

Event Programme

SCTS Annual Meeting 2018

18-Mar-2018 to 20-Mar-2018

SEC Glasgow, Glasgow, Scotland, United Kingdom

The Full Programme

SCTS Ionescu University

Day 1 - Coronary Surgery I - (Carron)

18-March-2018, at 09:00 to 10:30

Chair - Prof Vipin Zamvar

Chair - Mr Lognathen Balacumaraswami

Chair - Mr Alex Cale

09:00 (15 mins)

A100 - Evidence Base for Off-Pump CABG

A Muir¹;

¹ LHCH, UK

09:15 (15 mins)

A101 - Operative tips & tricks - Off-pump set-up & grafting

V Zamvar¹;

¹ Royal Infirmary Edinburgh, UK

09:30 (15 mins)

A102 - Debate - Optimal strategy for high risk coronary patients: Conventional bypass

A Bryan¹;

¹ Bristol Heart Institute, UK

09:45 (15 mins)

A103 - Debate - Optimal strategy for high risk coronary patients: Off bypass

U Benedetto¹;

¹ Bristol University Hospital, UK

10:00 (15 mins)

A104 - Debate - Optimal strategy for high risk coronary patients: Hybrid MIS

B Kiai¹;

¹ London Health Sciences Centre, Canada

Day 1 - Aortic Valve Surgery I - Abbott Medical - (Dochart 1)

18-March-2018, at 09:00 to 10:30

Chair - Mr Norman Briffa

Chair - Mr Clinton Lloyd

Chair - Mr George Asimakopoulos

09:00 (15 mins)

A105 - Durability of tissue valves?

T Doent¹;

¹ Department of Cardiothoracic Surgery, Friedrich Schiller University, Germany

09:15 (10 mins)

A106 - The optimal treatment for the failing prosthesis is Redo AVR

C Barlow¹;

¹ University Hospital Southampton, UK

09:25 (10 mins)

A107 - The optimal treatment for the failing prosthesis is TAVI

T Modine¹;

¹ CHRU de Lille, France

09:35 (20 mins)

A108 - What is new in recent EACTS guidelines :update

O Wendler¹;

¹ Kings College Hospital, UK

09:55 (15 mins)

A110 - When to repair a rheumatic Aortic Valve

M Antunes¹;

¹ University Hospital, Department of Cardiothoracic Surgery, Portugal

Day 1 - Oncological management of Lung cancer - (Leven)

18-March-2018, at 09:00 to 11:00

Chair - Dr Yusuf Abdullahi

Day 1 - Cardiac Wetlab CT Forum I - (Alsh)

18-March-2018, at 09:00 to 10:30

Chair - Dr Bhuvanewari Krishnamoorthy

Chair - Mrs Tara Bartley

Day 1 - Multi disciplinary thoracic surgery - (Boisdale 1)**18-March-2018, at 09:00 to 10:30**

Chair - Mr Aman Coonar

Chair - Miss Emma Beddow

Chair - Mr Vincent Young

Chair - Mr Richard Steyn

09:00 (15 mins)

A111 - Surgery with the plastic surgeon

S Rathinam¹;¹ UHL, UK**09:00 (15 mins)**

A111 - Surgery with the plastic surgeon

S Rathinam¹;¹ UHL, UK**09:15 (15 mins)**

A112 - Surgery with the Vascular Surgeons

D Harpole¹;¹ Duke University, United States**09:30 (15 mins)**

A113 - Surgery with the Spinal surgeon

S Cassivi¹;¹ Mayo Clinic, United States**09:45 (15 mins)**

A114 - Surgery with the ENT surgeon

M Kalkat¹;¹ Birmingham Heartlands Hospital, UK**09:45 (15 mins)**

A114 - Surgery with the ENT surgeon

M Kalkat¹;¹ Birmingham Heartlands Hospital, UK**Day 1 - Coronary Surgery II - (Carron)****18-March-2018, at 11:00 to 12:30**

Chair - Prof Farah Bhatti

Chair - Mr Surendra Naik

11:00 (15 mins)

A115 - Debate - LIMA and 2 veins – the gold standard - Yes

S Kendall¹;¹ James Cook Hospital, UK**11:15 (15 mins)**

A116 - Debate - LIMA and 2 veins – the gold standard - No

L Balacumaraswami¹;¹ University hospital of North Midlands, UK**11:30 (15 mins)**

A117 - Graft quality assurance - transit time flow monitoring techniques

D Taggart¹;¹ John Radcliffe Hospital, Oxford, UK**11:45 (15 mins)**

A118 - Recent major trials and guidelines update

U Benedetto¹;¹ Bristol University Hospital, UK**12:00 (15 mins)**

A119 - Endoscopic robotic CABG

B Kiai¹;¹ London Health Sciences Centre, Canada**Day 1 - Aortic Valve Surgery II - Edward Lifesciences - (Dochart 1)****18-March-2018, at 11:00 to 12:30**

Chair - Mr Rana Sayeed

Chair - Miss Betsy Evans

11:00 (20 mins)

A120 - Update on sutureless valve technology - who and when?

S Clark¹;¹ Freeman Hospital, Newcastle, UK**11:20 (20 mins)**

A121 - Minimally invasive vs open surgery - literature review

B Kirmani¹;¹ Liverpool Heart and Chest Hospital, UK**11:40 (20 mins)**

A122 - Can MECC be used safely in aortic valve surgery?

T Carrel¹;¹ University Hospital Bern, Switzerland**12:00 (25 mins)**

A124 - Arguing the choice of prosthesis for a young person is bioprosthesis vs mechanical?

O Wendler¹;

¹ Kings College Hospital, UK

Day 1 - Cardiac Wetlab CT Forum II - (Alsh)

18-March-2018, at 11:00 to 12:30

Chair - Dr Bhuvanewari Krishnamoorthy

Chair - Mrs Tara Bartley

Day 1 - Contemporary Thoracic Practice - (Boisdale 1)

18-March-2018, at 11:00 to 12:30

Chair - Mr Mike Cowen

Chair - Miss Donna Eaton

Chair - Mr Nilanjan Chaudhuri

Chair - Mr Mohammad Hawari

11:00 (15 mins)

A126 - Surgery for N2 disease

11:15 (15 mins)

A127 - Surgery for T4 tumours

G Rocco¹;

¹ National Cancer Institute, Pascale Foundation,

11:30 (15 mins)

A125 - Surgery for small cell carcinoma

D Harpole¹;

¹ Duke University, United States

11:45 (15 mins)

A128 - Role of ECMO in thoracic surgery

Day 1 - Mitral Surgery I - (Carron)

18-March-2018, at 13:30 to 15:00

Chair - Dr Clifford Barlow

Chair - Mr Prakash Punjabi

Chair - Mr Joseph Zacharias

Chair - Mr Ranjit Deshpande

13:30 (15 mins)

A129 - Operative tips & tricks: How I asses and preserve tissue for a good repair

P Perier¹;

¹ Herz und Gefäß Klinik,, Germany

13:45 (15 mins)

A130 - Dealing with the Barlow's valve

L Svensson¹;¹ Cleveland Clinic, United States**14:00 (15 mins)**

A131 - Lesion sets for AF during mitral surgery

M Castella¹;¹ Hosp. Clinic Uni. of Barcelona, Spain**14:15 (15 mins)**

A133 - Debate: We should ablate all Mitral Valve patients in AF

N Ad¹;¹ West Virginia University Heart and Vascular Institute, United States**14:30 (10 mins)**

A134 - Debate discussion

Day 1 - Aortic Surgery I - (Dochart 1)**18-March-2018, at 13:30 to 15:00**

Chair - Prof Hans-Joachim Schäfers

Chair - Mr Geoffrey Tsang

13:30 (15 mins)

A135 - Operative tips & tricks - valve sparing aortic root replacement

H Schaefer¹;¹ Saarland University Medical Center, Germany**13:45 (10 mins)**

A136 - Debate: reimplantation is better than remodelling for valve sparing root surgery in connective tissue disorders - Pro

H Schaefer¹;¹ Saarland University Medical Center, Germany**13:55 (10 mins)**

A137 - Debate: reimplantation is better than remodelling for valve sparing root surgery in connective tissue disorders - Con

L Balacumaraswami¹;¹ University hospital of North Midlands, UK**14:05 (20 mins)**

A138 - Should a valve sparing root replacement be performed in the presence of a bicuspid aortic valve?

J Kuo¹;¹ Derriford Hospital, UK

14:25 (15 mins)

A139 - Genotype and phenotypes of the ascending aorta / root in aneurysmal disease

H Bilal¹;¹ Liverpool, UK**14:40 (15 mins)**

A140 - Screening needs in patients with non-syndromic TAD

G Mariscalco¹;¹ University of Leicester-Glenfield Hospital, UK**Day 1 - Thoracic Wetlab CT Forum I - (Alsh)****18-March-2018, at 13:30 to 15:00**

Chair - Dr Bhuvanewari Krishnamoorthy

Chair - Mrs Tara Bartley

Day 1 - Current advances and innovations - (Boisdale 1)**18-March-2018, at 13:30 to 15:00**

Chair - Prof Mahmoud Loubani

Chair - Mr Jonathan Ferguson

Chair - Mr Giuseppe Aresu

Chair - Dr Sadeesh Srinathan

13:30 (15 mins)

A142 - Energy devices facilitating thoracic surgery

S Cassivi¹;¹ Mayo Clinic, United States**13:45 (15 mins)**

A143 - Update of reconstructive strategies in chest wall resection

G Massard¹;¹ Nouvel Hôpital civil, France**14:00 (15 mins)**

A144 - Non Intubated thoracic surgery

J He¹;¹ Guangzhou Medical University ,**14:15 (15 mins)**

A419 - Continuous progression and innovation in minimally invasive e surgery in thoracic surgery - what is the future

G Rocco¹;¹ National Cancer Institute, Pascale Foundation,**Day 1 - Mitral Surgery II - (Carron)**

18-March-2018, at 15:30 to 17:00

Chair - Mr Enoch Akowuah

Chair - Mr Franco Ciulli

Chair - Prof Olaf Wendler

Chair - Mr Kulvinder Lall

15:30 (15 mins)

A145 - UK Mini Mitral Trial

M Solinas¹;¹ Monasterio Foundation Heart Hospital, Italy**15:45 (15 mins)**

A146 - Surgical access debate: Median sternotomy is safer than minimally invasive techniques

P Punjabi¹;¹ Imperial College London, UK**16:00 (15 mins)**

A147 - Surgical access debate: Minimally invasive techniques is safer than median sternotomy

T Doenst¹;¹ Department of Cardiothoracic Surgery, Friedrich Schiller University, Germany**16:15 (15 mins)**

A148 - Dealing with concomitant procedures with MIS MVR

T Doenst¹;¹ Department of Cardiothoracic Surgery, Friedrich Schiller University, Germany**16:30 (15 mins)**

A149 - Mild to moderate TR - Are we wrong not to perform concomitant tricuspid repair

M Antunes¹;¹ University Hospital, Department of Cardiothoracic Surgery, Portugal**Day 1 - Aortic Surgery II - (Dochart 1)****18-March-2018, at 15:30 to 17:00**

Chair - Prof Jean Philippe Verhoye

Chair - Prof Lars Svensson

Chair - Dr Giovanni Mariscalco

15:30 (20 mins)

A150 - Recent major trials and guidelines update in acute type B dissection

T Carrel¹;¹ University Hospital Bern, Switzerland**15:50 (15 mins)**

A151 - Operative tips and tricks - the use of frozen elephant technique in Type A dissection

M Shrestha¹;¹ Hannover Medical School, Germany

16:05 (20 mins)

A152 - What to do with the aortic root in acute Type A aortic dissection: the French experience

J Verhoye¹;

¹ CHU Pontchaillou, France

16:25 (20 mins)

A153 - Treating chronic dissection TAAA, endovascular, hybrid or conventional surgery. The Cleveland Clinic experience.

L Svensson¹;

¹ Cleveland Clinic, United States

16:45 (15 mins)

A154 - What is the evidence for and against stenting in patients with connective tissue disorder

A Oo¹;

¹ Liverpool Heart and Chest Hospital, UK

Day 1 - Thoracic Wetlab CT Forum II - (Alsh)

18-March-2018, at 15:30 to 17:00

Day 1 - Oncological management of Lung cancer - (Boisdale 1)

18-March-2018, at 15:30 to 17:00

Chair - Mr Ian Morgan

Chair - Mr Jagan Rao

Chair - Prof Mark Da Costa

15:30 (15 mins)

A155 - Recent advances in radiation oncology in the management of lung cancer

K Franks¹;

¹ Consultant Clinical Oncologist/Associate Professor, UK

15:45 (15 mins)

A156 - Pushing the boundaries in surgical management of lung cancer

P Van Schil¹;

¹ UZA, Belgium

16:00 (15 mins)

A157 - Lung surgery after induction therapy

S Cassivi¹;

¹ Mayo Clinic, United States

16:15 (15 mins)

A258 - Airway surgery in spontaneously breathing patient

J He¹;

¹ Guangzhou Medical University ,

Adult Cardiac Clinical

Day 1 - Abbott Lunchbox Session - (Carron)

18-March-2018, at 12:30 to 13:30

Chair - Mr Alex Cale

12:30 (15 mins)

A159 - Haemodynamics

12:45 (15 mins)

A160 - Patient-prosthesis mismatch

13:00 (15 mins)

A161 - Trifecta valve durability

Day 1 - Lunchbox Session - Edwards - (Dochart 1)

18-March-2018, at 12:30 to 13:30

Chair - Mr Neil Moat

Chair - Mr Inderpaul Birdi

12:30 (15 mins)

A15762 - Metronome of valve repair and replacement therapies, since the 60s

12:45 (15 mins)

A15763 - Enhanced and reproducible MIAVR: EDWARDS INTUITY ELITE

13:00 (15 mins)

A15764 - New biological solutions for active patients: INSPIRIS RESILIA aortic valve

13:15 (15 mins)

A15765 - Emergence of Beating-Heart Mitral Valve Repair: Near Future Perspectives

Thoracic

Day 1 - Lunch Box Session Pulmonx and PneumRx - (Boisdale 1)

18-March-2018, at 12:30 to 13:30

Chair - Mr Tim Batchelor

Chair - Mr Nilanjan Chaudhuri

12:30 (20 mins)

A162 - Endobronchial valves: Current evidence and tips

D Slebos¹;

¹ Groningen University Medical Center, NL,

12:50 (20 mins)

A163 - Endobronchial coils : current evidence and tips

M HetzeL¹;

¹ Krankenhaus vom Roten Kreuz Bad Cannstatt Stuttgart ,

13:10 (20 mins)

A164 - Interesting cases

H Weaver¹;

¹ Glenfield Hospital, UK

Satellite

Day 1 - BISMICS - (Morar)

18-March-2018, at 12:30 to 13:30

Chair - Mr Clinton Lloyd

Day 1 - ACSA AGM - (Morar)

18-March-2018, at 16:00 to 19:00

Chair - Miss Chrissie Birkett

Day 1 - Trainees Meeting - (Lomond Auditorium)

18-March-2018, at 17:00 to 18:30

Chair - Mr Ahmed Al-Adhami

Chair - Mr Jacob Chacko

Day 1 - Clinical Audit Group - (Ness)

18-March-2018, at 17:00 to 18:00

Plenary

Day 2 - Plenary - (Lomond Auditorium)

19-March-2018, at 11:00 to 12:30

Chair - Mr Simon Kendall

Chair - Mr Graham Cooper

Chair - Mr Richard Page

11:00 (15 mins)

A165 - There's no 'T' in Aorta: A patient perspective on Aortic MDT

G Owens¹;

¹ Aortic Dissection Awareness UK, UK

11:15 (30 mins)

A167 - Getting a team to work effectively in the NHS

D Thornton¹;

¹ Dave Thornton Org, UK

11:45 (10 mins)

A168 - Introduction to President

11:55 (35 mins)

A169 - Presidential address

Adult Cardiac Clinical

Day 2 - Aortic Dissection - (Carron)

19-March-2018, at 09:00 to 10:30

Chair - Mr Mario Petrou

Chair - Prof Jean Philippe Verhoye

Chair - Prof Malakh Shrestha

Chair - Mr Justin Nowell

09:00 (10 mins)

A171 - The “unnatural” natural history of the dissected descending aorta after successful repair for DeBakey Type I Acute Aortic Dissection

A **Gambaro**²; M O Murphy²; J J See¹; M Rubens²; S Mirsadraee²; C Nienaber²; J Pepper²; C Quarto²; U Rosendahl²; G Asimakopoulos²;

¹ Changi General Hospital, Singapore; ² Royal Brompton & Harefield Hospitals, UK

09:10 (10 mins)

A172 - Aortic Valve Resuspension during repair of Acute Type A Dissection is associated with sub-optimal aortic valve function at medium-term follow up

A **Gambaro**¹; M Morosin¹; S Talukder¹; M O Murphy¹; J Pepper¹; C Quarto¹; U Rosendahl¹; G Asimakopoulos¹;

¹ Royal Brompton & Harefield Hospitals, UK

09:20 (10 mins)

A173 - Deployment of a frozen elephant trunk in aortic arch surgery for acute Type A dissection does not increase the incidence of paraplegia: a multicentre registry

S S **Poon**¹; D Tian²; T Yan³; D Harrington¹; O Nawaytou¹; I Gambardella¹; M Kuduvalli¹; M Field¹;

¹ Liverpool Heart and Chest Hospital, UK; ² Macquarie University, Sydney, Australia; ³ Sydney University Royal Prince Alfred Hospital, Australia

09:30 (10 mins)

A174 - Multi-centre results of ascending aorta, arch replacement with concomitant open descending aorta stenting using a hybrid stent-graft for acute type A dissection

H **Kattach**⁴; S Duggan⁴; V Dronavalli³; P Catarino²; J J Dunning²; M Field¹; D Harrington¹; M Kuduvalli¹; J Mascaro³; A Oo¹; T Velissaris⁴; G M Tsang⁴;

¹ Liverpool Heart and Chest Hospital, UK; ² Papworth Hospital NHS Trust, UK; ³ University Hospital Birmingham, UK; ⁴ University Hospital Southampton NHS Trust, UK

09:40 (10 mins)

A175 - Impact of a streamlined rotational system for management of type A aortic dissection: sharing is caring

R Vaja¹; S Talukder¹; M Norkunas¹; C Nienaber¹; G Asimakopoulos¹; J Pepper¹; U Rosendahl¹; N Moat¹; R Yadav¹; A DeSouza¹; C Quarto¹;
¹ Royal Brompton & Harefield Hospitals, UK

09:50 (15 mins)

A176 - What to do with the aortic arch in acute Type A aortic dissection. The Hanover experience.

M Shrestha¹;
¹ Hannover Medical School, Germany

Day 2 - Mitral MIS and AF - (Dochart 1)

19-March-2018, at 09:00 to 10:30

Chair - Prof Torsten Doenst

Chair - Dr Niv Ad

Chair - Mr John Butler

09:00 (10 mins)

A177 - Two year results of experience with Hybrid minimally invasive atrial fibrillation ablation programme: an update

P Gukop²; K Mattam¹; A Charaf²; K Mani²; R kaba²; M Gallagher²; A Momin²;
¹ Sheffield Teaching Hospitals NHS Trust, UK; ² St George's Hospital, University of London, UK

09:10 (10 mins)

A178 - Transthoracic Clamp versus Endo-aortic Balloon Occlusion in minimally invasive mitral valve surgery: a systematic review and meta-analysis

P MRival⁶; T Moore⁶; H Hamilton⁶; Z Du Toit⁶; U Benedetto¹; L Muller²; M Grimm²; M Solinas⁴; E Akuowah³; S Hunter⁵; M Caputo¹; GD Angelini¹; H Vohra¹;
¹ Bristol Heart Institute, UK; ² Department of Cardiac Surgery, Medical University Innsbruck, Austria; ³ James Cook University Hospital, Middlesbrough, UK; ⁴ Monasterio Foundation Heart Hospital, Massa, Italy; ⁵ Sheffield Teaching Hospitals NHS Trust, UK; ⁶ University of Bristol, UK

09:20 (10 mins)

A179 - Re-operative EndoMitral – The King's Experience

A H Seehripour¹; I Chauhan¹; J Glizevskaja¹; M Baghai¹; R P Deshpande¹;
¹ King's College Hospital, London, UK

09:30 (10 mins)

A180 - A multi-centre propensity matched study of minimal access versus sternotomy for mitral valve surgery

S W Grant⁶; E A Akowuah²; G L Hickey⁴; P Modi³; S Hunter⁵; J Zacharias¹;
¹ Blackpool Victoria Hospital, UK; ² James Cook University Hospital, Middlesbrough, UK; ³ Liverpool Heart and Chest Hospital, UK; ⁴ Liverpool University Medical School, UK; ⁵ Sheffield Teaching Hospitals NHS Trust, UK; ⁶ University Hospital of South Manchester, UK

09:40 (10 mins)

A181 - Analysis of the effect of the introduction of an automated knot fastener on operating time and clinical outcomes in minimally invasive mitral valve surgery

G Perin¹; M Shaw¹; P Modi¹;

¹ Liverpool Heart and Chest Hospital, UK

09:50 (10 mins)

A182 - Isolated atrial amyloid: not just a serendipitous finding but a major contributor to morbidity and mortality following cardiac surgery

S Volpi²; K Bhakhr²; D Gori¹; M Goddard²; R De Silva²;

¹ Institute of Hygiene and Preventive Medicine, University of Bologna, Italy; ² Papworth Hospital NHS Trust, UK

10:00 (10 mins)

A183 - Successful use of Apixaban for the treatment of new onset post-operative atrial fibrillation after cardiac surgery: a pilot study

S Datta¹; A Abdulbar¹; B wood¹; R Hasan¹; H Abunasra¹; E McLaughlin¹; H Bilal¹;

¹ Manchester Royal Infirmary, UK

10:10 (20 mins)

A184 - Update on new AF surgery guidelines

N Ad¹;

¹ West Virginia University Heart and Vascular Institute, United States

Day 2 - TAVI - (Dochart 2)

19-March-2018, at 09:00 to 10:30

Chair - Mr John Yap

Chair - Mr Neil Moat

Chair - Mr Renzo Pessotto

09:00 (10 mins)

A185 - Does re-do aortic valve surgery still have a role in the era of trans-catheter aortic valve implantation?

R Greco¹; E Hill¹; X Jin¹; M Renna¹; J Djordjevic¹; M Petrou¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK

09:10 (10 mins)

A186 - Elective cardiopulmonary bypass as a support tool in extreme patients undergoing Transcatheter Valve Implantation (TAVI)

R Vaja¹; A Duncan¹; A Daqa¹; C Mahon¹; U Rosendahl¹; R Yadav¹; C Quarto¹; N Moat¹;
¹ Royal Brompton & Harefield Hospitals, UK

09:20 (10 mins)

A187 - Extending the role of trans-catheter valve implantation for the treatment of severe mitral annular calcification

U Hamid¹; O C Nzewi¹; M Spence¹; G Manoharan¹; R Jeganathan¹;
¹ Royal Victoria Hospital Belfast, UK

09:30 (10 mins)

A188 - Impact of TAVI programme on surgical AVR workload in a single institution

T L Combellack¹; Y Ahmed¹; D Smith¹; A Chase¹; A Y Youhana¹; P Kumar¹;
¹ Morrision Hospital, Swansea, UK

09:40 (10 mins)

A189 - Surgical approach of turned down TAVI patients. Better outcomes with rapid deployment aortic valves.

C P Koutsogiannidis¹; Z Chan¹; A J Chambers¹; S Papaspyros¹; R Pessoto¹;
¹ Royal Infirmary of Edinburgh, UK

09:50 (15 mins)

A190 - Transcarotid TAVI implantation

T Modine¹;
¹ CHRU de Lille, France

10:05 (15 mins)

A191 - Update on UK TAVI registry - trends and developments

N Moat¹;
¹ Royal Brompton Hospital, UK

Day 2 - Training - (Lomond Auditorium)

19-March-2018, at 13:30 to 16:00

Chair - Mr Sion Jones

Chair - Miss Urszula Simoniuk

13:30 (5 mins)

A192 - Past achievements and future challenges of the CTRC

U Simoniuk¹;
¹ Heart and chest liverpool hospital, Germany

13:35 (20 mins)

A193 - Risk: a statistician's viewpoint

G Hickey¹;
¹ University of Liverpool, UK

13:55 (20 mins)

A194 - What do surgeons need to know about risk prediction

S Grant¹;¹ North West Deanery, UK**14:15 (20 mins)**

A195 - Risk communication and its effects on perception

A Freeman¹;¹ Winton Centre for Risk and Evidence Communication, University of Cambridge,**14:35 (10 mins)**

A196 - A virtual cardiothoracic surgery rotation: a novel approach

L Hurt²; F Bhatti¹;¹ Morriston Hospital, Swansea, UK; ² University Hospital of Wales, UK**14:45 (10 mins)**

A197 - Patients' attitudes towards trainee involvement in cardiac surgery

EJ Caruana¹; S Mahran¹; S Shanmuganathan¹; A Szafrank¹;¹ Nottingham City Hospital, UK**14:55 (10 mins)**

A198 - Training in Cardiothoracic Surgery in the UK – analysis of the GMC National Training Survey

NA Bradley¹; M Asif¹; J Butler¹; A J Kirk¹;¹ Golden Jubilee National Hospital, UK**15:05 (10 mins)**

A199 - UK National Surgical Fellowship Scheme in Cardiothoracic Transplantation and Mechanical Circulatory Support

E Khoshbin¹; S Tsui²; R Shah³; S Barnard¹; S C Clark¹;¹ Freeman Hospital Cardiothoracic Centre, UK; ² Papworth Hospital NHS Trust, UK; ³ University Hospital of South Manchester, UK**15:15 (10 mins)**

A200 - Can you start a program without a learning curve in minimally invasive cardiac surgery?

B H Kirmani¹; A Knowles¹; P Saravanan¹; J Zacharias¹;¹ Blackpool Victoria Hospital, UK**15:25 (10 mins)**

A201 - Which factors attribute to the surgeons' learning curve in robotic adult cardiac surgery?

K Schulte²; R Attia¹;¹ King's College Hospital, London, UK; ² Sana Hospital Berlin, Germany**Day 2 - CABG Conduit - (Carron)****19-March-2018, at 13:30 to 15:00**

Chair - Prof Vipin Zamvar

Chair - Dr Piroze Davierwala

Chair - Mr Mobi Chaudhry

Chair - Nidal Bittar

13:30 (10 mins)

A207 - All hands to the pumps! Is it all doom and gloom for off-pump coronary surgery?

EJ Caruana¹; S K Balasubramanian¹; S Shanmuganathan¹; S K Naik¹; A Szafranek¹;

¹ Nottingham City Hospital, UK

13:40 (10 mins)

A202 - Does the interval between myocardial infarction and revascularisation influence long term survival?

B H Kirmani¹; O Pennington²; J Knight²; M N Bittar¹;

¹ Blackpool Victoria Hospital, UK; ² Lancashire Cardiac Centre, UK

13:50 (10 mins)

A203 - In-vitro effect of dichloroacetate on human internal mammary artery

Z Tahir¹; A Hussain¹; R Bennett¹; J Hobkirk¹; M A Chaudhry¹; M Loubani¹;

¹ Castle Hill Hospital, UK

14:00 (10 mins)

A204 - 10-years outcome analysis of endoscopic vein harvesting for Coronary Artery Bypass Grafting

A Khosravi¹; M Rochon¹; J A Gaer¹; F De Robertis¹; T Bahrami¹;

¹ Royal Brompton & Harefield Hospitals, UK

14:10 (10 mins)

A205 - The total arterial myocardial revascularization using bilateral IMA and the role of postoperative sternal stabilization to reduce wound infections in a large co

M Albert¹; R Nagib¹; A Ursulescu¹; U F Franke¹;

¹ Robert-Bosch-Hospital, Germany

14:20 (10 mins)

A206 - Predicting trends in competitive flow during and after cardiopulmonary bypass: the role of transit time flowmetry

S Amin²; **RS Werner**³; D P Taggart¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK; ² University of Oxford, UK; ³ University of Zurich, Switzerland

14:30 (10 mins)

A208 - Is there sufficient evidence for the second arterial conduit?

D Taggart¹;

¹ John Radcliffe Hospital, Oxford, UK

14:40 (10 mins)

A209 - Real-life multi centric registry study on total arterial revascularization

C Spadaccio³; A Nenna²; M Pettinari¹; M Chello²; K Shaikhrezai³; N Al-Attar³; F W Sutherland³;

¹ AZ St.Jan, Belgium; ² Cardiac Surgery Department, Campus Bio - Medico University of Rome, Italy; ³ Golden Jubilee National Hospital, UK

14:50 (10 mins)

A210 - Long-term survival following Endoscopic Vein Harvest for coronary artery bypass grafting

B H Kirmani¹; S Power²; O Pennington²; J Knight²; M N Bittar¹; J Zacharias¹;

¹ Blackpool Victoria Hospital, UK; ² Lancashire Cardiac Centre, UK

Day 2 - AVR - (Dochart 1)

19-March-2018, at 13:30 to 15:00

Chair - Prof Manuel Antunes

Chair - Mr Norman Briffa

Chair - Prof Rakesh Uppal

Chair - Mr Andrew Goodwin

13:30 (10 mins)

A211 - Implantation of mechanical aortic prostheses is associated with increased hospital stay and anticoagulation related complications compared to bioprostheses

A Lopez-Marco⁵; S W Grant²; C Proll³; D Mehta⁵; A Y Youhana³; R Hasan²; Y Abu-Omar⁴; N Nikolaidis¹;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK; ² Manchester Royal Infirmary, UK; ³ Morriston Hospital, Swansea, UK; ⁴ Papworth Hospital NHS Trust, UK; ⁵ University Hospital of Wales, UK

13:40 (10 mins)

A212 - Five-year comparison of different bio-prosthetic aortic valves replacement impact on patient-prosthesis mismatch

MS Diab¹; N Moawad¹; L J Rogers¹; M Dalrymple-Hay¹; A Marchbank¹; J Kuo¹; J Unsworth-White¹; C Lloyd¹;

¹ Plymouth Hospitals NHS Trust, UK

13:50 (10 mins)

A213 - Incidence of patient prosthesis mismatch is reducing over time: 2725 bioprosthetic aortic valve replacements over 12 years

MT Yates¹; B M Robinson²; D Balmforth¹; J Yap¹; R Uppal¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² St James's Hospital, Ireland

14:00 (10 mins)

A214 - Mini-Stern trial: a randomised trial comparing mini-sternotomy to full median sternotomy for aortic valve replacement

S Nair⁴; B Thorpe³; C D Sudarshan⁴; P Catarino⁴; J Fox Rushby¹; Y Abu-Omar⁴; T Pillay²; M Codispoti⁴; J J Dunning⁴; N Moorjani⁴; K Valchanov⁴; C Paramasivam⁴; J Nalpon⁴; L Sharples³;

¹ Brunel University, Middlesex, UK; ² Freeman Hospital Cardiothoracic Centre, UK; ³ Leeds Institute of Clinical Trials Research, UK; ⁴ Papworth Hospital NHS Trust, UK

14:10 (10 mins)

A215 - Not all redo's are created equal: previous coronary artery bypass grafting confers higher mortality for redo aortic valve replacement

D Balmforth¹; B M Robinson²; M T Yates¹; M Bashir¹; C Di Salvo¹; R Uppal¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² St James's Hospital, Ireland

14:20 (10 mins)

A216 - Standardized Aortic Valve repair for isolated aortic insufficiency using single or double ring annuloplasty

M Zakkar¹; V D Bruno¹; C Acar²; N Khelil²; T Folliguet²; M Debauchez²; E Lansac²;

¹ Bristol Heart Institute, UK; ² IMM, France

14:30 (15 mins)

A217 - The Ross procedure versus Prosthetic Valve Replacement in young and middle-aged adults: a systematic review and meta-analysis

A C Visan¹; D M Dorobantu¹; D P Fudulu¹; M Caputo¹; H Thom³; E Keeney³; J Round³; M T Sharabiani²; S C Stoica¹;

¹ Bristol Heart Institute, UK; ² Imperial College London, UK; ³ University of Bristol, UK

14:45 (20 mins)

A218 - MAVRIC - what have we learnt?

E Akowuah¹;

¹ James Cook Hospital, UK

Day 2 - CABG - (Carron)

19-March-2018, at 15:30 to 17:00

Chair - Prof David Taggart

Chair - Dr Piroze Davierwala

Chair - Mr Hunaid Vohra

15:30 (10 mins)

A225 - Resurgence in EndoCAB – The King's Experience

A H Seehripour¹; I Chauhan¹; J Glizevskaja¹; M Baghai¹; R P Deshpande¹;

¹ King's College Hospital, London, UK

15:40 (10 mins)

A219 - Compliance with guideline-directed medication in contemporary trials of coronary revascularisation – systematic review and meta-analysis

A C Pinho-Gomes¹¹; L Azevedo³; J Ahn¹; S J Park¹; T Hamza⁷; M Farkouh¹²; P Serruys⁴; M Milojevic²; P Kappetein¹⁰; G Stone⁹; A Lamy⁵; V Fuster⁶; D P Taggart⁸;
¹ Asan Medical Center, University of Ulsan College of Medicine, South Korea; ² Department of Thoracic Surgery, Erasmus MC, Rotterdam, Netherlands; ³ Faculty of Medicine, Porto University, Portugal; ⁴ Imperial College London, UK; ⁵ McMaster University, Hamilton, Ontario, Canada; ⁶ Mount Sinai Cardiovascular Institute, New York, NY and Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid Spain, United States; ⁷ New England Research Institutes, Inc. Watertown, MA, USA, United States; ⁸ Oxford University Hospitals NHS Foundation Trust, UK; ⁹ The New York Presbyterian Hospital, Columbia University Medical Center, and the Cardiovascular Research Foundation, New York, United States; ¹⁰ Thoraxcenter, Netherlands; ¹¹ University Hospital of South Manchester, UK; ¹² University of Toronto, Canada

15:50 (10 mins)

A220 - Does a decade make a difference? Examining outcomes for emergency coronary artery bypass surgery 1996-2016.

C Toolan¹; G Hardman¹; M N Bittar¹;
¹ Blackpool Victoria Hospital, UK

16:00 (10 mins)

A221 - Impact of gender and age on long-term survival following coronary artery bypass surgery

G Sotiropoulos¹; A Dan¹; G Siniscalchi¹; M Pizzuti²; A Montecalvo¹; U Hamid¹; W I Awad²;
¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² St Bartholomew's Hospital, London, UK

16:10 (10 mins)

A222 - Long term survival for patients suffering CVA post CABG surgery. A single institution 21-year data analysis.

O Pennington²; J Knight²; B H Kirmani¹; M N Bittar¹;
¹ Blackpool Victoria Hospital, UK; ² Lancashire Cardiac Centre, UK

16:20 (10 mins)

A223 - Mid-term outcomes of coronary artery bypass surgery in Octogenarians: is prognosis an important topic of debate in this group?

A Montecalvo¹; G Siniscalchi¹; G Sotiropoulos¹; M Pizzuti¹; W I Awad¹;
¹ Barts Heart Centre, St Bartholomew's Hospital, UK

16:30 (10 mins)

A224 - Early and long-term follow-up after minimally invasive direct coronary artery bypass: experience of single centre

A Khosravi¹; B Bahrami¹; M Rochon¹; J A Gaer¹; F De Robertis¹; T Bahrami¹;

¹ Royal Brompton & Harefield Hospitals, UK

16:40 (15 mins)

A226 - Minimally Invasive CABG - the Leipzig experience

P Davierwala¹;

¹ Hertzzenrum Leipzig, Germany

Day 2 - BHVS Session - AVR Sutureless - (Dochart 1)

19-March-2018, at 15:30 to 17:00

Chair - Miss Gill Hardman

Chair - Mr Norman Briffa

Chair - Mr Neil Cartwright

15:30 (5 mins)

A227 - Welcome and introduction - BHVS President

15:35 (10 mins)

A228 - Surgical education in heart valve disease and the role of the BHVS

G Hardman¹;

¹ Lancashire Cardiac Centre, UK

15:45 (15 mins)

A229 - The decellularized aortic root replacement

J Pepper¹;

¹ Royal Brompton Hospital, UK

16:00 (10 mins)

A230 - Learning curve with the Intuity sutureless valve. When Intuity becomes Intuitive?

M Ghosh-Dastidar¹; M Sabetai¹; A Gkouma¹; M Mustaev¹; G Lucchese¹; C Young¹;

¹ Guy's and St Thomas' NHS Foundation Trust, UK

16:10 (10 mins)

A231 - Aortic valve replacement with a conventional stented bioprosthesis versus sutureless bioprosthesis :a study of 763 patients

S S Mujtaba¹; S Ledingham¹; A R Shah¹; T Pillay¹; S Schueler¹; S C Clark¹;

¹ Freeman Hospital Cardiothoracic Centre, UK

16:20 (10 mins)

A232 - Perceval sutureless Aortic Valve Replacement is associated with significantly reduced transvalvular gradients in the early post-operative period

A Gambaro¹; M O Murphy¹; J Pepper¹; C Quarto¹; U Rosendahl¹; G

Asimakopoulos¹;

¹ Royal Brompton & Harefield Hospitals, UK

16:30 (10 mins)

A233 - Thrombocytopenia after aortic valve replacement: comparison between Sutureless Perceval S valve and Perimount Magna Ease bioprosthesis

S S Mujtaba¹; S Ledingham¹; A R Shah¹; S Schueler¹; S C Clark¹; T Pillay¹;

¹ Freeman Hospital Cardiothoracic Centre, UK

16:40 (10 mins)

A234 - Sutureless Aortic Valve Replacement through minimally invasive access versus standard aortic valve operation; single centre experience

A Khosravi¹; B Bahrami¹; M Rochon¹; J A Gaer¹; F De Robertis¹; T Bahrami¹;

¹ Royal Brompton & Harefield Hospitals, UK

Thoracic

Day 2 - Preoperative - (Boisdale 1)

19-March-2018, at 09:00 to 10:30

Chair - Prof Mahmoud Loubani

Chair - Mr Tim Batchelor

Chair - Mr Babu Naidu

Chair - Mr Lawrence Okiror

09:00 (10 mins)

A235 - Impact of pre-treatment optimisation with pre-habilitation on patients undergoing thoracic surgery

G Chesterfield-Thomas¹; **I Goldsmith**¹;

¹ Morrision Hospital, Swansea, UK

09:10 (10 mins)

A236 - Cardiopulmonary exercise testing and the prediction of major adverse events in high-risk patients undergoing lung resection

ES Teh¹; S Sinha¹; N A Joshi¹; K Kamalanathan¹; M K Molyneux¹; N J Rasburn¹; T

J Batchelor¹; G Casali¹; E Intemullo¹; R Krishnadas¹; D G West¹;

¹ University of Bristol, UK

09:20 (10 mins)

A237 - Outcome of feasibility Randomised Controlled Trial (RCT) in major lung surgery patients receiving either preop carbohydrate & postop nutritional drinks or water

A Kerr¹; N K Oswald¹; J Webb¹; H Bancroft¹; S Kadir¹; J Taylor¹; E Bishay¹; M

Kalkat¹; R Steyn¹; B Naidu¹;

¹ Birmingham Heartlands Hospital, UK

09:30 (10 mins)

A238 - Preoperative planning in thoracic surgery: a prospective study comparing modern imaging techniques and 3D printing

J L Smelt³; T Suri²; O Valencia³; M Jahangiri³; K Rhode²; A Nair¹; A Bille¹;

¹ Guy's and St Thomas' NHS Foundation Trust, UK; ² King's College Hospital, London, UK; ³ St George's Hospital, University of London, UK

09:40 (10 mins)

A239 - An update on thoracic enhanced recovery in the Republic of Ireland

R Brown¹; K Redmond¹; D Eaton¹;

¹ Mater Misericordiae University Hospital, Ireland

09:50 (10 mins)

A240 - Procedure specific consent: a quality improvement project in thoracic surgery

A Kar¹; C Wong²; M Suen²; K Lau¹;

¹ St Bartholomew's Hospital, London, UK; ² The Chinese University of Hong Kong, China

10:00 (15 mins)

A241 - Enhanced recovery and comprehensive care - American perspective

D Harpole¹;

¹ Duke University, United States

10:15 (15 mins)

A242 - Surgical treatment decisions for patients with indeterminate pulmonary lesions

S Cassivi¹;

¹ Mayo Clinic, United States

Day 2 - Cancer - (Boisdale 1)

19-March-2018, at 13:30 to 15:00

Chair - Mr Shilajit Ghosh

Chair - Mr Kandadai Rammohan

Chair - Mr Sridhar Rathinam

Chair - Mr Francesco Di Chiara

13:30 (10 mins)

A243 - Assessment of interval progression of NSCLC between radiological diagnosis and surgery using the 8th TNM classification

ED Kennedy¹; N A Bradley¹; R Govindraj¹; A J Kirk¹; M Klimatsidas¹; M Asif¹;

¹ Golden Jubilee National Hospital, UK

13:40 (10 mins)

A244 - Does the administration of total parenteral nutrition following extended pleurectomy decortication offer any benefit?

A G Dawson¹; J Sharman¹; S M Cooke¹; Z Kidy¹; E Twitchell¹; S S Patel¹; A Nakas¹;

¹ University Hospitals of Leicester, UK

13:50 (10 mins)

A245 - The likelihood of cancer in patients proceeding to pulmonary resection without tissue diagnosis

S Srinathan¹; B Kidane¹; Y Teferi¹; L Leydier¹; V Bayaraa¹; L Tan¹; G Buduhan¹;
¹ Health Sciences Centre, University of Manitoba, Canada

14:00 (10 mins)

A246 - Should resection rate be used to assess thoracic surgical centres in their treatment of lung cancer?

N K Oswald²; J Adizie¹; Z Awan¹; K Mahendran¹; R Steyn¹; M Kalkat¹; E Bishay¹; B Naidu¹;
¹ Birmingham Heartlands Hospital, UK; ² University of Birmingham, UK

14:10 (10 mins)

A247 - Should the ESTS guidelines for mediastinal staging need to be revised?

P Papoulidis¹; S Kalra¹; I Paul¹; J Ferguson¹; J D Dunning¹;
¹ James Cook University Hospital, Middlesbrough, UK

14:15 (15 mins)

A158 - Update on advanced systemic treatment for lung cancer

G Middleton¹;
¹ University Hospital, Birmingham,

14:20 (15 mins)

A248 - Improving outcomes of patients with lung cancer in UK

M Peake¹;
¹ University Hospitals of Leicester, UK

Day 2 - Airway - (Boisdale 1)

19-March-2018, at 15:30 to 17:00

Chair - Mr Apostolos Nakas

Chair - Mr Manoj Purohit

Chair - Mr Vladimir Anikin

Chair - Miss SARA TENCONI

15:30 (10 mins)

A250 - Can electromagnetic navigational bronchoscopy (ENB) replace frozen section (FS)?

M Thomas¹; A Melvin¹; R Purmessur¹; E Bishay¹; R Steyn¹; H Fallouh¹; M Kalkat¹; L Hernandez¹; B Naidu¹;
¹ Birmingham Heartlands Hospital, UK

15:40 (10 mins)

A251 - Navigational bronchoscopy: the future of diagnostic lung cancer surgery?

J Massey¹; A Brunelli¹; E Kefaloyannis¹; R Milton¹; K Papagiannopoulos¹; P Tcherveniakov¹; N Chaudhuri¹;

¹ St James's University Hospital, UK

15:50 (10 mins)

A252 - Ten-year single centre experience of pneumonectomy and sleeve lobectomy for lung cancer: general trends in practice and outcomes

I Vokshi¹; F Tacconi¹; D R Sitaranjan¹; A Longe¹; W Bartosik¹; M Van Leuven¹; F Van Tornout¹; J Kadlec¹;

¹ Norfolk & Norwich University Hospital NHS Foundation Trust, UK

16:00 (10 mins)

A253 - Tracheal resection and reconstruction for benign tracheal stenosis – Birmingham Heartlands Hospital experience

A Menon¹; B Naidu¹; E Bishay¹; R Steyn¹; P Rajesh¹; H Griffiths¹; M Kalkat¹;

¹ Birmingham Heartlands Hospital, UK

16:10 (10 mins)

A254 - Valves, coils and staples. A surgeon's role in endobronchial lung volume reduction.

K Mahendran¹; N K Oswald¹; Z Jalal¹; H Fallouh¹; L Hernandez¹; E Bishay¹; M Kalkat¹; R Steyn¹; B Naidu¹;

¹ Birmingham Heartlands Hospital, UK

16:20 (10 mins)

A255 - Rigid bronchoscopy with endobronchial laser therapy for central airway obstruction

EJ Caruana¹; S Pathak¹; A G Dawson¹; S Rathinam¹; A Nakas¹;

¹ University Hospitals of Leicester, UK

16:30 (5 mins)

A256 - Introduce Tudor Edward Lecture

16:35 (15 mins)

A257 - Tudor Edwards Lecture - Endobronchial therapies for malignant airway obstruction

S Cassivi¹;

¹ Mayo Clinic, United States

16:50 (15 mins)

A249 - Update on the important oncological trials in thoracic cancers - TracerX and Matrix

G Middleton¹;

¹ University Hospital, Birmingham,

Advanced Heart & Lung Failure Surgery

Day 2 - Transplant - (Dochart 2)

19-March-2018, at 13:30 to 15:00

Chair - Prof Stephen Clark

Chair - Prof Nawwar Al-Attar

Chair - Mr Stephen Rooney

Chair - Mr John J Dunning

13:30 (10 mins)

A259 - DCD heart transplantation: a single centre experience

A Page¹; S Messer¹; E Pavlushkov¹; M Berman¹; Y Abu-Omar¹; J Dunning¹; D Jenkins¹; C D Sudarshan¹; P Catarino¹; A Ali¹; S Tsui¹; S Large¹;
¹ Papworth Hospital NHS Trust, UK

13:40 (10 mins)

A260 - Validation of a model to predict Primary Graft Dysfunction (PGD) after adult heart transplantation in the United Kingdom

S Singh¹; N R Banner³; S Rushton²; C Berry⁴; N Al-Attar¹;
¹ Golden Jubilee National Hospital, UK; ² NHS Blood and Transplant, UK; ³ Royal Brompton & Harefield Hospitals, UK; ⁴ University of Glasgow, UK

13:50 (10 mins)

A261 - The impact of gender mismatch on survival in heart transplantation

S Singh¹; S D Das De¹; N R Banner²; C Berry³; N Al-Attar¹;
¹ Golden Jubilee National Hospital, UK; ² Royal Brompton & Harefield Hospitals, UK; ³ University of Glasgow, UK

14:00 (10 mins)

A262 - Comparison of extra corporeal membrane oxygenation versus cardiopulmonary bypass support for lung transplantation

V Mehta¹; J Hasan¹; J Salaie¹; E Milser¹; K Santhanakrishnan¹; M Al-Aloul¹; J Dimarakis¹; J Barnard¹; R V Venkateswaran¹;
¹ University Hospital of South Manchester, UK

14:10 (10 mins)

A263 - Unit, surgeon and volume: Equal contributors to outcome in lung transplantation?

V Rizzo¹; E J Caruana¹; G Parry¹; S C Clark¹;
¹ Freeman Hospital Cardiothoracic Centre, UK

14:20 (10 mins)

A264 - Sequential Single Lung Transplant Maximises Donor Use without Impacting on Early Survival

B Gadallah²; L Nolke¹; K REDMOND¹;
¹ Mater Misericordiae University Hospital, Ireland; ² Mater University Hospital, Ireland

14:30 (10 mins)

A265 - Characterization of myocardial injury and extracellular matrix remodelling in a model of porcine closed chest acute myocardial infarction

V Bruno⁴; D Baz Lopez⁴; H Lin⁴; M S Suleiman¹; E Sammut⁴; A Cookson³; C Soeller²; H S Gill³; T Johnson¹; R Ascione¹;

¹ Bristol Heart Institute, UK; ² Royal Exeter and Devon Hospitals, UK; ³ University of Bath, UK; ⁴ University of Bristol, UK

Day 2 - Mechanical Support - (Dochart 2)

19-March-2018, at 15:30 to 17:00

Chair - Prof Lars Svensson

Chair - Mr Erwan Flecher

Chair - Mr Rajamiyer Venkateswaran

15:30 (10 mins)

A266 - A systematic review and meta-analysis of salvage extra-corporeal membrane oxygenation after adult post-cardiotomy cardiogenic shock

M Khorsandi¹; S D Dougherty⁵; O Bouamra⁹; V Pai⁴; P Curry²; S Tsui⁷; S C Clark³; S Westaby⁶; N Al-Attar²; V Zamvar⁸;

¹ Duke University Medical Center, United States; ² Golden Jubilee National Hospital, UK; ³ Institute of Transplantation, Freeman Hospital, UK; ⁴ Kasturba Medical College, India; ⁵ Ninewells Hospital School of Medicine, UK; ⁶ Oxford University Hospitals NHS Foundation Trust, UK; ⁷ Papworth Hospital NHS Trust, UK; ⁸ Royal Infirmary of Edinburgh, UK; ⁹ University Hospital of South Manchester, UK

15:40 (10 mins)

A267 - Veno-venous extra-corporeal membrane oxygenation in the treatment of peri-operative respiratory failure in cardiac surgery

K Wallwork¹; F Sertic¹; A Ferrara¹; R De Silva¹;

¹ Papworth Hospital NHS Trust, UK

15:50 (10 mins)

A268 - The role of Mechanical Circulatory Support (MCS) as a bridge to decision in Cardiogenic shock (CS) after ST-Elevation Myocardial Infarction (STEMI)

S Singh¹; S D Das De¹; J Dalzell¹; A Sinclair¹; H Doshi¹; P Curry¹; N Al-Attar¹; S Nair¹;

¹ Golden Jubilee National Hospital, UK

16:00 (10 mins)

A269 - Use of temporary Right Ventricular Assist Device (RVAD) after implantation of long term Left Ventricular Assist Device (LVAD)

V Mehta¹; J Hasan¹; P Callan¹; S G Williams¹; J Barnard¹; J Dimarakis¹; S Shaw¹; R V Venkateswaran¹;

¹ University Hospital of South Manchester, UK

16:10 (10 mins)

A270 - Coronary reperfusion ameliorates the deleterious effect of mechanical unloading on infarct size and interstitial fibrosis after acute myocardial infarction

S O Bello¹; C Singh¹; F Perbellini¹; **P Punjabi**¹; C M Terracciano¹;

¹ Imperial College London, UK

16:20 (10 mins)

A271 - Outcomes after extra-corporeal right ventricular assist device combined with durable left ventricular assist device implantation

M Khorsandi¹; M Bishawi¹; P Winterton¹; J Schroder¹; M Daneshmand¹; C Patel¹; J

Rogers¹; C Milano¹;

¹ Duke University Medical Center, United States

16:30 (15 mins)

A272 - ECMO support for post-cardiotomy cardiogenic shock - lessons learnt

E Flecher¹;

¹ Centre Hospitalier Universitaire RENNES, France

Congenital

Day 2 - Congenital - Atrial switch and perioperative care - (Leven)

19-March-2018, at 09:00 to 10:30

Chair - Mr Ramana Dhannapuneni

Chair - Mr Tim Jones

09:00 (20 mins)

A273 - Senning operation

D Barron¹;

¹ Birmingham Children's Hospital, UK

09:20 (20 mins)

A274 - Mustard and hemi-Mustard operation

A Hasan¹;

¹ Freeman Hospital, UK

09:40 (20 mins)

A275 - Early extubation and enhanced recovery

R Guerrero¹;

¹ Alder Hey Children's Hospital, UK

10:00 (15 mins)

A276 - Quality control in PICU and maximising patient flow

A Goldman¹;

¹ Great Ormond Street Hospital,

Day 2 - Rapid Fire : Abstracts - (Leven)

19-March-2018, at 13:30 to 15:00

Chair - Prof Hans-Joachim Schäfers

Chair - Mr Andrew McLean

Chair - Ms Carin van Doorn

13:30 (8 mins)

A277 - Risk perception of mothers and fathers of children undergoing heart surgery: a quantitative longitudinal analysis

H Peens-Hough¹; R Lotto²; S Seaton³; I Jones²; R Guerrero¹; R Dhannapuneni¹; A Lotto¹;

¹ Alder Hey Children's Hospital NHS Foundation Trust, UK; ² Liverpool John Moores University, UK; ³ University Hospitals of Leicester, UK

13:38 (8 mins)

A278 - Cardioplegia in paediatric cardiac surgery: a systematic review of randomised controlled trials

I Yim¹; A J Patel¹; N K Oswald¹; C R Chong²; J Stickley¹; T J Jones¹; N E Drury¹;

¹ Birmingham Children's Hospital, UK; ² University of Oxford, UK

13:46 (8 mins)

A279 - Balloon versus surgical aortic valve repair in neonates and infants - results from a national database

D M Dorobantu²; R Tulloh²; M T Sharabiani¹; A J Parry²; A Tometzki²; S C Stoica²;

¹ Imperial College London, UK; ² University of Bristol, UK

13:54 (8 mins)

A280 - Total anomalous pulmonary venous connection: 10 years results of the evolution of surgical repair without the use Deep Hypothermia Circulatory Arrest

S Loggos¹; G Pelella¹; H Peens-Hough¹; C Tennyson¹; A Lotto¹; R

Dhannapuneni¹; R Guerrero¹;

¹ Alder Hey Children's Hospital NHS Foundation Trust, UK

14:02 (8 mins)

A281 - Establishing an intracardiac operation for infundibular and pulmonary stenosis in Fallot's Tetralogy in 1948-9: evidence discovered in The Peacock Club minutes

T Treasure¹;

¹ Clinical Operational Research Unit, UCL, UK

14:10 (8 mins)

A282 - Long-term outcomes following partial Atrioventricular Septal Defect (AVSD) repair in Ireland

R Fleck²; K E O'Sullivan²; G Vgano³; G J Fitzmaurice⁴; P Cullen¹; D Arshad³; M

Abdelrahman²; J McGuinness²; J M Redmond²; L Nolke²;

¹ Cork University Hospital, Ireland; ² Mater Misericordiae University Hospital, Ireland; ³ Our Lady's Children's Hospital Crumlin, Ireland; ⁴ St James's Hospital, Ireland

14:18 (8 mins)

A283 - Current application of patient specific 3D printing in complex congenital heart disease

H Peens-Hough¹; M Richards¹; S Loggos¹; G Pelella¹; A Lotto¹; R Dhannapuneni¹; R Guerrero¹;
¹ Alder Hey Children's Hospital NHS Foundation Trust, UK

14:26 (15 mins)

A284 - Clinical research in paediatric cardiac surgery in the UK - an update

N Drury¹;
¹ Birmingham Children's Hospital, UK

Day 2 - Aortic Surgery in Congenital Heart Disease. Overlap and Collaboration - (Leven)

19-March-2018, at 15:30 to 17:00

Chair - Mr Asif Hasan

Chair - Mr Rafael Guerrero

Chair - Mr Massimo Caputo

15:30 (20 mins)

A285 - Aortic service experience and viewpoint

M Field¹;
¹ Liverpool Heart Centre, UK

15:50 (20 mins)

A286 - Congenital service experience and viewpoint

C van Doorn¹;
¹ Leeds Teaching Hospitals NHS Trust, UK

16:10 (20 mins)

A287 - European experience: a flexible approach?

H Schaefer¹;
¹ Saarland University Medical Center, Germany

CT Forum (Nursing and AHP)

Day 2 - Multidisciplinary team working - (Alsh)

19-March-2018, at 09:00 to 10:30

Chair - Miss Juliet King

Chair - Ms Tanya Usher

Chair - Ms Christina Bannister

09:00 (10 mins)

A288 - Making a difference in a cardiothoracic department: Surgical Care Practitioner (SCP) experience, 2016-2017

A Soler Castells¹; S Ibrahim¹; A Sitzberger¹; M Olivar¹; K Clark¹; S Amartey¹; C Buckley¹;
¹ Barts Heart Centre, St Bartholomew's Hospital, UK

09:10 (10 mins)

A289 - The introduction of a new self-assessment patient questionnaire - All About Me

A Haddock¹; M P Gilhooly¹; M Lincoln¹; M Berman¹; L Shirley¹; J Williams¹; M Rafiq¹;
¹ Papworth Hospital NHS Trust, UK

09:20 (10 mins)

A290 - Initial results from a pilot study of a physiotherapy prehabilitation programme for patients undergoing cardiac or thoracic surgery

K Lyon¹; F Nolan¹; N Lambie¹;
¹ Golden Jubilee National Hospital, UK

09:30 (10 mins)

A291 - The impact of implementing a band 4 physiotherapy assistant practitioner in critical care on rehabilitation milestones

R Marscheider¹; K Lyon¹; F Nolan¹;
¹ Golden Jubilee National Hospital, UK

09:40 (10 mins)

A292 - A year in the life of a Cardiothoracic Stroke Team

H Woollard¹; R A Baddeley¹;
¹ Papworth Hospital NHS Trust, UK

09:50 (30 mins)

A293 - Team engagement

Day 2 - Fellowship winners & launch of research group - (Alsh)

19-March-2018, at 13:30 to 15:00

Chair - Ms Helen Munday

Chair - Prof Gavin Murphy

Chair - Mrs Sarah Murray

13:30 (10 mins)

A294 - RCN President's opening remark

13:40 (20 mins)

A295 - Observation of ANP practice at Liverpool Heart and Chest Hospital and Blackpool

N Kearney¹;
¹ BHSCT, UK

14:00 (20 mins)

A296 - Enhanced recovery programmes after Thoracic Surgery, particularly in respect of lung volume reduction surgery and pacts programmes

R Brown¹;

¹ The Mater Misericordiae University Hospital, Ireland

14:20 (20 mins)

A297 - Innovations and best practice - UK and USA

L Best¹;

¹ Royal Sussex County Hospital , UK

14:20 (20 mins)

A297 - Innovations and best practice - UK and USA

L Best¹;

¹ Royal Sussex County Hospital , UK

14:20 (20 mins)

A297 - Innovations and best practice - UK and USA

L Best¹;

¹ Royal Sussex County Hospital , UK

14:40 (20 mins)

A298 - SCTS Nursing and AHP Research Group Launch

J Sanders¹;

¹ St Bartholomew's Hospital, UK

Day 2 - Advanced clinical practice and service development - (Alsh)

19-March-2018, at 15:30 to 17:00

Chair - Dr Bhuvanewari Krishnamoorthy

Chair - Mr Amal Bose

Chair - Dr Richard van Valen

15:30 (10 mins)

A299 - Implementing LocSSIPs outside of theatre to prevent never events and promote harm free care

A McDonnell¹;

¹ St Bartholomew's Hospital, London, UK

15:40 (10 mins)

A300 - Development of an in-house masters level cardiothoracic critical course for nurses with a partner university

R Gannon¹; S Moore¹; P H Critical Care Education Team¹;

¹ Papworth Hospital NHS Trust, UK

15:50 (10 mins)

A301 - Implementing Red2Green days on a busy cardiac ward helped to reduce length of stay and thus improve patient flow, as well as enhance patient and staff experience

C Bishop¹;

¹ Brighton and Sussex University Hospital NHS Trust, UK

16:00 (10 mins)

A302 - The impact of an Advanced Nurse Practitioner ward attendee review service development

T Bartley¹; S Faulkner¹;

¹ University Hospital Birmingham, UK

16:10 (10 mins)

A303 - An independent run advanced practice provider clinic for aortic valve repair surveillance

M Freas¹;

¹ University of Pennsylvania, United States

16:20 (10 mins)

A304 - Impact of an Advanced Clinical Practitioner (ACP) led chest drain clinic

L Kenyon¹; J Cahill¹; E Bishay¹; M Kalkat¹; L Hernandez¹; H Fallouh¹; R Steyn¹; B

Naidu¹;

¹ Birmingham Heartlands Hospital, UK

16:30 (10 mins)

A305 - The UK OCS competency pack - training non-medical Organ Care System (OCS) operators following donation after circulatory death (DCD) hearts

C Ellis¹; J Baxter¹; S Messer¹; A Page¹; E Pavlushkov¹; S Tsui¹; S Large¹; M

Berman¹; K Morley¹;

¹ Papworth Hospital NHS Trust, UK

16:40 (10 mins)

A306 - Chest x-ray review: if it's not documented, is it done?

K Smith¹; **D Bangar**¹; Y Iqbal¹; I Morgan¹;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK

16:50 (10 mins)

A307 - Service development: key points for digital photography in wound management

M Rochon¹; J Sanders²;

¹ Royal Brompton & Harefield Hospitals, UK; ² St Bartholomew's Hospital, London, UK

Satellite

Day 2 - SCTS Research Committee - (Lomond Auditorium)

19-March-2018, at 09:00 to 10:30

Chair - Prof Gavin Murphy

Day 2 - SAC - Trainees Leads - (Morar)

19-March-2018, at 09:00 to 10:30

Chair - Mr Rajesh Shah

Day 2 - SCPS College Council Meeting - (Katrine)**19-March-2018, at 09:30 to 12:30**

Chair - Mr Patrick Campbell

Day 2 - UK mini mitral investigator meeting - (Morar)**19-March-2018, at 12:30 to 14:30**

Chair - Mr Enoch Akowuah

Day 2 - SCPS Executive Meeting - (Katrine)**19-March-2018, at 13:30 to 15:45**

Chair - Mr Andrew Heggie

Day 2 - REDJUNEVATE Trial Management Group - (Morar)**19-March-2018, at 15:30 to 16:30**

Chair - Prof Gavin Murphy

Day 2 - Ethicon Scholarship Interviews - (Ness)**19-March-2018, at 15:30 to 17:00**

Chair - Mr Narain Moorjani

Chair - Mr Sridhar Rathinam

Day 2 - SAS Doctors Forum - (Lomond Auditorium)**19-March-2018, at 16:00 to 17:00**

Chair - Mr Maninder Singh Kalkat

Chair - Mr Uday Dandekar

16:00 (10 mins)

A 15865 - Improving learning and professional development for SAS doctors

16:10 (10 mins)

A 15866 - Alternative careers

16:20 (10 mins)

A 15869 - My road to a consultant post

16:30 (10 mins)

A 15867 - Word from SAC chair

16:40 (10 mins)

A 15872 - Address to SAS doctors

Day 2 - Congenital Sub-Committee - (Katrine)**19-March-2018, at 16:00 to 17:00**

Chair - Ms Carin van Doorn

Day 2 - James Lind Alliance - Adult Cardiac Surgery National Research Priority Setting Exercise - (Morar)

19-March-2018, at 16:30 to 17:30

Chair - Prof Gavin Murphy

Day 2 - SCTS Executive/Trustees meeting - (Lomond Auditorium)

19-March-2018, at 17:00 to 18:30

Chair - Mr Graham Cooper

Chair - Mr Richard Page

Day 2 - Cardiothoracic Trainees Research Collaborative Committee Meeting - (Carron)

19-March-2018, at 17:00 to 18:00

Chair - Miss Ana-Catarina Pinho-Gomes

Day 2 - UK Aortic Forum - (Dochart 1)

19-March-2018, at 17:00 to 18:00

Chair - Mr Geoffrey Tsang

Chair - Mr Jorge Mascaro

Day 2 - Congenital trials network - (Katrine)

19-March-2018, at 17:00 to 18:00

Chair - Mr Nigel Drury

Day 2 - Research Committee of the British Heart Valve Society - (Leven)

19-March-2018, at 17:15 to 18:15

Chair - Prof Gerry McCann

Pat Magee

Day 2 - Student Engagement - (Ness)

19-March-2018, at 09:00 to 10:30

Chair - Mr Aman Coonar

Chair - Prof Farah Bhatti

09:00 (5 mins)

A308 - Introduction

09:05 (10 mins)

A313 - Getting into and training in Cardiothoracic Surgery

A Al-Adhami¹;

¹ Golden Jubilee National Hospital, UK

09:05 (10 mins)

A313 - Getting into and training in Cardiothoracic Surgery

A Al-Adhami¹;¹ Golden Jubilee National Hospital, UK**09:15 (15 mins)**

A309 - A day in the life of a thoracic surgeon

A Kirk¹;¹ Golden Jubilee National Hospital, UK**09:30 (15 mins)**

A312 - A day in the life of a cardiac surgeon

B Evans¹;¹ Leeds General Infirmary, UK**09:45 (10 mins)**

A15843 - Student elective: "I did it my way"

09:55 (10 mins)

A15841 - WinS (Women in Surgery)

10:05 (10 mins)

A314 - The 4th International Cardiothoracic Surgery student event - Sheffield 2017 meeting report

10:15 (15 mins)

A311 - A day in the life of a paediatric cardiothoracic surgeon

A McLean¹;¹ Royal Hospital for Sick Children, UK**Day 2 - Student Engagement - Pat Magee Orals - (Ness)****19-March-2018, at 13:30 to 15:00**

Chair - Mr Alex Shipolini

Chair - Mr Alan Dawson

Chair - Miss Betsy Evans

Chair - Prof Alan Kirk

13:30 (10 mins)

A315 - The use of Alloderm in general thoracic surgery: applications and outcomes

C Gutierrez¹; V Joshi²; M Allen²; S Blackmon²; S D Cassivi²; F Nichols²; R Shen²; D Wigle²;¹ Mayo Clinic School of Medicine, United States; ² Mayo Clinic, Rochester, MN, United States**13:40 (10 mins)**

A316 - An international Delphi consensus exercise to agree for rib fracture definitions

P T Clarke⁹; R B Simpson⁷; W J Hunt⁷; M Gasparri²; R Gross¹; W Long⁶; J Mayberry¹⁰; F Pieracci³; B Sarani⁴; S Schulz-Drost⁸; T White⁵; J G Edwards⁷;

¹ Baystate Medical Center, United States; ² Chest Wall Injury Society, United States; ³ Denver Health and Hospital Authority, United States; ⁴ George Washington University, United States; ⁵ Intermountain Healthcare, United States; ⁶ Legacy Health, United States; ⁷ Sheffield Teaching Hospitals NHS Trust, UK; ⁸ Unfallkrankenhaus Berlin, United States; ⁹ University of Sheffield, UK; ¹⁰ University of Washington, School of Medicine, United States

13:50 (10 mins)

A317 - A robust semi-quantitative technique to assess infiltration and fibrosis in a mouse model of diffuse myocardial damage

HS Kalkat²; A Papanikolaou²; R Chowdhury²; S Rothery¹; M Hasham³; N Rosenthal³; S Sattler²;

¹ Facility for Imaging by Light Microscopy (FILM) , Imperial College, UK; ² National Heart and Lung Institute, Imperial College, UK; ³ The Jackson Laboratory, Bar Harbor, USA, UK

14:00 (10 mins)

A318 - High fidelity simulation of left ventricular loading conditions to test patch repair techniques for ventricular septal rupture

J Strickland²; K Buchan¹;

¹ Aberdeen Royal Infirmary , UK; ² University of Aberdeen, UK

14:10 (10 mins)

A319 - Cardiovascular structural and functional changes after kidney transplantation

N Punjabi²; N Sahdev²; A Ali¹; S Gati²; K Medina²; J Kaski²; D Banerjee²;

¹ Basildon and Thurrock University Hospital, UK; ² St George's Hospital, University of London, UK

14:20 (10 mins)

A320 - Surgery versus catheter interventions for simple congenital heart defects: trends from a UK national database

M Farooqi²; J Stickley¹; L Kim²; R Dhillon¹; T J Jones¹; W J Brawn¹;

¹ Birmingham Children's Hospital, UK; ² University of Birmingham Medical School, UK

14:30 (10 mins)

A321 - ABO-incompatible paediatric heart transplantation without the use of exchange transfusion

K Wheeler¹;

¹ Nottingham University, UK

14:40 (10 mins)

A322 - Randomized trial of Carpentier-Edwards supraannular prosthesis versus Medtronic Mosaic aortic prosthesis

O Zibdeh²; I Bugg²; S Patel²; G Twine¹; J Unsworth-White¹;

¹ Plymouth Hospitals NHS Trust, UK; ² Plymouth Medical School, UK

14:50 (10 mins)

A323 - Surgical repair for anomalous drainage of right pulmonary veins in paediatric population: impact of surgical techniques on superior vena cava inflow

J Federspiel³; S Das DeM Danton²; A McLean²; K McArthur²; E Peng²;

¹ Aberdeen Royal Infirmary, UK; ² Royal Hospital for Children, Glasgow, UK; ³ Saarland University - Medical Faculty, Germany

15:00 (10 mins)

A324 - Scimitar syndrome: presentation, management and outcomes

C Kinsella³; N Khan¹; J Stickley¹; N E Drury¹; S Bowater²; L E Hudsmith²; S A Thorne²; O Stumper¹; D J Barron¹; P Botha¹; T J Jones¹; P F Clift²;

¹ Birmingham Children's Hospital, UK; ² University Hospital Birmingham, UK; ³ University of Birmingham, UK

15:10 (10 mins)

A325 - Understanding the morphology of transposition: anatomical risk factors for current surgical treatment

N Maria²; M Roderick²; A Crucean¹; T Jones¹;

¹ Birmingham Children's Hospital, UK; ² University of Birmingham Medical School, UK

Adult Cardiac Clinical

Day 3 - Aortic Root - (Carron)

20-March-2018, at 09:30 to 11:00

Chair - Mr Mario Petrou

Chair - Prof Hans-Joachim Schäfers

Chair - Mr Geoffrey Tsang

09:30 (10 mins)

A326 - Hemi-root Remodelling and external ring annuloplasty valve sparing repair of bicuspid valve

M Zakkar¹; C Brega²; S Lejeune²; C Acar²; N Khelil²; T Folliguet²; M Debauchez²; E Lansac²;

¹ Bristol Heart Institute, UK; ² IMM, France

09:40 (10 mins)

A327 - Cardiac surgical cardio-aortovascular multidisciplinary management of Loeys Dietz syndrome

D Quinn²; R Mehdi¹; A M Ranasinghe²; P Clift²; J Mascaro²;

¹ Birmingham Heartlands Hospital, UK; ² University Hospital Birmingham, UK

09:50 (10 mins)

A328 - Natural history of surgical aortic pathology in patients with Marfan disease. Operative, medium and long term outcomes from a quaternary aortic referral centre.

I Gambardella¹; M Kuduvalli¹; D Harrington¹; O Nawaytou¹; M Field¹;

¹ Liverpool Heart and Chest Hospital, UK

10:00 (10 mins)

A329 - Systematic review of screening tests in relatives of patients affected by non-syndromic thoracic aortic diseases

G Mariscalco¹; R Debiec¹; G J Murphy¹;

¹ University Hospitals of Leicester, UK

10:10 (10 mins)

A330 - Aortic Valve Repair Techniques: an early experience from a single UK centre

R Greco¹; X Jin¹; M Petrou¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK

10:20 (10 mins)

A331 - Aortic regurgitation and fate of the arch in patients undergoing valve sparing aortic root surgery

R S Bilkhu¹; P Youssef¹; G S Soppa¹; A Child¹; M Tome¹; R Sharma¹; B Liban¹; M Edsell¹; M Jahangiri¹;

¹ St George's Hospital, University of London, UK

10:30 (10 mins)

A332 - Valve sparing root operations – preliminary data from a single UK center experience

D W Quinn²; **R Mehdi**¹; I Iskender²; J Mascaro²;

¹ Birmingham Heartlands Hospital, UK; ² University Hospital Birmingham, UK

10:40 (20 mins)

A333 - The UK Heart Research Lecture: The importance of stabilising the aortoventricular junction, the valve and the sinotubular junction in valve sparing aortic root replacement

H Schaefer¹;

¹ Saarland University Medical Center, Germany

Day 3 - Mitral Investigations - (Dochart 1)

20-March-2018, at 09:30 to 11:00

Chair - Mr Alex Shipolini

Chair - Dr Patrick Perier

Chair - Ms Rashmi Yadav

09:30 (10 mins)

A334 - Comparison of semi rigid and rigid rings in treating functional tricuspid regurgitation - early outcomes

K Nagarajan¹; S W Grant²; J S Billing¹; N Nikolaidis¹;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK; ² University

Hospital of South Manchester, UK

09:40 (10 mins)

A335 - Cardiopulmonary exercise testing as a new indication for surgery in primary mitral regurgitation - early results from the RIPCOM 1 study

J Afoke¹; S Kanaganayagam¹; L Howard¹; S Gibbs¹; P Punjabi¹;
¹ Hammersmith Hospital, UK

09:50 (10 mins)

A336 - Differences between echocardiography and cardiac MRI in primary mitral regurgitation

J Afoke¹; S Kanaganayagam¹; L Howard¹; S Gibbs¹; P Punjabi²;
¹ Hammersmith Hospital, UK; ² Imperial College London, UK

10:00 (10 mins)

A337 - Left atrial volume in preoperative assessment of elective cardiac surgery

C Spadaccio²; S D Das De²; S Singh²; A Nenna¹; V Pathi²; F W Sutherland²; G Bozzetti²;
¹ Cardiac Surgery Department, Campus Bio - Medico University of Rome, Italy; ² Golden Jubilee National Hospital, UK

10:10 (10 mins)

A338 - Characterisation of mitral valve annulus and papillary muscle geometry in systole and diastole of normal heart using 3D printed left ventricular models

F Pitoulis³; F Fullerton¹; B Johnson¹; B Statton²; S Kanaganayagam²; D O'Regan²; P Punjabi³;
¹ 3D Systems, United States; ² Hammersmith Hospital, UK; ³ Imperial College London, UK

10:20 (10 mins)

A339 - Early outcome and late survival of biological ring versus prosthetic ring in patients with degenerative mitral valve disease: a propensity score analysis

V Bruno²; M Zakkar¹; R Marsico¹; P Chivasso¹; G Guida¹; F Rapetto¹; R Ascione¹;
¹ Bristol Heart Institute, UK; ² University of Bristol, UK

10:30 (20 mins)

A340 - Should we stop repairing ischaemic mitral valves?

P Perier¹;
¹ Herz und Gefäß Klinik,, Germany

Day 3 - General - (Dochart 2)

20-March-2018, at 09:30 to 11:00

Chair - Prof Mahmoud Loubani

Chair - Mr Philip Curry

09:30 (10 mins)

A341 - Benign cardiac tumours: a contemporary case series of 136 patients in the United Kingdom

A Rossi¹; M T Yates¹; K Lloyd²; D Balmforth¹; N Roberts¹; D R Lawrence¹; M Scheaff²; R Uppal¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² St Bartholomew's Hospital, London, UK

09:40 (10 mins)

A342 - Establishing a high volume and multi-disciplinary septal myectomy service

D Bleetman¹; U Hamid¹; B M Robinson¹; A M Soler-Castells¹; M Nordblad¹; T Grundy¹; K Savvatis¹; C Rathwell¹; A Shipolini¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK

09:50 (10 mins)

A343 - Frailty and American College of Surgeons National Surgical Quality Improvement Program risk calculator in UK Cardiothoracic Surgery single centre experience

MURafiq¹; D Jenkins¹; M Screatton¹; M Berman¹;

¹ Papworth Hospital NHS Trust, UK

10:00 (10 mins)

A344 - Reduced transfusion of blood products and mediastinal bleeding following cardiac surgery after implementation of a novel 'haemostasis checklist'

J M Ali¹; C Gerrard¹; J Clayton¹; N Moorjani¹;

¹ Papworth Hospital NHS Trust, UK

10:10 (10 mins)

A345 - Stentless bioprosthesis for patients with carcinoid pulmonary valve disease

N Nicou²; M Silaschi¹; G Jakaj²; A Narayana²; O Wendler²;

¹ Comprehensive Heart Center, Halle (Saale), Germany; ² King's College Hospital, London, UK

10:20 (10 mins)

A346 - Transaortic and transmitral septal myectomy with anterior mitral leaflet extension for hypertrophic obstructive cardiomyopathy: a single centre experience

S M Rehman¹; S A Sadeque¹; S Duggan¹; H Ali-Ghosh¹; M Kaame¹; S A Livesey¹;

¹ University Hospital Southampton NHS Trust, UK

10:30 (10 mins)

A347 - Systematic review of the predictive accuracy of point of care tests for coagulopathy in cardiac surgery

A Monaghan²; C Corazzari²; M Wozniak²; C Tutino¹; C Beghi¹; G J Murphy²;

¹ Cardiac Surgery Unit, Insubria University, Varese, Italy; ² University Hospitals of Leicester, UK

10:40 (10 mins)

A348 - What is the clinical utility of accelerometers to predict early outcome in high risk frail patients undergoing cardiac surgery?

Y Abdullahi²; N Al-Saadi¹; R Casula²; L Athanasopoulos²; T Athanasiou²; **N Al-Saadi**³;

¹ Basildon and Thurrock University Hospital, UK; ² Imperial College London, UK; ³ Ms., UK

Day 3 - Aortic Arch - (Carron)

20-March-2018, at 11:30 to 13:00

Chair - Mr Sunil Bhudia

Chair - Prof Aung Oo

Chair - Dr Giovanni Mariscalco

Chair - Mr Mark Field

11:30 (10 mins)

A349 - Phantom heart and aorta model to compare aortic haemodynamics in bicuspid and tricuspid aortic valves

P Youssefi²; A Gomez¹; N Gaddum¹; J Ruijsink¹; M Whitehome¹; R Sharma²; A Figueroa¹; M Jahangiri²;

¹ King's College Hospital, London, UK; ² St George's Hospital, University of London, UK

11:40 (10 mins)

A350 - A novel technique for managing the hostile aortic arch: Zone zero deployment of frozen elephant trunk

O Nawaytou¹; V Giordano¹; D Harrington¹; I Gambardella¹; M Kuduvalli¹; M Field¹;

¹ Liverpool Heart and Chest Hospital, UK

11:50 (10 mins)

A351 - Should the arch be replaced prophylactically in patients undergoing proximal aortic surgery with Bicuspid Aortic Valve?

R S Bilkhu¹; P Youssefi¹; GS Soppa¹; A Child¹; M Tome¹; R Sharma¹; B Liban¹; M Edsell¹; M Jahangiri¹;

¹ St George's Hospital, University of London, UK

12:00 (10 mins)

A352 - Aortic cross-sectional area/height ratio identifies at-risk patients who do not meet conventional criteria for surgery

M Acharya¹; P Youssefi¹; O Valencia¹; M Edsell¹; R Morgan¹; M Tome¹; M Jahangiri¹;

¹ St George's Hospital, University of London, UK

12:10 (10 mins)

A353 - Partial sternotomy for one-stage repair of Aberrant Subclavian Artery (ASA) in adults

S Volpi¹; K Tweed¹; J Dunning¹; P Catarino¹;

¹ Papworth Hospital NHS Trust, UK

12:20 (10 mins)

A354 - A single centre experience of the management of aberrant subclavian artery

D Quinn¹; V Dronavalli¹; A M Ranasinghe¹; J Mascaro¹;

¹ University Hospital Birmingham, UK

12:30 (15 mins)

A355 - Do pulmonary function test results have an impact on post-operative morbidity and mortality following complex aortic surgery?

S Buderi¹; M Shaw²; T Theologou²; M Kuduvalli²; A Oo¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² Liverpool Heart and Chest Hospital, UK

12:45 (15 mins)

A356 - Frozen Elephant Trunk in chronic dissection/thoracoabdominal aneurysm. The UK experience.

A Oo¹;

¹ Liverpool Heart and Chest Hospital, UK

12:45 (15 mins)

A356 - Frozen Elephant Trunk in chronic dissection/thoracoabdominal aneurysm. The UK experience.

A Oo¹;

¹ Liverpool Heart and Chest Hospital, UK

12:45 (15 mins)

A356 - Frozen Elephant Trunk in chronic dissection/thoracoabdominal aneurysm. The UK experience.

A Oo¹;

¹ Liverpool Heart and Chest Hospital, UK

Day 3 - Mitral Techniques - (Dochart 1)

20-March-2018, at 11:30 to 13:00

Chair - Dr Patrick Perier

Chair - Mr Narain Moorjani

Chair - Prof Martin Grapow

Chair - Mr Inderpaul Birdi

11:30 (10 mins)

A357 - Permanent pacemaker insertion post-mitral valve surgery: does the type of atrial approach matter?

A Boulemden¹; D Nadarajah¹; A Szafranek¹; D Richens¹;

¹ Nottingham City Hospital, UK

11:40 (10 mins)

A358 - Extended trans-septal versus left atrial approach in mitral valve surgery: 1017 patients experience

S S Mujtaba¹; S C Clark¹;

¹ Freeman Hospital Cardiothoracic Centre, UK

11:50 (10 mins)

A359 - Resection versus non-resection techniques for Mitral Valve Repair in Barlow's disease

P Wierup²; L Svensson⁴; S Nozohoor³; A Gillinov²; S Ragnarsson³; H Vase¹; S Hyllen³; H Eiskjaer¹; C Meurling³; J Sjogren³; H Jensen¹;

¹ Aarhus University Hospital, Denmark; ² Cleveland Clinic, United States; ³ Skane University Hospital, Sweden; ⁴ The Cleveland Clinic, United States

12:00 (10 mins)

A360 - Mitral valve repair or replacement in acute infective endocarditis? Single centre experience with ten years follow up.

D Bleetman¹; A Harky¹; M Bashir¹; D Balmforth¹; B Adams¹; P Gupta¹; M T Yates¹; K Wong¹; J Yap¹; B Consortium of Surgeons¹; R Uppal¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK

12:10 (10 mins)

A361 - The impact of preservation of annulo-papillary continuity on right ventricular performance during Mitral Valve Replacement Surgery

A Ghoneim¹;

¹ Waikato Hospital, Hamilton, New Zealand

12:20 (15 mins)

A362 - Reproducible chordal reconstruction techniques

P Perier¹;

¹ Herz und Gefäß Klinik,, Germany

12:35 (15 mins)

A363 - Minimally invasive mitral repair techniques – the Basel Experience

M Grapow¹;

¹ University Basel, Switzerland

Day 3 - Ward / ITU - (Dochart 2)

20-March-2018, at 11:30 to 13:00

Chair - Mr Alastair Graham

Chair - Dr Giovanni Mariscalco

Chair - Mr David Lawrence

11:30 (10 mins)

A364 - A systematic review of the clinical outcomes and safety of prothrombin complex concentrates in cardiac surgery patients

M Roman¹; A Ahmed¹; G Mariscalco¹;

¹ University Hospitals of Leicester, UK

11:40 (10 mins)

A365 - Assessment of in-patients referred for urgent cardiac surgery by video consultation

A Cassidy¹; G Dunwoody¹; **A N Graham**¹;

¹ Belfast Health and Social Care Trust, UK

11:50 (10 mins)

A366 - Early discharge following cardiac surgery with supplemental home care practitioner visit is safe and cost-effective: a single centre experience

H Khan¹; S Garg¹; B Persaud-Rai¹; G Santhirakumaran¹; S Bhudia¹; S Raja¹;

¹ Royal Brompton & Harefield Hospitals, UK

12:00 (10 mins)

A367 - Impact of liver cirrhosis on outcomes following cardiac surgery

J M Ali¹; **K Wallwork**¹; Y Abu-Omar¹;

¹ Papworth Hospital NHS Trust, UK

12:10 (10 mins)

A368 - Intravenous iron transfusion in patients having in-house urgent cardiac surgery - does it have an effect?

M Sandhu¹; S Law¹; A Mellor¹; E A Akowuah¹;

¹ James Cook University Hospital, Middlesbrough, UK

12:20 (10 mins)

A369 - Late transfer increases the rate of operative cancellation in patients transferred for non-elective cardiac surgery

D Balmforth¹; B Adams¹; P Gupta¹; M T Yates¹; A Oo¹; R Uppal¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK

12:30 (10 mins)

A370 - The cancellation of same-day elective and urgent cardiac surgery at a large single cardiac centre in the UK

S Jasionowska¹; R F Hammond¹; W I Awad¹;

¹ St Bartholomew's Hospital, London, UK

12:40 (10 mins)

A371 - Are the KDIGO guidelines for acute kidney injury relevant to patients after cardiac surgery?

S H Howitt¹; I Malagon¹; J Dimarakis¹; C N McCollum¹; S W Grant¹;

¹ University Hospital of South Manchester, UK

Day 3 - Outcomes - (Carron)

20-March-2018, at 14:00 to 15:30

Chair - Mr Rana Sayeed

Chair - Mr Andrew Goodwin

Chair - Prof Gavin Murphy

14:00 (15 mins)

A372 - GIRFT Update

D Richens¹;

¹ UHSFT, UK

14:15 (10 mins)

A373 - Patients' perception of Cardiac Surgery outcomes data

R Salem¹; B R Waterhouse¹; N Hussain¹; Y S Haqzad¹; G Chetty¹;

¹ Sheffield Teaching Hospitals NHS Trust, UK

14:25 (10 mins)

A374 - National study of Regional Variations in Cardiac Surgery Outcomes (RVICSO)

P Theodoropoulos⁵; L Kenny³; R Beattie⁷; K Mensah⁴; L Rogers²; M Khorsandi⁶; G S Soppa⁵; D Harrison⁵; D Bleetman⁸; A Hussain¹;

¹ Castle Hill Hospital, UK; ² Derriford Hospital, UK; ³ Freeman Hospital Cardiothoracic Centre, UK; ⁴ Hammersmith Hospital, UK; ⁵ Research Collaborative of RCS England, SCTS and ACTACC, UK; ⁶ Royal Infirmary of Edinburgh, UK; ⁷ Royal Victoria Hospital Belfast, UK; ⁸ St Bartholomew's Hospital, London, UK

14:35 (10 mins)

A375 - Cardiac Surgical Safety Checklists: is a formalised valve checkpoint necessary?

N Tyson¹; F Bhatti¹;

¹ Morrision Hospital, Swansea, UK

14:45 (15 mins)

A376 - Establishment of 10 key clinical trials - National Priority setting Partnership

G J Murphy¹;

¹ BHF Chair of Cardiac Surgery, Director Leicester CTU, UK

15:00 (15 mins)

A377 - We need a UK trial in asymptomatic mitral disease

R Sayeed¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK

15:15 (15 mins)

A378 - Hunterian Lecture: NF-kB classical pathway activation by acute high shear stress and vascular inflammation: implication for vein graft failure

M Zakkar¹;

¹ 20, UK

Thoracic

Day 3 - Benign - (Boisdale 1)

20-March-2018, at 09:30 to 11:00

Chair - Miss Juliet King

Chair - Mr Ira Goldsmith

Chair - Mr Doug West

Chair - Prof Alan Kirk

09:30 (15 mins)

A379 - Management of benign mediastinal masses

E Ruffini¹;

¹ University of Torino, Italy

09:45 (10 mins)

A380 - In patients with end-stage emphysema is unilateral or bilateral lung volume reduction surgery superior for improving symptoms and quality of life?

A Monaghan¹; K Ang¹; S Rathinam¹;

¹ University Hospitals of Leicester, UK

09:55 (10 mins)

A381 - Impact of the type of initial intervention on outcome of surgically treated patients with chronic obstructive pulmonary disease

V Kouritas¹; R Milton¹; E Kefaloyannis¹; K Papagiannopoulos¹; A Brunelli¹; P

Tcherveniakov¹; N Chaudhuri¹;

¹ St James's University Hospital, UK

10:05 (10 mins)

A382 - Pulmonary actinomycosis in the 21st century – a multinational study focusing on current diagnosis and treatment of pulmonary actinomycosis

A B Almeida⁴; A Yankulov⁵; L Ferri²; A Dubecz¹; N Solymosi³; **M Schweigert**⁴;

¹ Klinikum Nuremberg, Germany; ² McGill University, Montreal General Hospital,

Canada; ³ Szent Istvan University, Hungary; ⁴ University Hospital Dresden,

Germany; ⁵ University Hospital St. George, Plovdiv, Bulgaria

10:15 (10 mins)

A383 - The impact of Level 1 trauma centre status on Thoracic Surgery

S Ajab²; J Massey¹; R Milton¹; P Tcherveniakov¹; K Papagiannopoulos¹; A

Brunelli¹; N Chaudhuri¹;

¹ Leeds Teaching Hospital NHS Trust, UK; ² Sheffield Teaching Hospitals NHS Trust, UK

10:25 (10 mins)

A384 - A twenty year, single centre experience of lung transplantation for Cystic Fibrosis

N Tyson¹; J Hasan¹; M Al-Aloul¹; K Santhanakrishnan¹; C Leonard¹; R Shah¹; P

Krysiak¹; P D Waterworth¹; J Barnard¹; R V Venkateswaran¹;

¹ University Hospital of South Manchester, UK

10:35 (15 mins)

A385 - Management of thymomas - IASLC/ITMIG update

E Ruffini¹;

¹ University of Torino, Italy

10:50 (10 mins)

A386 - Lung Volume Reduction Surgery with platelet rich fibrin - proof of concept

K Nagarajan¹; I Morgan¹;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK

Day 3 - Chest wall - (Boisdale 2)

20-March-2018, at 09:30 to 11:00

Chair - Mr Maninder Singh Kalkat

Chair - Mr Aiman Alzetani

Chair - Margaret Kornaszewska

Chair - Mr Sion Barnard

09:30 (10 mins)

A387 - The use of rib fracture classification and scoring systems in guiding clinical management and predicting outcomes in adults with multiple rib fractures

W J Hunt¹; R B Simpson¹; J R Dorman¹; J G Edwards¹;

¹ Sheffield Teaching Hospitals NHS Trust, UK

09:40 (10 mins)

A388 - Pectus Index: a novel marker for the clinical severity of pectus carinatum deformity

S Fraser²; L Harling¹; I Hunt²;

¹ Imperial College London, UK; ² St George's Hospital, University of London, UK

09:50 (10 mins)

A389 - Unifying classification of transdiaphragmatic intercostal hernia and other injuries involving the costal margin: systematic and practical nomenclature

MR Gooseman¹; M Rawashdeh¹; K Mattam¹; J N Rao¹; J G Edwards¹;

¹ Sheffield Teaching Hospitals NHS Trust, UK

10:00 (10 mins)

A390 - Complications after pectus deformity repair: risk comparison between Nuss and Ravitch procedure

M Jadoon¹; L Ross¹; V Voltzoglou¹; V Pagliarulo¹; E Addae-Boateng¹; A

Majewski¹; J P Duffy¹; M Hawari¹;

¹ Nottingham City Hospital, UK

10:10 (10 mins)

A391 - Anterior chest wall reconstruction after sternal resection for sarcoma: The Heartlands Technique

I Yim²; S Mohamed²; H Khalil¹; B Naidu¹; E Bishay¹; R Steyn¹; M Kalkat¹;

¹ Birmingham Heartlands Hospital, UK; ² University Hospital Birmingham, UK

10:20 (10 mins)

A392 - Clinical outcomes of non-compressive external bracing for pectus carinatum in a single UK centre

S Fraser²; L Harling¹; T Richards²; I Hunt²;

¹ Imperial College London, UK; ² St George's Hospital, University of London, UK

10:30 (15 mins)

A393 - Update on MARS II trial

E Lim¹;

¹ The Royal Brompton Hospital, UK

10:45 (15 mins)

A394 - Does every rib fracture need fixation?

I Hunt¹;

¹ St George's Hospital, UK

Day 3 - Contemporary - (Boisdale 1)

20-March-2018, at 11:30 to 13:00

Chair - Mr Apostolos Nakas

Chair - Mr Jayanta Nandi

Chair - Mr Rajesh Shah

Chair - Prof Karen Redmond

11:30 (10 mins)

A395 - National Thoracic surgery PPI group identify key questions in routine clinical care for further research

S Kadiri¹; J Taylor¹; A Kerr¹; M Kalkat¹; R Steyn¹; E Bishay¹; B Naidu¹;

¹ Birmingham Heartlands Hospital, UK

11:40 (10 mins)

A396 - National survey of UK medical student interest and perceptions of cardiothoracic surgery

R Preece¹; S Yatham¹; E Ben-David¹; S Rasul¹;

¹ St George's Hospital, University of London, UK

11:50 (10 mins)

A397 - 3D printing in the development of a patient specific lung resection simulator: a proof of concept experience

J L Smelt³; R Gandecha²; M Jahangiri³; K Rhode²; A Nair¹; A Bille¹;

¹ Guy's and St Thomas' NHS Foundation Trust, UK; ² King's College Hospital,

London, UK; ³ St George's Hospital, University of London, UK

12:00 (10 mins)

A398 - Long distance relationships - does the geographic distance from the transplant centre affect lung transplant outcomes?

E Khoshbin¹; J Battle¹; H Muse¹; K Wallace¹; G Ditchburn²; G Parry¹; S C Clark¹;
¹ Freeman Hospital Cardiothoracic Centre, UK; ² IAS Medical, UK

12:10 (10 mins)

A399 - Diagnosis of subsolid lung lesions with CT guided transthoracic needle biopsy

I Yim²; T Au Yong²; D Tattersall²; C Walker²; P Guest²; E L Senanayake¹; M Kalkat¹;

¹ Birmingham Heartlands Hospital, UK; ² University Hospital Birmingham, UK

12:20 (10 mins)

A400 - Clinical coding in thoracic surgery: a costly game of Chinese whispers?

K Chandarana¹; E J Caruana¹; M Cheung¹; J Haigh¹; S Rathinam¹; A Nakas¹; K Ang¹;

¹ University Hospitals of Leicester, UK

12:30 (10 mins)

A401 - Renal failure in thoracic surgery. Pilot and case for a Multi-centre Evaluation of Renal Impairment in Thoracic Surgery (MERITS) study

R Kushiwal¹; J Clayton¹; S Cook¹; G Aresu¹; A Peryt¹; J MacKay¹; **A S Coonar**¹;

¹ Papworth Hospital NHS Trust, UK

12:40 (15 mins)

A403 - Current technological advances in thoracoscopic surgery

J He¹;

¹ Guangzhou Medical University ,

12:55 (15 mins)

A141 - New gadgets and techniques in thoracic surgery

J Dunning¹;

¹ James Cook University Hospital, UK

Day 3 - VATS - (Boisdale 2)

20-March-2018, at 11:30 to 13:00

Chair - Dr Paula Agostini

Chair - Mr Edwin Woo

Chair - Miss Donna Eaton

Chair - Mr Steven Woolley

11:30 (15 mins)

A404 - VATS in lung cancer - scientific evidence

P Licht¹;

¹ Odense University Hospital, Denmark

11:45 (10 mins)

A405 - Recovery and quality of life after video-assisted thoracic surgery for lung cancer: a prospective study

K Avery¹; J M Blazeby¹; K Chalmers¹; K Tucker¹; R Houlihan¹; K Bobruk¹; P McElnay¹; G Casali¹; T J Batchelor¹; R Krishnadas¹; E Internullo¹; C Evans-Gable¹; **D West**¹;
¹ University of Bristol, UK

11:55 (10 mins)

A406 - Microlobectomy: a novel technique for pulmonary lobectomy

M Nardini⁴; P Papoulidis²; R Bilancia¹; I Mydin²; M ElSaegh³; M Migliore⁴; I Paul²; J Dunning²;
¹ Golden Jubilee National Hospital, UK; ² James Cook University Hospital, Middlesbrough, UK; ³ Liverpool Heart and Chest Hospital, UK; ⁴ University of Catania, Italy

12:05 (10 mins)

A407 - Validation of a virtual reality simulation module for training in robotic-assisted thoracic lobectomy

G Whittaker³; F Dar²; S Raveendran²; A Aydin³; P Dasgupta¹; K Ahmed¹;
¹ Guy's and St Thomas' NHS Foundation Trust, UK; ² King's College Hospital, London, UK; ³ North West Anglia NHS Foundation Trust, UK

12:15 (10 mins)

A408 - Learning VATS lobectomy as a consultant: How is the trainee's perspective affected?

M Jadoon¹; E Addae-Boateng¹;
¹ Nottingham City Hospital, UK

12:25 (10 mins)

A409 - VATS segmentectomy - less is more (patient friendly)

A J Chambers¹; W S Walker¹;
¹ Royal Infirmary of Edinburgh, UK

12:35 (10 mins)

A410 - Open thoracotomy vs. Video Assisted Thoracic Surgery (VATS) lobectomy for lung cancer and timing of delivery of post operative adjuvant chemotherapy

M Khalifa¹; A Menshawy¹; J Cave¹; A Alzetani¹;
¹ University Hospital Southampton NHS Trust, UK

12:45 (10 mins)

A411 - Video-assisted thoracoscopic surgery (VATS) in the management of primary spontaneous haemopneumothorax

A Asmat¹; H Yu¹; J Yeo¹; A Ahmed¹;
¹ Tan Tock Seng Hospital, Singapore

12:55 (15 mins)

A412 - Evolution of Thoracic Surgery in last 25 years

W Walker¹;¹ Edinburgh Royal Infirmary, UK**Day 3 - Postoperative - (Boisdale 1)****20-March-2018, at 14:00 to 15:30**

Chair - Mr Ian Hunt

Chair - Mr Doug Aitchison

Chair - Mr Emmanuel Addae-Boateng

Chair - Miss Henrietta Wilson

14:00 (15 mins)

A402 - Technology for patient benefit - The Mayo Model

S Cassivi¹;¹ Mayo Clinic, United States**14:15 (10 mins)**

A413 - Pain management of patients with rib fractures using serratus anterior catheter block – a novel technique

R Purmessur¹; S Mohamed¹; M Gorecha¹; M Bieker¹; R Steyn¹; B Naidu¹; MKalkat¹; H Fallouh¹; E Bishay¹;¹ Birmingham Heartlands Hospital, UK**14:25 (10 mins)**

A414 - Effectiveness of the new early warning score (NEWS) system in predicting adverse outcome in thoracic surgery patients

V Kouritas¹; N Cutmore¹; S Diamini¹; E Kefaloyannis¹; P Tcherveniakov¹; KPapagiannopoulos¹; A Brunelli¹; R Milton¹; N Chaudhuri¹;¹ St James's University Hospital, UK**14:35 (10 mins)**

A415 - Incidence, complication and treatment of postoperative surgical site infection after thoracic surgery. Review and application of current classification.

E Mancuso²; P M Pullinger Michael¹; F Van Tomout¹;¹ Norfolk & Norwich University Hospital NHS Foundation Trust, UK; ² Papworth Hospital NHS Trust, UK**14:45 (10 mins)**

A416 - Localisation of post-operative pain following thoracic surgery - does the surgical incision have any impact on the site of pain?

