ratio confirmed good calibration for entire cohort only for EuroSCORE II (1.05, 95% confidence interval 0.80-1.30). Hosmer-Lemeshow test confirmed overall good calibration only for additive EuroSCORE (p = 0.129). The EuroSCORE II significantly overestimates perioperative risk only in a low risk category (predicted mortality 1.29%, observed 0.7%). Affiliation to the higher EuroSCORE II risk group also denoted significantly longer period of stay in the intensive care unit, and significantly prolonged postoperative stay in the hospital (Friedman test, p < 0.001).

Discussion/Conclusion: EuroSCORE II confirmed good discriminative capacity and good calibration ability (O/E mortality ratio) in a contemporary patients' cohort undergoing cardiac surgery at our institution.

A60 Miniplegia versus blood cardioplegia in elective aortic valve replacement: a prospective randomised, non-inferiority controlled trial

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)A60

Background/Introduction: Antegrade intermittent 4:1 blood cardioplegia with Buckberg solution is widely used in elective aortic valve replacement. Use of miniplegia could simplify myocardial protection in this setting.

Aims/Objectives: Our objective was to compare both strategies in terms of non-inferiority.

Method: A prospective, randomised controlled trial was performed. Primary end-point was demonstrating non-inferiority of miniplegia versus intermittent 4:1 blood cardioplegia in elective aortic valve replacement. For sample size calculation, a maximum increase +15% in mean peak postoperative troponin T was considered non-inferior (Δ = 4,474-24 ng/L). Power was 0.9, and α < 0.05 was considered statistically significant. Secondary end-points were differences in troponin curve, reperfusion and postoperative rhythm, hematocrit, use of inotropic and vasopressor drug support, ICU stay, and postoperative evolution.

Results: 66 patients were enrolled and randomised. There were no significant differences in baseline and preoperative variables. Peak troponin T in miniplegia group was non-inferior to blood cardioplegia group (p = 0.036). Patients in the miniplegia group showed a higher incidence of spontaneous sinus rhythm after myocardial ischemia (18/33, 54.5% versus 8/33, 24.2%, p = 0.005) and fewer patients required defibrillation (9/33, 27.7% versus 21/33, 63.6%, p = 0.03) for ventricular reperfusion arrhythmias. Postoperatively, there were no differences in troponin T release, inotropic and vasopressor drug support, ICU stay, and postoperative mortality.

Discussion/Conclusion: Miniplegia used as myocardial protection in elective aortic valve replacement is non-inferior to blood cardioplegia. Preferential return to sinus rhythm and lower incidence of reperfusion arrhythmias in the miniplegia group could reflect a better myocardial protection during cardiopulmonary arrest. Ease of administration and inexpensive use of miniplegia are additional benefits.

A61 Ministernotomy reduces intubation time in aortic valve replacement with Perceval prosthesis

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)A61

Background/Introduction: Sutureless technology for aortic valve replacement (AVR) seems to reduce morbidity/mortality and minimally-invasive procedures are supposed to be facilitated. Consequently, even better results are expected from minimally-invasive surgery, but evidence of improvement is scarce.

Aims/Objectives: To shed more light in this field, we studied the effect on hospital outcome of ministernotomy (MS) versus full sternotomy (FS) in AVR with Sorin Perceval.

Method: From a single-center prospective registry (period 3/2011-2/2015), 104 patients underwent Perceval AVR without associated procedures. Three presented with absolute contraindications to MS and were discarded to favor a propensity score analysis. Accordingly, 67 with FS and 34 with a reversed-T MS were available. A logistic regression was performed and a nearest neighbor matching gave 24 couples.

Results: Preoperative profile was similar in FS and MS: mean age 81±4.1 vs 81.2±4 (p = 0.91), BMI 27.4±5.5 vs 27.2±4.2 (p = 0.97), COPD 4.2% vs 4.2%, creatinine 0.97±0.31 vs 1.1±0.23 mg/dL (p = 0.38), diabetes 33.3% vs 41.7% (p = 0.77), EF 0.61±0.11 vs 0.62±0.07 (p = 0.73), median frailty index 1 (IQR 0-3) vs 1 (IQR 0.5-2) (p = 0.65). FS assured
faster operative times than MS: CPB 70.9+/−15.8 vs 86+/−16.5 (p = 0.002), cross-clamp 46.2+/−12.3 vs 58+/−12.6 min (p = 0.002). However, median intubation time was longer in FS (8 hours, 7-11) respect to MS (7 hours, 5-10.5) (p = 0.021). Hospital outcome did not differ: mortality 8.3% vs 0 (p = 0.49), re-exploration 4.2% vs 0 (p = 1), sternal dehiscence 4.2% vs 0 (p = 1), a-fib 45.8% vs 58.3% (p = 0.76), pacemaker 4.2% vs 8.3% (p = 1), median postop stay 6 vs 7 days (p = 0.23).

Discussion/Conclusion: Although MS required longer CPB/cross-clamp times, intubation was shorter. Other clinical benefits from MS-AVR demands larger cohorts to be demonstrated.

A62
Cardiothoracic 3D Printing: Workflow and Applications for Clinical Practice
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Background/Introduction: Recent advances in anatomic rendering software have improved our ability to convert image datasets into file formats that can be used to create highly detailed cardiothoracic models. Parallel improvements in 3D printer technology have decreased the time necessary to produce physical representations of these models. We will describe the use of these models to assist with our cardiothoracic surgical practice.

Aims/Objectives: 1. Describe how highly detailed radiographic imaging datasets are transformed into useful life-sized models through 3D printing.
2. Discuss how these models aid in planning of open surgical and minimally invasive procedures across a wide range of cardiothoracic diseases.

Method: We retrospectively reviewed our database of 3D printed anatomic models and catalogued the cases based on anatomic region. This list was cross-referenced to determine which patients underwent a cardiothoracic surgical procedure. Surgical reports were reviewed and, when appropriate, outcomes were discussed with the surgical team to determine how the 3D models were employed to optimize patient care.

Results: Since the adoption of 3D printing in our practice, we have created well over 100 anatomic models for use in clinical practice, as well as research and education. A large subset of these models have been used to plan surgical and minimally invasive cardiothoracic procedures. In this exhibit, we will describe the equipment and workflow used in our practice to: 1) acquire and import high resolution imaging datasets, 2) segment the imaging data to produce an anatomically accurate model, and 3) create a highly detailed physical model of the relevant anatomy. Additionally, we will use actual case examples to demonstrate how these models have been used to improve safety, efficiency and outcomes of cardiothoracic procedures.

Discussion/Conclusion: Anatomic models produced using 3D printing techniques provide an accurate depiction of relevant anatomy that can assist in planning of open and minimally invasive surgical procedures in a wide range of cardiothoracic diseases.

A63
Natural History of Echocardiographic and Hemodynamic Changes Following Isolated Pericardietomy for Constrictive Pericarditis
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Background/Introduction: Pericardietomy has been shown to improve the functional status of patients with constrictive pericarditis and resultant heart failure symptoms. However, there are few studies following the chronic hemodynamic impact of surgery on the left ventricle, right ventricle and tricuspid valve.

Aims/Objectives: We sought to identify a homogenous cohort of patients undergoing surgery for constrictive pericarditis. Echocardiographic data would be collected through the length of their followup, assessing for left ventricular function, right ventricular function and valvular dysfunction to help to better understand the long term outcomes of pericardietomy.

Method: January 1993 to December 2013, 938 patients underwent pericardietomy at our institution. To establish a homogeneous population, we included patients with constrictive pericarditis and excluded patients with prior chest radiation and concomitant valvular or coronary procedures.

Results: We identified a cohort of 355 patients. Median age at operation was 62 (range 18-84) and 282 (79%) were male. Median pre-operative NYHA Functional class was III and 300/356 (84%) patients were in class III/IV. All patients underwent isolated pericardietomy; early mortality was 2.5%. During median follow-up of 29 months (max 20.5 yr), 507 echocardiograms were reviewed for tricuspid regurgitation (TR), right ventricular (RV) dysfunction, RV systolic pressure (RVSP), and left ventricular ejection fraction (LVEF). TR grade increased during follow-up from trivial to mild (p = 0.02). Despite this finding, there was no demonstrable impact on RV function or RVSP. Additionally, LVEF remained stable over follow-up. Median NYHA Functional class at last follow-up was I (77% class I/II).

Discussion/Conclusion: Pericardietomy is safe and provides significant improvement in functional status during late follow-up. A concern with surgery is the potential for ventricular dilation and dysfunction post-operatively. Our data demonstrate patients undergoing pericardietomy for constriction have stable ventricular function in late follow-up. There is an observed increase in TR grade from trivial to mild, but we did not observe an associated functional or hemodynamic consequence.

A64
An investigation into the effects of simulated ischaemic preconditioning on mitochondrial fusion in mouse embryonic fibroblasts
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Background/Introduction: Ischaemic preconditioning is the cardioprotective process of exposing the heart to short periods of ischaemia and reperfusion in order to increase its survivability when encountered with a subsequent sustained period of lethal ischaemia. Mitochondria undergo fusion and fission processes and potentiating mitochondrial fusion has been reported to be linked to increased cell death. Mitochondria condition is mediated by mitochondrial fusion.

Aims/Objectives: Investigate if the beneficial effect of ischaemic preconditioning is mediated by mitochondrial fusion.

Method: Mouse embryonic fibroblasts (MEFs) were divided into three groups: (I) Normoxia, (ii) simulated ischaemia-reperfusion injury (SIRI) and (iii) hypoxic pre-conditioned (Pre-con). Mitochondrial morphology was then determined using confocal imaging and cell death was assessed by flow cytometry.

Results: Cell death was 2.1% ± 1.4%, 30% ± 13.2% and 10% ± 6.8% in Normoxia, SIRI and Pre-con groups respectively (p < 0.0001). Mitochondria morphology studies showed that MEFs that underwent period of SIRI had a 46% ± 6.1% decrease in fused mitochondria compared to normoxic controls. More importantly, MEFs which have undergone hypoxic preconditioning before the period of SIRI showed an increase in the amount of fused mitochondrial networks compared to MEFs which were exposed to SIRI only (19.3% ± 6.5% vs 4.5% ± 6.4% respectively, p = 0.05). However, Hypoxic pre-conditioning does not seem to be inducing mitochondrial fusion as MEFs exposed to the pre-conditioning protocol only, showed a 16% ± 2.1% decrease in mitochondrial fusion.

Discussion/Conclusion: This study demonstrates that ischaemic pre-conditioning can be replicated in a cell line and that it appears to be preventing cell death by inhibiting mitochondrial fission. Further studies could be needed to investigate the effects of inhibiting different levels of the mitochondrial fission pathway in different cell line and animal models.
A65
Lipid metabolism does not influence the expression of proximal aortopathy in bicuspid aortic valve disease
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Grupo de Estudo REPLICCAR

Aims/Objectives: We aimed to correlate the markers of lipid metabolism with severity of proximal aortopathy in patients with BAV vs. tricuspid aortic valve (TAV) disease.
Method: A total of 458 consecutive patients (mean age 64 ± 11 years, 68% male) underwent aortic valve replacement (AVR) with/without proximal aortic surgery from January, 2008 through December, 2014. All patients undergoing combined procedures (e.g., AVR+CABG) were excluded. Only patients in whom proximal aortic dimensions were defined by preoperative CT/MR and/or TOE were included. Correlation analysis was performed between markers of lipid metabolism (i.e., cholesterol, LDL, HDL, and triglyceride) and maximal diameter of the proximal aorta in BAV subgroup (n = 273) vs. TAV subgroup (n = 185). Moreover, we compared correlation patterns between markers of lipid metabolism and maximal aortic diameter in BAV insufficiency (n = 46) vs. BAV stenosis (n = 227) cohorts. Logistic regression was performed to identify risk factors for proximal aortic diameter >40 mm in BAV and TAV subgroups.
Results: No correlation was found between markers of lipid metabolism and proximal aortic diameter in BAV subgroup (r = -0.1, p = 0.1) and TAV subgroup (r = 0.006, p = 0.9). No significant differences in correlation patterns were found between markers of lipid metabolism and maximal aortic diameter in BAV insufficiency (r = 0.3, p = 0.8) vs. BAV stenosis (r = -0.1, p = 0.1) cohorts. Logistic regression analysis revealed triglyceride levels (HR 1.4, p = 0.05) and statin therapy (HR 0.4, p = 0.03) as predictors of proximal aortic diameter >40 mm in BAV subgroup only.
Discussion/Conclusion: Our study demonstrates no linear correlation between markers of lipid metabolism and proximal aortic diameters in a surgical cohort of BAV and TAV patients. Statin therapy and triglyceride levels influence significantly proximal aortic diameter in patients with TAV, but not with BAV disease.

A66
Surgical treatment of congenital anomalies of the aortic arch:
Long-term results
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Background/Introduction: Congenital anomalies of the aortic arch gather a wide spectrum of malformations concerning the aortic arch or some of its branches and the pulmonary artery. These malformations are rare (1 in 1000 live births) and sometimes responsible of complete (vascular ring) or partial (vascular sling) encirclement of the oesophagus, trachea or bronchi. In cases of symptomatic airways obstruction or oesophagus compression the surgical treatment is mandatory and curative. 

In this paper we describe the experience of Children’s Hospital of Toulouse on the surgical treatment of congenital anomalies of aortic arch.
Aims/Objectives: To evaluate the results and the clinical outcome of reconstructive surgery in patients affected by symptomatic vascular ring.
Method: Observational retrospective monocentric study including all the patients with a congenital anomaly of the aortic arch submitted to surgical treatment since May 2010, at the Children’s Hospital of Toulouse.
Results: Between May 2010 and March 2015, 10 patients (3 girls and 8 boys) underwent surgical treatment for vascular ring responsible for a tracheo-esophageal compression: 9 double aortic arch including 7 right dominant arches, 1 left dominant, 1 balanced disposition and 1 child with a Neuhauser anomaly. The average age and weight were respectively 2.5 ± 1.5 years and 12.9 ± 3.7 kg. Surgical correction was carried out mainly by posterolateral thoracotomy and was performed without complication. The mean duration of mechanical ventilation was 6 ± 7 hours and the average length of stay in intensive care was 1.7 ± 0.7 days. The average hospital stay was 4.8 ± 1.2 days. All patients are alive at the time of the last follow-up and asymptomatic with normal growth.

Gait Speed improves EuroSCORE II prediction
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Grupo de Estudo REPLICCAR

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Discussion/Conclusion: In this series, the surgical treatment of aortic arch anomalies was curative in all cases without associated morbidity and with good functional midterm results. The diagnosis is often delayed and more frequently suspected on the basis of respiratory symptoms.
Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this Journal.
A68 Bilateral sympathectomy protects left ventricle against post-infarction remodelling
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A68

Background/Introduction: Sympathetic activity influences the post-infarction ventricular remodelling and the use of beta-blockers has shown beneficial effects on the left ventricle (LV) function and remodelling after myocardial infarction (MI). Nevertheless, its use has some limitations and may cause adverse effects in certain patients.

Aims/Objectives: Evaluate the influence of thoracic sympathectomy on LV remodelling and function post MI in rats.

Method: Male Wistar rats (300 ± 50 g) were anesthetized and, after left thoracotomy, MI was induced by ligation of left anterior descending (LAD) coronary. Sham rats were submitted only to thoracotomy. One week thereafter, MI rats were randomly submitted to left (LS) or bilateral (BS) sympathectomy by chemical ablation of stellate ganglion. Eight weeks after LAD ligation, the ventricular function was evaluated by conductance catheter technique. Stroke work (SW), cardiac output (CO), systolic volume (SV), end-systolic volume (ESV), end-diastolic volume (EDV), ejection fraction (EF) and dp/dt max were determined at baseline and after stimulation with dobutamine. Infarct size was determined by epicardial and endocardial infarct arc lengths.

Results: Eight weeks after LAD ligation, MI and LS rats presented increased EDV (214 ± 15 μL and 234 ± 39 μL, respectively), whereas BS group preserved EDV (133 ± 29 μL) similar to Sham rats (133 ± 10 μL) (p = 0.002). A significant reduction in EF was observed in MI and LS groups (33 ± 5% and 35 ± 6%, respectively), whereas it was preserved in BS (51 ± 5%) and Sham rats (62 ± 3%) (p = 0.001). In response to dobutamine infusion, LV contractility increased in Sham rats, rising SW, CO, SV, EDV, EF, and dp/dt max. Although none infarcted groups did exhibit changes in EDV after dobutamine infusion, a significant increase in EF (p < 0.001) was observed in BS rats (77 ± 8%) in comparison to MI group (48 ± 10%). A slight increase in SW, CO and SV after dobutamine was observed in MI untreated rats and those submitted to sympathectomy.

No differences was observed on infarct size among groups (p > 0.05).

Discussion/Conclusion: Bilateral sympathectomy was effective to attenuate LV remodelling and to preserve systolic function after myocardial infarction induction in rats.

A69 Clinical Trial: Heme Arginate in patients planned for Cardiac Surgery (HACS)
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A69

Background/Introduction: Acute kidney injury (AKI) is a significant complication of cardiac surgery and is associated with increased morbidity and mortality [1]. Despite much research, there is no specific therapy available. Although AKI can be multifactorial, ischaemia reperfusion injury (IRI) often plays a key role. Thus, cardiac surgery offers an attractive opportunity for translational AKI research given the predictable haemodynamic challenge to renal perfusion.

Hemeoxygenase-1 (H01) is a key inducible anti-inflammatory enzyme that catalyses the breakdown of the pro-oxidant protein heme ubiquitously found at inflamed sites. The drug heme arginate has been in use for over 20 years in the treatment of porphyria but also upregulates HO-1 in peripheral blood mononuclear cells (PBMCs) [2] and ameliorates calf muscle ischaemia [3]. In addition, treatment of mice with heme arginate prior to renal IRI strongly upregulates renal HO-1 expression and protects from AKI [4]. We therefore hypothesise that HAC may offer a prophylactic therapy for human renal IRI via the upregulation of HO-1.

Aims/Objectives: The HACS Trial aims to determine whether heme arginate will upregulate HO-1 in PBMCs in patients aged 60 or above who are scheduled for cardiac surgery, and to verify its safety in this patient cohort.

Method: 20 participants, who are scheduled for elective cardiac surgery, will be randomised to receive 1 mg/kg or 3 mg/kg heme arginate. The primary end point will be the difference in PBMC HO-1 protein from baseline at 24 hours. Secondary end points include HO-1 gene expression, safety and HO-1 genotype.

Results: Results are expected in July 2015. At the time of abstract submission, 14 of 20 participants have been recruited.

Discussion/Conclusion: Data from the HACS trial will inform a subsequent multicentre randomised controlled trial of heme arginate versus placebo in the prevention of AKI in patients deemed to be at higher risk of developing AKI post cardiac surgery.

References

A70 Repair of total anomalous pulmonary venous return (TAPVR) with pulmonary artery (PA) Stenosis in adult
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A70

Background/Introduction: Less than 7% patients with TAPVR survive into adulthood. Predictors of survive in untreated patients are: absence of concomitant CHD & atrial isomerism; large ASD; low pulmonary vascular resistance; mild/moderate TV incompetence. Experience of TAPVR repair in adults restricted by prevalence of case reports. Majority of repaired were ≥50 years old. There have been four case reports of untreated TAPVC diagnosed after 60 years of age, and three of them underwent subsequent surgery on 61u Melki,1992,63 [MH McMullan,1992] and 66 years of age[U Wetzel,2010]. Large surgical series presented by X Jian, 2012 [12 pts], S Talwar, 2008 [27 pts], B Korbmacamer, 2001 [12 pts] and J Rodriguez-Collado, 1992 [19 pts]. Among case reports of TAPVR in adults, up to our knowledge, there are only 4 patients with TAPVR and with PA valve stenosis /RVOT obstruction.

Aims/Objectives: To present successful repair of TAPVR with severe PA stenosis in 22 years old female.

Method: A 22-year-old female was referred to our unit for the cyanotic CHD. She had been diagnosed for CHD at the age of 9 years. Worsening on last 3 years. Body Mass 50 kg, Fatigue, cyanosis, markedly clubbed fingers, “watch-glass” nails. SaO2= 68-72%. Sinus rhythm. Echo- and 3D CT-scan revealed: Sinus Solfius, normal heart position. TAPVR Darling’s LV (supracardiac-cardiac), large ASD II, severe PA valve stenosis with SGr across the valve 119 mm. Hg. LV EDD-32 mm, LV ESD-26 mm. NYHA III.

Results: 09/04/2015 - Repair Of TAPVR (“Double Patch” technique) and PA Valvuloplasty. SpGr across PA valve decreased to 31 mm.Hg. The patient made an uneventful recovery and discharged from the hospital on 9th day after surgery. 5 months later surgery: patient was without any complaints, free from MACCE, SaO2 = 98 - 99%, SGr across PA valve 30 mm Hg.

Discussion/Conclusion: 1.TAPVR in adults could be repaired with 0% mortality; 2. Determinants of long-term events-free survival: pulmonary vascular resistance ≤4-6 u/Wood; lack of post/op PV obstruction; mild/ moderate TV incompetence; sinus rhythm.
Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A71

Demographics and angiographic patterns in young and very young adults (≥35-40 years of age) with coronary artery disease (CAD)
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Background/Introduction: Significant differences in the risk predictors and coronary angiographic patterns between young (≥35-40 years of age) and older (>40 years) patients with CAD, cause different treatment strategies and outcomes among these groups.

Aims/Objectives: To assess risk profile and coronary angiographic variables in young adults with stable angina (SA) and acute coronary syndrome (ACS).

Method: Enrolled 70 patients 27-40 years of age (38.5 ± 0.3) with CAD, including 9 (12.8%) ≤ 35 years old. SA verified in 50 (71.4%) patients, among them 35 (70%) with early MI. ACS - in 20 (28.5%) patients, including 11 (61%) with early MI. With regard to the coronary arteries (CA), attention was paid to the presence of any luminal narrowing, number of CA and segments involved.

Results: Risk predictors presented with: early MI in 46 (65.7%) patients; smoking (≥1 pack/day) in 26 (37.1%); family history of CAD in y 10 (14.3%); AH in 13 (18.3%); DM in 5 (7.1%); LVEF ≥ 35-40% in 15 (21.4%); MV dysfunction (II-IV) in 5 (7.1%); LV aneurysm in 6 (8.6%); BMI 25-30kg/m2 verified in 42.4% patients, BMI> 30m2r/m2 - in 25.8%.
1VD revealed in 21 (30%) patients; 2VD - in 17 (24.3%); ≥3VD - in 32 (45.7%). RCA lesion verified in 39 (55.7%) patients; LAD - in 69 (98.6%); LCx - in 43 (61.4%); Left main-in in 4 (5.7%).
70 patients underwent CABG. 58 (82.9%) - On-pump, 12 (17.1%) - OPCAB

Risk predictors, coronary angiographic patterns, and in-hospital results of CABG compared in ACS and SA groups.

Discussion/Conclusion: 1. Young adults with ACS manifest with prevalence of patients ≥35-35 years, non atheromatous 1VD, and one independent risk predictor; 2. Young adults with SA dominate with patients ≥35-40years, atheromatous multi-VD, early MI, LV dysfunction, and ≤2.3 risk predictors; 3. Proportion of patients ≥30-35years in ACS and SA groups comprised 2:1.

A73

Custodiol - N versus Custodiol: a prospective randomized double blind multicenter phase III Trial
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A73

Background/Introduction: HTK-Solution (Custodiol) is a well-established cardioplegic and organ preservation solution. We currently developed a novel HTK based solution Custodiol-N which includes iron chelators to reduce oxidative injury as well as L-arginine, to improve endothelial function.

Aims/Objectives: In the present first-in-human study, Custodiol-N was compared with Custodiol in patients undergoing elective coronary bypass surgery.

Method: The study was designed as prospective randomized double blind non-inferiority trial. Primary end-point was area under the curve (AUC) of creatinine kinase MB (CKMB) within the first 24 hours after surgery. Secondary endpoints included, peak CKMB and troponin-T and AUC of troponin-T release, cardiac index, cumulative catecholamine dose, ICU-stay and mortality. All values are given as mean ± SD, p < 0.05 was considered as statistically significant.

Results: Early termination of the trial was performed per protocol as the primary non-inferiority end point was reached after inclusion of 101 patients. Patient characteristics, medical history, operation and cross-clamp times did not differ between the groups. CKMB AUC (878 ± 549 vs. 778 ± 439 h*U/l, non-inferiority p < 0.001) and Troponin-T AUC (12990 ± 8347 vs. 13498 ± 6513 h*pg/ml, non-inferiority p < 0.001) was similar in both groups. Although the trial was designed for non-inferiority, peak CKMB (52 ± 40 vs. 41 ± 30 U/l, superiority p < 0.002) was significantly lower in the Custodiol-N group. Cardiac index, catecholamines ICU-stay and mortality (1 death in the control group) was similar in both groups.

Discussion/Conclusion: This study shows that Custodiol-N is safe and provides similar cardiac protection as the established HTK-Custodiol solution. The significantly reduced peak CKMB levels in the Custodiol-N group may implicate a beneficial effect on ischemia/reperfusion injury in the setting of coronary bypass surgery.

A74

Tiprotec preserves endothelial function after cold ischemia and warm reperfusion: comparison between Saline, Custodiol and Tiprotec
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Background/Introduction: Coronary artery bypass surgery provides excellent patency rates, however the early/late graft failure reduces the long-term benefit of myocardial revascularization.

Aims/Objectives: We investigated the effectiveness of generally used Saline, Custodiol solutions and a new solution (Tiprotec) at preserving endothelium after cold ischemia and warm reperfusion injury.

Method: Aortic transplantsations were performed in Lewis rats. Aortic arches stored in Saline, Custodiol and Tiprotec solutions for 2 hours, then were transplanted into abdominal aorta. Two, 24 hours and 1 week after transplantation, the implanted grafts were harvested. Endothelium-dependent and-independent vasorelaxations were investigated in organ bath. DNA strand breaks were assessed by TUNEL-method, mRNA expressions by quantitative real-time PCR and the expression of CD-31 and α-SMA by immunochemistry.

Results: Severely impaired endothelial function and integrity of implanted aortic grafts were shown after 2h in the Saline, Custodiol group (maximal vasorelaxation to acetylcholine: control: 91 ± 2%, Saline: 26 ± 5%, Custodiol: 24 ± 5%, CD31 positive area control: 96 ± 2%, Saline: 35 ± 13% Custodiol: 54 ± 5%, p < 0.05, respectively), however a preserved endothelial function was observed in the Tiprotec group when compared to the Saline and Custodiol group (maximal vasorelaxation:6% ± 7%, CD31 positive area:54 ± 10%, p < 0.05). After 1 week, endothelial function were partially recovered in all groups, however it was significantly better in the Tiprotec group (maximal vasorelaxation to acetylcholine: Saline: 42 ± 3%, Custodiol: 48 ± 3%, Tiprotec: 56 ± 3%, CD31 positive area: Saline: 56 ± 5%, Custodiol: 54 ± 4%; Tiprotec: 83 ± 6%; p < 0.05, respectively). In addition, mRNA levels of Bax, Bcl-2, eNOS, VEGF-2 and caspase-3 were significantly altered in both groups.

Discussion/Conclusion: Tiprotec appears to be superior for the preservation of endothelial- and smooth muscle cells of bypass graft after cold storage and warm reperfusion in our murine model.
Background/Introduction: Enhanced recovery after surgery (ERAS) is well established in other surgical specialties, accelerating recovery and improving outcomes. We have developed and implemented an ERAS programme in our institution for patients undergoing first time, isolated coronary artery bypass grafts with adequate post-operative social support.

Aims/Objectives: We report our early experience with enhanced recovery following cardiac surgery.

Method: Thirty-seven patients were enrolled in the enhanced recovery programme between January and December 2014. These were propensity matched using surgeon, gender, status of operation (urgent/elective) number of coronary artery bypass grafts, EuroSCORE and logisticEuroSCORE. All patients were included in the retrospective analysis. Comparison between the groups was made using a t-test.

Results: Mean post-operative length of stay was significantly reduced in the ERAS group, 4.05 (SD 1.43) days compared to 5.4 (SD 1.17) days in the non-ERAS group (p = 0.003). There were no hospital or Intensive Care Unit (ICU) readmissions in either group. Mean ICU length of stay was 1 night in both groups.

Discussion/Conclusion: Following the successful implementation of an ERAS programme we demonstrate that enhanced recovery in Cardiac surgery is safe, with no increase in readmission or complication rates and a significantly reduced hospital length of stay.

A76

Pain-diminishing effect of Kinesio taping in patients after sternotomy

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Background/Introduction: Post-sternotomy pain often causes patients discomfort and delays recovery. Consecutive pulmonary complications, in particular infections, as well as adverse effects of pain killers and addiction to pain killers lead to a significant increase of postoperative complication rates.

Aims/Objectives: In order to prevent postoperative pain and subsequently impaired inspiration enhancing the risk of pulmonary complications, sufficient analgesia is essential in patients after sternotomy. The present prospective randomized pilot study aimed at investigating the influence of Kinesio taping on the post-sternotomy pain levels.

Method: Fifty elective cardiosurgical patients at the age of 66 ± 10 years undergoing sternotomy between 09/2014 and 11/2014 at the University Hospital Duesseldorf were enrolled in the trial. All patients were randomly assigned to either group TAPE (n = 25), receiving Kinesio taping after discharge from the intensive care unit, or group CONTROL (n = 25) without Kinesio taping. In each group, two drop-outs occurred. Until discharge from the hospital, the pain level of all patients was daily assessed using a standardized pain measurement scale ranging from 0 to 10 points. Moreover, the need for additional analgesic therapy was documented.

Results: The mean hospitalization period in group TAPE was 10.1 ± 2.2 days versus 11.4 ± 4.4 days in group CONTROL. Patients treated with Kinesio tapes had significantly lower pain scale levels as compared to controls (1.7 ± 0.7 versus 3.3 ± 1.7 with p < 0.0001). The dose of administered opioids (piritramide) as well as of non-opioid analgesics (paracetamol) were significantly reduced in group TAPE (0.7 ± 0.9 versus 1.3 ± 1.1 mg/day and 0.9 ± 0.6 versus 1.3 ± 0.6 g/day; both with p < 0.05). The percentage of patients presenting with unimpaired breathing amounted to 96% in group TAPE and 22% in group CONTROL (p < 0.0001).

Discussion/Conclusion: Kinesio taping seems to be a safe and promising approach to reduce postoperative pain and the dose of analgesic drugs to be administered after cardiac surgery via sternotomy. The results of this pilot study warrant a clinical trial with a higher number of participants.

A77

Mini-Thoracotomy Access Reduces the Incidence of Postoperative Atrial Fibrillation after Aortic Valve Replacement

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Background/Introduction: Aortic valve replacement (AVR) is the current gold standard treatment for aortic stenosis. In the last 15 years popularity for minimally invasive (MI) AVR has grown exponentially. The most common techniques for MI-AVR are a partial sternotomy (PS) or a mini-thoracotomy (MT). Although MI access is technically more challenging and results in longer cross clamp and cardiopulmonary bypass times, MI has resulted in superior outcomes. Many publications have reported reduced postoperative pain, surgical trauma, blood loss, transfusion requirements, ventilation times, hospital stay with also earlier functional recovery and better cosmesis. Reductions in the incidence of postoperative atrial fibrillation (POAF) have also been shown.

Aims/Objectives: Compare the incidence of POAF between MT and PS techniques in MI-AVR.

Method: From January 2001 to January 2015, 1417 AVR cases were performed. Demographic and perioperative data were collected prospectively. A total of 523 patients underwent a full sternotomy or had past history of atrial fibrillation and were excluded from analysis. POAF was identified on the ward or ICU by continuous cardiac monitoring. Homogeneity of the sample was tested using multivariate regression and Kolmogorov-Smirnov tests, which did not identify any statistically significant confounding variables. Descriptive statistics were used to characterize samples with regards to demographic and perioperative variables.

Results: A total of 894 (475 males) patients met the inclusion criteria (309 PS and 585 MT cases). Overall, mean age was 70.9 ± 11.2 years. When compared to PS, MT had a shorter cardiopulmonary bypass (111 ± 38 vs. 117 ± 35; p = 0.038) and cross clamp time (80 ± 26 vs. 76 ± 30; p = 0.011). Incidence POAF was significantly lower in MT at 27.8% (n = 148) compared with 37.6% (n = 88), p = 0.007.

Discussion/Conclusion: MI-AVR via MT approach significantly reduces POAF compared with PS approach.

A78

Management of Complex Bronchial Ruptures in Blunt Trauma

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Background/Introduction: Complex bronchial rupture is considered a rare entity. Primary repair is surgically demanding, preferred procedure compared to partial or total lung resection that is usually performed in this situation. We present series of complex tracheobronchial injuries reported so far.

Aims/Objectives: Evaluate the ratio of complex bronchial injuries to simple bronchial injuries and the different management of different complex injuries.

Method: From 1995-2014, 20 patients were operated for bronchial rupture due to blunt chest trauma. Of these, 7 had complex bronchial injuries (3 located in the right bronchial tree, 3 in the left bronchial tree and 1 had
A79
Rehabilitation on the day of cardio-aortic surgery
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Background/Introduction: Fast-track strategy in cardio-aortic surgery has been known to have advantages in minimizing post-operative complications, shortening hospital stay and lowering costs.
Aims/Objectives: We reviewed our rehabilitation plan starting 2 hours after cardio-aortic operations retrospectively, in terms of feasibility and safety.
Method: Inclusion Criteria: 1. Non-emergency surgery; CABG, valve surgery, thoracic aortic surgery and their combination. 2. Well-awake without a ventilator 2 hours after operation. 3. No femoral lines such as IABP or arterial lines. 4. Chest tube drainage less than 100 ml/h. 5. No neurological, hemodynamic, or subjective abnormalities.
During two years, 281 patients met the criteria and divided into two groups: Group 0 consisting of 160 patients started rehabilitation (124 standing and 36 sitting) on the day of operation and Group 1 of 121 patients on post-operative day 1. Statistical analysis was considered significant when p-value was less than 0.05.
Results: Both groups had no significant difference in height, body weight, pre-op EF, duration of anesthesia or aortic cross-clamp time. Group 1, however, had significantly higher values in age (70.0 ± 11.0 vs 73.2 ± 12.1 years), EuroSCORE II (2.3 ± 1.7 vs 5.2 ± 5.5), operation time (261 ± 60 vs 327 ± 115 min), water balance (446 ± 1037 vs 936 ± 1268 ml), days requiring to achieve pre-operative walking level (4.2 ± 4.7 vs 7.5 ± 8.2), post-operative hospital stay (13 ± 12.3 vs 23 ± 32 days) and in-hospital mortality (0.6 vs 5.0%). There was no adverse event due to rehabilitation during the study period.
Discussion/Conclusion: In summary, rehabilitation 2 hours after operations was safe. Group 0 showed faster recovery, but had younger age and lower operative risks. Further analysis should be considered to clarify that early intervention could be beneficial to which patients and to what extent.

A80
A rare cause of a right atrial mass
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Background/Introduction: This 62 year-old gentleman presented with increasing shortness of breath on exertion and reduced exercise tolerance (NYHA class III). Brain natriuretic peptide and D-dimer were markedly elevated. ECG showed no evidence of acute ischaemia. There was a history of gastro-oesophageal reflux disease and excessive alcohol consumption 8 years previously. He was an ex-smoker with a 20 pack year history.
Aims/Objectives: CT-PA was performed to investigate for possible pulmonary embolism. A 78 × 51 mm right atrial mass was identified with associated pericardial and pleural effusions. Transthoracic Echo confirmed mass was prolapsing across tricuspid valve into right ventricle. CT also showed liver cirrhosis with a large mass within segments Iva and VIII which extended into the middle hepatic vein, inferior vena cava and right atrium.
Method: After median sternotomy cardiopulmonary bypass was instituted with arterial cannula via the ascending aorta and venous cannulae via superior vena cava and right femoral vein. Cannulation of the inferior vena cava was avoided as it was obstructed by the mass. Superior vena cava and inferior vena cava were then snugged. The procedure was performed without cardiopulmegeraity arrest (on-pump beating heart); right atrium opened; tumour inspected and delivered. The right ventricle was flushed out with saline whilst the main pulmonary artery was compressed.
Results: The delivered tumour weighed 93g and measured 86 × 62 × 39 mm. Morphological features of which are consistent with metastatic hepatocellular carcinoma. There was a significant fall in central venous pressure post-operation, from 29 mmHg to 11 mmHg. Patient was admitted to HDU and extubated in 3 hours. He was discharged home two weeks post-operatively after having a 20kg diuresis. His hepatocellular carcinoma is managed palliatively with prognosis between 3 and 6 months. He is currently being considered for biological treatment with sorafenib.
Discussion/Conclusion: Although a rare cause of an intra-cardiac mass, metastatic hepatocellular tumours can be treated similarly to renal cell carcinoma tumours of the heart. Surgical removal of the mass is an effective palliative procedure to improve quality of life. Communication with patients can be difficult as these heart tumours can be the initial presentation of metastatic tumour.
Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A81
Outcome of mechanical heart valve replacement in children: A 20-Year Experience
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Background/Introduction: There are a few reports regarding outcome of mechanical valve replacement of children.
Aims/Objectives: We investigated our 20-year experience with pediatric mechanical heart valve replacement with respect to mortality, valve-related morbidity, and reoperation risk factors.
Method: The medical records of 42 patients (20 male, 47.6 %) who underwent 59 mechanical valve replacements between March 1992 and February 2014 were reviewed, retrospectively. Median age of the patients was 11.0 years (range, 9.1 months to 17.6 years) and 15 patients (25.4%) were less than 5 years. Congenital valve disease was the most common diagnosis (n = 16, 27.6%). Mitral valve replacement was performed in 39 patients, followed by aortic valve in 12 patients, pulmonic valve in five patients. Double valve replacements were performed in two patients. Mechanical valve was used in 51 cases (83.6%). The median valve size was 23 mm (range, 16 to 33 mm), and the median follow-up duration after valve replacement was 6.0 years (range, 15 days to 21.7 years). Events were defined as the following: thrombosis, embolism, bleeding, reoperation, and death.
Results: There were two in-hospital mortality (all low cardiac outputs) and two late deaths (sepsis after heart transplantation and heart failure at 5.4 and 14.0 years postoperatively, respectively). Survival rates were 96.6%, 96.6%, and 93.7%, at 3, 5, and 10 years, respectively. Freedom from thromboembolism or bleeding events was 96.0 %, 93.9 %, and 86.0 %, at 3, 5 and 10 years, respectively. Eighteen reoperations were performed postoperatively. Freedom from reoperation was 91.1 %, 88.9%, and 74.3%, at 3, 5, and 10 years, respectively.
Discussion/Conclusion: Mechanical valve replacement can be performed in children with favorable early and long-term survival. Thromboembolism or bleeding events due to anticoagulation therapy were not common.

A83
Repair for the Anomalies of Ventriculoarterial Connection with Ventricular Septal Defect and Left Ventricular Outflow Tract Obstruction
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Background/Introduction: Anomalies of ventriculoarterial connection with ventricular septal defect (VSD) and left ventricular outflow tract (LVOT) obstruction such as transposition of the great arteries, double-outlet right ventricle, double-outlet left ventricle, and Taussig-Bing anomaly had a wide variety of spectrum, and several operative techniques have been performed according to diverse anatomical characteristics without standard operative selection guidelines.

Aims/Objectives: This study was undertaken to compare the outcomes of the Lecompte procedure and Rastelli repair in anomalies of ventriculoarterial connection with VSD and LVOT obstruction.

Method: Over a 35-year period (1979-2014), 95 patients underwent complete repair for anomalies of ventriculoarterial connection with VSD and LVOT obstruction. Fifty patients (52.6%) underwent the Lecompte modification, and median age and weight were 1.95 years (range: 0.30-12.48) and 10.1 kg (range: 5.7-35). Forty five patients (47.4%) underwent the Rastelli operation, and median age and weight were 3.25 years (range: 0.5-46.15) and 13.0 kg (range: 5.9-55).

Results: There were thirteen deaths after complete repair. Twenty three (46.0%) patients in the Lecompte group underwent reoperation, and thirty three (73.3%) in the Rastelli group underwent reoperation. Freedom from reoperation was 25.2 ± 9.4% at 25 years in the Lecompte group and 5.5 ± 4.8% at 27 years in the Rastelli group (p = 0.01). Freedom from reoperation for right ventricular outflow tract (RVOT) obstruction was 49.6 ± 9.0% at 25 years in the Lecompte group and 68.8 ± 5.8% at 27 years in the Rastelli group (p = 0.01). Freedom from reoperation for LVOT obstruction was 88.5 ± 5.4% at 25 years in the Lecompte group and 60.7 ± 10.4% at 33 years in the Rastelli group (p = 0.01).

Discussion/Conclusion: The Lecompte procedure and Rastelli repair provide satisfactory results at long-term follow-up. Substantial late mortality is more associated with RVOT obstruction, and LVOT obstruction in Rastelli repair rather than Lecompte procedure.

A84
Congenital tracheal diseases: diagnosis and management
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Background/Introduction: Congenital tracheal diseases are less common than congenital cardiac.

Aims/Objectives: They contain two lesions: anomaly and stenosis. They may associate with other congenital lesions especially pulmonary artery sling. Tracheal stenosis is the main factor causing airway obstruction. Depend on the degree of tracheal stenosis, clinical manifestation ranges from having some episodes of stridor to severe respiratory failure and death. Reconstruction surgery is the method of choice for severe cases.

Method: Retrospective review congenital tracheal disease cases that underwent reconstruction surgery for over two years (from Aug. 2013 to Feb. 2015). Tracheal stenosis parts were managed using slide tracheoplasty technique. As for other congenital lesions, only pulmonary sling was reconstructed, together with tracheoplasty.

Results: 16 patients (male 7; female 9) were operated. Ages range from 3 - 12 months (average: 7.9). Other congenital lesions include: sling: 12/16; ring: 1/16; VSD: 2/16; no anus: 2/16. Result is excellent in 14 cases: good in one. Mortality: 1.

Discussion/Conclusion: Reconstruction surgery is feasible for congenital tracheal diseases. Result is excellent. Slide tracheoplasty should be applied in all cases to manage tracheal stenosis parts. Segments resection is not recommended for any part of the trachea.

A86
Predictors of Left Ventricular Mass Regression Following Aortic Valve Replacement
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Background/Introduction: Aortic stenosis (AS) is one of the most common valvular heart disease nowadays. Independent factors affecting the postoperative outcome had been studied long time ago.

Aims/Objectives: Identification of the predictors of left ventricular mass regression after aortic valve replacement is our aim of this study.

Method: Randomized selection of 100 patients, underwent aortic valve replacement with a single type of bio-prosthesis (Medtronic Mosaic) for pure aortic stenosis. The study population showed that, 25/100 (25%) patients had prosthesis-patient mismatch of a moderate degree (indexed effective orifice area (IEOA) from 0.65 cm²/m² to 0.85 cm²/m²). The effect of prosthesis-patient mismatch on the postoperative echocardiographic findings mainly the regression of left ventricular mass after aortic valve replacement and follow up comparison of the unmatched group with the matched group in addition to the other possible related factors through the multivariate analysis was studied.

Results: In multivariate analysis, hypertensive patients, preoperative New York Heart Association (NYHA) class >II and a higher preoperative left ventricular mass ≤250 g/m² are independent predictors of incomplete left ventricular mass regression. Age and Gender was found to be insignificant predictors. There was a good correlation (r = 0.755, p < 0.001) between the postoperative left ventricular mass regression (LVMR) and the projected indexed effective orifice area. There was a significant reduction of left ventricle (LV) mass in both groups and a significant reduction of LV mass index among Non PPM group while it was of a no significant reduction in PPM.

Discussion/Conclusion: This study shows that in patients with pure aortic stenosis prosthesis-patient mismatch is associated with lesser regression of left ventricular hypertrophy after aortic valve replacement. Hypertension, preoperative (NYHA) class >II and a left ventricular mass ≤250g/m² are other independent predictors.

A87
The efficacy of custodiol as blood cardioplegia for myocardial protection in adult cardiac surgery
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Background/Introduction: Custodiol cardioplegia is an attractive method of myocardial protection, as a single dose provides a long period of preservation. Despite widespread use in Europe, the available data confirming its efficacy is little compared with conventional methods of cardioplegia. Custodiol solution is administered in a single-dose, allowing the operation to be done continuously. This is an advantage over other cardioplegic solutions that may have to be re-administered every 20-30 minutes.

Aims/Objectives: To compare the efficacy of Custodiol to standard Plegisol blood cardioplegia in adult cardiac surgical cases.

Method: This study was a single-center retrospective review of prospectively collected data. Adult cardiac surgery cases performed between January 2011 and August 2013 using Custodiol® were compared to cases using standard Plegisol blood cardioplegia. The endpoints of intra-operative and post-operative were compared including 30-day mortality, hospital readmission, prolonged mechanical ventilation time, and renal failure.
Results: Of the 100 cases identified, 40 cases used Custodiol and 60 used blood cardioplegia. Demographics data were similar in both groups with a mean patient age of 60 ± 14.1 years for Custodiol and 66 ± 10 years for blood cardioplegia. The average cardiopulmonary bypass time for Custodiol and blood cardioplegia was 122 ± 60 and 135 ± 54 minutes respectively. The Custodiol group had a greater incidence of prolongs ventilation (>24 hours), 20% versus 15 % respectively, and this approached a statistical significance with a p value of (0.05). Intra-operative blood usage was significantly higher in the Custodiol group compared to the blood cardioplegia group, with 44% of patients receiving fresh frozen plasma during the operation compared to only 25% in the blood cardioplegia group (p = 0.005). There is no statistically significant difference in 30-day mortality, hospital readmission, and renal failure.

Discussion/Conclusion: Custodiol is effective for myocardial protection with distinct advantage of long-term ischemic tolerance although the use of custodiol increase the need of fresh frozen plasma during the perioperative period when compared to blood cardioplegia.

A88 Impact of Transmyocardial laser revascularization on Pathomorphological and Physiological Patterns of Myocardial Microcirculation in patients with advanced CAD
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A88

Background/Introduction: The mechanism by which transmyocardial revascularization (TMR) offers clinical benefit is controversial. We hypothesized that TMR ameliorates vasocostriction in patients with ENDCAD.

Aims/Objectives: This study was undertaken to demonstrate that transmyocardial laser revascularization in patients with advanced CAD improves results of combined operations CABG+ TMR through reduction of vasocostriction.

Method: We investigated vessels of coronary microvascular network of patients with ENDCAD and analyzed the histological changes in two groups: in group of patients died after sole CABG (1-st group - 8 heart specimens) and group of patients died after combined operations CABG+ TMR (2-nd group - 6 heart specimens). These data are compared with hospital results (deaths, MACE) in two large groups of patients with ENDCAD: with isolated CABG (1-st group - 33 operations) and CABG + TMR (2-nd group - 87 operations), operated in 2011-2012.

Results: In all hearts after sole CABG was identified coronary arteriolar vasospasm that decreases coronary and bypass flow and thus increase the probability of thrombi formation. All cases after CABG + TMR revealed vasodilatation in lased areas. Reduction in the occurrence of vasospasm in cases with CABG + TMR can prevent graft and coronary occlusion. High indices of hospital mortality (12.1%) and morbidity (33.3%) in cases with sole CABG can be explained with coronary spasm in patients with advanced CAD. On the other hand, reduced hospital mortality (1.15%) and morbidity (2.3%) in the second group (CABG + TMR) can be explained by laser-induced vasodilatation of distal coronary bed. Elevated resistance of the coronary bed hinders the effectiveness of the graft and myocardial blood flow (MBF). We suggest, that intraoperative effectiveness of TMR based of denervation, dilatation of microvascular network of the myocardium and intraoperative improvement of perfusion.

Discussion/Conclusion: Elevated resistance of myocardial microcirculation (vasocostriction) in patients with advanced CAD inhibit the effectiveness of the CABG. In cases with TMR effectiveness is most likely due to vasodilatation of vasocostruction of myocardial microcirculation.

A89 CABG versus CABG+TMR in patients with and without advanced CAD
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A89

Background/Introduction: Intraoperative and hospital benefits from transmyocardial laser revascularization (TMR) may be related to acute sympathetic denervation. This study hypothesized that TMR as an adjunct to CABG would improve myocardial runoff in the TMR-treated regions and increase graft flow.

Aims/Objectives: To compare the results of different operations (CABG versus CABG+TMR) in patients with and without advanced CAD and intraoperative comparison with changes on the microvascular level (spasm).

Method: The results of 831 operations with CABG in patients with CAD in 3 groups were evaluated: CABG in patients without diffuse lesions of coronary arteries (group I - 711 patients), isolated CABG in patients with advanced CAD (group II - 33 patients) and CABG combined with TMLR in patients with advanced CAD (group III - 87 patients). Data evaluation was made on the basis of the data of intraoperative EchoCG and coronaro-shuntography, the values of cardiac enzymes (CPK and CPK-MB) and data of intra- and postoperative evaluation, which allow valuating of patients condition.

Results: Critical spasm of coronary arteries in group I occurred 1.7% of cases, in group II - 33.3%, in group III - 1.15%. Incidence of myocardial infarction was in group I 0.6%, in group II-20.3%, in group III -1.15%. Mortality rate in group I was 2.8%, in group II -12.1%, in group III -1.15%. As patients in group I and II differed only in presence of diffuse changes of coronary arteries, it appears that development (and/or worsening) of critical spasm, high incidence of MI and mortality is prerogative of patients with advanced CAD. As patients in group II and III differ only in extent of operations, represented show that the performance of TMLR in addition to CABG prevents development of critical spasm of coronary arteries and significantly improves effectiveness of operations.

Discussion/Conclusion: Possibility of intraoperative spasm development of coronary arteries, is determined by diffuse changes of coronary arteries: TMLR, performed as an adjunct to CABG in patients with advanced CAD, ameliorates vasocostriction (spasm), improves myocardial runoff (vasodilatation), acutely Improves graft and coronary artery flow, and can significantly improve the results of operations.

A90 Complicated Type B aortic dissection following Type A aortic Dissection Repair: Case Report
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Background/Introduction: Aortic dissection is an uncommon surgical emergency it is most lethal disease of the aorta. Prompt diagnosis and management of aortic dissection are key to reduce patient morbidity and mortality; hence the need to a have a high index of suspicion for this condition.