L MDunbar¹; N A Bradley¹; E D Kennedy¹; R Govindraj¹; H Monaghan¹; LHeron¹; A J Kirk¹; M Asif¹; M Klimatsidas¹;¹ Golden Jubilee National Hospital, UK

14:55 (10 mins)

A417 - Incidence of post-operative atrial fibrillation: thoracoscopic versus open lobectomy for lung cancer

Z Tahir¹; A Hussain¹; A M Habib¹; S Qadri¹; M Khalil¹; M A Chaudhry¹; M Loubani¹;
¹ Castle Hill Hospital, UK

15:05 (15 mins)

A418 - Post-operative pulmonary complications(PPC) prevention and amelioration: a Physiotherapist's perspective.

P Agostini¹;
¹ Heart of England Nhs Trust, UK

CT Forum (Nursing and AHP)

Day 3 - Cardiac - (Alsh)

20-March-2018, at 09:30 to 11:00

Chair - Mr Simon Kendall

Chair - Mrs Tara Bartley

Chair - Miss Chrissie Birkett

09:30 (10 mins)

A420 - An investigation into the use, duration and complications of epicardial pacing wires following cardiac surgery: a prospective, cross-sectional, Irish study

N Kiely¹; M Mooney²; F O'Brien²; V Young¹;
¹ St James's Hospital, Ireland; ² Trinity College Dublin, Ireland

09:40 (10 mins)

A421 - Solutions for vein distension and storage - which solution?

H Liu¹; **E Abraham**¹; D Jenkins¹; Y Li¹;
¹ Papworth Hospital NHS Trust, UK

09:50 (10 mins)

A422 - Chest radiographs after cardiac surgery: is one too many?

K Smith¹; E L Senanayake¹; H Luckraz²;
¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK; ² Heart Centre, American Hospital Dubai, UAE, United Arab Emirates

10:00 (10 mins)

A423 - Improvement in cardiac intensive care

R Patel¹;
¹ University Hospital Birmingham, UK

10:10 (10 mins)

A424 - Education and empowerment reduces anxiety in patients awaiting cardiac surgery

A Cassidy¹;

¹ Aileen Cassidy, UK

10:20 (10 mins)

A425 - Predictors of health-related quality of life after cardiac surgery: a systematic review

J Sanders¹; M Sekhon²; T Bowden²; L Aitken²;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² School of Health Sciences, City, University of London, UK

10:30 (10 mins)

A426 - Incidence of hepatic dysfunction in patients undergoing veno veno extracorporeal membrane oxygenation – initial results of an observational study

B Krishnamoorthy³; W Critchley²; K Akram¹; T Hardcastle¹; L Feddy³; R V Venkateswaran³; S Shaw³; S Spencer¹; I Malagon³;

¹ Edge hill University, UK; ² MCCR, Transplant lab, University of Manchester, UK; ³ University Hospital of South Manchester, UK

10:40 (10 mins)

A427 - Audit of patients' experience, satisfaction and quality of life following valve surgery: evaluating the impact of valve type choices

P Gukop²; G T Karapanagiotidis²; K Mattam¹; K Mani²; S Ali²; R Bilkhu²; A Momin²; J Nowell²; R K Kanagasabay²; M Sarsam²; V Chandrasekaran²;

¹ Sheffield Teaching Hospitals NHS Trust, UK; ² St George's Hospital, University of London, UK

10:50 (15 mins)

A428 - Heart Valve Voice

W Woan¹;

¹ Heart Valve Voice, UK

Day 3 - Patient Experience - (Alsh)

20-March-2018, at 11:30 to 13:00

Chair - Ms Melissa Rochon

Chair - Mr Richard Page

Chair - Mr Pete Winnard-Haley

11:30 (40 mins)

A429 - The multidisciplinary team from the patient's perspective

O Thorn¹; J Hull²;

¹ Armed Forces Para Snowsports Team, UK; ² UK Special Forces, UK

11:30 (40 mins)

A429 - The multidisciplinary team from the patient's perspective

O Thorn¹; J Hull²;

¹ Armed Forces Para Snowsports Team, UK; ² UK Special Forces, UK

12:10 (10 mins)

A430 - The benefits of a video to enhance the pre-assessment process of patient awaiting cardiac surgery

L Best¹; R Pittendrieh¹; E McIntosh¹;

¹ Royal Sussex County Hospital NHS Trust, UK

12:20 (10 mins)

A431 - Rehabilitation of patients with a Bi-Ventricular Assist Device (BiVAD) in critical care: a case study

R Fletcher¹; N Luis¹;

¹ Papworth Hospital NHS Trust, UK

12:30 (10 mins)

A432 - Understanding the experience of patients living with pulmonary hypertension (PH): a systematic review and meta-ethnography

J Quijano-Campos¹;

¹ Papworth Hospital NHS Trust, UK

12:40 (10 mins)

A433 - The use of the bed bike for patients bedbound on mechanical circulatory support: a case study

R Marscheider¹; F Nolan¹;

¹ Golden Jubilee National Hospital, UK

12:50 (10 mins)

A434 - Is patient feedback useful?

J Sharman¹; A Nakas¹; S Rathinam¹; K Ang¹; F Chowdhry¹;

¹ University Hospitals of Leicester, UK

Day 3 - Thoracic - (Alsh)

20-March-2018, at 14:00 to 15:30

Chair - Dr Joe Thekkudan

Chair - Mrs Amanda Acott

Chair - Mrs Amanda Walthew

14:00 (10 mins)

A435 - Advanced Nurse Practitioner (ANP) innovation in Thoracic Chest Drain Management

X Liu¹;

¹ University Hospital NHS Trust, UK

14:10 (10 mins)

A436 - Development of a telephone clinic for patients undergoing long-term follow-up after thoracic surgery

J Mitchell¹; C Buchanan¹; S Malone¹; F Di Chiara¹; D Stavroulias¹; E Belcher¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK

14:20 (10 mins)

A437 - Lung cancer survivorship - the first nurse-led clinic in the Republic of Ireland

R Brown¹; K Redmond¹; D Eaton¹;

¹ Mater Misericordiae University Hospital, Ireland

14:30 (10 mins)

A438 - Prehabilitation and outcomes of intervention in high-risk patients undergoing lung resection for lung cancer

E S Teh¹; **R Karanjia**¹; T Cave¹; S Gomez¹; D G West¹;

¹ School of Biological Sciences, University of Bristol, UK

14:40 (10 mins)

A439 - The clinical use of a screening tool to identify patients that require physiotherapy intervention after thoracic surgery: the results

Z M Barrett-Brown¹;

¹ Papworth Hospital NHS Trust, UK

14:50 (10 mins)

A440 - The evolution of the Thoracic Acute Pain Service alongside minimally invasive surgical techniques

H Monaghan¹; L Heron¹; E Lamont¹; **S Singh**¹; A J Kirk¹; R Zimmer¹;

¹ Golden Jubilee National Hospital, UK

15:00 (10 mins)

A441 - Nurse-led paravertebral analgesia management reduces opioid requirements of patients

H Monaghan¹; E Lamont¹; S Singh¹; **A J Kirk**¹; R Zimmer¹;

¹ Golden Jubilee National Hospital, UK

Satellite

Day 3 - AGM Meeting - (Lomond Auditorium)

20-March-2018, at 08:00 to 09:30

Chair - Mr Simon Kendall

Chair - Mr Graham Cooper

Chair - Mr Richard Page

Day 3 - Cardiac Sub-Committee - (Ness)

20-March-2018, at 09:30 to 10:30

Chair - Mr Graham Cooper

Chair - Mr John J Dunning

Day 3 - National Cardiothoracic Surgery Trainee Committee Meeting - (Leven)

20-March-2018, at 09:30 to 11:00

Day 3 - Clinical Domain Expert group meeting - (Katrine)

20-March-2018, at 09:30 to 10:30

Chair - Ms Carin van Doorn

Day 3 - Education Sub-Committee Meeting - (Ness)

20-March-2018, at 10:30 to 12:00

Chair - Mr Narain Moorjani

Chair - Mr Sridhar Rathinam

Day 3 - National Thoracic Patient Involvement Group - (Leven)

20-March-2018, at 11:00 to 13:00

Chair - Mr Amy Kerr

Day 3 - Exhibitors Meeting - (Katrine)

20-March-2018, at 11:30 to 12:30

Chair - Mr Maninder Singh Kalkat

Chair - Mr Clinton Lloyd

Day 3 - UK TAVI - (Ness)

20-March-2018, at 12:00 to 13:00

Chair - Dr William Toff

Chair - Mr Stephen Jones

Day 3 - Thoracic Audit & Quality Improvement Session - (Leven)

20-March-2018, at 13:00 to 14:30

Chair - Mr Doug West

13:00 (15 mins)

A442 - Improving lung cancer resection rates in Wales

I Goldsmith¹;

¹ Morriston Hospital, UK

13:15 (15 mins)

A443 - Data from the SCTS third national outcomes report in thoracic surgery

D West¹;

¹ Bristol Royal Infirmary, UK

13:30 (15 mins)

A444 - The Scottish QPI programme in lung cancer: implications for thoracic surgery

C Selby¹;

¹ Clinical Lead, South East Scotland Lung Cancer Network,

Day 3 - CTSNet Webinar Session - Take on the Experts - (Dochart 1)

20-March-2018, at 14:00 to 15:30

Chair - Mr Joel Dunning

Chair - Mr Neil Moat

14:00 (10 mins)

A15811 - Repair of inferior left ventricular aneurysm

14:10 (10 mins)

A15812 - Trans-apical valve in ring (VIR) mitral valve implantation through the anterior mitral valve leaflet (AMVL)

14:20 (10 mins)

A15813 - Robotically assisted Mitral Valve repair: sliding technique to prevent systolic anterior motion

14:30 (10 mins)

A15814 - Repair of a Coronary-Cameral Fistula

14:40 (10 mins)

A15815 - Left upper superior division segmentectomy using PINPOINT® Endoscopic Fluorescence Imaging System

14:50 (10 mins)

A15816 - Left VATS diaphragmatic plication

15:00 (10 mins)

A15817 - Resection of retrosternal goitre via right thoracotomy

15:10 (10 mins)

A15818 - Video-assisted thoracoscopic PlasmaJet ablation for malignant pleural mesothelioma

Day 3 - Thoracic Sub-Committee - (Leven)

20-March-2018, at 14:30 to 15:30

Chair - Miss Juliet King

Chair - Mr Richard Page

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Oral Abstracts

Presenter: **Mr Manraj Sandhu**, *Research Fellow in Cardiac Surgery, James Cook University Hospital*

Intravenous iron transfusion in patients having in-house urgent cardiac surgery - does it have an effect? A368

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Objective Whilst there is data which shows potential benefits of intravenous (IV) iron (Fe) transfusion in patients undergoing elective cardiac surgery, the effect of IV Fe in anaemic in-house urgent (IHU) patients has not previously been published. This study set out to observe a cohort of IHU patients who are anaemic and were treated with IV Fe. We investigated the effect of IV Fe on haematocrit (Hct) and blood transfusion in this group.

Methods 100 patients referred for IHU cardiac surgery were included. Anaemic patients (Haemoglobin <115g/L Female and <130g/L Male) were treated with IV Fe. Data on haematinic parameters, blood transfusion

post-operatively, 30 day mortality and length of stay were recorded. They were compared to a historic anaemic cohort of IHU patients who did not receive IV Fe.

Results Of 100 patients, 1 patient had percutaneous intervention (n=99). Thirty five patients were anaemic (35.4%). Of these, 28 patients (80%) received IV Fe prior to their procedure. The control was 24 anaemic IHU patients. The average EuroSCORE II was 4.5% (IV) and 4.85% (control). The mean time of receiving Fe before procedure was 4.57 days (SD 3.02). Baseline Hct was 34.0% (IV) and 33.0% (control). The mean Hct from the first pre-operative arterial blood gas was significantly higher in the IV Fe cohort, 33.3% (IV) and 30.5% (control) (p=0.016). The proportion of patients receiving blood transfusion in the IV Fe group was less, 61% (n=17) (IV) versus 75% (n=18) (control) but not significantly so. The mean number of units of blood received during admission was less in IV group 1.75 (1.76 SD) (IV) versus 3.08 units (3.20 SD) (control), but again not significantly so. There were no adverse events encountered with administering IV Fe.

Conclusion The proportion of IHU patients with pre-op anaemia requiring blood transfusion is high. Administration of IV Fe resulted in a significantly higher Hct prior to sternotomy. A larger trial is required to determine if IV Fe could lead to decreased transfusions.

Presenter: **Mr Giordano Perin**, *CST2, Liverpool Heart and Chest Hospital*

Analysis of the effect of the introduction of an automated knot fastener on operating time and clinical outcomes in minimally invasive mitral valve surgery *A181*

Authors **G Perin**¹; M Shaw¹; P Modi¹;

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Objective Cardiopulmonary bypass (CPB) and aortic cross clamp (AXC) time have been shown to be associated with clinical outcomes. There is limited data on the effects that the introduction of automated knot fasteners (Cor-Knot®) has on operative times and outcomes in minimally invasive mitral valve repair (MIMVR). Our aim was to evaluate the effect of the introduction of these devices on CPB and AXC times and post-operative outcomes.

Methods We included all patients undergoing isolated MIMVR by a single surgeon between March 2011 and March 2016 (n=108). Two cohorts were created based on the use (n=52) or non-use (n=56) of an automated knot fastener. We collected and compared data concerning intra-operative variables and post-operative outcomes.

Results Pre-operative characteristics were similar between the two groups, no significant difference was detected in terms of logistic EuroSCORE (manual vs automated: median 3.1 (IQR 2.1-5.5) vs 5.4 (2.2-8.3), p=0.07, respectively). CPB and AXC times were significantly shorter in the automated knot fastener group (CPB: median 200 mins (IQR 180-227) vs 165 min (IQR 145-189), p<0.001; AXC 134min (IQR 121-150) vs 111min (IQR 91-137), p<0.001, respectively). No death or stroke was recorded in either group. No difference was detected in terms of post-operative outcomes between the two groups.

Conclusion The use of an automated knot fastener significantly reduces cardiopulmonary bypass and aortic cross clamp times in minimally invasive mitral valve repair but this does not translate into an improved clinical outcome.

Presenter: **Mrs Melanie Freas**, *Cardiac Surgery ACNP-BC, MSN, , University of Pennsylvania*

An independent run advanced practice provider clinic for aortic valve repair surveillance A303

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Objective To provide uninterrupted annual surveillance for patients within an increasing growing cardiac surgery practice with limited clinical days, a select group of patients were selected to see a nurse practitioner in lieu of the surgeon. The purpose of this study was to examine the feasibility of developing a nurse practitioner run clinic for aortic valve repair patients within our institution. Patient compliance and satisfaction score were also assessed. This clinic was established to off load follow up patients from the current surgeon run clinic to allow room for new patient visits. A second objective was to evaluate the impact of a Nurse Practitioner utilizing a patient satisfaction survey.

Methods In December 2015, the surgeon selected 96 patients be moved off the clinic schedule for 2016 and seen by (APP). Each patient was sent a letter of explanation for change in provider and appointment date. At the completion of the visit a modified Sullivan/Luallin, Inc/Medical Group Management survey (SLIMGM) for patient satisfaction was sent. Surveys were returned by mail and follow up phone calls were made to encourage completion. The echocardiogram studies were reviewed at the time of visit. Electronic medical records were used to completed visit. Surveys consisted of a series of questions with a 1-5 rating scale. One being the lowest score and 5 being the highest score.

Results 96 patients were selected and 82 (85%) agreed to be seen by the APP. There was an 86% response and completion of the survey. The average total patient satisfaction score was 4.9 out of the 5.0 scale.

Conclusion The impact of an APP run clinic has had a dramatic overall effect on the surgical practice. There was a substantial increase in access for new patients, while those patients seen in the APP ranked their visit with high marks.

Presenter: **Mr Ivan Yim**, *ST2 , Queen Elizabeth Hospital, Birmingham*

Anterior chest wall reconstruction after sternal resection for sarcoma: The Heartlands Technique A391

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Objective Sternal resection is indicated for malignant and intractable infective conditions. A robust reconstruction of the resultant defect is essential for structural and functional integrity of chest wall. In pursuit of an ideal prosthesis, we have developed a cost-effective novel technique of chest wall reconstruction following sternal resection.

Methods From April 2010, 7 patients undergoing chest wall resection involving varying parts of manubrium-sternum and adjacent ribs for malignancy were included in this study. After resection, a pocket corresponding to the size of the defect is fashioned in a double layer of marlex mesh. This pocket is filled with a thin layer of methyl Methacrylate. Before the cement sets in, one or two titanium bars are passed through the layer of cement. The location of these bars corresponds to the edges of the resected ribs. This composite graft is anchored to the ribs by attaching the bars to the crimps secured to these ribs. The prosthesis is then covered with well vascularized muscle, myocutaneous flap or omentum.

Results The mean age was 52 yrs and 4 were women. Five patient presented with chondrosarcoma of sternum and 2 had recurrent breast cancer. Three patients had resection of manubrium and sternal body with adjacent clavicles and ribs. Four patients had resection limited to sternum and ribs. All seven patients were extubated after the procedure. None of the patients had any respiratory complications. The mean length of stay was 9 days (range 7-21 days). One patient required revision of tissue flap. At mean follow up of 22 months, all patients continue to remain well, with minimal chest discomfort and no incident of prosthetic failure.

Conclusion The methylmethacrylate- marlex mesh-titanium bars composite prosthesis is cost-effective, constructed during operation conforming to size of defect, it is robust and gives stability to chest wall. We have recorded good early outcomes and further functional studies will be performed to confirm physiological benefits.

Presenter: **Ms Elaine Teh**, *SpR Thoracic Surgery, University Hospital Bristol NHS Trust*

Cardiopulmonary exercise testing and the prediction of major adverse events in high-risk patients undergoing lung resection ^{A236}

Authors ES Teh¹; S Sinha¹; N A Joshi¹; K Kamalanathan¹; M K Molyneux¹; N J Rasburn¹; T J Batchelor¹; G Casali¹; E Internullo¹; R Krishnadas¹; D G West¹;

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Objective Lung cancer is the commonest cause of cancer death in UK. The BTS has produced guidance on management of patients with lung cancer. For high risk patients, formal exercise testing, such as cardiopulmonary exercise testing (CPET) for further stratification is recommended. However, the additional predictive benefit of CPET over clinical assessment has not been defined, especially in the era of VATS. We sought to determine whether CPET, clinical assessment or both provided the most accurate prediction of adverse events.

Methods This is an analysis of high risk patients undergoing lung resection in our unit who had undergone pre-operative CPET between August 2009 and May 2016. Clinical and CPET data were collected. Logistic regression analyses were conducted with 3 models to predict whether morbidity or death occurred

within 1 month of surgery (Model 1 using only clinical variables, Model 2 using clinical and CPET variables and Model 3 using only CPET variables).

Results 258 patients underwent CPET following initial assessment, and 218 underwent surgery. The mean age was 68±9, with 58% men. 229 (89%) were current or ex-smokers. The pre-operative clinical data were (in mean±SD) BMI 27±6, maximum METS 6±6, %FEV1 predicted 72±22, %TLCO predicted 63±18, ASA 2.5±0.6, MRC 1.2±1 and performance score 0.8±0.7. The CPET indices were VO₂max/kg 19±5, O₂ pulse 11±4, %HR peak 89±16, ventilator efficiency VE/VCO₂ 32±6, breathing frequency (BR) peak 33±7, %BF 119±28 and %breathing rate (BR) 114±62. 125 patients underwent VATS and 92 open surgery. Mortality was 3%. 93 patients had complications above Grade II (Clavien-Dindo classification). The results of the 3 models tested are shown in Table 1, showing Model 2 reliably distinguished between those who did and did not experience morbidity, $\chi^2(25)=55.61$, $p<0.0005$.

Conclusion In assessing high risk patients, CPET should be interpreted with clinical parameters for maximum predictive effect. Patients should not be declined surgery based purely on CPET assessment.

Presenter: **Dr Julie Sanders**, *Director of Clinical Research, St Bartholomew's Hospital*

Predictors of health-related quality of life after cardiac surgery: a systematic review A425

Authors J Sanders¹; M Sekhon²; T Bowden²; L Aitken²;

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Objective Traditionally, outcomes after cardiac surgery have focused on mortality and morbidity. Health-related quality of life (HRQoL) better reflects the overall impact of surgery on patients' lives. The aim of this systematic review was to identify predictors of HRQoL after cardiac surgery that could possibly be targeted to improve patient outcome.

Methods A MEDLINE search using the terms: "Cardiac Surgery" AND [(“Quality of life”) AND (“outcome assessment”)] appearing in full text was conducted. Only papers in English, published between 2001-2017 on adult patients and using a recognised and validated HRQoL tool were included. Studies including other interventions (eg. pacemaker insertion), those undertaking two-group comparisons and descriptive only studies were excluded. Full-text review for inclusion (100% agreement) and data quality assessments were undertaken independently by two authors. A standardised template was used for data extraction.

Results Overall, 514 papers were identified and screened with 13 papers included in the review. Most were prospective observational studies on coronary artery bypass graft surgery patients (54%), assessed HRQoL outcome between 1-6 months post-surgery (54%) and measured HRQoL using the SF-36 (77%). Overall, 35 pre-, one intra- and 17 post-operative predictors were identified, including the potentially modifiable risk factors of body mass index, smoking and emotional well-being. Within the factors identified, diabetes mellitus and pain (1-6 months and 8.2 years) and EuroSCORE, Quality of Recovery-40, length of hospital stay (up to 6 months and

between 1-3 years) were the only predictors at >1 follow-up time-point. All variables, except diabetes and pre-operative physical component score, were identified in only one study.

Conclusion Despite identifying 53 predictors of HRQoL after cardiac surgery, there was a lack of consistency across studies. Further multivariable examination of predictors in large cohorts is needed to identify potential areas for intervention.

Presenter: **Mr Paul Rival**, *Medical Student, University of Bristol*

Transthoracic Clamp versus Endo-aortic Balloon Occlusion in minimally invasive mitral valve surgery: a systematic review and meta-analysis A178

Authors P M Rival⁶; T Moore⁶; H Hamilton⁶; Z Du Toit⁶; U Benedetto¹; L Muller²; M Grimm²; M Solinas⁴; E Akuowah³; S Hunter⁵; M Caputo¹; G D Angelini¹; H Vohra¹;

¹ Bristol Heart Institute, UK; ² Department of Cardiac Surgery, Medical University Innsbruck, Austria; ³ James Cook University Hospital, Middlesbrough, UK; ⁴ Monasterio Foundation Heart Hospital, Massa, Italy; ⁵ Sheffield Teaching Hospitals NHS Trust, UK; ⁶ University of Bristol, UK

Objective This meta-analysis with systematic review aims to determine outcomes following aortic occlusion with the transthoracic clamp (TTC) versus endo-aortic balloon occlusion (EABO) in patients undergoing minimally invasive mitral valve surgery (MIMVS).

Methods A systematic electronic search of Medline and Embase was used to identify the latest studies up to June 2017 comparing TTC versus EABO in MIMVS. Primary outcomes of interest included all-cause mortality, cerebrovascular accident (CVA; <30 days), cardiopulmonary bypass (CPB) and aortic cross-clamp (AoX) times. Secondary outcomes of interest included acute kidney injury (AKI), aortic dissection and micro embolic events per patient. Risk ratios and weighted mean differences with their 95% confidence intervals (CIs) were analysed using a random effects model in Review Manager (Version 5.3. Copenhagen: The Nordic Cochrane Centre).

Results 11 observational studies met the inclusion criteria representing a population of 4,118 patients. There was no significant difference in the risk of post-operative death, CVA or AKI between the two techniques. TTC was associated with a significantly shorter AoX time (mean difference [-10.03], 95% CI, [-17.29] to [-2.77], p = 0.007) as well as a shorter CPB time than EABO (mean difference [-11.63], 95% CI, [-21.09] to [-2.17], p = 0.02). Evidence for a reduction of aortic dissection with TTC was also found: 4/1590 for the TTC group versus 19/2492 for the EABO group (RR, 0.33, 95% CI, 0.12 to 0.93, p = 0.04). A significantly higher risk of micro embolic events measured by means of continuous automated intraoperative transcranial Doppler (TCD) evaluations was reported with TTC versus EABO (mean difference 64.50, 95% CI, 55.31 to 73.69, p < 0.00001).

Conclusion Despite a higher risk of aortic dissection with EABO and micro embolic events with TTC, the rates of survival and CVA with both aortic occlusion techniques in MIMVS is similar.

Presenter: **Mrs Zoe Marie Barrett-Brown**, *Deputy Team Leader Physiotherapist, Papworth hospital*

The clinical use of a screening tool to identify patients that require physiotherapy intervention after thoracic surgery: the results A439

Authors **Z M Barrett-Brown¹**;

¹ Papworth Hospital NHS Trust, UK

Objective In 2016 a clinical screening tool was developed to assess which patients have a high risk of developing postoperative pulmonary complications (PPC) consequently needing physiotherapy and those at low-risk not requiring physiotherapy. High-risk would be a current smoker undergoing a lobectomy and low risk would be a lung biopsy patient with no underlying lung disease. The aims of this study were 1. to see if the screening tool is capturing the correct patients and 2. to see if minimal lung resection (segmentectomy and wedge resections) could be categorised as low-risk using the same screening tool.

Methods Data was collected between September 2016 and August 2017 on all patients requiring thoracic surgery. Patients were screened on postoperative day 1 (POD1) by a physiotherapist. If a patient screened in, the reason why was recorded and if there was any physiotherapy specific reasons. Any patients that screened out were referred back to physiotherapy if complications occurred after the initial screening and the reason was recorded.

Results 519 patients were screened, 406 (78.22%) screened as high-risk and were treated by a physiotherapist and 113 (21.77%) screened out as low-risk. 3 (2.65%) patients (2 video-assisted technology surgery (VATS) lung biopsies and 1 VATS pleural biopsy) that screened out were referred back to physiotherapy and required treatment (1 for poor mobility, 1 decreased upper limb function and 1 for sputum retention). A total of 39 (7.51%) minimal lung resections were carried out, 26 (66.66%) having no physiotherapy specific problems and 13 (33.33%) required physiotherapy; 6 for poor mobility, 3 for sputum retention and 4 had increased oxygen requirements.

Conclusion The clinical screening tool is accurately screening low-risk patients after thoracic surgery, allowing for more physiotherapy time and resources to be available for high-risk patients. However more data needs to be collected into minimal lung resection, to see if this patient group can be categorised as low-risk.

Presenter: **Dr Per Wierup**, *Staff, Cardiac Surgeon, Thoracic & Cardiovascular Surgery, Cleveland Clini*

Resection versus non-resection techniques for Mitral Valve Repair in Barlow's disease A359

Authors **P Wierup²**; L Svensson⁴; S Nozohoor³; A Gillinov²; S Ragnarsson³; H Vase¹; S Hyllen³; H Eiskjaer¹; C Meurling³; J Sjogren³; H Jensen¹;

¹ Aarhus University Hospital, Denmark; ² Cleveland Clinic, United States; ³ Skane University Hospital, Sweden; ⁴ The Cleveland Clinic, United States

Objective Barlow's disease is demanding to repair, and traditional resection techniques often requires a substantial effort and prolonged cross-clamp time. The purpose of this study was to compare traditional resection techniques with non-resectional techniques creating neochords using Gore-tex.

Methods All patients (n=102) scheduled for mitral valve surgery with the diagnosis of Barlow's disease were retrospectively divided into two groups: traditional resection techniques using resections, chordal transfers, or additional Gore-Tex chords as needed (n= 24) and non-resection using Gore-Tex chords (n= 78). The mean age was 54±9 years in the resection group and 51±9 years in the non-resection group. The patients were followed by repeated clinical and echocardiographic examinations according to local routines.

Results All patients underwent successful mitral repair. There were no perioperative deaths or >1+ mitral regurgitation at discharge. The ECC and x-clamp time were shorter in the non-resection group 121±41 min vs 158±40 min (p<0.001) and 79±25 min vs 122±31 min (p<0.001). No patients in the non-resection group needed inotropes on postoperative day 1 vs 29% in the resection group (p=0.015). Prolonged intensive care unit stay (>24hrs) was zero in the non-resection group vs 33% in the resection group (p<0,001). Overall hospital stay for the non-resection group was 5 days (IQR 4-7) in comparison to 10 days (IQR 7-12) for the resection group (p<0,001). During follow-up, 5.0 years (IQR 2.9-7.6), one patient in the resection group died three years after surgery. No patient needed reoperation and there were no systolic anterior motion. Freedom from death, reoperation, or >1+ mitral regurgitation did not differ between the two groups.

Conclusion The non-resection technique is safe and effective. The ECC and x-clamp times are significantly shorter and seem to translate into significantly less need for inotropic support, ICU stay, and overall hospital stay. The intermediate durability is comparable to conventional resection techniques.

Presenter: **Mr Muhammad Rafiq**, ST6, Papworth Hospital

Frailty and American College of Surgeons National Surgical Quality Improvement Program risk calculator in UK Cardiothoracic Surgery single centre experience A343

Authors **MURafiq**¹; D Jenkins¹; M Screaton¹; M Berman¹;

¹ Papworth Hospital NHS Trust, UK

Objective Frailty and post-operative length of stay is a major factor affecting patient flow and productivity. Present risk assessment tools are unable to predict length of stay and incorporate frailty. Post-operative length of stay (LoS) is a major factor affecting patient flow and productivity. Reduced time in hospital has better outcome relating to morbidity, cost-effectiveness and patient experience. Aiming to assess correlation between observed LoS (oLoS) versus predicted LoS (pLoS) in cardiothoracic surgery patients in UK using the ACS-NSQIP scoring tool.

Methods One hundred patients undergoing elective or urgent cardiothoracic procedures (coronary bypass, valve replacement and thoracic resections) from September to November 2016 were included. LoS was predicted using the ACS-NSQIP risk calculator (pLoS). Pearson's correlation between LoS and pLoS was

obtained. Univariate regressions between LoS and pLoS and frailty (Rockwood clinical frailty scale) were used. Multiple regression was performed to assess other variables.

Results Data ranges: age 35-92 years (mean 69.39), M:F ratio 2:1, predicted LoS (pLoS) from 3.5-26.5 (mean 7.65) days, LoS (LoS) 2-47 (mean 8.48) days, Intensive care stay 1-1128 hours (mean 48.9 hours), Frailty score 1-8 (mean 2.87), Pearson's correlation between oLoS and pLoS was 0.73 ($p < 0.001$). Multiple regression was run to predict oLoS and following variables were able to show significant relation, intensive care stay ($p < 0.000$), pneumonia ($p = 0.018$), re-admission ($p = 0.005$) and return to theatre ($p < 0.000$). While oLoS was significantly predicted by pLoS ($p = 0.003$).

Conclusion This small pilot study suggests that ACS-NSQIP risk assessment is able to predict LoS for UK cardiothoracic surgery patients. Our institution aims to join the ACS-NSQIP register and recruit all cardiothoracic patients (2500/year), to improve quality of care, better patient flow and discharge planning. Better measures of frailty have to be developed to improve the predictive value of ACS-NSQIP.

Presenter: **Mr Cameron Bishop**, *Ward Manager, BSUH NHS Trust Brighton*

Implementing Red2Green days on a busy cardiac ward helped to reduce length of stay and thus improve patient flow, as well as enhance patient and staff experience A301

Authors C Bishop¹;

¹ Brighton and Sussex University Hospital NHS Trust, UK

Objective Red2Green is an initiative that focuses on reducing wasted time in the patient's care. With patient flow in the NHS continuing to be a major factor, the implementation of Red2Green, along with auditing patient flow and measuring constraints, provided a positive patient experience by reducing length of stay (LOS), and improving staff satisfaction.

Methods We attended an NHSI conference about Red2Green to provide an insight into what we could do to improve the flow of patients on our ward. We sought a more structured multi-disciplinary team (MDT) board round, involving individual discussions around Red and Green bed days and introducing mid-afternoon safety huddles. Actions for the day, if they occurred, would become a green day and if they did not, a red day therefore prolonging LOS. With the launch of Red2Green we also promoted #endpjjparalysis to encourage patients to get out of their pyjamas into their own clothes to promote more independence, aiming to reduce LOS. We developed placemats on each bedside table, asking 4 key questions that the patient, relatives and staff could answer or ask to provide a much more positive patient experience. We audited these key questions before and after implementation to analyse if there was any significance.

Results From very early on in the deployment of Red2Green our results demonstrated a reduction in mean LOS by 3 days compared to the same period in 2016. When patients were asked the 4 key questions, prior to the implementation of placemats, 60-70% of them knew the answer, compared to 100% after. Speaking with patients, they were more satisfied with all aspects of their care compared with prior to starting Red2Green. Staff morale has

been noticeably different with the sickness rate falling by 3% and staff turnover dropping also by 3% compared to same period in 2016.

Conclusion Red2Green has been proven to be a successful tool in reducing LOS and thus improving patient flow, improving patient experience and improving staff satisfaction and morale.

Presenter: **Mrs Ranj Patel**, *Matron, Queen Elizabeth Hospital Birmingham*

Improvement in cardiac intensive care *A423*

Authors R Patel¹;

¹ University Hospital Birmingham, UK

Objective Issues on Cardiac Critical Care: - Poor throughput of elective cardiac cases - Medically struggling to cope on nights due high number of complex patients - 50% cardiac skills nurses - High number of external agency nurse usage - Junior nurses feeling unsupported - Low morale amongst nursing workforce - Poor retention of nurses

Methods Solving the issues: - Reducing the number of cardiac surgery cancellation - Participated in improvement in service delivery for patient - Introduction of new manager - Demonstrated strong commitment to make improvement

Results Outcomes: - Nursing - Developed Levels of competency doc - Educational needs met - New starter programmes and starting mechanical device training programmes - Introduction of National Competency book - Improved retention - more unit meeting, listening to staff, addressing concerns - Recruitment days were own staff involved - Improved morale

Conclusion Contribution: - Taking direct responsibility for concerns raised and dealing with the issues - Supported in reducing cancellation of cardiac operations - Improvement quantity and quality of nursing workforce

Presenter: **Dr Alexandru Visan**, *FY2, Southampton General Hospital*

The Ross procedure versus Prosthetic Valve Replacement in young and middle-aged adults: a systematic review and meta-analysis *A217*

Authors A C Visan¹; D M Dorobantu¹; D P Fudulu¹; M Caputo¹; H Thom³; E Keeney³; J Round³; M T Sharabiani²; S C Stoica¹;

¹ Bristol Heart Institute, UK; ² Imperial College London, UK; ³ University of Bristol, UK

Objective To compare outcomes (mortality, reintervention rates and valve-related complications) following the Ross procedure in relation to conventional aortic valve replacement (AVR) with either a mechanical

or a biological prosthesis.

Methods MEDLINE, EMBASE and the Cochrane Library were searched for studies published between 1990 and 2016 in adults aged 18 years and above. 8,370 studies were screened and assessed by full text. Publications were rated for inclusion by a second independent reviewer. Data from 41 observational studies and 2 clinical trials were pooled using a random effects model.

Results We identified 48 cohorts with a total number of 12,975 patients with a mean age of 44.5 years and a mean follow-up of 7.1 years. Mortality over the follow-up period was lower in Ross patients (0.54%, 95% CI [0.45; 0.64] vs 1.14%, 95% CI [1.11; 1.74] and 2.50%, 95% CI [1.80; 3.59], $p < 0.0001$) when compared to mechanical and tissue AVR. There were no significant differences in early mortality between groups. The Ross procedure was associated with decreased bleeding rates compared to mechanical and tissue AVR (0.11%, 95% CI [0.06; 0.20] vs 0.69%, 95% CI [0.50; 0.96] and 0.31%, 95% CI [0.14; 0.69], $p < 0.0001$). The number of thromboembolic events was also lower following the Ross procedure (0.26%, 95% CI [0.19; 0.37]) in comparison to mechanical and tissue AVR (0.86%, 95% CI [0.62; 1.18] and 0.57%, 95% CI [0.39; 0.84], $p < 0.0001$). Surgical reintervention on the aortic valve was reduced in Ross patients (0.54%, 95% CI [0.42; 0.69]) compared to tissue AVR (1.28%, 95% CI [0.88; 1.85]) but higher compared to mechanical AVR (0.37%, 95% CI [0.27; 0.50], $p < 0.0001$).

Conclusion Current evidence suggests that the Ross procedure represents a better option in young and middle-aged adults with aortic valve disease not amenable to repair. This is emphasized by this meta-analysis but reliance on these figures is reduced due to limited data, primarily observational, justifying the need for high-quality randomised controlled trials.

Presenter: **Dr George Whittaker**, *FYI Doctor, North West Anglia NHS Foundation Trust*

Validation of a virtual reality simulation module for training in robotic-assisted thoracic lobectomy *A407*

Authors **G Whittaker**³; F Dar²; S Raveendran²; A Aydin³; P Dasgupta¹; K Ahmed¹;

¹ Guy's and St Thomas' NHS Foundation Trust, UK; ² King's College Hospital, London, UK; ³ North West Anglia NHS Foundation Trust, UK

Objective To assess the construct and face validity of a new thoracic lobectomy module on the RobotiX Mentor, a previously validated robotic surgery simulator. We also aim to determine the acceptability and feasibility of implementation in surgical training.

Methods This prospective, observational and comparative study recruited novice (n=16), intermediate (n=9), and expert (n=4) participants from King's College London and at the European Society of Thoracic Surgeons' 25th European Conference on General Thoracic Surgery. Each participant completed two familiarisation tasks followed by the 'Guided Robotic Lobectomy' module and an evaluation questionnaire. Outcome measures of participants were compared using Mann-Whitney U tests to assess construct validity.

Results Construct validity was demonstrated in a total of 12/21 performance evaluation metrics. Experts and intermediates outperformed novices in all metrics including: time taken to complete module ($p=0.0403$),

vascular injury ($p=0.0166$), number of stapler firings ($p=0.0032$), number of instrument collisions ($p=0.0253$), time instruments out of view ($p=0.0100$), and number of movements ($p=0.0160$). Participants deemed aspects of the simulator (mean: 3.7/5) and module (3.4/5) as realistic and rated the simulator as both acceptable (4.1/5) and feasible (3.8/5) for robotic surgical training.

Conclusion Construct and face validity were established for the thoracic lobectomy module of the RobotiX Mentor robotic surgery simulator. Acceptability and feasibility for implementation in surgical training were also determined. This simulation module could help to reduce the initial steep part of the learning curve for robotic trainees and decrease the risk of errors during live training. Evaluation of content, concurrent and predictive validity is required to complete validation.

Presenter: **Miss Rebecca Fletcher**, *Physiotherapist, Papworth Hospital NHS Foundation Trust*

Rehabilitation of patients with a Bi-Ventricular Assist Device (BiVAD) in critical care: a case study *A431*

Authors **R Fletcher**¹; N Luis¹;

¹ Papworth Hospital NHS Trust, UK

Objective Levitronix Centri-mag Bi-Ventricular Assist Devices are used in order to manage advanced heart failure as a short term therapy in order to bridge patients to transplantation or recovery at a UK transplant centre. Due to the nature of this support at this centre the patient remains in Intensive Care for the duration. This review seeks to 1. explore the rehabilitation progression of a case study patient in order to optimise their physical condition for transplant 2. review the rehabilitation activity of BiVAD patients over a 12 month period.

Methods In order to report this case study a retrospective review of clinical notes has been conducted to review the content of physiotherapy sessions and patients physical activity status as measured by the Chelsea Critical Care Physical Assessment tool (CPAx). Rehabilitation was conducted in accordance with hospital policy; which includes standardised surgical implantation, ECMO Specialists or perfusionists and advanced competencies for physiotherapists, ensuring safety for these complex patients.

Results Of the 11 patients that received BiVAD support from June 2016 – June 2017, 10 underwent rehabilitation sessions with no serious adverse events. One patient's BiVAD support was withdrawn prior to the commencing rehabilitation. The case study patient achieved physically independent ambulation and use of the static bike within 10 days of BiVAD implantation. The mean duration of BiVAD support for all patients was 30.2 days with all patients achieving a CPaX score of over 26. Overall scores ranged from 26 to the maximum of 45 indicating full physical independence. This improvement indicates a gain in physical function from admission with advanced heart failure and predicts a shorter post-transplant rehabilitation period.

Conclusion Further investigation would be warranted into if, due to improved organ perfusion, BiVAD patients had a higher physical status and reduced length of stay post-transplant than those receiving solely inotropic support.

Presenter: **Mr Metesh Acharya**, *Research Fellow, St. George's Hospital*

Aortic cross-sectional area/height ratio identifies at-risk patients who do not meet conventional criteria for surgery *A352*

Authors M Acharya¹; P Youssefi¹; O Valencia¹; M Edsell¹; R Morgan¹; M Tome¹; M Jahangiri¹;

¹ St George's Hospital, University of London, UK

Objective Significant proportions of aortic dissections occur at aortic diameters <5.5 cm. By indexing aortic area to height and correlating with absolute aortic diameter, we sought to identify aneurysm patients at increased risk of aortic complications with abnormal indexed aortic areas >10 cm²/m and corresponding aortic diameters <5.5cm, who do not meet current size thresholds for surgery.

Methods Indexed aortic areas were calculated at six aortic locations in 187 aneurysm and 66 dissection patients operated between 2010-2016. Proportions of patients with indexed aortic area >10 cm²/m, mean indexed aortic areas corresponding to aortic diameters <4.0 cm, 4.0-4.5 cm, 4.5-5.0 cm, 5.0-5.5 cm and >5.5 cm, and mean aortic diameters corresponding to indexed aortic areas 10-12 cm²/m, 12-14 cm²/m and >14 cm²/m were determined.

Results Proportions of patients with abnormal indexed aortic areas were similar in aneurysm and dissection groups. 49.1% of patients with aneurysms and aortic diameters 4.5-5.0 cm, and 98.5% with aortic diameters 5.0-5.5 cm, had abnormal indexed aortic areas. 84.3% of patients with indexed aortic area >10 cm²/m at the mid-sinus level had mean aortic diameters <5.5 cm, compared to 62.9% at the sino-tubular junction, and 58.8% at the mid-ascending aorta. Only 139 patients (69.5%) out of 200 patients who have an IAA >10 cm²/m between the mid-sinus of Valsalva and mid-ascending aorta would warrant surgery according to basis of existing guidelines.

Conclusion Using the indexed aortic area, we identified a significant proportion of patients with thoracic aortic aneurysms who are at increased risk of aortic complications, despite current aortic guidelines not endorsing surgical intervention in this group. The data supports the use of indexed aortic area in pre-operative risk evaluation and as a criterion for surgical intervention.

Presenter: **Mr Metesh Acharya**, *Research Fellow, St. George's Hospital*

Cross-sectional area / height ratio at the mid-sinus and sino-tubular junction predicts dissection risk in aortic aneurysms *A170*

Authors M Acharya¹; P Youssefi¹; O Valencia¹; M Edsell¹; R Morgan¹; M Tome¹; M Jahangiri¹;

¹ St George's Hospital, University of London, UK

Objective The aortic cross-sectional area / patient height ratio has been validated in the stratification of mortality risk in patients with a tricuspid aortic valve and dilated aorta. In this patient group, an indexed aortic

root area $>10 \text{ cm}^2/\text{m}$ has been shown to have significant independent prognostic value. We assessed the ability of the indexed aortic ratio to predict the risk of acute type A aortic dissection.

Methods Indexed aortic areas were calculated using multi-planar imaging at six aortic locations (mid-sinus, sino-tubular junction, mid-ascending aorta, proximal arch, mid-arch, proximal descending aorta) in 66 dissection patients and 158 aneurysm patients who underwent surgery between 2010-2016 at our centre. Demographic, clinical and operative data were obtained from our institutional database and medical record review. Univariate analyses of categorical and continuous variables were performed using Chi-square and Fisher's Exact test. The distribution of continuous variables was assessed for normality with the Shapiro-Wilk Test, and both groups were compared using Mann-Whitney U tests. A backward stepwise multivariate logistic regression analysis was used to determine pre-operative indexed aortic areas at the six aortic locations, as predictors of acute type A dissection.

Results Regression analysis demonstrated significance for the indexed aortic area at the mid-sinus ($p=0.005$) and sino-tubular junction ($p=0.003$) as a predictor of acute type A dissection. However, there was no significant correlation between indexed aortic area at the mid-ascending aorta ($p=0.15$), proximal aortic arch ($p=0.75$), mid-arch ($p=0.54$) or proximal descending aorta ($p=0.11$) and risk of acute type A aortic dissection.

Conclusion Our data supports that cross-sectional area/patient height ratio at the mid-sinus and sino-tubular junction in aneurysms is a predictor of acute type A dissection. Indexed aortic areas distal to the aortic root do not predict dissection risk.

Presenter: **Mr Doug West**, *Thoracic Surgeon, University Hospitals Bristol*

Recovery and quality of life after video-assisted thoracic surgery for lung cancer: a prospective study ^{A405}

Authors K Avery¹; J M Blazeby¹; K Chalmers¹; K Tucker¹; R Houlihan¹; K Bobruk¹; P McElnay¹; G Casali¹; T J Batchelor¹; R Krishnadas¹; E Internullo¹; C Evans-Gable¹; **D West**¹;

¹ University of Bristol, UK

Objective Video assisted (VATS) approaches are increasingly used in lung cancer surgery, accounting for 54% of activity in the 2014-15 registry. Little is known about the impact on patients' health-related quality of life (HRQL). This prospective study describes recovery and HRQL in the first year after VATS surgery for non small-cell lung cancer.

Methods Consecutive eligible patients selected for resection for proven/suspected NSCLC in a single UK centre were identified. Patients completed HRQL assessments (European Organisation for Research and Treatment of Cancer QLQ-C30 and QLQ-LC13, Multidimensional Fatigue Inventory MFI-20) before and 1, 3, 6 and 12 months post-surgery. Mean HRQL scores (EORTC: 0-100, MFI-20: 0-20) were calculated. A ≥ 10 point change in EORTC scores was considered clinically relevant. Mean scores and 95% confidence intervals (CIs) are presented.

Results Of 92 patients (53 (57.6%) men, mean age 70.3 (SD 8.8), mean Thoracoscore 1.74 (1.03)) receiving VATS resection, 88 (96%) completed HRQL questionnaires pre-surgery. 71 (77.2%) were scheduled for lobectomy or bilobectomy. At each follow-up time-point, ≥ 67 (75.3%) patients completed questionnaires. While pain and global HRQL returned to pre-surgery levels by 3 months, at 12 months patients reported clinically significant and sustained increases in fatigue (baseline, 1m, 12m mean scores and CIs: 23.7, 19.1-28.4; 49.2, 43.3-55.1; 36.3, 29.3-41.4) and dyspnoea (24.1, 19.2-29.1; 48.8, 41.7-56.0; 45.7, 38.0-53.4) and deteriorations in social (86.9, 82.1-91.8; 62.8, 54.8-70.7; 76.7, 69.5-83.9) and physical function (84.9, 81.2-88.6; 63.9, 58.7-69.1; 73.5, 68.8-78.1).

Conclusion VATS lung cancer resection has considerable detrimental impacts on patients' HRQL at 12 months post-surgery. For informed treatment decisions, clinicians should provide patients with information about expected recovery and impact on HRQL. Fatigue and dyspnoea symptoms may have been previously underestimated.

Presenter: **Mr John Massey**, *ST5, NHS*

Navigational bronchoscopy: the future of diagnostic lung cancer surgery? *A251*

Authors **J Massey**¹; A Brunelli¹; E Kefaloyannis¹; R Milton¹; K Papagiannopoulos¹; P Tcherveniakov¹; N Chaudhuri¹;
¹ St James's University Hospital, UK

Objective At present in the UK, when investigating pulmonary nodules the options available for tissue diagnosis include image guided percutaneous biopsy (CTBx), bronchoscopy (Bx) or surgical biopsy. Patients whose lesions are not amenable to less invasive biopsy techniques may be referred directly to surgical biopsy. We are the second UK centre to offer a novel technique for obtaining diagnostic tissue using electromagnetic navigational bronchoscopy (ENB) thus negating the need for the surgeons' knife for biopsy alone. We aim to show that setting up a multi-consultant ENB diagnostic programme is feasible, safe and yields a high diagnostic rate.

Methods All patients were discussed at a local MDT with a surgeon present. We prospectively collected data on the first cohort of patients to undergo ENB (using the Medtronic Super-D system) including biopsy results and subsequent management. ENB was used as a second line diagnostic procedure when CTBx or Bx was not possible.

Results 5 surgeons performed 24 procedures. The sensitivity and specificity were 0.5 and 0.133 respectively. Positive predictive value was 1, accuracy was 0.562. Average length of time to perform procedure was 59mins. There were 2 post-operative pneumothoraces. 96% of the false negative results were obtained using CT slices more than 1mm and occurred in the 1st 14 procedures. Anecdotally, the surgeons found the procedure easier to perform with CT slices of 1mm.

Conclusion Our results likely reflect the learning curve associated with performing any new procedure. We have shown encouraging results in terms of picking up 1 in 2 cancers at an early stage, in our experience. However, we have also shown we cannot accept a negative result as truly diagnostic at present. Further cases

will allow us to gauge the extent of the learning curve in a Thoracic Surgical Unit with six surgeons, for this novel diagnostic procedure. This will then allow us to ascertain the true negative predictive value for cancer of this (second line) diagnostic procedure.

Presenter: **Mr Mehmood Jadoon**, *ST8, Nottingham University Hospitals NHS Trust*

Learning VATS lobectomy as a consultant: How is the trainee's perspective affected? *A408*

Authors **M Jadoon**¹; E Addae-Boateng¹;

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Objective Twenty-six years after report of video assisted thoracic surgery (VATS) lobectomy for non-small cell lung cancer (NSCLC), it is widely accepted this technique has many advantages over the traditional open thoracotomy. The technique is yet to be universally adopted by thoracic surgeons. The learning curve is described as difficult, requiring many cases to reach competence. We present results of a consultant who learned the approach on the job. It also assesses whether the transition period impacted on trainee opportunities.

Methods Data of a single surgeon was collected from August 2013 to September 2017 at a single centre. Cases completed by thoracoscopy were trimmed down to 118 VATS, compared with 80 open lobectomies for NSCLC. The assessment include VATS/open rate, conversion for bleeding, peri-operative outcomes and cases performed by the trainee.

Results The approach changed progressively during the learning period with a transition from open to VATS in the middle of the studied period as shown in table 1. Table 1 Conversion for bleeding was 2.5% (3/118) with less than 500ml loss in each case. 21.3% (17/80) atrial fibrillation occurred after open with 8.5% (10/118) following VATS. Six patients after thoracotomy and 7 in the VATS group had air leak more than 7 days. Morbidity also included sputum retention, confusion, nausea/vomiting/constipation, reoperation for bleeding, pain, pneumonia, and electrolyte imbalance. Deaths were recorded in 1.6% (2/118) following VATS and 1.3% (1/80) open lobectomies. Trainee opportunities are presented in table 2. Table 2

Conclusion It is safe to adopt VATS lobectomy as a consultant without adversely affecting patient outcomes while realizing role as trainer.

Presenter: **Mr Michael Schweigert**, *Head of Department, University Hospital Dresden*

Pulmonary actinomycosis in the 21st century – a multinational study focusing on current diagnosis and treatment of pulmonary actinomycosis *A382*

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University, Hungary; ⁴ University Hospital Dresden, Germany; ⁵ University Hospital St. George, Plovdiv, Bulgaria

Objective Pulmonary actinomycosis is an uncommon chronic bacterial infection. It is often confused with other suppurative conditions and particularly with lung cancer. As most studies are at least some decades old, we aimed to analyse the current pattern of disease in the 21st century.

Methods In a retrospective study we identified all patients with pulmonary actinomycosis at 5 tertiary referral hospitals in Canada, Bulgaria and Germany between 2000 and 2017. Demography, presence of risk factors, comorbidity, clinical presentation, diagnostic measures, treatment and outcome were analysed.

Results There were 30 patients (25 men, mean age 54 years). Clinical symptoms were cough (17), haemoptysis (6), weight loss (12), chest wall infiltration (6), fistulisation through the chest wall (6) and sepsis (3). Radiographic findings were tumour-like mass-lesion (13), cavity (4), lung abscess (6) and pleural empyema (4). FDG-PET was positive in 4 cases with tumour-like mass-lesion. Common risk factors were alcoholism (11), smoker (15), COPD (11) and dental disease (8). Extrapulmonary manifestations were rare (2). The mean Charlson Score of Comorbidity was 2.13. Diagnosis was obtained via bronchoscopy (12), CT-guided biopsy (3) and surgery (15). Patients with tumour-like lesion needed significantly more frequently surgery to obtain diagnosis (OR: 7.38; 95% CI: 1.22-60.99; p=0.02), were more often smokers (OR: 15.73; 95% CI: 2.18-205.60; p=0.02) and had a higher rate of lobectomy (OR: 22.91; 95% CI: 1.92-1348.01; p=0.01). There were no significant differences in mortality (p=1) and disease free at last consultation (p=0.71) between operative and non-operative patients.

Conclusion As clinical appearance, risk factors and typical comorbidity of pulmonary actinomycosis and lung cancer are very similar, distinction between tumour-like lesion of the lung caused by actinomycosis and lung cancer is extremely challenging. FDG-PET is not helpful. In cases of tumour-like lesion surgery is the mainstay to rule out lung cancer.

Presenter: **Mr Jonathan Afoke**, *Cardiothoracic Registrar, Hammersmith Hospital*

Cardiopulmonary exercise testing as a new indication for surgery in primary mitral regurgitation - early results from the RIPCOM 1 study ^{A335}

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Objective Many patients are referred late for surgery for primary mitral regurgitation (MR) resulting in impaired operative mortality and prognosis. Reasons include late referral, non-compliance with guidelines and insensitivity of current investigations in detecting LV impairment. Our primary aim is that CPEX is a new independent predictor of post-operative LVEF, functional capacity and quality of life.

Methods The Right Ventricular Pulmonary Circulation Continuum in Mitral Valve Disease Study 1 (RIPCOM 1, ClinicalTrials.gov Identifier NCT03155373) is a prospective observational study. Patients undergoing surgery undergo additional cardiopulmonary exercise testing (CPEX), cardiac MRI and quality of life

questionnaire pre-op and 6-9 months after surgery. Patients are stratified into group A (normal pre-op CPEX with peak VO₂ >80%) and group B (impaired pre-op CPEX with peak VO₂ <80%).

Results As of October 2017, 15 patients have entered the study. There is no significant difference in clinical characteristics between group A (n=8) and group B (n=7). There was a significantly lower percentage predicted peak VO₂ (67.4±9.9% vs. 90.1±5.8%, p=0.0001) and anaerobic threshold (45.4±8.5% vs. 56.8±8.7%, p=0.02) in group B compared to group A. In spite of reduced functional capacity, there is no significant difference in LV ejection fraction or dimensions. In spite of group B having reduced functional capacity, a non-significant lower proportion of patients have impaired LVEF (29% vs. 63%, p=0.15). Early post-op results suggest that patients in group A maintain preserved CPEX parameters and LVEF. Although patients in group B may recover normal LVEF and improve their post-op CPEX, but it does not return to normal.

Conclusion Early results from the RIPCOM 1 study suggest impaired pre-op CPEX is independent of current echo triggers for surgery. Initial post-op results suggest patients with impaired CPEX do not recover a normal CPEX post-op, suggesting CPEX may be a new indication for surgery.

Presenter: **Mrs Jayne Sharman**, *Advanced Nurse Practitioner, University Hospitals of Leicester*

Is patient feedback useful? A434

Authors J Sharman¹; A Nakas¹; S Rathinam¹; K Ang¹; F Chowdhry¹;

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Objective Patient experience is unique and individualised, which varies with one's own ideas and conceptions. Within our unit, we have held a Thoracic Surgery Patient Experience Day (TSPED) for the last five years to gain insight and feedback into the patients in-hospital stay. Past patients and their significant others have been invited to attend, to share their experience in a view to continually improve the hospital experience for future patients being admitted.

Methods Annually, every third patient was chosen from the wards admission book over a fixed time period. By picking in this way, it allowed for a diverse sample in terms of age, gender, ethnicity. An invitation, reply slip and agenda outlining the day was posted to the individuals. 500 patients have been invited over the 5 years with 102 participating.

Results An agenda was formulated to guide the day but not restrict the input of the attendees. The Thoracic Nurse Specialists, ward staff have assisted in the day. They aided patients, in identifying both positive and negative aspects around identified themes (Communication & Information Giving, Ward Environment, Facilities and Routine, Thoracic Specialist Nurses, Discharge Process & Clinics, The Patient Journey). The Consultants also held a Q&A session for the participants. The ward Physiotherapist and Head of Nursing also attended to ascertain feedback to aid improvement. Following the TSPED an action plan was formulated and posted out to the attendees with a realistic timeframe for the action points to be achieved.

Conclusion As each year has passed, the negative feedback from the participants has reduced and been replaced with further positive reinforcement of their, in-hospital stay. The TSPED has provided us with many

points for celebration, but also allows us to continue to evaluate and improve on the service that we give. As a unit, we feel this is a valuable day that we will continue to replicate and is now being replicated throughout the Trust.

Presenter: **Miss Niamh Kiely**, *Advanced Nurse Practitioner, St James's Hospital*

An investigation into the use, duration and complications of epicardial pacing wires following cardiac surgery: a prospective, cross-sectional, Irish study *A420*

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¹ St James's Hospital, Ireland; ² Trinity College Dublin, Ireland

Objective To determine the percentage of patients who use epicardial pacing wires which are inserted after cardiac surgery. Also to determine complications including delayed removal.

Methods Data was collected prospectively for all cardiac surgical patients over a 5 month period. Demographic data, operative procedure and detail relating to pacing wires were recorded.

Results Pacing wires were inserted in 164 of 167 patients having cardiac surgery. Of these, the majority (74%) of patients did not require pacing at any stage. Patients were further divided into those who had AVR as a component of their operation (42) and those who did not (122). Of those having AVR 26% (11) used their wires, including 9% (4) who went on to permanent pacemaker. 50% (21) of this group had their epicardial wires removed by day 4. Of the non AVR patients, 23% (28) used their wires. Permanent pacemaker happened only in the context of tricuspid valve replacement for 2 patients. Of the non AVR patients who required temporary post-operative pacing, 18 were paced for less than 12 hours. 2 were paced for 1 day post op; 4 were paced for 2 days. 0 for 3 days and 2 for 4 days, none of this group required temporary pacing beyond 4 days post op. 54% (66) had their wires out by day 4. The standard protocol in the research site is for unused pacing wires to be removed on day 4 post operatively but not to remove wires on weekends. 53% (87) of all cases had wires removed by day 4. 18% (29) had wires removed on day 5, 17% (28) on day 6 and 10% (16) had wires removed after day 7. A small number of patients died with pacing wires in situ (n=4; 2.4%) and a small number (n=3; 1.8%) were delayed as anticoagulation had to be stopped prior to wire removal. There were no pacing wire related complications apart from delayed discharge.

Conclusion The majority of patients having pacing wires did not require pacing and wire removal was uncomplicated in this study. The policy in this centre not to remove pacing wires on weekends delayed discharge for a significant number of patients.

Presenter: **Mr Ross Marscheider**, *Senior Physiotherapist, Golden Jubilee National Hospital*

The impact of implementing a band 4 physiotherapy assistant practitioner in critical care on rehabilitation milestones *A291*

Authors R Marscheider¹; K Lyon¹; F Nolan¹;

¹ Golden Jubilee National Hospital, UK

Objective Physiotherapy has a key role in the rehabilitation of patients following prolonged intubation after cardiothoracic surgery (Herdy et al, 2008). The current practice at the Golden Jubilee National Hospital (GJNH) is to assess and treat patients twice a day for rehabilitation. This project looks to measure the impact of increasing the number of rehabilitation sessions by introducing a band 4 physiotherapy critical care practitioner (PCCP).

Methods The primary outcome measure for this project relates to the rehabilitation milestones currently used at the GJNH, in particular the number of days patients require from start of active rehabilitation to independent sitting balance. Secondary outcomes are critical care length of stay and overall hospital length of stay. The physiotherapist will continue to see the patients twice per day and in addition to this they will be seen once or twice per day by a band 4 PCCP. This role will involve active or passive movements with patients depending on their conscious state and the use of the bed bike when appropriate. The cohort of patients used will be any patient in the intensive care unit who has been intubated for longer than 72 hours, excluding patients on mechanical circulatory support and patients following heart transplant. The data collected will be compared with retrospective data from patients before the start of the project.

Results This project is in its infancy thus there are no results to date. The hypothesis is that the increased input from physiotherapy will reduce the time it takes for patients to reach specific rehabilitation goals and therefore reduce the length of critical care stay and overall hospital stay. It is expected that there will be sufficient data to present by March 2018.

Conclusion The role of a band 4 PCCP has the potential to be highly effective in patients with critical care acquired weakness. This project aims to show the impact of this new role and its effect on rehabilitation milestones and patient length of stay.

Presenter: **Dr Dan-Mihai Dorobantu**, *Cardiology Trainee, Bristol Royal Hospital for Children*

Balloon versus surgical aortic valve repair in neonates and infants - results from a national database ^{A279}

Authors D M Dorobantu²; R Tulloh²; M T Sharabiani¹; A J Parry²; A Tometzki²; S C Stoica²;

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Objective Optimal choice of aortic valve (AV) repair in neonates and infants is still controversial and largely down to institutional preference. We aim to use data from the United Kingdom national audit to report modern results with these techniques in neonates and infants and investigate predictors of outcomes.

Methods Survival and freedom from aortic valve reinterventions were estimated with the Kaplan-Meier method. A modulated renewal approach was used, resetting the time-to-event variables at each aortic valve reintervention, in order to evaluate the impact of repeated procedures on outcomes.

Results A total of 647 neonates and infants (mean age 71 days) undergoing 888 AV procedures were included. Overall, unadjusted survival at 10 years after AV repair was 89.3%, freedom from AVR was 78.7% and freedom from any AV reintervention was 60.2%. Predictors of long term mortality in multivariable analysis were: AVR after repair (HR 3, p=0.02), lower age (HR 1.01/day, p<0.001), ventricular septal defect (HR 3.5, p=0.004) and initial concomitant arch repair (HR 2.5, p=0.04). Predictors for AVR (Figure) were BAV reintervention (HR 2.8, p=0.001), SAV reintervention (HR 3.6, p<0.001), subaortic stenosis (HR 2.8, p=0.001). There were no significant differences in outcomes between patients undergoing either BAV or SAV as initial procedures. The mean time interval from initial repair to AVR or death was shorter after initial SAV (1 year) when compared to initial BAV (2.2 years), and was also shorter when a SAV was performed during follow up (0.4 years) when compared to only BAV reinterventions (2.4 years).

Conclusion BAV and SAV have comparable results when performed as an initial procedure. AVR during childhood after BAV or SAV is associated with increased mortality. Requiring either BAV or SAV as a reintervention is associated with increased risk for AVR, with BAV appearing to be a better choice for postponing AVR in isolated AV stenosis. Further studies are needed to investigate this hypothesis.

Presenter: **Prof Tom Treasure**, *SCTStt120847, Clinical Operational Research Unit UCL*

Establishing an intracardiac operation for infundibular and pulmonary stenosis in Fallot's Tetralogy in 1948-9: evidence discovered in The Peacock Club minutes A281

Authors T Treasure¹;

¹ Clinical Operational Research Unit, UCL, UK

Objective Children with cyanotic congenital heart disease, known as 'blue babies' were untreatable until Helen Taussig proposed a systemic to pulmonary shunt, achieved in dogs by Vivien Thomas, and in patients by Alfred Blalock at Johns Hopkins from 1944. Blalock introduced the operation to Guy's during a month's exchange visit in September 1947, a major impetus in convening The Peacock Club in April 1948. Surgery for congenital disease had thus far been extra-cardiac but Russell Brock saw direct operations within the heart as the future. The discovery of the full minutes of 47 meetings allowed a study of the events leading to the Brock procedure, a combined operation on the infundibulum and the pulmonary valve.

Methods A study of the Club minutes, the fortnightly Guy's Hospital Gazette, the quarterly Guy's Hospital Reports, and the national journals was undertaken.

Results Reflecting on Blalock's visit the cardiologist Maurice Campbell wrote in the Gazette "in September 1946 I chose the first [patient] ... all this time Mr Brock had been discussing with me a more direct attack ... the stenosis that leads to obstruction of the pulmonary circulation is not always at the valve, but may be more infundibular". In the minutes in November 1948 Campbell analysed 460 congenital heart patients seen at Guy's since Blalock's visit; in January 1949 the subject was development of the heart; in April heart catheterisation and the Bing test were presented; in May the subject was angiocardiology and in June Mr Brock reviewed the muscular arrangement of the infundibulum. During the same time frame, November 1948 to July 1949 Brock,

operated on 11 patients with three deaths. He did 7 further operations at Johns Hopkins during November 1949 where Blalock adopted the operation.

Conclusion It was uncertain at the outset that there would be benefit from either the shunt or the direct operation while the septal defect remained, but the benefit was great in many patients who survived to have full anatomical repair in later years.

Presenter: **Mrs Jenny Mitchell**, *ANP Thoracic Surgery, Oxford University Hospitals NHS Foundation Trust*

Development of a telephone clinic for patients undergoing long-term follow-up after thoracic surgery *A436*

Authors **J Mitchell**¹; C Buchanan¹; S Malone¹; F Di Chiara¹; D Stavroulias¹; E Belcher¹;

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Objective Patients undergoing long-term follow-up after lung cancer surgery in our institution follow an imaging based follow-up programme. Protocol led CT imaging followed by out-patient appointments every 6 months for two years after surgery then annually until year 5 is undertaken. Feedback from patients indicated they find two trips to the hospital burdensome and they frequently requested results of surveillance imaging over the telephone. Limited capacity in the thoracic surgery clinics led to long waits for an appointment to be informed of imaging results. To address these issues, we developed a model of nurse led telephone follow-up after surveillance imaging.

Methods A proposal to hold one telephone clinic per week was proposed to commissioners in the autumn of 2016. Following approval, the telephone clinic commenced in April 2017. Patients are allocated to the telephone clinic once CT results are available. They are given a timed appointment and the telephone number they will be contacted on is confirmed prior to the appointment. A database is completed during the appointment, a record of the consultation is made in both paper and electronic patient records and a letter is sent to the GP and other teams who have contact with the patient.

Results In the first seven months (April to October 2017) there were 129 patient appointments in 24 telephone clinics. Average call length is 10 minutes with a range of 3 to 20 minutes. Every patient scheduled for a telephone appointment was contactable at the appointed time. Satisfaction with the clinic is high with 97% patients requesting their next follow-up appointment in the telephone clinic. Clinic capacity was increased at reduced cost to commissioners as a telemedicine appointment is charged at £25.34 compared to £70.16 for a face-to-face appointment.

Conclusion Early results suggest nurse led telephone clinics are an effective way of providing follow-up to patients on an imaging based follow-up programme after surgery. They are well received by patients.

Presenter: **Mr Mario Petrou**, *Cardiac Surgeon, Oxford University Hospitals NHS Foundation Trust*

Aortic Valve Repair Techniques: an early experience from a single UK centre *A330*

Authors R Greco¹; X Jin¹; M Petrou¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK

Objective Aortic valve repair (AVr) is an evolving area with only few European centres reporting a large volume experience. Very few other surgical units, especially in the UK, have adopted this approach as an alternative to standard aortic valve replacement even in patients with pure aortic regurgitation (AR). Our aim is to report our early experience with AVr techniques carried out by a single experienced aortic surgeon.

Methods Between August 2008 and October 2017, 58 patients with a mean age of 49 years (range 19-85) underwent aortic valve conserving surgery for AR. The mechanism of the AR was either primary (cusp prolapse or perforation) or secondary (aortic root and/or ascending aneurysms). 14 patients had a bicuspid aortic valve (BAV). Standard repair techniques were used including free-edge plication (17 cases), free-edge reinforcement (1 case), sub-commissural annuloplasty (27 cases), commissural resuspension (47 cases) and STJ-remodelling (42 cases). 11 patients underwent concomitant procedures including mitral valve repair, hemi-arch replacement, resection of sub-aortic membrane and CABG.

Results All patients underwent successful AVr including 1 patient who required a 2nd pump run. The post-bypass trans-oesophageal echo demonstrated no/trace AR in 47 (83%) cases, mild central AR 7 (12%) cases and mild eccentric AR in only 3 (5%) cases. 30 day survival was 100%. 2 patients suffered post-operative strokes. No cases required permanent pacemaker insertion. At a mean follow-up of 2.3 years (+/- 1.95) all patients are alive and well. 45 (79%) patients have no or trace AR, 11 (21%) have moderate AR and 1 patient underwent a re-operation for recurrence of severe AR.

Conclusion We report our early experience with AVr techniques for patients with pure AR due to a variety of mechanisms. Despite achieving an excellent immediate (post-bypass) technical result in most cases we remain cautious about the long-term durability. We therefore continue to carefully evaluate AVr in our practice.

Presenter: **Mrs Kathryn Smith**, *Cardiothoracic Nurse Practitioner, Royal Wolverhampton Trust*

Chest radiographs after cardiac surgery: is one too many? ^{A422}

Authors K Smith¹; E L Senanayake¹; H Luckraz²;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK; ² Heart Centre, American Hospital Dubai, UAE, United Arab Emirates

Objective The use and number of chest x-rays (CXR) performed post cardiac surgery vary between centres. The objective of this service evaluation was to assess whether clinical assessment is as good at identifying pathophysiology requiring intervention post cardiac surgery as a routine CXR, thus reducing the use of CXRs post-op, reducing radiation exposure and saving costs.

Methods This is a retrospective review of 100 consecutive patients who underwent cardiac surgery in 2017. Medical notes, clinical assessments and the post drain removal CXR (DRX) were used to assess whether

there was a need for a routine pre-discharge CXR. We then assessed the completed CXR to assess if there would have been a change in the clinical management.

Results Only 8 patients' pre-discharge CXR (8%) demonstrated any abnormality that required a clinical change in the current management plan. In all of these patients, either the post-drain removal CXR or the clinical assessment predicted that a change in clinical management was warranted. This was then confirmed by the pre-discharge CXR. The predictive value of clinical assessment, for change in management, had a specificity of 0.84 and a sensitivity of 0.88 with the respective values for the DRX being 0.90 & 0.88.

Conclusion The majority of the pre-discharge CXR's were not required (92%). Clinical assessment along with the DRX are effective in assessing if a change in clinical management is required. This would reduce patients' radiation exposure and could have saved the department at least £23,000 (92x£25x10) per annum (based on 1000 procedures/year).

Presenter: **Miss Amy Haddock**, *Team Lead Occupational Therapist, Papworth Hospital*

The introduction of a new self-assessment patient questionnaire - All About Me A289

Authors **A Haddock**¹; M P Gilhooly¹; M Lincoln¹; M Berman¹; L Shirley¹; J Williams¹; M Rafiq¹;

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Objective Our aim was to reduce the amount of delayed discharges from patients waiting in hospital for care packages or adaptive equipment. It was also to reduce the amount of time spent by the Occupational Therapy team chasing up information (home environmental details such as furniture heights) when patients had already been admitted to hospital. We also aimed to improve patients expectations on their discharge, by engaging them and their families in the discharge process, so that adequate support was arranged.

Methods We set up a multi-disciplinary team consisting of: Occupational Therapist, Physiotherapist, Ward-based Advanced Nurse Practitioner, Consultant Surgeon, Pre-admission Nurse, Communications Administrator, Deputy Director of Nursing, Registrar. We adapted a patient self-assessment questionnaire already successfully used in another local hospital to reflect the needs of our patient group. This was given out during pre-admission clinic visits, then brought in with the patient at time of admission, with the expectation that these will be filled in at home with family/carer support.

Results Patient feedback has been positive so far, and most have been completed thoroughly. Ongoing audit to determine amount of time potentially saved and whether the booklets have helped to reduce length of stay.

Conclusion We decided that it would be more effective to send the booklet out with the patients first invitation to clinic letter, so that when these were brought in completed to clinic, the nursing staff could review them, refer to the discharge team if needed and scan them into their EPR. This would allow the Occupational Therapy team to contact the patient at home and order any adaptive equipment/refer to appropriate services before they were admitted to hospital.

Presenter: **Miss Helen Woollard**, *Neuro Specialist Physiotherapist, Papworth Hospital NHS Foundation Trust*

A year in the life of a Cardiothoracic Stroke Team A292

Authors H Woollard¹; R A Baddeley¹;

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Objective To benchmark practise to evaluate current standards of stroke care against local policy and NICE guidelines CG68 and CG162. To compare the 2016 audit results against 2015 results to identify areas of improvement and development. The national incidence of stroke post CABG and post AVR surgery are 0.9% and 1.9% respectively.

Methods This was a prospective audit of inpatients experiencing a stroke in 2016. An audit form was used to collect data from 71 patients to reflect the NICE guidance requirements. Inclusion criteria specified that patients had evidence of stroke on imaging and/or neurological symptoms of greater than 24 hours duration. Patients were excluded if they presented with a stroke on arrival, hypoxic brain injury or a subdural haematoma.

Results Mean average length of stay fell by 2.7 days, an improvement of 14%. The local incidence of stroke post CABG and post AVR are 1.2% and 3.4% for 2016 respectively. 48% of patients were transferred for ongoing care within five days of being medically stable for transfer. 100% of patients were assessed by a Physiotherapist (PT) within 24 hours of symptoms onset. 94% of patients received PT five days per week. Speech and language therapy referrals rose from 38% to 86%. Social work referrals rose from 27% to 66%. 11% of patients received Occupational Therapy (OT) five days a week and 10% received 45 minutes of therapy as appropriate.

Conclusion * Ward based link nurses now disseminate key changes in service delivery. * A monthly newsletter and dedicated intranet site facilitate staff education. * A single point of access referral has expedited the stroke pathway, promoting more timely referrals to the MDT. * Funding for a generic B4 assistant post and a B6 neuro specialist post ensures enhanced service provision. * A business case has been accepted to allow for protected OT hours on critical care. * Attendance at monthly surgical audit meetings and a launch event continue to raise the profile of stroke care hospital wide.

Presenter: **Mr Sanjeet Singh Avtaar Singh**, *Research Fellow, Golden Jubilee National Hospital*

The role of Mechanical Circulatory Support (MCS) as a bridge to decision in Cardiogenic shock (CS) after ST-Elevation Myocardial Infarction (STEMI) A268

Authors S Singh¹; S D Das De¹; J Dalzell¹; A Sinclair¹; H Doshi¹; P Curry¹; N Al-Attar¹; S Nair¹;

¹ Golden Jubilee National Hospital, UK

Objective Cardiogenic shock (CS) complicates 5-15% of ST-segment Elevation Myocardial Infarctions (STEMIs). Prognosis of CS in this setting is poor with mortality up to 90% due to tissue hypoperfusion and end-organ dysfunction. Early institution of MCS [extracorporeal membrane oxygenation (ECMO) or short-term

ventricular assist device (ST-VAD)] improves prognosis of these patients by enabling bridging to recovery, transplantation or institution of long-term ventricular assist device (LT-VAD). We report our experience as a tertiary referral centre for MCS and transplantation.

Methods Retrospective review of data was done on all patients registered to the MCS service after PPCI (January 2009 - October 2017). The database was interrogated for patient demographics, type of and duration of MCS support, PCI-outcomes, length of stay and survival. A time-to-event analysis was performed with successful bridging as the primary outcome.

Results Twenty-five patients (17M:8F) were included in this study. The median age of the patients was 50 (45-56) years. ECMO was the initial MCS of choice in 17 (68%) patients and ST-VAD for 8 (32%) patients. The 30-day survival after any form of MCS in post-PPCI CS was 72%. 18 (72%) patients were successfully bridged to decision. The median length of in-hospital MCS support was 8 days. Median in-hospital stay was 27 days. Primary ECMO usage was associated with a higher 30-day mortality compared to ST-VAD but resulted in a better long-term survival at 6 years follow up.

Conclusion Timely institution of MCS in young patients with post-STEMI CS improves 30-day survival significantly. In our centre, majority of these patients (72%) were successfully bridged with MCS to decision making.

Presenter: **Mr Nicholas Bradley**, *CSTI, Golden Jubilee National Hospital*

Training in Cardiothoracic Surgery in the UK – analysis of the GMC National Training Survey ^{A198}

Authors N A Bradley¹; M Asif¹; J Butler¹; A J Kirk¹;

¹ Golden Jubilee National Hospital, UK

Objective Regional variation in surgical training is a well recognised phenomenon though is supported by a relatively poor body of evidence. A 2015 survey of UK cardiothoracic trainees highlighted trainees' perceptions that they received too few assigned working hours operating time. The GMC National Training Survey (GMC-NTS) defines quality of training by 17 parameters, however does not include operating experience, highlighting discrepancies between trainees' and trainers' perceptions of what constitutes optimal training. This study aims to describe the current regional variation in training experiences of cardiothoracic trainees in the UK.

Methods The 2017 results from the GMC-NTS were obtained as routine data from the GMC website. Trusts reporting incomplete or absent data were excluded. Each of the measured parameters was assigned a score based on deviation from mean value which was used to provide a composite score for each trust used in ranking. The Pearson's correlation coefficient of this method with "overall satisfaction" as reported by trainees was assessed and reported as r².

Results 43 centres were surveyed. Complete data sets were available for 30 centres. Significant correlation between our composite ranking and trainee reported "overall satisfaction" r² (28) = 0.81, p <0.05. Ranking of centres is shown in table 1.

Conclusion Cardiothoracic Surgery remains one of the most competitive surgical specialties at both ST1 and ST3 level. The data from the 2017 GMC-NTS highlight significant regional variation in quality of training, which, when combined with regional variability in training number availability depending on year of application, highlight the lottery by which a trainee's experience may be defined. Development of a novel training assessment tool incorporating trainees' and trainers' parameters, as well as objective measures such as examination performance and logbook completion is required. This will allow prospective trainees to make a more informed choice of training centre.

Presenter: **Mr Maziar Khorsandi**, *Transplant fellow, Duke University Medical Center*

Outcomes after extra-corporeal right ventricular assist device combined with durable left ventricular assist device implantation *A271*

Authors **M Khorsandi**¹; M Bishawi¹; P Winterton¹; J Schroder¹; M Daneshmand¹; C Patel¹; J Rogers¹; C Milano¹;

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Objective The incidence of severe right ventricular failure requiring a right ventricular assist device (RVAD) following insertion of a durable continuous flow (CF) left ventricular assist device (LVAD) ranges from 10-15%. We aimed to assess outcomes from durable CF LVAD requiring RVAD support and study the rate of ability to wean RVAD support.

Methods All data were acquired from the mechanical circulatory support (MCS) and billing database at the Duke University Medical Center (DUMC). All patients who had temporary extracorporeal RVAD at the time of or within 7 days of implantation of a durable, CF LVAD from Oct 2007-Oct 2017 at the DUMC were included. The institutional review board prospectively approved this analysis. Total artificial heart (TAH)/intra-corporeal BiVADs were excluded.

Results 1192 consecutive CF LVADs were implanted. There were 42 (3.5%) consecutive patients that met the inclusion criteria. RVAD patients were predominantly male (n=36, 86%). Twenty-four (57%) had LVADs as a bridge to transplant (BT), 17 (40%) were supported for destination therapy and 1 (3%) had LVAD with intention to bridge to recovery. Durable LVAD type included HeartMate II (n=22, 52%), HeartWare (n=17, 40%) and HeartMate 3 (n=3, 8%). RVAD duration ranged from 2-41 days (Mean=16.5 days, SD+/-12). Extracorporeal RVAD type included CentriMag (n=34, 81%) followed by RotaFlow (n=7, 17%) and AB5000 (n=1, 2%). 76% (n=32) were weaned to isolated LVAD. 21 (50%) had OHT. Major stroke rate was 17% (n=7). 38% (n=16) had renal failure. The Mortality rate on BiVAD was 12% (n=5). 28% (n=12) died after RVAD wean (OHT excluded, Fig 1 & 2). Large attrition rate was seen in the first 6 months following RVAD extraction (Fig 2).

Conclusion The rate of need for RVAD in this large CF LVAD experience remains very low. A high percentage of patients with BiVAD support could be weaned to isolated LVAD. However, the mortality of patients after RVAD explant remains high without OHT emphasizing the urgent need for transplant in candidates.

Presenter: **Mr Jonathan Afoke**, *Cardiothoracic Registrar, Hammersmith Hospital*

Differences between echocardiography and cardiac MRI in primary mitral regurgitation A336

Authors J Afoke¹; S Kanaganayagam¹; L Howard¹; S Gibbs¹; P Punjabi²;

¹ Hammersmith Hospital, UK; ² Imperial College London, UK

Objective Left ventricular ejection fraction (LVEF) and dimensions remain important indications for surgery and a predictor of heart failure and impaired prognosis in primary mitral regurgitation. Although transthoracic echocardiogram (TTE) is the most common imaging modality in assessment, there is evidence to suggest superior accuracy and precision with cardiac MRI. Our aim is to quantify differences between TTE and cardiac MRI in a prospective surgical cohort.

Methods The Right Ventricular Pulmonary Circulation Continuum in Mitral Valve Disease study 1 (RIPCOM 1, ClinicalTrials.gov Identifier NCT03155373) is a prospective observational study. Patients undergoing surgery under current guidelines undergo additional cardiopulmonary exercise testing (CPEX), cardiac MRI and quality of life questionnaire pre-operatively and at 6-9 months after surgery.

Results As of October 2017, 15 patients have entered the study of whom 14 have had cardiac MRI. All pre-operative TTE and cardiac MRIs were within 3 months of each other. Mean LVEF is significantly higher with cardiac MRI compared with TTE (69.4% vs. 58.0%, $p=0.0014$) with a moderate degree of correlation (Pearson correlation co-efficient 0.53). However, there was a high degree of correlation between left ventricular end systolic diameter on TTE and volume on MRI (Pearson correlation co-efficient 0.89) and left ventricular end diastolic diameter on TTE and volume on MRI (Pearson correlation co-efficient 0.87).

Conclusion LVEF is significantly higher on MRI compared to TTE, with only a moderate degree of correlation. However, there is high correlation between measurements of ventricular dimension on TTE and cardiac MRI. This implies pre-operative LVEF of 60% on cardiac MRI cannot be used as an accurate indication for surgery in primary MR and MRI specific values of LVEF and dimensions as indications for surgery are needed.

Presenter: **Mr Bil Kirmani**, *Consultant Cardiac Surgeon, Liverpool Heart and Chest Hospital*

Can you start a program without a learning curve in minimally invasive cardiac surgery? A200

Authors B H Kirmani¹; A Knowles¹; P Saravanan¹; J Zacharias¹;

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Objective Previous European publications have suggested an extended learning curve to safe adoption of minimally invasive cardiac surgery. Having done a structured fellowship in a European centre with a large experience, we sought to define our learning curve with the IntraClude™ Intra-Aortic Occlusion device.

Methods We undertook an analysis of our prospectively collected database for all patients operated on at our institution for minimally invasive mitral, tricuspid, atrial septum or atrial fibrillation surgery. 316 consecutive patients were identified including 124 patients having a double valve or concomitant procedure and 31 patients having redo procedure.

Results Patient demographics were representative of the surgical population (median age 64.5y, 61.1% male, 10.4% history of cerebrovascular event, 5.4% rate of peripheral vascular disease, Logistic EuroSCORE 6.98 ± 8.51). Bypass and aortic occlusion times (median 163 and 111 minutes, respectively) showed a decreasing trend over time. There were no intra-operative aortic dissections or malperfusion complications. Post-operative cerebrovascular events was noted in 8 (2.6%) patients. In-hospital mortality was 7/316 (2.2%) and conversion to sternotomy was 12 (3.8%) during the study period. There was no correlation between increased extra-corporeal circulation times and either conversion or death. Mean length of stay decreased from 8.5 to 6.9 days, with 93.7% of patients returning home.

Conclusion Adequate pre-operative planning and an integrated team approach to device deployment and monitoring in theatre have been fundamental to our institutional implementation of a successful minimal access program. We have demonstrated that the IntraClude™ device has an acceptable learning curve comparable to that for minimally invasive surgery with transthoracic clamping. We believe that a structured fellowship undertaken prior to starting prevents an obvious learning curve.

Presenter: **Mr Umar Imran Hamid**, *SpR Cardiothoracic Surgery, Barts Health*

Extending the role of trans-catheter valve implantation for the treatment of severe mitral annular calcification *A187*

Authors U Hamid¹; O C Nzewi¹; M Spence¹; G Manoharan¹; R Jeganathan¹;

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Objective With a rise in the aging population, mitral annular calcification (MAC) is increasingly encountered with a high operative mortality of up to 75%. We describe two cases of severe mitral stenosis with marked annular calcification successfully treated with a balloon expandable trans catheter valve which was deployed on cardiopulmonary bypass via a trans-atrial approach.

Methods Case 1: A 76 year old patient was admitted with congestive heart failure, NYHA class IV symptoms. The investigations demonstrated severe mitral stenosis with severe mitral annular calcification. The annulus was sized to a 29mm Edwards balloon. Any potential sites for para-valvular leaks (PVL) was obliterated using Teflon felt. The valve was then implanted under direct visualisation with careful adjustment to ensure the skirt of the valve was along the annular plane or slight atrialised. Case 2: A 68 year old patient with presented with NYHA III symptoms. Investigations demonstrated severe MR due to restricted leaflets, calcified mitral annulus, severe TR. At surgery, the TV was repaired first to prevent any possible distortion of the mitral valve annulus which could potentially lead to PVLs or migration of the prosthesis. A size 29mm Edwards balloon was inflated within the MV orifice but with a very loose fit. A size 30 Edwards Physio II ring was then inserted onto

the annulus using both leaflet and atrial wall tissue to anchor in areas of calcification. A size 29 Edwards Balloon was then reinflated within the ring with good anchorage and a snug fit and was subsequently implanted.

Results Both patients had a successful outcome with marked symptomatic benefit.

Conclusion We advocate utilising an open approach on CPB to implant a balloon expandable bio-prosthetic valve as it allows the operator to deal with procedural complications seen with trans-apical or trans-septal approaches much easily. However this proviso is applicable only to patients fit enough to tolerate an open approach.

Presenter: **Mr Prakash Punjabi**, *Cardiac Surgeon, Imperial College London*

Characterisation of mitral valve annulus and papillary muscle geometry in systole and diastole of normal heart using 3D printed left ventricular models A338

Authors F Pitoulis³; F Fullerton¹; B Johnson¹; B Statton²; S Kanaganayagam²; D O'Regan²; P Punjabi³;
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Objective The use of three-dimensional (3D) printing in therapeutic guiding is well documented. However, to this day there have been few studies exploring the properties of the heart using 3D printed models. We attempted to assess the poorly understood mitral valve annulus and papillary muscle (PM) geometrical changes in diastole and systole using such models.

Methods Stereolithographic (STL) files of systolic and diastolic models were computed, using ECG-gated cMRI in order to analyse the geometry of the mitral valve annulus and papillary muscles throughout the cardiac cycle. Measurements were performed on the STL files. Left ventricular end-diastolic (ED) and end-systolic (ES) models were subsequently 3D printed.

Results Four reference annular points were chosen using intracardiac landmarks. The distance of each of those annular points to the apex decreased from diastole to systole, suggesting an annular apical movement. Characterising the shape of the annulus, annular height increased from ED to ES (7.0mm to 9.4mm), whereas eccentricity (measure of how circular a shape is) decreased from diastole to systole (0.59 to 0.48) showing that the annulus became more circular from ED to ES. Interpapillary muscle distance (IPMD) was measured from papillary tip-to-tip and base-to-base. Tip-to-tip IPMD decreased from 39.2mm to 32.7mm, whereas base-to-base IPMD decreased from 18.7mm to 14.7mm from diastole to systole respectively. Distance between the posteromedial PM tip to the apex decreased from 76.3mm in diastole to 63.6mm in systole. Similarly, the distance from the anterolateral PM to the apex decreased from 85.6mm in diastole to 71.5mm in systole.

Conclusion These preliminary results support that 3D printing of cardiac models at selected cardiac cycle phases using minimally invasive techniques is possible and highly accurate. Future objectives and applications include personalisation of medical devices, surgical training, and pre-operative planning.

Presenter: **Dr Katharina Schulte**, *SpR, DTMH, DMCC, Sana Hospital Berlin*

Which factors attribute to the surgeons' learning curve in robotic adult cardiac surgery? *A201*

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Objective Robotic cardiac surgery is confined to specialist centres. It is seen as a significant future development of surgery. However it has serious cost implications in the NHS, potential patient benefits are unclear and there are medico-legal implications with a new technique when there are established data on outcomes with open surgery. We sought to determine what factors attribute to the learning curve for robotic cardiac surgery.

Methods We assessed 54 studies which evaluated the surgeons' learning curves from 1999 - 2017 in robotic procedures undertaken in adult cardiac surgery for CABG, mitral repair, AF-ablation and ASD-closure. A total of eight studies were included describing potential factors and their effects on the surgeons learning curve.

Results Two studies demonstrated that there is a significant learning curve in the performance of robotic CABG, especially during the first 20 patients. One study showed that users with more than 20-hours of experience performed significantly better in a robotic training model than novices with less than two hours of experience, independent of prior endovascular experience. One study demonstrated a significant decrease of robotic LIMA harvesting time from 140-minutes during the first ten cases to 34-minutes after 90 cases (P=0.001). In mitral valve repairs the use of the newer da Vinci Si HD system with the addition of an adjustable left atrial roof retractor along with increased experience in robotic surgery were described as responsible for a shorter learning curve. Cross clamp times decreased (P<0.01) despite increase in complexity of repair and junior trainees operating. Three studies mentioned the importance of stepwise training programmes and simulators in the development of robotic skills.

Conclusion Significant learning curve improvements are achieved within the first 20 cases. The training of young surgeons in simulated scenarios and in a stepwise fashion can avoid the complications encountered during the introduction of robotic surgery.

Presenter: **Mr Bil Kirmani**, *Consultant Cardiac Surgeon, Liverpool Heart and Chest Hospital*

Long-term survival following Endoscopic Vein Harvest for coronary artery bypass grafting *A210*

Authors B H Kirmani¹; S Power²; O Pennington²; J Knight²; M N Bittar¹; J Zacharias¹;

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Objective Poor uptake of Endoscopic Vein Harvest (EVH) in the United Kingdom has previously been attributed to concerns that the technique may be associated with higher rates of vein graft failure. Several studies have since shown equivalent mid-term mortality, and our aim was to determine the long-term survival of patients having endoscopic vein harvest.

Methods We analysed prospectively collected data for 8,556 consecutive patients undergoing isolated coronary artery bypass grafting at our institution from the start of our EVH programme to present day (2007 – 2017). A total of 1,029 patients had EVH performed by a number of different practitioners. Total follow-up was up to 10 years (median 4.8).

Results Patients had similar pre-operative age, gender distribution, BMI and comorbidity profiles. Fewer patients in the EVH group had poor LVEF (3.2% vs 4.6%, $p=0.044$), CCS IV symptoms (4.7% vs 6.9%, $p=0.006$) or NYHA IV symptoms (2.4% vs 3.4%, $p=0.019$). There was no difference in operative urgency, with emergent surgery in 1.2% of EVH and 1.6% open cases ($p=0.35$). Cardiopulmonary bypass times were similar between the two groups (Open 84.6 ± 58.3 vs EVH 87.3 ± 43.04 , $p=0.164$) as was ITU stay (Open vs EVH: 1.4 vs 1.4 days), total hospital stay (12.7 vs 12.3 days) and in-hospital survival (98.3% vs 98.1%). There was no difference in peri-operative complication rates. Kaplan-Meier curve analysis using the Log-Rank method demonstrated no difference in the long-term survival between open and EVH groups (71.5% vs 70.0%, $p=0.86$).

Conclusion Our real world data demonstrates that EVH can be safely utilised with reassurance that there is no detrimental impact on long term survival. While our study lacks angiographic confirmation of patency or need for revascularisation as a surrogate marker, these data indicate that patients do not have increased long-term mortality risk from EVH.

Presenter: **Mr Syed Saleem Mujtaba**, *Senior Clinical Fellow, Freeman Hospital*

Extended trans-septal versus left atrial approach in mitral valve surgery: 1017 patients experience ^{A358}

Authors S S Mujtaba¹; S C Clark¹;

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Objective The mitral valve may be accessed directly through the left atrium but visualisation can sometimes be challenging. A trans-septal inter-atrial approach provides better exposure and easy access for concomitant tricuspid procedures especially in difficult cases. This retrospective study evaluates the safety and effectiveness of the extended vertical trans-septal approach for routine mitral valve exposure.

Methods 1,017 consecutive patients undergoing an isolated primary mitral valve procedure (repair/replacement) through a median sternotomy were retrospectively studied between 2000 and 2015. 135 patients were operated by extended vertical trans-septal approach (EVTSA, Group A) while 882 patients underwent a traditional left atrial (LA, Group B) approach.

Results There were 135 patients (M/F=56/79) in Group A and 882 patients (M/F=398/484) in Group B. Logistic EuroSCORE was significantly lower in EVTSA group (0.61 vs 0.90 $p=0.000001$). In the LA group there were more patients with pre-operative TIA or Stroke (94 vs 6 $p=0.005$). Cumulative cross-clamp time was 82 (44-212) minutes (EVTSA) and 78 (30-360) minutes (LA) groups ($p=0.271$) while cardiopulmonary bypass time was 107 (58-290) and 114 (43-602) minutes respectively ($p=0.121$). Post-operative blood loss was 415 ml (EVTSA)

versus 427(LA) ml ($p=0.273$). No significant difference was found in the incidence of post-operative atrial fibrillation ($p=0.22$) or heart block requiring permanent pacemaker ($p=0.14$).

Conclusion An extended vertical trans-septal approach to the mitral valve is safe and reproducible. It gives excellent exposure of the mitral valve under all circumstances without any significant increase in cross clamp or bypass time, post-operative arrhythmia, heart block/pacemaker rate or bleeding.

Presenter: **Mr Syed Saleem Mujtaba**, *Senior Clinical Fellow, Freeman Hospital*

Thrombocytopenia after aortic valve replacement: comparison between Sutureless Perceval S valve and Perimount Magna Ease bioprosthesis A233

Authors S S Mujtaba¹; S Ledingham¹; A R Shah¹; S Schueler¹; S C Clark¹; T Pillay¹;

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Objective The incidence of postoperative thrombocytopenia after aortic valve replacement with the Perceval S Sutureless bioprosthesis remains unclear. The aim of this study was to report thrombocytopenia associated with the use of sutureless aortic valve replacements (AVR).

Methods The data was collected retrospectively for patients who had isolated AVR with sutureless Perceval S valve (Group A: 72 patients) and was compared with patients who underwent isolated sutured AVR with Perimount Magna Ease Bioprosthesis (Group B: 101 patients) in our institution between June 2014 and January 2017.

Results Cardiopulmonary bypass and cross-clamp time were significantly shorter in group A. Maximum drop in platelet count was 58% mean (day 2.3) in group A versus 44% mean (day 1.7) in group B ($p=0.0001$). Absolute platelet count on post-operative day 1-6 in group A was significantly less than in group B ($p<0.05$). Platelet count recovered to preoperative value in 44% patients in group B versus only in 26% patients in group A at discharge ($p=0.018$). Moderate thrombocytopenia occurs more often in group A (41% vs. 26%) ($p=0.008$) while severe thrombocytopenia ($<50 \times 10^9$) was observed in 6% in group A but never in group B. Platelets ($p=0.007$) and Packed red blood cells ($p=0.009$) transfusion was significantly higher in the group A.

Conclusion The implantation of sutureless Perceval aortic valves was associated with a significant drop in platelet count postoperatively with slow recovery and higher Platelets and PRBCs transfusion requirements. A prospective randomised trial is needed to confirm our findings.

Presenter: **Mr Rajdeep Bilkhu**, *Cardiothoracic Registrar, ST4, Rajdeep Bilkhu*

Should the arch be replaced prophylactically in patients undergoing proximal aortic surgery with Bicuspid Aortic Valve? A351

Authors R S Bilkhu¹; P Youssef¹; GS Soppa¹; A Child¹; M Tome¹; R Sharma¹; B Liban¹; M Edsell¹; M Jahangiri¹;

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Objective Recent guidelines support surgery for aneurysms of the ascending aorta and root in patients with bicuspid aortic valve (BAV) at smaller diameters. However, the fate of the arch after surgery of the root and ascending aorta is unknown. We set out to assess outcomes following root and ascending aortic surgery and subsequent growth of the arch.

Methods Between 2005 and 2016, 536 consecutive patients underwent surgery for aneurysm of the root and ascending aorta. Of these, 168 had bicuspid aortic valve. Patients undergoing concomitant aortic arch replacement and those with type A dissection were excluded. Arch diameter was measured before and after surgery, at six months and then annually.

Results Of 168 patients, 127 (75.6%) had aortic root replacement and 41 (24.4%) had ascending aorta replacement. Mean age was 57±12.8 years, 82.7% were males and five operations were performed during pregnancy. There was one (0.6%) hospital death. One (0.6%) patient had a stroke and one (0.6%) had re-sternotomy for bleeding. Median ICU and hospital stays were 1 and 6 days respectively. Follow-up was complete for 94% at a median of 5.9 years (1-139 months). Aortic arch diameter was 2.9 cm preoperatively and 3.0 cm at follow-up. There was 97% freedom from reoperation. No patients required intervention on the arch during follow up.

Conclusion Prophylactic arch replacement during aortic root and ascending aortic surgery in patients with bicuspid aortic valve is not supported by our data, nor is long-term surveillance of the rest of the aorta in this population. Aortic root and ascending aortic surgery in this cohort of patients can be done safely with low complication rate.

Presenter: **Mr Syed Saleem Mujtaba**, *Senior Clinical Fellow, Freeman Hospital*

Aortic valve replacement with a conventional stented bioprosthesis versus sutureless bioprosthesis :a study of 763 patients A231

Authors S S Mujtaba¹; S Ledingham¹; A R Shah¹; T Pillay¹; S Schueler¹; S C Clark¹;

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Objective The aim of this retrospective study was to compare early postoperative outcomes after aortic valve replacement (AVR) with sutureless bioprostheses and conventional stented bioprostheses implanted through median sternotomy.

Methods From January 2011 to December 2016, 763 patients underwent aortic valve replacement with bioprostheses; of these, 139 received a Perceval S sutureless valve (Group A), and 624 received a Perimount Magna Ease valve (Group B). These groups were further divided into A1 (isolated Perceval AVR), A2 (Perceval

AVR with coronary artery bypass-CABG), B1 (isolated conventional stented bioprosthesis) and B2 (isolated conventional stented bioprosthesis + CABG).

Results Patients in Group A were older (mean 74 years vs 71) ($p < 0.0001$), predominantly women, (53% vs 32%) ($p = < 0.0001$), had a higher logistic EuroSCORE (3.26 vs 2.43) (0.001), more pre-operative atrial fibrillation (20% vs 13%) ($p = 0.03$) and had a lower reopening rate for bleeding (2.1% vs 6.7%) ($p = 0.04$). Compared to Group B1, Group A1 had shorter cross clamp (mean 40 min vs 57 min) ($p = < 0.0001$) and bypass times (mean 63 min vs mean 80 min) ($p = 0.02$), and they bled less postoperatively (mean 295 ml vs mean 393 ml) ($p = 0.002$). The mean gradient across Perceval valve was 12.5 mmHg while its effective orifice area was 1.5 cms².

Conclusion In our retrospective study of 763 patients, sutureless valve group patients are older, mostly women, more symptomatic pre-operatively and have higher logistic EuroSCORE. They have shorter cross clamp and bypass times, less post-operative bleeding and reduced incidence of reopening. Further studies are needed to evaluate the clinical benefits in the short, mid and long-term.

Presenter: **Mr Rajdeep Bilkhu**, *Cardiothoracic Registrar, ST4, Rajdeep Bilkhu*

Aortic regurgitation and fate of the arch in patients undergoing valve sparing aortic root surgery *A331*

Authors **RS Bilkhu**¹; P Youssefi¹; GS Soppa¹; A Child¹; M Tome¹; R Sharma¹; B Liban¹; M Edsell¹; M Jahangiri¹;

¹ St George's Hospital, University of London, UK

Objective Valve sparing aortic root replacement (VSRR) is increasingly being performed in young patients with aortic root pathology, the majority of whom have connective tissue disease. In these patients, there may be involvement of the aortic arch. There are no specific guidelines on whether or at what size to replace the arch prophylactically at the time of surgery for the aortic root and ascending aorta. Our aims were to assess the growth of the aortic arch in particular, in patients with connective tissue disease undergoing VSRR and incidence of aortic regurgitation (AR) during follow up.

Methods Prospective data on patients undergoing elective or urgent VSRR between 2005 and 2016 was collected. In each case the remodelling technique was used. Patients undergoing aortic arch surgery and emergency surgery for acute type A aortic dissection were excluded. Patients were followed up at 8 weeks, 6 months and then annually with CT/MRI and echo. The aortic arch was measured preoperatively and at follow up on CT or MRI.

Results Sixty-seven patients underwent VSRR. Of these, 45 (67%) had connective tissue disease confirmed. Median age was 56 years and 85% were men. 32% had preoperative mild AR and 5% had moderate AR. Median annulus size was 25mm and the majority (98.5%) were tricuspid aortic valves. There were no deaths or perioperative strokes and no re-sternotomy for bleeding; haemofiltration or vascular complications. Median ICU and hospital stay was 1 day and 6 days respectively. At a median follow-up of 5.8 years (5 months-10 years)

survival was 100%. There was 97% freedom from moderate/severe AR, and 88% freedom from any AR. Mean pre operative aortic arch diameter was 2.9 ± 0.5 cm and was unchanged at follow up.

Conclusion VSRR can be performed with minimal complications and mortality and low incidence of AR during follow up. There was no statistical difference in aortic arch diameter six years following surgery, even in a cohort with a majority of patients with connective tissue disease.

Presenter: **Mr Ahmed Ghoneim**, *Assistant Lecturer Cardiothoracic Surgery, Tanta University*

The impact of preservation of annulo-papillary continuity on right ventricular performance during Mitral Valve Replacement Surgery A361

Authors A Ghoneim¹;

¹ Waikato Hospital, Hamilton, New Zealand

Objective The aim was to assess the value of preserving the annulo-papillary continuity during MVR on the right ventricular (RV) performance.

Methods This research was a multi-center non-randomized controlled study where 148 patients were prospectively recruited, and were assigned into one of the three groups; the resection group (R-MVR) n= 59 patients; who had the conventional MVR with severing both anterior and posterior chordae, the partial preservation group (P-MVR) n= 45 patients; only the posterior leaflet's chordae were preserved, and the total preservation group (T-MVR) n= 44 patients; both leaflets chordae were retained. Two-dimensional trans-thoracic echocardiography was used to assess the RV functions before and after surgery using different methods focusing on the RV fractional area change (FAC). Univariable and multivariable analyses were performed to detect the predictors of RV dysfunction (RVD) after surgery.

Results The RVFAC values were comparable between the three groups pre-operatively ($37.4\pm 7.6\%$, $37.8\pm 6.5\%$, $34.7\pm 13.0\%$ in R-MVR, P-MVR and T-MVR respectively) and the majority of patients had declines immediately after surgery, however in the R-MVR group, the RVFAC had further deterioration at 6-month follow-up ($25.4\pm 6.6\%$) and failed to recover to the pre-operative values in the P-MVR group ($33.4\pm 6.8\%$), while in the T-MVR group remarkable improvements were recorded ($47.4\pm 10.2\%$). There was a very significant difference between the three groups ($P < 0.001$). In the 6-month multivariable analysis, total preservation of chordae was a protective factor against RVD ($P = 0.001$) while total resection was an independent predictor of RVD ($P = 0.011$). After matching with the propensity score they retained their significant values ($P = 0.001, 0.002$ in order).

Conclusion Preservation of the native MV apparatus is crucial in preserving both the LV and RV performances with the superiority of total versus partial preservation.

Presenter: **Ms Salma Kadiri**, *Research Practitioner, Heart of England Foundation Trust*

National Thoracic surgery PPI group identify key questions in routine clinical care for further research A395

Authors S Kadiri¹; J Taylor¹; A Kerr¹; M Kalkat¹; R Steyn¹; E Bishay¹; B Naidu¹;

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Objective Patient and public involvement helps us understand and improve healthcare and treatments. A national group incorporating patient and carers who have had experience of thoracic surgery was developed in 2016. The aim of this study was to determine from the patient and carer perspective what could be improved with the thoracic surgery pathway to increase satisfaction and care thus enhancing clinical outcomes.

Methods 15 patients and carers from the national Thoracic surgery PPI group were sent a questionnaire via post. This consisted of 10 open ended questions regarding the service, education and advice they received before and after their lung surgery. The questions were semi structured which allowed flexibility. Phenomenological analysis was conducted in order to gather a deep understanding of the patients and carer's experiences through an inductive method.

Results Three themes were gathered from this audit; ambiguity regarding information; continuous need for reassurance, reflection, interpretation, and finally psychological impact. Patients required additional advice to cope with the physical and mental changes which affected their daily lives.

Conclusion It is evident that patient and public involvement in developing ideas for further research in thoracic surgery is invaluable. Their insight and experience can assist healthcare professionals make appropriate improvements to the service for the benefit of future patients. Receiving sufficient information and advice is vital to patient to managing the surgical journey. In order to achieve further in depth and detailed understanding of patient experiences post thoracic surgery, qualitative methods such as focus groups or interviews should be conducted.

Presenter: **Dr Pavlos Papoulidis**, *Senior Fellow, James Cook University Hospital*

Should the ESTS guidelines for mediastinal staging need to be revised? A247

Authors P Papoulidis¹; S Kalra¹; I Paul¹; J Ferguson¹; J D Dunning¹;

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Objective Mediastinoscopy is the traditional gold standard for staging lung cancer. ESTS has specific guidelines for mediastinoscopy. But in the new era of EBUS and PET/CT there is a controversial point of its use and value.

Methods We contacted a retrospective study of our database and identified the "surprise" N2 disease. As "surprise" N2 disease we defined as no evidence of lymph nodes larger than 1cm in short axis or with PET positivity.

Results In two years (2015-2017) we performed 293 mediastinoscopies, according to ESTS guidelines. 34 (11.6%) were positive for metastatic lung cancer. 3.7% of those were a “surprise” N2 disease, without any radiological or EBUS suspicion preoperatively. Another 20 proved to be lymphomas and sarcoidosis.

Conclusion Mediastinoscopy is a well-established practice for staging metastatic lung cancer. ESTS guidelines specifically show its place. But in our study its contribution in identifying N2 disease is small. Under the light of this small study and along with the literature we might consider a revision of ESTS guidelines for mediastinoscopy.

Presenter: **Mr Mustafa Zakkar**, *SPR, 20*

Hemi-root Remodelling and external ring annuloplasty valve sparing repair of bicuspid valve *A326*

Authors **M Zakkar**¹; C Brega²; S Lejeune²; C Acar²; N Khelil²; T Folliguet²; M Debauchez²; E Lansac²;
¹ Bristol Heart Institute, UK; ² IMM, France

Objective The management of borderline aortic root dilatation (40-45mm) in the presence of bicuspid aortic valve insufficiency (AI) with ascending aorta aneurysm is still not clear. If coronary ostia are implanted below the sinotubular junction, our surgical strategy in these patients is to associate aortic valve repair with an external annuloplasty to the replacement of the supracoronary aorta with the non-coronary sinus (Hemi Remodelling) in order to avoid coronary reimplantation. We present our experience and midterm outcome in patients who underwent surgery using this technique.

Methods Data were collected from the Aortic Valve repair InternATIOnal Registry (AVIATOR). Between 2003-2017, 18 patients underwent hemi root and external annuloplasty AV repair and included in the analysis.

Results The mean age is 50.5±11.6 years. All patients were male except for 1 (5.6%) patient. The mean EuroSCORE II was 2.2±0.9. 12 (66.7%). Annular size at the time of surgery was 27.2±2 mm and mean sinus size was 42.3±3.3 mm and STJ diameter of 38.6±4.2 mm and ascending aorta of 50±5 mm. 14 (87.8%) had ≥/2 AI at the time of surgery. In hospital mortality was 0%. None of the patients had CVA or required reintervention during hospital stay. 16 (88.9%) had no AI and 2 (11.1%) had grade I AI at discharge. Midterm follow up demonstrated 100% freedom for mortality and AV related reoperation and recurrence of AI>1. Freedom from composite major valve related adverse events at 1, 3 and 4 years were 89%, 76.2% and 61% respectively.

Conclusion Hemi-remodelling root replacement of the NCS in association and aortic valve repair with an external annuloplasty can be a safe and reproducible option for patients with borderline root dilatation and AI. It allows better visualisation of the valve without the risk of coronary reimplantation.

Presenter: **Mr Mustafa Zakkar**, *SPR, 20*

Standardized Aortic Valve repair for isolated aortic insufficiency using single or double ring annuloplasty *A216*

Authors M Zakkar¹; V D Bruno¹; C Acar²; N Khelil²; T Folliguet²; M Debauchez²; E Lansac²;

¹ Bristol Heart Institute, UK; ² IMM, France

Objective The role and location of aortic annuloplasty for isolated aortic valve (AV) repair with normal aortic root or ascending aorta dimensions remain to be established. We investigate the outcomes of a standardized isolated AV repair approach using an external aortic annuloplasty ring at subvalvular level (single annuloplasty) and the role of additional supra-annular annuloplasty at the sinotubular junction (STJ) (double annuloplasty).

Methods Data were collected from the Aortic Valve repair International Registry (AVIATOR). Between 2003-2017, 93 patients (56 single annuloplasty and 37 double annuloplasty) underwent Isolated AV repair.

Results Overall 30 days mortality, stroke, and need for permanent pace maker were 1.1%, 2.2% and 2.2% respectively. Overall survival and freedom from major valve related adverse event were 89.2% with no difference between the double and single annuloplasty groups (p=0.4). Freedom from valve related reintervention was 97.2% vs 72.9%, (p=0.02) for double annuloplasty compared to single annuloplasty at 6 years. Similarly; freedom from recurrence of > 2 AI was (100% vs 67.3%, p=0.008). Furthermore; univariate analysis identified the use of single annuloplasty and the size of STJ after surgery as predictive factors for risk for AV related reintervention and recurrence of AI > 2.

Conclusion Standardised aortic valve repair with external ring annuloplasty is associated with excellent long term outcomes. The stabilisation of the STJ with additional ring annuloplasty (double annuloplasty) is a protector factor against reoperation and recurrent AI compared to single annuloplasty.

Presenter: Ms Lisa Kenyon, Macmillan Thoracic ACP, Heart of England NHS Foundation Trust

Impact of an Advanced Clinical Practitioner (ACP) led chest drain clinic *A304*

Authors L Kenyon¹; J Cahill¹; E Bishay¹; M Kalkat¹; L Hernandez¹; H Fallouh¹; R Steyn¹; B Naidu¹;

¹ Birmingham Heartlands Hospital, UK

Objective Non-medical clinics are an increasingly used resource to manage postoperative patients. At one NHS Trust patients discharged with chest drains were previously reviewed on an ad-hoc basis by registrars & a senior nurse. A service improvement initiative has led to the introduction of an ACP led drain clinic. The aims of the service were to offer enhanced assessment & treatment, to reduce patient waiting time & reduce load on registrars, while continuing to maintain safety & standards of care.

Methods Two ACPs commenced a training programme of a foundation curriculum (MSc level) & specialty learning, & led the clinic autonomously from June 2017. A bespoke treatment room was set up. Audit of patient contacts & interventions was performed from February to October 2017.

Results A total of 45 patients were audited, 20 pre ACP led clinic, 25 post. ACPs saw 25 new patients, of these 15 required follow-up appointments. A continuous variable of waiting time for ACP review was compared to pre ACP led clinic (mean waiting time 12 vs 132 minutes). A t-test showed a significant difference ($p < 0.001$, median 5 vs 125 mins, 95th percentile was 15 vs 150 mins). 100% of chest x-rays were ordered & reviewed by ACPs vs zero before June. 72% (18/25) of treatments were ACP initiated, 28% (7/25) were discussed with a Registrar/Consultant vs 100% prior. No patients required admission from drain clinic post drain removal during the audit period. Interventions were 64% (16/25) drain removal, 12% (3/25) indwelling pleural catheter removal, 24% (6/25) local anaesthetic and stitch insertions, 28% (7/25) wound inspection for signs of infection.

Conclusion An ACP led drain clinic has led to significantly reduced waiting times thus improving patient experience and provided enhanced assessment and surgical treatments. Load on registrars has reduced. Safety & standards of care have been maintained. Future developments include initiating prescriptions (ACPs are now independent prescribers) & collecting patient satisfaction data.

Presenter: **Dr Shereen Ajab**, *core surgical trainee, Sheffield Teaching Hospitals NHS Foundation Trust*

The impact of Level 1 trauma centre status on Thoracic Surgery A383

Authors S Ajab²; J Massey¹; R Milton¹; P Tcherveniakov¹; K Papagiannopoulos¹; A Brunelli¹; N Chaudhuri¹;

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Objective Trauma is a leading cause of morbidity and mortality with 25% of deaths directly attributable to thoracic injuries. Development of major trauma centres has enabled centralisation of resources and reduces delays in transfer to specialist centres. We present our experience of the impact of the regional level 1 trauma centre, which opened in April 2013, on trauma referrals in our thoracic surgical unit.

Methods Analysis of prospectively collected data from April 2012 to December 2016 was performed. Data for patient demographics, mechanism and type of injury, thoracic surgery admissions, length of hospital stay and thoracic surgical intervention were collected.

Results In 2012-2013, prior to establishment of the trauma centre, 63 trauma referrals were received 66% due to falls, 28% after road traffic accidents and penetrating trauma in 6%. 42% required admission to our unit. The most common injuries were rib fractures. 6 patients had thoracic surgery. 2 years after the trauma centre opened, referrals rose to 140 patients. 91 patients were admitted and 17 patients underwent surgery with mean length of hospital stay of 7 days. Surgery included 8 VATS washouts, 7 thoracotomies, 1 haematoma drainage and 1 clavicular manipulation and reduction. In 2015-2016 192 trauma referrals were received and 114 patients admitted with mean length of hospital stay of 6 days. 16 patients required surgery. Surgery performed included 8 VATS washouts, 2 washouts with rib fixation, 1 rib fixation, 1 VATS bullectomy, 2 thoracotomies, 1 wound debridement and 1 evacuation of haematoma.

Conclusion Since the establishment of the regional trauma centre, the number of patients undergoing thoracic surgery has nearly tripled and our trauma admissions have risen 4.5 fold. This highlights the need for

greater resource planning to safely manage the increase in number of patients requiring thoracic care and to minimise any potential negative impact the greater demand is likely to have on finite resources such as staffing and beds.

Presenter: **Mr Syed Rehman**, *Specialty Trainee Registrar, University Hospital Southampton NHS Trust*

Transaortic and transmitral septal myectomy with anterior mitral leaflet extension for hypertrophic obstructive cardiomyopathy: a single centre experience *A346*

Authors S M Rehman¹; S A Sadeque¹; S Duggan¹; H Ali-Ghosh¹; M Kaarne¹; S A Livesey¹;

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Objective Hypertrophic Obstructive Cardiomyopathy (HOCM) affects 1 in 500 people in the UK. We present our experience of six patients with HOCM undergoing septal myectomy via both transaortic and transmitral approaches and extension of the anterior mitral valve leaflet (AMVL) to prevent systolic anterior motion (SAM).

Methods Prospectively collected data was analysed retrospectively for patients undergoing myectomy for HOCM from July 2016 to October 2017. All patients had median sternotomy and cardiopulmonary bypass via the ascending aorta and bicaval cannulation through the right atrium. Septal myectomy was performed via both an oblique aortotomy, through the aortic valve, and a left atriotomy, through partial detachment of the AMVL from the mitral valve annulus. A bovine pericardial patch from the detached AMVL to the annulus was used to extend the AMVL. This moved the coaptation line more posteriorly to reduce the risk of SAM. Mann-Whitney U test was used to determine statistical significance between pre- and postoperative LVOT measurements.

Results There were six patients (five male, median age 60 (48-77) years). Preoperative median left ventricular outflow tract (LVOT) gradient was 72 (36-96) mmHg. Postoperative median LVOT gradient was significantly reduced to 11.5 (6.7-20) mmHg ($p=0.005$). Preoperative median ventricular septal thickness was 1.7 (1.6-2.3) cm which was significantly reduced to a median thickness of 1.3 (1.2-1.4) cm postoperatively ($p=0.012$). There was no postoperative stroke or death, two patients had an implantable cardioverter defibrillator and one patient required a permanent pacemaker. There was no significant residual mitral regurgitation or SAM.

Conclusion Our recent adoption of a combined transaortic and transmitral approach to septal myectomy for HOCM has demonstrated satisfactory results. Furthermore, AMVL extension with a pericardial patch helps to reduce the risk of postoperative MR and SAM by ensuring a more posterior coaptation line of the mitral valve.

Presenter: **Ms Atasha Asmat**, *Consultant Thoracic Surgeon, TTSH*

Video-assisted thoracoscopic surgery (VATS) in the management of primary spontaneous haemopneumothorax *A411*

Authors A Asmat¹; H Yu¹; J Yeo¹; A Ahmed¹;

¹ Tan Tock Seng Hospital, Singapore

Objective Spontaneous haemopneumothorax (SHP) is a potentially life-threatening condition that affects 1-12% of patients presenting with spontaneous pneumothorax. Management remains controversial with no guidelines on indications and timing for surgery. The aim of this study was to review our institution's experience with surgical management of SHP using the video-assisted thoracoscopic (VATS) approach.

Methods This was a single-center retrospective review of all cases of SHP undergoing VATS at our institution from January 2000 to June 2016

Results Out of 491 primary spontaneous pneumothorax cases undergoing surgery at our institution during the study period, there were 28 cases of SHP managed with VATS. Mean age was 28.6 years, and there were 26 males. Hemodynamic instability (systolic blood pressure < 90 and / or heart rate > 100) occurred in 7 patients. Six patients required blood transfusion pre-operatively. Mean initial drainage upon chest tube insertion was 657 mls. Fourteen patients underwent surgery within 24 hours. There were no conversions to thoracotomy. The source of bleeding at surgery were torn adhesions (n=23), and bleeding ruptured bullae (n=5). There was no mortality. One patient underwent surgery for a contralateral pneumothorax on post-operative day 3. Two patients had a prolonged air leak (>=5 days). Mean length of hospital stay was 6.7 days (3-15 days).

Conclusion Our study demonstrates that early VATS for SHP can be performed with minimal morbidity and mortality.

Presenter: **Mr Amy Kerr**, *Thoracic Surgery Research Nurse , Heart of England NHS foundation Trust*

Outcome of feasibility Randomised Controlled Trial (RCT) in major lung surgery patients receiving either preop carbohydrate & postop nutritional drinks or water ^{A237}

Authors A Kerr¹; N K Oswald¹; J Webb¹; H Bancroft¹; S Kadir¹; J Taylor¹; E Bishay¹; M Kalkat¹; R Steyn¹; B Naidu¹;

¹ Birmingham Heartlands Hospital, UK

Objective In recent thoracic surgical studies malnutrition and weight loss are important risk factors for complications. However, it is uncertain whether optimising perioperative nutritional state with oral supplements results in a reduction in complications.

Methods Single centre mixed method open label RCT was conducted to assess the feasibility of carrying out a large multicentre RCT in patients undergoing lung resection. A nutritional intervention regime of preoperative carbohydrate-loading and early postoperative nutritional protein supplement drinks was compared to the control group receiving an equivalent volume of water. Primary outcome NIHR Trial feasibility measures. Postoperative pulmonary complications and surgical complications were measured. Questionnaires collected to

capture symptoms, recovery, quality of life, hand grip and peak flow. Qualitative interviews post-surgery were undertaken to assess patient experience of the trial and interventions.

Results NIHR feasibility criteria met, with study recruitment achieved 5 months ahead of target. All elective patients were screened of which 41% were randomised. There was no significant difference between the groups for demographics and risk factors. 97% of patients were compliant with nutritional drinks. 89% of questionnaires at 3 months were returned, results from the questionnaires indicate patients in the nutritional arm at 3 weeks have less symptom burden. Importantly, qualitative interviews demonstrated that the trial and intervention were acceptable. Patients felt the questionnaires captured their experience of recovery well.

Conclusion Current guidelines for enhanced recovery following thoracic surgery cannot recommend nutritional intervention because of lack of evidence. We have shown a trial design and intervention that is highly acceptable to patients' with good compliance to both intervention and trial measures. A large multi-centre clinical trial is required to test clinical efficacy in improving outcomes after surgery.

Presenter: **Mr Juan Carlos Quijano-Campos**, *Senior Staff Nurse, Papworth Hospital NHS Foundation Trust*

Understanding the experience of patients living with pulmonary hypertension (PH): a systematic review and meta-ethnography ^{A432}

Authors J Quijano-Campos¹;

¹ Papworth Hospital NHS Trust, UK

Objective The aims of this meta-ethnography were to gain knowledge and understanding of patients' experiences living with pulmonary hypertension (PH) to support clinical practice and future research.

Methods Design: A systematic review and an interpretative synthesis of eligible primary studies using a meta-ethnography approach. Methods: A systematic literature review was conducted using the following databases: CINAHL, BNI, AMED, MEDLINE, EMBASE, PsycINFO, Cuiden Plus, Scopus, The Cochrane Library, ASSIA, JBI, Campbell Library, and Web of Science. Supplementary search strategies included grey literature, reference list and forward citation searches on seminal studies, and consultation to relevant organisations or experts to maximise sensitivity of the strategy. Meta-ethnography was used to analyse, translate and resemble the primary qualitative research.

Results Of 3691 articles identified, 71 were reviewed in detail and 9 were included, using a total of 132 participants, and 549 online posts, in 8 different countries. Three major third-order constructs were derived from the synthesis: (a) 'Loss of Self', (b) 'Self-Growth', and (c) 'Drivers'. Finally, a refined explanatory model of patients' experiences living with PH was developed, showing a dynamic process between 'Loss of Self' and 'Self-Growth' depending on five fluctuating 'Drivers' ('coping strategies', 'support structures', 'management and treatment', 'awareness' and 'uncertainty').

Conclusion This meta-ethnography demonstrates a dynamic process of living with chronic and life-threatening condition, constituted by trigger factors which drive patients to positive or negative experiences. It

is important to consider the roles of both PH-patient associations and multidisciplinary PH-“experts” to improve patients’ personal growth, satisfaction and quality of life.

Presenter: **Ms Xiaohui Liu**, ANP, University Hospital Southampton NHS Trust

Advanced Nurse Practitioner (ANP) innovation in Thoracic Chest Drain Management *A435*

Authors X Liu¹;

¹ University Hospital NHS Trust, UK

Objective Prolonged air leak (PAL) is the most common complication after partial lung resection and one of the most important determinant of length of hospital stay for patients following their lung operation. Ambulatory Chest Drain System (ACDS) has been used for Thoracic patients to enable them to be discharged home early with chest drain in situ resulting in reduced postoperative complications; early rehabilitation and better patient’s experience. A service evaluation examined the benefits of this clinic; highlighting the number of patients discharged early; especially its financial impact.

Methods Data of all the patients who undergone lung resection and discharged with ACDS in between January 2013 and January 2017 in our unit were collected retrospectively. Information collected includes: type of the procedure; number of follow up visit; date of discharge; date of chest drain removal and number of days the chest drain were managed at patient’s own home.

Results There were 224 patients discharged with ACDS, of which 178 patients had a lung resection. Number of follow up visit 1-18, mean 2.64; the number of days chest drain were managed at patient’s own home 5-221 days, mean 20.07; a total of £896,016 was saved for the inpatient beds alone.

Conclusion Remotely managing patients with PAL using ACDS in their own homes is safe and cost effective and the Thoracic ANP with specialist knowledge plays an important role in managing this group of patients.

Presenter: **Mr Robert Fleck**, Cardiothoracics SHO/CTI, Mater Hospital

Long-term outcomes following partial Atrioventricular Septal Defect (AVSD) repair in Ireland *A282*

Authors R Fleck²; K E O’Sullivan²; G Viganò³; G J Fitzmaurice⁴; P Cullen¹; D Arshad³; M Abdelrahman²; J McGuinness²; J M Redmond²; L Nolke²;

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Objective Atrioventricular septal defects (AVSDs) encompass a spectrum of cardiac anomalies making up 3% of all major congenital heart defects. Lesions can be classified into complete, transitional and partial. There is a strong association between AVSDs and Trisomy 21, a condition which Ireland has the highest prevalence in Europe. The aim of this study was to perform a retrospective review of partial AVSD repair in Ireland over the past 20 years to delineate survival and re-intervention rate associated with the procedure.

Methods A retrospective review of 51 patients undergoing partial AVSD repair between 1993 and 2015 was carried out. Patients were identified from operative case logs and a database was compiled by performing a comprehensive search of written patient charts operation notes, echocardiographic studies, ICU patient records, clinic notes and autopsy reports.

Results A total of 29 (56.8%) of patients were male and mean age at operation was 3.32 years. Mean weight was 13.2Kg. Trisomy 21 was present in 29 (56.8%). Five patients (9.6%) had undergone prior surgery. Mean cardiopulmonary bypass time was 89 ± 36 minutes and mean aortic cross clamp time was 57 ± 28 minutes. One patient underwent partial AVSD repair and concomitant tracheal resection and ECMO decannulation. One patient was managed with suture atrial septal defect (ASD) closure, the remainder with patch repair of ASD and mitral cleft closure. Length of hospital stay was 9 ± 5 days. Median follow-up was 6.06 years (IQR, 1.65- 10.2 years). There were no early mortalities. One patient died one year following surgery (1.9%). One patient required re-operation at an interval of two years for severe mitral regurgitation (1.9%)

Conclusion Short and long-term survival following partial AVSD repair in Ireland revealed excellent results compared with other published series. Re-operation incidence also compared excellently with other reports published in the literature.

Presenter: **Dr Sara Volpi**, *Clinical Fellow, Papworth Hospital*

Partial sternotomy for one-stage repair of Aberrant Subclavian Artery (ASA) in adults A353

Authors S Volpi¹; K Tweed¹; J Dunning¹; P Catarino¹;

¹ Papworth Hospital NHS Trust, UK

Objective An aberrant subclavian artery (ASA) is a rare form of congenital aortic arch anomaly. The artery itself may compress neighbouring structures and form a Kommerell's diverticulum, which is susceptible to become frankly aneurismal and result in distal embolization or rupture. Therefore, surgical treatment may be required. Many surgical approaches have been used to relieve compressive ASA and treat the aneurism. The aim of this study is to present our experience with 4 patients with symptomatic ASA who were successfully treated in our centre, through a new different surgical approach: the upper partial sternotomy.

Methods Between 2015 and 2016, 4 patients with symptomatic ASA (mean age 42 years [range 17-60]) were studied. Symptoms were dysphagia (n = 3), shortness of breath (n = 3), pneumonia (n = 2), haemoptysis (n = 1), hoarse voice (n = 1) and neck pain (n = 1).

Results Surgical treatment was performed with an upper partial median sternotomy through the 3rd right intercostal space in all patients. A 30 mm curved tip endoscopic vascular stapler was used to transect the base of the ASA. In all the cases the ASA was too short to reach the arch, therefore, the use of an 8mm Haemashield graft was necessary in order to anastomose the subclavian artery to the arch of the aorta, proximal to the innominate artery. We did not have postoperative complications apart from the presence of chylothorax in one patient, definitively treated with VATS ligation of the thoracic duct. All patient had relief from symptoms after surgery. Median follow-up was 23 months (range 16-31).

Conclusion A symptomatic ASA should be corrected after diagnosis for relief of symptoms and prevention of possible complications. The upper partial sternotomy is a good and safe approach. It allows the surgeon to both visualise (Fig.1a) and resect the ASA (Fig.1b) and to easily anastomose it to the aortic arch (Fig.1c). This new surgical approach is less invasive and surgical results are very satisfactory.

Presenter: **Mr Sanjeet Singh Avtaar Singh**, *Research Fellow, Golden Jubilee National Hospital*

Validation of a model to predict Primary Graft Dysfunction (PGD) after adult heart transplantation in the United Kingdom A260

Authors S Singh¹; N R Banner³; S Rushton²; C Berry⁴; N Al-Attar¹;

¹ Golden Jubilee National Hospital, UK; ² NHS Blood and Transplant, UK; ³ Royal Brompton & Harefield Hospitals, UK; ⁴ University of Glasgow, UK

Objective The incidence of PGD in Western Europe is around 30%. It is a significant cause of early mortality and morbidity. Our aim was to develop a predictive risk score for ISHLT-defined PGD.

Methods We analysed the medical records of all adult heart transplants between October 2012-October 2016 in the UK. Pre-operative donor and recipient characteristics, intraoperative details and post-transplant complications were compared between the PGD and non-PGD groups. Independent risk factors were identified from a derivation cohort of 463 patients. We tested the model in validation cohort of 153 patients.

Results The incidence of PGD was 38% and PGD was associated with increased mortality (OR = 6.90, $p < 0.05$). Factors that were statistically significant on multivariable analysis were: preoperative mechanical circulatory support, donor-to-recipient weight mismatch, female-donor to male-recipient gender mismatch, increasing donor age, implant time and recipient diabetes. The model showed a moderate correlation, high specificity (88%) but low sensitivity (28.1%) and moderate accuracy (66%) in the validation cohort. The Fitted Receiver Operator Characteristic Area was 0.628.

Conclusion This is the first comprehensive national validated model for PGD after heart transplantation using the ISHLT definition. It identifies the donor, recipient and procedural risk factors for PGD.

Presenter: **Mr Sanjeet Singh Avtaar Singh**, *Research Fellow, Golden Jubilee National Hospital*

The impact of gender mismatch on survival in heart transplantation *A261*

Authors S Singh¹; S D Das De¹; N R Banner²; C Berry³; N Al-Attar¹;

¹ Golden Jubilee National Hospital, UK; ² Royal Brompton & Harefield Hospitals, UK; ³ University of Glasgow, UK

Objective Almost two-thirds of all organs donated are by women. Gender mismatched organs, however, have poorer outcomes in retrospective single centre studies in the literature in kidneys, hearts and livers. We aim to evaluate the impact of gender mismatch in all adults undergoing heart transplantation in the UK.

Methods We performed a retrospective analysis of all patients who underwent orthotopic heart transplantation between 2012-2016. The cohort of patients was divided into 3 groups based on donor to recipient gender status; Group 1 were patients with no gender mismatch between donors and recipients (Reference category), Group 2 included male donors and female recipients and Group 3 included female donors and male recipients. Time to event survival analysis was performed with all-cause mortality as the primary outcome measure. Multivariable Cox regression analyses was used to measure the associations between the Groups and all-cause mortality after adjusting for potential confounding variables. These included donor age, warm ischaemic time, and recipient diabetes. Kaplan-Meier curves were used to show survival analysis. Log-rank tests were performed to compare survival curves. Risk estimates were presented as hazard ratios with 95% confidence intervals Results for all analyses were considered statistically significant at p values < 0.05.

Results A total of 633 patients (74.7% male) were included; 74.5% of patients were in Group 1, 9.1% in Group 2 and 16.4% in Group 3. Median follow-up was 2.7(1.5-3.9) years. Multivariable Cox regression analysis showed that after adjustment for pre-operative confounding variables, Group 2 patients had increased mortality compared to Group 1 (HR 2.37, 95% CI 1.31-4.28, P<0.05). Group 3 patients did not have a significantly higher mortality compared to Group 1(HR 1.31, 95% CI 0.77-2.24, P>0.05).

Conclusion Gender mismatch has an increased risk of all-cause mortality. Further studies are needed to evaluate this association.

Presenter: **Mr Raphael Werner**, *Resident Thoracic Surgery, University of Zurich*

Predicting trends in competitive flow during and after cardiopulmonary bypass: the role of transit time flowmetry *A206*

Authors S Amin²; R S Werner³; D P Taggart¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK; ² University of Oxford, UK; ³ University of Zurich, Switzerland

Objective Competitive flow through the bypassed native coronary vessel is known to be a critical element in long-term functionality of internal mammary artery (IMA) grafts. Currently, there are no parameters that allow to predict the trend in competitive flow during and after cardiopulmonary bypass (CPB). We sought to

assess changes in bypass graft flow patterns by transit-time flowmetry (TTFM) depending on different flow conditions in the native coronary artery during on-pump CABG.

Methods In a prospective study of 39 patients (93 grafts), TTFM flow profiles of the IMA grafts to the left anterior descending artery were recorded under three different conditions: (1) during CPB with the aorta proximally cross-clamped (no competitive flow), (2) during CPB after releasing the aortic cross-clamp (initial competitive flow), (3) after CPB (final competitive flow). With TTFM, mean graft flow (MGF), pulsatility index (PI), percentage diastolic filling (%DF), and percentage backward flow (%BF) were determined. Multivariable linear regression and ROC curves were used to detect predictive variables for competitive flow.

Results By releasing the aortic cross-clamp, MGF was significantly reduced from 84.269.2ml/min to 28.719.4ml/min ($p<0.001$) and PI was significantly increased from 0.230.16 to 1.541.47 ($p<0.001$). After CPB, both MGF and PI were significantly greater (44.229.1ml/min, $p<0.001$; 2.671.04, $p<0.001$, respectively) than with a released cross-clamp on CPB. A greater percentage of native vessel stenosis, a greater number of bypass grafts and a lower MGF after releasing the cross-clamp were found to be independent predictors of an increase in MGF after CPB ($p=0.001$, $p=0.003$ and $p<0.001$, respectively).

Conclusion After CPB, competitive flow is significantly lower than during CPB with a released cross-clamp. Furthermore, when the cross-clamp is released, an initial MGF under 24ml/min may predict a subsequent 1.5-fold or greater increase in MGF after CPB with a sensitivity of 80% and a specificity of 60%.

Presenter: **Mr Maziar Khorsandi**, *Transplant fellow, Duke University Medical Center*

A systematic review and meta-analysis of salvage extra-corporeal membrane oxygenation after adult post-cardiotomy cardiogenic shock A266

Authors **M Khorsandi**¹; S D Dougherty⁵; O Bouamra⁹; V Pai⁴; P Curry²; S Tsui⁷; S C Clark³; S Westaby⁶; N Al-Attar²; V Zamvar⁸;

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Objective Postcardiotomy cardiogenic shock (PCCS) refractory to maximal medical therapy and intra-aortic counter pulsation (IABP) support is a rare but fatal phenomenon without the use of mechanical circulatory support (MCS). A systematic review and meta-analysis was performed to assess the evidence behind the utility of veno-arterial extra-corporeal membrane oxygenation (VA ECMO), determinants of outcome and survival rates in the context of refractory PCCS.

Methods A systematic review was performed, without time limit, in January 2017 using PubMed/MEDLINE. The search was conducted using the keywords; “postcardiotomy”, “cardiogenic shock”, “extracorporeal membrane oxygenation” and “cardiac surgery”. A meta-analysis was then performed on the

proportion of survivors in those papers that met the inclusion criteria. Meta-regression was performed for the most commonly reported adverse prognostic indicators (API).

Results The search yielded 431 papers of which 24 studies and a cumulative pool of 1,926 patients from 1992-2016 met the inclusion criteria. Each study was analysed for strengths and weaknesses. Reported outcomes, complications, and APIs were tabulated and analysed (table 1). The data was moderately heterogeneous (95% CI 0.29 to 0.34, $p < 0.01$, $I^2 = 60\%$, Figure 1). Overall survival rate to hospital discharge was 30.8%. APIs were advanced age (> 70 years, 95% CI -0.057 to 0.001, $P = 0.058$), and long ECMO support (95% CI -0.068 to 0.166, $P = 0.412$). Postoperative renal failure, high EuroSCORE ($> 20\%$), diabetes mellitus, obesity, rising lactate whilst on ECMO, gastrointestinal complications had also been reported.

Conclusion Salvage VA ECMO can confer intermediate and long-term survival advantage. Many studies had reported advanced age, renal failure and prolonged VA ECMO support as APIs. EuroSCORE can predict the perioperative need for VA ECMO. APIs can be used to aid with decision-making regarding both the institution and weaning of ECMO for refractory PCCS.

Presenter: **Miss Ana Lopez-Marco**, *Cardiothoracic Registrar, Ana Lopez*

Implantation of mechanical aortic prostheses is associated with increased hospital stay and anticoagulation related complications compared to bioprostheses *A211*

Authors **A Lopez-Marco**⁵; S W Grant²; C Prol³; D Mehta⁵; A Y Youhana³; R Hasan²; Y Abu-Omar⁴; N Nikolaidis¹;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK; ² Manchester Royal Infirmary, UK; ³ Morrision Hospital, Swansea, UK; ⁴ Papworth Hospital NHS Trust, UK; ⁵ University Hospital of Wales, UK

Objective According to the current ESC/EACTS guidelines, implantation of mechanical valve prosthesis in aortic position should be considered in patients below 60 years of age. Use of mechanical valves requires long-term anticoagulation, which carries additional risks of bleeding and thrombosis. The aim of the study was to investigate the impact of anticoagulation on postoperative stay and related complications.

Methods A multi-centre study of prospectively collected data, including all patients below 65 years of age undergoing aortic valve replacement (+/- concomitant non-valvular procedures) was performed. Exclusion criteria included preoperative atrial fibrillation and other indications for anticoagulation, previous cardiac surgery, emergency operations and infective endocarditis. Primary end-points were length of hospital stay and anticoagulation-related complications within 6 weeks of discharge.

Results A total of 1973 patients were included over a 5-year period from 5 UK centres. Mean patient age was 59 years (range 17-65). Mechanical valves were implanted in 52% of patients. On unadjusted analysis, mechanical prosthesis was associated with significantly prolonged postoperative stay (median of 7 vs. 6 days with bioprosthesis, $p < 0.001$). On multivariable logistic regression analysis, mechanical prosthesis was an independent predictor of prolonged postoperative stay (> 8 days; OR 1.55, 95% CI 1.27 – 1.90, $p < 0.001$). On

subanalysis, 5% of patients with mechanical prosthesis required readmission for anticoagulation-related complications within 6 weeks of discharge (including late tamponade). An additional 5% required repeated hospital attendance for INR stabilisation.

Conclusion Use of mechanical valves in patients below 65 years of age is associated with both increased hospital stay and anticoagulation-related complications compared to bioprosthesis. The clinical and health economic implications of prosthesis choice should be considered by both the heart team and patient.

Presenter: **Mr Jeremy Smelt**, *Cardiothoracic Registrar, Jeremy Smelt*

Preoperative planning in thoracic surgery: a prospective study comparing modern imaging techniques and 3D printing ^{A238}

Authors J L Smelt³; T Suri²; O Valencia³; M Jahangiri³; K Rhode²; A Nair¹; A Bille¹;

¹ Guy's and St Thomas' NHS Foundation Trust, UK; ² King's College Hospital, London, UK; ³ St George's Hospital, University of London, UK

Objective Careful preoperative planning in thoracic surgery is essential for positive outcomes where care has to be taken to avoid injury to the highly vascular hilar structures. Twenty to thirty per cent of patients can present with variable numbers of arterial and venous branches and therefore it is important for the surgical team to maximise their preoperative knowledge of position and relationship of these vascular structures. This is especially important in video assisted thoracic surgery (VATS) where palpation and 3-dimensional imaging is restricted. The objective of this study was to evaluate the ability of these imaging techniques, including 3D printing, to define the anatomy of the hilar structures prior to anatomical lung resection.

Methods All patients undergoing elective lung resections by VATS for cancer under a single surgeon were identified over a three-month period. A single surgeon was asked to record the number of pulmonary artery branches supplying the lobe to be resected using the preoperative CT scan, MIP slices and 3D reconstructed CT images. 3 patients had their lung hilum printed. These were then compared to the intraoperative findings.

Results 16 patients had their preoperative imaging analysed. A further 3 patients had their lung hilum modelled using 3D printing. The 3D prints of the hilum were found to be the most accurate measurement with a correlation of 0.92. CT, 3D reconstructed CT and MIP images tended to under recognize the number of arterial branches and therefore scored between 0.26 and 0.39 in terms of absolute agreement with the number of arteries found at operation.

Conclusion 3D printing in the planning of thoracic surgery continues to suggest benefit over contemporary available imaging modalities. Furthermore, the use of 3D printing in practicing operations is being established and the development of simulator models using patient specific anatomy is well underway.

Presenter: **Dr Sara Volpi**, *Clinical Fellow, Papworth Hospital*

Isolated atrial amyloid: not just a serendipitous finding but a major contributor to morbidity and mortality following cardiac surgery *A182*

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Objective Cardiac amyloidosis is a well-known cause of morbidity and mortality. However, the influence of isolated atrial amyloid (IAA) following cardiac surgery is largely unknown. The aim of this study is to assess whether the presence of IAA has an impact on postoperative morbidity and mortality.

Methods This is a retrospective study looking at the presence of IAA in cardiac tissue of patients undergoing cardiac surgery, using the electronic pathology registry over a 5-year period. Student's t-test and Chi-square were used to test differences among groups. Data were evaluated using a multivariate logistic regression after the selection of the most important predictors through a stepwise regression. A $p < 0.05$ was considered as statistically significant. STATA version 15 has been adopted for the statistical analysis.

Results A total of 195 cardiac surgery cases had left atrial appendage excised. IAA was identified in 30 (15.4%) of 195 patients. The presence of IAA was associated with an increased incidence of postoperative stroke (6.7% versus 0.61%; $p < 0.008$), as well as increased incidence of postoperative arrhythmias, which led to a permanent pacemaker insertion (16.7% versus 4.3%; $p = 0.006$), including ventricular tachycardia and fibrillation. Moreover, the presence of IAA correlated with an increase in the use of inotropes in the postoperative period, especially adrenaline ($p = 0.04$). Finally, in patients with IAA, the mortality is 6 times higher than in patients without amyloidosis at follow-up ($p = 0.001$) (Fig.1).

Conclusion IAA is an arrhythmogenic substrate for persistent arrhythmias and stroke incidence following cardiac surgery, with subsequent greater resource use. It confers a substantial statistic and clinical significant disadvantage in terms of morbidity and mortality after cardiac surgery. Therefore, we recommend that such patients are identified, referred and counselled accordingly.

Presenter: **Dr Bhuvanewari Krishnamoorthy**, *Senior Lecturer, I*

Incidence of hepatic dysfunction in patients undergoing veno veno extracorporeal membrane oxygenation – initial results of an observational study *A426*

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Objective Extracorporeal membrane oxygenation (ECMO) is frequently used in the cardiothoracic intensive care unit to maintain gaseous exchange in patients with acute respiratory distress syndrome (ARDS) and can also be used pre and post heart and lung transplantation. The incidence of renal dysfunction after ECMO is well-explored but there remains a paucity of liver dysfunction data in the literature. The aim of this observational single centre study was to establish the incidence of liver dysfunction during VVECMO. We also compared established hepatic biomarkers prior to and during ECMO.

Methods A total of 37 patients were recruited from the Manchester Foundation Trust cardiothoracic intensive care unit between 2011 and 2013. The study was conducted in accordance with the internal review board and audit department. All pre and post ECMO clinical data, laboratory blood tests and patient characteristics were recorded. The incidence of hepatic dysfunction and mortality were established.

Results The median age of the patient cohort was 32.7 (IQR: 17.7) years. Diabetes was a comorbidity in 25% of patients and 33.3% also suffered from hypertension. In total, 83% of patients required ECMO due to ARDS and the remaining patients received ECMO as a result of sepsis, pneumothorax and pneumonia. The mean duration of ECMO insertion was 12.4± 5.5 days. A mortality rate of 12.5% was observed during ECMO with the remaining 87.5% surviving to discharge. Significant increases in bilirubin (p=0.007), ALT (p=0.007) and albumin (p<0.0001) were observed over the first week of ECMO. A substantial drop in platelet count (p<0.0001) and APTT (p=0.0001) was also observed over the same time period.

Conclusion Our preliminary findings suggest that there are significant changes in liver function during ECMO. We are unable to determine the cause of this liver dysfunction but it may be multifactorial involving cannula position, the use of antibiotics and vasopressin, and severity of the pre-ECMO illness.

Presenter: **Miss Ana-Catarina Pinho-Gomes**, ST2, Manchester University Hospitals Foundation Trust

Compliance with guideline-directed medication in contemporary trials of coronary revascularisation – systematic review and meta-analysis A219

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Objective Despite the well-established benefits of secondary cardiovascular prevention, the importance of concurrent medical therapy in clinical trials of coronary revascularisation is often overlooked. This systematic review and meta-analysis aimed to assess compliance with guideline-directed medical therapy (GDMT) in clinical trials and its potential impact on the comparison between percutaneous coronary intervention (PCI) and coronary bypass grafting (CABG).

Methods We searched the Cochrane Central Register of Controlled Trials (CENTRAL) and MEDLINE from 2005 to August 2017. We also searched clinical trials registers and reference lists of relevant studies. We included randomised clinical trials comparing PCI with drug-eluting stents versus CABG and reporting medical therapy after revascularisation. Our outcome was compliance with GDMT, defined as (1) any antiplatelet agent plus beta-blocker plus statin; and (2) any antiplatelet agent plus beta-blocker plus statin plus angiotensin-converting-enzyme-inhibitor/angiotensin-receptor-blocker. Data collection and analysis were performed according to the methodological recommendations of The Cochrane Collaboration.

Results From a total of 439 references, 8 trials were included based on our inclusion and exclusion criteria. Overall, compliance with GDMT1 was low and decreased over time from 67% at 1-year to 43% at 5-years. Compliance with GDMT2 was even lower and decreased from 40% at 1-year to 34% at 5-years. Compliance with both GDMT1 and GDMT2 was higher in PCI than in CABG at all time points. Meta-regression suggested an association between lower use of GDMT1 and adverse clinical outcomes in PCI versus CABG at 5 years.

Conclusion Compliance with GDMT in contemporary clinical trials remains suboptimal and is significantly lower after CABG than after PCI, may influence the comparison of clinical trial endpoints between those study groups.

Presenter: **Miss Katie Lyon**, *Senior Physiotherapist, Golden Jubilee National Hospital*

Initial results from a pilot study of a physiotherapy prehabilitation programme for patients undergoing cardiac or thoracic surgery *A290*

Authors **K Lyon**¹; F Nolan¹; N Lambie¹;

¹ Golden Jubilee National Hospital, UK

Objective Prehabilitation is a concept by which patients are physically and mentally optimised prior to surgery. Patients who are referred for surgery are placed on a waiting list. A window of opportunity is noted in these patients where prehabilitation may have a role. We evaluated preliminary results of our physiotherapy prehabilitation programme which is currently recruiting. The aim is to determine whether a home based physiotherapy prehabilitation programme improves patients' functional capacity measured by a 6 minute walk test (6MWT) prior to surgery and improve post operative outcomes.

Methods At the point of being accepted for surgery participants are consented for the study. After completing the baseline 6MWT participants are randomised into the prehabilitation (P) or standard care (SC) group. The prehabilitation group are provided with instructions in the use of a patient diary, pedometer and incentive spirometer and taught a home based exercise programme. The standard care group receive the current

preoperative physiotherapy information. Repeat 6MWTs are carried out on day of admit for surgery, after discharge from physiotherapy and at follow up clinic (approx 6-8 weeks).

Results Recruitment for the pilot study is ongoing with a target of $n = 20$ for both cardiac and thoracic. Preliminary results: 8 participants have been enrolled to the cardiac strand of the study ($P = 4$, $SC = 4$) with a mean age of 64.5 and 68.3 years respectively. All participants showed an increase in functional capacity from baseline to preop with a mean improvement of 40.59m in the P group compared with 32.59m in the SC group. Due to small sample size statistical analysis cannot be applied at this time. It is anticipated that statistically relevant data will be available by March 2018.

Conclusion Although still in its infancy, preliminary results of the physiotherapy prehabilitation programme are encouraging. Further recruitment will provide a larger cohort of patients to fully evaluate outcomes.

Presenter: **Ms Melissa Rochon**, *Surveillance, Royal Brompton & Harefield NHS Foundation Trust*

Service development: key points for digital photography in wound management A307

Authors **M Rochon**¹; J Sanders²;

¹ Royal Brompton & Harefield Hospitals, UK; ² St Bartholomew's Hospital, London, UK

Objective Comprehensive wound assessments demonstrate better patient outcomes. Reports suggest the addition of a colour photograph improves decision-making, monitoring and treatment impact. Increasingly, hospitals are using digital photographs for these purposes. While nurse competency frameworks do exist, there is limited guidance on how to set up a digital image approach in the cardiac setting. Thus, we sought to explore the best method for photo management across two cardiothoracic centres for a secure, efficient and reproducible approach.

Methods To assess photo quality, two nurses trained in surveillance reviewed 1,837 photos on the electronic patient record (EPR). 1,713 uploaded to the EPR via a database and 124 uploaded directly to the EPR. Image quality was determined by: 1) function, including clarity and documentation of appropriate clinical details alongside the image; and 2) format, including size, rotation and focus. Both function and format needed to be satisfactory to meet quality criteria. The total number of cases per group as well as the total sample size were satisfactory. A standard operating procedure (SOP) was developed including considerations of information governance, security, consent, privacy and dignity, infection control, contingency planning and database management.

Results Overall, the pictures were of good quality (96%). Upload to EPR via a database approach demonstrated a 47% improvement in quality versus direct upload to EPR only. There was a significant difference in the quality of images managed using the two methods ($p < 0.0001$). Inter-rater reliability was high (1.0).

Conclusion From a quality control perspective, the use of a database to manage, store and upload photos to the EPR improved the quality of images ($p < 0.0001$). Our practical review of the quality of photos helped

inform our SOP which we hope will help other cardiothoracic centres implement a similar approach. Further studies are recommended.

Presenter: **Dr Panagiotis Theodoropoulos**, *Research fellow, St Georges Hospital*

National study of Regional Variations in Cardiac Surgery Outcomes (RVICSO) ^{A374}

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Objective Variations in provision of cardiac surgery in UK could be due to inequality in access and delivery of healthcare. Differences in outcome can be explained by patient and provider level factors like case volume, teaching status and sub-specialisation. We examined these factors and their influence on patients' outcomes.

Methods Patient and provider level factors in 16 units, 2012-2015, were studied. Impact of these on mortality and post-operative complications were analysed.

Results Of 50,871 patients, 25% were older than 75 years and 28.6% were female. There was significant variation between units in terms of patient co-morbidities, bed distribution and staffing. All hospitals had dedicated CT ICU beds with dedicated sub-specialist consultants. Post-operative complications included re-sternotomy for bleeding (4.8%; range 3.4-6.9%), and mediastinitis (0.4%; range 0.1-1%), TIA/CVA (1.7%; range 0.3-0.4%), haemofiltration (HF) (3.2%; range 0.8-6.8%), IABP (3.2%; range 0.4-6.3%), tracheostomy (1.6%; range 1.3-2.1%) and laparotomy (0.3%; range 0.03-0.6%). Median survival was 98% (range 96.3-98.6). Most outcomes showed more variation across units than would be expected by chance alone. Univariate analysis showed increasing number of ward beds was significantly associated with an increased rate of TIA/CVA and HF; number of patients per nurse on the ward associated with an increased rate of HF; and increasing number of ICU trainees/fellows was associated with decreased survival. However, none of the factors remained significant in the multivariate models. There was a significant correlation of survival with TIA/CVA ($r=0.62$, $p=0.024$), HF and laparotomy ($r=0.77$, $p=0.045$).

Conclusion In UK, significant variations exist in delivery of cardiac surgery for patient and provider level factors. There is no clear association with patient outcomes apart from stroke, renal failure and laparotomy. Further studies are warranted to determine association of provider level factors with patient outcomes.

Presenter: **Mr Ross Marscheider**, *Senior Physiotherapist, Golden Jubilee National Hospital*

The use of the bed bike for patients bedbound on mechanical circulatory support: a case study A433

Authors R Marscheider¹; F Nolan¹;

¹ Golden Jubilee National Hospital, UK

Objective In-bed cycling for patients with critical illness has been shown to be safe and feasible (Kho et al, 2015). However, it is often avoided in patients with mechanical circulatory support and end stage heart failure. This case study reports on the use of a bed bike with a patient on a femoral cannulated intra-aortic balloon pump (IABP) awaiting heart transplantation.

Methods Baseline measurements were taken prior to commencement of the bed bike when the patient had been doing active exercises in bed only. Outcome measures were calf width, thigh width (at VMO), grip strength, leg strength measurements (inner range quadriceps repetitions in 30 seconds and straight leg raise repetitions in 30 seconds) and a quality of life questionnaire. Measurements were taken on both legs to compare. The patient continued with active exercises with the addition of single leg strengthening on a bed bike under supervision. The time and level of the use of the bed bike increased as the patients tolerance improved. Measurements were taken weekly to examine change.

Results Despite being only two weeks since the addition of the bed bike, there has already been impressive improvement in most of the measures. There has been a 5.6% rise in calf width on IABP leg, 3.7% on non-IABP leg; 1.5% rise in thigh width on IABP leg, no change on non-IABP leg. Strength measurements have improved by 36% on the IABP leg and 16.8% on the non-IABP leg. Grip strength has remained similar on both hands so far. For measuring quality of life we used a modified version of the EQ-5D and since the introduction of the bed bike this has improved by 40%.

Conclusion In addition to standard practice when it comes to the physiotherapy treatment of patients on intra-aortic balloon pumps, the use of the bed bike can be beneficial for patients, not only from a physical perspective as it may be expected but also from a psychological perspective.

Presenter: **Mr Jeremy Smelt**, *Cardiothoracic Registrar, Jeremy Smelt*

3D printing in the development of a patient specific lung resection simulator: a proof of concept experience A397

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Objective Simulation in surgery is now widely accepted to reduce technical learning times, enhance surgical skills and therefore improve surgical outcomes for patients. The ideal simulator is cheap, easy to produce and high fidelity. 3-dimensional (3D) printing is an emerging technology that is gradually becoming popular in surgery. Having a 3D printed structure, specific to a patient's anatomy, creates the possibility of

planning and simulating a specific operation before it takes place. This is especially important in video-assisted thoracic surgery (VATS), where palpation and 3D intra-operative imaging is restricted. Our aim was to develop a 3D model of a patient's lung hilum that could be used as a cost effective, patient specific simulator, prior to anatomical lung resection.

Methods A preoperative Computerised Tomography (CT) scan was performed and then segmented using ITKSnap 3.6.0. The entire pulmonary artery, vein and bronchial tree of the lung were segmented and the data produced was then used to 3D print the structures in material mimicking the lung hilum tissue properties. These structures were then colour filed and inserted into a home-made box-trainer to create a simulator.

Results A cost effective and patient specific simulator was successfully created that could be used to plan and practice lung resection by dissecting out and dividing the hilar structures.

Conclusion This study demonstrates that patient specific simulators can be made at relatively low cost. These simulators can be used to train surgeons in VATS surgery and enhance technical skill prior to operating on patients. The simulators can also be utilized in the planning and practice of high risk surgeries. This prototype will undergo further modifications to add lung parenchyma to the hilar structures.

Presenter: **Ms Helen Monaghan**, *Clinical Nurse Specialist Acute Pain Management, NHS*

The evolution of the Thoracic Acute Pain Service alongside minimally invasive surgical techniques A440

Authors H Monaghan¹; L Heron¹; E Lamont¹; S Singh¹; A J Kirk¹; R Zimmer¹;

¹ Golden Jubilee National Hospital, UK

Objective Minimally invasive thoracic surgical techniques such as Video-Assisted Thoracoscopic Surgery and mini-thoracotomies have reduced the need for epidural analgesia post-operatively. We review the modifications to pain control pathways employed at our unit alongside advances in surgical practice.

Methods We retrospectively analysed data on patients undergoing lobectomies in 2016 and compared it to a historical cohort from 2012. We compared techniques of analgesia and post-operative nausea and vomiting outcomes between the two cohorts. Data was statistically analysed using chi-squared statistics.

Results The VATS lobectomy programme resulted in a paradigm shift towards less thoracotomies being performed. There was a significant reduction in the number of epidurals inserted, with increased numbers of all other analgesic regimes ($p < 0.01$) in the thoracotomy cohort compared to the VATS cohort. There was also a reduction in median length of hospital stay. There is also a reduction in total opioid requirement in the thoracotomy cohorts (52mg vs 34mg) ($p < 0.01$) and VATS cohorts (80mg vs 33mg) ($p < 0.01$).

Conclusion The acute pain service plays an integral part in the provision of thoracic surgical services. Ongoing evolution of practice is needed from both to ensure the best outcomes for patients.

Presenter: **Ms Helen Monaghan**, *Clinical Nurse Specialist Acute Pain Management, NHS*

Nurse-led paravertebral analgesia management reduces opioid requirements of patients *A441*

Authors H Monaghan¹; E Lamont¹; S Singh¹; **A J Kirk**¹; R Zimmer¹;

¹ Golden Jubilee National Hospital, UK

Objective The pain team plays a pivotal role in the acute post-operative setting. Patients often require a bespoke analgesic plan to allow optimal pain management, thereby facilitating early mobility in keeping with Enhanced Recovery Pathway (ERP) requirements. We piloted a nurse-led Paravertebral Infusion top-up service to ensure patients received ongoing pain control around the clock.

Methods Staff nurses in High Dependency Units were closely monitored by Nurse Specialists from the Acute Pain Service (APS) during the training period and certified once competent. We retrospectively reviewed data from a cohort of patients after the initial training period and compared it with a historical cohort of patients. The primary outcome measures were opioid requirement and post-operative nausea and vomiting. The secondary outcome is the length of stay.

Results There were 324 patients who underwent lobectomies at our institution in 2012. This increased to 420 in 2016. The median length of stay was reduced by 1 day.

Conclusion Nurse-led paravertebral analgesia management reduces opioid requirements of patients. It allows earlier engagement with physiotherapists which facilitates shorter length of stay in keeping with enhanced recovery principles.

Presenter: **Dr Rustam Karanjia**, *FYI, University Hospitals Bristol NHS Foundation Trust*

Prehabilitation and outcomes of intervention in high-risk patients undergoing lung resection for lung cancer *A438*

Authors E S Teh¹; **R Karanjia**¹; T Cave¹; S Gomez¹; D G West¹;

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Objective Lung cancer is the commonest cause of cancer deaths in the UK. 51.7% of early stage lung cancer is treated with surgery. Potential surgical candidates may present with poor functional status due to concomitant co-morbidity or frailty associated with cancer. Pulmonary rehabilitation prior to resection is a potential new dimension that could increase resection rates and improve surgical outcomes. It is a comprehensive intervention and has been shown to improve quality of life and exercise tolerance. We want to review our cohort of patients who were referred for a period of prehabilitation prior to consideration for surgery to determine the final intervention and outcomes.

Methods This is a descriptive study of patients with lung cancer who were assessed in our unit for lung resection and referred for prehabilitation from March 2015 to August 2017. Clinical data were collected from various hospital databases.

Results After initial assessment, 13 patients were referred for prehabilitation. The mean age was 64.3±8 years, with 8 (61.5%) men and 5 (38.4%) women. All were current or ex-smokers. 8 patients underwent CPET as part of their assessment, 5 patients had repeated CPET post prehab. The lung function and CPET results are shown in Table 1. A total of 8 (61.5%) patients underwent lung resection after prehab, with 5 patients deemed persistently high risk despite prehab. All underwent VATS sublobar resections. There was no perioperative death. 2 out of 8 patients who had surgery developed Grade II Clavien-Dindo or above post-operative complications. The median LOS was 3.5 (1-10) days.

Conclusion In this observational study, 38.4% of patients remained medically inoperable after prehab. For patients who improved functionally with prehab, surgical risk seems acceptable. More data is needed to further define the role of prehabilitation and criteria for patient selection. Units should have contingency plans in place for patients who remain inoperable despite prehabilitation.

Presenter: **Dr Sadeesh Srinathan**, Associate Professor, Health Sciences Centre, University of Manitoba

The likelihood of cancer in patients proceeding to pulmonary resection without tissue diagnosis *A245*

Authors S Srinathan¹; B Kidane¹; Y Teferi¹; L Leydier¹; V Bayaraa¹; L Tan¹; G Buduhan¹;

¹ Health Sciences Centre, University of Manitoba, Canada

Objective Resection of a pulmonary nodule without a tissue diagnosis is a common clinical scenario with little empiric evidence to guide decision making. The objectives of this study were to determine the frequency of a lung cancer diagnosis in this scenario and the performance of a model predicting lung cancer using only basic clinical characteristics.

Methods We reviewed the records of 500 consecutive patients who underwent pulmonary resection without a preoperative tissue diagnosis, at a tertiary care centre from August 2009 to March 2013. Age, sex, smoking status, prior malignancy, tumour size and whether an attempt at a tissue diagnosis was made were recorded. A logistic regression model was constructed to predict the chance of a lung cancer diagnosis. Model discrimination was determined by calculating a c-statistic.

Results There were 297 (59.4%) males and 203 (40.6%) females; 412 (82.4%) had a smoking history and 36 (7.2%) did not. The mean age was 64.9 years (SD, 11.25). There were 203 (40.6%) with a previous history of malignancy; 36 (7.2%) with a previous lung cancer. There were 102 (20.5%) patients who had an attempt at a tissue diagnosis. The final diagnosis was primary lung cancer in 336 patients (67.2%), a metastatic nodule in 85 (17%) and a benign diagnosis in 71 (14.2%). Male sex, increasing age, smoking history, and a previous history of lung cancer were significant positive predictors of lung cancer. Female sex and previous malignancy were

negative predictors. Model discrimination was excellent with a c-statistic of 0.80 for the model including only the clinical factors. Adding “attempt at diagnosis” (a physician factor) to the model did not improve discrimination.

Conclusion This large study reports a simple strong logistic model to predict the chance of lung cancer in patients undergoing resection without a tissue diagnosis. These findings will be used to create a risk score to help the surgeon and patient in making a shared clinical decision in the face of diagnostic uncertainty.

Presenter: **Mr Espeed Khoshbin**, *Peri-CCT National Fellow , Freeman Hospital*

UK National Surgical Fellowship Scheme in Cardiothoracic Transplantation and Mechanical Circulatory Support A199

Authors E Khoshbin¹; S Tsui²; R Shah³; S Barnard¹; S C Clark¹;

¹ Freeman Hospital Cardiothoracic Centre, UK; ² Papworth Hospital NHS Trust, UK; ³ University Hospital of South Manchester, UK

Objective In 2009, a new National Cardiothoracic Transplant Fellowship was established in the United Kingdom(UK). The aim was to deliver transplant-specific training and supply two NHS consultants every 18 months in order to sustain workforce predictions. The Fellowship positions were approved in advance, and quality assured by the Schools of Surgery. We report the outcome of this programme to date.

Methods An electronic survey of all past and current National Fellows was conducted in 2017. The survey enquired about three aspects of training: a) experience in transplantation; b) experience in adult cardiac surgery and c) the mode of assessment. The aim was to review the programmes in order to improve the quality of training and assess the outcomes of the scheme thus far. Weighted average (arithmetic mean) was used to present continuous variables.

Results Eight out of nine appointed Fellows responded to the survey (89%). Two more have since joined the programme. The majority of Fellows had completed general cardiothoracic training prior to taking up the Fellowship (n = 6). Average length of Fellowship was 15 (SD = 3) months. Experience in organ procurement, recipient implantation, mechanical circulatory support and the ease of access to performing indexed procedures to maintain surgical skills are illustrated in Figure 1. The satisfaction with the programme had a weighted average score of 7.13, but was 5.9 for access to indexed surgical procedures (scale of 0-9). Seven of the eight respondents recommended the Fellowship; one respondent had a poor experience. All but one who became a Consultant overseas obtained a Consultant position in the UK.

Conclusion This Fellowship scheme has successfully addressed the national workforce deficit by training competent cardiothoracic transplant surgeons according to the set standards. The survey has identified a need to improve access to perform indexed procedures and a standardised method for assessment for the future.

Presenter: **Mr Espeed Khoshbin**, *Peri-CCT National Fellow , Freeman Hospital*

Long distance relationships - does the geographic distance from the transplant centre affect lung transplant outcomes? ^{A398}

Authors E Khoshbin¹; J Battle¹; H Muse¹; K Wallace¹; G Ditchburn²; G Parry¹; S C Clark¹;

¹ Freeman Hospital Cardiothoracic Centre, UK; ² IAS Medical, UK

Objective Age, race, gender and income are widely recognized sources of disparities in access to healthcare. Patient and referring physician choice often means that some lung transplant recipients may reside considerable distances from their transplant centre compared with others. We reviewed a single centre experience to examine the effect of distance from home to the transplant centre on outcome.

Methods We conducted a retrospective study of 480 adults who received lung transplants for any indication from Jan 2002 and Dec 2016. The distance from the transplant centre was calculated using a mapping software and analysed in three distance cohort groups: A) 0 to 75 miles, B) 76 to 150 miles and C) >150 miles. The outcome measures were survival and the incidence of acute rejection requiring augmentation in the first year after transplant. Multivariate analysis was used to compare the groups. Kaplan-Meier plots compared survival.

Results Patients were categorised according to our three distance groups A, B and C (n = 123, 190 and 167 respectively). The groups were compatible with respect to age, sex, diagnosis and the type of operation. There was no significant difference in the survival between the three groups in the short, medium or long term illustrated by Kaplan-Meier plot in Figure 1 [Breslow (Generalized Wilcoxon $p = 0.794$), Tarone-Ware ($p = 0.840$) and Log Rank (Mantel-Cox $p = 0.973$) tests respectively]. The mean survival in years did not differ significantly between the groups (5.2, 5.4 and 5.2 respectively $p = 0.829$). There was no correlation between the incidence of acute rejection [mean (SD) 1.21(1.0), 1.29(1.1) and 1.4(1.1)], and the distance from the transplant centre ($p = 0.360$).

Conclusion Long-distance management of lung transplant recipients is successful and is not associated with an increase in adverse outcomes. By itself, distance should not represent a barrier to transplantation and patients can be confident in their choice of transplant centre even if it is far away.

Presenter: **Mr Ricky Vaja**, *Thre Royal Brompton Hospital*

Impact of a streamlined rotational system for management of type A aortic dissection: sharing is caring ^{A175}

Authors R Vaja¹; S Talukder¹; M Norkunas¹; C Nienaber¹; G Asimakopoulos¹; J Pepper¹; U

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Objective The surgical repair of acute type A aortic dissection is an emergency associated with upto 30% mortality. It has been established that outcomes are improved with specialist aortic team care in high volume centres. Most centres are limited to a small number of aortic specialists thus making it logistically impractical to have a dedicated 24/7 single centre service. Thus in the attempt for improvement we introduced in 2011 a

rotational 24/7 service between 3 centres covering a geographical location. Referring hospitals have 24/7 access to a dissection “Hotline” with an on call experienced aortic surgeon and a team on standby.

Methods We analysed data from a prospectively collected database since 2003. A total of 227 patients who underwent surgery for acute aortic dissection between 2003 and 2017. Results on outcomes were compared before and after initiation of the dissection hotline and 24/7 dedicated service.

Results We identified 128 patients from pre-rota group and 99 patients in the post rota group. There was no significance difference in demographics between groups including Age, gender, BMI, previous cardiac surgery, pre-op ventilation, smoking status, diabetes, CVA, COPD, PVD, renal dysfunction, Moderate or poor LV, root surgery and logistic EuroSCORE. In the post era group there was an increase in arch surgery (11.7% vs 20.20% P:0.07). The introduction of the rota reduced in hospital mortality (23.43% vs 12.12% P:0.029). On multivariate analysis, the introduction of the service improved overall long-term survival (P:0.047, HR:1.8 CI (1.009-3.229). There was no difference between the groups in post-operative complications including re-opening for bleeding, TIA, Stroke, AKI and re-intubation. There was an increase in length of hospital stay in the post rota group (18 vs 24 days P:0.03).

Conclusion A streamlined aortic dissection service allows for centralised care. This provides referring centres with 24/7 access to an experienced aortic team and may improve patient outcomes.

Presenter: **Dr Marco Nardini**, *Trainee, University Hospital of Catania*

Microlobectomy: a novel technique for pulmonary lobectomy A406

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¹ Golden Jubilee National Hospital, UK; ² James Cook University Hospital, Middlesbrough, UK; ³ Liverpool Heart and Chest Hospital, UK; ⁴ University of Catania, Italy

Objective Despite the recent advancement of video assisted pulmonary lobectomy, this procedure is still related to a considerable amount of post-operative pain. We describe the results with ‘Microlobectomy’: an innovative technique which eliminated the utility port.

Methods This is a single centre, single surgeon, consecutive patients' series from January 2014 until December 2016. The key principles are: no intercostal incision larger than 5mm, no utility incision (fig 1A), 12mm subxiphoid port (used for specimen retrieval and chest drainage, fig 1B), CO2 insufflation and the adoption of instruments, camera and staplers of 5mm diameter. We offered this procedure to all the patients awaiting pulmonary lobectomy for different conditions. Relative contraindications were severe obesity and left ventricular hypertrophy.

Results 82 cases' data were prospectively collected. Mean age was 66 (range 27-82). 69 operations (84.3%) were performed for pulmonary malignancy (stages Ia to IIIb). 53 patients underwent a right sided procedure and 29 a left sided, namely the procedures were: 30 right upper lobectomies, 9 right middle, 13 right lower, 15 left

upper, 7 left lower, 4 trisegmentectomies, 2 lingulectomies, 1 right and 1 left pneumonectomy. Conversion rate was 3.6% (in 3 patients). The mean operative time was 189 minutes (range 126-315). The 30 days mortality was 1.2% (1 patient deceased of sepsis). Morbidity was pneumonia in 12 individuals (14.6%), atrial fibrillation in 3 (3.6%) and prolonged air leakage, over 5 days, in 9 (12%). 17 patients (20.7%) went home on the day after surgery, 31 (37.8%) went home on post-operative day 2. 63 patients (76.8%) went home within 7 days. The median length of stay was 3 days (range 1-34).

Conclusion The lack of postoperative pain reduced the hospital stay and, potentially, all the complications related to the pain, poor mobility and prolonged hospitalization. We will continue to offer this procedure in order to report on a wider cohort and on long term oncological outcomes.

Presenter: **Mr Sukumaran Nair**, *Locum Consultant Cardiac Surgeon, Golden Jubilee National Hospital*

Mini-Stern trial: a randomised trial comparing mini-sternotomy to full median sternotomy for aortic valve replacement A214

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Objective Aortic valve replacement (AVR) can be performed either through full median sternotomy (FS) or upper mini-sternotomy (MS). The Mini-Stern trial aimed to establish whether MS leads to faster postoperative recovery and shorter postoperative hospital stay after first-time isolated AVR.

Methods This pragmatic, open-label, parallel RCT compared MS with FS for first-time isolated AVR patients in two UK NHS hospitals. Primary endpoints were duration of postoperative hospital stay and the time to fitness for discharge from hospital after AVR, analysed in the intent-to-treat population.

Results In this RCT, 222 patients were recruited and randomised (118 MS, 104 FS). Compared to FS patients, MS patients had longer hospital stay (mean 9.5 vs. 8.6 days) and took longer to achieve fitness for discharge home (mean 8.5 vs. 7.5 days). Adjusting for valve type, sex and surgeon, hazard ratios (HR) from Cox models did not show a statistically significant effect of MS (relative to FS) on either hospital stay (HR 0.874, 95% CI 0.668-1.143, p-value 0.3246) or time to fitness for discharge home (HR 0.907, 95% CI 0.688-1.197, p-value 0.4914). During 1 year of follow-up, 12 (10%) MS and 7 (7%) FS patients died (HR 1.871, 95% CI 0.723-4.844, p-value 0.1966). MS patients had higher cost of treatment and lower quality of life during first 12 months after AVR.

Conclusion Compared to FS approach for AVR, MS did not result in shorter hospital stay, faster recovery or improved survival and was not cost-effective. MS approach is not superior to FS for performing AVR in the UK NHS system.

Presenter: **Ms Victoria Rizzo**, *Clinical Fellow, Freeman Hospital*

Unit, surgeon and volume: Equal contributors to outcome in lung transplantation? A263

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Objective For complex procedures a volume-outcome relationship can often be demonstrated with multiple factors implicated, both at a unit and surgeon specific level. This study aims to investigate this phenomenon in lung transplantation.

Methods Prospective databases identified all adult patients undergoing isolated lung transplantation at a single UK centre between June 1987 & October 2017. Mortality data was acquired from NHS Spine. Individual surgeon demographics were obtained from the General Medical Council. Student t-test, Pearson's Chi-squared, Logistic Regression, and Kaplan-Meier Survival analyses were performed using the Analyse-it package for Microsoft Excel and STATA/IC.

Results 954 transplants (55.9% male, age 44.4±13.8 years, 67.9% bilateral lung) were performed, with a median survival to follow-up of 4.37 years. There was no difference in survival by recipient gender (p=0.661), between surgeons (p=0.224), or between weekday and weekend procedures (p=0.327). Increasing centre experience with lung transplantation (OR 1.001, 95%CI: 1.000-1.001, p=0.03) and with successive calendar years (OR 1.028, 95%CI: 1.005-1.052, p = 0.017) was associated with improved 5-year survival. Advancing surgeon age at time of performing transplant (mean, 48.8±6.6 years) was associated with an improved 30-day survival (OR 1.062, 95% CI: 1.019 to 1.106, p=0.003), which persisted at 5years post-transplant (OR 1.043, 95% CI: 1.014-1.073, p = 0.003). Individual surgeon experience, measured as number of previous lung transplants performed (mean, 76.4±78 procedures), showed a trend towards improved outcomes at 30 days (OR 1.004, 95% CI: 0.9999 to 1.008, p=0.0413) but there was no difference in 5-year survival (OR 1.002, 95% CI: 0.999 - 1.004, p=0.192).

Conclusion Our study demonstrates a relationship between unit volume and increasing surgeon age, and survival after lung transplantation. A transplant-volume:outcome relationship was not seen for individual surgeons.

Presenter: **Mr Sean Bello**, *ST6 Cardiothoracic Surgery, Mr Sean Bello*

Coronary reperfusion ameliorates the deleterious effect of mechanical unloading on infarct size and interstitial fibrosis after acute myocardial infarction A270

Authors S O Bello¹; C Singh¹; F Perbellini¹; P Punjabi¹; C M Terracciano¹;

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Objective Several contemporary studies report a worsening of myocardial fibrosis after mechanical unloading with LVADs but the underlying mechanism remains unknown. Mechanical unloading has however been linked to a reduction in microvascular luminal diameter in the failing heart, suggesting an association with negative auto-regulatory effects on the collateral circulation. We hypothesise that coronary reperfusion after

myocardial infarction ameliorates the deleterious effect of mechanical unloading on infarct size and interstitial fibrosis.

Methods Lewis rats weighing 250 to 300g were studied. Myocardial infarction – acute (AMI) and chronic (CMI) - was induced by LAD ligation. Two groups were generated: a permanent ligation group (AMI and CMI) and a reperfusion - coronary circulation restored after 90 minutes - group (AMI/R and CMI/R). In each group hearts were either loaded (L) or unloaded (U). In the loaded subgroup, rats were recovered after coronary ligation. In the unloaded subgroup, the infarcted hearts were explanted after 90 minutes and transplanted into the abdomen of healthy recipients via heterotopic abdominal heart transplantation. Hearts were harvested for analysis on day 2, day 7, and 16 wks.

Results 90 rats were studied. There was a significant increase in infarct ratio (IR) - infarct size/area at risk-, and interstitial fibrosis (IF) after mechanical unloading in the permanent ligation group at day 2 (AMI-L vs AMI-U $p = 0.0073$ (IR) and $p = 0.0012$ (IF)) and day 7 (AMI-L vs AMI-U $p = 0.0166$ (IR) and $p = 0.0363$ (IF)). After coronary reperfusion, mechanical unloading did not result in significant increase in IR or IF. At 16 wks however, this protective effect of reperfusion was lost (CMI/R-L vs CMI/R-U $p = 0.004$ (IR) and $p = 0.0024$ (IF)).

Conclusion These data suggest an association between the revascularisation of a less auto-regulated vessel and amelioration of the deleterious effect of mechanical unloading on the extracellular matrix with significant implications for LVAD induced recovery.

Presenter: **Mr Bil Kirmani**, *Consultant Cardiac Surgeon, Liverpool Heart and Chest Hospital*

Does the interval between myocardial infarction and revascularisation influence long term survival? A202

Authors **B H Kirmani**¹; O Pennington²; J Knight²; M N Bittar¹;

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Objective The effects of proximate myocardial infarction on peri-operative outcomes following coronary artery bypass grafting are well described. The long-term effects are less well known and we aimed to determine the durability of surgery in patients with recent MI.

Methods We performed an analysis of our prospectively collected database on patients undergoing coronary artery bypass grafting from 1996 – 2017. Of 16,260 patients, 7684 had suffered a previous myocardial infarction, including 87 who had surgery within 24 hours of an MI. Total follow-up was up to 21 years (median 7.7). In order to obviate the selection bias of unstable patients needing emergency surgery, we propensity matched to determine the long term survival in patients having surgery within 24 hours of MI.

Results There were clinically and statistically significant differences between groups. CCS IV was more common in MI < 24h vs 1-30 days vs 30-90 days (48.3% vs 14.4% vs 22.2%, $p < 0.001$) as were NYHA IV symptoms (18.4% vs 4.7% vs 7.1%, $p < 0.001$). Cardiogenic shock was also more common (29.9% vs 1.6% vs 1.7%, $p < 0.001$) and there were more emergent operations (59.8% vs 4.3% vs 4.8%, $p < 0.001$). There was no difference in survival between patients having surgery <30days vs 30-90days vs >90 days (median 15.6 vs 14.4 vs 15.4 year

survival, $p=0.14$), but survival was significantly worse in patients having surgery within 24 hours (median 9.3 years, $p<0.001$). Within the first 30 days, the mortality risk was $20.7 \pm 4.3\%$, falling to 8.0% in the second month and 1.2% at 90 days post surgery. Following propensity score matching, there was still a significant difference in the median survival between patients operated on within 24 h versus those waiting beyond that time (9.3 vs 14.2 years, $p<0.0003$).

Conclusion Surgical selection of patients for emergency revascularisation has excellent results for patients who survive to discharge. There appears to be no advantage to long-term survival by delaying non-emergent surgery after myocardial infarction.

Presenter: **Ms Alessia Rossi**, *clinical fellow, St Bartholomew*

Benign cardiac tumours: a contemporary case series of 136 patients in the United Kingdom ^{A341}

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Objective Benign cardiac tumours are rare. They present in a variety of non specific ways and can originate from any chamber of the heart. We present clinical characteristics, operative techniques and outcomes of the largest European series of patients undergoing cardiac surgery for benign tumours.

Methods We identified all patients undergoing surgery for cardiac tumours from the SCTS database at two cardiac surgery centres in the United Kingdom. Patient records were reviewed for presentation and operative technique. Pathological findings were recorded. Outcomes were from the Office of National Statistics database.

Results From 2004 to 2017, a total of 136 patients underwent surgery for resection of benign cardiac tumours. A further six patients had cardiac sarcoma resected. Mean age was 63 years (21-85), 47 (35%) were male and mean EuroSCORE I was 5.88 (2-15). Initial presentation was stroke (23; 16.9%), incidental (28; 20.6%), arrhythmia (13; 9.5%), shortness of breath (23; 16.9%), syncope (4; 2.9%), chest pain (8; 5.6%) or unknown (37; 27%). Cardiac chamber involved was left atrium (90; 66%), right atrium (38; 30%), right ventricle (1; 0.7%). Mean bypass time was 84 mins and cross-clamp time 54 mins. Two patients had re-sternotomy for bleeding and in hospital mortality was 2.1% (3). Final pathology was atrial myxoma (120; 88%), fibroelastoma (6; 4.4%), thrombus (5; 3.7%), granulation tissue (2; 1.5%), calcified nodule (2; 1.5%) and lipoma (1; 0.74%).

Conclusion Although uncommon, cardiac tumours must be excluded in patients presenting with the symptoms described. Pathological correlation is essential as myxomas may be malignant or other benign masses including thrombus. Surgery has excellent outcomes. To our knowledge this is the largest European series of benign cardiac tumours.

Presenter: **Mr Martin Yates**, *Fellow, Mount Sinai Hospital*

Incidence of patient prosthesis mismatch is reducing over time: 2725 bioprosthetic aortic valve replacements over 12 years A213

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Objective The proportion of bioprosthetic prostheses used for aortic valve replacement (AVR) is increasing. Bioprosthetic valves risk patient prosthetic mismatch (PPM) due to small effective orifice area (EOA). This study aims to examine the effect of PPM on perioperative mortality and survival in large cohort of bioprosthetic aortic valve implants. We also examine temporal changes in the incidence of PPM during the series.

Methods Patients who underwent AVR, either as isolated procedure, or with coronary artery grafting between 2004 and 2015 were identified from the prospectively collected databases of two tertiary cardiac surgery units. Patients where valve type and size were not available were excluded. Moderate and severe patient prosthesis mismatch were defined as 0.65-0.85cm²/m² and <0.65cm²/m² respectively. Follow-up was obtained by cross-reference with death data from the Office of National Statistics. Survival analysis was completed using the Kaplan-Meier method. Independence of risk factors for perioperative mortality or worse survival was analysed using regression methods.

Results The indexed effective orifice area (iEOA) was calculated in 2725 patients. Mean follow-up was 4.8 years. Median EuroSCORE I was 7.0. Operative mortality for the cohort was 2.83%. Both moderate (OR 2.15, 95% CI:1.28-3.63) and severe PPM (OR 3.16, 95% CI:1.47-6.80) predicted perioperative mortality. Severe PPM also predicted a worse long-term prognosis (HR 1.42 95% CI:1.11-1.83). The rate of moderate or severe PPM reduced over the study, from 60.9% in 2004-2007, to 46.7% in 2008-2011 and 36.9% in 2012-2015 (Figure 1). The mean iEOAs for patients in these periods were 0.84, 0.90 and 0.94cm²/m² respectively. The proportion of porcine valves implanted reduced over the study, while there was a commensurate increase in bovine pericardial valve use.

Conclusion Patient prosthesis mismatch increases early and late mortality following aortic valve replacement when severe. Moderate PPM only affects in hospital mortality. The incidence of PPM is reducing over time due to increasing effective orifice areas of modern bioprostheses.

Presenter: **Mr David Bleetman**, ST4, *David Bleetman*

Mitral valve repair or replacement in acute infective endocarditis? Single centre experience with ten years follow up. A360

Authors D Bleetman¹; A Harky¹; M Bashir¹; D Balmforth¹; B Adams¹; P Gupta¹; M T Yates¹; K Wong¹; J Yap¹; B Consortium of Surgeons¹; R Uppal¹;

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Objective Mitral valve surgery is the definitive treatment for acute infective endocarditis of the mitral valve. Depending on severity, both repair and replacement have been proposed. The aim of this study is to describe the feasibility of mitral valve repair for bacterial endocarditis and the efficacy of mitral valve replacement relative to mitral valve repair at a large UK centre.

Methods Between 1999 - 2016, a total of 449 patients have been admitted for mitral valve endocarditis and operated on. The study involves a retrospective, single-centre, cohort study. Primary outcome measured was in-hospital mortality. Secondary outcome was follow-up mortality. Patients were grouped according to procedure type, and potential differences in pre-operative and intra-operative factors were analysed. Survival charts were produced using the Kaplan-Meier technique, comparisons are made using logrank tests. To account for differences in case mix we developed a propensity score for mitral valve repair group members.

Results A total 342 (76.2%) patients underwent Mitral valve replacements, and 107 (23.8%) were Mitral valve repairs. Before matching, repair group were younger at presentation 54 years vs 59 years ($p=0.028$), rate of females were similar in both groups (68-71%, $p=0.57$). Patients in replacement group had higher rate of NYHA class III or above (59% vs 48%, $p=0.038$), higher logistics EuroSCORE (11.8 vs 5.1)

Conclusion This study presents the largest single-centre experience in the UK to date and has long-term data up to 10 years demonstrating Mitral valve replacement non-inferiority to Mitral valve repair in the context of mitral valve bacterial endocarditis. Our study suggests complete removal of the infected valve with prosthetic replacement is an acceptable option in patients for whom repair is not achievable.

Presenter: **Mr Ivan Yim**, ST2, *Queen Elizabeth Hospital, Birmingham*

Cardioplegia in paediatric cardiac surgery: a systematic review of randomised controlled trials A278

Authors I Yim¹; A J Patel¹; N K Oswald¹; C R Chong²; J Stickley¹; T J Jones¹; N E Drury¹;

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Objective Cardioplegia is the primary method for myocardial protection against ischaemia-reperfusion injury during cardiac surgery. However, there are marked variations in the use of commercially-available solutions in children worldwide which may be due to a lack of clinical evidence. We conducted a systematic review of randomised controlled trials of cardioplegia in paediatric cardiac surgery to evaluate the current evidence-base.

Methods We searched MEDLINE, CENTRAL and LILACS, and manually screened retrieved references and systematic reviews to identify all randomised controlled trials comparing cardioplegia solutions or additives in children undergoing cardiac surgery published in any language; secondary publications and those reporting inseparable adult data were excluded. Two reviewers independently screened studies for eligibility and extracted data; the Cochrane Risk of Bias tool was used to assess for potential biases.

Results We identified 26 trials randomising 1,596 children undergoing surgery; all were single centre, phase II trials, recruiting few patients (median 48, IQR 30-99). The most frequent comparison was blood versus crystalloid in 9 (34.6%) trials and the most common endpoints were biomarkers of myocardial injury (16, 61.5%), inotropes (14, 53.8%) and length of stay in intensive care (10, 38.4%). However, the heterogeneity of patients, interventions and reported outcome measures prohibited meta-analysis. The overall risk of bias was high in 3 (11.5%), unclear in 23 (88.5%) and low in none.

Conclusion The current literature on cardioplegia in children contains no late phase trials. The small size, inconsistent use of endpoints and low quality of reported trials provides a limited evidence-base to inform clinical practice. A core outcome set of clinically important, standardised, validated endpoints for assessing myocardial protection in children should be developed to facilitate the conduct of high-quality, multicentre clinical trials and meta-analysis of pooled data.

Presenter: **Dr Nina Al-Saadi**, *Foundation year 1 doctor, Ms.*

What is the clinical utility of accelerometers to predict early outcome in high risk frail patients undergoing cardiac surgery? A348

Authors Y Abdullahi²; N Al-Saadi¹; R Casula²; L Athanasopoulos²; T Athanasiou²; **N Al-Saadi**³;

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Objective Physical activity (PA), as a functional assessment of physiological reserves is critically important for predicting the ability to tolerate a major operation that might increase the occurrence of post-operative complications. The effect of PA intensity and frailty relationship is not clearly understood as much of the evidence comes from self-reported data on PA.

Methods 80 patients undergoing cardiac surgery with no contraindications and: (i) age ≥ 65 years, (ii) agree to wear a wrist band that contains a tri-axial accelerometer in order to objectively measure their PA levels both pre-operatively and post-operatively including while sleeping and bathing, (iii) Signed the content in the consent form.

Results The study presented relationship between accelerometer output and frailty score suggesting that tri-axial accelerometer is a valid tool to measure physical activity level in this cohort of functionally-limited patients. The most significant differences were noted pre-operatively ($p=0.0464$). Low frail patients were less likely to have two or more complication with relative risk of 0.4421 when compared to high frail patients (OR: 0.2716) with significant of ($p=0.0287$). Low PA and frailty were predictors of renal failure ($p=0.014$), composite complication ($p=0.019$) and re-operation ($p=0.033$). High frail patients were twice more likely to have longer in-hospital stay than non-frail ($p=0.016$).

Conclusion A difference has been identified in the pre-operative activity, this was measured by the accelerometer between highly frail and less frail patients. The operation affected the activity level of both groups with no significant difference noted postoperatively between them. Complication aggregation and length of hospital stay were higher in the highly frail group. This study highlights the lack of screening tools in cardiac

outpatient's clinics to determine which cardiac patients are at high risk of poor outcome and unplanned longer in-hospital stay. This necessitate technology use to predict risk better.

Presenter: **Dr Hyla Peens-Hough**, *Paediatric Cardiac Surgery Fellow, Alder Hey Children's Hospital Foundation Trust*

Risk perception of mothers and fathers of children undergoing heart surgery: a quantitative longitudinal analysis *A277*

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Objective The way in which risk is interpreted by parents of children undergoing congenital cardiac surgery is poorly documented. Literature suggests clinicians have concerns that parents may not understand the complexity of procedures, conversely some parents perceive an unnecessarily over-emphasise of risks. We aim to explore how risk is encountered by parents in order to deliver effective and compassionate care.

Methods A mixed methods approach was adopted. 90 parents of children undergoing cardiac surgery were recruited. A Likert scale from 1 (perceived lowest risk) to 6 (perceived highest risk), was completed at five points: arrival at pre-admission; post discussion with anaesthetist/surgeon; day of surgery; discharge from intensive care; following hospital discharge. The surgical sample was stratified according to RACHS-score and surgical consent was obtained accordingly.

Results The median score across the five points for each parent was calculated. These were combined to produce a median score for all parents, mothers and fathers. Maternal scores were higher than paternal scores (4.75 vs 3.0, $p < 0.001$). All scores were higher than the median RACHS-score: combined parental (3.8 vs 2.0 $p < 0.001$); maternal (4.75 vs 2.0, $p < 0.001$); and paternal scores (3.0 vs 2.0, $p < 0.001$). These scores remained significant after correction for multiple testing ($p < 0.01$). Individual parental risk scores varied at different time points, with no consistent risk scores observed. Postoperative complications resulted in a persistent rise in risk perception following discharge.

Conclusion When ranking perception of risk, parents reflect higher scores than those reported by the clinical team. Mothers report statistically significant higher scores than their partners, highlighting potential tensions. In addition, the changing perception of risk over different time points, emphasises the need for flexible levels of support and information as parents navigate uncertainty.

Presenter: **Dr Mervat Khalifa**, *Clinical Research Fellow CTS, University Hospital Southampton NHS Foundation Trust*

Open thoracotomy vs. Video Assisted Thoracic Surgery (VATS) lobectomy for lung cancer and timing of delivery of post operative adjuvant chemotherapy *A410*

Authors M Khalifa¹; A Menshawy¹; J Cave¹; A Alzetani¹;

¹ University Hospital Southampton NHS Trust, UK

Objective Video Assisted Thoracic Surgery (VATS) Lobectomy is becoming more prevalent as a surgical option for treating lung cancer alongside traditional thoracotomy as it allows faster recovery and expedited discharge, and hopefully should contribute to an earlier delivery of adjuvant chemotherapy for those who need it.

Methods A retrospective study was performed on patients who had a resection of lung cancer at Southampton General Hospital, between April 2013 and October 2016. Surgical and chemotherapy databases were reviewed to gather demographics, procedure dates, details (VATS/Open), pathological diagnosis and staging along with timing of chemotherapy delivery and, if any, toxicity.

Results A total of 465 patients' data in the Southampton area; (79 open 16.9% VS 389 VATS 83.1%) of which 36 patients (7.7%) had metastatic (Non-primary) lung cancer, 319 patient (68.2%) didn't have chemotherapy (38 Open, 281 VATS) and 110 patients (23.5%) had adjuvant chemotherapy (35 Open, 75 VATS). Out of the 110 patient treated, 101 patients (91.8%) of both groups, started their chemotherapy in less than 3 months period, with a Median of 60.4 days [24-138]. Chemotherapy was started earlier in the VATS group (median 59.5 days [24-117]) Vs the Open group with a median of 62.3 days [33-138]. To summarize, 93.3% (70/75)VATS patients Vs 88.6% (31/35) Open patients, started chemotherapy within 3 months. Also, Toxicity with subsequent termination of therapy was less in the VATS groups; 16% (12/75) Vs open surgery group 17.14% (6/35).

Conclusion More than 90% of patient started chemotherapy within 90 days of surgery. Open resections were associated with a higher risk of delayed chemotherapy. Future studies looking at the optimum timing of adjuvant chemotherapy may be feasible in the era of VATS surgery.

Presenter: **Dr Laura Dunbar**, CT2, *Golden Jubilee National Hospital*

Localisation of post-operative pain following thoracic surgery - does the surgical incision have any impact on the site of pain? A416

Authors L M Dunbar¹; N A Bradley¹; E D Kennedy¹; R Govindraj¹; H Monaghan¹; L Heron¹; A J Kirk¹; M Asif¹; M Klimatsidas¹;

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Objective Management of acute postoperative pain following thoracic surgery is challenging and requires a specialised team. Increased doses of sedating systemic analgesia increases the risk of post-operative respiratory complications and slows recovery. Previous studies comparing surgical techniques have focused on pain scores, but data on the site of pain are lacking. We aim to identify the actual site of pain perceived by the patient and compare to the surgical approach.

Methods Data were collected prospectively from 100 patients who underwent a range of thoracic surgical procedures between June and August 2017, in a high volume centre. Pain was assessed daily using a visual

analogue scale (score 0-4) for post-operative days 0-3. The primary site of the pain as indicated by the patient on their chest was documented. Statistical analyses were performed using GraphPad InStat v3.10. Data are reported as Mean (95% CI).

Results 94 patients were eligible for analysis. 66 lung resections, 18 pleural, 7 mediastinal and 3 chest wall procedures were performed via VATS (66.0%), thoracotomy (28.7%) and sternotomy (5.3%). Primary analgesia included paravertebral catheters (1.1%), IV opioid PCA (21%), oral analgesia (19.1%), combination therapy (52.1%) and epidural (6.4%). In 79 instances further rescue analgesia was required. With chest drain in situ 62.5% of patients reported maximal pain at the site of the chest drain ($p < 0.0001$). Post-operative pain scores decreased following drain removal. Mean pain score with drain was 1.64 (1.51-1.78), which fell to 1.06 (0.87-1.26) following drain removal ($p < 0.0001$). Only 5.63% of patients reported pain at their surgical incision.

Conclusion Acute post-operative pain after thoracic surgery tends to localise to the chest drain site irrespective of type of incision. Methods of post-operative pain control should be extended beyond the site of incision with targeted local analgesia to cover the site of chest drain in order to reduce need for high doses of systemic therapy.

Presenter: **Dr Ewan Kennedy**, *Core Surgical Trainee, Golden Jubilee National Hospital*

Assessment of interval progression of NSCLC between radiological diagnosis and surgery using the 8th TNM classification ^{A243}

Authors ED Kennedy¹; N A Bradley¹; R Govindraj¹; A J Kirk¹; M Klimatsidas¹; M Asif¹;

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Objective The 8th TNM classification of NSCLC has been widely adopted into UK practice. Compared with the 7th edition, there is a more substantial inverse relationship between tumour size and prognosis, which may upstage some patients. This study aims to describe the changes in tumour size from first radiological detection to surgical resection based on the 8th TNM edition to highlight the interval upstaging of patients awaiting surgery.

Methods A retrospective analysis of all NSCLC resections in a high volume tertiary centre between January and June 2016. Size, and TNM (8th edition) stage of primary tumour were recorded from first diagnostic CT report and from post-operative pathology reports. Incomplete data sets were excluded. Statistical analyses were performed using GraphPad InStat v3.10. $p < 0.05$ were considered significant. Data are reported as median (IQR) unless specified.

Results 144 patient records were eligible for analysis. Median number of days from diagnostic CT to resection was 77 (55). Median baseline tumour size was 2.4cm (1.7), stage T1c. 17% of patients had evidence of nodal disease at diagnosis. From CT to resection, T stage increased in 51% of patients. Overall stage group (Stage I-IV) between CT and resection increased in 53% of patients. The size of primary tumour increased in 65% of patients, by an average of 48% of original size. In patients who upstaged, there was a significant difference

between tumour size at time of CT, PET and resection ($p=0.0041$). Regression analysis of tumour size at pathology with baseline tumour size and time to resection did not show any relationship ($r^2=0.03$, $p>0.05$).

Conclusion Significant interval progression of NSCLC is seen between first radiological diagnosis and surgical resection, both in T stage and group Stage (8th edition). Reduction in the delay between radiological diagnosis and surgical resection, by greater coordination between services involved, could limit tumour progression and hence improve cancer prognosis.

Presenter: **Mr Vipin Mehta**, *Peri CCT fellow-Transplantation&MCS, Wythenshawe Hospital, Manchester*

Comparison of extra corporeal membrane oxygenation versus cardiopulmonary bypass support for lung transplantation ^{A262}

Authors V Mehta¹; J Hasan¹; J Salaie¹; E Milser¹; K Santhanakrishnan¹; M Al-Aloul¹; J Dimarakis¹; J Barnard¹; R V Venkateswaran¹;

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Objective Haemodynamic support during lung transplantation (LTx) is conventionally provided by cardiopulmonary bypass (CPB) requiring high doses of heparin. Extra Corporeal Membrane Oxygenation (ECMO) can provide similar haemodynamic support with minimal heparin doses, potentially improving outcomes. We analysed our outcomes comparing both of these approaches.

Methods A total of 260 patients underwent LTx from Jan 2007 to Aug 2017. We retrospectively analysed donor and recipient characteristics and post-operative outcomes including blood product usage to contrast the two surgical approaches.