Method: A 47 year old gentleman presented with chest pain radiating to the back which started during coitus. On admission he was diagnosed with hypertensive crisis and was given a GTN infusion. A CT scan of the aorta showed full length aortic dissection including the brachiophecalic trunk and both common iliac arteries. He was transferred to the Cardiac Unit for surgical repair of the type A aortic dissection, with replacement of the aortic valve and ascending aorta with inter-positional tube graft for type A dissection. Five days post operatively he re-presented with chest, back and abdominal pain associated with diarrhoea. He required Intensive Care Unit support. The patient then had an urgent CT Angiogram which showed progression of the dissection, involving type B aortic dissection extending to both common iliac arteries with significant stenoses of the true lumen of the aorta and right common iliac artery. Clinically there was evidence of bowel ischaemia and right lower limb ischaemia. He had prompt surgical fenestration of the abdominal aorta, re-exploration and washout, perfusion of the superior mesenteric artery, and embolectomy of the right common iliac artery. A short segment of the small bowel was ischaemic with petechial haemorrhages. Twenty-four hours after restoring vascular supply a re-look laparotomy confirmed that the bowel was viable. Post operatively he made an uneventful recovery, follow up CT scans have not revealed any new changes to the aortic dissection.
Discussion/Conclusion: This case illustrates, that following repair of type A aortic dissection the dissecting flap may continue to propagate distally and become unstable. This may have deleterious effects to end organs if surgical action is not taken promptly. Patients should never be profiled, and clinical communication should always be reviewed.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

Background/Introduction: Pulmonary endarterectomy (PEA) is the effective treatment for chronic thromboembolic pulmonary hypertension (CTEPH). Preoperative echocardiographic images often reveal severe tricuspid regurgitation, which regresses after successful surgical procedure. This is the main reason why tricuspid valve surgery is not performed along with PEA.

Aims/Objectives: We focused on the development of tricuspid regurgitation. Our aim was to analyze our strategy of treatment that does not involve tricuspid valve surgery.

Method: We performed analysis of patients who were operated on during the period between years 2004-2011. The data was collected from a set of 100 patients, 65 men and 35 women. Only 1 patient underwent concomitant tricuspid valve surgery - tricuspid valve repair. We analyzed different echocardiographic parameters of all our patients prior to operation and then 1 month, and 3 years after the procedure. We were mostly interested into the degree of tricuspid regurgitation, then the right ventricle function and presence of pulmonary hypertension. Repeated measures ANOVA with Fisher post-hoc test was used for evaluating the differences between the consecutive measurements.

Results: Average tricuspid regurgitation was 2.42 preoperatively, then significantly decreased to 1.44 postoperatively (p < 0.001) and negligibly increased to 1.45 three years after the procedure (p = 0.893). Almost 60% of patients had preoperatively severe tricuspid regurgitation (at least 2.5). After the operation 15% of patients had severe tricuspid regurgitation and after three years it was only 12%. Patients with severe regurgitation (at least 2.5) had in average PASP of 67.4 mmHg, patients with regurgitation greater than 3.0 had PASP over 68.4 mmHg. Mean FAC parameter was significantly elevated from 28.05 preoperatively to 34.87 postoperatively (p < 0.001) and slightly increased to 38.47 (p = 0.356) three years after the procedure.

Discussion/Conclusion: The results of our analysis confirm that our strategy not to perform any tricuspid valve surgery unless there is an organic cause of the valve disease was correct. The functional tricuspid insufficiency, even if severe, regresses after successful PEA and pulmonary artery pressure reduction. None of our patients was indicated to undergo tricuspid valve surgery as a redo procedure following PEA.

Background/Introduction: Orthotopic heart transplantation after univentricular palliation presents a difficult challenge due to the complex anatomy and prior surgeries.

Aims/Objectives: We present our surgical techniques/results in the current era.

Method: 2013-2014: 23 congenital cardiac patients underwent heart transplantation. 13 of them: previous univentricular palliation: hypoplastic left heart syndrome (n = 8), d-transposition of great arteries + criss-cross-heart (n = 1), unbalanced atroioventricular septal defect (n = 1), pulmonary atresia + intact ventricular septum (n = 1) and grown-up patients (GUCH) (n = 2: 1 double-inlet-left-ventricle and 1 tricuspid atresia).

Results: Paediatric group (n = 11): age 7.1±4.8 years (range 1.5 months-13 years); weight 21.3±9.5 kilograms (range 3.5-36). GUCH-group (n = 2): age 23.5±0.5 years; weight 50±10.2 kilograms. 46.1% had undergone Fontan completion, 15.4% Fontan take-down, 30.7% bidirectional cavopulmonary shunt and 7.7% Blalock-Taussig shunt. Berlin-Heart-EXCOR-Paediatric-Device as bridge to transplantation was used in 1 patient. Bicaval technique was performed along with: hemiarch repair (15.3±n = 2), pulmonary artery (PA) branches plasty (38.4±n = 5), hilum-to-hilum PA reconstruction (53.8±n = 7), superior vena cavae reconstruction (15.4%, n = 2) and stent removal from PA (61.5%, n = 8), inferior vena cavae (7.7%, n = 1) and lateral-tunnel-Fontan (7.7%, n = 1). Average cardiopulmonary-bypass time 257.6±79.3 minutes (range 120-431), total-ischemia-time 220.7+/-48.6 (range 140-287). One patient required ECMO; 4 underwent delayed sternal closure; 2 underwent diaphragm plication; 1 subacute-humoral-rejection treated with plasmapheresis. In-hospital stay 44+/-16 days (range 18-185). At follow-up (14.4+/-7.2 months), freedom from percutaneous procedures 83.3% (n = 10). 30-day mortality/follow-up mortality: zero. All of them remain with an optimal functional class.

Discussion/Conclusion: Heart transplantation following univentricular palliation is technically demanding but short-term results are excellent. An extensive surgical reconstruction (donor/heterologous tissues) is mandatory to improve outcomes. Further follow-up is necessary to evaluate the long-term results in this scenario.

Background/Introduction: Percutaneous interventions for cardiac disease are on the increase worldwide. Acute complications of interventions include vessel dissection, total occlusion, thrombosis etc. Other than the complications associated with the disease process and the disturbances to the vascular endothelium mechanical complications due to mishandling of or mishaps with the device itself can occur. These complications, though rare do occur and the cardiac surgeon has to deal with them often on an emergency basis.

Aims/Objectives: To assess the safety and efficacy of emergent surgery in patients who develop device related complications of PCI.

Method: We present 4 patients with coronary artery disease who had complications during angiogram and attempted angioplasty/stenting. In 1 patients the stent was inappropriately deployed and the patient required urgent surgery for stent retrieval. In one the ring tip of the angiography catheter dislocated in the coronary artery requiring emergency surgery and in a further two patients the guide wire broke in the circulation and had to be retrieved along with coronary artery bypass grafting.

In another group of 3 patients there was mishandling of the ASD device requiring urgent retrieval and ASD closure. Devices were lost in the LA, in the RA and the other in the Pulmonary artery.

In 1 patient undergoing device closure of PDA the device was deployed before proper positioning and was brought down to the femoral artery using a bronchoscopic biopsy forceps and then retrieved surgically. In a further patient a PDA coil was lost in pulmonary artery, lodging in a small branch. The child underwent surgical closure of PDA. The coil could not be retrieved.

Results: In conclusion, urgent surgery is often required for device related complications of percutaneous devices. Surgery can be safely undertaken in these patients with gratifying results.
Discussion/Conclusion: Emergent surgery is lifesaving in patients with device related complications of PCI and can be safely carried out.

A95
Influence of outflow cannula geometry on hemodynamics in patients with partial circulatory support: A computational fluid dynamics (CFD)-study
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A95

Background/Introduction: Partial circulatory support is a new option of treatment for heart-failure patients. The Circulite Synergy Micro-Pump is a partial support device where the inflow cannula is connected to the left atrium and the outflow cannula to the right subclavian artery (RSA). Computational fluid dynamics (CFD) simulations can be used to demonstrate changes in hemodynamics post treatment.

Aims/Objectives: To investigate the influence of the outflow cannula geometry on hemodynamics in the aorta and supra-aortic vessels in patients with a Circulite Synergy Micro-Pump.

Method: Lumina of the aorta and supra-aortic vessels of nine patients were segmented from computed tomography angiography (CTA) image data. Computational polyhedral meshes were created to conduct CFD-simulations (STAR CCM+) for diastolic flow conditions (turbulent flow model, diastolic heart flow velocity 0.25 m/s). To quantify effect of partial circulatory support, two simulations per case were carried out (with only native cardiac output and with the Circulite support device added, flow velocity 1 m/s).

Velocity magnitudes, velocities in inferior-superior direction (xyz) and wall shear stresses were averaged in the innominate artery and descending aorta.

Cases were divided into two groups: Outflow cannula placed orthogonal to the RSA (n = 5, group 1) angle between the cannula and the RSA distal to the anastomosis site smaller than 90° (n = 4, group 2).

Results: Geometry of the outflow cannula affected vz of the RSA and the innominate artery significantly (p < 0.05), but not in the descending aorta. Increase of velocity in the descending aorta was similar in both groups (group 1: 37.27%; group 2: 41.01%). Wall shear stress in the innominate artery did not change in group 1 (-6.06%), but increased in group 2 (+334.12%). The difference was not significant.

Discussion/Conclusion: Angle between SA and outflow cannula in patients with the Circulite Synergy Micro-Pump causes significant alterations in the subclavian and innominate arteries at diastole, but not in the descending aorta.

A99
A multistage approach to blood conservation in a Jehovah’s Witness patient undergoing redo aortic arch surgery
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Background/Introduction: 49 year old woman with Marfan’s syndrome previously treated with aortic root replacement and resection of aortic valve for type A dissection. Now presented with progressive dilating 6.3 cm arch aneurysm requiring redo surgery.

Aims/Objectives: To describe a multi-stage approach of patient blood management in a Jehovah’s Witness undergoing redo aortic arch surgery.

Method: Preoperative phase.
Baseline ferritin, transferrin, B12, folate and TFT levels.
Intravenous iron 1000 mg as single dose 3-5 weeks before planned surgery.
Epothulins alfa (600 units per kg) at weekly intervals starting 3 weeks before surgery and the 4th dose given day before surgery.
Hb improved from 119 to 152g/l.
Perioperative phase.
Predonation of 2 units blood at induction.
Usage of aprotinin.
Near normothermic CPB at 30°C.
Usage of Hemosep® device to recover blood spilled during surgery. This preserved platelets, white and red cells for subsequent transfusion.
Postoperative phase.
Hb 103g/l immediately post-op but fell to 64g/l over 24h. Therefore ventilated electively for 2 days giving IV iron and erythropoietin at day 1 and 4 to enhance erythropoiesis.
Patient extubated when Hb 79 g/l.

Results: Patient had no re-exploration for bleeding or tamponade. She had a period of CVVH for renal failure and IV antibiotic for chest infection. She was transferred to the ward on day 9 and discharged home on day 13. Subsequent follow up at week 1 and 6 post discharge showed the patient doing well.

Discussion/Conclusion: Meticulous multidisciplinary individualised patient blood management can result in safe and excellent outcome in a Jehovah’s Witness patient undergoing major redo aortic surgery.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A100
Appropriateness of Preoperative Antimicrobial Therapy Does Not Impact Operative or 5-Year Mortality for Patients with Infective Endocarditis Requiring Surgical Therapy
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Background/Introduction: Many factors may potentially affect postoperative outcomes of surgical therapy for infective endocarditis (IE). What effect appropriateness preoperative antimicrobial therapy, as judged by both duration and drug choice, is controversial in the current literature.

Aims/Objectives: This study examined the characteristics and outcomes of patient with culture-positive IE requiring surgical therapy, with emphasis on the impact on survival of appropriate preoperative antimicrobial therapy.

Method: Records of 353 consecutive patients undergoing surgery for IE from 1990-2013 were retrospectively reviewed. All patients with definite or probable active IE by modified Duke criteria and with positive blood cultures prior to surgery were included. Two infectious disease clinicians, blinded to patient outcomes, graded appropriateness of preoperative antimicrobial regimens.

Results: A total of 270 patients (190 men; mean age 46.2 years) met inclusion criteria. Native valves were infected in 219 (81%) patients. Appropriate preoperative antibiotics were administered to 177 (66%) patients. Multi-organism, Enterococcus, and fungal infections were more common in the inappropriately treated group. Recurrent IE was also more common in the inappropriately treated group. Strep viridans infections and IV-drug use were less common in the inappropriately treated group. Otherwise, there were no significant differences in the rates of comorbidities, valve involvement, pathogens, or postop complications (Table). Operative mortality was 12.9% overall, with no significant difference between the appropriately (14%) and inappropriately (11%) treated groups (p = 0.433). Similarly, there was no difference in unadjusted, all-cause mortality between the appropriately (52%) and inappropriately (48%) treated groups (p = 0.545). Mean follow-up time was 3.9 years.
A101

Mini-extracorporeal Circulation and Off-pump Techniques Associated with Less Inflammatory Gene Expression as Compared to On-Pump in the 24-hour Postoperative Window Following Coronary Artery Bypass Grafting

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Aims/Objectives: We sought to compare the inflammatory response induced by all three techniques (OPCAB, MECC, ONCAB) using gene expression analysis techniques.

Method: Patients (n = 102) undergoing isolated coronary bypass grafting were prospectively enrolled and divided into cohorts of OPCAB (n = 34), MECC (n = 34), and ONCAB (n = 34). Serial blood samples were collected at multiple time points (preoperatively, at skin closure, and postoperatively at 24 and 48 hours). Total RNA was isolated from all samples, and gene expression analyses were performed with the Illumina HumanHT12 v4 microarray. Individual samples were randomly allocated into training (n = 149) and test (n = 141) sets to validate results.

Results: Randomization between the training and test set showed no significant differences in clinical parameters between the two sets. Supervised gene expression analyses indicated that inflammatory pathways were significantly increased in all treatments, and these pathways were increased in ONCAB vs MECC or OPCAB, with no difference between MECC and OPCAB, at 24 hours postoperatively by multiple testing approaches. By 48 hours postoperatively, differences in inflammatory gene expression were no longer detectable.

Discussion/Conclusion: In the acute 24-hour period following surgery, inflammatory expression does appear to be less in MECC compared to ONCAB and no different in MECC compared to OPCAB. However, given that this difference resolved quickly, the clinical significance of this result is unclear. Our analysis will guide further investigation into the inflammatory response induced by OPCAB, MECC, and ONCAB techniques.

A102

Dual antiplatelet treatment after coronary artery bypass surgery

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Method: Retrospective study including all CABG patients during the years 2009-2010, with two years of clinical follow-up. Patients were classified in: A) SAT: daily 100 mg ASA. B) DAT: daily 100 mg ASA plus daily 75 mg clopidogrel.

Results: The study included 452 patients: 287 SAT (63.5%); 165 DAT (36.5%). 11.9% suffered a primary end-point event; 6.6% ACS; 4.4% UTVR; 1.5% stroke; 3.8% died during follow-up. Safety: 2 (0.4%) suffered a major BE, and 10 (2.2%) minor BE.

DAT was associated with a reduction of the primary end-point from 14.6% to 7.3% (p = 0.020). ACS were reduced from 8.7% to 3.0% (p = 0.020). There were no differences in UTVR nor stroke. Mortality during follow-up was lower in DAT (4.5% versus 2.4%; p = 0.257). A multivariate Cox proportional-hazards regression was performed; DAT was independently associated with the reduction of events (Hazard ratio 0.49; CI 95% 0.249 - 0.968; p = 0.040). The greatest benefit of DAT was seen after Off-pump CABG (Hazard ratio 0.395; CI 95% 0.176 - 0.885; p = 0.024) and in diabetic patients (Hazard ratio 0.326; CI 95% 0.124 - 0.854; p = 0.023).

Discussion/Conclusion: DAT is associated with a reduction of late adverse cardiovascular events after CABG, especially in Off-pump CABG and in diabetic patients. DAT did not increase the risk of BE.

A103

The benefits of the digital chest drainage after pleuro - decortication in empyema. Prospective, comparative randomized trial

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Aims/Objectives: We have designed a prospective, comparative and randomized study to evaluate if the use of digital chest drainage (Thopaz-Medela) to measure postoperative air leak compared to a classic device varies on deciding when to withdraw chest tubes and it diminished the complications and reoperation after pleuro-decortication.

Method: A prospective, comparative and randomized trial was conducted in 37 patients who underwent pleuro-decortication in a empyema. Since May-Dec 2014. Male 27; female 10; mean-age 48years. We compared the use of digital devices with the current analogue version. The digital and analogue group had 18 and 19 patients, respectively. The surgery was indicated when the empyema was 5-7 grade (Light Classification). The measure of the air leak in the digital group was in ml/min, in the analogic group we perform the conversion between the bubbles scale (0-5) to ml/min. We compare the number of complication and reoperation cases in both groups and the day to withdraw the chest tube.

Results: Clinical population data and Light Classification were not statistically different between the groups. Thoracotomy approach 94.6%, VATS 5.4%. The immediate postoperative air leak was in the 96% of the patients. The withdrawal of the chest tube in the Digital group 4.3 days; analogic 5.5 days (p = 0.49). The postoperative complication between digital and analogic groups were 22.2% vs 36.8% (p = 0.37). The reintervention was necessary in 16.67% vs 26.31% (p = 0.09).

Discussion/Conclusion: The use of digital chest drainage in pleuro-decortication reduce the reoperation cases. We observe a tendency to reduce the air leak and the chest tube necessity in the digital group, but probably we need a large series for confirm this point.

A104

Left atrial myxoma in dextrocardia with situs inversus totals

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Aims/Objectives: We present the rare case of a 69-year-old female, with a history of dextrocardia with situs inversus totals presenting to her general practitioner with a six-month history of shortness of breath
A105
Comparing use of BIMA in a Y-raft configuration to BIMA with additional radial artery use during CABG: Two institutional study
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Background/Introduction: Arterial grafting has been demonstrated to confer long-term survival advantages to patients undergoing Coronary Artery Bypass Grafting (CABG). Arterial revascularization may be achieved through the sole utilization of sequential Bilateral Internal Mammary Arteries (BIMA) in a Y-raft construct, or the use of BIMAs with additional radial arteries (RA).

Aims/Objectives: We assessed the long-term survival of these two approaches.

Method: Two consecutive series of patients underwent arterial revascularization at two institutions from 2000-2010. In group A, 183 patients underwent CABG with non-sequential BIMA grafting, utilizing the RA for additional targets. In group B, 771 patients underwent solely sequential BIMA grafting in a Y-raft configuration. Patient differences were balanced using a propensity score developed from a logistic regression model with 20 baseline factors. Cox Proportional Hazards Regression was used to adjust for group differences in evaluating survival.

Results: Patients in group B were significantly older (65.7 ± 9 vs. 56.6 ± 10; p < 0.0001), with more diabetes (30.6% vs. 6%; p < 0.0001), CHF (21.0% vs. 2.7% p < 0.0001), Peripheral vascular disease (21.1% vs. 8.2%; p < 0.0001), renal insufficiency (10.5% vs. 0.0%; p < 0.0001) and dialysis (10.4% vs. 0.0%; p < 0.0001). Group A had a higher proportion of patients with left ventricular ejection fraction less than 50% (26.8% vs. 20.9%; p = 0.046). Both groups had equivalent in-hospital mortality (1.0%), anastomotic sites (mean of 4; p = 0.552) and use of off-pump (both > 90%). In Cox analysis using the propensity score, group B had a trend of improved 14-year survival (92% vs 84%; p = 0.059). Kaplan-Meier analysis of the propensity matched sub-groups showed no statistical significance in 14-year survival (93% vs. 89%; p = 0.101).

Discussion/Conclusion: Overall there was no statistically significant difference in survival between these two approaches to arterial revascularization. A larger cohort is required to fully compare these techniques.

A106
Results of a protocol to limit blood utilization vary based on the cardiac procedure performed
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Background/Introduction: The use of blood transfusions has been shown to increase the risk of mortality and morbidity in cardiac surgery patients.

Aims/Objectives: To determine whether the implementation of a hospital protocol designed to reduce unnecessary blood transfusions has consistent impact across different cardiac operations.

Method: From 1/1/2012 through 12/31/2014, 1189 patients underwent isolated coronary artery bypass (ISO-CAB, N = 252), isolated valve (IsoValve, N = 190), CAB+Valve (N = 114), CAB+Other (N = 304), Valve+Other (N = 178), or other (151) surgeries. Overall 802 (67.5%) were male with a mean age of 70 ± 12 years. A protocol focusing on reducing blood use was initiated on 11/1/2013. We divided the cohort into two eras, pre-protocol (PreP, n = 736) and post-protocol (PostP, n = 453), to assess the impact of the protocol on transfusion rates in each surgical category.

Results: There was no significant difference in the type of cardiac surgery, baseline platelet count, Society of Thoracic Surgeons mortality or reoperation risk, or Off-Pump approach in CABG patients between the PreP and PostP groups. Fewer patients in the PostP group received any blood products (45.5% vs. 38.2%; p = 0.008) and fewer PostP patients received 1 unit or 2 more units of blood (p = 0.045). However, when assessing blood utilization by procedure, only PostP patients undergoing ISO-CAB or CAB+Other had significantly reduced utilization of any blood product (37.7% vs. 14.9%; p = 0.001 and 33.9% vs. 24.1%; p = 0.048). When PostP IsoCAB and CAB+Valve patients were transfused, they received a significantly greater number of units of blood (2.51 vs. 3.73; p = 0.082 and 4.77 vs. 9.39; p = 0.017). There was no difference in mortality between the PreP and PostP groups (2.4% vs. 3.5%; p = 0.180).

Discussion/Conclusion: Cardiac operations involving coronary artery bypass grafting may be most readily targeted to limit blood transfusions. Future protocols should recognize that different cardiac operations hold unique transfusion requirements that will respond differently to the implementation of a protocol driven approach to blood transfusion.

A107
Non-manipulation of Patent LIMA in the Setting of Reoperative Aortic Valve Replacement in Patients with Previous Coronary Artery Bypass A Zapolanski1, CE Kuschner1, CK Johnson1, G Ferrari1,2, RE Shaw1, ME Brizzio1, JB Grau1
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Background/Introduction: A patent left internal mammary artery (LIMA) graft challenges the protective effects of cold blood cardioplegia in patients undergoing re-operative aortic valve replacement (AVR).
This study presents the results of our approach to myocardial protection in a series of consecutive patients with previous coronary artery bypass (CAB) undergoing AVR. The surgical procedures performed in these series included 50 AVR and 22 AVR + CAB. Myocardial protection was delivered using mild systemic hypothermia and continuous cold blood retrograde and intermittent antegrade cardioplegia, avoiding any manipulation of the LIMA graft. Pre-operative demographics, operative characteristics, in-hospital complications and 30-day mortality were collected according to Society of Thoracic Surgeons (STS) standards.

Results: The cohort was predominately male (89%) and diabetic (58%) with an average age of 74 ± 8.3 years. Patients observed improved outcomes compared to STS predicted risk in Mortality (2.7% vs 6.3%), Stroke (1.4% vs 2.6%), Re-operation (6.8% vs 11.2%), Prolonged Ventilation (9.6% vs 21.4%), Renal Failure (1.4% vs 10.0%) Deep Sternal Wound Infection (0.0% vs 0.8%) and Length of stay >14 days (2.7% vs 32.5%). More patients had a length of Stay >6 days than Predicted (46.6% vs 21.6%). The STS does not provide a predicted risk for myocardial infarction. The actual rates of complications were lower than expected in five of the provided categories. The 1, 3, 5, and 8-year mortality rates were 4.5% (n = 369), 8.8% (n = 551), 20.0% (n = 630), and 45.5% (n = 511) respectively.

Discussion: In this series avoiding the manipulation of a patent LIMA graft was associated with a low morbidity and complication rate, including myocardial infarction, when compared to the predicted STS risk. This has become our preferred approach when performing re-operative surgery on patient with patent LIMA.

**A108**

A systematic review of one-lung ventilation during thoracic surgery comparing the safety and efficacy of high and low tidal volumes

Background/Introduction: Lung isolation, a technique largely used to enhance surgical procedures, was delivered using mild systemic hypothermia and continuous cold blood retrograde and intermittent antegrade cardioplegia, avoiding any manipulation of the LIMA graft. Pre-operative demographics, operative characteristics, in-hospital complications and 30-day mortality were collected according to Society of Thoracic Surgeons (STS) standards.

Results: The cohort was predominately male (89%) and diabetic (58%) with an average age of 74 ± 8.3 years. Patients observed improved outcomes compared to STS predicted risk in Mortality (2.7% vs 6.3%), Stroke (1.4% vs 2.6%), Re-operation (6.8% vs 11.2%), Prolonged Ventilation (9.6% vs 21.4%), Renal Failure (1.4% vs 10.0%) Deep Sternal Wound Infection (0.0% vs 0.8%) and Length of stay >14 days (2.7% vs 32.5%). More patients had a length of Stay >6 days than Predicted (46.6% vs 21.6%). The STS does not provide a predicted risk for myocardial infarction. The actual rates of complications were lower than expected in five of the provided categories. The 1, 3, 5, and 8-year mortality rates were 4.5% (n = 369), 8.8% (n = 551), 20.0% (n = 630), and 45.5% (n = 511) respectively.

Discussion: In this series avoiding the manipulation of a patent LIMA graft was associated with a low morbidity and complication rate, including myocardial infarction, when compared to the predicted STS risk. This has become our preferred approach when performing re-operative surgery on patient with patent LIMA.

**A109**

Single Centre Experience with Minimally Invasive Aortic Valve Replacement versus Conventional Full Sternotomy Approach - A Propensity Match Analysis

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A109

Background/Introduction: Minimally invasive approach to aortic valve replacement (AVR) is increasingly accepted as a valid alternative to conventional full sternotomy (FS-AVR), as reduces operative trauma with the final aim to improve the postoperative outcomes.

Aims/Objectives: The aim of our study is to compare short term clinical outcomes after minimally invasive AVR (mini-AVR) with outcomes following FS-AVR in the same institution.

Method: Between December 2010 and March 2012 627 patients underwent isolated AVR were retrospectively included in two groups: 599 patients underwent FS-AVR sternotomy (Group A), while 28 underwent minimally invasive procedure (Group B). Mini-AVR was performed through a 6 cm upper midline incision with reverse 1st manubriotomy carried into the right third intercostal space. Venous drainage for cardiopulmonary bypass was achieved alternatively percutaneously or with a flat two stage venous cannula with vacuum assist. Primary endpoint was peri-procedural mortality; secondary endpoints were overall postoperative complications, major adverse cardiac-related complication, use of blood products and need for transfusions, bypass time and cross-clamp time, ventilation time and length of stay in hospital. Propensity score match analysis was performed to avoid selection biases and equalize confounding preoperative variables.

Results: After propensity score match, no statistical significant difference was found in peri-procedural mortality rate (p > 0.05), mean bypass and cross clamp times. Minimally invasive AVR was associated with a significant reduced need for transfusion (p = 0.003), as well as postoperative cardiac and non-cardiac complications. A trend towards lower mean ventilation times, ICU stay and hospital stay in the mini-AVR group was also detected, but failed to reach statistical significance.

Discussion/Conclusion: Initial results with minimally invasive AVR are associated with significantly reduced blood loss, reduced blood transfusion and a trend towards less ventilation time, ICU stay and hospital stay. Postoperative cosmetic results were much better in the minimally invasive group.

**A110**

Video Assisted Thoracoscopic Surgery Lung Volume Reduction for Chronic Obstructive Pulmonary Disease in Indonesia

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Background/Introduction: Chronic Obstructive Pulmonary Disease (COPD) in the future will be increased according to increasing air pollution by smoke from factories or vehicles and smoking habits. Asthma, chronic
bronchitis, bronchiectasis, emphysema and others chronic and critical conditions require minimal invasive surgery.

**Aims/Objectives:** Video Assisted Thoracoscopic Surgery (VATS) is a minimalist operation using a fiber optic cable that is connected to a video screen television for imaging objects and surgery will be done through several small incisions like keyhole of the chest cavity. VATS advantages compared to conventional surgery is the recovery time is shorter and very useful in situations whereas conventional thoracotomy surgery is not possible due to severe conditions. The drawback with this minimal incision exposes less due to obstructed ribs, but can be overcome with proper planning beforehand through a 3D reconstruction of CT Scans Thorax.

**Method:** Case control study.

**Results:** Nine cases of COPD with pneumothorax complications between 44-84 years old performed VATS Lung Volume Reduction Surgery (LVRS). Comorbidities before surgery in 4 cases, such as Diabetes Mellitus, Coronary Arteriosclerosis Disease, emphysema subcutis, ulcer pepticum. Length of Stay (LOS) 5-40 days, morbidity infection in 3 cases, 1 case of gastrointestinal bleeding, prolonged pneumothorax 2 cases, 1 recurrent pneumothorax and no mortality. Functional testing of lung vital capacity about 21.5% with mean forced expiratory volume of 20%. Spirometry evaluations during the year showed an increase of 10-20%, but the functional of daily activities showed improvement and free from oxygen dependency. Four patients developed congestion right heart began three months after the respiratory rehabilitation with one person showed moderate pulmonary hypertension. 4-year follow-up to the dismissal of contamination to cigarette smoke showed significant changes in lung function of ventilation and perfusion test in Nuclear Medicine.

**Discussion/Conclusion:** VATS LVRS showed good outcome for selected COPD.

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**A111**

Type II A aortic dissection and ascending aor aneurysm seeing after mechanic aortic valve replacement

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A111

**Background/Introduction:** Type II A aortic dissection after mechanic aortic valve replacement.

**Method:** A 51-years-old male patient was hospitalized in our clinic on March 26, 2015. He had mild aortic insufficiency and mild mitral insufficiency. Ejection fraction was 60%. CT-Scan revealed type II A aortic dissection.

**Results:** He had Type II A aortic dissection with intimal tear at proximal region of the right coronary ostium. Mechanic aortic valve was normal function. Ascending aorta was replaced by using 26 mm Dacron tube graft between annulus of previous mechanic aortic valve and distal ascending aort by using hypothermic circulatory arrest and antegrade selective cerebral perfusion. An 8 mm dacron tube graft was anastomosed between right and left coronary annulus and this tube graft was anastomosed to neo-aorta (Cabrol technique). Postoperative period was event-free. The patient was discharged on 14 postoperative day with warfarine and methoprolol treatment.

**Discussion/Conclusion:** Although acute aortic dissection after mechanic aortic valve replacement is a rare complication, physicians should keep this potential life-threatening complication in mind.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

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**A112**

The post-pericardiotomy syndrome causing cardiac tamponade and pleural effusion in a patient that underwent mitral valve replacement

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A112

**Background/Introduction:** The post-pericardiotomy syndrome (PPS) is an important complication following cardiac surgery.

**Aims/Objectives:** We presented a patient with pericardial tamponade and pleural effusion that underwent mitral valve replacement.

**Method:** A 45-year-old man was hospitalized in our clinic on March 26, 2015. He had chest pain, dysnea, and easy fatigability. He underwent mitral valve replacement one month ago. The diagnosis of pericardial effusion was confirmed by echocardiogram. The chest x-ray showed left pleural effusion.

**Results:** Subxiphoid pericardial drainage and right thoracic pleural drainage were performed under local anesthesia. Pericardial serous fluid of 400 ml was drained. The right pleural serous fluid of 500 ml was drained. A subxiphoid pericardial and right thoracic drainage tube were inserted during surgery and removed after 4 days. No microorganism was cultivated from pericardial and pleural fluids. After hospital discharge, patient was followed with physical examination, echocardiography, and chest x-ray.

**Discussion/Conclusion:** Subxiphoid pericardial window under local anesthesia is an important surgical method for pericardial drainage in situations with pericardial effusion due to post-pericardiotomy syndrome.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

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**A113**

A novel and simple method for identifying the lung intersegmental plane with an infrared thermography

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A113

**Background/Introduction:** In performing lung segmentectomy, identification of the intersegmental plane is a very important process. To identify the intersegmental plane, several methods have been reported: (1) making a border line between inflated and deflated segments; (2) using infrared thoracoscopy with intravenous or intrabronchial injection of indocyanine green; (3) identifying intersegmental pulmonary vein using 3-dimensional pulmonary models. However each method has its own problems, and the choice of these methods is controversial. Recently, in ex-vivo study, the relation between lung perfusion and lung surface temperature was reported, whereas the change of surface temperature during lung segmentectomy has not been clarified.

**Aims/Objectives:** We hypothesized that surface temperatures of resecting segments or lobes decrease due to blood flow suppression by ligation of target arteries and veins. Therefore we tried to identify the intersegmental or interlobe plane with an infrared thermography.

**Method:** We used experimental pig models, and performed lung lobectomies (n = 2), and segmentectomies (n = 4). During surgical procedure, lung surface temperatures were monitored with an infrared thermography through the thoracotomies.

**Results:** After ligation of target arteries and veins, differences in temperature between resecting and preserving areas were clearly identified, and transitional zones of surface temperature were visualized as sharp lines. And intersegmental or interlobe planes detected by an infrared thermography were exactly matched with the lines detected by inflate-deflate lines.

**Discussion/Conclusion:** Result of this study shows the possibility of the visualization of intersegmental or interlobe planes with an infrared thermography. The thermographical method is noninvasive, and we just need to monitor the lung surface with an infrared thermography. In addition we can use the thermographical method together with conventional methods during operation. We consider that the thermographical method can help thoracic surgeons who perform lung segmentectomy to identify the intersegmental plane simply and precisely.
A114
Does impaired cardiac function affect peripheral arterial angioplasty outcomes?
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Results: From February 2009 to January 2014, 4 patients underwent surgical treatment and chest wall resection for giant chest tumor. The median defect size was 80 cm2 and the median number of ribs resected was 3. Lung resection was performed in 3. Prosthetic reconstruction was done with use of dual and polypropylene mesh and STRATOS system. Postoperatively, 1 patients died (had pneumonectomy plus chest wall resection. Respiratory failure did not occurred.

Discussion/Conclusion: The use of malleable Titanium bars to restore anatomic rib continuity helps to preserve the mechanics of ventilation better than a soft patch repair.

We have no incidence of respiratory failure. Pneumonectomy plus chest wall resection should be performed only in highly selected patients.

A119
Minimally invasive off pump CABG technique using “LIMA to LAD” first in staged hybrid approach for complex coronary artery disease
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Results: Out of 28 patients, 27 (97%) had successful LIMA to LAD grafting. Relief in angina was observed in 60 percent cases. Nine patients (30 %) underwent staged PCI after six months of the CABG. They also had smooth post-operative mortality. Pneumonectomy plus chest wall resection did not occurred.

Discussion/Conclusion: The use of malleable Titanium bars to restore anatomic rib continuity helps to preserve the mechanics of ventilation better than a soft patch repair.

We have no incidence of respiratory failure. Pneumonectomy plus chest wall resection should be performed only in highly selected patients.
MiniAVR patients were older (mean age 70 vs. 66, p = 0.02) and had lower preoperative Hct (34% vs 38%, p < 0.001). There were more redo operations in the cAVR group (15% vs 8%, p = 0.03). There were no differences in other preoperative variables, including calculated STS mortality risk (3% miniAVR vs 4% cAVR). Operative/postoperative results are reported below (Table 1). There was no difference between groups in rate of stroke, MI, pneumonia, transfusion, inhospital mortality, 30 day mortality, and length of stay. Operative conversion rate to cAVR was 1%. There was a 26% absolute reduction in the rate of post-operative atrial fibrillation in the miniAVR group corresponding to a 64% relative risk reduction (p = 0.015). As expected, bypass and cross-clamp times were longer in the miniAVR group (CPB was 20 minutes longer, p = 0.002), XC was 24.5 min longer, p < 0.0001. Total chest tube drainage was decreased by nearly 300 mL (p < 0.0001).

Discussion/Conclusion: A dedicated change in practice to miniAVR is safe, associated with improved outcome, is favored by patients and referring providers and may be associated with a significant reduction in post-operative atrial fibrillation.

### A121

#### 30-year experience of Fontan surgery: single-centre's data

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Background/Introduction: The Fontan procedure has been modified several times since it was introduced into practice in 1968. As many patients now survive to adulthood, attention is directed towards their clinical status and late morbidities.

Aims/Objectives: We report our surgical experience of 30 years in Fontan procedures and the long-term follow-up result.

Method: From January 1985 to January 2015, 80 patients underwent Fontan surgery. Twenty one patient received an atrio-pulmonary Fontan (Group I), 4 patients underwent total cavopulmonary connection (TCPc) with an intra-atrial lateral tunnel (Group II), 6 patients received extra-cardiac TCPc with an aortic homograft (Group III) and 49 patients received extra-cardiac TCPc with an expanded polytetrafluoroethylene conduit. They were followed for early and late mortality, long-term survival, postoperative morbidity and reintervention or reoperation.

Results: The mean follow-up time was 7.4 ± 6.6 years. The Kaplan-Meier estimated 15-year survival rate was 42% in Group I, 50% in Group II, 83% in Group III and 94% in Group IV. The median preoperative pulmonary artery pressure and pulmonary artery resistance were 13 mm Hg (QR, 11-15) and 1Wood unit (IQR, 1-1.4) respectively. Fenestration was created in 40 (50%) patients. The median length of stay in intensive care unit, intubation and chest drain stay time were 90 hours (interquartile range [IQR], 46-119), 8 hours (IQR, 6-16) and 18 days (IQR, 12-28) respectively. Early complications were bleeding in 6, taken down of Fontan circulation in 3 and acute heart failure managed by left heart bypass in 1 patient. Late-occurring morbidities included arrhythmias in 6, protein-losing enteropathy in 2, thromboembolism in 2 and tracheal stenosis in 1 patient. Fourteen patients (18%) had redo Fontan procedures.

Discussion/Conclusion: Our series showed improving results after Fontan completion with excellent mid-term outcome after extra-cardiac TCPc with expanded polytetrafluoroethylene conduit. The long-term result should be followed.
Remote cannulation was realized in 4 porcine experiments (75 ± SSM) were isolated and analyzed.

The number of patients receiving hemodialysis matched venous drainage in vivo. We sought to determine the effect of different methods to be responsible for impaired Ca2+-cycling and ETC function. Therefore, ischemia time should be considered an important factor influencing IR experiment-derived conclusions.

**Method:** Remote cannulation was realized in 4 porcine experiments (75 ± 3 kg) with percutaneous venous access, serial dilatation up to 18F and insertion of either 10F thin wall, wire wound cannula or a smaller, virtually wall-less (24F Smartcanula ST). A standard MECC pump set with a centrifugal pump and a hollow fiber membrane oxygenator, but no in-line reservoir was used. Pump flow and the required pump inlet pressure were recorded for increasing pump speed from 1500 RPM to 3500 RPM (500 RPM increments).

**Results:** Pump flow accounted for 1.2 ± 0.2 l/min for wall-less versus 1.2 ± 0.2 l/min for thin wall at 1500 RPM, 3.5 ± 0.4 versus 3.1 ± 0.4 at 2500 RPM, 5.6 ± 0.4 versus 4.2 ± 0.7 at 3500 RPM. Pump inlet pressure accounted for 4 ± 19 mmHg versus 2 ± 13 mmHg for 1500 RPM, 35 ± 19 versus -89 ± 27 at 2500 RPM, and -90 ± 21 versus -220 ± 29 for 3500 RPM. For a pump inlet pressure of -88 mmHg, the mean pump flow was 4.5 ± 0.8 l/min for the new smaller virtually wall-less venous cannula versus 3.1 ± 1/min for control (p < 0.005).

**Discussion/Conclusion:** At the well accepted pump inlet pressure of -80 mmHg, the new, smaller, virtually wall-less, braided cannulas designed for use with augmentation provide unmatched venous drainage in vivo despite an 18F peripheral access. Early clinical analyses have confirmed these findings.

**Background/Introduction:** The number of patients receiving hemodialysis is increasing year by year, and the number of cases who underwent thoracic aortic surgery is limited but also increases.

**Aims/Objectives:** In this study, we clarified the early and mid-term results of open surgery for thoracic aortic aneurysm (TTA) in patients under hemodialysis.

**Method:** In consecutive 700 open surgical repair for TTA between January 2002 and October 2014, there are 21 patients under hemodialysis preoperatively. They underwent open repair for aortic root in 2, ascending in 10, arch in 10, descending in 2 and thoracoabdominal aorta in 1. They were 7 late deaths including 3 aortic events and 2 cardiac deaths for the new smaller virtually wall-less venous cannula versus 3.1 ± l/min for control (p < 0.005).

**Results:** Pump flow accounted for 1.2 ± 0.2 l/min for wall-less versus 1.2 ± 0.2 l/min for thin wall at 1500 RPM, 3.5 ± 0.4 versus 3.1 ± 0.4 at 2500 RPM, 5.6 ± 0.4 versus 4.2 ± 0.7 at 3500 RPM. Pump inlet pressure accounted for 4 ± 19 mmHg versus 2 ± 13 mmHg for 1500 RPM, 35 ± 19 versus -89 ± 27 at 2500 RPM, and -90 ± 21 versus -220 ± 29 for 3500 RPM. For a pump inlet pressure of -88 mmHg, the mean pump flow was 4.5 ± 0.8 l/min for the new smaller virtually wall-less venous cannula versus 3.1 ± 1/min for control (p < 0.005).

**Discussion/Conclusion:** At the well accepted pump inlet pressure of -80 mmHg, the new, smaller, virtually wall-less, braided cannulas designed for use with augmentation provide unmatched venous drainage in vivo despite an 18F peripheral access. Early clinical analyses have confirmed these findings.

**Background/Introduction:** Significant mitochondrial function impairment is known to result from cardiac ischemia reperfusion injury (IR) precipitated by cardiopulmonary bypass during heart surgery.

**Aims/Objectives:** We sought to determine the effect of different ischemia time spans in cardiac IR on mitochondrial respiratory chain (RC) function, inner membrane polarization and Ca2+-homeostasis.

**Method:** Wistar rat hearts were harvested and divided into 4 groups of stop-flow induced warm global IR: 0, 15, 30 and 40 min of ischemia followed by 30 min of reperfusion, respectively. Myocardial contractility was determined from left ventricular pressure records (dp/dt, dPmax).

**Results:** Significant depressed LV contractility irrespective of ischemia duration. In contrast, increasing length of ischemia time highly significantly promoted ETC uncoupling at complex I, II and III in state 3 respiration, respectively. Membrane potential showed a distinct hyperpolarization in IR30/30 and IR40/30 compared to the other groups (p < 0.0001), continuously wearing off after CCCP-induced uncoupling. Regarding Ca2+-induced swelling, light transmission of IR40/30 SSMs started to differ significantly (p < 0.04) from IR0/30 after 6.5 min of Ca2+-addition, swiftly followed by IR15/30 (8.5 min) and 30/30 (16.5 min).

All effects were delayed by app. 3.6 min by pyruvate addition in parallel assays also halving recorded swellings. Ca2+-uptake revealed slower rates and greater spans in IR15/30 and IR30/30 (p < 0.005) whereas Ca2+-release was delayed for ischemia an duration ≤30 min (p < 0.0001).

**Discussion/Conclusion:** Longer ischemia duration in IR injury greatly impairs SSMs in terms of respiratory chain function and Ca2+-homeostasis. Membrane hyperpolarization appears to be responsible for impaired Ca2+-cycling and ETC function. Therefore, ischemia time should be considered an important factor influencing IR experiment-derived conclusions.
200 patients. The incidence of MACCEs was similar in both groups (A 5.2% vs. AC 9.7%, p = 0.22). The need for percutaneous coronary re-intervention showed no statistically significant differences (A 3.1% vs. AC 4.9%, p = 0.78).

Discussion/Conclusion: Compared with aspirin monotherapy, the combination of aspirin plus clopidogrel following CABG did not significantly increase graft patency or reduce the incidence of adverse cardiac events.

A128
Is perioperative pro-B-type natriuretic peptide a good tool to evaluate surgical risk in cardiac surgery?
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Background/Introduction: Predicting major adverse events and death in patients undergoing cardiac surgery is based on clinical risk scores such as Euroscore. This score has a moderate power for discriminating morbidity. Natriuretic peptides are well-established biomarkers in numerous clinical settings, prognostic, diagnostic and treatment of cardiac failure. In cardiac surgical patients the role of natriuretic peptides as risk markers is less well delineated.

Aims/Objectives: To assess the utility of natriuretic peptides as risk markers in cardiac surgery.

Method: This study is a prospective longitudinal study of consecutive 135 patients undergoing on-pump cardiac surgery between 2012 and 2013. We evaluated preoperative euroSCORE II, preoperative and 24 h postoperative pro-BNP. The endpoints were: heart failure, renal failure, all-cause mortality at 12 months. Independent sample t-Test were performed.

Results: One hundred thirty-five patients were available for analysis. the mean EuroSCORE II was 2.49%. Fourteen patients (10%) experienced postoperative heart failure and 30 patients (22%) renal failure. Within 12 months after surgery, six patients died. The "t" test showed significant augmentation of preoperative and postoperative pro-BNP in relation to heart and kidney failure.

Discussion/Conclusion: Increased perioperative pro-BNP concentrations are associated with more incidence of postoperative heart failure and renal insufficiency. Elevated preoperative pro-BNP is not correlated with mortality. Postoperative pro-BNP adds little to the value of preoperative pro-BNP measurement alone.

A129
An uncommon onset for tricuspid endocarditis
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Background/Introduction: Tricuspid endocarditis itself is a less common cause of endocarditis. It is rarely seen in non-intravenous drug users, non-central venous catheter, non-pacemaker patients and patients without congenital cardiac disorder.

Aims/Objectives: We describe the case of a young patient with tricuspid valve endocarditis who had an uncommon entry of bacteria.

Method: The patient was referred to surgery because of her clinical course worsened with persistent fever, big vegetations and pulmonary embolism. After meticulous examination of the patient we found a scar under her breast. There she had an abscess two months ago that healed spontaneously.

Results: Surgical indication was for pulmonary embolism and big vegetations. We did cleaning and debridement of the tricuspid valve, and took out three vegetations of approximately one centimeter each. Postoperative course had no incidences and finally she was discharged after completing antibiotic treatment.

Discussion/Conclusion: Most of the cases of tricuspid endocarditis (nearly 80%) are found in intravenous drug users. This case has a very rare entry of bacteria. First, because it started nearly two months ago and second because the skin infection almost had disappeared when the patient was diagnosed of endocarditis. There is no standardized surgical procedure for tricuspid endocarditis. In this case, as regurgitation was mild, we decided not to leave prosthetic material.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A130
Transplantation of an allogeneic bone graft in treatment of post-sternotomy massive bone loss defects
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Background/Introduction: Severe post-sternotomy dehiscence resulting in sternum and ribs losses, represent a surgical issue with mortality risk of 40%. Chest instability causes respiratory insufficiency, obstruction in disconnection from mechanical pulmonary ventilation and other soft tissue healing complications. Extensive bone tissue loss hinders the use of AO osteosynthesis.

Aims/Objectives: Basing on orthopedic experience in bone defects replacement, we developed a technique of chest wall reconstruction using an allogeneic bone graft.

Method: In the period 2011-2014, we performed allogeneic bone graft transplantation in 10 patients with extensive post-sternotomy defect of the chest wall. In 9 cases we used sternal graft, while in 1 case calva bone graft was used. Prior to the transplant, each patient underwent vacuum assisted closure treatment of the wound and general antibiotic therapy. Thorax and the graft stabilization was performed using transversal titanium plates with bicortical screws. In accordance with valid legislation, bone allograft was prepared by tissue centre. Powdered allogeneic spongy bone was used to enhance contact of graft and edges of sternal bone. In 9 cases the closure of soft tissues was performed using direct suture of mobilized pectoral flaps, while in 1 case V-Y transposition of pectoral flap was applied.

Results: In 6 cases (60%) the reconstructed chest wall was successfully healed without further complications. In 3 cases (30%) additional resuture of soft tissues and skin in the wound lower part was performed during hospitalization. Nevertheless, a high stability of the chest wall with respiratory insufficiency improvement and a very good final cosmetic effect of the wound was achieved in these cases. Healing wasn’t sufficient in 1 case (10%). Average length of the follow-up process of all the patients was 14.1 months (1-36). In four cooperating patients a scintigraphy examination of the chest wall was performed and it proved high healing activity of the graft and spongy bone.

Discussion/Conclusion: Based on our existing experience, the transplantation of allogeneic bone graft seems to represent a promising method of management of severe sternal dehiscence. The procedure is easy to apply, with favourable functional and cosmetic effect.

A131
The effect of local application of tranexamic acid to reduce blood loss after off pump coronary artery bypass grafting (CABG)
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Background/Introduction: After off-pump CABG surgery, bleeding and requirement of blood transfusion are the most common problems. Systemic use of antifibrinolytic reduces the postoperative blood loss.
We have evaluated the effect of the topical use of tranexamic acid in the peri cardiac cavity on postoperative bleeding following open heart surgery. 

**Aims/Objectives:** To evaluate the effect of local application of tranexamic acid to reduce blood loss after off pump coronary artery bypass grafting (CABG).

**Method:** Total 150 patients were enrolled in this double-blind, randomized, placebo-controlled, prospective clinical trial scheduled for primary isolated off pump coronary artery bypass grafting, divided in 2 groups (each group consisting of 100 patients). Patients with coagulopathies, renal failure, re-do surgery, or recent anti-platelet treatment were excluded. Tranexamic acid (TA) group (75 patients) received 1 gram of TA diluted in 100 ml normal saline. Placebo group (75 patients) received 100 ml of normal saline only. The solution was purred in the pericardial and mediastinal cavities before sternal closure. Postoperative blood loss, need for transfusion of blood products and the rate of re-sternotomy for bleeding were documented. 

**Results:** Both groups were comparable in their baseline demographic and surgical characteristics. In comparison with the placebo group, the patients receiving tranexamic acid had a significantly less chest tube drainage During the first 24 hours post-operatively up. In the tranexamic acid group (366 ± 158 mL) compared to the placebo group (580 ± 265 mL, p < 0.0001). There were no differences in mortality, morbidity between the 2 groups. Major blood transfusions were administered to Placebo group patients (4.8 ± 1.61 units) as compared to Group I patients (2.46 ± 1.2 units, p < 0.0001). Re-exploration for excessive surgical bleeding in two patient in TA group, no difference was found in morbidity or mortality between both groups.

**Discussion/Conclusion:** Topical application of tranexamic acid in patients undergoing primary coronary artery bypass grafting led to a significant reduction in postoperative mediastinal bleeding and requirement blood transfusion without adding extra risk to the patient.