Results 136 patients had LTx on CPB, while 55 patients were transplanted on ECMO. Patients transplanted off-pump (without CPB or ECMO) were excluded from the analysis. Mean recipient age was 55.6 ± 13.8 yrs. There was no difference in donor age/ height/ weight or recipient age/ height/weight between the two groups. Mean ICU stay tended to be longer in CPB group compared with ECMO group, 22 vs 16 days respectively ($p=0.08$). Mean hospital stay was 44 vs 35 days ($p=0.07$). Post-operative use of blood products was higher in patients on CPB. They required significantly more Fresh Frozen Plasma (6.3 vs 2.9 units, $p<0.001$) and platelets (5.6 vs 2.6, $p=0.008$), while cryoprecipitate use was similar (1.0 vs 1.7, $p=0.2$). Other blood product usage tended to be higher in CPB group: red cells (10.4 vs 7.2, $p=0.057$), albumin (19.6 vs 13.8, $p=0.063$). CPB patients had higher tendency towards re-exploration for bleeding (34/136 vs 7/55, $p=0.056$). Both groups had statistically similar rates of acute kidney injury requiring dialysis (26/136 vs 9/55, $p=0.27$), post transplant ECMO support (13/136 vs 10/55, $p=0.07$) and histological rejection within 30-days (ISHLT grade $\geq A1$, 24/136 vs 15/55, $p=0.1$). One-year survival was significantly higher in the ECMO group compared to CPB (92.7% vs 81.6%, $p=0.05$).

Conclusion ECMO is superior to CPB for LTx due to less blood product requirement and significantly higher one-year survival.

Presenter: **Mr Vipin Mehta**, *Peri CCT fellow-Transplantation&MCS, Wythenshawe Hospital, Manchester*

Use of temporary Right Ventricular Assist Device (RVAD) after implantation of long term Left Ventricular Assist Device (LVAD) A269

Authors V Mehta¹; J Hasan¹; P Callan¹; S G Williams¹; J Barnard¹; J Dimarakis¹; S Shaw¹; R V Venkateswaran¹;

¹ University Hospital of South Manchester, UK

Objective Right ventricular (RV) failure after implantation of long term left ventricular assist device (LT-LVAD) is multifactorial and is associated with high mortality and morbidity. We analysed our incidence and the impact of timing of RVAD implant after LT-LVAD.

Methods We retrospectively reviewed all patients who had LT-LVAD implantation, from January 2010 to October 2017 in our unit. We analysed patient characteristics, post-op RVAD use including the timing of RVAD implantation and survival.

Results Eighty nine LT-LVAD implants were performed on 87 patients (2 pump exchanges) from January 2010 to October 2017, at our centre. Mean age at implant was 48 years. 12 patients had Heartware (13 implants), 39 had Heartmate II and 36 had Heartmate III implantation (37 implants). The intention for LT-LVAD implantation was bridge to candidacy in 53 patients and bridge to transplant in 36 patients. Temporary RVAD support was required in 16/89(18%) procedures. Nine patients had a requirement for temporary RVAD implantation recognised at the same time as LT-LVAD implantation, before leaving theatre, while the 7 patients manifested a delayed requirement for RVAD. Overall in hospital procedural mortality rate was 9/89 (10.1%). In-hospital mortality rate was 1/89 (1%) in patients not requiring RVAD support, 2/9 (22%) in patients who had simultaneous RVAD implantation and 6/7 (86%) in the patients who had a delayed requirement for RVAD assistance. Of the 87 patients who had LT-LVAD implantation - 63 patients are still alive. The 1, 3 and 5 year survival while on LT-VAD (censored at transplant, explant or decommissioning for recovery) is 84%, 70% and 57% respectively. Kaplan Meir survival curves are as shown in figure 1.

Conclusion Our results demonstrate the importance of early recognition of RV failure in theatre, after LT-LVAD implantation. Management of RV failure with early temporary RVAD implantation can lead to an excellent outcome, while the results of a delayed RVAD implantation remain poor.

Presenter: **Mr Stuart Grant**, *ST5, North West Deanery*

A multi-centre propensity matched study of minimal access versus sternotomy for mitral valve surgery A180

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and Chest Hospital, UK; ⁴ Liverpool University Medical School, UK; ⁵ Sheffield Teaching Hospitals NHS Trust, UK; ⁶ University Hospital of South Manchester, UK

Objective There has been a marked increase in the number of minimal access mitral valve procedures performed worldwide in recent years. There is however limited comparative data between minimal access and sternotomy for mitral valve surgery. The objective of this study was to compare short and mid-term outcomes between sternotomy and minimal access for mitral valve surgery.

Methods Data for all mitral valve procedures with or without concomitant tricuspid atrial fibrillation surgery were collected from three UK hospitals between 1st January 2008 and 31st December 2016. Propensity matching on a one-to-one basis using nearest neighbour matching without replacement (caliper 0.05) was performed. Short term outcomes were analysed using conditional logistic regression and mid-term survival was analysed using Kaplan-Meier curve and log-rank test.

Results A total of 2402 procedures (1755 sternotomy and 647 minimal access) were performed during the study period. Propensity matching resulted in 586 matched pairs with improved balance post matching in all covariates. There was no significant difference in in-hospital mortality (OR 1.5, 95%CI 0.6- 3.7, p=0.374), re-operation (OR 0.9, 95%CI 0.5- 1.5, p=0.686), or post-operative stroke (OR 0.4, 95%CI 0.2- 1.1, p=0.068). Minimal access was associated with a lower need for transfusion (OR 0.6, 95%CI 0.4-0.8, p<0.001, and reduced post-operative length of stay (median 1 day, p<0.001). At a mean follow up of 4.1 years there was no significant difference in survival (p=0.40).

Conclusion This represents the largest comparative study of minimal access versus sternotomy for mitral valve surgery. Minimal access approach is associated with a significant reduction in post-operative length of stay and need for transfusion compared to sternotomy. There were no significant differences in in-hospital mortality, re-operation for bleeding, stroke or mid-term survival. Minimal access approach for mitral surgery is safe and has a number of potential benefits over sternotomy.

Presenter: **Mr Robert Gannon**, *CCA Education Charge Nurse, Papworth Hospital*

Development of an in-house masters level cardiothoracic critical course for nurses with a partner university ^{A300}

Authors **R Gannon**¹; S Moore¹; P H Critical Care Education Team¹;

¹ Papworth Hospital NHS Trust, UK

Objective Objectives: 1: Almost all cardiothoracic intensive care units enrol their nursing staff members on the general intensive care nursing course to help build expertise and to meet minimum standards for training. General intensive care nursing courses find it challenging to focus sufficiently on skill sets, knowledge requirements and critical analysis of the current evidence base in cardiothoracic critical care nursing due to their generic content. 2: As a recruiter of newly qualified nurses, this study programme represents a bridge to support the transition from student nurse to professional practitioner.

Methods A project management approach was adopted. Support was sought and gained from the critical care business unit to progress with the initiative. Close working relationships were developed with our partner university - Anglia Ruskin University. Delegation of various tasks to other members of our critical care education team in order to develop a programme of study, work based learning and a robust assessment process to meet the standards set by our partner university.

Results Anglia Ruskin University awarded our critical care unit a 30 credit cardiothoracic critical care course at Masters level. The course commenced in September 2017 and 50 staff members are currently enrolled.

Conclusion The award of this course represents a first in cardiothoracic critical care clinical education in the UK. This is the first cardiothoracic intensive care course that contributes to the percentage of staff that should have a post registration qualification in critical care nursing to meet the standards set out by the GPCs guidelines that are analysed on CQC inspection. 50% of critical care staff should have a post registration award in critical care nursing to support safe patient care. It is thought to represent a first in a provision of a bridge to support the student nurse transition to registered professional and lifelong learning in clinical practice.

Presenter: **Mr Vasileios Kouritas**, *Senior Specialist Registrar, St. James's University Hospital*

Effectiveness of the new early warning score (NEWS) system in predicting adverse outcome in thoracic surgery patients ^{A414}

Authors V Kouritas¹; N Cutmore¹; S Diamini¹; E Kefaloyannis¹; P Tcherveniakov¹; K Papagiannopoulos¹; A Brunelli¹; R Milton¹; N Chaudhuri¹;
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Objective Warning scores are utilized in everyday clinical practice to monitor patients in an effort to avoid catastrophic events. The NEWS is the most recent warning score system implemented across the nation. Aim of the present audit was to investigate the effectiveness of the NEWS in predicting an adverse outcome in patients who already trigger for escalation within a thoracic surgery department.

Methods Fifty-three patients who triggered for escalation of treatment according to the NEWS (≥ 5) were retrospectively investigated. The patients were enrolled after random ward rounds. Patients were categorized into group A if they had a favourable outcome and into group B if they developed an adverse event (re-operation, escalation of treatment to intensive care unit or death).

Results The mean age was 64.8 years (21 – 93) and 28 subjects (52.8%) were of male gender. Thirty-seven patients (69.8%) were included in group A and 16 in group B (30.2%, 6 patients were transferred to ICU, 6 were operated/re-operated on and 4 died). The age, gender, reason of admission/initial treatment, reason of deterioration and the NEWS between the 2 groups were similar. NEWS ≤ 7 in most patients (72%) was resolved whereas only 33% of the patients with NEWS ≥ 8 ended up with an adverse event. Patients with increasing NEWS in the HDU and with known reason of deterioration presented more adverse events ($p < .01$ respectively). ROC analysis of NEWS, as a predictor of adverse outcome, showed an Area Under the Curve=0.484 ($p = .68$). Logistic regression showed that increasing NEWS was not a predictor of adverse outcome.

Conclusion NEWS identified adverse outcome only on specific occasions. The characteristics of thoracic surgery patients need to be considered when implementing the NEWS in this population.

Presenter: **Mr Vasileios Kouritas**, *Senior Specialist Registrar, St. James's University Hospital*

Impact of the type of initial intervention on outcome of surgical treated patients with chronic obstructive pulmonary disease A381

Authors V Kouritas¹; R Milton¹; E Kefaloyannis¹; K Papagiannopoulos¹; A Brunelli¹; P Tcherveniakov¹; N Chaudhuri¹;

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Objective Surgical management of chronic obstructive pulmonary disease has shown to be safe and effective in appropriately selected patients. Aim of this study was to perform a comparison of the outcomes of patients with COPD, who were initially treated with LVRS or EBV's respectively.

Methods Within a study period of 3 years, 147 patients who were subjected to EBV insertion or LVRS were retrospectively analysed. The outcome of 52 patients who underwent EBV insertion (group A) was compared to the outcome of 52 patients (group B) treated with LVRS as initial intervention, after being matched for age, gender, performance status and exercise tolerance by propensity scoring (matching tolerance 0.5).

Results The mean age was 61.6 years while 61% were males. The postoperative morbidity was higher in group A (61% vs 34%, $p < .01$) but total length-of-stay was similar with group B (median 10 vs 7 respectively, $p = .12$). Re-interventions (including re-operations for morbidity) were necessitated in more patients from group A (57% vs 21%, $p < .01$) and the overall number of re-interventions was higher (median 2 vs 1, $p < .01$) in this group. The re-intervention-free interval was also shorter (25 vs 13 months, Tarone Ware test $p < .01$ respectively) in group A. Improvement of breathing status (reported from patients) improved in more patients in group B (67.5% vs 31%, $p < .01$) whereas the COPD Assessment Test (CAT) score improved more in that group (26 to 18 vs 26 to 22, $p < .01$). The type of initial intervention was a strong predictor of re-intervention probability ($p < .01$) alongside with the involvement of the emphysema MDT ($p = .025$) and female gender ($p < .01$). Survival was similar between 2 groups (log-rank 0.002, $p = .98$).

Conclusion Patients initially treated with LVRS, required fewer interventions for their disease, had longer re-intervention-free intervals and better post-intervention quality of life. The specific characteristics of each intervention and each target group should be considered before surgical intervention.

Presenter: **Miss Olivia Pennington**, *Statistician, Lancaster University*

Long term survival for patients suffering CVA post CABG surgery. A single institution 21-year data analysis. A222

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Objective Stroke is a well known complication of performing coronary artery bypass grafts (CABG). We aim to investigate the extent to which having a stroke after CABG impacts the risk of death compared to those who do not suffer a stroke.

Methods The analysis data set is based on a single centre retrospective study conducted over a 21-year follow-up period from 1996-2017. The survival analysis methodology consisted of Kaplan-Meier estimates; the log-rank and likelihood ratio tests and the Cox proportional hazards model (CPHM). A univariate CPHM was used to assess the hazard ratio of death for the presence of stroke, followed by a multivariate CPHM including adjustments for other pre-operative characteristics, using backward selection. Further analysis considers two sensitivity analyses: the first a stopped Cox regression model using a 5-year follow-up to assess the impact of the length of study time and the latter considering a period effect to appreciate medical advancements in surgery over the 21-year study length.

Results 16,309 patients were identified. 14,074 (87%) patients had on-pump CABG and 2,167 (13%) had off-pump. The incidence of stroke was 1.5%. However, 67.4% died by the end of follow-up. Hospital mortality for stroke patients was 34.4% with the remaining patients discharged alive and died at a later date. The hazard of death is approximately 3.4 (CI: 2.90, 3.97) times higher for patients who suffered a stroke compared with patients who did not. The hazard ratio decreased to 2.56 (CI: 2.17, 3.02) when adjusting for other operative characteristics including age and gender under the multivariate model. Both sensitivity analyses agreed with the results from 21-year follow-up data analysis; the risk of death following CABG surgery is higher in the cohort of patients who suffer from a stroke.

Conclusion Although the incidence of stroke is low the fatality rate remains high. This is irrespective of follow-up time and the period at which the patient had surgery.

Presenter: **Mr Jason Ali**, *Cardiothoracic surgery SpR, Royal Papworth Hospital*

Reduced transfusion of blood products and mediastinal bleeding following cardiac surgery after implementation of a novel 'haemostasis checklist' A344

Authors J M Ali¹; C Gerrard¹; J Clayton¹; N Moorjani¹;

¹ Papworth Hospital NHS Trust, UK

Objective Transfusion of blood products following cardiac surgery is associated with adverse outcomes, including mortality, infection and organ dysfunction. In addition, patients that have increased mediastinal drainage and require re-exploration are found to have increased morbidity and prolonged intensive therapy unit and hospital length of stay, resulting in increased resource utilisation. We aimed to reduce blood product transfusion rate and postoperative mediastinal bleeding by introducing a 'haemostasis checklist'.

Methods A simple, easy to perform 'haemostasis checklist' was developed using a systematic approach to the most common sites of bleeding and factors important for reducing coagulopathy. Prior to sternal closure following cardiac surgery, a time-out was taken by all theatre personnel to go through the 'haemostasis checklist'. Data was collected prospectively and analysed for all patients undergoing cardiac surgery in the 3 month period pre- (n=504) and post-implementation (n=514) of the checklist. This included patients undergoing elective, urgent and emergency procedures for all surgeons with no exclusions.

Results In the 3 month period following implementation of the haemostasis checklist, there was a significant reduction in mediastinal bleeding at 12 hours (347.0 vs. 420.7 mL, $p < 0.01$) and in the proportion of patients bleeding > 1 litre at 12 hours or returning to theatre within 48 hours (4.71% vs. 7.69%, $p < 0.05$). Associated with this, there was a corresponding reduction in the mean number of units of red blood cells (1.37 vs. 1.65 units, $p < 0.01$) and coagulation products (0.98 vs. 1.25 units, $p < 0.01$) transfused per patient, which has resulted in a cost saving of £30,053 in blood products alone since the introduction of the checklist.

Conclusion The 'haemostasis checklist' represents a simple intervention that has resulted in a significant reduction in postoperative mediastinal bleeding and subsequent blood product transfusion. These benefits are associated with significant cost savings.

Presenter: **Mr Jason Ali**, *Cardiothoracic surgery SpR, Royal Papworth Hospital*

Impact of liver cirrhosis on outcomes following cardiac surgery ^{A367}

Authors J M Ali¹; K Wallwork¹; Y Abu-Omar¹;

¹ Papworth Hospital NHS Trust, UK

Objective Liver cirrhosis is a significant risk factor in patients undergoing cardiac surgery that is not accounted for in risk scoring systems. We sought to review outcomes of cirrhotic patients undergoing elective cardiac surgery at our institution to evaluate its impact on postoperative morbidity and mortality.

Methods We identified patients with cirrhosis who underwent elective, first-time cardiac surgery at our centre between January 2008 and December 2016. Demographic and outcome data were retrieved from our prospectively maintained surgical database and the electronic patient records.

Results A total of 34 patients were identified, 21 male and 13 female. The mean age was 66.3 years. The mean 'model for end-stage liver disease' (MELD) score was 13 representing mild-moderate cirrhosis severity. Fifteen patients underwent single valve replacement, 8 CABG+ valve, 6 CABG and 5 double valve replacement). Twenty-nine patients (85.3%) had good LV function, the remaining moderate impairment. Mean logistic EuroSCORE was 5.54. The mean 12 hour mediastinal blood loss was significant - 2623ml (SD 567.9) with 4 patients (11.8%) returning to theatre for bleeding. Two patients (5.9%) experienced decompensated liver failure. Mean duration of invasive ventilation was 41.8 hours (SD 15.91), and mean length of ICU stay was 4.7 days (range 1-23). Two patients required ITU readmission. The mean length of hospital stay was 15 days (range 6 – 28). Perioperative mortality was 8.8%. One and five year survival were 84.8% and 64.7% respectively.

Conclusion Patients with cirrhosis undergoing elective cardiac surgery have greater than predicted mortality, prolonged ITU and in-patient stays and suffer significant postoperative morbidity. The significant impact of cirrhosis on postoperative morbidity and outcomes following elective cardiac surgery should not be underestimated, and this comorbidity should be factored in the evaluation of the perioperative risk-benefit ratio.

Presenter: **Ms Hailan Liu**, -, *Papworth Hospital*

Solutions for vein distension and storage - which solution? A421

Authors H Liu¹; E Abraham¹; D Jenkins¹; Y Li¹;

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Objective Coronary artery bypass grafting (CABG) is one of the most commonly performed cardiac procedures in the western world. Autologous vein grafts remain the primary graft material used in CABG surgery. Vein graft failure post CABG is a major complication of coronary artery bypass surgery. The preservation solution used to distend and store the harvested vein prior to implantation has a significant impact on vein graft endothelial function and contributes to intimal hyperplasia and subsequently vein graft failure. Despite this, preservation solutions have not been well investigated hence the effects of different solutions on the endothelium remains ambiguous. The objective of this work was to determine the best solution that could be used for vein distension and storage that would minimise intimal damage.

Methods The authors have conducted a national survey in the UK to assess current practice by obtaining data telephonically from thirty cardiac centres (85.7%). A literature review comparing studies in the last 10 years was then completed to determine the effectiveness of different preservation solutions in CABG surgery.

Results The nationwide survey demonstrated heparinised saline and heparinised autologous blood to be the most commonly used solutions. Heparinised autologous blood mixed with saline was the next most favoured choice. Other solutions; unheparinised saline, cardioplegia blood, heparinised Hartmann's solution, unheparinised Hartmann's solution and DuraGraft were used by a minority of surgeons in some centres. Our analysis showed that out of 30 cardiac units, 15 centres (50%) had agreement amongst its surgeons as to which type of solution to use. (Whatever solution was chosen, all surgeons in that unit used it). The other 15 centres used more than one type of solution per centre due to individual surgeon's preferences. In those cardiac units that had agreement amongst its surgeons, heparinised saline and heparinised autologous blood was most commonly used (33.33% each), while heparinised autologous blood mixed with saline was second most popular (13.33%). DuraGraft, heparinised and unheparinised Hartmann's solution were least popular (6.67% each). Similarly, the literature review indicated heparinised saline and heparinised autologous blood were the most widely used solutions. The findings revealed that there is no "best" solution currently. However, some studies demonstrated that a buffered solution produced the least damage to the intima.

Conclusion It's surprising that in this modern age, a suitable solution has not been produced to minimise vein graft failure. However DuraGraft, a relatively new product on the market is currently subject to a randomised controlled trial which may offer some answers in the near future.

Presenter: **Dr Alessia Gambaro**, *Cardiology Registrar, Royal Brompton Hospital*

The “unnatural” natural history of the dissected descending aorta after successful repair for DeBakey Type I Acute Aortic Dissection *A171*

Authors A Gambaro²; M O Murphy²; J J See¹; M Rubens²; S Mirsadraee²; C Nienaber²; J Pepper²; C Quarto²; U Rosendahl²; G Asimakopoulos²;

¹ Changi General Hospital, Singapore; ² Royal Brompton & Harefield Hospitals, UK

Objective To describe the natural history of the dissected descending thoracic aorta after successful proximal repair of DeBakey type I acute aortic dissection (DT1ADD) as evaluated by axial imaging during follow up period.

Methods The aortic dissection (AD) database from December 2004 to December 2015 was interrogated for patients (pts) who had dissection repair. To be included in the study patients needed to have axial imaging in the first month post-operatively and at least one follow-up scan six months post-operatively. Exclusion criteria included patients with prior cardiac surgery, DeBakey type II dissection, false lumen thrombosis or subsequent intervention on the descending aorta. Aortic dimensions of true and false lumina early after repair and at last follow up were compared.

Results Of the 107 repairs for Type A AD carried out during the study period, 23 pts met the inclusion criteria for the study. The initial postoperative (post-op) scan showed a median maximal diameter of 38mm, 33mm and 32mm at the proximal, mid and distal descending thoracic aorta (DTA) respectively. Although in a small number of cases the cross sectional area had little or no change, at a median period of 28.6 +/- 21.1 months (Range 7.1-71.5 months) from initial post-op scan there was a median 27.5%, 24.7% and 23.3% increase in cross sectional area of the proximal, mid and distal DTA respectively. At last follow up, ten pts (43.5 %) of the cohort had a DTA of greater than 5cm. By univariate analysis, large aortic size on initial post-op scan was the only predictor of aortic enlargement over time.

Conclusion The dissected descending thoracic aorta dilates with time after repair DT1AAD, with the greatest changes occurring in the proximal DTA. Routine surveillance with axial imaging is warranted in these pts and intervention to seal the entry point to the false lumen, particularly those that are large on the initial scan, may be beneficial to prevent future expansion and rupture.

Presenter: **Dr Alessia Gambaro**, *Cardiology Registrar, Royal Brompton Hospital*

Aortic Valve Resuspension during repair of Acute Type A Dissection is associated with sub-optimal aortic valve function at medium-term follow up *A172*

Authors A Gambaro¹; M Morosin¹; S Talukder¹; M O Murphy¹; J Pepper¹; C Quarto¹; U Rosendahl¹; G Asimakopoulos¹;

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Objective The purpose of our study was to report the early- and medium-term outcomes of patients having Aortic Valve Resuspension (AVS) and to compare these with patients having Aortic Valve Replacement (AVR) or Aortic Root Replacement (ARR) in a contemporaneous cohort of patients undergoing repair for Acute Type A Dissection (AAD).

Methods The aortic dissection database was interrogated for patients who had AVS as part AAD repair and analysed for operative details, post-operative course, echocardiographic function of the re-suspended aortic valve and aortic root dimensions and compared with patients who had AVR or ARR at the time of dissection repair. Risk factors for development of greater than mild aortic regurgitation (AR) were analysed by univariate analysis.

Results Of 181 patients having dissection repair during the study period, sufficient echocardiographic follow up was available in 42 (23.2%), of whom 26 (61.9%) had AVS and 16 (38.1%) had AVR/ARR. The median follow up period was 23.5 months (13.87; 40.22). In patients who had AVS, the prevalence of greater than mild AR at discharge and at last follow up was of 11.5% and 23.1% respectively, with no patient having greater than mild AR in the AVR/ARR group. Aortic root dilation was more common in the AVS group compared to those who had AVR, with a median increase in diameter of 0.4mm (-2.7; 1.9) and 0.1mm (-2.6; 2.5) respectively ($p < .05$). By univariate analysis the only factor associated with progression to moderate or severe AR was root diameter greater than 40mm (OR = 12, 95% CI 1.5 – 97, $p = .02$).

Conclusion AVS can have sub-optimal medium-term outcomes in terms of aortic valve function and patients with greater than mild AR after dissection is associated with larger aortic root. AVR or ARR offer better mid-term outcomes in terms of valve function, though root diameters do increase over time in patients who have AVR with retention of the native aortic root.

Presenter: **Dr Alessia Gambaro**, *Cardiology Registrar, Royal Brompton Hospital*

Perceval sutureless Aortic Valve Replacement is associated with significantly reduced transvalvular gradients in the early post-operative period A232

Authors **A Gambaro**¹; M O Murphy¹; J Pepper¹; C Quarto¹; U Rosendahl¹; G Asimakopoulos¹;

¹ Royal Brompton & Harefield Hospitals, UK

Objective To compare the early haemodynamics (HD) of the Perceval Sutureless Aortic Valve (PSAV) with a low profile stented sutured prosthesis in the early postoperative (post-op) period of a contemporaneous cohort of patients (pts) undergoing aortic valve replacement (AVR).

Methods The cardiac surgery database was interrogated over a 2 year period for all pts having surgical AVR. The 48 patients having PSAV for various indications were propensity matched to 48 patients who had AVR with a Perimount Magna by indication, valve morphology, prosthesis external diameter, patient characteristics, surgical access and concomitant procedures. Preoperative patient characteristics, EuroSCORE II, operative data, post-op outcomes and post-op echocardiographic parameters, both immediately after and prior to discharge, for both groups were analysed.

Results The groups were well matched and had similar rates of post-op mortality, mediastinal re-exploration, para-valvular leak and stroke. PSAV were associated with significantly lower peak and mean gradients immediately after surgery (29.4mmHg and 17.1mmHg) and at discharge (19.8mmHg and 9.4mmHg) compared with the propensity matched group, immediately after surgery (37.0mmHg and 25.0mmHg) and at discharge (27.6mmHg and 15.1mmHg). The superior HD were observed across all matched valve sizes, with the greatest differences in HD observed at discharge in the matched groups receiving the smaller valve sizes. PSAV was associated with shorter cardiopulmonary bypass (88.1 minutes vs. 97.8 minutes, $p < 0.01$) and cross clamp (68.5mins vs 84.4mins, $p < 0.01$) times but a higher rate of post-op pacemaker insertion (16.7% vs 6.3%, $P < 0.01$) compared to conventional valves.

Conclusion Compared with a propensity-matched group having sutured low profile stented bioprostheses, PSAV yields superior post-op HD with a higher rate of post-op pacemaker insertion. Careful follow up will be required to define if this improved early HD outcome translates to superior left ventricular mass regression.

Presenter: **Dr Alexandra Monaghan**, *FY2 Doctor, University Hospitals of Leicester*

Systematic review of the predictive accuracy of point of care tests for coagulopathy in cardiac surgery ^{A347}

Authors A Monaghan²; C Corazzari²; M Wozniak²; C Tutino¹; C Beghi¹; GJ Murphy²;

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Objective Coagulopathic haemorrhage is a common and severe complication of cardiac surgery. Treatment guidelines recommend the routine use of point of care diagnostic tests of coagulopathy in these patients, however recent studies question the validity of these tests. We hypothesised that the lack of clinical evidence is due to poor predictive or diagnostic accuracy, which we assessed in this systematic review.

Methods Design: Systematic review and meta-analysis adhering to guidance in the Cochrane Handbook for Diagnostic Test Accuracy Reviews. Setting: Surgery centres in North America and Europe. Participants: A search of Cochrane Central Register of Controlled Trials, Clinical Trials.gov, MEDLINE, and EMBASE and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) from inception to April 2017. Diagnostic tests: Viscoelastometry, platelet function tests and combinations of these. Reference outcome: Clinical definitions of coagulopathic bleeding. Outcome measures: Measures of predictive accuracy.

Results Searches identified 56 studies enrolling 9123 participants. Only one study on viscoelastic tests was classified as at low risk of bias. There was significant heterogeneity with respect to cohort selection and the definition of reference standards. Point estimates of sensitivity for viscoelastometry tests, platelet function tests and combinations of the two were 0.58 (95% Confidence Intervals (CI) 0.40 to 1), 0.59 (95% CI 0.30 to 0.89) and 0.91 (95% CI 0.05 to 1). Respective point estimates for specificity for these tests were 0.96 (95%CI 0.44 to 1), 0.76 (95% CO 0.51 to 0.98) and 0.37 (95%CI 0 to 0.99). The uncertainty around these estimates was unchanged across multiple sub-group and sensitivity analyses. Respective log Diagnostic Odds ratios were 2.63 (95%CI 2.12 to 3.14), 1.49 (95%CI 1.02 to 1.96) and 1.39 (95%CI 0.66 to 2.13).

Conclusion Existing evidence does not suggest that point-of-care tests of coagulopathy in clinical use in cardiac surgery have predictive accuracy.

Presenter: **Mrs Deljit Bangar**, *RWHT*

Chest x-ray review: if it's not documented, is it done? *A306*

Authors K Smith¹; **D Bangar**¹; Y Iqbal¹; I Morgan¹;

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Objective A systematic approach is needed to ensure radiographs are reviewed and documented appropriately to aid identification and treatment of pathophysiology. In 2013 the CXR review sticker was devised to provide evidence of CXR review and quality assessment. During our recent CQC inspection we were able to confidently provide full documentation of CXR reviews using this tool. This is an audit of CXR sticker compliance and its effectiveness in aiding timely identification and treatment of pathophysiology.

Methods Prospective analysis, selecting 20 ward patients at random per month over 2017. CXR's completed were compared against CXR review stickers documented in patient notes noting; If a green sticker has been used, if the fields have been filled in correctly, the level of practitioner reporting radiograph e.g. SpR, NP and if any clinical errors or mis-reporting occurred.

Results Since January, 180 patient notes were reviewed of which 177 (98.3%) had green stickers in their notes commenting on chest radiograph findings. Of the 3 cases with no green stickers, 2 cases had missed pneumothorax. 100% of CXR review stickers completed were signed by the reporting practitioner and only 2 case notes from 177 notes with stickers had no bleep number. One case where all fields were correctly filled had a missed pneumothorax. From 177 cases, 2 cases were not recorded at the same day of the radiograph and 11 (6.1%) of notes had green stickers with no recorded date or time- therefore unable to determine if radiographs reviewed within 1 hour of radiograph being performed.

Conclusion Uptake of green stickers is very good with no evidence of user apathy. Thanks to the CXR review sticker, traceability of radiograph reporting is now possible and no significant difference in reporting between SpR's and NP's was seen. The use of green stickers as a way to document CXR's reviewed remains a valuable exercise. The use of green stickers has been recognised by the trust and is currently being rolled out to other areas.

Presenter: **Mr Pouya Youssefi**, *SpR Cardiothoracic Surgery*,

Phantom heart and aorta model to compare aortic haemodynamics in bicuspid and tricuspid aortic valves *A349*

Authors **P Youssefi**²; A Gomez¹; N Gaddum¹; J Ruijsink¹; M Whitehome¹; R Sharma²; A Figueroa¹; M Jahangiri²;

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Objective To compare aortic haemodynamics in bicuspid aortic valve (BAV) and tricuspid aortic valve (TAV) morphologies by using a phantom heart and aorta (PHA) model.

Methods A PHA model was created using a piston/cylinder ventricle to pump fluid into a silicone thoracic aorta (comprising of the ascending aorta, arch with head and neck vessels, and descending aorta). Fluid entered the ventricle through a low vibration swing mitral valve, and exited through a trileaflet porcine bioprosthetic aortic valve (TAV). The PHA model underwent MR Angiography and flow-MRI above the aortic valve. The aortic valve was then "bicuspidised" by suturing 2 leaflets together. Flow-MRI was repeated with the valve orientated in the right-left fusion position (BAV-RL), and then again in the right-non fusion position (BAV-RN). Computational fluid dynamics analysis was carried out to assess aortic haemodynamics.

Results TAV showed central velocity streamlines with laminar flow patterns. BAV-RL and BAV-RN both showed eccentric jets near the aortic wall of the ascending aorta and arch, with a more disrupted flow pattern. BAV-RL displayed clockwise helical flow, whereas BAV-RN displayed anti-clockwise helical flow. TAV showed an even distribution of low wall shear stress (WSS) throughout the aorta. BAV-RL and BAV-RN both showed high WSS in the ascending aorta (and arch for BAV-RN), with the greater curvature experiencing the highest WSS. Oscillatory shear index was lowest in the greater curvature of the BAV simulations.

Conclusion The PHA model represents a novel method of comparing BAV and TAV haemodynamics in a controlled in-vitro environment where aortic shape and size, cardiac output, heart rate, systemic vascular resistance and blood pressure can be matched. BAV velocity profiles exhibit higher velocity jets at the periphery of the aortic lumen. In BAV, wall shear stress was higher in the ascending aorta, with the highest levels in the corresponding greater curvature. Oscillatory shear index was lowest in these same sectors.

Presenter: **Miss Niki Nicou**, *Clinical Fellow, KCH*

Stentless bioprosthesis for patients with carcinoid pulmonary valve disease ^{A345}

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Objective Pulmonary valve (PV) disease is rare in adults and mainly caused by carcinoid heart disease (CHD). Half of the patients present with PV stenosis. Surgery remains the most effective treatment and valve replacement recommended. Data around choice of prosthesis remain scarce. We retrospectively reviewed all patients who underwent PV surgery for CHD in our institution.

Methods Between 2008 and 2017, 21 patients were operated for CHD. In 19 patients PV was affected. All patients received treatment according to a standardised multidisciplinary protocol, including pulmonary root replacement (PRR) with a stentless bioprosthesis (SBP) (Freestyle TM, Medtronic, Minneapolis, USA).

Results In 21 patients (9 female, mean age 61±10, 6) an intraoperative inspection of the PV was performed. Nineteen had PV disease (regurgitation n=13, 68.4%, mixed n=6, 31.5%). In 4 patients PV disease was missed

during preoperative echocardiography (21%). Twelve patients presented with NYHA III-IV symptoms (42.9%). Mean logistic EuroSCORE was 4.6 ± 1.4 . All patients had PRR, concomitant tricuspid valve replacement, 3 aortic valve replacement (15.8%), 1 mitral valve replacement (5.2%) and 4 coronary artery bypass grafting (21.1%). Mean bypass and ischemic times were 126 ± 44 min and 84 ± 28 min respectively. Two patients required re-exploration for bleeding (10.5%). All patients survived 30-days and were discharged. Mean follow up was 941 ± 692 days. Long-term survival was 78.9%. All 4 mortalities were unrelated to PRR. Surveillance echocardiograms were performed in all patients. One patient (5.2%) with challenging postoperative Serotonin levels, presented with pulmonary prosthetic degeneration and underwent transcatheter PV implantation.

Conclusion This is the longest series in the literature investigating outcomes after PRR with SBP in patients with CHD. Direct intraoperative inspection of the PV is mandatory. PRR offers excellent perioperative and good long-term outcomes avoiding long-term anticoagulation that facilitates future treatment.

Presenter: **Dr Nathan Tyson**, *Foundation Year 2, Morriston Hospital*

A twenty year, single centre experience of lung transplantation for Cystic Fibrosis A384

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Objective Cystic Fibrosis (CF) is a leading cause of respiratory morbidity, and early mortality amongst younger patients. Lung transplantation (LT) has greatly improved outcomes of CF and is now the third most common indication for transplantation. Our centre has been performing transplantation for CF for over 20 years, and due to the success of LT, there is an increasing demand for surgery annually.

Methods All patients undergoing transplantation for CF in our centre were split in two eras between 1996-2005 and 2006-2015 and included in the study. Data was obtained from an in-house transplant registry and patient notes. A number of data points were recorded, including patient demographics, operative factors, post-operative survival, immunosuppression regime and infection status.

Results 24 patients were transplanted in the first decade and 30 patients in the second. Median post-operative survival was 2760 ± 490 days and 2215 ± 296 days (first and second decade respectively). There was no significant difference in length of survival between the two decades ($\chi^2=0.255$, $p=0.614$) noted. The time to surgery from initial placement on the transplant waiting list did not differ significantly between the first and second decades (median 473 days and 471 days respectively; $p=0.413$). Gender, BMI, cytomegalovirus or toxoplasmosis status mismatch did not impact on survival ($p>0.05$). Overall Survival in the two decades were 94.4%, 80.8% and 51.1% at 90 days, 1 year and 5 years respectively. There was no difference in the acute rejection rates done by surveillance bronchoscopy over the two decades and did not impact on survival ($\chi^2=0.196$, $p=0.658$).

Conclusion Overall survival remained consistent across two decades in our centre. Donor age and selection criteria have been extended over the two decades but this has not impacted on our survival over the two decades. Furthermore our outcomes compare favourably to those reported in literature or ISHLT.

Presenter: **Mrs Clair Ellis**, *Senior Staff Nurse, Papworth hospital NHS trust*

The UK OCS competency pack - training non-medical Organ Care System (OCS) operators following donation after circulatory death (DCD) hearts A305

Authors C Ellis¹; J Baxter¹; S Messer¹; A Page¹; E Pavlushkov¹; S Tsui¹; S Large¹; M Berman¹; K Morley¹;

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Objective The OCS is used to aid perfusion of the heart, whilst assessing heart function following donation after circulatory death (DCD). At present responsibility for operating the OCS lies with the Transplant Surgical fellows who are on rotation within the transplant team. It is felt supporting permanent non-medical staff members, such as Transplant Practitioners (TP) or Donor Care Physiologists (DCP) to be competent in operating the OCS is an essential initiative. At present, TP and DCP are part of the National Organ Retrieval Service (NORS). This has necessitated the formation of a local Standard Operating Procedure (SOP) and method of assessing competence.

Methods A multitude of learning opportunities have been embarked upon including attending clinical training opportunities at Transmedic in Andover, in-house training from surgical colleagues and the use of personal reflection, all of which have culminated in the development of a competency pack in support of using this specialised equipment. The UK OCS competency pack includes questions and answers to aid troubleshooting, pictures of OCS consumables to clearly identify equipment, the use of diagrams to highlight the correct placement of essentials and a competency sign off to ensure national standards are adhered to.

Results Papworth Hospital has re-perfused 37 DCD hearts on the OCS since February 2015. 33 of these hearts were retrieved from the OCS and successfully transplanted. 20 DCD heart patients have survived more than one year. All of which provided valuable learning points.

Conclusion Papworth Hospital has the world's largest clinical experience of DCD heart retrieval data using the OCS. With the introduction of the UK OCS Competency Pack it is hoped as a centre we can share our experience and support other centres in utilising this novel perfusion method. This compliments the development of national standards for best practice throughout UK cardiothoracic transplant centres.

Presenter: **Mr Charilaos-Panagiotis Koutsogiannidis**, *Speciality Doctor in Cardiothoracics, NHS Lothian*

Surgical approach of turned down TAVI patients. Better outcomes with rapid deployment aortic valves. A189

Authors C P Koutsogiannidis¹; Z Chan¹; A J Chambers¹; S Papaspyros¹; R Pessoto¹;

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Objective Since 2012, 163 patients with severe aortic stenosis and high risk profile were referred to our hospital for transcatheter aortic valve implantation (TAVI), but this procedure couldn't be offered by our Heart Team due to various contraindications. A new cohort of patients (this of "turned down" TAVI) has emerged and we investigated the outcomes of their conventional operation.

Methods 163 turned down TAVI patients underwent aortic valve replacement, alone or with concomitant cardiac procedures and were divided into two groups. 130 (79.75%) patients received a conventional aortic valve (cAV) and in 33 (20.25%) a rapid-deployment aortic valve (RDAV) was implanted. Pre-operative characteristics such as demographics and past medical history, intra-operative times and post-operative outcomes were recorded and analyzed.

Results A Mann-Whitney U test was performed. More female patients (23) were in RDAV group (69.7%) than in cAV (64 female, 49.2%) (p=0.017). There was no significant difference on log EuroSCORE between two groups (RDAV group 8.51 vs 8.97 in cAV). RDAV group had shorter median aortic cross-clamp time (42.5 min) than cAV group (60.5 min) (p=0.00015) and shorter cardiopulmonary bypass time (59.5 min) than cAV group (84 min) (p=0.00017). RDAV patients required shorter intensive care unit stay (p=0.0094) and less need of transfusion (p=0.0017). 30-day mortality was totally 3.07% (5 deaths), all in cAV group (3.8%) and none in RDAV, although this result didn't reach statistical significance (p=0.15).

Conclusion TAVI turned down patients undergo high risk operations and thus they require a "fast-track" procedure. We conclude that rapid deployment aortic valves provide shorter aortic cross-clamp and cardiopulmonary bypass periods and result in less stay in intensive care unit compared to conventional prosthetic aortic valves in high risk patients.

Presenter: **Mr Anas Boulemden**, *Mr, Trent Cardiac Centre*

Permanent pacemaker insertion post-mitral valve surgery: does the type of atrial approach matter? A357

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Objective To determine whether the type of atrial access to the mitral valve (MV) (left atriotomy, superior transseptal or transseptal) influenced postoperative permanent pacemaker implantation (PPM) and to investigate the effect of the sino-atrial (SA) node artery origin (RCA or Circumflex) on the rate of PPM insertion.

Methods We retrospectively reviewed consecutive cases of patients who had mitral valve surgery. The primary outcome was the incidence of permanent pacemaker insertion. The data were analysed using univariate then binary multivariate regression analysis. The incidence of postoperative bleeding was also evaluated.

Results 469 patients had MV surgery (24.1% repairs). The mean age was 66.5 ± 12.3 years, and 47.5% were female. 150 patients (32%) had mitral valve surgery via the standard left atriotomy approach, while 226 (48.2%) and 93 (19.8%) cases were performed using the transseptal and superior transseptal approaches respectively. Concomitant tricuspid valve surgery was carried out in 33 cases (7%). The overall rate of pacemaker implantation was 5.3%. On univariate and multivariate analyses only age (≥ 70 years old) and concomitant tricuspid valve surgery were significant predictors of postoperative pacemaker insertion. The type of atrial incision was not a predictive factor. (Tables 1 and 2). The origin of the SA node artery did not impact on the rate of PPM ($p=0.66$). There was no significant difference in the incidence of re-exploration for bleeding or tamponade ($p=0.08$).

Conclusion The type of atrial approach to the mitral valve and the origin of the SA node artery did not influence the incidence of postoperative permanent pacemaker insertion.

Presenter: **Dr Alexandra Monaghan**, *FY2 Doctor, University Hospitals of Leicester*

In patients with end-stage emphysema is unilateral or bilateral lung volume reduction surgery superior for improving symptoms and quality of life? A380

Authors A Monaghan¹; K Ang¹; S Rathinam¹;

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Objective LVRS is used in COPD to remove the most emphysematous, poorly functioning portion of lung to improve ventilation to other areas. However, there is debate over whether it is best to perform unilateral or bilateral LVRS. This review of the literature was conducted to ascertain whether bilateral or unilateral LVRS is superior for improving symptoms and quality of life.

Methods A best evidence topic in thoracic surgery was written according to a structured protocol. The question addressed was: In patients with end-stage emphysema, is unilateral or bilateral lung volume reduction surgery (LVRS) superior for improving symptoms and quality of life. A search on medline was conducted using the search strategy: Medline 1946 to August 2017 using OVID interface: [lung volume reduction surgery.mp] AND [unilateral.mp OR bilateral.mp]. 836 papers were found, of which 15 represented the best evidence to answer the clinical question. The authors, journal, date and country of publication, patient group studied, study type, relevant outcomes and results of these papers are tabulated.

Results Some studies show that bilateral LVRS results in superior post-operative PFTs, however they deteriorate faster in the first post-operative year with most studies demonstrating a greater morbidity and mortality risk in the peri-operative period when compared with staged-bilateral and unilateral procedures. The benefit of performing staged bilateral procedures is, although it doesn't significantly improve PFTs more than unilateral or one-stage bilateral, it provides more stable long-term improvements in PFTs. It also allows for the second stage to be performed at the patient's discretion when they feel their function has deteriorated again, with some patients not requiring a second procedure.

Conclusion Staged bilateral LVRS provides more stable long-term PFTs in comparison to one-stage bilateral and unilateral, with the benefit of allowing the second stage to be performed at the patient's discretion.

Presenter: **Mr Marius Roman**, *Cardiac Surgery ST3, Glenfield Hospital*

A systematic review of the clinical outcomes and safety of prothrombin complex concentrates in cardiac surgery patients A364

Authors **MRoman**¹; A Ahmed¹; G Mariscalco¹;

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Objective There is currently a paucity of evidence of investigating the use of prothrombin complex concentrates (PCCs) in surgical patients. This review aims to evaluate the efficiency of PCCs in the treatment of bleeding in surgical patients alone or in comparison with other hemostatic products.

Methods Embase and Pubmed were searched from inception until August 2017 for the terms "Prothrombin complex concentrate surgery". Articles written in English were selected. The inclusion criteria for studies was: PCCs administered prior or after surgery. The excluded studies involved: PCCs administered to correct vitamin K antagonists use, and to correct coagulopathy post trauma. The primary endpoint was mortality and secondary endpoints were blood loss, rates of transfusion and thrombotic complications.

Results Data from 6 cardiac surgical observational studies (782 patients) were included in the quantitative analysis. These studies showed that the use of PCCs was not associated with higher mortality (OR 1.07, 0.95 CI 0.69-1.67). The use of PCCs was associated with reduced bleeding (OR 0.73, 0.95 CI 0.59-0.9), reduced use of red blood cell transfusions (OR 0.49, 0.95 CI 0.34-0.69) and similar thrombotic events (OR 1.09, 0.95 CI 0.72-1.65). There is limited evidence of increased post-operative acute kidney injury and renal replacement therapy in patients receiving PCCs.

Conclusion The current evidence on the use of PCCs is limited to observational studies, with no level A studies. Further randomised controlled trials to assess the mortality, morbidity and hemostatic benefits PCCs with other coagulation products or placebo are needed.

Presenter: **Mr Mathew Thomas**, *ST7 cardiothoracics, Birmingham Heartlands Hospital*

Can electromagnetic navigational bronchoscopy (ENB) replace frozen section (FS)? A250

Authors **M Thomas**¹; A Melvin¹; R Purmessur¹; E Bishay¹; R Steyn¹; H Fallouh¹; M Kalkat¹; L Hernandez¹; B Naidu¹;

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Objective FS can cause uncertainty from a patient and diagnostic perspective and result in unnecessary surgery and inefficient use of theatre time. ENB is a guided bronchoscopic tool that aids in pre-op diagnosis. We assessed the negative effects of FS, generated a case for ENB and then conducted a pilot study reviewing the diagnostic accuracy and built a model for potential cost saving.

Methods Auditing our institute's annual practise in 2016 revealed 184 frozen sections, with 59% primary lung cancer, an average delay of 40 minutes for FS results. 2.7% were incorrectly reported benign and later required completion lobectomies. 3 patients had unnecessary lobectomies due to inconclusive FS results. 27% had benign disease with 174 post-operative hospital days. Hence we introduced a diagnostic ENB program in August 2017. Patients with peripheral lesions (those beyond the segmental bronchus) greater than 1cm underwent the procedure as a day case. We mapped the 1mm slice CT on the software to generate the bronchoscope path. Then under GA, using a size 8 ET tube, 2.8mm bronchoscope and the ENB edge biopsy kit we biopsied the nodules. Below are the results of a prospective study comparing ENB versus FS over the same period.

Results We performed 7 ENB guided biopsies. The median nodule size was 28mm, with the median SUV being 8.7. On average 5 biopsies of average 3mm size were obtained within a median duration of 50 minutes. The median post op stay was 4 hrs and with nil complications. Our diagnostic yield was 85.7%. During the same time period 42 frozen sections were performed with a median of 4 staples and 1 gun per case, 44 minutes results waiting time and 22 hrs overnight stay. Based on these potential cost savings and from the revenue generated from ENB we modelled a favourable economic model.

Conclusion Our interim results suggest that ENB is a safe, cost saving, and an effective biopsy tool. Literature shows ENB to have a diagnostic yield of 94% with 3% pneumothorax and 1% bleeding.

Presenter: **Mr Silviu Buderi**, *Cardiothoracic Clinical Fellow, St Bartholomew's Hospital*

Do pulmonary function test results have an impact on post-operative morbidity and mortality following complex aortic surgery? A355

Authors S Buderi¹; M Shaw²; T Theologou²; M Kuduvali²; A Oo¹;

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Objective This retrospective review assesses the role of preoperative pulmonary function tests (PFTs) in patients with aneurysmal aortic pathology and evaluates the relationship between pulmonary disease and morbidity and mortality (M&M) at two cardiothoracic units in UK.

Methods We retrospectively reviewed all patients with proximal aortic aneurysm. Perioperative and postoperative clinical data were obtained from the NICOR database. The diagnosis of CPD was based on BTS guidelines. The stratification of severity of lung disease was as follows: mild, FEV1 \geq 80%; mild to moderate, FEV1 50–79%; moderate to severe, FEV1 30–49% and severe to very severe, FEV1 < 30. Continuous data are presented as means \pm SD. Categorical data are presented as frequencies and percentages.

Results The study included 214 patients who underwent surgery for aortic aneurysm between 2015 and 2017. 72 patients were female (34%) and the mean age was 62 (14) years. 114 (53%) patients had PFTs preoperatively. Subgroup analysis according to anatomical location: root, ascending or arch; did not show an increase in M&M. Single exception was noted in the ascending aortic group where the reoperation rate in the PFTs group was higher, p=0.006. Overall, there was no difference in reoperation, stroke or in-hospital death

between patients who had PFTs and patients who did not have PFTs ($p=0.1$, $p=0.08$, $p=0.5$). Patients who had PFTs had a longer hospital stay with a median 9 (6 to 14) days compared to those who had no PFTs, $p=0.007$. Subgroup analysis according to severity of lung disease showed that patients with moderate to severe disease had longer hospital stay with no significantly influence M&M.

Conclusion Preoperative PFTs in patients undergoing surgery for aortic aneurysm did not have an effect on M&M. Furthermore, there was a negative impact in length of stay after ascending aortic surgery in patients who had PFTs. Routine PFTs are not accurately supporting assessment and decision for treatment of proximal aortic segments.

Presenter: **Mr Ismail Vokshi**, *SpR Cardiothoracic Surgery, Norfolk and Norwich Hospital*

Ten-year single centre experience of pneumonectomy and sleeve lobectomy for lung cancer: general trends in practice and outcomes A252

Authors **I Vokshi**¹; F Tacconi¹; D R Sitaranjan¹; A Longe¹; W Bartosik¹; M Van Leuven¹; F Van Tornhout¹; J Kadlec¹;

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Objective There has been a general trend reported of increasing number of sleeve lobectomies (SL) as compared to pneumonectomy (PN) for the treatment of lung cancer in the recent years. We aimed to study our change in practice in the last 10 years and determine the outcomes of SL versus PN and sleeve-to-pneumonectomy (SL:PN) ratio.

Methods A retrospective analysis of prospectively collected data including all patients who underwent pneumonectomy or sleeve lobectomy between 2007 and 2017 at a single thoracic surgery centre were included. The data for each surgery was collected from internal thoracoscopy database and patient records. We looked at the short-term outcomes and over-all survival of the two groups of patients. We identified the general trends in practice over the previous 10 years.

Results In total 142 patients were included in the study, of which 109 (77%; Age 58.2) were pneumonectomy and 33 (23%; Age 63.2) were sleeve resections. Average inpatient hospital days for the SL group were 8.8 as compared to 8.6 for the PN group. There were no 30-day or 90-day mortalities recorded in SL group as compared to 5.5% (n=6) 30-day mortality and 7.3% (n=8) 90-day mortality in the PN group. The actual 5-year survival data was available for patients operated on prior to 2013. This was lower in the PN group at 39% vs 50% for the SL group. There has been a general increasing trend in the number of sleeve resections being performed. SL:PN ration in 2007 was 1:20 and in 2017 it was 1:1, with average SL:PN ratio in the last 5 years of 1:1.3

Conclusion Our results show that sleeve lobectomies can be performed with very low initial post-operative risk, with very low 90 days mortality rates and a higher actual 5-year survival rate. They are also associated with less days spent in hospital. There appears to be a general increase in the ratio of SL to PN, which

given the favourable peri-operative mortality rates, in the long-term could translate to an increased 5-year survival in this group of patients with lung cancer.

Presenter: **Mr Damian Balmforth**, *Cardiac Registrar, Damian Balmforth*

Not all redo's are created equal: previous coronary artery bypass grafting confers higher mortality for redo aortic valve replacement *A215*

Authors **D Balmforth**¹; B M Robinson²; M T Yates¹; M Bashir¹; C Di Salvo¹; R Uppal¹;

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Objective Resternotomy for isolated aortic valve replacement (AVR) carries a higher mortality than a first-time procedure. This study aims to determine whether a past history of coronary artery bypass grafting (CABG) is an independent risk factor for mortality following resternotomy for AVR.

Methods All patients undergoing resternotomy for AVR between January 2004 and March 2016 at two cardiac centres were identified. Patients were grouped according to whether they had previously undergone CABG or any other cardiac surgery (valve replacement/repair, congenital, and aortic surgery). Survival analysis was performed using the Kaplan-Meier method. Predictors of postoperative survival were examined using Cox proportional hazards modelling.

Results 299 patients underwent resternotomy for isolated AVR during the study period. Of these, 124 had a previous history of CABG and 175 had a previous history of other cardiac surgery. Mean length of follow-up was 5.3 years. Patients with previous CABG were more frequently male [105 (84.7%) Vs 102 (58.3%); $p < 0.0001$], older [median age 73.2 Vs 58.5; $p < 0.0001$] and more likely to have impaired left ventricular function [66 (53.2%) vs 69 (39.4%); $p = 0.018$]. Overall, median logistic EuroSCORE in the CABG group was higher than in patients with other cardiac surgery [15.5 Vs 9.6; $p < 0.0001$]. Survival curves for the two groups are shown in figure 1. There was significantly higher in-hospital mortality in patients with previous CABG [12 (9.68%) v 4 (2.29%); $p = 0.005$]. Estimated 5-year mortality rate was also significantly higher in this group (40.3% vs 18.5%; $p < 0.0001$). On multivariate modelling, previous CABG remained an independent predictor of 5-year mortality [HR 1.73, (95% CI 1.09-2.75)].

Conclusion Previous CABG confers a higher 5 year-mortality in patients undergoing isolated AVR independently of differences in comorbidity profile. This finding should be considered when deciding the most appropriate treatment options for patients who require AVR following previous CABG.

Presenter: **Mr Michael Gooseman**, *CTh StR, Leeds Teaching Hospitals*

Unifying classification of transdiaphragmatic intercostal hernia and other injuries involving the costal margin: systematic and practical nomenclature *A389*

Authors MR Gooseman¹; M Rawashdeh¹; K Mattam¹; J N Rao¹; J G Edwards¹;

¹ Sheffield Teaching Hospitals NHS Trust, UK

Objective Injuries involving costal margin rupture (CMR) are uncommon, can be severe and seem difficult to characterise. Literature regarding the most severe type, transdiaphragmatic intercostal hernia (TDIH), is limited to case reports, with varying terminology and frequent disregard to the role of CMR. Our aims were to standardise taxonomy and determine the best management of each category of injury.

Methods Patients presenting with injuries to the diaphragm, the costal margin, or with chest wall herniation were identified. CT scans, were interrogated using sequential segmental analysis to create seven distinct & logical categories. Diagnostic and management data were reviewed.

Results 38 patients were identified. The categories are shown in the Figure. There were 19 patients with isolated DR (Group 1), who all underwent standard repair and 19 patients with CMR and/or intercostal hernia (Group 2). Aetiology was 100% and 26% from high velocity trauma in Groups 1 and 2, and 74% from severe coughing in Group 2 (p=0.05). Two of Group 2 had undergone prior incomplete surgical repair. 16 patients in Group 2 underwent surgery. Group 2 surgical techniques were tailored to the category and included sutures only (7), single layer mesh (3), a novel double layer mesh technique (3), plate and screw CMR and/ or rib fixation (6). One TDIH patient undergoing DR repair only recurred as did another who had suture repair only.

Conclusion Systematic sequential analysis of the costal margin, diaphragm and intercostal muscles defines categories of injury, avoids misdiagnosis and prevents inappropriate surgery. Complex thoracic surgical techniques may be required, including double layer mesh reinforcement and plate & screw fixation.

Presenter: Ms Ashvini Menon, ST6, Birmingham Heartlands Hospital

Tracheal resection and reconstruction for benign tracheal stenosis – Birmingham Heartlands Hospital experience ^{A253}

Authors A Menon¹; B Naidu¹; E Bishay¹; R Steyn¹; P Rajesh¹; H Griffiths¹; M Kalkat¹;

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Objective The resection of stenosed segment of the trachea and anastomosis of healthy normal calibre lumen is the recommended treatment for patients with benign tracheal stenosis. We reviewed our experience of tracheal resections for benign tracheal stenosis.

Methods Retrospective analysis of patients who underwent tracheal resection for benign tracheal stenosis between 2009 and 2017. Tracheal surgery for malignant conditions were excluded.

Results There were 26 patients (17 female) with a mean age of 45 years (range 21 – 79 years). The aetiology of stenosis was post-intubation in 3, tracheostomy in 14, idiopathic in 7, post-traumatic in 1 and recurrence after repair in 1 patient. All these patients had previously undergone 1 to 9 (median 3) endoscopic interventions. The median interval between first dilatation and operative procedure was 4 months (range 1 to 75

months). A transverse cervical incision was performed in 25 patients and median sternotomy in one patient. The mean length of trachea resected was 2.8cm (range 1.5 cm to 4.5 cm). Twelve patients underwent extended laryngotracheal resections involving varying portion of cricoid cartilage and cricothyroid membrane. In four patients the anastomosis was adjacent to vocal cords-two patients required temporary post resection Montgomery T-tube, one tracheostomy and one minitracheostomy. All patients were extubated at the end of the procedure. One patient developed a recurrence post resection and underwent further resection. There was no post-operative morbidity and mortality. The mean in hospital stay was 9.3 days (range 4 – 27 days).

Conclusion In our experience, the incidence of post intubation tracheal stenosis has decreased, but increasing number of tracheostomy related and idiopathic subglottic stenosis are being encountered. These patients require timely tracheal resection and with thorough preoperative preparation, meticulous intraoperative technique and aggressive postoperative care, long-lasting cure can be achieved.

Presenter: **Mr Damian Balmforth**, *Cardiac Registrar, Damian Balmforth*

Late transfer increases the rate of operative cancellation in patients transferred for non-elective cardiac surgery A369

Authors **D Balmforth**¹; B Adams¹; P Gupta¹; M T Yates¹; A Oo¹; R Uppal¹;

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Objective Patients from peripheral hospitals are frequently transferred to our cardiac unit for non-elective cardiac surgery. An electronic transfer system allows patients to be worked up for surgery prior to transfer in order to minimise the high demand for cardiac surgical beds. This study investigates how our current practice of transferring non-elective patients at short notice prior to their scheduled surgery is associated with the risk of their operation being cancelled.

Methods Records were prospectively compiled for all patients transferred from peripheral hospitals for non-elective cardiac surgery over a one-year period. These records were correlated with theatre planners for the same period to determine which patients were cancelled. Patients were grouped according to their time from transfer to scheduled surgery.

Results From September 2016 to August 2017, 235 patients were transferred for non-elective cardiac surgery. Of these, 28 (11.9%) were not scheduled for surgery and were excluded from further analysis. Of the remaining 207 patients, 43 were transferred within 24 hours of surgery (Group 1), 108 were transferred 24 to 48 hours before surgery (Group 2) and 56 were transferred more than 48 hours before surgery (Group 3). The number of operative cancellations in these three groups were 36 (83.7%), 5 (4.6%), and 6 (10.7%) respectively (p=0.008). In head to head comparisons of the groups, no statistical difference was found between rates of cancellation between Groups 2 and 3 (p = 0.127). The number of cancellations attributable to patient related factors were 27 in Group 1 (75%), 2 in Group 2 (40%) and 1 in Group 3 (16.7%).

Conclusion Patients transferred within 24 hours of their scheduled surgery were at a significantly increased risk of having their operation cancelled. This suggests that, despite modern technological aids, the risk

of cancellation may be reduced by ensuring patients are transferred more in advance.

Presenter: **Miss Louise Best**, *Advanced Nurse Practitioner, Royal Sussex County Hospital*

The benefits of a video to enhance the pre-assessment process of patient awaiting cardiac surgery *A430*

Authors L Best¹; R Pittendriagh¹; E McIntosh¹;

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Objective We wanted to explore how to improve information retention and maximise the time we spend with our patients in the pre-assessment with the use of an 11-minute video answering many of the anticipated questions. We wanted to know qualitatively what our patients felt the video added to their experience, specifically did it help reduce anxiety, answer questions, and in what other ways it helped them.

Methods We gave our patients a laptop in the pre-assessment clinic or as in-patients prior to surgery so they could watch the video. We then approached the patient and their carers/relatives post operatively to ask open ended questions to explore their experience of the video. We led with the key aspects of what were the three most useful things about the video, what were the three least useful and what three things would they like to include.

Results We found that information retention did improve. Although it is clearly not possible to eliminate anxiety entirely, the video did go some way to remove some of the unknown elements of the patients journey and thereby reduce some of the fear. Relatives valued being included when being able to watch the video. They felt also felt better able to help their loved one going through the experience of cardiac surgery. Patients felt many questions were answered by the video but others were also raised

Conclusion From our patient, relative and multidisciplinary team surveys we believe we have found good evidence to suggest that the video improves the experience of our patient group. We have found improved retention of information and improved understanding of the cardiac surgical pathway which we have also extrapolated to mean improved informed consent throughout the process. We would recommend all centres attempt make their own video to make it personal and relevant to your centre.

Presenter: **Mrs Tara Bartley**, *Lead ANP, Brighton and Sussex University Hospitals*

The impact of an Advanced Nurse Practitioner ward attendee review service development *A302*

Authors T Bartley¹; S Faulkner¹;

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Objective The flow of patients through the cardiac unit is dependent upon the decision to discharge being made as early in the day as possible, but this relies on a number of clinical and social factors being in place. The final discharge plan is determined by outstanding issues such as blood results or imaging that suggests the decision is unclear. We looked at the impact of the Advanced Nurse Practitioner (ANP) team undertaking assessment of patients who come back to the ward for further review following discharge. This service development allows such patients to be discharged when they would otherwise be required to an additional in patients stay.

Methods A retrospective analysis reviewed the number of patients seen, the clinical issues that patients are brought back for, such as review of wounds and blood tests. In addition, patients who are unable to attend the pre admission clinic are seen, thus avoiding delay in their surgical procedure. We demonstrate how the service is delivered and how the episode is captured ensuring medical records are up to date. Moreover, we reviewed the financial savings for the Trust and impact on patients.

Results To date four months data demonstrates the number of patients seen each month is between 3 to 21. No additional manpower has been required, the ANP team on the ward incorporate seeing patients in their daily activity. Based on a bed night cost of £225.15, we show a saving of £2,645.51 per month with a mean number of 12 bed nights. An Outpatient episode cost is £203 so a saving on OPD appointments of £2,385.25 was also demonstrated. In addition we are currently working with the finance department to see if we can capture reimbursement for these episode. Patients report that despite traveling back to the hospital the opportunity to go home earlier was preferable and being seeing by the ANP member that knew them is reassuring. The service also relieves the burden of over booking OPD appointments in surgeon's clinics.

Conclusion In conclusion the Impact of developing an Advanced Nurse Practitioner Ward Attendee review service demonstrates both a human and financial benefit to patients, the cardiac service and the Trust. Not only did patients prefer the option to go home with this method of follow up, but the service generated income savings. In addition the service augments the number of beds for additional activity, which intern means more patients receive their surgery and additional income is generated.

Presenter: **Mr Philemon Gukop**, *cardiothoracic Fellow, St George's University Hospital NHS found Trust Lo*

Two year results of experience with Hybrid minimally invasive atrial fibrillation ablation programme: an update A177

Authors P Gukop²; K Mattam¹; A Charaf²; K Mani²; R kaba²; M Gallagher²; A Momin²;

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Objective Atrial fibrillation (AF) is a global pandemic affecting over 50 million people worldwide with additional 5 million new cases yearly. In the United Kingdom 1.28% of the total population have AF, an incidence of 0.3%. It is significant source of morbidity and healthcare expenditure. The search for the optimal treatment of this condition is still on going. This is because existing therapies have short comings in terms of efficacy, adverse side effects and invasiveness. The hybrid AF ablation programme is a novel technique aimed at addressing these shortcomings

Methods The hybrid AF ablation programme is a 2stage technique; with a 1st stage 3ports laparoscopy with sub-xiphoid port access pericardiectomy for delivery of radiofrequency epicardia lesion set to the left atrium and pulmonary veins performed by a surgeon using the N-contact device and catheters. The 2nd stage is percutaneous delivery of endocardial lesions after taco mapping to supplement the initial epicardial lesions. Prospective data collection on consecutive patients enrolled to the Hybrid AF ablation programme in a single centre. Data is presented as median interquartile range.

Results N=32 cases, exclusion =2 due to(adhesion/bleed). Age range: 50-80 yrs, median= 65, 62% male. 24% had paroxysmal and 76% persistent AF, Duration of AF: range 1- 16 yrs, median =3. Left atrial (LA) size (mm): 32-65, median=48. 2nd stage complete in 97%. Follow-up: with 12 lead ECG+ 7day Holter. Conversion rate at 24 month 24/32 (76%). Length of stay range : 1-4 days, 1 day-22/32 (69%), 2 days- 10/32 (28%), 4days - 1/32 (3%)- AKI. Complications include sternotomy, groin haematoma, and port site infection, Dressler's syndrome x3.

Conclusion Hybrid AF is an effective and promising technique for treatment of lone AF in all comers, with conversion rate of 76% and LOS <2days in 95% of cases at 2 years, with minimal complications.

Presenter: **Mr Subir Datta**, *Speciality doctor, MRI*

Successful use of Apixaban for the treatment of new onset post-operative atrial fibrillation after cardiac surgery: a pilot study ^{A183}

Authors S Datta¹; A Abdulbar¹; B wood¹; R Hasan¹; H Abunasra¹; E Mclaughlin¹; H Bilal¹;

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Objective Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation (ARISTOTLE) trial included patients with moderate to severe valvular heart disease and excluded patients with mechanical prosthetic heart valves. The aim of this pilot study was to evaluate the effects of replacing Warfarin with Apixaban in patients with post-operative atrial fibrillation.

Methods Patients undergoing cardiac surgery between June 2015 to June 2017, who developed persistent post-operative atrial fibrillation despite chemical cardioversion were started on Apixaban at a dose of 5mg twice daily with normal renal function and 2.5 mg twice daily with deranged renal function. Patients with mechanical valve prosthesis were excluded from the study. All patients were reviewed at discharge and at 6 weeks after surgery. Study end points were incidence of stroke or systemic embolism, major bleeding and death.

Results Among 1476 patients in the study group 58 patients received Apixaban after failed chemical cardioversion. 32 had CABG, 13 had AVR, 5 had AVR with CABG, 3 had MV repair with CABG, 1 had MV repair with tricuspid repair, 1 had AVR plus MVR with aortic arch repair, 1 had excision of atrial myxoma and 2 had sternotomy for cardiac trauma. There were no episodes of bleeding, stroke or death at discharge. At 6 weeks follow-up 54 patients were in sinus rhythm and hence Apixaban was discontinued. 4 patients who remained with atrial fibrillation were successfully treated with DC cardioversion and Apixaban was continued for a further 6 weeks. There were no episodes of bleeding, stroke or death at 6 weeks follow-up.

Conclusion The successful outcomes in our study reveal that Apixaban has the potential to replace Warfarin in this group of patients who develop postoperative atrial fibrillation after cardiac surgery. It may reduce costs and improve patient satisfaction because of the absence of repeated clotting studies. A larger study would help to validate the safety of using Apixaban over Warfarin usage.

Presenter: **Mr Philemon Gukop**, *cardiothoracic Fellow, St George's University Hospital NHS found Trust Lo*

Audit of patients' experience, satisfaction and quality of life following valve surgery: evaluating the impact of valve type choices *A427*

Authors **P Gukop**²; G T Karapanagiotidis²; K Mattam¹; K Mani²; S Ali²; R Bilkhu²; A Momin²; J Nowell²; R K Kanagasabay²; M Sarsam²; V Chandrasekaran²;

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Objective Heart valve operations have both clinical and social consequences which could be influenced by the choices of prostheses and types of operation. EACTS/ESC and the AHA/ACC have issued a class 1 recommendation guide valve choices. The recommendation is that choice of valve prosthesis should be based on a discussion between the patient and the clinician. Patients are to be adequately informed of all available options and their implications and allowed to voluntarily choose a treatment option suitable for their personal circumstance. This pilot survey to our knowledge is the first attempt to obtain patients perspective and their experience of the process.

Methods Anonymous questionnaire was prospectively administered to 198 consecutive valve surgery patients at follow-up clinics. The data is presented as median interquartile range.

Results 189 patients were included. Age (yrs): 70 (56-75), time since operation (yrs): 2 (1-5), valve/operation types: tissue valve: 84 (42.2%), mechanical valve: 27 (13.6%), valve repair: 87 (43.9%). Voluntary choice of valve type/operation: 117 (59%); 24 (12.1%) felt inadequately informed. 9 (4.5%) regretted their operation. 23 (11.6%) were on warfarin solely as a result of valve operation. 141 (71.2%) were very satisfied with their valve operation. Impact on quality of life: poor sleep 15 (7.6%), affects other medical treatment: 18(9%), recreation/sports: 39 (19.7%), ability to work: 12 (6%), sexual life: 15 (7.5%), restricted diet: 6 (3%)

Conclusion Valve surgery may have different implications for patients depending on individual circumstances. Patients should be informed of the available options and allowed to choose voluntarily.

Presenter: **Dr Rushmi Purmessur**, *Core Surgical Trainee, Birmingham Heartlands Hospital*

Pain management of patients with rib fractures using serratus anterior catheter block – a novel technique *A413*

Authors R Purmessur¹; S Mohamed¹; M Gorecha¹; M Bieker¹; R Steyn¹; B Naidu¹; M Kalkat¹; H Fallouh¹; E Bishay¹;
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Objective Timely analgesia is the cornerstone for the management of rib fractures. Currently, this includes routine and opioid-based analgesia, intercostal blocks and epidural catheters. Serratus anterior catheters (SACs) have been suggested as a potential alternative to control pain without significant side effects.

Methods 30 consecutive patients admitted with multiple rib fractures, not requiring rib fixation and pain score (according to our validated questionnaire) >5 are to be enrolled and receive SAC. A trained anaesthetist inserts an SAC under ultrasound guidance [Figure A]. A loading dose of 40mLs of 0.25% Chirocaine is given into the serratus anterior plane, followed by a maintenance infusion of 0.1% Bupivacaine. This is thought to diffuse the local anaesthetic into the intercostal spaces and perform sustained effective intercostal block. Concurrent use of oral analgesia and the use of patient-controlled analgesia (PCA) was recorded. We also reviewed the length of stay (LOS), escalation of care to High Dependency Unit (HDU) and the need for non-invasive ventilation (NIV).

Results We have recruited 10 of the prospective 30 patients. The mean age of patients is 66.3, with an average LOS of 8.3 days and the catheter being in for an average of 3 days. The mean pain score pre catheter insertion was 9.7, STER 0.15 and 1 hour post catheter insertion was 4.6 STER 0.51 [Figure B]. The mean pain score difference was 5.14, $p < 0.0001$, 95% CI 4.02-6.27. Only 2 patients were admitted to HDU, both being admitted to HDU prior to the use of SAC. No patient required epidural catheters or NIV. 3 patients were initially started on PCAs. This was weaned off within 6 hours post SAC insertion in all 3 patients to oral paracetamol, ibuprofen, codeine or morphine sulphate as required.

Conclusion The interim results of this ongoing study have shown significant reduction in the pain and improved patient satisfaction score after institution of SACs in patients with rib fractures, without the need for epidural catheters.

Presenter: **Miss Caroline Toolan**, ST7, Blackpool Victoria Hospital

Does a decade make a difference? Examining outcomes for emergency coronary artery bypass surgery 1996-2016. A220

Authors C Toolan¹; G Hardman¹; M N Bittar¹;
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Objective Percutaneous coronary intervention (PCI) has become the mainstay of emergent coronary revascularisation however, surgical coronary revascularisation continues to have a place in disease not amenable to PCI and mechanical complications of myocardial infarction. We examine how emergency coronary artery surgery has evolved in our centre over the last twenty years.

Methods A retrospective review of all patients undergoing emergency cardiac surgery between 1996 and 2016 was performed. Two groups were compared; group 1 (1996-2006) and group 2 (2007-2016). Demographics, operative characteristics and postoperative outcomes were examined. Analyses were made using Fisher's exact test, t test and Mann-Whitney U where appropriate.

Results Of the 701 patients who underwent emergency cardiac surgery, 412 had coronary artery bypass grafting (CABG) as a primary procedure (Group 1 274, Group 2 138). Post infarct VSD was excluded from the analysis. The contribution of CABG to overall emergency operating reduced over the study period (Group 1 72%, Group 2 52% $p<0.0001$). There was no significant difference in age or gender but EuroSCORE was higher in Group 1 (12.65 vs 10.86 $p<0.0315$). Preoperative PCI within 24 hours of surgery decreased (Group 1 86%, Group 2 40% $p<0.0001$). A greater proportion of patients had concurrent procedures in addition to CABG in the latter group (Group 1 15%, Group 2 23% $p=0.0415$) and received more platelet transfusions postoperatively. There was a trend towards reduced mortality in Group 2 but this did not reach significance (Group 1 16%, Group 2 12.3% $p=0.378$).

Conclusion Across two decades emergency CABG is being performed less frequently but with greater operative complexity. Fewer surgical cases later in the study period reflect the known evolution of experience and improved outcomes of PCI in this setting. The reduced risk profile of the patients referred to surgery may reflect more circumspect referral patterns and improved multidisciplinary working within the heart team.

Presenter: **Mr William Hunt**, *Medical Student, The University of Sheffield*

The use of rib fracture classification and scoring systems in guiding clinical management and predicting outcomes in adults with multiple rib fractures A387

Authors **W J Hunt**¹; R B Simpson¹; J R Dorman¹; J G Edwards¹;

¹ Sheffield Teaching Hospitals NHS Trust, UK

Objective No study has ever validated all 11 rib fracture scoring systems (RFSS) against outcomes of blunt thoracic trauma (BTT). Surgical Stabilisation of Rib Fractures (SSRF) has been used for over 60 years however there are no agreed indications for its use. No RFSS have never been validated against SSRF.

Methods CT scans of 202 patients out of 1,695 patients admitted to the STH with BTT between 08/08/2010 and 02/05/2016 were assessed. Scores were produced using the RFSS AIS Thorax, OIS Chest Wall, SMuRFS Classification, Chest Trauma Score (CTS), Battle Score, Rib Fracture Score, Gonzalez Score, Rib Fx Score, Rib Cage Fracture Score (RCFS), Rib Score, and Thoracic Trauma Severity Score (TTSS). These scores were then tested to assess correlation with, and prediction of the outcomes SSRF, pneumonia, ICU/HDU admission, ICU/HDU length of stay (LOS) >7 days, LOS in hospital > 7 days, mechanical ventilation, respiratory failure, and mortality.

Results ROC analysis showed all RFSS predicted SSRF. AUC for the prediction of SSRF ranged from 0.701 to 0.878. The most accurate predictor of SSRF was the Rib Fx Score ($p<0.001$). The best predictor of ICU/HDU admission was the Rib Fx score and the RCFS (AUC 0.738 $p<0.001$). The best predictor of mechanical ventilation

was the Gonzalez score (AUC 0.762 $p < 0.001$). The best predictor of mortality was CTS (AUC 0.693 $p < 0.001$). The best predictor of ICU/HDU > 7 days LOS and LOS in hospital > 7 days was CTS (AUC 0.683 $p < 0.05$ and 0.651 $p < 0.001$). All RFSS failed to predict pneumonia and respiratory failure.

Conclusion RFSS have been shown to predict SSRF and therefore aid in the selection of patients for SSRF. The best predictor of SSRF was Rib Fx Score, a purely anatomical RFSS. This gives insight into potential indicators for SSRF. The best predictor of the other outcomes observed was the CTS.

Presenter: **Mr Alan Dawson**, *Specialist Registrar, Glenfield Hospital*

Does the administration of total parenteral nutrition following extended pleurectomy decortication offer any benefit? *A244*

Authors A G Dawson¹; J Sharman¹; S M Cooke¹; Z Kidy¹; E Twitchell¹; S S Patel¹; A Nakas¹;
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Objective Extended pleurectomy decortication (EPD) for malignant pleural mesothelioma (MPM) can cause a paralytic ileus resulting in limited oral intake post-operatively. Total Parenteral Nutrition (TPN) can provide nutritional support during this period. The aim of this work is to assess if TPN has any effect on length of hospital stay or survival following EPD.

Methods An EPD database was retrospectively reviewed between January 2015 and July 2016. Patients were divided according to whether they had received TPN. Demographic data along with length of hospital stay and overall survival data were collected. Survival times were calculated from the date of the operation until the date of death or censor date. Descriptive statistics were used to analyse the demographic and pre-operative data. Categorical data was analysed using Pearson Chi-Square, otherwise the Fisher's exact test was used. Continuous data was analysed using the Mann-Whitney U test. Data was analysed using SPSS Version 24.

Results Sixty-seven patients underwent an EPD for epithelioid MPM in 56 and biphasic MPM in 11. The median age was 68 years (64-72 years) with 53 (79%) males and 21 had neo-adjuvant chemotherapy. The median length of hospital stay was 14 days (10-18 days) and overall survival was 459 days (219-583 days). Twenty-nine (43%) patients received TPN. The median number of TPN bags administered was 5 (4-6 bags). Patients who received TPN had a significantly reduced hospital stay compared to patients who had not (12 days vs. 15 days, respectively, $p = 0.045$). There were no differences identified between the use of TPN and the age or sex of the patient; cell type; neo-adjuvant chemotherapy; or pre-operative haematological markers. The overall survival rates did not differ as to whether TPN was administered or not.

Conclusion The administration of TPN following EPD is associated with a shorter hospital stay. The mechanism underpinning this association must be explored further to enhance the post-operative care of the patient.

Presenter: **Ms Nicola Oswald**, *Research Fellow, University of Birmingham*

Should resection rate be used to assess thoracic surgical centres in their treatment of lung cancer? *A246*

Authors N K Oswald²; J Adizie¹; Z Awan¹; K Mahendran¹; R Steyn¹; M Kalkat¹; E Bishay¹; B Naidu¹;

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Objective The National Lung Cancer Audit (NLCA) includes resection rate of Non Small Cell Lung Cancer (NSCLC) as a treatment and outcome measure and as such surgical centres are under scrutiny. There is debate as to whether resection rate is the best measure to assess and compare the services of hospitals across the country. We aimed to identify the reasons patients with resectable tumours did not proceed to surgery and identify potential areas for improvement.

Methods We identified all patients discussed at the lung cancer multidisciplinary team meeting in hospitals that refer patients to our centre for the year 2015. We examined the case notes of patients who had stage I or II NSCLC but did not proceed to resection to ascertain the specialty of clinicians who reviewed the patient and to detail the decision making process.

Results Data from three referring hospitals revealed 27 patients who did not undergo surgery. Eighteen of them had received radical radiotherapy instead of surgery; these patients were older (mean age 75 versus 69 years) and had lower FEV1 (mean % predicted value 45% versus 88%) than patients who did undergo surgery. However, the 1 year survival rate was comparable (83% versus 85%). The rate of treatment with curative intent was 89%. The reasons for not undergoing treatment were: second cancer (33%), patient preference (44%) and poor lung function (22%). The 1 year survival in this group was 67%. Work is in progress to complete analysis from the remaining referring hospitals.

Conclusion The next NCLA is due to include the radical treatment rates for patients with stage I or II NSCLC; the mean rate was 68.7% in the 2015 period. Our local radiotherapy service is accessible and provides Stereotactic Ablative Radiotherapy (SABR) which is likely to have aided our favourable rate of treatment. We conclude that this combined figure is more representative of the service that patients receive than resection rate alone and welcome the addition of this measure compare outcomes across the country.

Presenter: **Mr Zaheer Tahir**, *Student, Hull York Medical School*

Incidence of post-operative atrial fibrillation: thoracoscopic versus open lobectomy for lung cancer *A417*

Authors Z Tahir¹; A Hussain¹; A M Habib¹; S Qadri¹; M Khalil¹; M A Chaudhry¹; M Loubani¹;

¹ Castle Hill Hospital, UK

Objective Atrial fibrillation (AF) is the most common arrhythmia after thoracic surgery. The increased morbidity and mortality has cost implications, increasing the length of hospital stay. This study aims to compare the incidence of post-operative AF in patients who had anatomical single lobectomy by VATS versus thoracotomy.

Methods The records of all patients that underwent anatomical single lobectomy via VATS and open thoracotomy between March 2013 and June 2016 were retrospectively analysed. We sought to compare the incidence of post-operative AF in the two groups. The exclusion criterion was a history of arrhythmia. AF was defined by clinical diagnosis with confirmation on electrocardiography.

Results 377 patients underwent isolated anatomical lobectomies for non-small cell lung cancer at our institution between March 2013 and June 2016. 169 patients had this performed via VATS resection versus 208 by thoracotomy. The overall incidence of AF was 6.3% and found to be significantly lower in VATS group (2.9% vs 9.1%, $p = 0.01$).

Conclusion We postulate that during an open lobectomy, there is a tendency to place the proximal staple line on the pulmonary veins close to the pericardium to allow adequate space for cutting between it and the distal suture close to the lung hilum. However, in VATS, we tend to staple and divide the vein closer to the lung hilum to prevent a long stump from obscuring the view. With less manipulation of the vein near the pericardium, there is less trauma and inflammation that could predispose to AF. With the absence of rib spreading pain is better controlled in VATS. This promotes deeper breathing, earlier mobility reducing the incidence of atelectasis and chest infections. Pain is linked to increased levels of catecholamine release increasing the susceptibility to atrial tachyarrhythmias. We believe more studies are needed to confirm our novel finding which will add to the list of advantages of the VATS over the open approach in the surgical resection of lung cancer.

Presenter: **Mr Ricky Vaja**, *Thre Royal Brompton Hospital*

Elective cardiopulmonary bypass as a support tool in extreme patients undergoing Transcatheter Valve Implantation (TAVI) A186

Authors R Vaja¹; A Duncan¹; A Daqa¹; C Mahon¹; U Rosendahl¹; R Yadav¹; C Quarto¹; N Moat¹;
¹ Royal Brompton & Harefield Hospitals, UK

Objective Patients with severe biventricular dysfunction are at risk of catastrophic circulatory collapse during the technical aspects of transcatheter aortic valve implantation (TAVI). A short period of cardiopulmonary bypass (CPB) can provide effective circulatory support during LV stiff wire manipulation, rapid ventricular pacing, aortic balloon valvuloplasty, and device deployment.

Methods We prospectively analysed TAVI data from January 2012 to November 2017. We identified patients who had undergone TAVI utilising elective CPB. We describe their demographics, echocardiographic findings, procedural and short-term outcomes.

Results Fourteen TAVI patients were identified with elective CPB. The mean age was 64 years; 3 were female (21.4%); 9 (64%) had previous sternotomy (5 AVR, 3 CABG & 1 AVR+CABG); 3 previous MI; 5 diabetes; 2 on dialysis; 5 severe respiratory disease; 1 previous stroke, 6 peripheral vascular disease. All patients had NYHA \geq 3 with severe biventricular dysfunction and at least moderate mitral regurgitation and pulmonary hypertension. The mean BNP was 899. 3 had severe aortic regurgitation. The remaining had severe aortic stenosis. All patients were discussed at a TAVI MDT. CPB was femoral-femoral in 11 patients and Subclavian

artery-femoral vein in 3. The period of bypass was short. Access was transfemoral in 13 and transapical in 1. 13 had a Core Valve and 1 had SAPIEN device. There was no major peri-procedural complications including post-balloon dilatation, 2nd TAVI, coronary obstruction, stroke or major bleeding, and no patient required acute haemofiltration. All patients survived to discharge and mortality was 0% at 30 days.

Conclusion In an extremely high-risk sub-group of patients undergoing TAVI (graft-dependent, LV impairment, moderate MR and raised pulmonary pressures), elective CPB offers peri-procedural haemodynamic stability with good 30-day survival. Elective CPB should be considered in patients who are at high risk from acute severe haemodynamic compromise during TAVI.

Presenter: **Mr Stuart Grant**, ST5, North West Deanery

Are the KDIGO guidelines for acute kidney injury relevant to patients after cardiac surgery? A371

Authors S H Howitt¹; I Malagon¹; J Dimarakis¹; C N McCollum¹; S W Grant¹;

¹ University Hospital of South Manchester, UK

Objective The Kidney Disease Improving Global Outcomes (KDIGO) Acute Kidney Injury (AKI) guidelines assign the same stage of AKI to patients whether they fulfil urine output criteria, creatinine criteria or both criteria simultaneously. The objective of this study was to validate the KDIGO criteria as a tool to identify those at risk of adverse outcomes after cardiac surgery.

Methods Analysis of prospectively collected data from 2284 consecutive adult patients admitted to the cardiac intensive care unit (CICU) following cardiac surgery between January 2013 and May 2015. The rates of prolonged CICU stay, subsequent renal replacement therapy (RRT) and 2-year mortality were compared for those diagnosed with AKI-1 and AKI-2 by urine output alone, serum creatinine alone or both factors using multivariable logistic regression and coxproportional hazards.

Results Based on KDIGO criteria, 819 of 2,267 eligible patients developed AKI after cardiac surgery. After multivariable adjustment, patients meeting both urine output and creatinine criteria for AKI-1 were more likely to have a prolonged CICU stay (OR 4.9, 95%CI 3.3-7.4, p<0.01) require RRT (OR 10.5, 95%CI 5.5-21.9, p<0.01) or experience 2-year mortality (HR 2.8, 95%CI 1.6-4.8, p<0.01) than those diagnosed as AKI-1 by urine output alone. After multivariable adjustment, patients diagnosed with AKI-2 by both urine output and creatinine criteria had an increased risk of CICU stay (OR 16.0, 95% CI 3.2-292.0, p<0.01), require RRT (OR 11.0, 95%CI 4.2-30.9, p<0.01) and 2-year mortality (HR 3.6, 95% CI 1.4-9.3, p<0.01) than those diagnosed with AKI-2 by urine output alone.

Conclusion After cardiac surgery there are significant differences in the risk of adverse outcomes amongst patients assigned the same stage of AKI based on the KDIGO guidelines. AKI diagnosed by both urine output and serum creatinine together carries the greatest risk. The KDIGO guidelines do not appear useful after cardiac surgery and also require validation in other settings.

Presenter: **Dr Hyla Peens-Hough**, *Paediatric Cardiac Surgery Fellow, Alder Hey Children's Hospital Foundation Trust*

Current application of patient specific 3D printing in complex congenital heart disease A283

Authors **H Peens-Hough**¹; M Richards¹; S Loggos¹; G Pelella¹; A Lotto¹; R Dhannapuneni¹; R Guerrero¹;

¹ Alder Hey Children's Hospital NHS Foundation Trust, UK

Objective 3D printing technology and advanced high resolution imaging can be utilised to create 3D printed replicas of patient's hearts. These 3D printed hearts enable the precise understanding of the complex anatomy for surgical planning, hands-on simulation of surgical procedures, morphology teaching of medical professionals and aid parent and patient communication. We aim to share our experience and current application of patient-specific 3D printed cardiac models.

Methods Eighteen patient-specific 3D printed heart models were used in the clinical setting between July 2015 and October 2017. The patients were specifically selected and CT and/or MRI obtained. The software used to create 3D models include: Plissimo, Mimic and 3-matic. 3D models of blood volume or tissue were created and printed. We evaluated the indication for production and the clinical application.

Results All 18 cases were successfully produced. Nine cases were produced pre-operatively to aid the multidisciplinary decision making and pre-operative surgical planning. These cases included double outlet right ventricle, truncus arteriosus with interrupted aortic arch, multiple ventricular septal defects, complex Tetralogy of Fallot and patients requiring redo surgery for complex congenital heart disease. Seven models were produced for education purposes and morphology training of health professionals. Two soft silicone models of Tetralogy of Fallot was used in hands-on surgical simulation for surgical trainees.

Conclusion 3D printed models are a valuable additional method for visualising the heart in complex congenital heart disease. This aids in the decision making and surgical planning. Utilizing 3D printed models in morphology training and hands-on surgical simulation provide enhanced learning opportunities. Models can aid patient and parent understanding of the morphology and surgical correction.

Presenter: **Mr Zaheer Tahir**, *Student, Hull York Medical School*

In-vitro effect of dichloroacetate on human internal mammary artery A203

Authors **Z Tahir**¹; A Hussain¹; R Bennett¹; J Hobkirk¹; M A Chaudhry¹; M Loubani¹;

¹ Castle Hill Hospital, UK

Objective Dichloroacetate (DCA) is a small molecule that exhibits multiple pharmacological properties. Most research has focused on its ability to modulate carbohydrate metabolism. It inhibits pyruvate dehydrogenase kinase (PDK) activity and thus stimulates mitochondrial pyruvate dehydrogenase (PDH) with

improved coupling between glucose oxidation and glycolysis. Increased glucose oxidation inhibits fatty acid oxidation via malonyl-coenzyme (figure 1). Some studies in humans and in animals have shown DCA to increase cardiac index and decrease pulmonary and systemic vascular resistance. Spasm of the internal mammary artery (IMA) graft can result in life-threatening complications following coronary artery bypass grafting. The aim of this study was to characterise the pharmacological effects of DCA on human IMAs.

Methods Research ethics committee approval was obtained for this study. Discarded segment of the distal left IMA were obtained. IMA rings of 1-2 mm internal diameter and 2 mm long were mounted on a 4 channel multi myograph system in modified Krebs solution. A basal tension of 2g was applied and were left to equilibrate for 60 min (figures 2 & 3). The effect of DCA was analysed in 6 rings compared with controls. Both arms were then constricted in 10 μ M of noradrenaline to analyse the effect of DCA. Integrity of endothelium was confirmed with KCl.

Results DCA did not lead to significant vasodilatation or vasoconstriction of human internal mammary arteries. It neither attenuated the vasoconstrictor effect of NA.

Conclusion This study demonstrated no significant effect of DCA on the vasomotor tone on human IMAs. This may have been masked due to the absence of alternative metabolic fuel source in Krebs solution compared to in-vivo conditions. This may be better characterised using media that contains both glucose and fatty acids. This study focused on the effects of DCA on IMAs alone and cannot be extrapolated to apply to its overall effects on peripheral vascular resistance.

Presenter: **Mr Mehmood Jadoon**, ST8, Nottingham University Hospitals NHS Trust

Complications after pectus deformity repair: risk comparison between Nuss and Ravitch procedure A390

Authors **M Jadoon**¹; L Ross¹; V Völtzoglou¹; V Pagliarulo¹; E Addae-Boateng¹; A Majewski¹; J P Duffy¹; M Hawari¹;

¹ Nottingham City Hospital, UK

Objective Pectus deformities are considered as anomalies of chest wall growth. The main two are pectus excavatum and carinatum. Minimally invasive Nuss procedure and Ravitch procedure are the two common techniques used to correct this deformity. Minimally invasive Nuss bar placement is now favoured over Ravitch because of minimal scarring, quicker recovery and preservation of intrathoracic volume.

Methods We reviewed our practice from prospectively collected Thoracic database and compared the two procedures with regards to outcomes. We operated on 165 patients from February 1988 to September 2017.

Results There were 18 female and 147 male patients. 61 patients presented with pectus carinatum and 99 patients with pectus excavatum and 5 patients with mixed deformity. 124 patients had Ravitch repair and 41 has Nuss procedure for correction of pectus deformity. Patient demographic data, Lung functions and Functional status was very comparable as depicted in Table 1. Complications rate was slightly higher in Nuss group with

regards to pneumothorax and surgical emphysema. Seroma formation was more common in Ravitch group (Table 2) and required pectus bar removal in 2 Patients in Ravitch group. 1 Ravitch patients had redo surgery for persistent deformity and one for unstable sternum. 2 patients in Nuss group had bar displacement and bar was replaced. No patient required ITU admission, or invasive ventilation. There was no mortality and all patients were discharged home. Overall end aesthetic outcome was very satisfactory in most patients.

Conclusion Our results suggest that both Nuss and Ravitch procedures are safe and good options in management of pectus deformities. There is a slight increased incidence of pneumothorax with Nuss procedure that might advocate use of a chest drain in this group. Hospital stay was very comparable.

Presenter: **Mr David Bleetman**, ST4, *David Bleetman*

Establishing a high volume and multi-disciplinary septal myectomy service ^{A342}

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Objective Septal myectomy (SM) is considered the gold standard for refractory left ventricular outflow tract (LVOT) obstruction in patients with hypertrophic obstructive cardiomyopathy (HOCM). Improved surgical outcomes have been demonstrated in high volume centres with a multi-disciplinary practice. We present the data from a recently established large UK service for SM to assess if good outcomes are associated with such an approach.

Methods All patients undergoing SM between September 2016 and September 2017 were enrolled. Patients were referred for surgery from an established tertiary cardiomyopathy service and discussed at an MDT meeting before being offered surgery. At surgery the multi-disciplinary assessment continued with a surgeon, an anaesthetist and a cardiologist present to evaluate the intraoperative TOE and direct manometry gradients both pre and post-myectomy. If the immediate result demonstrated a residual gradient, following discussion a second bypass run would be performed to achieve optimal surgical outcome. Patients remained under dual cardiology/surgical care until discharge and seen at six week follow up with transthoracic echocardiography. Data was collected retrospectively on baseline characteristics, pre and post-operative echo findings and symptomatology at follow up, morbidity and mortality and intraoperative details. Change in symptom class (CCS/NYHA) was assessed using wilcoxon signed rank test.

Results N=31, mean age =55, males = 20 (64.5%), previous PPM = 10 (32%), previous alcohol septal ablation 5 (16%). Mean resting and provocation gradient improvement was 53mmHg and 73mmHg respectively. Median pre and post-operative NYHA scores were 3 and 1 respectively (p<0.05) (Figure 1). Mean wall thickness reduction at the basal septum was 6.8mm. Mortality = 0%, PPM insertions = 1(3%), post-op AF = 5 (16%), VSDs = 0.

Conclusion A high-volume and multidisciplinary approach to SM for HOCM can achieve excellent short-term results, in-line with other specialist cardiomyopathy centres.

Presenter: **Mr Hassan Kattach**, *Senior Surgical Fellow Cardiac surg, Southampton University Hospital*

Multi-centre results of ascending aorta, arch replacement with concomitant open descending aorta stenting using a hybrid stent-graft for acute type A dissection *A174*

Authors **H Kattach**⁴; S Duggan⁴; V Dronavalli³; P Catarino²; J J Dunning²; M Field¹; D Harrington¹; M Kuduvali¹; J Mascaro³; A Oo¹; T Velissaris⁴; G M Tsang⁴;

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Objective Replacement of the ascending aorta, aortic arch and concomitant open stenting of the proximal descending aorta with a hybrid stent-graft in acute type A aortic dissection depressurises or obliterates the false lumen and may be useful technically at the time of surgery and in preventing long term complications. We report the short and medium term results from 4 major aortic centres in the United Kingdom.

Methods Between June 2013 and October 2017, all patients, in 4 centres, who underwent ascending aorta, aortic arch replacement and concomitant open stenting of the descending thoracic aorta for acute type A aortic dissection with a hybrid stent-graft were analysed prospectively. Preoperative data, operative outcomes, short and medium-term survival were analysed.

Results 47 patients (25 males) mean age 64±11 years (range 37-84) were included in the study. Left ventricular function was normal in 76% of the patients. Two patients had previous cardiac surgery. One patient had acute malperfusion syndrome. 26% of the patients had connective tissue disorder and 59% had hypertension. The mean cardiopulmonary bypass, the cross-clamp and distal body circulatory arrest with selective antegrade cerebral perfusion times were 357±113, 216±69 and 74±45 minutes respectively. 45% of the patients had other additional cardiac procedures (AVR, MVR, root replacement and CABG). Seven patients died in hospital (14.9%). 3 patients developed stroke. The median ITU and hospital stays were 8 days and 19 days. The mean follow up was 17±13 months. There was one late death during the follow-up period (survival 82.9%).

Conclusion Ascending aorta, aortic arch replacement with concomitant open descending aorta stenting using a hybrid stent-graft device in acute type A aortic dissection has favourable short and medium term outcomes and may add to the available strategy in treating these patients.

Presenter: **Mr Shahzad Raja**, *Consultant Cardiac Surgeon, Harefield Hospital (Royal Brompton & Harefield NHS*

Early discharge following cardiac surgery with supplemental home care practitioner visit is safe and cost-effective: a single centre experience *A366*

Authors **H Khan**¹; S Garg¹; B Persaud-Rai¹; G Santhirakumaran¹; S Bhudia¹; S Raja¹;

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Objective Prolonged postoperative stay after cardiac surgery is associated with a large expenditure of healthcare resources. One of the potential strategies to facilitate early discharge is to have a program of continuity of care by a home care practitioner. The aim of this study was to assess safety and cost-effectiveness of early patient discharge with supplemental visit by home care practitioner following cardiac surgery.

Methods From 2014 onwards, patients who underwent isolated coronary artery bypass grafting (CABG) or aortic valve replacement (AVR) and were deemed suitable to be discharged early on either day 3 or day 4 as per an agreed protocol were recruited into this study (Group A). These patients were compared with those who were discharged routinely (Group B). An experienced home care practitioner was appointed to visit the patients in Group A on 2nd day after discharge as defined in the protocol.

Results Group A included a total of 244 patients (203 CABG/ 41AVR). All patients in Group A had off-pump CABG with the mean number of grafts being 2.52 ± 0.66 . The ischaemic and bypass time for AVR patients was 54.90 ± 15.47 and 75.61 ± 16.0 respectively. The mean hospital stay for CABG was 3.93 ± 0.25 and for AVR was 3.85 ± 0.35 . Group B had a total 199 patients (155 CABG/44 AVR). All patients in Group B had on-pump CABG with the mean number of grafts being 2.68 ± 0.70 . The ischaemic and bypass time were 69.42 ± 12.73 and 98.26 ± 19.53 . The mean hospital stay was 7.09 ± 0.70 for CABG and 8.02 ± 0.69 for AVR respectively. The readmission rate was 1.6% (4) in Group A and 3.5% (7) in Group B ($P = 0.89$). The shorter hospital stay translated into significant cost saving without increase in readmission rates.