**A133**

Giant chondrosarcoma of rib: surgical resection and reconstruction with titanium bar, polypropylene mesh, and muscle advancement flap

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)**

**Background/Introduction:** Primary malignant tumours of the chest wall are rare. Chondrosarcoma is the most common malignancy of the sternum. Chondrosarcoma derived from rib is rare. Wide resection treatment is important because it is resistant to chemotherapy and radiotherapy.

**Aims/Objectives:** We report a case of giant chondrosarcoma arising on the 6th rib of a 76-year-old man which is growing slowly for 20 years and is treated with chest wall resection and different reconstruction way.

**Method:** Examination of 76-year-old male patient with anemia revealed a giant mass at anterior side of the right hemithorax. The mass with the story of slowly growing for 20 years which causing pain in the last 15 days revealed no involvement in bone scintigraphy. His chest CT showed erosion and destruction of 6.11 and 11 × 7.8 cm mass with millimetric calcifications and intermediate indistinct borders of the pectoral muscles. True-cut biopsy revealed findings consistent with chondrosarcoma.

**Results:** Tumor was resected together with the left 5th, 6th, and 7th ribs, titanium bars, titanium clips were applied into the area of the ribs; pectoralis major and rectus abdominis advancement flap were replaced under the bar, than polypropylene mesh was placed over the bars and the muscular reconstruction was completed with closing of skin. Patient was discharged on the 6th day, after uneventful postoperative follow-up. The pathologic report revealed low grade chondrosarcoma. He had no complaint of the chest at his 5th month outpatient control.

**Discussion/Conclusion:** For chondrosarcoma with wide resection in the treatment 97% 5-year survival is reported. Reconstruction with Titanium bar, polypropylene mesh, and chest wall muscle advancement flap has excellent stability, flexibility, and rigidity and permits a rapid return to baseline pulmonary mechanics.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

**A134**

Acute Lung Injury- ARDS in H1N1: Timing of Therapy

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**Background/Introduction:** In some viral or bacterial infections, a minority of patients developed rapidly progressive pneumonia leading to acute lung injury (ALI)-acute respiratory distress syndrome (ARDS).

**Aims/Objectives:** We reported two case of acute lung injury and their treatments.

**Method:** 34 year old male patient with severe acute respiratory failure was admitted to ICU. The patient was hospitalised with progressively worsened fever, coughing and dyspnoea lasting for one week. Severe pneumonia was first considered and antibiotics were started (levofloxacin, vancomycin) empirically and O2 was given through nasal canula. The clinical progressed to severe dyspnea in hours and after short Non-invasive ventilatory (NIV) support patient was entubated and accepted to ICU with severe ARDS. Oseltamivir 75 mg × 2 and Pulso steroid therapy (1 mg/day) was added to antibiotics and patient mechanically ventilated. With no reply to the therapy the patient was scheduled to ECMO therapy and transferred to different ICU center where the same medical therapy continued under ECMO support. After a few weeks therapy patient clinics improved. The second case was 33 female patient with same clinic. After symptoms of fever, coughing for a week she was accepted to our ICU with ALI-ARDS. The therapy of oseltamivir, vancomycin, levofloxacin, puls steroid (1 gr/day) and NIV was started. In a few days the patient’s clinic improved. The culture results showed H1N1 infection.

**Results:** Initial therapy of oseltamivir, pulse steroid therapy and NIV support results as suitable therapy for H1N1 induced ALI-ARDS. ECMO support is vital therapy in severe cases.

**Discussion/Conclusion:** Suspicion of viral infections and timing of current therapy in H1N1 induced ALI-ARDS is a challenge for treatment.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

**A135**

Depth of Anaesthesia Associated with 2.5% Isoflurane During Cardiopulmonary Bypass

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**Background/Introduction:** Since its inception, and to this day, measurement of the depth anaesthesia during cardiopulmonary bypass (CPB) has been challenged. Bispectral index (BIS) is commonly used but remains controversial. One pragmatic approach to anaesthesia is to administer 2.5% isoflurane into the sweep gas supply to the oxygenator and allow neuromuscular blockade to fade so that patient movement indicates an insufficient depth of anaesthesia.

**Aims/Objectives:** BIS was used to assess the depth of anaesthesia produced when 2.5% isoflurane was administered via the oxygenator during CPB. The aim was to discover whether this dose produced a BIS score lower than the recommended range of 40-60 and therefore deemed to be excessive. Secondary aims investigated the effects of age, patient temperature and oxygenator exhaust gas isoflurane concentration on patients BIS score.
Method: 10 patients who were scheduled for on-pump CPB were enrolled into this study and had their BIS score, age, nasopharyngeal temperature and oxygenator exhaust gas isoflurane concentration recorded at three time points chosen to represent cooling, stable hypothermia and rewarming.

Results: The mean BIS scores was excessively low at 16 (95% CI 8 - 23), with all patients recording a mean score below the target range of 40-60. Multiple regression found a significant positive association between the temperature and BIS score (beta = 0.678, p = 0.05). No significant association with concentration of isoflurane being exhausted from the oxygenator during CPB, and temperature was found.

Discussion/Conclusion: Administration of 2.5% isoflurane during CPB was associated with an excessive depth of anaesthesia as measured by BIS. However, the clinical importance of this finding is limited by two factors. The strong influence of body temperature on BIS and the lack of association with oxygenator exhaust concentration of isoflurane as an alternative estimate of depth of anaesthesia. If BIS is used during heart surgery then it should be interpreted with caution during hypothermic CPB.
Concomitant ablation for atrial fibrillation during septal myectomy in patients with hypertrophic obstructive cardiomyopathy

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Background/Introduction: Atrial fibrillation (AF) is the most common tachyarrhythmia in patients with hypertrophic obstructive cardiomyopathy (HOCM). AF emergence associated with significant clinical deterioration in patients with HOCM, that’s why maintenance of sinus rhythm is desirable. The most papers are reported results about catheter AF ablation but only paper including date about concomitant AF ablation during septal myectomy.

Aims/Objectives: Aim of the study was evaluation efficacy of concomitant AF ablation during septal myectomy in patients with HOCM.

Method: Between 2010 and 2013, 187 patients underwent of extended myectomy procedures. In 45 cases was performed concomitant AF ablation. AF was paroxysmal in 26 (58%), persistent in 19 (42%). Mean age was 52.8 ± 14.2 years (range 22 to 74 years). A primary HOCM was the main indication for surgery according to 2011 ACCF/AHA guidelines. Mean peak gradient was 90.7 ± 24.2 mm Hg, thickness of interventricular septum was 26.1 ± 4.3 mm. Mean AF duration was 17 ± 8 months.

Results: There were no early death. No procedure-related complications occurred with regard to ablation procedure. Complete atrioventricular block was in 2 (4.0%) cases with dual-chamber pacemaker implantation. Mean time cross clamping was 61.7 ± 26.2 min. Peak LVoT gradient was 14.6 ± 5.5 mmHg. Ablation technique was maze IV procedure for all patients (RF ablation with bipolar clamp + cryo lesion for mitral and tricuspid lines). Because of atrial wall thickness (5-6 mm) applications performed 8-10 times at the same line. There were no pacemaker implantation due to sinus node dysfunction. All patients were discharged in stable sinus rhythm. Mean follow-up was 24 ± 7 months. AF freedom at 6 months was 100% (45 pts), at 1 year was 93.3% (42 pts) and at 21 months was 82.3% (37 pts).

Discussion/Conclusion: Concomitant ablation for AF during septal myectomy in patients with HOCM safe and effective procedure, and should be considered carefully in these kind patients.

Self-expandable stented valve with glutaraldehyde-fixed cardiac xenograft treated by novel anticalcification protocols including immunologic modification for perventricular pulmonic valve implantation

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Background/Introduction: The conventional glutaraldehyde (GA) fixation for cardiac xenograft causes dystrophic calcification, and there is also a significant immune reaction to the galactose-α-1,3 galactose β-1,4-N-acetylgalucosamine (α-Gal), leading to calcification. So, future investigation should be redirected in the quest for the αGal-free long-lasting substitutes.

Aims/Objectives: We made the αGal-free long-lasting stented valve which is comprised of self-expanding nitinol frame containing GA-fixed xenografts treated by our novel combined anticalcification protocol. The safety and efficacy of our stented valve were evaluated using large-animal in vivo perventricular pulmonic circulatory models.

Method: Porcine cardiac xenografts were treated by decellularization, immunologic modification with alpha-galactosidase, space filler, GA fixation in organic solvent, and detoxification. The nitinol (Nikel-Titanium, shape memory alloy) frame is comprised of a braided wire that reverts to its original shape and locks the valve into position as deployed. We manufactured the stented valve with the porcine cardiac xenografts mounted on a nitinol frame. The stented valves were implanted in ovine pulmonary valve position via perventricular approach, and durability was evaluated for 18 months after implantation.

Results: To 18 months after perventricular pulmonic valve implantation, evaluation of echocardiography and cardiac catheterization demonstrated good hemodynamic status and function of pulmonary valve, and good endothelialization resulted in no paravalvular leakage. Durability of the porcine cardiac xenografts was well preserved without calcification.

Discussion/Conclusion: We demonstrated the safety and efficacy of the αGal-free long-lasting stented valve with our synergistic and simultaneous employment of multiple anticalcification therapies including immunologic modification with alpha-galactosidase. The future clinical study is warranted based on these promising preclinical results using large-animal in vivo perventricular pulmonic circulatory models.
Background/Introduction: Oral anticoagulation with a vitamin K antagonist (usually warfarin) is recommended for lifelong management post mechanical valve insertion. Effects of warfarin are highly variable and dosing outcomes are usually seen after three or four days. This audit was conducted in line with recommendations from patient safety alert 18 to review current practice of warfarin prescribing.

Aims/Objectives: To assess warfarin initiation in patients post mechanical valve insertion at the Heart Hospital.

Objectives: • 100% of patients to have a baseline international normalised ratio (INR).
• 100% of patients to have INRs on days 3, 4 and 7 (if appropriate).
• 100% of patients to have dose adjusted on day 4 according to Trust guidelines.
• 100% of patients to have consistent dosing on days 1, 2 and 3.
• 100% of patients on warfarin prior to admission would have warfarin restarted at the same dose.
• 0% of patients to have an INR > 3.5.

Method: This audit was conducted at The Heart Hospital and data collected retrospectively between November 2013 and August 2014. Patient notes, drug charts, electronic CDR and ICIP systems were used to collect inpatient doses, INRs and indications for warfarin. Pre-operative use of warfarin, and dosing, was also determined.

Results: There were 97 patients identified who had cardiac surgery which included at least one mechanical valve, of which a significant proportion were on warfarin prior to admission (22%, n = 21).

Results: 1. Baseline INR - 100% (97/97).
2. INR Day 2 - 82% (80/97).
3. INR Day 3 - 91% (87/96).
4. INR Day 4 - 87% (79/91).
5. INR Day 7 - 97% (34/35).
6. Consistency of first 3 doses - 30% (29/97).
7. INR > 3.5 - 12% (12/97), > 4 - 6% (6/97).

Discussion/Conclusion: The effect of warfarin is highly variable and exhibits much inter-patient variability which requires an individually tailored dosing regime when initiating warfarin. This audit suggests that warfarin prescribing is unpredictable following mechanical valve insertion and has led to clinically significant INR excursions of >4.0 in 6% of patients, which in turn suggests that improvements in prescribing could be made.

A148 Improvement of Mitral Regurgitation after Transapical Transcatheter Aortic Valve Bioprosthesis Implantation
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Background/Introduction: Implantation of transcatheter aortic bioprosthesis has become a procedure with increasingly relevance in medical practice for the treatment of aortic stenosis, especially in patients with high or prohibitive surgical risk for traditional surgery. The presence of mitral regurgitation (MR) may be associated with increased morbidity and mortality, however, some studies have shown reduction in the degree of regurgitation of this valve after treatment of the aortic valve.

Aims/Objectives: To evaluate MR evolution in three patients with moderate to severe MR, and who underwent transcatheter implantation of aortic bioprosthesis trough transapical approach due to severe aortic stenosis.

Method: Data were collected from medical records and databases. Of the 22 patients undergoing transcatheter implantation of aortic bioprosthesis trough transapical approach, due to severe aortic stenosis, in our service from May 2012 to May 2015, four were presenting with MR of moderate to severe before surgery. In one of these cases, we had no access to the postoperative echocardiogram. Regarding the group of three patients, two were females, mean age was 80.33 ± 7.63 years, Euroscore II average of 11.25 ± 3.1, STS-average score of 15.06 ± 9.26.

Results: None of the three patients had complications in the procedure or during the immediate postoperative period, finding themselves alive, and in ambulatorial follow-up, with an average follow-up time of 19.33 ± 14.84 months. Echocardiography before hospital discharge, and outpatient follow-up showed aortic valve prostheses normal functioning, medium transprosthetic gradient less than 10 mmHg, and mild mitral insufficiency. Only one patient (33%) showed discreet paravalvular reflux.

Discussion/Conclusion: In this study, patients undergoing transcatheter implantation of aortic bioprosthesis trough transapical approach, due to severe aortic stenosis, which had preoperative moderate or severe MR, demonstrated good outcome in the postoperative period and in ambulatorial follow-up, as well as significant reduction in mitral valve regurgitation.

A149 Correlation analysis of dermal collagen and elastic fibre content between two directions of skin samples taken from chest area and its surgical implications
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A149

Background/Introduction: Unequal distribution of dermal collagen and elastic fibers in different orientations is reported to be one of the multi focal causes of scar related complications.

Aims/Objectives: To study the correlation pattern between the variables of dermal collagen in horizontal (CH) and in vertical (CV) directions as well as that of dermal elastic fibers in horizontal (EH) and vertical (EV) directions.

Method: Current research comprised of histo-morphometrical study of 120 skin samples collected in horizontal and vertical orientations from anterior chest area and lateral chest areas of formalin embalmed human cadavers (n = 30). The quantitative fraction of dermal collagen and elastic fiber content was obtained by tissue-quant image analysis. Spearman correlation coefficient (r) was computed to determine the linear association between the variables (CH/CV/EH/EV). The results were interpreted according to the degree of association taking into consideration the significant correlation (p < 0.01 or p < 0.05) with respect to coefficient (r) values.

Results: Significant positive correlation between CH and CV and between EH and EV were observed in both anterior (r = 0.56; r = .62) and lateral chest areas (r = .55; r = .43). However, the negative correlations were observed between CH and EH for anterior chest area (r = -.55) and between CV and EV at lateral chest area (r = -.43).

Discussion/Conclusion: Positive correlation among dermal collagen and elastic fibers between horizontal and vertical directions, and their negative correlation within same direction could be one of the factors for the speckled behavior of scar related complications in the chest area.

A150 Long-Term Outcomes of External Repair as a Rescue Operation for Atrioventricular Groove Disruption following Mitral Valve Surgery
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Background/Introduction: Atrioventricular (AV) groove disruption is a lethal complication of mitral surgery. Traditional teaching mandates that an “internal” repair be performed requiring prosthesis exploitation, complete atrioventricular groove reconstruction utilizing a patch positioned from within the cardiac cavity, and subsequent prosthesis re-implantation. This is a massive undertaking and yields uniformly poor results.

Aims/Objectives: We examine the utility of an alternative, “external” approach for rescue of atrioventricular groove disruption.

Method: The study was conducted as a retrospective review of a multi-surgeon, multi-institutional experience inclusive of all patients suffering disruption of the atrioventricular groove following mitral surgery. All patients experiencing this complication (consecutively and exclusively) underwent “external” repair as a rescue procedure. The external repair
technique was conducted on cardiopulmonary bypass support using direct (felt pledget/strip reinforced) suturing of the AV groove. This was supplemented as needed with applications of BioGlue, external bovine patch, left atrial patch suture technique, and coronary bypass of the circumflex system.

Results: Over a span of 20 years, 3071 mitral valve surgeries resulted in 114: 5-FU+thymalin/taktivin (0.42%). Average patient age was significantly higher in MPP-positive patients (57.4 ± 8.7 vs. 52.8 ± 13.2, P = 0.030). Animals were sacrificed on average at 2 months after surgery. We analyzed data of 491 consecutive ECP (age = 56.2 ± 8.8 years; sex: 1, 10(Suppl 1): 195 (%)) and demonstrated that MPP, lymphatic and vascular invasion were more frequent in the MPP-positive group (3.02 ± 2.34 vs. 2.19 ± 2.45, P = 0.029, respectively). In addition, lymphatic and vascular invasion as well as lymph node metastasis were more frequent in the MPP-positive, than negative group (P = 0.003, P = 0.009, and P = 0.002, respectively). Five-year recurrence free survival (RFS) rates were significantly lower in the MPP-positive, than negative group (69.7% vs. 89.3%, P < 0.001). Multivariate analysis for RFS showed that MPP, lymphatic and vascular invasion were independent poor prognostic factors (P = 0.006, P = 0.003, P = 0.002, respectively).

Discussion/Conclusion: The presence (≥5%) of MPP in early stage lung adenocarcinoma should be considered a distinct subtype with a high risk of recurrence and a poor prognosis. In addition, preoperative PET/CT was useful for predicting whether tumours harboured MPP or not.

Results: Forty eight (14%) and 299 (86%) patients were MPP-positive and negative, respectively. There were no significant differences between both groups in age (P = 0.369), gender (P = 0.059), or tumour size (P = 0.437). However, SUVmax on PET/CT were significantly higher in MPP-positive, than negative group (3.02 ± 3.24 vs. 2.19 ± 2.45, P = 0.029, respectively). In addition, lymphatic and vascular invasion as well as lymph node metastasis was more frequent in the MPP-positive, than negative group (P = 0.003, P = 0.029, and P = 0.002, respectively). Five-year recurrence free survival (RFS) rates were significantly lower in the MPP-positive, than negative group (69.7% vs. 89.3%, P < 0.001). Multivariate analysis for RFS showed that MPP, lymphatic and vascular invasion were independent poor prognostic factors (P = 0.006, P = 0.003, P = 0.002, respectively).

Discussion/Conclusion: The presence (≥5%) of MPP in early stage lung adenocarcinoma should be considered a distinct subtype with a high risk of recurrence and a poor prognosis. In addition, preoperative PET/CT was useful for predicting whether tumours harboured MPP or not.
Discussion/Conclusion: SYS of ECP after radical procedures significantly depended on: 1) PT “early-invasive cancer”; 2) PT N0–N1; 3) CRF; 4) blood cell circuit; 5) biochemical factors; 6) hemostasis system; 7) adjuvant chemotherapy; 8) tumor localization.

A154
Aneurysm of left ventricle at non-atherosclerotic lesion of coronary arteries
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Background/Introduction: Aneurysm of left ventricle (ALV) is formed in each 5th patient with acute myocardial infarction in the presence of complete occlusion of the coronary artery (CA) by atherosclerotic plaque. But we noticed the formation of ALV in the absence of atherosclerotic stenosis, for patients with myocardial “bridges” (MB). The essence of this anomaly is the presence of systolic compression of the tunneled segment of the artery, which in itself raises doubts about its clinical significance. Due to the attitude of the medical community toward the MB, as a result of its ambiguous nature, and given the favorable long term trend, the MB is regarded as a variant of the norm. At the same time, increasing reports of cases of sudden death and myocardial infarction associated with the presence of MB demonstrates the relevance of this anomaly.

Aims/Objectives: To show possibility of formation of postinfarction aneurism of left ventricle (LV) in the absence of atherosclerotic plaques in CA.

Method: 12 patients in average age 35±5 years with transmural MI in anamnesis underwent standard examination (ECG, ECHO and angiography) and surgical treatment.

Results: All patients had ECG-signs of aneurism of anterior-septal and apical area of LV, which was confirmed by ECHO study, where we notice reduction of ejection fraction less 45% (from 35 till 45%). On the coronary angiography we found myocardial “bridge” (MB) over middle portion of LAD with systolic compression from 30% to 100% and aneurism of the apex of LV. We performed CABG with resection of an aneurism of LV with thrombectomy (in 7 cases) on-pump with good remote results after procedure.

Discussion/Conclusion: Transient systolic compression of the LAD by MB can lead to myocardial infarction with the formation of ALV even in the absence of atherosclerotic lesions of CA.

A155
The biggest experience in treatment of symptomatic patients with myocardial “bridges”
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Background/Introduction: The anomaly of location of the coronary arteries (CA) is one of the lesser known areas in the development of ischemic heart disease. Literature reports about myocardial “bridge” (MB) have usually been based on single cases and there are no algorithms of treatment patients with this anomaly. We have the largest database of the patients with MB.

Aims/Objectives: To show our experience in treatment of symptomatic patients with MB.

Method: During 9 years we observed 311 patients with symptomatic MB, which were diagnosed during coronary angiography. Average age of patients was 46 years. The following clinical studies have been done for all patients: ECG, echocardiography and coronary angiography.

Results: Mostly (96.1%) MB was settled down at the LAD. The average systolic compression was 60%. We use individual approach in treatment, which is based on the compression level for tunneled part of the CA, the presence of atherosclerotic plaque, accompanying heart pathology. 254 (81.7%) patients received medication. To standard medical therapy with B-blockers, Ca channels blockers and antiaggregants we added anxiolytics. 96.06% of patients showed a significant improvement of being. Drug-eluting stents implantation of the tunneled artery was carried out for 22 patients (7.07%), for 4 (18.1%) patients in stent restenosis appeared. 35 (11.2%) patients had surgical correction, among them 15 CA bypass grafting (CABG); 1 - supracoronary myotomy; epicardiotomy with denervation of tunneled segment of CA had been performed for 5 patients; 2 patients with hypertrophic cardiomyopathy had undergone Morrow operation. For 12 patients with postinfarction aneurism of left ventricle we performed a CABG with resection of an aneurism of left ventricle with thrombectomy in 7 cases.

Discussion/Conclusion: Individual approach in treating patients with MB helps to avoid life-threatening events and to improve the quality of life for patients with this anomaly. Despite the safety of endovascular procedure, indications for this minimally invasive treatment should only be performed in cases of patients who are resistant to drug therapy and have an unextended (<15 mm) tunneled segment of CA.

A156
Personalized reconstruction of large chest wall defect with rapid prototype prosthetic rib: early result and long-term patient outcomes in three cases
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Background/Introduction: The innovation from merging computed tomography (CT) measurement data to rapid prototyping, that now allow the production of solid copies of the patient’s bones, has presented thoracic surgeons with new opportunities in large chest wall reconstruction. Since 2010, our department applied this technique to prepare rapid prototype prosthetic ribs (RPPRs) which were customized for each patient.

Aims/Objectives: We pioneered a personalized chest wall reconstruction with RPPRs in three patients. We then evaluated patient early and long-term outcomes.

Method: From June 2010 to December 2014, a retrospective review of three patients who underwent resection of the large chest wall tumors and reconstruction with RPPRs was performed. Periodic CT measurements geometric patients’ chest contour were used to study.

Results: Patients, 1 female and 2 males, ranged in age from 48 to 68 years (mean 58 years). All patients underwent resection of the large chest wall tumor. Resection area was extended in anterolateral chest wall (n = 1), and anterior to posterior chest wall (n = 2). Number of resected ribs in each patient was 3, 4 and 5 ribs, respectively. The largest diameter of defects ranged from 15 to 24 centimeters. RPPRs were implanted and muscle flap coverage were used in all cases. No hospital mortality occurred. No patients developed infection of prosthesis. Patient follow-up ranged 12 to 48 months. No paradoxical movements or prosthesis displacement, and no relevant restriction of daily activity occurred in any patients. Geometric chest contour was stable at 6, 12, 24 and 48 months after surgery.

Discussion/Conclusion: This promising technique results in good patient outcome with functional and stable geometric results. Materials and surgical costs were reasonable, and the rapid prototyping is widely available worldwide. Furthermore, with the 3D model, the thoracic surgeon is able to visualize the surgery accurately beforehand and perform surgery more efficiency.
Impact of ethnicity on outcome following heart surgery in patients with concomitant valve disease and aneurysmectomy of the left coronary artery and blood products transfusion. From July 2013 up to September 2014, four high-risk patients underwent cardiac surgery at our unit between Sep 2005 and Dec 2013 were included in the study (n = 855). This group was matched 1:2 with Caucasian patients (n = 1710).

Results: Pre-operative characteristics confirmed that patients of Asian ethnicity were more likely to be younger (Mean Age 61.7 ± 11.3 years, p = 0.006), females (23% v/s 19%, p = 0.03) with lower BMI (27 v/s 29, p < 0.01) as compared to Caucasian population. Asian ethnicity was strongly associated with higher prevalence of diabetes (51% v/s 22%, p = 0.01), non-smokers (69% v/s 30%, p < 0.01) and need for urgent surgery (42% v/s 29%, p < 0.01). Post-operatively patients with Asian Ethnicity had a higher re-exploration rate (7.4% v/s 5.4%, p < 0.04), higher rate of readmission to ITU (2.9% v/s 2.6%, p = 0.04), a greater need for blood and blood products transfusion requirement (Blood Units 1.23 v/s 0.76, p < 0.01) and was also associated with a higher in-hospital mortality (2.8% v/s 1.5%, p = 0.02). Caucasians had a significantly higher prevalence of post op AF (26% v/s 17%, p < 0.01) but shorter ITU (median 1.0 (0.90) days v/s 1.5 (0.183) days, p < 0.01) and in-hospital stay (median 5 (1.184) days v/s 6 (3.183), p < 0.01).

Discussion/Conclusion: Asian ethnicity has an adverse impact on outcome following cardiac surgery, in a matched population. If confirmed in large randomised studies, ethnicity should be made part of future risk stratification models.

A160
Use of impella for off pump myocardial revascularization in high risk patients
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Background/Introduction: Patients undergoing coronary surgery are changed in the last years becoming a challenge for the cardiac surgeon not only for the quality of the coronary artery involved in the disease but also for the quality of patients. Low ejection fraction, elderly, COPD, kidney failure, Diabetes are often found in patients with coronary artery disease undergoing CABG.

Aims/Objectives: Beating heart myocardial revascularization is a well-established surgical technique but in case of very low EF (below 30%) there is a particular high surgical risk of conversion to on-pump surgery. The recently developed of impella device (Abiomed, Danvers, MA) represent a compromise between circulatory support and limited invasiveness.

Method: Three patients, male, admitted for acute coronary syndrome with three vessels CAD and low ejection fraction below 30%, were operated in our department. After preliminary lower limb duplex ultrasound to exclude peripheral artery disease, an Impella Recover LP 5.0 device was inserted via surgical exposure of the right femoral artery in two cases and a percutaneous puncture of the femoral artery in one case. The Impella device was inserted into the right atrium through the right common femoral vein and the left ventricle.

Results: The myocardial revascularization was performed using a complete arterial revascularization: Left internal mammary artery on the LAD and the radial artery "T" anastomosed from the LIMA to the other vessels (diagonal, intermedus ramus, OM and PDA). The device was left in for 48 Hours in the operation. All patients were discharged home after 9-10 days after admission and a follow up echocardiography performed six month after the operation showed an increase of the ejection fraction up to 40-45%.

Discussion/Conclusion: Use of the Impella Recover device for patients undergoing off pump CABG is feasible and safe, and appears a promising strategy to improve short- and long-term outcomes.

A161
Combined valve and myocardial revascularization on a beating heart in high risk patients
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Background/Introduction: The management of complex high risk patients (pts) is always a challenge for the cardiac surgeon.

Aims/Objectives: This paper describe our experience using an alternative surgical option in the treatment of concomitant valve disease and myocardial revascularization (CABG) in high risk patient with Ejection Fraction (EF) below 30%.

Method: From July 2013 up to September 2014 four high risk patients with low EF below 30%, concomitant mitral valve disease (3 pts), ventricular aneurism (1 pt), and severe coronary artery disease were operated using on pump beating heart technique. All pts were first connected to the IABP through the femoral artery and then put on CPB machine with a double venous cannula in the superior and inferior vena cava, aortic cannula, ventricular vent through the right superior pulmonary vein and cannula for the retrograde perfusion in the coronary sinus. At first was completed the myocardial revascularization with beating heart on pump, using the IMA on the LAD in all patients and a segment of the saphenous vein or radial artery as a T graft from the left internal mammary artery (LIMA) for the lateral or posterior wall. Then the aorta was cross-clamped, leaving the heart beating while the coronary were perfused through the retrograde perfusion and through the composite grafts. The procedure was completed harvesting a mitral ring in three cases and in one case with an aneurismectomy of the left ventricle.

Results: All patients were discharged 8 to 11 day after the operation, with an improved EF: Pt 1 EF pre op: 28%; post op EF 35%; Pt 2 EF pre op 30%; post EF 40%; Pt 3 EF pre op 38%; post EF 45%; Pt 4 pre EF 30%; post EF 40%.

Discussion/Conclusion: Even if the study involve just a little number of patients, the technique can improve the post op ejection fraction without changing the in hospital stay. It can be proposed for patients with a low EF in which there is a disease associated with CAD or in patient that have had a previous CABG with an heart disease different than a CAD.

A162
Prevalence, Treatment Eligibility and Postoperative Survival for Europeans with Aortic Stenosis
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Background/Introduction: Aortic Stenosis (AS) is the most frequent valvular pathology in the developed world. Whilst much is known about its pathogenesis and treatment, a paucity of data exists on the prevalence and number of patients eligible for valve replacement.

Aims/Objectives: To quantify prevalence, treatment eligibility and postoperative survival in patients with AS.

Method: A systematic search was conducted across PubMed and EMBASE for studies evaluating prevalence, severity, decision-making and survival in AS patients. Studies were selected using a priori defined criteria reviewed by two independent investigators. Prevalence rates [95%CI] were calculated and pooled using fixed and random-effects models (statistical heterogeneity evaluated via Q2 and I2). Subsequently, Monte Carlo methods with beta distributions and 2012 population data were utilised to assess eligibility per treatment option (using ESC indications).
A163

Evaluation of 17β-estradiol effects in mesenteric injury induced by occlusion of proximal descending aorta in male rats
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Background/Introduction: Acute mesenteric ischemia is a life-threatening emergency with overall mortality ranging from 60% to 80%, and this survival rate has not improved substantially in recent decades. In surgical aortic reconstruction, occlusion of the aorta affects various organs through the ischemia reperfusion injury. Among these organs, the intestine is probably the most affected one. Several studies have proposed that oestradiol has a beneficial effect in the course of the inflammatory lesion.

Aims/Objectives: This study aims to investigate the role of 17β-estradiol on mesenteric microcirculation after the occlusion of the descending aorta in male rats.

Method: Male Wistar rats underwent mesenteric ischaemia by placing a Fogarty catheter in the aorta, that remained occluded during 15 minutes, followed by reperfusion up to 2 hours. Rats were divided into four groups: (1) rats that underwent surgical manipulation only (SHAM, n = 9); (2) rats submitted to ischaemia-reperfusion injury (I/R, n = 11); (3) rats treated with 17β-estradiol (E2, 280 µg/kg, iv) 30 minutes before I/R (pre-E2 I/R, n = 16); (4) rats treated with 17β-estradiol (E2, 280 µg/kg, iv) 30 minutes after the ischaemia induction (post-E2 I/R, n = 16). Mesenteric perfusion was measured by intravital microscopy. Expression of eNOS was evaluated by immunohistochemistry and RT-PCR.

Results: There was 40% decrease in the number of perfused small vessels (<30 µm diameter) in the group I/R compared to SHAM (p = 0.0386) associated with a reduction on endothelial nitric oxide synthase (eNOS) expression (p = 0.0126). The pre-E2 I/R treatment improved mesenteric perfusion (p = 0.0540) and eNOS expression (p < 0.0001) to levels attained in SHAM rats. The post-E2 I/R treatment normalised eNOS expression to reference levels. There were no differences in eNOS gene expression amongst groups.

Discussion/Conclusion: Data presented suggest that either pre-treatment or post-treatment with 17β-estradiol enhances expression of eNOS on endothelial microvessels, improving mesenteric perfusion. 17β-estradiol treatment may be considered as an alternative to prevent major organs injury induced by aortic surgical procedures. Financial Support: 2013/02563-2 FAPESP.

A164

Comparison of the left ventricular apex versus other arterial cannulation sites for the operative management of acute type A aortic dissection
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A164

Background/Introduction: The selection of the arterial inflow site for cardiopulmonary bypass in patients with acute aortic dissection remains a very important issue. Several arterial cannulation sites, including left ventricular apex, were popularized over the years.

Aims/Objectives: The aim of the study was to analyse the influence of transapical cannulation on the outcomes of surgical treatment of type A aortic dissection.

Method: Between January 2010 and January 2015, emergent surgical aortic repair was performed in 158 consecutive patient with acute type A aortic dissection. In all patients open distal anastomosis was performed using deep hypothermic circulatory arrest. Patients were divided into two groups: transapical cannulation group and other cannulation sites group (including femoral and axillary artery cannulation). Operative variables and inhospital outcomes were compared between groups.

Results: The most frequent cannulation site was the transapical cannulation (103 patients, 65.2%). The other sites cannulation group (55 patients, 34.8%) included 33 patients with femoral and 22 patients with axillary artery cannulation. The mortality rate for the entire cohort was 17.7%. The mortality rate in the transapical group was 17.5% and 18.2% when other arterial cannulation sites were performed (p = 0.91). There was no difference in major inhospital outcomes between groups: postoperative stroke rate was 7.8% in transapical group and 9.1% in other cannulation sites group (p = 0.77); myocardial infarction rate was 4.9% vs 5.5% (transapical group vs other cannulation sites group respectively, p = 0.87), and the incidence of postoperative acute renal failure in transapical group was 9.7% vs 11.9% in the other cannulation sites group (p = 0.9).

Discussion/Conclusion: This study suggests that transapical cannulation can be routinely used as a fast and safe method to establish cardiopulmonary bypass in patients with type A aortic dissection. No difference in operative outcomes was found when transapical cannulation was compared to the other cannulation sites.
receiver curve (AUC) generated. The best cut-off point of the scoring model was identified, the likelihood ratio of a positive test result calculated.

**Results:** Logistic regression showed predictors of prolonged intensive care unit stay as; NYHA class 3-4 (OR,1.5; p = 0.0029), FEVI (OR, 0.76; p = 0.0026), emergency operation (OR,8.75; p = 0.0022), age (OR,1.02; p = 0.00007), LVEF<50% (OR,2.21; p = 0.00001), creatinine (OR,1.01; p = 0.000001), bypass time (OR, 1.01; p = 0.000001).

Intensive care unit stay score was determined by logistic probability (AUC=0.76, 95% CI, 0.73:0.76, p = 0.00001) suggesting that a cut-off score of 35 predicts prolonged intensive care stay with a sensitivity of 0.66, specificity of 0.72 and accuracy of 0.70. The likelihood ratio of a positive test was 2.34.

**Discussion/Conclusion:** Preoperative optimisation of the predictors of prolong intensive care stay, could reduce length of stay following cardiac-surgery.

**A166**

**Outline of the principles of management of cardiac tumours**

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A166**

**Background/Introduction:** Primary cardiac tumours are important sources of morbidity and mortality. Most are benign, the malignant types being rapidly fatal.

Their clinical features are often non-specific. They could cause thromboembolic events, cardiac failure, arrhythmias and death. Only few case reports and case series exist on the subject. There is a need to outline a robust management protocol for this important disease. We describe our 20 years' experience of this pathology and outline the management principles.

**Aims/Objectives:** To outline the principles of management of cardiac tumours.

**Method:** Retrospective data analysis on 78 patients who had surgery for cardiac tumours over 20 years period in a single centre, with prospective follow-up. The histological types and correlation of clinical and pathological diagnosis were determined. Data was analysed to determine the sensitivity and specificity of echocardiogram for diagnosis.

**Results:** 78 patients, female (67%) mean age (61) myxoma (78%), malignant (8%), Atrial fibrillation (26%), stroke (23%), NYHA 2-3 (65%). Kaplan Meier curve showed malignant tumour are rapidly fatal within 1 year of diagnosis and myxoma does not significantly affect survival (p = 0.043). Echocardiogram has sensitivity (0.93) and specificity (0.95), accuracy (0.94) for detection of myxoma but very poor for diagnosis of malignant cardiac tumours, p = 0.0001.

**Discussion/Conclusion:** More attention should be given to the management of cardiac tumours especially the malignant type with high fatality. Echocardiogram is not sensitive for malignant tumours. The first principle in treatment of cardiac tumours is prevention and treatment of arrhythmias and cardiac failure. The second principle is prompt exclusion of malignancy by MRI scan (sensitive) and histology. Malignant lesions will require a staging CT scan to assess resect-ability. The fourth principle is frozen section guided complete excision of resectable lesions and oncological advice for malignant disease.

**A169**

**A New Radiological Classification for Massive Pulmonary Embolism (SPECS)**

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A169**

**Background/Introduction:** Massive pulmonary embolism (PE) carries a mortality of 11% however current classifications do not identify those most at risk. Lack of direction prevents effective utilisation of options of treatment. We have undertaken this study to develop a radiological classification of massive PE that shows correlation with clinical outcome.

**Materials/Methods:** The study was conducted using the radiology database to identify all patients who had a CT pulmonary angiogram during the 12 months of 2014. A total of 1923 CTPAs were conducted, of which 210 were reported as large PE. These were examined, those with a segmental PE or poor quality imaging were excluded, leaving 154, 91 (59%) females in the study. The classification assessed location of clot (L) in major pulmonary arteries (scores 1, 2 and 4), the degree of occlusion (o) (score 1,2 and 3) and the impact on the right ventricle (RVR) (scores 1,2 and 3). Interventricular septum morphology (S) was also assessed (scores 1, 2, 3 and 4). Multipliers were used obtain the total score, (L x O x RVR). Maximum score 64. This score was correlated with clinical outcome.

**Results:** Average age of 69 years (range 20-98 years), with 13 deaths, 4 primarily from PE (group A), the remainder from causes other than PE (group B). Group A had a median score of 28.5 (IQR 16.3-33.7) compared with survivors, median score of 6 (IQR 3-15), p = 0.005. 2 patients with scores 14 and 24 respectively died following thrombolysis and interventional
radiology. 1 patient with a score of 33 survived after surgical pulmonary embolectomy.

Discussion: The results from this study demonstrate that the UHNM PE score is able to distinguish those patients with a massive PE that are life-threatening. We suggest the score requires further validation.

Conclusion: The UHNM PE Score, a new radiologic classification of massive PE that may be utilised in evaluating available therapies.

A170
Acute gastric obstruction following cardiopulmonary bypass in a patient with an adjustable gastric band
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A170

Background/Introduction: Obesity is a major problem with the number of obese patients presenting to cardiac surgery is ever increasing. Laparoscopic Adjustable Gastric Banding (LAGB) is one modality commonly used to mechanically reduce food intake and also promotes early satiety. Late complications of the device may occur in up to 20% of cases; increasing up to 30% in pregnancy. We report the first case of a late complication of LAGB after cardiopulmonary bypass.

Aims/Objectives: A 51 year old female with symptomatic, severe mitral valve regurgitation presented for elective mitral surgery. She had a history of atrial fibrillation, and insertion of LAGB two years previously. The patient underwent successful mitral valve repair using a 30 mm Cosgrove ring. Trans-oesophageal echocardiogram showed a competent valve, although transgastric views were avoided to prevent displacement of the gastric band. Post-operative recovery was uneventful and the patient was stepped down to the ward promptly. Diuretics were discontinued when the patient returned to pre-operative weight.

Method: The following day the patient complained of nausea and non-bilious vomiting. Her symptoms persisted despite cessation of opioid analgesia and commencing antiemetics. There were no significant clinical findings. Blood biochemistry and plain x-ray films were unremarkable.

Results: A gastrograffin swallowed showed that contrast failed to pass through the gastro-oesophageal junction. The gastric band balloon was deflated by 0.6 ml. Oral intake was resumed and she was discharged home. There was no residual dysphagia at follow up.

Discussion/Conclusion: The most common causes of postoperative nausea and vomiting are drug-induced emesis, paralytic ileus, obstruction or mesenteric ischaemia. Where patients have been stable with an LAGB in situ for some time, this can make the diagnosis of gastric inflow obstruction challenging. One possible explanation for the acute deterioration of an established LAGB following cardiac surgery is subacute oedema in the stomach wall at the site of the gastric band. Fluid retention and post-operative gut distension. Gastric band obstruction should be considered if such patients develop upper gastrointestinal. An early gastrograffin swallow should be considered.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A171
Comparison of myocardial protection methods in mitral valve surgery: a cohort study
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A171

Background/Introduction: Myocardial protection is the group of strategies aimed at reducing ischemia-reperfusion lesions and its consequences. There is much discussion regarding different methods and their features, while there is no unanimity about which is most appropriate.

Aims/Objectives: We aimed to compare two types of myocardial protection, intermittent global ischemia and cold crystalloid cardioplegia, in patients submitted to mitral valve surgery: preoperative conditions and surgical or clinical outcomes. Furthermore, we aimed to calculate cardioplegia exclusive equipments’ price.

Method: We performed a retrospective cohort study of medical records from patients who underwent mitral valve surgery at Hospital Universitário Ciências Médicas between 2010 and 2014. We compared preoperative conditions (gender, age and Euroscore II) and outcomes: death within 30 days, postoperative intensive care time and hospital stay time, cardiopulmonary bypass and ischemia time, use of pacemaker, use of vasoactive drugs and their time and intubation time. Cardioplegia equipments’ total cost was calculated by indexation through three methods and thereafter the mean of its results.

Results: We found no differences between the two groups’ preoperative conditions. The only difference between outcomes were cardiopulmonary bypass and myocardial ischemia time, in which the intermittent global ischemia group was favored (Bypass: RR 0.19, 95% CI: 0.09 - 0.41; Ischemia: RR 0.20, 95% CI: 0.10 - 0.43). The mean price found for the cardioplegia equipment was R$321.03 (USD 101.12).

Discussion/Conclusion: Intermittent global ischemia presented shorter surgical duration and reduced mitral valve surgery costs, while it didn’t affect mortality or morbidity. More comparative studies including other surgery types and different services are necessary to validate our results.

Table 1 (abstract A172)

<table>
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<td>Death&lt;30 days</td>
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A173
"No touch" technique and hypothermic circulatory arrest for porcelain aorta in combined valve surgery
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A173

Background/Introduction: Cardiac surgery in patients scheduled for combined single or multiple valve and CABG surgery with preoperatively undetected porcelain aorta is challenging. Different surgical strategies may address this problem. Abortion of the initial operation with subsequent interventional therapy and hypothermic circulatory arrest offer clampless treatment options in these patients.

Aims/Objectives: The aim of this retrospective study is to characterize patients with preoperatively undetected porcelain aorta scheduled for combined single or multiple valve and CABG surgery that were treated with hypothermic circulatory arrest during operation addressing the porcelain aorta and to describe the outcome.

Method: From 01/2011 to 04/2015, 19 patients (74.8 ± 7.4 years, 39% female) with preoperatively undetected porcelain aorta and combined single or multiple valve and CABG surgery were observed. 15 patients (79%) present with aortic valve pathology and CAD and 5 patients (26%) with aortic valve pathology and CAD or mitral or tricuspid valve pathologies. In all patients the ascending aorta ± hemiarch was replaced using circulatory arrest. The Euro Score II was 12.7 ± 4.4.

Results: Mean cardiopulmonary bypass, cross clamp and hypothermic circulatory arrest time, respectively, 140 ± 48 minutes, 96 ± 37 minutes and 11.9 ± 3.3 minutes. Bladder and tympanic temperature were, respectively, 27.9 ± 2.3°C and 23.3 ± 2.8°C. The 30 day mortality was 10.5% (n = 2), Stroke occurred in 5.3% (n = 1), renal failure in 15.8% (n = 3), prolonged ventilation was necessary in 21% (n = 4) and 10.5% (n = 2) had to be reoperated for bleeding, mean ICU stay was 4.4 ± 2.4 days. The mean length of hospital stay was 11.5 ± 4.4 days.

Discussion/Conclusion: These preliminary data indicate that hypothermic circulatory arrest with a "no touch" technique is a reasonable and safe and reproducible surgical option in patients with preoperatively undetected porcelain aorta scheduled for combined single or multiple valve and CABG surgery. However, better preoperative diagnosis is necessary to select patients for different treatment strategies, surgery vs. interventional therapy and to conduct larger studies comparing the results of different treatment strategies in these high risk patients.

A174
Outcomes of single institutional experience with Single Cross-Clamp technique
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A174

Background/Introduction: Minimizing cardiac surgery related mortality and furthermore morbidity remains at the center of patient focused care and quality improvement. We present our experience with single cross-clamp technique for following coronary artery bypass graft surgery (CABG) with or without aortic valve replacement (AVR).

Aims/Objectives: We hypothesize that a single cross clamp technique can improve survival whilst reducing associated morbidity.

Method: All clinical data were prospectively collected with the study design and analysis being retrospective in nature. A single surgeon’s procedures were included for the period October 2007 to January 2014.

Results: A total of 87.2% patients were operated on, with 609 (65.54%) being isolated CABG and 103 (14.46%) combined CABG with AVR. Average age in isolated CABG and combined groups were 66 and 73 years respectively. Average additive EuroScores were 3.5 and 7.29. 21.6% cases were performed by trainee or staff grade surgeon.

In hospital mortality was 0.16% in isolated CABG and 0% in CABG with AVR group. Postoperative complications in isolated CABG group included reoperation for bleeding or tamponade (2.13%), renal impairment requiring temporary haemodialysis (0.82%), and respiratory failure requiring reintubation (0.65%). We did not experience any cerebrovascular events. In the combined CABG with AVR group we experienced reoperation for bleeding or tamponade (2.9%), respiratory failure requiring reintubation (1.9%), and cerebrovascular events (1.9%). Kaplan Meier survival at 1, 3, and 5 years was 98.35%, 95.85% and 92.61% (isolated CABG), and 96%, 86.4% and 79.4% (combined CABG with AVR).

Discussion/Conclusion: Our preliminary study has demonstrated outcomes comparable to our nationally reported outcomes for the same time period. Single cross clamp technique for CABG with or without AVR is a safe and reproducible technique.

A175
Can Cardiothoracic Surgeon’s provide a Safe and Effective Thoracic Surgery Service
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Background/Introduction: There is a trend to separate Thoracic surgery from the Cardiothoracic surgical divisions. One of the main persuasive argument is the evidence in support of increased resection rate and effective delivery of thoracic surgical services. In such context we reviewed the outcome of thoracic surgical practice in our region where a cardiothoracic surgeon’s service was standard.

Aims/Objectives: To establish via our limited study that Cardiothoracic Surgeons can provide a safe, effective and result oriented thoracic surgery service.

Method: Patients were prospectively added, retrospectively analysed for the period from April 2005 to April 2014. Data were collected from PATs database, Cyber lab and Lung cancer MDT database. Data were analysed using Student’s t-test, Excel and Kaplan-Meier statistical analysis software.

Results: A total of 1057 primary lung cancer patients were operated on, 831 (75.39%) Lobectomy, 147 (13.86%) Wedge resection and 79 (7.45%) Pneumonectomy. 119 (8.9%) patient found to have N2 Positive disease of which 53 (5%) received Chemotherapy and 6 (0.56%) had radiotherapy. Our in hospital mortality were 1.2% for Lobectomy, 0.68% for Wedge resection and 5.06% for Pneumonectomy. A Kaplan-Meier Survival analysis for Lobectomies are 88.82%, 72.35% and 66.94%, for Wedge resections are 91.8%, 67.37% and 61.2%, and for Pneumonectomies are 78.41%, 44% and 25.3% at 1 year, 3 years and 5 years respectively.

Discussion/Conclusion: We compared our results with two major European thoracic registries (STCS Bluebook 2011 and ETS Silverbook 2014). Our in hospital mortality were 1.2% for Lobectomy vs 2.1% (STCS Bluebook 2011) Vs 2.3% (ETS Silverbook 2014), 0.68% for Wedge resection vs 0.7% (STCS Bluebook 2011) Vs 1.7% (ETS Silverbook 2014) and 5.06% for Pneumonectomy vs 6.5% (STCS Bluebook 2011) Vs 6.3% (ETS Silverbook 2014). Our limited study has demonstrated a comparable and superior outcome proves that Cardiothoracic Surgeons can deliver safe and effective thoracic surgical service.

A176
Reversal of abnormal cardiac parameters following Mitral valve replacement for severe mitral stenosis- in relation to Pulmonary artery pressure- A retrospective study of noninvasive parameters
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A176

"No touch" technique and hypothermic circulatory arrest for porcelain aorta in combined valve surgery.
Background/Introduction: Though the regression of Pulmonary Arterial Hypertension (PAH) in mitral stenosis (MS) has been studied over varying periods post-intervention, corresponding studies on the cardiac chamber alterations after surgery are very limited.

Aims/Objectives: We sought to determine the degree of reversal of these and the clinical status in connection with that of Pulmonary artery pressures (PAP).

Method: The pre and one-year postoperative data:-(Functional Class (FC), cardiothoracic ratio (CTR) in chest x-ray, and echocardiographically Left atrium (LA), Right atrium (RA), Right ventricle (RV), left ventricle (LV), & Pulmonary Artery (PA) dimensions, PAP, tricuspid regurgitation (TR), of 50 patients who had Mitral valve replacement (MVR) for MS with PAH, were retrospectively analysed for correlations with PAP (Pearson’s), and the change in each (t-test), in relation to that in PAP. PAH group-based (Group-I PAP ≥60 mmHg, Group-II >60 mmHg) analysis was done and the differences highlighted.

Results: All parameters correlated with the baseline PAP, with statistical significance (p < 0.05), except LA (r = 0.081 p = 0.577), Postoperatively there was significant reduction in PAP, CTR, LA, RA, RV, PA, FC, TR (p < 0.001 each), and increase in LV (p < 0.003). The change in PAP was 39.42%; with the decrease in CTR, LA & RA related to it. The RV & PA showed lesser reduction (8.61 & 9.42%). The changes were greater & significant in Group-II (especially PAP, RV & PA). At one-year, PAP normalized in only 19 (38%). Residual PAH & chamber enlargement prevailed more in Group-II.

Discussion/Conclusion: Conclusions: This study emphasizes the importance of the baseline PAP in MS, to which was proportionate the functional disability & the cardiac chamber alterations (except LA). An improvement in these accompanied the postoperative PAP regression, though not all were directly proportionate with PAP. The higher-pressure group showed greater degree of regression, but also greater prevalence of residual abnormalities (most except LA), suggesting that the pathologic changes in them might take longer to resolve, which needs further evaluation.