Conclusion Our study shows that discharging suitably selected patients home on day 3 or 4 with home care practitioner follow up is not only safe but cost effective. This study also shows that patient undergoing aortic valve surgery can be discharge early if they meet pre-defined discharge criteria.

Presenter: **Mr Spyridon Loggos**, *Senior Fellow in Congenital Cardiac, Alder Hey Children's Hospital*

Total anomalous pulmonary venous connection: 10 years results of the evolution of surgical repair without the use Deep Hypothermia Circulatory Arrest A280

Authors S Loggos¹; G Pelella¹; H Peens-Hough¹; C Tennyson¹; A Lotto¹; R Dhannapuneni¹; R Guerrero¹;

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Objective Repair of the Total Anomalous Pulmonary Venous Drainage (TAPVD) remains a challenge, traditionally been performed under deep hypothermia circulatory arrest. This study analyses a single institution's experience in the evolution of the surgical management of TAPVD without the use of deep hypothermia over the last 10 years.

Methods This is a retrospective review of 73 patients who underwent TAPVD repair, from January 2007 to October 2017 at Alder Hey Children's Hospital. There were 36 supracardiac; 22 infracardiac; 9 cardiac; and 6 mixed types. Patients with single ventricle physiology were excluded. The median age at repair was 22 days (range 0d-1.2years), and the median weight was kg 3.35 Kg (range 2-7.8Kg. 58% of patients presented with obstructive pulmonary venous drainage (73% in the infracardiac group), and native pulmonary vein hypoplasia

was present in 15% of patients. Emergency and urgent repair (within 24 h from presentation) was required in 41 and 50% of cases. Normothermia at 36°C was employed in 26 cases. Mild hypothermia (28-34°C) in 25 cases, moderate hypothermia (21-28°C) in 7 cases and deep Hypothermia (≤ 20 °C) in 15 cases. Bicaval cannulation was used in 56 (76%) patients and at the beginning of the series Hypothermic circulatory arrest was employed in 18 (24%) patients.

Results The overall hospital mortality was 4.1% (n=3), one at deep hypothermia (5.5%), one at moderate (14%) and one at mild hypothermia (4%). Reoperation for restenosis was required in 4 cases, and all survived at follow up. There was no mortality in the normothermic group. There were two late deaths at 5 and 3 months, both due to pulmonary hypertension and hypoplasia of the native pulmonary veins. In the last 5 years, we have gradually moved towards normothermia for managing CPB for TAPVD correction for all types, with no mortality.

Conclusion The surgical repair of TAPVD without the use of hypothermia is a safe and reproducible technique which does not affect negatively on morbidity, early and late mortality.

Presenter: **Mr Ivan Yim**, ST2, *Queen Elizabeth Hospital, Birmingham*

Diagnosis of subsolid lung lesions with CT guided transthoracic needle biopsy ^{A399}

Authors **I Yim**²; T Au Yong²; D Tattersall²; C Walker²; P Guest²; E L Senanayake¹; M Kalkat¹;

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Objective Ground glass and sub-solid opacities in the lungs are increasingly being detected on CT (computed tomography) scans of the thorax and establishing a diagnosis remains challenging. We assessed the diagnostic performance of CT guided transthoracic needle aspiration biopsy (TNAB) of these lesions performed at a single centre.

Methods A retrospective review of consecutive patients who have undergone CT guided TNAB from January 2016 to September 2016 at University Hospital Birmingham was performed. The diagnostic accuracy of the procedure was confirmed through comparison with results of surgical resection and repeat imaging follow up. The radiological and histological features of the lesions were recorded.

Results 105 TNAB were performed in this time period, 19 patients had ground glass and subsolid opacities. The mean size of the lesion in axial view was 23.7 mm (range 13 to 39mm). The diagnosis of lung cancer was made in 10 cases, lymphoma and sarcoidosis in 1 case each. Of the malignant group, 5 patients went on to have surgical resection and the final histology matched the TNAB histology in all 5 cases. In 7 patients, the TNAB were benign or was non diagnostic. 5 of these patients underwent surgical resection and adenocarcinoma were confirmed on histological examination; 1 patient was followed up and serial imaging showed resolution of the nodules and 1 patient was subsequently found to have widespread disease and therefore not for surgery. The overall sensitivity of CT guided TNAB in this series was 64%, specificity was 100%, Positive predicative value 100%, negative predicative value 25%.

Conclusion CT guided TNAB is safe and effective diagnostic tool in patients with ground glass and subsolid opacities. If the diagnosis can be obtained preoperatively, this saves theatre time and reduces the need to perform intraoperative frozen section. The non-diagnostic or benign lesions will require alternative diagnostic approach or close follow up.

Presenter: **Mr Anthony Chambers**, SpR, *Edinburgh Royal Infirmary*

VATS segmentectomy - less is more (patient friendly) *A409*

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Objective Segmentectomy and wedge resection are grouped together in the SCTS outcome data but are quite separate from each other as curative surgery for lung cancer, since segmentectomy is more likely to provide sufficient margins and allows access to sub-segmental and hilar lymph nodes. In addition, segmental resections have been shown to convey the same survival outcomes as lobectomies (1) but are not widely practiced predominantly due to being a more technically demanding and time-consuming operation.

Methods We present data from the Edinburgh VATS fellowship programme spanning segmentectomies over the past 22 years (2). There have been 122 anatomical segmentectomies over this time period with 85% performed by trainees. (This represents 9% of the VATS lobectomy programme from 1995). Volume has increased yearly with 46% conducted over the previous 3 years. Patients are carefully selected and anatomical variation in vasculature established preoperatively via 3D reconstruction. A posterior fissure-based approach is utilised.

Results We present the work-up and operative techniques for our segmentectomy. The average operating time was 157 minutes vs 154 for VATS lobectomy with average blood loss of 85 mls (vs 100 mls). 30% were for metastases and 70% for primary lung cancer. The average length of stay was 6 days (vs 6.9 for VATS lobectomy) segmentectomy conveyed a 10-21% saving in lung parenchyma over a lobectomy.

Conclusion We conclude that via our approach segmentectomies can be taught to trainees with equivalent operating times to lobectomies. This offers patients the oncological benefits of an anatomical resection with a lung sparing procedure. We believe VATS segmentectomies should be considered in patients with bronchogenic carcinoma and poor lung function or for metastases where a wedge resection is not feasible. 1. Bedetti, Benedetta et al. *Journal of Thoracic Disease* 9.6 (2017): 1615–1623. 2. Richards JM, Dunning J, Walker WS. *Ann Cardiothorac Surg*. 2012;1:33-36.

Presenter: **Dr Marc Albert**, *Senior Cardiac Surgeon, Robert-Bosch-Hospital*

The total arterial myocardial revascularization using bilateral IMA and the role of postoperative sternal stabilization to reduce wound infections in a large co *A205*

Authors M Albert¹; R Nagib¹; A Ursulescu¹; U F Franke¹;

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Objective The total arterial myocardial revascularization using bilateral IMA shows improved results regarding mortality, long-term survival as well as superior graft patency and thus has become the standard technique according to recent guidelines. On the other hand, those patients might suffer from an increased risk of developing sternal wound infections, especially when being obese or having a medical history of diabetes. One reason for the wound complications may be an early sternum instability, which could be avoided using a thorax support vest (e.g. Posthorax vest). This retrospective study compares the wound complications after bilateral IMA grafting according to the use of a Posthorax vest.

Methods Between April 2015 and May 2017 1613 patients received a total arterial myocardial revascularization using bilateral IMA via a median sternotomy and have been administered a Posthorax support vest on the 2nd postoperative day. We compared those patients with the 1667 patients operated via the same access the preceding 26 months. The endpoints have been the incidence of wound infections, when did the wound infection occur and how many wound revisions were needed until wound closure.

Results The demographic data of both groups were similar. A significant advantage for the use of a thorax support vest could be seen regarding the incidence of wound infection ($p=0.036$) and the hospital length of stay when a wound complication did occur ($p=0.018$).

Conclusion As seen in this retrospective study, the early perioperative use of a thorax stabilization vest such as the POSTORAX vest can reduce the incidence of sternal wound complications significantly. Furthermore, when a wound infection occurred and the patients returned to the hospital for wound revision, the patients who had been administered the POSTHORAX vest postoperatively will have a significantly shorter length of stay until wound closure.

Presenter: **Dr Karishma Chandarana**, FY2, Glenfield Hospital

Clinical coding in thoracic surgery: a costly game of Chinese whispers? *A400*

Authors K Chandarana¹; E J Caruana¹; M Cheung¹; J Haigh¹; S Rathinam¹; A Nakas¹; K Ang¹;

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Objective Clinical coding is the process of assigning standard codes to summarise a patient's care episode as documented in case notes. This data underpins billing and reimbursement, and informs health service audit, research, resource allocation. We conducted a multidisciplinary audit to assess the accuracy of coding performed for patients admitted to our thoracic surgical unit, and to further evaluate the implications of any discrepancy.

Methods Blinded re-coding was undertaken by a dedicated clinician, for 20 randomly-selected thoracic surgical inpatient episodes, between November 2016 and January 2017. This data was compared to codes [1] formally allocated by the clinical coding team, and [2] clinical events identified on dedicated 'coding sheets'

routinely completed by ward-based clinicians at patient discharge. The financial and health information implications of our adjustments were subsequently analysed.

Results Clinical coders failed to capture 47% of all codes (median 11 per patient, range: 6 to 19). Comorbidities and post-operative complications were most likely to be missed. Interviews with clinical coders identified case note legibility, use of abbreviations, and evolving medical terminology as the most significant barriers to accuracy. Departmental 'coding sheets' were – by design – unable to account for 61% of encountered clinical events, with a further 53% (median: 3.5, range: 0 to 14) of potentially-included codes being missed. Actual income was 24% (GBP 1,876+/-£951 per case) lower than that predicted by our re-coding exercise; projected to an annual departmental loss of income of GBP 1.8 million.

Conclusion Current coding practices are unreliable, with resultant under-billing and inadequate data quality for health service evaluation. Emphasis should be placed on clinician and coder education, and to increase clinician engagement with the coding process. Thoughtful design of electronic discharge documentation may reduce duplication and automate output with increased accuracy.

Presenter: **Mr Amir Sephehpour**, *Specialty Registrar ST8, King's College Hospital*

Re-operative EndoMitral – The King's Experience A179

Authors **A H Sephehpour**¹; I Chauhan¹; J Glizevskaja¹; M Baghai¹; R P Deshpande¹;

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Objective Analysis of our experience in re-operative endoscopically-assisted minimally invasive mitral valve surgery in patients with previous sternotomy.

Methods We retrospectively analysed our records from January 2011 till October 2017. We extracted data including pre-operative demographics, EuroSCORE, and post-operative major adverse cardiovascular and cerebrovascular events (MACCE) and echocardiographic data.

Results We performed 12 cases (8 male), mean age 57.2±14.8, mean EuroSCORE 14.2±12.7. 9 (75%) patients underwent second-time surgery, 1 (8.3%) underwent third-time surgery and 2 (16.7%) patients underwent fourth-time surgery. Previous operations included CABG (n=4), AVR (n=1), MVR (n=4), MVR+CABG (n=1), AVR+MV repair (n=1), ASD repair+total anomalous pulmonary venous drainage+MV repair (n=1). The technique was femoral arterial and venous cannulation for cardiopulmonary bypass (CPB), right anterior thoracotomy, endoscopically-assisted access to the left atrium. 3 (25%) operations were performed using aortic endo-balloon and cardioplegic arrest, and the remainder (9, 75%) using hypothermic fibrillation. Operations performed included 6 (50%) MVR, 4 (33%) MV repair, 1 (8.3%) MVR+TV repair + ASD closure, and 1 (8.3%) MV repair + TVR. Mean CPB time was 168.1±33.8 mins and mean aortic cross-clamp time was 98.3±11.9 mins. There was one incidence of post-op stroke following endo-balloon rupture. There were no incidences of mortality, peri-op myocardial infarction or any other MACCE. Post-op echocardiography revealed mild paravalvular leak in one patient. There were no incidences of conversion to sternotomy or permanent pacemaker insertion or wound infections. The mean length of stay was 12.3± 7.1 days.

Conclusion We demonstrate the safety and excellent outcomes in re-operative minimally invasive mitral valve surgery, in patients with previous sternotomy. Following our initial experience with the endo-balloon we have moved away from this technique and now exclusively use hypothermic fibrillation.

Presenter: **Mr Omar Nawaytou**, *Consultant Cardiac Surgeon, Liverpool Heart and Chest*

Natural history of surgical aortic pathology in patients with Marfan disease.
Operative, medium and long term outcomes from a quaternary aortic referral centre. *A328*

Authors I Gambardella¹; M Kuduvalli¹; D Harrington¹; O Nawaytou¹; M Field¹;

¹ Liverpool Heart and Chest Hospital, UK

Objective Our aim was to investigate the natural history of Marfan disease with overt aortic pathology requiring surgical treatment, and the outcomes of the latter at a quaternary aortic centre.

Methods Our institutional database was interrogated on aortic procedures in patients with a recorded diagnosis of Marfan disease. In-hospital outcomes were analysed with a procedure-based approach, whilst follow up outcomes followed a patient-based approach.

Results Between January 1998 and June 2017, a total of 193 operations were performed on 116 patients. Seventy-seven patients (39.89%) needed ongoing surgical care, with a number of sequential aortic procedures spanning from 2 to 6. The procedures involved the following aortic segments: 86 roots, 29 arches, 12 concomitantly roots and arches, 43 descending thoraco-abdominal; additionally, isolated mitral and/or tricuspid valve surgery was required in 23 patients. This population was relatively young (41 years), with little gender skewing (61% male). Procedures were performed in a non-elective setting in 34% of cases. There were 2 (1.03%) hospital death (1 redo root replacement, and 1 combined arch plus descending aorta replacement). In-hospital major morbidity included 9 (4.66%) strokes, 1 (0.51%) myocardial infarctions, 13 (6.73%) respiratory failures requiring tracheostomy, 10 (5.18%) respiratory failures requiring dialysis, and 0 cases of paraplegia. Survival at 1, 5 and 10 years was respectively 95.5%, 89.6% and 83.6%. Competitive risk of reoperation at 1, 5 and 10 years was respectively 9.7%, 20.8% and 30.5%.

Conclusion To our knowledge, this is the first comprehensive series on the natural history of aortic surgery patients with Marfan disease. Regardless between one third and half of Marfan patients require serial aortic operations in their life span, their overall surgical prognosis compares favourably to the one of patients with sporadic aortic disease.

Presenter: **Mr Amir Sepehripour**, *Specialty Registrar ST8, King's College Hospital*

Resurgence in EndoCAB – The King's Experience *A225*

Authors A H Sephripour¹; I Chauhan¹; J Glizevskaja¹; M Baghai¹; R P Deshpande¹;

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Objective Analysis of our experience and results in endoscopically-assisted minimally invasive coronary artery bypass surgery.

Methods We retrospectively analysed our records, from February 2010 till October 2017. Using electronic case notes and local PATS database we extracted data including pre-operative demographics, EuroSCORE, and post-operative major adverse cardiovascular and cerebrovascular events.

Results We performed 81 cases (70 male), mean age was 74.3± 5.2, mean logistic EuroSCORE was 3.6± 1.4, 18 (22%) were performed as part of a staged revascularization strategy with PCI to significant non-LAD lesions. There was a progressive increase in the number of cases performed, 3 in 2010 increasing to 18 thus far in 2017. The operation was performed in two stages. Firstly, totally endoscopic LIMA harvest with a 3-port approach using the Ethicon Harmonic scalpel. Secondly, off-pump coronary anastomosis of LIMA to LAD (+/- diagonal sequential graft) through a 4cm left anterior thoracotomy. Eight (9.9%) patients underwent sequential LIMA to diagonal to LAD grafting. There were no incidences of mortality, stroke, peri-operative myocardial infarction or any other major adverse cardiovascular or cerebrovascular events. There were 2 (2.5%) intra-operative conversions to sternotomy. One for the finding of an intra-myocardial LAD, and the second for a lack of adequate flow in the LIMA, which necessitated a sternotomy and harvest of the RIMA for LAD grafting. There was 1 (1.2%) incident of repeat revascularization with PCI to the native LAD disease. There were 2 (2.5%) incidences of superficial wound infection. The average length of stay was 5.3± 1.2 days.

Conclusion Our results demonstrate the resurgence, progressive increase and excellent outcomes with endoscopically-assisted minimally invasive CABG. The complete harvest and division of all branches of the LIMA endoscopically results in less recurrent angina and allows the use of a smaller thoracotomy as compared to previous techniques.

Presenter: **Mr Kumaresan Nagarajan**, *Senior Fellow, RWHT*

Comparison of semi rigid and rigid rings in treating functional tricuspid regurgitation - early outcomes ^{A334}

Authors K Nagarajan¹; S W Grant²; J S Billing¹; N Nikolaidis¹;

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Objective Annuloplasty rings are widely used for repairing functional tricuspid regurgitation. The objective of this study is to compare efficacy and durability of semi rigid and rigid rings (Triad Vs Edwards Physio Tricuspid rings) in our practice

Methods We looked into all consecutive tricuspid valve repair patients in our unit from February 2016 until February 2017 under two mitral surgeons. We analysed their demographics, preoperative and post operative

echocardiographic findings. Patients had concomitant multi valve, coronary artery surgery and major aortic procedures. Tricuspid annuloplasty rings were included while tricuspid leaflet augmentation, placement of neo chords with annuloplasty was excluded. Patients are routinely followed up after valve repairs in our unit six to eight weeks after surgery and then with annual assessment. We have complete follow up of all our patients.

Results Total numbers of patients are 98. The mean age of our patients was 70 ± 9.8 years. Female patients were 50/98 (51%) whilst males were 48/98 (49%). Preoperatively 67% of them (66/98) were in atrial fibrillation. 53% of the patients had moderate tricuspid regurgitation whilst 47% had severe regurgitation. Left ventricular function was preserved in 52%, moderate in 41% and poor in 7%. 54% (53/98) had semi-rigid rings whilst 46% had rigid rings. Annulus size was 4.04 ± 0.15 . The mean rigid ring size was 28 ± 3.5 similar to semi-rigid size of 28 ± 3.4 . Post-operative echo showed Trivial or no leak in 96% (51/53) in the semi-rigid group and 95.6% (43/45) in the rigid group. There was no early mortality in both groups. There were no pacing related complications in both groups.

Conclusion The early outcomes of both semi-rigid and rigid rings are similar. Further assessment of symptom relief, ventricular remodeling, annular motion and improvement in ventricular function is ongoing. Early data shows that both rings can be used to treat functional tricuspid regurgitation irrespective of annular size with satisfactory outcomes.

Presenter: **Mr Mohammad Diab**, ST3, Derriford Hospital

Five-year comparison of different bio-prosthetic aortic valves replacement impact on patient-prosthesis mismatch ^{A212}

Authors **MS Diab**¹; N Moawad¹; L J Rogers¹; M Dalrymple-Hay¹; A Marchbank¹; J Kuo¹; J Unsworth-White¹; C Lloyd¹;

¹ Plymouth Hospitals NHS Trust, UK

Objective The impact of Patient prosthesis mismatch (PPM) on clinical outcomes remains controversial. Projected indexed EOA (EOAi) calculated at the time of operation have been proven to predict PPM. We, therefore, set to examine the impact of various supra-annular bioprosthetic aortic valve on expected PPM.

Methods A total of 1548 consecutive patients, with aortic valve stenosis, underwent isolated AVR (941, 61%); and combined AVR and CABG (607, 39%), between April 2012 and October 2017 at a single institution. Clinical and haemodynamic data were prospectively collected and retrospectively analysed. EOA for the different valves were recorded from the manufactures in-vivo information. The indexed EOA was then determined. ANOVA and Chi-square test were used to compare different bioprosthetic models against expected PPM and Kaplan-Meier analysis of mortality was performed using SPSS version 24.

Results The mean age was 74 ± 8 and 1007 (65%) were males. The implantation of Trifecta, Perimount, Magna Ease, Epic, Epic Supra, Mosaic and Edwards' SAV aortic valves were 522 (33.7%), 177 (11.4%), 111 (7.2%), 380 (24.5%), 133 (8.6%), 66 (4.3%) and 118 (7.6%), respectively. A total of 80 (5.2%) patients suffered severe PPM (EOAI ≤ 65 cm²/m²), while 614 and 814 patients had moderate and mild PPM, respectively. The relation of the

different valve models and sizes against BSA and PPM is demonstrated in figure 1. There was a statistically significant difference in PPM against the different AVR models ($p < 0.001$). Epic bioprosthetic valves had the highest rate of severe PPM (49, 3.2%) followed by Magna Ease (11, 0.7%) and Mosaic (10, 0.65%). There were no patients with PPM in patients who received Trifecta bioprosthesis. Mortality and propensity-matching data to follow.

Conclusion Although an increase in valve size correlates with favourable patient-prosthesis mismatch outcome, other factors such as valve haemodynamics should be taken into consideration.

Presenter: **Mr Benjamin R. Waterhouse**, *Core Surgical Trainee (CT2), Yorkshire and Humber Deanery*

Patients' perception of Cardiac Surgery outcomes data A373

Authors R Salem¹; B R Waterhouse¹; N Hussain¹; Y S Haqzad¹; G Chetty¹;

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Objective A top priority for SCTS is patients' interests. Cardiac surgeons in the UK have collected data on mortality and surgical outcomes since 1977. SCTS made this data publically available in 2005, something that is not standard practice amongst other surgical specialties. SCTS calls it the "era of accessible information", but how aware are patients of these results? Our study set out to investigate patients' awareness and understanding of published outcome data in our unit.

Methods A survey of pre-and post-operative cardiac patients attending outpatient clinic was carried out between June and October 2017. Patients were asked to anonymously complete a validated 10-point questionnaire including demographic, subjective, and objective questions designed to assess their awareness and understanding of SCTS surgical outcome data.

Results 103 surveys were distributed and 95 were completed. Among those who completed (Male: 62.2%; Female: 37.8%; Mean age: 66y) 82.7% were unaware of SCTS surgical outcome data and 43.2% showed no interest in knowing. Those who were aware (17.3%) only 50% were interested in knowing the success rate of the surgeon/unit. Patients with a higher level of education are more likely to be aware of the outcome data ($p = 0.019$). Only 46.9% of the patients were able to make an informed decision taking the outcome data into account. This is an ongoing survey with more results available by the time of SCTS meeting.

Conclusion This survey has shown that the majority of patients undergoing cardiac surgery are unaware of the SCTS surgical outcome data. Of those who were aware, only half were interested in knowing the success rate of their surgeon or unit. Further research is warranted in understanding the factors behind these results and how to make the "accessible information" more accessible.

Presenter: **Dr Giovanni Mariscalco**, *Associate Professor of Cardiac Surgery, Glenfield Hospital*

Systematic review of screening tests in relatives of patients affected by non-syndromic thoracic aortic diseases A329

Authors G Mariscalco¹; R Debiec¹; G J Murphy¹;

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Objective Screening is not the current standard of care in relatives of patients affected by non-syndromic thoracic aortic diseases (NS-TAD). We aimed to determine the incidence of aortic diseases, the predictive accuracy of available screening (imaging or genetic) tests, and the effectiveness of screening programs in this population of patients.

Methods A systematic literature search on PubMed/MEDLINE, EMBASE, and the Cochrane Library was conducted from inception to the end of June 2017. The search was supplemented with the Online Mendelian Inheritance in Man (OMIM) database. This study is registered with PROSPERO (CRD42017064598).

Results A total of 52 studies were included, and a total of 2619 relatives were screened for NS-TAD. Screening was genetic in 50% of studies, followed by imaging techniques in 12%, and a combination of the two in 38%. Newly affected individuals were identified in 34%, 24% and 15% of first-, second, and third degree relatives respectively. Familial NS-TADs were primarily attributed to single-gene mutations, expressed in an autosomal dominant pattern with incomplete penetrance. Specific gene mutations were observed in 25% of the screened families. Disease sub-type and genetic mutations stratified patients with respect to age of presentation, aneurysmal location, and aortic diameter prior to dissection. Relatives of patients with sporadic NS-TADs were also found to be affected. No studies evaluated the predictive accuracy of imaging or genetic screening tests, or the clinical or cost-effectiveness of a NS-TAD screening programme.

Conclusion Our review supports routine imaging and genetic testing of relatives of patients affected by non-syndromic aortopathies. The evidence suggests that screening of first - and second-degree relatives of patients affected by familial NS-TAD, and first-degree relatives of those affected by sporadic NS-TADs will result in significant numbers of patients with otherwise undiagnosed disease.

Presenter: **Mr Omar Nawaytou**, *Consultant Cardiac Surgeon, Liverpool Heart and Chest*

A novel technique for managing the hostile aortic arch: Zone zero deployment of frozen elephant trunk A350

Authors O Nawaytou¹; V Giordano¹; D Harrington¹; I Gambardella¹; M Kuduvali¹; M Field¹;

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Objective Conventional total aortic arch replacement requires a distal anastomosis beyond the origin of the left Subclavian artery (Zone 3). This may be challenging in a number of arch pathologies. The “Spielvogal” technique constructs an anastomosis in Zone zero proximal to the Brachiocephalic trunk, leaving a long conventional elephant trunk in the arch. This leaves the arch pathology untreated until a second stage is completed. We present our initial experience of an alternative approach for the hostile arch which allows complete treatment of the arch pathology in a single stage by Zone zero deployment of a frozen elephant trunk (FET) device.

Methods Between December 2008 and October 2017 75 patients underwent total arch replacement using a FET device. Out of these, 17 patients had Zone zero deployment of the device due to hostile arch anatomy. All procedures were performed under hypothermic circulatory arrest at 22 degrees C and selective antegrade cerebral perfusion. The procedures were performed using the Thoraflex Hybrid device. All 3 arch vessels were re anastomosed directly to the graft device.

Results 15 of the 17 procedures were performed emergently. The arch was deemed hostile due to complete arch disruption in 5, extensive anterior mediastinal haematoma due to a contained rupture in 5, friable infected mycotic aneurysms in 3, and other reasons in 4 patients. In hospital mortality and stroke rate were 5.9%. There were no cases of paraplegia. Two patients required further reintervention in the form of TEVAR extension distally and stage 2 repair of thoracoabdominal aorta. Late survival was 87.5% at 24 months. Follow up of the patients with infected arch pathology revealed no late deaths or reinfection.

Conclusion In arch pathology that lacks a good distal site for an anastomosis a Thoraflex device may be used to bring the anastomosis forward to Zone zero, while still excluding the aneurysm distally, and treating pathologies in a single stage. Continued surveillance is essential in these patients.

Presenter: **Dr Leanne Harling**, *SpR Thoracic Surgery, Imperial College London*

Pectus Index: a novel marker for the clinical severity of pectus carinatum deformity ^{A388}

Authors S Fraser²; L Harling¹; I Hunt²;

¹ Imperial College London, UK; ² St George's Hospital, University of London, UK

Objective To ascertain whether a clinical model of the Haller index could be utilised to assess the severity of pectus carinatum deformities in an out-patient setting without the need for radiological investigations.

Methods 144 patients with pectus carinatum deformities attended an out-patient clinic where they were assessed clinically by a surgeon. Simple measurements using a tape measure and callipers were performed by an experienced physical therapist. Prior to calculation of the Pectus Index (PI), the surgeon assessed the deformity as either mild, moderate, severe or extreme. The PI was then calculated as demonstrated in Figure 1 using the antero-posterior diameter at the peak of the deformity compared to the medio-lateral width. Statistical analysis was performed using STATA 12.0.

Results The surgeon's clinical assessment of the severity of the deformities was as follows: mild (n=6), moderate (n=55), severe (n=81) and extreme (n=2). The average PI was 1.12 (range 0.71-1.43). A low Pectus Index correlated with increased severity of the deformity. A PI of >1.29 was associated with mild deformities, 1.28-1.18 with moderate deformities, 1.17-1.02 with severe deformities and a PI of <1.02 was associated with extreme forms of pectus carinatum deformity. At multilevel regression a significant reduction in pectus index was seen with each stepwise increase in clinical severity (moderate vs. mild: Coef. -0.104 (95%CI -0.192, -0.015) p=0.022; severe vs. mild: Coef. -0.217 (95%CI -0.305, -0.130) p<0.0001; extreme vs. mild: Coef. -0.265 (95%CI -0.434, -0.097) p=0.002).

Conclusion The Pectus Index is a cheap and easily reproducible tool which can be used as an adjunct to clinical assessment of pectus carinatum deformities. In addition, it is an objective tool which can be used in monitoring the progress of treatments such as external bracing and surgical correction.

Presenter: **Miss Stephanie Fraser**, *SpR, London Deanery*

Clinical outcomes of non-compressive external bracing for pectus carinatum in a single UK centre A392

Authors S Fraser²; L Harling¹; T Richards²; I Hunt²;

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Objective The impact of pectus carinatum deformity in a young patient population has been clearly elucidated and surgical repair has been linked with lower rates of physical and psychological morbidity. Smaller previous studies evaluating bracing for pectus carinatum have been plagued by high failure and non-concordance rates. Here we aimed to assess whether out-patient correction of the deformity followed by a protocol of non-tightening compressive bracing was associated with improved compliance while maintaining improvements in satisfaction and quality of life.

Methods 124 sequential out-patients attending clinic underwent assessment of their pectus carinatum deformity with measurements and a structured questionnaire. All patients subsequently underwent out-patient manipulation of their deformity, followed by a tailored programme for external bracing. Patients were followed up at 3 month intervals with repeat measurements and questionnaires.

Results There was a significant and immediate improvement in the clinical Haller or peak of the pectus carinatum deformity which was maintained throughout the period of follow up (mean 3.7 cm; range 0-12 cm) (Figure 1). There were high rates of patient concordance (95%) with only six patients failing to complete the bracing protocol to date. When rated out of 10, patients described a significant improvement in the subjective impression of their chest morphology (3.24 vs 8.04; $p < 0.0001$; 95%CI -5.20 to -4.40) and a significant reduction in anxiety and low mood (5.74 vs 2.90; $p < 0.0001$; 95%CI 2.21 to 3.48). Patients were satisfied with the treatment (mean score 8/10; median 9/10) and 90% would recommend it to others. Skin irritation was the only complication reported with one patient experiencing a severe skin reaction requiring topical treatment.

Conclusion This programme for manipulation and bracing of flexible pectus carinatum deformity offers excellent outcomes and improved quality of life in a young patient population.

Presenter: **Dr Nathan Tyson**, *Foundation Year 2, Morrilton Hospital*

Cardiac Surgical Safety Checklists: is a formalised valve checkpoint necessary?

A375

Authors N Tyson¹; F Bhatti¹;

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Objective The introduction of Surgical Safety Checklists (SSCs) has been shown to greatly improve safety across all surgical specialties. Of these documents, the World Health Organisation (WHO) checklist has become the most widely used. However, this checklist is not specific to cardiothoracic surgery and omits several relevant points. The SCTS released a cardiothoracic-specific SSC. In light of the recently issued medical alert regarding the remounting of prostheses, could SSCs be modified to improve the safety of valve replacement?

Methods An electronic survey (consisting of 32 question items) was disseminated to all UK adult cardiac surgical centres. The survey evaluated the opinion of SSCs. In addition, opinion on the checking of prosthetic valves and the inclusion of a new valve checkpoint in SSCs was sought.

Results The original or modified WHO checklist was the most commonly used (68.4% of units), with only 3 centres using the SCTS document. 89.5% of centres felt there were a number of inclusions to be made. Overall opinion on the design of current SSCs was positive, with the current format (sign in, time out and sign out) widely accessible. The majority respondents (89.5%) felt that current SSCs had fostered an improved safety awareness. A majority of surgeons felt that the valve check was necessary during cardiac surgery, with 63% of respondents feeling that it should be formalised as part of an improved SSC document. Of note, only 32% of units regularly perform a formal check of the manufacturer, type and size of valve during surgery.

Conclusion Whilst SSCs have been shown to improve safety in a number of specialties, a number of factors have influenced their efficacy in the cardiac operating theatre. Although currently available SSCs do not formally mandate the checking of valve prostheses, the results of this survey suggest that the SCTS should support our proposal of including a valve checkpoint on an improved cardiac surgical checklist.

Presenter: **Miss Renata Greco**, *Cardiothoracic registrar, Oxford University Hospital*

Does re-do aortic valve surgery still have a role in the era of trans-catheter aortic valve implantation? *A185*

Authors R Greco¹; E Hill¹; X Jin¹; M Renna¹; J Djordjevic¹; M Petrou¹;

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Objective Re-do aortic valve replacements (AVR) have higher mortality and morbidity compared to first time AVR. Trans-catheter aortic valve implantation (TAVI) is an option for high-risk patients. The aim of the study is to present our experience with re-do aortic procedures and assess if this surgery still plays a role in modern cardiac surgery.

Methods We retrospectively reviewed 77 patients who underwent re-do aortic valve procedures under a single surgeon between April 2008 and October 2017.

Results Mean patients' age was 51.47 ± 19.18 years (35.5% < 40, 28.6% between 40-60, 33.8% between 60-80 and 5.2% >80 years old), 20 (26%) patients were in class NYHA III/IV, 16 (20.3%) required urgent surgery. Aortic regurgitation (AR) was present in 50 (64.4%) patients and aortic stenosis in 37 (48.1%). Pre-operative characteristics are reported in table 1. Indication for re-do was: infective endocarditis (IE) in 19 (24.7%) patients (12 root abscess), bio-prosthesis degeneration in 9 (11.7%), mechanical valve dysfunction in 4 (5.2%), paravalvular leak in 5 (6.5%), patient-prosthesis mismatch in 3 (3.9%), native valve disease in 19 (24.7%), aortic aneurysm, pseudoaneurysm and dissection in 27 (35.1%), root and homograft degeneration in 22 (28.6%). Thirty-eight (49.4%) patients underwent re-do AVR and 39 (50.6%) re-do complex aortic valve surgery (27 root procedures, 23 ascending aorta and 6 hemiarch replacement). Concomitant procedures were performed in 18 (23.4%) patients. A bioprosthesis was implanted in 33 (42.9%) patients, a mechanical valve in 28 (36.4%), a composite graft in 2 (2.6%), a biovalve in 5 (6.5%) and a homograft in 8 (10.4%). In-hospital mortality was 3.9% and incidence of major complications was low (table 2).

Conclusion In our experience more than half of the patients were younger than 60 and required complex aortic procedures. A large number of patients chose a mechanical prosthesis (39%), or presented with contraindications for TAVI such as previous mechanical valve (19.5%), significant AR (64.4%), IE (21.1%), proximal aortic disease (35.1%) and need for concomitant surgery (23.4%). Re-do aortic surgery remains the only treatment for such challenging cases and can be performed with acceptable mortality and morbidity in a specialised aortic centre.

Presenter: **Mr Tom Combellack**, *ST5 Cardiothoracic Registrar, Wales Deanery*

Impact of TAVI programme on surgical AVR workload in a single institution A188

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Objective The UK has an ageing population with a rapidly increasing burden of aortic valve disease. Our centre serves a particularly elderly population. Since the introduction of transcatheter aortic valve implantation (TAVI), many patients who were previously considered unfit for surgery are now being referred to the Heart Valve Team (HVT) for intervention. The aim of our study was to assess the impact of a TAVI programme, introduced in our institution in 2009, on the total number of aortic valve interventions and surgical aortic valve replacements (SAVR) for the population we serve.

Methods We performed a retrospective analysis of all SAVR±CABG and TAVI±PCI from 2006-2016 (11 years) in our centre as recorded in the national database. In particular, we compared the most recent 4 years of the TAVI programme (2013-2016) to the 3 years preceding the TAVI programme (2006-2008), analysing the proportion of departmental activity, age (median, interquartile range (IQR)), logistic EuroSCORE (median, IQR) and re-sternotomy rate (%).

Results We identified 2569 patients who underwent SAVR±CABG or TAVI±PCI. Comparing the most recent 4 years to the 3 years preceding the programme, there was a 48.9% increase in mean annual aortic interventions from 188 (range 155-231) to 280 (range 228-306). As a proportion of all departmental activity, this

represented an increase in aortic valve interventions from 27% to 48%, with a 19% increase in SAVR. Median age increased from 72 (IQR 65-78) to 76 (IQR 68-80) ($p=0.0005$), median logistic EuroSCORE increased from 6.85 (IQR 3.74-12.53) to 7.01 (IQR 4.24-11.64) ($p=0.663$) and re-sternotomy rate increased from 2.5% to 4.2%.

Conclusion The introduction of a TAVI programme has been very positive for our patients. In our institution the total aortic valve intervention rate has increased with an expanding provision of TAVI and more patients being considered for SAVR. In our experience, we are moving to an era where all aortic valve disease should be referred to the HVT.

Presenter: **Miss Ana Maria Soler Castells**, *Surgical Care Practitioner Trainee, St Bartholomew's Hospital*

Making a difference in a cardiothoracic department: Surgical Care Practitioner (SCP) experience, 2016-2017 ^{A288}

Authors A Soler Castells¹; S Ibrahim¹; A Sitzberger¹; M Olivar¹; K Clark¹; S Amartey¹; C Buckley¹;
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Objective To describe the role of Surgical Care Practitioner at (Hospital)* in a cardiothoracic service regarding the current social, economic, ethical and legal context (2016-2017).

Methods A literature review of the social, economic, ethical and legal context of the SCP role in the last three decades. Description of the current services and role performed by SCP regarding the literature reviewed critically analysed.

Results The SCP as part of the extended surgical team, helped to maintain the demands of the surgical services (RCSEng 2014). Several studies has proved the positive impact of the work of SCP in healthcare like reduction of waiting times, improved operating times, high patient satisfaction, low postoperative complications rates, reduced length of stay and readmission rates improved capacity and clinical activity (Abraham, 2011, Martin et al. 2007, Kumar et al. 2013, Tingle et al. 2016 and Abraham, 2016). The SCP has a legal and moral responsibility to ensure that the duty of care and standard of care owe to a patient does not fall (Bridge 2007 and McHale and Tingle, 2007).

Conclusion The role of the SCP is multitasking, with the capability to carry out her/his duty in many areas, variable depending of the hospital where perform her duties and always under the supervision of a consultant surgeon. This advance non-medical practitioner with a potential to serve where is best as a resource, a valuable member of the extender surgical team, is under the professional codes of conducts of NMC and HCPC. A logical debate is still ongoing regarding boundaries, effectiveness, safety and quality of the delivery of care and other similar roles like First Assistant or Surgical Assistant. In our hospital, the cardiothoracic SCP is a valuable and knowledgeable member of the surgical team, working in theatre, expanding in areas like endoscopic vein harvesting, vigilance on surgical site infections or wound clinic for the management of postoperative surgical wound care.

Presenter: **Dr Rana Mehdi**, *Doctor, Birmingham Heartlands Hospital*

Valve sparing root operations – preliminary data from a single UK center experience ^{A332}

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Objective Valve sparing root replacement (VSRR) is gaining popularity. Successful long term valve patency is the aim and identifying those patients likely to achieve this important quality monitoring of any program

Methods A descriptive retrospective analysis of data from n=88 VSRR (reimplantation technique) performed at a single center since 1998. N = 60 had pre and serial post operative echocardiographic data available for analysis.

Results Please see Table 1 demographics, pre, intra and post operative results. Patients undergoing VSRR enjoyed a median freedom from moderate or severe AR of 5129 days.

Conclusion Overall results suggests median freedom moderate/severe AR of 14 years. Preoperative severe AR increases the risk of early to mid-term failure compared to other AR grades, which remain comparable in durability.

Presenter: **Mr Michael Sabetai**, *Thoracic Surgeon, Guys' and St. Thomas' Hospital*

Learning curve with the Intuity sutureless valve. When Intuity becomes Intuitive? ^{A230}

Authors M Ghosh-Dastidar¹; M Sabetai¹; A Gkouma¹; M Mustaev¹; G Lucchese¹; C Young¹;

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Objective To describe our experience and outline our learning curve with the Intuity sutureless bioprosthesis.

Methods Prospectively collected data of all patients receiving the Intuity valve in our centre were analysed. Two groups were identified; one that received the first generation Intuity valve and one that received the Intuity Elite valve. The group receiving the first generation valve served as our learning curve. Groups were compared using the Mann-Whitney U and chi-square test.

Results The Intuity valve was implanted in 116 patients. Deployment was successful in all cases either via a mini (81%, 94/116) or a full (19%, 22/116) sternotomy. First generation valves were implanted in 29% (34/116) of cases. Isolated AVR was performed in 78% (91/116), AVR & CABG in 15% (18/116), and AVR & Other in 7% (7/116) cases which included 4 ascending aortic interventions and 3 atrial appendage exclusions. 17% (19/116) of patients had a bicuspid aortic valve. Median Log EuroSCORE was 5.8. Mean bypass and ischaemic times were 55 and 42 minutes respectively. Mortality rate was 3.4% (4/116), PPM rate 8.6% (10/116), and re-exploration rate

9.5% (11/116). Incidence of more than mild PV leak was 0.9% (1/116). Comparison of the 1st generation versus Elite valve implants showed the following; increased incidence of ministernotomy (59% to 91%, $p<0.001$), decreased re-exploration rate (17% vs 6%, $p=0.05$), increased rate of no or trace PV leak (85% vs 95%, $p=0.04$), decreased bypass time (71 vs 58 mins, $p=0.003$) and ischaemic time (53 vs 44mins, $p=0.04$) and preoperative LV function (52 vs 56%, $p=0.05$).

Conclusion The Intuity valve can be implanted safely. It facilitates minimally invasive AVR and significantly reduces bypass and ischaemic times. Patient selection during the learning curve remains challenging. Access, as reflected by re-exploration rate and sizing, as reflected by the incidence of more than trace PV leak, are the factors that need attention during the learning curve. The need for post-op PPM remains a concern.

Presenter: **Mr Enrico Mancuso**, CT2, Royal Papworth Hospital

Incidence, complication and treatment of postoperative surgical site infection after thoracic surgery. Review and application of current classification. *A415*

Authors E Mancuso²; P M Pullinger Michael¹; F Van Tornhout¹;

¹ Norfolk & Norwich University Hospital NHS Foundation Trust, UK; ² Papworth Hospital NHS Trust, UK

Objective The purpose of this study is to review incidence, complications and current treatments of postoperative surgical site infection after thoracic surgery according with recent definitions and classifications.

Methods The research was conducted between November 2016 and November 2017 in a single unit of an academic tertiary referral hospital. Data associated with patients were collected with a combined retrospective and prospective way. We reviewed all the cases where a course of antibiotics was started after the suspicion of surgical site infection and we assessed when this was confirmed with laboratory results or radiological tests.

Results 410 patient underwent thoracic surgery, 163 female and 247 male aged between 14 and 89. The study included 259 VATS procedures, 77 thoracotomies, 46 mediastinoscopies with cervical approach, 5 sternotomies and 24 procedures with other approaches. Patients underwent 132 anatomical lung resections, 121 minor resections, 23decortications, 48 pleurodesis, 23 volume reduction surgeries and 41 operations involving the chest wall. 143 patients (35%) had a course of antibiotics post-operatively. A surgical site infection was confirmed in 51 patients (12% of total); within this pool of patients 33 had a delayed discharged of the primary admission, 9 patients were readmitted and 9 patients underwent surgical re-exploration for complications related to the infection. Mortality was a direct complication of SSI in 4 cases. For 12 of these patients, the microorganism responsible for the infection was identified and a targeted antibiotic therapy was started. Sepsis was present in 20 patients (4.8% of total).

Conclusion Regardless of large use of antibiotics, SSIs after thoracic are still a real threat and represent a substantial burden of disease in terms of morbidity, mortality and economic cost. Despite commonly SSIs are “superficial” or “deep-incisional”, in thoracic surgery the most dangerous infective complication is represented by lung and pleural cavity infections.

Presenter: **Mr Vito Domenico Bruno**, *Research Clinical Fellow, University of Bristol - School of Clinical Science*

Early outcome and late survival of biological ring versus prosthetic ring in patients with degenerative mitral valve disease: a propensity score analysis *A339*

Authors V Bruno²; M Zakkar¹; R Marsico¹; P Chivasso¹; G Guida¹; F Rapetto¹; R Ascione¹;

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Objective To compare early outcome and late survival of mitral annuloplasty (MRA) performed either with tailored bovine pericardial semi-complete rings (Bioring) or conventional prosthetic rings (Prosthetic) in patients with degenerative mitral valve disease (DMVD) undergoing mitral valve repair.

Methods Between May 2003 and March 2015 550 patients with DMVD. Of these, 203 (36.9%) had MRA with Bioring and 347 (63.1%) with Prosthetic ring/band. The early in-hospital outcomes, MRA costs and 1, 5-year survival rates were assessed both as unmatched and propensity score matched analyses.

Results In-hospital mortality (1.5% vs 2.6%, p=0.57), stroke (0% vs 1.4%, p=0.21), renal failure requiring dialysis (0.5% vs 0.9% p=1) and reoperation for bleeding (3.4% vs 4.6%, p=0.66) were similar between Bioring vs Prosthetic groups. The Bioring was associated with shorter hospital stay (9±5.3 vs 11.3±9.1 days, p=0.001), average RA costs (£1,120 vs £ 125, p<0.01) and >50% reduction in the composite of death, stroke, dialysis and reopening for bleeding, although this did not reach significance (4.4% vs 8.9%, p=0.13). One and 5-year survival were 97.8% and 95.8% vs 95.6% and 79%, Bioring vs Prosthetic respectively (p < 0.01). The propensity score matching analysis (n=201 for each group) showed similar results for in-hospital mortality (1.5% vs 1.5%, p= 1), stroke (0 vs 1%, p= NA), dialysis (0.5% vs 0.5%, p=1) and reopening for bleeding (3.5% vs 4.5%, p =0.79), all Bioring vs Prosthetic. The composite outcome was still >50% lower but not significant for the Bioring group (3.5% vs 7.5%, p = 0.28), whereas survival rates after matching remained significantly lower for the Bioring group (97.8% vs 95.6% at 1 year and 95.7% vs 80.5% at 5 years; p <0.01).

Conclusion The use of a biological ring for MRA to treat DMVD is an effective surgical alternative to conventional Prosthetic rings with comparable early health outcome, reduced hospital stay and improved long-term survival.

Presenter: **Mr Aman Coonar**, *consultant surgeon, Thoracic Surgery*

Renal failure in thoracic surgery. Pilot and case for a Multi-centre Evaluation of Renal Impairment in Thoracic Surgery (MERITS) study *A401*

Authors R Kushiwal¹; J Clayton¹; S Cook¹; G Aresu¹; A Peryt¹; J MacKay¹; A S Coonar¹;

¹ Papworth Hospital NHS Trust, UK

Objective Patients for thoracic surgery are increasingly frail and older. We suspected an increase in frequency of renal impairment despite having an established enhanced recovery programme. We were interested

in determining the actual characteristics of renal impairment in our practice and therefore undertook an audit. This was a pilot to establish the case and basic pro-forma for a more extensive multi-centre study to investigate this problem. Better understanding could improve outcomes and quality.

Methods Consecutive patients undergoing thoracic surgery in a single practice over 3 months. Pre, peri & post-operative factors were collected and correlated with outcomes. Renal impairment was classified as Acute Kidney Injury stage 1-4. Factors that were associated with renal impairment were identified by multi-variate analysis.

Results 194 subjects (100% cases), 123 male (63%). AKI in 25/194 (13%). 20 male (17% of male patients) v 5 (7% of female patients). AKI stage 1 in 17 (9%) stage 2 in 6 (3%) stage 3 in 2 (1%) There was 1 death which was in one of the patients who developed AKI stage 3. We identified the following as being associated with an increased risk of AKI. Male sex, age, baseline renal function with creatinine >140, diabetes, pre-operatively diagnosed heart disease, treatment with ACE inhibitor or angiotensin-receptor blocker, treatment with NSAID or COX inhibitors, treatment with statin, urgency of operation.

Conclusion AKI occurred in 13% with stage 2-3 in 4% of our series. We identified various factors associated with AKI. We propose that this pilot study be developed into a Multi-centre Evaluation of Renal Impairment in Thoracic Surgical patients (MERITS). As mortality is very low in thoracic surgery alternative measures of morbidity are important to determine. This will be useful in counselling patients, identifying patients at increased risk, benchmarking, quality and safety.

Presenter: **Mr Amir Khosravi**, *Senior Cardiothoracic Surg. Registr, Royal Brompton and Harefield Hospitals*

10-years outcome analysis of endoscopic vein harvesting for Coronary Artery Bypass Grafting *A204*

Authors **A Khosravi**¹; M Rochon¹; J A Gaer¹; F De Robertis¹; T Bahrami¹;

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Objective Despite increasing recognition that endoscopic vein harvesting (EVH) is associated with decreased leg wound morbidity, improved cosmetic results and enhanced patient satisfaction, concerns persist regarding the safety and efficacy of EVH in terms of mortality, short- and long-term graft patency and need for re-intervention. This study compares long-term outcomes for EVH and open vein harvesting (OVH) at our institution.

Methods From 2007 to 2017, 8571 consecutive patients underwent isolated or combined coronary artery bypass grafting (CABG) at our institution. 4322 patients with EVH were propensity matched to 4249 patients who had OVH. Their data were analysed retrospectively. Outcome measures included in-hospital mortality, major complications, readmission to hospital for cardiac causes, need for reintervention and medium-term mortality. For information on medium-term outcomes, a questionnaire was mailed to all surviving patients or to the general practitioners of those patients who had died during the follow-up period.

Results There were no differences in demographics, comorbidities between both groups. Risk adjusted survival was 92% for EVH patients and 78% for OVH patients ($p = 0.0001$) and freedom from repeat revascularisation was 98.5% for EVH patients versus 96.7% for OVH ($p=0.0002$) during the 10 years follow up.

Conclusion Our analysis shows the long-term safety and efficacy of EVH. It is significantly related with less repeat revascularization and it improved survival post coronary artery bypass graft surgery.

Presenter: **Mrs Andrea McDonnell**, *Matron, Barts Health NHS Trust*

Implementing LocSSIPs outside of theatre to prevent never events and promote harm free care *A299*

Authors A McDonnell¹;

¹ St Bartholomew's Hospital, London, UK

Objective A never event involving a retained guide wire occurred at St. Bartholomew's hospital. We wanted to ensure that this did not re-occur and that we were delivering safe, harm free care to our patients.

Methods We reviewed the never event incident at each stage looking at what happened, what should have happened and what should be in place to prevent re-occurrence. We reviewed the process, competency, documentation, equipment and governance. We audited all the clinical areas at St. Bartholomew's to see how many invasive procedures were carried out and in which areas. We identified that using LocSSIPs could reduce risk to patients and staff during invasive procedures outside of theatres. We held an LiA conversation to discuss our findings and implementation of LocSSIPs involving staff from across the Trust. Following the LiA conversation we devised a generic LocSSIP SOP with supporting checklists to ensure standardisation of practice. We used the trust sequential LocSSIPs as a base for our SOP and the Faculty of Critical Care Medicine checklists to standardise our format for each invasive procedure. We rolled out training in the areas that undertook invasive procedures most frequently and launched the LocSSIP checklists as a trial. Auditing them and amended as required before rolling them out across the rest of the site.

Results Eleven clinical areas are currently using LocSSIPs when undertaking invasive procedures outside of theatres. Areas that utilise the LocSSIPs are auditing practice, reporting results back monthly. There have been no further never events on the St. Bartholomew's site involving invasive procedures.

Conclusion Implementing LocSSIPs has improved the standard of care we are delivering to our patients and supports our staff to implement best practice. We have standardised practice across the site and reduced risk. We have implemented the sequential steps but we will be implementing the organisational steps over the next three months to further improve clinical practice.

Presenter: **Mr Aravinda Page**, *Registrar, Papworth Hospital*

DCD heart transplantation: a single centre experience *A259*

Authors A Page¹; S Messer¹; E Pavlushkov¹; M Berman¹; Y Abu-Omar¹; J Dunning¹; D Jenkins¹; C D Sudarshan¹; P Catarino¹; A Ali¹; S Tsui¹; S Large¹;

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Objective Fifty years following the first heart transplant, it continues to be the best treatment for end-stage heart failure. However, heart transplantation is severely limited by the number of available donor organs. Hearts from donation after circulatory determined death (DCD) had up until recently thought to be unsuitable for transplantation. We report on a single centre experience of the use of DCD hearts in a large volume transplant centre.

Methods This is a retrospective cohort study analysing consecutive isolated DCD heart transplants with continuous machine perfusion during transport performed between February 2015 and October 2017 against a matched cohort of heart transplants from donation after brain death (DBD). Matching was based on recipient factors including age, sex, transpulmonary gradient, pulmonary vascular resistance, pre-transplant mechanical support as well as donor age, sex and height.

Results Thirty-one DCD heart transplants were included in our study. Early post-operative outcomes are comparable between the DCD and DBD cohorts including the use of an intra-aortic balloon pump (23% vs 19%, p=1), extra corporeal membrane oxygenation (13% vs 6%, p=0.67) and haemofiltration (32% vs 29%, p=1). The ITU length of stay was 5 days in the DCD cohort as against 7 days in the DBD cohort (p=0.15) with a trend toward a shorter hospital stay amongst DCD transplants (20 vs 27 days, p=0.06). 30 day survival was 100% in both groups and 1 year survival amongst eligible patients in the DCD cohort was 86% versus 95% in the matched DBD cohort (p=0.3). At 1 year follow up no significant difference was seen in graft survival, function or rejection.

Conclusion DCD heart transplantation is a safe means to increase heart transplant activity with early outcomes comparable with more routinely used DBD hearts.

Presenter: **Mr Amir Khosravi**, *Senior Cardiothoracic Surg. Registr, Royal Brompton and Harefield Hospitals*

Early and long-term follow-up after minimally invasive direct coronary artery bypass: experience of single centre A224

Authors A Khosravi¹; B Bahrami¹; M Rochon¹; J A Gaer¹; F De Robertis¹; T Bahrami¹;

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Objective Meta-analyses of randomised and non-randomised clinical trials of patients with isolated proximal LAD lesions reported no significant difference in mortality, myocardial infarction, or stroke, but a three-fold increase in recurrent angina and a five-fold increase in repeat revascularization with PCI compared with CABG. Minimally invasive direct coronary artery bypass surgery (MIDCAB) has been developed to reduce surgical invasiveness for single LAD revascularization.

Methods We followed all 281 patients who underwent MIDCAB from 2003-2017 at our institution. Patient demographics and preoperative and postoperative data were analysed.

Results The average ventilation time was 4 hours. 16% of the patients were able to be extubated in theatre. The rate of Reoperation for bleeding was 2.2%. None of the patients had neurological events. The surgical site infection rate was 1/1%. In-hospital, 1-year and 4-year clinical events were source-documented and adjudicated. The mortality rate was in-hospital 1%; 1-year 1% and 4 years 4.3% and after 10 years was 10% respectively. The patients were discharged home at a mean day of 5.

Conclusion The MIDCAB is a reasonable option for patients with single vessel disease and can be safely performed with low postoperative mortality and morbidity. The clinical adverse event rate may decrease with accumulated experience. Excellent short term and long term clinical results can be achieved with this technique.

Presenter: **Dr Bassem Gadallah**, *cardiothoracic surgery reg, Mater University Hospital*

Sequential Single Lung Transplant Maximises Donor Use without Impacting on Early Survival ^{A264}

Authors B Gadallah²; L Nolke¹; K REDMOND¹;

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Objective A double lung donor may be split for two single lung recipients. SLT performed sequentially minimizes utilization of hospital resources and maximizes on donor to transplant conversion rates. However, extended ischemic time donors remains a challenge.

Methods Donor 1 was male, cause of death (COD) extra-dural bleed. Recipient 1 (right) was male, end-stage IPF. Following this transplant, EVLP reconditioned the contralateral left lung prior to implanting into recipient 2 (left), end-stage IPF. Donor 2 was female, COD intra-cerebral bleed. Recipient 3 (left) was male, IPF. At closure, recipient 4 was induced (right), female, 60 years end-stage COPD. Donor 3 was 46 years female, COD anoxic brain injury, both lungs were split and put sequentially on EVLP allowing for a SLT on recipient 5 (right), end-stage IPF and then recipient 6 (left), end-stage IPF. Donor 4 was 42 years female, COD subarachnoid haemorrhage, estimated. Recipient 7 (right) was male, IPF. Recipient 8 (left lung) was, male, with end-stage IPF. Donor 5 was 21 years female, COD Traumatic brain injury, Recipient 9 (left) was male, 179 cm with end stage IPF. Recipient 10 (right) 65 years, IPF.

Results Sequential SLT (n=10) were performed from 5 double lung blocks. Total ischemic time from donor cross-clamp to reperfusion from R1-R10 respectively varied between 3h 20 m to 14 h 55m. There was no primary graft dysfunction at 72 hours. ICU stay: Mean (7.9 days). Hospital LOS: Mean (21 days). R1 and R6 needed temporary diaphragm plication to facilitate size matching. R2, 5, 6 received EVLP reconditioned lungs. R2 had an ischemic time of 16 hours however had a relatively short ICU and hospital stay.

Conclusion Sequential SLT may offer a potential solution to address the lack of donor offers and maximise on the donor to transplant conversion rate. Donor ischaemic lung time is not a deterrent in the era of

EVLP. Sequential SLT into two recipients by a single theatre service is feasible, cost-effective and safe.

Presenter: **Mr Amir Khosravi**, *Senior Cardiothoracic Surg. Registr, Royal Brompton and Harefield Hospitals*

Sutureless Aortic Valve Replacement through minimally invasive access versus standard aortic valve operation; single centre experience A234

Authors **A Khosravi**¹; B Bahrami¹; M Rochon¹; J A Gaer¹; F De Robertis¹; T Bahrami¹;

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Objective In high-risk surgical patients, sutureless aortic valve replacement (AVR) should be an alternative to standard AVR. Our aim was to evaluate the early result of minimally invasive aortic valve replacement in comparison to standard technique in our centre.

Methods Between April 2014 – March 2016, 219 patients underwent biological aortic valve replacement. n=125 (57%) patients had minimally invasive AVR using sutureless prosthesis (SU-AVR) and n=94 (43%) patients had standard AVR (SAVR). 83% of the patients in SU-AVR group were operated through right anterior thoracotomy. 17% of the SU-AVR and 61% of SAVR had concomitant cardiac procedures.

Results The demographic and comorbidities of the both groups were comparable. After propensity score match, there was statistical significant difference in peri-procedural mortality rate (Concomitant SAVR 10% vs. SU-AVR 0% p<0.0001), mean bypass (S-AVR 120 min. vs. SU-AVR 80 min. p<0.003), and cross clamp times S-AVR 88 min. vs. SU-AVR 52 min. p<0.003). There was no significant difference in the post-operative blood loss. The incidence of renal failure which required haemofiltration was significantly higher in SAVR group (15%) vs. SU-AVR (0.8%) p<0.0001. The patients in SU-AVR groups had an average time of ventilation (10.7h) vs SAVR (26.4h) p<0.002. The incidence of postoperative pacemaker Implantation was higher in SU-AVR group (4%) vs. SAVR (2%) p=0.03. Postoperative cosmetic results and incidence of postoperative wound infection in isolated AVR were significantly better in the SU-AVR group. The mean costs savings for isolated AVR in SU-AVR compared to SAVR were £3,627 (p = 0.13), mainly driven by hospital stay costs.

Conclusion SU-AVR via both approaches is safe and feasible with excellent outcomes, and is associated with significantly lower mortality. Despite higher cost of sutureless aortic valve prosthesis it seems to be cost-effective in patients undergoing surgical aortic valve replacement.

Presenter: **Dr Libor Hurt**, *FYI, University Hospital of Wales*

A virtual cardiothoracic surgery rotation: a novel approach A196

Authors **L Hurt**²; F Bhatti¹;

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Objective Medical students continuously evaluate which medical speciality they would like to pursue as a career. Factors which influence this include experiences undergone at medical school. Our medical school provides a novel approach to medical education within the first 2 years, via Learning Opportunities in the Clinical Setting (LOCS). These are half to full day placements, selected via a catalogue. We aimed to evaluate what our medical student perceptions are surrounding speciality choice and if they utilise clinical and education experience to inform career choice. We also analysed whether medical students would like more education and/or clinical exposure to cardiothoracics.

Methods We surveyed 4 years of medical students and aimed to establish whether students use teaching and clinical experience to inform speciality choice and if they would like more of either. A student underwent a 'virtual cardiothoracics journey' using the LOCS system to ascertain feasibility should students require more experience. This was successfully accomplished through attendance of outpatient clinic, pre-operative assessment, a theatre session and post-operative care.

Results 84 medical students (total n =280) answered a questionnaire. 54.76% (n=46) knew what speciality they wanted to train in, only 26.53% (n=13) said surgical and almost 40% stated medical. 94.74% feel that clinical exposure affects their speciality choice where 77.97% (n = 60) of participants use teaching to influence career choice. Pertaining to cardiothoracics, 54.54% (n=42) wanted more teaching and over 2/3 wanted more clinical exposure. We established that we could create a virtual cardiothoracics rotation using the LOCs system.

Conclusion It became apparent that students wanted more exposure to cardiothoracics surgery, thus the LOCS system was utilised to generate a novel virtual cardiothoracics rotation following a patient journey. This approach was feasible and tested. We propose that this approach may be utilised at other universities

Presenter: **Mr Kajan Mahendran**, *Trainee ST5, Birmingham Heartlands Hospital*

Valves, coils and staples. A surgeon's role in endobronchial lung volume reduction. A254

Authors **K Mahendran**¹; N K Oswald¹; Z Jalal¹; H Fallouh¹; L Hernandez¹; E Bishay¹; M Kalkat¹; R Steyn¹; B Naidu¹;

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Objective Traditionally lung volume reduction surgery (LVRS) has been performed by thoracic surgeons whilst the newer endobronchial treatments for lung volume reduction are performed in Europe by interventional respiratory physicians. Here we present the experience of a regional surgical unit offering both traditional surgical and newer endobronchial techniques.

Methods At our tertiary referral centre for thoracic surgery, patients are referred to the emphysema MDT. The team carries out selection of patients and suitable modality of treatments. All treatments both surgical and endobronchial are performed by the surgeon trained in techniques of LVRS, endobronchial valve placement and coils.

Results 186 patients have been discussed at our lung emphysema MDT. 71 were not suitable for treatment, 8 declined, 13 had suspension of planned treatment and 21 are awaiting treatment or further investigation prior to decision regarding treatment. Of the 64 patients treated thus far, 30 have had endobronchial valves placed, 21 have had LVRS, 13 have had coils placed and 2 patients had Chartis assessment alone and were not suitable for valve placement. 2 patients went on to have a second procedure. Median FEV1, TLC and RV were 44%, 131% and 209% predicted respectively for patients selected for treatment. Clinical outcomes for each modality are within international standards.

Conclusion The success of lung volume reduction treatments is highly dependant on matching each patient with the correct treatment modality. Having a variety of techniques available provides patients with the best possible chance of symptomatic benefit over a longer period whilst reducing the periprocedural risks. These are a complex group of patients who can truly benefit symptomatically and prognostically from a holistic approach to their treatment.

Presenter: **Dr Shi Sum Poon**, *Medical doctor, Cambridge*

Deployment of a frozen elephant trunk in aortic arch surgery for acute Type A dissection does not increase the incidence of paraplegia: a multicentre registry *A173*

Authors S S Poon¹; D Tian²; T Yan³; D Harrington¹; O Nawaytou¹; I Gambardella¹; M Kuduvalli¹; M Field¹;

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Objective Total arch replacement (TAR) with frozen elephant trunk (FET) is increasingly performed worldwide in acute type A aortic dissection. Paraplegia is a potential devastating complication and it is increasingly being reported in the literature. A multiple centres international study is presented which assesses the safety of FET in terms of the risks of paraplegia as well as mortality and stroke.

Methods The International Aortic Arch Surgery Study Group Registry was analysed between 2000 and 2013. Patients who underwent emergency surgery for acute type A aortic dissection and treated by TAR with or without FET were eligible for inclusion. Baseline data were compared between 25 participating centres. A propensity-matched analysis was conducted to evaluate the outcomes on paraplegia, stroke and mortality.

Results 11,928 patients in the registry underwent aortic arch surgery of which 6,180 were total arch replacements. 978 patients with total aortic arch surgery in acute Type A dissection were included in the study. Among 471 (48.2% of entire cohort) patients who underwent TAR with FET, 292 (62%) of were performed in Asia pacific, 178 (37.8%) in Europe and 1 (0.2%) in North America. The mean age was 59 (46-68) in both groups and 72% were males. Following propensity-matching for risk factors, there were no significant difference between TAR and TAR with FET in terms of mortality (21.1% vs. 17.7%, p=0.48), permanent neurological deficits (9.2% vs. 8.9%, p=0.76) and spinal cord injury (3.8% vs. 5.4%, p=0.78).

Conclusion Within the context and limitations of a large multi-centre international propensity matched retrospective study it is encouraging that use of FET in total aortic arch surgery for acute Type A aortic dissection did not increase the risk of paraplegia. This data should give surgeons the confidence to consider using a FET in this setting although the exact risk factors for paraplegia remain to be determined. Mortality and stroke rates for TAR in acute Type A remain significantly burdensome.

Presenter: **Mrs Gemma Thomas**, *Senior Physiotherapist, ABM University Heath Board*

Impact of pre-treatment optimisation with pre-habilitation on patients undergoing thoracic surgery *A235*

Authors G Chesterfield-Thomas¹; I Goldsmith¹;

¹ Morrision Hospital, Swansea, UK

Objective Patients with significant dyspnoea, impaired performance status (PS) and frailty are vulnerable to increased risk of adverse events including death following surgery and high scores may preclude them from undergoing surgery. Pre-treatment pulmonary rehabilitation by improving these parameters may optimize patients for surgery and reduce their increase risks of adverse events following surgery. The impact of pre-treatment optimization with pre-habilitation (PROP) on patients for thoracic surgery is evaluated.

Methods 118 consecutive patients (mean age 70.3 sd 10 years; 50.8% females) with dyspnoea and impaired PS ≥ 2 were prospectively referred for pre-habilitation. Their PS, dyspnoea and frailty scores were recorded prior to and following PROP. Patients with dyspnoea and PS scores ≥ 3 were considered high risk. Their scores and number that became suitable for surgery were recorded. The post-operative hospital mortality, complications and length of hospital stay were determined.

Results 86 patients (mean age 70.5 sd 10) received PROP. Their mean dyspnoea scores prior to and following PROP were 2.89 (sd 0.8) and 1.9 (sd 1) [$p < 0.00001$] respectively; PS were 1.9 (sd) and 1.4 (sd) [$p < 0.002$] and mean frailty scores were 3.8 (sd 1.2) and 2.7 (sd 1.6) [$p < 0.00001$]. Following surgery there were no hospital deaths, complication rates were 13.4% (11), length of ITU/HDU stay 4 (sd 5.7) days and ward stay 6.1 (sd 5.8) days. Of the 55 patients with ≥ 3 dyspnoea score, ≥ 3 PS 25 patients were unfit for surgery. With PROP 14.5% (8) patients became suitable for surgery. Following surgery there were no hospital deaths, complication rates were 4% (1), length of ITU/HDU stay 3.6 (sd 3.1) days and ward stay 5.6 (sd 2.4) days.

Conclusion Our study suggests that PROP improves dyspnoea, performance status and frailty score and optimizes patients for radical treatment. Following surgery there were no hospital deaths whilst complications and length of hospital stay were acceptable in this high risk group of patients.

Presenter: **Mr David Quinn**, *Trust grade Cardiac surgeon, Personal*

A single centre experience of the management of aberrant subclavian artery *A354*

Authors D Quinn¹; V Dronavalli¹; A M Ranasinghe¹; J Mascaro¹;

¹ University Hospital Birmingham, UK

Objective Aberrant subclavian artery (AScA) is often asymptomatic may present as dysphagia or complicate the aortovascular management of other aortic diseases. Aberrant subclavian artery is often asymptomatic, may present as dysphagia, or may complicate aorto-vascular management of other aortic diseases. The aim is to describe the single centre experience in managing this condition.

Methods A retrospective analysis of prospectively collected data, using non-parametric tests.

Results Of n = 471 patients under cardio-aortovascular MDT surveillance n = 27 had a diagnosis of AScA. Please see Table 1. In all type B dissections, the origin was at the ARScA. A bovine arch was present in n=2, a 4 vessel arch in n=2, bicuspid aortic valve in n=4 and cervical arch in n=1. In only n=1 patient was the ARScA symptomatic. N=1 patient awaits total arch replacement (TAR) with frozen elephant trunk (FET) with translocation and n=3 patients have been discharged from surveillance without operative procedures. Please see Table 2. All patients survived initial surgery with only one ARScA:common carotid bypass failing with the arm supplied by collateral circulation. Symptom relief from dysphagia in one patient was complete. All bypassed and transfixated subclavians have thrombosed and decreased in size.

Conclusion Symptoms from AScA are rare. In type B dissections the ARScA is often the site of the start of the flap. A tailored approach, either preparatory carotid bypass and transfixion or translocation and transfixion are safe.

Presenter: **Dr Ryan Preece**, FY2, St. George's Hospital

National survey of UK medical student interest and perceptions of cardiothoracic surgery *A396*

Authors R Preece¹; S Yatham¹; E Ben-David¹; S Rasul¹;

¹ St George's Hospital, University of London, UK

Objective Since the turn of the millennium there has been a dramatic reduction in the number of UK graduates entering cardiothoracic surgery (CTS). This study aimed to determine the interests of undergraduate surgical society members in pursuing a career in CTS and to elucidate their general perceptions of the speciality.

Methods A cross-sectional survey assessing previous CTS exposure and future interests in pursuing a career in CTS was generated on LimeSurvey and distributed to the student members of all 33 UK surgical societies via email and social media platforms.

Results 352 complete responses were obtained. Overall, 31% students declared an interest in pursuing a career in CTS with 11% specifically expressing CTS to be their top career choice. Subgroup analysis of final year students revealed lower levels of interest with 14% expressing an interest in the speciality and 5% claiming it to be their top choice. 75% of students felt they had received inadequate CTS teaching at medical school and 91%

of final year students had spent no dedicated time on a CTS placement with 83% never having scrubbed into a CTS operation. 43% students reported no knowledge of the current CTS training pathway with just 13% having attended a CTS conference or careers day. 49% students were aware of the publication of surgeon-specific mortality data and 20% of these claimed this deterred them from a career in CTS. Factors most attracting students to a career in CTS were the intellectual challenge and artistic nature of the profession along with the opportunities for global practice and research. Factors most deterring were competition levels and the limited number of UK centres.

Conclusion Whilst CTS remains a reasonably popular career option among surgically-orientated UK medical students, there is a concerning reduction in desire to pursue a CTS career by the final year of medical school. The main contributing factor towards this appears to be a significant lack of engagement of the speciality with medical students.

Presenter: **Dr Kate Wallwork**, *Junior Clinical Fellow, Papworth Hospital*

Veno-venous extra-corporeal membrane oxygenation in the treatment of peri-operative respiratory failure in cardiac surgery A267

Authors **K Wallwork**¹; F Sertic¹; A Ferrara¹; R De Silva¹;

¹ Papworth Hospital NHS Trust, UK

Objective Acute respiratory distress (ARDS) is life threatening syndrome responsible for rapidly progressive respiratory failure. ARDS is a recognised complication post-cardiac surgery with an incidence of 20% and a mortality rate of 80%. Contact between blood and the artificial cardiopulmonary bypass circuit and ischaemia-reperfusion injury incite a systemic inflammatory response triggering ARDS. Transfusion and ventilator-associated lung injury have also been linked. Conventional management involves low tidal volume lung protective ventilation. VVECMO has shown potential as a rescue therapy however few have examined the role of VVECMO in post-cardiotomy ARDS. We examined the outcomes of VVECMO in the management of ARDS in 8 patients post-cardiac surgery in a single centre.

Methods 8 patients were retrospectively identified as receiving VVECMO having failed conventional management. VVECMO was indicated if; Murray score ≥ 3.0 , uncompensated hypercapnoea, $FiO_2 < 150$ mmHg on high FiO_2 .

Results The mean age of patients was 65.5 years. The mean EuroSCORE & Log EuroSCORES were 8.75 and 18.94 respectively. Surgeries included CABG (n=4), valve replacement (n=2), aortic root replacement (ARR) (n=1) and redo-ARR with valve replacement (n=1). Indications for VVECMO were aspiration pneumonia (n=2), HAP (n=3), H2N1 pneumonitis (n=1), bronchial mucus plugging (n=1) and hypoxic arrest due to iatrogenic lung injury (n=1). The mean interval to initiation of VVECMO was 4.1 days with a mean duration of 8.5 days. 4 patients required haemodynamic support with an intra-aortic balloon pump (n=3) or conversion to VAECMO (n=1). 50% were successfully weaned. In-hospital mortality was 50%. Causes of death included multi-organ failure (n=2), irretrievable heart failure (n=1) and respiratory failure (n=1).

Conclusion We describe a series of 8 patients receiving post-cardiac surgery respiratory support with VVECMO for ARDS refractory to mechanical ventilation. All non-survivors had severe cardiac dysfunction with evidence of pump failure suggesting that patients suffering from postoperative ARDS may benefit from VVECMO if, the cardiac function is preserved or recoverable and, if the lungs are the primary affected organ.

Presenter: **Mr David Quinn**, *Trust grade Cardiac surgeon, Personal*

Cardiac surgical cardio-aortovascular multidisciplinary management of Loeys Dietz syndrome ^{A327}

Authors D Quinn²; R Mehdi¹; A M Ranasinghe²; P Cliff²; J Mascaro²;

¹ Birmingham Heartlands Hospital, UK; ² University Hospital Birmingham, UK

Objective Loeys Dietz syndrome (LDS) patients are vulnerable to life threatening aortovascular events. Its recognition and management through a multidisciplinary team (MDT) approach may be important improving the prognosis for these patients.

Methods A descriptive analysis of the cardio-aortovascular MDT based identification and the management of LDS.

Results Of n = 471 patients under cardio-aortovascular MDT surveillance n = 66 underwent genetic screening on basis of phenotype, aorto-vascular presentation or family history. N = 11 had TGF BR mutations consistent with LDS. Please see Tables 1 and 2. All patients were on 6 monthly MRA follow up (F/U) initially, n=2 remain on this schedule, n=7 on 1 yearly and n=1 on 2 yearly MRA F/U. n=1 patient experienced acute type B dissection under MDT surveillance Further operations recommended through the MDT and performed at the cardiac surgical centre include total arch + descending aortic replacement (n=2), thoraco-abdominal aortic (TAAA) replacement (n=1), valve sparing root replacement (n=1), root replacement + TAAA replacement (n=1). N=1 patient awaits TAAA and 1 patient under surveillance experienced an acute type B dissection. All patients are surviving

Conclusion The diagnosis of LDS is not always phenotypically obvious and a multidisciplinary clinical, radiological and genetic approach to screening for LDS is an important recommendation given the likelihood of further surgery.

Presenter: **Mr Alessandro Montecalvo**, *Cardiothoracic Surgeon, St. Bartholomew's Hospital*

Mid-term outcomes of coronary artery bypass surgery in Octogenarians: is prognosis an important topic of debate in this group? ^{A223}

Authors A Montecalvo¹; G Siniscalchi¹; G Sotiropoulos¹; M Pizzuti¹; W I Awad¹;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK

Objective The aim of this study was to determine the mid-term survival in octogenarians with 3 vessel and/or left main stem CAD, undergoing CABG at a single cardiac centre, and ascertain the appropriateness of surgery in this group of patients.

Methods All octogenarians undergoing isolated first time CABG at our centre over a 2 year period from January 2011 to December 2012, were retrospectively reviewed; this allowed 5 year follow-up. Demographic and operative data, and post-operative outcomes, were collected and analysed. All-cause mortality was ascertained from the NHS Spine Portal. Kaplan-Meier curve was used to calculate 5-year actuarial survival.

Results A total of 101 octogenarians underwent CABG; median age 82 years (range 80-91 years), 76 (75.2%) were male. Mean EuroSCORE II was 7.13 % (range 2.82% - 15.42). At the time of surgery 52 patients (51%) had impaired LV function (EF < 50%), 63 (62.3%) had at least one previous MI, 36 (35.6%) were diabetic (7 on insulin), 8 (7.9%) had previous stroke, 7 (6.9%) had chronic renal failure. 13 (12.9%) cases were performed off pump. 5 patients had a single, 16 had 2, 61 had 3 and 19 had 4, bypass grafts. In-hospital mortality was 4% (4/101). At a median follow-up of 69 months (range 58 – 82 months; complete), all-cause mortality was 40.6% (41/101). Of the 97 patients leaving hospital alive, a further 11 (10.9%) died within 12 months. Actuarial survival at 2 years was 79.2%, 3 years was 77.2%, 4 years was 71.3% and 5 years was 65.4%, respectively. There were 35 deaths at 5 years of which 23 patients had impaired LV function pre-operatively, indicating that LV impairment was a significant predictor of 5 year mortality (p= 0.037). Other risk parameters examined including sex, diabetes, impaired kidney disease or recent MI were not significant predictors of 5 year mortality.

Conclusion CABG in octogenarians is associated with a low operative mortality and good mid-term survival, especially in patients with preserved LV function. CABG in octogenarians with severe coronary artery disease should still be considered a prognostic treatment.

Presenter: **Mr Georgios Sotiropoulos**, *Clinical Fellow, St Bartholomew's Hospital*

Impact of gender and age on long-term survival following coronary artery bypass surgery ^{A221}

Authors G Sotiropoulos¹; A Dan¹; G Siniscalchi¹; M Pizzuti²; A Montecalvo¹; U Hamid¹; W I Awad²;

¹ Barts Heart Centre, St Bartholomew's Hospital, UK; ² St Bartholomew's Hospital, London, UK

Objective Female gender has been traditionally considered an independent risk factor for patients undergoing cardiac surgery. Recent studies show that gender might not play a role in certain population subgroups. The aim of this study is to evaluate the impact of female sex on late outcomes following CABG and investigate whether the outcomes were influenced by age.

Methods We analysed prospectively collected data from all patients who underwent isolated first time CABG in our centre over a 13 month period, between Jan 2006 and Jan 2007; this allowed 5 and 10-year follow-up. Patient characteristics and post-operative outcomes were collected and analysed. All-cause mortality following CABG was ascertained from the NHS Spine Portal. Comparisons between male and female patients were made. In addition, a sub-analysis of patients less than or older than 70 years of age was examined.

Results A total of 671 patients underwent CABG over this 13 month period; 147 (21.9%) of were female. Female and male groups were similar in terms of age (mean 70 +/- 8.7 years and 67 +/- 9.3 years, respectively). In-hospital mortality was 0.7% (1/147) in females vs 1.7% (9/524) in males. Follow-up was complete. At a median follow-up of 136.1 months (complete), survival in women was 84.4% (124/147) vs 83.6% (438/524) in men at 5 years (p=0.9) and 61.2% (90/147) vs 64.7% (339/524) in men, at 10 years (p=0.52). Survival in female patients <70 years old was 92.9% vs 91.3 % in men at 5 years (p=0.6) and 83% vs 75.7% at 10 years (p=0.23), respectively. Survival in female patients >70 years old was 76.3% vs 72.4% in men at 5 years (p=0.47) and 40.7% (31/76) vs 45.7% (91/199) in men, at 10 years (p=0.78).

Conclusion Our study indicates that female gender was not a risk factor in mid- and long-term all-cause mortality for patients undergoing CABG. Similarly, age less than or greater than 70 years appears not to influence outcomes between females and males.

Presenter: **Mr Vito Domenico Bruno**, *Research Clinical Fellow, University of Bristol - School of Clinical Science*

Characterization of myocardial injury and extracellular matrix remodelling in a model of porcine closed chest acute myocardial infarction ^{A265}

Authors V Bruno⁴; D Baz Lopez⁴; H Lin⁴; M S Suleiman¹; E Sammut⁴; A Cookson³; C Soeller²; H S Gill³; T Johnson¹; R Ascione¹;

¹ Bristol Heart Institute, UK; ² Royal Exeter and Devon Hospitals, UK; ³ University of Bath, UK; ⁴ University of Bristol, UK

Objective To ascertain changes in myocardial injury and extracellular matrix (ECM) remodelling in a porcine model of closed chest myocardial infarction (MI).

Methods Five Yorkshire pigs (mean weight 63.6 kg) were subjected to 60 minutes of coronary occlusion by percutaneous balloon inflation of the left anterior descending (LAD) coronary artery (n=3) or the circumflex artery (CA; n=2). MRI was undertaken within 24 hours post-MI and at 6-weeks. Methods of characterization included ECG, serial troponin and MRI validation. Left ventricular myocardial tissue was collected for each animal from the infarcted area and from healthy myocardium for proteomics analysis using a BCA method for protein quantification.

Results All pigs survived the MI procedure. Marked ST changes were observed within 5-10 minutes from coronary occlusion. One animal suffered VT (CA group) while 2 animals showed VF (LAD group) at 30-35min of ischemia, treated with DC cardioversion. The model showed consistent evidence of scar size by MRI (average scar size 16 ± 1.8% of LV mass) and by troponin release (mean 4.7 ng/l at 4 hours). A total of 5891 proteins were identified with proteomics analysis. Abundance ratio between infarcted and viable territory was calculated: this ratio spanned between 0.010 to 12.164, with a mean of 1.039. After normalization, the proteins below the second centile (122 proteins) and the 98th centile (118 proteins) were identified. These proteins were tested into the STRING database for network analysis: Spectrin (FDR 0.018/0.029), Thrombospondin type 3 (FDR 0.022/0.029)

and thrombospondin C-terminal (FDR 0.022/0.029) pathways were identified in both PFAM and INTERPRO protein domains.

Conclusion Our data show that we can induce a balloon MI model in pig that is relevant to clinical practice with potential for development of novel treatments. In addition, it showed significant ECM remodelling with Spectrin and Thrombospondin type 3 proteins pathways as a possible target for modulation.

Presenter: **Mr Kumaresan Nagarajan**, *Senior Fellow, RWHT*

Lung Volume Reduction Surgery with platelet rich fibrin - proof of concept A386

Authors **K Nagarajan**¹; I Morgan¹;

¹ Heart & Lung Centre, The Royal Wolverhampton NHS Trust, UK

Objective Tissue sealants and buttressing agents have been used for reducing air leak in Lung Volume Reduction surgery (LVRS). We believe that platelet rich fibrin (PRF) is cost effective and reduces air leak and duration of chest drain post operatively resulting in early discharge of patients without chest drains.

Methods From July 2017 till October 2017 consecutive patients were enrolled for video assisted thoroscopic LVRS with PRF after informed consent. They received PRF as an adjunct to staple line instead of sealants (Proseal) or buttressing material. PRF was prepared by harvesting 120 mls of whole blood from the patient and then centrifuged @ 1300 rpm (200g) for 8 minutes. The cost of this is about 10 pounds per patient. The resulting PRF was compressed into membranes and exudates that could be applied over the stapler line. Duration of chest drain, amount of drainage and air leak were analysed and compared to a similar group of LVRS patients with sealants from our institution between February to May 2017.

Results There were 5 patients in both groups with similar demographics. Results are summarized in the table as follows. We will include the cost comparison on time for the meeting. There was significant difference in drainage amount, duration of chest drain and air leak. The length of stay is similar as patients in the sealants group were discharged home on Topaz digital drain system and followed by our wound clinic.

Conclusion LVRS with PRF results in shorter duration of chest drain with reduction in drainage and air leak resulting in early discharge when compared to sealants and buttressed staplers while being cost effective. We are in the process of conducting a randomized study to validate our concept.

Presenter: **Mr Edward Caruana**, *ST4, Nottingham University Hospitals*

All hands to the pumps! Is it all doom and gloom for off-pump coronary surgery? A207

Authors **EJ Caruana**¹; S K Balasubramanian¹; S Shanmuganathan¹; S K Naik¹; A Szafranek¹;

¹ Nottingham City Hospital, UK

Objective The Randomized On/Off Bypass (ROOBY) Trial recently reported higher all-cause mortality at 5 years with off-pump coronary artery bypass grafting (OPCAG). Both off- and on-pump coronary artery bypass grafting (CABG) have been offered at our institution since 1996. We sought to evaluate the real-world long-term outcomes following OPCAG, in our cohort.

Methods Data obtained from prospective databases for all adult patients undergoing isolated CABG at a single UK centre, between January 2003 and December 2011, was retrospectively analysed. Mortality data was acquired from NHS Spine (median follow-up 10.2 years). Student t-test, Pearson's Chi-squared, and Logistic Regression analyses were performed using the Analyse-it® package for Microsoft Excel.

Results 3400 patients - 1122 (33%) OPCAG - were included. A median of 101 (range 31 to 242) OPCAG procedures were performed annually. Patients in the OPCAG group were older ($p = 0.01$) and had a higher logistic EuroSCORE ($p < 0.001$, mean difference (MD) 0.9%). Post-operative hospital stay was shorter in the OPCAG group ($p = 0.002$, MD 1.1 days). There was no difference in all-cause mortality at 30-days ($p = 0.52$), 5-years ($p = 0.54$) or 10-years ($p = 0.75$). There was no discernible impact of institution ($p = 0.84$) or consultant ($p = 0.66$) learning curve in OPCAG.

Conclusion OPCAG is a safe alternative to traditional on-pump CABG, and may be of benefit in higher-risk patients. It should remain a part of the cardiac surgeon's armamentarium.

Presenter: **Dr Suraj Pathak**, *Foundation Trainee, NHS*

Rigid bronchoscopy with endobronchial laser therapy for central airway obstruction A255

Authors E J Caruana¹; S Pathak¹; A G Dawson¹; S Rathinam¹; A Nakas¹;

¹ University Hospitals of Leicester, UK

Objective Central airway obstruction is distressing and may prove life-threatening. Rigid bronchoscopy with endobronchial laser therapy is one of a spectrum of interventions that may benefit this patient group. We report on the peri-operative to medium-term outcomes at a single institution.

Methods Patients who received endobronchial laser therapy at Glenfield Hospital between January 2012 and December 2014 were identified through operative databases. Data were collected retrospectively from case notes and electronic records. Statistical analysis was performed using the Analyse-it® package in Microsoft Excel.

Results 84 procedures were performed in 52 patients. Sixty-four percent were male with a mean age of 64 ± 13 years (SD) and a median Charlson comorbidity index of 6 (range: 0 to 11) at first presentation. Seventy-nine percent of cases were malignant, of which 68% constituted primary lung cancer. Tracheal involvement was demonstrated in 37%. Average laser energy usage was 1510-1621 Joules; with a median length of stay of 2 (range 0 to 55) days. There were no immediate peri-operative deaths. Overall mortality was 10% ($n = 5$) at 30-days, and 65% ($n = 34$) at 2-years following the initial procedure. Median survival in the malignant group was 10 (range: 0

to 43) months. No difference in average survival was noted with tracheal involvement ($p = 0.67$) or between patients with primary versus secondary malignancy ($p = 0.39$).

Conclusion Rigid bronchoscopy with endobronchial laser therapy is safe, with low perioperative morbidity and mortality, despite the high-risk nature of the procedure and patient group.

Presenter: **Mr Alastair Graham**, *Consultant Cardiothoracic Surgeon, The Belfast Trust*

Assessment of in-patients referred for urgent cardiac surgery by video consultation A365

Authors A Cassidy¹; GDunwoody¹; A N Graham¹;

¹ Belfast Health and Social Care Trust, UK

Objective In UK practice, around one third of patients undergoing cardiac surgery are urgent “in-house” transfers and are often referred from remote hospitals and will usually have co-morbidities that need assessed prior to surgery. Pre-operative assessment at a surgical clinic is impractical and may put the patient at risk whereas direct admission may result in patients being found to be unfit when assessed and may waste resources. To address these issues, we introduced assessment of in-house transfers by video conferencing equipment.

Methods After a pilot using Microsoft Lync, a Sony Ipela VC system was leased at a cost of £3000 per year. Since January 2016, 111 patients have been assessed by 8 Consultant Cardiac Surgeons. Only 1 of these patients, who underwent PCI for unstable symptoms, did not proceed to surgery. In the remaining 110 patients, there were no new clinical issues detected due to physical assessment on subsequent admission to the cardiac surgery unit.

Results Satisfaction with the system was assessed by a survey of patients and staff in the referring hospitals and of 290 domains assessed, 227 were rated very good or excellent, 48 good, 14 fair and only 1 poor. In 2 cases, due to problems with the patient’s hearing, the system was felt to be suboptimal compared to a standard face-to-face consultation.

Conclusion Video consultation with in-house transfer patients requiring cardiac surgery has the potential to save significant resources while allowing safe and efficient assessment for surgery. In addition, it allows the patient to “meet” the surgeon prior to transfer and a full explanation of the surgery at this stage leads to a reduction in anxiety. It also helps educate staff in remote units about cardiac surgery as a doctor or senior nurse from that centre is usually present during the consultation. We have found video consultation to be safe, efficient and very popular with patients and is now the standard method of assessing potential in-house transfers in our unit.

Presenter: **Mr Edward Caruana**, *ST4, Nottingham University Hospitals*

Patients’ attitudes towards trainee involvement in cardiac surgery A197

Authors EJ Caruana¹; S Mahran¹; S Shanmuganathan¹; A Szafrank¹;

¹ Nottingham City Hospital, UK

Objective Trainee contribution is essential for safe and effective care. Training and service provision are fundamentally coupled. We sought to evaluate cardiac surgical patients' attitudes to varying extents of trainee-involvement in their care.

Methods Convenience sampling of thirty post-operative cardiac surgical patients at a single UK centre recruited voluntarily to a structured telephone interview. Quantitative ratings are on a 10-point scale. Statistical analysis was performed in Microsoft Excel 365 with the Analyse-it® add-on.

Results 24 patients (age 69±12 years, 63% male) completed the survey. 63% of patients felt that basic operative competency should be first achieved in simulated settings. Patients' confidence in registrars performing their operation under direct supervision was 10(2) [median(IQR)]; falling to 8(4) with the consultant unscrubbed but in theatre, and to 6(3) with a consultant available nearby. Confidence in having senior house officers as the leading on-site clinicians out of hours was rated at 8(1). Higher confidence in trainee participation was noted in male patients (p = 0.02), and with increasing socioeconomic deprivation (p = 0.04); with a non-significant trend in younger patients (p = 0.06). Patients wish to be informed beforehand that trainees may participate in their operation (54%), and to meet them pre-operatively (67%). 92% of patients felt reassured when shown matched cardiac surgical outcome data demonstrating equivalence of trainee- to consultant-performed procedures; with 83% articulating that such objective information should be shared pre-operatively.

Conclusion Patient confidence in supervised trainee-participation is high. Explicitly educating patients about the role of surgical trainees and the implications of training on outcomes may provide reassurance. It should also be considered an integral part of the informed consent process.

Presenter: **Mr Aileen Cassidy**, *Cardiothoracic ClinicalCoordinator*, *Aileen Cassidy*

Education and empowerment reduces anxiety in patients awaiting cardiac surgery *A424*

Authors A Cassidy¹;

¹ Aileen Cassidy, UK

Objective Within the region patients are waiting up to and over 26 weeks for surgery. They attend their pre-operative assessment (POA) appointment on average 99 days after being added to the waiting list. This has resulted in patients and relatives being extremely anxious whilst waiting for their surgery, and in addition physically unprepared for it. There were too many patients suspended on the waiting list due to lifestyle factors, and pre-op investigations having to be repeated due to the long waits.

Methods An education programme was introduced, inviting patients and relatives to attend 2-3 weeks following being added to the waiting list. Encouraged patients to take responsibility for their own health early in their journey, e.g. smoking, diabetic control, weight, alcohol consumption, dental, etc, early identification of

required pre-op tests. Therefore it is patient focused, opportunity to meet the team, allays fears and anxieties. The programme is run by the POA team.

Results Improved patient satisfaction and experience: Education, support and empowerment for patient' and relatives; addresses psychological concerns/stress/anxieties around waiting for cardiac surgery; shortened pre-assessment appointment; reduced waiting time for patient; reduced last minute cancellations.

Conclusion This programme has significantly improved the patient experience. There have been 3 significant reasons for its success: Mental preparedness, physical preparedness for surgery and their future and improved and more efficient service, better access to cardiac surgery; reduction in waiting list suspensions due to lifestyle factors; reduction in overall waiting time for surgery (on average 79 days). The team were overwhelmed by the positive feedback from patients and relatives attending the programme. Some relatives attending the programme, who have had cardiac surgery in the past have commented that they wished that this type of programme was available at the time of their surgery.

Presenter: **Miss Sara Jasionowska**, *Clinical Research Fellow, St Bartholomew's Hospital*

The cancellation of same-day elective and urgent cardiac surgery at a large single cardiac centre in the UK A370

Authors **S Jasionowska**¹; R F Hammond¹; W I Awad¹;

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Objective The cancellation of same-day elective surgery in the UK is an unfavourable outcome for patients. It poses a considerable drain to NHS resources. There is an adherent lack of national data on the matter. The aim of this study is to determine the extent and reasons for same-day cancellations at our unit.

Methods We prospectively reviewed all same-day cancellations of elective and in-patient adult cardiac surgical procedures over a 5 month period from June 2017 to October 2017. Patients were divided into two groups: cancelled (C) and not cancelled (NC). Differences between the two groups were analysed.

Results During this 5 month period a total of 493 patients were scheduled to undergo a cardiac surgical procedure. 72.2% of the scheduled surgeries were elective and 27.8% were urgent in-patients. Of these patients 48 (9.7%) were cancelled and for the following reasons: patient unfit for surgery (31.5%), lack of intensive unit bed space (18.8%), inadequate work up (8.3%), emergency case intervention (6.3%), perfusionist shortage (6.3%), electrical systems failure (6.3%), or for other reasons (22.5%). Comparing the C and NC groups, there was no significant difference in terms of mean age (C group: 66.5 years vs NC group: 66.3 years), urgency of the procedure (C group: 29.8% vs NC group 27.7%), average EuroSCORE II (C group: 4.35 vs NC group: 5.01), LVEF (C group: poor 0%, fair 30.8%, good 69.2% vs. NC group: poor 3.4%, fair 27.5%, good 68.8%). The most prevalent surgery cancellation types were as follows: CABG (10%), AVR (13.2%), MVR (7%), CABG+ AVR (7.3%) and double valve replacement (18.8%). In the C group, 20 (41.7%) underwent their procedure within 72 hours, 15 (31.3%) were rescheduled, 11 (22.9%) were not rescheduled or performed.

Conclusion Contrary to expectations, a large number of patients are being cancelled on the same day of planned surgery. There is a clear need to introduce measures to improve service provision, patient flow and quality of patient care.

Presenter: **Dr Cristiano Spadaccio**, *Clinical fellow, Golden Jubilee National Hospital*

Real-life multi centric registry study on total arterial revascularization *A209*

Authors C Spadaccio³; A Nenna²; M Pettinari¹; M Chello²; K Shaikhrezai³; N Al-Attar³; F W Sutherland³;

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Objective To compare perioperative outcomes in total arterial (TA) CABG versus saphenous vein-based (SV) CABG (LIMA plus one/more saphenous vein grafts) in a real-life multi centric registry study (NCT03231527).

Methods A total of 4,985 patients undergoing primary elective isolated CABG between 2012 and 2016 in three high-volume European centres were retrospectively analysed. End-points included early mortality, length of ICU stay, length of hospital stay, use of blood products, post-operative acute kidney injury (CSA-AKI), post-operative atrial fibrillation (AF), myocardial infarction (MI), stroke, respiratory complications and overall sternal or saphenous-harvesting wound complications.

Results No differences were found in preoperative risk profile and intraoperative variables (TA n= 1588; SV n=3427). TA group had a significantly lower transfusion requirement with a significant reduced usage of RPC units per transfused patient compared with SV (mean difference about 1 RPC unit). TA patients had a reduced intubation time, stroke rate, and length of ICU staying and were discharged 1.3 days earlier than SV patients. There were no statistically significant differences in the other postoperative complications analyzed, although the trend consistently favored TA. Leg wound complications were observed in 4.0% of SV patients while no in between-groups difference in sternal wound complications were detected.

Conclusion TA CABG was associated to reduced transfusion requirements, stroke rate and a shorter length of stay when compared to a cohort of SVCABG patients with similar risk profile in a real-life multi centric analysis. No differences in mortality, postoperative complications and sternal-related complications were found. Avoidance of additional incision(s) for vein harvesting reduces RPC use and eliminates the risk of leg wound complications, translating into shorter length of stay. These findings have dramatic economical implications in the clinical management of CABG patients.

Presenter: **Mrs Rachel Brown**, *Thoracic ANP, The Mater Misericordiae University Hospital*

Lung cancer survivorship - the first nurse-led clinic in the Republic of Ireland *A437*

Authors R Brown¹; K Redmond¹; D Eaton¹;

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Objective Lung cancer is the leading cause of cancer mortality in Ireland. The condition and its treatment can cause persistent challenges; symptoms such as pain, dyspnea, fatigue and anorexia are common. In addition to the psychosocial or emotional consequences such as anxiety and depression. The population of patients undergoing lung cancer resection surgery were followed up in a general thoracic clinic by a member of the medical team. This posed potential issues with continuity and consistency of care delivery.

Methods A Thoracic Advanced Nurse Practitioner was employed to lead the lung cancer survivorship programme. The clinic was developed over a 6 month period whilst the ANP was trained up from a candidate to registered ANP. During this time the clinic was supervised by a thoracic consultant and patients were engaged in an evaluation of attending a nurse-led service. Currently the clinic is set-up bi-weekly to facilitate the number of patients needing to attend and a maximum of ten patients booked into the clinic to allow 30 minute appointment slots. This provides adequate time for a holistic assessment. It also ensures patients are seen on-time as per their allocated slot. The clinic has links to holistic services (such as psychological support, reflexology, etc) which are provided by a charity organisation. In addition we can offer a referral to a community based exercise programme, pulmonary rehabilitation at the Dublin City University (DCU).

Results Since September 2017 the autonomous nurse-led service has seen over 42 patients. The results from the ongoing audit are not fully evaluated but the hypothesis is that over twenty appointments per month have been made available within the general thoracic consultant led clinic for new patients. The clinic has provided a robust and holistic approach to cancer surveillance with a protocolised care pathway which is consistent in its care delivery. The access to other services such as reflexology and pulmonary rehabilitation are important and have been made available without any additional resources.

Conclusion A nurse-led survivorship clinic for the surgical lung cancer population is viable and should be considered amongst other units within Ireland to ensure standardised care and protocolled surveillance of this population.

Presenter: **Dr Cristiano Spadaccio**, *Clinical fellow, Golden Jubilee National Hospital*

Left atrial volume in preoperative assessment of elective cardiac surgery ^{A337}

Authors C Spadaccio²; S D Das De²; S Singh²; A Nenna¹; V Pathi²; F W Sutherland²; G Bozzetti²;

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Objective Left atrial volume (LAV) is considered a marker of end-diastolic ventricular pressure and an early marker of LV dysfunction. LAV has been used as a measure of prognosis in patients with heart failure. However, little data is available on the potential use of LAV in surgical settings as a preoperative marker of LV dysfunction and predictor of postoperative complications. We aimed to evaluate the role of preoperative LAV in elective non-valvular cardiac surgery.

Methods We retrospectively analysed a cohort of patients undergoing elective coronary artery bypass graft (CABG). Patients with valvular disease of any degree and preoperative atrial fibrillation were excluded. LAV was measured at transthoracic preoperative echocardiography and divided in 4 categories according to guidelines (normal, mild, moderate, severe). Outcomes analysed were in-hospital mortality, need for prolonged inotropic support or IABP, development of atrial fibrillation, acute kidney injury, respiratory complications or neurological complications. A logistic regression analysis was performed.

Results A total of 1132 patients were included, mean age 67±11.5 mean EuroSCORE 5.38±6.5. In 55% of the patients LA was mildly enlarged, 25.7% moderately enlarged and 13% severely dilated. Mortality was 1%. At univariate analysis LAV was a predictor of mortality and atrial fibrillation. However, when included in a multivariate regression analysis after adjustment for EuroSCORE, LAV was only able to predict development of atrial fibrillation.

Conclusion In elective conditions, underlying initial LV dysfunction might be undiagnosed determining potential complications in the postoperative period. LAV is a recognized marker of LV impairment in the context of advanced heart failure, but also represents an indicator of increased LV end-diastolic pressure and diastolic dysfunction. In elective cases, elevated preoperative LAV can constitute a marker of underlying diastolic dysfunction and warn about potential postoperative complications.

Presenter: **Mr Ashok Kar**, *Cardiothoracic Surgery ST6, St George's Hospital*

Procedure specific consent: a quality improvement project in thoracic surgery *A240*

Authors A Kar¹; C Wong²; M Suen²; K Lau¹;

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Objective The process of obtaining informed consent has changed following the 2015 seminal ruling by the Supreme Court (*Montgomery v Lanarkshire Health Board*). Specifically patients should be clearly informed of procedure risks; alternatives must also be mentioned prior to undergoing any surgical procedure. This discussion and its documentation should be consistent within a unit, particularly for major thoracic operations. We sought to evaluate our current practice and identify areas for improvement, before creating procedure specific consent forms with the aim of improving the overall consent process.

Methods We prospectively evaluated the documentation in the clinic letters and patient notes for all thoracic operations performed during a two week period in June 2017 using a pro-forma. The three commonest thoracic operations: Lung Resection, Effusion Surgery and Pneumothorax Surgery were analysed for documentation of details relating to the WHO surgical checklist, benefits, risks and alternatives to surgery. After careful evaluation of how consent was obtained, a quality improvement process was undertaken to create procedure specific consent forms based on these findings.

Results 10 lung resections, 8 effusion and 5 pneumothorax operations were evaluated for the adequacy of the consent obtained. 100% of the consent forms signed prior to surgery documented all the necessary details

required for the WHO surgical checklist. None included the alternatives to an operation. Table 1 lists the risks documented for each operation category.

Conclusion After observing variability in the explanation of benefits, risks and alternatives to surgery for each procedure type, our introduction of procedure specific consent forms has helped to improve the consent process within our unit. There is currently no speciality specific national guidance for consent in major thoracic surgery. We suggest the introduction of universal procedure specific consent forms.

Presenter: **Mrs Rachel Brown**, *Thoracic ANP, The Mater Misericordiae University Hospital*

An update on thoracic enhanced recovery in the Republic of Ireland A239

Authors **R Brown**¹; K Redmond¹; D Eaton¹;

¹ Mater Misericordiae University Hospital, Ireland

Objective The first Thoracic Enhanced Recovery Programme (TERP) in the ROI was introduced in 2015. These initial data (6 months) were presented at the SCTS in 2016. The purpose of this audit is to evaluate the TERP outcomes and if initial results have been sustained. In addition the bi-products discovered at the initial evaluation have been considered to assess if any further improvements have been made during the 12 month audit cycle.

Methods The 12 month audit will measure the compliance to the TERP and its outcomes. The preadmission consultation includes consent for surgery, scheduled surgical date, smoking cessation advice and referral to POAC and prehabilitation. The thoracic surgical checklist has been utilised to measure reduced cancellations, improved list efficiency and optimized bed management. Benefits include reduced fasting times, early physiotherapy, adherence to thoracic specific protocols and preoperative discharge planning. This robust service has enabled day of surgery admission (DOSA), walking to theatre, compliance to fasting times and analgesic protocol. The postoperative drain protocol and early mobilisation after surgery (including prescribed exercise) facilitates safe and early discharge. This is further supported by the nurse-led chest drain clinic, telephone follow-up and early OPD.

Results The following have been measured; length of stay (LOS), DOSA, patients walking to theatre, duplication of pre-operative tests, patient and staff satisfaction. Our data illustrated; maintained reduction in LOS (8.6 days- 4.2 days), DOSA less than 10% to 70% (as per the national target), duplication of pre-operative tests initially reduced from 83% to 63%. Since implementation of the TPM this was further reduced to <2%. All DOSA patients walk to theatre. The staff & patient survey shows increased satisfaction and improved understanding of TERP.

Conclusion TERP is a safe and effective care delivery pathway that has been able to consistently deliver measurable outcomes.

Presenter: **Prof Enrico Ruffini**, *Associate Professor, Thoracic Surgery, University of Torino*

Management of thymomas - IASLC/ITMIG update A385

Authors E Ruffini¹;

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Objective

Presenter: **Mr Eric Lim**, *Consultant Thoracic Surgeon, The Royal Brompton Hospital*

Update on MARS II trial A393

Authors E Lim¹;

¹ The Royal Brompton Hospital, UK

Objective

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Surgical treatment decisions for patients with indeterminate pulmonary lesions

A242

Authors S Cassivi¹;

¹ Mayo Clinic, United States

Presenter: **Dr Paula Agostini**, *Physiotherapist, Heart of England Nhs Trust*

Post-operative pulmonary complications(PPC) prevention and amelioration: a Physiotherapist's perspective. A418

Authors P Agostini¹;

¹ Heart of England Nhs Trust, UK

Objective

Presenter: **Mr David Harpole**, *Professor of Surgery and Pathology, Duke University*

Enhanced recovery and comprehensive care - American perspective A241

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¹ Duke University, United States

Presenter: **Mr Gaetano Rocco**, *National Cancer Institute, Pascale Foundation*

Continuous progression and innovation in minimally invasive e surgery in thoracic surgery - what is the future *A419*

Authors **G Rocco**¹;

¹ National Cancer Institute, Pascale Foundation,

Objective

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Tudor Edwards Lecture - Endobronchial therapies for malignant airway obstruction *A257*

Authors **S Cassivi**¹;

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Objective

Presenter: **Miss Donna Eaton**, *Thoracic and Lung Transplant Surgeon, Mater Misericordiae University Hospital Dublin*

Role of ECMO in thoracic surgery *A128*

Authors

Presenter: **Mr Ian Hunt**, *Consultant Thoracic Surgeon, St George's Hospital*

Does every rib fracture need fixation? *A394*

Authors **I Hunt**¹;

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Objective

Presenter: **Mr Eric Lim**, *Consultant Thoracic Surgeon, The Royal Brompton Hospital*

VATS in lung cancer - scientific evidence *A404*

Authors **P Licht**¹;

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Presenter: **Mr William Walker**, *Edinburgh Royal Infirmary*

Evolution of Thoracic Surgery in last 25 years *A412*

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Presenter: **Prof Michael Peake**, *Professor of Resp.Med, University Hospitals of Leicester*

Improving outcomes of patients with lung cancer in UK *A248*

Authors **M Peake**¹;

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Presenter: **Mr Sridhar Rathinam**, *Consultant Thoracic Surgeon, UHL*

Surgery with the plastic surgeon *A111*

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Presenter: **Mr Maninder Singh Kalkat**, *Consultant, Birmingham Heartlands Hospital*

Surgery with the ENT surgeon *A114*

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Objective

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Surgery with the Spinal surgeon *A113*

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Objective

Presenter: **Mr David Harpole**, *Professor of Surgery and Pathology, Duke University*

Surgery with the Vascular Surgeons *A112*

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Objective

Presenter: **Mr Gaetano Rocco**, *National Cancer Institute, Pascale Foundation*

Surgery for T4 tumours *A127*

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Objective

Presenter: **Mr David Harpole**, *Professor of Surgery and Pathology, Duke University*

Surgery for small cell carcinoma *A125*

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Objective

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Surgery for N2 disease *A126*

Authors

Objective

Presenter: **Mr Joel Dunning**, *Thoracic Surgeon, James Cook University Hospital*

New gadgets and techniques in thoracic surgery *A141*

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¹ James Cook University Hospital, UK

Objective

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Energy devices facilitating thoracic surgery *A142*

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Presenter: **Mr Maninder Singh Kalkat**, *Consultant, Birmingham Heartlands Hospital*

Update of reconstructive strategies in chest wall resection *A143*

Authors **G Massard**¹;

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Objective

Presenter: **Dr Kevin Franks**, *Clinic, Consultant Clinical Oncologist/Associate Professor*

Recent advances in radiation oncology in the management of lung cancer *A155*

Authors **K Franks**¹;

¹ Consultant Clinical Oncologist/Associate Professor, UK

Objective

Presenter: **Prof Paul Van Schil**, *Chair, University Hospital of Antwerp*

Pushing the boundaries in surgical management of lung cancer *A156*

Authors P Van Schil¹;

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Objective

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Lung surgery after induction therapy *A157*

Authors S Cassivi¹;

¹ Mayo Clinic, United States

Objective

Presenter: **Mr Harkaran Kalkat**, *Medical Student, Imperial College London*

A robust semi-quantitative technique to assess infiltration and fibrosis in a mouse model of diffuse myocardial damage *A317*

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Objective Histology is essential to assess a range of damage parameters in mouse models of diffuse myocardial injury. However, analysis of large sample volumes is time consuming and a robust semi-quantitative scoring technique can increase throughput. Therefore, this study aimed to optimise systematic semi-quantitative scoring methods as well as develop ImageJ macros to simplify software-based generation of quantitative data for comparison.

Methods Mice were injected with 80mg/kg Isoproterenol to induce infarct-like lesions in the myocardium. Four mid-level cross sections of formalin-fixed hearts were stained with Haematoxylin & Eosin [H&E] and PicosirusRed [PSR] to analyse cellularity and fibrosis. A semi-quantitative scoring system was developed to assess these parameters and ImageJ software macros were developed for quantitative analysis. Connexin-43 [Cx-43] staining was used as an additional measure of cardiomyocyte health.

Results Semi-quantitative scoring confirmed increased fibrosis (1.83+/-0.35 vs 0.93+/-0.2: p<0.0001, n=10) and cellularity (1.83+/- 0.27 vs 0.94+/- 0.22: p<0.0001, n=10) in injured versus control hearts. Quantitative results displayed the same pattern for fibrosis (6699 +/- 1321µm² vs. 15572 +/- 3522µm²: p<0.0001, n=10) and cellularity (752n +/-85 nuclei vs. 932 +/-100 nuclei: p=0.006, n=10). Semi-quantitative assessment of Cx-43 lateralisation also showed increased lateralisation in injured hearts (1.13+/-0.35 vs. 3.25+/-0.56: p<0.0005 n=5).

Conclusion Our system of semi-quantitative scoring and quantitative analysis of H&E and PSR stained sections yields sensitive and robust measures of infiltration and fibrosis in diffuse cardiac injury. The Cx-43 staining protocol and semi-quantitative scoring method also enable Cx-43 lateralisation to be considered a dependable parameter for assessing damage. Additionally, ImageJ software macros facilitate the reliable quantification of hundreds of samples in a matter of minutes.

Presenter: **Prof Vipin Zamvar**, *Consultant Cardiothoracic Surgeon, Royal Infirmary Edinburgh*

Operative tips & tricks - Off-pump set-up & grafting A101

Authors V Zamvar¹;

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Objective

Presenter: **Mr Andrew Muir**, *Cardiac Surgeon, LHCH*

Evidence Base for Off-Pump CABG A100

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Objective

Presenter: **Mr Alan Bryan**, *Heart Surgeon, Bristol Heart Institute*

Debate - Optimal strategy for high risk coronary patients: Conventional bypass

A102

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Presenter: **Mr Umberto Benedetto**, *Cardiac Surgeon, Bristol University Hospital*

Debate - Optimal strategy for high risk coronary patients: Off bypass A103

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Presenter: **Dr Bob Kiaii**, *Chief of Cardiac Surgery, London Health Sciences Centre*

Debate - Optimal strategy for high risk coronary patients: Hybrid MIS A104

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Presenter: **Mr Simon Kendall**, *Cardiac Surgeon, Hon Sec SCTS, James Cook Hospital*

Debate - LIMA and 2 veins – the gold standard - Yes A115

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Presenter: **Mr Lognathen Balacumaraswami**, *Consultant Cardiac surgeon, University hospital of North Midlands*

Debate - LIMA and 2 veins – the gold standard - No A116

Authors **L Balacumaraswami**¹;

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Presenter: **Prof David Taggart**, *Consultant, John Radcliffe Hospital, Oxford*

Graft quality assurance - transit time flow monitoring techniques A117

Authors **D Taggart**¹;

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Objective

Presenter: **Mr Umberto Benedetto**, *Cardiac Surgeon, Bristol University Hospital*

Recent major trials and guidelines update A118

Authors **U Benedetto**¹;

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Presenter: **Dr Bob Kiaii**, *Chief of Cardiac Surgery, London Health Sciences Centre*

Endoscopic robotic CABG *A119*

Authors **B Kiaii**¹;

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Presenter: **Mr Enoch Akowuah**, *Consultant Cardiac Surgeon, James Cook Hospital*

UK Mini Mitral Trial *A145*

Authors **M Solinas**¹;

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Objective

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Presenter: **Mr Prakash Punjabi**, *Cardiac Surgeon, Imperial College London*

Surgical access debate: Median sternotomy is safer than minimally invasive techniques *A146*

Authors **P Punjabi**¹;

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Objective

Presenter: **Prof Torsten Doenst**, *Chairman, Department of Cardiothoracic Surgery, Friedrich Schiller University*

Surgical access debate: Minimally invasive techniques is safer than median sternotomy *A147*

Authors **T Doenst**¹;

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Presenter: **Prof Torsten Doenst**, *Chairman, Department of Cardiothoracic Surgery, Friedrich Schiller University*

Dealing with concomitant procedures with MIS MVR A148

Authors T Doenst¹;

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Presenter: **Dr Patrick Perier**, *Attending Surgeon, Herz und Gefäß Klinik,*

Operative tips & tricks: How I asses and preserve tissue for a good repair A129

Authors P Perier¹;

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Objective

Presenter: **Dr Niv Ad**, *Chief, Cardiac Surgery , West Virginia University Heart and Vascular Institute*

Debate: We should ablate all Mitral Valve patients in AF A133

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Objective

Presenter: **Dr Manuel Castella**, *Chief Cardiac Surgery, Hosp. Clinic Uni. of Barcelona*

Lesion sets for AF during mitral surgery A131

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Presenter: **Miss Mehreen Farooqi**, *Medical Student, University of Birmingham*

Surgery versus catheter interventions for simple congenital heart defects: trends from a UK national database A320

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Objective To assess the use of surgery and catheter interventions in the management of simple congenital heart defects in the UK & Ireland over the last 16 years.

Methods Data was obtained from the publically-accessible NICOR National Congenital Heart Disease Audit website. The number of surgery and catheter procedures performed for ASD repair/closure (including sinus venosus), PFO closure, VSD repair/closure and PDA ligation/closure were recorded according to age categories (neonate, infant, child, adult) for each reporting centre.

Results There are distinct and different age groups in which catheter or surgery procedures are performed for treatment of ASD, VSD, and PDA. For ASD closure, catheter procedures are performed in greater volumes, as though only surgery is performed in neonates the volume of procedures are still low. Closure of PDA is also predominantly performed via catheter though high numbers of surgeries are performed in infants. Surgery for VSD is still the main stay for closure, though the number of catheter procedures has increased since the start of the collection periods. The increasing popularity of catheter procedures does not always correlate with a decrease in the number of surgeries performed, such as is the case for VSD closure, and thus it may be the case that not all centres initially reported their data accurately.

Conclusion The increasing familiarity of clinicians with catheter closure combined with the evidence to support its use leading to a change in funding and guidelines, has led to catheter closure of ASD and PDA defects. For the closure of VSD surgery still remains the preferred option, particularly for peri-membranous VSDs, though this may change in the future.

Presenter: **Prof Torsten Doenst**, *Chairman, Department of Cardiothoracic Surgery, Friedrich Schiller University*

Durability of tissue valves? *A105*

Authors T Doenst¹;

¹ Department of Cardiothoracic Surgery, Friedrich Schiller University, Germany

Objective

Presenter: **Dr Clifford Barlow**, *Surgeon, University Hospital Southampton*

The optimal treatment for the failing prosthesis is Redo AVR *A106*

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Presenter: **Mr Clinton Lloyd**, *Cardiac Surgeon, Derriford Hospital*

The optimal treatment for the failing prosthesis is TAVI *A107*

Authors T Modine¹;

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Presenter: **Prof Olaf Wendler**, *Professor of Cardiac Surgery, Kings College Hospital*

What is new in recent EACTS guidelines :update *A108*

Authors O Wendler¹;

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Objective

Presenter: **Prof Stephen Clark**, *Consultant Surgeon, Freeman Hospital, Newcastle*

Update on sutureless valve technology - who and when? *A120*

Authors S Clark¹;

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Presenter: **Mr Bil Kirmani**, *Consultant Cardiac Surgeon, Liverpool Heart and Chest Hospital*

Minimally invasive vs open surgery - literature review *A121*

Authors B Kirmani¹;

¹ Liverpool Heart and Chest Hospital, UK

Presenter: **Prof Olaf Wendler**, *Professor of Cardiac Surgery, Kings College Hospital*

Arguing the choice of prosthesis for a young person is bioprosthesis vs mechanical? *A124*

Authors O Wendler¹;

¹ Kings College Hospital, UK

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Presenter: **Prof Manuel Antunes**, *Cardiac Surgeon, University Hospital, Department of Cardiothoracic Surgery*

When to repair a rheumatic Aortic Valve *A110*

Authors M Antunes¹;

¹ University Hospital, Department of Cardiothoracic Surgery, Portugal

Objective

Presenter: **Dr Niv Ad**, *Chief, Cardiac Surgery, West Virginia University Heart and Vascular Institute*

Update on new AF surgery guidelines *A184*

Authors N Ad¹;

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Presenter: **Mr Gareth Owens**, *Aortic Dissection Awareness UK*

There's no 'I' in Aorta: A patient perspective on Aortic MDT *A165*

Authors G Owens¹;

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Objective

Presenter: **Mr David Richens**, *Cardiac Surgeon, GIRFT*

GIRFT Update *A372*

Authors D Richens¹;

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Presenter: **Mr Dave Thornton**, *Coach and facilitator, Dave Thornton Org*

Getting a team to work effectively in the NHS *A167*

Authors **D Thornton**¹;

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Presenter: **Mr Neil Moat**, *Consultant, Royal Brompton Hospital*

Transcarotid TAVI implantation *A190*

Authors **T Modine**¹;

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Presenter: **Mr Neil Moat**, *Consultant, Royal Brompton Hospital*

Update on UK TAVI registry - trends and developments *A191*

Authors **N Moat**¹;

¹ Royal Brompton Hospital, UK

Presenter: **Dr Philip Arnold**, *Alder Hey Hospital*

Early extubation and enhanced recovery *A275*

Authors **R Guerrero**¹;

¹ Alder Hey Children's Hospital, UK

Objective

Presenter: **Mr Asif Hasan**, *Consultant Cardiothoracic Surgeon, Freeman Hospital*

Mustard and hemi-Mustard operation *A274*

Authors **A Hasan**¹;

¹ Freeman Hospital, UK

Objective

Presenter: **Mr David Barron**, *Congenital cardiac Surgeon, Birmingham Children's Hospital*

Senning operation *A273*

Authors **D Barron**¹;

¹ Birmingham Children's Hospital, UK

Objective

Presenter: **Ms Carin van Doorn**, *Consultant Surgeon, Leeds Teaching Hospitals NHS Trust*

Congenital service experience and viewpoint *A286*

Authors **C van Doorn**¹;

¹ Leeds Teaching Hospitals NHS Trust, UK

Objective

Presenter: **Prof Hans-Joachim Schäfers**, *Director, Dept. of Thoracic and Cardiovascular Surgery,, Saarland University Medical Center*

European experience: a flexible approach? *A287*

Authors **H Schaefers**¹;

¹ Saarland University Medical Center, Germany

Objective

Presenter: **Prof David Taggart**, *Consultant, John Radcliffe Hospital, Oxford*

Is there sufficient evidence for the second arterial conduit? *A208*

Authors **D Taggart**¹;

¹ John Radcliffe Hospital, Oxford, UK

Presenter: **Mr Enoch Akowuah**, *Consultant Cardiac Surgeon, James Cook Hospital*

MAVRIC - what have we learnt? *A218*

Authors **E Akowuah**¹;

¹ James Cook Hospital, UK

Presenter: **Dr Patrick Perier**, *Attending Surgeon, Herz und Gefäß Klinik,*

Should we stop repairing ischaemic mitral valves? *A340*

Authors P Perier¹;

¹ Herz und Gefäß Klinik,, Germany

Presenter: **Dr Patrick Perier**, *Attending Surgeon, Herz und Gefäß Klinik,*

Reproducible chordal reconstruction techniques *A362*

Authors P Perier¹;

¹ Herz und Gefäß Klinik,, Germany

Presenter: **Prof Martin Grapow**, *Cardiac Surgeon, University Basel*

Minimally invasive mitral repair techniques – the Basel Experience *A363*

Authors M Grapow¹;

¹ University Basel, Switzerland

Objective

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Presenter: **Prof Malakh Shrestha**, *Director of Aortic Surgery and Vice Chairman of the Division of Cardiothoracic, Hannover Medical School*

What to do with the aortic arch in acute Type A aortic dissection. The Hanover experience. *A176*

Authors M Shrestha¹;

¹ Hannover Medical School, Germany

Presenter: **Prof Hans-Joachim Schäfers**, *Director, Dept. of Thoracic and Cardiovascular Surgery,, Saarland University Medical Center*

The UK Heart Research Lecture: The importance of stabilising the aortoventricular junction, the valve and the sinotubular junction in valve sparing aortic root replacement *A333*

Authors H Schaefers¹;

¹ Saarland University Medical Center, Germany

Objective

Presenter: **Prof Hans-Joachim Schäfers**, *Director, Dept. of Thoracic and Cardiovascular Surgery,, Saarland University Medical Center*

Operative tips & tricks - valve sparing aortic root replacement *A135*

Authors H Schaefers¹;

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Presenter: **Prof Aung Oo**, *Consultant Cardiac Surgeon, St Bartholomew's Hospital*

Frozen Elephant Trunk in chronic dissection/thoracoabdominal aneurysm. The UK experience. *A356*

Authors A Oo¹;

¹ Liverpool Heart and Chest Hospital, UK

Presenter: **Prof Hans-Joachim Schäfers**, *Director, Dept. of Thoracic and Cardiovascular Surgery,, Saarland University Medical Center*

Debate: reimplantation is better than remodelling for valve sparing root surgery in connective tissue disorders - Pro *A136*

Authors H Schaefers¹;

¹ Saarland University Medical Center, Germany

Presenter: **Mr Lognathen Balacumaraswami**, *Consultant Cardiac surgeon, University hospital of North Midlands*

Debate: reimplantation is better than remodelling for valve sparing root surgery in connective tissue disorders - Con A137

Authors L Balacumaraswami¹;

¹ University hospital of North Midlands, UK

Presenter: **Mr James Kuo**, *Consultant Surgeon, Derriford Hospital*

Should a valve sparing root replacement be performed in the presence of a bicuspid aortic valve? A138

Authors J Kuo¹;

¹ Derriford Hospital, UK

Presenter: **Mr Haris Bilal**, *Cardiac Surgeon, Liverpool*

Genotype and phenotypes of the ascending aorta / root in aneurysmal disease A139

Authors H Bilal¹;

¹ Liverpool, UK

Presenter: **Dr Giovanni Mariscalco**, *Associate Professor of Cardiac Surgery, Glenfield Hospital*

Screening needs in patients with non-syndromic TAD A140

Authors G Mariscalco¹;

¹ University of Leicester-Glenfield Hospital, UK

Presenter: **Mr Geoffrey Tsang**, *Consultant Cardiac Surgeon, Southampton Hospital*

Operative tips and tricks - the use of frozen elephant technique in Type A dissection A151

Authors M Shrestha¹;

¹ Hannover Medical School, Germany

Objective

Methods**Results****Conclusion**

Presenter: **Prof Jean Philippe Verhoye**, *Cardiac Surgeon, CHU Pontchaillou*

What to do with the aortic root in acute Type A aortic dissection: the French experience *A152*

Authors J Verhoye¹;

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Presenter: **Prof Lars Svensson**, *Chairman, Heart and Vascular Institute, Cardiac Surgeon, Cleveland Clinic*

Treating chronic dissection TAAA, endovascular, hybrid or conventional surgery. The Cleveland Clinic experience. *A153*

Authors L Svensson¹;

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Presenter: **Prof Aung Oo**, *Consultant Cardiac Surgeon, St Bartholomew's Hospital*

What is the evidence for and against stenting in patients with connective tissue disorder *A154*

Authors A Oo¹;

¹ Liverpool Heart and Chest Hospital, UK

Presenter: **Prof Thierry Carrel**, *Chairman, Departement of Cardiovascular Surgery, University Hospital Bern*

Recent major trials and guidelines update in acute type B dissection *A150*

Authors T Carrel¹;

¹ University Hospital Bern, Switzerland

Presenter: **Prof Thierry Carrel**, *Chairman, Departement of Cardiovascular Surgery, University Hospital Bern*

Can MECC be used safely in aortic valve surgery? *A122*

Authors T Carrel¹;

¹ University Hospital Bern, Switzerland

Presenter: **Mr Erwan Flecher**, *Pr Flecher, Centre Hospitalier Universitaire RENNES*

ECMO support for post-cardiotomy cardiogenic shock - lessons learnt *A272*

Authors E Flecher¹;

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Objective

Presenter: **Prof Lars Svensson**, *Chairman, Heart and Vascular Institute, Cardiac Surgeon, Cleveland Clinic*

Dealing with the Barlow's valve *A130*

Authors L Svensson¹;

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Presenter: **Prof Gavin Murphy**, *BHF Chair of Cardiac Surgery, Director Leicester CTU*

Establishment of 10 key clinical trials - National Priority setting Partnership *A376*

Authors G J Murphy¹;

¹ BHF Chair of Cardiac Surgery, Director Leicester CTU, UK

Objective

Presenter: **Dr Piroze Davierwala**, *Senior Consultant, Hertzzenrum Leipzig*

Minimally Invasive CABG - the Leipzig experience *A226*

Authors P Davierwala¹;

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Objective

Presenter: **Mr Peter Clarke**, *Medical Student, University of Sheffield*

An international Delphi consensus exercise to agree for rib fracture definitions A316

Authors P T Clarke⁹; R B Simpson⁷; W J Hunt⁷; M Gasparri²; R Gross¹; W Long⁶; J Mayberry¹⁰; F Pieracci³; B Sarani⁴; S Schulz-Drost⁸; T White⁵; J G Edwards⁷;

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Objective There is a need to agree consensus for rib fracture definitions to aid communication and standardisation for research. The Chest Wall Injury Society initiated efforts to agree consensus in several areas pertaining to rib fixation in 2013. We have performed an international Delphi exercise to seek consensus on rib fracture definitions.

Methods All definitions regarding displacement, fracture line characterisation, fragmentation, associations between neighbouring ribs, anatomical sectors, flail chest and sternal (anterior) flail chest were retrieved from the literature, trial protocols, research theses, conferences proceedings and personal correspondence. Experts to include in the exercise were identified from authorship, CWIS members, clinical trial chief investigators, and major trauma centre leads. SurveyMonkey questionnaires were circulated. An international review committee (IRC) was set up and standard Delphi consensus methods agreed. An a priori consensus threshold was set at 80%. Results of each round were collated and analysed by the IRC. Where consensus was not reached, the IRC determined iterative refinements to the question design for the subsequent round. This is in keeping with the tenets of the Delphi method: anonymity, iteration, controlled feedback, and group response.

Results There were 106 respondents from 18 countries. Consensus was gained in 6 out of 14 domains. Results are according to the attached table.

Conclusion The CWIS Rib Fractures Delphi Consensus Exercise has agreed taxonomy for rib fractures with a strong international mandate. Where consensus has not been reached, a framework for clinical recording has been proposed and further evaluation in clinical studies indicated. This will allow standard reporting of cases within surgical units and standard taxonomy for design, analysis and interpretation of clinical trials.

Presenter: **Mr Omar Zibdeh**, *Med Student, Plymouth University Peninsula School of Medicine*

Randomized trial of Carpentier-Edwards supraannular prosthesis versus Medtronic Mosaic aortic prosthesis A322

Authors O Zibdeh²; I Bugg²; S Patel²; G Twine¹; J Unsworth-White¹;

¹ Plymouth Hospitals NHS Trust, UK; ² Plymouth Medical School, UK

Objective This is a prospective randomised study comparing the clinical performance and durability of Carpentier-Edwards (CE-SAV) from Edwards Lifesciences (Irvine, CA) and the newer Mosaic from Medtronic Corporation (Minneapolis, MN) porcine bioprostheses in the aortic position over a 10-year period.

Methods Between January 2001 and March 2005, 398 patients undergoing bioprosthetic aortic valve replacement (AVR) were randomised to receive either the CE-SAV (n= 193) or the Mosaic (n= 205) prosthesis. The preoperative demographics, EuroSCORE, and intraoperative characteristics concerning cardiopulmonary bypass of the 2 groups were comparable. All patients were followed annually for 10 years.

Results There have been 77 (39.9%) deaths in the CE-SAV group and 94 (45.9%) deaths in the Mosaic group. The 10-year survival in the 2 groups was 60.1% and 54.1% respectively (p= 0.23). There were no statistically significant differences between the 2 groups in terms of structural valve deterioration (SVD) (p= 0.08), endocarditis (p= 0.95), and major bleeds (p= 0.07). However, the incidence of thromboembolism was higher in the CE-SAV group, with 31 occurrences when compared with 19 in the Mosaic group (p= 0.04). Whereas, the incidence of paravalvular leaks and valve-related reoperations were higher in the Mosaic group, with 6 leaks and reoperations when compared to none in the CE-SAV group (p= 0.01).

Conclusion At 10 years post implantation, freedom from reoperation was higher in the CE-SAV group. In the Mosaic group, the thromboembolism was less but there were more paravalvular leaks, emphasising the need for vigilance with any prosthetic design change which might bring benefits in one area at the expense of detriment in another. There were no other statistically significant differences between CE-SAV and Mosaic aortic prostheses.

Presenter: **Miss Gill Hardman**, *Cardiothoracic Specialist trainee, Lancashire Cardiac Centre*

Surgical education in heart valve disease and the role of the BHVS A228

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Presenter: **Prof John Pepper**, *Consultant Surgeon, Royal Brompton Hospital*

The decellularized aortic root replacement A229

Authors J Pepper¹;

¹ Royal Brompton Hospital, UK

Presenter: **Mr Jan Federspiel**, *Medical Student, Scottish paediatric cardiac service*

Surgical repair for anomalous drainage of right pulmonary veins in paediatric population: impact of surgical techniques on superior vena cava inflow A323

Authors J Federspiel³; S Das DeM Danton²; A McLean²; K McArthur²; E Peng²;

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Objective Anomalous drainage of right upper pulmonary vein into the right atrium occurs typically in proximity to the superior vena cava (SVC). Conventional surgical repair (non-Warden: Single patch technique and one patch technique with and without SVC augmentation) is associated with concern of SVC narrowing, hence translocation into right atrial appendage (Warden-type procedure) is preferred in some centres. Our study assesses the impact of surgical approaches on the need of re-intervention on SVC inflow at long-term follow-up.

Methods This is a retrospective observational analysis of a single institutional experience spanning over 23 years (07/93 to 02/17) in paediatric population (N=42, median age 3.9 years, range 0.1-15.3 years). There were no statistical significant differences in terms of age (p=0.21) and weight (p=0.58) between non-Warden (N=9, median age 3.9 years, weight 17.2kg) and Warden (N=9, median age 3.9 years, weight 15.9kg) group. Patients with associated complex congenital intra-cardiac anomalies were excluded. All statistical analysis performed with STATA v12® (t-test/Mann-Whitney-U-test for continuous variables, Chi-Square/Fisher exact test for categorical variables, Kaplan-Meier and log rank analysis for evaluating freedom from re-intervention on SVC).

Results All patients were alive at last follow-up (mean 7.2 years, range 0-23 years). One (3%) in non-Warden required re-intervention and one (11%) patient in Warden needed re-intervention twice (at 6, 17-month post-op). All re-interventions involved balloon angioplasty of the SVC without stent. No other re-intervention (for ASD or pulmonary vein) was required. Overall freedom from re-intervention at 10 and 20-year is 95% (97% at 10 and 20-year in non-Warden and 89% at 5 and 8-year in Warden group; log-rank p=0,34).

Conclusion Long-term freedom of re-intervention on the superior vena cava in the non-Warden group is non-inferior compared to the Warden patients with lower trend of re-intervention.

Presenter: **Dr Allan Goldman**, *Great Ormond Street Hospital*

Quality control in PICU and maximising patient flow A276

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Presenter: **Mr Nigel Drury**, *Consultant, Birmingham Children's Hospital*

Clinical research in paediatric cardiac surgery in the UK - an update A284

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Presenter: **Mr Mark Field**, *Consultant Surgeon, Liverpool Heart Centre*

Aortic service experience and viewpoint A285

Authors M Field¹;

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Objective test

Presenter: **Ms Claudia Gutierrez**, *Medical Student, Mayo Clinic*

The use of Alloderm in general thoracic surgery: applications and outcomes A315

Authors C Gutierrez¹; V Joshi²; M Allen²; S Blackmon²; S D Cassivi²; F Nichols²; R Shen²; D Wigle²;

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Objective Prosthetic material is sometimes used to repair defects in the thoracic cavity, such as in the airway or diaphragm. One such material that can be used for this purpose is Alloderm®, a commercially available decellularized cadaveric dermis. We wished to explore our own institution's experience with Alloderm® over the past 14 years and analyse our results.

Methods We retrospectively reviewed patient records between July 2003 and June 2017. Patient demographics, indication for surgical intervention, location of patch use, clinical outcomes and complications were attained. Ethical and research approval was attained by our own Institutional Review Board.

Results There were a total of 54 implants of Alloderm® between July 2003 and June 2017 in 49 patients. Indications for implantation were; airway repair (29%, n=16), foregut repair (15%, n=8), diaphragm repair (26%, n=14), chest / abdominal wall closure (13%, n=7), and miscellaneous (17%, n=9). In 71% (n = 35) of patients, cancer was the primary pathology and indication for primary surgical intervention. The in-patient and out-patient complication rate directly related to Alloderm® for each category was: airway (25%, 6%), foregut (0%, 62.5%), diaphragm (0%, 21%), chest/abdominal wall (0%, 14%) and miscellaneous repairs (0%, 0%), respectively. There were two inpatient deaths, both of which were in patients with significant airway defects on mechanical ventilation.

Conclusion Alloderm® can be successfully used for a variety of reconstructive procedures as demonstrated by this cases series. Airway reconstructions resulted in the highest in-patient complication rate which is likely a reflection of their critical state at the time of implantation.

Presenter: **Miss Kyrie Wheeler**, *Medical Student, Nottingham University*

ABO-incompatible paediatric heart transplantation without the use of exchange transfusion A321

Authors K Wheeler¹;

¹ Nottingham University, UK

Objective Since 2001, ABO-incompatible paediatric heart transplantation has been undertaken using complete exchange transfusion to remove recipient antibodies and prevent acute rejection (West, et al. 2001). This mandates exposing patients to multiple units of red blood cells, fresh frozen plasma and platelets totalling three times their circulating volume, which can result in fluid overload, low blood pressure when carrying out the transfusion and sensitization, which is associated with reduced long-term graft survival.

Methods A new method was developed to remove antibodies from the recipients' blood using an immunoabsorption column incorporated into the cardiopulmonary bypass circuit before re-perfusion of the donor heart (figure 1) therefore eliminating the need for exchange transfusion. A pilot study (figure 2) showed that the method removed a constant and predictable quantity of antibodies; the technique has now been used in several patients (Robertson, et al. 2017).

Results An ABO group B heart was accepted for an 11.5kg, 4-year-old ABO group A patient with end-stage dilated cardiomyopathy. The recipients' IgM anti-B antibody titres pre-bypass was 8:1. To calculate the length of time required to remove anti-B antibodies from the plasma the following formula was used: With each pass of the plasma volume (PV) through the column, the antibody titre dropped by one-fold, so three passes were undertaken before re-perfusing the donor heart. The operation proceeded smoothly, and routine immunosuppression was used. The patient made an uncomplicated recovery and remains well a year later with no rejection episodes.

Conclusion Immunoabsorption column can be used as an alternative to the transfusion exchange in mismatch heart transplants.

Presenter: **Mr Jonathan Strickland**, *Medical Student, University of Aberdeen*

High fidelity simulation of left ventricular loading conditions to test patch repair techniques for ventricular septal rupture A318

Authors J Strickland²; K Buchan¹;

¹ Aberdeen Royal Infirmary, UK; ² University of Aberdeen, UK

Objective One of the most detrimental outcomes of myocardial infarction is Ventricular Septal Rupture causing a left to right shunt. Surgical repair of such defects, by the David's or Daggett's patch technique, carries an in-hospital mortality of 20-40%, due to suture lines pulling through infarcted, insubstantial myocardium. This study postulated that, since the papillary muscles are less frequently affected by the infarct, one could anchor

the patch to them for a stronger repair. With limited data on this topic, this study was carried out with a sample size of n=14 to act as a pilot and feasibility study aiming to inform a full investigation.

Methods A high fidelity simulator was created by use of porcine hearts pressurised by a cardiopulmonary bypass machine (see figure 1). Defects were made in accordance with known areas of septal weakness, outlined in previous studies, and patched in either a standard Daggett's technique or anchored to the medial papillary muscle. The left ventricle was then sealed by over sewing the aorta, ligating the coronary arteries and patching the left atrium prior to pressurisation. Leak rate through the defect was calculated by recording the volume passing through it in a five minute period.

Results The results showed a difference in median leak rate between the two techniques to be 0.132L/min (p=0.286) in favour of the papillary approach. This was not statistically significant despite representing a difference in leakage of around 50%. A sample size for a full study was determined to be n=62 for 80% statistical power.

Conclusion This study demonstrates the need for further investigation, with a sample in excess of 31 hearts per arm, as it appears possible that the papillary approach offers a degree of superiority, despite not being demonstrated statistically on this occasion. In addition to informing a further investigation, this study outlines the feasibility of using high fidelity simulation for investigating these, and potentially other, surgical techniques.

Presenter: **Miss Cristina Kinsella**, *Medical Student, University of Birmingham*

Scimitar syndrome: presentation, management and outcomes A324

Authors C Kinsella³; N Khan¹; J Stickley¹; N E Drury¹; S Bowater²; L E Hudsmith²; S A Thorne²; O Stumper¹; D J Barron¹; P Botha¹; T J Jones¹; P F Clift²;

¹ Birmingham Children's Hospital, UK; ² University Hospital Birmingham, UK; ³ University of Birmingham, UK

Objective To evaluate the long-term outcomes of patients diagnosed with Scimitar syndrome in two tertiary referral centres from 1988-2017.

Methods Data was collected retrospectively using medical records. Scimitar syndrome was defined as a right hemi anomalous pulmonary venous connection to the Inferior Vena Cava.

Results Twenty-seven patients were diagnosed with Scimitar syndrome. Three subgroups emerged: 'Early Scimitars' (n=6), 'Stable Scimitars' (n=8) and 'Surgical Scimitars' (n=13) (table). Early Scimitars (median age at diagnosis 30 days) presented with severe respiratory distress; most had associated severe non-cardiac defects (n=5). There was 100% mortality within the first year in this sub-group, with (n=4) or without (n=2) surgical correction. Of the Stable Scimitars (median age at diagnosis 10 months), 6/8 had a collateral arterial supply to the right lung (75%) and 5/8 (69%) were symptomatic. In symptomatic patients with a collateral arterial supply (n=4), coil embolisation of the collateral arterial supply abolished symptoms in 50% of cases (n=2). Of the Surgical Scimitars (median age at diagnosis 16.1 years), 9/13 (69%) underwent surgical repair of their Scimitar vein (baffle: n=6, re-implantation: n=3), 2/13 are awaiting surgery, and 2/13 are at present conservatively managed. Following surgery one patient was lost to follow up. Four patients (50%) developed post-operative complications (right

phrenic nerve palsy: n=1, pulmonary embolus: n=1, atrial flutter: n=1; one complex patient: stroke, pneumothorax, pleural effusion and haemoptysis). Two developed Scimitar vein stenosis (25%). There was one late post-operative death (13%).

Conclusion There is a high mortality in Early Scimitars. Stable Scimitars may benefit from coil embolisation and should be conservatively followed up. Due to the significant risk of complications, surgical correction should be reserved for the symptomatic and those developing co-morbid disease (increasing right ventricular dilation, arrhythmia).

Presenter: **Miss Nikita Maria**, *Medical student, University of Birmingham*

Understanding the morphology of transposition: anatomical risk factors for current surgical treatment A325

Authors N Maria²; M Roderick²; A Crucean¹; T Jones¹;

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Objective Few high-quality morphological studies examine the anatomical features of heart specimens with transposition of the great arteries (TGA). Morphological studies allow unparalleled insight into anatomy, and are not limited by imaging or intra-operative findings. When combined with clinical studies, they can demonstrate the relationship between anatomy and patient outcomes. This archive contains many unoperated hearts, providing a great tool for teaching and research.

Methods The incidence of morphological variants was investigated, and findings were compared with other archives and clinical data. Detailed analysis was performed on a large number of heart specimens with an emphasis on an objective approach. Various features impacting the surgical treatment were examined including: coronary pattern, outflow tract obstruction (OTO), and ventricular septal defects (VSDs).

Results Overall, 142 TGA specimens (67 with VSDs) were examined. In total, 17 different coronary patterns were encountered: eight hearts with a single coronary and five with dual origin from a single sinus. Intramural was present in 17 hearts and OTO in 68 hearts: 49 displayed right-sided OTO and 36 displayed left-sided OTO. The frequency of VSD phenotypes was: 59.7% perimembranous, 17.9% muscular, 4.4% doubly-committed, and 17.9% non-classifiable. In contrast, the clinical database had a higher incidence of muscular defects (44.2%).

Conclusion The incidence of both intramural coronaries and perimembranous VSDs was higher relative to other archives. The incidence of left and right-sided OTO was higher than other morphological papers, and significantly higher than clinical papers. By comparing morphological findings with clinical data, the impact of anatomy on patient outcomes can be better understood.

Presenter: **Miss Nikita Punjabi**, *Medical student, St George's, University of London*

Cardiovascular structural and functional changes after kidney transplantation A319

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Objective Cardiovascular (CV) event rates are high in chronic kidney disease (CKD) patients. CKD is an independent risk factor for coronary artery disease (CAD) as well as adverse outcomes during cardiac and non-cardiac surgery. This CV risk improves with kidney transplantation but despite this, those patients still have a significantly increased CV risk that is 50 times greater than the general population. Additionally, the longer-term cardiovascular structural and functional changes with kidney transplantation are poorly understood which this study prospectively investigates.

Methods 24 non-diabetic, live-donor kidney transplant patients (20 dialysis and 4 pre-dialysis, mean age 45±13 years, 75% male, 75% Caucasian) completed baseline (6 months before transplant) measurements. These included a detailed echocardiogram and a vascular endothelial function investigation using brachial artery flow-mediated dilatation (FMD) conducted together with routine blood and clinical examinations. Patients were followed up with the same investigations in the short-term (9 patients, 8±0.5 months) and longer-term (17 patients, 28±6 months).

Results Left ventricular mass (LVM) regressed (208±82g to 178±63g) and ejection fraction (EF) improved (59±9% to 69.5±9%) over time, significantly in the longer-term after transplantation (Figure 1). No significant changes were observed in FMD; however, a significant improvement was observed in nitroglycerin-mediated dilatation (NMD) (10±6% to 15±5.5%, p=0.022). Higher NMD values at baseline were correlated with greater improvement in LVM index at follow up (p=0.009).

Conclusion Cardiac structure and function significantly improves in the longer-term with kidney transplantation, likely indicating lower risk of CAD. The improvement in cardiac structure could be related to improvement in vascular distensibility.

Presenter: **Prof Enrico Ruffini**, *Associate Professor, Thoracic Surgery, University of Torino*

Management of benign mediastinal masses A379

Authors E Ruffini¹;

¹ University of Torino, Italy

Presenter: **Prof Jianxing He**, *Guangzhou Medical University*

Airway surgery in spontaneously breathing patient A258

Authors J He¹;

¹ Guangzhou Medical University ,

Objective

Presenter: **Prof Jianxing He**, *Guangzhou Medical University*

Current technological advances in thoracoscopic surgery *A403*

Authors **J He**¹;

¹ Guangzhou Medical University ,

Presenter: **Prof Stephen Cassivi**, *Professor of Surgery, Mayo Clinic*

Technology for patient benefit - The Mayo Model *A402*

Authors **S Cassivi**¹;

¹ Mayo Clinic, United States

Presenter: **Gary Middleton**, *University Hospital , Birmingham*

Update on advanced systemic treatment for lung cancer *A158*

Authors **G Middleton**¹;

¹ University Hospital , Birmingham,

Presenter: **Oliver Thorn**, *Armed Forces Para Snowsports Team*

The multidisciplinary team from the patient's perspective *A429*

Authors **O Thorn**¹; J Hull²;

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Presenter: **Gary Middleton**, *University Hospital , Birmingham*

Update on the important oncological trials in thoracic cancers - TracerX and Matrix *A249*

Authors **G Middleton**¹;

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Objective

Methods

Results

Conclusion

Presenter: **Mr Rana Sayeed**, *Consultant Cardiac Surgeon, Oxford University Hospitals NHS Foundation Trust*

We need a UK trial in asymptomatic mitral disease *A377*

Authors **R Sayeed**¹;

¹ Oxford University Hospitals NHS Foundation Trust, UK

Presenter: **Mr Mustafa Zakkar**, *SPR, 20*

Hunterian Lecture: NF-kB classical pathway activation by acute high shear stress and vascular inflammation: implication for vein graft failure *A378*

Authors **M Zakkar**¹;

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Objective

Presenter: **Miss Urszula Simoniuk**, *Registrar, Heart and chest liverpool hospital*

Past achievements and future challenges of the CTRC *A192*

Authors **U Simoniuk**¹;

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Objective

Presenter: **Dr Graeme Hickey**, *Research Associate, University of Liverpool*

Risk: a statistician's viewpoint *A193*

Authors **G Hickey**¹;

¹ University of Liverpool, UK

Presenter: **Mr Stuart Grant**, *ST5, North West Deanery*

What do surgeons need to know about risk prediction *A194*

Authors S Grant¹;

¹ North West Deanery, UK

Presenter: **Dr Alexandra Freeman**, *Executive Director, Winton Centre for Risk and Evidence Communication, University of Cambridge*

Risk communication and its effects on perception *A195*

Authors A Freeman¹;

¹ Winton Centre for Risk and Evidence Communication, University of Cambridge,

Presenter: **Dr Julie Sanders**, *Director of Clinical Research, St Bartholomew's Hospital*

SCTS Nursing and AHP Research Group Launch *A298*

Authors J Sanders¹;

¹ St Bartholomew's Hospital, UK

Presenter: **Miss Noirin Kearney**, *Staff Nurse, BHSCT*

Observation of ANP practice at Liverpool Heart and Chest Hospital and Blackpool *A295*

Authors N Kearney¹;

¹ BHSCT, UK

Presenter: **Mrs Rachel Brown**, *Thoracic ANP, The Mater Misericordiae University Hospital*

Enhanced recovery programmes after Thoracic Surgery, particularly in respect of lung volume reduction surgery and pacts programmes *A296*

Authors R Brown¹;

¹ The Mater Misericordiae University Hospital, Ireland

Presenter: **Miss Louise Best**, *Advanced Nurse Practitioner, Royal Sussex County Hospital*

Innovations and best practice - UK and USA A297

Authors **L Best**¹;

¹ Royal Sussex County Hospital, UK

Presenter: **Mr Wil Woan**, *CEO, Heart Valve Voice*

Heart Valve Voice A428

Authors **W Woan**¹;

¹ Heart Valve Voice, UK

Presenter: **Dr D J Slebos**, *Interventional Pulmonologist, Groningen University Medical Center, NL*

Endobronchial valves: Current evidence and tips A162

Authors **D Slebos**¹;

¹ Groningen University Medical Center, NL,

Presenter: **Prof Martin Hetzel**, *Krankenhaus vom Roten Kreuz Bad Cannstatt Stuttgart*

Endobronchial coils : current evidence and tips A163

Authors **M Hetzel**¹;

¹ Krankenhaus vom Roten Kreuz Bad Cannstatt Stuttgart ,

Presenter: **Mr Ira Goldsmith**, *Consultant, Cardiothoracic Surgical Unit*

Improving lung cancer resection rates in Wales A442

Authors **I Goldsmith**¹;

¹ Morriston Hospital, UK

Presenter: **Mr Doug West**, *Thoracic Surgeon, University Hospitals Bristol*

Data from the SCTS third national outcomes report in thoracic surgery A443

Authors **D West**¹;

¹ Bristol Royal Infirmary, UK

Presenter: **Dr Colin Selby**, *Consultant Respiratory Physician, Sth.East Scot.Lung Cancer Network*

The Scottish QPI programme in lung cancer: implications for thoracic surgery *A444*

Authors **C Selby**¹;

¹ Clinical Lead, South East Scotland Lung Cancer Network,

Presenter: **Miss Helen Weaver**, *Specialty Registrar, Glenfield Hospital*

Interesting cases *A164*

Authors **H Weaver**¹;

¹ Glenfield Hospital, UK

Presenter: **Prof Jianxing He**, *Guangzhou Medical University*

Non Intubated thoracic surgery *A144*

Authors **J He**¹;

¹ Guangzhou Medical University ,

Objective

Presenter: **Prof Alan Kirk**, *Consultant Thoracic Surgeon, SCTS*

A day in the life of a thoracic surgeon *A309*

Authors **A Kirk**¹;

¹ Golden Jubilee Nationl Hospital, UK

Presenter: **Mr Andrew McLean**, *Congenital Heart Surgeon, Royal Hospital for Children, Glasgow*

A day in the life of a paediatric cardiothoracic surgeon *A311*

Authors **A McLean**¹;

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Presenter: **Miss Betsy Evans**, *Consultant Cardiac Surgeon, Leeds General Infirmary*

A day in the life of a cardiac surgeon *A312*

Authors **B Evans**¹;

¹ Leeds General Infirmary, UK

Presenter: **Mr Ahmed Al-Adhami**, *Specialty Registrar, Golden Jubilee National Hospital*

Getting into and training in Cardiothoracic Surgery *A313*

Authors **A Al-Adhami**¹;

¹ Golden Jubilee National Hospital, UK

Presenter: **Mr Tomaz Stupnik**, *Thoracic Surgeon, University Medical Centre Ljubljana*

Ethicon VATS Simulation lab *A15552*

Presenter: **Prof Thorsten Hanke**, *Cardiac Surgeon, Asklepios Klinikum Harburg*

Haemodynamics *A159*

Presenter: **Dr Catherine Szymanski**, *Cardiologist, Paris*

Patient-prosthesis mismatch *A160*

Presenter: **Mr Kulvinder Lall**, *Consultant & Clinical Lead Cardiac Surgery, Barts Health NHS Trust*

Trifecta valve durability *A161*

Presenter: **Mr Inderpaul Birdi**, *Consultant Cardiothoracic Surgeon, Essex Cardiothoracic Centre, Basildon*

Metronome of valve repair and replacement therapies, since the 60s *A15762*

Presenter: **Mr Michael Sabetai**, *Thoracic Surgeon, Guys' and St. Thomas' Hospital*

Enhanced and reproducible MIAVR: EDWARDS INTUITY ELITE *A15763*

Presenter: **Prof Olaf Wendler**, *Professor of Cardiac Surgery, Kings College Hospital*

New biological solutions for active patients: INSPIRIS RESILIA aortic valve *A15764*

Presenter: **Mr Neil Moat**, *Consultant, Royal Brompton Hospital*

Emergence of Beating-Heart Mitral Valve Repair: Near Future Perspectives *A15765*

Presenter: **Mr Mylvaganam Jeyakanthan**, *Registrar, James Cook University Hospital*

Repair of inferior left ventricular aneurysm *A15811*

Presenter: **Mr Luke Rogers**, *Cardiothoracic Surgical Trainee,*

Trans-apical valve in ring (VIR) mitral valve implantation through the anterior mitral valve leaflet (AMVL) *A15812*

Presenter: **Dr Per Wierup**, *Staff, Cardiac Surgeon, Thoracic & Cardiovascular Surgery, Cleveland Clini*

Robotically assisted Mitral Valve repair: sliding technique to prevent systolic anterior motion *A15813*

Presenter: **Miss Shubhra Sinha**, *ST4 Cardiothoracic Surgery, Bristol Royal Infirmary*

Repair of a Coronary-Cameral Fistula *A15814*

Presenter: **Mr Vijay Joshi**, *Thoracic Surgery Fellow, Mayo Clinic*

Left upper superior division segmentectomy using PINPOINT® Endoscopic Fluorescence Imaging System *A15815*

Presenter: **Mr Ahmed Habib**, *Cardiothoracic registrar, Castle Hill Hospital*

Left VATS diaphragmatic plication *A15816*

Presenter: **Miss Aleksandra Bartnik**, *Cardiothoracic surgery trainee, Papworth Hospital*

Resection of retrosternal goitre via right thoracotomy *A15817*

Presenter: **Dr Periklis Perikleous**, *Clinical Fellow (SpR), Royal Brompton and Harefield NHS Trust*

Video-assisted thoracoscopic PlasmaJet ablation for malignant pleural mesothelioma *A15818*

Presenter: **Prof Farah Bhatti**, *Morrison Hospital*

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Presenter: **Miss Ann Cheng**, *Medical Student, University of Edinburgh*

Student elective: "I did it my way" *A15843*

Presenter: **Mr Jonathan Ferguson**, *Consultant Surgeon, South Tees Hospital*

Improving learning and professional development for SAS doctors *A15865*

Presenter: **Mr Subir Datta**, *Speciality doctor, MRI*

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Presenter: **Mr Mohamed Zeinah**, *Liverpool and Chest Hospital*

My road to a consultant post *A15869*

Presenter: **Mr Richard Page**, *Consultant Thoracic Surgeon, Liverpool Heart and Chest Hospital*

Address to SAS doctors A15872

Posters

Poster 1 : Chest wall resection and reconstruction for recurrent breast cancer involving chest wall - a single centre multidisciplinary approach

Authors

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Objective

Despite therapeutic advances in the management of breast cancer, 20% patients present with locoregional recurrence and 3% with metastases. Standard treatment includes hormonal, chemo or radiotherapy. However, in selected patients with recurrent breast cancer involving chest wall, multidisciplinary surgical approach could be considered.

Methods

Between 2010 and 2017, 20 patients with recurrent breast cancer involving chest wall were treated with resection and reconstruction. Median age of the patients was 56 years (range 29-79). 12 patients had local recurrence involving the chest wall and 8 patients had distant metastasis to chest wall or internal mammary lymph nodes.

Results

17 patients underwent bony resection of varying components of chest wall including sternum and ribs. 3 patients required extensive soft tissue resection with periosteum and partial thickness rib resection. 16 patients (80%) were treated with chemotherapy prior to surgery. 11 patients with bony chest wall defect underwent reconstruction using marlex-methylmethacrylate composite prosthesis, titanium plates or biological mesh. In all patients, reconstruction was complemented with soft tissue cover utilizing regional, distant and free tissue flaps. 5 patients were electively ventilated overnight in intensive care; rest were extubated and managed on high dependency unit. All flaps survived except 2 that required revision. 2 patients experienced late superficial infection. There were no in hospital mortality following surgery. 8 patients died; 7 were due to distant metastases. At a mean follow up of 23 months, the average survival in patients operated for local recurrence is 51.7 months (95% CI 37.7 to 65.7) and 24.5 months (95% CI 7.3 to 41.7) for patients with distant metastatic recurrence.

Conclusion

Multidisciplinary oncoplastic approach for recurrent breast cancer which includes chest wall resection and reconstruction is useful adjunct in selected group of patients. This improves local disease control, symptoms and possibly disease free survival.

Poster 3 : Outcomes of concomitant surgical ablation for atrial fibrillation in patients undergoing Cardiac Surgery: a 3-Year, single surgeon's experience

Authors

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Objective Recent clinical guidelines support the safety and benefit of concomitant surgical AF ablation, to restore sinus rhythm (SR). To investigate this, we performed a single surgeon's data analysis to evaluate the outcome of concomitant surgical AF ablation using radiofrequency and cryoablation probes.

Methods From December 2014 to October 2017, 36 patients with AF underwent concomitant surgical AF ablation. To evaluate the outcomes of AF ablation, we assessed the immediate documentation of SR post operatively. Follow up rhythm assessment was based on a 6-week outpatient electrocardiogram (ECG), followed by 24-hour Holter ECG assessment at 3 and 6 months post-operatively and another outpatient assessment at 1 year. We also assessed use of class I or III antiarrhythmic drugs; Amiodarone, and anticoagulants; warfarin or direct oral anticoagulant. Rhythm outcome predictors such as left atrial (LA) size were recorded from pre-operative echocardiograms.

Results Mean patient age was 69.6±7.0 years, and 19 (52.8%) were males. The overall rate of maintenance in SR (with or without antiarrhythmic drugs) was 76.9% and 82% and 80% at 3 months, 6 months and 1 year, respectively (Fig1). Of all the patients in SR at 6 months, only 5.2% of these were also on antiarrhythmic medication; the remaining 94.7% were not. 77.8% of patients maintained in SR at 6 months not on antiarrhythmic medication, were also not on anticoagulant therapy. No significant difference in the rate of conversion to SR between patients with persistent and paroxysmal AF (80% vs 87%;P=0.5) was found. Neither LA diameter (P=0.27) nor immediate postoperative SR (P=0.40) significantly influenced SR at 6 months.

Conclusion Concomitant surgical ablation of AF is a useful treatment. Contrary to previous reports, LA diameter does not influence AF recurrence and subsequent need for antiarrhythmic medication. These results corroborate the 2017 recommendations of the HRS consensus statement. We aim to investigate other possible predictors in our analysis.

Poster 4 : Aortic valve replacement for aortic stenosis and severe LV dysfunction - retrospective single institution analysis

Authors

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Objective Surgical aortic valve replacement for aortic stenosis in the context of severe left ventricular systolic dysfunction is an area of evolving practice. Improvement in surgical technique has led to significant reduction in mortality and morbidity. Surgery has been performed in patients with severe LV dysfunction with contractile and without contractile reserve. Numerous observational studies have shown a survival benefit compared to medical management alone. Surgery has been performed successfully in patients with severe aortic stenosis and no contractile reserve with a mortality and functional benefit.

Methods Retrospective collection of data since 2001 of all patients who underwent surgical aortic valve replacement for aortic stenosis in context of severe LV dysfunction at our institution. Data was collated through the database cardiac database with the matched fields. The primary endpoint analysed was mortality. Secondary endpoint analysed was symptomatic improvement in terms of NYHA class dyspnoea status measured pre-and-post operatively. Exclusion criteria included patients who underwent concomitant cardiac procedures or where the predominant lesion was aortic valve regurgitation.

Results 97 patients were identified within the database between the specific timeframe (2001-2016). Statistical analysis demonstrated that at 50% of the operated cohort were still alive on the Kaplan Meier survival curve. Furthermore, there was a statistically significant difference between pre-and-post operative NYHA dyspnoea status as reported by the patients during follow-up

Conclusion Severe aortic stenosis with severe left ventricular dysfunction is a difficult condition to manage with management options including medical management, transcatheter aortic valve implantation and surgical aortic valve replacement. Our institution experience demonstrates that surgery can be performed in this cohort with good long-term survival benefit and improved functional status.

Poster 5 : Surgical aortic valve replacement in class II to III obese patients still significantly improves symptom status: a retrospective cohort study

Authors

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Objective Aortic stenosis (AS) is the most common valvular heart disease in the developed world. Its impact on public health is expected to increase due to aging populations. Rising obesity rates are an independent trend, with 27% of UK adults currently considered obese. Obese patients are at higher risk of cardiorespiratory disease, often with multifactorial causes of breathlessness. When coupled with AS, it may be difficult to unpick the extent to which valvular disease contributes to their symptoms, and whether surgery would improve them.

Methods We performed retrospective analysis of patients with BMI<35 who underwent primary elective sAVR at a single centre between 02/2015-11/2016. The Wilcoxon test was used for non-parametric paired

dependent data to compare pre- and post-operative NYHA classification. The p-value was set at <0.05 with 95% confidence intervals.

Results 58 patients were identified, of whom 6 received mechanical prostheses. The mean BMI was 38.9kg/m² (SD3.7), logistic EuroSCORE was 7.22% (SD6.69) and aortic valve area was 0.82cm² (SD0.18). 21 patients had a recorded smoking history and 21 a respiratory co-morbidity (including obstructive sleep apnoea, asthma, COPD and bronchiectasis). Of these, 3 underwent pulmonary function testing. NYHA classification improved significantly post-operatively (p<0.0001, Z -5.59). 4 patients were asymptomatic: all had preserved left ventricular function and experienced no change in symptom classification. Unfortunately, one patient died within 30 days, with two further deaths after this period.

Conclusion In this small sample, patient selection for sAVR was in line with 2017 ESC/EACTS guidelines and we achieved an improvement in symptom status by operating. We therefore propose a prospective cohort study comparing the size of this effect with that of a population of patients with normal BMI. An improved understanding of the impact of obesity on this quality of life surrogate will enhance pre-operative counselling in this demographic.

Poster 6 : Clinical outcomes of minimal access aortic valve replacement in octogenarians

Authors

S S Sharma¹; J George¹; U Aslam¹; Y Ahmed¹; P Kumar¹;

¹ Morrision Hospital, Swansea, UK

Objective Aortic valve stenosis is the most common acquired valve lesion among octogenarians in the Western societies. The UK octogenarian population is set to double from 2.5 million currently to 5 million by 2030. Partial sternotomy aortic valve replacement (mini-AVR) leads to reduced surgical morbidity, reduced blood transfusion requirements, less post-operative pain and quicker recovery by maintaining sternal integrity. We assessed the clinical outcomes of the mini-AVR undertaken in our octogenarian population.

Methods All patients undergoing isolated aortic valve replacement by partial sternotomy were extracted from a prospectively entered database between 2006 and 2017. Patient demographics, pre-morbid status, operative details and clinical outcomes were evaluated. A Kaplan-Meier survival curve was plotted over five years.

Results 235 mini-AVRs were undertaken between Mar 2006 and Aug 2017, out of which 61 patients (26%) were aged 80 or above. The mean age was 84 years (range 80-91 SD 3), female 63%, diabetes mellitus 10%, pulmonary disease 22%, poor LV function in 7%, moderate in 17% and good LV in 76% of the cases. Logistic EuroSCORE was 13.3 (interquartile range 8-15, SD 9). Overall in-hospital and 30-day mortality, stroke, re-exploration rate, conversion to full sternotomy was 0%. Renal failure requiring dialysis was 1.6% (1/61), and

permanent pacemaker rate was 1.6%. Blood transfusion was not required in 46% of patients. More than 80% of patients survived greater than 5 years.

Conclusion Despite high logistic Euro SCORE and high predicted operative risk, we have shown excellent results in octogenarians by this approach. In this era of transcatheter aortic valve implantation, mini-AVR adds to the armamentarium of the surgical team when evaluating the intervention options for severe aortic stenosis in the octogenarian population.

Poster 7 : Surgery through a minimally invasive upper hemi-sternotomy. The effect of surgeon experience.

Authors

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Objective To compare outcomes of patients undergoing surgery through an upper hemi-sternotomy (UHS) by surgeons with different levels of experience.

Methods Data on all patients undergoing surgery through an upper hemi-sternotomy between April 2011 and April 2017 were analysed. Three groups were created. Group 1 were patients operated on by a surgeon with more than 10 years experience in minimal access surgery prior to the data period. Group 2 were patients operated on by newly appointed Consultant surgeons and Group 3 were patients operated on by senior trainees who had never performed minimal access surgery previously. Demographic, procedural and outcome data were compared.

Results A total of 329 patients underwent surgery through an UHS. There were 152 patients in Group 1, 115 in Group 2 and 62 in Group 3. All three groups were comparable with regards to age, gender, ejection fraction and peak gradient. Mean logistic EuroSCORE of Group 1 was 6.60 and significantly higher than Group 2 at 4.80 ($p = 0.01$), and Group 3 at 4.55 ($p = 0.03$). The proportion of patients with aortic stenosis was higher in Group 1 (126pts, 82.9%) and Group 2 (96pts, 83.5%) compared to Group 3 (46pts, 74.2%). There were 6 deaths in total, 4 (2.6%) in Group 1, 1 (0.9%) in Group 2, and 1 (1.6%) in Group 3 but no difference in mortality rates between the subgroups ($p = 0.56$) using Kaplan-Meier analysis. There was also no difference in stroke ($p = 0.21$) and PPM ($p = 0.12$) rates between Groups.

Conclusion Trainees start learning surgery through a UHS with lower risk patients and less calcified valves, but perform the surgery safely. These results suggest that the learning curve in training with surgery through a UHS is minimal and does not affect patient outcome.

Poster 8 : Early clinical results of Perceval suture-less aortic valve in 139 patients: Freeman experience

Authors

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Objective The aim of this retrospective study is to evaluate the safety and performance of the Perceval sutureless valve in patients undergoing aortic valve replacement (AVR). We report the 30-day clinical outcomes of 139 patients.

Methods From January 2014 to December 2026, 139 patients underwent suture-less aortic valve replacement. Their operation notes, National adult cardiac surgery database and per operative TOE findings were studied retrospectively.

Results 92 patients underwent isolated aortic valve replacement (group A) with Perceval valve and 47 patients had combined procedures of AVR and coronary artery bypass grafting (group B). The patients received a size S (n=23), M (n=39), L (n=42) or XL (n=35) prosthesis. Perceval valve was successfully implanted in 135 patients (97.1%). Mean cross clamp and bypass time was 40 and 63 minutes for isolated cases, while it was 68 and 107 minutes for combined cases. 3 patients (2.1%) died within 30 days. 4 patients suffered stroke and 5 patients went into acute renal failure. Median ICU and hospital stay was 2 and 8.5 respectively. 4 valves were explanted due to significant para-valvular leak after surgery. 5 patients had permanent pacemaker as a result of complete heart block and mean post-operative drainage was 295 ml for isolated case and 457 ml for combined cases. The mean gradient across Perceval valve was 12.5 mmHg while its effective orifice area was 1.5 cms².

Conclusion Early post-operative results showed that Perceval valve is safe. Further follow up is needed to evaluate the long-term outcome with this bio-prosthesis.

Poster 9 : Sutureless Aortic Valve Replacement is associated with reduced stroke volume index as compared to Conventional Stented Prostheses

Authors

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Objective Padoxical low flow (LF), defined as stroke volume index (SVi) below 35 ml/m² is associated with a negative prognosis after aortic valve replacement (AVR) in patients with severe aortic stenosis (AS) and preserved ventricular function. We report the post-operative hemodynamics in propensity-matched patients with

both pre-operative low and normal flow, undergoing AVR with a Perceval sutureless valve (PSV) or by conventional stented valves (CSV).

Methods The cardiac surgery database was interrogated for all patients undergoing AVR for severe AS and preserved left ventricular (LV) function between 2014 and 2017. Of these 432 patients, a cohort of 29 consecutive patients who underwent AVR with PSV were propensity-matched with patients who had CSV. Preoperative patient characteristics, operative details, echocardiographic data and post-operative hemodynamics were analysed.

Results The two groups of patients were well matched. Paradoxical LF AS was detected pre-operatively in 35.0% of PSV and 42.3% of CSV patients. The median pre-operatively SVi in the PSV group and CSV group was 37.8 ± 10.5 ml/m² and 34.2 ± 9.5 ml/m² respectively ($p=0.42$). There were no perioperative deaths. No patient had an outflow tract procedure. The pre-discharge ventricular function in both groups was preserved. Postoperative persistent or new-onset LF was more prevalent in the PSV group compared with the CSV group with a prevalence of 47.4% and 34.7% respectively. LV function remained unchanged in both groups.

Conclusion In patients with severe AS and preserved LV function AVR with PSV is associated with a higher incidence of persistent or new onset LF compared with CSV. Close follow up is crucial to determine if this difference persists over time and whether it translates into different adverse long-term outcomes.

Poster 10 : The Perceval Sutureless Bioprosthesis – The King’s Experience

Authors

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¹ King's College Hospital, London, UK

Objective Analysis of our experience and results with the use of the Perceval sutureless bioprosthesis.

Methods We retrospectively analysed our records, from September 2013 till October 2017. Using electronic case notes and local PATS database we extracted data including pre-operative demographics, EuroSCORE, and post-operative major adverse cardiovascular and cerebrovascular events.

Results We performed 89 cases (65 male), mean age was 78.2 ± 6.7 , mean logistic EuroSCORE was 14.7 ± 4.6 . The operations performed were isolated AVR in 49 (55%), AVR+CABG in 40 (45%) and in the isolated AVR cohort 32 (65%) were performed via mini-sternotomy. Mean cardiopulmonary bypass time was 83.5 ± 14.2 and mean aortic cross clamp time was 48.6 ± 13.7 . There was 1 (1.1%) in-hospital mortality. There were 3 (3.4%) re-explorations for bleeding. There was 1 (1.1%) permanent pacemaker insertion. There was 1 (1.1%) mild and 3 (3.4%) trivial paravalvular leaks on post-operative echocardiography. On long-term follow up, there was 1 (1.1%) incidence of prosthetic valve infective endocarditis; 1 (1.1%) incidence of cerebrovascular accident; 1 (1.1%) moderate, 2 (2.2%) mild and 2 (2.2%) trivial paravalvular leaks on follow-up echocardiography. Post-operative

valve gradients were 9.63 ± 4.35 mmHg (mean) and 19.59 ± 8.46 mmHg (peak). The median length of hospital stay was 6 days.

Conclusion Our results demonstrate the excellent safety and haemodynamic performance of the Perceval sutureless bioprosthesis in this elderly patient cohort.

Poster 11 : Three years single experience with Rapid deployment aortic valve: what we have learned?

Authors

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Objective To assess the major outcomes after the implantation of Rapid deployment aortic valve and to evaluate the post-operative grade of left ventricular remodelling.

Methods From July 2014 to date, 152 consecutive patients (mean age 78.17 ± 6.9 years, mean logistic EuroSCORE 10.5 ± 7.9) underwent aortic valve replacement (AVR) with Intuity Elite Sutureless Valve System via full or minimally invasive approach (mini-sternotomy or minitoracotomy). Mitral valve surgery or coronary artery by-pass graft were concomitant procedures in 63 patients (41.5%).

Results In-hospital mortality was 4% (one patient post-AVR and six post AVR plus other surgery). Octogenarians constituted 51.3% of the cohort. The mean aortic cross clamping time was 57.0 ± 24.7 minutes, significantly lower for isolated AVR, 46.0 ± 18.4 minutes, than for AVR plus other concomitant procedures, 72.1 ± 24.3 minutes, $p < 0.05$. The mean hospital stay was of 11.3 ± 8.1 days, lower for patients underwent minimally invasive treatment than full sternotomy (median 7 (IQR 5) vs 8 (IQR 7)). The Mean post-operative effective orifice area index (EOAi) was 0.93 cm²/m². The incidence of permanent pacemaker implantation was 6.73% (n=7). No para-valvular leakage was observed. Left ventricular mass index (LVMI) was reduced significantly at follow-up, when compared to pre-operative (125.3 vs 106.6 g/m²).

Conclusion Aortic valve replacement with Rapid deployment valve provides satisfactory hemodynamic results at mid-term follow-up. The mean value of the EOAi and the mean aortic gradient seem to be related with a good post-operative performance. LVMI is reduced at mid-term follow-up and a significant reverse remodeling can be also observed in those cases with patient-prosthesis mismatch.

Poster 12 : 20 years comparative outcomes analysis of BIMA only versus single internal mammary artery and supplemental vein grafts for left-sided target vessels

Authors

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Objective Despite the plethora of observational studies reporting superiority of bilateral internal mammary arteries (BIMA) over single internal mammary artery (SIMA), none of these studies compare a pure cohort of BIMA only for grafting of left-sided target vessels with a control group of SIMA and supplemental vein grafts. We undertook a single-centre, 20 years outcomes analysis using the propensity matching technique to determine the impact of these two grafting strategies for left-sided target vessels on short- and long-term outcomes.

Methods The study population consisted of 2265 patients who underwent CABG using SIMA with supplemental veins (n = 1445, 63.8%) or BIMA only (n = 820, 36.2%) for left-sided target vessels from January 1996 to December 2016. A propensity score was generated for each patient from a multivariable logistic regression model based on 20 pretreatment covariates. A total of 850 propensity matched pairs were generated.

Results The short-term outcomes were similar except for an increased rate of sternal wound infection (p = 0.001) and decreased rate of stroke (p = 0.03) following BIMA only grafting. At a mean follow-up for hospital survivors of 10.2 years (range, 6 weeks to 20.5 years) in the SIMA group and 10.1 years (range, 6 weeks to 20.1 years) in the BIMA group, BIMA was associated with a significantly lower risk for late mortality (hazard ratio, 0.59; 95% confidence interval, 0.35-0.92; P = .02) with an absolute risk reduction of 32%. Similar benefit was seen in the need for repeat revascularization (hazard ratio, 0.67; 95% confidence interval, 0.48-0.94; P = .03) with an absolute risk reduction of 28%.

Conclusion BIMA only grafting for left-sided target vessels confers superior re-intervention free survival at 20 years compared with conventional grafting.

Poster 13 : 20 years comparative outcomes analysis of off-pump and on-pump coronary artery bypass grafting from a centre performing high-volume off-pump coronary surgery

Authors

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Objective Persistent concerns regarding long-term outcomes of off-pump coronary artery bypass grafting prompted us to review our practice of coronary artery bypass grafting (CABG) over the last 20 years with a view to comparing the short-term and long-term outcomes of off-pump and on-pump CABG in a high-volume off-pump coronary surgery centre.

Methods We retrospectively analysed prospectively collected data from Patients Analysis and Tracking System (PATS) database (Dendrite Clinical Systems, Oxford, UK) for all isolated first time CABG procedures performed at our institution from January 1996 to December 2016. Over the study period, 10,664 patients underwent isolated first time CABG. Off-pump and on-pump CABG were performed in 5,922 and 4,742 patients, respectively. Propensity score matching was also used to compare the 2 matched groups.

Results Patients receiving off-pump CABG had more arterial grafts ($P < 0.001$), more sequential grafts ($P < 0.001$), more trainee first operators ($P = .02$), similar number of grafts ($P = .15$), fewer emergency operations ($P = .03$), fewer complications and shorter length of stay ($P < 0.001$). Off-pump CABG did not significantly affect early (hazard ratio [HR], 1.02; 95% CI, 0.73-1.20; $P = .27$) and late (HR, 1.06; 95% CI, 0.92-1.22; $P = .36$) mortality.

Conclusion Off-pump CABG performed by experienced surgeons with exclusive off-pump practice in a high-volume off-pump coronary surgery centre reduces the incidence of early complications and provides excellent long-term survival similar to on-pump CABG.

Poster 14 : Conventional coronary artery bypass grafting versus total arterial revascularisation; a single surgeon, single centre experience

Authors

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Objective There is general consensus that the internal mammary artery (IMA) to left anterior descending (LAD) bypass graft provides the greatest prognostic benefit. Opinion is divided regarding the choice of conduit for the remaining grafts. We present the experience of a single surgeon, using both techniques, in a single centre.

Methods A prospectively collected database was analysed retrospectively. Cases were categorised into conventional coronary artery bypass grafting (CABG) (left IMA to LAD with at least one long saphenous vein graft to additional targets) or total arterial revascularisation (TAR) (left IMA to LAD in isolation, or with any combination of right IMA or radial artery for subsequent targets).

Results Of 468 consecutive patients, 351 had conventional CABG, 117 TAR. A range of two to five grafts were performed in the CABG group, one to four in the TAR group. In the TAR group, isolated left IMA to LAD was performed in 4 cases (3%), bilateral IMAs were used in 78 patients (67%) and the radial artery in 94 (80%). Median EuroSCORE II calculations were 1.6% and 0.9% for CABG and TAR groups. In-hospital mortality was

1.4% (n=5) and 0.9% (n=1) respectively. There were three deep sternal wound infections in the conventional group, none in TAR. There was no statistical significance in predicted versus observed mortality between the two groups. Re-sternotomy for bleeding was similar (3.4% v's 3.7%). Median duration of follow up was 28 months (CABG) and 21 months (TAR). One-, two- and three-year survival was similar between the two groups (96%, 92%, 84% vs 96%, 92%, 82% respectively).

Conclusion In our experience TAR and conventional CABG have similar outcomes in terms of in-hospital mortality, re-operation for bleeding, deep sternal wound infection and 1-3 year survival.

Poster 15 : Off-pump vs on-pump CABG surgery: a five-year single surgeon study

Authors

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Objective There are studies comparing off-pump (OPCABG) and on-pump (ONCABG) surgery including multi-centre studies and meta-analyses. Despite this, there still remains doubt as which is the best technique. As a result, we assessed the short-term outcomes of off-pump and on-pump CABG involving a single surgeon over a five-year period at our institute.

Methods We retrieved all data for patients operated between 2011 and 2016. Only isolated cases involving CABG by the specified surgeon were included. Full details were retrieved from the PATS database and case notes. Statistical analyses were performed using student t-test for continuous data and Fisher Exact test for categorical data.

Results There were 631 isolated CABG cases performed by this surgeon. 168 cases (26.6%) were OPCABG whilst 463 cases (73.4%) were ONCABG. The average age of the OPCABG was 70.60+/-8.64 years, which was significantly higher than the ONCABG group (p=0.001). All other demographic data were equally matched between the groups. Overall, the logistic EuroSCORE in the OPCABG was 4.74+/-5.92 compared to 4.79+/-8.25 in the ONCABG group (p=0.68). The duration of surgery in the OPCABG was 202.84+/-44.65 minutes compared to 231.50+/-73.20 minutes in the ONCABG group (p=0.001). The cumulative bypass times and cross-clamp times in the ONCABG groups was 96.74+/-26.37 and 71.48+/-22.15 minutes respectively. The number of distal anastomoses performed in the OPCABG group was 2.51+/-0.71 compared to 3.10+/-0.76 (p=0.0001) in the ONCABG group. There were four conversions (2.4%) from OPCABG to ONCABG. There were no differences in total blood loss and blood transfusion requirements in the two groups. Neither were there any differences in the need for CPAP or inotropic support. The incidence of arrhythmias was 31 (18.5%) in the OPCABG compared to 126 (27.2%) in the ONCABG group (p=0.01). All other complications were comparable between the groups. There was one death (0.6%) in the OPCABG compared to 6 deaths (1.3%) in the ONCABG groups (p=0.49). There were no differences in the ITU and hospital stay between the OPCABG and ONCABG groups.

Conclusion Our results demonstrate that over the five-year period, OPCABG can be safely used with good comparable outcomes to conventional ONCABG.

Poster 16 : Propensity matched study to evaluate short and long-term outcomes following off-pump versus on-pump CABG surgery; up to 18 years follow up

Authors

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Objective Coronary artery bypass grafting (CABG) surgery may be performed either with cardiopulmonary bypass (on-pump) or without cardiopulmonary bypass (off-pump). Recent NEJM randomized trial claimed that off-pump CABG led to lower rates of 5-year survival and event-free survival than on-pump CABG. We report our experience of on-pump versus off-pump CABG surgery in the last 18 years.

Methods This was a retrospective study of data entered prospectively into our cardiac surgical database between February 1999 to February 2017. All patients undergoing first time CABG surgery, performed by a consultant as principle operator, were included. Up to 18 years of survival data (from NHS Spine) and re-admissions with myocardial infarction or cerebrovascular accidents were collected from our hospital database. Patients were propensity score matched by age, gender, Operative Priority, EF, Dyspnoea status, Angina Status, EuroSCORE, Logistic EuroSCORE and number of distal anastomosis. Data was analyzed using SPSS 23.

Results After propensity score matching, there were 296 patients in each group. Their preoperative variables were comparable with an overall balance test $p=0.995$. There were no statistically significant differences at 30 day mortality (2.0% and 1.7%; $p>0.05$) and long-term survival at 18 years follow up (77.4% versus 77.0%; log rank >0.05) between off-pump and on-pump patients respectively. We did not observe any significant differences in immediate post-operative outcomes between the groups. Re-admission with major adverse cardiovascular events (26.7% versus 24.3%; $p>0.05$) and cerebrovascular events (1.9% versus 1.4%; $p>0.05$) were comparable between off-pump and on-pump groups respectively.

Conclusion In this highly calibrated propensity score matched study, we did not observe any significant differences in the short and long-term mortality and morbidity between patients undergoing CABG surgery using on-pump and off-pump techniques. This study shows that off-pump CABG is safe in the hands of experienced surgeons.

Poster 17 : 18-year outcome analysis of salvage operations

Authors

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Objective

Salvage operations in cardiac surgery are those undertaken just immediately after or with concomitant cardiopulmonary resuscitation. Outcome analysis of salvage operations are sparse in the literature. We analysed the outcomes and peri-operative strategies of all salvage procedures at our institution over a period of 18 years between 1997 and 2014.

Methods

Peri-operative data stored in a prospective database was matched to survival data. Demographic data, risk scoring, operative strategies were examined. SPSS v22 was used to undertake unpaired t-test with 95% confidence intervals where appropriate to analyse the results.

Results

109 patients were included in the analysis. Mean age was 63.7 years (range 13-91). 8% were diabetic, 26% had history of pulmonary disease and 34% had abnormal renal function pre-operatively. LV function was moderate in 31% and poor in 35%. 29% had undergone PCI prior to surgery, 11% within 24 hours of the surgery. Pre-operative inotropes were used in 50% and 31% were ventilated. IABP was used in 42%, with 35% confirmed MI within 24 hours. Operative strategies included femoral cannulation which was undertaken in 17%. Aortic cannulation was undertaken in 77%. Mean bypass time was 168 minutes (median 133, range 0-521). Mean cross-clamp time was 89.8 minutes (median 69, range 0-289). Where undertaken, mean cumulative circulatory arrest was 27.4 minutes (range 0-146 minutes). The most common procedures were type A aortic dissection management, post-infarct ventricular septal defect closure, coronary artery bypass grafting, cardiac tamponade release and cardiac trauma. In-hospital mortality was 36.7%.

Conclusion

We report the largest series of salvage procedures in the literature spanning two decades. With team-based simulation training, commissioning of rescue device including extra-corporeal resuscitation devices and ventricular assist devices, mortality of salvage operations may be reduced even further.

Poster 18 : A surgical protocol for managing patients with carcinoid heart disease

Authors

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Objective

The carcinoid valve disease process affects the tricuspid and pulmonary valves, with the development of right-sided heart failure. These patients represent a surgical challenge, often with multiple co-morbidities increasing the surgical risk. We have developed a surgical strategy for carrying out valve replacement.

Methods We present a case series of four patients, three female, one male who underwent double valve replacement for carcinoid disease. The average age at surgery was 63 years (52-80 years) and mean EuroSCORE II was 15%. Preoperative echo for all patients showed severe tricuspid and pulmonary regurgitation. All patients had a preserved left ventricular ejection fraction of >50% and no evidence of increased pulmonary pressures. Pre-operatively all patients were on Sildenafil and Octreotide (IM). This was changed to a peri-operative Octreotide infusion. Our technique is as follows: following initiation of aorto-caval bypass, the pulmonary valve is excised using a transverse arteriotomy. We anastomose a BioIntegral® porcine pericardial valve conduit into the pulmonary position with a 4-0 continuous Prolene® suture. We then perform the right-sided atriotomy and replace the tricuspid valve on the beating heart. All patients received a bioprosthetic tricuspid valve, implanted with 2/0 Ethibond® suture.

Results Average bypass time was 97 minutes and average cross-clamp time was 59 minutes. ICU length of stay was 55 hours (25-97 hours) and average time to discharge was 18 days (8-27 days). All patients made a full recovery and thirty day mortality was zero. Post-operative echocardiography was done in three out of four patients, showing valve prostheses were working well with no deterioration in right ventricular function. Progression of disease caused mortality in two patients.

Conclusion The techniques described in this case series appear to be an effective way to manage this complex cardiac problem, particularly with regard to the conduit choice for the pulmonary valve.

Poster 19 : A systematic review: validity, reliability and feasibility of accelerometer applications in adult patients with cardiovascular disease

Authors

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Objective The objective of this review is to evaluate the use of accelerometers in older adults with known cardiovascular disease, focusing on their validity, reliability and feasibility.

Methods Studies were identified through searching EMBASE, CINAHL, MEDLINE, Cochrane, PubMed and other web based science electronic database for the period from 1980 to 2015. Selection criteria included papers dealing with the use of accelerometry as a measure of PA in patients with cardiovascular disease, as well as patients following surgical intervention for cardiovascular disease.

Results 1461 studies were identified, of these 15 met the inclusion criteria, in which uniaxial, biaxial and triaxial accelerometers were used as devices to measure PA. The type of device, as well as experimental design, and device position and setting, differed between the studies. The experimental design dictated the parameters used to assess validity, the steps taken, intensity of PA, daily PA and energy expenditure were amongst the most frequently used parameters. The feasibility of the different positions and settings of device use was

investigated. The triaxial accelerometer was the most frequently used device type in the studies. The feasibility of accelerometer use was assessed. The studies retrieved poorer information about the reliability and validity of accelerometry in the assessment of PA.

Conclusion PA monitoring can be valuable in the assessment and management of patients with cardiovascular disease; thus deeming accelerometry as a potential crucial tool in patient management. Overall the performance of the accelerometers in the assessment of PA was fairly good, and correlated well with other parameters of PA. However, extensive information on the reliability and validity of the devices was lacking in most papers. Future research should hope to focus on these factors.

Poster 20 : MatrixRib plate fixation for the treatment of sternal non union

Authors

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Objective Sterile sternal non-union is a recognised complication following median sternotomy. It is a defined as a fracture of the sternum that persists after 3 months without evidence of healing. It is a morbid condition associated with pain and sternal instability in the absence of infection. We aimed to surgically manage patients presenting with this complication using the MatrixRib system with the techniques described in the Elastic Stable Chest Repair used in pectus repair.

Methods Patients were identified who had undergone cardiac surgery and had sternal pain/ instability with a diagnosis of non union on CT scan. They proceeded to operation under the care of a consultant cardiac and thoracic surgeon. The sternotomy incision was reopened and pectoralis major muscle flaps elevated. The wires were removed and sternal edges mobilised and then debrided with an oscillating saw. Autologous cortical/cancellous bone chips were harvested from the iliac crest. Loop Myo sternal wires were placed around the sternal edges and bone chips placed between the sternal edges, especially where there was loss of sternal bone. After sternal approximation with wires, two (2 patients) or three (1 patient) MatrixRib plates were fixed from rib to sternum to rib with locking screws.

Results Three patients were included. There was a median length of stay of 5 days. At 3 months surgical follow-up, all patients reported being pain free and having no sternal instability or clicks. None of the patients suffered from a wound infection and there were no signs of non-union on the radiograph.

Conclusion Sterile sternal non union can be treated successfully using the MatrixRib system with autologous iliac crest bone graft. We used techniques with which we have become familiar since we have started using the Elastic Stable Chest Repair in selected cases for pectus surgery. The techniques are simple, safe and effective and can be used when there is sufficient intact sternum remaining for rewiring or sternal plating alone.

Poster 21 : Outcomes of off-pump coronary endarterectomy

Authors

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Objective

The number of patients being referred for coronary artery bypass graft surgery (CABG) with complex, diffuse coronary disease is increasing. Some advocate endarterectomy to allow preparation of a vessel, which may otherwise not be graftable. However, there have been concerns regarding immediate safety. Our aim was to assess early outcomes of patients undergoing off-pump CABG (OPCABG) and coronary endarterectomy.

Methods

Between 2007 and 2016, 937 patients underwent OPCABG. 148 (15.8%) underwent coronary endarterectomy. In hospital outcomes of patients undergoing endarterectomy were compared to those undergoing OPCABG without endarterectomy.

Results

Pre operative characteristics are shown in Table 1. Endarterectomy was performed more frequently in males (86.5% vs 13.5%, $p=0.04$) and in diabetics (35.8% vs 26.7%, $p=0.02$). The median number of endarterectomies per case was 1 (range 1-4), with median number of vessels grafted 4 (range 1-8). Endarterectomy of the left anterior descending artery was performed in 54.8% patients, right coronary/posterior descending artery in 20.4%, obtuse marginal in 17.7% and diagonal in 8.6% patients. 14.5% patients underwent multi-vessel endarterectomy. There was no significant difference in re-stentotomy for bleeding ($p=0.52$); stroke ($p=1.00$); haemofiltration ($p=0.70$) or tracheostomy ($p=0.69$). No patients required early percutaneous coronary intervention. There was no significant difference in intra-aortic balloon pump insertion following surgery (0.7% vs 0.3%, $p=0.51$). Mortality in those undergoing OPCABG with endarterectomy was 2.03% vs 0.76% in those undergoing OPCABG alone, but did not reach statistical significance ($p=0.16$).

Conclusion

Coronary endarterectomy can be performed safely off-pump with minimal in hospital complications. It should be considered in patients with diffuse coronary disease. Further long-term studies are required to assess mid to long-term outcomes of patients who undergo off-pump coronary endarterectomy.

Poster 22 : Clinical utility of thromboelastography (TEG) in off-pump Coronary Artery Bypass Grafting (CABG)

Authors

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Objective Thromboelastography enables a complete evaluation of the process of clot initiation and the structural characteristics of the formed clot and its stability. Many studies have previously assessed the predictive role of thromboelastography in on-pump cardiac surgery. However, there are no clear guidelines about its role or use in off-pump coronary artery bypass grafting. The aim of this study is to evaluate the use of thromboelastography and its relevance during the post-operative period.

Methods This is a two-year prospective study consisting of 550 patients undergoing off-pump coronary artery bypass grafting for coronary artery disease. Thromboelastography was performed as a bedside investigation in the Cardiothoracic & Vascular Surgery Intensive Care Unit.

Results The association between Maximum amplitude and a total blood loss of < 500 ml compared to a blood loss of > 500 ml was found to be statistically significant ($p < 0.001$). Using Receiver Operator Characteristic Curve analysis, it was seen that with increasing maximum amplitude values, a decrease in blood loss was observed. Cut off value for maximum amplitude of < 49.63 was regressed to have a predicted sensitivity of 100% and a predicted specificity of 89.3% for prediction of blood loss of > 500 ml.

Conclusion Thromboelastographic parameters show a reliable correlation for an increased blood loss in off-pump coronary artery bypass grafting surgeries and predict patients with an increased chance of blood requirement as well as for those at risk of a hypercoagulable state.

Poster 23 : Ischaemic mitral valve surgery: to replace or repair

Authors

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Objective Mitral valve repair versus mitral valve replacement in ischemic mitral surgery is still an important dilemma. We set out to analyse our experience and trend of surgical outcomes.

Methods From January 2004 to June 2017 3,656 patients at a single institution in London received mitral valve surgery. A native mitral valve pathology of ischemia was recorded in 203 (5.6%) cases. We examined their pre-operative and operative characteristics and post-operative outcomes. 173 (85.2%) patients were successfully linked to their follow up mortality data and survival was compared.

Results 62 (30.5%) of cases underwent mitral valve replacement. Patients undergoing replacement were more likely to be younger (median ages = 66 vs 70; $p=0.030$), and have a higher logistic EuroSCORE (median = 14.8% vs 9.0%; $p=0.038$). Rates of female patients and non-elective presentations were comparable between the two groups (25.8% vs 31.2%; $p=0.44$ and 59.7% vs 46.8%; $p=0.09$, respectively). Mitral valve replacement patients were less likely to have a concomitant CABG procedure (74.2% vs 90.8%; $p=0.002$), rates of concomitant

surgery on an accompanying cardiac valve were comparable (6.5% vs 8.5%; $p=0.78$). Bypass and cross-clamp times were comparable between groups (median time = 137 vs 145; $p=0.54$, and 92 vs 105; $p=0.26$). In-hospital mortality rates between the 2 groups were comparable, (16.1% vs 14.2%; $p=0.72$), follow-up survival was also comparable at 1 (78.9% vs 78.9%; $p=0.86$), 5 (57.1% vs 68.3%; $p=0.34$), and 10 (47.9% vs 44.2%; $p=0.44$) years.

Conclusion Mitral valve repair offers no superiority to mitral valve replacement in the setting of Ischaemic mitral valve surgery.

Poster 24 : Beyond Mitral Valve Repair: a multidisciplinary approach for Minimally Invasive Mitral Surgery

Authors

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Objective To provide an anatomical, in vivo, evaluation of the relationship between the Circumflex artery (CX) and Mitral Valve Annulus (MVA), in order to select the appropriate reparative gesture, during Minimally Invasive Mitral Valve Surgery (mini-MVS).

Methods From August 2015, 70 patients, electively referred for mini-MVS, were considered as part of our Heart Team for mitral surgery. A pre-operative multi-slices computed tomography (CT) was performed in all the cases. The distance CX-MVA was evaluated with a “five zone system”, designed with the help of radiologist: these zone were identified along the two commissures of the MVA and numbered in anticlockwise direction. For those patients with a CX-MVA distance less than 1.0 mm, it was preferred to perform the surgical procedure in a hybrid theatre: this to assess, intra-operatively and with the cardiologist support, the patency of the CX. Pre-and intra-operative investigations were always completed with a transoesophageal echocardiogram (TOE).

Results The shorter distance between CX and MVA was found at Zone 1 (5.02 ± 2.18 mm) and at Zone 2 (6.41 ± 4.26 mm). A high risk anatomy (distance less than 3.0 mm) was identified in 18 patients. With regard to the surgical strategy, it was observed that the use of a flexible device, seemed to achieve a better CX patency, when compared with other devices. Intra-operative angiogram was performed in those patients with closer relationship: it allowed a real-time evaluation of CX distortion. The patency of the CX was finally evaluated with intra-operative TOE. Post-operative transthoracic echocardiogram showed no residual mitral regurgitation, at follow-up.

Conclusion Pre-operative knowledge of coronary anatomy is a useful tool to identify high-risk patients for CX-injury during mitral valve surgery: in high risk anatomy, the role of surgeon, cardiologist, anaesthetist and radiologist is important to allow a safe and satisfactory surgical gesture with the avoidance of CX artery injury.

Poster 25 : Comparison of long-term echocardiographic outcomes in patients undergoing Minimally Invasive Versus Conventional Mitral Valve repair surgery

Authors

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Objective To compare the long term outcomes between minimally invasive mitral valve repair (MiMVR) and conventional surgery. Current retrospective comparisons between the two techniques frequently report echocardiographical (echo) outcome early after surgery and rarely report them later after surgery.

Methods Patients were selected for MiMVR by MDT from June 2008 to March 2013. Patients included had at least two transthoracic post-operative echocardiograms, one later than one-month post-surgery. Patients were excluded if there was a replacement, coronary intervention or other valve intervention. Echo parameters included left ventricular (LV) size, systolic function, degree of mitral regurgitation (MR) and mean mitral valve gradient. Clinical outcomes including mortality, re-operation, recurrence of at least moderate MR and elevated mean mitral valve gradients > 5mmHg (PG) were recorded and compared using Kaplan-Meier survival analysis.

Results 223 patients underwent isolated mitral valve repair surgery. One hundred and ten (48%) met the criteria and were included. Fifty patients underwent conventional surgery and 60 underwent MiMVR. Mean clinical follow-up was 6.3 years and echo follow up was 3.2 years. There was a significantly higher recurrence of moderate MR in the conventional group (38% (n=19) versus 17% (n=10)). The mean LV end-diastolic diameter was 4.8cm (conventional) versus 5.0cm (MiMVR). The incidence of elevated PG was 26% (n=13, conventional) and 23% (n=14, MiMVR). There was no significant difference in incidence in re-operation (conventional 12% (n=6), MiMVR 8.3% (n=5)). Long-term mortality was higher in the conventional group (1.7% vs 18% p = 0.004) although the EuroSCORE II was significantly higher 3.4% +/- 1.7 vs. 9.2% +/- 8.2.

Conclusion MiMVR is safe and feasible in a selected cohort of patients with long-term echo follow-up. There was a higher rate of recurrence of moderate MR and mortality in the conventional group; likely due to the characteristics of the conventional group.

Poster 26 : Cross-clamp devices for Minimally Invasive Mitral Surgery: when, why and which benefits

Authors

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Objective To compare the usefulness and the outcomes of different aortic crossing-clamp strategies, during minimally invasive mitral valve surgery (mini-MVS).

Methods From January 2014 to date, 135 patients, underwent mini-MVS. The IntraClude® intra-aortic occlusion system (Irvine, California) was used in 67 (49.6%), while a SCANLAN® Chitwood-DeBakey clamp was applied in 64 patients (47.4%). In 4 cases (2.9%), it was decided to use a beating heart strategy with moderate hypothermia.