A181

Inclusion of tube current control in xy-plane for cardiovascular computed tomography reduces radiation exposure and produces better images

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Background/Introduction: Radiation dose in cardiac scans may have an impact on incidence of cancer in patients. New techniques have evolved to include control in the xy-plane to produce more uniform images at the scanning processes.

Aims/Objectives: This study investigates if the addition of tube current control in the xy-plane on image data (newer software) uses lower radiation dose and produces better cardiovascular computed tomography (CVCT) images, as compared to tube current control in the z-axis alone (traditional software).

Method: Patients referred for CT angiography were randomly allocated to undergo scanning with a 320-row-detector CT using the traditional software and the newer software. Only those with no history of coronary revascularization; and no significant stenosis at the left main artery and proximal of left anterior descending artery were included for the study. The magnitude of X-ray radiation exposure with the use of the traditional software was manually determined by radiographers according to protocol, while that for the use of the new software was automatically calculated to achieve a pre-set image quality. Estimated effective radiation dose was then calculated from the extended dose length product. Two radiologists, blinded to the scanning parameters, assessed the overall image quality using a 5-point grading scale based on the quantity of mottle noise and streak artifacts.

Results: From September 2009 to December 2011, 156 consecutive patients were recruited. Sixty-one patients underwent scanning using the traditional software while 95 patients had scanning with the newer software. Both groups were similar in baseline characteristics. The use of the traditional software resulted in 55% more radiation exposure (mean radiation dose in mSv, traditional software: 3.1 ± 3.0; newer software: 2.0 ± 0.9). CVCT images produced with the use of the newer software were of better image quality (mean grade of image quality, traditional software: 2.6 ± 1.0; newer software: 3.8 ± 0.3).

Discussion/Conclusion: Iterative reconstruction algorithms, involving the addition of tube current control in the xy-plane, use lower radiation dose and produce better quality CVCT images.
coronary artery surgery to assess haematocrit levels and transfusion needs. **Method:** We did a retrospective study on two groups of patients undergoing coronary artery bypass surgery over a six month period. In the non RAP group (n = 124), the CPB circuit was primed with crystalloid standard prime. In the RAP group (n = 120), retrograde autologous priming was used to reduce crystalloid prime (620.77 ml ± 133.13 ml). Haematocrit levels, transfusion requirements and other clinical parameters were evaluated. Data collection from various databases in the hospital was done using Microsoft excel spreadsheet. Statistical analysis was performed using SPSS software for windows.

**Results:** Demographic data and operative parameters were equal for patients in both groups. The haematocrit levels pre CPB, lowest Hct on CPB and end of CPB were 37.9, 26.4, 27.43 in the RAP group compared to 41.35, 28.00, 28.36 in the Non RAP group. Blood transfusion requirements in the RAP group was 0.84 and 0.80 in the Non RAP group. There was no significant difference in length of stay, post op AF.

**Discussion/Conclusion:** Our analysis concludes that RAP of the CPB circuit does not significantly increase haematocrit levels or reduces blood transfusion requirements in patients having uncomplicated coronary artery bypass graft surgery. Haematocrit levels may have been even lower without RAP in the study group. Hence, further studies are required to assess RAP benefits in patients having coronary and valvular cardiac operations.
A retrospective study of 17 neonatal patients, undergoing surgical correction of patent ductus arteriosus, was performed, in a period of eight years, from December 2007 to March 2015.

Results: Female gender was predominant in 80% and the mean gestational age was 27.71 ± 2.95 weeks. The mean birth weight was 1324.92 ± 857.37 g. Being the reference case ductus arteriosus in average 2.82 mm (DP ± 0.94). Associated pathologies were present in 80% of the patients and 64.70% underwent premedical treatment. There was no operative mortality in this group of patients. Time of hospital stay in these patients was related to gain of weight, being two kilos the minimum to be discharged. Due to this the mean hospital stay after the correction of the heart defect was 97 days. Three patients died in ICU due to complications of other congenital malformations, such as neurological and gastrointestinal.

Discussion/Conclusion: The surgery is the recommended treatment failure of conventional medical treatment. It presents good results and no mortality, related to the cardiac surgery.

A185

Histological analysis of saphenous veins surgically harvested by with or without electrocautery

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A185

Background/Introduction: The use of electrocauterization in the harvesting of the saphenous vein has a deleterious effect, in the histological aspect of the vein, and if it correlates to the clinical result.

Method: Twenty-four patients underwent CABG and in twelve of them electrocauterization was used (Group 1) to harvest the saphenous vein and in another twelve it was not (Group 2). Vein segments were sent for analysis after fixed in 10% formalin for 24 hours. These segments were vertically cut and two fragments were removed for histological analysis. They were stained with hematoxylin and eosin according to the normal protocol. All samples were analyzed by a blinded observer, which looked for morphological changes, especially acute ones in the endothelium, muscle tunics and adventitia. The acute changes investigated were: necrosis, degeneration, inflammation, thrombosis, structural ruptures and signs of hemorrhage. The mid-term results of the grafts were observed clinically.

Results: In both the groups there was no change in the endothelium or muscle tunics and the presence of hemorrhage. A definite or proven diagnosis is based on demonstration of tubercle bacilli in pericardial fluid or on histologic section of the pericardium. Constrictive pericarditis is a complication of tuberculous pericarditis that necessitates surgical intervention.

A187

Arterial switch operation in patients with Taussig - Bing anomaly - our experience in coronary anatomy and staged repair

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A187

Background/Introduction: A variety of definitive operations have been used to manage patients with Taussig Bing anomaly. But arterial switch operation and closure of the VSD is the most widely used procedure.

Method: This study analyzes the impact of the position of the coronary arteries and the feasibility of staged surgical approach in children with Taussig Bing anomaly with aortic arch obstruction.

Results: From 2013 to 2015, 4 patients were presented with Tassig Bing anomaly. Among four, one patient had Tassig Bing anomaly and coarctation of aorta with 1 left circumflex and 2 right sided coronary artery, another had intramural origin of right coronary artery and left coronary artery, both of which were arising from left facing sinus. The third patient had an unusual coronary pattern, and fourth infant had single coronary artery arising from the left anterior aspect of the aortic root.

Discussion/Conclusion: Arterial switch operation with right and left coronary artery transfer to neoaoa. Coaertation repair was performed prior to arterial switch for the patient who had Tassig Bing with coarctation of aorta. Third patient was proceeded with Blalock Tassig shunt followed by bidirectional Glenn operation as the coronary artery was running below the pulmonary annulus. PA band was applied first and ASO was performed subsequently for the patient who had single coronary coronary. There was no death. One patient required reoperation for aortic arch obstruction. Others had no significant complications.

A188

Results of surgical management in mechanical mitral valve thrombosis

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A188

Background/Introduction: Valve thrombosis is a serious complication of heart valve surgery. It most often involves mechanical valve in mitral position and may be life-threatening in the short term period,
necessitating prompt treatment. Among therapeutic options, surgery leads to complete success of deobstruction but with a high morbidity-mortality rate.

**Aims/Objectives:** The purpose of this study is to review the results of our experience in surgical management of mechanical mitral valve thrombosis.

**Method:** This is a retrospective study including fifteen patients operated on in our institution for mitral valve thrombosis between 2012 through 2014. Ten patients (66.7%) were operated on as emergent cases (within 24 h after admission) and five patients (33.3%) were elective (3-5 days after admission). Mean age was 45 years and 12 were females. All patients had a mechanical valve implanted in the mitral position; mean time between first and second intervention was 3.9 years (7 day-19 years). Clinically 14 patients (93.3%) were in NYHA stage III-IV on admission, seven had pulmonary edema (46.7%) and 6 had hemodynamic instability (40%) necessitating inotropic support. Mean preoperative mitral gradient was 26.4 mmHg. All patients underwent a surgical procedure, consisting of valve replacement in 14 patients and thrombectomy in one case. Five patients had associated tricuspid annuloplasty.

**Results:** Six patients died postoperatively which represents a 40% mortality rate. This occurred mainly in patients with hemodynamic instability and NYHA class IV. Good results were achieved in patients with stable hemodynamics and NYHA class II-III with no mortality in this group. All other patients were discharged after an uneventful postoperative course and no patients had recurrence of valve thrombosis at a mean follow up of 17 months.

**Discussion/Conclusion:** MVT is a serious complication with a dark time.

A retrospective observational study was done at our unit over a period of 6 months. All patients had chest drains postoperatively and were discharged if there were no air leaks or worsening of their pneumothorax post drainage. A repeat CXR was obtained during routine follow up 6 weeks later. Patients with pneumonectomies and permanent thoracostomies were excluded from the study. Air leaks were detected using digital drainage systems.

**Results:** There were 158 patients in the study. The mean age was 59.7 years (SD = 16.6). All patients were asymptomatic at the time of discharge and none required further intervention in other hospitals with regards to their pneumothorax. There were 9 (5.7%) patients who were discharged with large residual pneumothorax (>2 rib space) visible on CXR. The mean age of this cohort was 60.7 years (SD = 8.8). During the long follow up, these residual spaces were either partially or fully fluid filled without radiological or symptomatic worsening.

**Discussion/Conclusion:** This study found that it was safe to discharge asymptomatic patients with a large pneumothorax provided they are haemodynamically stable and had no air leak.

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**A189**
Midterm results of tricuspid annuloplasty with a homemade PTFE flexible ring

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**Background/Introduction:** Tricuspid regurgitation is a serious valvulopathy with a significant impact on long-term survival. Several techniques have been described to address it, including suture techniques and ring techniques. All have the same purposes of favoring leaflet coaptation, reducing the size of the tricuspid annulus and stabilize the repair to preclude further re-expansion and dilatation of the annulus.

**Aims/Objectives:** The purpose of this study is to evaluate the outcome of tricuspid annuloplasty with a PTFE linear strip.

**Method:** From February 2009 to May 2013, seventy-two patients underwent tricuspid annuloplasty for functional tricuspid regurgitation (TR). In 32 patients, tricuspid annuloplasty was done with a linear strip of PTFE. All patients had a left ventricular assist device implanted. The mean age was 42.7 years and 15.6% were reoperations. Right heart failure was present in 19% of patients on admission and 56% had atrial fibrillation. Ten patients (31.2%) were symptomatic (NYHA class 3 and 4) and 22 patients (69%) had significant tricuspid regurgitation (grade 3-4).

**Results:** The mean follow-up was 18 months (min 4 months, max 53 months). Early and late mortality were 9.1% and 6.8% respectively. At last follow-up, all patients had few or no symptoms (NYHA class 1 or 2). Eighteen patients (66.7%) had TR grade 0-1, five patients (18.5%) had TR grade 2 and four patients (14.8%) had TR grade 3 but remained asymptomatic under medical treatment. No patient was reoperated. On echocardiography, there was a significant reduction in the size of the right ventricle and tricuspid annulus with a mean tricuspid gradient of 3 mm Hg at the last follow-up.

**Discussion/Conclusion:** Tricuspid annuloplasty with a PTFE linear strip is effective for the treatment of functional tricuspid regurgitation with good midterm results. This technique is a good alternative of annuloplasty in case of unavailability of a prosthetic ring especially in developing countries. A long-term follow up is needed to see if these results are sustainable.

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**A190**
Can we send patients with large non-resolving pneumothorax home post chest drain removal?
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**Background/Introduction:** In thoracic surgery, access to the pleural cavity involves a pleurotomy. A chest drain is inserted to allow re-expansion of the lungs post-pleurotomy. This also prevents a tension pneumothorax. Some patients have a residual pneumothorax post chest drain removal noted on chest radiography (CXR) despite having no air leaks. Rates of pneumothorax post chest drain removal vary with figures quoted at 9.3-13.6%. The majority of these are barely perceptible or small (<1 cm from pleural line to the apex of the hemithorax). Some are larger (>2 rib spaces in apex or base). For these larger pneumothoraces, is it safe to send patients home?

**Aims/Objectives:** To assess the progress of patients discharged with large non-resolving pneumothoraces.

**Method:** A retrospective observational study was done at our unit over a 6-month period. All patients had chest drains postoperatively and were discharged if there were no air leaks or worsening of their pneumothorax post drain removal. A repeat CXR was obtained during routine follow up 6 weeks later. Patients with pneumonectomies and permanent thoracostomies were excluded from the study. Air leaks were detected using digital drainage systems.

**Results:** There were 158 patients in the study. The mean age was 59.7 years (SD = 16.6). All patients were asymptomatic at the time of discharge and none required further intervention in other hospitals with regards to their pneumothorax. There were 9 (5.7%) patients who were discharged with large residual pneumothorax (>2 rib space) visible on CXR. The mean age of this cohort was 60.7 years (SD = 8.8). During the long follow up, these residual spaces were either partially or fully fluid filled without radiological or symptomatic worsening.

**Discussion/Conclusion:** This study found that it was safe to discharge asymptomatic patients with a large pneumothorax provided they are haemodynamically stable and had no air leak.

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**A191**
Can we send patients with small pneumothorax post drain removal home?
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**Background/Introduction:** Pneumothorax can be a complication following chest drain removal. In thoracic surgery, access to the pleural cavity involves a pleurotomy. A chest drain is inserted to allow re-expansion of the lungs post-pleurotomy. This also prevents a tension pneumothorax. Some patients have a residual pneumothorax post-chest drain removal noted on chest radiography. Rates of pneumothorax post chest drain removal vary with figures quoted at 9.3-13.6%. The majority of these are barely perceptible or small (<1 cm from pleural line to the apex of the hemithorax). Is it safe to discharge these patients home?

**Aims/Objectives:** To assess if it is safe to send patients with small pneumothorax home post chest drain removal.

**Method:** A retrospective observational study was done at our unit over a 6-month period. All patients had chest drains postoperatively and were discharged if there were no air leaks and the patients were stable. A repeat CXR was obtained during routine follow up in 6 weeks’ time. Patients with pneumonectomies and permanent thoracostomies were excluded from the study.

**Results:** There were 158 patients in the study. The mean age of the patients was 59.7 years (SD: 16.6). All patients were asymptomatic at the time of discharge and none required further intervention in other hospitals with regards to their pneumothorax. There were 29 (18.4%)
patients who were discharged with small residual pneumothorax (<1 rib space) visible on CXR. At 6 weeks of follow up, 7 (4.4%) patients had visible pneumothorax on their CXR with no radiological or symptomatic worsening.

**Discussion/Conclusion:** This study found that it was safe to discharge asymptomatic patients with a small pneumothorax provided they are haemodynamically stable. Our study shows that 76% of these patients will have no residual pneumothorax in 6 weeks' time and the remaining 24% will continue to be asymptomatic with no radiological worsening of their pneumothorax.

**A192**

**Does intracostal suture placement during closure reduce pain post-thoracotomy compared to routine pericostal closure?**

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A192

**Background/Introduction:** Postero-lateral thoracotomies are routinely performed in thoracic surgery. Post-operatively, the pain can be incapacitating due to many factors including intercostal nerve injury. Therefore neurovascular bundle (NVB) protection may be a key element in improving pain control. Two methods of chest closure are used in our unit; traditional pericostal closure and intracostal closure.

**Aims/Objectives:** To investigate whether intracostal suture placement reduces acute postoperative thoracotomy pain and length of stay.

**Method:** A retrospective cohort study involving 1031 patients who underwent primary postero-lateral thoracotomies in the past 3 years was conducted at our regional cardiothoracic centre. 5 different surgeons, 4 using pericostal sutures and 1 intracostal sutures placement performed the surgeries. Patient’s primary method of analgesia was per anaesthetists’ preference. After completion of the appropriate procedure, patients had one or two soft chest tubes placed as per surgeon’s preference.

In the pericostal group, Vicryl 2.0 sutures were placed around their ribs in the standard pericostal fashion. The intracostal group had their thoracotomies closed by drilling approximately four evenly spaced holes using a 5-mm attachment to a pneumatic drill. Vicryl 2.0 sutures were placed through the hole and just over the top of the rib above.

Intra and postoperative characteristics of patients were recorded. In the intracostal group, there were 744 patients in the pericostal group and 287 patients in the intracostal group. In patients in the intracostal group were younger (63 ± 12.3 years vs 66 ± 10.5, p = 0.01), but all other parameters were similar. The mean pain score for the pericostal group on post op day 3 and length of stay was significantly higher.

**Discussion/Conclusion:** Intracostal suture placement reduces pain on post op day 3 and length of stay.

**A193**

**Comparison of early hemodynamic performance of 19 mm aortic valve bioprosthesis in patients with small aortic annulus**

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**Background/Introduction:** A possible problem in aortic valve replacement (AVR) for patients with a small aortic annulus is prosthesis-patient mismatch (PPM). Although larger size prostheses have been well studied, the hemodynamics of 19 mm bioprostheses have been reported in only a small number of patients.

**Aims/Objectives:** This study aims to compare the early hemodynamic performance of the new Trifecta valve with others in the 19 mm smallest size.

**Method:** We retrospectively evaluated 100 patients who underwent AVR with 19 mm bioprosthesis (Trifecta valve in 33, Magna Ease valve in 47, Mosaic Ultra valve in 20) at Saitama International Medical Center between April 2012 and August 2014. Hemodynamic performance was evaluated by transthoracic echocardiography at discharge and 1-year follow-up.

**Results:** Preoperative characteristics and early clinical outcomes were similar among the 3 groups. Average age was 75.7 years old and average body surface area was 1.40 m² in all patients. For the Trifecta, Magna, and Mosaic groups, the mean pressure gradient was 10.8 ± 4.4 mmHg, 16.3 ± 5.1 mmHg and 19.2 ± 6.9 mmHg, respectively; the peak pressure gradient was 19.9 ± 7.6 mmHg, 29.2 ± 8.2 mmHg and 35.9 ± 10.9 mmHg, respectively; the EOA was 1.62 ± 0.35 cm², 1.17 ± 0.22 cm² and 1.15 ± 0.23 cm², respectively; the EOAI index was 1.16 ± 0.23 cm²/m², 0.83 ± 0.19 cm²/m² and 0.87 ± 0.23 cm²/m², respectively, at discharge. The MPG and PPG were smallest (p < 0.001) and EOAI were largest (p < 0.001) with the Trifecta valves among the 3 groups. PPM was not found in patients with the Trifecta valve (p < 0.001). MPG and PPG at 1-year follow-up were a little higher than those at discharge, and the EOAI were a little smaller than those at discharge.

**Discussion/Conclusion:** The new 19 mm Trifecta valve had favorable early hemodynamic performance compared with the conventional valves, and it may be useful for preventing PPM in patients with a small aortic annulus.
more severe myocyte injury and fibrosis. Nevertheless, these alterations were not in correlation with early surgical outcomes. Furthermore, history of spell was positively correlated with poor early surgical outcomes.

A195
Symmetric Volume-Reduction Plasty of the Enlarged Left Atrium: 15-years clinical experience
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A195

Background/Introduction: Atriomegaly as a complication of mitral valve disease leads to atrial blood transport dysfunction, atrial fibrillation, respiratory insufficiency and heart failure.

Aims/Objectives: To analyze the results of treatment of all concomitant cardiac pathologies including atriomegaly during original surgical correction of mitral valve disease.

Method: From December 1998 to December 2013 we performed symmetric volume-reduction plasty of the left atrium (LA) in 104 patients with mitral valve disease using a technique we developed: we began the superior suture on the top of LA; above the line between the superior pulmonary veins; the right and left sutures were begun more laterally than the ostium of the inferior pulmonary veins, while on the left side we took into the suture the inner part of the left auriculum. All three sutures were tied up in the center of the posterior LA. Most of patients (87 cases) had a chronic form of atrial fibrillation and were in NYHA class IV. Mean age was 53±11 years. Procedures consisted of left atrium plasty (104 cases), mitral valve surgery (104 cases), tricuspid annuloplasty (47 cases), right atrium plasty (29 cases), aortic valve replacement (20 cases), left atrium thrombectomy (7 cases), coronary artery bypass grafting (5 cases), artificial chordae implantation (5 cases).

Results: There were 2 in-hospital deaths (1.9%). The size of left atrium after surgery decreased from 8.3±2.1 x 6.7±1.4 cm (range 5 to 14.5 cm) to 5.0±1.3 x 4.7±1.1 cm. The cardiothoracic ratio decreased from 0.62±0.04 to 0.53±0.02. The tracheal bifurcation angle decreased from 94.3±5.3° to 76.0±6.3°. The follow-up data from 12 months to 15 years were available for 89 pts, and 54 pts (60.7%) among them reported the sinus rhythm.

Discussion/Conclusion: Our results showed that both models appear to have the use of this original surgical technique of the symmetric atrial plasty for correction of mitral valve disease.

A196
Comparison of donor hearts from hypoxic cardiac arrest followed by warm ischemia and from exsanguination as non-beating donor models in rat heart transplantation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A196

Background/Introduction: Non-heart-beating donation, in the situation where a patient cannot be diagnosed as dead using brainstem criteria, may be an alternative to overcome shortage of donors. Preclinical studies showed that functional recovery of hearts after circulatory determination of death (DCDD) were similar to that of hearts from brain-dead donor. However, there are several experimental methods of simulating DCDD conditions such as exsanguination and hypoxic cardiac arrest both followed by warm ischemia.

Aims/Objectives: We aimed to compare two non-heart beating models in rat heart transplantation in which grafts were retrieved under exsanguination- or apnea-induced non-heart-beating conditions.

Method: Donor hearts were either left in situ for 10 min after cardiac arrest, which was induced by rapid exsanguination (exsanguination group, n = 6) or subjected to hypoxic cardiac arrest followed by 10 min of warm ischemia (apneal apneic group, n = 6). Additionally, a control group, in which heart grafts were retrieved from heart beating donors, was used (n = 6). Then, hearts were perfused with a cold preservation solution (Custodiol), explanted, stored at 4°C in Custodiol for 1h and heterotopically transplanted. We evaluated left-ventricular graft function and assessed protein expression 1.5h after transplantation.

Results: After transplantation, significantly decreased systolic function (left-ventricular systolic pressure: exsanguination 64 ± 6 mmHg vs. apnea 47 ± 6 mmHg vs. control 89 ± 5 mmHg; developed pressure: exsanguination 62 ± 6 mmHg vs. apnea 43 ± 6 mmHg vs. control 88 ± 6 mmHg; dp/dtmax: exsanguination 1700 ± 85 mmHg/s vs. apnea 2313 ± 262 mmHg/s vs. control 3333 ± 147 mmHg/s, p < 0.05) was observed in both exsanguinations- and apnea-groups compared to controls. Additionally, apnea-group showed further impaired diastolic function when compared with the exsanguination-group (dp/dtmin: apnea 1044 ± 81 mmHg/s vs. exsanguination 1588 ± 160 mmHg/s, p < 0.05). Protein levels of caspase-3, tumor necrosis factor alpha, cyclooxygenase-2, nuclear factor KappaB, inducible nitric oxide synthase, cytochrome-c and SERCA-2 (assessed by Western Blot) did not differ between the groups.

Discussion/Conclusion: Our results showed that both models appear to be useful for investigating functional and molecular characterization of potential use of hearts after DCDD.

A197
Use of untreated fresh autologous pericardium for reconstruction of pulmonary valve in tetralogy of Fallot requiring transannular patch: Is it the best material?
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Background/Introduction: Autologous untreated pericardium is the first material used for reconstruction in cardiac surgery but fell out of repute because of its early failure. Easy availability, and its likeness to valve tissue still upholds the promise of its use as a material for reconstruction of valve.

Aims/Objectives: To study durability of fresh autologous untreated pericardium (FAP) in reconstruction of a competent pulmonary valve (PV) in TOF requiring transannular patching.

Method: Between December 2006 and 2012, 98 operated TOF were divided into four groups based on requirement of a monocusp, tricuspid repair of bicuspid PV or need of a tricuspid PV in patients requiring TAP. Group I, monocusp (n = 50), Group II, repaired bicuspid PV valve (n = 6), Group III tricuspid PV (n = 22) and group IV avoiding TAP (n = 20). FAP sutured to the undersurface of TAP and native annulus was used to create a new annulus and a competent PV with one of techniques.

Results: Median age was 11 years (1 - 38), 78 were males. The clinical follow-up is 88% for 57.5 months (33 - 84) while echocardiographic follow-up is 80% for 36 months (6 - 72). There was no significant difference in two groups in occurrence of PI (Group I, none 31, mild 12, moderate 6 and severe 1 vs. Group II none 15, mild 5 and moderate to severe 2 vs. Group III, none 4, mild 1 and moderate 1 vs. Group IV, none 16, moderate 2, sever 2, p = 0.59) and RVOT gradient. There was no thickening and calcification in constructed valve.

Discussion/Conclusion: FAP for reconstruction of pulmonary valve is successful in maintaining functionality, indicated by occurrence of pulmonary insufficiency in reconstructed PV comparable to that of preserved native valve. Further, tricuspid PV has best coaptation amongst groups.

A198
Application of PET/CT to adjuvant chemotherapy for early lung adenocarcinoma
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A198
Background/Introduction: The role of adjuvant chemotherapy for stage I lung cancer is unknown. Some Japanese trials demonstrated that tegafur-uracil chemotherapy improved the prognosis of stage I lung cancer over 2 cm.

Aims/Objectives: The purpose of this study is to determine the significance of the maximum standardized uptake value (SUVmax) on F-18-fluorodeoxyglucose positron emission tomography/computed tomography (FDG-PET/CT) images to postoperative adjuvant chemotherapy for early lung adenocarcinoma.

Method: We reviewed 174 consecutive patients with completely resected pathological T1b-2aN0M0 lung adenocarcinoma between January 2006 and March 2011, and assessed recurrence-free interval and overall survival based on SUVmax values derived from preoperative FDG-PET/CT images. All patients were assessed by FDG-PET/CT before surgery.

Results: Ninety patients received adjuvant chemotherapy and 84 did not. Patients given adjuvant chemotherapy were older, but had the lower T status tumor than those who were not (both, p = 0.001). Adjuvant chemotherapy conferred benefits upon recurrence-free interval and overall survival based on SUVmax values derived from preoperative FDG-PET/CT images. All patients were assessed by FDG-PET/CT before surgery.

Discussion/Conclusion: Preoperative SUVmax on FDG-PET/CT images reflected the efficacy of postoperative adjuvant chemotherapy in patients with pathological T1b-2aN0M0 lung adenocarcinoma. Indications of adjuvant chemotherapy for early lung adenocarcinoma might be more precisely determined using SUVmax on FDG-PET/CT images together with tumor size.

A199
Preoperative tissue Doppler imaging-derived atrial conduction time predicts postoperative atrial fibrillation in patients undergoing mitral valve surgery for mitral valve regurgitation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A199

Background/Introduction: Postoperative atrial fibrillation (POAF) is a common complication of cardiac surgery and may result in stroke, heart failure and poor prognosis.

Aims/Objectives: This study aimed to evaluate a novel index of total atrial conduction time derived from the P-wave onset (lead II) to the peak A’-wave on tissue Doppler imaging (PA-TDI duration). The PA-TDI duration was compared with previously reported predictors of POAF, and the optimal cut-off value of PA-TDI was calculated in patients undergoing mitral valve replacement or repair (MVR) for mitral valve regurgitation (MR).

Method: Seventy-two patients undergoing MVR were enrolled. They had transthoracic echocardiography with tissue Doppler imaging preoperatively and were monitored postoperatively with continuous electrocardiographic telemetry for 14 days. Preoperative characteristics, echocardiographic data, operative data and postoperative findings were compared between patients with POAF (44 patients) and without (28 patients).

Results: Postoperative cardiac and cerebral events was significantly larger in 44 patients with POAF than in 28 without POAF (14 patients (32%) vs. 2 (7%), p = 0.0190). Multivariate analysis revealed that etiology of deep vein thrombosis (Odds ratio [OR], 4.28; 95% confidence interval [CI], 1.30-14.10; p = 0.0169) and PA-TDI duration (OR, 1.04; CI, 1.01-1.07; p = 0.0052) were significant independent predictors of POAF. Receiver-operating-characteristic curve analysis showed the optimal cut-off values of PA-TDI duration was 159.4 ms.

Discussion/Conclusion: Pa-TDI duration was an independent predictor of POAF after MVR. Patients with PA-TDI duration >159.4 ms should be considered high risk and treated appropriately to improve outcomes.

A200
Perioperative quantitative coronary angiography and ultrasonographic graft assessments for the right coronary artery bypass grafting
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A200

Background/Introduction: Preoperative quantitative assessment of coronary angiography (CAG) and real-time graft size and graft flow assessment using epigraphic ultrasonography in the operative field have been performed to ascertain the patency in the right coronary artery bypass grafting (CABG).

Aims/Objectives: This study aims to evaluate the efficacy of the preoperative coronary artery and graft assessment to increase the patency of the right CABG.

Method: CABG was performed in 200 patients from January 2010 to December 2014. Ninety-three patients underwent all of preoperative CAG, intraoperative graft assessment and postoperative CAG with a total of 93 grafts anastomosed to the right coronary artery. Severity of coronary artery stenosis was evaluated by CAG. The size of target right coronary artery was measured by ultrasonography in the operative field. Parameters about graft flow were obtained from flow velocity curve in all the graft. The grafts were divided into two groups: patent grafts (Group A, n = 86) and failing grafts (Group B, n = 7). All factors were compared in these two groups and evaluated by logistic analysis and receiver operating characteristic (ROC) curve analysis.

Results: The overall patency as measured by postoperative CAG was 94.6% (88/93). There were 7 failing grafts including 5 occlusion and 2 competitive slow flow. Logistic regression analysis revealed that the percentage of graft size measured by ultrasonography divided by the size of the right coronary artery (graft-RCA size mismatch) and the pulsatility index (PI) were independent predictors of early graft failure (graft-RCA size mismatch, Odds ratio [OR], 2.37, 95% confidence interval [95%CI], 1.94-289.0, p = 0.0132; PI, OR, 1.51, 95%CI, 1.16-1.96, p = 0.0023, area under the curve [AUC], 0.981). ROC curve analysis revealed that graft-RCA size mismatch > 2.08 and PI > 4.55 were predictors of graft failure.

Discussion/Conclusion: In this series, epigraphic ultrasonography depicted graft flow clearly. Combination of preoperative quantitative coronary artery assessment and real time graft assessment was essential to predict graft failure during the CABG. This technique may increase the patency of the right coronary artery bypass grafting.

A201
Surgical ergonomics - Analysis of technical skills, simulation models and assessment methods
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A201

Background/Introduction: Over the past two centuries the surgical profession has undergone a profound evolution in terms of efficiency and outcomes. Societal concerns in relation to quality assurance, patient safety and cost reduction have highlighted the issue of training expert surgeons. The core elements of a training model build on the basic foundations of gross and fine motor skills.

Aims/Objectives: We provide an analysis of the ergonomic principles involved and propose relevant training techniques. We have endeavoured to provide both the trainer and trainee perspectives.

Method: This analysis is structured into four sections: 1) Pre-operative preparation issues, 2) technical skills and instrument handling, 3) low fidelity simulation models and 4) discussion of current concepts in crew resource management, deliberate practice and assessment.

Results: Rehearsal, warm-up and motivation-enhancing techniques aid concentration and focus. Appropriate posture, comprehension of
ergonomic principles in relation to surgical instruments and utilisation of the non-dominant hand are essential skills to master. Low fidelity models can be used to achieve significant progress through the early stages of the learning curve. Deliberate practice and innate ability are complementary to each other and may be considered useful adjuncts to surgical skills development.

Discussion/Conclusion: Safe medical care requires that complex patient interventions be performed by highly skilled operators supported by reliable teams. Surgical ergonomics lie at the heart of any training model that aims to produce professionals able to function as leaders of a patient safety oriented culture.

### A202

**The Evolution of Consent Law in the UK**

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**Background/Introduction:** Every human has a fundamental right, to determine what happens to their body (autonomy). For us as surgeons, it is imperative that we obtain valid consent from our patients before performing any examination or procedure. For consent to be valid, it must be informed, voluntary, and be given by a competent patient. There is an existing judicial debate in UK Law regarding how much information should be given to patients for the consent to be accepted as informed and therefore valid. Recently, the case of Montgomery vs NHS Lanarkshire has changed the consent law in the UK.

**Aims/Objectives:** We aim to describe the evolution of consent law in the UK.

**Method:** A detailed literature search was performed in the British and Irish Legal Information Institute to examine case laws relating to consent.

**Results:** Landmark cases on informed consent in British Law have been provided in the table attached.

#### Table 1 (abstract A202) Evolution of Consent Law in The UK - Important Case Laws

<table>
<thead>
<tr>
<th>Case (Year)</th>
<th>Nature of Case</th>
<th>Ruling</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolam vs Friern Hospital (1957)</td>
<td>The patient (Bolam) underwent electroconvulsive therapy for depression and suffered pelvic fracture. Bolam filed a negligence claim as he was not informed of the risk of injury.</td>
<td>The judgement was based if the doctor’s practice was deemed acceptable by other competent doctors. This became known as the Bolam test. The doctor was not held liable his actions were supported by his peers.</td>
<td>Introduce the concept of the Bolam test.</td>
</tr>
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### A203

**Swivel and Roll - A new dance for the modern Thoracic Surgeon**

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**Background/Introduction:** In comparison to open surgery, VATS lung resections are technically challenging operations as the operative field is transformed from a three dimensional multi-angle wide view to a two dimensional screen. Therefore careful pre-operative and intra-operative planning is required to complete the procedure safely and successfully. All our patients undergo a Computed Tomography (CT) which is essential for pre-operative planning.

**Method:** We used the Swivel function to manipulate the images in the coronal axis to produce a sagittal view so that the spine lies on the left hand side and the sternum on the right side. The roll function allows the image in the sagittal view to move by 90 degrees this orients the images in the patient’s position on the operating table.

**Results:** The results are demonstrated in the images below.

### A204

**An Audit on Consent - Risk Disclosure in Thoracic Surgery**

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**Background/Introduction:** The law on consent is continuously evolving as there is no statute in British law relating to consent. Instead this relies on common or case law. The recent case of Montgomery vs NHS Lanarkshire has change the consent law with relation to the disclosure of information. It is now recommended that we as surgeons should disclose risks that an average patient would want to know. In modern surgical practice consent should be viewed as a continuous process involving an honest and open discussion and should take into consideration the patient’s rights, values and choices.

**Aims/Objectives:** To assess the information given to patients during the consent process for thoracic surgery.

**Method:** We retrospectively examined the clinic letters, consent forms and case notes for patients undergoing surgery in the thoracic department over a 2 week period in May 2015.

**Results:** Over a Two-week period 21 patients underwent thoracic surgery. Of the 21 clinic letters, only 11 (52%) stated the benefits and risks of the procedure that were discussed with the patient. Only 3 consent forms stated the risks of the procedure. 9 (42%) of case notes had no evidence
of any discussion of benefits and risks of the procedure on the clinic letter, case notes or consent form.

A graph is attached which demonstrates the specific risks that were discussed with the patients.

Discussion/Conclusion: The recommendations on risk disclosure have evolved by moving away from the paradigm of paternalism to emphasize the significance of patient autonomy. It is therefore, important to document the discussion with the patient in the clinic letters as well as consent forms, to prevent litigation in the current legal climate. This audit demonstrates that 42% case notes and consent forms do not have any written documentation of risk disclosure. We have designed a new consent form that lists important risk factors that all patients undergoing
Thoracic surgery should be informed about. This new consent form will standardise the documentation of the consenting process.

**A205**

**Repair of Symptomatic Non-union Rib Fractures: Outcomes from a Contemporary Thoracic Surgical Series**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1):A205

**Background/Introduction:** Rib fracture nonunion represents failure of normal fracture healing. Although randomized controlled trials have demonstrated benefit to acute rib stabilization, the role of open reduction and internal fixation (ORIF) for symptomatic nonunion fractures is unknown and limited to case reports.

**Aims/Objectives:** We review and report our recent consecutive series of ORIF for symptomatic nonunion rib fractures.

**Method:** All consecutive patients who underwent rib stabilization for symptomatic nonunion between 2010 and 2014 were retrospectively reviewed. Indications included persistent fracture on imaging accompanied with pain. Outcomes were analysed on 1) radiographic criteria including postoperative chest X-ray at 2 weeks, and CT scans at 6 and 12 months and 2) patient symptoms.

**Results:** Eight patients (6 men, 2 women) underwent non-union rib stabilization of 1 to 4 ribs during the study period. Median age was 56 years (range, 46-67 years). Mean BMI was 31.8 and median interval from index injury to rib fracture surgical repair was 14.5 months (range, 4-24 months). 73% of this cohort used tobacco chronically within the 3 years preceding repair. One patient underwent stabilization with ORIF alone and the remaining 7 patients underwent ORIF plus autologous bone grafting. There was no operative mortality. Median length of stay was 3.5 days (range, 1-7 days). Complications included 2 surgical site infections treated with surgery and 1 patient with pneumonia requiring antibiotics. At a mean follow up of 9.8 months (range 1-27), all patients reported symptomatic improvement. Radiographic healing was present in 100%.

**Discussion/Conclusion:** Rib stabilization with bone grafting may be a successful alternative in the management of symptomatic non-union rib fractures. With increased experience with this thoracic surgical option, earlier intervention in select cases may permit more rapid symptom control and better outcomes.

**A206**

**Evaluate the outcome of pneumonectomy for stage III a-N2 NSCLC**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1):A206

**Background/Introduction:** The effect of surgery in patients with III a-N2 NSCLC non-small cell lung cancer is not certain.

**Aims/Objectives:** We intend to evaluate the outcome of pneumonectomy in III a-N2 NSCLC patients.

**Method:** We retrospectively reviewed the cases of patients with III a-N2 non-small cell lung cancer, who underwent pneumonectomy from April 2003 to January 2014 at a single institution.

**Results:** During the study, 184 patients underwent surgical resection of stage III a-N2 non-small cell lung cancer. Among them, 35 patients had pneumonectomy, 29 patients (83%) were male, and 6 (17%) were female. The median age was 57 years (43 yrs-77 yrs) old, and the median follow up duration was 77 months. 27 patients (77%) had induction chemotherapy before operation. Right pneumonectomy was performed in 13 patients (37%), and Left pneumonectomy was done in 22 patients (63%). The 5-year survival was 58% in pneumonectomy, 28% in the right pneumonectomy and 76% in the left pneumonectomy, respectively. Left pneumonectomy (p = 0.021) and complete resectability (p = 0.017) were positive prognostic factors, but the induction chemotherapy before operation was negative prognostic factor. (p = 0.040).

**Discussion/Conclusion:** The side of operation and complete resectability are positive prognostic factor, but the induction chemotherapy is negative prognostic factor for pneumonectomy in III a-N2 NSCLC patients.

**A207**

**Long term results of permanent epicardial pacing in neonates and infants**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1):A207

**Background/Introduction:** Despite the improvement of transvenous leads, the open surgical implantation of epicardial leads in neonates and infants remains essential.

**Aims/Objectives:** We reviewed the long term outcomes after epicardial pacemaker implantation in neonates and infants.

**Method:** From 1989 to 2013, 44 patients (15 neonates) underwent pacemaker implantation within the first year of life. The mean age and weight were 101.2 ± 97.2 days and 4.8 ± 1.8kg at the time of pacemaker implantation. The Indication for pacemaker implantation were postoperative atrioventricular block in 23, congenital atrioventricular block in 16, sinus node dysfunction in 4, and myocarditis induced atrioventricular block in 1. Unipolar epicardial leads (non steroid eluting: 22, steroid eluting: 22) were inserted through median sternotomy or subxiphoid approach.

**Results:** Mean follow up duration was 9.1 ± 7.9 years. The most commonly used generator mode at first implantation was VVI, which was used in 52.3% (n = 23). There were generator mode changes from initial VVI or VVIR to dual chamber pacing in 11 patients, mean 7.0 ± 6.2 years later, due to ventricular dysfunction and dyssynchrony. Freedom from the need for generator replacement was 95.0%, 70.1%, 21.7% at 1, 5, 10 years. And, the median longevity of the generators was 6.5 years. 15 lead malfunction (34.1%) events were detected, 5 of which were due to lead fracture and 1 of which was due to lead infection. Freedom from the need for lead replacement was 97.6%, 75.7%, 47.7% at 1, 5, 10 years. The lead replacement rate is significantly higher in patients who underwent non steroid eluting lead implantation (p = 0.033). The median longevity of the leads was 9.1 years.

**Discussion/Conclusion:** In neonates and infants, more frequent pacemaker generator or lead changes are needed because of high pacing rates, complete pacemaker dependency and rapid somatic growth. The use of steroid eluting leads increased lead longevity and decreased the need for surgical reinterventions. Epicardial pacing is feasible, safe, and effective in neonates and infants.

**A208**

**Comparison of release kinetics of different cardiac biomarkers in patients undergoing off pump coronary artery bypass surgery and valve replacement surgery for rheumatic heart disease**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1):A208

**Background/Introduction:** Cardiac biomarkers are released during cardiac surgery. The release kinetics have not been compared in patients undergoing different types of cardiac surgery.

**Aims/Objectives:** We compared the release kinetics of BNP, Troponin-I (Tn-I) and CK-MB in patients undergoing off pump CABG (OPCABG) and valve replacement (VR).

**Method:** Cardiac biomarkers were serially measured 24 hours prior and 6, 24, 48 hours and 1 month following OPCABG (n = 80, mean age 59.1 years) and VR (n = 50, mean age 36.7 years).
Results: Mean baseline BNP was significantly higher in VR (304.01 vs 105.8 pg/ml, p < 0.001), although baseline LVEF (54.4% vs 52.5%) was similar in both. Pre-operative Tn-I and CK-MB levels were higher in those undergoing OPCABG. Biomarker release kinetics were significantly different amongst two groups. All three biomarkers increased rapidly within 6 hours of OPCABG. In VR group, BNP levels initially decreased (within 6 hours), and then peaked at 24 hours; in contrast Tn-I and CKMB levels increased within 6 hours, with declining trends at 24 hours. Peak BNP levels occurred usually by 24-48 hours. At 1 month, levels of all biomarkers were similar to baseline. In patients undergoing OPCABG, those with higher baseline BNP had lower LVEF; whereas in patients undergoing VR, those with higher baseline BNP levels had higher prevalence of atrial fibrillation and higher RV systolic pressure. Patients with higher pre-operative BNP had longer post-operative inotropic duration and ventilator time. In patients undergoing VR, patients with higher baseline BNP also had longer post-operative ICU and hospital stay. In both groups, baseline, post-operative and delta BNP levels were significant predictors of post-operative inotropic duration and ventilation time.

Discussion/Conclusion: Patients of RHD undergoing VR had higher baseline BNP levels as compared to those undergoing OPCABG, despite similar LVEF. Release kinetics of biomarkers following OPCABG and valve surgery are significantly different from each other. Of all studied biomarkers, only BNP predicted post-operative inotropic duration and ventilation times.

A210
Minimally invasive cardiac surgery - A single centre experience
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A210

Background/Introduction: Minimally Invasive Cardiac Surgery is the Future of Cardiac Surgery. The patients who undergo these surgeries have better post-operative recovery, better cosmesis and faster recovery times.

Aims/Objectives: We present our data of 58 cases performed at our center in last 4 years.

Method: 18 mitral valve replacements, 20 ASD closures, 14, Off pump CABGs, 6 Aortic Valve Replacements. Off the 14 CABGs, 3 were Hybrid Procedures.

Results: Only one conversion to Median Sternotomy was necessary of the 58 cases which were operated. The operative time was definitely longer compared to the standard procedures but postoperative bleeding, ICU stay and Postoperative pain and amputation were significantly smaller than standard surgeries. The patients have significantly reduced time to get back to complete work so the surgery also reduces the economic burden of the patients.

Discussion/Conclusion: Minimally invasive cardiac surgery is here to stay in cardiac surgery practice. Proper patient selection is necessary at least in the initial stages to avoid surgical misadventures. The availability of HYBRID Cardiac surgery suites definitely reduces the peripheral vascular complications. With proper training and availability of resources minimally invasive cardiac surgery can be performed at most centres with acceptable results.

A211
Association between [18F]-fluoro-2-deoxyglucose uptake and expressions of hypoxia-induced factor 1α and glucose transporter 1 in non-small cell lung cancer
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A211

Background/Introduction: High maximal standardized uptake values (SUVmax) on [18F]-fluoro-2-deoxyglucose positron emission tomography (FDG-PET) are associated with inferior survival in non-small cell lung cancer (NSCLC).

Aims/Objectives: Here, we investigated the biological mechanisms underlying FDG uptake in NSCLC.

Method: This study included 133 patients with NSCLC (109 with adenocarcinoma and 24 with squamous cell carcinoma). The patients underwent tumor resection, at the latest, 4 weeks after FDG-PET. The SUVmax values for primary lesions were calculated based on FDG uptake. The expression of hypoxia-inducible factor 1α (HIF1α) and glucose transporter 1 (GLUT1) was evaluated on immunostained tumor sections using six-point grading scales.

Results: SUVmax and the expression of HIF1α and GLUT1 were significantly higher in squamous cell carcinoma than in adenocarcinoma (p < 0.001, p = 0.034, and p < 0.001, respectively). In adenocarcinoma, but not squamous cell carcinoma, SUVmax, HIF1α, and GLUT1 correlated with various clinicopathological factors relating to malignancy, and SUVmax and GLUT1 were associated with disease-free survival (DFS) (p < 0.001 and p = 0.029) and overall survival (OS) (p < 0.001 and p = 0.033, respectively). Moreover in adenocarcinoma, HIF1α and GLUT1, GLUT1 and SUVmax, and HIF1α and SUVmax were significantly correlated (p < 0.001 for all), suggesting that HIF1α-induced GLUT1 might influence SUVmax values on FDG-PET.

Discussion/Conclusion: In lung adenocarcinoma, but not squamous cell carcinoma, HIF1α, and GLUT1 expressions indicate tumor aggressiveness pathologically, and might explain high FDG uptake on PET and correlate with poor prognosis.
A213
Reduction in deep sternal wound infection with use of a peristernal cable-tie closure system
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Background/Introduction: Deep sternal wound infections (DSWI) are a rare but serious complication after median sternotomy.

Aims/Objectives: We evaluated postoperative outcomes associated with two sternal-closure techniques.

Method: Methods and outcomes of sternal closure were reviewed in consecutive patients undergoing a variety of cardiothoracic surgical procedures. Sternal closure in the historical control group was performed using trans-sternal, stainless-steel wire sutures; subsequent patients were closed using wire sutures together with a novel, peristernal cable-tie closure system to reinforce the corpus sterni. Perioperative care was standardized between groups.

Results: Between July 2010 and July 2014, 609 consecutive adult patients underwent sternal closure following open median sternotomy at a single hospital in Mobile, Alabama. Sternal closure was accomplished with wire sutures in the first 309 patients and with cable-tie reinforcement in the subsequent 300 patients. One author performed 71.8% (222/309) of the wire suture procedures and 92.7% (278/300) of the cable-tie procedures; the others were performed by a single other partner in his practice. Baseline characteristics were comparable between groups, except that the cable-tie group exhibited greater preoperative comorbidity. Mean body mass index was comparable between groups (30.2 ± 6.6 kg/m2 wire suture versus 30.5 ± 7.7 cable-tie, p = 0.568). DSWI occurred in 2.6% (8/309) patients in the wire-suture group, whereas no DSWI were observed in the cable tie group (p = 0.008). Analysis of STS data shows the authors' rate of DSWI to be 0.0% in each of the years from 2012 - 2014 (corresponding with adoption of the cable-tie system), compared to an overall institutional rate of 0.2% and an overall STS database rate of 0.3% for 2014.

Discussion/Conclusion: The peristernal cable-tie system was a simple and reliable method for sternal closure after open median sternotomy, and was associated with a reduced risk of deep sternal wound infection, even in an obese and comorbid population.

A214
Complications in defibrillator surgery in patients with implanted ventricular assist device
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A214

Background/Introduction: The implantation and exchange of pacemakers and defibrillators (ICD) is a frequently performed procedure with low complication rates. However, patients with the need for a permanent anticoagulation with warfarin have a significantly increased risk for bleeding in the intraoperative and postoperative course.

Aims/Objectives: The aim of this study was to evaluate bleeding complications associated with implantation or replacement of implantable cardioverter-defibrillators (ICD) in patients with a ventricular assist device (VAD) in whom continuous anticoagulation is required.

Method: A total of 37 patients with a VAD in whom an ICD has been implanted, explanted or replaced, were retrospectively analyzed.

Results: All ICD related procedures were successfully performed. There were no procedure-related deaths. Perioperative anticoagulation was achieved with intravenous heparin, which was discontinued four hours prior to surgery and restarted four hours after surgery. The average international normalized ratio ± standard deviation (INR ± SD) was 1.5 ± 0.3, and the mean partial thromboplastin time (PTT) ± SD was 67.1 ± 23.1 seconds. Platelet inhibition in 23 patients (62.2%) was achieved with aspirin, and in 14 patients (37.8%) with clopidogrel up to the time of surgery. The thirty-seven ICD interventions included ten primary implants (27.0%), twenty-three replacements (62.2%) and four explants (10.8%). In a follow-up period of at least three months, a total of nine complications (24.3%) were attributable to ICD intervention. These included two conservatively treated hematomas and six hematomas that required surgical evacuation. There was no difference in bleeding frequency comparing subcutaneous and subpectoral approach. There were no ICD lead damages or thromboembolic events identified in the follow-up period.

Discussion/Conclusion: With regards to anticoagulation in VAD patients post-ICD intervention, the incidence of hematoma was significantly higher in non-VAD patients. On the sixth postoperative day (5.7 ± 4.9), the hematoma followed. This delayed incidence of bleeding suggests that re-initiation of warfarin post-ICD intervention in supplement with intravenous heparin represents a vulnerable period in which the ICD-pocket wound tends to bleed. An increased incidence of thromboembolic events was not observed.

A215
A survey of antibiotic prophylaxis in adult cardiac surgery in the UK
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A215

Background/Introduction: Antibiotic prophylaxis has been proven to reduce surgical site infection (SSI) rates in adult cardiac surgical patients. However, current guidelines are vague and in this era of increasing antibiotic resistance it is essential that we inform and develop a consensus opinion.

Aims/Objectives: Our aim was to acquire an overview of antibiotic prophylaxis in adult cardiac surgical centres in the UK and compare this to national and international guidelines.

Method: We developed a 10 point questionnaire and obtained results via telephone interview of on-call cardiac surgery registrars in all UK units in April 2015.

Results: A total of 32/35 (91%) of on-call registrars responded, with the majority (21/32, 66%) being unaware of their local SSI rate. Only one cardiac centre used a surgeon-specific policy while the remaining 31 centres (97%) used a unit-specific policy. Although all units complied with guidelines, there was wide variation in practice. For indexed operations e.g. CABG and isolated valve procedures, the majority (21/32, 66%) of units used single antibiotic prophylaxis, most commonly cefuroxime (14/32, 44%). The remaining centres used combination antibiotic prophylaxis (11/32, 34%), most commonly fluocoxacinil and gentamicin (8/32, 25%). Most units (23/32, 72%) prescribed prophylaxis for 24 hours post operatively, 3 units (9%) for 48 hours and 4 units (12.5%) administered only a single dose. Approximately half of centres used MRSA skin preparation bundles even when MRSA status was unknown and 7 centres (22%) routinely used anti-MRSA antibiotic agents.

Discussion/Conclusion: The results of this survey demonstrate that while all UK adult cardiac centres adhere to guidelines, there is significant divergence in policy between different centres. While it is clear that large scale multi-centre studies are required to develop more specific guidelines, particularly in terms of antibiotic selection and duration, the results of this national survey will help to inform ongoing debate and guide future policy development.
Five female patients (age 23, 37, 58, 70 and 76, mean 52.8) were mbolectomy. The

Background/Introduction: Mortality and morbidity of redo cardiac surgery is higher due to the presence of adhesions between cardiac structures and the chest wall. Preoperative Computed Tomography (CT) scans can help mitigate the risk of injury during redo surgery. Some surgeons use findings from preoperative CT scans to modify their surgical approach but its use is not universal.

Aims/Objectives: We sought to determine if CT scans and time elapsed from initial cardiac surgery can predict the severity of adhesions, and whether CT scan findings are associated with the use of preventative surgical strategies.

Method: We studied 92 patients referred for redo cardiac surgery. CT scan findings, operation notes findings, use of preventative surgical strategies, mortality and date of initial cardiac surgery were recorded.

Results: In the study, 58 patients had preoperative CT scans and 34 patients did not. Preoperative CT scans identified 36 patients with moderate adhesions and 22 patients with severe adhesions. 13 out of 36 patients (33%) with moderate adhesions on CT scans had moderate adhesions during surgery. 16 out of 22 patients (73%) with severe adhesions on CT scans had severe adhesions during surgery. No association was found between the degree of adhesions on preoperative CT scans and surgical findings (p = 0.486). Severe adhesions on preoperative CT scans are not associated with greater use of preventative surgical strategies (p = 0.134). No significant difference in mortality was found in patients who had preoperative CT scan and those who did not (p = 0.070). No association was found between the severity of adhesions and time elapsed from initial cardiac surgery (p = 0.695).

Discussion/Conclusion: Preoperative CT scans and time elapsed from initial cardiac surgery are not useful in predicting the severity of adhesions in redo cardiac surgery. Severe adhesions on CT scans are not associated with greater use of preventative surgical strategies.

Background/Introduction: Infective endocarditis, which is described as malignant disease of infections, has several complications increasing morbidity and mortality like splenic infarct and cerebral abscess.

Aims/Objectives: Our case was 46-year-old male patient. Five before his admission to our clinic, he was hospitalized for weakness, headache, nausea, and vomiting in a different clinic.

Method: Transthoracic echocardiography revealed a vegetative lesion on mitral valve. Combined parenteral antibiotherapy was admitted. Blood cultures and antibiotics resulted with metisilene sensitive Staphylococcus Aureus and Pseudomonas Putida 10 days after. Patient was consulted to infectious disease department and continuation of antibiotics was decided. His abdominal CT revealed splenic infarct and cerebral CT revealed a 2 cm lesion located in left temporal lobe with peripheral edema. Cerebral MR examination revealed hypo intense cortical changes with hemorrhagic content that is settled by embolization. This was reported as an infective disease like cerebritis or multiple abscess formation. Neurosurgery consultation resulted as operation indication was going to be decided by patients response to antibiotherapy and treatment of cardiac pathology has priority. In addition, they reported that elective surgery should planned after control cranial MR examination and there was not any risk for anticoagulation. Coronary angiography was normal but catheterization revealed serious mitral valve insufficiency.

Results: Patient underwent surgery. After left atriotomy, there was a chorda rupture at P3 segment of posterior leaflet and vegetative lesion on anterior leaflet. Both of these findings were consistent with transeusophaeal echocardiography. Native valve was excised. Due to its resistance to infection, short-term anticoagulation requirement, further operations, and advancements at valve in valve technique, bioprosthetic valve replacement was planned. By using 29 no St. Jude bioprosthesis, valve was replaced by ti-cron sutures with pledgets. Patient recovered uneventfully.

Discussion/Conclusion: We recommend multidisciplinary approach to infective endocarditis because of cardiac involvement, different complications types, patient specific problems, and pathogen related problems. Only by this method, optimal survival rates and complete eradication of pathogens may be achieved.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Successful pneumonectomy of a patient with squamous cell carcinoma of lung operated by median sternotomy and anterior approach due to suspicion of left main pulmonary artery invasion and possible need for cardiopulmonary bypass

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Background/Introduction: Peripheral invasion of cancers may require multidisciplinary approach for increasing safety and efficacy of curative surgical interventions.

Aims/Objectives: Our case was 58-year-old male patient. He was treated with chemo/radiotherapy for six times due to bronchial carcinoma in a different clinic for 9 months.

Method: Thorax CT revealed a lesion of 40x43 mm enveloping left main pulmonary artery and bronchi in left hilus. Chest and Cardiovascular surgery council planned an intervention consisting of left pneumonectomy across pericardium, because of suspicion of left main pulmonary artery invasion, vascular graft interposition to left main pulmonary artery and emergent cardiopulmonary bypass if necessary.

Results: Median sternotomy was performed after intubation with double lumen endotracheal tube and general anesthesia. Adhesions were removed after entering left pleural cavity. A tumoral lesion of 4x3x3 cm, advancing to pericardium was localized centrally at upper lobe’s anterior segment and it was invading left main pulmonary artery. Pericardium was explored for evaluating invasion of intrapericardial main pulmonary
our case was 76 year-old male patient. Coronary artery and three-vessel vascular invasion was not observed. Metastasis was observed in two peribronchial lymph nodes and 14 perihilar and bronchial lymph nodes were free from metastasis. Adjuvant chemotherapy was planned in postoperative Surgery-Oncology council. 

Discussion/Conclusion: Risk evaluation of oncologic patients and Multidisciplinary approach to patients who are candidates for surgery may improve surgical survival rate.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A222
Revascularization Strategy with prolonged cardiopulmonary bypass in a patient with multiple morbidity factors and serious left main coronary artery lesion
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A222

Background/Introduction: Mortality and surgical risk significantly increase in patients who have multiple morbidities and are candidates for surgical coronary revascularization.

Aims/Objectives: Our case was 71 year-old male patient. He had PTCA ten years ago in his medical history. He was having chest pain episodes for 1 year. In addition, he had stroke 8 years ago and carotid endarterectomy 1 year. In addition, he had diabetes mellitus regulated with oral anti-diabetics and chronic obstructive pulmonary disease, which was consulted to chest department and reported as medium-risk for surgery, in his medical history. 24 years before his admittance, he had total laryngectomy for laryngeal cancer. Patient was consulted to ear-nose-throat department preoperatively.

Results: Patient underwent coronary artery bypass grafting surgery with these clinical findings. Intubation was performed directly from trachea with 7.0 mm spiraled tube. Proximal part of median sternotomy incision was having chest pain episodes for 1 year. In addition, he had stroke 8 years ago and carotid endarterectomy 7 years ago in his medical history. Our patient had morbidity factors for cardiovascular disease, COPD, and benign prostate hypertrophy.

Method: Coronary angiography and selective arch aortography, revealed plaque formation that was not creating any hemodynamic obstruction on left carotid system and total occlusion of right internal carotid artery. Serious stenosis of 50% at left main coronary artery and three-vessel disease was evident. Interventricular septum was measured as 16 mm in transthoracic echocardiography. High-risk surgical revascularization of coronary arteries was planned.

Results: After median sternotomy, routine unicaval two stage venous cannulation and aortic cannulation was performed for cardiopulmonary bypass. Mean arterial pressure was stabilized optimally during operation due to risky situation carotid arteries. After anticoagulation and retrograde cardioplegia protocol, cross-clamp was placed. Sequential bypass was performed to PL and PD branches of right coronary artery by using saphenous vein grafts. Patient recovered uneventfully. He was discharged with plan of hybrid intervention (PTA for left common iliac artery and bilateral femoro-popliteal bypass) 8-10 weeks later.

Discussion/Conclusion: Bilateral serious peripheral artery disease dramatically increases the risk of surgical coronary revascularization. Risk is seriously elevated with total laryngectomy caused by cancer etiology. Multidisciplinary approach is essential in such cases. Morbidity and mortality may be reduced and safety of procedure may be increased with optimal pre and perioperative precautions.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A224
Relation between endoleak development and aneurysm diameter in patients with abdominal aorta aneurysm treated with endovascular repair
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A224

Background/Introduction: Although it may differ with age, gender and body mass index; diameter of infrarenal aorta is between 1 and 2.5 cm. Its mean value in male is 21.4 mm and 18.7 mm in female. More than 50% irreversible dilation of abdominal aorta is called abdominal aorta aneurysm. It is usually observed as dilation of aortic diameter over 3 cm between aortic bifurcation and renal artery.

Aims/Objectives: We retrospectively investigated and included elective or emergency (ruptured abdominal aortic aneurysm) intervention of 203
abdominal aortic aneurysm patients treated with endovascular aortic repair (EVAR) between dates January 2006 and January 2013. Sixteen of these patients were female (7.9%) and 187 of them were male (92.1%). Method: In our study mean aneurysm diameter was 65.83 mm ± 14.92 mm (between 40 mm and 130 mm). Results: When we compared endoleak and aneurysm diameter; mean diameter was 64.7 ± 16.96 mm in endoleak group and 68.22 ± 14.61 mm in group without endoleak. There was not any statistical significance. Discussion/Conclusion: Intervention is indicated in patients with abdominal aorta aneurysm diameter over 5 cm, symptomatic patients with aneurysm diameter less than 5 cm, equal to or more than 5 mm dilation of aneurysm in six months, ruptured or prone to rupture aneurysms, saccular or dissected aneurysms.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A225 Importance of anatomic variations in secundum ASD: residual ASD detected on postoperative 31st year Ufuk Yerkin1, Nihan Karakaş, Mehmet Balkanay, Ali Gurbuz
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A225

Background/Introduction: Secundum ASD is the most common congenital defect seen in adulthood. Anatomical variations are the most important factors in decision making of surgical procedure.

Aims/Objectives: Our case was 57 year-old male. He underwent secundum ASD repair 31 years ago. His complaint was progressive dyspnoea and for about 1 year.

Method: Transthoracic echocardiography revealed residual ASD and transosophageal echocardiography showed that this ASD is a patch tear close to the orifice of inferior vena cava in size of 15 × 6 mm. Coronary angiography and cardiac catherization were performed and results were normal. Cavity sizes and pulmonary artery pressure were normal.

Results: He was taken to operation, pericardium was very adherent and epicardial was cleaned with gentle dissection. Inferior vena cava cannulation was performed and the cannula was misguided to left atrium transeptally, it was detected by the help of blood color and cannula was redirected to IVC by special stretching manuever. Under total cardiopulmonary bypass fossa ovalis type secundum ASD was explored and there was no patch component. An untouched sinus venous type ASD in size of 10X15 mm near IVC was detected and repaired with teflon pledget. Successful decanulation and hemostasis after optimal deairing and residual ASD check, operation was terminated. No early or late complication was seen postoperatively and TEE showed no residual ASD.

Discussion/Conclusion: We suggest that secundum ASD should be evaluated carefully especially by young surgeons as it may have anatomical variations and different localizations.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A226 Mortality properties of our case series of abdominal aorta aneurysm patients treated with endovascular repair Serkan Yazman, Ismail Yürekli1, Ufuk Yerkin, Levent Yilik, Koksal Donmez, Hasan Iner, Teyfik Gunes, Barcin Ozcem, Ali Gurbuz
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A226

Background/Introduction: When we compare EVAR and conventional surgical intervention, EVAR has a better mortality in early period but there was not any significant difference for mortality between EVAR and conventional surgery after 4 years.

Aims/Objectives: Between 2006 and 2013, 203 abdominal aortic aneurysm patients who were decided to have high risk for conventional surgery and underwent endovascular aortic repair (EVAR) were included in our study.

Method: Mean age was 69.17 ± 8.83 (between 38-89). Sixteen of these patients were female (7.9%) and 187 of them were male (92.1%). Twelve patients underwent emergency surgery for ruptured abdominal aortic aneurysm.

Results: Total mortality of 203 patients included in this study after eight years follow-up was 26. Mortality in first month was 14, including eight patients who underwent emergency intervention and with ASA score of IV. Survival rate was 93.2%. Survival rate in 5 years was 84.1% and survival rate of followed-up patients after 6 years was 79.7%. Early period mortality due to aneurysm in patients underwent elective intervention (N: 191) was3.1%. Mortality due to aneurysm in 5 years follow up was 3.6% and survival rate in 8-year follow up was 91.7%.

Discussion/Conclusion: When compared to conventional surgery, mortality rates are significantly lower in EVAR patients. This is because of less bleeding and lower ischemia period. Debates are ongoing for mortality rates endovascular treatment, but with its minimal invasive nature, it reduces physiological stress and perioperative/postoperative cardiac, pulmonary, and renal mortality is lower. EVAR is the treatment of choice, especially in ruptured abdominal aorta aneurysm.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A227 Effects of smoking habit and diagnosed COPD on intensive care unit stay length of surgically treated coronary artery and obstructive peripheral arterial disease patients Ersin Čelik1, İsmail Yürekli1, Ufuk Yerkin1, Habib Çakir1,*, Köksal Dönmez2, Metin Gümüş3, Rahika Durusoy4, Ali Gurbuz1
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A227

Background/Introduction: Smoking is one of the most important mortality and morbidity factors.

Aims/Objectives: We examined 688 coronary artery disease and 268 peripheral vascular disease patients who were treated surgically at our clinic between dates January 2007 and December 2010.

Method: Mean age of 868 coronary artery disease patients were 63,86 ± 11,7 (between 21-91 years) and 268 peripheral arterial disease patients were 65,44 ± 10,37 (between 21-92 years).

Results: There were 47 COPD patients in 868 patients who underwent surgery for coronary artery disease. In addition, 490 patients were active smoker and 378 were not using tobacco products. Mean Intensive care unit stay for COPD patients was 4,81 day and 3,06 day for patients without COPD. This difference was significant (p < 0.05).There were 31 COPD patients in 268 patients who underwent surgery for peripheral arterial disease. In this group, 172 patients were active smoker and 96 were not smoking. Mean Intensive care unit stay for COPD patients was significantly longer in COPD group (p < 0.05).

Discussion/Conclusion: We believe that, preoperative smoking cessation and long-term bronchodilator therapy will reduce morbidity rates of our patients in our daily practice.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A228 Role of LDL level over hospital stay length of surgically treated coronary artery and obstructive peripheral arterial disease patients Ersin Čelik1, İsmail Yürekli1, Ufuk Yerkin1, Habib Çakir1,*, Köksal Dönmez2, Metin Gümüş3, Rahika Durusoy4, Ali Gurbuz1
1Department of Cardiovascular Surgery, Katip Celebi University Izmir Ataturk Training and Research Hospital, Izmir, Turkey; 2Department of Public Health,
Background/Introduction: Atherosclerosis is the most common and most important risk factor for cardiovascular diseases.

Aims/Objectives: Between dates January 2007 and December 2010, 868 coronary artery disease patients and 268 peripheral vascular disease patients who were treated surgically at our clinic were investigated.

Method: Mean age of 868 coronary artery disease patients were 63.86 ± 11.17 (between 21-91 years) and 268 peripheral arterial disease patients were 65.4 ± 10.37 (between 21-92 years).

Results: Between 868 patients underwent surgery for coronary artery disease, LDL cholesterol level of 518 patients were >100 mg/dl and 350 patients were < 100 mg<7 mg/dl. Mean hospital stay length of patients was 6.8 days and 6.19 days, respectively. This difference was significant (p < 0.05). Between 268 patients underwent surgery for peripheral arterial disease, LDL cholesterol level of 177 patients were >100 mg/dl and 91 patients were < 100 mg<7 mg/dl. There was any significant correlation between LDL cholesterol levels and intensive care or hospital stay length (p > 0.05).

Discussion/Conclusion: We believe that precise examination of preoperative risk factors and providing adequate pre and per operative medication will significantly reduce surgical morbidity rates, intensive care unit, and hospital stay lengths of coronary and peripheral arterial disease patients.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A229 Successful surgical intervention to ascending aortic aneurysm with dissection risk in a Patient with Cushing’s syndrome and pituitary operation
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Background/Introduction: Patients with serious medical records due to chronic diseases have the chance of early identification of additional diseases and fast and safe surgical intervention if needed.

Aims/Objectives: Our case was 44 year-old female patient. She had exertional chest pain for two months. She had pituitary surgery for Cushing’s syndrome a year ago, in his medical history.

Method: For investigation of her complaints transthoracic echocardiography, thoracoabdominal computerized tomography with contrast and coronary angiography combined with thoracic aortography revealed an aortic aneurysm with 55 mm in diameter, beginning 4 cm distally from aortic root and ending prior to arc of aorta. Surgical intervention was planned in Cardiology and Cardiovascular surgery council due to patient’s risk of dissection and/or rupture.

Results: Preoperative endocrinology consultation resulted with midnight cortisol level of 2.98 and cortisol level in 24 hours urine sample as 119 mcg/day. Pituitary MR screening was normal. With diagnosis of Subclinical Cushing (pseudoCushing) and control plan 6 months later, operation was approved. Under general anesthesia, median sternotomy was performed. Arterial cannulation was performed from small curvature aorta aneurysm. Supracoronary Ascending aorta was replaced by 24 mm UltraMax double velour graft by using cardiopulmonary bypass. Patient recovered uneventfully. She is still followed up by endocrinology and our departments’ outpatient clinics.

Discussion/Conclusion: Patients with Cushing’s syndrome and ascending aorta aneurysm must be investigated by a multidisciplinary approach, due to risk of malign hypertension and connective tissue defects, which may cause dissection and rupture. Patients with operation indication may undergo surgery with low mortality rates by taking required measures, as in our case.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A230 Patient with three separate accessory saphenous veins identified while graft preparation: A case report
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Background/Introduction: Congenital anomalies which do not cause functional or cosmetic problems are usually incidentally identified at diagnostic researches or surgical explorations.

Aims/Objectives: Our case was 54 year-old male patient. He had cerebral ischemic attack a year ago and amaurosis fugax 2 months ago, in his medical history.

Method: Patient’s coronary angiography and selective arcus aortography revealed 50% stenosis at left main coronary artery and serious three-vessel disease. Cardiology and Cardiovascular surgery council decided that ulcerous lesion at left carotid artery has priority. Patient underwent coronary artery bypass grafting and aortic valve replacement. Preoperative right and left heart catheterizations for evaluation of surgical exploration.

Results: Under general anesthesia, median sternotomy was performed. LIMA graft preparation and great saphenous vein preparation from right lower extremity were maintained together. Three separate accessory saphenous veins were visualized below knee level. The medial one was thin but other two had optimal diameter. For reducing incision length and surgical wound size, both accessory saphenous veins were prepared by controlled saline infusion and collaterals were ligated. Three coronary arteries were successfully revascularized. The patient recovered uneventfully. Patient is still followed up by our outpatient clinic.

Discussion/Conclusion: As in our case, latent congenital anomalies are usually incidentally identified at surgical explorations. Sometimes this situation may be altered for patient’s advantage and be beneficial for patient even by reducing tissue damage.

Consent: Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

A231 Pre and postoperative value of contrast computerized tomography scan for patients with abdominal aorta aneurysm treated with endovascular repair study
Serkan Yazman, İsmail Yüreğil, Levent Yılık, Ufuk Yetkin, Köksal Dönmez, Hasan İmer, Tevfik Güneş, Başın Özcem, Ali Gürbüz*
Department of Cardiovascular Surgery, Katip Celebi University Izmir Ataturk Training and Research Hospital, Izmir, Turkey

Background/Introduction: One of the most important advantages of endovascular treatment is decreased systemic complication rates, especially complications in perioperative period, against conventional surgery.

Aims/Objectives: We included 203 abdominal aortic aneurysm patients treated with endovascular aortic repair (EVAR) between dates 2006 and 2013.

Method: All of the patients had high risk for conventional surgery. Mean age was 69.17 ± 8.83 (between 38-89). Sixteen of these patients were female (7,9%) and 187 of them were male (92,1%). Twelve patients underwent emergency surgery for ruptured abdominal aortic aneurysm. Any additional pathology that may interfere conventional surgery and increase the operative risk was investigated and effected patient selection.

Results: Treatments of all patients were planned by using contrast computerized tomography. Inclusion criteria were: asymptomatic patients with abdominal aorta diameter on CT equal to or larger than 5,5 cm, symptomatic patients with abdominal aorta diameter on CT smaller larger than 5,5 cm, patients with saccular aneurysm and ruptured abdominal aorta aneurysm.

Discussion/Conclusion: Ultrasonography is safely used in first diagnosis, follow-up and postoperative controls. Preoperative evaluation, imaging of
abnormalities, identifying ruptures and localization of aneurysm may be performed on contrast CT. Due to different complication after EVAR, yearly radiologic follow-ups by computerized tomography, ultrasonography and direct x-rays are essential.

**Consent:** Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

### A232

**Indications and outcome of thoracotomy in a new cardiothoracic unit in sub-Saharan Africa**

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A232**

**Background/Introduction:** Thoracotomy is a major thoracic surgery procedure that has various indications and can be marred with various complications and occasionally dismal outcome especially in resource poor environment like ours.

**Aims/Objectives:** To determine the demographic pattern, indications, complications and challenges of open thoracotomy in a new cardiothoracic unit in sub-Saharan Africa.

**Method:** It is a prospective study of patient admitted into the unit since its inception between January 2012 and May 2015. Patient’s demographic data, clinical presentation, indications for and outcome of thoracotomy were analysed.

**Results:** A total of 40 patients were admitted and treated during the period with a male to female ratio of 2.6:1. The mean age was 29.5 years. The most common indication for thoracotomy in our series is chronic empyema thoracis, which accounted for 16 (40%) of all the thoracotomies, chest trauma was an indication in 12 (30%) of cases. Eight patients out of 12 (66.7%) had emergency thoracotomy. One patient (2.5%) had thoracotomy and bronchotomy for removal of a long-standing foreign body in the right lower lobe bronchus. Three patients (7.5%) died, 2 died intraoperative and one died in the intensive care unit after emergency thoracotomy following penetrating chest trauma.

**Discussion/Conclusion:** Chronic empyema thoracis is currently the most common indication for thoracotomy in our setting. This can be attributed to the fact that we are still battling with various forms of pulmonary and pleural infections that are poorly treated and most of these patients present late to the hospital. The outcome of thoracotomy is good despite the fact that it is a new unit and our resources are limited.

### A233

**Tuberculosis can cause anything in the world except pregnancy!**

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A233**

**Background/Introduction:** Tuberculosis has been reported to cause aortic aneurysms and coronary aneurysms.

**Aims/Objectives:** To describe a case report with a surprise diagnosis of tuberculosis.

**Method:** We present a patient with dialysis dependant end stage renal disease for AR with a dilated root and chest wall mass with coronary aneurysms needing aortic valve replacement and coronary artery bypass grafting whose final diagnosis was tuberculosis.

**Results:** A 37 year old male patient presented with class III dyspnoea on exertion. He was hypertensive with dialysis dependent end stage renal disease and dialysed using an AV Fistula on the left upper limb. Echocardiography showed severe AR and LV dysfunction. CT Coronary angiography showed aortic root to be 5 cm and saccular aneurysms in the circumflex and the right coronary artery with complete occlusion of RCA. A Bentall procedure was planned. Intraoperatively, there was a mass arising from anterior chest wall measuring 6 cm × 5 cm attached to the Left Internal Mammary artery with multiple enlarged paratracheal and mediastinal lymph nodes. Frozen section from the mass and lymph nodes did not reveal any malignancy. The oncosurgeon felt that the mass was malignant looking at its extent and CT characteristics. Pragmatically a mechanical aortic valve replacement and saphenous vein grafts to the OM and PDA were performed after a discussion between the clinicians instead of a root replacement. The final histopathology showed tuberculosis of the lymph nodes with no malignancy in the mass. The patient underwent dialysis postoperatively and needed inotropes till day 4. He was started on anti-tuberculosis medications and was discharged on postoperative day 10. In retrospect the coronary aneurysms and the root dilatation with aortic regurgitation could have been caused by tuberculosis.

**Discussion/Conclusion:** Surprises are still possible in today’s world even with the best investigations and as surgeons we have to make difficult decisions on table.

**Consent:** Written informed consent was obtained from the patient’s next of kin for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.
A235
Comparing the quality of uniportal and multiportal video-assisted anatomical resection for primary lung cancer: the preliminary results of a single centre audit
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Journal of Cardiothoracic Surgery. 2015, 10(Suppl 1), A235

Background/Introduction: Clear resection margins and appropriate lymph node dissection are fundamental aspects of complete lung cancer resection, as defined by the International Association for the Study of Lung Cancer (IASLC). However, no reports to date have compared these outcomes in uniportal versus multiportal approaches to video-assisted thoracoscopic surgery (VATS).

Aims/Objectives: We present a large case series comparing the quality of uniportal and multiportal VATS lung resection for lung cancer.

Method: A retrospective review was performed on all patients who underwent VATS anatomical resection for primary lung malignancy between January 2013 and April 2015. Data collection comprised patient demographics, operative technique and pathological staging. Primary outcomes were presence of clear resection margins and quality of lymph node dissection in accordance with IASLC guidelines. Statistical differences between uniportal and multiportal approaches were calculated using the χ² and student’s t-test.

Results: A total of 182 patients were included in the study, 101 in the uniportal group and 81 in the multiportal group. Multiportal approaches comprised of two-port access in 61 patients and three-port access in 20 patients. Lobectomies were performed in 163 patients and anatomical segmentectomy performed in the remainder. There were no significant differences in involvement of bronchial, mediastinal or vascular resection margins with 95% of tumours reported as fully excised in both groups. The mean number of nodal stations dissected was 4.14 using uniportal access and 3.97 via the multiportal approach (p = 0.326). The difference in mean number of mediastinal stations dissected between both groups was also not significant (mean 2.05, uniportal; mean 2.15, multiportal; p = 0.402). Almost all resections involved hilar or intrapulmonary nodal sampling (99% in both groups).

Discussion/Conclusion: Quality of resection in single port access for VATS anatomical lung resection is comparable to the traditional multportal approach in our single centre series. Greater awareness of the importance of lobe-specific nodal dissection may improve operator outcomes.

A236
Alternative treatment option for high risk surgical candidates after previous cardiac surgery: The Scottish National TAVI Programme experience
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Journal of Cardiothoracic Surgery. 2015, 10(Suppl 1), A236

Background/Introduction: Patients that require aortic valve replacement, having previously undergone cardiac surgery, have a higher morbidity and mortality with increased risks of mediastinal injury during re-operation.

Aims/Objectives: In the era of TAVI for high risk surgical candidates, we analysed our experience with redo conventional surgical aortic valve replacement (SAVR) and compared these results with those from patients who had undergone TAVI as a second heart operation.

Method: A retrospective, observational, comparative study was performed in the national centre offering TAVI. 149 consecutive patients underwent redo operation with SAVR (n = 59) or TAVI (n = 90) between October 2012 and February 2015. In the SAVR group patients with concomitant procedures (n = 8) or endocarditis (n = 8) were excluded from the analysis.

Results: Mean logistic Euroscore was 29.6 for redo-TAVI compared to 18.6 for redo-SAVR (p < 0.05). Type of previous cardiac surgery performed in each redo group is summarised in Table 1.

Table 1 (abstract A236)

<table>
<thead>
<tr>
<th>Previous Cardiac Surgery</th>
<th>Redo-SAVR</th>
<th>Redo-TAVI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABG</td>
<td>20</td>
<td>82</td>
</tr>
<tr>
<td>AVR</td>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>AVR + CABG</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>MVR</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Congenital</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Other Cardiac</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

TAVI access was transfemoral (65.5%), transapical (6.7%), or trans-aortic (27.8%). Despite a higher incidence of MACE (major adverse cardiac events) in SAVR patients, results indicated no significant differences between two groups in terms of all-cause and cardiovascular related mortality, stroke, myocardial infarction. In details, hospital mortality was higher in SAVR group (5.1%) compared to TAVI group (2.2%), although it did not reach statistical significance. There was a higher incidence of CVA in the SAVR versus TAVI group (6.8% vs. 2.2%; p = 0.385). Patients were found to require permanent pacemaker insertion more often after TAVI (10% vs 3.4%; p = 0.2).

Finally, average length of post-operative hospital stay was significantly shorter in TAVI than SAVR group (5.4 vs 10.4 days; p < 0.00001).

Discussion/Conclusion: This retrospective analysis suggests that TAVI is preferable to SAVR in this high risk group of patients. Redo-SAVR remains a valid option for younger patients in whom long-term durability of the prosthetic valve is a concern.

A238
Patients with unstable angina and myocardial infarction expose remote VSMC phenotype switch and alteration in the proliferation of smooth muscular cell in the aortic wall
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Journal of Cardiothoracic Surgery. 2015, 10(Suppl 1), A238

Background/Introduction: Vascular smooth muscular cell (VSMC) involve in vessel tone regulation and endothelial cell function. It is known and critical player in pathological conditions including atherosclerosis. VSMC is dynamic structure and response to different stimuli. MiRNAs molecules are important regulatory mechanism to promote/suppress VSMC proliferation and phenotype switch.

Aims/Objectives: Aim: We hypothesized that patients with acute myocardial infarction have altered VSMC transcriptome affecting cell phenotype and proliferation.

Method: Methods: Aortic wall tissue obtained during coronary artery bypass surgery underwent laser dissection of SAVR. Frozen aortic sections were stained with Arcturus LCM kit to identify cells of interest follow by cell collection and trRNA extraction. The transcriptome profile will be performed using Affymetrix GeneChip Human Genome U133 Plus 2.0 Array. The differently expressed mRNA/miRNA data were validated on independent cohort of patients with RT-PCR method assay.

Results: Result: We identify nine miRNA differentially expressed in patients with acute myocardial infarction, with four of them related to VSMC proliferation and differentiation. The most prominent down regulated miRNA was known regulator of VSMC phenotype miR-143. Among up regulated miRNA, miR-486-5p and miR-29a-3p reported before as a potent regulator of VSMC function. Pairwise analysis with miRNA data from the
same patients reveal reciprocal and statistically significant changes in the phenotype and proliferation related mRNA.

Discussion/Conclusion: Conclusion: In patients with acute myocardial infarction we observe remote phenotype and proliferation shift in the aortic wall VSMC. Switch of contractile phenotype and proliferation alteration might play compensatory role in patient with unstable plaque and myocardial infarction.

A239

Obstetric history after mechanical cardiac valve replacement
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A239

Background/Introduction: In patients who have undergone mechanical prosthetic heart valve replacement, pregnancy is associated with the risks of warfarin embryopathy. A significant proportion of our patient undergoing mechanical mitral cardiac valve replacement were females of child bearing age. Aims/Objectives: To study the obstetric history in patients after mechanical cardiac valve replacement. Method: Retrospective analysis of 35 subjects who conceived after cardiac valve replacement with mechanical valves and presented with 45 pregnancies was carried out. Ten patients had multiple pregnancies (2 each), 10 patients had documentary evidence of termination of pregnancy elsewhere outside the institute. Thus we document 35 pregnancies in 25 cases. Results: 45.7% had successful pregnancy outcome. 40% cases had missed abortion. Five patients chose to have Medical Termination of Pregnancy (MTP) with tubal ligation. The majority of subjects (76.4%) delivered within 5 years of valve replacement. Despite counselling about embryopathy all except one patient continued to take oral anticoagulants. There was no maternal mortality. Morbidity in the form of post-partum hemorrhage (8.5%), bleeding complications (5.7%) was observed. The incidence of preterm delivery was 14.3% and small for gestational age babies were 5.7%. There were no still births; one baby had malformations but was not consistent with features of embryopathy.

Discussion/Conclusion: Significant proportion of patients having valve replacement in our centre are females. Post-surgery their obstetric history is complicated by poor awareness about oral anticoagulation and its effect on pregnancy this results in delay in seeking appropriate obstetric care. In pregnancy there is an increased fetal wastage in patients taking oral anticoagulants though women with artificial valves can tolerate the hemodynamic load of pregnancy well. A successful pregnancy outcome in women with surgically corrected valve pathology involves preconception evaluation, counseling, close supervision during her pregnancy and labor.

A240

Results of minimally invasive approach for rheumatic mitral valve disease
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A240

Table 1 (abstract A239) Pregnancy outcome in study subjects

<table>
<thead>
<tr>
<th>Pregnancy Outcome</th>
<th>No. of Subjects</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTP</td>
<td>05</td>
<td>14.3</td>
</tr>
<tr>
<td>Abortion</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>Full Term Normal Delivery</td>
<td>11</td>
<td>31.4</td>
</tr>
<tr>
<td>Cesarean Section</td>
<td>05</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Background/Introduction: The rapid development and refinement of techniques over the past decade have led to the realization that a Minimally invasive (MI) approach enables complex (open) valve surgery to be performed with results equivalent to those of conventional valve surgery done in experienced center. Rheumatic Heart Disease (RHD) continues to be endemic in developing countries like India. Aims/Objectives: To compare minimally invasive surgery with standard sternotomy procedure among patients of rheumatic mitral valve disease.

Method: A retrospective comparative study was carried out in tertiary care hospital of central India. From April 2013 to December 2014, a total of 128 eligible study subjects (45 males and 83 females) (range 7 to 66 years) presented to CVTS department of our hospital were included. Majority of were in NYHA III (52.9%) and NYHA IV (29.7%). All study subjects were considered for minimally invasive (MI) approach, however only 63 study subjects fulfilled the eligibility criteria for the above procedure. Clamp time (CT), Cardiopulmonary bypass (CPB) time, intensive care unit (ICI) stay and hospital stay was observed among study subjects. These results were compared to 63 age and sex matched study subjects from 2012 and also with 65 study subjects who had not undergone minimally invasive surgery approach in same period.

Results: Among MI surgery, operative mortality was 02 (3%), re-exploration were 3 (5%) and 3 (5%) re-admission. 01 re-admission was for delayed tamponade and 02 were for non-compliance with oral anticoagulants. Statistically significant lower CT, CPB time and ICU stay was found in minimally invasive surgery when compared with standard sternotomy approach (p < 0.006).

Discussion/Conclusion: Minimally invasive approach for rheumatic valve yields similar morbidity and mortality with reduced surgical time and length of ICU stay. Peripheral cannulation does not cause problem and cosmetic results were excellent.

A241

Prediction of outcomes in patients with severe aortic stenosis after multiple valve surgery
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A241

Background/Introduction: Aortic stenosis (AS) occupies the first place in the list of diseases leading to valve replacement surgery. Biomarker NT-pro BNP was proved to have predictive power in people with coronary artery disease. However the relationship between NT-proBNP level and outcomes after single valve replacement and multiple valve surgery for severe AS is still controversial.

Aims/Objectives: To analyze the role of NT-proBNP in prediction of outcome after multiple valve surgery for severe AS.

Method: Among all patients treated at the Center during March 2012 - September 2013 there were 49 patients with severe AS and secondary mitral and tricuspid regurgitation. They were included into the prospective study. Surgical treatment consisted of aortic valve replacement (AVR) in combination with atriointervalvevalve repairs. Follow-up period was 1 year. Patients’ data, including NT-proBNP values, were collected preoperatively and 1 year after surgery.

Results: Average patients’ age was 63.2 ± 10.3 years, proportion of men - 53.1%. Postoperative 30-day mortality was 2.0%, 1-year mortality - 8.2%. The average NT-BNP level was 8060,20 ± 7286 pg/ml preoperatively and 870,1 ± 1591 after operation (p < 0.001). Using multivariate regression model a significant independent negative relationship was obtained between NT-proBNP level and the following parameters: aortic valve effective orifice area (p < 0.001), left ventricular ejection fraction (p = 0.001). Preoperative level of NT-proBNP didn’t correlate with 1 year survival (p = 0.36). However a significant negative association was found between preoperative NT-proBNP values and risk factor profile of 5-year survival (p = 0.003) described in previous studies and consisted of age, sex, aortic valve peak systolic gradient, LVEF, pulmonary artery systolic
pressure and left ventricular myocardial mass. When NT-proBNP values increased probability of 5-year survival.

Discussion/Conclusion: Biomarker NT-proBNP can predict 5-year survival in patients with severe AS after multiple valve surgery. In Further Studies with greater amount of patients this relationship should be detailed.

A242
Spontaneous pneumothorax associated with primary lung cancer
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A242

Background/Introduction: Spontaneous pneumothorax in association with primary lung cancer is infrequent. No exact mechanism is settled for its occurrence. However, it could be either a primary manifestation or complication for a primary lung cancer.

Aims/Objectives: The aim of this retrospective study is to search for the association of pneumothorax with primary lung cancer.

Method: Retrospective revision of the files of the patients who presented with spontaneous pneumothorax and admitted to the Cardiothoracic Surgery Department - Main University Hospital of Alexandria, Egypt during the period from January 2005 to January 2015 was performed. Files were searched for association of spontaneous pneumothorax with primary pulmonary carcinoma. Patients who had spontaneous pneumothorax in association with pulmonary metastases were eliminated.

Results: Four patients have been found in our medical records. Two of them (50%) had advanced squamous cell lung cancer (stage III) and were referred to Oncology Department to receive treatment following pleural drainage with intercostal tube. One of the three (25%) discovered the pulmonary carcinoma following surgery for recurrent spontaneous pneumothorax through bullectomy. This patient received formal lobectomy. Fourth patient had a bronchoalveolar carcinoma that discovered accidentally intra-operatively during bullectomy.

Discussion/Conclusion: Pneumothorax as a first manifestation of lung cancer is rare. It could be an ominous sign and usually carries bad prognosis. Recurrent spontaneous pneumothorax in old, heavy smoker patient or patient with emphysema should raise the suspicion of presence of pulmonary carcinoma.

A243
Comparison of long-term outcomes between Off-Pump CABG and conventional CABG
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Background/Introduction: There has been controversy surrounding the late outcomes of Off-Pump Coronary Artery Bypass (OPCAB) and conventional CABG (c-CABG).

Aims/Objectives: The aim of this study was to compare the early and long-term outcomes of OPCAB with those of conventional CABG (c-CABG).

Method: This retrospective study was based on data from 183 patients who underwent CABG between January, 2000 and December, 2005. OPCAB was performed in 102 patients and c-CABG in 81. The mean follow-up duration was 107 months. The end-points of long-term results were overall death, freedom from cardiac death and major adverse cardiac events (MACE). We expressed the Kaplan-Meyer survival curve, and determined the independent predictors for risk factors of mortality using multi-variate analysis.

Results: Four patients in c-CABG group died of low cardiac output syndrome and CVA. There was no operative mortalities in OPCAB group (p = 0.23). Bleeding requiring reoperation (51, p = 0.05) and CVA (30, p = 0.05) occurred more frequently in c-CABG group than OPCAB group. The completeness of follow-up was 83.8%. Late deaths occurred in 26 patients (11 [18.0%] in c-CABG group, 15 [16.9%] in OPCAB group). The causes of death were cancer, CVA, cardiac and sepsis.

Rerevascularization was performed more frequently in OPCAB group than in c-CABG group (14.5, p = .297). Five-year overall survival, freedom from cardiac death and MACE in c-CABG and OPCAB groups were 90.2 vs 96.6 %, 98.4 vs 100 %, and 91.8 vs 85.4 %, respectively. Ten-year survival estimates were 82.0 vs 83.1 %, 96.7 vs 96.6 %, and 88.5 vs 83.1 %, respectively. There were no statistical significance between 2 groups’ survival (p = .743 in overall survival, P = .813 in free from cardiac death, and p = .305 in free from MACE). Age was an independent predictor for mortalities (p = 0.000).

Discussion/Conclusion: OPCAB showed the better operative mortality and complication rates, and the higher rerevascularization rate, compared with c-CABG. Nevertheless, the survival indices did not reveal the statistical significance between 2 groups.

A244
Role of FDG-PET/CT in prediction of pathological tumor response and survival after trimodality therapy for esophageal squamous cell carcinoma
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Background/Introduction: Trimodality therapy has frequently been applied to patients with locally advanced esophageal cancer. However, to preoperatively predict the response to neoadjuvant therapy and prognosis is difficult.

Aims/Objectives: The present study aimed to determine the diagnostic applicability of 18F-fluorodeoxyglucose-positron emission tomography/ computed tomography (FDG-PET/CT) to evaluating the response and prognosis after trimodality therapy for esophageal squamous cell carcinoma (ESCC).

Method: The responses of 111 patients with ESCC who underwent neoadjuvant chemoradiotherapy (nCRT) followed by surgery were monitored by measuring the maximal standardized uptake value (SUVmax) of the primary tumor on FDG-PET before and after nCRT. Associations between SUVmax and pathological response of primary tumor and prognosis were analyzed.

Results: We compared the SUVmax between good (Japan Esophageal Society response evaluation criteria grades 3/2; n = 87, 78.4 %) and poor (grade 1; n = 24, 21.6 %) responders. The SUVmax after nCRT (post- SUVmax) in good and poor responders were 2.7 ± 0.9 and 4.4 ± 2.2, respectively (p < 0.0001). The rates of the SUVmax decrease after nCRT (ASUVmax) in these patients significantly differed (71 ± 14% vs. 60 ± 21%, respectively, p = 0.003). The area under receiver operating characteristic curves (AUC) showed that the optimal cut-off for post- SUVmax and ΔSUVmax were 3.7 (AUC, 0.76; 95% CI, 0.63-0.89; P < 0.001) and 70% (AUC, 0.65; 95% CI, 0.52-0.78; P = 0.02) for predicting good responder, respectively, and that the patients could be separated into groups with and without good response using these cut-off values. The 5-year overall survival rate was significantly higher for patients with ΔSUVmax > 70% than > 70% (66% vs. 42%, p = 0.04), and multivariable analysis including preoperative factors also revealed ΔSUVmax (≥ 70%/ > 70%) as an independent prognostic factor for disease-specific survival (OR, 2.22; 95%CI, 1.02 - 4.76; p = 0.04).

Discussion/Conclusion: Post-SUVmax and ΔSUVmax were valuable preoperative factors for predicting tumor response and survival in patients with ESCC after trimodality therapy. Thus, FDG-PET/CT findings are useful for tailoring optimal therapies for individual patients with ESCC.

A245
Completion lobectomy for unanticipated pN1 disease on postoperative pathology after segmentectomy for cT1NO lung cancer: Prevention of pleural adhesion by using fibrin glue
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A245
Background/Introduction: Segmentectomy is an anatomic sublobar resection that has recently been introduced for small lesions in cases of lung cancer.

Aims/Objectives: In completion lobectomy after segmentectomy, pleural adhesion in the hilar vessels and inter-segmental plane makes the procedure much difficult. Preventing adhesion could reduce intraoperative bleeding and operation time in cases of reoperation.

Method: Here, we present a case of right S9+10 segmentectomy followed by completion lobectomy for unanticipated nodal metastasis reported on postoperative pathologic examination 1 month after right S8+9 segmentectomy for clinical T1N0 pT1 lung cancer. In the initial surgery, we used electrocautery without a stapler to divide the inter-segmental plane. The entire dissected inter-segmental plane was covered with absorbable mesh and fibrin glue. At re-thoracotomy, pleural adhesion at the inter-segmental plane was never observed although there were adhesions at parietal pleura not covered with fibrin glue.

Discussion/Conclusion: Covering the inter-segmental plane with fibrin glue may be useful not only for preventing air leakage but also for preventing pleural adhesion.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A247
Effect of Aortic Valve Replacement on the Carotid Artery Distensibility in Patients with Aortic Valve Diseases
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Background/Introduction: Impaired carotid artery distensibility in patients with aortic stenosis (AS) was reported previously. However, there is no physiological assessment of the carotid artery distensibility in patients with aortic valve diseases underwent aortic valve replacement (AVR).

Aims/Objectives: In this study, we clarify the effect of AVR on the static and dynamic distensibility of the carotid artery in patients with aortic valve diseases.

Method: Twenty patients with AS and 9 with aortic regurgitation (AR) underwent AVR were recruited. As static distensibility parameters of the carotid artery, such as β stiffness index, pressure-strain elastic modulus (Ep), and arterial compliance (AC), were obtained by a real time echotracking system at pre-AVR and 1 week after AVR. As a dynamic distensibility parameter of the carotid artery, maximum rate of rise of carotid diameter (d/dt) was obtained.

Results: Effective orifice area indices (EOAI) were 1.13 ± 0.18 in AS group and 1.21 ± 0.12 in AR group, respectively. In AS group, post-AVR peak aortic velocities (AoV) was significantly reduced compared with pre-AVR peak AoV. On the other hand, post-AVR peak AoV was significantly increased compared with pre-AVR peak AoV in AR group. There were no significant changes in the static distensibility parameters, such as β stiffness index, Ep, and AC, following AVR in each group. With regard to the dynamic distensibility parameters of the carotid artery in AS group, post-AVR d/dt was higher than pre-AVR d/dt (4.63 ± 1.80 mm/s vs. 3.30 ± 1.15 mm/s). In AR group, post-AVR d/dt was lower than pre-AVR d/dt (4.37 ± 0.95 mm/s vs. 3.93 ± 4.35 mm/s). In the evaluation of relationship between these dynamic distensibility parameters and the cardiac parameters for all AVR patients, there was significant correlation between the ratio of post- to pre-AVR peak AoV and the ratio of d/dt (R = 0.753).

Discussion/Conclusion: We found rapid and drastic alternation in dynamic distensibility of the carotid artery after AVR. It was affected by the alternation of peak AoV related to AVR.

A246
Prediction of the Transprosthetic Velocity Following Aortic Valve Replacement with Bioprosthesis in the Patients with Aortic Stenosis
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A246

Background/Introduction: In aortic valve replacement(AVR), to obtain the largest possible effective orifice area index (EOAI) is considered to be desirable to avoid prosthesis patient mismatch in patients with aortic stenosis (AS). In spite of the adequate EOAI, sustained high transprosthetic velocity was often observed in early after AVR with bioprosthesis.

Aims/Objectives: We hypothesized that we could predict the transprosthetic velocity following AVR by clarifying the effect of AVR on cardiac function and peripheral vascular distensibility.

Method: Twenty patients with AS without aortic insufficiency underwent AVR using bioprostheses were recruited. Pre- and post-AVR cardiac function parameters and aortic valve parameters were collected by transthoracic echocardiography. To evaluate the influences of peripheral vascular resistance on transvalvular flow velocity, static distensibility parameters of the carotid artery, such as β stiffness index, pressure-strain elastic modulus (Ep), and arterial compliance (AC), were obtained by a real time echotracking system at pre-AVR and 1 week after AVR.

Results: Calculated effective orifice area index (EOAI) of the prosthetic valve was 1.13 ± 0.18. Pre-AVR peak AoV and post-AVR peak transprosthetic velocity was 5.15 ± 0.82 m/s and 2.78 ± 0.59 m/s, respectively. There was significant reduction in peak AoV following AVR. With regards to peripheral vascular resistance, static distensibility parameters of the carotid artery were not affected by AVR (pre- vs post-AVR β stiffness index, 15.26 ± 6.61 vs 15.07 ± 7.74, Ep, 190.46 ± 83.70 kPa vs 194.69 ± 104.15 kPa, AC, 0.66 ± 0.32 mm2/kPa vs 0.67 ± 0.31 mm2/kPa). No significant changes in LVEF and FS were also found. There was significant correlation between the ratio of peak transprosthetic velocity to pre-AVR peak AoV and the ratio of calculated EOAI to pre-AVR AVAL. As a result, predicted transprosthetic peak velocity could be calculated as (0.7642-0.084 × EOAI /pre-AVR AVAI) × pre-AVR peak AoV.

Discussion/Conclusion: We explored the effects of AVR on cardiac function and peripheral vascular distensibility. And we found a formula to predict the transprosthetic velocity following AVR.

A251
Aortopulmonary window due to transcatheter pulmonary valve implantation after arterial switch operation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A251

Background/Introduction: Right-sided lesions occur in 5-25% of patients after arterial switch operation (ASO) and percutaneous or surgical treatments are available (although they are not complication-free).

Aims/Objectives: We present the first reported case of iatrogenic aortopulmonary window (APW) due to transcatheter pulmonary valve implantation after ASO and the surgical strategy for repair.

Method: A 12-year old boy (d-transposition of the great arteries and ASO (LeCompte maneuver) in the neonatal period) was referred for transcatheter pulmonary valve implantation due to pulmonary regurgitation. A 22-mm stent-mounted valve bovine jugular vein graft (Melody valve, Medtronic, Minneapolis) was implanted, but the patient became hemodynamically unstable (pulmonary-to-systolic ratio 1.96).
Transesophageal echocardiography (TEE) showed a traumatic APW in the uppermost portion of the ascending aorta. Haemodynamic stability was achieved following closure using a 10-mm Amplatzer-Muscular-VSD-Occcluder but he remained symptomatic in the subsequent weeks. TEE showed residual left-to-right shunt in the proximal margin and a covered stent was implanted on the left pulmonary artery (LPA) to deal with the residual shunt, but the Amplatzer was dislocated. He was referred for emergent surgery. He was cooled to 18°C and ventricular fibrillation was achieved. Carbon dioxide field flooding was employed throughout. The circulation was arrested and the right PA was incised and extended toward the LPA. Both percutaneous devices were removed and the APW was closed (Gore-Tex patch). The PA and branches were reconstructed (bypass time 150 and arrest time 23 minutes). TEE showed no residual shunts.

Results: He had an uneventful recovery and was discharged on 10th postoperative day.

Discussion/Conclusion: The adherences between the aorta and PA on performing the LeCompte maneuver and the protrusion of the stent-mounted valve into the PA bifurcation may result in an APW. Care should be taken in avoiding Melody valve in patients with ASD and surgical option such as valved conduit is advised when significant pulmonary regurgitation is developed.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A254
Quality of life changes: a prospective evaluation after surgery ablation atrial fibrillation
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Background/Introduction: Atrial fibrillation (AF) is a chronic condition that increases the risk of patient mortality and morbidity and often requires life-long treatment, including long-term oral anticoagulation. Therefore, quality of life (QoL) is an important treatment outcome when measuring patients’ physical, emotional, and social functioning, as well as their perceived health.