Results No differences were observed in the operative times between the IntraClude® (Cross Clamp time (XCT): 88.18±20.33 minutes) and the Chitwood-DeBakey clamp (XCT: 84.8±18.15 minutes), $p>0.05$. Post-operative incidence of ventricular fibrillation, as consequence of failed de-airing, was similar in the two groups (2, 2.9% Vs 1, 1.5% cases, respectively), despite the percentage was greater in the IntraClude® group. The percentage of conversion to full sternotomy was greater for the IntraClude® group (5, 7.4%), than the Chitwood-DeBakey clamp (1, 1.5%). No differences were observed in the two groups, in regards to the return to theatre for bleeding. The redo mitral surgery were 7 in total (5.1%); in 3 of those cases, it was used the IntraClude® device, while in the remanent cases no cross-clamp technique was used.

Conclusion Chitwood-DeBakey cross-clamp provides a reliable technique for minimally invasive mitral surgery, when the aorta is safe to manipulate, with good operative times and incidence of post-operative complications. The IntraClude® intra-aortic occlusion system and the beating heart strategy, are generally preferred in redo patients and with ascending aorta disease: these findings show that mini-MVS is a safe approach even in redo cases.

Poster 27 : Consent in cardiac surgery: change for the better?

Authors

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Objective This project has explored whether it is time to change our consenting practice in cardiothoracic surgery. After the Montgomery Supreme Court case in 2015, there has been a decided move towards patient-specific consenting practice, doing away with the paternalistic approach previously employed. We sought to identify how our consent process compares to this ideal in cardiac surgery.

Methods Consent for cardiac surgery from our center was assessed from two aspects: 1. A validated prospective questionnaire designed to test the patients' understanding of the procedure they had consented to. 2. Consent forms were independently analysed for documentation of all risks of the procedure.

Results Failure rate for patient knowledge for 42 patients after consent carried out was 93% and 77% for aortic valve replacement and coronary artery bypass grafting (CABG) procedures respectively. Of 52 consent forms assessed, 33% were completed by a consultant and 67% by a registrar. One hundred percent of forms

documented risk to life, with percentage risk quoted for 71%. Less than fourteen percent mentioned pain as a possible complication and none explained failure of bypass grafts for CABG, with just 3% of consents for valve surgery mentioning paravalvular leak.

Conclusion This study shows our routine consenting practice needs development and at SCTS we will present these results and demonstrate a novel way in which we changed our practice. Information with regard to pathology and management is now imparted in three different formats in combination with our cardiology colleagues. Audio-visual representation of the disease process, management options and patient journey is a key factor, making sure that patients understand the options and consent to the risks our treatment strategies inevitably involve. We believe that these improvements will revolutionise the way professionals handle consent and enhance communication and patient understanding of that which is most relevant to them and of impact to their lives.

Poster 28 : Does the National Early Warning Score at discharge from cardiac intensive care predict subsequent readmission?

Authors

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Objective Readmission to the cardiac intensive care unit (CICU) after cardiac surgery is disconcerting for patients, may compromise clinical outcomes and has implications for service planning. The National Early Warning Score (NEWS) is designed to identify ward based patients at risk of clinical deterioration. The objective of this study was to validate whether the NEWS is a useful tool in the assessment of patients prior to discharge from CICU.

Methods An analysis of prospectively gathered patient monitoring data from CICU for patients admitted following cardiac surgery between January 2013 and May 2015 was performed. Minimum, median and maximum NEWS were calculated for each patient for the last 12 hours of their CICU stay before discharge to the ward. The logistic EuroSCORE was also calculated for each patient. The NEWS and logistic EuroSCORE were compared between those patients who experienced readmission to CICU within five days and those who did not using the Mann-Whitney U test.

Results During the study period, 2292 patients were admitted to CICU after cardiac surgery. A total of 2153 were discharged to the ward after their first CICU admission. There were 30 (0.9%) readmissions to the CICU within five days of initial discharge. The median logistic EuroSCORE was not significantly different between those patients experiencing readmission (4.9, IQR 2.4-9.2) and those not experiencing readmission (3.8, IQR 2.1-7.2, p=0.43). NEWS varied significantly during the last 12 hours of CICU admission. The median NEWS was not statistically significantly different in those experiencing readmission 3.5 (2.0-5.0) and those not experiencing readmission (3.0, IQR 3.0-5.0, p=0.60).

Conclusion The NEWS does not appear to be a useful tool for identifying patients who at discharge from CICU are at risk of subsequent readmission. As a result the usefulness of NEWS in the care of ward based cardiac surgery patients also needs to be reconsidered. Cardiac surgery specific early warning scores should be developed.

Poster 29 : Pre-operative renal dysfunction negatively impacts on long term survival after cardiac surgery

Authors

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¹ Castle Hill Hospital, UK

Objective Pre-operative renal dysfunction is a well-known risk factor of post cardiac surgery mortality and morbidity. SCTS (The Society for Cardiothoracic Surgery) national database reported that the 5 year survival in patients with elevated creatinine is 60% while the 5 year survival in patient with no renal disease is 90%. The purpose of this study is to analyse the operative mortality and short and long term survival of post-cardiac surgery patients who had renal dysfunction pre-operatively.

Methods 2.4% patients (315/13486) suffering from preoperative renal dysfunction/failure, underwent cardiac surgery from Jan 1998 to Sep 2017. The operative mortality was determined and short and long-term survival was observed until 2012. The patients were divided in 4 groups on the basis of severity of renal dysfunction: Group 1 (69%) elevated creatinine >200 µmol/l, Group 2 (8.6%) acute renal failure (ARF) on dialysis, Group 3 (17.6%) chronic renal failure on dialysis and Group 4 (4.8%) renal transplant.

Results 77% of the patients were male with median age of 69 years (2287) and 49% older than 70 years. 52% of patients had urgent/emergency operation. Isolated CABG was the operation in 49%. Overall operative mortality was 19.8%. Operative mortality in elective patients was 10.8% and 28% in urgent/emergency patients. Operative mortality in Groups 1, 2, 3 and 4 was 19%, 30%, 19% and 7% respectively. Overall 5 year survival of all discharged patients was 55% with median survival of 5.8 years. 5 years survival in Groups 1, 2, 3 and 4 was 50%, 23%, 36% and 71% with a median survival of 5, 2.5, 2.6 and 7.9 years respectively. Patients requiring new dialysis postoperatively had poor long-term survival with median survival of 0.12 years while those patients whose creatinine level reduced to <200 µmol/l, demonstrated median survival of 7 years. Patients who underwent isolated CABG, showed better long-term survival than those who underwent CABG+VALVE (median 5.29 vs 0.95 years).

Conclusion Age above 70 years, preop ARF and dialysis, new postop dialysis and CABG+Valve procedures in this cohort demonstrated poor short and long-term survival. Transplant patients and patients with improved postop creatinine exhibited significantly improved survival.

Poster 30 : Preventable cancellations in cardiac surgery - does a patient-led approach improve service delivery?

Authors

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Objective Cancellations in cardiac surgery result in significant financial cost to NHS services and have a detrimental effect on the individual patient journey. Causes of cancellation can be divided into preventable and non-preventable. A 2016 internal audit found 13.90% of cancellations were preventable and aimed to reduce this using a patient-led approach and additional pre-operative checklists. This study aims to re-audit the rate of preventable cancellations in a major cardiothoracic centre following optimisation of service.

Methods Data were collected retrospectively from theatre logbooks over a 6-month period. Causes of cancellation were identified using theatre logbooks and electronic patient data. Any major cardiac case was included.

Results Over the study period 196 cases were cancelled from their planned date of surgery. 605 cases were carried out during the study period, giving a cancellation rate of 24.47%, compared with 20.9% in the 2016 audit. 18 (9.23%) cancellations were identified as being preventable. Of the non-preventable cases, the most common causes were intercurrent illness (29.23%) and lack of staffed ICU bed (20.00%). Preventable causes were; outstanding pre-operative investigations (5.64%), patient adherence to therapy (1.54%), further MDT input required (1.03%), unavailable equipment (1.03%). These figures are comparable with our previously collected data. Of cancelled cases, 82.65% were planned as elective, and 17.35% as urgent. Replacement cases were found in 45.86% of cancellations unrelated to ICU beds.

Conclusion Preventable cancellation rates remain high in cardiac surgery despite service improvements using a patient-led pre-operative checklist. The most common cause for cancellation remains a delay in performing necessary preoperative investigations which has not improved compared with previous data (5.64% vs. 5.80%). The low replacement rate of cancelled cases highlights a potential target for service improvement through improved identification of suitable patients.

Poster 31 : The impact of frailty on post-operative outcome following valve surgery - a retrospective analysis

Authors

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Objective Cardiac surgery risk scores perform poorly in elderly patients, partially owing to the fact that they fail to take account for frailty and disability which are critical determinants of health status with advanced age. The aim of this study was to ascertain whether frailty was taken into account when risk-predicting patients undergoing valve surgery. Furthermore, a secondary analysis was performed to see if frailty correlated with outcome.

Methods Retrospective case note analysis of 235 patients (128 Isolated Aortic Valve, 107 Composite Aortic Valve) over a 12 month period in order to assess risk of mortality and accordingly demonstrate whether frailty was taken into account. The Katz Index of Independence (KII) was applied to all cases retrospectively in order to assess frailty.

Results No patient was assessed for frailty during the work-up for surgery. The mean EuroSCORE II was 3.41 +/- 4.43. Thirty-day mortality was 3.4% (n=8); when stratified according to surgical cohort, the mortality rates for isolated and composite aortic valve surgery were 2.3% (n=3) and 4.7% (n=5) respectively. Using the KII to ascertain frailty; 66% (n=2) and 60% (n=3) of mortalities were classed as "frail" in the isolated and composite aortic valve surgery group respectively. Overall rate of frailty in the group was 8.9% (n=21); when stratified according to alive/dead status at 30 days, the rates were 7% and 62.5%, p<0.0001.

Conclusion Patients deemed frail using an objective assessment tool have a higher likelihood of experiencing mortality, morbidity, MACCE following cardiac surgery. Clinicians should use an integrative approach combining frailty and disability to better characterise the pre-operative cohort and identify those at highest risk. Further studies are warranted to ascertain which components of frailty confer the most negative post-operative outcome.

Poster 32 : Predictors of next-day discharge following transcatheter aortic valve replacement

Authors

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¹ Faculty of Medicine, Porto University, Portugal; ² Manchester Royal Infirmary, UK; ³ University Hospital of South Manchester, UK

Objective Recent technological developments have improved safety and efficacy of transcatheter aortic valve replacement (TAVR) allowing some patients to be discharged the next day. The aim of this study was to determine the predictors of next-day discharge (NDD) and longer post-procedural length of stay (LLOS) in patients undergoing TAVR.

Methods This retrospective cohort study analysed the records of 192 patients who underwent TAVR from 2014 to 2017 in a single centre. Data regarding baseline patients' characteristics, procedural details and outcomes were compared between patients in the NDD and longer LOS (LLOS) groups. Multivariate analysis was used to determine independent predictors of NDD and LLOS.

Results There were 42 patients (25%) in the NDD group. The median LOS was 3 days (p25-p75 [1.3-6]). Baseline characteristics were comparable in the NDD and LLOS groups, apart coronary artery disease and frailty, which were more common in the latter. Procedural characteristics were different with elective admission, femoral access and conscious sedation more common in the NDD group. Complications were more common in the LLOS group, particularly pacemaker insertion. There was one death in each group. No further deaths or readmissions happened within 30-day follow-up. The independent predictors of NDD were female sex, absence of frailty, elective admission and femoral access. The predictors of LDD were male sex, frailty, coronary artery disease, urgent admission and non-femoral access.

Conclusion This single centre study demonstrated that NDD after TAVI can achieve good clinical outcomes without increasing complications or 30-day readmission rates. The independent predictors of NDD and the patient and procedural factors associated with increased LOS after TAVR can aid risk stratification for selecting patients for NDD after TAVI and improve clinical effectiveness. The possibility of day case TAVI seems promising but further research is warranted to adequately identify suitable candidates.

Poster 33 : Carcinoid heart disease: early outcomes after surgical valve replacement in 9 patients

Authors

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¹ Freeman Hospital Cardiothoracic Centre, UK

Objective To describe the early outcomes of carcinoid patients undergoing surgical heart valve replacement.

Methods In a retrospective study, records of patients with symptomatic carcinoid heart disease referred for valve surgery between 2012 and 2016 were reviewed. The perioperative and early postoperative outcomes were analysed.

Results Nine patients, with a mean age of 61 years (range 55-70 years) underwent cardiac surgery for carcinoid syndrome. 3 patients had quadruple valve replacement, 5 had Tricuspid and Pulmonary valves changed, while one had Tricuspid, pulmonary and Aortic valves replaced. Right sided valves were replaced with biological valves in 8 patients and mechanical valve in 1 patient. Left sided valves were replaced with mechanical valve in 2 and with biological valve in 1 patient. Mean post-operative follow up is 24 months (range 6-50 months, median 16 months). All the patients had good left ventricle except in one patient when it was mildly impaired.

Right ventricle was severely dilated in 4 patients, moderately in 2 and mildly in 3 patients. One patient died of heart failure 10 days postoperatively. Functional improvement was noted in all survivors and they were in New York Heart Association class I at last follow up.

Conclusion Although carcinoid syndrome is a rare and progressive disease, valve replacement in symptomatic patients is a reasonable option with survival benefit, low early postoperative mortality, without valve-related complications and with functional improvement. Cardiac assessment is required in all patients with carcinoid disease from the earliest time of medical treatment to improve patients' result.

Poster 34 : Is minimally invasive primary valve procedures in elderly patients using retrograde femoral arterial perfusion safe

Authors

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¹ Blackpool Victoria Hospital, UK

Objective Minimally invasive cardiac surgery (MICS) have evolved and become acceptable approach for primary valve procedures. Yet elderly patients are considered not safe and suitable for MICS. Use of the retrograde femoral arterial perfusion also creates concerns and is debatable. In such background aim of our study was to establish that minimally invasive primary valve procedures (MIVP) are safe in elderly patients and use of retrograde femoral arterial perfusion technique does not increase risk of stroke.

Methods A retrospective analysis of prospectively collected data of 243 patients cohort (156 in Adult group, 87 in Elderly group) between 2007-2017. Inclusion criteria were minimally invasive primary valve (MIVP) procedures of any aetiology with retrograde femoral arterial perfusion. Patient's ≥ 70 yrs were considered elderly and Patients < 70 yrs were considered Adult. Patients undergoing concomitant CABG and valve surgery with antegrade aortic perfusion were excluded.

Results Out of total 243 patients a cohorts of 87 elderly patients with mean age 75.9yrs and mean Logistic EuroSCORE of 9.05 were identified. Although we experience Mean bypass time of 166min and Mean cross-clamp time of 112min using retrograde femoral arterial perfusion, we did not encounter any incidence of stroke. We found that incidence of post-operative blood loss, blood product transfusion and MACE were comparable with open primary valve procedures for the given age group. EuroSCORE adjusted MACE and mortality were also comparable with younger patients who underwent minimally invasive valve procedure. Overall length of CITU stay (mean) was 1.35 days and length of hospital stay (mean) was 8.84 days. In-hospital mortality was 3.4%. Survival at 1 year and 5 years were 96.6% respectively.

Conclusion Outcome of this non propensity matched institutional study indicates that minimally invasive valve procedure is safe in elderly patients and the use of retrograde femoral arterial perfusion does not increase risk of stroke.

Poster 35 : Triple valve surgery in Waikato, New Zealand - managing the burden of Rheumatic Heart Disease in the 21st Century

Authors

O Pumphrey¹; N H Brunger²; D J McCormack²; A El-Gamel²;

¹ University Hospitals of Leicester, UK; ² Waikato Hospital, Hamilton, New Zealand

Objective Triple valve surgery (TVS) is a complex procedure with previously reported operative mortality of 25% and 10-year survival of 40%. Rheumatic heart disease (RHD) is a well-known precursor to valvular pathology requiring surgical intervention. In view of increasing numbers of cases in our unit, we assessed factors affecting mortality and long-term survival in this group.

Methods This retrospective study was conducted on 52 patients (mean age 55 ± 14 years), who underwent TVS in Waikato DHB from March 2005 to July 2017. Data was collected from hospital notes, clinic letters, our online database and from correspondence to GP practice.

Results 75% of diseased valves were rheumatic, with Māori making up 83% of the total population. Valvular regurgitation was the most common pathology requiring intervention (58% in AV and MV, 98% in TV), with almost equal number of mechanical and tissue valves implanted. The 30-day mortality rate was 11.5%, and overall mortality 34.6%. The calculated 5-year survival rate was 63.7%. The presence of CHF, or a combination of pulmonary hypertension causing moderate to severe right ventricular impairment were identified to be the most significant predictors of mortality using multiple linear regression method.

Conclusion Our study has identified the impact of pulmonary hypertension in combination with RV impairment on short and long-term survival. Efforts to optimise RV function and pulmonary pressures using pre-operative Sildenafil seem to have a significant benefit in this population.

Poster 36 : Triple Valve Surgery in Waikato, New Zealand: managing the burden of Rheumatic heart disease in the 21st Century

Authors

N H Brunger²; O Pumphrey¹; D Gimpel²; N N Patel¹; D J McCormack²; A El Gamel²;

¹ University Hospitals of Leicester, UK; ² Waikato Hospital, Hamilton, New Zealand

Objective Triple valve surgery (TVS) is a complex procedure with previously reported operative mortality of 25% and 10-year survival of 40%. Rheumatic heart disease (RHD) is a well-known precursor to valvular pathology requiring surgical intervention. In view of increasing numbers of cases in our unit, we assessed factors affecting mortality and long-term survival in this group.

Methods This retrospective study was conducted on 52 patients (mean age 55 ± 14 years), who underwent TVS in Waikato DHB from March 2005 to July 2017. Data was collected from hospital notes, clinic letters, our online database and from correspondence to GP practice.

Results 75% of patients had confirmed RHD, with Māori making up 83% of the total population. Valvular regurgitation was the most common pathology requiring intervention (58% in AV and MV, 98% in TV), with almost equal number of mechanical and tissue valves implanted. The 30-day mortality rate was 11.5%, and overall mortality 34.6%. The calculated 5-year survival rate was 63.7%. The presence of CHF, or a combination of pulmonary hypertension causing moderate to severe right ventricular impairment were identified to be the most significant predictors of mortality using multiple linear regression method.

Conclusion Our study demonstrates the burden of rheumatic heart disease in the Wakiato region. Early identification and greater access to health care in the Māori population are imperative to improving outcomes, and preventing morbidity and mortality. Efforts to optimise RV function and pulmonary pressures using Sildenafil therapy seem to have significant benefit in this population.

Poster 37 : An audit of a pilot study involving day of surgery admissions (DOSA) in patients undergoing cardiac surgery

Authors

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Objective DOSA has been trialled in numerous surgical specialties in an attempt to reduce costs and pressure on inpatient beds. DOSA has recently been trialed in our centre in patients due to undergo cardiac surgery. This audit will review one year of DOSA in patients undergoing cardiac surgery and assess the success of the service based on the number of patients undergoing cardiac surgery on their day of admission to hospital and reviewing reasons for cancellations on the planned day of surgery.

Methods The Cardiac Surgery Theatre logbook is an electronic diary detailing theatre bookings and contains details including patient name, planned procedure, DOSA notification and annotation if cancelled. The Theatre logbook was examined and a database compiled of all DOSA patients, planned procedure, date of surgery and cancellation reason if relevant.

Results Fifty-one patients were listed for DOSA between March and September 2017. Twenty-eight patients underwent their operation on the planned day. Twenty-three patients did not undergo surgery on the planned day of admission for several reasons. Reasons for cancellation of surgery: first operation of the day over-ran (6); insufficient ICU staff/beds (6); transplant/retrieval (5); another patient required urgent inpatient surgery (3); other clinical issue (2) and MSSA positive (1).

Conclusion In the majority of cases, DOSA was achieved successfully in patients deemed eligible for this service. A number of reasons have arisen for cancellation of surgery including prolonged first cases; insufficient ICU beds; transplant; urgent inpatient surgery; other clinical issues and untreated MSSA colonisation. Analysis of the results is encouraging as it proves that DOSA is possible for carefully selected cardiac surgery patients and the three main reasons for cancellation (17/23) are non-clinical and relate to staffing or theatre timing issues which can be addressed to enhance the percentage of patients successfully operated on their day of admission.

Poster 38 : Discharge destination for octogenarians undergoing urgent cardiac surgery

Authors

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¹ Liverpool Heart and Chest Hospital, UK

Objective Urgent cardiac surgery has been reported in octogenarian patients with acceptable early mortality. Quality of life improvement has also been documented in this population following cardiac surgery. It is not clear, however, whether those who undergo urgent procedures return their pre-morbid residence or require further care.

Methods Patients were identified from urgent referrals to a single centre between August 2012 and November 2015. Pre-operative characteristics, operative details and post-operative data were identified from a prospectively collected institutional database. Logistic regression analysis was performed to analyse variables associated with discharge home.

Results A total of 2211 urgent referral were received, of which 310 (14.0%) were aged 80 years or greater. Of these, 192 (61.9%) underwent urgent surgery, 32 (10.3%) were declined urgent surgery but were operated electively following outpatient review. Median age in the urgent group was 82 (interquartile range 81-83), median EuroSCORE was 11.2 (IQR 7.9-18.5). 145 (75.5%) patients underwent a single procedure with the remainder having up to 4 procedures performed concomitantly. Overall mortality in the urgent group was 8.9%, median length of ITU stay was 2.8 days (IQR 1.8-5.4) and post-operative length of hospital stay was 13 days (IQR 9-18). There were 7 (3.6%) cerebrovascular events and 16 (8.3%) required renal support. 85 (44.3%) of the patients were not discharged to their usual place of residence. Logistic regression analysis demonstrated that the number of procedures was the only pre-operative variable which was predictive of not returning to usual residence, odds ratio 3.1(95% CI 1.5 to 6.6).

Conclusion Urgent surgery can be performed with acceptable mortality in octogenarians. A large minority do not return to their normal place of residence, predicted by a higher number of concomitant procedures. This information may have important ramifications in the consent process and inform the allocation of postoperative resources.

Poster 39 : Enhanced recovery in cardiac surgery

Authors

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Objective Enhanced recovery after surgery (ERAS) is well established in other surgical specialties [1], accelerating recovery and improving outcomes. We report our 3-year experience with enhanced recovery in cardiac surgery.

Methods All patients in the ERAS programme between January 2014 and August 2017 were included in the analysis (ERAS group). Patients were matched using age, gender, status of operation (urgent/elective) number of distal anastomoses, EuroSCORE and logistic EuroSCORE (non-ERAS group). Analysis was performed using appropriate statistical methods with a p value of 0.05 taken as significant.

Results Two hundred and two patients have been enrolled in the ERAS programme. Hospital length of stay was significantly reduced in the ERAS group, median 4 (range 2-15 SD 2.4) days compared to 5 (range 3-46 SD 5.3) days in the non-ERAS group ($p < 0.0001$). There was no significant difference in mortality or re-admission rates between the two groups. The proportion of patients with pulmonary complications was significantly higher in the non-ERAS group, 10% vs 3.5% ($p = 0.0061$). There were no significant differences in other post-operative complications. The frequency endoscopic vein harvest or off-pump CABG was not significantly different between groups. The proportion of cases listed as non-consultant grade as primary operator was significantly higher in the ERAS group (33.7%) than in the non-ERAS group (22.3%) ($p = 0.0044$).

Conclusion Enhanced recovery in Cardiac surgery is safe and significantly reduces pulmonary complications and hospital length of stay, without impacting on training. References 1. Nicholson A et al. A systematic review and meta-analysis of enhanced recovery programmes in surgical patients. British Journal of surgery. 2014;101:172-188.

Poster 40 : Implementation of electronic prescribing order-set to enhance administration of early aspirin and optimal medical therapy (OMT) after surgical

revascularization

Authors

A Amir¹; U Simoniuk¹; N Mediratta¹; M Pullan¹;

¹ Liverpool Heart and Chest Hospital, UK

Objective In order to enhance compliance with current international guidelines we designed a unique electronic order-set within electronic patient record system (EPR). We aimed to improve the administration of early aspirin and prescription of optimal medical therapy (OMT) post coronary artery bypass graft (CABG), using an automatic e-prescribing order-set.

Methods We performed a retrospective analysis of prospectively collected data for 102 patients who underwent CABG in June-July 2017. Following an earlier 2-cycled quality improvement study in 2016, we introduced an e-prescribing order-set for patients undergoing CABG. We evaluated patients' characteristics, discharge medications and contraindications to OMT.

Results Out of 102 patients, 19 were excluded due to incomplete EPR data. 83 included patients were divided into two groups; 15 patients had arterial conduits (AA group), and 68 patients had combined arterial/venous conduits (AV group). 41 patients required urgent surgery whereas 42 were routine. In the AV group, 67.6% patients were prescribed a loading dose of aspirin within 6 hours post-op. Of these, 47% patients received it within 6 hours. The remaining 20.6% received it up to 24 hours post-operatively. 32.4% patients were not prescribed a loading dose of early aspirin. 70.6% patients received OMT at discharge including a single antiplatelet, statin, beta blocker and ACEi/ARB. 23.5% did not have an ACEi/ARB and 7.4% patients did not have a beta blocker prescribed at discharge.

Conclusion With the use of electronic order-set, early aspirin administration rate has improved from 55% to 67.6% compared with the previously reported data in our centre. OMT prescription rate post-CABG was notably higher in comparison to data published in the SYNTAX trial - 70.6% versus 31.2%. E-prescribing order-set has significantly enhanced aspirin and OMT prescribing rate, therefore is a useful, simple tool which has helped us to adopt evidence-based recommendations, and improve quality in our clinical practice.

Poster 41 : Post-operative cardiothoracic X-ray protocols deliver low clinical yield and results that are not cost-effective

Authors

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Objective Due to the invasive nature of cardiac surgery, intensive post-operative care is needed and radiological imaging is often helpful. However, since ionising radiation has an associated increased neoplastic

risk, decreasing unnecessary radiation exposure is important. New literature suggests that routine post-operative X-rays are no longer necessary and should be determined by clinical assessment.

Methods A retrospective analysis of the quantity, indications, new radiological findings and medical intervention post X-ray in cardiothoracic post-operative patients. Positive findings were determined from radiological reports and patient notes utilised to determine management post X-ray.

Results Patient cohort n=49 consisted of average age of 61.7 ±8.41 and an average number of chest X-rays 4.46 ±2.58. M:F ratio = 5:1. Total number of x-rays performed was n=219 with those undertaken days 0-2 days post-operatively n=169 (77%). X-rays with new positive findings n=121 (55%). Of this 55%, intervention was carried out in n=21 of cases (17%). The most common indication for imaging was positioning of lines, tubes and drains n=95 (43%) followed by screening for pneumothorax post drain removal in n=55 (20%). Of those 55, chest tube insertion occurred in n=5 (9%). Most common new finding was post operative atelectasis, n=63 (52%) followed by pleural effusions, n=40 (33%) of which, n=25 (63%) were graded small.

Conclusion A small number of post-operative chest X-rays had meaningful positive findings and intervention. Each chest X-ray costs \$106, potentially saving \$69,960 per year by abolishing routine imaging post chest drain removal. Positive findings demonstrated a diagnosis that can be ascertained clinically rather than requiring imaging. A collective effort between cardiothoracic teams and those responsible for post-operative care should aim to reduce unnecessary imaging, decreasing exposure, decreasing money expenditure and improving clinical astuteness.

Poster 42 : Histopathological outcomes of lung resection for pulmonary solitary lesions in young adults. A single center descriptive study.

Authors

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¹ Nottingham City Hospital, UK; ² University Hospital of Wales, UK

Objective Lung resection for pulmonary solitary lesions in young adults is a rare event that has not been studied in extent. The scope of this study is to present the histopathological outcomes of lung resections for pulmonary solitary lesions in this particular age group of the population.

Methods From 1996-2016 we operated on 4073 patients with lung lesions. We analyzed the data retrospectively and identified all the patients younger than 40 years of age operated for a solitary lung lesion. These patients were divided into two groups (Group A: <29 years of age, Group B: 29-39 years of age) and the histopathological features post lung resection were analysed.

Results 108 patients <40 years of age were identified. In Group A there were 46 patients of mean age 22,5 years (range 14-29). 25 males, 21 females. 20 patients had a post lung resection histopathological diagnosis of

sarcoma, 9 carcinoid, 9 teratoma, 2 testicular cancer, 2 granuloma, 1 histiocytoma, 1 sequestration, 1 neurogenic tumor and 1 melanoma. 24 patients had history of previous cancer in other sites. In Group B there were 62 patients, 27 females and 35 males. Mean age was 35.4 years (range 30-39). 17 patients had carcinoid, 13 sarcoma, 8 NSCLC, 6 granuloma, 3 teratoma, 3 colorectal mets, 2 breast mets, 2 germ cell tumor, 2 mucoepidermoid cancer, 2 tuberculoma, 1 nodular lymphoid hyperplasia, 1 cystic adenomatoid malformation, 1 testicular cancer and 1 thymoma. 22 patients had history of previous cancer in other sites.

Conclusion The likelihood of encountering primary NSCLC in young patients with solitary lung lesions is very low. In the group of patients <30 years of age the most frequent histopathological outcome was sarcoma and in the group 30-40 years of age carcinoid tumor. A combined evaluation of a patient's age group and past medical history can be an important differential diagnostic tool for the physician.

Poster 43 : VATS diaphragmatic plication program: preoperative and postoperative clinical, radiologic and spirometric assessments

Authors

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¹ Castle Hill Hospital, UK

Objective Patients with diaphragmatic paralysis have been conventionally treated with plication. This requires extensive suturing and knot tying, which is particularly challenging by VATS. Is it possible to achieve an adequate (clinical, radiologic and spirometric) plication by VATS while gaining less pain compared to a thoracotomy. Also, are the radiologic dimensions on the chest x-ray postoperatively correlating with the improvement in exercise tolerance?

Methods We started a VATS diaphragmatic plication program in 2016. Reviewed 5 cases retrospectively with regards to: Demographics, Etiologies and Outcomes: Exercise tolerance, Spirometry and X-ray dimensions. We also correlated the radiologic with improvement in Karnofsky score.

Results There were 3 males and 2 females; mean was age 54.2 years. Etiologies identified were: idiopathic, viral, post radiotherapy, post traumatic and postoperative. Mean Karnofsky score pre- and postoperative: 60 and 96; p<.01. Pre and postoperative FEV1 (1.97 and 2.39; p=.04), FEV1% (63.2 and 73.4; p=0.01), FVC (2.76 and 3.03; p=.07) and FVC% (63.8 and 77.8; p<.01). The vertical x-ray dimensions pre and post op (102.8 and 147.8; p<0.01). There was statistical correlation between the increase in vertical x-ray dimension to improvement in Karnofsky score (31.4 and 30; p=0.47).

Conclusion VATS diaphragmatic plication is feasible with good to excellent clinical (exercise tolerance), spirometric and radiologic improvement. There is a correlation between the functional and radiologic improvements.

Poster 44 : High flow apnoeic ventilation delivered by LMA or ETT (LMET Flow) for tracheal resection and reconstruction surgery

Authors

M Egan¹;

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Objective Airway management for tracheal resection poses several challenges to anaesthetists. We report a novel approach to airway management using a high flow oxygen delivery device in combination with a Laryngeal Mask Airway (LMA) for a single patient undergoing tracheal resection surgery. Attaching a widely available device for high flow oxygen delivery (OptiFlow TM) to an LMA provided excellent patient oxygenation for the entire duration of tracheal reconstruction (44 minutes). Our technique facilitated this intricate surgery by removing an endotracheal tube from the operative field and provided optimal conditions for anastomosis. No interruption of surgery to allow for tube manipulation or mechanical ventilation was required. It is the first time that a high flow oxygen device attached to a LMA has been used to provide apnoeic oxygenation for such surgery.

Methods Standard mechanical ventilation through a Laryngeal Mask Airway was used for the initial phase of this surgery, namely dissection down to trachea. Once the trachea was incised the anaesthetic circuit was disconnected and the laryngeal mask was attached to a widely available high flow oxygen nasal delivery system (OptiFlow TM). 100% Oxygen was delivered at 40L/min for 44 minutes.

Results Arterial Oxygen saturation was maintained at an SPO2 of 98-100 for 44 minutes of apnoea, the entire duration of tracheal surgery. Arterial carbon dioxide levels were also within safe limits throughout surgery.

Conclusion This technique of airway management using high flow (40L/min) oxygen delivery via a Laryngeal Mask Airway offers major advantages over other techniques currently employed for tracheal resection. These include excellent oxygenation, optimal conditions for reanastomosis, no interruption of surgery to change airway management such as withdrawing or reinsertion of an endotracheal tube. LMA use also avoids coughing which risks tearing the anastomosis and removes the risk of residual paralysis as no muscle relaxants are required.

Poster 45 : Lessons learnt from the initiation of PEACE (Posthumous Evaluation of Advanced Cancer Environment) at a Regional Thoracic Centre

Authors

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¹ Birmingham Heartlands Hospital, UK

Objective TRACKing non-small cell lung Cancer Evolution through therapy (Rx) (TRACERx) study has been recruiting at our regional thoracic surgery centre since 2014. TRACERx has enabled the understanding of molecular characteristics of cancer and intra-tumour heterogeneity, however, further development into cancer evolution and tumour progression was required, leading to the establishment of PEACE (Posthumous Evaluation of Advanced Cancer Environment) research study.

Methods PEACE involves multi-region sampling of metastatic cancer in a post-mortem setting, where fresh primary tissue has previously been harvested. Our PEACE patients filter in from 11 tertiary sites, therefore in the event of a death, transportation of the body requires meticulous planning and organisation. The success of PEACE relies on the relationships established between the TRACERx patients, their families and the research team. Such rapport is invaluable when discussing the sensitivities of death and posthumous tissue harvesting, often in a time of grief. Communication and effective collaborations between a multitude of disciplines including pathology, the mortuary, bereavement services, the coroner's office, external mortuaries and funeral directors have been vital, as every team has their part to play to ensuring the success of the study.

Results Our site has been open for 2 months, with 2 successful PEACE post mortems conducted and an additional 1 TRACERx patient consented to PEACE for when the time comes. Enhancing the awareness of the study is an area of focus moving forward, an idea supported by our palliative care teams from across the regional hospitals.

Conclusion Despite the logistical challenges, PEACE has enabled patients and their relatives to discuss the prospect of death. Moreover, it is empowering for relatives to know that their kin have contributed to valuable research. Thus, PEACE can be considered a study which turns the negative association with death into a positive experience for the patient and their family.

Poster 46 : Pre-emptive training of community nurses to facilitate smooth transition from hospital to home - a protocol for Indwelling Pleural Catheters

Authors

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Objective Patients admitted for diagnostic and/or therapeutic procedures relating to malignant pleural effusions often require the insertion of an Indwelling Pleural Catheter (IPC) which is managed completely by the community nursing teams until removal. This requires a familiarity and training process of the district nurses prior to discharging the patient which is the limiting factor in the early discharge of patient from the hospital.

Methods During the months of April to October 2017, we scanned all the surgical waiting lists well in advance and initiated a process to pre-operatively identify all of the patients likely to have an IPC insertion. The geographical location for the origin of referral in these patients were looked at and the relevant district nursing team were contacted. Training in management of the IPC was initiated by connecting the company producing the IPC and the district nursing team in anticipation of the patient to arrive over the next 5-7 days.

Results 25 patients were identified during the 6 month period. 18 of these patients underwent insertion of an IPC on the scheduled date. 4 health boards and 25 district nursing teams were trained in the management of IPC. Average time for communication with Company representative and the training of the nurse was 2 days. Although the average length of stay for the patient after the procedure was 5 days this was often due to other issues, saving us 2 days length of stay compared to our previous protocols which equates to approximately £12000 of financial savings to re-invest in the service.

Conclusion Pre-emptive training of district nursing teams for IPC care will allow seamless management and discharge of patients following the surgery. This improves the patient experience and communication between hospital and community teams.

Poster 47 : Routine monitoring of LFTs in lung cancer resections - a necessary burden?

Authors

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Objective Increased availability of routine investigations results in significant overinvestigation. Results are generated which have minimal impact on clinical decision making, burdening patients with unnecessary tests as well as increasing cost to NHS providers. This study aims to identify the extent of monitoring of liver function tests in lung cancer resections in a tertiary centre, to ascertain whether monitoring was indicated clinically, and whether any impact on clinical decision making occurred.

Methods Cases were identified using theatre records. Cases coded as “lobectomy/bilobectomy” were included from the period 20/06/17 to 20/09/17. Electronic records were used to collect patient data. Abnormal LFTs were defined from local laboratory normal values.

Results 91 cases were included; 77 (84.62%) patients had 1 set of pre-operative LFTs, 12 (13.19%) patients had 2 sets, and 2 (2.20%) patients had 0 sets. 69 (75.82%) had normal LFTs pre-operatively. The most common abnormality was an isolated raised γ GT (15 patients; 16.48%). 298 sets of LFTs were measured post-operatively (median 3). 61 (67.03%) patients had either normal or static LFTs post-operatively, 16 (17.58%) had elevation of 1 parameter, and 14 (15.38%) had >2 deranged transaminases. 48 (50.55%) patients took medications pre-

operatively which may cause LFT derangement. 3 (3.30%) patients had a prior history of liver disease. Altered clinical decision making due to LFTs derangement was recorded in 1 case (1.10%).

Conclusion Clinicians have a duty to patients to investigate in an appropriate and efficient manner, and have an obligation to justify expense and practise cost-effectively. Our data suggest that in perioperative thoracic surgical patients routine monitoring of LFTs without clinical justification does not impact patient care even in patients with pre-existing liver disease and therefore their omission represents a potential strategy to optimise patient journey and improve service efficiency.

Poster 48 : Thoracic fenestration: early is better than late

Authors

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Objective Pleural empyema can be a complex condition to treat. Particularly in unwell patients with multiple co-morbidities it can require multiple surgical interventions. Surgery (drainage, debridement, decortication) is often required for treatment in stages II and III. VATS has gained popularity and become the mainstay surgical approach. However, we have noted that patients with severe co-morbidities, who present with complex empyemas can require multiple surgical procedures and long treatment periods. We aim to show that early intervention with fenestration augmented with intrapleural vacuum dressing application can result in shorter hospital stays and is well tolerated.

Methods Data was gained from a prospectively kept surgical database for the period 07/09 to 12/16. Inclusion criteria was any patient having thoracic fenestration performed for empyema. Patients were excluded if they were empyemas as a complication of surgical or medical intervention. Patients were subdivided into two groups: patients undergoing surgical washout prior to fenestration (group A) vs those who underwent fenestration as the primary treatment (group B).

Results 24 pts met the inclusion criteria (16male; 8female; average age 65(39-84). Group A (15pts) did worse than group B (9pts) in terms; of HDU admission (66% vs 44% chi-square statistic= 1.1429 (p= 0.285), in-patient mortality (20% vs 11% chi-square statistic 0.32 (p= 0.572) and hospital length of stay (average stay in days: 27 vs 17 p= 0.277 by t-test). 54% of patients received a negative pressure dressing to aid in closure of the fenestration.

Conclusion We have shown that fenestration is a safe method of surgically treating empyema. Our data demonstrates a trend towards shorter hospital stay and lower mortality in patients who undergo early fenestration compared to those who undergo repeated washouts prior to fenestration. We conclude that fenestration could be considered as the first line surgical treatment in appropriately selected patients with complex empyemas.

Poster 49 : Ultrasonic scalpel to perform parietal pleurectomy

Authors

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Objective

Pleurectomy is a procedure frequently performed during thoracic surgery, and it is known that it has some risks such as postoperative bleeding. The aim of this study is to demonstrate that the use of ultrasonic energy device (Harmonic, Ethicon Endo-Surgery, US) to dissect the parietal pleura can reduce the chance of bleeding during or after the operation.

Methods

We adopted this technology for the last 4 years, at our institution, during video assisted (VATS) or open surgery. We report the results of this consecutive series of patients who underwent parietal pleurectomy, for different conditions, and where the ultrasonic scalpel was adopted to perform the pleurectomy. Data were prospectively collected in the bespoke software for medical record.

Results

Data from 40 patients were analysed. The mean age was 60.9 (range 22-85), including 6 women and 34 men. 18 procedures had diagnostic intent. 18 procedures were performed on the left pleural cavity while 22 on the right one (20 VATS and 20 mini-thoracotomies). 15 procedures were performed for benign conditions and 25 for malignant processes (16 patients were affected by mesotheliomas, 7 by metastatic cancer to the pleura, 1 by thymoma and 1 by seminoma). The average hospitalization was 4.7 days (range 2-10). 1 patient was discharged with chest drain in situ because of prolonged air leak. None of the patients had significant bleeding during or after the pleurectomy, and no other complications were recorded. None of the patients sustained complications related to the utilization of the Harmonic device for the parietal pleurectomy.

Conclusion

Our experience suggests that ultrasonic scalpel can be safely adopted to perform parietal pleurectomy and achieve a better haemostasis.

Poster 50 : Chest wall reconstruction: a 10-year experience with an oncological and functional reconstructive algorithm

Authors

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Objective Traditional chest wall reconstructive algorithms which consider only the defect size, thickness and number of ribs resected do not fully address the complex oncological and functional requirements of these cases. The aim of this study was to analyse our 10-year experience of chest wall resection and reconstruction using an oncological and functional reconstructive algorithm.

Methods This was a retrospective review of chest wall reconstructions performed at the University Hospital of South Manchester NHS Foundation Trust in the 10-year period between 2007 and 2017. These included reconstructions for the National Aspergillois Centre and Greater Manchester & Oswestry Sarcoma Service.

Results Fifty-five patients (28 male, 27 female; mean age 55, range 16-84) underwent chest wall reconstruction in the 10-year period. Indications for reconstruction were sarcoma (60%), lung malignancy (18%), aspergilloma (7%), breast cancer (6%) and others (9%). The median number of ribs resected was 3 (range 0-9). Skeletal reconstruction consisted of a polypropylene-methyl methacrylate sandwich (44%), mesh only (36%) or no skeletal element. Forty-one cases (75%) required 43 muscle or myocutaneous flaps: 31 (72%) latissimus dorsi, 11 (26%) pectoralis major and 1 (2%) serratus anterior. None of the patients required free tissue transfer. Mean length of stay was 10 days (range: 4-24). Complications included 4 (7%) infections, 2 (4%) haematomas, 2 (4%) seromas, 2 (4%) hernia/bulges and 1 (2%) pneumothorax. There were no cases of flap necrosis/loss.

Conclusion Our experience using this reconstructive approach has been shown to be a safe, reliable and fulfils both the oncological and functional requirements of these complex cases.

Poster 51 : A retrospective analysis to determine patient suitability for Endobronchial Lung Volume Reduction

Authors

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Objective Endobronchial Lung Volume Reduction (LVR) in carefully selected patients can lead to improvements in quality of life, breathlessness and functional capability. It is not hindered by the same cost, waiting-times and side effects associated with lung transplantation. However, patients require clinical, physiological and radiological assessment prior to intervention. This study aimed to determine how many patients would be eligible for LVR from a given cohort and the impact on service from screening this group.

Methods The online records of all patients with a diagnosis of COPD who had completed pulmonary rehabilitation in Greater Glasgow and Clyde over a year were analysed. The clinical exclusion criteria were current smoking, recurrent exacerbations (>1 per year) and a diagnosis of bronchiectasis or chronic bronchitis. The physiological parameters were FEV₁ 15-45%, RV>180% and TLCO>20%.

Results 807 patients were included in the analysis, of these 250 were clinically suitable. 22 of the 250 patients met the physiological criteria for LVR. 6 of the 22 underwent an HRCT, 3 met the radiological criteria for LVR. 132 required additional physiological tests to assess suitability.

Conclusion Introduction of screening as part of a pulmonary rehabilitation program would help identify a motivated and stable population for LVR. The main impact on the service would be the additional physiological tests, 16% of the population required further investigation. Less than 3% of the population required HRCT. We believe that this would be the most cost-effective strategy to work up patient suitability for this intervention.

Poster 52 : Experience with 3-D printed titanium ribs and hemi-sternum implant for chest wall reconstruction

Authors

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Objective Reconstruction of chest wall defects following resection of chest wall sarcoma is complex and challenging. We present a case of an adult male who underwent surgical resection of chest wall chondrosarcoma where three ribs and right hemi-sternum were resected followed by reconstruction of the resulting large defect with a custom-made titanium implant constructed using three-dimensional (3-D) printing technology in the UK for the first time.

Methods A 76 year male presented with an enlarging right anterior pectoral mass of eight months duration. A biopsy confirmed chondrosarcoma arising from the costal cartilage of the 3rd rib. This required an en bloc resection of the tumour with resection of the right pectoral muscles, the second to the fourth ribs up to the mid axillary line, the intervening intercostal muscles, and resection of the right hemi-sternum. Given the size of the resulting defect, a multidisciplinary approach was adopted for a rigid and soft tissue reconstruction of the defect. A custom-made chest wall implant was designed based on 3-D computed tomography scan reconstruction and the titanium implant constructed using 3-D printing technology in the UK (will be described in detail during oral presentation). At surgery, following resection, the large defect was reconstructed with placing a Gore-Tex patch and anchoring the implant to the fragments of the healthy ribs laterally and the hemisternum medially. Finally, the surgical site was covered with a latissimus dorsi flap.

Results The postoperative course was uneventful. Histology confirmed chondrosarcoma with clear microscopic margins. At follow-up there was no discomfort, pain, displacement or paradoxical movement and the patient was fully mobile.

Conclusion Our case demonstrates that a 3-D printed custom-made titanium chest wall implant, constructed for the first time in the UK, is feasible and safe, provides a satisfactory result and makes this a good surgical choice for reconstruction of large chest wall defects.

Poster 53 : “Can the trainee fix this?” The safety of training on rib fixation following blunt chest trauma: a single institution’s experience.

Authors

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Objective Chest trauma comprises a substantial part of traumatic injuries and is a significant factor in overall morbidity and mortality. Surgical fixation of fractured ribs is associated with improved patient outcomes. The severity of the injuries usually required an experienced surgeon to perform the corrective procedure. The aim of this study was to establish whether rib fixation can be safely performed by trainees with limited experience.

Methods We retrospectively analysed 42 consecutive patients who underwent surgical rib fixation following blunt chest trauma between July 2013 and April 2017. There were 17 procedures performed by supervised trainees (TG) and 25 procedures performed by consultants (CG).

Results The CG included 3 patients with repair of ruptured diaphragm and rib fixation. There was similar percentage of post-operative ITU admission between 2 groups (40% for CG vs. 35% for TG, P = 0.243) with a longer ITU stay for the consultant group (median 10.5 vs. 7.5 days). Median time to drain removal was similar among the two groups (3 days, P = 0.08) and there was no significant difference between two groups in regards to length of stay (median 5 days for CG and 6 days for TG, P = 0.465). There was no difference in the number of ribs fixated between the two groups (median 3 ribs per group, P = 0.485).

Conclusion Our study showed that training on rib fixation is relatively safe and feasible without increasing the length of hospital stay, time to drain removal or need for admission to intensive treatment unit.

Poster 54 : Complex anterior chest wall reconstruction following sternal dehiscence using Stratos system, autograft bone and omentoplasty

Authors

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Objective Sternal wound dehiscence following sternotomy for cardiac surgery is a rare but serious complication with high morbidity and mortality. Patients with high risks and multiple comorbidities are unlikely to

be successfully treated by a simple rewiring of the sternum. We present our technique using the Stratos System, autograft bone and omentoplasty in the management of complex sternal dehiscence.

Methods Between September 2010 and September 2017 11 patients underwent sternal reconstruction using the STRATOS system in our department. All patients were males and the mean age was 60 years (SD±8). 2 patients had history of COPD, 3 had diabetes and 3 patients were obese. 10 patients had undergone initially median sternotomy for cardiac surgery and 1 had clamshell incision for bilateral lung transplantation. 9 patients had coronary artery bypass surgery, 1 patient had redo sternotomy for redo fourth time aortic valve replacement and replacement of ascending aortic aneurysm. 3 patients had undergone previous failed repair of the sternum.

Results There were no perioperative death and all patients were extubated immediately after surgery. The median length of stay was 12.5 days (range 8-131). Three patients developed recurrent wound infections necessitating removal of the Stratos bars and prolonged vacuum assisted closure therapy. Two patients required prolonged hospital stay due to deep sternal wound infection and recurrent sternal dehiscence. 80% of patients made a good recovery with only minor complications identified during the follow-up (Sieroma, sinus) managed conservatively.

Conclusion Rigid sternal fixation with or without omentoplasty can be performed successfully in the management of sternal wound dehiscence with acceptable outcomes. Although the optimum method of chest wall stabilisation is still a matter of debate this small series adds to the current evidence for the application of this technique particularly in complex cases.

Poster 55 : Descending mediastinitis. A review of single centre experience.

Authors

M Jadoon¹; V Valtzoglou¹; V Pagliarulo¹; E Addae-Boateng¹; A Majewski¹; J P Duffy¹; M Hawari¹;

¹ Nottingham City Hospital, UK

Objective Descending mediastinitis is a life threatening condition with reported mortality of 20% to 40%. Most patients present following a retropharyngeal, neck or dental abscesses, which extends down into the mediastinum and pose serious septic sequelae.

Methods In this study, we review our experience and management strategies of this rare condition and the resulting outcomes. 12 patients were treated for descending mediastinitis from December 2011 to October 2017.

Results Our case series includes 7 male and 5 female patients with mean age of 56 years. Patients had mean BMI of 33.72. Two patients were diabetic. Patients presented initially with chest pain, cough, dyspnoea and eventually fever and profound sepsis. All patients were operated within 12 hours of admission. VATS approach was used for 8 patients and thoracotomy approach for 4 patients. 6 patients needed right sided exploration, 3 needed left sided surgery, and 3 had bilateral exploration. All patients needed neck drainage, 3

patients as joint cases with ENT, 4 patients by thoracic team and 5 patients had their neck collections drained before transfer. Streptococcus Milleri was the commonest organism cultured in 7 patients. Other organisms cultured were candida, coagulase negative Staphylococcus, anaerobes, Enterococcus faecium and Morganella morhanii and Fusobacterium Nacrophorum. Mean stay in ICU was 10.16 day. 2 patients required redo VATS debridement. One patient required redo neck drainage. 5 patients had tracheostomy for respiratory wean. Mean total hospital stay was 18.41 days. Two patients died, one after developing bowel, hepatic and splenic ischaemia and other patient with multi-organ failure post septicemia.

Conclusion Mortality in our series was 16.66%. An early intervention, a thorough drainage of neck, mediastinal and chest collections and readiness for redo-interventions is necessary to achieve good outcomes. Multi-disciplinary approach with ENT, intensivists and microbiology teams is essential.

Poster 56 : On table prevention of airleaks: a protocol from previous studies

Authors

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Objective To produce a protocol for prevention of PAL in lung resection surgery which may be introduced into clinical practice, and which is based on currently available literature.

Methods A search was performed of a number of databases to find studies which examined prevention of PAL post-operatively in patients undergoing wedge resection, lobectomy, anatomic resection or lung volume reduction surgery. A protocol was then designed using best evidence from the available literature.

Results Post-operative air leak is well recognised in thoracic surgery, and complicates up to 50% of all lung resections, with the highest incidence in the immediate post-operative period (approximately 28-60%). Prolonged air leaks (PALs) have been defined as any air leak persisting for ≥ 7 days post-operatively. The development of PAL is associated with considerable mortality and increased hospital stay. A number of factors have been implicated in the development of PAL. Amongst these factors are anatomical factors affecting resection (such as incomplete or absent interlobar fissure), upper lobe lobectomy and low predicted post-operative FEV13. Lung Volume Reduction Surgery (LVRS) more commonly results in PAL (39-45.2%) than lung resection in emphysematous (5.4-44%) or non-emphysematous patients (4.2-18.2%). Male gender and % emphysema have also been shown to be independent risk factors.

Conclusion Variable factors were used in arriving at a scoring system using the parameters of if it was a wedge resection of the lung or Anatomical resection, presence of pleural adhesions etc, and a scoring system was arrived at. Score of ≥ 5 indicates high risk, and patient should be considered for measures as given in the attachment.

Poster 57 : Digital portable suction unit adjunct for traditional chest drainage system: an initial single centre experience

Authors

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Objective Digital drainage systems can reduce duration of chest tube placement following thoracic surgery. By incorporating portable suction, they can improve patient satisfaction and decrease complications. We sought to evaluate our unit's practice for drain management and assess the introduction of an adjunct to our traditional chest drainage system which provided both portable suction and digital information.

Methods We performed an audit to assess if we were following our unit's chest drainage management guidelines. This helped establish number of portable suction devices that may be required. We tested the safety/usability of the Rocket Portable Suction Unit (PSU) when fitted to the conventional Rocket drain bottles for 5 patients. After training of doctors, theatre/ward nursing staff and physiotherapists (MDT) we introduced the PSU for patients requiring suction for >24hours and objectively assessed, via survey, patient (n=10) and MDT user experience (n=10).

Results Our audit demonstrated good compliance with our drain management protocol, suggesting adequate decision making independent of a digital drain information system. The PSU adjunct was safe and suction was adequately applied and confirmed on graphical display. Figure 1 demonstrates patient satisfaction for portable suction system compared to wall suction. MDT users found it useful that air leak could still be visualised when the PSU was fitted but did not find the graphical display helpful unless downloaded; there was also issues raised of insufficient units being available for use in all potential patients.

Conclusion Our initial experience of the Rocket PSU highlights the patient demand for portable suction, along with the MDT interest in having units available for this purpose. A major advantage was that the adjunct was integrated to our current system and air leak could still be visualised. Although the digital air leak indicator and graphical display was helpful, it did not significantly alter our practice for drain management.

Poster 58 : Infected mediastinal cyst – complication following endobronchial ultrasound guided biopsy

Authors

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Objective Mediastinal cysts are commonly an incidental finding simulating a benign or malignant diagnosis. Infection is a recognised complication of mediastinal cyst and therefore early surgical management is essential. Endobronchial ultrasound guided biopsy (EBUS) has been used to diagnose and manage mediastinal cyst. We present a case series of two patients who presented with sepsis following diagnostic EBUS of mediastinal cyst.

Methods Two patients with incidental CT thorax finding of mediastinal mass in the subcarinal region had undergone diagnostic EBUS. Both patients presented within a week following EBUS with sepsis and septic shock. There was radiological evidence of an enlarging mediastinal mass, pericardial effusion and pleural effusion.

Results 53 biopsies were performed over one year and rate of infection was 3.8% (two cases). Both infected cases presented for posterolateral thoracotomy and deroofting of the cyst in conjunction with antimicrobial treatment. One of the patients presented in septic shock requiring post-operative ICU admission. The post-operative in-hospital stay was 7 and 21 days. Both patients made a full recovery. The 3-month surgical follow-up was satisfactory with no evidence of cyst recurrence on CT thorax.

Conclusion Radiological features of mediastinal cyst should be recognised and early surgical intervention in large or enlarging cyst should be electively performed. EBUS should be performed to assist in radiological diagnosis and aspiration avoided if the lesion appears to be cystic. Close radiological and clinical correlation is essential in diagnosing mediastinal cyst.

Poster 59 : Thoracic drains: one, two or a specially designed drain

Authors

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Objective To review the current evidence for single- and double chest drain placement. Based on the results of a literature search, to design a pleural drainage system which is better suited to thoracic surgery and is based on currently available best evidence.

Methods Medline was searched using PubMed and OVID interfaces. Search strategy was: The reference lists of all selected papers were reviewed and any further papers of interest were also selected. Two hundred and forty-three papers were found using the reported search. From these six papers were identified that provided the best evidence to answer the question.

Results Alex et al. in 2003 analysed 120 consecutive patients recruited between January 2001 and December 2002. Group A (60 patients) had two 28 French (F) drains inserted - one in the apical and the other in the basal position. Group B (60 patients). Gomez-Caro et al. conducted a randomised controlled trial (RCT) with 119 patients. The patients were randomised to receive a single 28F drain sited laterally directed from the base towards the mid-cavity (Group A - 60 patients) or two 28F drains one sited apical and anterior, the other posterior and basal (Group B-59 patients). Despite no significant differences in the pain score registered, Group B patients necessitated significantly more intravenous morphine than patients in Group A [one patient (1.6%) vs. nine patients (10.1%), P=0.0003]. Icard et al. prospectively evaluated 100 consecutive patients receiving a single 24F Blake drain. The median duration of drainage was five days (range: 3-15 days). A RCT conducted by Pawelczyk et al. in 2007 studied 187 consecutive patients. Patients were randomised to receive a single drain (90 patients) or two drains (93 patients) sited in the mid-position.

Conclusion In thoracic surgery, the used of two chest drain tubes has not been shown to be advantageous over the insertion of a single drain. The Authors have designed a prototype of a special thoracic drain.

Poster 60 : Case series of unexpected findings of malignancy in bullectomy and pleural specimens post surgery for spontaneous pneumothorax

Authors

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Objective Primary lung and pleural malignancies can present with a range of symptoms or be an incidental finding, but they rarely manifest as a spontaneous pneumothorax. We report a series of seven patients who were diagnosed with malignancy following surgery for pneumothorax.

Methods We retrospectively reviewed a prospectively collected thoracic database and identified all patients operated for spontaneous pneumothorax between 1993 and 2016, who had a postoperative histopathology consistent with malignancy. Patient characteristics and outcomes were analyzed.

Results 6 patients, 4 males and 2 females were identified, with a median age of 49 years (range 28-62). From an initial CXR all patients were diagnosed with spontaneous pneumothorax, without other identifiable lesions. None of the above had preoperative CT scan and all proceeded to surgery due to persistence of the pneumothorax despite adequate drainage. 5 patients had bullectomy and pleurectomy and 1 had bullectomy and talc pleurodesis. 2 had primary lung adenocarcinoma, 2 primary lung squamous cell carcinoma, 2 epithelioid pleural mesothelioma, all diagnosed on histopathology of the resected bulla or pleura. Postoperative staging CT was done in all involved patients and MDT discussion with further appropriate management were instituted. 2 were accepted as R0 wedge lung resections due to poor lung function and 1 had further lobar resection. 1 had

pleurectomy decortication followed by chemotherapy for mesothelioma and survived more than 4 years and 2 had palliative chemotherapy.

Conclusion It is extremely important to send all resected specimens to pathology when performing surgery for pneumothorax and to check the results. Despite the rarity, thoracic malignancy could be incidentally diagnosed allowing appropriate surgical or oncological management. The value of preoperative CT scan in patients presenting with pneumothorax should be appraised.

Poster 61 : Advances in the management of lung cancer: vaccines, their use and future

Authors

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Objective Overall aim is to review pre-clinical and clinical research conducted during development of CIMAvax EGF, primarily studies published by Cuban investigators in international peer-reviewed scientific journals, and evaluate the evidence for vaccine use in lung cancer.

Methods An automated search for "vaccine" and "EGF" was conducted in PubMed, resulting in 17 articles published by Cuban authors between January 1, 1994 and September 30, 2009. Main findings were described and discussed, along with unpublished preliminary findings of an initial ongoing phase III clinical trial.

Results Articles reviewed describe five phase I/II and one phase II clinical trials conducted in Cuba in 1995-2005. A non-controlled 1995-1996 study resulted in the earliest published scientific evidence of the feasibility of inducing an immune response against autologous EGF in patients with different advanced stage tumours. Subsequent controlled, randomized trials included patients with advanced stage (IIIB/IV) NSCLC. The 2 and 3rd phase I/II trials differentiated immunized patients as poor antibody responders (PAR) and good antibody responders (GAR), according to their anti-EGF antibody response, and confirmed greater immunogenicity with Montanide ISA 51 adjuvant in the vaccine formulation, as well as the benefits of low-dose cyclophosphamide treatment 72 hours before the first immunization. In the 5th phase I/III trial, longer survival and increased immunogenicity were achieved using a VChTV schedule and dividing the vaccine dose in 4 anatomical sites. Longer survival was observed in all vaccinated patients compared to controls, and the difference was significant ($p < 0.05$) in the group aged <60 years.

Conclusion Phase II/III trials have clearly demonstrated that immunotherapies against NSCLC have a proven role in the management of carcinoma as part of a treatment regime alongside traditional immunotherapy drugs.

Poster 62 : An audit to improve the quality of thoracic surgery operation notes

Authors

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Objective The importance of accurate, detailed operation notes is well recognised by the Royal College of Surgeons (RCS) after the National Confidential Enquiry into Perioperative deaths in 1994 revealed significant variation in operation notes and advised urgent measures to improve quality. We set out to assess adherence of our Thoracic surgery department to guidelines published in Good Surgical Practice, 2014.

Methods We performed a retrospective audit of all thoracic operation notes in a two-week period from 11/09/17 to 21/09/17. Data was collated into a Microsoft Excel proforma containing the RCS standards. Operation notes in this department are both handwritten into an existing peri-operative proforma used across the Trust and typed; both were reviewed. 31 patients were included and their operation notes compared with the 22 RCS criteria. We also included other criteria common to thoracic surgery, namely drains and staplers used. Microsoft Excel was used to analyse data and create graphs to illustrate results. Operations performed ranged from video-assisted thorascopic (VATS) to open lobectomy to Nuss procedures.

Results Overall the majority of criteria were adherent to RCS guidelines with most achieving >90%. Areas of poor documentation were type of procedure; elective or emergency (12.9%) (though this was documented in the main operating database), local anaesthesia used (37.9%), details of closure (48.2%) and identification of prosthesis (0%). Additional criteria were size, position and type of drain (84%, 52% and 76% respectively) and details of staplers used (89.4%).

Conclusion Results are due to be presented back to the department and we endeavour to educate surgeons of the importance of thorough documentation given its medical and legal implications. We will trial a thoracic surgery specific operation note proforma to include drains and staplers and will re-audit after two months to determine its effectiveness and potential to recommend to other thoracic departments across the country.

Poster 63 : Discharge with portable chest bag and digital drainage system - a safe and cost-effective solution

Authors

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Objective The aim of this study is to evaluate the safety and cost-effectiveness of using portable drainage systems for outpatient management of patients with prolonged air leak and drainage, who are otherwise

medically fit for discharge.

Methods This prospective study follows patients discharged with a Rocket® ambulatory drain bag or a digital Thopaz® drain between October 2016 to October 2017. On discharge, patients were educated about their drainage systems and given information leaflets. They were reviewed on a weekly basis with clinical examination and chest radiographs alongside regular district nurse reviews.

Results Seventeen patients were identified with 15 having previous surgery (8 lobectomy, 2 pneumothorax surgery and 5 decortication for empyema). One patient required chest drain insertion for a pneumothorax following CT guided biopsy and another for non-operable empyema & bronchopleural fistula. Chest drains were removed at median 10 days following discharge (range 2 to 233). Following drain removal, none of the patients had residual space or pleural effusion on chest radiographs. One patient attended A&E for a bag tear which was replaced without any issues. The patient with inoperable bronchopleural fistula was the only readmission secondary to lung collapse on the portex bag but was later discharged on continuous suction via Thopaz. Overall, the portable drainage systems were well tolerated and there were no mortalities whilst patients had drains. One patient passed away from pneumonia 3 weeks following drain removal. A total of 428 days in hospital were saved by sending patients home with drains in situ. This equates to an approximate saving of 117,000 pounds as each night costs 275 pounds. This also meant there were less cancellations for new patients requiring surgery.

Conclusion Portable chest drainage is a safe and effective management for persistent air leak or drainage in appropriately selected patients. It has significant cost saving implications & can increase surgical activity.

Poster 64 : Laparoscopic lens contamination and its impact in thoracic surgery

Authors

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Objective There is an increasing number of Video-assisted thoracoscopic (VATS) operations due to the demonstrated evidence showing its benefit compared with a traditional thoracotomy approach. In VATS surgery, the camera lens acts as a surgeons eyes inside the chest cavity, therefore any issues arising from polluting the lens would lead to loss visual acuity and impede the surgeons ability to complete their task. This pilot project will aim to quantify the frequency and duration of lens contamination and associated impacts on thoracic surgery.

Methods Data is collected manually in a speciality thoracic unit where staff in these theatres remain largely unchanged. Procedures that were VATS-related were observed and data was recorded in a form by a member of staff. An example of the type of data that was collected is attached to this abstract. It was crucial for the team to not notify the surgical team of the data recording to not misrepresent the results of the project.

Results These are preliminary results; more data is expected. 13 VATS operations were observed, around 18 hours of operating. 44 cleaning events were recorded, at an average of 3.3 cleaning events per operation. A total time spent cleaning was 16:22 at an average of 1:16 per operation and 22 seconds per cleaning event. On average, 3.1% of operating time was spent cleaning the lens. Only 2 operations ended quickly with no contamination and 2 operations were converted to open thoracotomy. When comparing variables using % of time spent cleaning: Using a 3-port method, 3.1% compared with 1.9% for a Uniportal method, and Using a 3d scope, 1.3% compared with 3.5% for a 2d scope.

Conclusion Lens contamination is a major cause of frustration to surgeons and staff alike. There is currently no literature that provides evidence of benefit to a cleaning method and it is left to a surgeons' personal experience or belief. This project aims to provide statistical evidence for different cleaning techniques or equipment to cut down on time wasted.

Poster 65 : VATS Thymectomy for Myasthenia Gravis: one center experience

Authors

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Objective The MGTX (Myasthenia Gravis Thymectomy Trial) recently proved that open thymectomy improves clinical outcomes of patients with myasthenia compared to medical treatment alone. The aim of our study was to analyse the benefits of VATS thymectomy for patients with non-thymomatous myasthenia gravis.

Methods Retrospective analysis of prospectively collected data for all patients with non-thymomatous myasthenia gravis who underwent VATS thymectomy in our unit in the last 5 years (n = 15). Perioperative rebound of myasthenia symptoms, pain control, hospital stay and cosmetic satisfaction were recorded. Improvement of symptoms and reduction of medication were assessed via questionnaires given to the patients and the referring neurologist.

Results Mean age at operation was 35 years (range 16 -88). The population was predominantly females (87%). Most of the patients presented in MGClass II-III, but 20% was in class IV, requiring intravenous medication or plasmapheresis prior to the operation. Mean postoperative hospital stay was 4.5 days. Half of the patients had minor neurological symptoms in the immediate postoperative period. During the follow-up, 75% of the patients had significant improvement of symptoms, noticeable mainly from 3 months onwards. According to the responsible neurologist, 8% of the patients achieved a complete remission, 42% could reduce their medication and 50% were not affected by the operation. Wound satisfaction was 100%.

Conclusion VATS thymectomy provided a significant symptomatic relief in patients with non-thymomatous myasthenia gravis. The VATS approach contributed to the low complication rates and high satisfaction level among the patients.

Poster 66 : First reported case of congenital emphysema with Partial Anomalous Venous Drainage

Authors

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Objective We report the first case in the literature of congenital emphysema with partial anomalous venous drainage. Congenital lobar emphysema (CLE) is a rare congenital anomaly usually resulting from an embryonic/fetal obstruction of the developing airway. Similarly, partial anomalous pulmonary venous connection (PAPVC) is a rare cardiac congenital anomaly, whereby one or more of the pulmonary veins drain back into the systemic venous drainage. The drainage may be supra-cardiac, infra-cardiac or intra-cardiac.

Methods A 21-year-old female, non-smoker, presented with a 4-year history of sharp, episodic, retrosternal chest pains brought on with exercise. Chest radiograph revealed an emphysematous left lung causing compression and shift of the mediastinum to the opposite side and downward displacement of the diaphragm. CT scan confirmed the x-ray findings and in addition showed an emphysematous lower lobe compressing the left upper lobe and an anomalous inferior pulmonary vein draining into the hemi-azygos vein.

Results She underwent a left VATS lower lobectomy for symptomatic congenital emphysema and PAPVC. At operation, the lung appeared pink and the left lower lobe was grossly enlarged, emphysematous and spongy. The inferior pulmonary vein was seen draining anomalously into the left hemi-azygos system. Following surgery she made an unremarkable recovery and at follow-up was pain free and active.

Conclusion This is the first reported case in the literature of congenital emphysema with PAPVC. The PAPVC originated from the left lower lobe, which is rare, and resulted in oxygenated blood flowing back into the systemic venous system in a supra-cardiac manner from a congenitally emphysematous lobe. As the patient was symptomatic, and shunting may result in pulmonary hypertension and right ventricular dysfunction, surgical resection of the congenitally emphysematous lobe was required with correction by resection of the PAPVC. Long term follow up is required to assess the final outcome.

Poster 67 : Free tissue reconstruction of recalcitrant empyema cavity and associated chest wall defect

Authors

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Objective A recalcitrant empyema is associated with high morbidity and mortality, and effective management is therefore essential to prevent death and deterioration in quality of life. This unique case series illustrates a successful multidisciplinary management algorithm involving free tissue reconstruction which has life-changing effects.

Methods A retrospective analysis of the case notes, radiological and intraoperative photographic imaging was carried out on patients undergoing free tissue reconstruction for recalcitrant empyema cavity and associated chest wall defect between October 2013 and June 2016.

Results Six patients received reconstruction using a free contralateral latissimus dorsi flap, 5-51 months after initial fenestration. Three patients also had a bronchopleural fistula. Five patients required nutritional optimisation before reconstruction. Following reconstruction, five patients were successfully discharged after 9-19 days. One patient passed away eight weeks post-reconstruction due to respiratory and cardiac failure. During one and a half years (mean) follow up of these five patients, empyema and bronchopleural fistula were successfully treated, and all five patients gained good weight and significant improvements in quality of life. These included increased independence and exercise tolerance.

Conclusion MDT management involving free tissue reconstruction effectively treats recalcitrant empyema and bronchopleural fistula leading to significant improvement in quality of life.

Poster 68 : Life-threatening pulmonary haemorrhage following cryoablation for atrial fibrillation

Authors

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Objective Cryoballoon ablation is a recently introduced treatment option for patients with symptomatic atrial fibrillation. The reported rate of complications is low (approximately 5%) and comprises mainly vascular access-site complications and phrenic nerve palsy. We report to the best of our knowledge the first case of a life-threatening pulmonary haemorrhage occurring during the procedure.

Methods A 72-year-old woman with atrial fibrillation was undergoing cryoballoon ablation at an external institution. When the balloon catheter was inserted into the left lower pulmonary vein she suddenly developed massive haemoptysis. The procedure had to be aborted. She became rapidly unstable and required intubation, mechanical ventilation and vasopressor therapy while she was still in the catheter laboratory.

Results The patient immediately underwent CT angiography that showed massive pulmonary haemorrhage and leakage of contrast medium into the left lower lobe. Endobronchial bleeding persisted. As the situation was deteriorating, she was transferred to our department of thoracic surgery. Upon arrival the patient was in critical condition. The endotracheal tube was filled with fresh blood. She was immediately brought into the OR and double lumen intubation was performed to secure the right airway system and to avoid asphyxiation by blood. Bronchoscopy showed fresh and massive bleeding from the left lower lobe in accordance with the CT angiography findings. As the patient was in life-threatening condition we opted for emergency surgery with thoracotomy and left lower lobectomy. Following lobectomy the endobronchial bleeding stopped and the patient was stabilized without problem. The postoperative course was uneventful.

Conclusion Vascular injury during cryoballoon ablation for atrial fibrillation can result in a situation of highest urgency. Then emergency surgery is mandatory to save the patient. Therefore, cryoballoon ablation should only be performed in institutions with easy access to cardiothoracic surgery.

Poster 69 : Metastatic renal cell carcinoma to the left atrium: a case report and review of the literature

Authors

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Objective The majority of cases of cardiac metastases from a renal cell carcinoma involve the right atrium. Metastases to the left atrium through the pulmonary veins are exceedingly rare and challenging. We report a case of a right lower lobe renal cell carcinoma metastasis invading the left atrium through the right inferior pulmonary vein and place this into context within the literature.

Methods Ovid Medline was searched from inception to the present day with no restrictions applied. The search terms consisted of: (renal cell carcinoma) AND (left atrium). This produced seven potential abstracts. Of these, five papers were included. One further paper was identified from review of references, resulting in the inclusion of six papers.

Results In total, six patients were identified from the search strategy and, together with our experience, seven patients were included. The median age was 58 years (IQR: 56-75 years) and four were male. The majority of patients (57%) had an original left-sided renal cell carcinoma and one had bilateral renal cell carcinomas. The laterality of the pulmonary metastases were evenly distributed with one patient having bilateral pulmonary disease and spread to the left atrium was most commonly through the right inferior pulmonary vein. All but one patient had evidence of the left atrial metastasis on computed tomographic scan or echocardiography. Six patients had surgical resection of the tumor and left atrial mass and four patients received adjuvant chemotherapy. Two patients died in hospital, two died from subsequent cerebral metastases and three patients were progressing well at a median follow-up time of 11 months post-operatively.

Conclusion Pulmonary metastases to the left atrium are rare clinical entities. When metastases are located close to the pulmonary veins, consideration must be given to direct invasion and extension to the left atrium allowing the development of a clear operative strategy reducing unanticipated intra- and post-operative events.

Poster 70 : Minor Video Assisted Thoracoscopic surgical procedures on spontaneous ventilation anaesthesia: an early experience of a novel anaesthetic technique

Authors

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Objective Video Assisted Thoracic Surgery (VATS) under sedation with laryngeal mask (LMA) is an emerging novel technique while patient is spontaneous ventilating. In this technique, patient does not require muscle paralysis, tracheal and double lumen intubation and one lung ventilation.

Methods We recently started doing minor thoracic VATS surgical procedures by this technique such as bullectomy & pleurectomy, plural biopsy, lung biopsy, wedge excisions, decortications. At present we have done only 7 patients to report but we are doing these cases regularly.

Results In this technique, surgical pneumothorax is created with the formation of ports which subsequently collapsed the lung with adequate surgical exposure. In our experience, collapsed lung was identical as one lung ventilation. Oxygen saturation was maintained over 95% all the time while end tidal CO₂ was very low. Patients were comfortable during procedures and woke up very quick after procedures. Standard surgical procedures were performed without any delay or difficulty. There was no complication in peri-operative period and their post op recovery was unremarkable.

Conclusion Minor VATS procedures can be performed by this technique which is safe and economical, with rapid post op recovery. However, it is a new technique which requires further studies.

Poster 71 : Survival after pulmonary metastasectomy for colorectal cancer

Authors

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Objective Pulmonary metastasectomy is a common practice in Thoracic Surgery. However, there is lack of level one evidence to demonstrate the survival benefit in resecting pulmonary metastasis. We aim to report the survival outcome and prognostic factors of pulmonary metastasectomy in our centre.

Methods This is a retrospective study of consecutive patients who underwent pulmonary metastasectomy for primary colorectal cancer over 10-year period in a single centre. Survival was calculated using Kaplan Meier analysis. Categorical and continuous prognostic factors were analysed using log rank (Mantel Cox) method and Cox Regression method respectively. For any statistically significant factors detected, Cox regression was used to calculate hazard ratio.

Results Between April 2006 and March 2016, 43 patients undergone 56 operations (13 patients had 2 separate operations) and a total of 64 pulmonary metastases were resected. Median disease-free-interval (DFI) post pulmonary metastasectomy was 9 months (95% CI 1.9-16.1). Five-year survival rate after pulmonary metastasectomy was 58.6%. Thirteen patients (30.2%) were dead at the time of censure. Surgical approach (Thoracotomy vs Video Assisted Thoracoscopic Surgery (VATS)) and the number of pulmonary metastasis were found to affect survival outcome. VATS resection showed better survival compared to open resection (HR 0.301; 95% CI 0.098-0.927, p=0.037). Patients with solitary pulmonary metastasis had better survival outcome compared to patients with multiple pulmonary metastases (HR 0.232, 95% CI 0.074-0.727, p=0.012). There was no correlation between DFI and survival (p= 0.472).

Conclusion Pulmonary metastasectomy confers a good 5-year survival outcome in selected patients. Solitary pulmonary metastasis from colorectal cancer and VATS pulmonary metastasectomy are good prognostic indicators of survival. Further data from prospective studies or randomised controlled trials are needed for better evidence.

Poster 72 : What level of care do VATS lung resections need post-operatively?

Authors

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Objective This study examines the safety of post-operative ward care following VATS lung resection. By prospectively reviewing the post-operative course following surgery in a high dependency unit versus a specialist ward, we seek to establish whether patients can be safely cared for in a ward setting immediately following surgery. The primary endpoint of the study is HDU admission of ward patients.

Methods Over a 2 month period we reviewed the post-operative course of 45 sequential VATS wedge resection and lobectomy patients which were subsequently cared for in a HDU or ward setting based on surgeon preference. 13 patients underwent VATS wedge resection and 30 underwent VATS lobectomy. The procedures were all carried out by 3 consultant thoracic surgeons in a single high volume thoracic surgery unit. A

specialised thoracic ward (1 nurse per 8 patients) and high dependency unit (1 nurse per 2 patients) were both routinely available for post-operative care.

Results 2 patients were excluded from analysis due to conversion to open. Of the remaining 43 patients, 18 were discharged from recovery to the ward and 25 to higher level care. None of the patients admitted to the ward required subsequent admission to HDU. 2 of the 14 ward patients were reviewed by an on-call doctor overnight – both for drowsiness due to PCA overuse. 2 of 25 HDU patients required medical review overnight – one for high lactate due to dehydration and one due to an incidental finding of sick sinus syndrome. No serious surgical complications or mortality were reported in any of the cases. Length of stay did not significantly differ between both groups of patients - median 3 days.

Conclusion Patients can be safely looked after on a thoracic surgery ward following VATS lung resection. No ITU admissions or long term adverse events were reported in patients discharged to the ward. HDU/ITU will still be required for high risk patients but patient flow can be facilitated by discharge of routine VATS surgery patients toward following surgery.

Poster 73 : Management of post-cardiotomy cardiogenic shock with extra-corporeal membrane oxygenation

Authors

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Objective Despite vast development of surgical procedures, skills and management, post-cardiotomy cardiogenic shock (PCCS), a condition with inadequate blood circulation due to primary heart failure, remains a clinical challenge with 100% mortality. Extra-corporeal life support (ECLS), although considered as a last resort in the management of PCCS, is being used increasingly.

Methods A retrospective study of patients with PCSS requiring ECLS between 2006 and 2017 (upto September) was performed. All patients were evaluated by our multi-disciplinary team for suitability as candidates for ECLS. Peripheral as well as central veno-arterial ECLS were implanted using either Cardiohelp® or CentriMag® (Thoratec) pump head and Medos Hilite® 7000LT oxygenator as a standard set. Overall outcomes of the patients were analysed.

Results 39 patients (Male: Female 23:16) with mean age of 57 (range: 20-81) years, required ECLS for PCCS. In this group, 24 patients (61.5%) died on ECLS. 15 patients (39.5%) were weaned, out of which: 1 was bridged to LVAD, 1 was bridged to total artificial heart and died after two weeks; 1 patient was bridged to BiVAD and died after 3 weeks; 1 died after one month from the date of the explantation. 12 patients are alive at the time of presentation, with an average follow up of 1197 days.

Conclusion We demonstrate ECLS as a potential rescue in the management of patients with PCCS. Results of ECLS for cardiogenic shock due to PCCS are encouraging, with acceptable long term results if the patient is weaned. The use of ECLS in PCCS must be decided depending on individual risk factors.

Poster 74 : Left ventricular dilatation, presence of intra-cardiac thrombus and short-term outcomes of primary heart graft failure patients managed with ECMO

Authors

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Objective Primary graft failure (PGF) is a complication of cardiac heart transplantation (Htx) which carries high morbidity and mortality. Extracorporeal Membrane Oxygenation (ECMO) has emerged as a preferred treatment for PGF, being widely employed as a method for recovering primary graft function. The primary aim of this study was to determine if two common complications of ECMO therapy; Left ventricular dilation (LVd) and left sided intra-cardiac thrombus (LVt) were associated with poorer short- term outcomes in PGF patients and which factors of ECMO delivery were associated with these two complications.

Methods Data was retrospectively collected from 17 PGF patients treated with ECMO between 2012 – 2016 at the GJNH. Data was sourced from in-hospital data management system “C.I.S” and legacy patient notes. Statistical analysis was performed, significance was defined as P value < 0.05 and a confidence interval (CI) of 95%. The collected data was analysed for associations.

Results The short-term outcomes of this cohort were that 7 (41%) recovered sufficient function to allow weaning from ECMO, 5 (29.5%) were converted to VAD therapy, 5 (29.5%) were unable to wean from ECMO and care was withdrawn. 7 (41%) developed Left Ventricular Dilation (LVd), 10 (59%) developed left sided intra-cardiac thrombus (LVt). Both left ventricular dilation and intra-cardiac thrombus were associated with poorer short-term outcomes. The rate of delivered flow was associated with both left ventricular dilation and intra-cardiac thrombus. No other statistically significant associations were found.

Conclusion Short-term outcomes for PGF patients in this study are consistent with published data and suggest that ECMO therapy remains a viable treatment strategy. The delivery of high % flows being associated with both the occurrence of dilation and thrombus may imply that while venous oxygen saturation and other perfusion markers can be maintained, the delivery of lower % flows may be beneficial to PGF patients treated with ECMO.

Poster 75 : Donor Right Ventricular Stroke Work Index (RVSWI) is a poor predictor of Primary Graft Dysfunction (PGD) after heart transplantation

Authors

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Objective Ventricular dysfunction of the transplanted heart in the first 24 hours after transplantation for reasons other than rejection or mechanical causes is defined as PGD. PGD is the leading cause of 30-day mortality after heart transplantation. Previous studies have identified multiple donor and recipient risk factors. Our aim was to study the association between donor RVSWI and incidence of PGD.

Methods We analysed the medical records of all patients who underwent heart transplantation between June 2010-October 2017 at our centre. We identified 68 donors who had invasive haemodynamic monitoring prior to retrieval at the donor hospitals. Potential recipients had right heart catheter studies at 6-8 weekly intervals while in the waiting list for heart transplantation as part of routine follow up in our centre. The primary endpoint for the study was ISHLT-defined PGD. We stratified the cohort into 2 categories of RVSWI (Group 1: RVSWI < 6 gm-m/m²/beat (reference category), Group 2: RVSWI > 6 gm-m/m²/beat. Multivariable logistic odds regression analysis was performed to calculate the odds ratio of developing PGD in Group 2 compared to Group 1. Potential confounders adjusted for were donor age, donor inotrope score, warm ischaemic time, recipient pulmonary vascular resistance, donor-recipient gender mismatch and preoperative mechanical circulatory support in the recipient.

Results The median age of donors was 43 (14-62) years. There were 33F:35M donors. The median age of recipients was 49 (18-64) years. In the subgroup analysis of donors on inotropes, patients with an RVSWI Group 2 had an OR of 1.42 (95% CI 0.24-8.33, P>0.05) compared to Group 1. In donors not on inotropes, patients in the RVSWI Group 2 had an OR of 0.54 (95% CI 0.07-4.47, P>0.05). There was no significant interaction between the RVSWI Groups and the use of inotropes in donors.

Conclusion Donor RVSWI is not a predictor of PGD in our cohort. Donor age and warm ischaemic time were both associated with PGD in our cohort.

Poster 76 : Impaired baseline renal function may not influence long term renal function and survival in patients with long term ventricular assist device

Authors

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Objective It remains controversial whether preoperative renal dysfunction affects mortality after prolonged LVAD support as long term follow up studies are limited to 1 year. The purpose was to investigate changes in estimated glomerular filtration rate (eGFR) up to 8 years post LVAD implant and their impact on long term survival.

Methods A retrospective single-centre analysis was conducted from 2006 to 2017 of 255 consecutive LVAD recipients (30% HMII, 70% HVAD). Patients were divided into two groups based on preimplant eGFR (< 60, > 60 ml/min/1.73 m²). The clinical course was also assessed with respect to baseline grade (1: > 90 normal, 2: 60-89 mild dysfunction, 3: 45- 59 moderate, 4: 30- 44 moderate to severe, 5: 15- 29 severe, 6: < 15 kidney failure). Change in eGFR and the impact on survival were analysed.

Results The eGFR of the total cohort increased from a baseline of 75.19 ± 34.35 to 118.97 ± 67.62 ml/min/1.73 m² one month post-implant ($p < 0.0001$) and declined at 3 months; 6 years post implant eGRF was higher than baseline though this was not significant ($p=0.48$). Those with a preimplant eGFR >60 followed the same pattern as the entire cohort whereas those with a preimplant eGFR < 60 had a significant increase at 1 month ($p < 0.0001$), followed by a significant decline from 1 to 3 months. For this group, eGFR remained significantly higher than baseline 6 years post-implant ($p=0.032$). For the baseline eGRF <60 group, there was a sustained transition to improved distribution of renal function grade post-LVAD (Fig 2A, B). Post-LVAD survival at 1, 3, and 5 years for baseline eGFR > 60 was 76 %, 54%, 48% and for eGFR < 60 was 71%, 60%, 48%, respectively. There was no difference in survival between the two groups ($p = 0.98$) or between the grades ($p = 0.14$).

Conclusion Patients with low preimplant eGFR derive most benefit from LVAD therapy, with eGFR remaining elevated above preimplant levels up to 6 years. Surprisingly, pre-implant renal dysfunction did not impact negatively on long term mortality post LVAD.

Poster 77 : 1 year results after successful short term mechanical circulatory support bridging strategies to heart transplantation

Authors

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Objective Short term (ST) mechanical circulatory support (MCS) may be used to bridge patients to heart transplantation. The MCS strategy is responsive to clinical need from ECMO and Impella as salvage and stabilisation strategies through to STLVAD and BiVAD +/- ECMO as optimisation strategies. The mid-term success of these strategies requires evaluation.

Methods Prospectively collected data on all successful bridges to transplant were reviewed and a descriptive analysis performed on non-parametric data. The data is presented according to initial MCS strategies even if the strategy altered during the period of bridging.

Results Table 1: There were 29 patient successfully bridged to transplantation of which n= 4 (14%) had died at 1 year. At presentation n=23 were INTERMACS 1 and n=6 were INTERMACS 2. The aetiology was dilated cardiomyopathy (n=18), ischaemic cardiomyopathy including post acute myocardial infarction (n=7), hypertrophic cardiomyopathy (n=1) and amyloidosis (n=2). After the initial LV impella strategy 1 patient was bridged to ECMO then BiVAD and was alive at one year. N = 4 patients with an initial strategy of pECMO underwent further bridging before heart transplantation (1 cECMO, 1 ST LVAD, 1 BiVAD, 1 BiVAD ECMO). The median (IQR) total duration of MCS was 12.5 (3.75-28) days The complications of MCS pretransplant were bleeding requiring re-exploration (BiVAD n= 1 cECMO n=1, ST LVAD n = 1), peripheral limb vascular complications (pECMO n =3). Post transplant primary graft dysfunction necessitated cECMO (n=3), BIVAD +/- ECMO (n=2) and ST RVAD (n=2).

Conclusion Survival at 1 year after MCS bridged heart transplantation is good using an appropriately responsive MCS strategies. The number of days supported however is considerable and patients post transplant may need further MCS support.

Poster 78 : Endovascular aortic repair versus open surgical repair for descending thoracic aortic disease: a systematic review and meta-analysis

Authors

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Objective The purpose of this study was to determine whether thoracic endovascular aortic repair reduces death and morbidity compared with open surgical repair for descending thoracic aortic disease.

Methods A comprehensive search was undertaken among the four major databases (PubMed, Embase, Scopus and Ovid) to identify all randomized and nonrandomized controlled trials comparing open versus endovascular repair in thoracic aortic aneurysm. Databases were evaluated and assessed to July 2017. Odds ratios, weighted mean differences, or standardized mean differences and their 95% confidence intervals were analysed.

Results A total of 14,580 patients were analysed in total of 13 articles which were included in the synthesis of the meta-analysis. A total of 10,672 patient had open repair 3,908 patients had endovascular repair. Patients undergoing open repair were younger (mean was 65.1 yrs vs 70.0 yrs, p<0.00001), there was higher elective rate in open repair patient (84% vs 81%, p=0.01). Duration of intensive care and total hospital stay were much shorter in endovascular patients again open repair (4.5 vs 8.5 days, p<0.00001 and 9.5 vs 15.7 days, p<0.00001). Postoperative stroke and paraplegia were similar in both groups and with no statistical difference (p=0.98, p=0.73 respectively), while renal failure was higher in open repair group (p<0.00001). In-hospital and one

year mortality were lower in endovascular repair ($p=0.02$, $p=0.04$ respectively), however 5 year mortality were higher in endovascular group ($p=0.001$).

Conclusion The present meta-analysis shows that endovascular repair of thoracic aortic aneurysm gives a better perioperative outcomes up to one year, however there is lower mortality rate at 5 years in open repair, therefore a long term data and studies are required to give a better understanding of comparing these two techniques.

Poster 79 : Ten-year experience of valve-sparing aortic root replacement

Authors

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Objective To evaluate the short- and the long-term results of valve-sparing aortic root replacement in a single institution in the United Kingdom.

Methods This retrospective study included all patients that underwent valve sparing aortic root replacement in our institution between June 2007 and June 2017. Patients' characteristics, surgical data, ITU and in-hospital stays, freedom from re-operation and mortality data was analysed.

Results Sixty patients underwent valve sparing root replacement during this period. The mean age was 50 ± 15 (range 20 - 84 years). The logistic EuroSCORE was 8.0 ± 5.2 . The mean cardiopulmonary bypass time and the cross clamp time were 231 ± 58 and 176 ± 49 minutes respectively. The mean ITU stay was 3 ± 5 days, and the mean in-hospital stay was 13 ± 10 days. The mean postoperative follow-up was 4.3 ± 2.8 years (3 months to 10 years). The 30-day mortality was 1.7%. During the follow-up period, 4 patients (6.7%) underwent re-do surgery for valvular dysfunction. Freedom from re-operation at 5 and 10 years were 96.7% and 93% respectively. The overall mortality at 10 years was 3 patients (5%). At the last follow-up, freedom from mortality and re-operation for valve dysfunction was 88.3%.

Conclusion Valve sparing root replacement has excellent short- and long-term results. It offers a good long-term alternative to aortic root replacement in younger population without the need for anti-coagulation.

Poster 80 : The use of the Personalised External Aortic Root Support in concomitant cardiac surgical procedures

Authors

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Objective We have tested the feasibility of using the Personalised External Aortic Root Support (PEARS) aortic wrap to simplify the surgery for patients requiring concomitant procedures (e.g. complex mitral valve repair) in the presence of a modestly dilated aortic root.

Methods 4 patients with Marfan syndrome were referred for mitral repair surgery. 3 male and 1 female with a mean age of 32 years (range 17 to 45 years). All 4 had severe mitral regurgitation secondary to mitral valve prolapse associated with a dilated aortic root measuring 42 to 46 mm in diameter at the level of the sinuses of Valsalva. The PEARS devices (Exovasc Ltd.) were manufactured in advance based on measurements taken from CT scanning.

Results All 4 patients underwent successful mitral valve repair + PEARS procedures. Most of the PEARS part of the operation was performed before and after the period of cardiopulmonary bypass. At 2.5 years follow-up the patients are all clinically well and echo studies show competent mitral valves and stable aortic root dimensions.

Conclusion We believe that the use of the PEARS aortic wrap simplifies concomitant surgery e.g. when a patient requires complex mitral valve repair. The alternative is to ignore the dilated aortic root or carry out extensive prophylactic surgery (i.e. valve sparing aortic root replacement). The latter requires significantly longer operating times with the likelihood of a higher incidence of perioperative adverse events.

Poster 81 : Endovascular aortic repair versus open surgical repair for acute type B thoracic aortic dissection: a systematic review and meta-analysis:

Authors

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Objective The purpose of this study was to compare perioperative and mortality outcomes of endovascular aortic repair against open repair in acute type B aortic dissection.

Methods A comprehensive search was undertaken among the four major databases (PubMed, Embase, Scopus and Ovid) to identify all published data comparing open versus endovascular repair in the management of acute type B aortic dissection. Databases were evaluated and assessed to July 2017. Odds ratios, weighted mean differences, or standardized mean differences and their 95% confidence intervals were analysed.

Results A total of 18,193 patients were analysed in a total of 9 articles which were included in the synthesis of the meta-analysis. A total of 11,618 patients had open repair while 6,575 patients had endovascular repair. Patients undergoing open repair were younger (mean was 61.3 yrs vs 66.6 yrs, $p=0.02$). Postoperative stroke, paraplegia and renal failure were similar in both groups and with no statistical difference ($p=0.06$, $p=0.86$, $p=0.09$ respectively). Vascular complications were higher in endovascular repair group ($p<0.00001$). In-hospital and one-year mortality were similar in endovascular and open repair ($p=0.38$ and $p=0.41$ respectively), however, 5-year mortality was higher in open repair group ($p=0.02$).

Conclusion The present meta-analysis shows that open surgical repair gives satisfactory perioperative outcomes in patients presenting with acute type B aortic dissection, however all-cause mortality at 5 years favours endovascular repair. A long-term comparative data and studies are required to give a better understanding these two approaches.

Poster 82 : Total arch replacement and Frozen Elephant trunk with JOTEC E-vita Hybrid stent graft system - preliminary data from a single UK centre experience

Authors

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Objective The JOTEC E-vita (standard or open plus) is a hybrid stent device to facilitate total arch replacement (TAR) with frozen elephant trunk (FET) deployment. It has a high radial force nitinol covered stent through a collared armless graft. A descriptive of the results of the Jotec E-vita (n= 29) at a single centre.

Methods An analysis of prospectively collected data, using non-parametric tests.

Results Please see Table 1. The intentional staging of the TAR-FET was no 2nd stage anticipated (n=4), potential 2nd stage (n=15) and definite 2nd stage (n=6). Of the potential patients n=7 progressed to 2nd stage (TEVAR n=4, DTAR n =3) while n= 1 awaits TAAAR and 1 died awaiting TEVAR. Of n=6 with intention for 2nd stage at first operation 1 died post stage 1, one died during 2nd stage TEVAR, n=1 has undergone DTAR, n=1 undergone TAAAR and n=2 received TEVAR. There are n=22 long term survivors. There was n=1 significant and n=1 insignificant type 1 endoleak in the series

Conclusion JOTEC E-vita can be deployed in selected cases, including dissections, with minimal major complications and a low rate of endoleak formation.

Poster 83 : Evaluation of the learning curve in transcatheter aortic valve implantation: a systematic review

Authors

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Objective With rapid advances in TAVI technology and its exponential increasing use it is important to evaluate all outcomes. It is a significantly technical procedure which requires good training and proctorship, within a unit specifically equipped and trained. There have been several studies showing a significant learning curve to achieve good outcomes including mortality. The aim of the study was to systematically review current literature evidence to evaluate the effect learning curves in TAVI.

Methods Systematic review of all published and non published literature data. Six major databases were searched and articles were screened by two reviewers independently. 4,259 articles were found, all titles and abstracts were screened. Thirty nine articles were selected for full text review. Finally, only 10 articles met full inclusion criteria. Odds ratios, weighted mean differences, or standardized mean differences and their 95% confidence intervals were analysed

Results A total of 730 and 1234 patients were classified into early and late experience respectively, 1232 patients had transfemoral approach and 685 has tranapical approach, All papers reported a reduction in 30 day mortality in their early experience compared to later experience along the learning curve. There is higher rate of failure to deploy the device of centres in their early TAVI experience compared to centres in their late TAVI experience. Rate of Stroke, permanent pacemaker insertion and tamponade remained the same at early and late experience times.

Conclusion There is a steep learning curve associated with TAVI reflected in a reduction in 30 day mortality, which may reflect operator experience, better patient selection, and technological device advances.

Poster 84 : Short term outcomes of aortic surgery: looking for the best operation and the best patients

Authors

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Objective Ascending aortic aneurysmal dilation and abnormalities of aortic valve morphology often coexist. The surgical treatment to replace the aorta +/- valve is based on multiple factors including anatomical

position of dilation, aortic valve dysfunction, connective tissue disorder, operative risk. Options include supra-coronary ascending aortic replacement [SCAAR], Aortic valve and ascending aortic replacement [AVAR] and Bentall [RR]. We sought to describe the in-hospital outcomes of these alternatives to inform decision-making.

Methods Retrospective analysis of database 2008-to present was conducted. Patients were stratified into three surgical groups – SCAAR, AVAR and Bentall. Demographics were recorded and EuroSCORE calculated. In-hospital complications were recorded including: mortality, stroke & length of stay. Surgical groups were then 1:1 propensity matched to account for EuroSCORE variation.

Results A total of 195 patients were identified (RR n=52; AVAR n=74; SCAAR n=69) [Table 1]. Mean age = 57.9±14.9 years. Baseline EuroSCORE was higher in the SCAAR group compared with AVAR and RR [p=0.008]. Following propensity matching the incidence of stroke was significantly higher in the SCAAR group compared with both AVAR and Bentall [p=0.031], with a trend to increased mortality [SCAAR vs. AVAR or RR, 20% vs. 7%; p=0.06]. Logistic EuroSCORE was predictor of mortality (odds ratio 1.05, P=0.013) and neurological events (odds ratio 1.08, P=0.001)

Conclusion SCAAR is associated with significant risk of stroke and in-hospital mortality compared with AVAR or Bentall. Logistic EuroSCORE was highest in SCAAR and remained the sole predictor of mortality. These results suggest that SCAAR is being preferred in patients with a higher predicted risk. Despite this, SCAAR still carries a higher stroke risk and a high operative mortality compared with alternatives after adjustment for preoperative risk. Based on these results the ascending graft-only option should be used with caution.

Poster 85 : Ascending aorta replacement following endovascular stenting

Authors

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Objective Endovascular treatment of ascending aortic disease, including acute aortic syndromes, has become an established alternative to surgical management in selected patients. However, complications following endovascular treatment may require high-risk surgery. Here we present two cases of ascending aorta replacement following endovascular stenting.

Methods Case 1: A 78 year old patient was initially treated with endovascular stenting for a localised type A dissection due to high operative risk. The patient re-presented 14 months later with chest pain and the CT scan showed erosion at the proximal end of the stent into the false lumen and reperfusion of the false lumen. The patient underwent type A dissection repair and extraction of the ascending aortic stent (operative technique described in the final presentation). Case 2: 74 year old female initially presented with cardiac tamponade caused by a penetrating aortic ulcer and was treated with an endovascular stent as a rescue measure. Ascending aorta continued to increase in diameter secondary to an endoleak. She underwent repair of the ascending aorta and

hemiarch (operative technique described in the final presentation) In both cases MDT discussion recommended to proceed with surgery.

Results In both cases the surgery was successful and patients were discharged home.