Aims/Objectives: Compare the quality of life (QoL) of patients with persistent atrial fibrillation (pAF) and coronary artery disease (CAD) after modified mini-maze (MM) procedure or pulmonary vein isolation (PVI) using irrigated radiofrequency ablation (irrRA) compared with patients in the control group (CABG alone).

Method: In this prospective randomized study, we included 95 patients with pAF and CAD who underwent CABG combined with intraoperative irrRA. Patients were randomly assigned to 3 groups: CABG and PVI (CABG+PVI, n = 31), CABG and MM procedure (CABG+MM, n = 30), and isolated CABG (CABG alone, n = 34). All patients received implantable loop recorders (ILRs). Patient QoL was assessed using the Short Form 36 (SF-36) preoperatively, and 1 and 2 years postoperatively. The study primary end point - freedom from AF 1 year postoperatively, measured by ILRs; secondary end point - long-term outcomes, QoL, mortality, cardiovascular events.

Results: No reoperations or hospital mortalities were recorded. Mean follow-up was 14.9 ± 9.7 months. The freedom from AF were 80%, 86.2%, and 44.1% in the CABG+PVI, CABG+MM, and in the CABG alone groups, respectively. The QoL significantly improved in CABG+PVI and CABG+MM groups compared with CABG alone group in most domains.

Discussion/Conclusion: Effective elimination of AF during CABG surgery improves QoL in all physical health domains of the SF-36 and the role-emotional functioning domain. Thus, patients with concomitant AF and CAD may benefit from intraoperative irrRA to prevent relapse of the arrhythmia.

A255
Anatomical variations of coronary venous system and its tributaries: A cadaveric study
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A255

Background/Introduction: Knowledge of the coronary venous system (CVS) anatomy is an important factor before many electrophysiological procedures, such as CRT or ablations.

Aims/Objectives: The aim of the present study is to note the anatomy of the coronary venous system and its tributaries in cadaveric hearts.

Method: Total of fifty-five formalin-fixed adult human cadaveric hearts studied. Following measurements were noted: a) length of coronary sinus (CS), b) its relation to left coronary artery (LCA) and mitral valve annulus and left atrium, c) number of atrial and ventricular tributaries, d) distance and the opening angles of major tributaries from the coronary ostium, e) length and width of coronary ostium, f) Attachment of Thebesian valve.

Results: The following results are obtained: a) Length of coronary sinus (CS) ranged from 2 cm to 3.8 cm, the mean being 2.8 cm. b) Relation of coronary sinus to the left coronary artery (LCA) and mitral valve annulus was above and parallel in 100% cases c) The number of Atrial tributaries ranged from 1-2 and ventricular from 1-6. d) The mean distance of Anterior interventricular vein (AIV), Posterior vein of the left ventricle (PVLV), Oblique vein of left atrium (OVLV), Middle cardiac vein (MCV) from the coronary ostium was 67.5 mm, 32 mm, 41 mm, 7 mm respectively e) The average length and width of coronary ostium was 9 mm and 13 mm respectively. f) Thebesian valve in 24/35 hearts was
attached to the superior, right and inferior margins of the ostium. In 29/55 hearts to the inferior margin of the ostium.

Discussion/Conclusion: For invasive cardiologists, knowledge about CVS anatomy could add value and during electrophysiology procedures.

A256
Is nodal biopsy a pre-requisite to surgery in biopsy proven pulmonary adenocarcinoma in the era of PET-CT?
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Background/Introduction: Lung cancer management is defined by stage ≤ 25 mm. 13 patients There is a direct relationship between low gender and contractility is not well defined. The PET scan has dependence on staging EBUS or the “gold standard” mediastinoscopy. Aims/Objectives: We attempt to answer the question whether nodal biopsy is a pre-requisite to surgery in biopsy proven pulmonary adenocarcinoma.

Method: Retrospective data from all patients undergoing surgical resection of adenocarcinoma with pre-operative staging limiting nodal disease to N1 and tumor size < T3 during the period of Jan 2012 to December 2014 was included. The data taken was from CT, PET and histopathology. Surgical decision was made after an MDM.

Results: A total of 40 patients were included. The most common subtype of adenocarcinoma was acinar (AA) 42.5%, lepidic (LA) 20%, papillary (PA) 17.5%, micropapillary (MPA) and solid (SA) 10% each. PET was positive for nodal disease in 4 (10%) patients, while histology revealed nodal disease in 10 patients (25%). 2 PET positive patients were false positives. Nodal disease was most common in PA and AA subtypes. None of LAs had any nodal spread. 9/10 patients had a tumor size ≤ 25 mm. 13 patients (32.5%) had lymphatic invasion, of which 7 had established nodal spread. SUV max had a positive association with nodal disease above 5.0. SUV max below 5.0 was also associated with a smaller size.

Discussion/Conclusion: There is a direct relationship between low SUVmax and small tumor size. PET CT scan has a low sensitivity in diagnosing nodal disease in early adenocarcinomas. The risk of nodal spread however is low in lepidic adenocarcinomas. We recommend that biopsy proven lepidic adenocarcinomas with a SUVmax below 5.0 on PET CT should be good candidates for surgical intervention without mediastinoscopy. In other adenocarcinoma subtypes, nodal disease suspected by size criteria on CT may merit sampling prior to resection.

A257
Impact of gender on contractile function in human skinned fibers in condition of volume-overload
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A257

Background/Introduction: Gender-based differences in the cardiac morphology and function in patients with volume-overload cardiac pathologies has been widely examined. However the relationship between gender and contractility is not well defined.

Aims/Objectives: Therefore we evaluate the gender influence on contractile capacity in patients with volume overload, present with severe mitral valve regurgitation and preserved left ventricular function.

Method: Right auricle tissue from 12 patients (6 male and 6 female patients) Right auricle samples from 40 patients (20 male patients, 67 ± 9 years) with severe mitral regurgitation show adverse calcium induced force properties. Male fibers achieve lower maximal force values, starting at higher base values in low calcium concentration condition and might therefore have higher sensitivity to calcium.

A258
Is there a gender-dependent negative inotropic effect of Methylene blue on the contractile performance on the level of myofibrillae?
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A258

Background/Introduction: Methylene blue (MB) is a frequently used in patients with systemic inflammatory response syndrome with the effect of an increase in systemic vascular resistance. Recent studies assume that MB improves contractility and sensitizes myocardium to catecholamines. Aims/Objectives: But there are no data on human cardiac tissue showing whether MB has any impact on cardiac performance on the level of contractile apparatus and whether there is any gender difference.

Method: Right auricle tissue from 12 patients (6 male and 6 female patients) undergoing elective cardiac surgery (aortocoronary bypass grafting) was obtained prior to right atrial cannulation. The tissue was prepared in 24 hours lasting procedure and each cycle and each patient (n = 30 in each patient with and without MB).

Results: 1. Skinned human fibers exposed to MB develop less force than control fibers. MB improves contractility and sensitizes myocardium to catecholamines. 2. In presence of MB there was an increase of calcium concentration until pCa 4.5. The fibers first underwent an increase of calcium concentration until pCa 4.5. Afterwards the fibers are relaxed in calcium-free solution until steady state is achieved. Afterwards a second cycle is started with pCa 6.0 and 100 nM MB is added to every step of increasing calcium concentration. We performed 3 experiments with different fibers in each cycle and each patient (n = 30 in each patient with and without MB).

Discussion/Conclusion: Our data showed that MB has a negative inotropic effect on contractile performance of skinned human atrial fibers. We observed reduced absolute forces after exposure to MB and additionally there is some evidence for a gender-dependent effect on the contractile apparatus in presence of MB.
Aims/Objectives: To present our results of 723 consecutive CABG procedures in regard to the frequency of mediastinal infections/complications.

Method: We included in the study 723 patients submitted to elective CABG-off pump procedure in the 15 year-period 2000-2014. The characteristics of our sample included: 498 male and 225 female patients. Mean age was 68.7 ± 6.9 years. The vast majority of patients (644/89%) were submitted to off-pump procedure, mostly with skeletonized bilateral internal thoracic artery (BITA) revascularization. Care was taken that the patients were extubated and transferred to the ward early. Mean discharge period was 7.2 days. Subgroups with extra risk factors for sternal/mediastinal complications such as diabetics or patients with COPD, BITA and obesity were provided with thoracic bandage and advised to avoid extra tension in the area.

Results: No cases of mediastinal infection were observed; in total, only 51 cases (7%) of superficial sternal wound infection were noted.

Discussion/Conclusion: Off pump-CABG procedures can be safely performed in regard to mediastinal complications, even in subgroups of patients with augmented risk for mediastinitis.

Background/Introduction: ECMO is widely used through the world, but Pericardectomy remains the only available procedure in regard to mediastinal complications, even in subgroups of patients with augmented risk for mediastinitis.

A260
Exclusive percutaneous peripheral veno-arterial ECMO with distal reperfusion of homolateral limb
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)pA260

Aims/Objectives: We describe and assess the effectiveness, the feasibility and the security of exclusive percutaneous peripheral veno-arterial ECMO including the distal reperfusion of the homolateral lower limb.

Method: It is a monocentric, retrospective and observational study. Twenty nine patients (seventeen men, mean age 60.7 years) were implanted between July 2012 and March 2014. The indications for ECMO were acute phase of myocardial infarction (n = 8), post-cardiomyogenic shock (n = 12), acute myocarditis (n = 1), cardiac rhythm disorders (n = 1), bridge to cardiac transplantation or long-term circulatory support (n = 7). The insertion was performed in hybrid operating room. After puncture of the common femoral artery (CFA) the superficial femoral artery (SFA) was opacified. An anterograde 6F introducer was placed in the SFA under fluoroscopic control. The arterial and venous cannulae were then introduced through guide wires placed under fluoroscopic control. The distal perfusion of the homolateral lower limb was performed through a connection between the arterial cannulae and the introducer placed initially. Femoral arterial cannula was surgically removed at the end of the assistance to avoid vascular complications, the others by compression.

Results: The mean duration of circulatory support was 9.5 days (from 1 to 52 days). Thirteen deaths occurred (45%). Bleeding of the groin required a haemostasis procedure in two cases only (5%). One external iliac artery dissection (2.5%) and two acute thrombosis of the oxygenator (one of which was reversible) (5%) occurred. Neither infection, nor lower limb acute ischemia occurred. A percutaneous atrioseptostomy was performed in catheterization room in eight patients who presented an acute pulmonary edema (21%), which all resumed.

Discussion/Conclusion: These results suggest that the implantation of exclusive percutaneous peripheral veno-arterial ECMO is efficient, reproducible and minimally invasive. The pre-positioning of the distal reperfusion should be systematic. Surgical ablation of the arterial femoral cannula is necessary, but complications related to an initial surgical approach could be avoided during the time of assistance.

Background/Introduction: Pericardectomy remains the only available treatment for constrictive pericarditis.

Historically idiopathic was the main aetiology for CP followed by TB.

In recent years we have seen a change in the aetiology of CP with increasing PCI and surgical interventions.

We reviewed 40 patients who underwent pericardectomy over 10 years period in our institution.

Aims/Objectives: To establish the commonest aetiology of CP in this cohort of patients in light of the relative increase of numbers in our hospital (100% increase in the last 3 years).

To correlate clinical diagnosis with histological diagnosis.

To explore the increasing role of new diagnostic tools like MRI in this known disease.

To detect recurrence rate of CP & need for reintervention.

To compare outcome of pericardectomy in our hospital with published data.

Method: This was a retrospective study. We reviewed hospital records for all pericardectomy patients over the last 10 years (N = 40) to extract:

1. Aetiology based on histological (when available), intraoperative findings and clinical diagnosis.
2. Follow up information including survival & NYHA post operatively at 3 clinic reviews.
3. Preoperative imaging including Echo, CT and MRI.
4. Interval between the onset of symptoms, diagnosis & surgical intervention.

Results: The main aetiology in our institution was post cardiac surgery (35%) followed by idiopathic (25%). Post radiation represented only (7.5%).

Clinical diagnosis matched the histological diagnosis in 87.5% of cases.

MRI was the key diagnostic tool in 22.3% of cases.

The interval between onset of symptoms and diagnosis was very variable (3-48 months).

Operative mortality was 5%. Patient with NYHA class III-IV were (17.5%). 5 years survival was 85%.

Discussion/Conclusion: A change in aetiology is shown in this limited patients group with post cardiac surgery being the lead one. This was not in the context of surgical closure of pericardium as thought before.

The delay in diagnosis of CP post cardiac surgery is an indicator of a diagnosis dilemma. MRI was key in the diagnosis as it implicate a more robust criteria compared to the classical “septal bounce”. Further multi-centre studies are required to investigate this new pattern of a known debilitating pathology.

A264
Clinical features and treatment for coronary sinus orifice atresia
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)pA264

Background/Introduction: Coronary sinus orifice atresia (CSOA) is a rare clinical condition, and usually does not require any treatment.

Aims/Objectives: To review clinical features and surgical outcomes for CSOA.

Method: From 2003 to 2015, 6 patients were diagnosed as CSOA. There were 4 females. Median age at diagnosis was 3.5 years-old (range, 0.2-73).

Associated cardiac anomalies were ASD in 2 patients, functional single ventricle in 2, VSD in 1, and congenitally corrected transposition of great arteries (ccTGA) in 1. Median follow up period was 9 years (1-11).

Results: CSOA was preoperatively diagnosed in 2 of 6 patients by late phase coronary angiography findings, intraoperatively in 3, and postoperatively in 1. Coronary venous drainage was through the left superior vena cava (LSVC) to innominate vein in 3, through Thesvesian veins to right atrium in 2, and both in 1. 3 patients needed surgical treatment without any mortalities. The first patient with ccTGA had undergone the redirection of LSVC to functional left atrium at the timing of double switch operation, because postoperative transient high right SVC pressure would deteriorate coronary venous drainage, and also the presence of LSVC obstructed to create right ventricle to pulmonary artery conduit. Second patient with TA gradually developed hypoxia after the...
Fontan operation, which was revealed to be caused by the increase of veno-venous shunt blood flow from innominate vein to right atrium through LSVC to Thesian veins, so that LSVC was ligated and coronary sinus was unroofed. The remaining functional single ventricle patient had undergone ligation of LSVC and unroofing coronary sinus at Fontan operation, to prevent coronary venous drainage failure.

**Discussion/Conclusion:** CSOA should be suspected when LSVC drained into innominate vein existed. Surgical treatment is required if post-operative high right SVC pressure would cause coronary venous drainage failure, especially in functional single ventricle patient.

### A265

**Routine innominate artery cannulation for elective ascending aortic surgery. A single-centre experience**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1)A265

**Background/Introduction:** Innominate artery cannulation is indicated in operations for acute and chronic aortic disease and also in case of porcelain aorta or reoperations. We routinely used innominate artery cannulation in 81 elective operations which included ascending aorta replacement.

**Aims/Objectives:** Aim of our study is to determine whether routine innominate artery cannulation is safe and effective for elective surgical procedures including ascending aorta replacement.

**Method:** We excluded from the study all patients who underwent emergent or urgent operation for acute aortic syndrome, any aortic surgery distal to innominate artery and patients who had other than innominate artery cannulation (aortic, subclavian/axillary, femoral). The final cohort was consisted of 81 patients who underwent elective ascending aorta replacement alone or with concomitant procedures such as aortic root replacement, coronary or/and valve surgical interventions, which were performed only with innominate artery cannulation. Open distal anastomosis after clamping of the aortic arch branches and selective antegrade cerebral perfusion with a flow rate of 10 ml/kg/min, was performed in all patients. 43 peri-operative variables have been investigated.

**Results:** The operations that have been performed are categorized into ascending aorta replacement with interposition graft (n = 27, 33.3%), Bentall procedure (n = 20, 24.7%), Bentall plus coronary artery bypass surgery (n = 8, 9.9%), ascending aorta replacement with interposition graft plus aortic valve replacement (n = 12, 14.6%), ascending aorta replacement with interposition graft plus coronary artery bypass surgery (n = 9, 11.1%) and ascending aorta replacement with interposition graft plus aortic valve replacement plus coronary artery bypass surgery (n = 5, 6.2%). In hospital mortality rate was 1.2% (n = 1). Three patients (3.7%) had postoperative stroke, 2 had transient ischemic attack (2.5%) and 7 developed cognitive dysfunction (8.6%). Average antegrade cerebral perfusion period was 20 minutes at a temperature of 29.4°C. In three cases bilateral (left common artery) antegrade cerebral perfusion was also used.

**Discussion/Conclusion:** Innominate artery cannulation performed for elective surgical procedures including ascending aorta replacement is safe and effective. It poses low mortality rate and a low risk of neurological events and cognitive dysfunction.

### A266

**Spontaneous chylothorax identified during delivery**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1)A266

**Background/Introduction:** Spontaneous (idiopathic) chylothorax during pregnancy is an extremely rare entity and symptoms can be attributed to other causes and lead to misdiagnosis. Management can be challenging.

**Aims/Objectives:** To describe the mechanisms and management of gestational chylothorax.

**Method:** A 39 year old lady was referred to our department 15 days after delivery (caesarean section) of a healthy fetus due to left pleural effusion. She was complaining for shortness of breath and dry cough for the last 4 weeks of gestation and she was managed as a respiratory infection with no improvement to her symptoms. There was no attempt for a regular vaginal delivery (due to her request) and she was brought to the theatre for a Caesarian section. At the time of the procedure, diminished breath sounds were noticed on auscultation and after the delivery of a healthy fetus, a CXR followed by CT revealed a massive left pleural effusion. Diagnostic thoracentesis was performed and pleural fluid analysis showed chylothorax (milky fluid, triglyceride level: 340 mg/dl). Despite the conservative management, chylothorax persisted so the patient was scheduled for VATS pleurodesis. A VATS chemical pleurodesis (left side) was performed under general anesthesia and single lung ventilation; no obvious leak was identified, talc was used and two chest drains were inserted. Twelve days after the procedure the triglyceride level of the pleural fluid was 45 mg/dl and the output minimal, so diet was started gradually (100 cc of milk). The next day the triglyceride level was 160 mg/l and the total output 300 mls. Additionally, an ultrasound revealed thrombosis of the lower part of the left internal jugular and left innominate vein (previous central line) which obviously increased the chylothorax. On the day 25 a right posterolateral thoracotomy was performed and a mass ligation of the tissue between esophagus,azygos vein and the descending aorta was obtained. On the next two postoperative days the output from the chest drains was 780cc the 1st and 2380cc the 2nd day despite total parenteral nutrition. The patient was brought back to theatre, the incision reopened and oil was given through the nasogastric tube. A leak was noticed just next to the previous ligation stiches and the thoracic duct was dissected and ligated with 3-0 prolene pledgeted sutures. Introduction of oil didn’t lead to leak this time.

**Results:** Her postoperative period was complicated with septic episodes which were managed with appropriate changes of her antibiotic cover. Institution of low fat diet didn’t result in new pleural effusion, the drains were removed and the patient was discharged on day 74.

**Discussion/Conclusion:** Chylothorax following delivery has only been reported in individual cases and there are no large series describing the exact nature of the mechanism. It is believed that high intraabdominal pressures generated by the Valsalva maneuver of the mother during pushing, or external pressure on the abdomen can result in high intrathoracic pressures which disrupt the thoracic duct into the pleural space. Idiopathic cases of gestational chylothorax have been reported and treated surgically after the delivery. In our patient, no Valsalva maneuver was performed and the patient admitted that her dyspnea and cough started the last month of gestation with no history of trauma or any change in her physical activity, which indicates the preexistence of the effusion. This lady has been followed up for 7 years after this episode and she is completely asymptomatic with no pleural effusions identified on x rays. Based on the experience gained from this case as well as from similar reports, early operative management of spontaneous chylothorax related to pregnancy is the most effective therapy.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

### A268

**Assessment of microcirculation on sternal wound healing after coronary artery bypass graft surgical diabetic & non-diabetic patients using laser Doppler imaging system**

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**Background/Introduction:** In this study we propose to investigate the effect of the neovascularisation and blood flow to the sternum and surrounding tissues in diabetic & non-diabetic patients by using a laser Doppler imager. The reasons for the delayed healing are not entirely clear,
but are thought to include both mechanical factors such as poor wiring of the breastbone during surgery, and biological factors related to the interruption to the blood supply to the sternum and surrounding tissues associated with the procedure.

**Aims/Objectives:** To assess the role of neovascularisation in diabetic & non-diabetic following coronary artery bypass graft (CABG) surgery using Laser Doppler Imager.

**Method:** Patients were divided into two groups as diabetic & non-diabetic had undergone CABG (30 patients). Sternal microcirculation measurements were taken by using a Moor LDI laser Doppler imaging system, at ten time points (pre-induction to 96 hours after bypass). The regional blood flow was estimated by measuring the Doppler shift of laser light caused by blood cells passing within the laser light field. Blood samples were taken for the analysis of number of factors.

**Results:** Results: The neovascularisation and wound healing were comparatively faster in non-diabetic surgical patients than diabetic group. New vessel formation from the right internal thoracic and intercostal arteries to the left side confirmed that the vascular supply of the sternum on the left side following CABG surgery was not entirely depended upon the left internal thoracic arteries. This is due to secondary changes in diabetic patients on vascular system.

**Discussion/Conclusion:** There was a formation of new vessels from right side of the sternum following the mobilization of left internal thoracic artery in CABG surgical patients. The healing process was faster in non-diabetic CABG surgical patients.

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**A269**

Preimplant experience in pulmonary metastatectomy

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**Background/Introduction:** The surgical resection of pulmonary metastasis is not new it dates back to 1994 thanks to Blalock who resected lung metastases from colorectal cancer. He reported his preliminary results in 1947. Since then, there is a wide variation in the 5-year survival rate achieved by lung metastatectomies in different institutions. It varies between 9% to 45%.

**Aims/Objectives:** We aimed to review our preliminary limited experience in pulmonary metastatectomies in KAMC; Makkah; Saudi Arabia in more than 3 years.

**Method:** This is a retrospective study including 21 patients who had pulmonary metastatectomy in KAMC; Makkah between 2012 January and June 2015.

**Results:** Our study included 21 patients who had lung metastases and were operated upon by thoracic surgeons. Females constituted more than 2/3 of this series. Mean age was 26 years. Mean follow up duration was 25 months. The commonest primary originated from the bones and rectosigmoid. Thirty five thoracic surgeries were required for those 21 cases. Twelve patients had one thoracic surgery, five had 2 surgeries, three had 3 surgeries and one had 4 surgeries. We used either VATS or thoracotomy in our lung metastatectomies. Only one third of the resected specimens were proved to be metastatic. No significant perioperative complications were reported in our series. No mortality was reported during the study period.

**Discussion/Conclusion:** Pulmonary metastatectomy can be performed safely either by VATS or through thoracotomy with acceptable results.

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**A270**

Successful use of reduction aortoplasty in patients undergoing aortic valve replacement with ascending aortic dilatation

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**Background/Introduction:** Ascending aortic dilatation is associated with bioprosthetic aortic valve disease. Some advocate replacing the ascending aorta in conjunction with aortic valve replacement. We adopted to perform ascending aortoplasty at the time of aortic valve replacement.

**Aims/Objectives:** The aim of this study was to analyze the short and long term post-operative outcomes in this group of patients.

**Method:** We performed a retrospective analysis on all patients who underwent reduction aortoplasty during aortic valve surgery from 2005 to 2013. This was a single surgeon and single center study. Data was collected from the departmental database and office of national statistics. Study endpoints included early and late mortality and incidence of aortic dissection.

**Results:** We identified 26 patients who underwent aortoplasty during aortic valve replacement. Age (66± 13 years), sex (male: female, 15:11), ejection score (5± 3), bypass time (95± 18 min), eclipsemachine time (68± 13 min). Native valve pathology (stenosis: regurgitation: mixed, 13:4:9). Type of implant (mechanical: biological, 13:13). Median prosthesis valve size was 25 mm in all patients. Post-operatively there was no incidence of stroke. Two patients required hemofiltration before recovered on discharge. Early mortality was (n = 1, 4%) and 10 year mortality was (n = 6, 23%). There was no incidence of aortic dissection.

**Discussion/Conclusion:** In our study, aortoplasty to counter aortic dilatation was successfully performed with acceptable levels of morbidity and mortality. Reduction of the aortic root during the procedure did not give rise to post-operative aortic dissection.
This limited experience suggests that endobronchial Valves to treat patients with prolonged air-leaks from various etiologies is effective. Pooled data from multiple centers will permit clear patient selection criteria of patients with prolonged air-leaks. Specifically in the group of patients unsuitable for operative intervention, endobronchial valve placement is an important management tool.

**A272**

Video-assisted thoroscopic surgery under non-intubated spontaneous breathing anesthesia using laryngeal mask

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**Background/Introduction:** During the past 20 years, video-assisted thoroscopic surgery (VATS) has been an important minimally invasive tool. In order to further reduce its invasiveness, non-intubated spontaneous breathing general anesthesia with LMA without using muscle relaxants was used in a variety of thoracic procedures. The objective of this study is to evaluate the safety and feasibility of this advantageous technique.

**Aims/Objectives:** From March 2013 till now, 23 patients with lung or pleural disease were managed by VATS under spontaneous breathing general anesthesia with LMA without using muscle relaxants.

**Method:** Results: The mean operative time was 40 minutes (range, 15-90 minutes). The values of lower oxygen saturation and peak end-tidal carbon dioxide tension were 95% and 50 mmHg, respectively. No mask displacement occurred. No conversion to endotracheal anesthesia was required, whereas one patient required conversion to mini thoracotomy. The level of technical feasibility was excellent in 12 cases and good in 11 cases. Mortality as well as morbidity rates were zero. Mean postoperative stay was 2.6 days.

**Table 1(abstract A272) Clinical characteristics of the patients**

<table>
<thead>
<tr>
<th>Mean Age (years)</th>
<th>53.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Range (years)</td>
<td>20-87</td>
</tr>
<tr>
<td>Male/Female</td>
<td>9/7</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>56-100</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>&lt;30</td>
</tr>
<tr>
<td>ASA class</td>
<td>I-II</td>
</tr>
</tbody>
</table>

**Table 2(abstract A272) Type of LMA used**

<table>
<thead>
<tr>
<th>Type of LMA</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMA ProSeal</td>
<td>21</td>
</tr>
<tr>
<td>LMA Fastrach</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 3(abstract A272) Type of thoracic procedure**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleural biopsy</td>
<td>2</td>
</tr>
<tr>
<td>Lung biopsy</td>
<td>4</td>
</tr>
<tr>
<td>Pulmonary nodule excision</td>
<td>4</td>
</tr>
<tr>
<td>Pericardial window</td>
<td>3</td>
</tr>
<tr>
<td>Multiloculated empyema debridement</td>
<td>2</td>
</tr>
<tr>
<td>Pneumothorax</td>
<td>8</td>
</tr>
</tbody>
</table>

**Discussion/Conclusion:** It seems that VATS is safe and feasible under non-intubated spontaneous breathing anesthesia with LMA. A confident manipulation of lung parenchyma is allowed preventing from cough, pain, or panic attack described for awake epidural anesthesia, as well as avoiding the risks of tracheal intubation and mechanical ventilation.

**A273**

The association between Toll-like Receptor 4, CD14 and coronary atherosclerosis

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**Background/Introduction:** Immune and inflammatory mechanisms are considered to play a key role in the pathogenesis of atherosclerosis. Toll-like-Receptor4 and CD14 receptors are involved in the intracellular signalling pathway of the innate immune and inflammatory responses against pathogens. Functional polymorphisms of TLR4 and CD14 have so far conflicting impact on coronary artery disease.

**Aims/Objectives:** We study the most frequent functional polymorphisms of TLR4 -Asp299Gly, Thr399Ile- and of the promoter of CD14 (T/C-159) aiming to identify if they predispose to coronary artery disease.

**Method:** We included two study groups. The study group 1 was consisted of 100 human subjects whose post mortem autopsy revealed severe atheromatosis of their coronary arteries. 100 patients who underwent cardiac Multi-Detector-Row-Computed-Tomography (MDCT) and they were found positive for severe coronary atheromatosis were included in the study group 2. Our case group consists of both group 1 and 2. The control group consists of 100 healthy individuals. DNA was obtained from 100 paraffin embedded human aortic tissues and 100 blood samples for our study groups respectively. DNA from the control group was also obtained from blood samples. Genotyping was performed by allele specific PCR or PCR-RFLP analysis.

**Results:** There was no statistical difference between case group and control group with regards to the frequencies of 299Gly and 399Ile allele of TLR4, Frequencies of T allele of the CD14 promoter, regarding the of CD14(T/C-159) functional polymorphism, are significantly higher in the control group compared to the case group (37% vs 23.75%), p = 0.05.

**Discussion/Conclusion:** The results of this study suggest that functional polymorphisms of TLR4 do not have an impact on coronary atheromatosis for the population we studied. However, polymorphisms of CD14 seem to have a protective role against coronary artery disease. Our next step would be to include more patients in our study and find an easily quantified expression of CD14 that could correlate with coronary atheromatosis.

**A274**

Follow-up after the Ross procedure. How significant it is

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**Background/Introduction:** Replacement of the aortic valve or aortic root with a pulmonary autograft (Ross procedure) and replacement of the pulmonary valve with a pulmonary allograft or xenograft and is now a widely used technique for the treatment of aortic valve disease in the children and young adult. Excellent short and midterm results have been demonstrated but there is continuing concern about the risk of long-term autograft dilation and aortic regurgitation.

**Aims/Objectives:** Case report 1.

A 24 year old female patient in 2002 at the age of 12 underwent a Ross procedure due to severe congenital aortic valve stenosis. During the follow-up, in the last year the aortic root dilated from 30 mm to 34 mm. Other findings were mild aortic regurgitation and mild pulmonary valve
stensosis. The patient is still under surveillance and clinically on NYHA class II.

**Method:** Case report 2.

A 29 year old female patient in 2002 at the age of 17 underwent a Ross procedure due to a congenital severe aortic valve stenosis combined with regurgitation. During the follow-up the aortic root and the ascending aorta gradually dilated to 52 mm and 50 mm respectively with also mild to moderate aortic regurgitation. In 2014 she underwent a redo-Bentall operation with the replacement of the dilated aorta and valve with a mechanical conduit ATS 22 mm/26 mm (Medtronic Inc MN USA). After the operation the patient is stable and is doing well.

**Results:**

A male patient in the year 2000 at the age of 10 underwent a Ross procedure due to severe aortic valve regurgitation combined with stenosis. During the operation also annuloplasty of the aortic ring was done because of the difference between the native aortic ring and the pulmonary autograft diameters. In 2007 he underwent balloon dilation of the neo-aortic valve due to severe stenosis with a decrease of the peak gradient from 80 mmHg to 30 mmHg. During the follow-up aortic root and ascending aorta gradually dilated to 50 mm and 56 mm respectively. Moreover the aortic stenosis after the balloon dilation also deteriorated. In 2010 he was referred to surgery for replacement of the aortic root and the ascending aorta. Unfortunately, the patient died from aortic rupture before surgery during the preoperative evaluation.

**Discussion/Conclusion:** In conclusion, dilatation of the pulmonary autograft is a major drawback of the Ross procedure and it is the leading cause for reoperation. In order to prevent any lethal or non-lethal complications of the pulmonary autograft these patients need a close and life-long systematic follow-up.

**Consent:** Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

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**A275**

**Surgical management of Sternal wound infection post cardiac surgery: “single surgeon experience”**

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**Aims/Objectives:** Sternal osteomyelitis and post sternotomy mediastinitis still stays as a severe life-threatening complication after cardiac surgery. This study was conducted to evaluate the short and long term results of surgical management of deep sternal wounds infection (DSWI).

**Methods:** A retrospective study was conducted to investigate post cardiac surgery patients with sternal wound infection by thoracic surgeon. From March 2008 to March 2013 all patients who were underwent surgery for post cardiac surgery sternal wound infection and or dehiscence were enrolled.

**Results:** A consultant non cardiac thoracic surgeon managed 146 patients with DSWI and/or dehiscence. Nine patients were excluded due to sternal dehiscence with no evidence of gross infection and also negative wound culture. Eighty four patients were female. According to EI Oakley classification, Type I, II, III, IV, V were 8, 2, 79,5,43, consequently. All patients evaluated by CT scan before intervention or after 1st operation. Patients had soft tissue debridement, with removal of wires in one or staged operation combined with mediastintomy, mediastinal irrigation and debridement. Twelve patients had near total sternectomy, one upper sternectomy and one patient had sternoclavicular joint resection. One hundred four patient had partial sternectomy (74 longitudinal and 30 transverse sternectomy). Chondrectomy was done in 44 and decontortion in 6. Twelve patient had rewiring. Bone stabilization was done by Zipfix or Steristab and +/- wires in 12 and Titanium plate in 6.Only two patients had negative pressure wound therapy (NPWT) as a bridge to reconstruction. At the end 20 patients had delay simple closure of skin. In 113 patients a total of 163 pectoral muscle flap including: 36 right pectoral major muscle turnover flap (RPMMTF); 53 combined RPMMTF plus left advancement pectoral muscle flap (LTPMFMCF); 14 local right or left PMMF were done. We used 4 rectus abdominis flap, 2 omental flap, and breast flap. Twenty nine patients had reoperation after reconstruction. Nine had recurrence osteomyelitis and/or chondritis. One patient had mediastinitis and 9 had skin flap necrosis. Remnant of pace wire was the cause of recurrent infection in 2. Five patients had rewiring or reconstruction and one patient had operation due to GI bleeding. Hospital mortality rate was 8.21% (12 patients were died. Patients had followed for a mean of 40.3 months and 3 years mortality rate was 13.69%.

**Discussion/Conclusions:** DSWI remains a major challenging complication after open heart surgery. The key issues are early diagnosis, prompt surgical intervention by expertise and use all available treatment modality to decrease mortality and better outcomes.

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**A276**

**Excavatum & Exercise: Digging for causes of dyspnoea**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1):A276

**Background/Introduction:** Pectus Excavatum is the most common congenital chest wall deformity (90%) and the documented incidence ranges between 0.1% - 0.3%. Patients with Pectus Excavatum can suffer with body image and psychological issues. Indications for surgical correction remains controversial although a decrease in exercise tolerance is frequently overlooked. A general consensus persists that Pectus Excavatum is a cosmetic defect with no physiological consequences.

**Aims/Objectives:** In this study we investigated the functional exercise capacity of patients with Pectus Excavatum (PE).

**Method:** Between Feb 2006 and March 2015: 44 patients presented to our institution with symptomatic PE. 29 (26 male : 3 female) patients underwent complete investigational study including Computed Tomography (CT) of the thorax Cardiopulmonary Exercise tolerance (CPX) testing including measurement of Cardiovascular parameters: Maximal oxygen consumption (VO2 max) ; normal > 85% predicted. Anaerobic Threshold (AT)=: change from aerobic to anaerobic metabolism (normal range 47 -64%). O2 pulse (an indirect measure of stroke volume; normal > 90% predicted). Respiratory parameters: Ventilatory reserve (VE/BTPS); normal > 85% predicted. Peak exercise. End Tidal CO2 (PETCO2); normal 30 - 38 mmHg.

**Results:** Results Mean Age 22.4 years (13 - 33 years). All presented with symptoms of dyspnoea /fatigue /dysphagia. Mean VO2 max was 78% (51 - 102%). VO2 max was sub-normal in 19 (65%) indicating cardiac dysfunction. 15 (51%) patients had reduced AT. 15 patients had reduced VO2 /HR. 28 (96.5%) had marked increase/unused ventilatory reserve. 14 (48%) had a marked increase in PETCO2, inability to expire CO2.

**Discussion/Conclusion:** Pectus Excavatum is associated with significant compromise in cardiopulmonary physiology (65%). The aetiology of the defect is mainly cardiac or respiratory in nature with some having a mixed picture. We advocate the routine use CPX testing in PE patients prior to corrective surgery. These results support the premise that most patients with severe anatomical PE defect also have an associated severe physiological defect.

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**A277**

**The ABC of Pectus Excavatum: a novel anatomical classification system**

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*Journal of Cardiothoracic Surgery* 2015, 10(Suppl 1):A277

**Background/Introduction:** Pectus Excavatum affects between 1:400 - 1:1000 live births. Little academic focus has been directed to the anatomical subgroups of this condition. No anatomical classification and subgrouping has been formulated. Current surgical strategies utilize a ‘one size fits all’ philosophy with variations of the Nuss or Ravitch procedure.

**Aims/Objectives:** Our aim was to stratify patients with Pectus Excavatum by providing an anatomical classification that would guide treatment. The novel classification we propose provides a framework for use with current and evolving medical technologies.
Method: Between April 2006 - March 2015, 24 patients (22 male: 2 female; Age 15 - 33 years) presented to our institute with symptomatic Pectus Excavatum. All presented with symptoms of dyspnoea/fatigue/dysphagia. All patients underwent Prospective evaluation of exercise and anatomical characteristics by: Spirometry; Cardiopulmonary exercise tolerance (CPET) testing & Non-contrast axial/sagittal CT scan of the thorax & 3D reconstruction. We propose an Anatomical classification based on 2D and 3D CT imaging: Classification A : No depression of manubrium, posterior angulation of sternal body.Classification B: (1) Horizontal depression of manubrium and sternal body with no angulation (2) Depression of manubrium with posterior angulation of sternal body.Classification C: Complex asymmetrical torsion of manubrium and body of sternum associated with asymmetrical distortion and depression of rib cage. Results: 9 patients (38%) had a Type A defect. We recommend this sternal body angulation to be corrected with Ravitch Procedure, Transverse osteotomy and midline screw fixation bar. 14 (58%) patients had a Type B2 defect, which we recommend should be repaired as a Type A defect but elevation of the whole sternum using a transverse screw fixation bar. Discussion/Conclusion: Our classification provides a framework for evaluation of the pathological anatomy of Pectus Excavatum. This classification has been shown to have utilitarian value in planning surgical strategy. The model will provide opportunities for future development of surgical technique and provides a descriptor that will allow academic discussion.

A279 Management of tracheostomy-related emergencies: An audit of junior doctors’ knowledge and skills
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A278

Background/Introduction: The 2014 National Enquiry Confinement into Patient Outcome and Death (NCEPOD) highlighted hospital tracheostomy care as a significant patient safety issue (1) Tracheostomy-related complications occur frequently in ward patients, and are potentially life-threatening. (2) Rapid recognition and management of blocked or displaced tracheostomy tubes is essential. According to Intensive Care Society guidelines “All staff working in clinical locations where tracheostomy patients are managed must be competent to assess and initiate management in the event of airway emergency occurring”. (3) Junior doctors are often the first called to manage such patient deteriorations.

Aims/Objectives: The aim of this study was to ascertain junior doctors’ confidence and competence levels in the basic management of tracheostomy patients who develop airway problems. The overall objective was to ensure that junior doctors can recognise and rapidly instigate effective resuscitative measures.

Method: Questionnaires were circulated to junior doctors working on general medical and surgical wards, and the Accident and Emergency department. Doctors rated their confidence in recognising airway obstruction in tracheostomy patients and in initiating management of this. 8 multiple choice questions (MCQs) based on the Resuscitation Council’s tracheostomy algorithm were also completed. Following this, teaching sessions and practical workshops were organised and doctors repeated the questionnaires.

Results: 38 questionnaires were completed and returned by junior doctors. 24 (63.2%) had previously cared for patients with a tracheostomy. 8 (21.1%) felt confident in recognising airway obstruction and 6 (15.8%) felt confident or very confident in initiating initial management for a blocked or displaced tracheostomy. The mean score of 8 MCQ questions was 45.1%. After the teaching sessions, repeat questionnaires confirmed significantly improved confidence levels, and dramatically improved MCQ scores.

Discussion/Conclusion: The management of airway obstruction in patients with tracheostomies is poorly understood by junior doctors. This poses a significant patient safety concern. Teaching workshops with practical demonstrations are effective measures to improve doctors’ confidence and management of emergencies.

A280 Experience with early commencement of immunoglobulin treatment in score-identified high risk septic patients postoperatively after congenital heart surgery
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A280

Background/Introduction: There is still considerable controversy in literature with regards to the immunoglobulin therapy and its role in reduction of sepsis in patients undergoing congenital heart surgery.

Aims/Objectives: The purpose of this study was to evaluate the efficacy of a polyclonal intravenous immunoglobulin preparation (IVIg) (Globucel) in the treatment of a group of patients affected by sepsis after undergoing repair of congenital heart defects in reducing overall mortality (primary endpoint). Secondary endpoints analysed included improvement in the severity score, hemodynamic variables, Arterial Blood Gas parameters Procalcitonin levels, leukocytes, platelets and coagulation profile.

Method: This was a retrospective study. 14 patients developed sepsis in the postoperative period after congenital cardiac surgery and were admitted to the cardiovascular intensive care unit from Feb 2014 to May 2015. All 14 patients (IVIg group) received immunoglobulins in addition to the conventional therapy. The control group consisted of a historical cohort of 14 cardiac surgical patients (age and gender matched) with comparable congenital heart disease and sepsis severity (control group) treated only with conventional therapy.
Results: Of the 28 patients, 4 patients had septic shock (1 from the IVI g group and 3 from the control group). Sepsis was present in 11 patients (5 from the IVI g group and 6 from the control group) and severe sepsis in 13 patients (8 from the IVI g group and 5 from the control group). The overall mortality rate was 64% without significant difference between the two groups (57% IVI g group vs 71% control group, p: 0.46). Among the 13 patients affected by severe sepsis, those from the control group had a mortality rate significantly higher in the control group 4/5 (80%) as compared to the IVI g group 2/8 (25%) (p < 0.01). The 90-day survival rate was significantly higher in the IVI g group than in the control group (log-rank test, p < 0.05). No significant differences were found between study groups in APACHE II scores.

Discussion/Conclusion: Though the overall mortality was not significantly reduced, in the subgroup of patients with severe sepsis, the administration of polyclonal immunoglobulins improved the survival rate significantly.

Method: A retrospective review of data for patients undergoing decortication for diagnosed stage III empyema was ascertained via prospectively recorded data. Histopathology and culture records were obtained from January 2011 to December 2014. A total of 67 cases were included. The study focused on intra-operative samples taken for microbiological analysis, cytology and histopathology. Material was obtained from broncho-alveolar-lavage samples, wound swabs, pleural fluid analysis and decorticated material.

Results: Of the total of 67 patients, 1 was incidentally found to have a mesothelioma. Of the remaining 66, 25.7% (17) patients were found to have positive cultures from cortical samples, however 7 of these patients had no growth from concomitant pleural fluid samples. 74.2% were found to be culture negative. In five cases multiple organisms were cultured. The most common species was Staphylococi spp. in 7 colonies (41.1%), Gram negative rods including Escherichia coli, Pseudomonas spp, Klebsiella in 4 colonies (23.5%). There were 2 patients of Corynebacterium spp and 1 of Aspergillus fumigatus. 2 cases of Mycobacterium tuberculosis, diagnosed on both cultures and confirmed by histopathology, had no growths from pleural fluid.

Discussion/Conclusion: A significant number of patients had positive cultures. In addition a neoplastic case and TB were identified when not suspected. It remains a recommendation that all patients with surgical decortication should have culture samples and that we must take into account the changing microbiology spectrum when considering antibiotic therapy in earlier stages of empyema thoracis.
A284
International Normalized Ratio (INR) instability in post-valve replacement readmissions in Sri Lanka
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A284

Background/Introduction: Anticoagulation plays an essential part of the follow-up of all patients with prosthetic heart valves, who require lifelong anticoagulation therapy with monitoring of INR to avoid mechanical valve thrombosis and thromboembolism. Studies on INR monitoring are scarce in Sri Lanka.

Aims/Objectives: To identify demography and clinical presentation of patients admitting to Cardiothoracic Unit with INR instability.

Method: All re-admissions over a period of one and half years from October 2012 following a valve replacement with INR instability were included. An interviewer administered structured questionnaire was used for data collection. The data was analyzed using SPSS statistical software. Ethical clearance was obtained from the Ethical Review Committee of the THK.

Results: There were 43 readmissions during the study period with INR instability of which 74.4% did not have complications (bleeding or valve dysfunction), on admission. The mean age of the sample was 46.3 years (SD = 13.4 years) and 53.5% were females. The mean weight of them was 55.3 kg (SD = 11.8kg) and the mean height 160.1 cm (SD = 15.8 cm). Of the 25.6% (N = 11) who was admitted with complications majority (N = 7,636) had bleeding manifestations. No one was on any other interacting drug with Warfarin at the time of data collection. Nearly half (48.8%) had Mitral (MVR), 40% Aortic (AVR) and the rest Double (DVR) valve replacements. Age (p = 0.40), height (p = 0.35) and weight (p = 0.20) were not statistically significantly different between the type of valve replacement.

Discussion/Conclusion: The majority did not have complications and the type of the valve replaced was not statistically significantly associated with INR instability. Studying the reasons for INR instability could be important for the future management of prosthetic valve replacement patients.

A285
Cardiac Myxoma—A case series from a Cardiothoracic Unit in a developing country; Sri Lanka
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A285

Background/Introduction: Myxomas remain the most common benign primary cardiac tumors, where it’s growth can masquerade as mitral stenosis, infective endocarditis and collagen vascular disease. This tumour is rare with an estimated incidence of 0.0067% - 0.33%. They can lead to embolisation, conduction disturbances and lethal valve obstructions.

Aims/Objectives: To describe socio-demographic characteristics, presentation and outcome of cardiac myxoma patients presenting to our Cardiothoracic Unit.

Method: All patients who presented and underwent surgical excision at our Cardiothoracic Unit, and histologically proven as cardiac myxoma were included over a period of six years from January 2009. Data were collected from the operation note data base and the patient records and was analyzed by SPSS statistical software.

Results: There were 31 patients who underwent surgery. Their age ranged from 15 years to 69 years with a mean age of 43.2 years. The majority (71%) were females. The main presenting symptoms were shortness of breath (43.5%) and stroke (34.8%). No one died from the surgery and no one suffered significant morbidity. All patients had myxomas in the left atrium where majority were attached to the inter atrial septum (80.5 %). Almost all recovered from strokes without residual effects.

Discussion/Conclusion: By early diagnosis and prompt surgery, myxoma can be treated with minimal complications with the desired outcome. Sometimes a high degree of suspicion is required for early diagnosis.

A287
Destination Therapy with the magnetically levitated HVAD
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A287

Background/Introduction: Destination therapy (DT) with mechanical circulatory support (MCS) for advanced-stage heart failure patients is an alternative therapy when there is no option of eventually providing the patient with heart transplantation. New generation magnetically levitated pumps encourage a broader use of DT.

Aims/Objectives: Aim of this study was to analyze follow up complications and survival after DT with MCS.

Method: 13 consecutive patients at our hospital were included in this study. Only adult patients with magnetically levitated Heartware® LVADs were included in this study. We analyzed the indication and outcome of LVAD destination therapy assessing risk profile, INTERMACS classification, complication rates, and survival after LVAD implantation (cut-off 30/06/2014).

Results: Our data show preoperative values including age [67.1 y±5.0 y] and INTERMACS classification [range 2-4]. The indication for DT includes old age, compliance problems, and severe comorbidities. Outcome data demonstrate a low 30-day mortality in elective DT patients (100% survival). Mean follow up after permanent Heartware implantation was in average 544 days (range, 160-1512). 1 year survival after DT with HeartWare was 83.3%. Most frequent complications include bleeding and stroke (1 GI-bleeding, 1 permanent stroke, 1 recovered from SAB, 1 sternal wound infection). Using Heartware as DT LVAD lead to reduction of required INR and hereby reduction of complication rate.

Discussion/Conclusion: Destination therapy with magnetically levitated HeartWare LVAD is associated with lower in-hospital mortality compared to heart transplant patients. Long-term survival after destination therapy is possible. Especially new magnetically levitated pumps with lower INR required might help to further reduce LVAD complications.

A288
Routine surveillance endomyocardial biopsy for the detection of cellular rejection beyond 2 years after cardiac transplantation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A288

Background/Introduction: Endomyocardial biopsy (EMB) is widely used for routine surveillance of cardiac allograft rejection. The need for continued EMB beyond the first year after cardiac transplantation is controversial.

Aims/Objectives: The aim of this study was to investigate the use of EMB in monitoring long term surviving heart transplant recipients.

Method: We conducted a retrospective chart review of all patients at our center 2 years or more after heart transplantation. 154 HTx patients between 2000-2012 were included in this study. Significant cellular rejection was defined as grade 2R or 3R using ISHLT nomenclature. Patients were analyzed assessing immunosuppressive regimen and procedural related complications.

Results: Of 154 cardiac transplant patients, 110 (71.4%) had a follow-up of more than 2 years. Interestingly, 17 of these long-term survivors of cardiac transplantation developed at least 1 episode of significant late
Analyzing the respective immuno-suppressive regimen showed increased number of calcineurin inhibitor (CNI)-free regimen (64.7%) in patients rejecting late after heart transplantation. The overall incidence of procedural related complications was low (1.0%) and none was life-threatening.

**Discussion/Conclusion:** The above data demonstrates that endomyocardial biopsies continue to detect clinically significant rejection beyond 2 years after cardiac transplantation. Late rejection was not depending on previous episodes of early cellular rejections. Therefore, we recommend long-term routine endomyocardial biopsies in cardiac transplant recipients especially in patients at high risk due to the immuno-suppressive regimen.

**A290**

Cabröl technique in coronary artery bypass grafting
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A290

**Background/Introduction:** In coronary artery bypass surgery, proximal anastomosis at the ascending aorta and an arterial or venous graft may be conducted by side-to-side maneuver (Cabröl-type).

**Aims/Objectives:** We evaluated the long-term clinical outcome and aortocoronary graft patency of Cabröl-type proximal anastomosis in coronary artery bypass grafting (CABG).

**Method:** From 2002 to 2012, 460 patients (age, 64.7 ± 8.3 years) underwent CABG using Cabröl technique. The graft configuration included the anastomosis of saphenous vein (SV) to saphenous vein (n = 266), SV to radial artery (RA) (n = 65), RA to SV (n = 108), RA to RA (n = 8), and others (n = 11) (Figure). The mean follow-up duration was 50.3 ± 32.3 months. Postoperatively, coronary computed tomography angiography (CTA) was checked in 362 patients (78.7%).

**Results:** The operative mortality was 3.9%. The actuarial rate of the overall survival at 1, 5, and 10 years was 97.7% ± 0.7%, 88.6% ± 1.6%, and 70.4% ± 4.0%, respectively. The actuarial MACCE-free survival at 1, 5, and 10 years was 97.7% ± 0.7%, 89.9% ± 1.6%, and 84.2% ± 2.8%, respectively. Of 301 patients who used LITA (in situ) to LAD anastomosis, 712 grafts (mean, 2.4 grafts per patient) were used in Cabröl-type anastomosis. The 1-, 2-, 5-, and 8-year patency of graft in Cabröl-type anastomosis was 91.4% ± 1.2%, 88.8% ± 1.4%, 80.7% ± 2.2%, and 76.3% ± 3.7%, respectively.

**Discussion/Conclusion:** This alternative proximal anastomosis technique in CABG demonstrated relatively comparable patency of aortocoronary graft.

**A291**

Is there a cardiodepressant effect of higher BMI on contractile force of skinned human fibers?
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**Background/Introduction:** Body mass is reported to influence myocardial performance. Latest studies have emphasized the importance of negative inotropic Adipoocyte-derived factors and assume an impact on cardiac contractile function. However the underlying mechanism remains unclear.

**Aims/Objectives:** Our hypothesis was if body mass and gender impact cardiac force development on the level of the contractile apparatus.

**Method:** Therefore we performed a study to examine the influence of BMI (3 groups: group I > 25, group II 25-30, group > 30) on the myocardial performance of skinned muscle fibers. Right atrial tissue preparations of 70 patients undergoing aortocoronary bypass operation (CABG, 48 patients, group a) and aortic valve replacement (AVR, 22 patients, group b) was obtained prior to cannulation and prepared for the experimental set up. The fibers were exposed to gradual increase of calcium concentration and the force values were recorded and stored by the associated computer program. The statistical analysis was performed with Pearson’s correlation (SPSS, p < 0.05 significant).

**Results:** 1) BMI > 30 (group III) was associated with less force (Mean force 1.58 ± 0.1 mN, p < 0.02, max force 2.24 ± 0.17 mN, p 0.02 versus group II (Mean force 1.8 ± 0.3 mN, p = 0.04, max force 2.59 ± 0.2 mN, p 0.03) and group I (Mean force 1.8 ± 0.1 mN, p = 0.03, max force 2.62 ± 0.3 mN, p < 0.03). The force values between group I and II were not significantly different. Dividing the groups after surgical procedure the impact of BMI on force development in group III is even more intense in the CABG group compared to the AVR group: 2.0 ± 0.2 mN versus 2.4 ± 0.1 mN, p 0.04.

**Discussion/Conclusion:** In accordance to literature, BMI > 30 is associated with reduced force capacities. Additionally the underlying cardiac disease might aggravate the impact of weight on cardiac force.

Further studies are mandatory to evaluate the clinical relevance of this experimental observation and potential consequences in the therapy of obese patients.

**A292**

Lessons from modular approach to training for minimally invasive aortic valve replacement: implications for training and outcome
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A292

**Background/Introduction:** Minimally-invasive Aortic Valve Replacement (mini-AVR) is being increasingly adopted in clinical practice. Training can be a challenge due to the inherent difficulties of limited surgical exposure. We analysed individual trainee experience in our institutional undergoing mini-AVR training within a series of our cases where all AVRs are routinely undertaken by this approach.

**Aims/Objectives:** We assessed the impact and outcome on training in mini-AVR in our centre at both the trainee cohort and individual trainee levels. We assessed the complication rates between trainees and consultant surgeon undertaking mini-AVR in the context of challenging surgical access.

**Method:** A single consultant surgeon undertook minimally-invasive aortic valve replacement for all isolated first-time aortic valve replacement, without any selection. Operative records and cardiac surgery database of all patients who had undergone mini-AVR between 2006-2015 were retrieved. Patient demographics, pre-morbid status, operating surgeon, operative details and outcome were evaluated. We constructed learning curves of individual trainees and compared. Part-procedures were defined and enumerated, and individual experience over time was plotted. Risk stratification was also analysed, p < 0.05 was defined to be statistically significant.

**Results:** 171 mini-AVRs were undertaken between 2006 and 2015. We defined a case as all parts being undertaken by the operator. Mini-AVR was divided into nine component part-procedures including ministernotomy, cannulation, aortotomy, decalcification, implantation, aortotomy closure, de-airing and weaning, decannulation and sternotomy closure. 13% of cases (n = 23) were undertaken by trainees. The proportion of part-procedures undertaken by trainees varied between 13% (all part-procedures) to 87% (single part-procedures) of all cases. The learning curve of five trainees with the highest operative numbers were plotted. The learning curve of a single trainee over time was plotted in part-procedures. Logistic euroSCORE was not significantly different between trainees and consultants, however trainees took longer bypass and cross-clamp times.

**Discussion/Conclusion:** We demonstrate detailed learning curves and outcomes comparison in learning minimally-invasive aortic valve replacement. The challenge in mini-AVR is the access - mini-sternotomy and cannulation, which is the focus in our training programme.

**A293**

Results of minimally-invasive aortic-valve replacement in octogenarians
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A293

**Background/Introduction:** Minimally-invasive aortic-valve replacement (mini-AVR) via J-sternotomy has been shown to reduce surgical morbidity. Little data is available on the outcomes of mini-AVR in the very elderly population.
Aims/Objectives: We assessed the clinical outcomes of mini-AVR in all octogenarians undertaken at our centre.

Method: A single consultant surgeon routinely undertook the minimally-invasive procedure via J-sternotomy for all isolated first-time aortic valve replacements. Operative records and clinical outcomes of all patients who had undergone mini-AVR in our centre between 2006-2015 were retrieved from the national cardiac surgery database. Patient demographics, preoperative status, operative details and outcomes were evaluated.

Results: 171 mini-AVRs were undertaken between 2006 and 2015, out of which 41 patients were aged 80 or above. Patient demographics were as follows: mean age 83.8 years (range 80-91, SD 2.934), female gender 63.4%, diabetes mellitus 9.8%, pulmonary disease 22.0%, LV function <30% in 73.3%, 30-50% in 17.1% and >50% in 7.6%, logistic EuroSCORE 13.3 (interquartile range 8.44 – 14.7, SD 9.04). Overall in-hospital- and 30-day mortality was 2.4% (1/41), re-expansion rate was 0.0%, renal failure requiring dialysis 2.4% (1/41), permanent pacemaker 2.4% (1/41), CVA 0.0%, conversion to full sternotomy 0.0%.

Discussion/Conclusion: Despite high logistic EuroSCOREs, we have shown excellent results in octogenarians by this approach. In this era of transcatheter aortic valve implantation, mini-AVR needs to be in the armamentarium of the surgical team.

A294

Antibiotic Usage in First Time Coronary Artery Surgery

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A294

Introduction: Prophylactic antibiotics have an important role in the prevention of infection following cardiac surgery [1], however, inappropriate or excessive use is associated with the development of antibiotic resistance. Cephalosporins, for example, have a well-established association with ceftriaxidumicile [2]. The incidence of nosocomial infections in patients who undergo coronary artery bypass grafting (CABG) is approximately 5% [3]. The current antibiotic regimen for patients who undergo CABG at the Royal Brompton Hospital (RHB) includes cefuroxime 1500 mg at induction and 750 mg prior to sternal closure, followed by two further doses of 750 mg postoperatively, eight hours apart. We conducted a retrospective audit to evaluate adherence to the trust’s prescribing guideline for CABG and to review the use of antibiotics in the postoperative period.

Methods: Patients who underwent first-time CABG from 01.08.2014 to 31.10.2014 were eligible for inclusion. Data were retrospectively collected from the anaesthetic record, the electronic patient record and the medical notes. Data collected included details of antibiotic usage: choice of antibiotic, timing and duration of administration.

Results: A total of 88 patients were included. 13 (42%) of the 31 patients who received additional antibiotics had some form of positive microbiology, whereas 9 of these patients (29%) had no microbiology analysis. Documentation of the indication for additional antibiotics was only identified for 19 patients (61%).

Conclusion: This audit found excessive, prolonged use of antibiotics post CABG at RHB. Documentation of the indication for antibiotics was poor.

References:

Table 1 (abstract A297) Antibiotic usage for CABG at RHB

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<td>Correct antibiotic at induction</td>
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</tr>
<tr>
<td>Antibiotics within 60 minutes of incision</td>
<td>83</td>
<td>6</td>
</tr>
<tr>
<td>Second dose prior to sternal closure</td>
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<td>Correct postoperative doses</td>
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<td>Second-line antibiotics commenced</td>
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A296

Does adoption of new technologies require high operative volume?

Our results with sutureless aortic bioprostheses

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A296

Background/Introduction: In order to develop a new surgical program based on recently developed technologies, companies often require a minimal volume of operations. Sutureless aortic bioprostheses were recently introduced in order to make the operation simpler, faster and more user friendly.

Aims/Objectives: The aim of this study is to review our results with the Edwards Intuity Elite sutureless bioprosthetic aortic valve.

Methods: The perioperative data of patients who underwent aortic valve replacement during the last year by sutureless bioprostheses (Edwards Intuity Elite, n = 7) were reviewed retrospectively and compared to those who received a conventional bioprostheses (Edwards Perimount Magna Ease, n = 7).

Results: Patients in the Intuity group were significantly older (76 vs. 64 years), but didn’t differ significantly with regards to EuroSCORE-II or comorbidities. The operative times didn’t differ significantly between groups, even though more patients in the Intuity group had concomitant procedures. No valvular and paravalvular leak or heart block were seen after the operation in both groups. Despite the median valve size being smaller in the Intuity group (21 vs. 25 mm), the postoperative gradients were significantly lower.

Conclusion: New sutureless aortic bioprostheses were safe and effective for the surgical treatment of severe aortic stenosis and provided better hemodynamic results. During this initial learning curve, operative times didn’t differ between groups, no per- or post-operative complications were observed. The adoption of new technologies don’t require high volume, provided it is conducted by the same familiar team in a step-by-step way.

A297

External stenting of saphenous vein bypass grafts does not affect intraoperative transit-time flow measurement

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A297

Background/Introduction: Saphenous vein grafts (SVG) are the most commonly used conduits for coronary artery bypass operations (CABG), despite their sub-optimal long-term patency. External stenting of SVG (eSVG® mesh) was recently proposed to improve their long term patency. Transit time flow measurement (TTFM) is a well described method for intraoperative quality control for CABG.

Aims/Objectives: The aim of this study is to assess whether external stenting of SVG affects perioperative TTFM.

Methods: Twenty six patients who underwent elective CABG were divided into two groups based usage of externally stented SVG (eSVG® mesh, n = 13), or bare SVG (n = 13). The anatomic quality were evaluated with TTFM using the Medi-Stim VeriQ flowmeter and a 4 mm
Table 1 (abstract A297)

<table>
<thead>
<tr>
<th></th>
<th>Mesh covered SVG (n = 13)</th>
<th>Bare SVG (n = 13)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>median</td>
<td>min-max</td>
<td>median</td>
</tr>
<tr>
<td>Age (years)</td>
<td>64</td>
<td>51-82</td>
<td>64</td>
</tr>
<tr>
<td>Bypass grafts</td>
<td>3</td>
<td>1-4</td>
<td>3</td>
</tr>
<tr>
<td>Simultaneous concomitant operation</td>
<td>3 (23%)</td>
<td>2 (15%)</td>
<td>&gt;0.05*</td>
</tr>
<tr>
<td>CBP time (min)</td>
<td>112</td>
<td>57-161</td>
<td>94</td>
</tr>
<tr>
<td>Cross Clamp Time (min)</td>
<td>69</td>
<td>34-122</td>
<td>63</td>
</tr>
<tr>
<td>TTFM (ml/min)</td>
<td>59</td>
<td>19-106</td>
<td>43</td>
</tr>
<tr>
<td>PI</td>
<td>1.9</td>
<td>1.2-4.9</td>
<td>2.3</td>
</tr>
</tbody>
</table>

*Mann-Whitney U Test, * Fisher’s exact test

Table 1 (abstract A296)

<table>
<thead>
<tr>
<th></th>
<th>Intuity group (n = 7)</th>
<th>Conventional group (n = 7)</th>
<th>*p</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>Median</td>
<td>Min.-Max.</td>
<td>Median</td>
</tr>
<tr>
<td>Euroscore II</td>
<td>6.48</td>
<td>2.56-10.55</td>
<td>3.41</td>
</tr>
<tr>
<td>CBP time (min)</td>
<td>102</td>
<td>58-218</td>
<td>102</td>
</tr>
<tr>
<td>Crossclamp time (min)</td>
<td>78</td>
<td>45-133</td>
<td>79</td>
</tr>
<tr>
<td>Valve size</td>
<td>21</td>
<td>21-27</td>
<td>25</td>
</tr>
<tr>
<td>Concomitant procedures</td>
<td>2</td>
<td>2</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Aortic Valve Gradients (mmHg)</td>
<td>71</td>
<td>30-95</td>
<td>49</td>
</tr>
<tr>
<td>Preop Max.</td>
<td>46.50</td>
<td>16-61</td>
<td>29.50</td>
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<tr>
<td>Preop Mean</td>
<td>15.50</td>
<td>8-19</td>
<td>26</td>
</tr>
<tr>
<td>Postop Max.</td>
<td>9</td>
<td>7-13</td>
<td>14</td>
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</table>

Table 1 (abstract A298)

<table>
<thead>
<tr>
<th></th>
<th>Median</th>
<th>Min.-Max.</th>
<th>Median</th>
<th>Min.-Max.</th>
<th>*p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>76</td>
<td>71-79</td>
<td>64</td>
<td>43-82</td>
<td>0.035</td>
</tr>
<tr>
<td>Euroscore II</td>
<td>6.48</td>
<td>2.56-10.55</td>
<td>3.41</td>
<td>1.53-8.97</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>CBP time (min)</td>
<td>102</td>
<td>58-218</td>
<td>102</td>
<td>69-158</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Crossclamp time (min)</td>
<td>78</td>
<td>45-133</td>
<td>79</td>
<td>52-118</td>
<td>&gt;0.05</td>
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<tr>
<td>Valve size</td>
<td>21</td>
<td>21-27</td>
<td>25</td>
<td>23-27</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Concomitant procedures</td>
<td>4</td>
<td>2</td>
<td>&gt;0.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results: There was no significant difference between two groups regarding pre and peri-operative parameters, although more patients in the eSVS® mesh group had concomitant procedures (3, 23% vs. 2, 15%, P > 0.99). All SVG were patent in both groups at the end of the surgical procedure and TTFM values were similar; eSVS® mesh group had a trend for longer cardiopulmonary and aortic cross clamping times, which didn’t reach statistical significance.

Conclusion: External stenting of SVG by eSVS® mesh does not extend the operative times. All SVG showed excellent flow and eSVS® mesh coverage didn’t impede TTFM or provide graft flow different to controls.

A298
Postoperative delirium following cardiac surgery: the incidence, risk factors and outcome
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A298

Background/Introduction: Postoperative delirium (POD) is a common and serious complication after cardiac surgery and numerous studies have confirmed this in occurrence from 10% to 60%, patients have an increased risk of developing POD that is associated with poor outcomes.

Aims/Objectives: The aim of this study was to identify POD incidence, potential risk factors and to evaluate clinical outcome.

Method: A single-centre cohort of 292 patients undergoing elective cardiac surgery were prospectively enrolled.

Results: The incidence of POD was 27.74%. The analysis showed that POD prolonged the length of the ICU stay 5.8 (± 2.89) vs 3.86 (± 1.91) days, p < 0.001, patients after POD more frequent was required reintubation (OR: 13.169; 95% CI 1.456-119.087, p = 0.022) and had had the prolonged length of the postoperative hospital stay >10 days (OR: 2.060; 95% CI 1.226-3.460, p = 0.006). Multivariate analysis remained as an independent predictors for POD: age > 70 yr (OR: 2.227; 95% CI 1.325-3.742, p = 0.003), ejection fraction < 42% (OR: 2.398; 95% CI 1.397-4.117, p = 0.002), length of stay in the hospital before surgery > 6 days (OR: 1.840; 95% CI 1.064-3.180, p = 0.029), combined valve repair and CABG surgery (OR: 2.083; 95% CI 1.153-3.761, p = 0.015), duration of CPB > 86 min (OR: 2.068; 95% CI 1.182-3.618, p = 0.009) and postoperative atrial fibrillation (OR: 2.244; 95% CI 1.158-4.347, p = 0.007).

Discussion/Conclusion: Our current analysis suggests that POD is a frequent complication and worsen patient outcome following cardiac surgery. Many factors cannot be changed or avoided but some can be modified and it depends from us: if to shorten the length of stay in the hospital before surgery < 6 days, it may reduce the number of patients who develop POD. By the way, a large prospective randomised study in this regard is needed.

A299
Antiplatelet Therapy Post Coronary Artery Bypass Grafting: A survey of practice at UK Cardiothoracic Units
Yama Shoaib Haqzad*, Alexandra Woods, Mubarak Chaudhry, Mahmoud Loubani
Department of Cardiothoracic Surgery, Castle Hill Hospital, Cottingham, HU16 5JQ, UK
Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A299

Background/Introduction: Bleeding complications and perioperative cardiovascular events are strongly influenced by the management of
antithrombotic therapy before and after Coronary Artery Bypass Grafting (CABG). Early thrombosis is a major cause of vein graft attrition after CABG with occlusion rates ranging between 5 - 26% 2. There is scarce evidence in dual antiplatelet therapy post elective CABG.

Aims/Objectives: The primary objective of this survey was to establish the variations in antiplatelet therapy post CABG in all cardiothoracic units across the United Kingdom (UK).

Method: A comprehensive list of all cardiothoracic units across the UK was obtained from the Society for Cardiothoracic Surgery (SCCTS). 41 units were identified in England, Scotland, Wales and Northern Ireland. Questionnaire regarding antiplatelet therapy was developed and administered to the on call cardiothoracic registrars over a 3 day period. Data was analysed using Microsoft Excel.

Results: All 41 centres responded to the questionnaire. 300 mg Aspirin (ASA) was given Per Rectum 6 hours post CABG in 66% of the units while surgeon specific variation existed in 24% of the units and it was not given in 10% of the units. Post elective CABG, 51% of the units gave isolated ASA 75 mg for life while variation between consultants within the unit existed in 27%, dual antiplatelet therapy was used in 10% and varying doses of ASA administered in 7%. In post CABG patients with previous Coronary Stents or recent Acute Coronary Syndromes 51% of the units added 75 mg of Clopidogrel, 5% added ticagrelor (180 mg loading then 90 mg twice daily) to ASA while 2% only gave Aspirin with variable practice between surgeons within the same unit in 37% of the units. Variation in practice existed in 85% of the units in this survey.

Discussion/Conclusion: This survey highlights a diverse practice in antiplatelet therapy between cardiothoracic units across the UK. There is also variation in practice between the consultants within each unit. Comprehensive survey of individual cardiothoracic surgeons across the UK may highlight.

A300
Debut century in cardiac surgery - Is it worth mentioning
Kalyana Janavangula
Leeds Teaching Hospitals NHS Trust, Leeds, LS1 3EX, UK
Journal of Cardiothoracic Surgery 2015, 10(Supp 1):A300

Background/Introduction: Consultant surgical practice including the variation in practice between the consultants within each unit. Good foundation in times where outcomes are highly scrutinised and available to public domain. Gone those days where people are going to accept mishaps just because you started as a newly appointed consultant. Good foundation in the initial stages gives you the confidence to handle challenging and high risk cases in the future.

A301
Simultaneous coronary artery bypass grafting and carotid endarterectomy can be performed with low mortality rates
Elbuze Aydin1, *Yucel Ozcu1, Sabit Sanikaya1, Davut Cekmekocoglu1, Ismail Yuksethan2
1Kartal Kosuyolu Yuksek Ihtisas Research and Training Hospital, Istanbul, Turkey. 2Taksim German Hospital, Istanbul, Turkey
Journal of Cardiothoracic Surgery 2015, 10(Supp 1):A301

Background/Introduction: There remains a controversy on the best approach for patients with concomitant carotid and coronary artery disease.

Aims/Objectives: In this study, we report our experience with simultaneous carotid endarterectomy (CEA) and coronary artery bypass graft (CABG) surgery in our clinic in the light of the literature data.

Method: Between January 1996 and January 2009, a total of 110 patients (86 males, 24 females; mean age: 65.11 ± 7.81 years; range, 44 to 85 years) who were admitted to Hospital, Cardiovascular Surgery Clinic were retrospectively analyzed. All patients underwent simultaneous CEA and CABG. Demographic characteristics of the patients and a history of previous myocardial infarction (MI), hypertension, diabetes mellitus, hyperlipidemia, peripheral arterial disease, and smoking were recorded.

Results: One patient (0.9%) with major stroke died due to ventricular fibrillation. Perioperative neurological complications were observed in seven patients (6%). Complications were persistent in two patients. Four patients (3%) had postoperative major stroke, whereas three patients (2%) had transient hemiparesis. No perioperative myocardial infarction was observed.

Discussion/Conclusion: Simultaneous CEA and CABG can be performed with low mortality and morbidity.

A302
The relationship between the ascending aortic and left ventricular size after aortic valve replacement
Ingrid Schusterova1, 2, Panagiotis Artemiou1, Martina Polackova1, Frantisek Sabol1, Alzbeta Tohatyova2
1East Slovakian Cardiovascular Institute, Kosice, Slovakia; 2Department of Paediatrics and Adolescent Medicine, Faculty of Medicine, Pavol Jozef Safarik University in Kosice, Slovakia
Journal of Cardiothoracic Surgery 2015, 10(Supp 1):A302

Background/Introduction: Different studies in the literature examined the fate of the ascending aorta and aortic root after valve replacement and various factors such as bicuspid aortic valve and aortic valve pathology were studied. The effect of the left ventricular end diastolic diameter (LVDD) has not been yet examined.

Aims/Objectives: In this retrospective study we analyze for the first time the effect of the left ventricular end-diastolic diameter and its role on the aortic expansion after aortic valve replacement one year after the procedure.

Method: Forty three consecutive patients took part in this study. All of them underwent aortic valve replacement (AVR) in our Institution between the years 2012-2013 with either mechanical or biological prosthetic aortic valve.

Results: After aortic valve replacement there was a decrease in the ascending aorta and aortic root dimensions (p = 0.001, p = 0.001 respectively). Left ventricular end-diastolic diameter and ejection fraction did not change significantly after AVR. There were the correlations between the preoperative ascending aortic size and the preoperative and after the first year left ventricular end-diastolic diameter (r = 0.419, p = 0.001 and r = 0.320, p = 0.314 respectively). Postoperatively there was also a correlation between the ascending aortic size and the preoperative and after the first year left ventricular end-diastolic diameter (r = 0.320, p = 0.003 and r = 0.136, p = 0.335 respectively).

Discussion/Conclusion: In conclusion, in this retrospective study we showed that there was a correlation between the preoperative and postoperative aortic size (ascending aorta and aortic root) and the postoperative left ventricular end-diastolic diameter. Although it is early for definite clinical conclusions, however it is the first study which tried to analyze this relationship.
The study population consisted of 30 patients (22 male, 8 female). Mean age was 52.63 ± 11.8 years. Implanted valve sizes were 21 mm (n = 9), 23 mm (n = 11), 25 mm (n = 7) and 27 mm (n = 3). Overall mean post-operative pressure gradients were 11.3 ± 5.8 mmHg (mean) and 19.54 ± 9.5 mmHg (peak). Subgroup mean post-operative pressure gradients were 18.37 ± 4.6 mmHg, 9.8 ± 2.2 mmHg, 9.46 ± 2.54 mmHg, 7.78 ± 2.3 mmHg for the 21, 23, 25 and 27 mm cohort respectively. Overall mean post-operative left ventricular ejection fraction was 54.9 ± 3.3%. Overall mean effective orifice area was 1.95 ± 0.7 cm².

Discussion/Conclusion: These results of our experience demonstrate excellent haemodynamic performance of the Trifecta bioprosthesis valve in young patients under 65.

A308
Left Ventricular Mass Regression following Implantation of St. Jude Medical Trifecta Aortic Bioprosthesis
JA Chacko, J Edlin, AH Sepehrpouri, SG Ambekar, KS Lal
St.Bartholomew's Hospital, London, UK
Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A308

Background/Introduction: The aim of this prospective study was to evaluate mid-term left ventricular (LV) mass regression following implantation for aortic stenosis.

Method: One hundred and seventy two consecutive patients undergoing aortic valve replacement using the St. Jude Medical Trifecta valve at a single UK centre over a 48-month period were included in this study. Patients undergoing concomitant cardiac procedures were included. All implanted valves were 19, 21, 23, 25, 27 & 29 mm in size. Patients underwent both pre-operative and post-operative transthoracic echocardiography. Two-dimensional measurements of the left ventricle were used to calculate LV mass using the Devereux equation.

Results: 30 patients had the adequate 2-dimensional left ventricular measurements recorded to calculate both pre- and postoperative left ventricular mass. Valve Sizes were 21 mm (n = 7), 23 mm (n = 15), 25 mm (n = 6) and 27 mm (n = 2). Overall absolute left ventricular mass regression was 18.1% ± 23.8%. Mean preoperative LV mass was 247.8 ± 102.5 g and mean postoperative LV mass was 200.7 ± 74.1 g. Regression of LV Mass index was -30.66 g/m².

Discussion/Conclusion: Utilising available 2-D Measurements in this group we observe regression of LV mass & LV Mass Index post aortic valve replacement with the Trifecta bioprosthetic valve. However, further consistent 2-D measurements are required across the cohort to establish this relationship.
Aortic bioprosthesi reduces the operative length hence its use should be prioritized in such cases.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A310
Levosimendan preconditioning in patients undergoing elective cardiac surgery with poor ejection fraction. preliminary results
R Ávalos1, R MartínezSanz2, JJ Jiménez1, JL Inbareni1, J Montoto1, A Lacruz1, M Brouard1, P Garrido1, PC Prada1, Jorge P Pérez1, M García-González1
1Complejo Hospitalario Universitario de Canarias. Tenerife. Spain; 2Universidad de La Laguna. Tenerife. Spain
Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A310

Background and Aims: Left ventricular systolic dysfunction (LVSD) represents a risk factor for the development of low cardiac output syndrome (LCOS) resulting in a high mortality in patients undergoing cardiac surgery. Levosimendan is a drug with inotropic, vasodilatory and organ-protective properties, often used in heart failure and low cardiac output patients.

We study the effects of preoperative levosimendan administration (PLC) in patients with LVSD undergoing elective cardiac surgery on LCOS development and other secondary post-surgery outcomes.

Methods: We retrospectively studied a cohort of patients with LVEF ≥ 45% undergoing elective cardiac surgery from January 2006 to December 2013. Patients who received PLA (infusion of 0.05 to 0.2 mcg/kg/min for 24 hours without loading dose) - (Group I) within 72 hours prior to surgery were compared with those who did not receive it (Group II).

Demographic, clinical, hemodynamic, operative characteristics and postoperative outcome were analyzed. PLCO was considered as cardiac index lower than 2.2 l/min/m2, without low blood volumen.

Results: 146 patients with LVSD were included. 80% were male; mean age 66 ± 9.7 years; LVEF 36 ± 5%; and Euroscore 8.7 ± 8.6 were studied. Group I included 13 and Group II 123 patients.

Among both groups there were no significant differences in age, sex, cardiovascular risk factors, preoperative functional class, LVEF and operative characteristics.

Group I patients had a lower incidence of LCOS (7.7 vs 43.6%; p = 0.012); higher cardiac index (3.2 ± 0.7 vs 2.7 ± 0.8 L/min/m2; p = 0.02); lower troponin I peak levels (1.9 ± 1.8 mg/ml vs 7.04 ± 32; p = 0.02); lower creatinine peak levels (0.98 ± 0.4 vs 1.3 ± 0.7 mg/dl; p = 0.03 and shorter mechanical ventilation (4 [2-7] vs 6 [5-19] h; p = 0.007)). They needed lower maximum dose of dobutamine (1.4 ± 1.9 vs 4.7 ± 5.3 mcg/kg/min; p = 0.016). De novo atrial fibrillation incidence was similar in both groups (30 vs 32%; p = NS). Group I patients had a lower but not significantly postoperative hospital stay (7 [6-10] vs 9 [7-17] days; p = 0.008). There was no differences in mortality at 30 days (0 vs 7.5%; p = NS). After adjusting for preoperative LVEF and NYHA, patients in Group I showed less risk of LCOS development (OR: 0.11; 95% CI [0.01-0.85]; p = 0.005).

Conclusions: Preoperative administration of Levosimendan reduces the incidence of LCOS and exerts beneficial effects on myocardial and renal preservation in high-risk patients with LVSD undergoing elective cardiac surgery.

A311
Factors related to permanent disability employment on patients fewer than 62 years operated by open heart surgery
R MartinezSanz1,2, R Ávalos1, L Perdomo1, ME Alonso1, F Benitez1, JJ Jiménez1, J Montoto1, PC Prada1, P Garrido1, R de la Llana1,2, M Brouard1, JL Inbareni1
1Complejo Hospitalario Universitario de Canarias. Tenerife. Spain; 2Universidad de La Laguna. Tenerife. Spain
Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A311

Background: The quality of life after cardiac surgery greatly improves the reincorporation into the usual job, although not always in the same proportion.

Objective: Our proposal is to identify factors that complicate the return to work after open heart surgery.

Materials and method: All the patients younger of 62 years old who underwent open heart surgery between the years 2010 and 2012 were studied. Perioperative variables were collected: preoperative functional status, LVEF, type of intervention, type of job (employee or self-employed person) and permanent incapacity (PI) for employment through a review of their medical history.

Results: A cohort of 204 patients was studied. Age 51 +/- 9 years; 156 (76,5%) were male; Logistic Euroscore (LE) of 5.1 +/- 8.4, LVEF 58 +/- 11. Surgery was 86 (42.2%) CABG, 79 (38.7%) valvular, 16 (7.8%) combined surgery and 23 (11.3%) others. 28 (13.7%) were self-employed. 15 of them already had a PI at the time of surgery. Patients with PI presented a LE of 6.7 +/- 6.9 Vs. 11.1 +/- 5 (p = 0.006); age 53 +/-6 vs 48 +/- 10 (p < 0.001), with no difference in LVEF. There were more PI among women (57%) than male 41% (p = 0.046). There was a higher percentage of valvular surgery in women. Higher number of CABG and valvular surgery was associated with PI (p = 0.015).

Conclusions: Permanent work cessation activity after open-heart surgery was statistically determined with an older age, comorbidity, female gender and type of intervention. Valve surgery, the number of values operated or higher number of bypasses increase the probability of PI.

A312
Aortic root full detachment from the aortic annulus. aortitis role in the formation of a pseudoaneurysm 3 years after an aortic valve replacement
R MartinezSanz1,2, R Ávalos1, R de la Llana1,2, P Garrido1, J Montoto1, PC Prada1, M Brouard1, JL Inbareni1, JJ Jiménez1, C Vaqueropuerta1
1Complejo Hospitalario Universitario de Canarias. Tenerife. Spain; 2Universidad de La Laguna. Tenerife. Spain; 3Universidad de Valladolid. Valladolid. Spain
Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A312

Background: Ruptures of the free aortic wall or fistulas to other cardiac structures after aortic valve surgery have been described. They can be due to poor quality of the aortic wall, suture breakage, poor technique or, rarely, aortitis.

Objective: We present a rare case of complete rupture of the aortic root three years after aortic valve replacement (AVR), with formation of a large pseudoaneurysm, successfully resolved. Enterococcus faecalis RNA was found in aortic wall.

Patient and Method: A 67-year-old male is brought to the emergency room after suffering syncope. He underwent surgery for AVR 3 years earlier. The computed Tomography (CT) showed a hardly identifiable image at the site of the aortic root. There was a large shift in the origin of the coronary arteries. He underwent emergency surgery.

Results: Redo open-heart surgery was performed, using femoral cannulation, mild hypothermia at 28°C, and circulatory arrest during 4 minutes, just to open and inspect the aorta. A big cavity acting as the aortic root, with irregular contour was observed. The floor of the cavity was the aortic prosthesis, the roof the beginning of true aortic root including both coronay ostia and the walls were formed by the roof of the left atrium, the main pulmonary artery, superior vena cava, right pulmonary artery and the rests of fibrotic and adhered pericardium. Aorto prosthesis seemed normofunctional, but the walls of the ascending aorta and aortic root were inflamed. A Bentall-De bono technique was performed. An Enterococcus faecalis was identified in the aortic wall by polymerase chain reaction. He was given six weeks of antibiotic therapy.

Conclusions: Aortitis after AVR may cause complete rupture of the aortic root by its own detachment, creating a pseudoaneurysm, which might rupture. The preoperative diagnosis is not easy as well the surgical treatment.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A313
Surgical treatment of type A Acute Aortic Dissection based on Geneva algorithm
Burak Can Depboyulu1, Leon Finci1, Patrick O Myers1, Saziye Karaca1, Dominique Vala1, Jalal Jolou1, Parmeseven Mootoosamy1, Mark Licker1, Karim Bendjelid1, Afkendiyos Kalangos1, Mustafa Cikirikcioglu1
1Division of Cardiovascular Surgery, Hospitals and Medical Faculty of Geneva, Geneva, Geneva, 1211, Switzerland; 2Division of Anaesthesiology University,
Background/Introduction: Type A Acute Aortic Dissection (AAAD) is a highly deadly disease. Management of AAAD suspicion is extremely important in order to gain time and increase the likelihood of survival.

Aims/Objectives: The aim of this study is to review our experience based on our local algorithm developed for the assessment and management of patients with AAAD suspicion over the last 8 years.

Methods: All patients who underwent an emergency surgery for AAAD between 2007 and 2014 following our algorithm were assessed. Their clinical situation at admission, evaluation, operative and postoperative data were evaluated retrospectively. Continuous variables were expressed as mean ± standard deviation; categorical variables were shown as frequency and percentage.

Results: A total of 68 patients were included during the study period. The mean age was 61 ± 13 years, with 42 men (65%). Supracoronary ascending aorta replacement was the primary surgical procedure (in 31 patients, 46%). The mean cardiopulmonary bypass, cross clamp and circulatory arrest times were 3.2 ± 1.6, 2.1 ± 1.2 and 0.4 ± 0.2 hours. Acute renal failure (27, 40%), re-operation (18, 26%) and pneumonia (14, 20%) were the main postoperative complications. Mean intensive care unit stay and hospitalization times were 5.8 ± 6.2 and 26.5 ± 53.5 days. There were 14 perioperative deaths (21%) and 18 hospital deaths (26%). The 6-year survival was 67.5%.

Conclusion: Our institutional experience in managing AAAD is comparable to results from other centers. Standardizing management using an algorithm is important to gain time for rapid decision-making and having successful outcomes in centers with limited volume.

A314
Open and closed distal anastomosis for acute type A aortic dissection repair: early and long-term outcomes from a contemporary series of 204 patients
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A314

Background/Introduction: The current general consensus favours an open distal anastomosis for aortic dissection repair. A limited number of studies have compared the results between open and closed repair strategies.

Aims/Objectives: We have reviewed our experience in the treatment of acute aortic dissection with open and closed distal anastomosis. We assessed the preoperative and intraoperative characteristics of the two cohorts of patients and analysed early and long-term survival, the neurologic outcomes and the evolution of the residual dissected aorta.

Method: 204 patients underwent repair of spontaneous acute type A aortic dissection between January 2000 and December 2013. Open and distal anastomosis strategies were equally used by all the first operators throughout the study period. Univariate comparisons of preoperative, operative and postoperative variables were performed between the two
groups. Twenty-six variables were entered into a regression model to determine the impact on mortality and the occurrence of postoperative neurologic complications. The subgroup of patients with type 1 de Bakey and an intimal tear in the proximal aorta was studied with a similar analysis design. Mean FU was of 67 +/- 46 months. CT scan FU was available in 83 patients among survivors.

**Results:** Patients in the open repair group were more likely to present and have an open distal repair. The two group characterized different anatomical presentations of acute type A aortic dissection. The use of circulatory arrest with cerebral perfusion provided a reduced rate of postoperative neurologic deficits. Patients who underwent an open distal anastomosis showed a significant higher rate of complete thrombosis of the false lumen (p = 0.036).

**Discussion/Conclusion:** There is no difference in early and late survival between patients receiving an open distal repair and a closed anastomosis. The two group characterized different anatomical presentations of acute type A aortic dissection. The use of circulatory arrest with cerebral perfusion provided a reduced rate of postoperative neurologic deficits. The open repair was associated with a higher rate of complete false lumen thrombosis.

**A315**

Sutureless Aortic Valves in combined procedures: a useful tool in the armamentarium of cardiac surgeons

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Department of Cardiac Surgery - Paracelsus Medical University Nuremberg - Germany

**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A315**

**Background/Introduction:** Following the encouraging preliminary results, sutureless aortic valve implantation is performed in a growing number of patients as it makes minimally invasive surgery easier.

**Aims/Objectives:** On the other hand, less data are available on the performance of sutureless aortic valves in combined or complex procedures.

**Method:** Between May 2010 and May 2015, 319 patients (age 77.4 ± 5 years, female 169 (53%) underwent aortic valve replacement with a sutureless bioprosthesis in our institution. Of them, 25 were operated upon as REDO (10 with a degenerated aortic bioprosthesis and/or 15 with previous CABG) or as combined procedures (114 Patients, Table 1), in-hospital and follow up clinical and echocardiographic data were collected for all patients and here reported for the combined procedures.

**Results:** Mean logistic EuroScore was 14.7 ± 12%. The patients received a sutureless bioprosthesis in our institution. Of them, 25 were operated upon as REDO (10 with a degenerated aortic bioprosthesis and/or 15 with previous CABG) or as combined procedures (114 Patients, Table 1), in-hospital and follow up clinical and echocardiographic data were collected for all patients and here reported for the combined procedures.

**Discussion/Conclusion:** The sutureless aortic valve represents a useful tool in the armamentarium of cardiac surgeons for combined and complex surgery. As with growing experience, the indications and the limitations may become the same as for a conventional biological prosthesis but its use can make the operations faster, especially in complex and long procedures.

**A317**

Results of tricuspid valve reconstruction using a semirigid ring or a flexible band

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**Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A317**

**Background/Introduction:** Current concepts for tricuspid valve surgery recommend concomitant tricuspid valve reconstruction (TVR) utilizing annuloplasty devices over simple suture annuloplasty.

**Aims/Objectives:** It is unclear if flexible bands offer the same long-term results like rigid or semi-rigid rings. We aimed to evaluate possible outcome differences between the flexible SJM Tailor Band (FB group) and the Carpentier-Edwards rigid MC3-Ring (RR group).

**Method:** We retrospectively evaluated 141 patients undergoing tricuspid valve reconstruction (TVR) with the MC3-ring or the Tailor Band or suture annuloplasty between 01/11 and 12/13. Demographic variables, intraoperative parameters, pre- and postoperative echocardiographic studies were analyzed. A total of 108 pts undergoing TVR formed the RR group and 20 the FB group. Patients treated with suture annuloplasty or other devices were excluded.

**Results:** Age, gender, preop. Euroscore II and severity of tricuspid regurgitation (TR) did not differ among groups. Intraoperative parameters (procedure time, cardiopulmonary bypass and cross-clamp time) were also similar. Long-term mortality with a median follow-up of 1361d (range: 854-1900d) was similar, too. Postoperative echocardiographic follow-up revealed a trend for more severe TR after reconstruction with the band than with the rigid ring (p = 0.064, Mann-Whitney-U). Subgroup analysis of patients undergoing mitral valve plus concomitant tricuspid valve reconstruction demonstrated more moderate TR in the FB group (Table 1).

**Table 1 (abstract A317) Group/degree of TI Ti grade I Ti grade II p = 0.043 (Mann-Whitney-U)**

<table>
<thead>
<tr>
<th></th>
<th>RR group (N = 38)</th>
<th>FB group (N = 9)</th>
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<td>25</td>
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Discussion/Conclusion: Tricuspid valve reconstruction with the rigid MC3 ring yields a higher rate of just trace tricuspid regurgitation than with a flexible band in patients undergoing concomitant mitral valve surgery. A trend towards more trace tricuspid regurgitation was observed in the overall study cohort. Longer follow-up or even more desirable a multi-center study is warranted to determine if usage of flexible bands will lead to more reparations or more overt right-sided heart failure than rigid rings.

A318
Off pump mitral valve repair
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Background/Introduction: The NeoChord DS1000 is a disposable device used to replace damaged chordae by delivering artificial chordae tendinae in a beating heart through small anterolateral thoracotomy. It gives alternative approach in treating degenerative mitral valve insufficiency.

Aims/Objectives: To assess safety and efficacy in treating patients with off-pump transapical neochord implantation in Vilnius University.

Method: 60 patients had underwent off pump transapical neochord implantation. Patients were followed up to 1 year with clinical and echocardiographic examination.

Results: Out of 60 patients 48 (80%) had chordae implanted only to P2 segment, 2 (3%) patients had chordae implanted only to A2 segment. All other patients had chordae implanted to multiple segments. The average patient age was 60 ± 12 years, Euroscore II - 1.2 ± 1%. Median duration of operation was 129 ± 27 min. The mean intraoperative blood loss was 700 ± 500 ml, mean postoperative drainage was 230 ± 120 ml. Three (6%) patients needed RBC transfusion, 1 (2%) patient needed FFP transfusion. One patient required permanent pacemaker implantation due to sick sinus syndrome. There were no re-explorations for bleeding, strokes, new renal failure, wound infections or deaths. Acute procedure success was achieved in 58 (97%) of patients.52 patients had reached 6 months follow up and 33 patients have reached 12 months follow up. In patients with P2 prolapse without prolapse extension towards the commissures or central component to regurgitant jet or lack of central coaptation the mitral valve insufficiency less than 2+ remained in 94% (36 out of 38) patients at six months and 92 % (22 out 24) at 12 months follow up. In patients with prolapse extension towards the commissures or with central component to regurgitant jet or lack of central coaptation the mitral valve insufficiency less than 2+ was achieved in 50% (6 out of 12) patients at six months and 50% (4 out 8) at 12 months follow up.

Discussion/Conclusion: Off-pump transapical implantation of artificial chordae with NeoChord device is a safe method for the treatment of mitral valve insufficiency and preserves conventional MV repair treatment options if unsuccessful.

A319
The Place of Closed Mitral Valvotomy (CMV) Procedure in the Modern Era: 20 Years Single Center Experience
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Background/Introduction: The rham of RHD with MS varies depending on severity of disease, availability of expertise and resource; however in a facility deprived country with low economic status closed mitral valvotomy remain the standard palliative treatment. CMV is indicated in patients with pure non-calcific isolated MS with normal sinus rhythm.

Aims/Objectives: The aim of this study was to evaluate the clinical status of patients with mitral stenosis following closed mitral valvotomy. About 96%, of the patients were in good health. These results suggest that there is still a good place for closed mitral valvotomy in carefully selected cases.

Method: The suitable patients were selected according to echocardiography criteria: (1) pliable anterior mitral leaflet, (2) absence of significant mitral subvalvular disease, (3) absence of significant calcification, and (4) the mitral valve orifice area less than (1.1 cm2). The indications also include asymptomatic women of child bearing age with mitral valve areas of ~1.2 cm2.

Results: In-hospital mortality was 0.5%. Cardiac failure with significant MR was the main cause of early death, and no postoperative peripheral embolism occurred in cases done after TEE and occurred in 0.5% cases done without TEE. Freedom from thromboembolism was 99.0 +/- 0.5% at 20 years. Operative results were satisfactory in most patients, and severe mitral incompetence was seen only in hundred cases in which 15 cases converted to open heart and remaining treated with medical treatment in which we lost 12 patients. Reoperation was performed in 1110 patients (25.57%). The mean interval between CMV and reoperation was 141.1 +/- 60.8 months (range: 1-240 months).

Hundred patients were reoperated for moderate or severe mitral regurgitation, 990 for mitral restenosis, and twenty for mixed mitral valve disease (stenosis and regurgitation). Freedom from reoperation after CMV was 81.4 +/- 1.3% at 10 years, 74.42 +/- 2.1% at 20 years. Cox regression analysis indicated that impaired functional capacity, reduced mitral valve area, gradual increase in left atrial diameter and postoperative mitral insufficiency increased the reoperation rate after CMV.

Discussion/Conclusion: CMV represents a satisfactory technique in terms of lower cost, high efficacy, simplicity and reproducibility.

A320
Surgical vs. catheter-based paravalvular mitral valve leak closure (transapical approach). Early results. Single center experience
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Background/Introduction: Following surgical mitral valve replacement paravalvular leaks may occur in up to 17% of patients. A significant fraction of these patients present with a symptoms of heart failure and/or anaemia. Conventional surgical closure is associated with increased morbidity and mortality. Alternative transcatheter closure has been developed and being introduced into the clinical practice with a reasonable success. More evidence is needed to compare the efficacy and safety between surgical and catheter-based paravalvular mitral valve leak closure.

Aims/Objectives: To compare efficacy and safety between two treatment methods of mitral valve paravalvular leak closure.

Method: A retrospective analysis of patients' medical records treated for mitral paravalvular leak at our institution in year 2005-2015. 41 patients had paravalvular leak closure. 31 patients had paravalvular leak repaired via conventional surgery, and 10 patients had catheter-based procedure (trans apical approach). Patients' data, operative variables, postoperative complications, 1 and 4 months postoperative results were analyzed.

Results: Patients in a catheter-based paravalvular leak closure group were older (71 ± 6 years vs. 63 ± 8 years, $p = 0.004$), and had higher incidence of essential hypertension (8 (80%) vs. 10 (32.3%), $p = 0.008$). Procedure was longer in surgical closure group (270 ± 98 min vs171 ± 86 min, $p = 0.007$). Early after the treatment mild/moderate regurgitation of a paravalvular leak was found more frequently in a catheter based paravalvular leak closure group (5 (50%) vs. 1 with severe regurgitation in conventional surgery group (3.54%), $p = 0.0004$).

Discussion/Conclusion: Catheter-based closure of a paravalvular leak is reserved for older and sicker patients. Although the procedure of catheter-based paravalvular leak closure is quicker, patients have higher incidence of mild/moderate paravalvular leak after the procedure, which has reduced over time. With more clinical experience and development of special equipment, catheter-based paravalvular leak closure could be a possible alternative to the conventional operation.
A321 Validation of the endothelial staining markers CD31 and CD34 in immunohistochemistry of the long saphenous vein

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A321

Background/Introduction: Endothelial injury during the surgical intervention can significantly affect the functional status of the vein. The endothelial layer plays a vital role in the long saphenous vein for ensuring smooth blood flow and the prevention of vasocostriction and thrombus formation within the blood vessels. There are few histological studies comparing the different vein harvesting techniques that have studied endothelial layer integrity using CD31 on human long saphenous veins.

Aims/Objectives: Immunohistochemistry (IHC) remains the gold standard for studying the morphological status of the vein. Although previous studies have used IHC markers to score endothelial integrity, none of them compared the quality of CD34 staining following CABG surgery, particularly in terms of colour, intensity and distribution of their expression. This study aims to compare the endothelial markers CD31 and CD34 as reliable markers of endothelial damage on human long saphenous vein. This is the first study which directly compares these differences to identify and set a standard for future IHC on long saphenous veins.

Method: Patients were consented prior taking part in this study, which was approved by the Greater Manchester North East - National Research Ethics Committee (NREC). Ten tissue samples were obtained from ten traditional open vein harvesting patients and were automatically processed and stained using immunohistochemistry for CD31 and CD34. The colour, intensity and distribution of the staining on the tissues were scored blindly by five independent scorers and an expert histopathologist for this study. None of these collaborators were involved at any stage of this research project.

Results: Consecutive saphenous vein sections were stained using anti-CD31 and anti-CD34 antibodies. A significantly different pattern of expression was found in terms of colour, intensity and distribution. The CD34 antibody demonstrated greater colour (p < 0.007), intensity (p < 0.019) and distribution (p < 0.007) compared to CD31.

Discussion/Conclusion: In conclusion, the use of CD34 for assessing the endothelial integrity is more suitable than CD31. This study provides novel evidence regarding the use of these markers which can have important clinical effects, for example when used for coronary artery bypass surgery.

A322 Miniatized versus conventional cardiopulmonary bypass in patients undergoing coronary artery bypass surgery: impact on lymphocyte depletion and sternal wound healing

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A322

Background/Introduction: To reduce deleterious effects of C-CPB novel concepts have been developed based on miniatuized cardiopulmonary bypass (Mini-CPB) with closed circuits, low priming volumes and optimized perfusion system. In C-CPB surgery, it has previously shown that the use of Mini-CPB can reduce systemic inflammation compared to C-CPB (25) and so attenuate the pathologic effects of C-CPB.

Aims/Objectives: The aim of this study was to compare miniatuized cardiopulmonary bypass (Mini-CPB) versus conventional cardiopulmonary bypass (C-CPB) in patients undergoing coronary artery bypass grafting (CABG) in term of sternal wound healing and lymphocyte depletion.

Method: A total of 847 patients undergoing isolated coronary artery bypass grafting (CABG) surgery were studied. Exclusion criteria were: redos, emergencies, CPB time longer than 180 min, antibiotic therapy within two weeks prior to surgery. Finally, 697 consecutive patients who underwent CABG, between January 2012 and September 2014, were studied prospectively. C-CPB was used in 397 (56.9%) patients (Group A) and Mini-CPB was used in 300 (43.1%) (Group B). Patients in the two groups were similar with respect to demographic and preoperative status. To detect lymphocyte depletion, blood was sampled for lymphocyte measurements at three time points: preoperatively (T1), 24 (T2) and 72 h postoperatively (T3). The presence of infections was evaluated according to the ASEPSIS wound scoring system. Antibiotic prophylaxis with cefazolin was performed preoperatively, according to the routine of the institution.

Results: The study groups had similar EuroSCOREs. A total of 26/697 (3.7%) patients had sternal wound infection (SWI). Patients from Group A showed a higher incidence of SWI compared to Group B (26/397, 6.5% vs 0/300, 0% respectively, p = 0.002). In Group A 14/26 (54 %) patients developed deep SWI, and 12/26 (46 %) developed superficial SWI. The Group A but not the Group B showed significant lymphocyte depletion from preoperative during the 1st postoperative day (7.96 ± 4.85 % in Group A vs. 15.4 ± 4.8 % in Group B, p: < 0.0001). Also in 3rd postoperative day, lymphocyte depletion was lesser in Group B (9.83 ± 6.61 % in Group A vs. 13.67 ± 5.41 in Group B, respectively, p < 0.0001). The most frequently cultured isolated were Staphylococcus epidermidis (37%), Staphylococcus aureus (22.2%), and 22 (85%) patients were treated by debridement and vacuum therapy and 4 (15%) patients underwent surgical sternal reconstruction.

Discussion/Conclusion: This study shows that Mini-CPB for patients undergoing isolated CABG is associated with a reduced risk of SWI occurrence. This may be related to the less inflammatory response of Mini-CPB compared to C-CPB and to the lesser lymphocyte depletion. Further studies are needed to confirm these findings.

A323 Cardiac surgery in adults with congenital heart disease: an African perspective

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Background/Introduction: A paucity of data exists on the spectrum and outcome of adult patients undergoing congenital heart surgery (CHS) on the African continent.

Aims/Objectives: This study was undertaken to understand the local disease profile and needs of this patient group and so to facilitate planning for future provision of cardiac services.

Method: A retrospective chart review was undertaken of all consecutive adult patients (≥ 18 years) undergoing CHS in a single African tertiary care hospital between October 1995 and January 2015. Patients and operative outcomes were described using the Society of Thoracic Surgeons CHS database form.

Results: A total of 220 operations were performed in 209 patients (45% male). Mean age at surgery was 30.1 ± 10.9 years. Preoperative risk factors were present in 19.1% of patients with endocarditis, renal dysfunction and severe pulmonary hypertension the most frequent. Reoperations constituted 28.6% of procedures performed. The most common lesions according to primary diagnostic category were as follows: Septal defects (43.6%), Right heart lesions, including Conduit failure (23.7%), Left heart lesions (10.5%) and Thoracic arteries and veins (8.6%). Nineteen patients comprised 2.7% of diagnoses. Fifty-four percent of patients presented in the moderate or complex Bethesda diagnostic classes. Preoperative risk factors were present in 19.1% of patients with endocarditis, renal dysfunction and severe pulmonary hypertension the most frequent. Reoperations constituted 28.6% of procedures performed. Right ventricle to pulmonary artery conduit placement constituted 86.3% of patients. The mean Aristotle Basic Score was 6.2 ± 2.4.

Discussion/Conclusion: Surgical treatment is feasible in the African context with low mortality and acceptable morbidity in spite of limited resources. Our patient profile was similar to that reported in a recent multicentre European series. Our utilization of diagnostic cardiac catheterization seemed excessive. More than half of our patient group will require long-term specialized care.
A324
Surgical repair of isolated total anomalous pulmonary venous connection is linked to favourable outcomes
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A324

Background/Introduction: The operative mortality for total anomalous pulmonary venous connection repair is considered high when coexists with other congenital cardiac lesions. The isolated form however warrants excellent surgical outcomes.

Aims/Objectives: We analysed our series to test the validity of the above statement.

Method: From July 2007-April 2015, 18 consecutive patients, 10 males and 8 females (55/45%), median age 33 months with isolated total anomalous pulmonary venous connection were operated in our department. Of these 8 (44.4%) were of the supracardiac type, 4 (22.2%) cardiac, 5 (27.8%) of the infracardiac type and one mixed case (5.6%). Perinatal respiratory distress was the prominent clinical symptom (61%). Mean cardiopulmonary bypass time/cross-clamp time was 128/69 minutes. In all cases except the cardiac type repair was performed with direct anastomosis of the connecting vein to the left atrium and atrial septal defects were closed with autologous pericardium.

Results: There was one early mortality (5.5%) related to marked pulmonary hypertension and one case of postoperative chylothorax managed conservatively. Median intensive care unit stay was 7 and length of hospital stay 15 days respectively. Mean follow-up was 22 months (range 1-70) with trivial tricuspid regurgitation in 5 patients (33.3%) and moderate in one patient (6.6%). During this period no pulmonary venous stenosis was observed. No reoperation was necessary and no late deaths.

Discussion/Conclusion: Isolated total anomalous pulmonary venous connection is usually diagnosed after birth unlike complex forms where their pathology is conspicuous. The isolated form can be safely operated early with excellent surgical outcomes.

Figure 1(abstract A327) TTE-TEE Echocardiography: Right atrial mass

A325
Factors determining outcomes in adult patients operated for congenital heart diseases
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A325

Background/Introduction: Older patients with congenital heart disease (GUCH) present a unique challenge.

Aims/Objectives: To analyze factors predicting early cardiac morbidity in GUCH at a tertiary care centre.

Method: Between January 2004-December 2014, 1432 patients ≤13 years of age underwent surgery for GUCH. Factors associated with early cardiac morbidity were analyzed.

Results: On multivariate analysis, previous sternotomy, aortic cross clamp time more than 45 min, cyanosis, emergency procedure were identified as independent predictors of early cardiac morbidity with respective odds ratios of 10.5, 3.7, 2.3 and 8.0. These four variables together could discriminate 77% of all procedures correctly as to their immediate post-operative morbidity. Taking the log odds with each of these 4 as the respective weights, a score was generated. The weights were previous sternotomy (2.4), aortic cross clamp > 45 min (1.3), emergency (2.1), cyanosis (0.8), if the respective condition is present, zero otherwise. The score ranged from 0 to 4.5. The average value of the score based on the 4 variables was significantly higher in cases with cardiac morbidity (0.75 ± 0.88) vs (1.85 ± 1.17), p < 0.001. Distribution of the scores was significantly different between patients with and without morbidity. 67% patients without any morbidity had score ≤ 1 compared to 24.6% with morbidity. Only 1.2% patients without morbidity had score of ≤ 3 compared to 15% patients with morbidity. Compared to patients having score < 1, patients with score between 1 and 2 had an odds ratio of 3.5; patients with score between 2 and 3 had an odds ratio of 6.3; > 3 had an odds ratio of 32.1 for cardiac morbidity.

Discussion/Conclusion: Surgery for GUCH can be safely performed when adequate caution is taken in presence of four independent predictors like previous sternotomy, aortic clamp time > 45 min, cyanosis, emergency procedure.

A327
Lung Metastatic Nodules as First Presentation of Synovial Cardiac Sarcoma
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Background/Introduction: Synovial sarcomas are rare tumors accounting for approximately 1% from all cardiac neoplasms and present with a variety of symptoms depending on their location and size.

Aims/Objectives: To describe a unique case of a 36 year old male presenting with bilaterally pulmonary nodules as a result of right heart synovial sarcoma.
Method: Video-assisted thoracoscopic biopsy (due to newly diagnosed pulmonary nodules) revealed mesenchymal malignant neoplasm. Echocardiography showed a large mass located in the right atrium, arising from the anterior tricuspid valve. MRI of the heart demonstrated further anatomic details. 18F PET-CT scan revealed increased tracer uptake in lung nodule and in lytic lesion of the 8th thoracic vertebrae body indicating a spinal cord metastasis (Fig 2).

Results: The patient underwent median sternotomy and aorto-bicaval cannulation. After longitudinally opening of the right atrium, a 6-cm long pedunculated tumor originating from the atrial wall and part of the septal cusp of the tricuspid valve was identified. The tumor was completely resected with part of the invaded cusp. The septal cusp was repaired with pericardial patch and tricuspid valve repair was completed with the placement of annuloplasty ring. The left lower lobe nodule was excised with wedge resection, while the nodules of the left upper lobe and the right lower lobe were ablated with radiofrequency device because of their central location. The patient was discharged uneventfully on the 6th postoperative day.

Histopathologic testing results, showed neoplastic infiltration by spindle-like cells with dense arrangement, large nuclei, atypia, polymorphism and increased mitotic rate. Findings were indicative of monophasic synovial sarcoma mainly from spindle cells (Fig 4).

Discussion/Conclusion: We present a unique case of a patient with synovial sarcoma with pulmonary nodules as first manifestation.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A328
Is pre-operative haemoglobin A1c level a successful predictor of adverse outcome after cardiac surgery?
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Background/Introduction: Uncontrolled diabetes mellitus increases morbidity and mortality after cardiac surgery. Haemoglobin A1c (Hb A1c) is used to measure long-term glucose control. There have been reports of a higher incidence of wound infections with uncontrolled Hb A1c levels in patients undergoing cardiac surgery.

Aims/Objectives: To establish clinical significance of elevated HbA1c level among patients who underwent cardiac surgery, and whether this may influence their postoperative mortality and morbidity.

Method: We performed a retrospective review of patients who underwent cardiac surgery over a 4-year period (2012-2015). Patients were stratified into three HbA1c groups (I = HbA1c 20-41 mmol/mol; II = HbA1c 42-48 mmol/mol; III = HbA1c 49-150 mmol/mol). Study end points were post-operative wound infection, stroke and renal failure. Chi-square test and independent sample t-test were performed to compare variables of interest.

Results: Among 1452 patients, 883 patients were in group I, 281 in group II and 288 in group III. There was statistically significant difference in post-operative wound infections between three groups (p < 0.006), with Group III having the highest rate of 7.6% while Group II 6.8% and Group I 3.5%. Patients with pre-operative HbA1c >42 mmol/mol (7.2% vs 3.5%) had a higher incidence of post-operative wound and infections (p < 0.002; OR 2.134; 95% CI 1.322 - 3.445) when compared with Hb1Ac <42 mmol/mol. Patients with pre-operative HbA1c >42 mmol/mol also had a significant increase in post-operative renal complications (p-value < 0.033; OR 2.569; 95%CI 1.049 - 6.290). Sub-group analysis among the urgent cases (n = 333) showed a 2.1 fold rise in wound infection (p < 0.02, OR 2.1, 95% CI 1.3-2.7). There was no statistical rise in incidence of stroke or mortality between the groups.
Discussion/Conclusion: Elevated Hb1Ac was associated with increased wound infections and risk of renal dysfunction after cardiac surgery. Patients undergoing urgent surgery with undiagnosed diabetes may remain at increased risk of post-operative wound infections.

A329
Usefulness of Early Postoperative Atrial Fibrillation Burden as a Predictor of Late Recurrence after Maze Procedures
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Purpose: It is difficult to evaluate the efficacy of maze procedures because a true atrial fibrillation (AF) burden measurement during follow-up is not yet clinically available. The aim of this study is to evaluate the usefulness of early postoperative AF burden as a predictor of late AF recurrence after the maze procedure.

Methods: Between January 2000 and November 2009, we enrolled 508 consecutive patients (284 females, aged 55 ± 12 years) who underwent the maze procedure with other cardiac operations. The early postoperative AF burden was measured by continuous monitoring of the cardiac rhythm during hospitalization. The post procedural rhythm was checked with a serial electrocardiogram every day. The mean follow up duration was 58 ± 32 (maximum, 10.4 years) months.

Results: The hospital mortality was 0.2% (1/508). Late cardiac-related deaths occurred in 25 patients (4.9%); 419 patients (86.9%) remained AF-free at the end of the follow-up period. The early postoperative AF burden was correlated with age, AF duration, atrial F wave, and left atrial volume index (Table 1). On Cox regression analysis, independent predictors of AF recurrence were AF duration (p < 0.001) and early postoperative AF burden (p < 0.001). On receiver operating characteristic curve analysis, we found that early postoperative AF burden ≥ 0.25 predicted AF-free survival with a sensitivity of 77% and a specificity of 62% (area under the curve (AUC) = 0.768) and AF duration ≥ 30 months predicted AF-free survival with a sensitivity of 70% and a specificity of 60% (AUC = 0.729). Freedom from AF recurrence at 10 years was significantly lower in patients with early postoperative AF burden > 0.25 (Figure 1).

Conclusions: Measurement of the early postoperative AF burden was helpful in predicting AF recurrence. We suggest that greater efforts to prevent AF recurrence should be made in patients with high early postoperative AF burden and long AF duration.

A330
Improving On Fast-track Protocol for Post Cardiac Surgery Patients
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Background/Introduction: Many risk factors have been shown to be independently predictive of the success of fast-track for post cardiac surgery patients. While a safe fast-track protocol is important, patient selection is crucial too in determining the success of fast-track patients.

Aims/Objectives: We aim to improve on our fast-track protocol by identifying risk factors affecting extubation time in our institution.

Method: For a total of six months duration, we non-selectively included all cardiac surgery patients admitted through our new post-anaesthesia care unit (PACU). We studied how patients’ profile, comorbidities and operative data affect the success rate of extubation.

Results: 107 of the total 145 patients admitted to PACU were able to be extubated. However, only 79(54.5%) patients were able to be extubated within four hours. Within the success group, we found that age (OR = 0.912; 95% CI = 0.044-1.779) and duration of ventilator weaning (OR = 0.813; 95% CI = 0.698-0.928) significantly influenced the extubation time with p-value of 0.040 and <0.001 respectively. Within the failure group, age (HR = 1.061; 95% CI = 1.018-1.105), EuroScore II (HR = 2.303; 95% CI = 1.416-3.748), cardiopulmonary bypass time (HR = 1.015; CI 95% = 1.005-1.025), aortic cross-clamp time (HR = 1.023; 95% CI = 1.010-1.037) and post-operative inotropic usage (HR = 2.892; 95% CI = 1.637-5.109) significantly affect failure of extubation with p-values of 0.005, 0.004, 0.001 and <0.001 respectively.

Discussion/Conclusion: Through this observational study, we will be able to improve on our pre-operative patient selection based on their age and EuroScore II; and intra-operative decision based on the total cardiopulmonary bypass time and aortic cross-clamp time in order to fast-track cardiac patients by admitting them to PACU. Through this, fast-track protocol can be practiced safely to its many advantages.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A331
If I had a Hammer
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A331

Background/Introduction: We present the case of a 64 year old man who was referred to our tertiary center with 3 nails drilled into his chest with a nail gun secondary to deliberate self-harm. The patient underwent a sternotomy for removal of the 3 nails. 2 nails were easily visible and removed. They caused pericardial perforation and myocardial injury. The third nail was difficult to locate. Myocardial injury showed a trajectory near...
the junction of the left anterior descending artery and the diagonal artery with no bleeding appreciated. A magnet was then used to locate the third nail which was found to be deep in the hilum of the lung. The magnet was then used to gently ‘milk’ the nail into a more superficial position. Once the nail was more easily accessible, it was removed.

Discussion/Conclusion: A case of a lost metal during surgery can present a challenge to even the most experienced surgeons. Currently, the protocol involves a standard visual search followed by intra-operative imaging. This approach can lengthen operative time, cause injury during a rigorous search, and increase costs. Our case demonstrates how the use of magnets can assist a surgeon in locating and removing lost metal reducing the risk of iatrogenic injury, length of the operation and cost.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A332
Differential significance of HRCT and FDG-PET/CT to predict lymph node status between patients with clinical stage IA lung adenocarcinoma and squamous cell carcinoma
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A332

Background/Introduction: True node-negative small sized non-small cell lung cancers are optimal candidates for sublobar resection without systematic lymph node dissection.

Aims/Objectives: The purpose of this study is to identify the predictive factors of true node-negative clinical stage IA non-small cell lung cancer.

Method: A multicenter database of patients with completely resected clinical stage IA lung adenocarcinoma (n = 502) or squamous cell carcinoma (n = 100) was retrospectively analyzed. The relationship between lymph node status and preoperative factors such as tumor size on HRCT and maximum standardized uptake value (SUVmax) on FDG-PET/CT were examined.

Results: Multivariate analyses revealed that solid tumor size on HRCT (Odds ratio (OR), 1.42; p < 0.001) or SUVmax on FDG-PET/CT (OR, 1.04; p = 0.049) was identified as an independent predictor of lymph node metastasis in patients with lung adenocarcinoma. The predictive criteria of node-negative lung adenocarcinoma were solid tumor size <0.8 cm or SUVmax <1.5. Among patients who met the node-negative criteria, recurrence-free survival at 5 years was not significantly different between those who underwent lobectomy (96.0%) and those who underwent sublobar resection (97.2%). In patients with squamous cell carcinoma of the lung, no independent predictive factors for lymph node metastasis were identified in univariate or multivariate analysis.

Discussion/Conclusion: Either solid tumor size on HRCT or SUVmax on FDG-PET/CT was a significant independent predictor of nodal status in clinical stage IA lung adenocarcinoma. The node-negative criteria of solid tumor size <0.8 cm or SUVmax <1.5 are helpful for choosing candidates for sublobar resection without systematic lymphadenectomy. In patients with clinical stage IA lung squamous cell carcinoma, systematic lymphadenectomy is advisable.

A333
Mechanical Circulatory Support as a Bridge to Recovery in Fulminant Myocarditis
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A333

Background/Introduction: Ventricular assist devices have been routinely used in patients with end stage heart failure as a bridge to transplantation. We present a case of using a Bi-Ventricular Assist Device (BiVAD) in a patient with fulminant heart failure as a bridge to recovery.

Aims/Objectives: A 36 year old lady with a history of Grave’s Disease and three months post-partum presented with fulminant myocarditis. She presented to her local hospital on 2nd January with episodes of ventricular tachycardia (VT) and syncope. She was transferred to a tertiary level cardiology centre as she failed to cardiovert. Echocardiography demonstrated significant left ventricular (LV) thickening and LV stasis. She continued to have VT storms and was referred to our advanced heart failure service.

Method: On arrival she rapidly deteriorated with recurrent VT and ventricular fibrillation (VF) episodes causing severe haemodynamic compromise. A decision was made to institute mechanical circulatory support with veno-arterial Extra-Corporeal Membrane Oxygenation (VA-ECMO). During cardiopulmonary resuscitation she was placed onto VA-ECMO and stabilised. That same evening she underwent conversion to BiVAD support for offloading of both ventricles.

Results: She was extubated on the first post-operative day. Myocardial biopsy performed during BiVAD implantation confirmed florid myocarditis. After the ensuing days, she was mobilised and rehabilitated on the ITU and there was a gradual recovery of myocardial function. On the 25th post-operative day her BiVAD circuit was explanted following a successful wean.

After further rehabilitation she was discharged home, 39 days after admission. MRI prior to discharge demonstrated satisfactory biventricular function with a small right atrial thrombus.

Discussion/Conclusion: Ventricular assist device therapy can be utilised as an effective primary treatment modality for patients in fulminant heart failure within the spectrum of post-partum cardiomyopathy. We suggest early discussions with regional advanced heart failure centres to facilitate prompt intervention leading to full recovery.

A334
Cardiac surgery with concomitant atrial ablation
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A334

Background/Introduction: Concomitant surgical ablation is recommended in patients undergoing cardiac surgery with atrial fibrillation (AF) to increase the incidence of sinus rhythm (SR). According to literature Cox IV seems to be superior to other surgical methods, although more invasive.

Aims/Objectives: The aim of our study was to analyze our institutional results with pulmonary vein isolation (PVI) using a bipolar radiofrequency clamp in combination with occlusion of the left atrial appendage (LAA).

Method: Retrospectively we studied our institutional database for all PVI cases. Incidence of normal SR versus AF was evaluated beyond 3 month after surgery. Supplementary follow up (FU) involved incidence of stroke and use of anticoagulants, patients NYHA state, survival and reintervention rate. We separated two groups in either preoperative paroxysmal AF (group 1) or chronic AF (group 2).

Results: Between 01/2013 and 03/2015 56 patients (32% female; 73 ± 7 years) received PVI and LAA occlusion concomitant to other cardiac surgery. 34 (61%) patients suffered for paroxysmal AF and 22 (39%) for chronic AF. 15 patients underwent isolated mitral valve surgery, 8 in combination with CABG and 3 with aortic valve surgery. 6 patients were admitted for isolated aortic valve surgery, 3 in combination with CABG and 21 for isolated CABG. Median follow up was 267 (102; 365) days after surgery, 84% had normal SR (group 1 85%, group 2 82%, p = 0.59) and there were no strokes and no reinterventions. 75% were on treatment with anticoagulants and 54% were in NYHA class 0-1, 38% in NYHA class 2-3 and 7% in NYHA class 4. We observed 3 deaths, including 1 early death that was lost to FU.

Discussion/Conclusion: Less invasive PVI in combination with LAA occlusion is safe and reveals high success rates. High rate of anticoagulation despite normal SR at FU has to be analyzed further. Patients undergoing cardiac surgery should receive concomitant PVI and LAA occlusion if AF is present.
A336
Advanced mechanical circulatory support for refractory cardiogenic shock after cardiac surgery: An eleven-year experience in Edinburgh
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Background/Introduction: Post-cardiotomy cardiogenic shock (PCCS) occurs in 2-6% of patients undergoing surgical revascularization or valvular surgery. Approximately 0.5-1.5% of patients are refractory to maximal inotropic and intra-aortic balloon counter pulsation (IABP) support. Refractory PCCS leads to rapid multi-organ dysfunction syndrome and is an almost universally fatal clinical state without advanced mechanical circulatory support (AMCS) i.e. extra-corporeal membrane oxygenation (ECMO) or ventricular assist devices (VAD). However, the associated major complications and cost related to such complex devices has led to centralization of such valuable services to only a few UK centers.
Aims/Objectives: We assessed the outcome of salvage AMCS for PCCS in a non-transplant cardiothoracic surgery unit over an eleven-year period.
Method: The data was gained through the Royal Infirmary of Edinburgh cardiac surgery database. Our inclusion criteria included any patient from April 2004-April 2015 who had received salvage Veno-Arterial ECMO or VAD for PCCS (Cardiac Index < 2.2 L/min per square meter OR Systolic BP < 90 mmHg) refractory to IABP and maximal inotropic support following adult cardiac surgery.
Results: We identified 16 patients who met the inclusion criteria in the aforementioned period. Age range was 34-83 years (Median 71). There was a large male predominance of 12 (75%). Overall 15 patients (94%) had received ECMO of which number, 12 (80%) had received central ECMO and 3 (20%) had received peripheral ECMO. 1 patient (6%) had VAD. Most common procedural related complication was haemorrhage. Massive stroke, Femoral artery pseudo-aneurysm, septic shock, and renal failure also occurred in this group. Overall survival was 31.2%. All survivors had NYHA class II-III on 24 months follow-up.
Discussion/Conclusion: Our survival rate is identical to the reported data from previous studies. AMCS for refractory PCCS remains a controversial approach his is perhaps due to the high cost and serious complication rates. However, the survivors appear to continue living with an acceptable quality of life.

A337
An unusual symptoms caused by huge pseudoaneurysm formation of ascending aorta
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Background/Introduction: We are presenting a 33-year-old patient with huge pseudoaneurysm formation of the ascending aorta, developing after type A acute aortic dissection type Stanford A. During this surgery the ascending aorta including the aortic valve had been replaced. The regular follow-up by echocardiography was performed once a year. After 10 years without any problem, the patient began to suffer from atypical problems - repeated respiratory infections and superior vena cava syndrome. The CTA shown huge pseudoaneurysm of the ascending aorta which was oppression superior vena cava, both main bronchi and esophagus. This finding was the indication for redo surgery. During redo surgery the total suture line dehiscence of distal anastomosis between vascular prosthesis and native aortic arch was found. The blood stream leaking through this dehiscence formed pseudoaneurysm sac. The aortic root with mechanical prosthesis was found intact. The supracoronary ascending aorta replacement was performed. Four days after surgery the cardiac tamponade was diagnosed.

On operating two small leaks between native aortic arch and vascular graft was directly sutured. Further progress was uneventful.
Method: Case report.
Results: Echocardiography and CTA showed a good function of the prosthesis. Fifteen days after surgery the patient was discharged home.
Discussion/Conclusion: Suture line dehiscence and pseudoaneurysm formation is one of the leading causes of late reoperation after surgical repair of acute type A aortic dissection. Redo surgeries are connected with high risk of death. Therefore timing and good preoperative imagination are very important.
Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

A339
Preoperative aspirin continuation versus replacement therapy with low molecular weight heparin before coronary surgery: effects on postoperative bleeding risk
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Background/Introduction: Management of preoperative antiplatelet therapy in coronary surgery is still variable among surgeons. Guidelines collide with prejudices: replacement of aspirin with low molecular weight heparin (LMWH) is still performed in many Centers due to a presumed minor risk of intraoperative bleeding, even though supporting evidences are weak and detrimental effects are well-described.
Aims/Objectives: The purpose of this study is to analyse postoperative bleedings in patients scheduled for elective primary isolated on-pump coronary artery bypass grafting (CABG), depending on preoperative continuation of aspirin or its replacement with LMWH, since direct and unbiased comparisons are lacking.
Method: Retrospectively, 200 patients were included in Group 1, in which aspirin was stopped at least five days before surgery and replaced with enoxaparin, and 200 patients in Group 2, in which aspirin was continued until surgery. Postoperative bleedings and surgical complications were monitored during hospitalization.
Results: Postoperative bleeding was lower in Group 2 compared to Group 1 in the first hour after operation (p = 0.005), in the following 12 hours from surgery (p < 0.001), and considering the overall blood loss with reduced major postoperative bleeding events rate (p < 0.001). There were no differences in the use of blood products and reoperation for bleeding. Patients in Group 2 tended to have lower values of postoperative C-reactive protein (p = 0.068). Aspirin withdrawal before surgery was an independent predictor of major postoperative bleeding at Logistic regression, while statin treatment might exert a protective effect (p = 0.085). Combined aspirin and statin treatment is even more beneficial (p = 0.031). After propensity score adjustment, aspirin protective effect carries an adjusted odds ratio of 0.317 (p = 0.001).
Discussion/Conclusion: Postoperative bleeding was reduced in patients who continued aspirin until the day of surgery compared to patients who replaced it with LMWH. This finding may be due to a reduction in postoperative inflammatory reaction, since statin treatment played a protective role and C-reactive protein levels tended to be reduced in patients who continued aspirin.

A341
Mitrval repair versus mitral valve replacement in octogenarians - review of long-term outcomes in the past two decades
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A341
Background/Introduction: During the past decades, the cardiovascular community was faced with an ageing patient population and thus with an increased number of elderly patients referred for cardiac surgery. This is also perceptible for mitral valve (MV) disease, as gold standard treatment is MV-repair or replacement. Satisfactory results were proven in octogenarians, but comparative data of both treatments is scarce.

Aims/Objectives: We reviewed results after either MV-repair or replacement in octogenarians treated at our centre over the past 20 years.

Method: Our in-hospital database was explored for patients who had MV surgery; this yielded 1736 patients treated between 1994 and 2014. 155 patients (8.9%) were aged >80 years and received MV-repair (n = 1066.68%) or replacement (MVR n = 49.31%), in 53.8% of MV-repair and 51.0% of MVR concomitant procedures were performed. A comparative survival-analysis of octogenarians with adjustment for valve pathology and a subgroup-analysis for isolated procedures was performed.

Results: Mean age was 82.1 ± 1.9 years (MV-repair vs 82.5 ± 2.3yrs (MVR: p = 0.21). Logistic EuroSCORE was 19.7 ± 6.6 vs. 20.9 ± 14.9% (p = 0.73). Median follow-up was 918.5 days (IQR 272.5-1862). Thirty-day mortality was 7.5% (MV-repair) vs. 12.2% (MVR: p = 0.37). ICU-stay was 46.8 ± 118.8 hrs (MV-repair) vs. 48.8 ± 43.9 hrs (MVR: p = 0.89); ventilation time was (Median [IQR]) 6 [5-11.5] vs. 9 [6-14.5]hrs (p = 0.83). Adjusted 1-,2-, and 8 year survival was 88.3%, 83.2%, 66.6% and 32.2% after MV-repair vs. 68.6%, 63.2%, 39.6% and 19.0% (MVR: p = 0.02). 1-,2-,5-, and 8 year survival of isolated procedures was 91.7%, 89.4%, 74.3% and 52.2% after MV-repair vs. 78.3%, 67.4%, 34.1% and 18.2% after MVR (p = 0.03).

Discussion/Conclusion: Long-term survival after MV-repair was superior to MVR. This was still apparent after adjustment for valve pathology and in the subgroup of isolated procedures. Even in octogenarians, the complex anatomy of the mitral valve should be preserved and the repair whenever possible.

A343

Prospective, multicenter study of pleural adhesion in repeated pulmonary surgery

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Background/Introduction: Pleural adhesion (PA) complications repeated pulmonary surgery.

Aims/Objectives: Herein, we prospectively investigated the degree of PA in the second thoracotomy to assess the impact of the previous ipsilateral thoracic procedure.

Method: Seventy patients, with a median age of 67 years, undergoing a second thoracotomy with complete medical records of the previous thoracotomy from 4 institutions were included in this study. The mean interval from the first operation to the second operation was 20 months (1-105 months). The site and the extent of adhesion as well as duration and amount of bleeding while dissecting the adhesion were recorded.

Results: Fifty-four (76%) patients had PA to the chest wall and 10 (14%) had an increased number of elderly patients referred for cardiac surgery. This might be caused by post-operative in the subgroup of isolated procedures. Even in octogenarians, the site and the extent of adhesion as well as duration and amount of bleeding while dissecting the adhesion were recorded.

Discussion/Conclusion: Long thoracotomy incision length in the initial operation for predicting PA was 75 minutes, 10 g, and 6 cm, respectively. On the basis of the univariate analysis for PA, operation time >75 minutes, bleeding >10 g, thoracotomy incision length >6.0 cm, and segmentectomy or lobectomy in the initial surgery were significantly associated with PA. Multivariate analysis revealed only thoracotomy incision length >6.0 cm was the independent predictor for PA (p = 0.0065). All patients with thoracotomy incision length >6.0 cm showed PA, but 54% of patients with thoracotomy incision length >6.0 cm. On the other hand, thoracotomy incision length was not associated with dense and total PA. Multivariate analysis identified only post-operative drainage period >5 days in the initial surgery to be the independent predictor for dense and total PA in the thoracic cavity (p = 0.016).

Discussion/Conclusion: Long thoracotomy incision length in the initial surgery is a predictor for PA at the second surgery. Dense and total PA might be caused by post-operative inflammation in the thoracic cavity due to prolonged air leakage.

A344

A prospective study of the National Early Warning Score in Cardiothoracic Surgery

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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A344

Background/Introduction: The National Early Warning Score (NEWS) is a clinical guide used to facilitate early detection of deterioration by categorising a patient’s severity of illness and prompting nursing staff to request a medical review at specific trigger points utilising a structured communication tool while following a definitive escalation plan. Adopting a National Early Warning Score (NEWS) is beneficial for standardising the assessment of acute illness severity, enabling a more timely response using a common language across acute hospitals nationally.

Aims/Objectives: To determine whether the NEWS guideline recommendations apply to post-operative cardiac and thoracic patients.

Method: A prospective study of patients undergoing cardiac and thoracic surgery was performed. Data was entered into a spread sheet using patient’s medical notes and observation sheets. The data looked at procedure performed, post-operative length of stay in ICU, post-operative complications, NEWS score on arrival to ward, and average NEWS score each day up to and including day of discharge.

Results: 100 post-operative cardiac patients and 100 post-operative thoracic patients were included in the study. Our results showed initially
Our results show that the NEWS score guide meeting the inclusion criteria, were identified. A total of 6689 patients underwent CABG of which trainees of the patients with mechanical valve prostheses in those over 65. It has been shown that the survival of patients does not correlate with cardiac and thoracic patients in the initial post-operative period. More research in this area could shed some light on potential adjustments and modifications to correlate better with our patient population.

A345
A Retrospective Cohort Study in patients over 55: Mechanical versus Biological valve prostheses
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A345

Background/Introduction: The choice between a mechanical valve and a biological valve is not always clear for patients requiring valve replacement surgery; age has been considered to be the determining factor in the decision making process. Previous guidelines have recommended the implantation of mechanical prostheses in patients under the age of 65 and biological prostheses in those over 65.

Aims/Objectives: To investigate the life expectancy of patients over 55 who have had either a bioprosthetic or mechanical valve replacement and to establish if there is a significant difference in survival rates between these two valve groups. In addition, this research aims to investigate if factors such as hypertension, diabetes and a history smoking have an impact on the patients’ survival.

Method: 138 patient charts meeting the inclusion criteria, were identified using the percussionist database, and were used to extract the data relevant to the study. Data was analysed using SPSS.

Results: Of the 138 patients, 59.8% (n = 61) of the patients with biological valves and 58.3% (n = 21) of the patients with mechanical valves survived between 5 to 10 years. The unpaired t-test and the chi-squared test performed showed that there was no statistically significant difference in the survival of patients who had biological valves and those who had mechanical valves.

Discussion/Conclusion: This study suggests that the type of valve prosthetic implanted does not affect the survival of the patients.

A346
Systematic lymph node sampling at operation results in more node positive staging in NSCLC
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Background/Introduction: It has been shown that the survival of patients with NSCLC is related to nodal involvement. Both BTS and SIGN guidelines recognise that simple nodal sampling is not adequate to accurately stage NSCLC. More research in this area could shed some light on potential adjustments and modifications to correlate better with our patient population.

Aims/Objectives: We report on the nodal staging of all patients in 2012 and 2013 who underwent lung resection.

Method: All patients who underwent surgery for NSCLC at The Golden Jubilee National Hospital in 2012 and 2013 were included. Data were collected on histological diagnosis, T and N staging from histology reports, the lymph nodes sampled at operation and the operating surgeon. Adequate lymph node sampling was considered to have been performed if more than three mediastinal lymph node stations were sampled, as this is a quality performance indicator set out by NHS Scotland.

Results: 583 patients underwent lung resection. There was no difference in the proportion of patients with nodal disease between operating consultant (p = 0.120). In this cohort, as the number of lymph node stations sampled increased, the proportion of node positive disease increased from 16% and 19% if only 1 or 2 lymph node stations were sampled respectively, to 42% node positive if more than 6 stations were sampled (p = 0.002). When 3 or more mediastinal lymph node stations were sampled, then the detection of nodal disease increased by 50% (p = 0.006).

Discussion/Conclusion: By sampling more mediastinal lymph nodes, more diseased lymph nodes were detected. This meant these patients were more accurately staged and considered for adjuvant chemotherapy, therefore potentially increasing their chances of survival.

A348
Consultants or Trainees: Whose patient’s do better following surgical coronary revascularisation?
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A348

Background/Introduction: It is a commonly held belief that patients undergoing coronary artery bypass grafting (CABG) have better outcomes when their surgery is performed by a consultant rather than a surgical trainee. However, there are few studies that analyse the relationship between operator grade and clinical outcomes.

Aims/Objectives: To investigate the effect of operator grade on the outcomes of CABG in the setting of a major tertiary centre with a nationally accredited cardiac surgical training programme.

Method: A retrospective observational cohort study was performed on prospectively collected data for all patients undergoing CABG between January 2003 and July 2011.

Results: A total of 6689 patients underwent CABG of which trainees performed 1968 (29.4%). The proportion of procedures performed by trainees declined over time from 30.2% in 2003 to 26% in 2010. Consultants tended to perform more high risk operations with their patients being more likely to have high Euroscores, be urgent cases, and have cardiogenic shock. In the unadjusted Cox analysis, consultant operator grade was associated with an increase in 5 year mortality [HR: 1.26 (95% CI: 1.07-1.47)]. However, this association did not persist following multiple adjustment for co-morbidities [HR: 1.02 (95% CI: 0.87-1.20)]. In a propensity score analysis that stratified patients by risk, whilst consultants were found to have performed a greater proportion of high risk cases, there was no significant difference seen in 5 year mortality between consultants and trainees across the range [RR 1.04 (95% CI: 0.86-1.24)].

Discussion/Conclusion: There is no difference in clinical outcomes between trainees and consultants where CABG is performed in a centre with a dedicated training programme under direct consultant supervision.

A350
VATS Pneumonectomy: The Posterior Approach
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Journal of Cardiothoracic Surgery 2015, 10(Suppl 1):A350

Background/Introduction: VATS lobectomy is a well-established procedure with proven benefit for patients, in the form of fewer complications and shorter hospital stays but providing equivalent clearance of tumours compared to thoracotomy. A less common and more complex procedure is performing pneumonectomy by the same technique, with little published evidence to demonstrate the same clinical or oncological benefits.

Aims/Objectives: Our objective was to review the characteristics and outcomes for patients undergoing VATS pneumonectomy at a single institution.

Method: Pneumonectomy was performed by the previously described Edinburgh VATS approach. This technique is optimised with the use of a 30 degree HD camera, and dividing hilar structures in the following order: SPV, main PA, IPV, and main bronchus after sampling of station 7 lymph nodes. Operation notes, discharge summaries and pathology reports of patients who have undergone VATS pneumonectomy from 1992 until the present were reviewed. The details of these patients were recorded in a worksheet and analysed using Microsoft Excel.
Results: Age (mean, range) 63 (14-82) Female 9 (45%) Right Pneumonectomy

Our objective was to perform a complete evaluation of OPCAB provides

To compare survival in high-risk patients with MVD and

Better understanding of hemodynamic

to evaluate their impact onto the

that was created in an attempt to

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Background/Introduction: High-risk patients with multivessel disease (MVD) represent a surgical challenge carrying high mortality risk. These cases elicit discussion within heart teams regarding the actual benefit of undertaking major surgery on these patients and often lead to abandon the surgical option. Off-pump coronary artery bypass (OPCAB) provides good quality graft on left anterior descending (LAD) without exposing the patient to cardiopulmonary bypass, and, despite providing an incomplete revascularization, might be the ideal choice in patients with multiple comorbidities, not eligible to percutaneous or on-pump procedures.

Aims/Objectives: To compare survival in high-risk patients with MVD and no percutaneous option, treated with incomplete off-pump surgical myocardial revascularization or discharged on optional medical therapy.

Method: 83 high-risk patients with MVD were enrolled: 42 were treated with incomplete off-pump revascularization using left internal mammary artery (LIMA) to LAD; 41 were treated with optional medical therapy (OMT), having refused surgery. Patients were followed-up by telephone interview. Primary endpoint was survival from all-cause mortality; secondary endpoints were survival from cardiac-related mortality and freedom from non-fatal major adverse cardiac events (MACE).

Results: During follow up, there were 11 deaths in OPCAB group and 27 deaths in OMT group. Death was due to cardiac factors in 6 and 15 patients, respectively. MACEs were observed in 6 patients in OPCAB group and 4 patients in OMT group. Both survival from all-cause mortality and cardiac-related events were in favor of the OPCAB group over the OMT which carried a propensity score-adjusted hazard ratio of 3.862 and 3.663, for all-cause and cardiac-related mortality respectively. There was no statistically significant difference concerning freedom from MACE.

Discussion/Conclusion: For high-risk patients with MVD, considered ineligible for on-pump complete revascularization surgery or percutaneous coronary intervention, incomplete revascularization with OPCAB LIMA-on-LAD offers benefits in survival when compared to OMT alone.

A352

Performance of euroscore ii compared with its predecessors in octogenarian patients undergoing aortic valve replacement

Background/Introduction: Logistic EuroSCORE overestimates the risk profile of octogenarians undergoing aortic valve replacement by traditional surgery. EuroSCORE II, that was created in an attempt to improve this previous version, has been evaluated in the general population. However, to our knowledge, there are no studies evaluating the predictive performance of EuroSCORE II in the elderly population undergoing surgery for aortic valve replacement despite the fact that the majority of patients receiving transcatheter techniques are octogenarians and this new version is being used for the selection of high-risk surgical patients.

Aims/Objectives: Our objective was to perform a complete evaluation of EuroSCORE II in octogenarian patients undergoing aortic valve replacement and compare it with its predecessors.

Method: All octogenarians who underwent aortic valve replacement between 2009 and 2015 were analyzed. EuroSCORE II was assessed calculating discrimination using the area under the ROC curve (AROC), and calibration using the Hosmer-Lemeshow (HL) test and the risk adjusted mortality ratio (RAMR) of the model. The same analysis was performed by risk quartiles.

Results: 482 octogenarian patients underwent aortic valve replacement in our center during the study period. Discrimination of EuroSCORE II was excellent, AROC=0,91, and better than its previous versions, AROC for logistic EuroSCORE =0,81 and for additive EuroSCORE=0,80. Calibration was poor due to underestimation of the mortality risk. (p for Hosmer-Lemeshow test of 0,03 and risk adjusted mortality ratio=8,9/6,1=1,46). However, analyzing by quartiles, EuroSCORE II has almost perfect calibration and discrimination for all patients except for those with the highest risk. In the fourth quartile of risk, EuroSCORE II markedly underestimates the mortality risk. In these high-risk patients, the best calibration is reached using the logistic EuroSCORE (p for HL test 0,23 and RAMR =29,2/24,91= 1,17).

Discussion/Conclusion: High risk patients can be detected using EuroSCORE II due to its excellent discrimination power. However, once a patient is selected as high-risk (EuroSCORE II > 6,5), logistic EuroSCORE should be used to calculate the risk of mortality.

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Elevated Pressures on Aortic Valve Leaflets correlate with Orientation of LVAD Outflow Graft

Background/Introduction: Better understanding of hemodynamic alterations caused by long-term use of continuous-flow left ventricular assist devices (LVAD) is necessary to evaluate their impact onto the native heart and major vessels. In particular, aortic insufficiency is a known complication after LVAD implantation and may be related to alteration of blood flow distribution on the leaflets of the aortic valve.

Aims/Objectives: To evaluate whether orientation of LVAD outflow graft relative to aortic wall was related to presence of retrograde velocity inferior to the anastomosis site and to increased pressure on the aortic valve leaflets.

Results: In four cases, the angle of the LVAD outflow graft was larger than 90 degrees (102 - 112) relative to the anterior wall of the ascending aorta inferior to the anastomosis point (i.e. pointing down) resulting in retrograde flow along the posterior wall towards the aortic root. Corresponding leaflets exhibited increased pressure relative to unaffected leaflets in these cases. In three cases, the LVAD outflow graft angle was smaller than 90 degrees (70 - 71, i.e. ‘pointing up’). No retrograde flow or velocities were observed for these cases and no elevated pressures were observed at the aortic roots or the valve leaflets. Square root of maximum pressure on the aortic valve leaflets correlated significantly with LVAD outflow angle, correlation coefficient 0.88, p < 0.05).

Discussion/Conclusion: Orientation of the LVAD outflow graft relative to the aortic wall, i.e. ‘pointing down’ or ‘pointing up’, has direct impact on the pressure distribution at the aortic valve leaflets with adverse conditions for the first orientation potentially promoting aortic insufficiency.
Contralateral pneumothorax following surgical management of a unilateral pneumothorax?
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Background/Introduction: Recurrent spontaneous pneumothorax prompts surgical intervention. Even though the underlying pathology is still not clear, there is an increased risk of spontaneous pneumothorax of the opposite lung. In many cases patients’ wish to know the risk of a further event on the opposite side and whether prophylactic surgery would be of benefit.

Aims/Objectives: Calculate risk of contralateral pneumothorax in patients with recurrent pneumothorax on one side.

Method: A retrospective review of data from a prospectively recorded database was performed from April 2011 to December 2014. We identified 64 cases of unilateral pneumothorax managed with VATS surgical interventions, after excluding cases secondary to cystic fibrosis. Cases were followed and those developing contralateral spontaneous pneumothorax were recorded.

Results: A total of 64 cases were performed. The average follow-up was 21 months. In three cases contralateral spontaneous pneumothorax occurred (4.6%). Two cases presented within one month of the first procedure and the third at 8 month. As these had a prior history, surgical intervention was advocated in the three cases.

Discussion/Conclusion: Contralateral pneumothorax following surgical intervention for spontaneous pneumothorax is not common but does occur. However the frequency is not such that prophylactic intervention is advocated. Routine screening follow-up is unlikely to be rewarding and so counselling and provision of information regarding symptoms that would prompt re-representation is advocated.

A359 The use of structured light plethysmography in assessing the outcome of lung reduction
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Background/Introduction: Lung volume reduction surgery via endobronchial valves (EBV) insertion improves clinical outcomes and quality of life in selected patients with emphysema. The response to this intervention has been inconsistent because collateral ventilation prevents lobar atelectasis. Outcomes of this procedure are measured radiologically. But these radiological methods lack sensitivity and cannot identify non-responders immediately after surgery.

Aims/Objectives: Thus we evaluated the viability of a novel portable device to measure success/failure of EBV insertion by measuring the lobar atelectasis effect on dynamic chest wall motion.

Method: Structured Light Plethysmography (SLP) measures chest wall motion using a light grid which is simultaneously projected in the chest wall motion on the valves receiving side compared to global chest wall motion immediately postoperatively that was sustained during subsequent measurements from 5% +/- 0.99% pre-op to 48 +/- 0.60% at 2nd post-operative day (P < 0.001). This was mirrored by an improvement in his Borg breathless score from 7 to 0. In the second patient the valves did not result in lobar reduction and there was no significant reduction in measured motion. In the third patient the valves had an immediate beneficial effect on chest wall motion but this was reversed by the development of a para-valvular leak.

Discussion/Conclusion: SLP can detect immediate successes or failure of EBV LVR and may be a useful tool in monitoring and understanding benefits for this surgery.

A360 Prolonged air leak following lung resection - does Tri-staplerTM technology improve the incidence?
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Background/Introduction: Prolonged air leak following lung resection leads to delayed discharge and increases risk of infection. The incidence of prolonged air leak (defined as greater than 7 days) is approx. 9% in the U.K. (SCTS Cardiothoracic Surgery database 2011). The Covidien Tri-staplerTM technology (Covidien, Mansfield, MA) claims to improve air leak rates following lung resection through improved vascularity at the suture line. We started using these staplers in August 2012.

Aims/Objectives: To determine if Covidien Tri-staplersTM improve prolonged air leak incidence through comparison with the incidence in previous two years (i.e. August 2010 - July 2012).

Method: The departmental database which collects and validates data prospectively was used to find patients having non-pneumothorax lung resection surgery between August 2010 and July 2014. They were divided into two groups - Group 1 (EndoGIA Autosuture™; August 2010 - July 2012) and Group 2 (Tri-stapler™ device; August 2012 - August 2014). The groups were then compared for preoperative variables and postoperative outcomes.

Results: A total of 401 patients were included - Group 1 with 242 patients (102 males - 42.1%) and Group 2 with 159 patients (72 males - 45.3%). Mean age was 67.5 years (Group1) and 67.6 years (Group2); p = 0.92. COPD incidence was 59 (24.4%) patients in Group 1 and 66 (41.5%) patients in Group 2; p < 0.001. There was no significant differences in the incidence of prolonged air leak in Group 1 (n = 20; 8.3%) and Group 2 (13; 8.2%); p = 0.98. Significant infection prolonging hospital stay was more frequent in Group 1 (n = 17; 7%) than Group 2 (n = 18; 11.3%) but this was not statistically significant (p = 0.15). Mean post-operative stay was similar in both groups (7.9 days for Group 1 and 7.1 days in Group 2; p = 0.30).

Discussion/Conclusion: The outcomes for the two groups were similar with no significant advantage from usage of the Tri-stapler™ technology.

A361 Alternatives in the treatment of prosthetic infection after the Bentall-de Bono operation
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Background: Infection of a valved conduit used to perform a Bentall-De Bono technique is an infrequent but serious complication.

Objective: Two different strategies of treatment, based on the extension of the infection, were used. We report our experience on the management of three cases so treated.

Method: In case 1, three months after hospital discharge, a small fistula in the upper sternal scar was observed. When it was explored surgically, the fistula affected the superior-posterior part of the sternum and the pericardium was covering the prosthetic graft, which had a drop of pus. Cases 2 and 3 presented clear mediastinitis, with fever, leucocytosis and purulent effusion around the conduit, at 7 and 10 days after Bentall procedure. In case 1 s. *Epidemidis* was isolated and in cases 2 and 3 enterococci were cultured.

Results: In case 1, a pedicled left internal mammary artery flap was inserted among the Dacron and the pericardium but not prosthesis
replacement was performed. The postoperative course was excellent and the patient is well six years later. In cases 2 and 3, the valved Dacron tube was removed. A homograft was put in place. In both cases there was no problem with the homograft. This worked well, but mediastinitis took several weeks to heal. Finally, both patients were discharged and continue well 5 and 2 years later.

Conclusions: If a very mild infection by a not aggressive germ affects a valved conduit, a coverage of the Dacron with a pedicled mammary flap may be effective. Otherwise, putting a homograft is the solution.

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Lemierre’s syndrome - A new causative organism and life-threatening complication
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Background/Introduction: Lemierre’s syndrome is classically caused by an acute oropharyngeal infection, with subsequent Internal Jugular Vein (IJV) thrombosis and dissemination to secondary sites, with Fusobacterium necrophorum as the main causative organism. We present the case of a 43 year old woman with pharyngodynia, rigors and shortness of breath (SOB). Computer tomography (CT) revealed a bilateral tonsillar bed infection, thrombosis of the right IJV, with positive blood cultures for Slackia species, a gram-positive anaerobic bacterium previously isolated from human faeces. The patient also had bilateral cavitating lung nodules and empyema, requiring pleural decortication on the left. The case was complicated by haemoptysis and a right sided pulmonary artery aneurysm, thought to be mycotic in nature and radiologically embolised. The patient made a full clinical recovery, with complete resolution of the aneurysm and cavitating nodules on final imaging.

Aims/Objectives: This case highlights the classic clinical features of Lemierre’s syndrome and identifies a new causative organism. It also recognises the potentially fatal complication of mycotic aneurysm formation.

Method: CT imaging demonstrated bilateral gas locules in the tonsillar beds, right IJV thrombosis and bilateral cavitating lung nodules in keeping with septic emboli. The patient also had bilateral empyema, requiring left sided pleural decortication and lung abscess marsupialisation via Video-Assisted Thoracoscopy. A further CT was performed following frank haemoptysis and showed an aneurysm of the right upper pulmonary artery, which was radiologically embolised.

Results: Blood cultures were positive for Slackia species. Pneumococcal, aspergillus, hepatitis and autoimmune antibody screens were negative. Complement and immunoglobulin titres were normal. Follow up CT at 6 months revealed complete resolution of the pulmonary artery aneurysm and cavitating nodules.

Discussion/Conclusion: The patient presented with the classic features of Lemierre’s syndrome, namely oropharyngeal infection, thrombosis of the IJV and septic emboli. Causative organisms include Fusobacterium necrophorum, Streptococci and Staphylococcus. The organism in this case, of the genus Slackia, is an obligate Gram positive anaerobe not previously associated with Lemierre’s syndrome. Furthermore, Lemierre’s syndrome has been associated with intracranial and carotid artery aneurysms. Here we describe mycotic aneurysm formation distal to the head and neck, which fully resolved.

Consent: Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

Cite abstracts in this supplement using the relevant abstract number, e.g. Pecheva et al. Lemierre’s syndrome - A new causative organism and life-threatening complication. Journal of Cardiothoracic Surgery 2015, 10(Suppl 1)A362