Conclusion Surgery on the ascending aorta for complications following endovascular treatment is a high-risk but feasible management option as exemplified by the two cases. A multidisciplinary team including cardiac surgeons and interventional radiologists should be involved in the decision making.

Poster 86 : Surgery for type A aortic dissection in patients over the age of seventy: outcomes from the UK national database (NICOR)

Authors

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Objective Recent guidelines have stated that age alone should not be a limiting factor for offering life-saving surgery to patients with acute type a dissection (ATAD). The objective of this study was to review the outcomes of patients above the age of 70 undergoing surgery for type A aortic dissection (TAAD) using national outcome data in the UK.

Methods Prospectively collected data of procedures undertaken on patients with an age of 70 years or more were extracted from the National Institute for Cardiovascular Outcomes Research (NICOR) National Adult Cardiac Surgery Audit (NACSA) registry. All operations were performed in England and Wales between 1st April 2007 and 31st March 2013. The primary outcome for this study was in-hospital mortality. The secondary outcome was mid-term mortality followed up to 5 years.

Results A total of 507 patients were included in the study. Median age of 75 years 110 (21.7) patients underwent root surgery, 448 (88.4) ascending surgery and 65 (12.8) arch surgery. Concomitant procedure included CABG and aortic valve procedures (n=77 (15.2%) and n=171 (33.7%). In-hospital mortality rate was 22.5% (n=114). Return to theatre occurred in 65 (12.8%) patients, CVA in 57 (11.2%) and post-operative dialysis in 15% (n=76) patients. The highest number of procedures performed by a single surgeon during the study period was 12.

Conclusion Surgery for acute TAAD in patients over 70 in the UK is feasible with acceptable mortality rates. However, like previous studies, rates of stroke in older patients may be higher. The present study supports the notion that age should not be a discriminating factor in operating on patients with TAAD.

Poster 87 : Is the risk of paralysis post TEVAR overstated?

Authors

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Objective

Thoracic endovascular aortic repair (TEVAR) is increasingly utilised for a host of aortic pathologies reducing morbidity and mortality in comparison to open repair. Despite this spinal cord ischaemia (SCI) remains a feared complication with incidence reported in the literature up to 15%. Here we review the circulation to the spinal cord, illustrate occlusion of the left subclavian artery and present results from a single, tertiary referral centre with a particular focus on the limited use of adjuvant therapies to reduce SCI.

Methods

Data were collected retrospectively from an electronic hospital discharge database and clinical notes on all patients who underwent TEVAR between 2008 and 2017 in a tertiary referral centre. Key fields included aetiology, time to intervention, length of stay, incidence of paralysis and known risk factors for SCI. Imaging was reviewed to identify occlusion of the left subclavian artery and post-procedural complications.

Results

A total of 35 patients underwent 37 TEVAR's during this nine-year period. Mean age was 71 years (range 49 – 85) and 37% (n = 13) of individuals were female. Aortic pathologies treated included 54% (n = 19) thoracic aortic aneurysms, 23% (n = 8) dissections, 20% (n = 7) ruptures and a single thoraco-abdominal aortic aneurysm. Eighteen patients had intentional left subclavian artery occlusion, with an additional partial occlusion in another patient. No patients received pre-deployment left subclavian artery reimplantation, intraoperative or postoperative revascularisation. The left common carotid artery was however reimplanted in two individuals. Median follow-up was 96 days (IQR 30 – 490; n = 30). Mortality at 30 – days was 17% (n = 6) and 26% (n = 9) at 1 year. There was one recorded incident of hemiplegia post TEVAR (2.8%).

Conclusion

SCI is a rare complication of TEVAR in our centre. Presented outcomes are lower than current evidence suggests despite limited implementation of adjuncts to minimise SCI and predominant coverage of the left subclavian artery.

Poster 88 : Pharmaco-economic analysis of medication prescription at hospital discharge in patients after coronary artery bypass surgery and coronary angioplasty

Authors

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Objective In the developing world, patients often pay for their medications due to lack of insurance. Cost analysis of medications for post-CABG and post-PCI patients is relevant in such settings.

Methods Prescriptions of 5948 patients (PCI:5152, CABG:796) at hospital discharge at a tertiary centre in North India were accessed. Treatment cost at 30 days post-discharge was analyzed (calculating total for each group and then comparing equal projected numbers).

Results Prescription rates for aspirin and clopidogrel were similar (> 95%). Clopidogrel 75 mg bd was more often prescribed post-PCI (79.5 vs 3.7%), leading to 64% higher (£ 2816 vs £ 1707) cost for clopidogrel in PCI group. Including the cost of Prasugrel/ticagrelor (used in 11% post PCI) escalated cost of anti-platelets by 53% (£ 4329). Prescription rates of ACEI 2.5, 5 and 10 mg (29, 69 and 2% vs 72.2, 20.6 and 7%; PCI vs CABG) were significantly different. As ACEI were prescribed 2 times more often in PCI group (89.4 vs 41.4%), 30 day cost was ~ 2.5 times higher (£ 1722 vs £ 705). Post-PCI patients were more likely to receive higher BB dose (50 mg, 80.9 vs 55%). As overall prescription rates of BB in PCI and CABG groups were high (95.2 vs 90%), the cost difference was narrow (£ 1,385 vs £ 1211, 14% higher in PCI group). Although overall statin prescription was also high (98.2 vs 91.6%), post-PCI patients more often received higher dose (40-80 mg: 72 vs 1%) and Rosuvastatin (17 vs 6.8%). For atorvastatin, 30 day cost was 2 times higher (£ 4029 vs £ 1971) in the PCI group. Factoring in Rosuvastatin further widened this difference by ~ 3 times (£ 6000 vs £ 2239).

Conclusion Differences in drug prescriptions exist at hospital discharge following CABG and PCI. Although post-PCI patients more often receive optimal therapy, this causes significantly higher 30 day higher costs. This is relevant in developing economies with self-paying patients, who are often not reimbursed for medical care.

Poster 89 : Do evidence practice gaps exist for medication prescription at hospital discharge in patients undergoing coronary artery bypass surgery and coronary angioplasty

Authors

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Objective Adherence to guideline-directed medical therapy (GDMT) after CABG and PCI may be sub-optimal at hospital discharge. Despite earlier onset of more severe and progressive CAD as compared to Western counterparts, analysis of medication advice following CABG and PCI from the developing world is unreported.

Methods Records of 5948 patients (post-PCI:5152, post-CABG:796) at a single tertiary centre in North India were analyzed.

Results Prescription rates for aspirin 100 vs 98.2% and clopidogrel 100 vs 94.4% were similar while beta-blockers (BB, 95.2 vs 90%), statins (98.2 vs 91.6%), angiotensin converting enzyme inhibitors (ACEI) (89.4 vs 41.4%) nitrates (51.2 vs 1.1%) and calcium channel blockers (6.6 vs 1.6%), were significantly more frequently prescribed following PCI (all $p < 0.01$). Despite similar baseline left ventricular ejection fraction (LVEF) (48.1 vs 51.1%), diuretics were prescribed almost universally post-CABG (98.2 vs 10.9%, $p < 0.001$). 98.2% of post-CABG patients received a prescription for clopidogrel (75 mg od or bd) in addition to aspirin. Prasugrel and ticagrelor were only prescribed post PCI (11%). Following PCI, atorvastatin was prescribed in 82.6% and rosuvastatin in 17.4% (rates for CABG: 93.2 and 6.8%, respectively, $p < 0.01$ for both). Aspirin 150 mg was the most frequent dose prescribed in groups (91.2 vs 92.2%). Post PCI patients more often received clopidogrel 75 mg bd (79.5 vs 3.7%); clopidogrel 75 mg od was more common post-CABG (9 vs 94%). Those undergoing PCI were more likely to receive higher dose of BB (50 mg: 80.9 vs 55%) and statins (40-80 mg atorvastatin: 72 vs < 1%), $p < 0.001$.

Conclusion Significant differences in prescription of GDMT exist at hospital discharge among PCI and CABG patients. Post-CABG, ~ 10% patients were not prescribed BB/statins & 60% did not receive ACEI. Post CABG patients less often received high dose statin or optimal BB dose and routinely received diuretics. Such practice gaps in GDMT need to be rectified to improve cardiac care.

Poster 90 : Perfusion strategy for ascending aorta and arch aneurysm/dissections

Authors

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Objective A retrospective analysis of perfusion strategies, technical and procedural details of aortic aneurysm repairs performed during 2004 till date in our institute. A case volume of 409 has been analyzed and discussed in detail.

Methods Our centre has adapted to a bi-caval and double arterial cannulation technique with excellent results. Femoral and axillary cannulation for arterial inflow in aortic arch involved dissection or aneurysm is the most commonly used cannulation strategy. All the cases were monitored with SvO₂, lactate and right radial pressures. NIRS Monitoring was introduced in 2012. Although these approaches has been described, specific technical details is not been clearly defined about cerebral perfusion flows, safety level in cerebral oxygenation level, core temperature and its specific safety TCA time limits, drugs etc. In addition, the ideal anatomic characteristics of different types of aortic dissections amenable to central cannulation have not been delineated.

Results Out of 409 aortic aneurysms there were 85 cases of aortic arch aneurysm/dissection in which 71 cases required Antegrade cerebral perfusion, 10 cases required retrograde cerebral perfusion and 4 Cases required both. Total Patients who were subjected to TCA were 12 and 59 cases were operated on low flows. Patients were cooled to 18°-20° degree and Antegrade cerebral perfusion was done in Right Axillary artery. Retrograde cerebral perfusion was performed in SVC. Cardioplegic arrest was repeated every 25 - 40 minutes with

respect to patient's temperature. Neurological outcome was better in the ACP category and there was evidence of neurological deficit whenever the NIRS was low >10minutes during the ACP perfusion. There were 15 cases of in house mortality and 18 cases of morbidity which includes 5 cases of TIA and 13 cases of mild to moderate neurological deficit.

Conclusion We conclude that by implementing our current perfusion strategies we have observed better neurological outcome and results in aortic arch involved surgeries.

Poster 91 : Robotic assisted lung volume reduction surgery

Authors

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Objective With treatments options of end stage emphysema increasing, specialist MDT allowing selection of the best available treatment for each patient. More recently robotic surgery or RATS (daVinci Xi) is being introduced for its advantages over VATS of 3DHD vision, increased dexterity in the surgical field and less port site pain. This report presents early experience of RATS LVRS, with no other published cases to date.

Methods Three cases of RATS LVRS were carried out in a single centre (January-July 2017). Heterogenous ESE was identified on CT, with incomplete fissures excluding endobronchial valves as a treatment choice. PFTS including TLC and RV, FEV1 and DLCO, were within criteria. All patients were medically optimised including referral to pulmonary rehabilitation.

Results All three were confirmed ex-smokers of over 2 years, 2 male, 1 female, aged 76, 73 and 59 years respectively. Case 1 underwent staged LLL endobronchial valve insertion with RLL RATS LVRS 3 months later. Case 2 underwent targeted RATS LVRS for upper lobe predominant ESE having initially presented with a secondary pneumothorax. Case 3, requiring two litres of home oxygen at night, underwent a RUL targeted RATS LVRS. CO2 insufflation in the operative field facilitates delineation of lung targets as hyperinflated trapped air is slower to deflate. Air leak was minimal in cases 1 and 2, with case 3 discharged with a chest drain attached to a PorteX valve bag with subsequent removal at 2 weeks. Analgesia requirements included local anaesthetic, Paracetamol, NSAIDs and Oxynorm 5mgs prn. All 3 patients noted a subjective and objective improvement in lung function at 3 months, case 3 is awaiting LVRS on the contralateral side.

Conclusion This is the first report of use of the daVinci Xi for LVRS. Initial experience is excellent with minimal morbidity and acceptable outcomes. Use of firefly fluorescence available with the daVinci Xi may be an additional useful step to further elucidate non-perfused ESE targets at surgery. A multi-centre study should be considered.

Poster 92 : The effect of BMI on length of stay in cardiac wards after Aortic Valve Replacement

Authors

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Objective Body Mass Index (BMI) is compared to length of stay on cardiac wards to identify whether there is any statistical significance. EuroSCORE 2 is the current risk calculator used in aortic valve replacement (AVR). It accounts for factors including age, gender, diabetes, cardiac history and urgency of operation. BMI, weight or height are not included.

Methods The hospital in this study keeps extensive details of all patients undergoing AVR in a database. Data from 1414 patients having AVR over the past four years were retrieved, along with BMI, length of stay on cardiac wards and confounding variables such as EuroSCORE 2. The World Health Organisation's (WHO) categorisation of BMI was used to group patients. Length of stay was chosen over acute mortality as the average mortality for AVR in the UK was 1.12% (2013), there would be insufficient data for analysis. IBM SPSS Statistics v23 was used to analyse distribution of these groupings and mean stay. A Chi squared analysis was carried out to determine any statistical significance.

Results The majority of AVR patients are in the $25 \leq x < 30$ (overweight) BMI category, with little data for < 18.5 (underweight) and ≥ 40 (class III obese) patients. There is little change in length of stay for BMI categories except the obese class III category which does show an increase. Chi squared at 15 df is significant at 25. The whole data set however shows that differences between length of stay and BMI category are not significant (chi squared = 24.51). Chi squared = $\sum (o_{ij} - e_{ij})^2 / e_{ij}$. A Chi squared table at 15 df shows $(o_{ij} - e_{ij})^2 / e_{ij}$. This demonstrates that in overweight patients, more of them had a shorter, and fewer of them had a longer length of stay than expected. The reverse was true for class III obese patients, with more of them having longer stays than expected.

Conclusion This could influence a surgeon's willingness to operate on patients of varying BMI. The results shown support the exclusion of BMI from the EuroSCORE 2 risk calculator.

Poster 93 : Is Tacrolimus more likely to induce diabetes mellitus than Ciclosporin in heart transplant patients?

Authors

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Objective Immunosuppression has evolved since the first successful orthotopic heart transplant 50 years ago. Currently, calcineurin inhibitors lie at the focal point of the immunosuppressive regimen. However, these drugs exhibit a variety of side effects, including hyperglycaemia. This compounds the risk of chronic allograft vasculopathy. There is conflict around which calcineurin inhibitor, tacrolimus or ciclosporin, is more diabetogenic. The aim of this investigation was to identify any association between immunosuppressive regimens used and the development of diabetes in heart transplant recipients.

Methods A retrospective study of 52 patients who had undergone a orthotopic heart transplant between January 2011 and August 2017. Patients received either tacrolimus (n=33) or ciclosporin (n=19) alongside on a combination of mycophenolate mofetil and corticosteroids. Fasting glucose was measured at three monthly intervals after transplantation and HbA1c was taken from one point in time. Statistical analysis was performed using Students t-test for continuous variables and Chi-squared for categorical variables.

Results The baseline demographics are as follows (Table 1). The fasting glucose of tacrolimus treated patients was higher over the 12-month period compared to ciclosporin treated patients (7.3 ± 1 vs 5.9 ± 0.5 , $p=0.017$). The results were significantly higher in the tacrolimus group at 9 months (6.8 ± 2 vs 5.4 ± 1.4 , $p=0.013$). In contrast to these findings, HbA1c of the tacrolimus group was lower than the ciclosporin group however these results did not reach statistical significance (38 ± 11.4 vs 43 ± 1.3 , $p=0.401$).

Conclusion Tacrolimus has an influential role on the fasting glucose of heart transplant patients. Future research should focus on using HbA1c at different time points as it is the best indicator of complications among diabetic patients.

Poster 94 : Non-United Rib Fractures - surgical technique and quality of life of patients following surgical stabilisation

Authors

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Objective Though the prevalence of non-united rib fractures (NURFs) in patients who have suffered multiple rib fractures is not known. There are many surgical techniques based on bone healing theory are suggested however not one is universally accepted. This study investigates the quality of life (QOL) of patients who have undergone SSNURFS in a centre in Sheffield and correlates this with evolving surgical techniques.

Methods A case series of patients undergoing SSNURFS was collected between September 2009 to January 2017 prospectively. Admission CT was assessed. All thoracic and intra-thoracic trauma recorded and

classified. CT was then assessed where the NURF was first evident, with each NURF classified as hypertrophic, atrophic, or pseudo-arthritis based on its appearance. Surgical technique was then classified. QOL data was collected post-operatively using the Short Form-36, Brief Pain Inventory, Modified Glasgow Outcome Scale-extended and the SMuRFS post-operative questionnaire.

Results SSNURFs was performed on 24 patients in the time. The median (IQR) number of fractures in original injury was 6 (4) with 3(4) becoming non-united and 3 (3) surgically stabilised. 84% of patients suffered displaced fracture series. 177 fractures were classified, 87 (49.2%) did not unite and 63 (72.4%) were surgically stabilised. The most common indication for surgery was painful non-union. 11 patients responded to the request for QOL data. Patients whose NURFs were fixed with no debridement, no graft but plated had the highest average score in the SF-36. These patients had similar scores on the BPI, GOSE-M and the SMuRFS post-operative questionnaire.

Conclusion The prevalence of NURFS was high in this cohort of patients requiring SSNURFS. This is the first study to link surgical technique with QOL. Patients who underwent SSNURFS reported a reduction in pain and improvement in functioning, with the greatest improvement when no debridement, no graft and plating was used.

Poster 95 : Laparoscopic specimen bags study

Authors

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Objective Video assisted thoracoscopic surgery (VATS) and laparoscopic surgery are complicated by the removal of the often large specimen through a small port site. This may be influenced by different specimen retrieval bag (SRB) designs. Objectives 1 - To evaluate the forces required to remove an SRB during VATS or laparoscopic surgery. 2 - To create a bench test to analyse force required to remove specimens using different SRBs.

Methods Experiment 1: A SRB was attached to a Newton meter inside a simulated body cavity. 22 surgeons with VATS or laparoscopic experience pulled the SRB, as if to remove a specimen from the cavity. The forces (and angle of force) generated over a 20 second period were measured. Experiment 2: Single-blinded RCT to determine the different forces required to remove a sample through a simulated surgical port site between: i) Standard (control) SRB (Espiner, UK) ii) Newly designed (intervention) SRB. The method to ensure reliable, repeatable forces applied to the SRB was achieved by swinging a weight from an inverted simulated cavity containing the specimen in an SRB. The number of swings before the specimen was removed was recorded (up to a maximum of 30 swings).

Results Experiment 1: The average maximum force exerted was 93N. There was no significant difference between males and females. Experiment 2: The control SRB had no successful passages through the site whilst

the average number of swings for the intervention arm was 3. ($P < 0.006$)

Conclusion These experiments are the beginning of series, to better understand the impact of SRB design on the removal of specimens from body cavities. The bench test is repeatable and reliable. When two different SRBs were compared, the bench test demonstrated a significant improvement for the novel design. This improvement is likely due to the elongation of the specimen allowing easier removal.

Poster 96 : Ability of short-term risk mortality scores to predict long-term survival in patients undergoing cardiac surgery

Authors

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Objective The Society of Thoracic Surgeons Predicted Risk of Mortality score (STS PROM), EuroSCORE I (ES1) and EuroSCORE II (ES2) reliably predict 30-day mortality after cardiac surgery. Data on the ability of these short-term indices to accurately predict long-term survival are sparse. We sought to assess the ability of STS PROM, ES1 and ES2 to predict long-term survival.

Methods Demographic, clinical and procedural data on 1279 consecutive patients undergoing any of the 5 cardiac operations with a calculable STS PROM were prospectively collected and used to calculate STS PROM, ES1 and ES2. Patients were stratified into 5 risk-score categories based on their scores (1: 0-0.99%, 2: 1.0-1.99%, 3: 2.0-2.99%, 4: 3.0-4.99%, 5: >5%). Long-term survival data were obtained from the National Death Registry. Kaplan-Meier (KM) survival curves were plotted for each risk-score category and compared using Log-rank test. Model discrimination was assessed using the Area Under the Receiver Operating Curve (AUC). We used Cox regression analysis to identify independent predictors of long-term survival.

Results Mean follow up was 62±28 months (range 1-107 months). Mean survival of the entire cohort was 95±1 months. Long-term survival was inversely related to the STS-PROM, ES1 and ES2 (Panels A, B and C). STS PROM and ES2 predicted long-term survival more reliably than ES1. Eight-year survival for the 5 STS risk-score categories was 96±1%, 81±3%, 78±4%, 70±5%, 57±4%, respectively ($p < 0.0001$). STS PROM model discrimination (0.76±0.02) was superior to that of the ES1 (0.69±0.02) and ES2 (0.72±0.02) (Panel D). Cox regression identified age, incidence of surgery, diabetes mellitus, dialysis and STS PROM to be independent predictors of long-term mortality.

Conclusion The STS PROM is a more reliable predictor of long-term survival in patients undergoing cardiac surgery compared to the ES1 and ES2. Mortality scores should be used in the discussion of long-term outcomes with patients and in the analysis of procedural cost-effectiveness.

Poster 97 : Impact of Transcatheter Aortic Valve Implantation on Surgical Aortic Valve Replacement activity: a single institution study

Authors

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Objective We aimed to assess the impact of TAVI on surgical aortic valve replacement (SAVR) activity in a single institution. TAVI has gained popularity as a treatment option for severe symptomatic aortic stenosis in patients at high and excessive operative risk. Recent evidence has also shown that TAVI is safe and effective in intermediate-risk patients. An important concern among the surgical community is that the expansion of TAVI will reduce overall surgical activity.

Methods We performed a retrospective analysis of SAVR at our institution between May 2012 and November 2016. The number of procedures, patient demographics and comorbidities, echocardiographic data and clinical outcomes were recorded at 30-days.

Results From October 2011 to April 2014 (31 months prior to introduction of TAVI), 111 SAVR were performed. Median age 71 years, median EuroSCORE II 2.18%, 30-day mortality 3.6%, re-sternotomy 2.7%, stroke 2.7%, NPOAF 34.23%, PPM 3.6%, no paravalvular leak grade 3 or above and median PLOS 10 days. From May 2014 to November 2016, 94 TAVI were performed. Over the same time period 164 cases of SAVR were performed. In this period, median age was 70 years, median EuroSCORE II 2.01%, 30-day mortality 1.22%, re-sternotomy 4.88%, there were no strokes, NPOAF 38.41%, PPM 3.66%, paravalvular leak grade 3 or above 2.44% and median PLOS 9 days.

Conclusion The introduction of TAVI in our institution did not reduce surgical activity. On the contrary, SAVR rates have increased in this time. TAVI has increased the overall aortic valve intervention in our institution by treating an additional cohort of patients.

Poster 98 : 2015 ESC guidelines for the management of infective endocarditis: an analysis of their impact in a single centre

Authors

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Objective Following ESC guideline change in 2015 for early treatment of complicated infective endocarditis, the timing of surgery was recommended to be taken by the multi-disciplinary endocarditis team. We aimed to evaluate the impact of the guidelines on patient selection, the timing of surgery and surgical outcomes in a single centre.

Methods Every consecutive patient undergoing surgical management of IE during a 46 month period ending in September 2017 was included in the study. We also analysed in-house referrals to the surgical team in the same time period that were managed without surgical intervention. Data was collected retrospectively including demographic information, dates of referral, operative data as well as post-operative follow-up. We used descriptive statistics and Mann-Whitney U tests to compare patients undergoing surgery before and after introduction of the guidelines.

Results A total of 102 patients were included in the study of which 39 were in-house referrals. Of the in-house referrals, a marginally smaller proportion of patients received surgical management post-guidelines (63% vs. 70%). The post-guideline group had a shorter timeframe from admission to operative intervention in days (median (IQR)) (3.5 (14.5) vs. 4 (11.75)) but this was not statistically significant, lower Logistic EuroSCORE (8.16(13.0) vs. 13.1 (20.3)), lower cumulative bypass time in minutes (93.5 (52.0) vs. 135.0 (107.0) and lower cumulative cross-clamp time in minutes (75.0 (37.0) vs. 90.0 (76.0)). None of these relationships reached statistical significance. Rates of complications were too low to allow for meaningful comparison between groups.

Conclusion Our study suggests that the introduction of ESC 2015 Infective Endocarditis Guidelines has begun to influence the timing of surgery and patient selection without showing evidence of increased risk for the patient population. This real world study provides reassurance to the surgical community regarding the impact of early surgery.

Poster 99 : Rates of unoperated severe aortic stenosis (AS) in the transcatheter aortic valve implantation (TAVI) era

Authors

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Objective Severe symptomatic AS has a very poor prognosis and requires aortic valve intervention. Previous studies have demonstrated that a significant proportion of patients are un-operated and not seen by a surgeon. With recent evidence from randomised trials expanding the indications for TAVI, we investigated the change in unoperated disease.

Methods Retrospective analysis of patients with echocardiographic evidence of severe aortic stenosis (AVA <1cm², MPG ≥40mmHg or visually severe on echo) was performed at a university teaching hospital. 50 consecutive patients were included in the study in 2017.

Results There were 35 males and 15 Females in the cohort with a mean age of 73.4 and 72.8 respectively. 66% (n=33) of patients had aortic valve intervention and 34% (n=17) did not. Of patients that did not have intervention 59% (n=10) were referred for surgery and 35% (n=6) were not, 30% (n=5) of these did not see a surgeon, all of whom were symptomatic. Mean MPG was 38mmHg and AVA 0.8cm².

Conclusion Even in the era of TAVI and multidisciplinary team management of severe AS, there is a significant proportion of patients that are not referred for a surgical opinion.

Poster 100 : Antimicrobial sensitivity and resistance profiles in cardiac surgery patients: results from a trust-wide infection surveillance program

Authors

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Objective The worrying emergence of drug-resistant bacterial strains, drug toxicity and economic forecast, highlights the importance of organism-targeted antibiotic treatment in cardiac surgical site infection (SSI), according to prevalent flora and their sensitivity and resistance patterns. We aimed to determine the epidemiological, sensitivity and resistance profile of organisms isolated from sternal/chest swabs in cardiac surgical patients.

Methods Isolates from sternal/chest wound swabs in cardiac surgery patients (excluding transplant) across two Trust hospital sites A and B between January-December 2015 were analysed. Outcomes of interest were the profile of isolated organisms, and antibiotic susceptibility for Gram-positive and Gram-negative bacteria across the Trust. Resistance patterns between the two hospital sites were also compared.

Results Across both hospitals, isolated Gram-positive organisms were most commonly sensitive to linezolid (A: 12/93, B: 9/64) and gentamicin (A: 12/93, B: 9/64), and resistant to penicillin (A: 6/40, B: 8/45) and erythromycin (A: 5/40, B: 8/45). Gram-negative organisms appeared most sensitive to ciprofloxacin (A: 9/49, B: 8/39), gentamicin (A: 9/49, B: 8/39), amikacin (A: 9/49, B: 8/39) and meropenem (A: 9/49, B: 7/39), and resistant to ampicillin (A: 8/31, B: 5/15), cefuroxime (A: 7/31, B: 5/15) and co-amoxiclav (A: 8/31, B: 4/15). The most common Gram-positive resistant organism across both hospital sites was Staphylococcus (A: 22/40, B: 27/45). The most common resistant Gram-negative organisms were Enterobacter (A: 7/31, B: 4/15), Klebsiella (A: 12/31, B: 3/15) and Coliforms (B: 3/15).

Conclusion We identified the prevalent organisms causing SSI in cardiac surgical patients at the Trust, in addition to their antimicrobial susceptibility characteristics. More widespread collection of this data accrued over longer time periods could provide meaningful insight for the development of national guidelines for the antibiotic prophylaxis and treatment of cardiac SSI.

Poster 101 : Risk profiles and outcomes of patients undergoing surgical aortic valve replacement and transcatheter aortic valve implantation: a single centre experience

Authors

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Objective

Surgical aortic valve replacement is the gold standard for the management of symptomatic severe aortic stenosis. However, TAVI is now well-established as an alternative therapy for patients who are at a high or prohibitive risk for surgery. We wished to document any change in surgical patient risk profiles and outcomes between 2006 and 2016. In addition, we wished to report any differences between 2016 surgical patients and contemporary TAVI patients. We hypothesised that 2016 surgical patients would have similar age, surgical risk and outcomes to their 2006 counterparts. Furthermore, we hypothesised that while 2016 TAVI patients would be older and have higher surgical risk than contemporary surgical patients, major outcomes, as measured as a composite endpoint of in-hospital mortality and in-hospital stroke, would be similar.

Methods

All patients from a single centre with symptomatic severe aortic stenosis undergoing either surgical aortic valve replacement in 2006 and 2016 or TAVI in 2016 were included in this retrospective analysis. Hospital records were reviewed to obtain baseline patient characteristics and clinical outcomes. Statistical analysis was performed with a Student's t-test or Fisher's exact test, where appropriate, with a p value <0.05 considered significant.

Results

A total of 491 patients were included in the study. Surgical patients in 2006 had similar risk and outcomes to their 2016 counterparts. In 2016, patients treated with TAVI were older than contemporary surgical patients (80.6±1.2 vs. 69.1±1.9, p<0.001) and had higher logistic EuroSCORE (23.0±1.9 vs. 8.6±0.6, p<0.001). There was no significant difference in in-hospital mortality, in-hospital stroke or the composite endpoint.

Conclusion

Over the past decade there has been no significant change in surgical patient risk characteristics and major outcomes. TAVI patients are older and have higher pre-operative risks than contemporary surgical patients, but in-hospital mortality, stroke and the composite endpoint is similar.

Poster 102 : Trends in myocardial protection for isolated Coronary Artery Bypass Grafting: a survey of 17 cardiac surgical centres

Authors

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Objective To identify changing trends of surgical practice for myocardial protection strategies in isolated coronary artery bypass grafting (CABG).

Methods An electronic survey was sent to 28 cardiac surgical centres located in the UK, in October 2016. Data from each centre for the previous five calendar years (January 2011 –December 2015) were tabulated. Values of p were calculated for two population proportions using the Z score test. A p value of <0.01 was considered significant.

Results 17 completed surveys were received (61%). 39,304 isolated CABG operations were performed during this period. Use of cardiopulmonary bypass (ONCAB) was 31,558 (80.3%) vs 'off-pump' (OPCAB) technique 7746 (19.7%). The proportion of OPCAB cases remained between 18 – 21% over the study period, with the largest increase occurring between 2011 & 2012. P values to assess the significance of variation of OPCAB cases between each year were <0.01, 0.32, 0.20 and 0.01 respectively. Of the 31,558 ONCAB cases, intermittent cross clamp fibrillation (XCF) varied between 8.6 – 10.9% over the study period, with the largest (decrease) occurring between 2014 & 2015. P values to assess significance of variation of XCF usage between each year were 0.68, 0.90, 0.20 and <0.01 respectively. Cardioplegia use for ONCAB cases was 88.5% (mean). Of these, blood cardioplegia was used in a mean of 93.7% of cases and crystalloid mean use was 2.1%, but had decreased by over half from 3.5% to 1.6%. Antegrade cardioplegia was used 83% of the time, with both concurrent antegrade and retrograde usage in over 15% of cases. Retrograde only use, occurred in <1% of cases.

Conclusion XCF remains the method of choice for a significant number of cardiac surgeons but the majority prefer antegrade blood cardioplegia for isolated CABG. Despite changing technologies and perceived benefits of minimally invasive cardiac surgery, cardiopulmonary bypass still remains popular amongst UK cardiac surgeons. OPCAB has not increased significantly in recent years.

Poster 103 : Flap efficacy in preventing bronchopleural fistula after lung resections

Authors

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Objective Bronchopleural fistula (BPF) is a major complication of extended pulmonary resections, particularly pneumonectomy. A lower incidence of BPF has been reported with the reinforcement of the bronchial stump closure with vascularised tissue flaps of different origins. Through this study, we aim to evaluate the efficacy of flap in preventing BPF in Albania, as no such study has been carried before in our country.

Methods Data of 202 patients who underwent lung resections during 2013-2017 were analysed retrospectively. In 34.16% of resections, flaps of different origins were used to cover the bronchial closure. All patients operated for lung cancer had undergone mediastinal lymphadenectomy.

Results Mean age 65.12 (17-80) years. 81% males, 19% females. Lung cancer was found in 90.1% of all resected cases, infective diseases in 5.45%, bronchiectasia in 2.97%. 9.89% of cancer patients were treated with neoadjuvant radio and/or chemotherapy. 56.59% were treated with adjuvant therapy postoperatively. Types of lung resection: pneumonectomy 21.29%, lobectomy 64.85%, sleeve lobectomy 2.97%, bilobectomy 10.89%. Right lung resections comprise 64.36%. Flap was used in all cases of pneumonectomies and sleeve lobectomies, in 8.4% of lobectomies and 40.9% of bilobectomies. Types of flap used: intercostal muscle comprised 52.17%, pericardial fat pad 24.64%, pericardium 13.04%, parietal pleura 10.15%. BPF was diagnosed in 4 patients after right pneumonectomy. One of them died soon after the fistula was diagnosed. 1 month mortality: 2 patients. 6 month mortality: 7 patients. Postoperative hospital stay: 10 (5-21) days.

Conclusion Usage of tissue flap, preferably intercostal muscle, is a safe and effective method of reinforcing bronchial closure after lung resection and preventing bronchial stump fistula. In all cases, early recognition of risk factors and individualised approach for every patient remains the *lege artis* of preventing BPF.

Poster 104 : Dual antiplatelet and gastroprotective therapy post-CABG: a survey of surgeons' opinion and current practice in UK and Ireland

Authors

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Objective Despite evidence and clear guideline recommendations advocating the use of dual antiplatelet therapy (DAPT), there is still a considerable ambiguity regarding its use after coronary artery bypass grafting (CABG). The aim of this study is to explore the current variation that might still exist in opinions and in clinical practice surrounding the use of DAPT post-CABG in the United Kingdom and Republic of Ireland. Additionally, the attitude of surgeons to the use of postoperative gastric protection was also explored.

Methods A questionnaire with 18 questions was developed to survey areas of knowledge, attitudes and practice patterns in the use of DAPT and gastric protection regime. All cardiac surgeons registered with SCTS were invited by e-mail to participate in the survey.

Results 62 adult cardiac surgeons were surveyed. 31% correctly identified prasugrel to be the P2Y12 inhibitor associated with the greatest bleeding risk. Only 25% use DAPT routinely post-CABG. 70% believe there isn't enough evidence of benefit for its routine use. Despite Class 1 guideline recommendations, only 61% continue DAPT after surgery for the post-ACS CABG patients. Interestingly, only 25% started the second agent on the same day as Aspirin. 87% felt that gastroprotective therapy should be routinely used after CABG. 33% preferred use of H2 receptor blockers and 60% used PPI agents.

Conclusion Regarding DAPT after coronary bypass grafting, the cardiac surgeons displayed variance in attitudes and their practice patterns. Interestingly, despite the Class 1 guideline recommendation for use of DAPT after CABG in patients who presented with acute coronary syndrome, this was not uniformly practised. The survey also showed varying attitudes towards gastric protection strategy after CABG. In the modern age of evidence based medicine, it would appear that there is a need for further clinical trials to guide our attitude and practice in the use of DAPT and gastric protection relevant to coronary artery bypass graft.

Poster 105 : Are endobronchial valves successful in reducing static lung volumes in emphysema patients?

Authors

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Objective According to WHO, COPD killed 3.17 million people (8684/day). Research published last year by the British Lung Foundation estimate around 1.2 million people currently diagnosed in the UK. Current treatment for emphysema includes smoking cessation, medical management and surgical (lung volume reduction surgery and endobronchial valves (EBV)). We aim to investigate the efficacy EBV to reduce lung volumes within the hemithorax

Methods A retrospective study looking at all patients treated with EBVs at our institution between November 2015 – August 2017. Our primary outcome was representative lung volumes before and after (7 days, 3 months) EBV insertion. The secondary outcomes were x-ray measurements of hemithorax reduction & indication of lobar or segmental collapse on imaging.

Results 25 patients (13 males, 12 females. Mean age 64.5 ± 8.8 years) received EBV during the study period. Mean representative lung volume in treated lungs significantly reduced at both follow up periods (1955.09 \pm 111mls vs 7-days post-op: 1595.64 \pm 82mls and 3-months post-op: 1607.86 \pm 85mls; $p < 0.05$ for both). The contralateral lung had a significant increase in volume (pre-op: 1833.02ml \pm 109ml vs 7 days post-op: 1991.77ml \pm 119 and 3 months post-op: 1970.32ml \pm 114, $p < 0.05$ for both).

Conclusion EBV treatment significantly reduces lung volume within the hemithorax both qualitatively and quantitatively. Further follow up is needed for evaluation of long-term benefits.

Poster 106 : Ministernotomy versus right anterior thoracotomy for minimally invasive aortic valve replacement; a systematic review and meta-analysis

Authors

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Objective

Minimally invasive aortic valve replacement (MIAVR) is an increasingly popular procedure, with two distinct methodologies vying for surgeons' preference. This systematic review aims to help guide clinical decision making by comparing ministernotomy (MS) and right anterior thoracotomy (RAT) on key clinical outcomes.

Methods

The online databases MEDLINE and EMBASE on OVID were searched. Two reviewers independently selected studies that compared operative outcomes for aortic valve replacements performed via MS and RAT. Risk of bias was assessed by two independent reviewers using an adapted version of the Newcastle-Ottawa scale. All data was analysed in Review Manager (Version 5.3) using a random effects model, and presented as a risk ratio or weighted mean difference with 95% confidence intervals.

Results

Ten observational studies involving 3486 patients were included. There was no evidence for an effect of MS on mortality versus RAT (RR=1.41, 95%CI=0.75-2.65; I²=0%). The major finding was a significantly lower rate of reoperation for bleeding following MS compared with RAT (RR=0.46, 95% CI=0.30-0.69; n=2164; studies=6; I²=0%). Aortic cross-clamp time bordered significance favouring MS (MD=-7.39, 95% CI = -14.93-0.16; I² = 93%). Both techniques were equivalent for stroke (RR = 0.90, 95% CI = 0.29 to 2.80; I² = 0%) and atrial fibrillation (RR = 1.13, 95% CI = 0.59 to 2.17).

Conclusion

This is the first systematic review to directly compare MS and RAT for MIAVR which has shown that MS had a lower rate of reoperation for bleeding compared to RAT. Both techniques are equivalent in terms of survival.

Poster 107 : Long term survival following on-pump and off-pump coronary artery bypass graft surgery

Authors

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Objective The primary aim of this study is to compare the long term survival rates in patients undergoing on-pump coronary artery bypass surgery (ONCAB) and off-pump coronary artery bypass surgery (OPCAB).

Methods A single institution retrospective study of 10,292 patients who underwent CABG procedure between years 2000-2016. A logistic regression model was fitted to calculate estimated propensity score, treating surgery “group” as dependent variable and the 27 covariates as independent variable including the EuroSCORE. Propensity score 1 to 1 matching was carried out in R package MatchIt. For survival a Cox regression model was used to compare the two groups.

Results 8,318 patients had ONCAB procedure and 1,974 had OPCAB procedure. Prior to matching the OPCAB group had significantly higher EuroSCORE of 3.7 ± 2.7 vs 3.5 ± 2.6 ($P=0.012$) and significantly lower number of grafts per patients 2.39 vs 2.75 ($P=1.92 \times 10^{-91}$). However, the hospital mortality and blood transfusion rate were higher in the ONCAB group 1.29% vs 0.71% ($P=0.01$), 0.28 ± 0.92 vs 0.36 ± 1.00 ($P=0.002$) respectively. Post matching distributions between OPCAB and ONCAB show a substantial balance with results being consistent across both groups (figure 1) and with slight imbalance in number of single graft patients between the two groups. The ONCAB group had an expected hazard of 53.4% higher compared to OPCAB group. Thus OPCAB offers a higher survival rate as illustrated on the Kaplan Meier curve (figure 2). As at 10 and 15 years there was a significant difference between the groups with OPCAB group showing significant survival advantage.

Conclusion OPCAB surgery in the hands of experienced operators has shown less hospital morbidity and mortality and significantly better long term survival at 10 years and beyond.

Poster 109 : Is it unlucky to undergo cardiac surgery on Friday 13th?

Authors

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Objective To examine the association between Friday 13th and cardiac surgical mortality.

Methods A retrospective case-control study was designed. Patient information including basic demographic and operative mortality on Fridays 6th, 13th, and 20th, in months when the 13th falls on a Friday between 1995 and 2015, was collected from cardiac centres around the world using an 8-question survey. The primary outcome measure was in-hospital mortality.

Results 15 cardiac centres around the world submitted data for our study. A total of 2007 patients were included, with 654, 704, and 640 respectively on Fridays 6th, 13th, and 20th. Patient demographic, including age, gender, length of hospital stay, and type of operation received, was not statistically different between operative dates. The mortality rate in our study, a composite of both emergent and non-emergent surgery, was 4.0% ($p = 0.075$; NS).

Conclusion It is safe to undergo cardiac surgery on Friday 13th, despite the superstition associated with such an unlucky day.

Poster 110 : Short and long term outcomes following off-pump versus on-pump CABG surgery; upto 18 years follow up

Authors

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Objective Coronary-artery bypass grafting (CABG) surgery is performed either with cardiopulmonary bypass (on pump) or without (off pump). Recent NEJM randomized trial claimed that off-pump CABG led to lower rates of 5-year survival and event-free survival than on-pump CABG. We report our experience of on pump versus off-pump CABG surgery in the last 18 years.

Methods This is a retrospective study of data entered prospectively into our cardiac surgical database between February 1999 to February 2017. All patients had first time CABG surgery, performed by a consultant as principle operator (minimum 10 years of experience), were included. Up to 18 years of survival data (from NHS Spine) and re-admissions with myocardial infarction or cerebrovascular accidents were collected from our hospital database. Patients were propensity score matched by age, gender, Operative Priority, EF, Dyspnoea status, Angina Status, EuroSCORE, Logistic EuroSCORE and number of distal anastomosis. Data was analyzed using SPSS 23.

Results After propensity score matching, each group had 296 patients. Their preoperative variables were comparable with an overall balance test $p=0.995$. 30 day mortality showed no statistical difference (2.0% and 1.7%; $p>0.05$) and long term survival at 18 years follow up were 77.4% versus 77.0% (log rank >0.05) between off-pump and on-pump patients respectively. We did not observe any significant differences in immediate post-operative outcomes between the groups. Re-admission with major adverse cardiovascular events (26.7% versus 24.3%; $p>0.05$) and cerebrovascular events (1.9% versus 1.4%; $p>0.05$) were comparable between off-pump and on-pump groups respectively.

Conclusion In this highly calibrated propensity score matched study, we did not observe any significant differences in the short and long term mortality and morbidity between patients undergoing CABG surgery using

on-pump or off-pump technique. The study shows that off-pump CABG in the hands of experienced surgeons are safe procedures.

Poster 111 : Gauging student interest in Cardiothoracic surgery - a review of the 4th SCTS student careers day

Authors

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Objective Sheffield hosted the 4th SCTS Student Careers Day in October. The conference showcased Cardiothoracic surgery to students from different social backgrounds. With minimal exposure to the specialty in medical school curriculums, the objective was to ascertain student opinions of Cardiothoracic surgery and to investigate what can be provided to students interested in the specialty.

Methods A feedback questionnaire was created using google forms; completed by 44 of the 102 delegates. Demographic information was assessed. Statistics and graphs were created using Google Forms.

Results 56.8% students were female and the majority of delegates were in later years of University study. 20.5% of delegates were 6th form students. The questionnaire compared likelihood (1=very unlikely, 5=very likely) of applying for specialty training in Cardiothoracic surgery before and after the conference. Initial interest in specialty training was 40.9% scored 3/5, 15.9% 4/5 and 18.2% 5/5 whilst 13.6% were very unlikely to apply. There was an increase in likelihood of applying for training after the conference. 31.8% 5/5, 45.5% 4/5 and no students were very unlikely to apply for the training. 45.5% of students found the practical workshops which included chest drain insertion the most engaging. 43.2% were encouraged most by the lectures. It was important to assess what discourages students from a career in Cardiothoracic surgery. 75% attributed this to lack of Cardiothoracic posts, while 36.4% answered competition and 29.5% recognised lack of experience. The questionnaire found that practical workshops 50% of students, abstract competitions 38.6% and a summer school, elective or placement 65.9% would be most inspiring.

Conclusion This is the first analysis of student feedback performed, giving insight into student career aspirations and provides information on how to improve student exposure to the specialty. This initial analysis has demonstrated a clear benefit to offering students Cardiothoracic specific events.

Poster 112 : Short and long-term outcomes of re-exploration for bleeding/tamponade in CABG patients: up to 18 years follow up

Authors

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Objective Studies suggest that re-exploration post cardiac surgery for bleeding or tamponade is associated with morbidity, mortality and longer hospital stay. We sought to evaluate short and long-term outcomes of patients re-explored immediately post CABG surgery in our unit.

Methods This was a retrospective study of data from our cardiac surgical database between April 1999 and April 2017. We compared the short and long-term outcomes of patients who were re-explored (RE) following CABG surgery with those who were not (Control) using propensity score matching in SPSS 23. Follow up data was obtained using NHS spine.

Results In total, 7364 patients underwent CABG only operations during this period. 236 (3.2%) were re-explored immediately for either bleeding or tamponade. Patients were propensity score matched 1:5 (227 RE versus 1103 control) by age, gender, EuroSCORE, log EuroSCORE, bypass and cross clamp time. Baseline characteristics were comparable after matching. Significantly higher rate of post-operative MI, GI complications, Renal Failure, CVAs, Arrhythmias, and wound infections were observed in the RE group (P<0.001). The 30 day mortality was significantly higher 12.8% versus 2.3% (P<0.001) in the RE group compared to the Control group. Long-term survival at 11 years follow up was 74.9% versus 82.4 in the RE and Control groups respectively (Log Rank = 0.006). Patients who were re-explored had a longer post-operative stay 12.5 (+/- 16.4) versus 8.7 (+/-8.8) in the control group (p<0.001).

Conclusion Our data show a significantly higher rate of post-operative morbidity and mortality associated with patients re-explored for bleeding or tamponade after CABG surgery. These patients had a significantly longer post-operative stay in hospital which undoubtedly has a major financial impact. This study highlights the importance of efficient haemostasis post cardiac surgery to prevent bleeding/tamponade in patients undergoing CABG surgery.

Poster 113 : Outcomes of concomitant surgical ablation for Atrial Fibrillation in patients undergoing Cardiac Surgery: a 3-year, single surgeon's experience

Authors

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Objective Recent clinical guidelines support the safety and benefit of concomitant surgical AF ablation, to restore sinus rhythm (SR). To investigate this, we performed a single surgeon's data analysis to evaluate the outcome of concomitant surgical AF ablation using radiofrequency and cryoablation probes.

Methods From December 2014 to October 2017, 36 patients with AF underwent concomitant surgical AF ablation. To evaluate the outcomes of AF ablation, we assessed the immediate documentation of SR post operatively. Follow up rhythm assessment was based on a 6-week outpatient electrocardiogram (ECG), followed by 24-hour Holter ECG assessment at 3 and 6 months post-operatively and another outpatient assessment at 1 year. We also assessed use of class I or III antiarrhythmic drugs; Amiodarone, and anticoagulants; warfarin or direct oral anticoagulant. Rhythm outcome predictors such as left atrial (LA) size were recorded from pre-operative echocardiograms.

Results Mean patient age was 69.6 ± 7.0 years, and 19 (52.8%) were males. The overall rate of maintenance in SR (with or without antiarrhythmic drugs) was 76.9% and 82% and 80% at 3 months, 6 months and 1 year, respectively (Fig 1). Of all the patients in SR at 6 months, only 5.2% of these were also on antiarrhythmic medication; the remaining 94.7% were not. 77.8% of patients maintained in SR at 6 months not on antiarrhythmic medication, were also not on anticoagulant therapy. No significant difference in the rate of conversion to SR between patients with persistent and paroxysmal AF (80% vs 87%; $P=0.5$) was found. Neither LA diameter ($P=0.27$) nor immediate postoperative SR ($P=0.40$) significantly influenced SR at 6 months.

Conclusion Concomitant surgical ablation of AF is a useful treatment. Contrary to previous reports, LA diameter does not influence AF recurrence and subsequent need for antiarrhythmic medication. These results corroborate the 2017 recommendations of the HRS consensus statement. We aim to investigate other possible predictors in our analysis.

Poster 114 : A single centre's experience with Minimally Invasive Aortic Valve Replacement versus conventional Full Sternotomy – propensity match analysis

Authors

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Objective Minimally Invasive Aortic Valve Replacement (MIAVR) surgery is increasingly used as an acceptable alternative to conventional Full Sternotomy Aortic Valve Replacement (FSAVR). The aim of this study is to compare the operative and post-operative outcomes after MIAVR compared to FSAVR.

Methods Between January 2014 and November 2017, 296 patients underwent isolated AVR; 44 of these were MIAVR. All MIAVR were performed via a partial upper half mini-sternotomy carried into the right third intercostal space. Propensity score match analysis was performed to avoid selection biases and balance confounding preoperative variables.

Results Propensity score matching; based on 21 baseline characteristics, yielded 42 pairs. Mean patient age was 67.2 ± 13 years; 65 (77.4%) were males. No statistical significance was found between peri-procedural mortality rate and ICU stay (days) ($P>0.05$), however, mean bypass time (mins) (113.9 ± 29.2 vs 79.5 ± 31.2 , $p<0.001$)

and cross-clamp time (mins) (88.1 ± 25 vs 58.8 ± 25.4 , $P < 0.001$) were significantly longer in MIAVR. Prosthetic valve size (mm) was smaller in MIAVR compared to FSAVR (23.2 ± 1.8 vs 24.1 ± 2.1 , $P = 0.026$). There was a non-significant trend of quicker time to extubation in MIAVR compared to FSAVR (5.9 ± 2.5 vs 7.9 ± 6.8 , $P = 0.08$) as well as lower post-op stay in days (7.2 ± 3.4 vs 9.6 ± 10.5 , $P = 0.17$). Similarly to previous reports, there was a lower incidence of post-op arrhythmias (AF) after MIAVR compared to FSAVR (7.1% vs 26.2%, $P = 0.038$, respectively). There was a non-significant lower incidence of post-op pulmonary complications following MIAVR compared to FSAVR (14.3% vs 16.7%, $P = 0.5$).

Conclusion Advantages for MIAVR remain controversial. Objective benefits of MIAVR include reduction of post op-arrhythmia's and a trend towards reduced ventilation time, pulmonary complications and hospital stay. We aim to investigate further outcomes including blood loss, need for transfusion and permanent pacemaker, as well as identify factors associated with the benefits of MIAVR.

Poster 115 : Dual antiplatelet therapy following coronary artery bypass graft surgery – an audit of contemporaneous practice

Authors

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Objective Dual antiplatelet therapy (DAPT) improves outcome following coronary artery bypass graft (CABG). AHA guidelines stipulate that aspirin and clopidogrel should be continued for one year postoperatively in those presenting with ACS (Level 1) and considered in those with stable ischaemic heart disease (Level 2b). Within SYNTAX, NOBEL and EXCEL, surgical patients received suboptimal postoperative medical therapy. This baseline retrospective AUDIT aims to evaluate the received postoperative antiplatelet therapy of CABG patients at discharge.

Methods All patients undergoing isolated CABG in a 3-month period were included (n=69). Patients on anticoagulant therapy were excluded. Patient discharge summaries were analysed. The antiplatelet medications prescribed at discharge and duration of proposed antiplatelet therapy continuation were recorded.

Results Prescription of antiplatelet therapy following CABG was widely varied. 17 different regimens were found varying in either the drugs prescribed or length of therapy. None of the patients were prescribed DAPT in accordance with recommendations. The most common regimen prescribed was 3 months aspirin & 3 months clopidogrel (27 patients). No pattern in prescribing was found when patients were separated according to preoperative status (acute coronary syndrome, stable ischaemic heart disease and percutaneous coronary intervention).

Conclusion Antiplatelet therapy following CABG is not being prescribed in accordance with current recommendations. Whilst patients are reviewed by cardiology 6 weeks following CABG, it is essential that

clinicians document the treatment duration at discharge. We discuss the processes implemented in the unit to improve consistency and standard of care.

Poster 116 : Measuring the early impact of Lung Volume Reduction Surgery by use of the post-operative CXR

Authors

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Objective Lung volume reduction surgery (LVRS) is the only interventional or surgical treatment proven to improve overall prognosis in emphysema. We evaluate the role of the PA Chest X-Ray to examine to what extent does lung volume reduction surgery affect the non-operated side.

Methods 25 (15 male) consecutive unilateral VATS LVRS were performed by a single surgeon over 15 months from June 16-September 17; mean age=63.84yrs (range 40-82yrs). Measurement on the PA-CXR was taken at the point where the clavicle crossed the internal pleural superior margin and a vertical line was drawn from this point to the diaphragm. We compared the mean changes in height (cm) pre and post-operatively for operated and non-operated sides separately and compared these.

Results Mean reduction for operated sides were 3.10cm (SD=2.50cm, range=0.00-3.10cm, median=2.63, T-Test: p=0.0011). Mean reduction for non-operated sides were 1.85cm (SD=2.17, range=-2.32-6.50cm, median=1.20, p=0.0369). Mean difference in reduction between operated and non-operated sides were 1.25cm (SD=1.51, range=-1.20-5.21cm, median=1.14, p=0.0327).

Conclusion There is a statistically significant reduction in height (cm) in both operated and non-operated sides. There is a statistically significant higher reduction on operated sides versus non-operated sides. We have shown bilateral benefit for unilateral focused LVRS measured on the PA-CXR.

Poster 117 : Open chest management post-cardiac surgery - current and potential predictors of mortality

Authors

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Objective Open chest management (OCM) is an important intervention for patients who are unable to undergo sternal closure after cardiac surgery. The aim of this study was to evaluate the incidence, survival and predictors of mortality among OCM patients, with a focus on overall fluid balance over the course of OCM.

Methods We retrospectively collected data from our database to identify adult patients that were managed with an open chest post-cardiac surgery between January 2013 and December 2016. Medical records were reviewed to determine mortality, fluid balance, perioperative status, as well as pertinent haemodynamic data.

Results 43 (1.3%) out of 3370 adult patients were managed with an open chest post-cardiac surgery during the period. 18 (40.9%) patients had a delayed sternal closure immediately following surgery due to haemodynamic instability after coming off cardiopulmonary bypass; while 26 (59%) had a re-sternotomy and subsequent delayed sternal closure due to acute deterioration in the cardiac intensive care unit. The mean age of patients was 68.9±9.2 years and the mean logistic EuroSCORE II was 13.6±14.7. The hospital survival was 35/43 patients (81.4%). Predictors of mortality by univariate analysis included perioperative IABP use (p=0.003), new onset haemodialysis (p=0.006), higher mean dose of epinephrine at the time of chest closure (survivors 9.4±2.8µg/min; non-survivors 2.9±0.6µg/min, p=0.003), and a greater positive fluid balance over the course of OCM (survivors 3267±1249ml; non-survivors 367±449ml, p=0.01). Contrary to recent studies, we did not find that the duration of OCM was a significant predictor of mortality.

Conclusion Although OCM continues to be a beneficial therapeutic option in patients who cannot tolerate sternal closure postoperatively, patients who require IABP, dialysis, high doses of inotropes, as well as patients who were managed with a positive fluid balance continue to have poor outcome.

Poster 118 : Concomitant dental and cardiac surgery: a meta-analysis of current evidence

Authors

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Objective Conducting invasive dental procedures (IDPs) prior to cardiac surgeries have been the traditional approach to decrease perioperative risk of infections (eg. endocarditis). However, recent studies suggest that a concomitant approach to perform dental and cardiac surgery simultaneously may be more effective and cost-efficient. This review aims to consolidate current evidence evaluating the risk and benefits of concomitant dental and cardiac surgery.

Methods Major databases were searched systematically for RCTs and observational studies from 2005 to 2016 comparing basic patient demographics and outcomes following a concomitant and non-concomitant (traditional) approach to IDPs and cardiac surgery. Two studies were identified that included 71 patients.

Results Patients were grouped into concomitant and traditional groups. There were a total of 38 patients in the concomitant group; and 33 patients in the traditional group. The basic patient demographics were similar between both groups. Meta-analysis showed that hospital length of stay (LOS) and all-cause mortality were similar between both groups (LOS: traditional vs. concomitant; 19.28±12.56 vs. 16.88±8.45 days, p=0.3558); (all-cause mortality: traditional vs. concomitant; OR 0.19 [95% CI: 0.02-0.96], p=0.176). Interestingly, both groups also had similar outcomes in terms of number of patients developing endocarditis post-operatively (data not shown).

Conclusion This meta-analysis suggests that there is no significant difference between traditional and concomitant approaches. While the data presented in this study were statistically insignificant, a clear trend of superior outcomes associated with the concomitant approach could be appreciated. More RCTs and observational studies should be conducted in the future to compare these approaches and generate larger sample sizes for greater statistical power, given the likely prospects of cost-reduction and non-inferiority of concomitant IDP and cardiac surgery.

Poster 119 : Intraoperative Epicardial Pacing Wires in CABG patients; Does overdrive pacing prevent atrial fibrillation?

Authors

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Objective Studies suggest atrial overdrive pacing in patients undergoing CABG surgery prevents post-operative Atrial Fibrillation. Additionally, Epicardial Pacing Wires (EPWs) are used to improve haemodynamics and suppress dysrhythmias post cardiac operations. Rare but life threatening complications include atrial/ventricular lacerations, haemorrhage, injury to graft and ventricular arrhythmias. The primary objective of this study was to evaluate effects of overdrive pacing on post operative AF. The secondary objectives were the short and long term outcomes including rate of Permanent Pace Maker (PPM).

Methods This was a retrospective analysis of data from our cardiac surgical database from April 1999 to April 2017. Patients with EPWs were overdrive paced at 90DDD for at least 48 hours post-surgery. Otherwise the groups were similarly managed as per departmental protocol for CABG surgery. Patients were propensity score matched by age, EuroSCORE, logistic EuroSCORE, bypass time and cross clamp time. Data was analysed using IBM SPSS 23.

Results 7300 patients, in sinus rhythm preoperatively, underwent CABG surgery during this period. 446 patients had EPWs inserted intra-operatively. After propensity score matching, 428 patients with EPWs were matched to 428 patients in non EPWs group. Baseline characteristics were comparable in both groups after matching. 38.6 % experienced post-operative AF in EPWs group compared to 32.0% in the non EPWs group (p = 0.09). The rate of PPM insertion was 0.5% vs 1.2% between EPWs and non EPWs groups respectively. Both

groups (EPWs + non EPWs) were comparable in their survival to discharge 97.9% versus 97.9% (p = 1.00) and their survival at up to 18 years follow up (86.4% versus 84.6%) respectively (Log Rank = 0.248).

Conclusion Our study shows that overdrive pacing post CABG surgery does not prevent post-operative atrial fibrillation. However, further multicentre studies are warranted before developing clear guidelines for the insertion of intraoperative EPWs in CABG patients.

Poster 120 : Metastatic meningioma to the lung - 22 years on: a case report

Authors

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Objective Abstract meningiomas are the most common primary central nervous system tumour accounting for 15-18% and distal metastasis occur in fewer than 1-1000 cases. Exposure to ionising radiation, female gender and genetic factors play are significant risk factors and play an important role in tumour development. Meningiomas are classified using the World Health Organisation grading system. Also the time between the detection of the meningioma and the distal metastasis was over 20 years. This combination makes this case extremely rare.

Methods This case report describes a benign meningioma in a 71 year old female that metastasised to the lung.

Results There was at the time of writing no evidence of local reoccurrence or invasion at the primary site and histological analysis showed that the pulmonary nodules were meningothelial cells providing evidence of a metastasis. Also the time between the detection of the meningioma and the distal metastasis was over 20 years.

Conclusion This combination makes this case extremely rare of metastatic meningioma in that its clinical progression is atypical as they usually show local invasion at the primary site, however in this case report this was absent. Also the average detection time between detection of the primary tumour and the detection of metastasis is 6.4 years and survival is 7.3 years after the primary tumour is detected. In this case report the patient was alive over 20 years later.

Poster 121 : A changing rhythm: the future of peer tutoring in ECG teaching

Authors

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Objective Electrocardiogram (ECG) interpretation is a notoriously difficult skill for medical students to grasp. We propose that peer tutoring is a novel method to effectively teach this complex topic. Peer tutoring provides a cost effective, engaging and beneficial learning experience for both tutor and tutee. Peer tutors are often senior students teaching younger years. In this study, we assess students' views on learning ECG interpretation from peer tutors and therefore review whether it is a worthwhile addition to the medical curriculum.

Methods A cross-sectional study was conducted. A lecture on ECG interpretation was delivered to 38 clinical medical students by a senior medical student. The cohort had received ECG teaching two weeks prior from faculty. Students were given a questionnaire (95% response rate) and a Likert scale was used to grade responses.

Results Before the peer tutor lecture, no students agreed with the statement that they 'felt confident interpreting ECGs', with 92% disagreeing or strongly disagreeing. However, after the lecture, 92% of students agreed* with the statement ($p < 0.05$). 97% of students agreed* they 'felt confident learning ECGs from peer tutors'. Furthermore, 86% agreed* they were 'more willing to engage in peer tutoring led sessions compared to sessions run by the faculty'. 100% of participants agreed* 'peer-led ECG teaching is a useful addition to the faculty teaching' and 97% of students agreed* it was 'as effective as faculty teaching'. *agreed = agreed or strongly agreed

Conclusion Our study shows peer tutoring, in the context of ECG interpretation, is an effective method of teaching. Medical students were more willing to engage and felt more confident in interpreting ECGs after the peer led session. Further analysis on a bigger cohort is needed to confirm our results. To conclude, the results indicate that peer tutoring led ECG sessions are a useful addition to faculty teaching and should be considered for inclusion in to the medical curriculum.

Poster 122 : The affects of non-clinical conversation on noise levels in theatre

Authors

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Objective Exposure to high noise levels is associated with hearing loss, poorer performance, increased blood pressure, levels of adrenaline, noradrenaline and cortisol. Studies have demonstrated 66% of anaesthetists have abnormal audiograms for their age; staff having reduced auditory processing with higher levels of noise as well as an increased risk of surgical site infection. A study across 5 adult ICUs demonstrated peaks up to 100 dB (equivalent to a pneumatic road drill 10 meters away) 22-28 times per hour. Normal office noise levels are 40-60 dB. Poor communication and communication failures have consistently been identified as a leading contributor

in errors and poor patient outcomes. To begin to understand the potential role of noise pollution in surgical outcomes this study was designed to define noise levels and “aetiologies” during cardiothoracic surgical procedures.

Methods Mobile app ‘Sound Meter and Noise Detector’ was used at 10 minute intervals throughout 5 cardiac surgical procedures and the noise level was measured along with, who was in theatre, what was happening and whether there was any conversation, clinical or non-clinical.

Results Average noise levels (ANL) of empty theatre: 57 dB. Short peaks of up to 81 dB were recorded. ANL during non-clinical conversation was higher in all operations than the ANL of clinical conversations. The ANL of non-clinical conversations, on average was 8 dB higher than the ANL with no conversation.

Conclusion The ANL staff are exposed to in theatre fall within recommend limits. This study has many clear limitations, although the data could suggest higher noise levels could be a surrogate marker for reduced levels of concentration, due to the association with non-clinical conversation. Conversely, lower levels of noise were noted during critical times of operations, e.g. going on/off bypass. Minimising non-clinical conversation could reduce ANL leading to more conducive environments for effective communication and reduce communication errors.

Poster 123 : Cancellations in cardiac surgery: predictable, dangerous and avoidable?

Authors

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Objective Theatre cancellations are costly, distressing to patients, and may result in poorer outcomes. We sought to evaluate the determinants, incidence, outcomes and documentation practices surrounding cardiac surgical theatre cancellations at a single UK institution.

Methods Patients cancelled following final theatre listing, between March 2016 and February 2017, were identified from administrative databases. Cancellation data was collected retrospectively from individual case-records, and documentation practices audited against the AAGBI Guidelines on Theatre Efficiency (2003). Perioperative and survival data was obtained from national databases. Statistical analysis was performed in Analyse-it for Microsoft Excel.

Results 487 (94.2%) non-emergent procedures were performed, with 45 cancellations in 43 patients (cancellation rate: 9.2%); and resulting in a 16% increase in interval wait from angiogram to surgery. Only 6 cancellations (13.3%) were documented in full accordance with the relevant guidance. Age (p=0.88), gender (p=0.38) and EuroSCORE II (p=0.60), day of the week (p=0.14) and consultant surgeon (p=0.29) had no impact on

likelihood of cancellation. Cancellation rates varied by month ($p=0.038$, highest in January (19.4%) and lowest in October (2.1%)). 82% ($n=37$) of cancellations were due to hospital-causes; primarily bed-staffing availability (40.5%) and emergency cases (37.8%). Cancellation was associated with a higher in-hospital mortality ($n=3$) (6.7 vs 1.6%, $p=0.044$), but this normalised 6 months post-operatively ($p=0.19$). 5 cancellations (11.1%) were foreseeable and preventable.

Conclusion Surgical cancellations are common, with only a small proportion being foreseeable and preventable. Documentation practices surrounding cancellations are poor. Cancellation may be associated with poorer short-term outcome; however, this effect needs further evaluation in a larger cohort.

Poster 124 : Post-operative cardiothoracic X-ray protocols deliver low clinical yield and results that are not cost-effective

Authors

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Objective Due to the invasive nature of cardiac surgery, intensive post-operative care is needed and radiological imaging is often helpful. However, since ionising radiation has an associated increased neoplastic risk, decreasing unnecessary radiation exposure is important. New literature suggests that routine post-operative X-rays are no longer necessary and should be determined by clinical assessment.

Methods A retrospective analysis of the quantity, indications, new radiological findings and medical intervention post X-ray in cardiothoracic post-operative patients. Positive findings were determined from radiological reports and patient notes utilised for management post X-ray.

Results Patient cohort $n=49$ consisted of average age of 61.7 ± 8.41 and an average number of chest X-rays 4.46 ± 2.58 . M:F ratio = 5:1. Total number of x-rays performed was $n=219$ with those undertaken days 0-2 days post-operatively $n=169$ (77%). X-rays with new positive findings $n=121$ (55%). Of this 55%, intervention was carried out in $n=21$ of cases (17%). The most common indication for imaging was positioning of lines, tubes and drains $n=95$ (43%) followed by screening for pneumothorax post drain removal in $n=55$ (20%). Of those 55, chest tube insertion occurred in $n=5$ (9%). Most common new finding was post-operative atelectasis, $n=63$ (52%) followed by pleural effusions, $n=40$ (33%) of which, $n=25$ (63%) were graded small.

Conclusion A small number of post-operative chest X-rays had meaningful positive findings and intervention. Each chest X-ray costs \$106, potentially saving \$69,960 per year by abolishing routine imaging post chest drain removal. Positive findings demonstrated a diagnosis that can be ascertained clinically rather than requiring imaging. A collective effort between cardiothoracic teams and those responsible for post-operative care should aim to reduce unnecessary imaging, decreasing exposure, decreasing money expenditure and improving clinical astuteness.

Poster 125 : ESC Guidelines for management of acute heart failure - to reduce post-operative complications

Authors

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Objective A considerable number of patients who undergo cardiac surgery have heart failure (HF). Heart failure can complicate the post-operative course of cardiac surgery patients, leading to a prolonged stay in ICU. Hence, it is important that HF is managed correctly to reduce the burden of disease and reduce post-operative complications. This study examined the implementation of the new European Society of Cardiology (ESC) pathway for management of acute heart failure (AHF) guidelines (June 2016), which suggests that patients presenting to A&E with pulmonary oedema alongside other signs of AHF should be referred to cardiology directly.

Methods This study observed time periods before (February-June 2016) and after (October-December 2016) the implementation of the guidelines. Three hundred and eighty x-rays of patients presenting to A&E with AHF were reviewed by a medical student and two independent cardiologists for pulmonary oedema. For patients identified to have pulmonary oedema, the notes were searched for details including: A&E diagnosis, referral pathway, final admitted ward, discharge date, HR, BP and co-morbidities.

Results Prior to the ESC guidelines, 26 patients presenting to A&E were identified with AHF with pulmonary oedema. Of these, only 35% were referred to cardiology immediately in A&E. However, following the introduction of the ESC guidelines, 27 patients presenting to A&E were identified to have AHF with pulmonary oedema. 48% were referred to cardiology in A&E. Therefore, following the new guidelines, the percentage of patients directly referred to cardiology increased by 13%.

Conclusion Following ESC 2016 guidelines more AHF patients with pulmonary oedema presenting to A&E are being referred directly to cardiology. This hopefully will lead to better management and in turn reduce the post-operative complications in HF patients. However, more work needs to be done to ensure that the number being referred is far greater to improve patient outcomes and comply with ESC guidelines.

Poster 126 : External thoracic support devices reduce sternal wound complications after cardiac surgery

Authors

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Objective To investigate the current understanding of the role of external thoracic support devices on complications after cardiac surgery.

Methods We performed a review of MEDLINE via Ovid looking for any studies representing level 3 evidence or better, that assessed the relationship between external thoracic support device and sternal wound complications. A best evidence topic in cardiac surgery was written according to a structured protocol.

Results 116 papers were found using the reported search, of which six presented the best evidence to answer the clinical question. These studies demonstrate a significant reduction of deep sternal wound complication on comparing external support with no support. Non-elastic devices were more effective in reducing sternal complication compared with the elastic bandage (four trials). Three studies reported significant reduction of mean hospital stay in patients receiving non-elastic chest support devices.

Conclusion We conclude that early post-sternotomy use of an external non-elastic sternal support device reduces overall sternal wound complications and may reduce the hospital length of stay.

Poster 127 : Cardiothoracic studentship: where are they now?

Authors

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Objective In 2015 we designed and implemented a cardiothoracic 'studentship' programme. Initial evaluation from the programme identified that students were better prepared to pursue a career in cardiothoracic surgery following the course. After 3 years of participation by 15 students we set out to assess how this programme has impacted our students.

Methods From 2015 till 2017, 15 students from the University of Liverpool and Lancaster University have attended the studentship. All the participants were contacted with a follow up questionnaire to assess the impact of their participation on our programme on their career progress to date.

Results Thirteen participants responded to our questionnaire (87%). Eleven students continued to express an interest in pursuing cardiothoracic surgery as a career. Of these, ten students indicated the studentship affected this decision. Since the studentship, six students have been involved in presenting posters, oral presentations, prizes and publications; mostly in the cardiothoracic field. Five students also actively sought out cardiothoracic experience; including medical electives, cardiothoracic student days, courses and placements.

Throughout our evaluation of the course, 'providing an insight' into cardiothoracic surgery remained a key feature. In the free text feedback, students highlighted the provision of support and mentorship as the most important feature of their participation on the programme and their ongoing activities within cardiothoracic surgery.

Conclusion Overall, the studentship has been effective in providing an insight into cardiothoracic surgery as well providing participants with mentors to support them with their long term career goals. We believe that implementing this model of studentship in other hospitals across the UK would result in a widespread positive effect on students interested in cardiothoracic surgery.

Poster 128 : 'Getting it right first time' – is it true for decortication?

Authors

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Objective A national review of cardiothoracic surgery practice ('Getting it right first time') identified a higher than average rate of open decortication for empyema at a regional thoracic unit with high VATS lobectomy rates. The purpose of this audit was to identify contributing factors to this observation and report differences in clinical outcomes between open and VATS decortication.

Methods 170 patients underwent surgery for empyema from January 2015 to May 2017 at a regional thoracic surgery unit. Demographic data was collected alongside pre-operative factors (albumin, haemoglobin, white cell count and C-reactive protein, length of history, microorganism), intra-operative factors (operator training grade, surgical procedure, conversion, presence of trapped lung and signs of sepsis at the time of surgery), post-operative outcomes (length of post-surgical stay, intensive care stay, chest tube duration, complications, re-operation, re-admission and mortality) and post-operative clinical pathological and radiological findings.

Results Data for the first 72 patients is presented in Table 1. Patients who underwent VATS decortication tended to be older and have a shorter duration of symptoms.

Conclusion VATS decortication is now widely accepted. Early stage empyema patients have good clinical outcomes following VATS. There may be a role in late disease too. The high open rate may be explained in part by the stage of the empyema. Initial clinical outcomes in both VATS and Open groups are comparable. Further information will be available once analysis of a further 98 cases is complete.

Poster 129 : Are Thoracic surgeons fulfilling contemporary guidelines in lymph node assessment in lung cancer surgery?

Authors

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Objective Lung cancer remains the second most common cancer in men and women in the UK. The incidence is higher in Scotland than other constituent countries of the UK. The surgical resection rate for non-small cell lung cancer (NSCLC) in Scotland is 23.3%. Lymph node assessments are also routinely performed during resections to aid staging and subsequent management. The prognosis of lung cancer is directly related to its stage at the time of diagnosis. The West of Scotland Cancer Network (WoSCAN) has set a QPI of 1 node from at least three N2 stations sampled at the time of resection or previous mediastinoscopy. Are we meeting the criteria?

Methods A retrospective review of all anatomical lung resections our institution in 2016. Demographic data, intraoperative data and pathology reports from each patient were analysed and compared to the WoSCAN QPI. The standard of compliance was set at 80%. Statistical analysis was performed using Students t-test/Mann Whitney U tests for continuous variables and Chi-squared for categorical variables.

Results There were 396 patients who underwent anatomical lung resections during the study period. The 1-year survival for all patients was 87.4%. During this period there were 353 (89.1%) lobectomies, 17(4.3%) bilobectomies and 26 (6.5%) pneumonectomies. The demographic details are listed below. The overall WoSCAN QPI compliance rate for all lung resections was 84%.

Conclusion The lymph node assessment rate at our institution was compliant for both VATS and open procedures in anatomical lung resection.

Poster 130 : What is the outcome of ICU patients who received a tracheostomy one year post-discharge?

Authors

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Objective This project aimed to explore the long term outcomes of having a tracheostomy inserted while in ICU, and assess the likelihood that patients may have developed tracheal stenosis as a result of the tracheostomy. The primary outcome was current respiratory status and whether this had declined since their tracheostomy was fitted. The secondary outcomes included length of stay (both overall and in ICU), time to

insertion, method of insertion and total tracheostomy time, and how these factors correlate to mortality and current respiratory status.

Methods ICU information about patients who received a tracheostomy in the last six years was used to identify eligible patients. Patients were excluded if they had died as an inpatient, were under the age of 18 at admission, or had been discharged less than 12 months ago. Eligible patients that were alive were contacted and asked to complete a questionnaire about their current respiratory health and how it had changed since their tracheostomy. Data was also collected from the hospital database.

Results 80% of patients developed or experienced worsening of at least one respiratory symptom following their discharge from hospital, the average being one symptom. The largest proportion of deaths occurred in the first three years after discharge. Survival was highest in patients under the age of 50 (100%), and lowest in those aged 80 and above (25%). The shorter the stay in ICU the greater the survival rate, which was a more important predictor than length of overall hospital stay. Those that received an early tracheostomy (within the first seven days of admission) had slightly higher survival – 80.95% compared to 75% for the late group.

Conclusion It is likely that the majority of patients who receive a tracheostomy will experience the development or worsening of respiratory symptoms one year after discharge. Mortality is affected by multiple different factors, with increased age and length of stay in ICU and late insertion all negatively impacting survival.

Poster 131 : Criteria for early extubation in congenital heart surgery

Authors

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Objective Early extubation has been shown to be a superior management in congenital heart surgery in terms of lower early mortality, reduction in the need for ventilation, shorter ICU and hospital stay and no increase in re-intubation. A clear criteria for early extubation has not been established as different centres practice different methods.

Methods 55 papers were produced after a database search. 20 of these papers were chosen on their relevance to the topic as well as clear anaesthetic methods described and risk factors assessed. These methods and risk factors were compared to decipher a clearer criteria for early extubation in congenital heart patients.

Results Overall six papers specified the need for a good surgical technique and adequate repair of defect in the patient. Meticulous perfusion through the surgery and the use of ultrafiltration, mentioned in eight articles, is also essential. An effective anaesthetic method is also required to provide the patient with adequate sedation and pain relief. Seven articles indicated the advantage of a single shot caudal anaesthetic; particularly dexmedetomidine, in assisting with early extubation and pain relief. The need for a collaboration between

different teams as well as possible creation of new protocols, is indicated in eight studies as essential for successful early extubation.

Conclusion Early extubation has been shown to have great benefits for patient. A criteria for early extubation would include good surgical repair, meticulous perfusion and a good anaesthetic method with collaboration of the different teams. Factors that impede the use of caudal anaesthetics, such as spinal malformations and bleeding problems, would comprise part of the contraindications for early extubation. Ultimately, early extubation should be assessed depending on the stability of the patient at the time of extubation via for example haemodynamic stability.

Poster 132 : Three dimensional printing: the next big step for cardiac medical education or another fad?

Authors

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Objective Three dimensional (3D) printing allows for the replication of human body structures with realistic representations of depth and shape. A potentially important use for 3D printed models is to act as an innovative alternative for teaching cardiac anatomy. It has been suggested that 3D printed models do have advantages over traditional methods in teaching cardiac anatomy. Could 3D printed models be superior in teaching cardiac anatomy compared to traditional teaching methods? We sought to summarise the available literature to determine whether 3D printing will improve cardiac anatomy teaching.

Methods An online PubMed database search was done in September 2017 with the search phrase '3D printing models for clinical anatomy teaching'. 35 publications appeared on our search, we used works that would help answer our research question. We also checked references of included publications to identify potentially relevant work that were missed by our search.

Results There is great potential for 3D printing to be an invaluable adjunct to existing methods of teaching cardiac anatomy. As an artificial learning tool produced by the mimicking of live subjects, post mortem subjects, or cadaveric specimens, its accuracy and precision to the original is second to none. Financial and time costs involved in the preparation of 3D printed models are minimal when compared to current methods of teaching, and its effectiveness in teaching cardiac anatomy has been demonstrated in various studies involving medical students, medical residents, as well as cardiac nurses.

Conclusion Our review covers an important topic of technology in 3D printing that is rapidly developing. In recent years, its potential use in various areas of medicine has been investigated. It is important that as technology advances, we take advantage of its maximum utility. Our review demonstrates that the versatility of

this technology includes the ability to teach cardiac anatomy well, aiding the early training of aspiring cardiothoracic surgeons.

Poster 133 : Retrospective analysis of the discharge antiplatelet medications and clinical outcomes for CABG patients

Authors

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Objective This study aimed to determine contemporary patterns of clinical practice concerning antiplatelet regimens prescribed following Coronary Artery Bypass Graft (CABG) surgery and subsequently, compare 1-year mortality outcomes between the various post-operative antiplatelet regimens.

Methods This was a single-centre retrospective analysis, whereby data, including demographic characteristics, discharge medications and 1-year mortality status was collected from patients who underwent a CABG procedure. The sample comprised acute coronary syndrome (ACS) patients between 01/01/2012 and 31/12/2015 and stable patients between 01/01/2014 and 31/12/2015.

Results Despite the local introduction of ticagrelor as a first-line therapy for ACS patients in 2012, there was substantial variation in clinical practice. The use of ticagrelor following CABG for ACS was associated with a marginal 1-year survival advantage compared to other antiplatelet regimens, however, this was not statistically significant (Odds ratio= 0.864; 95%CI 0.251-2.976).

Conclusion Despite trial data implying the benefit in the use of ticagrelor following CABG for ACS, there was no statistically significant difference in 1-year mortality observed in this real-world study, although a low event rate led to wide confidence intervals and further work is thus required in a larger cohort. However, this study highlighted the need for standardisation of the antiplatelet regimen prescribed following CABG.

Poster 134 : Giant Left Circumflex artery aneurysm with a coronary sinus fistula

Authors

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Objective Giant Left Circumflex artery aneurysms are a rare entity, of which we are aware that there is only 13 individual cases reported. The definition of the clinical progression of this condition and of the therapeutic intervention is limited.

Methods We provide this case report to describe the natural history of a patient with this condition, its successful surgical treatment and provide a causal hypothesis.

Results We describe the investigations, imaging and surgical management of the patient with a Giant Left Circumflex artery aneurysm with a coronary sinus fistula. Surgical resection of the aneurysm was performed with coronary artery bypass grafting.

Conclusion Giant Left Circumflex artery aneurysms are a rare entity. When symptoms such as angina or a coronary Steele phenomenon occurs, surgical resection and bypass grafting we consider is a feasible surgical option

Poster 135 : Simulation's role in the evolution of lobectomy: current techniques with a future to robotics

Authors

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Objective The current model of see one, do one, teach one for Cardiothoracic surgical training is unable to provide residents with practice that is highly deliberate and time-efficient in its current state. We narrate the evolution of simulation in teaching different surgical methods for the performance of thoracic lobectomies.

Methods We conducted a literature search on public databases that detailed thoracic lobectomy and their associated simulation models. 37 full-text articles published between the years 2002 and 2017 were cited. We included literature specifying the range of high fidelity and low fidelity simulation models developed to achieve core competencies in thoracic surgery. We focused on open lobectomies, video assisted thoracoscopic surgery (VATS), and robotics, highlighting both their technical and non-technical components.

Results Simulation has been characterised as reducing the technical learning curve associated with procedures, preparing surgeons for actual practice, improving patient safety and service efficiency. Simulation training aids the development of non-technical skills while preparing surgeons for infrequently encountered scenarios, including surgical emergencies or surgical methods that are declining in their frequency of use, such as open lobectomies. Documented literature suggests limited availability of high and low fidelity simulation models for lobectomy procedures that utilise different surgical methods. The adoption of simulation practice for lobectomy is in its early stages of development. Tools for validating different lobectomy simulation models are

still being refined to provide significant and effective cross-transference of skills from these models into the surgical theatre.

Conclusion Current literature in lobectomy simulation reflects the growing need for adaptation of new surgical techniques to facilitate the longevity of the thoracic specialty. Simulation carries the potential to act as “the” paradigm shift in preparing future thoracic surgical workforces.

Poster 136 : Audit of post operative delirium following cardiac surgery on ITU

Authors

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Objective The development of delirium following cardiac surgery increases patient morbidity, mortality (1) and the duration of hospital admission (2). Cardiac surgery departmental standards specify a daily confusion assessment method (CAM-ICU) should be recorded for each patient post operatively. We investigated if CAM-ICU is recorded daily for each patient and if delirium prolonged the length of stay in ITU. We also recorded the range of drugs used to treat delirium.

Methods The retrospective audit looked at ITU patients following cardiac surgery, between 01/07/2017 and 31/07/2017. Prescribing and Information Communication System (PICS) was used to infer, duration of critical care admission, CAM-ICU status (+/- daily record) and delirium medication prescribed. Patients were considered to have delirium if they received neuroleptics.

Results Analysis of 116 patients revealed 15% had a CAM-ICU status recorded at some point during the admission. A daily CAM-ICU screen was not recorded in PICS for any patient. Furthermore, the length of stay was significantly increased in patients who received neuroleptics in comparison to patients who did not (p<.001). A range of neuroleptic medication was used to treat delirium on ITU indicating non-standardised treatment.

Conclusion Cardiac surgery departmental standards are not being adhered to and the true prevalence and resolution of delirium following cardiac surgery is not clear. However, length of stay is increased in patients with delirium, reducing the number of free ITU beds and hospital resources. Novel therapies such as Dexmedetomidine have been shown to prevent post-operative delirium and reduce duration of admission (3) and may be indicated in this setting.

Poster 137 : Delayed sternal closure versus partial pericardiectomy for the treatment of postoperative right ventricular failure following open heart surgery

Authors

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Objective Delayed sternal closure (DSC) and open chest management (OCM) are often utilised to treat right ventricular failure (RVF) following open heart surgery. However, they are associated with high incidence of complications and mortality. Partial pericardiectomy which allows for chest closure without DSC+OCM has recently been introduced in our institution. Our early clinical experience with partial pericardiectomy has been positive. The aim of this study was to compare the clinical outcomes between DSC+OCM and partial pericardiectomy.

Methods We performed a retrospective study on all patients who has undergone DSC+OCM and partial pericardiectomy due to RVF following open heart surgery between January 2013 and December 2016. Basic patient demographics were analysed and primary outcomes including ICU stay and in-hospital mortality were measured.

Results Basic patient demographics were similar between partial pericardiectomy and DSC+OCM patient groups. Total ICU stay was significantly longer following DSC+OCM compared to partial pericardiectomy (16.00 ± 2.828 vs. 6.167 ± 1.662 days, p<0.05). However, total hospital stay was similar between both groups (partial pericardiectomy 24.00 ± 7.497 vs. DSC+OCM 26.10 ± 4.413days, p=ns). The overall in-hospital mortality was 0 (0/7, 0%) following partial pericardiectomy with all 7 patients alive at discharge; while in-hospital mortality was 2 (2/10, 20%) following DSC+OCM (p=ns).

Conclusion Our early clinical experience suggests that partial pericardiectomy is associated with a shorter ICU stay, and may be a non-inferior alternative to DSC+OCM to avoid complication associated with the latter. Results from RCTs and larger population studies are needed in the future to accurately establish this conclusion.

Poster 138 : Presentation of papillary fibroelastoma of the aortic valve with atypical symptoms: case report and literature review

Authors

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Objective Papillary fibroelastomas (PFE) are common benign tumours which are considered for surgical treatment as they carry a risk of life-threatening complications. Patients diagnosed with a fibroelastoma often

present with embolic events or angina. We report a case of aortic valve papillary fibroelastoma with atypical symptoms, treated with valve-sparing surgical excision. Our case highlights the management of this condition, emphasising the need to develop guidelines regarding the treatment of patients with PFE.

Methods We used hospital records for our patient undergoing fibroelastoma excision. We reviewed the literature from PubMed, Cochrane and Embase to explore treatment guidelines.

Results A 69 year old male was referred to the Cardiology clinic with a 2-year history of shortness of breath on exertion, but reported neither chest pain, orthopnoea nor syncope. Transthoracic echocardiogram scan showed a pedunculated mobile mass (11mm x 9.5mm) attached to the left coronary cusp of the aortic valve. CT coronary angiogram showed multiple calcified plaques with 70% stenosis of the left anterior descending artery. A 69 year old male was referred to the Cardiology clinic with a 2-year history of shortness of breath on exertion, but reported neither chest pain, orthopnoea nor syncope. Transthoracic echocardiogram scan showed a pedunculated mobile mass (11mm x 9.5mm) attached to the left coronary cusp of the aortic valve. CT coronary angiogram showed multiple calcified plaques with 70% stenosis of the left anterior descending artery. He underwent valve-sparing excision of fibroelastoma via median sternotomy. Intra-operative Trans-Oesophageal Echocardiogram (Figure 1) showed no evidence of aortic incompetence. The patient was weaned off Cardiopulmonary Bypass in sinus rhythm. Postoperative course was unremarkable and he was discharged on day 6 postoperatively in stable health on his regular medications. He underwent valve-sparing excision of fibroelastoma via median sternotomy. Intra-operative Trans-Oesophageal Echocardiogram (Figure 1) showed no evidence of aortic incompetence. The patient was weaned off Cardiopulmonary Bypass in sinus rhythm. Postoperative cour

Conclusion PFE is the second most common cardiac tumour affecting valvular structures and is associated with life-threatening complications – mainly neurological embolic events. The risk of these complications can be significantly reduced with surgical excision. This is an area in which clear guidelines are lacking, and would be of benefit in aiding clinicians to balance the risks of future embolic event with the risks of a surgical intervention, particularly for patients who are asymptomatic or present atypically.

Poster 139 : Aortic valve replacement with sutureless Perceval S valve for failure of homograft aortic root replacement from Endocarditis

Authors

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Objective A 25 year old Asian man presented to his local hospital with 2 month history of fever and signs of aortic regurgitation (AR). TOE confirmed severe AR with vegetations on all three aortic valve leaflets. Blood

cultures were positive for *Streptococcus viridans*. The patient underwent aortic root replacement with 22mm Cryo preserved homograft. His post-operative period was uncomplicated.

Methods He represented 14 years later with a one-week history of fever, night sweats and rigors. TOE confirmed severe AR with an aortic root abscess extending into the left atrium and mitral valve annulus. Blood cultures grew *Streptococcus constellatus*. CT angiogram aorta showed a 10x17x40mm abscess at the level of a heavily calcified aortic root (Fig.1); he was commenced on antimicrobial therapy and underwent urgent surgery due to the development of heart block.

Results Intraoperatively, there was extensive pus at the calcified aortic homograft root, perforation of anterior leaflet of mitral valve and an aorto-left atrial fistula. He underwent redo sternotomy, repair of the atrial fistula with bovine pericardial patch, a mechanical mitral valve replacement using 25 mm On-X valve and an aortic valve replacement using a size Small perceval valve due to the extensive calcification at the aortic root. Post operative period was unremarkable and he was discharged back to his local hospital for 6 weeks of antibiotic treatment. A repeat TOE at 6 weeks post-op showed normally functioning and well seated tissue aortic valve, well seated mechanical mitral valve, no evidence of any vegetations, para-prosthetic leaks or fistula (Fig.3). He was discharged home and remains well at 14 months follow-up.

Conclusion *Streptococcus constellatus* endocarditis is very rare. This is the first reported case of *Streptococcus constellatus* endocarditis of an aortic homograft. The success of the surgery in this very high risk patient was facilitated by the deployment of a sutureless valve in a porcelain homograft aortic root replacement.

Poster 140 : Low ejection fraction Coronary Artery Bypass Grafting (CABG). Predictors of operative complications and mortality.

Authors

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Objective In patients with ischaemic cardiomyopathy, left ventricular dysfunction by itself is insufficient as a predictor of post-operative complications. This study assesses the effect of pre- and peri-operative factors that increase risk following operation in patients with low ejection fraction (EF).

Methods We retrospectively analysed 346 consecutive patients with EF \leq 30% from the cardiac surgery database who underwent CABG in a single institution. The primary study end-point was 30-day all-cause mortality and major adverse cardiac events after operation (MACE).

Results Left main stem disease (p=0.001), time interval less than 24h between surgery and last MI (p=0.001), pre-operative ventilation (p<0.001), haemodynamic instability prior to operation (p<0.001), non-elective

CABG ($p < 0.001$) and serum creatinine $> 166 \text{ mol/l}$ ($p < 0.001$) were predictors of early 30-day mortality by univariate analysis. Multivariate analysis with generalised structural equation model analysis showed pre-operative haemodynamic instability [adjusted odds ratio (AOR), 3.64; 95% confidence interval (CI), 1.09-12.1; $p = 0.035$] revascularisation complications (AOR, 12.8; CI, 3.51-46.4; $p < 0.001$) and renal complications (AOR, 9.87; CI, 3.01-32.4; $p < 0.001$) were independent predictors of 30-day mortality. The urgent and emergency/salvage operations were predictors for renal complications ($p = 0.004$; $p = 0.003$). Emergency/salvage operations were also correlated with revascularisation complications ($p = 0.016$). Pre-existing diabetes mellitus increased likelihood of both renal (AOR, 2.77; CI, 1.18-6.49; $p = 0.025$) and vascular complications (AOR, 3.71; CI, 0.190-72.5; $p = 0.388$).

Conclusion Patients with EF $\leq 30\%$ undergoing CABG have fair short-term survival, which could be equal to or lesser than predicted by EuroSCORE II. Pre-operative haemodynamic instability is a strong predictor of early mortality and MACE. Early operation on an elective basis before haemodynamic deterioration occurs should be recommended as an additional strategy to minimize risk.

Poster 142 : Klippel-Feil syndrome with associated aortic stenosis in a bicuspid aortic valve - a case report

Authors

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Objective A 54 year-old lady with known Klippel Feil syndrome (KFS) was admitted for elective cholecystectomy. Comorbidities included non-insulin dependent diabetes, hypertension and osteoarthritis. She had no previously known cardiovascular abnormalities.

Methods Pre-operative work-up revealed an ejection systolic murmur in addition to the features of KFS: short, web neck and limited cervical vertebrae movement. Cardiac ECHO confirmed severe aortic valve stenosis with a mean gradient of 60 mmHg, a bicuspid aortic valve (BAV) and moderately impaired LV function. General surgeons decided to postpone cholecystectomy until aortic valve intervention. Coronary angiography showed unobstructed coronary arteries and she was accepted for AVR. At operation, TOE confirmed a heavily calcified and stenosed BAV with a normal aortic root and ascending aorta. The left ventricle was hypertrophied with an EF of 40%.

Results Following mini sternotomy and establishment of cardiopulmonary bypass, a truly BAV was excised and a 21mm Carbomedics mechanical prosthesis was inserted. The post-operative period was uncomplicated. She was discharged home 6 days post-op and remains well at 4 months follow up. Histopathology of the excised valve leaflets displayed areas of fibrosis, myxoid degeneration, calcification and neo-vascularisation. Mild patchy chronic inflammation was noted.

Conclusion KFS is an inherently rare congenital condition. It is associated with a number of chromosomal mutations, notably in GDF6 and GDF3 genes with autosomal recessive and autosomal dominant inheritance patterns. Congenital heart disease including coarctation of the aorta, hypoplastic aortic arch, aortic root aneurysms and intra-thoracic aorta, is present in 4-14% of cases. This is the first reported case of aortic valve replacement for a stenosed BAV in a patient with KFS with no other associated congenital aorto-vascular pathology. This case may serve as grounds for screening patients with KFS for BAV and potentially fatal aortic disease.

Poster 143 : Comparing post-operative atrial fibrillation treatment to local guidelines

Authors

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Objective Atrial Fibrillation (AF) is the commonest arrhythmia and complication of cardiac surgery. It is associated with longer hospital stays, more post-operative complications and increased mortality. South Tees Hospitals (STH) have a treatment pathway designed to return patients to sinus rhythm and therefore reduce hospitalisation costs and improve patient prognoses. There were two main aims: Calculate the rates of post-operative AF locally to gauge surgical standards. Determine if STH guidelines for new onset, post-operative AF treatment are being followed.

Methods This audit was approved by the STH audit coordinator. A proforma was designed and used to collect information from patient notes. The six treatment steps each had a 100% completion target. Data were collected prospectively for all cardiac surgery discharges between 4/1/17 and 31/1/17. Total cases were counted, excluding those with pre-existing AF.

Results • 66 patients met the criteria, 20 developed AF (30%). • All 20 patients were checked for underlying sepsis and given Enoxaparin treatment. • Targets were missed for ECGs 90%, potassium 90% and Amiodarone 65%. • Only 2/5 patients indicated for direct current cardioversion received it.

Conclusion STH rates of AF post-cardiac surgery were favourable, at 30% compared to reported rates of 30-40%. All patients were checked for underlying sepsis and given Enoxaparin treatment, showing assuring attention to acute complications. Inconsistencies existed in choice of first-line drug for cardioversion, with some patients receiving Bisoprolol rather than Amiodarone. A departmental meeting is required to discuss this and devise a solution. Patients are missing treatment due to no direct current cardioversion being performed on weekends and this needs changing. After changes are made, the proforma should be updated and a re-audit undertaken.

Poster 144 : Sutureless Aortic Valve Replacement in high-risk patients

Authors

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Objective

Aortic stenosis (AS) affects up to 10% of over 65's and has a 2-year mortality rate of 50%. With the current patient demographic ageing and having many co-morbidities, surgical replacement via mid-line sternotomy (cAVR) is unfeasible in many of these high-risk patients. Sutureless AVR (suAVR) in combination with a minimally invasive approach may be the answer. However, there is limited evidence available on its use in high-risk patients and so the aim of this paper is to review and summarise significant research in the field.

Methods

Performing a search of the Cochrane and PubMed databases, papers with a large population of high-risk patients were chosen. Articles were then grouped, and their results analysed according to the predominant high-risk characteristic. Any papers not published in the English language or involving the Medtronic 3F Enable valve were excluded. Furthermore, many smaller studies were excluded due to research time constraints.

Results

suAVR resulted in shorter aortic cross clamp and cardio-pulmonary bypass times but higher incidences of atrial fibrillation, when compared to cAVR, in patients with a mixture of high-risk features and those undergoing concomitant operations. Lower mortality and morbidity rates were reported when compared with transcatheter aortic valve implantation; rates of patient prosthetic mismatch were equal or lower in suAVR in patients with small aortic annuli and good haemodynamic performance was shown after re-do operations with suAV.

Conclusion

The medical profession needs to be able to offer patients safe and effective surgical correction of AS. There is an increasingly high-risk patient demographic requiring AVR and this summary of current evidence suggests that suAVR in high-risk patients is safe, results in good surgical outcomes and minimal morbidity. Moreover, this review highlights the need for further research in the field of suAVR, so that evidence based clinical guidelines can be formulated.

Poster 145 : Pneumothorax and air travel: case report and literature review

Authors

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Objective Pneumothorax is deemed a contraindication for air travel. Several guidelines have been published providing recommendations on air travel after pneumothorax, yet many are based on expert opinions and not guided by evidence-based medicine. While much of literature has examined air travel in relation to spontaneous pneumothorax, there is limited consolidation of information regarding pneumothorax that is a consequence of trauma or iatrogenic causes such as thoracic surgery. Further, great disparity exists in practice despite guidelines and recommendations.

Methods In this study, we report the case of a 76-year-old male who developed a large pneumothorax following a right upper lobectomy and the subsequent management in face of his travel requirements. A review of the literature for the various guidelines and clinical studies is also performed.

Results Our findings suggest that current practice errs on the side of caution when providing travel advice following radiographical resolution of pneumothorax, despite minimal supporting evidence; research studies supporting otherwise are also evaluated.

Conclusion We conclude that with proper clinical evaluation and patient education, patients with pneumothorax may be able to undertake air travel sooner than recommended in current guidelines.

Poster 146 : ABO-incompatible paediatric heart transplantation without the use of exchange transfusion

Authors

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Objective Since 2001, ABO-incompatible paediatric heart transplantation has been undertaken using complete exchange transfusion to remove recipient antibodies and prevent acute rejection (West, et al. 2001). This mandates exposing patients to multiple units of red blood cells, fresh frozen plasma and platelets totalling three times their circulating volume, which can result in fluid overload, low blood pressure when carrying out the transfusion and sensitization, which is associated with reduced long-term graft survival.

Methods A new method was developed to remove antibodies from the recipients' blood using an immunoadsorption column incorporated into the cardiopulmonary bypass circuit before re-perfusion of the donor heart (figure 1) therefore eliminating the need for exchange transfusion. A pilot study (figure 2) showed that the method removed a constant and predictable quantity of antibodies; the technique has now been used in several patients (Robertson, et al. 2017).

Results An ABO group B heart was accepted for an 11.5kg, 4-year-old ABO group A patient with end-stage dilated cardiomyopathy. The recipients' IgM anti-B antibody titres pre-bypass was 8:1. To calculate the length of time required to remove anti-B antibodies from the plasma the following formula was used:

