

MEETING ABSTRACTS

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A1

Impact of Lung Cancer Screening on the Detection of Thoracic Aortic Aneurysms

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Objectives: A national lung cancer screening programme is currently being developed in the UK and is expected to be available nationwide by 2029. Non-contrast CT thorax imaging, used in lung cancer screening, will detect a range of incidental findings including thoracic aortic aneurysms. Little is known about the incidence of thoracic aortic aneurysms in this population and the impact of the referral of these cases to cardiac surgery.

Methods: Lung cancer screening was offered to all current and ex-smokers aged between 55 and 74 through their GP in Sussex. All incidental cases of thoracic aortic aneurysms found between September 2022 and July 2024 were included in the study. An initial cutoff of aneurysms greater than 4.0 cm was used to trigger referral to cardiac surgery. This threshold was increased to 4.5 cm in April 2024.

Results: During the study period 17,918 CTs were carried out. This led to 120 referrals to cardiac surgery representing a detection rate of thoracic aortic aneurysms of 0.64%. 96 patients entered aortic surveillance programmes, 2 patients are currently awaiting surgery and 4 patients have undergone surgery. The average number of referrals each month prior to April 2024 was 5.7 and this decreased to 1.5 from April 2024.

Conclusions: Lung cancer screening is currently leading to a significant number of referrals to cardiac surgery services in Sussex. A small number of patients have undergone surgery, or are awaiting surgery, as a consequence of aortic aneurysms found during screening and a relatively large number have entered surveillance programmes.

A2

Does the beating heart technique, during frozen elephant trunk implantation for complex aortic arch replacement surgery, reduce inotrope and vasopressor requirements?

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Objective: To investigate whether 'beating heart', in patients undergoing frozen elephant trunk for aortic arch replacement, reduces inotrope and vasopressor requirements, early post-operatively.

Methods: Single-centre, retrospective analysis of patients who underwent frozen elephant trunk for aortic arch replacement. 'Beating heart' patients, receiving warm blood perfusion to aortic root during frozen elephant trunk implantation, were compared to 'cardioplegic arrest'. Primary outcome was inotrope requirements (adrenaline; dopamine) and vasopressors (noradrenaline; vasopressin). Secondary outcomes consisted of thirty day mortality and veno-arterial extracorporeal membrane oxygenation incidence.

Results: Of 135 patients, twice as many underwent 'beating heart' (n=91; 67%) compared to 'cardioplegic arrest' (n=45; 33%). Pre-operative demographics were comparable for age, gender, left ventricular function, redo surgery and surgical risk. 'Beating heart' was less likely to present for urgent/emergent surgery (41% versus 87%; $p < 0.01$) and more likely to undergo aneurysmal disease surgery (53% versus 6%; $p < 0.01$). Cardio-pulmonary bypass, aortic cross-clamp, deep hypothermic circulatory arrest and antegrade cerebral protection times were comparable. By intensive care unit arrival, 'beating heart' had tendency to lower adrenaline requirements (0.02 ± 0.05 versus 0.10 ± 0.51 mcg/kg/min; $p = 0.15$), but similar dopamine (2.04 ± 2.21 versus 2.06 ± 2.06 mcg/kg/min), noradrenaline (0.03 ± 0.02 versus 0.03 ± 0.04 mcg/kg/min), and vasopressin (0.008 ± 0.024 versus 0.007 ± 0.020 units/min). 30-day mortality (15% versus 13%) and veno-arterial extracorporeal membrane oxygenation incidence (3% versus 2%) was comparable.

Conclusions: 'Beating heart' surgery has a tendency towards lower adrenaline requirement following aortic arch replacement surgery with frozen elephant trunk. No difference in 30 day mortality or vasopressors was observed.

A3

Early results of hybrid aortic arch stent for the treatment of acute type A aortic dissection, Ascyrus Medical Dissection Stent (AMDS)

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Objectives: We present our early outcomes following the use of the Ascyrus Medical Dissection Stent (AMDS) for hybrid aortic arch stenting in patients with acute Type A aortic dissection.

Methods: Retrospective study of all patients who underwent AMDS insertion for type A dissection from October/2023 to April/2024. Data included: presentation, operation, post-operative recovery and follow-up.

Results: Total of 9 patients received AMDS. 78% were males, mean age was 66 years. 55% presented with acute renal failure and one patient presented with acute right lower leg ischaemia. AMDS stent,



ascending aortic replacement and aortic valve resuspension performed in 78% of patients and 22% required mechanical root replacement. AMD sizes used were 55/55 (33%), 55/40 (11%), 40/30 (22%) and 40/40 (11%). There were no in hospital deaths or permanent post-operative stroke. Mean follow up period was 7 months (4–12) with no deaths at follow up. Postoperative CT mean time of 4.5 months showed satisfactory results with either complete obliteration or thrombosis of the false lumen in 8 out of the 9 patients. Ischaemic limb resolved post AMDS insertion without the need for vascular intervention. 1 patient had persistent false lumen and severe aortic regurgitation after resuspension of the valve required re-intervention.

Conclusions: AMDS can be safely performed with good results. AMDS reduces malperfusion and promote early false lumen thrombosis and the risk of DANE. Extended follow-up is essential to assess long-term efficacy of this innovative approach.

A4

Mid-term results of the Ascyrus Medical Dissection Stent (AMDS) in the treatment of acute type A aortic dissection

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Objectives: The AMDS is an adjunct to standard hemi-arch repair in patients with acute type A aortic dissection (ATAAD) and has been available for use in the United Kingdom for approximately 3 years. The objective of this study was to evaluate the mid-term clinical and radiological outcomes.

Methods: All patients with ATAAD treated with the AMDS between February 2021 to August 2024 at our centre were included. Salvage patients were excluded. Clinical outcome data included peri-operative outcomes, mid-term survival, mid-term aortic re-intervention and aortic remodelling. For aortic remodelling analysis, the pre-operative diameter of true and false lumen in zone 2 and in the descending aorta were compared against post-operative follow-up scans. Stable aortic diameter was defined as a change of less than -5 mm.

Results: A total of 22 patients were included. The in-hospital mortality rate was 9.1% and overall survival was 81.2%. Pre-operative radiological malperfusion was resolved in all patients. Stable or decreased overall aortic diameter was seen in all patients in zone 2 and in 95.4% of patients in the descending aorta. A reduction in the diameter of the false lumen in zone 2 was observed in all patients. In the descending aorta 90.1% of patients experienced a reduction in false lumen diameter. One descending aorta re-intervention was performed.

Conclusion: This study demonstrates excellent clinical outcomes and very encouraging results with regards to aortic remodelling in zone 2 and the descending aorta. Further study is required to ensure that these promising mid-term results are maintained in the long-term.

A5

Coronary Ostial Involvement in Type A Aortic Dissection: A Single-Center Experience

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Objective: To assess surgical outcomes in patients with coronary artery ostial dissection compared to isolated Type A aortic dissection.

Methods: From 2019 to 2024, 314 patients with acute Type A aortic dissection were treated in our clinic. Excluding 29 patients with malperfusion of the brain, internal organs, or limbs, 244 patients showed no malperfusion. Dissection affected coronary arteries in 49 patients (19.0%). Most were male (75.5%), with a mean age of 49.0 ± 9.5 years;

69.4% had hypertension, and 8.1% had Marfan syndrome. The Neri classification was used: Type A – 12 (24.5%), Type B – 24 (49.0%), Type C – 2 (4.0%), and coronary ostial intimal tear (COIT) – 11 (22.4%).

Results: Ostial repair was performed in 3 cases (27.2%) with Type A ostial dissection. For Type B, ostial repair was performed in all 24 cases, with one instance requiring conversion to coronary artery bypass grafting (CABG). Type C cases were managed with CABG. Thirty-day mortality was 8.2% in the coronary dissection group, compared to 4.1% in the isolated Type A dissection group.

Conclusions: Coronary artery ostial dissection was observed in 19.0% of patients with Type A acute aortic dissection who underwent surgery from 2019 to 2023. Right coronary artery involvement accounted for 52.2% of cases, suggesting a potentially higher preoperative mortality rate when the left coronary artery is affected. The involvement of coronary artery ostia in dissection nearly doubles in-hospital mortality compared to isolated Type A aortic dissection.

A6

Surgical Reconstruction of Isolated Unruptured Non-Coronary Sinus Valsalva Aneurysm: A Case Report*

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Sinus valsalva aneurysm (SVA) is a rare cardiac anomaly with a prevalence of approximately 0.09% in general population.

A 30-year-old female patient presented with complaints of fatigue and exertional dyspnea. In the echocardiography imaging, the non-coronary cusp was aneurysmatic. CT showed a 6,7 cm saccular aneurysmal dilatation of the non-coronary cusp of the aortic wall (Fig.A).

The operation was done via conventional cardiac surgical technique. A thin-walled aneurysm sac of the non-coronary cusp was noted (Fig.B). The aneurysmatic part of the noncoronary cusp section was resected starting from the annulus up to the sinotubular junction. A biological porcine pericardial patch of 2×3 cm was placed in this area instead of the resected aortic wall (Fig.C), (Fig.D). Visually the coaptation surface evaluation was normal.

*The patient has confirmed explicit consent to be in the Journal.

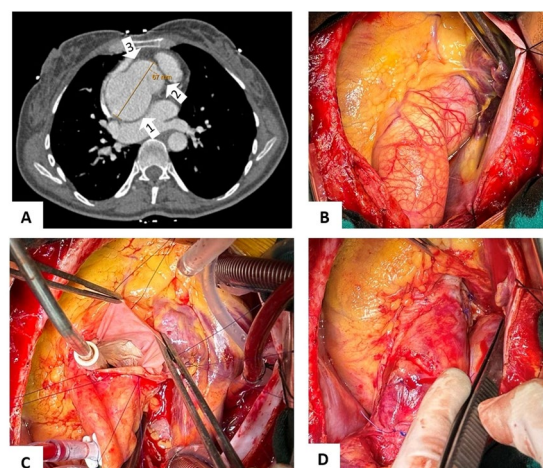


Figure A. Preoperative CT images 67mm aneurysm size Arrow1. Non-coronary cusp Arrow2. Left coronary cusp Arrow3. Right coronary cusp B. Intraoperative image of isolated noncoronary cusp aneurysm C.Porcine pericardial patch suturing D.The final stage of the repair

SVA is a rare cardiac anomaly originating mostly from the right coronary sinus (64%), with less frequent occurrences relating to non-coronary sinus (36%) and the left coronary sinus (28%). It is less commonly

seen as an isolated cusp aneurysm. It can be congenital or acquired. Patients are usually diagnosed with SVA incidentally.

Once diagnosed; surgical repair should be performed. The surgical strategy depends on the origin, size, shunting, and associated pathologies beside SVA. Different techniques are employed to treat a SVA, such as patch closure of the aneurysm orifice, valve-sparing operation, and Bentall operation.

Surgical treatment should be considered first in SVA because of high risk of rupture. In the setting of suitable conditions, repair should be considered first.

A7

Development of a Decision Support Tool for screening in Thoracic Aortic Diseases: an update from the DECIDE TAD initiative

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Background: Thoracic Aortic Diseases (TAD) have a frequent genetic aetiology which is increasingly recognised by guidelines, which currently encourage familiar screening in selected cases. Nonetheless, this approach is not homogeneously implemented in clinical practice, and several barriers both at an individual and organisational level hinder homogeneous access to the service across the UK.

Methods: A series of workshops and consensus exercises were run as part of an NIHR Programme to develop a Decision Support Tool (DST) to facilitate access to screening in Thoracic Aortic Diseases.

Results: A working group of clinicians and members of the public was formed. Twenty-four participants were approached, with a positive response rate of 75%, for a total 18 participants in the panel once finalised (6 dissection survivors, 2 relatives, 3 clinical geneticists, 3 cardiologists, 2 surgeons, 2 nurses). Four workshops were held over the course of 4 months. A longlist of domains was produced and subsequently filtered, to identify the most relevant items for the DST. An analogical prototype of the DST was tested by an external cohort of service users. Lastly, a toolkit for the DST implementation was prepared.

Conclusion: The first work-package of the DECIDE-TAD initiative delivered a digital DST through a collaborative effort of patients, relatives, researchers and clinicians, that has the potential to facilitate access to screening for TAD in the current healthcare system once implemented. The effectiveness of the DST will be tested in the next years in the largest multicentre randomised controlled trial for TAD conducted in the UK.

A8

Aortocutaneous Fistula and Ascending Aortic Rupture Following Aortic Root Abscess Repair: a Complex Reoperative Case Report*

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A 75-year-old man was transferred to our centre with acute heart failure following recent permanent pacemaker insertion for complete heart block. Initial management was with IV Furosemide and CPAP.

His past medical history also included stage 3 chronic kidney disease and gout. Blood cultures confirmed native valve Enterococcus faecalis endocarditis. Echocardiography showed severe aortic regurgitation with vegetations on a bicuspid valve and dilated aortic root. Emergent surgery found a 1.5×2 cm aortic root abscess beneath the right coronary artery. Thorough debridement, pericardial patch repair, and valve replacement (29 mm Perimount Magna Ease bioprosthesis) were undertaken. Postoperatively, he required intraaortic balloon pump support, continuous venovenous hemofiltration, pleural effusion drainage and hyponatraemia.

At six-month follow-up, a 4×4 cm fluctuant swelling was noted at the surgical site. Two years postoperatively, the patient developed a hoarse voice. CT revealed a rapidly expanding ascending aortic aneurysm (4.8×6.9 cm) with wall irregularity and penetrating atherosclerotic ulcers. The aneurysm had eroded through the anterior chest wall, forming an aortocutaneous fistula requiring emergency reoperation.

Cardiopulmonary bypass was established via right femoral venous (percutaneous), right common carotid and axillary arterial cannulae. After cooling to 28 °C, an apical left ventricular vent was placed via a mini-antrolateral thoracotomy. The ascending aorta was replaced (38 mm Vascutek Gelweave graft) under deep hypothermic circulatory arrest with selective cerebral perfusion via the left common carotid artery. This case highlights the successful management of an aortic root abscess and the importance of long-term surveillance. Late complications may present with unusual symptoms requiring urgent surgical reintervention.

*The patient has confirmed explicit consent to be in the Journal.

A9

Aortic arch replacement with Frozen Elephant Trunk technique in patients proven to have connective tissue disease – early clinical and radiological outcomes

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Introduction: The Frozen Elephant Trunk (FET) procedure is used to treat patients with connective tissue disease (CTD) in both acute and chronic settings. However, outcome data is limited. This study assesses the clinical and radiological outcomes in this patient cohort.

Methods: We analysed a prospectively collected database and medical records. Clinical and radiological outcomes of all CTD patients who underwent aortic arch replacement with descending thoracic aorta stenting with FET between 2017 and 2024 at a UK university hospital were assessed.

Results: Of the 145 patients who underwent FET procedures, eight (5.5%) had confirmed CTD via genetic testing. The mean age was 50.1±16.3 years, with 4 (50%) being men and six (75%) having had re-operative surgery. Six patients had Loeys-Dietz syndrome and two had Marfan syndrome. Two had acute and six had chronic aortic dissection. The mean in-hospital stay was 23±9 days. There was no in-hospital mortality. One patient experienced a stroke and another developed paraplegia. During follow-up (mean 3.2±2.5 years), there were no deaths, though three (38%) patients required further distal aortic intervention, and one awaiting surgery (all with Loeys-Dietz syndrome). Postoperative CT scans revealed that seven (88%) patients had full thrombosis of the false lumen around the stent, with stabilisation or improvement in aortic diameter post-surgery in that segment.

Conclusion: Aortic arch replacement with FET using a hybrid stent-graft for CTD patients demonstrates good survival rates. However, the potential for further distal aortic interventions underscores the necessity for continued aortic surveillance and meticulous MDT planning.

A10**The aortic root enlargement by Y-incision: A Single Centre Experience**

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Background: Aortic root enlargement is an important concept in the lifetime management of patients with small native aortic root anatomy and improves left ventricular reverse remodelling. We evaluate the safety and early outcomes following aortic annular enlargement by a Y-incision approach.

Methods: A prospective institutional study was performed. We analysed data obtained from our prospective adult cardiac surgery database of patients who underwent elective and urgent aortic root enlargement between January 2023 and October 2024.

Results: 12 patients were included in the study with mean age 59.7 ± 10.1 years and median EuroSCORE II 6.7 ± 4.6 and median Logistic EuroSCORE 5.3 ± 3 [Table 1]. All patients had aortic valve replacement. Concomitant procedure was performed in three patients: one patient had ascending aorta and hemiarch replacement, one had CABG and one had left atrial appendage closure [Table 2]. Valve upsizing was ≥ 2 sizes in 9 patients (75%) [Table 3]. There was no mortality and major postoperative complications including renal failure requiring permanent dialysis, wound infections, or reoperation for bleeding, and stroke [Table 4]. There was significant improvement in transvalvular gradient on follow up echocardiography compared to preoperative measurement.

Conclusions: The Y-incision aortic annular enlargement is safe and effective for upsizing the aortic annulus by 3 to 4 valve sizes. This strategy enables potential future transcatheter aortic valve-in-valve procedures.

Table 1 (abstract A10) Pre-Operative variables

Age	59.7±10.1
M:F	4:10
EuroScore	6.7± 4.6
SCOTS EuroScore	5.3 ± 3.1
DM	5
HTN	10
EF	Good (LVEF >50%) 2 Moderate (LVEF 31 - 50%) 10
Smoking History	Never-smoker 8 Ex-smoker 4
History (Hx) of MI	Once in 1 Twice 1
Hx of PCI	1
Hx of Neurological Dysfunction	None
Hx of Pulmonary Disease	1
Pre-Operative heart rhythm	Sinus Rhythm 10 Atrial fibrillation/ flutter 1 Other abnormal rhythm 1
Severity of Aortic Stenosis (12)	Severe 11 Moderate 1
Creatinine Clearance	120.7 ± 47.8
Left Ventricular Function	47.6 ± 6.7
Preoperative Stay	3.5 ± 5.0
Native Valve Pathology	Degenerative 8 Bicuspid 4
Haemodynamic Valve Pathology	Stenosis 10 (85.7) Regurgitation 2 (14.3)
Pre-operative Inotrope support	0
Severity of Aortic Stenosis – EOA	0.64 ± 0.1
Severity of Aortic Stenosis – Gradient	53.1 ± 22

Table 2 (abstract A10) Operative Variables

Aprotinin use	2
Valve Procedure	Replacement 12 (100)
Additional	
CABG	1
LAAOS	1
Hemiarch replacement	1
Heparin/ Nitrate	0
Left Heart Catheterisation	7
AKI	8
Arrhythmia	AF/SVT 3
Transfusion	7
RBC Used	7
FPP Used	2
Platelet used	4
Cumulative Bypass Time	285.1 ± 153.9
Cumulative Cross Clamp Time	200.5 ± 67.1

Table 3 (abstract A10) Valve size

Native annular size based on pre-bypass TOE and verified by direct sizing during surgery & n	Implanted valve size & n	Upsizing
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Table 4 (abstract A10) Post operative variables

17 mm ---2	21 mm --- 2	2
19mm---4	23 mm---4	2
20mm---2	25 mm---2	2
22mm---1	25 mm---1	2
23mm---3	25 mm---3	1

A11

Incidental 7 cm aneurysm on Aortic isthmus with a potential persistent ductal remnant in a 33 year old patient with recurrent chest infections*

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We present a case of a 33 year-old woman who presented with recurrent chest infections accompanied by chest pain and shortness of breath, prompting a chest X-Ray which revealed complete opacification of left upper lobe and very widened mediastinum. This led to CT scan which revealed a giant 7 cm thoracic aortic aneurysm involving the origin of left subclavian artery. The aneurysm extended into left upper chest compressing the upper lobe bronchus. The tortuous path of the aorta along with the aberrant path of the aneurysm posed a question of the embryological origin of aneurysm (whether this was potential persistent ductal / congenital arch remnants).

The aneurysm was successfully repaired using cardiopulmonary bypass with total circulatory arrest and antegrade cerebral perfusion at 25C. The Innominate artery is cannulated for arterial return where the tip of cannula was positioned in the arch to achieve hypothermia and repositioned towards head during circulatory arrest for cerebral perfusion. The head vessels were isolated and subclavian was divided from arch. A 32 mm Gelweave tube graft was used to construct the distal arch after excising the aneurysm sac and anastomose to proximal arch at Zone 2. A separate 6 mm Gelweave graft was used to connect the subclavian artery to the native aorta. The patient was fully rewarmed and CPB weaned off with minimal inotropic support. Heparin reversed with protamine and coagulation corrected before chest closure. Patient made good recovery following surgery and discharged home. She was followed up in clinic post-operatively with significant symptom reduction.

*The patient has confirmed explicit consent to be in the Journal.

A12

Redo Versus First-time Sternotomy Frozen Elephant Trunk Procedures in 165 Patients

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Objectives: To evaluate the outcomes of redo Frozen Elephant Trunk (FET) procedures compared to first-time sternotomy FET in patients with extensive aortic arch disease.

Methods: This retrospective review consists of 165 consecutive FET cases from a single tertiary centre over 7.5 years (June 2017 to March 2024). The cohort included 114 first-time FET patients (69%) and 51 redo-FET patients (31%). Data was extracted from a prospectively maintained database and analysed using IBM SPSS Version 29.0. Categorical variables were compared using Chi-square and Fisher's Exact tests, and continuous variables with the Mann-Whitney-U test.

Results: Redo-FET patients were significantly younger (mean age 54.9 vs. 60.5 years, $p=0.004$) and included more Marfan syndrome patients ($p<0.001$). Elective cases were more frequent in the redo group (78.4%) compared to first-time cases (25.4%, $p<0.001$). Cardiopulmonary bypass (CPB) times were significantly longer for redo cases ($p=0.027$). Overall, mortality was 21.2%, with stroke at 16.4%, paraplegia at 3.6%, and re-exploration at 21.8%. There is no difference between the redo-FET and first-time groups in terms of mortality, re-exploration, stroke, and paraplegia. Mortality increased to approximately 40% during the COVID-19 pandemic (2019–2021).

Conclusions: Redo-FET outcomes are comparable to first-time FET in experienced centres. Elective procedures, both first-time and redo, had similar outcomes. Emergency FET cases showed higher stroke rates, likely due to acute pathologies causing malperfusion. COVID-19 (2019–2021) was associated with increased mortality in both elective and emergency FET cases.

A13

Can Trainees Perform Frozen Elephant Trunk Procedures Safely?

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Objectives: The frozen elephant trunk (FET) procedure is a complex aortic repair surgery indicated for extensive aortic arch disease. Increased demands on surgeons to report outcomes have limited training opportunities in cardiac surgery, making consultants cautious about training next-generation surgeons in high-risk procedures like FET. This study aims to evaluate the outcomes of FET procedures performed by trainees versus those performed by consultants in both elective and emergency settings.

Methods: This retrospective cohort study was conducted at a single centre over a 7.5-year period (June 2017 – March 2024), analyzing 165 FET cases. Patients were stratified by primary surgeon status: Trainee ($n=27$) and Consultant ($n=138$). Outcomes were assessed using IBM SPSS version 29.0, using Chi-square and Fisher's Exact tests for categorical variables and the Mann-Whitney U test for continuous variables.

Results: Patient demographics and the number of emergency and redo-sternotomy procedures were similar between the trainee and consultant groups. Cardiopulmonary bypass (CPB) time was significantly longer in the consultant group (329.5 ± 78.9 vs. 363.0 ± 97.7 min, $p=0.039$), though cross-clamp and circulatory arrest times were comparable. Both groups demonstrated similar rates of mortality, stroke, paraplegia, re-exploration, renal failure, and length of hospital stay.

Conclusion: Competent trainees can perform FET procedures with outcomes comparable to those of consultants. These findings support the inclusion of FET procedures in training under appropriate supervision.

A14

4D MRA technique aid clinical decision making for future interventions in chronically dissected thoraco-abdominal aortas following acute type A repair

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Aim: Patients undergoing surgical or endovascular aortic repair require regular imaging surveillance of their remnant aorta by CT angiography as standard of care. Cardiovascular magnetic resonance imaging utilising 4D flow and time resolved contrast enhanced MRA provide functional and dynamic assessment of the aorta and potentially offer insights including visualisation of flow patterns through entry tears.

Methodology: This was an observational pilot study of consecutive patients with chronic residual thoracoabdominal aortic dissection following acute type A aortic dissection repair who were referred for assessment by MRI after cardiovascular MDT. All patients who underwent 4D flow at 1.5 T were included. The 4D flow and TWIST MRA datasets were analysed for sites of entry tears, flow patterns and shear stress. These were correlated with subsequent changes in aortic dimensions on CT imaging and clinical outcomes.

Results: Between September 2021 and August 2024, 8 patients (age 37–72 years) underwent 4D-flow MRA. In 4/8 patients, stable false lumen perfusion was observed on 4D-flow. In all cases, subsequent surveillance CTA demonstrated stable aortic dimensions. In 3/8, false lumen shear stress was higher than then observed cohort with flow through entry tear. In 1/8, the entry tear demonstrated high velocity forward flow into false lumen and low velocity backward flow into true lumen. All 4/8 progressed to symptomatic aortic dilatation that met the threshold for aortic intervention.

Conclusion: In a select cohort of aortic surveillance scenarios, functional MRA techniques can provide reliable early predictive flow patterns for thoracoabdominal aorta expansion requiring surgery or TEVAR.

A15

Systematic review of clinical outcomes following surgical aortic valve replacement in patients with bicuspid aortic valve and a preoperative proximal aorta diameter less than or equal to 45 mm

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Objectives: Bicuspid aortic valve (BAV) is associated with early valvular dysfunction, often necessitating surgical aortic valve replacement (SAVR). BAV patients are also prone to aortopathy. Current ESC guidelines recommend intervention during SAVR when ascending aorta/root diameter ≥ 45 mm, though evidence is weak. This review evaluates outcomes in BAV patients with aortas ≤ 45 mm undergoing SAVR, to assess guideline validity.

Methods: A systematic database search was conducted to include all studies investigating BAV patients with ascending aorta/root diameter ≤ 45 mm following SAVR without aortic intervention. The primary outcome was reoperation on the ascending aorta/root. Secondary outcomes included aortic dissection/rupture, mean annual aortic expansion rate, and 10-year survival.

Results: Fifteen cohort studies encompassing 2,315 patients (mean age 58.81 ± 5.67 years; 68% male) were included; 69.5% had aortic stenosis, 12.9% aortic regurgitation and 17.6% mixed aortic valve disease. Mechanical valve prosthesis was implanted in 55% (805/1464). Concomitant procedures included CABG in 14% (209/1488), mitral valve interventions in 2.4% (35/1488). Mean baseline aortic diameter was

37.89±4.45 mm. Mean follow-up was 8.76±3.49 years. Aortic reoperation occurred in 15/2,008 (0.75%) patients at a mean of 7.43 years and aortic dissection/rupture in 5/2,007 (0.25%) at a mean of 6.86 years. The annual aortic expansion rate was 0.48±0.40 mm/year, and the 10-year survival rate was 73.04±9.42% among 472 patients.

Conclusion: BAV patients with aortic diameters ≤45 mm have low rates of aortic reoperation and adverse events following SAVR, suggesting routine prophylactic aortic intervention may be unnecessary. Findings support current guidelines, though long-term monitoring is recommended.

A16

Reoperation after Acute type A dissection repair: single centre experience

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A16

Objectives: We analysed outcomes of aortic reoperation following primary acute type A aortic dissection (ATAAD) repair.

Methods: Prospectively collected bespoke hospital database was analysed to look for redo aortic operations between 2015 and 2024. Only those who had previous ATAAD repair were included. Aetiopathology, time intervals and outcomes including survival were tabulated.

Results: Thirty patients were identified (mean age 59.8y±12.7, 23 male, 8 connective tissue disease). Initial operation were mostly limited distal resections: ascending aortic replacement (n=18) and aortic root replacement (n=12)±concomitant procedures. The median time to first redo was 6 years(1–28 years). Redo operations involving various aortic segments were due to infection(n=4), proximal aortic issue(n=3), distal aortic issue(n=22), both proximal and distal(n=1). In-hospital mortality for first redo-operation was 3.3%(n=1,infection). Complications included stroke(n=3), paraplegia(n=1), dialysis(n=9) and tracheostomy(n=5). Actuarial survival after first redo at 1, 5, 8 years was 90±5%, 73±10% and 54±17% respectively. Ten patients required further aortic re-intervention: TEVAR(n=8), FET(n=1) and TAAAR(N=1). Overall survival after initial repair of ATAAD at 8, 16, 25 years with multidisciplinary aortic care was 83±8%, 72±9% and 58±15% respectively.

Conclusions: Progression of aortic disease remains a common indication for reoperation after ATAAD with limited distal aortic resection. When subjected to adequate aortic surveillance and active management by a multidisciplinary aortic team using modern technologies, good long-term survival is possible. However, redo surgery carries high morbidity.

A17

Early and Mid-Term Results following Valve-Sparing Aortic Root Replacement in Type A Aortic Dissection

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A17

Objective: To assess short- and mid-term outcomes of valve-sparing root replacement (VSRR) in patients with type A aortic dissection.

Methods: Consecutive patients undergoing VSRR for type A aortic dissection were included. Primary endpoint was survival at follow-up. Secondary endpoints were 30-day survival, short-term morbidity, and freedom from valve-related reoperation.

Results: From January 2019 to September 2024, 36 patients were included. 27 were males (75%) and 9 females (25%). Mean age was 50±13.17 years. 11% (n=4) had a bicuspid aortic valve, and 89% (n=32) had a tricuspid valve. All patients underwent the standard David V reimplantation procedure. 13% (n=5) required additional

aortic valve repair. Acute type A dissection repair was performed in 81% (n=29) of cases, and chronic type A dissection repair in 19% (n=7). Additional procedures included total arch replacement in 25% (n=9) and hemiarch replacement with hypothermic circulatory arrest in 47% (n=17).

Survival rates were 97.1% at 6 months (34/35), 97.0% at 1 year (32/33), and 95.7% at 3 years (22/23). Freedom from valve-related reoperation was 100% at all follow-up points (6 months, 1 year, and 3 years), with outcomes similar to our non-dissection cohort (p=ns). Complications occurred in 41% (n=15) of patients, including re-exploration (14%, n=5), atrial fibrillation (11%, n=4), cerebrovascular accident (17%, n=6), reintubation (8%, n=3), continuous veno-venous hemofiltration (8%, n=3), and permanent pacemaker placement (3%, n=1).

Conclusions: Midterm results support valve-sparing root replacement for selected patients with type A aortic dissection, though postoperative complication risks must be considered when extensive procedures are planned.

A18

Trends in Outcomes and Operative Techniques in Type A Aortic Dissection – Insights from the Scottish National Cohort

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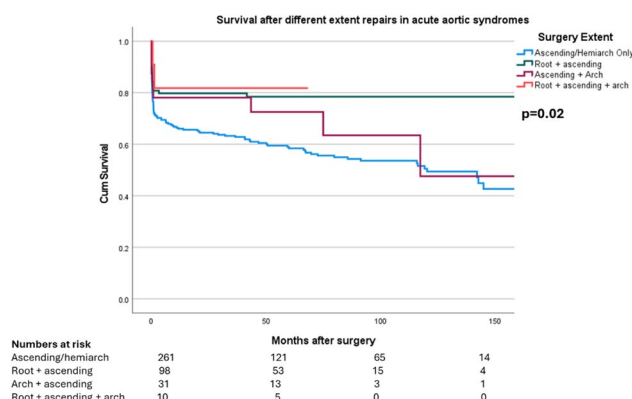
Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A18

Objective: To study the trends in patient demographics, surgical repair strategies and outcomes for a. national cohort.

Methods: Consecutive patients undergoing emergent surgery for acute aortic syndromes at three. cardiothoracic surgery units were included. Two eras were defined: 2008–2014 and 2015–2022. We analyzed two outcomes: early (30-day or in-hospital) and late mortality during follow-up.

Results: 404 patients with acute aortic syndromes underwent emergency surgery during April 2008 – April 2022. These were referred from 35 emergency departments across 12 distinct geographic. health boards. Mean age was 61±14 years. 69% (n=278) were males. There were no significant. differences in baseline characteristics between the two eras. The number of procedures increased. significantly by 118% between the two eras (127 vs. 277). In the recent era, more patients. underwent aortic root replacement (27% vs. 13%, p<0.01), arch surgery (6% vs 13%, p=0.06) and less. patients had interposition tube graft or hemiarch replacement only (71% vs. 55%). The use of. selective antegrade perfusion significantly increased in the recent era to 50% from 21% of cases. There was a trend in reducing early mortality from 32 to 23% in the recent era (p=0.07). Long term. survival was better for patients undergoing root replacement at the index operation (Figure). Age. and pericardial effusion on diagnostic CT were independent predictors of early and late mortality.

Conclusion: Early mortality after type A dissection is influenced by disease and patient-specific factors. Long term survival appears to be associated with a more extensive repair at the index operation.



A19

Ig G4

Aortitis masquerading as Type A Intramural hematoma*

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A19

Introduction: IgG4 related disease is an immune mediated condition which can affect most organs and can be associated with aortitis, may lead to aneurysms or dissections. Its management is medical and will not require any surgical intervention.

Case presentation: A 71-year-old gentleman, hypertensive and history of MI and PCI. Presented with angina and angiogram showed in-stent stenosis of the LAD and Circumflex disease. He was therefore referred for surgical revascularization as an outpatient.

A cardiac CT scan was performed to assess his suitability for minimally invasive approach, and this showed a type A IMH. Based on the CT findings, the patient was urgently admitted for coronary artery bypass graft (left internal mammary artery to left anterior descending artery) and interposition graft to replace his ascending aorta.

Intra operatively, the wall of the ascending aorta was definitely abnormal, grossly thickened with no evidence of recent or previous IMH. The enlarged aorta had thick fibrous media which was whitish gray in color with easily separable adventitia and intimal layers. Enlarged lymph nodes were also seen behind ascending aorta.

Immunohistochemistry findings were in keeping with IgG4 aortitis rather than IMH. The patient was subsequently referred to the Rheumatologist for continuation of care.

Conclusion: IgG4 in those cases it will be identified as incidental finding in patients undergoing radiological investigation for other conditions. CT and ECHO findings are similar to IMH but serology will show elevated serum levels of IgG and histology characterized by lymphocytic infiltration (usually with IgG4-positive plasma cell), storiform fibrosis and obliterative phlebitis.

*The patient has confirmed explicit consent to be in the Journal.

A20

Evaluating the Effects of Malperfusion Syndrome on Outcomes Following Emergency Type A Aortic Dissection Surgery

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Objectives: This study assesses the impact of malperfusion syndrome (MPS) on short-term postoperative outcomes and midterm survival following emergency surgery for acute type A aortic dissection (AAD) at a UK tertiary centre. Furthermore, it examines the effects of the number and type of malperfused vascular beds and how this may impact survival.

Methods: This retrospective cohort study included patients who underwent emergency surgery for AAD at our institution from 2012 to 2020. MPS was defined as organ dysfunction resulting from impaired blood flow, confirmed through clinical evaluation. Statistical analyses included Kaplan–Meier survival curves and Cox proportional hazards models to evaluate the impact of MPS on survival.

Results: A total of 151 patients undergoing emergency surgery for acute type A aortic dissection were included, of whom 65 (43%) presented with MPS and 86 (57%) without. Patients with MPS had a higher in hospital mortality (12 [18.5%] vs 6 [7%]). Figure 1 depicts the Kaplan–Meier 5-year survival estimates for patients with MPS versus those without and demonstrated reduced short and mid-term survival ($P < 0.001$, log-rank test). The predicted survival estimate worsened as

the number of malperfused vascular beds increased ($P < 0.001$). Cox regression analysis also showed MPS to be the most significant predictor of reduced survival (HR 8.92 CI [3.2–24.9] $P < 0.001$).

Conclusion: MPS significantly worsens short-term postoperative outcomes and midterm survival after acute type A aortic dissection surgery. The risk of mortality increases with increasing number of malperfused vascular beds. Early identification and targeted management of malperfused vascular beds may help improve patient prognosis.

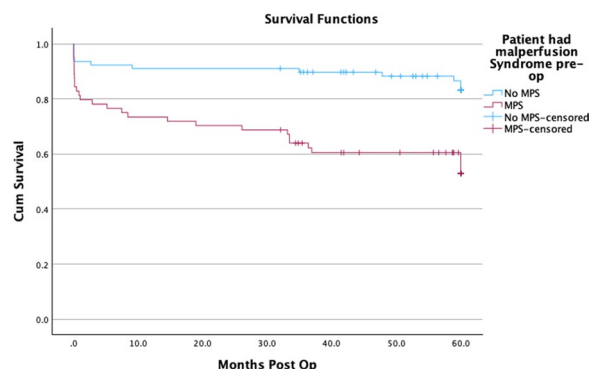


Figure 1 (abstract A20) Kaplan–Meier survival estimates, comparing the group with MPS versus the group without MPS.

A21

Should we Watch and Wait for Isolated Iatrogenic Aortic Dissection? A Systematic Literature Review

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A21

Objectives: The latest EACTS/STS “Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ” does not describe the management strategy for iatrogenic dissection in the absence of coronary artery involvement. This study investigates the optimal management strategy for isolated iatrogenic aortic dissection (IAD) following percutaneous coronary intervention (PCI). The research aims to clarify whether conservative or surgical intervention is more effective, with a focus on understanding outcomes such as morbidity, mortality, and complication rates.

Methods: A systematic review of the literature was conducted, examining studies involving adult patients who developed isolated IAD following PCI. Studies were only included if they discussed the management strategy and reasonable follow up. Studies involving prior cardiac surgery, root replacement, or coronary artery involvement were excluded.

Results: Literature identified only nine cases (average age 64.9 years, predominantly female) with isolated IAD. The right coronary cusp was the most common site of dissection. Four patients were managed surgically all due to life threatening complications. All other patients were managed conservatively, with no reported complications during follow-up period (average 136 days).

Conclusions: This review suggests that conservative management, involving strict blood pressure control and careful monitoring, may be an effective approach for isolated, uncomplicated IAD post-PCI. Surgery should be reserved for cases exhibiting haemodynamic instability, severe aortic regurgitation, large haematomas, or extensive dissections. The limited data underscore the need for further research to establish clearer guidelines for IAD management in the absence of coronary involvement.

Final category: Adult Cardiac – Aortic Valve**A22****Comparison of Outcomes Post Cor-Knot Versus Manual Tie in Valve Surgery: Our- 8 Year Analysis of Over 1000 Patients**

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Correspondence: Hiral Jhala**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A22**

Background: In the era of minimally invasive valve surgery (MIVS), automated titanium fasteners such as Cor Knot®, have reduced aortic-cross clamp (AXC) and cardiopulmonary bypass (CPB) times to improve survival outcomes. Whilst, most comparative studies pertain to MIVS, there is a lack of literature comparing Cor-Knot (CT) and manual knot tying (MT) in open valve procedures. We primarily compare AXC and CPB times, residual valvular regurgitation (RVR), freedom from valve re-intervention (FFI) and secondary post-operative outcomes of CT vs MT.

Methods: Retrospective analysis was performed for patients, undergoing valve replacement surgery, at a single-centre (January 2017-January 2024).

Results: CT: N=504, MT: N=519. Mean age was 67.7 years. Cor-Knot reduced AXC and CPB times by 12.0 and 13.7 min respectively in isolated aortic valve replacements (AVR) and by 20.1 and 17.8 min in valve & grafts (CABG) (both $p < 0.0001$), but not in mitral, tricuspid, double valves, major aortic surgery or redo valves. The CT group had no RVR in isolated AVR or valve & CABG procedures, but more RVR in mitral, double valves and redo valves than the MT group. In the CT group, FFI was 1.3 years lower in AVR ($p = 0.02$) but longer in mitral ($p = 0.32$) and double valves ($p = 0.51$).

Conclusion: Cor-knot is feasible and safe to be used in all isolated and high-risk concomitant valve procedures. It may be more beneficial in open isolated AVR compared to other open valve surgeries, however further studies are required to validate its utility in open mitral, tricuspid and high-risk surgery.

A23**Aortic Single Point of Referral Process: A Single-Centre Review of the Aortic**

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This study evaluates the implementation of an aortic single point of referral process (ASPOR) and application of ESC guideline criteria to enhance communication and patient flow for those with aortic valve disease needing surgical aortic valve replacement (SAVR) or transcatheter aortic valve implantation (TAVI). We aimed to demonstrate a reduction in time from referral to definitive treatment (RTT) and improved resource utilization.

Methods/Results: We conducted a retrospective analysis of patients referred electively for aortic valve interventions (SAVR/TAVI) through ASPOR at a UK tertiary cardiac centre between January 2023 and June 2024. Data were obtained from Dendrite/NICOR databases and ESC criteria used to triage patients into SAVR/TAVI/joint SAVR-TAVI pathways. In 2023, 637 patients with severe aortic stenosis were referred, with 90 (14%) requiring evaluation in a joint TAVI/SAVR clinic. By 2024, this reduced to 5% (11 out of 205 patients referred, $p < 0.001$). We observed a statistically significant reduction in referral to treatment time (RTT) for both TAVI and SAVR from 2023 to 2024. The mean RTT for TAVI patients decreased from 138 days (± 81) in 2023 to 80 days (± 50) in 2024 ($p < 0.001$). Similarly, the mean RTT for SAVR patients dropped from 156 days (± 85) to 101 days (± 45) ($p < 0.001$).

Conclusion: Implementation of ESC guidelines and ASPOR significantly reduced the time from referral to treatment for both TAVI and

SAVR patients. Additionally, there was a notable decrease in the number of patients needing joint SAVR-TAVI clinic evaluations, leading to improved resource utilization.

A24**Analysis of tariff and survival for transcatheter and surgical aortic valve replacement for severe calcific aortic stenosis – UK perspective**Zhikun You^{1,2}, Jason Kho¹, Tracey Sach^{1,2}, Theodore Velissaris¹, Szabolcs Miskolczi¹, Suvitesh Luthra^{1,2}¹University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom. ²University of Southampton, Southampton, United Kingdom**Correspondence:** Jason Kho**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A24**

Objectives: Surgical aortic valve replacement (SAVR) and transcatheter aortic valve replacement (TAVR) are two common interventions for severe calcific aortic stenosis. This study estimates short-term tariffs for TAVR and SAVR as well as explore factors affecting survival.

Methods: Retrospective analysis of patients undergoing SAVR or TAVR at a single United Kingdom tertiary centre was conducted between January 2019 and March 2022. Collected data included age, length of stay (LOS), survival time, complexity/comorbidity (CC) scores (Grp 1; 0–4, Grp 2; 5–9, Grp 3; ≥ 10) and tariffs. Time-dependent Cox regression models and Kaplan–Meier survival analyses were performed.

Results: SAVR patients ($n = 440$) had a mean age of 70.76 ± 10.68 years, post-procedural stay of 10.33 ± 6.90 days and tariff of $\pounds 12,729.63 \pm 3,755.82$. TAVR patients ($N = 387$) mean age was 80.54 ± 7.11 years, post-procedural stay 4.78 ± 6.14 days and tariff of $\pounds 11,537.85 \pm 4,660.05$, excluding valve costs averaging $\pounds 15,000$. Severity increased tariff for both SAVR and TAVR patients. Multivariate time-dependent Cox regression found age (HR1.05, 95%CI 1.01–1.09) and LOS (HR1.04, 95%CI 1.02–1.07) to affect SAVR survival, while number of procedure codes (HR1.38, 95%CI 1.05–1.82) and CC score (HR2.35, 95%CI 1.20–4.60) affected TAVR survival. Survival was higher in the SAVR group (TAVR; 29.11 ± 12.34 months vs SAVR; 34.11 ± 12.68 months, log-rank $p < 0.05$) reflecting the younger age of SAVR patients and in grp 2 (CC scores 5–9, log-rank $p < 0.05$).

Conclusion: This study increases understanding of tariff and survival for SAVR and TAVR. Further research is needed for comparable groups, taking a broader perspective and longer timeframe.

A25**Multicentre Survey On Prosthesis Patient Mismatch**Mohamed Sherif¹, Brianda Ripoll², Walid Elmahdy²¹Castle Hill Hospital, Hull, United Kingdom. ²Leeds General Infirmary, Leeds, United Kingdom**Correspondence:** Mohamed Sherif**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A25**

Objective: This study is a multicenters, multinational survey designed to investigate beliefs surrounding Patient-Prosthesis Mismatch (PPM) and its complications. It also aims to outline institutional experiences and surgical strategies employed to prevent PPM.

Methods: A Google Forms questionnaire consisting of 12 questions related to PPM was distributed online via the SCTS and Edwards Lifesciences surgeons' email list. Data were analysed using SPSS software, version 27.

Results: A total of 41 surgeons working in 37 centres from Europe and North America responded to the survey. All centres recognise PPM as a significant complication. The majority (97%) believe that PPM impacts postoperative symptoms, with 85% acknowledging its influence on both short- and long-term survival. While 97% of respondents have a dedicated valve MDT, only about half (56%) have measures in place for preoperative PPM prediction.

Aortic root enlargement was the most common approach to avoid PPM, followed by mechanical valve implantation and rapid deployment valves. Additionally, 61% of centres believe that patients with anticipated PPM should be operated on by an aortic surgeon.

Conclusions: The survey highlights a shared recognition of the clinical impact of PPM on postoperative outcomes and the importance of dedicated MDTs in managing it. Although practices for predicting and preventing PPM vary, respondents consistently advocate for specialist involvement in complex PPM cases. Standardising protocols may enhance PPM prevention and improve patient outcomes across institutions.

A26

Changes in the surgical AVR population and outcomes in the era of TAVR

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A26

Objectives: Surgical Aortic Valve Replacement (SAVR) has historically been the gold standard treatment of aortic valve pathology although this has changed with the introduction of Transcatheter Aortic Valve Replacement (TAVR). There remains a significant population who are optimally treated by SAVR. Our aim is to describe changes in SAVR population in the era of TAVR.

Methods: Single center retrospective review of 9,730 consecutive patients undergoing SAVR with or without concomitant coronary artery bypass grafting (CABG) from 2000 to 2023.

Results: We observed a significant increase in co-morbidities of the cohort: median age from 73.5 years to 76.7 years ($p < 0.001$), previous cerebrovascular disease from 17.5% to 20.5%, peripheral vascular disease from 10.9% to 33.5% ($p < 0.001$), previous aortic valve replacement from 6.0% to 10.3% ($p < 0.001$). However, there was a significant decrease in median STS Predicted Risk of Mortality from 3.8% to 1.6% ($p < 0.001$). Despite this, there was a significant fall in mortality from 3.0% to 0.7% ($p < 0.001$) and complications such as atrial fibrillation (33.1% to 17.3%, $p < 0.001$), transient ischaemic attack (1.7% to 0.8%, $p < 0.001$) and renal failure (4.2% to 1.6%, $p < 0.001$).

Conclusion: Despite the SAVR population increasing in co-morbidities, results have remained robust with a significant decrease in post-operative mortality and complications.

A27

Thrombocytopenia after Perceval aortic valve replacement: A propensity matched study

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A27

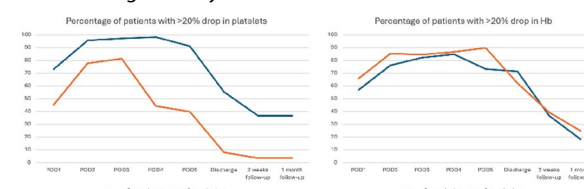
Objectives: Thrombocytopenia and anaemia are common in patients undergoing aortic valve replacement (AVR) and is usually secondary to cardiopulmonary bypass. Previous studies reported higher than expected rates after sutureless AVR. We compared their incidence after biological sutured or sutureless valves (Perceval) and their impact on post-operative outcomes.

Method: 758 patients underwent tissue AVR $\pm$ CABG between 2018 to 2024. 93 patients had Perceval valve vs 665 sutured valves. 1:1 propensity score matching was performed with 93 patients per group with comparable baseline and operative characteristics. There were no significant differences in bypass (76.2 ± 23.8 vs 82.2 ± 24.1 min) or cross-clamp times (55.2 ± 19.4 vs 58.9 ± 13.9 min) between Perceval or sutured groups. Thrombocytopenia and anaemia were defined as a 20% decrease in platelet and haemoglobin counts respectively from baseline. Follow-up was to 1-month after surgery.

Results: There were no significant differences in anaemia rates between groups for the duration of follow-up. Thrombocytopenia was significantly higher in the Perceval than the sutured-valve

group (98.9% vs 89.2%, $p = 0.005$), with a significantly higher rate across all time point (Figure 1). There were no differences in post-operative length of stay (8 vs 7 days, $p = 0.633$), re-operation (4.3% vs 4.3%, $p = 1.00$) and in-hospital mortality rates (6.5% vs 3.2%, $p = 0.497$). Findings remained similar if thrombocytopenia was defined as $< 150 \times 10^9/L$ and anaemia as < 115 g/L (females) or < 130 g/L (males).

Conclusion: Patients receiving Perceval valve have higher rates of thrombocytopenia after surgery which persisted up to 1-month post-surgery. However, this has little impact on the post-operative outcomes and length of stay.



A28

Chylopericardium after cardiac surgery: A case report and systematic review*

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A28

Chylopericardium after cardiac surgery, though rare, involves chylous fluid accumulation in the pericardium, often due to thoracic duct injury. This case report and systematic review present an instance of isolated chylopericardium in an elderly female post-aortic valve replacement, managed to reduce risks from persistent chyle accumulation and hemodynamic complications.

A systematic review on this topic was registered in PROSPERO (CRD42024607538) and conducted per PRISMA 2020.

We identified 94 articles with 176 cases. The average patient age was 32.4 years (newborn–77 years). Chylopericardium primarily followed congenital heart defect repairs (56.3%), valve surgeries (17.2%), CABG (11.5%), transplants (5.7%), and tumour resections (8.6%). Conservative or minimally invasive management was effective in (63%) of cases, while (37%) required surgical intervention.

A 74-year-old Caucasian woman was readmitted with progressive breathlessness, orthopnoea and gross-pitting pedal oedema which developed 17 days post aortic valve replacement. Chest X-ray demonstrated cardiomegaly and Trans thoracic echocardiography showed significant global pericardial effusion measuring 48 mm around the posterior left ventricle with IVC collapse of $> 50\%$ with minimal change in right atrial pressure. A Sub-xiphoid surgical approach drained 900 mL of typical chyle looking fluid. Laboratory analysis showed elevated triglyceride-to-cholesterol ratio of 8.3 mmol/L: 1.6 mmol/L, with negative cultures. She was started on a low-fat diet initially and later Octreotide was commenced.

Chylopericardium after cardiac surgery is more common in paediatric cases, but can occur in adults. A stepwise approach, with conservative management for uncomplicated effusion and escalation for severe cases, is recommended. Close monitoring is crucial to avoid complications.

*The patient has confirmed explicit consent to be in the Journal.

A29**AVR implantation: Single Interrupted Sutures upgrades Aortic Valve Size**

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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1): A29**

Introduction: Aortic annular enlargement has been a topic of interest, particularly in relation to valve size and patient-prosthesis mismatch. This study aimed to investigate the effect of a single interrupted suture (SIS) technique compared to the pledgeted mattress (PM) technique on valve size.

Methods: A retrospective study was conducted from 2012 to 2024. The primary outcome was valve size. The secondary outcomes were mortality, atrial fibrillation and pacemaker implantation. Cohorts were propensity-score matched with 272 patients undergoing isolated AVRs in each cohort. A combination of t tests, Chi Square, Anova and Tukey HSD tests was utilised for statistical analysis.

Results: The mean valve size was significantly larger with SIS compared to PM (23.1 mm vs. 22.7 mm; $p=0.03$). The distribution of valve sizes between cohorts was, however, non-significant ($p=0.53$). Mortality (SIS 0 vs. PM 2; $p=0.48$) and HDU stay (SIS 47.62 h vs. PM 57.81 h; $p=0.11$) remained non-significant per cohort. However, SIS had decreased ICU stay (35.33 h vs. 52.38 h; $p=0.04$), cross clamp time (49.5 min vs. 83.05 min; $p<0.001$), bypass time (67.37 min vs. 107.19 min; $p<0.001$), atrial fibrillation (78 vs. 91; $p=0.27$) and length of stay (7.52 vs. 9.47; $p<0.001$). Furthermore, SIS was associated with significantly lower incidence of permanent pacemaker implantation (4 vs 14; $p=0.03$).

Discussion: SIS were significantly associated with a larger valve size, decreased cross clamp time, bypass time and incidence of pacemaker implantation. SIS should be considered as a surgical technique as an aim to reduce the risk of patient-prosthesis mismatch and morbidity.

A30**To Anticoagulate or Not: A National Survey of Anticoagulation Practices for Biological Valve Replacements and Repairs in Scotland**

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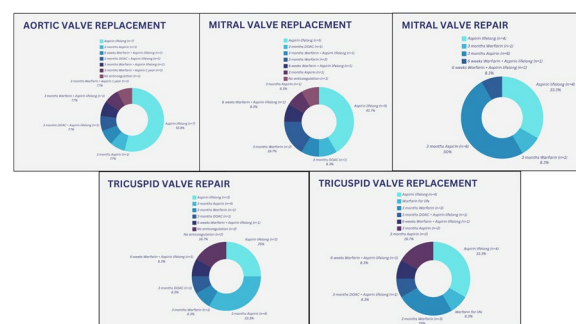
Journal of Cardiothoracic Surgery 2026, **21(Suppl 1): A30**

Introduction: The lifetime thromboembolism risk for patients with bioprosthetic valve replacement and repair in sinus rhythm is generally low, though mitral valves carry a slightly higher risk than aortic valves, particularly within the first 3 to 6 months postoperatively. Optimal anticoagulation strategies remain debated without a universal consensus. In Scotland, around 400 aortic valve replacements and 2,160 cardiac operations are performed annually.

Methods: A survey was distributed to all adult cardiac surgeons across Scotland's three cardiothoracic centers (Aberdeen Royal Infirmary, Royal Infirmary of Edinburgh, and Golden Jubilee National Hospital) to assess anticoagulation practices for bioprosthetic aortic and mitral valve replacements, as well as tricuspid and mitral valve repairs in patients without atrial fibrillation.

Results: Thirteen of seventeen surgeons (76%) responded: three from Aberdeen Royal Infirmary, six from the Golden Jubilee Hospital, and four from Edinburgh Royal Infirmary. Responses are shown in Figure 1.

Conclusion: This survey reveals variability in anticoagulation practices among Scottish cardiac surgeons after bioprosthetic valve replacements and repairs. While aspirin monotherapy is most common, approaches vary, with some surgeons choosing warfarin or DOACs alongside aspirin. These findings highlight the need for further high-quality trials to establish the optimal anticoagulation strategy.

**A31****Correlation between CT predicted transcatheter valve size and implanted surgical valve size in severe calcific aortic stenosis**

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Objective: Valve sizing during Surgical Aortic Valve Replacement (SAVR) is subjective and dependent on surgeon's intraoperative assessment and implantation technique. We compared the size of the implanted SAVR prosthesis to the CT predicted TAVR size for potential under-sizing.

Methods: This is a single centre, retrospective study (2019- 2024). All patients who had SAVR after TAVR-MDT discussion with TAVR CT evaluation of their aortic valves were included. Data collected included the details of the implanted SAVR prosthesis (type and size) and TAVR-CT data for aortic annulus diameters and aortic valve area (AVA). SAVR size was compared to CT predicted TAVR size for Evolut R balloon expanded valve. Differences between size, effective and indexed orifice area (EOA, iEOA) between the implanted SAVR and predicted TAVR prosthesis were analysed.

Results: 120 patients were included. CT predicted Evolut R size was 34.8% larger (8 ± 3 mm), $p<0.01$ compared to implanted SAVR size. Predicted Evolut R EOA was 24.7% larger (SAVR; 1.74 ± 0.25 mm² vs 2.19 ± 0.38 mm², $p<0.01$) and predicted iEOA was 25.5% larger for Evolut R (0.94 ± 0.16 mm²/m² vs 1.17 ± 0.22 mm²/m², $p<0.01$) compared to the implanted SAVR prosthesis.

Conclusion: SAVR prosthesis may be undersized compared to CT predicted TAVR prosthesis. Preoperative CT scans may be helpful in objective sizing of SAVR prosthesis.

A32**Minimally invasive aortic valve replacement: less pain and bleeding?**

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Objectives: The aim of this study was to assess if minimally invasive aortic valve replacement (MI-AVR) is associated with less post-operative pain and bleeding compared to full sternotomy aortic valve replacement (FS-AVR).

Methods: This was a retrospective analysis of all patients undergoing first time and isolated aortic valve replacement (AVR) at a single centre. Exclusion criteria were pre-operative systemic disease associated with chronic pain and chronic use of oral analgesia. Primary endpoints were use of intravenous analgesia at 48 h post-surgery (PCA); pain score at 48 h. Secondary endpoints were total drain output and the need for blood product transfusion.

Results: Between 2011 and 2019, 142 patients underwent isolated AVR. Of these, 53 underwent MI-AVR: 43 mini sternotomy (MS) and 10 Right anterior thoracotomy (RAT). The remainder (n=89) underwent FS-AVR. Patients undergoing MI-AVR had less moderate and severe pain compared to FS-AVR, however, there was no association between surgical approach and use of PCA (Odd Ratio (OR): 1.06(95% CI:0.5–2.1) or pain score ((OR): 1.08(95% CI:0.5–2.2). MS was associated with less post-operative bleeding ($p=0.05$, $R^2=0.02$) whilst patients undergoing RAT AVR had the lowest requirement for blood transfusion (OR:0.68, 95%CI: 0.2–2.3), although this did not reach statistical significance.

Conclusions: In this cohort MI-AVR has similar outcome to FS-AVR for pain score and use of analgesia. The type of surgical strategy (MI-AVR or FS-AVR) was not predictive of drain output and need for blood transfusion, but MI-AVR is associated with reduced drain output.

A33

The Predictive Ability of EuroSCORE II among Patients Undergoing Aortic Valve Replacement for Aortic Stenosis or Regurgitation: A Retrospective 19-Year Analysis in a UK Tertiary Centre

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Objectives: The EuroSCORE II is a useful tool for predicting in-hospital mortality following cardiac surgery. The aim of this study was to investigate the ability of the EuroSCORE II to predict mortality in patients undergoing aortic valve replacement (AVR) for aortic stenosis (AS) versus aortic regurgitation (AR).

Methods: We investigated all patients who underwent AVR from Jan/2005 to Oct/2024 at our centre. We evaluated the discrimination power of the EuroSCORE II by using the receiver operating characteristic curve and the corresponding area under the curve (AUC). We performed calibration plots to assess the concordance between the model's prediction and the observed outcomes for the two study groups.

Results: We included 1,401 patients. AR (N=384) versus AS (N=1,017) patients were more commonly male (75.8% vs 58.9%; $P<0.001$), younger (57.2 ± 15.7 vs 67.8 ± 10.6 years; $P<0.001$), had LVEF $\leq 50\%$ (31.0% vs 13.6%; $P<0.001$), pre-operative shock (1.6% vs 0.5%; $P=0.043$), longer CBP (113.1 ± 86.2 vs 91.8 ± 38.5 min; $P<0.001$) and cross-clamp times (83.3 ± 49.8 vs 68.9 ± 27.3 min; $P<0.001$). AS patients had a higher incidence of diabetes (24.9% vs 8.1%; $P<0.001$) and extra-cardiac arteriopathy (2.9% vs 1.0%; $P=0.047$). Observed mortality was not significantly different (AS: 1.4%; AR: 2.3%; $P=0.204$). AUC showed a 76.2% (95% CI: 67.2–85.1%) and 88.6% (74.4–100%) predictive power for in-hospital mortality among AS and AR patients, respectively.

Conclusions: Patients with AS and AR undergoing AVR have different characteristics and co-morbidities. The EuroSCORE II seems to be a more reliable model for estimating the true risk of in-hospital mortality in AR patients.

A34

Impact of Bicuspid Valve Morphology on Outcomes of Valve-Sparing Root Surgery – Is It All About Symmetry?

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Objective: To evaluate the role of commissural symmetry in outcomes of bicuspid aortic valve (BAV) repair and identify additional outcome-influencing factors.

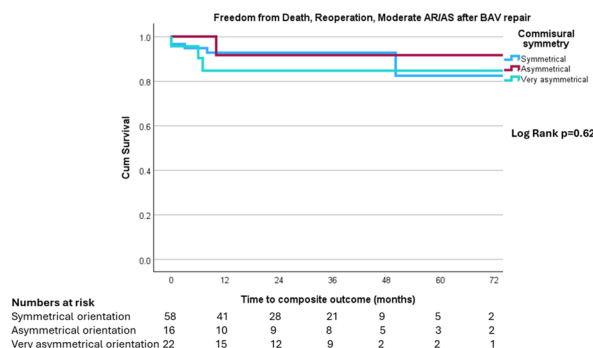
Methods: We included consecutive BAV patients who underwent valve repair or valve-sparing root surgery. The primary outcome was a composite of: early and late death, valve-related reoperation,

moderate aortic regurgitation (AR) or moderate stenosis (AS) during follow-up.

Results: 99 patients were included, with a mean age of 45 ± 12 years. 90% were male. 95% (n=94) underwent David V reimplantation, 3% (n=3) had remodeling and 2% (n=2) had valve repair with annuloplasty. Commissural orientation was symmetrical in 60% (n=59) and asymmetrical (17%,n=17) or very asymmetrical (23%,n=23). Mean annular diameter was 29 ± 4 mm.

Median follow-up was 24 months. There were no early postoperative deaths or intraoperative conversions. The primary outcome occurred in 9 patients (2 deaths, 2 reoperations, and 5 with moderate AS/AR). Commissural symmetry was not associated with the composite outcome (figure) or moderate AR/AS ($p=0.62$). However, lower geometric heights of fused and non-fused cusps (OR 0.53, $p=0.01$; OR 0.65, $p=0.01$), anterior leaflet calcium (OR 8.3, $p=0.03$) were composite outcome predictors. Anterior leaflet plication had a beneficial effect (OR 0.21, $p=0.03$). Aortic annular dimensions, graft size, and other repair factors showed no association. Mean aortic gradient on discharge predicted the composite outcome (OR 1.17, $p=0.02$) and moderate AS/AR at follow-up (OR 1.35, $p=0.04$).

Conclusion: While commissural orientation was not predictive, anatomical and technical factors were associated with adverse outcomes in BAV repair. Larger, longer-term studies are needed to confirm these findings.



A35

Anterior Right Thoracotomy Versus Mini-Sternotomy for Surgical Aortic Valve Replacement: A Systematic Review & Meta-Analysis

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Surgical aortic valve replacement (SAVR) is traditionally performed through a conventional median sternotomy; however, the anterior right thoracotomy (ART) and mini-sternotomy (MiS) methods of minimally invasive access are now being increasingly utilised by surgeons. This study aimed to evaluate the ART and MiS approaches for SAVR, by conducting a systematic review and meta-analysis to determine comparability.

A systematic search of the following electronic literature databases (from their inception) was performed: OVID Medline, OVID Embase, Scopus, the Cochrane Library, EBSCO Medline, Web of Science and PubMed. The search query input consisted of terms such as 'ART' AND 'MiS' AND 'SAVR'. Studies were selected based upon predefined inclusion and exclusion criteria, and data for perioperative variables were extracted. R statistical software (version 4.4.1) was used to perform the meta-analysis.

Twenty-eight studies were included, comprising 33,903 patients. The pooled effects analyses observed that the ART achieved statistically superior outcomes concerning stroke ($P=0.02$), surgical site infection ($P=0.03$) and hospital duration of stay ($P=0.04$) when compared to

the MIS. The MIS approach was found to confer significantly improved outcomes regarding cardiopulmonary bypass time ($P=0.02$), conversion ($P=0.03$), paravalvular leak ($P=0.02$), bleeding ($P<0.01$), and postoperative pain at intensive care unit ($P<0.01$) and 30-day follow-up ($P<0.01$) time points in comparison to the ART.

This demonstrates that there are differences evident between the two minimally invasive approaches, as reflected in the reported perioperative outcomes. Therefore, it is suggested the method of operative access should be tailored to the patient and determined based upon the surgeon's experience and technical proficiency.

A36

Early to Mid-term Results after Valve-Sparing Root Surgery – Does Valve Morphology Affect Outcomes?

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Objective: To evaluate short- and mid-term outcomes of valve-sparing root surgery and assess the impact of valve morphology on these outcomes.

Methods: We included all consecutive patients undergoing valve-sparing root surgery from 2017 (program inception) to 2024. The primary outcome was a composite of survival, reoperation, and grade 2+ aortic regurgitation (AR) at follow-up. We also analyzed each component separately.

Results: We included 334 patients with a mean age of 51 ± 15 years. 81% ($n=262$) were male. Preoperative AR grade $\geq 2/4$ was present in 64% ($n=207$). The aortic valve was tricuspid in 69% ($n=225$) and bicuspid in 31% ($n=100$). Most patients (90%, $n=294$) underwent David V reimplantation, 7% ($n=24$) had isolated valve repair with annuloplasty and 2% ($n=7$) had remodeling. Concomitant hemiarch replacement was performed in 10% ($n=34$) and total arch replacement in 6% ($n=20$). There were no early deaths. Intraoperative conversions to aortic valve replacement occurred in 3% ($n=9$). Median follow-up was 34 months [IQR 14–54]. Survival rates were 99%, 97%, and 96% at 1, 2, and 5 years, respectively. Valve-related reoperations were required in 1% ($n=3$), and freedom from significant aortic regurgitation (grade ≥ 3) was 99%. The composite endpoint occurred in 4% ($n=14$), with similar rates for tricuspid and bicuspid valves ($p=0.60$). Tricuspid valves had lower mean gradients than bicuspid valves (5.4 vs. 8.9 mmHg, $p<0.001$).

Conclusions: Valve-sparing root surgery shows favorable short- and mid-term outcomes, with comparable results for tricuspid and bicuspid valves. Longer follow-up is necessary to confirm repair durability.

Final category: Adult Cardiac – Coronary

A37

Harvest or not to harvest: a step-wise decision for radial artery graft selection in surgical coronary revascularisation

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Background: The radial artery (RA) is a popular graft choice in surgical coronary revascularisation. Vascular assessment plays a key role in addressing the anatomical, physiological and pathological aspects of RAs to inform their suitability for coronary bypass grafting. Our objective was to devise and validate a new scale (Radial Artery Quality Evaluation Survey, RAQES) which evaluates the quality of RAs, focused on the key priority of developing a rapid and objective monitoring.

Methods and Results: A multicentre three-round e-Delphi and advisory committee feedback were conducted. Participants included 17

surgical care practitioners and 5 consultant cardiac surgeons. Main outcomes for this Delphi study were to determine A) the level of agreement from experts on the preliminary quality indicators (Round 1); B) the stability of consensus (Round 2); C) the finally selected indicators for the RAQES (Rounds 2 and 3). Delphi panellists rated potential quality indicators through 5-point Likert scale. The final list of indicators was those achieving 75% agreement among participants, had a median ≥ 4 and interquartile range ≤ 1 .

We identified 14 quality indicators spanning a range of areas including surgical accessibility, visual inspection of the RA, quality of the RA morphology, presence of pulse, inspection of blood flow, and quality of harvesting technique. A numerical rating scale was validated by the advisory committee as the optimal approach for an impartial monitoring of the RA quality.

Conclusion: The RAQES is a novel assessment scale for RA grafts selection in surgical coronary revascularisation, as this study advocates for a standardised RA screening.

A38

No-touch aorta off-pump LIMA-radial artery Y-graft CABG as a safe strategy for all-comers: long-term follow up of a preferred treatment approach

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Objective: Survival of no-touch aorta, total arterial off-pump CABG (OPCAB) with LIMA—radial artery Y-graft in 2004—2021 for all-comers for isolated CABG regardless of preoperative factors.

Patients and methods: All patients with OPCAB no-touch aorta total arterial LIMA- RA Y-graft surgeries performed between 2004 and 2021 without any concomitant interventions were included. OPCAB was performed by a team of experienced surgeons. For 5 year survival times, Kaplan–Meier test and Cox regression were used. Patients were categorized into 5 age groups (< 50 y.o.; 50–59; 60–69; 70–79; > 80 years).

Results: 2174 patients were included. Median follow-up time was 3266 days. Mean number of grafts was 3.7 with little variation between age groups ranging from 3.6 to 3.8 ($p=0.09$), respectively. The 5 year survival probability was 90% ($n=1767$) and ranged between age groups from 98 to 65% (log rank: $p= < 0.0001$). A Cox regression model observed that sex, age, NYHA class > 1 , CCS class IV, left ventricular ejection fraction, previous stroke, diabetes, PAD, chronic lung disease, EuroSCORE I (log) were potential predictors for long-term mortality.

Conclusion: This study shows that total arterial no-touch aorta LIMA-RA Y-graft OPCAB as regular practice for all patients, regardless of age, is safe and effective. Our findings underline the strength of experience in a total arterial treatment strategy. Further research should identify risk factors influencing other outcomes after revascularization ensuring optimal outcomes across diverse patient populations.

A39

Safety and Efficiency of Remote Monitoring using a Virtual Ward for Patients Awaiting Urgent Cardiac Surgery (The WATCH Pathway)

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Objectives: Current wait for Inpatient for Urgent Coronary Artery Bypass Graft surgery (CABG) can be from 7–28 days. Remote monitoring may allow patients to safely spend this time at home prior to surgery. The aim of this project is to assess the safety and efficiency of using remote monitoring in a virtual ward to facilitate hospital discharging and conversion from inpatient urgent to early elective CABG.

Methods: All patients referred for urgent inpatient CABG were assessed for suitability using a pre-set criteria (Pain free for 48 h, non-critical coronary disease, all investigations completed and accepted and listed for surgery on specific date within 14 days). They were monitored via the Ortus iHealth platform with daily symptomatic questionnaires. Primary outcome was unplanned admission, non-elective surgery, bed nights saved and patient satisfaction.

Results: From December 2022 and October 2024, 117 patients were recruited onto the pathway from 12 different hospitals. Mean age was 60 years and 102(87%) were male. Median time from discharge to surgery was 9 days with a total of 1006 bed-nights saved. Eight patients flagged on the system with symptoms, all of whom underwent expedited elective surgery. One patient had an emergency PCI. In hospital mortality was 0% and one patient had re sternotomy for bleeding. 95% of patients rated their overall experience good, very good or excellent.

Conclusion: Selected patients requiring urgent CABG can be safely monitored via a virtual ward with high patient satisfaction and significant reduction in hospital stay and costs.

A40

Obesity paradox: Myth or reality?

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Objectives: Conflicting results are reported from the series studying the effect of body mass index (BMI) on cardiac surgery outcomes. We wanted to check the existence of an 'obesity paradox' that suggests better outcomes in obese patients in our patients.

Methods: 9575 patients undergoing first-time coronary artery bypass grafting (CABG), aortic valve replacement (AVR) and combined CABG-AVR at our institute between April 2012 and June 2023 were studied. Patients were categorised according to their BMI- Underweight (BMI < 20); healthy weight (20–24.9); overweight (25–29.9); obese (30–34.9) and morbidly obese (BMI > 35.5). The groups were compared based on their pre-operative characteristics, and peri-operative findings focusing on short-term and long-term mortality. The effect of the BMI categories on the mid and long-term survival was assessed using Kaplan-Meier survival curves. All statistical analyses were performed using R, version 4.4.1 (R Foundation for Statistical Analysis).

Results: Euroscore differed significantly between the groups ($p < 0.001$) and post-hoc analysis showed that the Euroscore in Underweight (6.1 ± 5.44) and healthy weight (5.61 ± 5.72) patients was significantly higher than the overweight (4.37 ± 4.69), obese (4.07 ± 4.2) and morbidly obese (4.01 ± 3.96) patients. There was no significant difference between the groups at 30-day mortality. The long-term mortality was significantly higher in the underweight and the healthy-weight patients compared to other groups ($p < 0.001$) with the significance appearing 3 years after the surgery.

Conclusions: Underweight and healthy weight patients in our cohort had significantly higher Euroscore and significantly higher long-term mortality highlighting the implication of the Euroscore rather than obesity on the patient outcomes.

A41

Endoscopic Radial Artery Harvest: Early Experience of Adopting a Minimally Invasive Radial Artery Harvest Technique

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A41

Objective: To evaluate the early experience of adopting a minimally invasive radial artery harvesting technique for patients scheduled for coronary artery bypass graft (CABG) surgery.

Methods: A single institution study that commenced an endoscopic radial artery harvesting (ERAH) programme from September 2022 to 2024. Data was obtained from a prospectively maintained electronic database of all CABG patients who underwent ERAH. CABG remains the gold standard procedure for severe multi vessel coronary artery disease. While the internal thoracic arteries are the preferred conduits, other peripheral conduits such as the radial arteries and saphenous veins are more commonly utilized. The endoscopic technique has the advantage of reducing all morbidities due to a smaller incision for conduit harvesting however, it is associated with a learning curve.

Results: Since September 2022, 80 patients required ERAH. All the procedures were performed by one experienced endoscopic vessel harvesting surgeon. The first 10 cases as a part of learning curve, average harvesting time was 40 min which reduced significantly to 25 min. Total of 5 conversions to open harvest (6.2%). Redivac drain was placed in all patients which was removed next day of the surgery. No patients had any wound complication or hematoma or any numbness in the lateral cutaneous nerve of the forearm innervation area.

Conclusion: ERAH, although challenging, could be introduced safely. This innovative technique has significantly improved wound complication rate in patients undergoing CABG surgery in our hospital as well as patient satisfaction and quality of life.

A42

Autologous Blood Donation is safe and effective for Elective, Urgent or Emergency On and Off Pump CABG

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Objective: There are concerns that Autologous blood donation (ABD) may result in suboptimal intraoperative oxygen delivery to the myocardium during coronary artery bypass grafting (CABG). This has deterred the use of ABD, particularly in non-elective cases. We sought to evaluate the safety and effectiveness of ABD in CABG, performed using both, on-pump and off-pump techniques in elective, urgent and emergency settings.

Methods: We report a single UK centre experience between 2014 and 2023 of 193 CABG patients who underwent ABD. Overall, 38.7% were elective, 56.5% urgent, and 4.8% emergency cases.

On-pump CABG was performed in 112 patients. Prospectively collected data was crosschecked with cardiac surgical and blood bank databases independently.

Results: National Adult Cardiac Surgery Audit (NACSA) 2024 reports 45% of all CABG required packed red blood cells (RBC) and blood product transfusions. In comparison, our results show 24.47% (28.97% on-pump vs 18.52% off-pump) required any transfusion of RBC, fresh frozen plasma, platelets, cryoprecipitate or Octaplex, of which, only 21.62% (24.30% on-pump vs 17.28% off-pump) of ABD patients required RBC transfusion. There was 0% hospital mortality in elective and emergency cases and 0.54% in the overall group at 12 months. Urgent CABG survival was 99.05% (NACSA 2024 report 99.01%). Re-opening for post-operative bleeding was 2.16% (NACSA 2024 national average 2.15%).

Conclusions: ABD can be performed safely in elective, urgent and emergency patients undergoing on-pump and off-pump CABG. ABD should be used more widely as this strategy decreases the need for valuable resources and its associated risks and costs.

A43

Investigation of early outcomes in patients receiving Direct Oral Anticoagulants or Warfarin for New Postoperative Atrial Fibrillation Following Coronary Artery Bypass Grafting

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Objective: To investigate trends in anticoagulation strategies and outcomes of patients receiving direct oral anticoagulants (DOACs) or warfarin for postoperative atrial fibrillation (POAF) following coronary artery bypass grafting (CABG).

Methods: All patients undergoing isolated CABG between Jan 2020 and Jan 2024 were identified and those developing POAF prescribed either DOAC on the day of discharge or warfarin, compared for in-hospital stay and early complications.

Results: 3,444 patients underwent CABG during this period (mean age 64 ± 10.1 years, 83.6% male, 83.9% hypertensive, 48.3% diabetic (19.4% insulin-dependent) and 51.3% had moderate/severe renal impairment. Mean length of hospital stay was 9 ± 9.9 days. POAF occurred in 512 (14.9%) patients of whom 149 (29.1%) remained in atrial fibrillation and anticoagulated (144 (96.7%) received a DOAC on hospital discharge (79 (54.9%) Edoxaban, 42 (29.2%) Apixaban, 23 (16.0%) Rivoroxaban), and 5 (3.3%) received warfarin with an INR of 2.2 ± 0.7 at discharge. Three (2.0%) patients had re-sternotomy for bleeding/tamponade post-op before anticoagulation. The median hospital stay was 20 ± 9.9 days in patients on warfarin versus 10 ± 8.2 days on DOACs, $p=0.017$. At a follow-up of 6 ± 4.7 weeks, 3 (2.0%) patients on DOACs had epistaxis and 3 were readmitted to hospital (2 on DOACs) for intervention (2 for pleural effusion, 1 for pericardial effusion). There were no major complications of stroke, bleeding or death.

Conclusions: DOACs have increasingly become first line choice of anticoagulation in POAF following CABG. DOACs are associated with shorter hospital stays and few early post-operative complications, justifying future use.

A44

Trend and early clinical outcomes in Re-operative coronary artery bypass grafting in the United Kingdom

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A44

Introduction: Re-operative coronary artery bypass grafting (redo-CABG) is a complex surgical procedure with limited data available on its outcomes in the UK. This study aimed to investigate the trends in redo-CABG, assess early clinical outcomes, and compare the effectiveness of on-pump and off-pump.

Methods: A retrospective analysis of the UK National Adult Cardiac Surgery Audit database was conducted to identify patients undergoing redo-CABG between 1996 and 2019. Procedural volume trends were analysed. Clinical outcomes were compared using inverse propensity score matching. Factors associated with off-pump were identified.

Results: A total of 8593 patients underwent redo-CABG from 1996 to 2019, with 7184 (83.6%) performed on-pump. The median age of the whole cohort was 67.2 years (IQR: 61.0,72.9) and 86% were male. The volume of redo-CABG peaked in 2002 with 694 cases, and then generally declined to approximately 150 cases annually from 2015.

Patients who underwent redo-CABG with cardiopulmonary bypass had a higher in-hospital mortality (5.9% vs 3.75%, $p=0.0011$) and post-operative cerebrovascular accident (1.46% vs 0.51%, $p=0.0084$). There were no differences in return to theatre (6.15% vs 4.79%, $p=0.07$) and post-operative dialysis (3.9% vs 2.83%, $p=0.07$). Older patients (OR: 0.99, 95% CI: 0.98–0.99, $p<0.001$), a history of pulmonary disease (OR: 0.75, 95% CI: 0.63–0.89, $p=0.001$) and previous PCI (OR: 0.71, 95% CI: 0.62–0.83, $p<0.001$) were more likely to undergo off-pump redo-CABG.

Conclusion: The declining trend in redo-CABG in the UK may reflect the increasing role of percutaneous interventions. Off-pump redo-CABG is associated with improved early clinical outcomes, particularly in-hospital mortality and stroke.

A45

In-Hospital Outcomes in South Asian Patients Following Coronary Artery Bypass Graft Surgery: a Comparison with Caucasian Patients

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A45

Introduction: South Asian (SA) ethnicity is often blamed for worse outcomes after coronary artery bypass graft (CABG) surgery. This study compares in-hospital outcomes for SA versus Caucasian patients undergoing CABG.

Methods: A retrospective analysis of all patients who underwent isolated CABG between January 2018 and March 2024 at a tertiary cardiac centre serving a large SA population. Baseline characteristics, operative details, and postoperative outcomes were compared using Mann–Whitney U and Chi-squared tests.

Results: 5,398 patients underwent CABG of whom 2,216 were Caucasian and 1,517 SA. Caucasians vs. SAs were older (64.9 ± 9.8 vs. 60.3 ± 10.5 years, $p<0.001$), had a similar gender distribution (84% male), higher prevalence of obesity (BMI >35) (14.6% vs. 5.7%, $p<0.001$), smoking history (18.3% vs. 13.7%, $p<0.001$), COPD (11.2% vs. 7.7%, $p=0.001$), left main stem disease (26.5% vs. 22.1%, $p=0.002$), pre-operative atrial fibrillation (3.2% vs. 0.9%, $p<0.001$) and mean EuroSCORE II (2.1 ± 3.2 vs. 2.0 ± 2.3 , $p=0.026$). Conversely, SAs had higher prevalence of Type II Diabetes (63.1% vs. 34.3%, $p<0.001$), Insulin Dependent Diabetes (11.4% vs. 8.3%, $p=0.002$), hypertension (85.2% vs. 82.5%, $p=0.014$) and severe renal impairment (14% vs. 9.9%, $p<0.001$). Operative details were similar within the two groups. In-hospital mortality and hospital length of stay were significantly higher in SAs vs. Caucasians (2.4% vs. 1.3%, $p=0.01$ and 12.3 ± 11.0 vs 11.2 ± 9.4 days, $p<0.001$, respectively) while rates of re-sternotomy for bleeding, haemodialysis and stroke were similar between the two groups.

Conclusions: SA patients undergoing CABG have higher mortality compared to Caucasians, highlighting the importance of including patient ethnicity in risk models predicting operative mortality.

A46

Usefulness of Myocardial Viability Assessment by Delayed Enhanced Magnetic Resonance before Surgical Revascularization in severe Ischemic cardiomyopathy. Is it worth doing?

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Introduction: CABG has survival benefit in severe ischemic cardiomyopathy but is associated with poor peri-operative outcomes. To mitigate risk, pre-operative viability assessment is usually performed in these patients. Cardiac magnetic resonance (CMR) has emerged as a newer diagnostic modality for viability assessment, however the prognostic significance of CMR is yet to be proven.

Aim: To evaluate the impact of viability assessment by CMR on clinical outcomes among patients with severe LV dysfunction undergoing CABG.

Material & Methods: It is a single center, retrospective study from January 2016–December 2023. Total of 147 consecutive patients with LVEF $\leq 30\%$ who underwent CABG (elective or urgent) were considered. Patients were divided into Group A, viability not assessed by CMR pre-operatively (N=47) and Group B, adequacy of viability confirmed with delayed enhanced CMR (N=100). Primary outcome were in-hospital and mid-term survival. Median followup was 31 months (0–92 Months).

Results: Mid term and in-hospital survival was similar between the two groups. In hospital peri-operative clinical outcomes were also comparable among the two groups except cross clamp time which was less in “no CMR” group 41 min (34,48) as compared to CMR group

47 min (40,59) $p=0.020$. Interestingly a steady increase in the utilisation of DE-CMR was noted for viability assessment over the last 7 years. **Conclusion:** Pre operative viability assessment by cardiac MRI do not impact clinical outcomes among patient with severe cardiomyopathy undergoing CABG. Cardiac CMR is expensive and routine use may delay treatment leading to inefficient utilization of health care resources without added benefit.

A47

Differences in EuroSCORE II predictive ability between South Asian and Caucasian patients undergoing isolated Coronary Artery Bypass Graft Surgery

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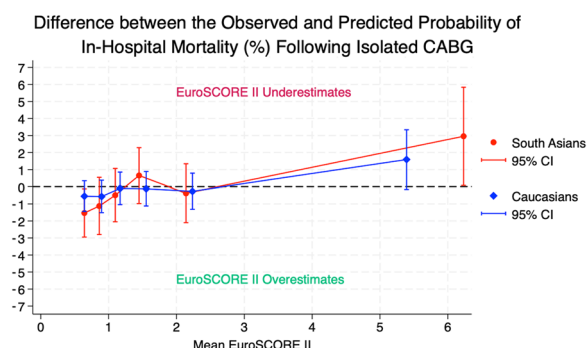
Objectives: The EuroSCORE II encompasses a variety of patient and procedural characteristics but does not account for ethnicity as a risk factor. We sought to investigate the ability of EuroSCORE II to predict in-hospital mortality in South Asian and Caucasian patients undergoing Coronary Artery Bypass Graft (CABG) surgery.

Methods: We retrospectively included all South Asian and Caucasian adult patients undergoing isolated CABG procedures from January/2018 to March/2024 at a large UK tertiary centre serving a large Asian population. The receiver operating characteristic (ROC) curve and its corresponding area under the curve (AUC) were used to investigate the discrimination power of the EuroSCORE II. Concordance between the observed and predicted mortality was assessed via calibration plots.

Results: We included a total of 3,733 patients (1,517 South Asian and 2,216 Caucasian). Mortality was 2.4% among South Asians and 1.3% among Caucasians ($P=0.010$). The EuroSCORE II showed a good discrimination power in predicting in-hospital mortality for both South Asian (AUC: 80.8%; 95% CI: 73.8–87.8%) and Caucasian (AUC: 78.2%; 95% CI: 68.9–87.6%) patients.

However, while the EuroSCORE II more accurately estimated the true risk among Caucasians, the mortality of South Asian patients in the lowest EuroSCORE II decile was significantly ($P=0.034$) overestimated, while that in the highest decile was significantly ($P=0.044$) underestimated (Figure 1).

Conclusions: Our data suggests that the EuroSCORE II might not equally reliably predict the risk of in-hospital mortality between South Asian and Caucasian patients, particularly for higher EuroSCORE II values. However, larger studies are required to validate our findings.



A48

On pump Versus Off Pump Coronary Artery Bypass Graft Surgery in severely reduced Left Ventricular Function ($\leq 30\%$)

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A48

Introduction: Conventional on-pump CABG (ONCAB) among patients with severely reduced left ventricular function (LV) has high incidence of peri-operative adverse clinical outcomes. Off-pump CABG is an alternative to ONCAB as it avoid cardiopulmonary bypass. However the potential benefit of OPCAB in patients with severe left ventricular (LV) dysfunction is unknown.

Aim: To compare in-hospital outcomes and mid term survival of OPCAB and ONCAB among patients with severely reduced left ventricular function (LVEF $\leq 30\%$).

Material & Methods: It is a single center, retrospective study from January 2016—December 2023. A total of 147 consecutive patients with LVEF $\leq 30\%$ who underwent first time isolated ONCAB or OPCAB (elective or urgent) were considered. Patients were divided into 2 Groups: On pump CABG (N=57) and Off pump CABG (N=90). Primary Outcomes were in-hospital and mid-term survival. Median followup was 31 months (0–92 Months).

Results: Mid term and in-hospital survival was same among the two groups. Median number of diseased coronary vessels is significantly different among the two groups, OPCAB 3 (2,3) and ONCAB 3 (3, 3) $P=0.008$. Median number of grafts received in ONCAB 3 (3,3) were significantly higher than OPCAB 2 (2,3) $p < 0.001$. Among patients with triple vessel disease, 70% patients in ONCAB received three grafts whereas only 45% in OPCAB received three grafts $p=0.013$. Other post operative outcomes were not significantly different between the two groups.

Conclusion: In comparison to ONCAB, OPCAB has similar in-hospital and mid term survival. However, complete revascularization is achieved more often in ONCAB as compared to OPCAB.

A49

Completeness of Revascularization in Patients with Multivessel Coronary Artery Disease: A Network Meta-Analysis

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Objectives: Complete revascularisation is recommended under the EACTS 2018 guidelines during revascularisation as Class IIA for PCI and Class IB for CABG respectively. However, best practice treatments for revascularisation in multivessel coronary artery disease (MVD) are still a controversy with respect to outcomes and benefits. This network meta-analysis compared complete vs incomplete revascularisation in both CABG and PCI.

Methods: A systematic search for observational studies and randomised controlled trials (RCTs) was done on MEDLINE, EMBASE and Scopus databases for studies published from inception until August 2024. A Bayesian network meta-analysis was conducted to compare late (> 12 month) outcomes in incomplete and complete revascularisation from PCI and CABG.

Results: The meta-analysis included a total of 45 studies with 194,409 patients. Complete revascularisation was associated with lower redo revascularisation rates compared with PCI (OR:2.61, 95% Confidence Intervals (CI): 1.95–3.54). There was no difference in mortality, stroke or MI risk between PCI or CABG. Incomplete revascularisation was associated with worse mortality for both PCI (OR: 1.58, 95% CI: 1.38–1.80) and CABG (OR: 1.25, 95% CI: 1.03–1.51).

Conclusions: Complete revascularisation is superior to incomplete revascularisation across CABG or PCI treatment in patients with multivessel disease, and so clinicians should factor the completeness of

revascularisation as a major factor in decisions regarding treatment modality. Complete or incomplete CABG was still preferable to PCI, offering evidence for the value of surgical revascularisation.

Final category: Adult Cardiac – Miscellaneous

A50

Appraising the Implementation of Evidence-based and Guideline-based Practice for High-risk Patients Undergoing Cardiac Surgery Within a Newly Merged NHS Trust

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A50

Objectives: To appraise the implementation of best practices pre-, peri- and post-operatively at an NHS trust to optimise the quality of care for high-risk patients undergoing cardiac surgery.

Methods: Patients with a Euroscore³ 5 undergoing cardiac surgery at Guy's and St Thomas' trust (GSTT) between 1st February 2021 and 28th February 2022 were identified retrospectively. Patient outcomes, including rates of mortality, complications and the mean length of stay (LOS) were collected and analysed using a two-proportion Z-test. Semi-structured interviews with clinical leads identified the patient pathway protocols (PPPs) for high-risk cases, including multi-disciplinary meetings (MDMs), endocarditis MDMs, day-of-surgery admissions, dual-consultant operating, a consultant of the week model, ring-fenced beds, a pooling system, mitral and aortic valve surgeries performed by specialists, enhanced recovery after surgery protocol and segregation of private and public services. PPPs were scored using a normalised scoring system and a Kruskal-Wallis test was used to identify variations.

Results: 510 high-risk patients were identified within GSTT. There were no significant differences between the four hospitals in their total PPP scores (H(3)=0.048, P>0.9). Mortality rates were significantly different between St Thomas' and Royal Brompton (Z=3.41, P<0.0007). The rates of complications, excluding stroke, were significantly different between hospitals. St Thomas' had the longest mean LOS, lowest PPP score and highest mortality, surgical-site infection, and re-bleeding rate.

Conclusions: Variations in PPPs and patient outcomes exist within hospitals in GSTT and underscore the importance of adopting evidence-based guidelines to ensure the highest quality of care for high-risk patients.

A51

Warm, wake, wean: assessing patient readiness for ICU in a quaternary centre

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Following the COVID-19 pandemic, reducing surgical waiting times has become increasingly important. We sought to find out if protocol changes at handover to ICU from surgery at Royal Papworth hospital (RPH) could reduce length-of-stay on ICU.

We measured several parameters including drug infusions, ventilation mode, vital signs, and blood components by asking staff to fill in a pro forma. Next, we hope to ascertain whether protocol changes can affect these parameters and hasten recovery, allowing fast-track discharge.

We found that the majority of patients (52%, n=132) were transferred to ICU under Propofol anaesthesia, which may have lead to delays in extubation. Most patients (62%, n=136) entered ICU with synchronised intermittent mandatory ventilation (SIMV). Timedirected extubation protocols have been shown to reduce hospital stays, even in high risk patients. Several patients were also receiving high doses of morphine (mean 19.515mcg/kg/hr) which may have lead to delays in extubation and the ability to eat solid foods due to side effects such as

respiratory depression and gastro-intestinal changes. Before the data was collected, it was believed that many patients experienced post-operative hypothermia. However, upon handover, most patients were normothermic (36.3°C, 95%CI [36.2, 36.4]) and instead became cold after ICU admission.

The collection of this data has highlighted at least three areas in which protocols can be changed at RPH: anaesthesia and ventilation at handover, pain relief methods, and keeping patients warm. By improving in these areas, we hope to reduce the time patients spend in ICU.

A52

Continuous Postoperative Pericardial Flushing Reduces the Risk of Postoperative Bleeding after Elective Adult Cardiac Surgery – A Study-level Meta-analysis

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Background: Retained blood syndrome contributes to higher morbidity and mortality post cardiac surgery. We investigate the benefits of continuous postoperative pericardial flushing (CPPF) over standard care chest drainage in patients undergoing cardiac surgery.

Methods: Various online databases were screened for randomised controlled trials (RCTs) and observational studies comparing CPPF to standard care for elective adult cardiac surgical patients. Primary outcomes: 12-h and total blood loss, cardiopulmonary bypass (CPB) and aortic cross-clamp (AXC) times; surgical re-intervention for bleeding, mortality, sternal wound infections and fluid re-accumulation at discharge. Secondary outcomes: perioperative blood transfusion, time to extubation and total hospital stay.

Results: 586 patients from four studies were included. CPPF was associated with less blood loss at 12 h: Odds ratio (95% confidence interval) OR 0.71 (-0.91 -0.51) and in total 0.49 (-0.67 to -0.32)(both p<0.00001). CPPF had lower surgical re-intervention rates (3.9% vs 8.6%), risk ratio (RR) 0.52 (0.24–1.12)(p=0.1), and transfusion of blood products (RR 0.57 (0.36–0.89)(p=0.01). There were no significant differences in overall mortality, CPB and AXC times, length of hospital stay, time until extubation or sternal wound infections between the groups. Risk of fluid accumulation was lower in the CPPF groups RR 0.88 (0.80–0.97)(p=0.01).

Conclusions: CPPF has shown promising results in reducing postoperative blood loss and fluid re-accumulation with fewer blood transfusions, and lower surgical re-intervention rates across all ranges of cardiac surgical procedures. It is a safe, feasible and effective in all types of cardiac surgery, however further studies are needed to validate these findings.

A53

Virtual appointments as an alternative to 'treat and return' assessments

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A53

Objectives: In-House Urgent (IHU) patients have experienced a recent or acute cardiac incident, or a worsening of heart failure symptoms, necessitating their admission to a hospital for possible inpatient surgery and are referred from regional hospitals. Patients identified as more complex in the MDT are traditionally transferred to be reviewed by a designated surgeon as a 'treat-and-return' appointment. This has significant cost associated and patients may spend many hours in an ambulance, to be seen for only a few minutes.

Methods: To improve the service, through collaboration with 7 referring centres, we have begun reviewing patients remotely using Attend

Anywhere video consultation appointments that are attended by the patient and a healthcare professional from the referring hospital, and the consultant surgeon and Advanced Nurse Practitioner from our centre.

Results: We conducted a successful patient launch which allowed us to determine the suitability of such consultation and assess any potential issues of the process for future use.

This approach offers many advantages:

- Eliminates the need for patient travel with associated environmental and financial costs
- Improves the timeline from MDT discussion to decision making of treatment as these appointments are more easily arranged
- Improve handover process between centres through having the opportunity to speak to the patient's local team
- Aid in improving patient flow within our centre, not requiring beds to be available for 'treat-and-return' patients.

Conclusion: Virtual appointments offer an innovative alternative to 'treat-and return' appointments. They can be implemented successfully and offer significant benefits to patients and clinical teams.

A54

Does the Use of Topical Vancomycin Paste Reduce the Incidence of Deep Sternal Wound Infections?

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Background: Deep sternal wound infection (DSWI) is a serious complication after median sternotomy for cardiac surgery, with an incidence ranging from 0.5% to 6%. DSWI is associated with significant morbidity and mortality, with mortality rates between 10 and 47%. Risk factors include diabetes, obesity, chronic obstructive pulmonary disease, prolonged surgery duration, reoperation, and bilateral internal mammary artery use. Therefore, measures to reduce DSWI are essential, such as applying topical vancomycin paste to the sternal edges after surgery.

Methods: We conducted a retrospective review of data from a dedicated infection control service (January 2019-January 2024). Vancomycin paste application was based on surgeon preference, allowing easy identification of treated patients. Data analysis employed Unistat statistical software, expressing results as median values (inter-quartile range, IQR), percentages, and case numbers for categorical variables.

Results: A total of 7 DSWI cases occurred exclusively in the untreated group (7/4126, 0.17%) versus none in the vancomycin group (0/851, 0%). The untreated group had 136 re-sternotomies (3.3%) compared to 15 (1.8%) in the vancomycin group. All DSWI cases occurred in first-time sternotomy patients. The majority were female (57%), with a median age of 65. Pathogens included *Staphylococcus* (43%) and *E. coli* (29%).

Conclusion: Our findings indicate remarkably low DSWI rates. All cases occurred in patients not receiving vancomycin paste, suggesting its significant effectiveness. Given the high morbidity and mortality associated with DSWI, adopting vancomycin paste as a standard prophylactic measure may greatly enhance patient outcomes and reduce complications.

A55

Posterior Left Pericardiotomy Reduces Post-Operative Atrial Fibrillation in patients undergoing Cardiac Surgery

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Objective: Atrial fibrillation(AF) is a common postoperative complication with an incidence of around 30% after cardiac surgery. At present,

small randomised controlled trials have shown a reduction in AF post-surgery by using a posterior left pericardiotomy (PP). We aim to test the impact of PP on a large cohort of consecutive cardiac surgery cases.

Methods: Patients were divided into two groups. One group had PP as part of their surgical procedure and the other group did not and formed the control group. For both groups the incidence of post-operative AF was analysed. Both univariate & multiple logistic and linear regression analyses were used to assess binary and continuous outcomes.

Results: A total of 2,833 patients who underwent surgery between 2015–2022(8 years) were included in the analysis, with 929 patients who underwent PP and 1,904 patients who did not receive PP. The univariate analysis for AF showed that PP was associated with a 29% reduction in the odds of developing AF(OR:0.71; 95% CI: 0.55–0.91; p=0.0073). The multivariate model for AF showed PP also remained significantly protective, reducing the odds of AF by 31%(0.69; 95% CI: 0.53–0.89; p=0.0047) after controlling for the potential confounders. Patients who underwent PP also had significantly reduced AF duration, with a 5.3% average reduction(P = 0.0016).

Conclusion: Posterior left pericardiotomy is associated with a reduced odds and duration of post-operative AF. A large-scale trial is indicated to confirm this finding as well as the impact of PP and AF on post-discharge clinical outcomes.

A56

Increased Use of Stroke Mitigation Strategies Reduces Stroke Rate in High-Risk Cardiac Procedures: Insights from a High-Volume UK Centre

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Background: Stroke remains a devastating complication of cardiac surgery, significantly increasing mortality, morbidity, and healthcare costs. However, no European guidelines for prevention exist. This study evaluated perioperative strokes at our institution, focusing on the impact of stroke mitigation strategies across procedure types.

Methods: 4533 patients who underwent cardiac surgery between April 2019 and March 2022 were stratified by the occurrence of radiologically confirmed stroke within 30 days of surgery. Preoperative and operative characteristics, and stroke mitigation strategy utilisation, were compared.

Results: Forty-three patients (0.95%) experienced a perioperative stroke. Stroke patients had higher risk profiles and underwent more complex procedures. However, the relative difference in stroke rates between high-risk (combined=1.51%, aortic=1.47%) and isolated CABG (0.86%) was smaller than reported in the literature by Gaudino and colleagues (combined=2.65%, aortic=4.25%, isolated CABG=1.30%). Stroke mitigation strategies were used significantly more in high-risk procedures than in isolated CABG: CT imaging (78.9% vs 6.7%, p<0.0001), cerebral oximetry (78.9% vs 26.7%, p=0.0047), and MAP > 65 mmHg (73.7% vs 33.3%, p=0.0359).

Conclusions: Increased use of stroke mitigation strategies reduced stroke rates in high-risk cardiac procedures, with a smaller relative difference between the groups than in the literature. Variable use, especially in isolated CABG patients, highlights a potential area for improvement in clinical practice and further stroke reduction. Consensus guidelines are needed to standardise care and improve outcomes across all risk groups.

A57**Aspirin administration within 6 h post Coronary Artery Bypass Graft (CABG) surgery; Improving outcomes through a single-cycled audit**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A57

Introduction: As electronic patient record systems (ERS) become more prevalent, there is a risk that automation may perpetuate poor clinical practices. However, once appropriately modified, ERS has the potential to facilitate lasting improvements in clinical practice. There is a Level 1a recommendation by the American Heart Association 2021 Guidelines in favour of aspirin administration within six hours to patients post CABG. Previous studies have shown low compliance with these recommendations.

Objective: To assess pre- and post-intervention compliance with international guidelines for aspirin administration within six hours post-CABG surgery.

Methods: A retrospective sample of the most recent 20 patients who underwent isolated CABG surgery at Cork University Hospital was analyzed. Data from the ERS was analysed to determine time of aspirin administration post-operative. Patient demographic, clinical, and operative factors were also collected. Following the initial audit, an intervention took place, which included educational sessions for healthcare staff and modifications to the ERS post-operative order set and schedule. A post-intervention audit is scheduled for December 2024, and a significant improvement in compliance is anticipated.

Results: The initial audit revealed that no patients received aspirin within the recommended six-hour window post-operatively. All patients received aspirin according to the existing order-set, which was 06:00 the following morning. All patients received aspirin within 24 h post-operative.

Conclusions: This audit highlights how ERS can obscure suboptimal clinical practices if not properly configured. Nevertheless, the post-intervention improvements demonstrate that with appropriate modifications, ERS can be a powerful tool for initiating and sustaining clinical improvements.

A58**Carnitine palmitoyltransferase 2(CPT-2) deficiency in cardiac surgery- a multi-disciplinary team led approach***

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A58

Background: Carnitine palmitoyltransferase II deficiency (CPT-2) is an inherited autosomal recessive disease which results in a defect in the mitochondrial long chain fatty acid (LCFA) oxidation process. CPT-2 is one of the three major enzymes constituting the carnitine shuttle. It is located on the inner mitochondrial membrane and its function is to convert acylcarnitine esters to acyl-Co-A's which are then used for beta-oxidation to produce energy. CPT-2 deficiency thus results in accumulation of long chain acylcarnitines, reduced free carnitine and overall inability to obtain energy from LCFAs especially in state of metabolic stress triggered by surgery. Classic presentation would include hypoketotic hypoglycaemia, rhabdomyolysis and cardiomyopathy, all

of which would lead to an accentuated risk of post-operative complications, need for renal replacement therapy and prolonged intensive care stay.

Case presentation: A 41-year-old gentleman presented with chest pain, underwent cardiac investigations including a transoesophageal echocardiogram which showed severe mitral regurgitation secondary to prolapse of A2 to A3 and P3 with good ejection fraction and an angiogram showing triple vessel disease. He was therefore scheduled for coronary artery bypass and mitral valve repair. This is on a background of CPT-2 deficiency, otherwise fit and well. This was managed with special parenteral nutrition regimens and metabolic monitoring in the peri-operative stage with close collaboration of the cardiac surgery, anaesthetics and dietetics teams. This patient had an uncomplicated post-operative recovery thanks to the appropriate interventions.

Conclusion: CPT-2 deficiency is a rare inherited metabolic entity which requires unique multi-disciplinary perioperative management to ensure optimal patient outcomes.

*The patient has confirmed explicit consent to be in the Journal.

A59**Pre-Operative HbA1c is Elevated...What Do We Do About It? Adequacy of Pre-Operative Diabetic Assessment and Glycaemic Control in Patients Undergoing Cardiac Surgery**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A59

Objectives: 30–40% of patients undergoing cardiac surgery have diabetes. Glycaemic control should be optimized in diabetic patients prior to cardiac surgery. Enhanced Recovery After Surgery Guidelines 2019 recommend HbA1c < 53 mmol/mol prior to cardiac surgery. The British Diabetes Society recommend diabetic referral if HbA1c > 69 mmol/mol. We aim to evaluate adequacy of HbA1c testing and optimisation of glycaemic control prior to undergoing cardiac surgery.

Method: A clinical audit performed on all adult diabetic patients undergoing elective cardiac surgery (08/11/2023 – 25/04/2024). Data was collected electronically on pre-operative diabetic assessments and glycaemic control interventions. Data analysis was performed using SPSS V.29.

Results: 66 diabetic patients were included. Median age at operation was 67 years with average BMI of 30.7. Most patients were put forward for elective CABG (65.2%), aortic (24.2%) and mitral valve surgery (16.7%). Type 1 and Type 2 diabetes was observed in 9.1% and 90.9% of patients, respectively.

HbA1c testing was undertaken in 95.5% of cases pre-operatively. 43.9% were deemed to have 'uncontrolled' diabetes; of these, no action was performed in 82.8% of cases despite an abnormal result. Only 16.7% of patients received appropriate diabetic referral when indicated. The rates of post-operative wound infections were higher in uncontrolled diabetic patients than controlled diabetics (6.1% vs 3.0%) (**Table 1**).

Conclusion: Good compliancy was demonstrated for HbA1c testing. However, improvement is needed to ensure adherence to glycaemic control interventions. Recommendations include emphasising the importance of diabetic interventions where appropriate, and considering the role of earlier pre-operative assessments to optimise glycaemic control in high-risk patients.

Table 1 (abstract A59) Post-operative outcomes of patients with diabetes undergoing elective cardiac surgery. Outcomes relating to post-operative wound infection compared between those with controlled and uncontrolled diabetes.

Diabetes Data		Patients with diabetes, n=66	
Sternal wound closure		47 (71.2%)	
Standard closure technique		17 (25.8%)	
Anti-microbial suture		1 (1.5%)	
Topical sealant		1 (1.5%)	
Other		1 (1.5%)	
Post-operative Complication (can have more than one)			
Atrial fibrillation		14 (21.2%)	
Hospital acquired pneumonia		11 (16.7%)	
Readmitted to ward after discharge		2 (3.0%)	
Readmitted to ITU		1 (1.5%)	
Other		14 (21.2%)	
No complications		30 (45.6%)	
Post-Operative Wound Infection		6 (9.1%)	
	Controlled DM	2 (3.0%)	
	Uncontrolled DM	4 (6.1%)	
Infective Complication		7 (10.6%)	
	Controlled DM	3 (4.5%)	
	Uncontrolled DM	4 (6.1%)	
Deep Sternal Wound Infection		3 (4.5%)	
	Controlled DM	1 (1.5%)	
	Uncontrolled DM	2 (3.0%)	
Length of hospital stay, days (Median [IQR])		7 (IQR 2)	
Patient status at discharge		65 (98.5%)	
Alive		65 (98.5%)	
In hospital mortality (intra-operative complication)		1 (1.5%)	

A60
Pericardiectomy for constrictive pericarditis: a single tertiary centre experience and 10-year outcomes
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A60

Background: Constrictive pericarditis (CP) typically presents with right sided heart failure symptoms and diastolic impairment. Pericardiectomy is the sole therapeutic option for CP but is traditionally associated with a high prevalence of morbidity and mortality. We report a single-centre experience with pericardiectomy over a 10-year period.

Method: Between July 2014 and October 2024, a total of 48 consecutive patients [37 M: 11F, median age 57(29–83) years] underwent pericardiectomy for CP. All operations were performed via median sternotomy. Clinical follow up data were collected prospectively and evaluated retrospectively.

Results: In-hospital mortality was 2.1% (n=1) and 30-day mortality was 10.4% (n=5). Ten patients (20.8%) required cardiopulmonary bypass, and five patients (10.4%) underwent concomitant procedure during pericardiectomy. Median postoperative hospital stay was 7 days. Forty patients (83.3%) had NYHA 3/4 class symptoms preoperatively and functional class improved significantly with NYHA 1/2 class in 41/48 (85.4%) patients (p value < 0.001). Pericarditis recurrence rate was 4.2% (n=2) and one required re-exploration due to cardiac tamponade. Survival at 1,3,5 years are 85.4%, 80.5% and 77.4% respectively. (Figure 1).

Conclusion: Although early mortality after pericardiectomy remains high, the procedure provides significant improvement in functional status. Long-term outcomes of pericardiectomy, performed either alone or concomitantly with other cardiac procedures, indicate favourable clinical outcomes.

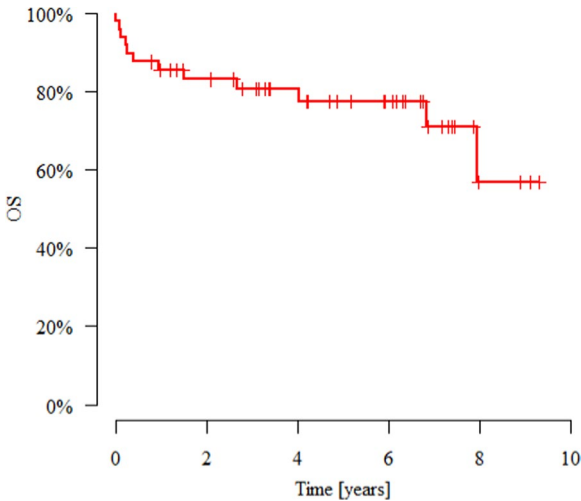


Figure 1 (abstract A60)
Kaplan–Meier Survival Curve. OS indicates overall survival.

A61
Maximizing Recovery: The Impact of Incentive Spirometers on Post-Cardiac Surgery Outcomes
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A61

Background: Postoperative pulmonary complications (PPCs) are a significant concern for patients undergoing cardiac surgery, leading to increased morbidity, extended hospital stays, and higher healthcare costs. Incentive spirometers (IS) are commonly recommended to improve lung function and prevent PPCs, but robust evidence supporting their effectiveness in cardiac surgery patients is limited.

Aim: The primary aim of the this study is to assess whether the use of incentive spirometers can significantly reduce the incidence of PPCs and shorten the length of hospital stays in patients undergoing elective cardiac surgery.

Design: This study utilizes a retrospective-prospective cohort design conducted at the Royal Brompton Hospital. This approach allows for a comprehensive evaluation of the IS's impact by leveraging existing data and validating findings through ongoing patient outcomes.

Methods: All eligible patients were enrolled and categorized into two groups based on the use of IS: a retrospective cohort and a prospective cohort (patients using IS post-surgery). Both cohorts were assessed postoperatively with primary outcomes including the incidence of PPCs, length of hospital stay, and patient satisfaction.

Results: This study at RBH indicate a reduction in PPCs from 52 to 30% and a 1.2 day decrease in hospital stay in the IS group. The patient satisfaction was excellent.

Conclusion: This study potentiates the routine use of IS as an evidence-based standard practice in postoperative care for cardiac surgery patients, potentially leading to better health outcomes and reduced healthcare costs.

Key Learning Points

1. Enhancing Patient Recovery and Reducing Complications.
2. Cost Savings for the NHS.

A62

The Influence Of Ethnicity And Deprivation Levels On The Early Results Of Coronary Artery Bypass Surgery: Single Centre Experience

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Objectives: Healthcare outcome disparities are avoidable inequalities with strongly interlinked multifactorial determinants. Ethnicity and deprivation are major factors not included in cardiac surgical risk scoring systems. Our catchment area comprises ethnically diverse population with high deprivation scores. Therefore, we've tried to assess the impacts of ethnicity and deprivation on early surgical outcomes in a series of isolated CABG patients.

Methods: 1,069 patients who underwent surgery between Jan. 2022 and Aug. 2024 were included. Ethnicity was expressed as Caucasian, Asian, Black and Other, and the UK Index of Multiple Deprivation (IMD) was utilized as a surrogate of deprivation level. Primary end points were mortality and composite of complications, and secondary end points were mode of admission and interval between admission and operation.

Results: 32% of all patients were non-white ethnic minorities and 55% were most deprived. 78% of ethnic minorities were most deprived compared to only 46% of Caucasian population. There was no significant difference in the mortality based on ethnicity but patients from most deprived areas had significantly higher mortality (1.3% vs 1.0%). Ethnic minorities have scored much higher complication rates 14% compared to 8.6% among the white population. The most deprived ethnic minorities scored the highest urgent admission (68%), complications (14%) and mortality (1.5%) with p -values $< 0.05\%$.

Conclusion: The wider non-clinical determinants of health including ethnicity and socio-economic status might impact surgical outcomes through complex factors such as access to health services, literacy/language barriers, poor previous experience, misinformation and fear. These factors warrant further investigations and subsequent mitigation.

A63

Cardiac Surgery in the Time of COVID: A Retrospective Analysis of Trends In England and Outcomes During and After the Pandemic

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A63

Introduction: The COVID-19 pandemic severely disrupted cardiac surgery services in the UK. This study, carried out on behalf of CVD-COVID-UK / COVID-IMPACT consortium examines the pandemic's impact on surgical practices and outcomes, comparing pre-lockdown data with periods during and after lockdowns.

Methods: Data from multiple national registries, collated by HDRUK and the British Heart Foundation Data Science Centre was used. A retrospective cohort study utilising linked national electronic health records from these registries in England (2018–2022) was conducted. The study population included 91,371 patients undergoing first-time adult cardiac surgery between 01 Jan 2018 to 31 Mar 2022. This period was divided into 5 phases according to dates of lockdowns and their relaxations. Outcomes included trends in procedures, waiting times, early mortality, ICU support needs, length of stay, and midterm survival and readmission. Logistic and Cox regression, and negative binomial regression models were used to analyse the data.

Results: Surgical volume significantly decreased during lockdowns, with incomplete recovery post pandemic. There was a marked fall in elective procedures and a steep rise in waiting times for both urgent & elective cases. Early and midterm mortality increased despite a decrease in the logistic EuroSCORE. Critical care requirements per patient remained unchanged but individual patient length of stay increased.

Conclusion: The COVID-19 pandemic negatively impacted cardiac surgery services in the UK, leading to reduced surgical volume, increased waiting times, and poorer outcomes. Recovery thus far has been incomplete. These findings highlight the need for strategies to address the surgical backlog and improve service resilience.

A64

Bleeding in Cardiac Surgery: Short-Term Impact, Long-Term Outcomes

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Objectives: To evaluate the impact of bleeding on short and long-term outcomes in cardiac surgery patients.

Methods: A retrospective analysis of 2107 adult patients undergoing cardiac surgery without re-exploration was conducted. Patients were grouped by chest drain output (lower and upper quartiles) and propensity matched to control for 16 confounding factors. Outcomes included blood transfusion, need for advanced critical care support, and survival at 30 & 90 days, 1 year, and 5 years. Chi-Squared tests and odds ratios were used to compare outcomes; Kaplan–Meier curve with log-rank testing was used to evaluate survival.

Results: 189 well-matched patients were included in each propensity-matched group. Significant predictors of high chest drain output included gender, creatinine clearance, procedure type, and cardiopulmonary bypass time. High chest drain output was associated with increased blood transfusion (OR=4.130; $p < 0.001$), prolonged advanced cardiac & respiratory support (OR=3.087; $p < 0.001$), and longer hospital stays. While higher mortality was observed at 1 year in the high output group, this was not statistically significant (OR=2.858; $p = 0.065$). The difference at 5 years was minimal (OR=1.255; $p = 0.452$).

Conclusions: Significant bleeding after cardiac surgery increases the risk of short-term complications & costs and may influence 12-month survival. Optimal haemostasis during the initial procedure is crucial for maintaining safety & sustainability of cardiac surgical practice.

A65

The association between Preoperative Beta-blocker and postoperative Atrial Fibrillation in Isolated Aortic Valve Replacement

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Background: Postoperative Atrial Fibrillation (POAF) is a common complication of cardiac surgery, linked to increased mortality and morbidity. While guidelines recommend beta-blockers to reduce POAF risk, evidence primarily comes from coronary artery bypass studies. This study investigates the association of preoperative beta-blocker therapy with POAF in patients undergoing isolated surgical aortic valve replacement (AVR).

Methods: This is a retrospective cohort study utilizing the Maritime Heart Center Cardiac Surgery Registry. Our sample comprised individuals who underwent isolated AVR for Aortic stenosis between January 1996 and December 2018. A propensity score model of all independent risk factors of POAF was used to compare patients receiving pre-operative Beta-blocker versus no Beta-Blocker therapy. Our primary endpoint was the incidence of POAF before discharge, while secondary endpoints included length of hospital stay, in-hospital mortality, and discharge on anticoagulation.

Results: Post-propensity matching yielded 594 patients in each group, with a mean age of 67 years. Incidences of POAF did not significantly differ with 43% in the non-beta-blocker group versus 45% in the beta-blocker group ($p=0.61$). Secondary endpoints revealed no significant differences in prolonged hospital stay (21.4% without beta-blockers vs. 25.6% with beta-blockers, $p=0.23$), in-hospital mortality (1.5% without beta-blockers vs. 2.2% with beta-blockers, $p=0.65$), or anticoagulation requirements upon discharge (10.9% with beta-blockers vs. 12.8% without, $p=0.28$).

Conclusion: The use of prophylactic beta-blocker therapy for patients undergoing isolated AVR does not decrease the incidence of POAF.

A66

Understanding The Learning Curve in Robotic-Assisted Cardiac Surgery and its Application on Curriculum Development – Systematic Review
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Objectives: Since robotic-assisted cardiac surgery was established, the adoption rate was slow despite proven its efficacy and safety. Limited knowledge about the learning curve (LC) has led to lacking recognised training programme which in turn jeopardises patient safety and reduces the uptake rate.

This study aims to review current literature, identify any knowledge gaps and quantify the LC. In addition, the study focuses on the application of LC knowledge on the curriculum development which has not been covered in the literature before.

Methodology: This narrative systematic review was conducted according to PRISMA-20 guideline. Ovid MEDLINE, PubMed, EMBASE and SCOPUS were searched from database inception to the 5th of February 2024. Eligible articles were those assessing LC in robotic-assisted cardiac surgery and reported in English.

Results: Among 24 studies which met the eligibility criteria (Table 1), 12 studies are for robotic-assisted coronary artery bypass, 9 for robotic-assisted mitral valve repair and 3 for robotic-assisted atrial septal defect repair. All studies were observational. Reporting LC exhibited substantial heterogeneity in terms of outcome variables and statistical analysis. None of the studies have quantified the surgeons' previous experience. Finally, having structured training programme is the most recommended method to mitigate the steep LC while creating standardised reporting system has been advised to decrease heterogeneity in the future studies.

Conclusion: Current literature shows high heterogeneity in defining LC which creates challenges in developing safe curriculum. Nonetheless, adopting structured programme with good exposure to simulation sessions are deemed effective approach to reduce LC and improve patient safety.

Table 1 (abstract A66) Characteristics of Included Studies

Author name, Year	Country	Operation type	Exclusion Criteria	Robot System	Study Type	period study	Patient no. (M: F)	Mean age	Learning curve aim
RA-CABG									
Novick 2003	USA - Florida	BH-TECAB	emergency operation, a LVEF < 30%, a distal coronary target vessel less than 1.5 mm, a previous sternotomy or ipsilateral anterior thoracotomy, insufficient pulmonary reserve for one lung ventilation	Zeus	Retrospective	1999-2001	90 (52M, 38F)	57	Primary
Bonatti 2004	Austria	RA-CABG	None	DuVinci	Retrospective	2001-2002	52 (41M, 11F)	60	Primary
Dellinger 2007	Austria	AH-TECAB	None	DuVinci	Retrospective	2001-2005	100 (83M, 17F)	59	Primary
Bonatti 2008	Austria	AH-TECAB	systemic atherosclerotic disease, renal failure, and other significant comorbidities	DuVinci	Retrospective	2001-2006	70 (58M, 12F)	59	Primary
Khadblin 2010	UK - London	RA-CABG	None	DuVinci	Retrospective	2002-2008	109 (84F, 25M)	62	Primary
Hemli 2013	USA - NYC	BH-MIDCAB	robotic harvesting of bilateral mammary arteries, TECAB procedures	DuVinci	Prospective	2011-2012	77 (50M, 27F)	64.5	Primary
Lee 2013	USA - BAII	BH-TECAB	None	DuVinci	Retrospective	2001-2011	120	60	Secondary
Yang 2013	China - Beijing	RA-CABG	None	DuVinci	Retrospective	2007-2012	202 (155M, 46F)	58	Primary
Cheng, 2014	China	BH-TECAB	history of left lung trauma or surgery, LVEF < 50%, emergency CABG, severe COPD	DuVinci	Retrospective	2007-2013	90 (70M, 20F)	59.1	Primary
Patrick 2021	Pennsylvania, USA	AH-TECAB	concomitant procedures	DuVinci	Retrospective	2014-2018	1195 (918M, 277F)	64.7	Primary
RAMVR									
Baraz 2002	Tel Aviv, Israel	RAMVR	re-operative, concurrent coronary surgery, aortic procedures, emergency cases	DuVinci	Retrospective	2011-2019	133 (102M, 31F)	58	Secondary
Chitwood 2005	USA - Carolina	RAMVR	None	DuVinci	Retrospective	2000-2004	100	57	Secondary
James 2005	USA - Lincoln	RAMVR	concomitant severe coronary artery occlusion, hemodynamic instability, LVEF < 0.30	DuVinci	Retrospective	2003-2004	32 (12M, 20F)	67.6	Secondary
Charland 2011	USA - Carolina	RAMVR	None	DuVinci	Retrospective	2000-2009	500	-	Primary
Yaffe, 2014	USA - NYC	RAMVR	Concomitant procedures	DuVinci	prospective	-	92 (23M, 69F)	56	Primary
Goodman 2017	USA - Cleveland	RAMVR	concomitant procedures (except - subaortic closure of a patent foramen ovale - pulmonary vein isolation for atrial fibrillation)	DuVinci	Retrospective	2006-2011	498 (378M, 120F)	57	Primary
RA-ASD									
Kasravi 2018	Finland	RAMVR	Significant aortic, iliac, or femoral artery calcification Dry femoral vessels LV dysfunction Pulmonary artery pressure>70 mm Hg severe RV dysfunction Diameter of the ascending aorta>40 mm Significant mitral annular calcification Moderate or severe aortic regurgitation Hypertrophic and/or aortic stenosis Morbidity obesity previous thoracic trauma, lung surgery, pleuritis Significant coronary stenosis, COPD	DuVinci	Retrospective				
Kakuta 2020	Japan	RAMVR	Concomitant procedures	DuVinci	Retrospective				
Gulu et al., 2021	Turkey	RAMVR	Concomitant procedures	DuVinci	Retrospective				
RA-ASD									
Bonares 2008	Austria	TR-ASD repair (AH)	single-lung ventilation, intolerable peripheral CPB	DuVinci	Retrospective				
Hone 2012	India - New Delhi	TR-ASD repair (AH)	Serum Bilirubin > 2mg, Serum Creatinine > 1.8 mg Previous right thoracotomy Presence of LVNC Dense pleural adhesions Bleeding diatheses Abnormal anatomy/pathology of femoral vessels/IVC drainage Preexisting neurological deficit	DuVinci	Retrospective				
Xiao 2014	China-Beijing	RA-ASD	single-lung ventilation, intolerable peripheral CPB	DuVinci	Retrospective				

RA-CABG: robotic-assisted coronary artery bypass graft, **RAMVR:** Robotic-assisted mitral valve repair, **RA-ASD:** robotic assisted atrial septal defect repair, **BH:** beating heart, **AH:** arrested heart
TECAB: total endoscopic coronary artery bypass, **MIDCAB:** minimal invasive direct coronary artery bypass, **LSVC:** left superior vena cava, **IVC:** inferior vena cava, **LVEF:** left ventricular ejection fraction, **PCI:** percutaneous coronary intervention, **CPB:** cardiopulmonary bypass

A67

Cardiac Enhanced Recovery After Surgery: Impact on quality of life and surgical satisfaction
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Objectives: The cardiac Enhanced Recovery After Surgery (ERAS) protocol can decrease length of hospital stay and incidence of complications. However, its impact on patient reported outcome measures is poorly understood. We assess the impact of cardiac ERAS on quality of life (QOL) and surgical satisfaction.

Methods: We carried out a single-centre study. Participants completed a survey pre-operatively, at 6 weeks and 6 months post-operatively.

Primary outcomes were 1) QOL assessed using PROMIS Scale v1.2–Global health and 2) surgical satisfaction assessed using Surgical Satisfaction Questionnaire (SSQ-8). Secondary outcomes were post-operative 1) independence with activities of daily living; 2) pain scores compared to expectations; 3) symptom burden; and 4) exercise tolerance. The cardiac ERAS protocol was implemented and regularly audited to ensure compliance > 70%.

Results: 191 patients were recruited to the study. Physical health scores significantly improved at 6 months compared to baseline (47.7 vs. 50.8, $p=0.02$). There was no significant change in mental health scores ($p=0.06$). Surgical satisfaction was highest for in-hospital pain control (71.7% very satisfied) and overall outcome of surgery (70.5% very satisfied). Patients significantly overestimated pain scores in the first post-operative week: expectation 7 (5–8) vs. reality 6 (4–8) ($p<0.01$). Exercise tolerance improved from 2 flights of stairs pre-operatively to 4 flights of stairs at 6 months post-operatively ($p<0.01$).

Conclusion: Cardiac surgery with the cardiac ERAS protocol is associated with significant benefits to physical health scores and exercise tolerance. Multi-modal, opioid-sparing analgesia provides significantly lower pain scores compared to expectations and lead to high post-operative surgical satisfaction.

A68

Patients' experience with Enhanced Recovery After Cardiac Surgery (ERAS)

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A68

Objectives: The cardiac Enhanced Recovery After Surgery (ERAS) protocol can decrease length of hospital stay and incidence of complications. Less known, is its impact on patients' experience undergoing cardiac surgery. We set out to assess patients' peri-operative experience with the cardiac ERAS protocol.

Methods: Single-centre, prospective study on 191 consecutive patients undergoing cardiac surgery. The cardiac ERAS protocol was implemented peri-operatively. Patients were administered questionnaires pre-operatively, at 6 weeks and 6 months post-operatively, assessing pre-operative concerns, education and prehabilitation, sources of information, recovery, and surgical satisfaction.

Results: Patients were most concerned about pain, followed by infection, stroke, recovery, burden on family and mortality. Patients' median estimations for peri-operative risk were: mortality 3%, heart attack 5%, stroke 5%, wound infection 10% and bleeding 5%. Pre-operative understanding was lowest for levels and duration of post-operative pain. Discussions with the surgical team were the most useful source of education. There was low usage of online resources. From pre-assessment clinic to surgery, alcohol consumption ($p<0.01$) and cigarette consumption ($p<0.01$) significantly decreased. For prehabilitation, 48.8% improved their diet; 31.7% lost weight; 18.3% saw a clinician for medical comorbidities and 17.1% underwent controlled aerobic exercise. Patients under-estimated when they would use the bathroom unaided ($p<0.01$), mobilise independently ($p<0.01$) and return to work ($p<0.01$), but had better understanding for return to normal ($p=0.09$), moderate ($p=0.50$) and vigorous ($p=0.77$) physical activity.

Conclusion: The cardiac ERAS protocol provides effective prehabilitation and education for surgery. To reduce peri-operative stress, patients can be better educated about risks, post-operative pain and recovery.

A69

Post-cardiac surgery hyponatraemia and patient outcomes: a retrospective cohort study in a quaternary centre

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Objectives: Postoperative hyponatraemia is common after cardiac surgery and has been linked to adverse patient outcomes. This study, to our knowledge the first of its kind in the UK, evaluates the relationship between post-cardiac surgery hyponatraemia and patient factors, intraoperative variables, and adverse postoperative outcomes in a quaternary cardiothoracic referral centre.

Methods: This retrospective cohort study included 416 patients from November 2020 to March 2021. Data on demographics, preoperative conditions, intraoperative variables, and postoperative outcomes were collected. ANOVA, t-tests, and Chi-squared analysis were used to explore associations with postoperative hyponatraemia.

Results: Postoperative hyponatraemia occurred in 53.4% of patients ($n=222$). Hyponatraemic patients were older (68.7 ± 10.5 vs. 65.8 ± 12.1 years, $p=0.01$) with higher Logistic EuroSCOREs (5.8% vs. 4.6%, $p=0.004$). Hyponatraemia was linked to longer hospital stays (9.1 vs. 7.0 days, $p<0.00001$) and higher complication rates (73.9% vs. 52.2%, $p<0.00001$; RR 1.42, 95% CI 1.21 to 1.66), particularly cardiac (35.1% vs. 23.9%, $p=0.014$; RR 1.46, 95% CI 1.07 to 2.01), wound-related (11.3% vs. 1.6%, $p<0.001$; RR 6.91, 95% CI 2.12 to 22.51), and other complications (65.8% vs. 22.8%, $p<0.00001$; RR 2.88, 95% CI 2.17 to 3.82). Subgroup analysis demonstrated associations between severity of postoperative hyponatraemia and patient demographics and adverse postoperative outcomes.

Conclusions: Post-cardiac surgery hyponatraemia is common and associated with adverse outcomes, such as prolonged hospital stays and increased complications. Monitoring sodium levels and proactively managing hyponatraemia, especially in older and higher-risk patients, may improve outcomes.

A70

Long-term outcomes of native infective endocarditis after surgery: A single-centre experience

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Objectives: Infective endocarditis, although rare, has a high morbidity and mortality rate. Limited data is available comparing long-term post-operative outcomes between aortic and mitral valve endocarditis. Hence, we aim to assess this in our cohort.

Method: Between April 2011 and April 2021, all adult patients, aged 18 and above, who had surgery for first-time isolated native aortic or mitral valve endocarditis were included. Patients were followed up till July 2024, with minimum 3 years follow-up.

Results: 94 patients were included in our study. Streptococcus was the most common bacteria species (39.4%) and was more common in the aortic than mitral group (44.8%vs30.6%). Conversely, staphylococci was more common in the mitral group (38.9%vs24.1%). The mitral valve group had a longer bypass time (110 ± 53 vs 93 ± 44 min, $p=0.040$) and cross clamp time (87 ± 39 vs 73 ± 37 min, $p=0.042$) than the aortic group. Post-operatively, there was no statistically significant

difference between the AV and MV group in the re-exploration rate (8.6%vs8.3%), new CVA (1.7%vs5.6%) or new dialysis (12.1%vs5.6%). Patients with AV and MV endocarditis had comparable in-hospital mortality (12.1 vs 8.3%; $p=0.56$) and 1 year post-surgery (15.5 vs 11.1%; $p=0.391$). Although the mortality rate for aortic valve endocarditis was higher at both 5 years (41.3 vs 25.0%; $p=0.14$) and 8 years (43.0% vs 33.0%; $p=0.34$) follow-up, it was not statistically significant.

Conclusion: Despite differences in the peri-operative variables, there was no significant difference in the short and long-term mortality rates after aortic and mitral valve endocarditis surgery.

A71

Impact of Postoperative Bleeding on Early and Late Kidney Function in Major Cardiac Surgery

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A71

Objectives: AKI is a known complication of cardiac surgery, with many established risk factors, such as age, cardiopulmonary bypass duration, or type of surgery. However, the impact of postoperative bleeding on kidney function is unclear. This study aims to assess whether the amount of postoperative bleeding has an influence on early and late renal function.

Methods: A retrospective analysis of 2107 adult patients undergoing cardiac surgery without re-exploration between 2015 and 2022 was conducted. Patients were grouped by chest drain output (lower and upper quartiles) and propensity matched to control for confounding factors (including preoperative eGFR). Pre- and postoperative median eGFR and creatinine levels over 30 months were compared. Statistical analysis was performed using the Linear mixed-effects model and the Shapiro-Wilk test.

Results: Preoperatively, the median eGFR in the upper and lower quartile groups were 68 and 77 respectively. Postoperative eGFR remained stable with a median of 70 in both groups with a small non significant dip to 68 in the lower quartile group.

Conclusions: The amount of postoperative bleeding did not result in statistically significant differences in postoperative kidney function between the groups. These findings suggest that bleeding may not be a major determinant of renal outcomes.

A72

Tricuspid Valve Repair and Permanent Pacemaker Implantation – James Cook University Teaching Hospital

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A72

Background: An international multicentre study published in NEJM evaluated outcomes of concomitant tricuspid valve repair during mitral valve surgery demonstrating that patients receiving concomitant procedures had significantly higher incidence of permanent pacemaker implantation than the single procedure group (14.1% vs 2.5%).

Objectives: Determine: the PPM implantation rate for these two groups; the degree of post-operative tricuspid regurgitation in each group; and long-term survival across the groups.

Methods: A systematic review of prospectively collected data identified the patients. Their clinical records were evaluated to determine PPM rate, degree of post operative tricuspid regurgitation and survival.

Results: Our search found 82 patients, with 67 patients receiving concomitant procedures, of which 63 patients had tricuspid repair and 15 patients isolated mitral intervention.

Incidence of PPM implantation in the concomitant procedure group was higher (3/63 [4.76%]) than the mitral procedure only group (0/15

[0%]). However, this was 66.2% lower than in the published study, and all patients with PPM were operated on by one individual.

Postoperative tricuspid regurgitation was significantly better in the concomitant repair group when compared to the mitral only group (4.3% vs 60% moderate-severe).

Survival at ten years was better in the single procedure group (83% vs 63%).

Conclusion: Concomitant tricuspid valve repair reduces the severity of post-operative tricuspid regurgitation more than isolated mitral valve surgery, but has an increased risk of permanent pacemaker implantation and poorer long-term survival. The PPM rate may be much lower than other studies suggest.

A73

Emotional and Psychological Well-Being of Cardiothoracic Surgeons After Surgical Complications

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A73

Introduction: Cardiothoracic surgeons experience intense psychological pressures, exacerbated by severe surgical complications including major bleeding and death. We aim to understand the emotional impact of surgical complications in Cardiothoracic Surgery.

Method: A 25-question, web-based survey was distributed to all Society for Cardiothoracic Surgery members in Great Britain & Ireland.

Results: A total number of 22 surgeons completed the survey. Most respondents were experienced surgeons (45.5% with over 20 years of practice), who perform an average of 101–200 surgeries annually. All participants experienced major intraoperative and postoperative complications, including patient fatalities (86.4%), and frequently described emotional responses of stress (72.7%), anxiety (72.7%), guilt (50%), and helplessness (50%).

For many, emotional recovery from complications was protracted, with 45.5% taking over a week to return to stability. Despite these challenges, formal psychological support was rarely accessed; only one participant had sought counselling, although 95.5% expressed a need for accessible, confidential psychotherapy. Limited workplace support was identified as a critical gap, with only 13.6% of institutions offering formal mental health services, and stigma around mental health adding to the barriers for surgeons.

Conclusion: This study underscores a compelling demand for psychotherapy and structured emotional support tailored to surgical professionals, as nearly 60% of respondents viewed psychotherapy as beneficial for coping and resilience. Addressing the unmet needs of cardiothoracic surgeons through confidential, peer-inclusive mental health services has the potential to improve surgeons' well-being, mitigate the cumulative emotional strain of complications, and ultimately enhance patient care outcomes.

A74

Role of perioperative corticosteroids in adult cardiac surgery: a Cochrane systematic review

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Background: Corticosteroids are a cost-effective class of drugs whose anti-inflammatory action found widespread adoption in clinical

practice. Their potential role in mitigating the systemic inflammatory response that can follow cardiac surgery, has been extensively investigated, producing multiple reports with conflicting results.

Methods: With the support of the SCTS we performed a Cochrane systematic review and metaanalysis of randomised controlled trials assessing the role of prophylactic corticosteroids in adults undergoing cardiac surgery.

Results: Seventy-two studies were included, for a total of 16,962 participants. Most (89%) of the trials were conducted in low-risk settings, such as elective coronary artery bypass grafting and valve surgery operations. Compared to placebo or no treatment, the use of perioperative corticosteroids could produce little to no difference in mortality: risk ratio (RR) 0.90, 95% confidence interval (CI) 0.75 to 1.07. The risk of myocardial complications may be reduced (RR 1.16, 95% CI 1.04 to 1.31), while the risk of pulmonary complications may increase (RR 0.88, 0.78 to 0.99). Among the secondary outcomes, the risk of infectious complications could be lower with corticosteroids (RR 0.84, 95% CI 0.76 to 0.92), while little to no effect could result on gastrointestinal complications and renal failure.

Conclusion: A perioperative treatment with prophylactic corticosteroids undergoing adult cardiac surgery could produce opposing effects in terms of organ protection, and result in no clear reduction in mortality. Nonetheless, valuable clinical benefits, albeit of small magnitude, could be appreciated in some outcomes, and the role of these drugs should be explored in specific cohorts.

A75

Single mediastinal or multiple mediastinal-pleural drains in Coronary Artery Bypass Grafting?: A Retrospective Cohort Study

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Introduction: Postoperative drainage is a critical intervention following coronary artery bypass grafting (CABG) to mitigate pericardial effusion leading to cardiac tamponade and pleural effusion. Although the number of drains used varies according to patient factors, surgeon's preference and surgical technique; the impact of drain number on clinical outcomes and cost-effectiveness remains inadequately explored. This study aims to assess the association between the number of mediastinal-pleural drains with postoperative outcomes.

Methods: A retrospective analysis was conducted on 340 patients who underwent isolated CABG from 2022 to 2024 comparing one mediastinal drain (n=37) to multiple mediastinal-pleural drains (n=303). Primary outcomes included rates of re-operation for bleeding and cardiac tamponade, pleural effusion requiring drainage, length of hospital stay (LOS) and re-admission.

Results: Exclusively patients with multiple drains had incidence of re-operations (3.3%, n=10 Vs 0%, n=0) due to bleeding or tamponade. The incidence of pericardial effusion (1.32%, n=4) reported only in the same group. Pleural effusion requiring drainage was slightly higher in one mediastinal drain group (8.1%, n=3) compared to the multiple drain group (4.95%, n=15). The average LOS was longer in patients with multiple drains (7.87 days) compared to those with mediastinal only drain (6.4 days).

Conclusion: Single mediastinal drain group had fewer acute emergency related events and comparable outcome, leading to challenge clinical concern of multiple drains. Larger, prospective studies are warranted to further elucidate the impact of mediastinal drain number on CABG outcomes, which could ultimately inform postoperative management strategies, optimise patient recovery trajectories and cost effectiveness.

A76

Shifting the Focus in Cardiac Surgery Fluid Management for Better Recovery Outcomes—A Comprehensive Review

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Objectives: Fluid replacement strategies after cardiac surgery are vital, yet most studies focus solely on mortality, potentially overlooking key outcomes such as postoperative atrial fibrillation (POAF), ICU stay duration, renal function, and diuretic prescriptions. These factors may better reflect recovery and inform fluid management. This review evaluates current research on colloid and crystalloid strategies, emphasising whether outcomes like POAF, renal function, and diuretic use are adequately considered.

Methods: A qualitative systematic review of PubMed, Medline, and Google Scholar was done, from inception to date to synthesise findings on the postoperative fluid management of patients undergoing cardiac surgery.

Results: This review found mixed efficacy of colloid versus crystalloid solutions post-cardiac surgery. Colloids, particularly albumin, show advantages in fluid balance, vasopressor reduction, and shorter ICU stays, but carry a higher risk of acute kidney injury (AKI), especially with synthetic colloids like hydroxyethyl starch (HES). Crystalloids are less associated with renal complications, yet contribute to increased fluid retention and longer hospital stays. Few studies, however, report on the incidence of POAF or diuretic prescription needs, limiting the understanding of fluid strategies on these relevant postoperative outcomes.

Conclusions: Mortality alone may be an insufficient measure for evaluating fluid replacement strategies after cardiac surgery. Expanding outcome measures to include POAF, diuretic requirements, and renal function could yield more actionable insights, guiding more tailored and potentially safer fluid management protocols. Further research is warranted to assess these outcomes and establish more holistic, patient-centred standards in postoperative care.

A77

Surgical Repair of Post-Infarction Ventricular Septal Defects: A Regional Experience Across Three Yorkshire Cardiac Centres

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Aim: This retrospective study evaluates the outcomes of surgical repair for ischemic ventricular septal defects (VSDs) across three cardiac centres in Yorkshire. The study also examines whether concomitant CABG affects survival following VSD repair.

Method: A retrospective analysis was conducted on patients who underwent surgical repair of ischemic VSDs over the past decade across three centres. Data were analysed using IBM SPSS Statistics 27.

Results: 84 patients underwent VSD repair, with 63% (53 patients) male and 37% (31 patients) female. The mean age was 66 years (range: 46–86 years). The mean time of presentation to surgery was 6 days (range: 0–37 days). Patients who survived had a mean pre-operative stay of 10 days, whereas non-survivors had shorter pre-operative stay, averaging 2.7 days ($p < 0.001$). Intra-aortic balloon pump (IABP) used in 62% (52 patients); however, no survival benefit was associated with IABP use ($p = 0.85$). Half of patients underwent VSD repair with a patch, while the other half received concomitant CABG and patch repair. Survival was higher in the group receiving CABG alongside VSD repair. Overall, in-hospital mortality following VSD repair was 42%, with 45% in the patch-only group compared to 38% in the patch with CABG group ($p = 0.01$).

Conclusions: Surgical repair of post-infarction VSD is associated with high in-hospital mortality. Concomitant CABG during VSD repair may offer a survival benefit, though further analysis is required. Timing of surgery appears to be a critical factor for survival, while IABP use was not associated to improved outcomes.

A78

Using cardiopulmonary bypass to support resection of inferior vena cava tumours improves outcomes – A case series

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Objectives: Renal cancers have increased by 88% since the 1990s. Over 90% of renal cancers are renal cell carcinomas (RCC). 5–15% of RCCs have tumour/thrombus extension into the vena cava with 1% reaching the right heart. Where extension is close to, or beyond, the cavoatrial junction resection may require cardiopulmonary bypass (CPB) to access the tumour from the atrium although techniques utilising liver mobilisation have been increasingly adopted. This study aims to assess outcomes for use of CPB in this setting and how these might compare to other approaches.

Methods: This study took the form of a single centre retrospective case series. A registry search was performed on all patients undergoing nephrectomy with CPB support from 1st January 2010 to 31st December 2022 and their notes and outcomes were reviewed.

Results: 16 patients were included for study. 100% of patients were alive at discharge with an average hospital stay of 9.4 days and ICU stay of 2.7 days. 1 patient required reoperation for bleeding, 1 patient required post-operative haemodialysis. No other significant complication (Clavien Dindo ≥ 2) was encountered. 8 patients had died by the time of study with average life expectancy of 588.63 days and relating to metastatic disease in 7 of these.

Conclusions: As one of the largest case series' of its kind, these results demonstrate a satisfactory safety profile for this approach and, in this case series, complications were less frequent than reported with the transplant-based approach. It should still be considered where IVC involvement is significant.

A79

Results from the Phase II of RECAP (Rehabilitation through Exercise Prescription for Cardiac patients using an Artificial Intelligence based Programme) Trial: A Feasibility RCT

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Objectives: This RCT aimed to evaluate the efficacy of an AI-enabled, home-based cardiac rehabilitation (CR) program and to assess the feasibility of conducting a clinical effectiveness trial comparing AI-assisted rehabilitation with standard face-to-face rehabilitation.

Methods: 51 participants (post-ACS or cardiac surgery) were randomly assigned in a 1:1 ratio to either the intervention group (AI-enabled home-based rehabilitation) or the control group (standard on-site rehabilitation). Efficacy was measured by the change in the six-minute walk distance (6MWD) from baseline, while feasibility was evaluated based on predefined criteria including patient recruitment, randomization, retention, adherence, and trial delivery, supplemented by qualitative interviews.

Results: The percentage increase in 6MWD from baseline to follow-up was 17% for the control group and 11% for the intervention group. The intervention group had a higher baseline 6MWD (416 m vs 381 m), while the control group had a higher dropout rate (23% vs 4%). All five feasibility criteria were met. Five participants declined participation the trial, preferring a fully remote program. Recruitment,

randomization, and retention rates were 85%, 100%, and 86%, respectively. The intervention effectively improved physical activity from baseline, with the mean step count increasing from 43,731 in week 1 to 50,465 in week 8. The highest mean step count (52,517) was recorded in week 3. All 25 participants in the intervention group used the app over four days a week on average. Qualitative interviews revealed a positive reception.

Conclusions: An AI-enabled, home-based CR program increases physical activity during an 8-week training program. A definitive RCT to further investigate its effectiveness is feasible.

A80

Optimizing Post-Operative Follow-Up Practices to Enhance Resource Efficiency in Cardiac Surgery Patients

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Background: The COVID-19 pandemic catalyzed the shift towards telephone-based follow-up consultations for post-operative care, a practice that has been retained for selected patient cohorts. However, duplicate clinic bookings for follow-up have been observed, leading to resource strain and potential delays in care. This audit evaluates the current follow-up practices in cardiac surgery patients to identify opportunities for improved resource use, aligned with the NHS's Net Zero 2040 emission targets.

Objectives: The audit aimed to reduce duplicate appointments and standardize follow-up by implementing criteria to assign patients to either virtual or face-to-face consultations based on recovery status. The objective was to ensure sustainable, patient-centered follow-up models while minimizing unnecessary appointments.

Methods: In the first cycle, electronic patient records for 273 cardiac surgery patients (CABG, valve, or combined procedures) were analyzed, revealing that 7.3% of patients had avoidable duplicate appointments. Following this, a criteria-based intervention was introduced. Patients with uncomplicated recoveries were scheduled for telephone follow-ups, while those with complications or prolonged stays were assigned in-person appointments. This protocol was integrated into electronic records and communicated to wards for consistency. A second audit cycle included 260 patients post-intervention.

Results: Post-intervention, duplicate appointments dropped to 0.7%, highlighting the effectiveness of standardized follow-up criteria in reducing unnecessary bookings and optimizing resources.

Conclusion: Standardizing follow-up pathways significantly improved resource efficiency and reduced avoidable appointments. This approach supports sustainable, patient-centered follow-up models and aligns with the NHS's environmental goals. Further cycles will assess the long-term impact and broader applicability of this protocol.

A81

West of Ireland's first minimally invasive valve programme

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Objectives: To evaluate the early experience of adopting a minimally invasive valve programme in the smallest cardiac unit in the British Isles. Recent studies have highlighted the utility of minimally invasive cardiac surgery and the excellent outcomes that can be achieved. Here we present the outcomes of the introduction of a minimally invasive cardiac surgery program in the west of Ireland and in the smallest cardiac unit in the British Isles.

Methods: The programme commenced in August 2019, data was obtained retrospectively from a prospectively maintained electronic database of all patients who underwent a minimally invasive cardiac procedure from August 2019 to September 2024.

Results: A total of 73 patients have undergone surgery under the supervision of a proctor, despite pausing during the COVID-19 pandemic. The age range of the patients was 33 to 86 years of age, with 37 female patients and 36 male patients. Successful outcomes include a 100% repair rate for 20 patients who underwent mitral valve repair for degenerative mitral valve disease as well as 5 patients who underwent tricuspid valve repair. 1.4% pacemaker insertion and 0% paravalvular leak rate among 34 Aortic Valve and 17 Mitral Valve replacements.

Conclusions: Blood transfusion, length of stay and post op complication rates were comparable to contemporaneous open procedures in the unit demonstrating how, under correct proctorship, a minimally invasive programme can be started in any or all cardiac surgery units.

A82

A Novel Sternal Closure Technique in Cardiac Surgery: Polyethylene Suture Tapes vs Steel Wires for Enhanced Outcomes and Patient Recovery

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Objectives: Steel wires are often inadequate for sternal closure for patients at high risk of sternal complications. This study compares a novel sternal closure system to conventional steel wires to assess its potential to reduce sternal complication rates and improve clinical outcomes.

Methods: A retrospective study was conducted on 300 consecutive patients undergoing cardiac surgery via median sternotomy. 150 patients underwent steel wire sternal closure, while 150 underwent suture tape closure. Preoperative, intraoperative, and postoperative data were collected and analyzed for both groups.

Results: Rates of sternal wound infections (1% vs 5%, $p=0.04$) and sternal dehiscence (0% vs 5%, $p=0.03$) were lower in the suture tape group. Suture tape patients had significantly less pain at 14 and 30 days ($p<0.001$ and 0.007). The requirement for sternal protection adjuncts was eliminated with suture tape closure. Sternal closure time was significantly shorter in the suture tape group (11 vs 19 min, $p<0.001$).

Conclusions: Suture tapes proved safe, feasible, and effective for sternal closure. They demonstrated significant advantages for sternal closure over steel wires, with reduced rates of sternal dehiscence, infection, postoperative incisional pain, and closure time. These superior outcomes and the elimination of sternal protection adjuncts can potentially reduce healthcare costs. Our experiences suggest that this novel sternal closure system has significant potential, particularly for high-risk patients prone to sternal complications. Larger prospective studies with longer follow-ups are warranted to optimize sternal closure strategies and improve patient outcomes.

A83

Bone Cement Embolization into Right Heart—An Unusual Case of Right Heart Failure*

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We present a case of a 75-year-old Asian female patient with symptoms and signs of right heart failure. She underwent multiple orthopaedic procedures including bilateral total knee replacements and

right shoulder replacement for arthritis two years before developing heart failure symptoms. She also underwent vertebroplasty for vertebral compression fractures secondary to severe osteoporosis. She started noticing heart failure symptoms once she started mobilizing well. The onset of symptoms, predominantly dyspnoea, was insidious and rapidly progressed to NYHA class IV which led to a cardiology referral and a full workup.

Chest X Ray showed radio-opaque shadows in the cardiac silhouette. CT showed bone cement material in the right heart, tricuspid valve, and right upper lobe pulmonary artery. Echocardiogram demonstrated severe tricuspid regurgitation with non-coapting leaflets along with echo-dense material dispersed along the septal leaflet area.

Patient underwent TVR. Intraoperative findings include bone cement deposits in RA, RV, and isolated bone cement deposits in the septal leaflet, which restrict movement. Deposits were also noted along the free edge. The tricuspid valve was excised and cleared of all the bone cement deposits, and it was replaced with a 29 mm Hancock biological valve. At the same time, an epicardial permanent pacemaker was inserted.

Iatrogenic bone cement embolization to right heart and pulmonary vascular bed is a known complication reported in the literature but our case is very unique where the bone cement deposits caused severe tricuspid incompetence by restricting the leaflet motion and failure of coaptation. Patient made an excellent recovery following surgery.

*The patient has confirmed explicit consent to be in the Journal.

A84

A case series of Cardiac Myxomas and Autologous Blood Donation

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Objectives: Cardiac myxomas have diverse presentations ranging from heart failure and influenza-like symptoms to stroke and sudden death, with an estimated incidence of 0.03%. We review a series of cardiac myxoma cases from a single center in the UK.

Methods: 38 patients that underwent surgical resection of cardiac myxoma in a 10-year period between 2014 and 2024, accounting for 0.6% of all cardiac cases. Data was collected retrospectively from the cardiothoracic surgical database and crosschecked with the blood bank.

Results: 31.58% of myxoma cases were elective, 57.89% urgent, 7.89% emergencies of which 2.63% were salvage. 32 (84.21%) were resection of cardiac myxoma only, 5 (13.16%) with coronary artery bypass grafting (CABG) and one case included wedge resection of lung lesion. 7(18.42%) were done with autologous blood donation (ABD). Patients who received ABD did not require any blood product transfusion, 38.71% of non-ABD patients required blood products of which 35.48% required red blood cells (RBC). Average cardiopulmonary bypass (CPB) time was 106.63 min and length of stay (LOS) post-operatively was 7.39 days. 21.05% had cardiac complications, 75% being atrial fibrillation and 7.89% had pulmonary complications with 0% needing hemofiltration.

Conclusions: Cardiac myxomas are rare tumors with sub-acute and acute presentations including flash pulmonary oedema and cardiac arrest. Incidence is more than that quoted in literature. Despite cardiac myxoma patients needing emergency surgery and often being unstable, our study demonstrates ABD is safe in this patient cohort and can substantially reduce the need for homologous blood and products.

A85**Short-term Permanent Pacemaker and Implantable Cardioverter Defibrillator Implantation Rates following Septal Myectomy for Obstructive Hypertrophic Cardiomyopathy**

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Background: Patients with hypertrophic cardiomyopathy often experience debilitating symptoms due to dynamic left ventricular outflow tract obstruction (HOCM). Obstruction can be relieved surgically by septal myectomy (SM), but this can cause conduction abnormalities necessitating permanent pacemaker (PPM) or implantable defibrillator (ICD) insertion. Left bundle branch block (LBBB) is common (40%), whereas complete heart block (CHB) is rare (< 2%).

Aim: This study evaluated PPM and ICD insertion rates during the postoperative hospital stay and at 12-months post-SM.

Methods: A retrospective review was conducted on 218 HOCM patients who underwent SM by a single surgeon at St. Bartholomew Hospital from September 2016 to October 2023. Clinical data was obtained from the institutional surgical database and electronic medical records. Patients operated on from October 2022 onwards (n=36) were excluded from the 12-month analysis and 34 patients were lost to follow-up, leaving 148 patients in the 12-month follow-up analysis cohort.

Results: Postoperatively, 10 patients required PPM insertion – 9 for CHB and 1 for sick sinus syndrome—while 1 patient had an ICD procedure for primary prevention. At 12-months, PPM insertion was necessary in 2 patients (1.4%) for CHB or LBBB. ICD implantation was performed in 4 patients for non-sustained ventricular tachycardia (n=2), primary prevention or replacement of their PPM.

Conclusion: When SM is performed at experienced centres there is a low rate of PPM and ICD implantation postoperatively (4.6% and 0.9%) and at 12-months follow up (1.4% and 2.7%), respectively.

A86**A Rare Presentation of a Papillary Fibroelastoma on Coumadin Ridge Repaired Through a Minimally Invasive Approach***

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Introduction: Papillary fibroelastomas (PFs) are rare cardiac tumours often located on the aortic or mitral valves. PFs on the Coumadin Ridge (CR) are exceedingly rare, with only seven previously documented cases. We present a case highlighting the diagnostic and therapeutic challenges posed by this unique tumour location.

Case: A 79-year-old male with newly diagnosed AF underwent direct current cardioversion (DCCV), which initially succeeded but recurred. Transoesophageal echocardiography (TOE) identified a small mass at the left atrial appendage (LAA), initially diagnosed as thrombus, leading to anticoagulation therapy. A repeat TOE revealed a mobile mass on the CR with finger-like projections, raising suspicion of a PF. The patient underwent minimally invasive resection via mini-thoracotomy, combined with a Maze-IV procedure and left atrial appendage occlusion (LAAO). Histology confirmed a PF, and the patient had an uneventful recovery, being discharged on postoperative day five.

Discussion: PFs on the CR are rare, with few documented cases. This tumour location can accentuate AF symptoms and may reduce response to rhythm control strategies. Surgical resection, especially via minimally invasive techniques, has shown favourable outcomes for PFs on CR. This case also demonstrates the diagnostic complexity, as PFs can be misidentified as thrombi, highlighting the need for careful evaluation.

Conclusion: This case underscores the importance of considering PFs in patients with recurrent or refractory AF, particularly when

echocardiography reveals a speckled mass on CR. Minimally invasive surgical resection with Maze-IV is an effective approach, combining AF management with tumour excision, and represents a viable option for similar cases.

*The patient has confirmed explicit consent to be in the Journal.

A87**Post-operative Atrial Fibrillation Rates in Septal Myectomy Surgery**

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Background: Patients with hypertrophic cardiomyopathy frequently experience debilitating symptoms due to left ventricular outflow tract obstruction (HOCM). Obstruction can be relieved surgically by septal myectomy with adjunctive procedures. Postoperative atrial fibrillation (POAF) is a common complication, occurring in approximately 30% of cases, peak incidence between postoperative days two to four. POAF independently predicts adverse outcomes such as stroke.

Aim: This study sought to evaluate the impact of amiodarone and left atrial appendage occlusion (LAAO) on POAF incidence.

Methods: A retrospective review was conducted on 218 HOCM patients who underwent septal myectomy by one surgeon at St. Bartholomew Hospital from September 2016 to October 2023. Clinical data was obtained from the institutional surgical database and electronic medical records. Patients with pre-op atrial fibrillation (n=44) were excluded. The remaining patients were categorised as follows: 56 patients received no LAAO nor amiodarone (Group A), 6 were given only amiodarone (Group B), 70 had LAAO only (Group C), and 41 received both treatments (Group D).

Results: POAF occurred in 57 patients. The rate of POAF was 28.6% in Group A, 16.7% in Group B, 37.1% in Group C, and 34.1% in Group D. Compared to Group A, POAF incidence decreased by 11.9% in Group B but increased by 8.6% and 5.6% in group C and D, respectively.

Conclusion: The higher POAF incidence in LAAO patients may be due to trauma-induced inflammation. Amiodarone decreases POAF incidence. However, the effect of LAAO and amiodarone on the incidence of POAF is inconclusive and further research is warranted.

A88**Quadruple Valve Replacement: Defying the Odds – A Single-Centre Experience**

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Objective: Only 11 quadruple valve replacements (QVR) have been performed in the UK, with 85% of cardiac centers lacking experience in this complex operation. This study evaluated preoperative factors, postoperative outcomes, and long-term follow-up in patients undergoing QVR for carcinoid heart disease at our center.

Methods: Four patients, aged 61–67, with carcinoid heart disease underwent QVR in our unit. We conducted a retrospective review, assessing preoperative characteristics, risk scores (mean EUROSCORE 4.75; Logistic EUROSCORE 3.97), NYHA class, echocardiographic parameters, and perioperative metrics, including cross-clamp and cardiopulmonary bypass (CPB) times. Postoperative complications, ICU and hospital stays, and long-term follow-up (mean 58 months) were reviewed, focusing on reinterventions and prosthetic valve function.

Results: The average cross-clamp and CPB times were 178.5 and 208.5 min, respectively. NYHA class improved from a mean of 3.5 preoperatively to 1.5 postoperatively, indicating substantial functional enhancement. Prosthetic valve function was excellent, with only one patient requiring a valve-in-valve procedure for a pulmonary valve at

84 months. LV function remained stable or improved. ICU stays ranged from 2 to 29 days, and hospital stays from 9 to 56 days. None of the patients required a permanent pacemaker during follow-up.

Conclusions: QVR demonstrates significant functional improvements postoperatively for patients with complex carcinoid heart disease. The variability in recovery times highlights the importance of long-term follow-up to manage complications. These findings support QVR as a promising approach for improving outcomes in multi-valvular disease, with durable prosthetic function in a high-risk population.

A89

Combined Pulmonary and Tricuspid Valve Replacement for Carcinoid Heart Disease—High Stakes and Mixed Results

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Objectives: This study evaluates outcomes, complications, and survival in patients undergoing combined pulmonary and tricuspid valve replacements for carcinoid heart disease, a rare procedure in adult cardiac centers in the UK.

Methods: We conducted a retrospective analysis of 11 patients with a primary diagnosis of neuroendocrine tumor (NET). Data points included demographics, preoperative NYHA class, valve types used, intraoperative metrics (cross-clamp and CPB times and postoperative outcomes. Key clinical parameters such as LV and RV function, ICU and hospital stay, and follow-up durations were recorded. Mortality was categorized into early (within 30 days) and late (after follow-up) phases.

Results: Patients, aged 53–70, had a preoperative NYHA Class 4, improving postoperatively to Class 2.5. Average cross-clamp and CPB times were 91 and 121 min, respectively. CorKnot was used in 7 cases. The most common pulmonary and tricuspid valves were the 25 mm and 27 mm Edwards Perimount Magna Ease, respectively. Complications included bleeding (1 case), rhythm abnormalities (1 case), dialysis, and wound infections. Three patients died within 30 days, and 2 others during follow-up. Although 45% of the entire cohort died during follow up survivors have an excellent quality of life and none have required valve reintervention.

Conclusions: Combined pulmonary and tricuspid valve replacements showed high complication and mortality rates over time, with significant postoperative support required. Improved NYHA classification indicates functional benefit; however, effective risk management remains essential. Further research is recommended to optimize outcomes for high-risk patients.

A90

Influence of Preoperative Albumin on Mortality Following Surgery for Infective Endocarditis: A Systematic Review & Meta-analysis

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Objectives: Mortality rates for infective endocarditis (IE) remain high, ranging from 20–40% in one year, despite advances in diagnosis and treatment. The preoperative albumin level as a risk factor is often

overlooked. This study aims to review the association between pre-operative albumin levels and mortality in patients undergoing cardiac surgery for IE.

Methods: This review was registered with PROSPERO (CRD42023445338) and followed PRISMA guidelines. Databases such as PubMed, MEDLINE via Ovid, Embase, Scopus, Clinical.Gov, and Cochrane CENTRAL were searched. Inclusion criteria were studies on IE patients who underwent cardiac surgery with documented preoperative albumin levels. Exclusion criteria were review articles, animal studies, in-vitro research, and case reports. Data extraction was conducted independently by two authors, with discrepancies resolved by consensus. The quality of the included studies was assessed using the Newcastle–Ottawa Scale. A fixed-effect model was applied for meta-analysis using Review Manager 5.4.

Results: The analysis included studies with homogenous patient populations (I²=0%) and showed no publication bias (Egger's test, P=0.457). A significant difference was found in preoperative albumin levels between mortality and no-mortality groups (P<0.0001).

Conclusion: Low preoperative albumin levels are associated with increased mortality in IE patients undergoing surgery. Preoperative albumin is a valuable prognostic factor and should be incorporated into preoperative risk assessments to improve patient outcomes in IE.

A91

Preoperative Serum Albumin Level in Relation to Mortality and Organ Dysfunction in Infective Endocarditis in Patients Undergoing Cardiac Surgery

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A91

Objectives: Infective endocarditis (IE) carries a high mortality rate despite improvements in diagnostic and treatment strategies. Early surgical intervention has shown promise in improving patient prognosis. Albumin, comprising 60% of plasma proteins, is a marker not only for nutritional status but also for inflammation, renal dysfunction, and fluid imbalance. This study aims to investigate the relationship between preoperative albumin levels and surgical outcomes in IE patients.

Methods: A retrospective cohort study was conducted at a single centre over a 7.5-year period (June 2017 – March 2024), involving 481 consecutive IE patients. Patients were categorised into two groups: survivors (Group 1) and non-survivors (Group 2). Preoperative albumin levels were compared between groups, and outcomes were analysed using IBM SPSS 29.0, with chi-square and Fisher's exact tests for categorical variables and Mann–Whitney U tests for continuous variables.

Results: Overall mortality rate was 13.5%. Group 1 patients, compared to Group 2, had lower rates of re-exploration (7.9% vs. 16.9%, p<0.001) and lower renal failure requiring hemofiltration (13% vs. 43.1%, p<0.001), but comparable stroke rates (5.5% vs. 10.8%, p=0.104). Lower preoperative albumin was associated with in-hospital mortality (p<0.001), neurological dysfunction (p=0.035), and renal dysfunction (p<0.001), with no significant association with re-exploration (p=0.405).

Conclusion: IE mortality is associated with co-morbidities and prolonged operations. Low preoperative albumin levels indicate a higher risk of mortality, stroke, and renal failure, highlighting its potential for risk stratification in surgical candidates with IE.

A92

Acute Kidney Injury in Cardiac Surgery: Predictors and Outcomes

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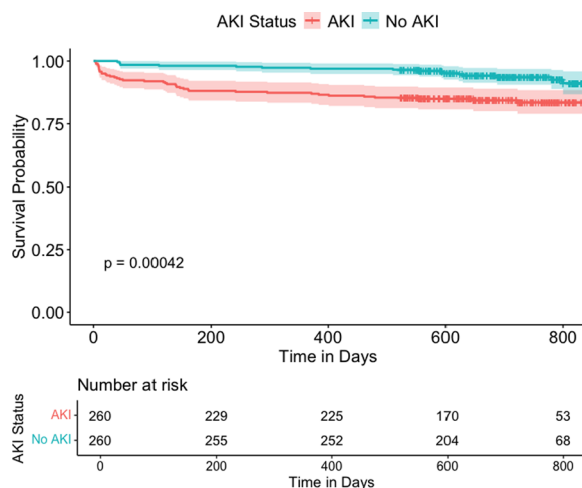
Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A92

Objective: To identify factors associated with acute kidney injury (AKI) following cardiac surgery and evaluate its impact on outcomes.

Methods: A retrospective analysis of 1,441 cardiac surgery patients over one year at a single centre was conducted. Predictors of AKI, defined by KDIGO criteria, were identified using multivariable logistic regression. Propensity score matching was used to compare 260 patients with AKI to 260 without.

Results: AKI was present in 18.0% of the patients (260/1441). Multivariable analysis identified several factors associated with patients who developed AKI. These include increasing age in years ($p < 0.006$), Euroscore II ($p < 0.001$), diabetes treated with insulin ($p = 0.014$), preoperative use of calcium channel blockers ($p = 0.026$), emergent surgery ($p = 0.046$), increasing number of red blood cell transfusions ($p = 0.044$), and increasing duration of cardiopulmonary bypass ($p < 0.001$). Factors associated with decreased risk of AKI included higher preoperative haemoglobin level ($p = 0.021$), preoperative beta blocker usage ($p = 0.011$) and inpatient-urgent priority of surgery ($p = 0.042$). In the propensity-matched cohort, patients with AKI had greater packed red blood cell transfusion requirement ($p = 0.006$), longer ICU stays ($p < 0.001$), longer hospital stays ($p < 0.001$), and worse survival (Figure 1, hazard ratio 2.66, $p < 0.05$) compared to patients without AKI.

Conclusions: AKI is common after cardiac surgery and is a predictor of inferior outcomes. Patients who develop AKI experience prolonged hospital and ICU stays and have reduced survival. This study highlights which patients are at high-risk, and who should be prioritised for pre-, intra- and post-operative reno-protective strategies that could improve survival following cardiac surgery.



A93

King's College Hospital's Cardiothoracic response to the Synovis Cyberattack: What have we learnt?

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A93

Objective: The 3rd of June 2024 ransomware attack on Synovis significantly disturbed the workflow of cardiac surgery in our institution, including but not limited to blood cross-matching facilities. We aim to analyse the clinical impact of the attack and recommend contingency planning for the future.

Methods: Retrospective review of a prospectively maintained institutional database was carried out. We compared all open cardiac procedures carried out in a 115-day period (07/06/2024 -30/09/2024) encompassing the Synovis attack, to the same period in 2023. All analyses were conducted using the Stata (StataCorp LLC, version 18, Tx, USA) software package.

Results: We performed 155 open procedures during the cyberattack in 2024, compared to 224 in 2023. 40 (26%) patients required post-operative blood transfusion in 2024. SpRs performed the same proportion of cases in both periods (44%, $p = 0.95$). Retrograde autologous priming was used in most patients. We altered our case-mix in response to reduced facilities for complex procedures, performing 70% isolated CABGs in 2024 vs. 50% in 2023. Median Euroscore II during the cyberattack was 0.88 (IQR 0.76–1.31) compared to 1.63 (IQR 1.13–2.58) the year prior ($p < 0.001$). There was no difference in the incidence of inpatient mortality ($p = 0.24$), renal replacement therapy ($p = 0.47$), return to theatre for bleeding ($p = 0.47$), or stroke ($p = 0.57$).

Conclusion: Our analysis demonstrates that digitalised medicine's susceptibility to cyberattack can be managed without jeopardising patient safety. We achieved this by altering the complexity of our case-mix accordingly without a significant difference in clinical outcomes, all while maintaining training initiative during a major crisis.

A94

Single Centre Experience of High-Risk Cardiac Surgery Patients: The Value of the 'Star Chamber'

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A94

Background: The value of pre-operative discussions for high-risk cardiac surgical patients is well established, with international guidelines advocating class I recommendations for Heart Team discussions. In our institution, high-risk surgical patients undergo multi-consultant review and operations if deemed for surgery, named 'Star Chamber' cases. This is in line with the recent change of cardiac surgery data reporting moving from individual to unit level outcomes in the UK by NICOR.

Objective: To evaluate patient outcomes since the inception of the Star Chamber in 2014 at our institution.

Methods: Retrospective data on patients undergoing surgery following Star Chamber discussion was analysed utilising electronic patient records and audit data. These were attended by a minimum of four consultants to discuss the patient's suitability for surgery, operative strategy, and consultant allocations to the case (minimum two).

Results: Fifty-six patients discussed by the Star Chamber underwent surgery over ten years. The median age at surgery was 68.5 years, with 62.9% male patients. A wide range of operations were performed, most of which were complex and multi-procedural (Table 1). Most cases were urgent (58.9%), had $< 50\%$ LVEF (51.8%), and a median EuroScore II of 14.65% (IQR, 3.68–26.02%). Outcome measures are summarised below (Table 1).

Conclusions: The utilisation of surgeon-based, multi-consultant Star Chamber discussions for high-risk cardiac cases aids decision-making in a difficult patient cohort, with acceptable morbidity and mortality outcomes. This council offers high-risk patients an opportunity to undergo surgery safely without individual surgeons taking on this risk, and instead pooling their expertise for improved outcomes.

RESULTS	NUMBER OF PATIENTS (N)	PERCENTAGE OF TOTAL (%)
Operation(s) Performed		
• CABG Only	7	12.5
• Valve Only	8	14.3
• CABG + Valve	11	19.6
• Other	30	53.6
Redo Surgery	15	26.8
Return To Theatre for Bleeding	5	8.9
Post-Operative Haemofiltration	21	37.5
Mechanical Circulatory Support	6	10.7
Mortality	18	33.3

Table 1: Outcome measures for patients discussed in the Star Chamber.

A95**Re-operative Cardiac Surgery in Adults with Trisomy 21: Long-Term Outcomes and Considerations**

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Introduction: Adults with Trisomy 21 generally have lower rates of re-operative cardiac surgery compared to the general adult population. This may be due to concerns about surgical risk and postoperative recovery. Limited data are available to guide clinicians in decision-making regarding reoperations in adults with Trisomy 21. This study aims to provide insights into the outcomes of these procedures in this patient group to support evidence-based decision-making.

Methodology: This was a single-centre, retrospective analysis conducted between 2012 and 2024. The study included patients over 18 who underwent re-operative cardiac surgery, excluding those undergoing primary surgeries. Data were analysed using SPSS v29. The outcome measures were mortality rates and survival.

Results: Five patients met the inclusion criteria, with a mean follow-up duration of 116 ± 28.6 months. The patient population was predominantly female (60%), with a mean age of 37.5 ± 3.5 years for males and 32.7 ± 4.7 years for females ($p=0.3$). The average EuroSCORE II was 2 ± 0.4 for males and 2.1 ± 0.0 for females ($p=0.7$). Pulmonary valve replacement was the most common re-operative procedure (60%). Postoperative recovery was favourable, with a mean intubation duration of 1.2 ± 0.8 days and a mean hospital stay of 7.8 ± 1.3 days. No mortality or major adverse cardiovascular events were reported during the follow-up period.

Conclusion: Although the sample size is small, this study suggests that re-operative cardiac surgery can be a viable option for selected adults with Trisomy 21, with low morbidity and no mortality observed.

A96**Patient Choice on Bioprosthetic Versus Mechanical Aortic Valve Replacement in Patients Under 50**Hiral Jhala¹, Mark Danton^{1,2}¹Department of Cardiac Surgery, Golden Jubilee National Hospital, Glasgow, United Kingdom. ²University of Glasgow, Glasgow, United Kingdom**Correspondence:** Hiral Jhala*Journal of Cardiothoracic Surgery* 2026, 21(Suppl 1): A96

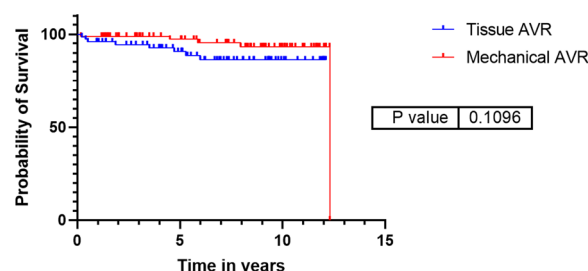
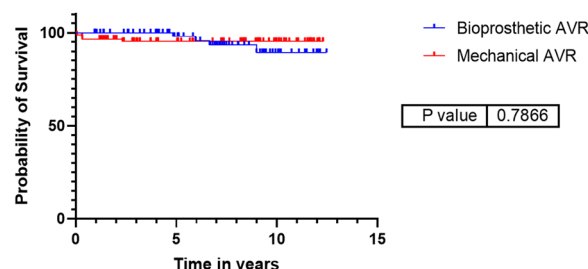
Background: The use of bioprosthetic aortic valve replacements (bAVR) is an option if warfarin is not desired or contraindicated in younger patients. Valve-in-valve transcatheter aortic valve implantation (TAVI) as a solution for valve degeneration, makes the use of biological valves an increasingly attractive option. We present an analysis

of prosthetic choice of bAVR versus mechanical aortic valve replacement (mAVR) in patients under 50 years.

Methods: We compared demographics, significant patient-prosthesis mismatch (PPM—defined as indexed-effective-orifice-area (iEOA) $< 0.85 \text{ cm}^2/\text{m}^2$), late overall survival (OS) and freedom from re-intervention (FFR) in patients younger than 50, undergoing first-time isolated AVR between 2012–2022.

Results: N = 160 AVRs (72 bAVR, 88 mAVR). Mean age 37.8 ± 9 (range 16–49 years). 113 males (70.4%), 47 females (29.4%). The proportion of bAVR vs mAVR was similarly distributed across the age groups, however younger females tended to prefer bAVR (73.3% of < 35 s vs 40.6% of ≥ 35 s). PPM ($n=28$, 17.5%) was more common with females (29.8% vs 12.4% males) ($p=0.01$), and with mAVR (23.9% vs 9.7% bAVR) ($p=0.02$). No in-hospital or 90-day mortality. 10-year OS was 86.1% vs 93.1% in bAVR vs mAVR respectively ($p=0.1$) (**Fig.1a**). 10-year FFR was 89.3% vs 95.2% in bAVR vs mAVR respectively ($p=0.8$) (**Fig.1b**). 4 patients in each group required prosthetic re-intervention all opting for surgical redo-AVR. Causes included for bAVR: degeneration ($n=4$); mAVR: degeneration ($n=1$), dehiscence ($n=2$) and endocarditis ($n=1$).

Conclusion: Patients under 50 years are receiving similar proportions of bAVR vs mAVR with comparable survival and FFR at 10 years. bAVR were less susceptible to PPM.

Overall survival**Freedom From Re-intervention (FFR)****A97****A Systematic Review Comparing Interleukin-6 Levels and Post-Operative Complications Following Conventional vs Minimised Cardiopulmonary Bypass in Adult Patients Undergoing Cardiac Surgery**Zuzanna Aleksandra Sypula¹, Anushka Haresh Lakhani¹, Eduardo Urgesi², Cristina Revilla Martin², Wael Ibrahim Awad^{2,3}¹Barts and the London Medical School, London, United Kingdom. ²Barts Heart Centre, St. Bartholomew's Hospital, London, United Kingdom.³William Harvey Research Institute, Queen Mary University of London, London, United Kingdom**Correspondence:** Zuzanna Aleksandra Sypula*Journal of Cardiothoracic Surgery* 2026, 21(Suppl 1): A97

Objectives: Cardiopulmonary bypass (CPB) induces systemic inflammation, often causing a cytokine storm with elevated IL-6 levels. Minimised CPB (MCPB) reduces this inflammation compared to

conventional CPB (CCPB), limiting blood exposure to foreign surfaces, haemodilution, complement activation. This review compares perioperative IL-6 levels as a potential marker of postoperative complications in cardiac surgery with MCPB versus CCPB.

Methods: A systematic review of 16 randomised controlled trials involving adults undergoing any cardiac surgery was conducted by searching relevant databases. The primary outcome was IL-6 levels from baseline and up to 48 h post operatively. Secondary outcomes included ventilation time, ICU/hospital stay length, need for blood transfusions, new-onset postoperative atrial fibrillation (AF), in-hospital mortality.

Results: Data from 978 individuals (484 CCPB, 494 MCPB) showed similar mean bypass time, cross-clamp time, and baseline characteristics across the two groups. MCPB resulted in lower IL-6 levels immediately post-surgery (138.46 vs 184.93 pg/ml, $p=0.006$) with levels tantamount beyond 24 h. MCPB vs CCPB patients had shorter ICU (26.99 vs 51.24 h, $p<0.001$), hospital stay (9.02 vs 10.2 days, $p<0.001$) and received fewer blood transfusions (1.57 vs 2.16 units, $p<0.001$), respectively. There were no significant differences in ventilation time (9.66 vs 14.09 h, $p=0.1088$), new-onset AF (19/133 (14.3%) vs 28/123 (22.8%), $p=0.1503$), or in-hospital mortality (7/324 (2.2%) vs 7/305 (3.4%), $p=0.9150$), with MCPB vs CCPB, respectively.

Conclusions: MCPB is associated with lower early IL-6 levels, shorter ICU/hospital stays, reduced blood transfusions, suggesting that a reduced inflammatory response may improve post-operative outcomes in cardiac surgery.

A98

Moderate To High Dose Beta Blockade To Reduce The Incidence Of Post Cardiac Surgery Atrial Fibrillation: Single Centre Experience

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A98

Background: Postoperative Atrial Fibrillation (POAF) is a common complication after cardiac surgery with a reported incidence of up to 40%. POAF is associated with significantly increased postoperative hospital stay, stroke, MI, HF and reduced long-term survival. We've compared the incidence of POAF in a group of patients who received moderate to high postoperative doses of Bisoprolol twice a day (Mod/High-Bis. group) to the routine small single dose (No/Low-Bis. group).

Methods: Data of patients who underwent isolated CABG over a period of 2 years (2022 and 2023) were collected and analysed. Mod/High-Bis. group included 185 patients compared to 360 patients who received no or low dose of Bisoprolol postoperatively (total cohort of 545 patients).

Results: Patients' characteristics of both groups were comparable (Table 1). There was significantly reduced incidence of POAF in the Mod/High-Bis. group (7%) compared to No/Low-Bis group (16%). Univariate analysis revealed that Bisoprolol dose was an independent predictor of POAF with a p -value of 0.05. The in-hospital mortality of Mod/High-Bis. group was significantly lower than the No/Low-Bis. group (0.5% vs 2.2%) as well as the complications' composite score (2.7% vs 3.3%). 0.8% of the No/Low Bis. group were readmitted to CCU compared to 0.5% of the Mod/High Bis. group.

Conclusion: Early postoperative moderate to high Beta-blockade is associated with significant reduction of POAF and no adverse clinical consequences. The group of patients who received higher Bisoprolol doses have also had less in-hospital mortality, readmission to ICCU and postoperative complications.

Table 1 (abstract A98) Comparison of the Pre- and Intraoperative Risk Factors of the 2 Groups

Pre- and Intraoperative Risk Factors	Mod/High Bis. group (n=185)	No/Low Bis. group (n=360)
Average age	63 years	64 years
Male Sex	85%	83%
Average EuroScore II	1.98%	1.62%
Poor LVEF	5.9%	3.3%
LM stenosis	26%	31%
Average BMI	29.1%	28.5%
DM	40%	44%
HTN	78%	82%
Average CPB	81 minutes	87 minutes
Average X clamp	50 minutes	51 minutes

A99

Outcomes of Surgical Pulmonary Embolectomy at a Specialist Cardiothoracic Surgery Centre: A Retrospective Analysis

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A99

Background: Pulmonary embolism (PE) is a significant cause of morbidity and mortality worldwide. Although anticoagulation is the primary treatment, surgical pulmonary embolectomy can be life-saving in certain high- and intermediate-risk PE cases. This study assesses outcomes from a specialist cardiothoracic centre and compares them with recent UK national data.

Methods: A retrospective review was conducted on patients undergoing surgical pulmonary embolectomy at the centre from 1999 to 2024. Complete data were available for 15 patients, with outcomes evaluated against national data reported in the *British Journal of Surgery* (January 2024), focusing on mortality and complication rates.

Results: Over the study period, 22 patients underwent embolectomy, with data complete for 15 patients aged 21–84 years. Of these, 8 had high-risk (massive) PE, and 7 had intermediate-risk (submassive) PE. Three patients had previously failed or were contraindicated for thrombolytic therapy, while the remaining were referred directly for surgery. The mean cardiopulmonary bypass time was 61 min, with an average ICU stay of 3 days. The in-hospital mortality rate was 33%, with a 12-month survival rate of 66.67%. Complication patterns, including cardiac arrest, pericardial effusion, and atrial fibrillation, were comparable to national data. (See Table 1).

Conclusion: Surgical pulmonary embolectomy, while a rare procedure, remains a critical intervention for high-risk pulmonary embolism cases, especially when conventional therapies prove ineffective or are contraindicated. This retrospective analysis, though limited by a small sample size inherent to the procedure's rarity, underscores the value of specialized cardiothoracic centres in managing these complex cases.

	Trust Data	National Data
Study Period	1999 - 2024	1997 - 2018
Number of Patients Operated	22	256
Mean Cardiopulmonary Bypass Time (minutes)	61	73
In-Hospital Mortality Rate (%)	33	25
Overall Complication Rate (%)	40	38
12-Month Survival Rate (%)	66.67	-

Table 1. Comparison of Surgical Pulmonary Embolectomy Outcomes: Trust Data vs. National Data.

A101

Impact of Covid-19 pandemic on surgically treated Infective Endocarditis

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A101

Introduction: The impact of the COVID-19 pandemic on surgically treated infective endocarditis (IE) patients remains unclear. This study aimed to assess the pandemic's effect on preoperative characteristics and postoperative outcomes in this group.

Methods: A single-centre, retrospective study was conducted on patients undergoing surgery for active IE from January 2016 to August 2024. We studied the incidence, demographics, and clinical outcomes including in-hospital mortality and length of stay. Patients were grouped into pre-COVID (2016–2020) and post-COVID (2020–2024) cohorts. Statistical analyses included t-tests, chi-square, and Kruskal–Wallis tests.

Results: The number of patients undergoing surgery for IE was significantly higher post-COVID (121; $p=0.005$). Post-COVID patients had worse NYHA class ($p=0.0013$) and angina status ($p=0.0022$). Mortality rates ($p=0.83$), ICU stay ($p=0.99$), and stroke rates ($p=0.99$) did not differ significantly. However, post-COVID patients spent more time in the HDU (52.65 vs. 75.64 h; $p=0.04$) and required more inotropes ($p=0.01$). Annually, there was an increased trend in patients needing revascularization with mitral valve surgery ($p=0.05$) across the study period. This is presented in Figure 1.

Conclusion: There has been an increase in patients undergoing surgical treatment for IE post-COVID. Post-COVID patients presented with more severe shortness of breath, angina, and showed a trend towards increased revascularisation. They also required more inotropes and had a longer length of stay in hospital, especially in HDU, which may be attributed to the increased complexity of the operation.

[TO BE INSERTED FROM ATTACHMENT A102]

Figure 1

Pre-operative characteristics	Pre-COVID	Post-COVID	P value (<0.05 significant)
Case Numbers	81	121	0.005
Age in years (SD)	52.8 (14.4)	55.4 (13.4)	0.2
Male Gender (%)	60 (74%)	96 (78.69%)	0.48
Logistic EuroScore	12.94	13.09	0.93
Diabetes	8	22	0.43
Ventilated Pre-op	5	7	1
LV Function			0.67
NYHA class			0.0013
I	23	10	0.0003
II	16	37	0.12
III	25	50	0.17
IV	17	24	0.98
Angina Status			0.0022
0	69	74	0.0004
I	6	22	0.0495
2	3	18	0.02
3	1	6	0.305
4	2	1	0.72
Renal Impairment			0.74
Intra-operative outcomes	Pre-COVID	Post-COVID	P value (<0.05 significant)
Xolamp in mins	114.77	121.83	0.48
Bypass time in mins	154.3	169.23	0.273
Blood products usage	4.52	3.76	0.36
Inotropes requirement			0.01
No inotropes	39	36	0.003
Small amount	17	30	0.825
Moderate amount	10	33	0.029
Large amount	5	14	0.362
Post-operative outcomes	Pre-COVID	Post-COVID	p value (<0.05 significant)
Mortality	4 (4.93%)	4 (3.28%)	0.83
ICU Hours	130.47	130.33	0.99
HDU hours	54.65	75.64	0.04
LOS	12.2	17.08	0.003
Haemofiltration	7	17	0.346
Atrial Fibrillation	16	29	0.59
Pacemaker	2	7	0.44
Stroke	1	1	0.99

Yearly analysis of procedure type

	2016	2017	2018	2019	2020	2021	2022	2023	2024
aortic	4	9	5	7	4	11	11	7	5
aorticcabg	0	1	2	0	0	3	2	2	0
double	3	5	3	8	4	12	3	3	7
mitral	2	2	9	5	8	5	6	5	5
mitralcabg	0	0	0	2	0	1	3	3	1
pulmonary	0	0	0	0	0	0	1	0	0
tricuspid	0	1	4	3	0	2	1	0	1
triple	1	0	1	0	1	0	2	1	0

Figure 1 (abstract A101)

1 Pre-operative, Intra-operative and Post-operative characteristics of pre-COVID and post-COVID cohort with Yearly procedure volume.

A102

Robotic Assisted Occlusion of the Left Atrial Appendage using Atriclip®

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1):A102

Objective: Assess the feasibility and safety of robotic platform for application of Atriclip® for management of arrhythmia.

Method: We described a case of 82-year-old man who had robotic Atriclip® successfully. He has a BMI of 52, idiopathic thrombocytopenia and two spontaneous intracranial haemorrhages. He was in chronic atrial fibrillation (AF) but could not be anticoagulated safely due to his medical history, which posed a risk of embolic stroke. Only suitable treatment is occlusion of left atrial (LA) appendage. Since there is extensive experience of Atriclip® applications and robotic thoracic procedure in our institution, we have elected to use this

minimally access approach to reduce his morbidities, and allow rapid recovery given his pre-existing medical conditions.

Results: The procedure was successfully performed without complications. He was extubated immediately after surgery and his chest drain was removed within 4 h. He had no pain and was mobilising once he recovered from his general anaesthetic. He was discharged within 24 h. (An edited video will be presented at the meeting describing the key steps).

Conclusion: We demonstrate the feasibility and safety of this procedure. To the best of our knowledge this is the first-reported robotic application of Atriclip® in the UK and possibly Europe.

*The patient has confirmed explicit consent to be in the Journal.

A103

Surgical repair of post myocardial infarction ventricular septal defect: A single institution experience over 27 Years

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A103

Introduction: Ventricular septal defect (VSD) is a mechanical complication of acute myocardial infarction (MI) with a very high mortality, despite advances in surgical and circulatory support. The tremendous hemodynamic disturbance and the severely fragile myocardium render surgical repair a great challenge. The optimal time of surgical repair with or without circulatory support is still controversial. Patients undergoing post infarction ventricular septal defect repair are at high risk for early morbidity and mortality.

Objective: The aim of this study is to review our experience with early surgical repair of post-MI VSD in a single cardiac institution.

Method: From 1997 to 2024, 62 consecutive patients underwent surgical repair of post – MI VSD. Among them, 41 were male, and the mean age was 69 ± 5 years. In majority of patients, an intra-aortic balloon pump (IABP) was inserted immediately after diagnosis. Majority of patients were operated at a mean of 4 ± 3.9 days, and 18 within 24 h of the rupture. 22 Patients underwent Emergency surgery, 6 had salvage procedure, rest had urgent/planned surgery. From the data available 20 Patients had Anterior defect and 9 patients had inferior defect. 40 Patients had concomitant coronary artery revascularization.

Results: The overall 30-day mortality was around 35%. Coronary angiography was performed in all 62 patients. Average length of stay in the hospital was 29 days.

Conclusion: In our experience, immediate insertion of IABP and hemodynamic stabilization with planned surgical intervention of VSD repair and concomitant coronary revascularization provided a 65% survival rate.

A104

A comparison of Endoscopic versus Median sternotomy approach for myxoma excision: A single-centre experience

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A104

In this retrospective study, we compared the outcome of endoscopic surgery to the usual median sternotomy in patients undergoing cardiac myxoma excision.

Between January 2009 and August 2024, a total of 89 patients (27 males, 62 females; age range from 43 to 82 years (mean age: 68) who had a confirmed diagnosis of isolated cardiac myxoma were included in the study. The patients were divided into two groups: those who underwent endoscopic myxoma excision (n=24) and those undergoing conventional median sternotomy (n=65). Clinical characteristics, operative, and postoperative outcomes were compared.

Results: The approach was determined according to the surgeon's preference and experience. The mean cardiopulmonary bypass (105 vs. 96 min) was shorter in the median sternotomy group. However, aortic cross-clamp time (50 vs. 65 min) was shorter in the endoscopic group because 2 patients had surgery on a beating heart without cross-clamp.

No mortality in the endoscopic group vs. 2 mortality in the sternotomy group. ICU Stay was 1 day in both groups; total hospital stay was 5 days (0–24) in the endoscopic group vs. 6 days (2–97) in the sternotomy group (P value 0.042). The mean postoperative blood loss was significantly lower in endoscopic patients (140 vs 300 mls p=0.001). 1 patient in the median sternotomy group returned to the theatre for bleeding. No conversion to sternotomy was needed in the endoscopic group. 1 patient had a new postoperative neurological dysfunction in each group.

A105

How does liver cirrhosis impact post-operative mortality in cardiac surgery?

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Objectives: Liver cirrhosis is associated with poor post-operative outcomes in cardiac surgery (CS) with an increase in mortality and morbidity due to coagulopathy, hemodynamic changes, impaired immune response and myocardial dysfunction. However, debate remains on whether liver cirrhosis (LC) reliably predicts poor outcomes for CS patients and if the Child Turcotte Pugh classification system accurately assesses LC's prognosis. This review aims to explore the current literature and evaluate the impact of liver cirrhosis on postoperative mortality in cardiac surgical patients.

Methods: A literature search was conducted using PubMed, Medline, and Web of Science with the terms "Liver Cirrhosis," "Cardiac Surgery," and "Mortality." Twelve studies met the inclusion criteria (English, human-based) and were reviewed.

Results: Increased CTP severity correlated with higher mortality: short (18%) and medium to long-term (26%). Mortality by CTP class showed A, B, and C scores, with 13%, 25%, and 53% in the short term and 8%, 31%, and 44% in the medium to long term.

Conclusions: LC negatively impacts postoperative mortality in CS in both the short and medium to long-term follow-up periods. This review ascertains that patients with less severe LC should not be precluded from CS if it is medically appropriate for them to undergo it; however, caution must be exercised for those in later-stage CTP classes. To increase the scope and safety of CS in these patients further research needs to be done on its suitability and alterations made to management plans and surgical techniques.

A106

Quantifying the Effect of Loop Diuretics Post Cardiac Surgery and Evaluating Current Practice

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Objectives: Enhanced Recovery After Cardiac Surgery (ERACS) protocols emphasize fluid management to reduce postoperative fluid overload. However, specific guidelines on perioperative loop diuretic use remain limited, leading to variable practices and unpredictable patient responses. This study aimed to evaluate our institution's practices and quantify body weight (BW) changes based on the timing of diuretic initiation.

Methods: We conducted a retrospective review of patients undergoing isolated cardiac surgery at our trust between April and June 2023. Exclusion criteria included aortic replacement/repair, congenital procedures, patients under 18, combined/multi-valve procedures, and infective endocarditis. BW and furosemide administration were tracked up to postoperative day 8 using electronic records.

Results: Of the 104 patients reviewed, 43 underwent isolated valve repair/replacement and 61 underwent coronary artery bypass grafting. Eighty-two patients (79%) received diuretics during their stay, with Day 4 being the most common initiation day. Notably, 59% of patients receiving diuretics started after step-down to the ward. Patients who began diuretics on Day 2 or 3 demonstrated a quicker return to baseline BW and a reduced peak BW compared to those initiated later.

Conclusion: Early initiation of loop diuretics, particularly on Day 2 or 3 post-surgery, was associated with better BW outcomes, suggesting that early diuresis may enhance recovery by mitigating fluid overload. Further standardization of diuretic timing in ERACS protocols could optimize postoperative management.

A107

Low-Cost Variable Fidelity Models for Cardiac Surgery Training: A Compilation of Home-Based Simulators

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Objective: To develop accessible, low-cost simulators for cardiac surgery training that enable learners to practise essential techniques across a variety of procedures in a safe, customizable environment.

Background: Simulation-based training has proven effective in bridging the gap between theoretical knowledge and practical surgical skills, providing a risk-free environment for learners. However, high-fidelity models are costly and may not be feasible for routine or at-home practice, creating a need for affordable alternatives that maintain educational value.

Methods: We designed a series of low-fidelity, cost-effective simulators using accessible materials, including 3D-printed components and household items. The models were developed for key cardiac procedures, such as aortic valve replacement, coronary artery bypass grafting (CABG), mitral valve repair, and congenital cardiac surgeries, including atrial septal defect (ASD) and ventricular septal defect (VSD) repair. Each simulator is customizable for different anatomical features and surgical scenarios, enhancing adaptability for various learning needs.

Results: Each simulator supports targeted practice of spatial planning, suture techniques, and procedural rehearsal. Trainees benefit from customizable models that mimic specific anatomical and procedural nuances, allowing for practice of complex techniques, such as conduit routing in CABG and patch placement in VSD repair. Subjective feedback from trainees indicates that these models improve confidence and competence in performing these surgeries.

Conclusion: This suite of low-fidelity simulators offers a versatile and economical solution for cardiac surgery training, enabling skill development without the need for high-cost, high-fidelity models. By increasing access to practical training, these models contribute to improved surgical preparedness.

A108

Enhancing Accessibility to Cardiothoracic Surgery: Insights from Medical Student Perspectives

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Objectives: This study aimed to identify barriers perceived by medical students in entering cardiothoracic surgery (CTS) and to propose interventions that foster a more inclusive environment within the specialty.

Methods: An Equality, Diversity, and Inclusion (EDI)-focused survey was distributed to medical students across the UK and Ireland, promoted through social media and direct correspondence with medical schools. The survey collected data on demographics, career ambitions, experiences in surgical fields, and specific perceptions of CTS. Chi-squared tests assessed associations between demographic factors and perceived barriers, with an alpha level of 0.05.

Results: Eighty-one responses identified key barriers: financial constraints (37.8%), negative theatre experiences (37.8%), and perceived gender-based obstacles (56.1%). Financial challenges were primarily associated with travel and portfolio-building costs, with a significant association between self-funding students and perceived barriers ($p=0.03$). Negative theatre experiences included unwelcoming environments and lack of guidance. Gender-related challenges were reported by 56.1% of respondents, 91% of which were female, underscoring the need for gender-specific mentorship. Additionally, first-generation medical students showed a significant correlation with perceived barriers in CTS ($p=0.05$).

Conclusions: Findings reveal critical areas for improving access to CTS, including financial support, gender-based mentorship, and enhanced theatre / procedural orientation, and promoting diversity role models within CTS. The data rejects the null hypothesis of no association between demographics and perceived barriers, though limitations in sample size suggest a potential type II error. Ongoing collaboration between EDI and CTS committees is crucial to addressing these barriers, encouraging students from diverse backgrounds to consider careers in CTS.

A109

Development of a 90-Degree Hinge Castroviejo Needle Holder for Enhanced Manoeuvrability in Cardiac Surgery

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Objective: To design and analyze a novel Castroviejo needle holder featuring a 90-degree hinge and an integrated miniature gear system. This design aims to translate the rolling motion of the index finger into controlled rotation, improving suture placement precision along a parallel axis to the shaft in cardiac surgery.

Methods: Using computer-aided design (CAD) software, we developed a Castroviejo needle holder with a 90-degree hinge at the tip, allowing for expanded maneuverability. The design includes a miniature gear system that converts the index finger's rolling motion into rotational movement, enabling precise needle control. Finite Element Analysis (FEA) is currently being conducted to assess the structural integrity of both the hinge and gear components under typical

surgical loads. Material selection emphasized lightweight alloys for reduced hand fatigue and high durability.

Results: Preliminary CAD models indicate that the hinge and gear mechanism function as intended, allowing controlled needle rotation and increased flexibility in suture placement. Virtual feedback from cardiac surgeons highlights the potential advantages of improved maneuverability and ergonomic handling. Initial FEA simulations have begun, focusing on stress distribution across the hinge and gears to confirm stability and reliability under operational conditions.

Conclusion: This needle holder design holds promise for enhancing precision and control in cardiac surgery. The combination of a 90-degree hinge and a miniature gear system introduces new ergonomic possibilities for suture placement in anatomically restricted areas. Further FEA results and physical prototyping will confirm functional feasibility and clinical potential.

A110

Exploring Massive Open Online Courses (MOOCs) as a Supplementary Tool for Cardiac Surgical Training

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Introduction: With the changing landscape of training future cardiac surgeons and increasing digital integration, Massive Open Online Courses (MOOCs) present a possible tool to enhance off-work learning. MOOCs are web-based platforms offering access to educational materials for large-scale participation, integrating multiple media types to facilitate a comprehensive learning experience. This study examines the potential role of MOOCs in extending the breadth of resources available to trainees.

Methods: The course structure is conceived to mirror the progressive competencies required in cardiac surgery, with each module culminating in evaluations designed to ensure comprehension and retention. Building upon the foundations of reference textbooks and annual review courses, the proposed format permits multimodal learning through audio, video, images, text, and simulation integration, providing a learner-centric approach. A literature search explored the current development and deployment of MOOCs in surgical education, particularly their use in cardiothoracic surgery.

Results: Studies in medical education reveal that MOOCs can improve learner engagement, flexibility, and knowledge acquisition. Integration of 3D anatomical models of pre- and post-operative structures, operative videos, guidelines, and ongoing assessments with clinical scenarios aligns with the goals of cardiac surgery education curricula. These features may accelerate trainee progress toward the competency level of a day-one consultant.

Conclusion: MOOCs offer a promising supplementary resource for cardiac surgical training. Their integration with rigorous academic standards has the potential to cultivate a higher caliber of surgical skill and knowledge, supporting professional development and addressing the evolving needs of trainees in a digital era.

A111

Development of Low-Cost, Portable Simulators for Training in Minimally Invasive Cardiac Surgery (MICS)

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Objective: To design accessible, low-cost simulators for minimally invasive cardiac surgery (MICS) training, using variable material options to support skill development in resource-limited settings.

Background: MICS demands precision, spatial awareness, and technical skill, which are challenging to develop without adequate practice. Traditional high-fidelity simulators are often prohibitively expensive and lack portability. To address these barriers, we created three low-cost MICS simulator models based on material availability: one using LEGO bricks as a customizable platform and two using 3D-printed structures, offering trainees accessible tools for home-based or classroom training.

Methods: The three simulator designs were guided by principles of affordability, modularity, and versatility. The LEGO-based model offers an adjustable training platform, easily customizable by the trainee to simulate various MICS scenarios. The 3D-printed models provide two structured setups replicating specific MICS procedures, such as mitral annuloplasty and atrial appendage clipping, with modular components to simulate restricted access and realistic spatial challenges.

Results: Each model allowed trainees to practice key MICS techniques, including instrument handling and suturing in confined spaces. The models' modular designs allow for varied levels of complexity, making them adaptable for different stages of training.

Conclusion: These MICS simulators provide a low-cost, portable solution for skill development in minimally invasive cardiac surgery. By enabling training across diverse setups, they make MICS education more accessible, particularly in resource-limited environments.

A112

Right Ventricular Myxoma Involving Chordae Tendineae: A Case Report and Literature Review*

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Objectives: The study aims to report a rare case of right ventricular myxoma (RVM) involving the chordae tendineae, highlighting its diagnostic challenges and surgical management. The research question focuses on effective diagnostic and operative strategies for managing right ventricular myxomas.

Methods: A 36-year-old woman presented with progressive breathlessness and chest heaviness. Initial imaging suggested a mediastinal mass or pericardial cyst. Surgical excision was performed through a median sternotomy. Right ventricle was accessed through the tricuspid valve. The mass was carefully mobilised and excised with meticulous dissection from the right ventricular wall and papillary muscles. The thinned ventricular wall was reinforced with Teflon strips, and the tricuspid valve was repaired using a ring for structural support. Closure of the right ventricular free wall was achieved with plication techniques to ensure integrity and prevent wall deformation.

Results: Postoperative outcomes showed significant symptomatic improvement, and follow-up assessments over one year revealed no recurrence. Comprehensive literature review showed limited reports of RVM but highlighted approaches like choledochoscopy to improve preoperative planning and optimal excision strategies to mitigate recurrence rate.

Conclusions: This case highlights the diagnostic and operative complexities of right ventricular myxomas, which can mimic other masses. Comprehensive imaging and interdisciplinary planning are critical for surgical success. Techniques such as ventricular wall plication and secure tricuspid repair were essential in this case, minimising recurrence risk and improving functional outcomes. Further studies are needed to establish standardised management protocols for this rare condition.

*The patient has confirmed explicit consent to be in the Journal.

A113**Temporary Frame-Assisted Leaflet Implantation for Aortic Valve Neocuspidization: An Ex-Vivo Proof of Concept Study**

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Objectives: Aortic valve neocuspidization (AVN) offers a promising approach to aortic valve reconstruction but is limited by procedural variability and dependency on surgeon expertise. This study evaluates a novel 3D-printed temporary frame designed to enhance AVN by standardising leaflet placement and reducing surgical complexity.

Methods: We developed a temporary frame to assist leaflet positioning during AVN, incorporating artificial rings at the annulus and sinotubular junction to secure pericardial leaflets. This 3D-printed device features elastic rings to guide and support leaflet placement, allowing a hemicontinuous suturing technique to anchor leaflets accurately and consistently. Ex-vivo testing was conducted to assess the device's impact on procedural efficiency and leaflet stability.

Results: Preliminary ex-vivo results demonstrated that the frame-assisted technique streamlined the leaflet implantation process, reducing handling of pericardial tissue and operative time. The hemicontinuous suturing approach enabled consistent and secure leaflet attachment, potentially contributing to the durability and function of the neocuspidized valve.

Conclusions: The temporary frame-assisted approach to AVN shows promise in enhancing surgical reproducibility and efficiency. By providing structured support for leaflet placement, this technique may reduce the procedural variability inherent in conventional AVN. While ex-vivo findings are encouraging, further clinical trials are necessary to confirm the technique's effectiveness and safety in a clinical setting. This device represents a valuable advancement in AVN, with potential to standardize and improve outcomes in aortic valve reconstruction.

A114**3D Printing for Surgical Practice: Affordable and Accessible Soft Models Using TPU Filaments**

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Objectives: While 3D printing has often been viewed as expensive and complex, advancements in using thermoplastic polyurethane (TPU) filaments offer a cost-effective approach to producing soft anatomical models. This study examines the potential of TPU-based models as tools for surgical practice, providing realistic tactile feedback and customizable patient-specific anatomy for preoperative planning.

Method: TPU filaments were used to 3D-print soft anatomical structures, this allowed for simulating suturing and other tactile aspects of surgery. Additionally, patient-specific anatomy can be printed in-house to evaluate its utility for quick reconstructions and personalized surgical rehearsals.

Results: The 3D-printed TPU models provided durable, flexible representations of anatomical structures that allowed for suturing. Although the models may not be as high quality or realistic as other materials, the low-cost nature of TPU usually under 30 pounds for a kilogram of filament, allows for it to be a viable option to be considered.

Conclusions: Using TPU filaments for 3D printing offers a practical and accessible solution for creating soft anatomical models for surgical training. This approach allows for quick, cost-effective in-house production of patient-specific anatomy, supporting tailored surgical planning and practice.

Final category: Adult Cardiac – Mitral Valve**A115****Abnormal peak VO₂ and LVGLS predicts progression to surgery and death in moderate primary mitral regurgitation**

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Introduction: Mitral regurgitation (MR) severity via transthoracic echocardiography is subject to measurement error. Additional modalities include cardiopulmonary exercise testing (CPET) and complex echocardiographic measurements, such as LVGLS.

Methods: Information on 65 patients with moderate primary MR that underwent CPET was collected from chart review. LVGLS was retrospectively collected by single person blinded to patient outcomes. Significance was determined via Kruskal–Wallis rank-sum test and Fisher's exact test respectively. Primary outcome was progression to surgery or death. Abnormal CPET was defined as % predicted peak VO₂ < 85% and abnormal LVGLS was defined as < 16%.

Results: Abnormal CPET patients had significantly lower LVEF (56% (52–63) v 65% (61–68), p=0.015), higher LA volume index (55 cc/mm² (48–69) v 44 cc/mm² (37–53), p=0.017) and lower LVGLS (11% (8–14) v 19% (17–21), p<0.001), with no significant difference in ERO area (p=0.256) or regurgitant volume (p=0.676). The abnormal CPET group had significantly lower % predicted peak VO₂ (68% (65–77) v 96% (77–101), p<0.001), higher Ve/VCO₂ (32.1 l/min/l/min (29.4–38.6) v 29.9 (25.9–32.6), p=0.036) with no difference in respiratory exchange ratio (p=0.376). At follow-up, 26 patients progressed to surgery (6 with abnormal CPET, 20 with normal CPET) and 14 patients died (5 with abnormal CPET, 9 with normal CPET). Univariate analysis showed time to surgery or death was significantly associated with an abnormal CPET (HR 2.56 (1.21–5.41), p=0.014) and LVGLS (HR 0.93 (0.88–0.98) p=0.007).

Conclusions: Abnormal CPET and LVGLS are associated with earlier progression to surgery and mortality, suggesting a role in moderate primary mitral regurgitation monitoring.

A116**A Systematic Review Comparing Structural Valve Deterioration in Porcine vs. Bovine Pericardial Valves for Mitral Valve Replacement**

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Objectives: Bovine valves are favored for aortic valve replacements due to their durability; however, they may lead to early Structural Valve Deterioration (SVD) when used in the mitral position. Porcine valves, with superior leaflet mobility, may demonstrate reduced rates of SVD. This review evaluates long-term SVD outcomes of bovine and porcine valves in mitral valve replacement (MVR).

Methods: A systematic review was conducted, including studies comparing porcine and bovine bioprosthetic valves in MVR, focusing on SVD as the primary outcome. A literature search was performed across Embase, MEDLINE, CINAHL, and Web of Science from January 1, 1970, to January 13, 2024. Adult patients undergoing MVR were included, with data extraction following PRISMA guidelines. Risk of bias was assessed using the Newcastle–Ottawa Scale. Data analysis focused on the incidence and contributing factors of SVD.

Results: Ten studies met the inclusion criteria, comprising 6,637 patients with follow-up periods ranging from 3.5 to 15 years (Table 1). **Conclusion:** Bovine valves showed higher susceptibility to calcification and stenosis, whereas porcine valves experienced fewer calcifications but more frequent cusp tears, indicating generally better SVD-free survival. Future studies should investigate re-replacement outcomes using percutaneous techniques, as calcified bovine valves may hinder valve-in-valve implantation. Individualized patient care is crucial, considering factors such as age, co-morbidities, environmental conditions like calcification risks in hard water regions, and cultural or religious preferences. Randomized controlled trials and consistent methodologies are needed to optimize valve selection and improve outcomes for MVR patients.

Table 1 (abstract A116) Summary of Key Findings from Included Articles, including Risk of Bias Assessment using Newcastle Ottawa Scale.

Study (Year)	Population Data	Timepoints	Key Findings on SVD	Newcastle Ottawa Scale
(3) Uchino et al. (2022)	240 patients (125 Epic, 115 CEP)	3, 5, 7 years	No significant difference	No Identified Bias (NIB)
(4) Han et al. (2022)	388 patients (217 bovine, 171 porcine)	3.5 years	No significant difference	NIB
(5) Kim et al. (2021)	309 patients (241 Perimount, 68 Hancock II)	5, 10, 15 years	No significant difference (Cumulative)	High Risk of Bias
(6) Pelletier et al. (1989)	878 porcine, 715 pericardial	6 years	Porcine>Bovine	NIB
(7) Wheatley et al. (1995)	170 patients (93 Biopro vs 99 Carpentier-Edwards)	7 years	Bovine>Porcine	NIB
(8) Jamieson (1999)	1,266 (porcine), 429 (pericardial)	10 years	Bovine>Porcine	NIB
(9) Raman et al. (2020)	274 patients matched (154 BioMVR, 120 PmMVR)	10 years	Porcine>Bovine	NIB
(10) Keshibi et al. (2023)	278 explantations (183 porcine, 95 bovine)	Porcine: 11.4 years Bovine: 9.8 years	No Overall data	NIB
(11) Grunkemeier (2012)	506 porcine and 2,449 pericardial aortic valves	15 years	No significant difference	Medium Risk of Bias
(12) Beute et al. (2020)	940 implants (463 porcine, 477 bovine)	15 years	Porcine>Bovine	NIB

A117
Short- and Mid-Term Outcomes Following Mitral Transcatheter Repair (Mitral Clip): A Single-Centre Retrospective Study
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Objectives: Transcatheter edge-to-edge repair for mitral regurgitation has evolved over recent years. Mitral clip implantation has been increasingly utilized in clinical practice. There remains a paucity of data evaluating outcomes following mitral clip. We aim to evaluate short and mid-term outcomes of patients undergoing mitral clip implantation. **Method:** Retrospective study on patients undergoing mitral clip for primary MR (04/11/2021–20/03/2024). Data was collected to compare pre- and post-procedural outcomes. Data was analysed using SPSS V.29. Average follow-up time was 21 (IQR 15–31) weeks. **Results:** 33 patients undergoing mitral clip implantation were included. Median age was 82 years with most patients possessing atrial fibrillation/flutter (72.7%). A MitraClip or Pascal device was implanted in 90.9% and 9.1% of patients, respectively. An average of 2 mitral clips were inserted (SD ± 0.6). Prior to procedure, 97.0% of patients had severe MR and 63.9% possessed poor LVEF (Table 1). 87.9% had pre-procedural Class 3 NYHA functional capacity. Residual post-procedural MR was recorded as: mild (27.3%), moderate (18.2%) or severe (18.2%). 36.4% possessed Class 2 NYHA dyspnoea post-procedure. 69.7% still had poor LVEF following mitral clip. Overall length of stay was 4 days. At follow-up, a third of patients had died (33.3%) at 39 (IQR 19–60) weeks post-mitral clip. **Conclusion:** Outcomes following mitral clip implantation show good initial improvement in MR. However, residual moderate/severe MR was seen in over a third of patients. Overall mid-term survival outcomes

remain poor. Further research is required to confidently ascertain the long-term clinical benefits of transcatheter mitral valve repair.

Table 1 (abstract A117) Pre- and Post-Procedural Outcomes Following Mitral Clip Implantation. Data presented as frequency (percentage, %).

Clinical Outcomes	Pre-Procedure, N=33	Post-Procedure, N=33
NYHA Severity Classification		
Class 1	0 (0.0%)	9 (27.3%)
Class 2	0 (0.0%)	12 (36.4%)
Class 3	29 (87.9%)	9 (27.3%)
Class 4	4 (12.1%)	2 (6.1%)
Severity of Mitral Stenosis		
None	32 (97.0%)	28 (84.8%)
Mild	0 (0.0%)	2 (6.1%)
Moderate	0 (0.0%)	1 (3.0%)
Severe	1 (3.0%)	0 (0.0%)
Severity of Mitral Regurgitation		
None	0 (0.0%)	4 (12.1%)
Mild	0 (0.0%)	9 (27.3%)
Mild-Moderate	0 (0.0%)	6 (18.2%)
Moderate	1 (3.0%)	6 (18.2%)
Severe	32 (97.0%)	6 (18.2%)
Severity of Tricuspid Regurgitation		
None	6 (18.2%)	6 (18.2%)
Mild	7 (21.2%)	11 (33.3%)
Moderate	18 (54.5%)	9 (27.3%)
Severe	2 (6.1%)	3 (9.1%)
LVEF (%)		
Poor (EF <30%)	21 (63.6%)	23 (69.7%)
Moderate (EF 30-50%)	10 (30.3%)	7 (21.2%)
Good (EF >50%)	2 (6.1%)	1 (3.0%)

A118
Creatinine Clearance and Renal Function as Predictors of Long-Term Survival in Patients Undergoing Mitral Valve Surgery for the Treatment of Mitral Regurgitation
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Objective: Baseline renal function is known to influence survival after cardiac surgery, but the evidence is inconclusive for patients with mitral regurgitation (MR) undergoing mitral valve (MV) surgery. Thus, we evaluated baseline renal function, measured by creatinine clearance (CrCl) and estimated glomerular filtration rate (eGFR), as a predictor of survival in these patients. **Methods:** In this retrospective analysis, 146 patients undergoing MV surgery between 2017 and 2018 were analysed. CrCl and eGFR were calculated using the Cockcroft-Gault and MDRD equations, respectively. Predictors of all-cause mortality were assessed using multivariable Cox regression models including variables significant in univariable analysis alongside CrCl or eGFR. In a sensitivity analysis, patients were split into EuroSCORE CrCl cohorts (<50, 50–85, >85) and assessed for survival differences using Kaplan–Meier and multivariable Cox regression analysis. **Results:** Within our cohort (median follow-up: 5.8y), univariable analysis revealed age, diabetes, COPD, NYHA ≥ 3, eGFR and CrCl as significant predictors of all-cause mortality. In multivariable analysis, both eGFR (HR: 0.78, 95% CI: 0.62–0.98, p=0.031) and CrCl (HR: 0.75, 95% CI: 0.62–0.92, p=0.005) remained independent predictors, with the CrCl model having marginally stronger predictive ability (C-statistic: 0.827) compared to eGFR (C-statistic: 0.823). Stratifying by CrCl thresholds demonstrated significant survival differences (log-rank: p<0.001) and CrCl <50 ml/min was an independent predictor of mortality (HR: 10.15, 95% CI: 1.29–79.67, p=0.027). **Conclusion:** Baseline renal function independently predicts survival in MR patients undergoing MV surgery and should be included in pre-operative risk assessment. Further investigation is warranted to optimise outcomes in patients with poor baseline renal function.

A119**Sex-Related Differences in Patients with Mitral Regurgitation Undergoing Mitral Valve Surgery: A Propensity Score-Matched Study**

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Objective: Sex-related differences in the presentation and outcomes of patients with mitral regurgitation (MR) undergoing mitral valve (MV) surgery are not well understood. We aimed to identify these differences to inform more personalised management.

Methods: In this retrospective analysis, 143 patients with MR undergoing surgery between 2017 and 2018 were stratified by sex and assessed for differences in baseline characteristics. Subsequently, 1:1 propensity score-matching (PSM) was performed, with baseline clinical characteristics as covariates, yielding 42 comparable pairs. The primary outcome, all-cause mortality, was assessed using Kaplan-Meier curves. A secondary endpoint of post-operative length of stay (LOS) was also assessed.

Results: At baseline, females (n=67) had higher Logistic EuroSCORE (p=0.006), more urgent operations (25% vs 12%, p=0.02), MV replacements (28% vs 11%, p=0.007), NYHA ≥ 3 (73% vs 45%, p<0.001), and secondary MR (43% vs 16%, p<0.001). Females had significantly smaller left ventricular end-systolic (LVESD; 33 mm vs 38 mm, p=0.002) and end-diastolic (LVEDD; 51 mm vs 59 mm, p<0.001) diameters, though diameters indexed to body surface area showed no significant differences (LVESDi; 19.0 vs 19.0, p>0.9, LVEDDi; 30.0 vs 29.0, p=0.9). Females had shorter bypass (103 min vs 133 min, p<0.001) and cross-clamp (75 min vs 91 min, p<0.001) times. After PSM, females had significantly longer LOS (8.5 days vs 7.0 days, p=0.033) and no significant differences in all-cause mortality (log-rank: p=0.3, median follow-up: 5.7y).

Conclusion: Females with MR had an increased surgical risk profile and post-operative length of stay, however long-term outcomes were comparable. Our results support the consideration of indexed LV diameters in surgical decision-making to address sex-related differences.

A120**Mitral Valve Surgery in Octogenarians: Determinants of Adverse In-Hospital Outcomes**

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Introduction: With an aging population, the demand for mitral valve surgery among octogenarians in the UK is increasing. This study examines predictors of adverse perioperative outcomes in octogenarians undergoing mitral valve surgery.

Methods: A retrospective review of octogenarians undergoing mitral valve surgery at a single UK centre from 2000 to 2024. The study outcomes include in-hospital mortality, acute kidney injury requiring dialysis, stroke, and length of hospital stay.

Results: There were 107 patients, median age of 81yrs (IQR 80 – 83). Most surgeries were elective (75%), and mitral valve regurgitation was the predominant pathology (85%). Fifty-four percent underwent mitral valve repair and 45.8% had mitral valve replacement. Mean (±SD) Logistic EUROScore was 13.8% (±7.4), and observed mortality was 13.1%. There was a trend towards higher mortality with valve replacement (8.4% vs 4.7%, p=0.16), and a trend towards lower reoperation for bleeding (3.4% vs 8.2%, p=0.41), stroke (5.2% vs 6.1% p=0.58) and requirement for dialysis (4.7% vs 5.6%, p=0.38) with repair. Post-operative stay was significantly shorter (12.8±8 vs 17.7±17, p=0.03)

after repair. Determinants of operative mortality were reoperation for bleeding (OR=16.82, 95% CI: 1.48–191.02, p=0.02), and dialysis (OR=19.63, 95% CI: 2.71–142.19, p=0.003). Operative mortality has significantly improved over the last decade.

Conclusion: Mitral valve surgery in octogenarians can be performed without excess mortality. Mitral valve repair showed a trend towards better outcomes, but reoperation for bleeding and new operative dialysis increases mortality. Mitral valve surgery in Octogenarians in the last decade has significantly improved due to subspecialisation.

A121**Transaxillary VS Median Sternotomy in Mitral Valve Surgery—A Meta analysis**

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Background: Minimally invasive mitral valve surgery aims to reduce trauma, pain, and recovery time of sternotomy. Though transaxillary access is one technique, its safety and efficacy remain unclear.

Objectives: This meta-analysis compares clinical outcomes of mitral valve surgery via transaxillary access versus median sternotomy.

Methods: A systematic search of PubMed, EMBASE, Cochrane Central, and WoS was conducted to identify relevant studies. Outcomes analysed included cardiopulmonary bypass time (CPB), cross-clamp time, mechanical ventilation, postoperative complications, and duration of recovery. Review Manager(5.1) was used for statistical analysis; heterogeneity assessed by I²-statistics.

Results: Three studies involving 2,129 patients (53.3% transaxillary) were included. CPB time was significantly longer in the transaxillary group (MD 22.89; 95% CI 21.74, 24.04; p<0.00001; I²=6%), while cross-clamp times were similar. Both approaches showed comparable rates of postoperative stroke, MI, CVVHD, new-onset AF, pacemaker implantation, and re-thoracotomy. Mechanical ventilation was shorter in the transaxillary group (MD -2.36; 95% CI -2.49, -2.24; p<0.00001; I²=99%). Patients in the transaxillary group also had shorter ICU stays (MD -6.48; 95% CI -7.36, -5.60; p<0.00001; I²=87%) and hospital stays (MD -0.34; 95% CI -0.41, -0.27; p<0.00001; I²=99%), fewer wound complications (OR 0.41; 95% CI 0.21, 0.82; p=0.01; I²=0%), and a greater proportion discharged without cardiopulmonary rehabilitation (OR 7.15; 95% CI 4.96, 10.29; p<0.00001; I²=0%).

Conclusion: Transaxillary access yields similar morbidity and mortality outcomes to median sternotomy, with shorter ventilation times, post-operative stays, and a higher rate of discharge without cardiopulmonary rehabilitation.

A122**Repair Techniques for Posterior Left Ventricular Rupture Following Mitral Valve Surgery: A Review of Successful Cases**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A122

Background: Posterior left ventricular (LV) rupture is a rare but fatal complication of mitral valve surgery, with an incidence of 0.6%-1.8% and mortality reaching 86%. This complication is associated with factors such as posterior mitral annular calcification, advanced age, female sex, extensive decalcification, and infective endocarditis. Despite preventive efforts, LV rupture remains difficult to manage. This

review summarizes successful repair strategies to establish a general approach for this high-risk scenario.

Methods: A PubMed search yielded 18 case reports documenting various successful repair techniques for posterior LV rupture, representing around 15% of survival cases in the literature.

Results: Most cases (n=14) involved mitral stenosis with posterior mitral annular calcification. Repair techniques varied based on timing, patient stability, and setting (ICU or post-CPB). Re-initiation of CPB was required in 16 cases, including seven cases using external repair with Teflon patches and sealants. Internal repairs involved pericardial patch reinforcement with Teflon sutures to stabilize the ventricular wall and support the prosthetic valve. Mechanical support measures, including intra-aortic balloon pump (IABP, n=9) and Impella device (n=1), were used to offload the injured ventricle.

Conclusion: Managing posterior LV rupture post-mitral valve surgery requires prompt re-initiation of CPB and tailored repair techniques. Mechanical circulatory support plays a key role in recovery by reducing ventricular load. More case data is needed to optimize treatment strategies for this critical complication.

A123

Audit of Outcomes of Concomitant surgical ablation for Atrial Fibrillation in Patients undergoing Mitral Valve Surgery: A 10-year, Single Surgeon's Experience

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The 2017 European Heart Rhythm Association (EHRA) consensus statement supports concomitant surgical atrial fibrillation (AF) ablation as a safe and effective way to help patients undergoing mitral valve (MV) surgery regain sinus rhythm (SR). A single surgeon's data was analysed to investigate the outcomes of concomitant surgical AF ablation at Royal Sussex County Hospital from December 2014 to August 2023.

Ninety-four patients with AF underwent cryoablation or radiofrequency ablation, with post-surgical sinus rhythm status monitored via ECG and 24-h Holter data at 6 weeks, 3, 6, and 12 months postoperatively. Antiarrhythmic medications (AADs) and anticoagulants use were also evaluated. SR maintenance was observed in 80.43%, 84.62%, and 91.43% of patients at 3, 6, and 12 months, respectively. By 6 months, 81.43% of patients in SR did not require antiarrhythmic drugs (AADs), while 67.06% required anticoagulation at 3 months. Patients with paroxysmal AF had significantly higher freedom from AF recurrence than those with persistent AF (94.29% vs. 88.24%, $P=0.0371$). Left atrial (LA) diameter ($P=0.0714$), lesion sets ($P=0.1718$), and ablation probe type ($P=0.8848$) did not significantly influence AF recurrence rates.

Overall, concomitant AF ablation appears safe and effective, particularly for patients with paroxysmal AF, aligning with the 2017 European Heart Rhythm Association (EHRA) consensus. Significant reductions in AAD dependency were noted postoperatively, and while LA diameter did not impact recurrence rates in this cohort, it remains an important factor in patient selection. This audit supports concomitant AF ablation as a valuable intervention for SR maintenance in MV surgery patients with paroxysmal AF.

A124

Is Mitral Valve Repair Justified in Octogenarians?

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Objective: Octogenarians are often at high risk for adverse operative outcomes. This study sought to determine if mitral valve repair was associated with better in-hospital outcomes than replacement in this growing surgical population.

Methods: We reviewed and analysed prospectively collected data for all patients aged 80 and older who underwent mitral valve surgery at our institution between January 2014 and September 2024. Those who had active infective endocarditis, redo surgery, or an emergency operation were excluded. We compared pre-, intra-, and postoperative variables between patients with mitral repair and valve replacement.

Results: 31 of 61 patients (51%) had mitral valve repair. The mean age was 81.7 ± 1.9 yrs, and concomitant procedures included coronary artery bypass grafting, aortic valve replacement, ablation of atrial fibrillation and left atrial appendage occlusion. There were no statistically significant differences between the repair and replacement groups. No operative mortality was observed in the repair group vs 10% (n=3) in the replacement group ($p=0.07$). Postoperative morbidity, such as reoperation for bleeding, pulmonary complications, neurological dysfunction, new dialysis, and gastrointestinal complications, were not statistically significantly different between the groups. The average hospital stay was ten days for both repair and replacement patients.

Conclusion: Our study shows that mitral valve repair could be associated with better patient outcomes compared to replacement in octogenarians. Larger studies are warranted.

A125

Minimally invasive mitral surgery: a retrospective cohort study

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Objective: Aim of this study was to assess outcomes after minimally invasive mitral valve surgery (mini-MVS) compared to full-sternotomy mitral surgery (FS-MVS).

Methods: This was a single centre, retrospective, observational cohort study of consecutive patients undergoing first time, isolated mitral valve repair or replacement, for mitral regurgitation, stenosis or mixed disease. Patients undergoing left atrial appendage closure and surgery for atrial fibrillation were included, while all urgent and emergency patients were excluded. Surgery was performed via full sternotomy or via right mini-thoracotomy. The primary endpoint was all-cause operative mortality.

Results: Between 2019 and 2023, 227 patients underwent mitral valve surgery at a single institution. The mean age was 68.9 ± 9.2 years. FS-MVR was performed in 139 (61%) patients, while 88 (39%) underwent mini-MVR. Mitral valve repair was performed in 76.4% patients, n=174. The remaining 53 patients (23.6%) underwent mitral valve replacement. Overall mortality was 0.8% (n=2) with no mortality in the mini-MVR group. There was no significant difference in mortality between the two groups (HR > 2, 95% CI: 0.9, 3.5, $p=0.993$). The length of hospital stay was shorter for mini-MVR than FS-MVR (5.2 ± 3.2 days versus 7.1 ± 3.1 , $p=0.047$). At a median follow-up of 42.8 months, all the patients (n=225) were alive. Post-operative echocardiogram showed no difference in the rates of residual regurgitation (FS-MVR: none=100, 72%; mild=39, 28%; mini-MVR: none=65, 74%; mild=23, 26%).

Conclusion: We have demonstrated equivalent surgical outcomes of FS vs mini-MVR. In this cohort, there was no mortality and reduced length of hospital stay in the mini-MVR group.

A126
Mitral Valve Surgery in Patients with low ejection fraction: Does concomitant surgery for Atrial Fibrillation impact Operative Mortality?

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Objective: Patients with low ejection fraction are usually higher risk for poor outcomes so it is unclear if concomitant atrial fibrillation surgery, by slightly prolonging surgery, would add to the risk.

Method: We conducted a retrospective review of data prospectively collected for patients undergoing cardiac surgery at our centre between January 2016 and August 2024. All patients undergoing mitral valve surgery with co-existing atrial fibrillation were included, and those who underwent emergency and redo procedures, or had active infective endocarditis were excluded.

Results: There were 104 patients; 75 had AF surgery (group 1) and 29 did not (group 2). Table 1 compares the baseline variables between the groups. Mitral valve repair was the predominant procedure in group 1, while MV replacement was for group 2. There was no difference between the groups for additional procedures performed; which included: tricuspid valve repair 25.3% (n=19) in group 1 vs 20.7% (n=6) in group 2, and CABG 17.3% (n=13) for group 1 and 31.0% (n=9) in group 2. Reoperation for bleeding (2.67% vs 3.45%), Stroke (0% vs 3.45%) and postoperative dialysis (8% vs 10.34%) were similar for groups 1 and 2 respectively. The mean logistic Euroscore for group 1 was 11.1% and 12.3% but the observed mortality was 6.7% (n=5) and 10.3% in group 2 (n=3).

Conclusion: Concomitant AF surgery in patients with low left ventricular ejection can be performed without increased in-hospital mortality.

Table 1 (abstract A126) Comparison of the baseline variables between the groups (Patients who underwent mitral valve surgery with concomitant AF surgery VS Patients who underwent mitral valve surgery without concomitant AF surgery).

Variables	Patients who underwent mitral valve surgery with concomitant AF surgery (n=75) Group 1	Patients who underwent mitral valve surgery without concomitant AF surgery (n=29) Group 2	P value
Mean age (SD)	68.7 (±31.2)	67.2 (±19.1)	NS
Female	19 (25.3%)	13 (44.8%)	0.09
Mean Body mass index (kg/m ²)	26.2	26.2	NS
Peripheral vascular disease	12 (16.0%)	9 (31%)	0.08
New York Heart Association functional class III/IV	38 (50.7%)	17 (58.6%)	NS
Rheumatic Mitral valve pathology	13 (17.3%)	5 (17.2%)	NS
Mitral valve regurgitation	63 (84%)	25 (86.2%)	NS
Ejection Fraction (0.30-0.49)	68 (90.7%)	26 (89.7%)	NS
Ejection Fraction (< 0.30)	7 (9.3%)	3 (10.3%)	NS
Mean Logistic EuroSCORE (SD)	11.1 (±3.2)	12.3 (±8.4)	NS

A127
Outcomes Following Adult Redo Mitral Valve Surgery in a Single Centre Study

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Background: Redo mitral valve surgery is associated with significant mortality and morbidity, which must be assessed against the potential benefits to patients. This retrospective study assessed patients

following mitral valve redo surgery through median sternotomy at our institution to establish overall outcomes of adult patients undergoing redo-mitral valve surgery.

Methods: This retrospective study included 51 consecutive mitral valve redo procedures that were performed between April 2012 to July 2024 at our institution. Patient demographics and procedure details were retrospectively analysed, together with indications for redo mitral valve operation, length of hospital stay, in-hospital mortality and survival rate following operation.

Results: Mean patient age was 60.5 years old and the mean Logistic Euroscore was 14.09. In these 51 patients, the indications for a mitral valve redo were prior valve repair failure (35.3%), implanted valve failure (23.5%), infective endocarditis (9.8%) or other reasons (31.4%) including haemolysis, thrombosis or dehiscence. The mean hospital stay was 12.4 days. The in-hospital mortality was 9.8%. At a mean follow up period of 6.6 years, the mortality rate was 27.5%. These deceased patients survived for a mean of 2.97 years post-operation.

Conclusion: Due to significant improvements in outcomes of patients following mitral valve replacement or repair surgery, patients are surviving longer, increasing the risks of valve failure or complications, resulting in an increase in the number of redo-mitral valve operations. Despite the generally high mortality rate of such redo procedures, our results demonstrate that favourable outcomes can still be achieved.

A128
Long Term Results of Mitral Valve Repair – Does Anatomy or Repair Technique Impact Long-Term Outcomes?

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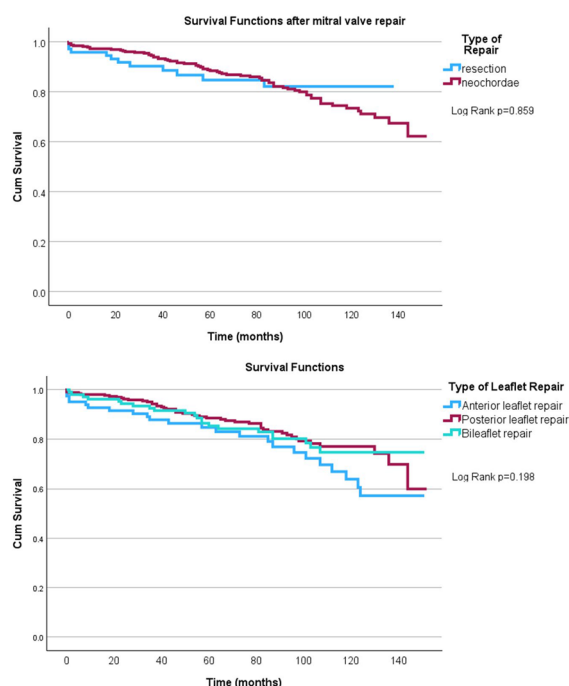
Objective: To investigate long-term results of mitral valve repair and identify prognostic factors associated with long-term outcomes.

Methods: We retrospectively analyzed all consecutive patients undergoing mitral valve repair over a 10-year period (2012–2022). Patients undergoing surgery for infective endocarditis were excluded. The primary outcome was long-term survival. The secondary outcome was early postoperative mortality. We performed logistic regression and survival analysis to identify factors associated with long-term mortality.

Results: 612 consecutive patients undergoing mitral valve repair were included in the analysis. Mean age was 65 ± 13 years. 64% (n=391) were male. 84% (n=515) were elective procedures and 16% (n=96) were urgent. 5% (n=30) were redo operations. Mean logistic Euroscore was 6.3 ± 6.4. 25% (n=158) had concomitant aortic or tricuspid valve surgery. 17% (n=102) had repair using leaflet resection techniques, 60% (n=366) had neochordae inserted and 5% (n=29) had direct leaflet closures.

463 patients (76%) were alive at a median follow-up of 6.4 years. In-hospital mortality was 1.6% (n=10). Univariate analysis showed that age at surgery [OR 1.096], Logistic Euroscore [OR 1.077] and preoperative moderate [OR 4.08] and poor LV function [OR 3.75] were associated with long-term mortality. There were no differences in long term survival with regards to type of repair performed (p=0.85) and anatomical leaflet repaired (p=0.198) (Figures 1a and 1b).

Conclusion: Short and long-term outcomes after mitral valve repair were excellent. The type of repair technique and the leaflet operated did not seem to affect long-term outcomes. Instead, long-term survival seems to be influenced by patient-related factors.



KM curves comparing long term survival after neochordae vs resection (1a) and type of leaflet repaired (1b)

KM curves comparing long term survival after neochordae vs resection (1a) and type of leaflet repaired (1b).

A129

Mitral Repair Versus Replacement in Impaired Left Ventricular Function: Comparison of In-hospital Outcomes

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Objective: Mitral valve repair has advantages over replacement for patient outcomes. It is controversial if repair confers clinical benefits in patients with impaired left ventricular function.

Method: Retrospective review of prospectively collected data for patients undergoing cardiac surgery at our institution between January 2014 and August 2024. All patients undergoing mitral valve surgery with impaired LV function were included, and those who underwent emergency, redo procedures, or had active infective endocarditis were excluded. Perioperative data were compared between mitral repair and replacement patients.

Results: There were 204 patients; 103 had repair (50.5%) and 101 replacement (49.5%). Mean age was similar in both groups (67 vs 68 years). Advanced symptoms (NYHA III/IV) were common for replacement (63.4%) and repair (53.4%) groups. Preoperative AF rates were equivalent for both groups (59.4% vs 60.1%). Degenerative mitral valve was the predominant pathology (replacement 58.4% vs repair 90.3%, $p=0.04$), but rheumatic disease was more common with replacement (30.7 vs 0.97%, $p=0.03$). Severe regurgitation was present in all repair, and 72% of replacement group. There were trends towards higher rates of postoperative stroke (5.94% vs 0%) and postoperative dialysis (9.90% vs 3.88%) in the replacement group. Postoperative hospital stays were comparable for both groups (13.6 vs 15.3 days). Observed operative mortality (2.9%) was substantially lower than predicted (logistic Euroscore $9.4 \pm 7.7\%$, $p=0.01$) in repair group, not so for replacement ($9.90\% \pm 12.5 \pm 8.8\%$, $p=0.21$).

Conclusion: Patients with impaired left ventricular function with degenerative mitral regurgitation derive better clinical outcomes with mitral valve repair than replacement.

A130

Endoscopic redo mitral surgery versus conventional Redo sternotomy for Mitral valve surgery: single centre experience

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This single-centre retrospective study included patients who underwent Redo mitral valve procedures from June 2009 to August 2024. We compared the outcomes of conventional Redo median sternotomy and endoscopic mitral surgery.

Results: 53 patients underwent redo sternotomy and 49 underwent endoscopic. The mean age was 62 years in the redo sternotomy vs. 68 in the endoscopic. Euro Score II was 4.2 vs. 5.7. The mean cardiopulmonary bypass (134 vs. 163 min) was shorter in the redo sternotomy group. Myocardial protection varied; 49 patients (91%) had cross-clamp and cardioplegia in redo sternotomy vs. 26 (57%) in endoscopic. Beating heart without a cross-clamp was 3 (6%) vs. 11 (22%). Fibrillation without cross-clamp 2 (4%) vs. 9 (18%). 1 patient in the endoscopic group had aortic-cross clamp with fibrillation.

2 in-hospital mortality in the redo sternotomy group (Septicemia and MOF) vs. 3 mortality in the endoscopic group (2 Septicemia and 1 Stroke) (P value 0.35). The mean ICU stay was 1 day in both groups; the total post-op stay was 11 days (3–56) in the sternotomy group vs 7 days (2–45) in the endoscopic group (P value 0.007). The mean post-operative blood loss was significantly lower in endoscopic patients (340 vs. 270 mls $p=0.003$). 1 patient in each group returned to the theatre for bleeding or tamponade. 2 patients had a post-op permanent stroke in the redo sternotomy vs. 1 in the endoscopic (P value 0.095). 4 patients required new dialysis in the redo sternotomy vs. 2 in the endoscopic (P value 0.46).

A131

Use of endoaortic balloon occlusion (EABO) in endoscopic mitral surgery: A single-centre experience

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Background: In many centres, minimally invasive approach is now the accepted treatment for mitral valve surgery. In our centre, we have adopted endoaortic balloon occlusion (Intracluse™, Edwards Lifesciences) as the preferred method for endoscopic mitral valve surgery.

Methods: This single-centre retrospective study included patients who underwent minimally invasive mitral valve procedures from June 2009 till August 2024. Clinical characteristics and operative data were collected. Outcome measures included procedural variables, length of intensive care unit (ICU) and hospital stay, and major adverse cardiac and cerebrovascular events (MACCE).

Results: A total of 458 patients (167 females and 291 males, age range from 20 to 92 years (mean age: 63)) underwent mitral valve surgery were included in the study. The mean Euro Score II was 1.36. 368 patients had mitral valve repair, while 90 patients had mitral valve replacement. The mean cardiopulmonary bypass (168 min) and the mean aortic cross-clamp time (114 min). One in-hospital mortality (0.2%). ICU Stay was 1 day; total hospital stay was 7 days (2–103). 11 patients (2.4%) returned to the theatre. 4 patients (0.9%) required postop hemofiltration/dialysis. 2 patients (0.4%) had postoperative stroke.

Conclusions: Endoaortic balloon occlusion is appropriate and reasonably safe.

A132**Low BMI as a risk factor for patients undergoing endoscopic mitral valve surgery**Bassem Gadallah^{1,2}, Prerit Agarwal¹, Joseph Zacharias¹¹Blackpool Victoria Hospital, Blackpool, United Kingdom. ²Benha University, Benha, Egypt**Correspondence:** Bassem Gadallah**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A132**

Background: Various studies have reported that A low body mass index is linked to a higher risk of unfavorable outcomes following conventional heart surgery.

Methods: This single-center retrospective study included patients who underwent minimally invasive mitral valve procedures from June 2009 till August 2024 comparing the outcome of patients with low BMI (< 19 kg/m²) to patients with normal BMI (≥ 19 and < 25 kg/m²).

Results: No. of patients with low BMI was 21 patients vs. 211 patients with normal BMI. Euroscore II of low BMI patients was 1.1 vs. 1.7 for patients with normal BMI. The mean cardiopulmonary bypass (146 vs. 150 min). Aortic cross-clamp time (94 vs. 102 min) both are not statistically significant. The mean amount of postoperative blood loss was similar in both groups (273 vs. 260 mls). No mortality in the low BMI group; however, 1 mortality in the normal BMI group (p-value 0.9). ICU Stay was 1 day in both groups. Total hospital stay was 6 days (3–47) in the low BMI group vs. 7 days (2–97) in normal BMI (P value 0.055). No return to theatre in the low BMI group; however, 9 patients in the normal BMI group returned to theatre for bleeding/tamponade (P value 0.054).

No patients had a stroke in the low BMI group vs. 3 patients in the normal BMI group.

Conclusion: Low BMI (< 19 kg/m²) doesn't add extra risk for endoscopic mitral valve surgery.

A133**Mitral Valve Microarchitecture and its relation to mitral valve leaflet stretch marks**

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Objectives: Having visualised “stretch marks” on the A2 and P2 parts of the mitral valve in clinical mitral valve repair we decided to study the collagen microarchitecture of the mitral valve in order to see if it could explain the phenomenon.

Methods: 20 porcine mitral valves were excised. The leaflets were fixed, stained and mounted for analysis. The preparations were analysed using Microsoft excel to examine for mathematic patterns in the collagen architecture. Data points were collected from the collagen curves and compared with idealised quadratic and 5th polynomial (boomerang) shaped curves.

Results: The collagen fibres in the central part of the anterior leaflet and the P2 scallop of the posterior leaflet formed homologous patterns. Mathematical comparisons with an idealised quadratic curve gave an R value of 0.995 whilst the R-value for the boomerang (5th polynomial) curve was 0.998.

Conclusions: In a sheet of tissue containing a series of homologous collagen curves the point of maximum stress when the tissue is pressurised lies at the maxima (or minima) of the curve and is directly proportional to the distance between the roots of the curve. This is exactly what is seen clinically. Where leaflet stretching affects the central part of A2 it is maximal at the marginal part of the leaflet, narrowing and disappearing before the annulus is reached. Surgical repair of this lesion is best accomplished with a neochord which reapproximates the edges of the stretch mark near the free margin of the leaflet.

A134**Should we fix both? Mitral Valve and Concomitant Tricuspid Valve Surgery: 25-year Single Centre Experience**Rishab Makam^{1,2}, Ayush Balaji^{3,2}, Akshay Balaji^{3,2}, Mubashar Nadeem^{4,2}, Azar Hussain¹, Mahmoud Loubani^{1,2}¹Castle Hill Hospital, Hull, United Kingdom. ²Aspiring Congenital Heart Surgeons Association, -, United Kingdom. ³Hull York Medical School, York, United Kingdom. ⁴Manchester University NHS Foundation Trust, Manchester, United Kingdom**Correspondence:** Rishab Makam**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A134**

Objectives: In the absence of standardised guidelines for managing mild to moderate tricuspid regurgitation (TR) during mitral valve (MV) surgery, we sought to evaluate whether performing concurrent tricuspid intervention affects patient outcomes.

Methods: Analysis of our database between 1998 to 2023 identified 1,600 MV procedures, with 913 cases meeting criteria for either isolated MV repair/replacement (MVR/MVR) or MVR/MVR with concomitant tricuspid repair (TVr). Outcomes assessed included in-hospital mortality, major adverse cardiac and cerebrovascular events (MACCE), new renal dialysis requirements, and postoperative stay.

Results: Among the 913 cases, 860 underwent isolated MV surgery (396 MVR, 464 MVR), and 52 had concomitant mitral and tricuspid surgery (24 MVR, 28 MVR). There were no significant differences in rates of stroke (p=0.56), postoperative MI (p=0.45), or in-hospital mortality (p=0.70) between groups. However, the concomitant surgery group exhibited significantly higher postoperative dialysis rates (p=0.01) and longer hospital stays (p=0.02). These trends persisted in the concomitant MVR and TVr subgroup, with dialysis (p=0.01) and extended hospital stays (p=0.05) remaining elevated.

Conclusions: Our findings suggest that concomitant TV intervention during mitral surgery does not increase MACCE. However, concomitant surgery may increase risk of postoperative dialysis and longer hospital stay. While this study supports the feasibility of addressing tricuspid disease during mitral surgery, study limitations highlight the need for further research to inform decision-making in this population.

Final category: Congenital**A135****Aorta Pulmonary Window Repair by using two separate patches**

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Correspondence: Simran Kundan**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A135**

Introduction: AP window repair has been described by using a Sandwich patch between the great arteries. We evaluated our method of septating the two outflows by disconnecting and repatching the two arteries separately.

Method: We analysed of our database from April 2009 to March 2018 for all patients who underwent an APW repair.

Results: We operated 30 children with APW (13 female, 17 male), mean age 3.3 months, mean weight 3.8 kg. Sixteen type I, 11 type II and 3 type III defects. Mean CPB time 148 min, ACC 78 min and ACP was used in 9 patients averaging 59 min. Seven patients underwent delayed sternal closure. Average ventilation was 47 h and ICU time was 6.6 days. We used Sandwich technique in 15 children, separate patches in 10 children. 5 children had associated arch repair and one had an ASO.

The sandwich technique used for type II defect, 4/11 had an average RPA gradient of 11 mmHg (5–21 mmHg) whereas only one child (type III) had a gradient of 28 mmHg at the RPA. For the children in whom the outflows were disconnected, the mean gradient across the MPA-RPA junction was 5 mmHg (2–7 mmHg). There was one postoperative mortality. Average follow up of 78 months, with stable gradients over that time.

Conclusion: In children with complex AP window anatomy, separating the two outflows and reconstructing them with different patches gives the most anatomic outflows.

A136**A Single Stage Frozen Elephant Trunk Technique For Kommerell Diverticulum With Left Aortic Arch And Right Aberrant Subclavian Artery: A Novel Surgical Technique**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A136

Objectives: Kommerell diverticulum (KD) carries a significant risk of dissection and rupture, reason why its timely treatment is essential. Traditionally, its treatment consisted on a two-staged or multistage surgery. Here, we present a novel single stage total correction with a frozen elephant trunk technique (FET) for KD with left aortic arch (LAA) and aberrant right subclavian artery (ARSA).

Methods: From November 2021 to May 2024 two patients underwent a single staged FET technique for KD with LAA and ARSA. The intervention consisted of the total replacement of the ascending aorta and aortic arch with an EVITA NEO prosthesis, with re-implantation of all supraaortic arch vessels (SAAV), the ligation of the ARSA with exclusion of the KD from the body circulation, and finally the creation of an independent bypass between the RSA and the ascending aorta.

Results: Both patients recovered well without any mayor cardiovascular complications during their hospital stay or postoperative period. Throughout follow-up angio-CT imaging showed the complete aortic arch replacement with re-implantation of the SAAV without any leaks, good stent expansion in the descending aorta, and a thrombosed aberrant stump.

Conclusions: The surgical technique we present in this article shows promising early and mid-term outcomes, with the advantage of offering a single stage intervention, a more anatomical complete revascularization of all SAAV with a complete exclusion of the KD and good symptomatic relief. Nevertheless, to extend and completely validate this technique more patients are required.

A137**Quantitative Analysis of Aortic Valve Geometry in children with and without Congenital Aortic Valve Disease**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A137

Objectives: Bicuspid aortic valve (BAV) is the most common congenital heart defect, affecting about 1% of the population. In children, congenital aortic valve disease is more complex as compared to adults, often appearing as monocuspid or functionally monocuspid. Aortic valve geometry in these children remains unclear.

Methods: Echocardiography for children (N=105, median age: 6) with congenital aortic valve disease (N=39 surgery, N=14 balloon valvuloplasty, N=18 no intervention) was compared with controls (N=34) with structurally normal aortic valves. Cusp height at full closure of aortic valve in end diastole (H-C) and full opening (H-O), prior to any valve intervention, were measured from the hinge line at the aortic annulus in the parasternal long-axis view and indexed to annular dimensions.

Results: BAV patients (N=71) had lower indexed H-C (median=0.333) than controls (median=0.520) (p<0.001), but comparable indexed H-O (p=not significant). Control group H-C (median=0.520) was significantly higher than that in BAV with surgery (median=0.333) (p<0.01), balloon valvuloplasty (median=0.333) (p=0.011), and no intervention (median=0.278) (p<0.01). Indexed H-C was similar across BAV patients, regardless of intervention (p=not significant). 14 BAV

patients (19.72%) had free edges that closed below the annular plane (median=-0.40 mm), which was not observed in control patients.

Conclusion: Children with congenital aortic valve disease demonstrate significantly deranged aortic valve geometry compared to children with structurally normal aortic valves. The prognostication value of these indicators require further studies.

A138**Evaluation of surgical outcome, encompassing pain and comfort scores, in children undergoing minimally invasive surgery for Atrial Septal Defect closure**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A138

Background/Objectives: It is unclear if minimally invasive surgery results in higher pain levels due to local retraction of the wound or nerves, compared to conventional longer incisions.

Methods: Between 2015–2024, forty-four ASD patients were reviewed [29 minimally-invasive (20 MS-ministernotomy, 9 MT-minithoracotomy) vs 15 FS-full sternotomy]. Pain and comfort levels within first 24-h post-surgery were assessed by (i) nurse-reported pain score (NRS) (0=none, 1=mild, 2=moderate, 3=severe) and (ii) Comfort-B Score (scale 1–5), focusing on 4 domains: alertness, agitation, facial tension, and movement. Trainees performed surgery in 12 (80%)-FS, 9 (45%)-MS, and 1 (11%)-MT.

Results: No age or weight differences existed [MS (5.5 years,19.2 kg) vs MT (5.5 years,21.3 kg) vs FS (6 years,20.2 kg); p=NS]. The maximal NRS (median,interquartile) were (i) at rest: MS-2.0(2.0–2.0), MT-2.0(1.0–3.0) (p=0.51), FS-1.0(0.5–2.5) (p=0.51), (ii) on movement: MS-2.0(2.00–2.25), MT-1.0(1.0–1.5), FS-1.5(1.00–2.25)(p=0.10). Average and maximal Comfort-B scores were comparable (p=NS). No differences existed in cardiopulmonary-bypass time (p=0.09), but MT had the shortest cross-clamp-time (10.0 min) compared to MS-21.5 and FS-17.0 (p=0.0049). Extubation occurred on postoperative day-0 (0–1) (MS) compared to day-1 (0–1) (FS) and day-1 (1–1.5) (MT) (p=0.014). Median ICU and hospital stays were 1 day and 5 days for all groups (p=NS). Morbidities included re-exploration for bleeding (n=1) and superficial debriement (n=1).

Conclusion: Minimally invasive ASD repair can be performed safely in children with minimal morbidity and no difference in pain or comfort compared to the conventional approach.

A139**Modified Warden's Procedure for PAPVC Rerouting**

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A139

Introduction: The double patch and its modifications repair of SVASD puts both the systemic and pulmonary venous pathway at risk of stenosis.

The Warden's procedure safeguards the pulmonary venous return to LA.

Method: We retrospectively analysed outcomes of patients undergoing Warden's procedure from Jan 2016 till Dec 2020. Modified Warden's procedure was performed in all patients. The neo SVC-RA junction was anastomosed with continuous suture for the posterior wall and interrupted sutures anteriorly.

Results: Forty patients (29 m/11f). Mean age of 3.5 years. Mean weight of 14.51 kg. 26 patients had only RUPV involvement, 12 had involvement of RUPV and RMPV and 1 had HAPVC. 37 (92.5%) had the pulmonary veins draining at the SVC-RA junction and 5 (12.5%) were draining high up in the SVC. The ASD was Sinus Venosus in 36 (90%) and Ostium Secundum in 4 (10%).

Mean CPB time was 105.88 (77–267) min and ACC was 36.9 (14–157) minutes.

There was no SN dysfunction. Postoperative echo showed a mean gradient of 2.3 (0–9 mmHg) across the neo SVC-RA junction. There was laminar flow in the pulmonary venous baffle.

Conclusion: Warden's procedure safeguards the pulmonary venous pathway, particularly when.

1. PAPVC drain high up in the SVC
2. B/L SVC and
3. When the pulmonary veins open on the lateral aspect of the SVC-RA junction.

Our modification of anastomosing the neo SVC-RA junction maximizes the anastomosis without any pursestring effect.

A140

Optimising Follow-up Guidelines for Patients Who Underwent the Arterial Switch Operation for Transposition of the Great Arteries: A North-West Quality Improvement Initiative

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A140

Background: Transposition of the great arteries requires prompt diagnosis and intervention. The arterial switch operation (ASO) is one of the greatest surgical innovations of the past century; with excellent early outcomes, we shift our focus to optimising long-term results. Long-term follow-up consistently reveals several complications warranting targeted investigations. As our centre has no formal follow-up guidance, we evaluate current follow-up practices, identify deviations from evidence-based standards, and propose recommendations for alignment with optimal care.

Methods: We conducted a comprehensive literature review and compared findings to established guidelines, forming a standard against which current practices were measured. Six patients who underwent ASO within the last 15 years are included. We reviewed all clinical follow-ups, assessing care components and timing against the proposed standards to identify potential areas for improvement.

Results: Follow-up frequency, history taking, physical examination, and echocardiography aligned with the recommended standards. However, Holter monitoring was performed in 0% of patients under age 5, 16% biennially for ages 1–9, and 12.75% for ages 10–18. Exercise testing, cardiac MRI, and coronary patency assessments were not utilised in the 1–9 and 10–18-year categories, although cardiac MRI was appropriately used in patients aged 10–18.

Conclusions: Our proposed guideline identifies significant areas for improvement in our practice. Further evaluation will determine if implementing these recommendations enhances the consistency and quality of long-term care. Discussion among professionals is essential, as sharing insights and collective expertise can drive the development of standardised follow-up protocols, ultimately improving patient outcomes in the field.

A141

Melody mitral valve replacement in young infants and children

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A141

Background: Melody valve for Mitral Valve Replacement (MMVR) is a valid alternative to mechanical valves in young children when MV

repair is not possible. We studied our initial results with such valve substitute looking at complication rate, need for reintervention and survival.

Methods: Children who underwent MMVR between 2020 and 2024 were included. Cumulative incidence of reintervention and transplant-free survival were analyzed with Kaplan–Meier analysis. Change in mitral valve annulus size after reintervention was also studied.

Results: Fourteen patients underwent MMVR. Median age and weight were 8.9 months (3.2–15.5) and 5.8 kg (4.1–9.0) respectively. Eleven patients (78.5%) had previous operations to the mitral valve. Nine patients (64%) had atrioventricular septal defect and 8 (57%) had both mitral regurgitation and stenosis. Median diameter of the dilated Melody implanted was 15.5 mm (11–19). Four patients required a pacemaker for post-operative heart block. There were no reports of coagulopathy and left ventricular outflow tract obstruction during our follow-up 16.0 months (6.7 – 34.4). There were two in-hospital deaths, one in a patient on ECMO preoperatively, and one in Shone Syndrome with our smallest dilation (11 mm). We did not experience late mortalities. Four patients required subsequent balloon-dilatation of the Melody valve (median time 10.3 (7.6–13.2) months) and 3 underwent mechanical MVR (median time of 24.3 months).

Conclusion: In this high-risk group of small and young children, MMVR provides good early survival, bridging successfully to mechanical MVR. The valve is amenable to catheter dilatation as the child grows. Heart block needing pacemaker is a potential morbidity.

A142

Early Outcomes of Transannular Repair of the Pulmonary Artery Using a Right Atrial Appendage Neovalve

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A142

Background: Pulmonary artery (PA) repair in pediatric cardiac surgery often utilizes the transannular patch (TAP) technique, which, while effective, is associated with complications such as right ventricular (RV) dysfunction and pulmonary valve (PV) regurgitation. Recent findings highlight the need for improved strategies to address these issues and enhance long-term outcomes.

Materials and Methods: This retrospective cohort study analyzed 26 pediatric patients who underwent PA repair from December 2023 to September 2024. Patients were divided into two groups: RAA neovalve (n=13) and TAP (n=13). Key procedural metrics, RV function, and postoperative outcomes were evaluated using standard statistical methods.

Results: The RAA neovalve group demonstrated significantly reduced severe PV regurgitation compared to the TAP group (p<0.001). Additionally, the RAA neovalve group exhibited improved RV function, with more patients showing no RV dysfunction (p=0.014). The RAA neovalve group also experienced shorter ICU stays (3.88±0.84 days vs. 6.13±2.75 days, p=0.044) and hospital stays (10.1±1.25 days vs. 13.2±3.19 days, p=0.029).

Conclusion: The RAA neovalve technique presents a significant improvement over traditional TAP in reducing severe PV regurgitation and enhancing RV function. The shorter ICU and hospital stays associated with the RAA neovalve suggest better postoperative recovery. These results indicate that the RAA neovalve could be a superior alternative to TAP for PA repair, warranting further research to confirm these benefits and explore long-term outcomes.

A143**Expect the Unexpected: Insights into Anomalous Coronary Arteries in Aortic Root Replacement**David Cistulli¹, Mathew Doyle¹, Yashaskar Rao¹, Paul Bannon^{1,2,3}, Martin Misfeld¹¹Royal Prince Alfred Hospital, Sydney, Australia. ²University of Sydney, Sydney, Australia. ³The Baird Institute for Applied Heart and Lung Research, Sydney, Australia**Correspondence:** David Cistulli**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A143****Objective:** To analyse anomalous coronary artery presentations in aortic root replacement (ARR), focusing on patterns, origins, and demographics.**Methods:** A systematic review of the literature was performed for all cases with anomalous coronary arteries undergoing ARR. Data included baseline characteristics, coronary anomaly types and origins, operative details and outcomes. The data were combined with a case performed at our institution.**Results:** Twelve patients were identified, all male, with a mean age of 51.4 years. Anomalous right coronary artery (RCA) was most common (50%), 83.3% of these originating directly from the left coronary sinus. Anomalous left circumflex artery (LCx) was noted in 41.7% of cases, with various origins (right sinus, left sinus, RCA). One case (8.3%) involved an anomalous LM arising from the RCA. Intramural or malignant course was found in 25% of cases. Most patients presented with aortic root aneurysm (91.7%) and severe aortic valve insufficiency (75%). The mean aortic root diameter was 54.9 mm. Valve-sparing ARR was performed in 66.7% of cases, with normal post-operative valve function and no adverse events. Reimplantation of the anomalous artery was performed in 58.3%, translocation in 16.7%, and a common island approach in 25%. One common island case included an LCx bypass graft, which failed due to competitive flow.**Conclusion:** Anomalous coronary arteries in ARR are rare, with RCA and LCx most frequent. ARR with valved conduits and even valve-sparing procedures are feasible and safe in selected patients with excellent results. Awareness of these anomalies is essential for surgical planning and outcome optimisation.**A144****Management of primary airway tumours in children – Single centre experience over 10 years**Tjasa Zaletel^{1,2}, Christopher Rutter³, Pooja Shetty¹, Arun Beeman¹, Nagarajan Muthialu¹¹Great Ormond Street Hospital, London, United Kingdom. ²University College London, London, United Kingdom. ³The Ohio State University College of Medicine, Columbus, USA**Correspondence:** Tjasa Zaletel**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A144****Objectives:** Primary airway tumours are extremely rare in children (0.049 in 100,000). This study aims to evaluate the management of primary paediatric airway tumours at our quaternary paediatric airway centre.**Methods:** This is a retrospective single-centre cohort study evaluating the management of children presenting with primary airway tumours at a quaternary paediatric airway centre from January 2012 to December 2022. Various demographic and clinical data were collected. Patients were followed up for a mean duration of 4 years.**Results:** A total of 23 children (male=14, female=9) with the mean age of 4.5 years were included in this study. Common symptoms at presentation were cough (n=9), dyspnoea (n=4) and weight loss (n=3). Diagnostic work-up included Computerised Tomography (CT scan) and bronchoscopy. Tumours were located in the left paratracheal (n=1), right main bronchus (n=8), left main bronchus (n=7), right bronchus intermedius (n=3), carina (n=3) and distal (n=1) regions. Surgical management included right pneumonectomy (n=2), sleeve resection of bronchus (n=17), sleeve lobectomy (n=2) and excision (n=2). Histopathological analysis showed inflammatory myofibroblastic tumour (IMFT, n=12); carcoid tumour (n=4); clear cell carcinoma (n=2) and mucoepidermoid carcinoma (n=5).

Our patient survival was 100%. One child with IMFT (ALK-positive) continues to receive chemotherapy (crizotinib) and needed biodegradable stent insertion for recurrent tracheal stenosis. One child required insertion of tissue expander in hemithorax.

Conclusions: Airway tumours are uncommon in children and need extensive work-up including contrast-enhanced CT scan. While majority of them can be amenable to local excision, these tumours can at times follow a protracted clinical course.**A145****Kommerell's diverticulum – old foe revisited**Tjasa Zaletel^{1,2}, Christopher Rutter³, Pooja Shetty¹, Arun Beeman¹, Nagarajan Muthialu¹¹Great Ormond Street Hospital, London, United Kingdom. ²University College London, London, United Kingdom. ³The Ohio State University College of Medicine, Columbus, USA**Correspondence:** Tjasa Zaletel**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A145****Background:** Vascular rings represent unique embryological anomalies that can compromise trachea and oesophagus. In right aortic arch with aberrant left subclavian artery (RAA/ALSA) subtype, large Kommerell's diverticulum significantly compresses trachea/oesophageal complex keeping children symptomatic. Our study reviews single-centre surgical experience of managing children with Kommerell's diverticulum.**Methods:** This retrospective review includes children who underwent vascular ring surgery (n=262) over 10 years, of which only those with RAA/ALSA subtype were included (n=71). We reviewed surgical technique—Kommerell's diverticulum resection with reimplantation of subclavian artery. Our primary end point was symptom relief. Secondary end points were risk to anastomosis of subclavian artery to common carotid artery, risk of left recurrent laryngeal nerve injury, incomplete resection or reintervention.**Results:** Out of 71 children, 66 children underwent primary resection. Remaining 5 had redo thoracotomy following previous vascular ring surgery (wherein diverticulum was not addressed) to complete diverticulum resection and subclavian artery reimplantation. All underwent left thoracotomy at third intercostal space, sparing latissimus dorsi and serratus anterior.

In the reintervention group, 2 children remain symptomatic at 6 months. None of those with primary resection had persistence of airway symptoms. One had weak radial pulse with a gradient of 4 mmHg across anastomosis on angiography and no further intervention.

Conclusion: The main inciting component of vascular ring in RAA/ALSA subtype is Kommerell's diverticulum. It is important to consider dividing/resecting it and reimplanting left subclavian artery to common carotid artery for symptom relief. Surgical risks are low, making this surgery reproducible without difficulty.**A146****Evaluation of the diagnostic pathway for necrotising enterocolitis (NEC) in infants following cardiac surgery for congenital heart defects**Tjasa Zaletel^{1,2}, Mislav Planinc³, Branko Mimic¹¹Great Ormond Street Hospital, London, London, United Kingdom.²University College London, London, United Kingdom. ³Great Ormond Street Hospital, London, United Kingdom**Correspondence:** Tjasa Zaletel**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A146****Objectives:** Following cardiac surgery, altered clinical presentation of infants may delay the diagnosis of necrotising enterocolitis (NEC) leading to potentially life-threatening complications. This study aims to evaluate peri-operative risk factors and the diagnostic pathway of NEC in infants post-cardiac surgery.**Methods:** This is a retrospective single-centre cohort study evaluating risk factors and diagnostic pathway in infants diagnosed with NEC post-cardiac surgery between April 2019 and August 2024 at a tertiary paediatric centre. We collected data about age, co-morbidities,

pre-operative diagnosis, diagnostic tools, treatment strategies, outcomes and complications.

Results: A total of 58 patients (males = 29, females = 29) were included in this study. The average age at operation was 70.4 ± 69.5 (5–267) days. The most common preoperative diagnoses included ventricular septal defect (41%), aortic arch disorders (29%) and right ventricle anomalies (26%). Majority (67%) had associated comorbidities, of which premature birth (38%), preprocedural mechanical ventilatory support (26%) and chromosomal anomalies (26%) were most common. One third underwent one or more previous procedures. Clinical examination, stool sample, blood cultures and plain abdominal film were used to diagnose NEC. Infants were managed by a combination of conservative, pharmacological and surgical interventions. There were 5 deaths. 30% experienced post-operative complications, of which acute kidney injury requiring dialysis and new neurological impairment were the most common (25%).

Conclusions: Systematic approach to diagnose and manage NEC in infants post-cardiac surgery are key for early diagnosis. Despite that, multiple challenges remain. Persistently high morbidity and mortality warrant further interest in identifying those at risk to enable early intervention.

A147

Determining aortic wall nanomechanical properties in patients with coarctation of the aorta

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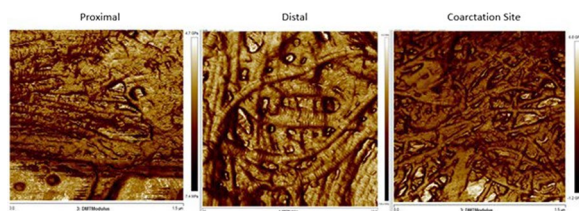
Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A147

Objectives: This project aims to utilise atomic force microscopy (AFM) to characterise the nanomechanical properties of the aortic wall in patients with coarctation of the aorta (CoA) following childhood correction. AFM is a high-resolution imaging technique capable of visualising collagen fibril ultrastructure and determining tissue stiffness (elastic modulus) on biopsy samples in vitro.

Methods: Aortic samples were collected from 27 neonatal CoA patients undergoing surgical repair, with the proximal end of the sample labelled with a stitch to note the correct orientation. Each sample was divided into three regions: the coarctation site (CS), and samples proximal and distal to the CS. Samples were embedded in OCT and sectioned to 5 microns for AFM analysis. AFM was used with the Bruker Peakforce QNM method using a RTESPA MMP-11120 tip to record three 1.5µm images per sample.

Results: AFM images demonstrated abundant collagen fibrils in the aorta. Collagen fibrils in these images are more disorganised in the CS compared to proximal and distal samples (Figure 1). The CS demonstrated the greatest mean elastic modulus of 2.3GPa compared to both the proximal (1.9GPa) and distal groups (1.8GPa).

Conclusions: AFM is a useful technique for determining localised changes in the aorta of CoA patients. The increased elastic modulus and greater disorganisation of collagen fibrils in the CS may indicate changes to extracellular matrix composition as a result of CoA. Increased elastic modulus in proximal samples compared to distal samples indicates that extracellular remodelling may occur in response to blood pressure changes caused by CoA.



A comparison of collagen fibril structure in the proximal, distal and coarctation site regions of the aorta in a patient with CoA.

A148

Restrictive right ventricular physiology early after Tetralogy of Fallot repair – prevalence in contemporary era and impact on surgical outcome

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A148

Post-repair Tetralogy of Fallot is characterised by variable degrees of restrictive RV, with estimated 46.5% pooled prevalence of pulmonary arterial end-diastolic forward flow (EDFF). Its prevalence in contemporary era and impact on outcome remains unclear.

Early post-repair (day 0/1) echocardiography (N=55, 20% aorto-mitral discontinuity) were reviewed. Doppler profiles across PA were examined (restrictive RV-defined by EDFF on at least three consecutive cardiac cycles). Primary repair was favoured (median age at repair: 0.6 year, range 14.0 days–2.5 years; 7.4 kg, 3.5–12.4 kg; 3-BTT shunt) with (i) comprehensive myectomy achieving unobstructed outflow [peak gradient < 2.5 m/s in 43(78%)], (ii) mini transannular patch (32/58% with selective PV reconstruction: 5-monocusp, 1-bicuspid from RA appendage) (iv) careful preservation of tricuspid valve [51(93%) TR < moderate, 4(7%) moderate].

12(22%) patients developed restrictive physiology post-repair, which was associated with higher RV outflow gradient (p=0.007), but not age, bypass time, transannular patch, tricuspid/pulmonary regurgitation. Median extubation time was post-op day 1 (interquartile 1–3; 41(75%) extubated by post-op day 2), and ICU stay 4 days (3–7). Longer ICU stays were not associated with EDFF or transannular patch, but with moderate/severe PR (median 5 vs 3 days when < moderate PR, p=0.015) and bypass time (p=0.018). Early reintervention included 1(1.8%) tricuspid repair and 2(3.6%) permanent pacemaker. All patients were alive at follow-up (median 5.14 years, 3(5%) late RV outflow tract reintervention).

Restrictive physiology had not resulted in longer ICU stay. Strategies improving PV competency whilst achieving unobstructed outflow tract may further improve early outcome and reduce late reintervention.

A149

Using the ExoVasc PEARS graft to support the Ross operation (Ross-PEARS) in patients with aortic valve regurgitation

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Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1): A149

Background: Despite the evidence of the excellent results of the Ross operation, it's still not recommended on certain situations, like significant aortic valve regurgitation. The reason is the risk of autograft dilatation and dysfunction. We believe the correct and personalized support of the autograft can make the Ross suitable for patients with pure aortic regurgitation.

Methods: Since 2015 we have been using the ExoVasc PEARS to support the autograft. Among the 93 recorded Ross-PEARS cases, we selected those with pure regurgitation (27). When there was a significant discrepancy between the ascending aorta and the pulmonary artery, a reduction aortoplasty was performed.

Results: Mean age was 24.44 (ranging 9–65). 17 patients had bicuspid aortic valve, and 9 of them had dilated aortopathy. 8 patients underwent reduction aortoplasty. Mean bypass and cross-clamp times were 193.18 and 141.13 min respectively. Median postoperative length of stay was 6.5 days. Mean follow-up was 38.05 months. The first patient in the cohort required a mechanical AVR (had rheumatic valve disease). None of the rest of the patients show significant aortic valve regurgitation.

Conclusions: Ross operation offers excellent results in terms of survival and functionality. However, the autograft dilatation in the free-root Ross is a well described complication. We believe that with the

correct autograft support, free-root Ross can also be performed in patients with pure aortic valve regurgitation. For this reason, we have been performing the Ross-PEARS since 2015. Results are very promising, even in those patients with aortic regurgitation or bicuspid aortic valve.

A150

Machine Learning Applications in Paediatric Cardiac and Congenital Heart Surgery: A Systematic Review of Current Use and Impact

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Clinical prediction tools (CPTs) are essential for patient stratification, risk assessment, and decision-making in healthcare. Advances in machine learning (ML) enable the processing of large datasets with sophisticated algorithms, though its role in paediatric cardiac surgery remains unclear. This review examines ML's current application in paediatric surgery, evaluating evidence, validity, and clinical effectiveness. A systematic search on October 22, 2024, using terms like "cardiac surgery," "paediatric," and "machine learning," was conducted on Medline, Web of Science, and Embase following PRISMA guidelines. Two independent reviewers screened studies, applied the MACHINE Learning Assessment Tool (M-LAT) for bias, and excluded studies using only traditional statistical models.

Out of 246 identified studies, 26 met inclusion criteria, encompassing 42 ML models. Most studies were from the United States (35%) and China (15%), with four multi-country studies. Key areas of focus included congenital heart disease (CHD), where ML models aided in risk stratification and surgical planning (38%), and paediatric cardiac surgery, predicting complications like acute kidney injury (AKI) and prolonged ventilation (31%). Heart transplant studies (15%) assessed outcomes, graft survival, and perioperative risks, while 15% addressed postoperative issues such as neurological complications.

Supervised learning was predominant (81%), with unsupervised and generative models less common. ML models used an average of 40 variables across 24,720 cases, with AUCs ranging from 0.54 to 1.00. Limitations included small, imbalanced datasets and potential bias. Future research should aim to optimize unsupervised learning and explore real-time applications, underscoring ML's potential to handle complex data in paediatric cardiac surgery.

A151

Global Disparities in Congenital Heart Surgery: Assessing the Burden of Untreated Congenital Heart Disease

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Background: We further assessed the global burden of untreated congenital heart disease (CHD) by quantifying the disparity of congenital heart surgeon (CHS) workforce based on income level and demography of global population.

Methods: Cardiothoracic Surgery Network (CTSNet) registry was manually searched for each country to identify all CHS. World Bank data was utilised to determine Gross Domestic Product per capita (GDP/capita) and to stratify each country based on income level (LIC-lower, LMIC-lower middle, UMIC-upper middle, HIC-high income). The ratios of CHS (per million population) to (i) whole population "CHS:Whole" (ii) children under 15-year "CHS:Paeds" for each country (N=119) were determined.

Results: The CHS ratios correlated with GDP/capita: (i) $r(\text{CHS:Whole})=0.69$, 95%CI 0.57–0.77, $p<0.0001$ and (ii) $r(\text{CHS:Paeds})=0.76$, 95%CI 0.67–0.83, $p=0.0099$. For HIC, UMIC, LMIC and LIC, (i) CHS:Whole 1.24, 0.60, 0.20, 0.09 surgeons ($p\text{-value}<0.00001$) and (ii) CHS:Paeds 7.73, 2.48, 0.70, 0.23 surgeons ($p\text{-value}<0.00001$). LMIC and LIC had higher proportion of paediatric population compared to higher income countries (median LIC 39% vs LMIC 30% vs UMIC 23% vs HIC 16%; $p\text{-value}<0.00001$), resulting in more pronounced disparity in CHS:Paed (of HIC 34-fold higher than LIC) (vs CHS:Whole 14-fold).

Conclusion: LICs have denser paediatric populations but the lowest ratios of CHS to population, confirming a greater need than previously highlighted. As CHD care extends beyond surgeons, the excess burden of untreated CHD remains unquantified, pointing to the need of future research.

A152

Case report: Peripheral bypass cannulation for high-risk redo-sternotomy in a patient with absent abdominal IVC and lower body venous return via hemi-azygous continuation to a persistent left SVC to coronary sinus*

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Objective: Advanced planning of cardiopulmonary bypass strategy is mandatory for patients undergoing multiple redo-sternotomy.

Method: A 17 years old patient underwent prior sternotomies for neonatal aortic coarctation repair, resection of subaortic membrane and Ross operation. She now presented with a dilated neo-aortic root, aortic valve regurgitation, recurrent subaortic obstruction and stenosed RV-PA conduit. MRI showed that the aortic root was adherent to the sternum and there was a surprise finding of an absent abdominal IVC. Both iliac veins drained to a paraspinal confluence continuing as a hemi-azygous vein to a persistent left SVC to the coronary sinus. Small right SVC with no connecting vein in between right and left SVCs.

Prior to redo-sternotomy inflow for cardiopulmonary bypass was established via a 6 mm vascular graft on the right subclavian artery and drainage via short venous cannulas in the right internal jugular vein size 23FG and left common femoral vein size 28FG, both 15 cm in length.

Result: Full bypass flows were achieved without vacuum assistance. The patient underwent uneventful sternal re-entry and successful mechanical Bentall with Konno enlargement of the aortic annulus and replacement of RV-PA conduit with homograft size 23 mm.

Conclusion: Cross-sectional imaging of the heart as well as potential peripheral cannulation sites as part of the routine work-up for redo-sternotomy allowed planning for successful high-risk sternal re-entry in this patient with abnormal systemic venous drainage.

*The patient has confirmed explicit consent to be in the Journal.

A153

Treatment pathway, mortality, and hospital resource utilisation in a national cohort of patients with pulmonary atresia with intact ventricular septum (PA-IVS)

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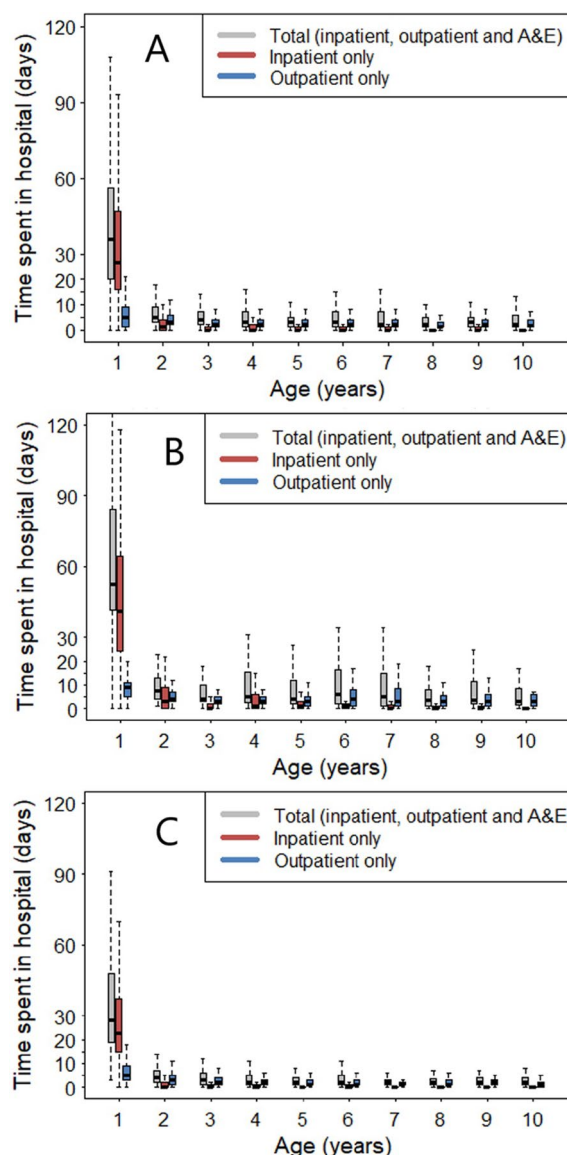
Objectives: Management of pulmonary atresia with intact ventricular septum (PA-IVS) has evolved in the past decades, especially with more transcatheter right ventricular (RV) decompression procedures. We aim to report contemporary national outcomes for PA-IVS patients from 0–18 years.

Methods: All patients with PA-IVS born between 2000–2021 in England and Wales were linked to hospital and outpatient records national datasets.

Results: 510 PA-IVS patients were included of which 136 (26.7%) went on a *single ventricle pathway*, 278 (54.5%) underwent *biventricular pathway* and 96 (18.8%) were *uncommitted*. Median follow-up was 8.9 years, with 1-year and 5-year mortality 19.3% and 20.5%, respectively. Those having palliative stage 1 as first intervention had higher 1-year mortality compared to those having RV decompression as first intervention (36.5% vs 7.5%, $p < 0.05$). Overall, RV decompression was predominantly transcatheter (81.7%). In those undergoing biventricular repair, freedom from any cardiac reintervention was 36.3% at 10 years.

Median total number of days at hospital was highest during first year of patients' lives (36 days) and decreased gradually down to 1 day per year by 18 years old (Figure Panel A). Single ventricle pathway individuals spent more days in the hospital (Figure Panel B) compared to biventricular pathway (Figure Panel C).

Conclusion: Transcatheter RV decompression has become the most prevalent initial treatment option in PA-IVS, with good survival but high burden of reintervention. Early mortality after non-antegrade flow augmentation remains high. Compared to the single ventricle pathway, biventricular repair has lower mortality and hospital resource utilisation.



Hospital resource utilisation (total days spent in hospital): Panel A – the whole PA-IVS cohort, Panel B—Single Ventricle pathway individuals and Panel C – those who underwent a biventricular pathway.

A154

Survival outcome, reintervention, and hospital resource utilisation in a national cohort with atrio-ventricular septal defect (AVSD)

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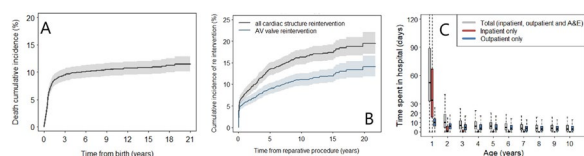
Journal of Cardiothoracic Surgery 2026, **21**(Suppl 1):A154

Objectives: Large multicentre contemporary outcome data on management of complete AVSD is lacking. We aim to report national outcomes between 0–18 years in balanced AVSD.

Methods: All patients with AVSD between 2000 to 2021 undergoing a cardiac procedure in England and Wales were linked to hospital and outpatient records using a national dataset framework. Risk factors for mortality, reintervention and time spent in hospital were evaluated using multivariable regression.

Results: 2698 complete AVSD patients were followed-up for a median of 10.6 years, of which 89.7% had complete AVSD repair while the remainder had staged or partial repairs, with 1-year and 5-year mortality being 7.4% and 9.9% respectively (Figure panel A). Freedom from any cardiac structural reintervention at 10 years was 83.7%, most procedures being atrioventricular valve repair or replacements (Figure panel B). Median total number of days in hospital was highest during the first year of life, at 52 days and decreased gradually down to 3 days after 10 years (Figure panel C). Down syndrome, congenital non-cardiac comorbidities, acquired comorbidities, severity of illness and/or neonatal period at the first procedure were linked with higher mortality risk and reduced days at home during first year of life.

Conclusion: Mortality and hospital resource utilisation are high in the first year of life for AVSD infants. Beyond the first year of life, there is an increasing burden of atrioventricular valve reintervention. Risk factors associated with worse outcomes are mostly non-modifiable but can inform decision making and targeted improvements in quality of care.



A155

Impact of atrioventricular valve reinterventions on long-term outcome after complete atrioventricular septal defect repair

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Objective: This study examines impact of atrioventricular (AVV) reintervention on long-term outcome following complete atrioventricular septal defect (AVSD) repair.

Methods: 90 consecutive patients (76% Trisomy 21) who underwent complete AVSD repair between 2008–2018 at a single tertiary

centre were reviewed. Two-patch technique was used in 54 (60%) and Nunn technique in 36 (40%) at a median (interquartile) age of 4.12 (3.13–5.03 months) and weight 4.6 (4.0–5.4 kg) at the time of surgery. Kaplan–Meier analysis was used to assess freedom from death and reintervention.

Results: Early mortality (≤ 30 days) was 2.2%(2), with another 2.2%(2) mortality within and 2.2%(2) after one year. AVV reinterventions were required in 14(15.6%) patients (all involved left including 2 concomitants right AVV); half ($n=7$) occurred within the first year and another half ($n=7$) after one-year post-repair. The majority of valve reintervention occurred within the first 30-day (5, 5.6%: 4-redo repair, 1-replacement) with 60% ($N=3$) mortality (vs 1,11.1% mortality post 30-day, $p=0.095$). Overall long-term survival (freedom from death) was 95.5% (1-year), 94.4% (5-year) and 93.3% (at 10 and 15 years) post repair. Valve reintervention significantly impacted on survival [71.4% at 1, 5, 10-year vs no valve reintervention survival 98.7% (1, 5-year), 97.3%(10-year)], log-rank $\chi^2=14.618$, $p<0.001$). After excluding valve reintervention within first year post-repair, there was no survival difference between valve reintervention (100% at 5 and 10-year vs no valve reintervention: 98.7%(5-year), 97.3% (10-year) log-rank $\chi^2=0.192$, $p=0.661$).

Conclusion: Early reintervention impacts survival, highlighting optimal initial repair.

A156

Autonomous Intra-Aortic Cardiac Pump Technology for End-Stage Heart Failure

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The LifeheART device is an innovative Left Ventricular Assist Device (LVAD) currently under development, aimed at improving support options for patients with end-stage heart failure. Unlike conventional extracorporeal LVADs, potentially causing blood and organ damage, LifeheART is implantable within the ascending aorta, operating in series, preserving native cardiac function and minimizing adverse effects. This device, featuring a large pump diameter and requiring lower rotational speeds, demonstrated reduced blood trauma and enhanced biocompatibility. Key innovations include a shaft-less impeller design and intra-aortic placement to mitigate thrombosis, blood damage, and end-organ dysfunction thanks to significantly reduced wall shear stresses. Utilizing the Taguchi Design Optimization Method and Computational Fluid Dynamics (CFD), we investigated various pump geometries to optimize performance. Initial testing of a prototype in a mock cardiovascular circuit demonstrated the ability to achieve the desired pressure and mass flow rate characteristics at low rotation speeds, correlating with a low blood damage index. Additionally, the LifeheART device aims to incorporate an adaptive response system that leverages real-time ECG signals for personalized support, employing embedded AI algorithms for continuous monitoring and device regulations. This cybernetic approach promises significant improvements in patient outcomes and comfort by addressing the primary risks of LVAD implantation. As the LifeheART device progresses through development, it represents a promising advancement in intelligent cardiovascular support systems.

A157

Neurodevelopmental outcomes of patients undergoing arterial switch operation for transposition of the great arteries – a review of the literature

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Background: The 5-year mortality for children undergoing arterial switch operation (ASO) is around 6–7%. However, neurodevelopmental outcomes following ASO are of increasing research interest due to potential long-term impacts on cognitive and motor functions. This review evaluates neurodevelopmental outcomes in children who have undergone ASO.

Methods: A comprehensive literature search was conducted using PubMed, Medline and Scopus. From our search strategy, we excluded reviews, case reports, producing a total of 20 studies meeting our inclusion criteria. Common outcome measures included cognitive development, motor skills and brain injury incidence, assessed via standardized neurodevelopmental assessments, imaging techniques, and quality-of-life scales.

Results: Studies identified that infants undergoing early ASO exhibit a range of neurodevelopmental outcomes, with impairments noted in motor skills and cognitive performance. One study highlighted an inverse relationship between age at surgery and postoperative brain weight z score ($R^2 = 0.16$, $P = 0.007$) and a statistically significant decrease in neurodevelopment in the older age group. Meanwhile, another study reported significant impacts on cognitive and motor skills, correlated with perioperative complications. The pooled mean scores indicate that cognitive abilities averaged at 87.2, motor skills at 78.8 compared to neurotypical children of similar age who achieve average cognitive scores around 100. Studies further identified a link between non-cardiac comorbidities and reduced neurodevelopmental scores, underscoring the multifactorial nature of these outcomes.

Conclusion: Studies have demonstrated that factors such as age at surgery, perioperative complications, additional comorbidities contributing to neurodevelopmental outcomes. Further research into how this negative impact on neurodevelopment can be reduced intraoperatively needs to be conducted.

A158

Predictors of Ventilation Time in Children After Cardiac Surgery

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Objectives: This study sought to identify major factors of prolonged postoperative ventilation time in paediatric patients after cardiac surgery, enabling tailored interventions to enhance recovery.

Methods: We performed a retrospective observational study involving 396 paediatric patients (ages 0–14) who underwent cardiac surgeries in our centre. Data were obtained from electronic records (June 2023– July 2024) and encompassed demographic details, preoperative ejection fraction, intraoperative RACHS scores, and perioperative complications. The ventilation time was log-transformed to address significant variability, hence enhancing data interpretability. Statistical analyses comprised t-tests, Mann–Whitney U tests for continuous variables, ANOVA for group comparisons, Chi-squared, Fisher's exact tests for categorical data. A p-value of less than 0.05 was deemed statistically significant.

Results: In this study, high-risk pediatric patients (RACHS score 4) had ventilation times over 50% longer than those in lower-risk groups ($p < 0.001$), showing that surgical complexity has a significant impact. Non-survivors had longer ventilation time and ICU days (averaged

328.56 h, 19.64 days) than survivors (averaged 42.18 h, 4.63 days), both statistically significant ($p < 0.001$). Furthermore, younger and lower-weight patients had delayed extubation, occurring in around 30% of cases ($p < 0.05$). A positive correlation was noted between ventilation time and ICU stay, showing that longer ventilation led to longer ICU durations.

Conclusion: This study highlights key determinants of prolonged ventilation, highlighting the necessity for tailored weaning procedures and enhanced preoperative strategies in high-risk patients. Incorporating these findings into clinical practice can decrease ventilation time, improve recovery and overall outcomes in paediatric cardiac surgery.

A159

"Thrombus in Transit" Impending paradoxical embolism

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We report the case of a 62-year-old female who presented to the emergency department with dyspnea on exertion and pleuritic chest pain following a nine-hour flight from the USA. Past medical history was significant for Rheumatoid arthritis and BMI of 31.

CTPA showed extensive large emboli involving third-order branches of pulmonary arteries with large clot burden in the right atrium. TTE showed a hypoechoic mass in RA+LA moving over the interatrial septum of 4×1 cm. A coronary angiogram showed non-obstructive disease. Heparin infusion was initiated. A thorough MDT discussion recommended emergent surgical embolectomy. This was performed via a right and left atriotomy. The straddled thrombus across the PFO was removed. The main PA was explored and thrombus was also removed. PFO closure was then performed. Post-operative course was uneventful. Patient was discharged on day 8 post-op on apixaban.

Our case demonstrates the extremely rare finding of a thrombus entrapped in a PFO. Timely initiation of treatment is paramount to prevent the lethal sequelae of this condition. The most appropriate therapy for a 'thrombus in transit' is still unclear. Surgical embolectomy, IV thrombolysis, or catheter-based approaches. Surgical intervention proved favorable in our case that dealt with the large straddled clot, PFO closure and thus preventing recurrent paradoxical embolism. An MDT approach is crucial to help guide the best treatment modality for each individual patient.

* The patient gave their explicit, informed consent to publish their details in an open access journal.



Intraoperative 3d TOE image showing straddled thrombus within the PFO

Intraoperative 3d TOE image showing straddled thrombus within the PFO.

A160**Patient reported outcomes in a prospective cohort of children treated for congenital heart disease (CHD) – lessons learned**

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Objectives: To evaluate patient reported outcomes for Quality of Life (QoL) in paediatric CHD patients.

Methods: All patients above 8 years were eligible to fill in a questionnaire that included CHU9D (Child Health Utility for QoL assessment) by themselves or their parent/guardian prior to the procedure (or within a few days post procedure), at 3 months (3 m) and 12-month (12 m) post-procedure. A patient and public involvement (PPI) group reviewed the questionnaires, and their comments were incorporated as appropriate.

Results: 342 (279 catheter and 63 surgical) patients were due to have completed the questionnaires at all 3 time points (baseline (BL), 3 m and 12 m) by September 2024. Response rate at BL was 54% which decreased to 47% at 3 m and 33% at 12 m.

68 (~20%) individuals with an average age 12.3 years (minimum 8, maximum 17) responded at BL, 3 m and 12 m. Classification based on severity of disease included 57.35% (n=39) and 42.65% (n=29) with mild and moderate-severe CHD respectively, whilst classification based on procedure type was 20.6% surgery (n=14) and 79.4% transcatheter (n=54). CHU9D questionnaire data across 9 dimensions of QoL assessment are illustrated in Figure.

Conclusion: Beyond the hospital episode, QoL questionnaire more likely represents a reflection of the chronic condition rather than care delivery. Population heterogeneity and complex treatment pathways make it challenging to interpret the data despite classifying the cohort based on disease severity and procedure type. Future work with longer follow-up time is warranted to better understand QoL in children with CHD undergoing cardiac procedure.



Figure (abstract A160) CHU9D QoL dimensions (Likert scale 1–5 with 1 being no difficulty to 5 being significant impairment). Average scores (n=68) at Baseline (BL), at 3 m and 12 m are represented here.

A161**Combined Heart and Liver transplantation vs Heart only transplantation in a failing Fontan circulation – a Review of the outcomes, should operative criteria be reconsidered?**

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Background: Patients with Fontan physiology often experience progressive heart and liver failure, necessitating either a heart transplant (HT) or a combined heart-liver transplantation (HLT). This review evaluates outcomes for Fontan patients undergoing HLT versus HT alone, using recent data on survival and complications.

Methods: We conducted a retrospective review, analysing one- and five-year survival rates and postoperative complications for Fontan patients receiving HLT or HT.

Data on survival rates, complications, and specific indications for each transplant approach were assessed. Patients were categorised based on FALD (Fontan-associated liver disease) severity, with FALD scoring systems and imaging used to determine the level of hepatic dysfunction.

Results: The data revealed a one-year survival rate of 89% for HLT, compared to 68% for HT, indicating better short-term outcomes with HLT. At five years, HLT maintains a survival rate of 79.5%, while HT drops to 47%, highlighting HLT's long-term advantages for Fontan patients. HLT recipients had fewer liver-related readmissions but faced a higher likelihood (60%) of requiring renal support postoperatively. Hospital stays were longer for HLT patients, with a median of 51 days, compared to 23 days for HT patients.

Conclusion: HLT provides improved one- and five-year survival rates for Fontan patients compared to HT alone. Although HLT involves increased complexity and longer hospital stays, its enhanced survival rates and reduced liver-related complications make it a preferred option for patients with advanced liver disease. These findings underscore the need for refined selection criteria and optimized perioperative care for this high-risk population.

A162**Outcomes of Valve-Sparing Aortic Root Replacement Surgery (VSARR) Tricuspid versus Bicuspid Aortic Valve morphology**

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Objectives: Bicuspid aortic valve (BAV) is associated with proximal aortopathy, root dilation and risk of dissection. Pre-emptive VSARR is recommended to mitigate future aortic events when root dimension exceeds 50 mm. However, BAV may not be as durable compared with tricuspid aortic valve (TAV) in the VSARR reconstruction. This study compares VSARR outcomes in TAV and BAV patients.

Methods: This retrospective observational cohort study compared VSARR outcomes between TAV and BAV patients, focusing on patient survival, late aortic valve function and reintervention rates. Baseline demographics and operative details were extracted from electronic health records, and echocardiograms from preoperative, postoperative, and follow-up stages were reviewed to assess valve performance using preset parameters.

Results: The study included 74 participants in the analysis, with 62 in the TAV group and 12 in the BAV group. Compared with Tricuspid the bicuspid aortic valve was associated With a higher proportion of regurgitation pre-op (73% vs 37%, p<0.05, fig.1) In-hospital mortality was (n=1, 1.4%), and 10-year survival rates of 95.9% without difference between valve morphologies. At median follow-up of 79.2 months the

incidence of moderate AI was similar (BAV vs TAV, 20% vs 26%, $p=n.s$). Reintervention for valve failure was similar between groups (BAV vs TAV, 0% vs 6.5%, $p=n.s$).

Conclusions: VSARR was associated with satisfactory midterm outcomes for both TAV and BAV morphology. No difference in survival, valve reintervention nor proportion of late AI between BAV versus TAV was apparent. Given the caveat small BAV sample size, these findings suggest that valve morphology did not influence VSARR outcomes.

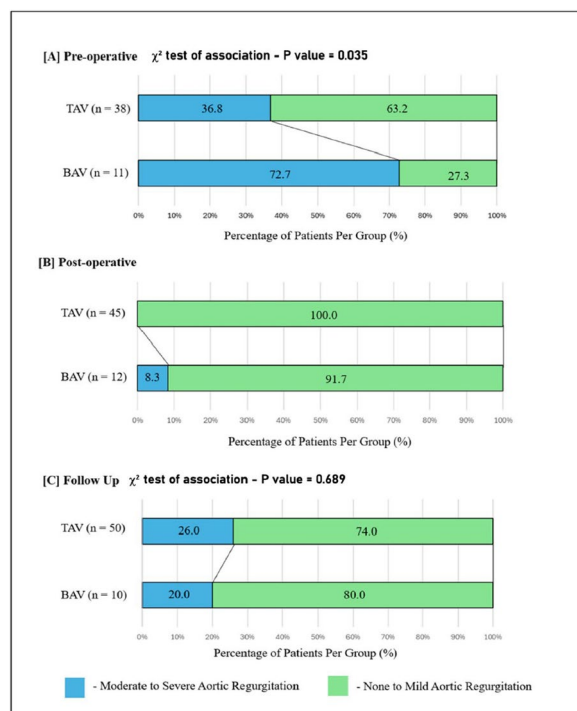


Figure (abstract A162) Degree of Aortic Regurgitation by Percentage between Tricuspid (TAV) and Bicuspid (BAV) Study Groups, Pre-operatively, Post-operatively and Follow-up, from Categorical Data in Echocardiographer Reports.

A163

Right Atrial Appendage Neo-Pulmonary Valve Reconstruction in Tetralogy of Fallot: A Systematic Literature Review of Early-Mid Term Outcomes

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Objectives: This systematic review aims to evaluate the effectiveness and safety of right atrial appendage (RAA) tissue for neo-pulmonary valve (NPV) reconstruction in Tetralogy of Fallot (TOF) patients. Given the long-term complications of transannular patch (TAP) repair, such as pulmonary insufficiency (PI) and right ventricular dysfunction, this study examines whether RAA-based NPV can be an effective alternative with better valve function.

Methods: A comprehensive review identified four studies reporting on RAA-based NPV in TOF repair. Patient demographics, perioperative data, and clinical outcomes were analysed, with primary focus on residual PI at follow-up. Secondary outcomes included reintervention rates and postoperative hospital stay.

Results: A total of 61 patients were included. The average age of patients was 8.9 months, with a median follow-up of 9 months. RAA-based NPV demonstrated favourable outcomes, with 86.9% of patients experiencing none/trivial PI, 13.1% with mild PI, and only 3.3% with moderate or worse PI at median follow-up. The reintervention rate was 4.9%, with no overall mortality. Mean postoperative stay was approximately 7.4 days, suggesting that despite longer operating times, hospital recovery times were not prolonged compared to TAP repair in studies that reported comparisons.

Conclusions: RAA-based NPV reconstruction shows favourable early outcomes with potential for annular growth. Limited technical challenges and low re-intervention rate alongside the apparent reduction in PI-related morbidity underscore the procedure's promise. Further long-term follow-up and refinements to the technique may enhance its role in reducing the need for pulmonary valve replacement in this patient population.

A164

Split Parallel Circulations: A Novel Heterotopic Cardiac Transplantation approach as an Alternative pathway for pediatric Patients with Univentricular Hearts

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A164

Objective: To explore the feasibility of heterotopic cardiac transplantation (HHT) as an alternative to the Fontan procedure in paediatric patients with univentricular heart failure. This novel approach aims to establish isolated parallel circulations, where one heart supports pulmonary circulation and the other supports systemic circulation, potentially reducing cardiac workload and coronary demands.

Methods: We developed surgical protocols and are currently constructing an in-vitro model to simulate and analyse this dual-circulation approach. The HHT design involves a donor heart functioning independently within the pulmonary or systemic circulation, effectively offloading the native ventricle. This structural unloading is hypothesised to decrease ventricular size and lessen coronary oxygen demand, addressing limitations of single-ventricle physiology. We are actively applying for in vivo testing to evaluate this approach further.

Results: Preliminary in-vitro testing demonstrates the technical feasibility of maintaining separate pulmonary and systemic circulations, with enhanced hemodynamic stability. This approach allows each heart to function under reduced strain, potentially improving long-term outcomes for paediatric patients with univentricular heart disease.

Conclusion: HHT as an alternative to Fontan offers a possible solution for paediatric patients, with the potential to improve survival and quality of life by establishing a dual circulation system. Further research, including planned in vivo testing, will assess the safety and effectiveness of this approach, with the goal of expanding treatment options for complex congenital heart conditions.

A165

Mid-term Outcomes of The AVaTAR Technique: a New Approach to NeocuspidisationRishab Makam^{1,2}, Ayush Balaji^{3,2}, Ignacio Lugones⁴¹Castle Hill Hospital, Hull, United Kingdom. ²Aspiring Congenital Heart Surgeons Association, -, United Kingdom. ³Hull York Medical School, York, United Kingdom. ⁴Children's General Hospital "Dr. Pedro de Elizalde", Buenos Aires, Argentina**Correspondence:** Rishab Makam*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A165*

Objectives: The Aortic Valve Trileaflet Autologous Reconstruction (AVaTAR) technique provides a feasible alternative to traditional alternatives by accommodating patient growth, preserving the native annulus, and avoiding anticoagulation. This study aimed to evaluate whether AVaTAR is a safe alternative to the surgical repair of aortic valve regurgitation (AR) in paediatric patients.

Methods: The technique used prototype devices (Fig 1A) to replace the native valve with a custom trileaflet valve made from autologous pericardium, designed to be symmetrical and oversized. Analysis of all paediatric patients who underwent the AVaTAR procedure for severe AR was conducted. The study assessed postoperative morbidity, mortality, reintervention rates, and echocardiographic outcomes.

Results: Seven patients (from four centres) were included with mean age of 7.6 years (5.5–13.4), and mean weight of 25.8 kg (17–38 kg). At discharge, 71% had absent or mild AR, none requiring reintervention. Follow-up at a mean of 4.3 years indicated that 43% maintained absent or mild AR (Fig 1B and 1C), while moderate AR persisted or developed in the remaining patients. Additionally, 57% had absent or mild aortic stenosis (AS) at follow-up, with a mean peak gradient of 43 mmHg. All patients preserved ventricular function and were classified as NYHA I–II, with no reintervention necessary to date.

Conclusions: The AVaTAR technique shows promising mid-term outcomes in paediatric AR treatment. Its reproducibility, compatibility with growth, and avoidance of anticoagulation make it a viable alternative for paediatric patients. The approach preserves native annulus growth and may reduce the need for surgical re-intervention.

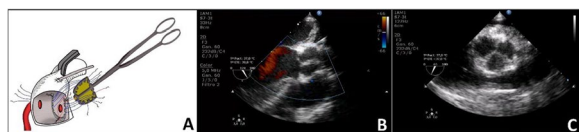


Fig 1A(abstract A165) 3D Model of Pericardial Harvest Device. B: Echocardiographic view demonstrating competence of AVaTAR Valve without regurgitation. C: Echocardiographic view demonstrating symmetrical coaptation of oversized AVaTAR valve.

A166

Building Interest in Congenital Cardiac Surgery through a Grassroots Approach: The Role of the Aspiring Congenital Heart Surgeons Association (ACHSA)Ayush Balaji¹, Rishab Makam, Akshay Balaji, Natasha Bocchetta, Mubashar Nadeem, Abdelrahman Azam, Nabil Hussein, Giuseppe Pelella, Ignacio Lugones, Mahmoud Loubani, Tim Jones, Attilio Lotto
Aspiring Congenital Heart Surgeons Association, United Kingdom**Correspondence:** Ayush Balaji*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A166*

Introduction: Congenital cardiac surgery (CCS), essential for treating congenital heart defects (CHD), holds a unique appeal for surgical trainees due to its blend of technical challenge, life-changing outcomes, and multidisciplinary collaboration. Despite its significance, interest in CCS has waned over the past decade. This study introduces

the Aspiring Congenital Heart Surgeons Association (ACHSA), a grassroots initiative aimed at revitalising interest in CCS through a structured educational curriculum and mentorship model, making the specialty more accessible and appealing to early-career professionals.

Methods: A comprehensive review was conducted to assess CCS training pathways, mentorship practices, and educational needs among trainees. Key findings highlighted limited exposure to CCS, the absence of a structured curriculum, and extended training timelines as deterrents. ACHSA was conceived to bridge these gaps by providing foundational knowledge, mentorship, and targeted early exposure within a cohesive curriculum framework designed to inspire commitment to the specialty.

Results: ACHSA's curriculum combines CCS fundamentals with mentorship-led teaching, fostering knowledge acquisition and career interest among junior trainees. Initial engagement data suggest that exposure to a foundational curriculum enhances trainee interest by showcasing CCS's rewarding and diverse opportunities.

Conclusion: ACHSA offers a sustainable approach to re-engaging early-career medical professionals in CCS. By establishing a foundational curriculum and structured mentorship, ACHSA systematically provides early exposure and cultivates a dedicated CCS pathway.

A167

Subclavian patch to reconstruct the aortic arch: a potential option for HLHS arch repair?Ayush Balaji¹, Rishab Makam^{2,3}, Akshay Balaji⁴, Nabil Hussein⁵, Mahmoud Loubani^{4,2}¹Hull York Medical School, Hull, United Kingdom. ²Castle Hill Hospital, Hull, United Kingdom. ³Aspiring Congenital Heart Surgeons Association, -, United Kingdom. ⁴Hull York Medical School, Hull, United Kingdom.⁵Birmingham Children's Hospital, Birmingham, United Kingdom**Correspondence:** Ayush Balaji*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A167*

Objective: Traditional approaches to aortic arch reconstruction in Hypoplastic Left Heart Syndrome (HLHS) commonly utilize homografts or synthetic patches, yet these materials can be prone to calcification and size mismatches in neonates. This concept proposes an autologous subclavian artery conduit for aortic arch reconstruction, leveraging its compatibility with neonatal dimensions, growth potential, and reduced risk of calcification.

Methods: A literature review was conducted to analyze subclavian artery growth in patients following coarctation repair, exploring its implications for HLHS. Additional studies on patch dimensions in neonates with hypoplastic aortic arches and subclavian revascularization strategies were examined. The proposed strategy involves using the subclavian artery (1–2 cm circumference in neonates) as a natural patch.

Results: The literature review supports the subclavian artery's potential for growth over time, comparable to observations in coarctation repair cases. The potential for growth of the patch, reduced calcification and homograft use positions the subclavian patch as a promising alternative that could optimize long-term outcomes. A smaller patch size may be used to augment the arch given the growth potential of the subclavian patch.

Conclusions: The subclavian artery patch offers a growth-compatible, autologous alternative for aortic arch reconstruction in HLHS, emphasizing a forward-looking approach to patient management. By minimizing calcification risk and homograft dependency, this strategy aligns with long-term vascular development needs. Empirical studies are recommended to evaluate this concept's clinical viability, potentially guiding a paradigm shift in HLHS management with benefits extending across the patient's lifespan.

A168

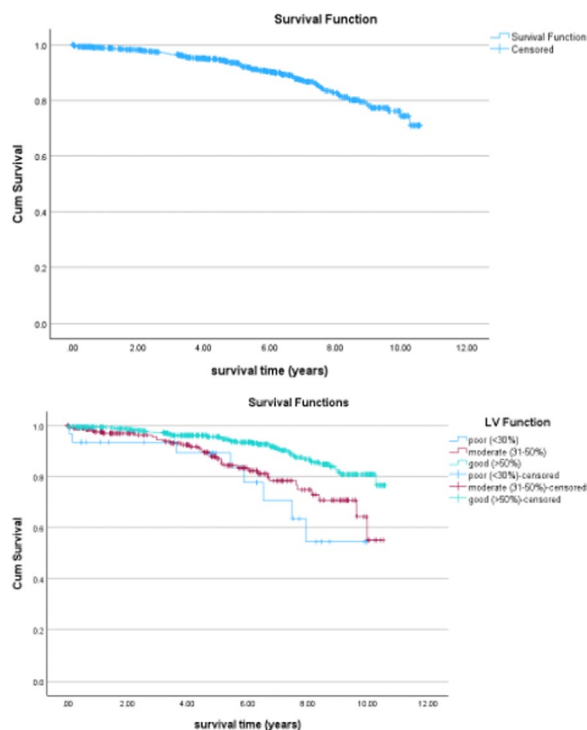
The impact of pulmonary vein reintervention on long-term outcomes after repair of total anomalous pulmonary venous drainage: a 20-year cohort studyHong Jun Yong¹, Kazi Zahidul Hoque², Walid Gabir², Vivian Bader², Andrew McLean², Mark H Danton², Edward Peng²¹University of Glasgow, Glasgow, United Kingdom. ²Royal Hospital for Children Glasgow, Glasgow, United Kingdom**Correspondence:** Hong Jun Yong**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A168**

Objectives: This study assesses the long-term outcomes of survival after total anomalous pulmonary venous drainage (TAPVD) repair, with focus on the impact from reintervention on pulmonary venous (PV) obstruction.

Methods: Ninety-eight patients (between 2000–2023) underwent repair for TAPVD [37(37.8%)-supracardiac, 30(30.6%)-infracardiac, cardiac-22(22.4%), mixed-8(8.2%)] were analysed. 39%(38) were obstructed at presentation, including one in extremis with atretic PV drainage (3.1% patients pre-op ECMO). Median(interquartile) age at repair was 6 days (5-60 days) and weight 3.5 kg (3.0–4.1 kg) at time of surgery. Kaplan–Meier analysis was used to assess freedom from death and reintervention.

Results: Early mortality (≤ 30 days) was 9.2% (9). 12.2%(12) required post-operative ECMO with 75%(9/12) mortality among this cohort. Overall, PV reintervention rate was 15/98(15.3%): (i) 4(4.1%) involved confluence alone: all survived at long-term follow up (range 1.9–21.0 years) (ii) 11(11.2%) involved branch PV: 7(64%) died (five within 1-year, two 1-5 year post TAPVD repair) with 4 long-term survivors (follow-up range 17.1–23.2 years). Overall freedom from PV reintervention was 88% (1-year), 84% (5-year), and 82% (at 10,15-year). Branch PV reintervention impacted on survival (54.5% at 1-year, 36.4% at 5,10,15,20-years)(vs none or confluence reintervention alone; log-rank $\chi^2=8.713$, p-value=0.013) (Figure 1). Overall long-term survival post-TAPVD repair was 79%(1-year), 76%(5,10 year), and 72%(15,20-year). After excluding deaths within 1-year post repair, survival was 97% (5 & 10 years) and 92% (15,20-years).

Conclusions: Reintervention on branch PV obstruction, but not confluence stenosis, remained the main risk factor impacting on long-term survival following TAPVD repair.

**Cox Regression Model:**

	Sig.	Exp(B)	95.0% CI for Exp(B)	
			Lower	Upper
Good LV Function (>50%)	<.001			
Poor LV Function (<30%)	.005	2.928	1.379	6.216
Moderate LV Function (31-50%)	.001	2.063	1.328	3.205
Pulmonary disease	.022	1.663	1.075	2.573
Extracardiac Arteriopathy	<.001	2.230	1.427	3.485

Table 1. Cox-Regression model of independent predictors of survival (LV Function, Pulmonary diseases and Extracardiac Arteriopathy).

A169

Could Peristaltic Leg Pumps Improve Cardiac Function and Long-Term Outcomes in Post-Fontan Patients? A Literature ReviewRishab Makam^{1,2}, Ayush Balaji^{3,2}, Mubashar Nadeem^{4,2}, Akshay Balaji^{3,2}, Abdelrahman Azam^{3,2}, Natasha Bocchetta^{3,2}, Nabil Hussein^{5,2}, Mahmoud Loubani^{1,2}¹Castle Hill Hospital, Hull, United Kingdom. ²Aspiring Congenital Heart Surgeon's Association, -, United Kingdom. ³Hull York Medical School, Hull, United Kingdom. ⁴Manchester University NHS Foundation Trust, Manchester, United Kingdom. ⁵Birmingham Children's Hospital, Birmingham, United Kingdom**Correspondence:** Rishab Makam**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A169**

Objective: To evaluate peristaltic leg pumps as a non-pharmacological intervention to enhance venous return, improve cardiac function, and reduce long-term complications in post-Fontan patients.

Background: Post-Fontan patients often experience haemodynamic issues due to impaired venous return, leading to complications like systolic dysfunction, hepatic congestion, and protein-losing enteropathy. Improving venous return could increase preload and cardiac output, potentially alleviating these conditions. However, due to reduced muscle mass and exercise tolerance, the natural lower limb muscle pump is less effective in these patients. Peristaltic leg pumps, which simulate natural muscle contractions, could help mechanically enhance venous return and decrease cardiac strain.

Methods: A literature review of 27 studies examined links between lower limb muscle mass, venous return, and cardiac outcomes in post-Fontan patients. The review focused on the impact of improved muscle mass and the efficacy of mechanical interventions, like peristaltic leg pumps, in enhancing venous return and cardiac function.

Results: 6 studies in patients without structural heart issues showed that peristaltic leg pumps increased venous velocity significantly across various positions. This effect suggests potential benefits for Fontan patients, particularly those with limited mobility, by improving venous return and potentially preventing Fontan failure. Wearable technology could facilitate consistent, at-home support.

Conclusion: Peristaltic leg pumps offer a promising, low-risk method to enhance venous return and cardiac function in post-Fontan patients, particularly those with mobility restrictions. Further research, especially randomised controlled trials, is needed to confirm these benefits and explore wearable devices for continuous daily use.

A170

Scimitar Syndrome Repair with Lugones Pericardial Well Technique: Single-centre Experience and Alternative ApproachesRishab Makam^{1,2}, Ayush Balaji^{3,2}, Ignacio Lugones^{4,2}¹Castle Hill Hospital, Hull, United Kingdom. ²Aspiring Congenital Heart Surgeons Association, United Kingdom. ³Hull York Medical School, York, United Kingdom. ⁴Children's General Hospital "Dr. Pedro de Elizalde", Buenos Aires, Argentina**Correspondence:** Rishab Makam**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A170**

Objectives: This study aims to evaluate the Lugones pericardial well technique as a safer and more effective surgical method for repairing Scimitar Syndrome, a rare congenital anomaly involving partial anomalous pulmonary venous return. Traditional repairs often face

challenges such as postoperative obstructions due to intracardiac baffling and reimplantation techniques. This study explores whether the Lugones technique can mitigate these risks while providing long-term efficacy.

Methods: Following median sternotomy, the right pleural space was opened to access pulmonary venous drainage. Following dissection, the Scimitar vein (SV) was transected and anastomosed to the pericardium through a wide incision, with precautions to avoid phrenic nerve injury. The pericardium, emptying the SV, is anastomosed to the left atrium providing unobstructed physiologic venous return.

Results: The study included 14 patients aged 2 months to 20 years, with follow-up lasting up to 11 years. No cases of mortality, pulmonary venous obstruction, or significant complications were observed. Only one patient experienced transient phrenic nerve palsy, which resolved without intervention.

Conclusions: The Lugones pericardial well technique demonstrates a low risk of obstruction attributed to the absence of vessel kinking and autologous tissue-based anastomosis. Modifications can be made in cases with rotation of the heart, large atrial septal defects. Alternative right axillary thoracotomy approach provides superior cosmetics and intraoperative access. The procedure is straightforward and reproducible, involving moderate hypothermia and shorter operative times. Notably, it avoids opening the interatrial septum, eliminating risks of AV block and vena cava obstruction, supporting its potential as an advantageous approach for SV repair.

Final category: NAHP Forum

A171

What are the predictive risk factors that can contribute to acute mesenteric ischemia following cardiac surgery?

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What are the predictive risk factors that can contribute to acute mesenteric ischemia following cardiac surgery?

Background: Acute Mesenteric Ischemia (AMI), characterised by reduced intestinal blood supply, is a severe complication post-cardiac surgery, carrying substantial risks including high mortality rates.

Methods: A comprehensive literature search of four databases was conducted, and twenty-two studies were selected for inclusion within this systematic review. Patient demographics, preoperative cardiovascular risk factors, intraoperative considerations, postoperative factors and biomarkers were examined for their roles in AMI occurrence and severity.

Results: Advanced age, emerges as a key risk factor. Hypertension, Peripheral Vascular Disease, New York Heart Association Class, Diabetes Mellitus, and Chronic Kidney Disease are identified as contributors to AMI susceptibility. Intraoperative factors such as prolonged cardiopulmonary bypass durations, inotropic support, and intra-aortic balloon pump utilisation are shown to impact AMI development. Post-operative complications including atrial fibrillation, prolonged ventilation, reoperation for bleeding, haemodialysis, and sepsis are also associated with an elevated risk of AMI. Moreover, distinct biological markers such as lactate levels, pH measurements, transaminases, and creatinine concentrations play a pivotal role in early AMI identification, providing valuable diagnostic insights.

Conclusion: The overarching theme of this review is the consistent high in-hospital mortality rates linked to AMI cases, underscoring the urgency of early detection. By synthesizing these findings, this systematic review offers valuable guidance to clinicians in navigating this intricate clinical landscape and improving patient outcomes.

A172

Introducing Electronic Whiteboard System for Urgent Regional Thoracic Surgery Referrals

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Effective communication is crucial in managing urgent thoracic conditions, however, challenges like miscommunication and incomplete information often result in treatment delays, negatively impacting patient outcomes. To tackle these issues, we collaborated with a software company to develop a customized electronic whiteboard system aimed to enhance communication between referring and receiving hospitals. This innovative web-based platform enables real-time patient data entry, tracking of pending referrals, and uploading of relevant investigation reports. Additionally, it provides a time-stamped audit trail, promoting transparency and accountability throughout the process. We launched a pilot program at one regional hospital in January 2024, subsequently rolling out to seven additional regional hospitals. Over nine months, the pilot managed 120 patient referrals, with 69 patients accepted for transfer, 44 received valuable advice without needing transfer, and 7 were scheduled for outpatient follow-up. The electronic whiteboard significantly enhanced communication between referring teams and our centre, facilitating timely assessments facilitated appropriate clinical decisions, which reduced unnecessary transfers, and ensured optimal patient care. Feedback from departmental meetings and referring hospitals revealed strong support for the system, highlighting its benefits in documentation, record-keeping, and overall patient safety. The platform not only improved communication and freeing up staff time for clinic duties, but also allowed clinician to manage patient efficiently, fostering better dialogue and continuous monitoring. Furthermore, some patients could be managed remotely, avoiding unnecessary transfer. We recommend broader adoption of this system across thoracic centres to further enhance patient management and communication protocols, ultimately improving patient outcomes and safety in healthcare.

A173

Revolutionizing Competency: The Design, Implementation, and Impact of a New Assessment for Cardiac Surgery Specialist Nurses

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Cardiac Surgery Specialist (CSS) Nurses undergo additional training to manage patients within the first 48 h post-surgery, contributing to improved patient care through timely interventions. Competency assessment for CSS Nurses was previously conducted via informal VIVA-style examinations by Consultant Intensivists, which resulted in inconsistencies and lack of robustness. A new assessment method was introduced to ensure validity, fairness, reliability, and transparency. Initially designed as an OSCE, the new assessment incorporated multi-modal theory instruction, including Study Days, an Online Module provided by CSU-ALS, and Supervised Practice. The Angoff method was utilized to establish the pass mark, with Senior Cardiothoracic ICU Nurses and Doctors acting as expert judges. During implementation and testing, the assessment evolved into a VIVA (Oral Examination), conducted by a Senior ICU Nurse alongside a Surgical or Intensive Care Consultant.

Staff evaluations, conducted via a Microsoft Form using a Likert Scale, revealed that the new method was well-received. Feedback indicated the relevance and clarity of the questions, with suggestions for improvements such as using mannequins for realism, providing program details beforehand, and expanding scenario topics. This process demonstrated the positive impact of the new assessment method, leading to plans for further scenario expansion and potential replication for ECMO Specialist Nurses. The initiative highlights

a commitment to excellence in clinical education, ensuring a higher standard of competency evaluation for specialist nurses.

A174

Title: The impact of a newly launched Advanced Nurse Practitioner-led Coronary Artery Bypass Graft follow up clinic

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Objectives: With the increasing pressure on healthcare services, Advanced Nurse Practitioner (ANP)-led follow-up clinics have emerged as a viable solution to improve patient outcomes. This study examines the impact of an ANP-led Coronary Artery Bypass Grafting (CABG) follow-up clinic on patient satisfaction, clinical outcomes, and overall healthcare delivery.

Methods: A total of 42 patients attending the follow up clinic of two consultants reviewed by a single ANP in a tertiary cardiothoracic hospital over a five-month period were surveyed using a structured questionnaire assessing various aspects of follow up care, including communication, effective addressing of patient concerns, patient education, waiting times, and overall experience.

Results: The results revealed high levels of satisfaction, with 100% (n=40) of respondents rating their care as excellent or good. 100% of the responders felt that their concerns and questions were addressed, instructions regarding treatment plan and medications were clear and appointments were scheduled in a timely manner. None of them encountered any difficulties accessing the service. Key drivers of satisfaction included clear communication, compassionate care, and short wait times. However, 10% (n=4) patients suggested the areas for improvement as providing more clarification regarding the member of staff who would be reviewing them in the outpatient setting.

Conclusion: The findings suggest that ANP-led CABG follow-up clinics can effectively enhance patient care by improving clinical outcomes and patient satisfaction while alleviating the burden on traditional healthcare services. The success of the clinic underscores the critical role of ANPs in delivering high-quality, patient-centered care.

A175

Reducing the incidence of sternal wound infections in high-risk cardiac surgery patients using postoperative sternal supports: A Quality Improvement Project

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A175

Background: Sternal wound infections are a significant concern in cardiac surgery, especially in an ageing patient population with comorbidities that increase infection risk. These infections lead to higher mortality rates, longer hospital stays, potential re-operations, and financial strain on families and healthcare systems. Cardiac healthcare professionals recognise that this patient group is at a potentially higher risk; thus, clinicians must take responsibility for delivering care and employ practices that minimise this risk.

Aim: A quality improvement project was developed on a cardiac surgery ward to address these gaps and reduce sternal wound infections in high-risk patients following coronary artery bypass grafting. The project aimed to ensure all patients undergoing this procedure were risk-assessed, with high-risk patients receiving a sternal support on day two of recovery, continuing until their six-week follow-up.

Methods: Using the Model for Improvement Framework, three Plan, Do, Study, Act (PDSA) cycles were implemented: (1) enhancing communication and implementing the Brompton and Harefield infection score (BHIS), (2) training staff on BHIS and sternal support application, and (3) educating patients about using sternal support for recovery.

Results: Improved risk assessments (0% to 77%) and timely sternal support application (0% to 48%) were demonstrated, leading to a reduction in infections from 46 to 21%.

Conclusion: This project successfully reduced infection rates, empowered both staff and patients, and demonstrated the importance of standardised practices to improve patient outcomes.

A176

Experiences and views of patients who received home-based prehabilitation via remote consultation—A Service Evaluation

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A176

Prehabilitation services traditionally consist of fully supervised exercise and education groups and have a positive influence on hospital length of stay, rate of post-operative complications and quality of life. In March 2020, due to the declaration of the COVID-19 pandemic, all in-person programmes ceased. The recently re-introduced local service was redesigned to consist of initial contact either in person as part of a surgical consultation or via telephone, with telephone utilisation continuing for any further contact. Therefore, this study aimed to evaluate whether remote prehabilitation via telephone is acceptable to preoperative lung cancer resection candidates, explore whether this service met their emotional, physical, and educational needs and identify the desire for alternative methods of provision to increase future capacity and adherence.

Participants were eligible to participate if they were aged over 18, underwent lung resection for a suspected or confirmed lung cancer diagnosis between 01.04.2021 and 31.03.2022 and had contact with the Prehabilitation team. Non-random purposive sampling produced a sample size of 71. Self-administered, quantitative questionnaires were deployed via hyperlink or QR code contained within an email, or alongside a hard-copy via post.

The telephone-based prehabilitation service met most participants emotional, physical and educational needs prior to lung resection. Feedback demonstrating more desire for information on exercise and pain control is comparable elsewhere with in-person lung resection education programmes, along with some inability to meet emotional needs remotely. The remote prehabilitation service was therefore found to be acceptable to the local pre-lung resection cohort.

A177

Evaluating the Impact of a Neuropathic Pain Tool on Standardising and Improving Neuropathic Pain Assessment in Adult Postoperative Thoracic Surgical Patients

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A177

Background: Postoperative thoracic surgery patients often experience both acute and neuropathic pain (NP), the latter resulting from surgical trauma to the intercostal nerves. While acute pain is typically assessed using a Numeric Rating Scale, this method does not differentiate between acute and NP, leading to potential under diagnosis of NP.

Objectives: A quality improvement project was implemented to evaluate whether the introduction of a standardised NP assessment tool can improve the identification and assessment of NP in adult thoracic surgery patients during their inpatient stay and enhance staff confidence in diagnosing and managing NP.

Methods: The project involved electronically integrating a NP assessment tool, into patient's ward round documentation to be used daily. Staff questionnaires were used to evaluate the tool's feasibility, its impact on clinical practice, and its effect on staff confidence. Data was collected on compliance with the tool's use and the incidence of NP diagnoses.

Results: The study included 255 patients, with 87% undergoing assessment using the NP tool. Among these, 6 patients were diagnosed with NP. All staff reported increased confidence in NP

assessment, though daily use of the tool was deemed impractical due to time constraints. This led to recommendations for using the tool based on clinical judgment.

Conclusion: The introduction of an NP assessment tool significantly improved the standardisation of NP assessment, reducing clinician bias and enhancing the accuracy of pain management in thoracic surgery patients. However, adjustments to the tool's application are necessary to balance thoroughness with feasibility in a busy clinical environment.

A178

Boosting adherence to post-operative atrial fibrillation (POAF) management protocols based on 2024 European Society of Cardiology (ESC)/ European Association for Cardio-Thoracic Surgery (EACTS) guidelines improves outcomes at a tertiary referral centre – A clinical audit

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A178

Objectives: Evaluating local fidelity to protocols based on ESC/EACTS guidelines for POAF management in adult cardiac surgical patients.

Methods: Patients undergoing elective or urgent surgery were included in each audit cycle. We excluded known paroxysmal and chronic AF cases. Outcomes were POAF incidence, cardioversion and relapse rates, early bisoprolol administration, amiodarone loading and maintenance. Data obtained prospectively from electronic records was analysed against local protocols based on ESC/EACTS guidelines and presented in governance meetings followed by re-auditing.

Results: Baseline data analysis revealed that out of 82 patients, POAF incidence was 30.5% (n=25). Bisoprolol was not administered in 16% cases, although 8% had no contraindications. Adherence to amiodarone loading was 64% and oral maintenance was prescribed for 52% patients. Initial cardioversion rate was 92% (n=23) and 48% (n=12) relapsed.

Second cycle data (n=56) showed that POAF rates decreased to 28.6% (n=16). Bisoprolol was withheld in 6.3% cases with no obvious contraindication. 62.5% patients received amiodarone loading and cardioversion was achieved in 93.8% (n=15) cases, while 43.8% (n=16) relapsed. On discharge, 50% patients received oral maintenance.

Upon re-auditing (n=66), POAF incidence was 30.3% (n=20). Where indicated, all patients received bisoprolol. Amiodarone loading was done in 70% cases and cardioversion was achieved in 95% (n=19), while 25% (n=5) relapsed. Oral maintenance was initiated for 40% patients.

Conclusion: This clinical audit revealed significant variability in the management of POAF. Improvements in fidelity to indicated early B-blockade, amiodarone loading, cardioversion and relapse rates were noted on ameliorating non-adherence to 2024 ESC/EACTS guidelines.

A179

Cost-Effectiveness and Clinical Impact of an Advanced Nurse Practitioner-Led Drain Clinic

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A179

Background: Efficient post-operative care in cardiothoracic surgery is essential for enhancing patient outcomes and reducing hospital costs. Our Advanced Nurse Practitioner (ANP)-led Drain Clinic addresses post-discharge management for patients with indwelling drains or other minor surgical needs. This study evaluates the clinical utility, cost-effectiveness, and hospital days saved due to the Drain Clinic.

Methods: We analysed clinic records from January 2024 – August 2024 for patients treated at the ANP-led Drain Clinic. Data points included reasons for clinic visits, outcomes, and hospital days saved.

Cost-effectiveness was inferred based on the reduction in inpatient days achieved by the outpatient clinic visits.

Results: A total of 80 patients were seen in the Drain Clinic, with 502 hospital days saved. The primary reason for visits was "Drain management" (Portex™ Drain) accounting for 54% of cases. Outcomes indicated that drains were successfully removed, reducing potential readmissions. Other visit purposes included chest x-ray review (23%), blood results review (20%), and wound checks (4%). The estimated cost savings amounted to £320,276, underscoring the clinic's efficiency in handling post-surgical care without readmission.

Conclusion: The ANP-led Drain Clinic demonstrates substantial benefits in terms of patient management and cost savings, primarily by reducing the need for prolonged hospitalisation. This model presents a viable, cost-effective approach for managing patients post-discharge in cardiothoracic surgery settings.

A180

Provision of pre-operative physiotherapy for in-patients waiting for cardiac surgery in an adult tertiary cardiothoracic centre

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A180

Background: Currently, patients waiting in hospital for cardiac surgery do not routinely receive physiotherapy. This pre-operative phase is often prolonged and could be used to prepare for the expectations regarding post-operative recovery, teach/practice post-operative breathing exercises and optimise function/mobility.

Objectives: To provide pre-operative physiotherapy to all patients waiting as inpatients for cardiac surgery for a 4 month 'trial' period with the aim of:

- Reducing post-operative length of stay by 10% compared to baseline data collected prior to intervention
- Reducing the incidence of post-operative pulmonary complications (PPCs) by 5% compared to baseline rate of 11.6%

Methods: Baseline data was collected prior to implementing pre-operative physiotherapy to identify length of stay and incidence of PPCs within this cohort. Physiotherapy intervention was then provided which consisted of education, chest physiotherapy and exercise as indicated, at a frequency determined by clinical presentation. Data was concurrently collected for this group to capture length of critical care & post-operative length of stay, incidence of PPCs and number of physiotherapy contacts pre-operatively.

Results: To date, 14 patients have been seen for pre-operative physiotherapy & discharged post-surgery. Average post-operative length of stay was 7.57 days (compared to 9.53 days pre-intervention) and average critical care stay was 1.5 days (3.12 days pre-intervention) for this group. There were no reported incidences of PPCs as determined by the Melbourne Group Score.

Conclusions: Although the trial period is still ongoing, early indications are that pre-operative physiotherapy intervention appears to benefit post-operative length of stay and incidence of post-operative pulmonary complications.

A181

A Benchmarking Exercise to Review Current Practices in Physiotherapy Interventions Pre and Post Thoracic Surgery

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Objective: To survey the current practices of pre and post thoracic surgery physiotherapy throughout units in the United Kingdom and compare to our centre.

Method: Questionnaires were sent out to a total of twenty-one units. Responses were received via email and collated over a three month period.

Results: Nine units responded.

Four units have a prehabilitation service, with two units seeing lung volume surgery and two units seeing oncology patients. Referrals are received from multiple members of the MDT. Service provision is either virtual or face to face assessment and amount of intervention varies.

There are a large variety of thoracic surgeries carried out throughout the units with most seeing all patients post operatively. Two units have already implemented a screening tool with another currently in development. Three units aim to see their thoracic patients day 0 but are often limited by time out of theatre and physiotherapy provision. Therapists implement a large variety of interventions based on clinical need with two centres using set protocols.

Conclusion: It appears that we are working in-line with many of the other units of the United Kingdom at present in terms of surgeries seen, interventions offered and review periods. However this is acknowledge that response rate was low. Currently we do not have a prehabilitation service or a screening tool post operatively but this is something we may look to develop in the future.

A182

Introduction of pre op carbohydrate loading to an established thoracic surgery ERAS programme. A patient satisfaction survey

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Introduction: Enhanced recovery after surgery (ERAS) programmes are well established in all areas of surgery. In our thoracic surgical population, carbohydrate loading was one of the elements of the programme not offered until 2023. We now provide carbohydrate drinks to patients with the expectation of shorter admission stays and reduced post op symptoms such as nausea.

Methods: As part of ERAS we commenced preoperative carbohydrate loading for all non-diabetic thoracic surgery patients. Each patient was given 6 drinks with instructions at preadmission clinic and advised to take 4 the day before surgery and 2 on the morning of surgery. A patient satisfaction survey was created to ask 5 specific questions about their experience when telephoned post discharge.

Results: Since we introduced carbohydrate loading there have been several positive and important benefits observed. At the preadmission clinic the patients have been keen to be involved and take some ownership of their preparation for surgery which has reduced their anxiety with having something to focus on. The patient satisfaction survey of 30 patients was completed which highlighted some important factors – the patients had less nausea and vomiting so reduced anti-emetics used, they had increased energy to do physiotherapy and walking, leading to reduced length of stay.

Conclusion: The introduction of carbohydrate drinks to thoracic surgical patients has shown positive outcomes with a reduction in length of stay and post op nausea and vomiting. We will continue to provide drinks to this patient group with a view to expanding to other specialities.

A183

A service evaluation of inpatient physiotherapy for patients undergoing aortic endovascular surgery

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Objectives: Early mobilization is an integral part of the post-surgical pathways across multiple specialties (Tazreean, Nelson and Twomey, 2022). Physiotherapists at our trust previously routinely reviewed all aortic endovascular patients with a spinal drain inserted during surgery.

This study aims to evaluate the physiotherapy service for patients undergoing aortic endovascular surgery, to determine the impact of changing local practices and to benchmark against other endovascular services nationwide.

Methods: Patients undergoing aortic endovascular surgery were evaluated between January 2022 and June 2024. A comparison of practice was made before and after November 1st 2023 when local practice changed. A questionnaire was completed by physiotherapists from other endovascular centres around the UK.

Results: n=76 patients were evaluated in total (n=54 pre-November 2023, n=22 post-November 2023). Average LOS was 9.94 days and 7.77 days respectively. More patients were reviewed by physiotherapy prior to November 2023 (n=29; 55%) than after this date (n=6; 27.3%). The most common indication for review prior to November 2023 was having a spinal drain (n=12, 30%) compared to referrals for co-morbidities post November 2023 (n=2; 33%). 50% of other endovascular centres do not use screening tools, and 50% of centres use blanket referrals to review EVAR patients.

Conclusions: Change in physiotherapy practice did not adversely affect LoS. The patient cohort being reviewed by physiotherapy has shifted towards the frail population rather than elderly patients. There is scope for endovascular centres to develop standards of care. Further research should investigate the safety and efficacy of prehabilitation.

A184

A service evaluation exploring the adoption of lung ultrasound in the physiotherapy assessment and management of cardiothoracic patients in critical care and ward-based settings

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Introduction: Lung ultrasound (LUS) is an emerging tool used by physiotherapists. Integration of LUS into clinical environments aims to enhance physiotherapy assessment and management. Following identification of pulmonary pathology amenable to physiotherapy intervention, LUS has shown to be effective in guiding and preventing under or over treatment, particularly in the acute setting¹.

Objectives: To review whether the use of LUS in the assessment of non-weaning spontaneously ventilating patients alters the physiotherapy treatment and management plan in cardiothoracic critical care and ward-based settings.

Methods: A prospective service evaluation was conducted between November 2023 and November 2024. Patients were assessed with LUS if they met the inclusion criteria: post-cardiothoracic surgery, interventional cardiology, spontaneously ventilating with an inability to wean oxygen or increased oxygen requirements.

Each patient was assessed by a physiotherapist who indicated whether treatment was required, LUS was conducted, and the physiotherapists were asked whether the LUS findings altered the intervention.

Results: Patient demographics and results are shown in table 1. Of the seven patients (28%) not requiring physiotherapy, four patients (57%) had features amenable to intervention shown on LUS. Of the 18 patients (72%) for physiotherapy treatment, following LUS one (5%) patient did not require intervention. A total of 12 patients had an alteration to treatment due to LUS findings.

Conclusion: The addition of LUS altered treatment in 48% of cases. This service evaluation demonstrated LUS has the potential to improve patient care and streamline physiotherapy resources in a cardiothoracic setting. Additional studies with larger cohorts warrant further investigation.

Table (abstract A184) Patient demographics and results.

Table 1. Patient demographics and results	
Age, years (mean $\pm$ SD)	68 (9.2)
Male, n (%)	17 (68)
Admission reason, n (%)	
Cardiac surgery	19 (76)
Thoracic Surgery	4 (16)
Interventional Cardiology	2 (8)
Without LUS treatment required, n	18
With LUS treatment required, n	21
Change to treatment plan due to LUS, n	12
Key:	
SD: standard deviation	
LUS: lung ultrasound	

Reference

- Gustafson, O., Hayward, S., Helmsley, A., Grant, J., Smith, M., Tait, C., Pickering, N., Hardy, J., Atkin, K., Jones, U. Physiotherapists use of lung ultrasound. *Journal of the Association of Chartered Physiotherapists in Respiratory Care*. (2021). Volume 53. Issue 2. 2021 Article on: p147-150.

A185

"We like to move it, move it" Day 0 mobilisation after thoracic surgery. A physiotherapy ERAS service improvement

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Objectives: Enhanced recovery after surgery (ERAS) has become embedded practice within thoracic surgery leading to reductions in hospital length of stay (LOS) and improved patient outcomes. Physiotherapy is an integral part of ERAS. We sought to evaluate the impact of introducing early mobilisation on day 0 at our thoracic centre.

Methods: Over a 3-month period the physiotherapy team implemented day of surgery mobilisation to thoracic surgery patients deemed medically stable. A prospective database was used to collect patient outcomes and retrospective data was collected from electronic records to form a control group. Statistical analysis was performed in Microsoft Excel 365.

Results: 83 patients (54% male) were mobilised on day 0, 55.4% of this group underwent a VATS. Whilst the control group had analysis of 80 patients (50% male and 44% VATS). Patients who undertook day 0 mobilisation on average stayed 1.72 days less in hospital (6.1 days vs 7.87 days) and 1.55 days less in HDU (1.34 vs 2.69 days). The reduction in LOS equated to 142 bed days saved and an estimated cost saving of £49,966. Furthermore, the day 0 group required 1 day less physiotherapy input (4.31 vs 5.31 days), left hospital mobilising on average 245 m further and no patients required emergency on-call physiotherapy or bronchoscopy. During day 0 mobilisation 31% were unable to mobilise due to hypotension and or vomiting.

Conclusion: Day 0 mobilisation can be implemented safely and effectively contribute to ERAS pathways. Further analysis is required to contribute towards ERAS best practice guidelines.

A186

Redevelopment of Post-Operative Cardiac Surgery Extubation Guideline to Reduce Post-Operative Length of Intubation

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Objectives: Our Cardiothoracic Critical Care Unit employs a multidisciplinary extubation protocol where routine cases have a sedation break

at 2 h post-surgery and extubation by 6 h. We audited our compliance, however only 39.4% had their sedation break at 2 h and 43.5% were extubated by 6 h post-operatively. To improve compliance we redeveloped the post-operative extubation policy with a stepwise guideline at the end of the first and second hours, concentrating on metabolic trends rather than definite numbers. We implemented teaching sessions for nursing staff around rationales for early extubation, titration of sedation and new extubation guideline.

Methods: We re-audited 95 routine post-operative cardiac surgery patients over a period of two months compliance with the 2 h sedation break and extubation at 6 h policies as well as collecting data on total intubation time and time from sedation off to extubation.

Results: Our re-audit showed compliance with patients having their sedation break at 2 h had increased to 51.7% (from 39.36%) and 71.59% were now extubated by 6 h post-operatively (from 43.48%). Furthermore average duration between stopping sedation to extubation was reduced from 370.4 min to 88.9 min and average ventilation times from 563.8 min to 324.76 min.

Conclusions: Through our quality improvement project redeveloping the extubation guideline as well as an education drive on the intensive care unit we were able to reduce our post-operative ventilation times and improve compliance with our extubation within 6 h post-operative target. A key factor in the success of this project was the buy-in from the wider team including the surgeons, anaesthetists and nursing staff.

A187

Challenging traditions: multidisciplinary team perceptions of patient safety and quality of care post implementation of advance nurse practitioner led ward rounds

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A187

Objective: Advanced nurse practitioner (ANP) led ward round were introduced into the Thoracic department in February 2022. The objective of this study was to gain an understanding of staff perceptions of the quality of care and patient safety following its implementation especially with the current controversy around nurses taking more responsibility in medical management.

Methods: A qualitative approach was utilised with a questionnaire that was sent out to nursing and medical staff. The questionnaire focused on patient safety and quality of care with an opportunity for suggestions to improve current practice.

Results: A total of 15 ward nurses, 11 registrars, 10 senior house officers (SHO) completed the questionnaire. All nurses (100%) strongly agreed that ANP led ward rounds improve patients' safety, quality of care and allow timely discharges. A total of 63% of registrars felt that it was effective and 60% of SHO's agree that it improved quality of care. As a result of ANP led ward rounds, 81% of registrars and 100% of SHO's felt their learning and training opportunities have increased especially in relation to theatre time.

Conclusion: There was high satisfaction rate across the multidisciplinary team with the ANP led ward rounds in their contribution to improving quality of care and patient safety, but it wasn't universal which reflects traditional perceptions. There are highlighted areas for improving practice and gaining more acceptance amongst the medical team which, can be taken forward whilst continuing to challenge traditional roles to meet the demands of the modern NHS.

A188**Incisional vacuum assisted closure (IVAC) dressing on sternal wounds following Coronary Artery Bypass Graft (CABG) surgery – does application reduce the incidence of sternal wound infection in diabetic patients?**

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A188

Objective: Published evidence has demonstrated that there may be benefit using IVAC over standard dressings for the prevention of surgical site infections (SSIs) post cardiothoracic surgery. Following a rise in SSI rates, it was identified that the patient cohort at most risk of infection were diabetics with a high BMI (> 25). As a result of these findings and, following a small-scale service evaluation in 2022/2023 which pointed towards a significant reduction in SSIs when using IVAC, the hospital made available IVAC to all patients undergoing CABG surgery to determine if there was a useful reduction in sternal SSI rates.

Methods: A retrospective study was carried out to establish SSI rates in CABG patients during a year of IVAC use (May 2023-April 2024). These SSI rates were compared to SSIs in CABG patients a year prior to IVAC (July 2021-June 2022).

Results: During the period July 2021-June 2022 with no IVAC in use, the rate of SSI in diabetic CABG patients was 8.7% (24/277). From May 2023-April 2024, the roll out of IVAC was associated with a decreased SSI rate of 4.7% (13/260) in diabetic patients. More specifically, diabetic superficial infections reduced from 4% to 2.3% with IVAC, deep infections reduced from 3.6% to 1.9% and organ space infections reduced from 1.1% to 0.8%. Total SSI rates (diabetic and non-diabetic) reduced from 6.6% in 2021–2022 to 4% in 2023–2024.

Conclusion: Implementation of IVAC reduces the risk of SSIs compared to standard dressings in diabetic patients undergoing CABG surgery.

A189**Implementing a virtual ward platform for the management of patients awaiting elective cardiac surgery and its impact on service efficiency – a single centre experience at the Essex Cardiothoracic Centre**

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Objective: This presentation shares insights from our centre's experience of implementing a virtual ward model for elective cardiac surgery patients, with key metrics being, patient satisfaction, number of elective patients requiring urgent inpatient surgery, and number of surgeries expedited due to worsening of symptoms.

Methods: We launched a virtual ward program using the Ortus i-health platform on 1st July 2024 to monitor and support elective patients pre-operatively. We included all 287 patients on our elective cardiac surgery waiting lists and had an 83% uptake. Patients submitted a fortnightly questionnaire scoring their symptoms of chest pain, shortness of breath, oedema, palpitations, and dizziness, assigning a red, amber or green symptom status.

Results: Since the program began, more than 50% of our patients reported "red flag" symptoms with a total of over 300 "red flag" questionnaires responded to within the 4-month period. Following clinical reviews, 27 surgeries (9% of the waiting list) were expedited. Additionally, there was a 71% reduction in elective patients needing urgent inpatient surgery compared to the same period in the previous year. Patients have reported feeling supported, safe and less anxious by knowing they had direct contact with the surgical team increasing their satisfaction in the service.

Conclusion: Implementing a pre-operative virtual ward for elective cardiac surgery patients at our centre has shown to be an innovative

model that enhances care quality, safety and patient satisfaction while also optimising the use of healthcare resources and reducing cost.

A190**Radiological surveillance compliance post lung resection for primary lung cancer in a Nurse Led Lung Cancer Surveillance and Survivorship Service**

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Objective: Guidelines recommend routine radiological surveillance following treatment for primary lung cancer to detect recurrence and secondary primary tumours. The Nurse Led Lung Cancer Surveillance & Survivorship Service in St James's Hospital, Dublin was established in 2018. The patients referred to the clinic are those who have had lung resection, do not need further surgery or adjunct treatment and are therefore by definition, patients with early or treatable disease. The aim of this study was to examine compliance to surveillance radiology.

Methods: In this retrospective study the radiological records for all patients referred to the nurse led service between 2018 and 2023 were reviewed using the National Integrated Medical Imaging System.

Results: The minimum standard for radiological surveillance is CT thorax at 6 months post op followed by CT thorax annually thereafter for at least five years post surgery. Compliance was deemed to be completion of CT scan within the acceptable timeframe of three months from the appointment date.

Data on 1244 patients was reviewed.

Results showed;

87%, 1080 patients, either completed or were on course to achieve minimum imaging.

12%, 150 patients, were on course to achieve minimum imaging standards; however, died prior to the completion of five years of imaging.

1%, 14 patients had incomplete surveillance.

Conclusion: In contrast to published international studies which show poor compliance with adherence to surveillance imaging, patients attending this nurse led service are compliant and are meeting minimum standards in radiological surveillance. Adherence to surveillance is facilitating early detection of cancer recurrence.

A191**Does prehabilitation improve lower-limb strength, health related quality of life and estimated VO2 max of preoperative patients in a predominantly thoracic cohort?**

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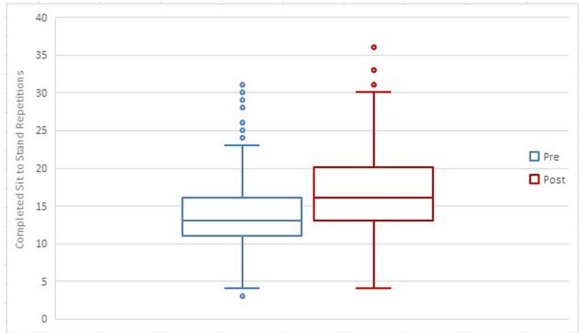
Introduction: Better fitness prior to major surgery reduces anaesthesia risk, post-operative complications, and hospital length of stay. Fitness can be improved with intervention of prehabilitation.

Objective: To assess if prehabilitation improves lower-limb strength, health related quality of life (HRQoL) and estimated VO₂ max of preoperative patients.

Method: Patients were referred to prehabilitation if they had a minimum of 2 weeks prior to planned surgery, with an inpatient stay of minimum 2 days. Patients received targeted exercise prescription based on baseline assessment and comorbidities. Frequency of interventions depended on patient need. Combinations of telephone, in-person sessions or group classes were offered, supported by home exercise programmes.

For patients participating in prehabilitation, we assessed lower-limb strength via the 30 s Sit To Stand test (STS), HRQoL using the EQ-5D-5L test, and estimated VO₂ max via Duke Activity Status Index (DASI) at baseline (referral) and repeated during their last contact with the service.

Results: Between 9th June 2021 and 30th September 2024 we saw 1857 patients. 46% were having thoracic procedures. Patients had on average 4.7 contacts with the prehabilitation team. The mean difference in STS was +2.85($p < 0.001$) $n = 584$ (Figure 1). The mean difference in EQ-5D-5L index score was +0.49($p < 0.001$) $n = 638$. The mean difference in DASI estimated VO_2 max was +1.02($p < 0.001$) $n = 241$.
Conclusion: As demonstrated by the data collected, prehabilitation improved lower-limb strength, HRQoL and estimated VO_2 max of pre-operative patients in a predominantly thoracic cohort.



A192

Single centre experience of The Essex Cardiothoracic Centre. Utilising virtual ward technology, a novel healthcare model designed to bridge the gap between hospital care and home for patients requiring urgent in-patient coronary artery bypass grafts (CABG) in an evolving digital healthcare landscape
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Objective: A virtual ward (VW) for patients awaiting urgent CABG allows patients to safely remain at home whilst receiving continuous monitoring and support. This model aims to optimise bed usage whilst ensuring the safety, comfort and mental wellbeing of the patient.
Method: Patients are enrolled in the ORTUS VW based on strict criteria, including—awaiting CABG and symptom free on optimal medical therapy. Surgery scheduled within 2 weeks of discharge, accepted for early discharge at the Multidisciplinary Team Meeting, and their ability to use the ORTUS App.
Exclusion criteria include severe LV impairment, unstable clinical condition, poor home support.
Patients log their symptoms daily and upload blood pressure and heart rate readings. The clinical team reviews this data to provide personalised support offering prompt intervention if required.
Results: The VW commenced in January with six patients enrolled to date. One patient followed safety netting advice and presented to A&E overnight with exacerbation of symptoms.
The VW has saved approximately 70 bed days with all six patients reporting positive experiences.
Conclusion: A VW for patients awaiting urgent CABG offers a sustainable solution that balances resource demands with high-quality, patient-centred care. The VW model enhances patient comfort and safety and reduces hospital burden.
However, the success of this approach depends on seamless coordination and appropriate patient selection to ensure safety and efficacy. As the healthcare sector increasingly adopts digital innovations, virtual wards for urgent CABG represents a sustainable, patient-friendly, resource-efficient solution without compromising care quality.

A193

Paravertebral block – Does it reduce pain intensity & opioid consumption in cardiothoracic thoracotomy patients?
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Objective: Assess acute pain management post thoracotomy in adult cardiothoracic surgery in patients with paravertebral block (PVB). Evaluate pain intensity at 24 h and 48 h post-op and compare opioid consumption in patients with or without PVB.
Method: Data for patients (96) undergoing thoracotomy incision between May 2024 – August 2024 across 2 sites was reviewed retrospectively from trust electronic health records. Data on PVB dosing, pain scores and opioid consumption was obtained for patients with or without PVB.
Results: 53% of patients with thoracotomy received a PVB of which 19/51 (37%) received sub-optimal dosing of continuous levobupivacaine infusion based on trust guidance of weight-based dosing. Thoracic patients with PVB reported higher pain severity at rest and on movement on postoperative D1 and D2 compared to those without. Patients with PVB had higher opioid consumption in both the first 48 h and during their inpatient stay compared to those without. In contrast, cardiac patients with PVB reported lower pain severity at rest and on movement on postoperative D1 and D2 compared to those without. Patients with PVB had lower opioid consumption in both the first 48 h and during their inpatient stay compared to those without.
Results summarised in table 1.
Conclusions: Suboptimal PVB dosing may have contributed to higher pain scores and opioid consumption. Further education on PVB dosing is recommended. Data around pain intensity and opioid consumption in patients with PVB is inconclusive. Further comparative studies to assess benefit of PVB post thoracotomy in reducing both post-operative pain and opioid consumption is recommended.

Table 1 (abstract A193) Summary of results (Cross site: May 24-Aug 24)

	Thoracic surgery		Cardiac surgery	
	PVB	Without PVB	PVB	Without PVB
Number of patients	33	15	18	21
No. of patients with suboptimal PVB infusions	12	N/A	7	N/A
Mean pain score at 24 hours*	Rest 2.6 Movement 3.6	Rest 2.1 Movement 3.2	Rest 2.2 Movement 3.1	Rest 2.9 Movement 3.5
Mean pain score at 48 hours*	Rest 1.7 Movement 3.1	Rest 1.5 Movement 2.2	Rest 1.4 Movement 1.7	Rest 1.8 Movement 2.6
Opioid consumption (48 hours) - mean oral morphine equivalence (mg)	238 ↑	208 ↓	191 ↓	270 ↑
Opioid consumption (inpatient stay) - mean oral morphine equivalence (mg)	515 ↑	372 ↓	249 ↓	447 ↑

*Analogue scale from 0–10 (0 – no pain; 10 – unbearable pain).

A194**Mortality and morbidity outcomes one-year after aortovascular surgery in Marfan syndrome patients: analysis of linked national data**

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Objective: Mortality and morbidity outcomes following aortovascular surgery (AVS) in Marfan syndrome (MFS) patients have not been reported in the United Kingdom. This study aims to identify the incidence of AVS in MFS patients and their mortality and morbidity outcomes 1-year after surgery.

Methods: This secondary analysis of 10-year national cardiac surgical data utilised linked Health Episode Statistics, Office for National Statistics and the National Adult Cardiac Surgery Audit data. All adult MFS patients (≥ 18 years) undergoing AVS between January 2010–December 2019 were included. Data was analysed using descriptive statistics and Kaplan–Meier for time to event analysis.

Results: Overall, 6,760 MFS patients were identified of which $n=1026$ (15.2%) had AVS. The majority ($n=649$ (63.3%)) were male, mean age at surgery was $43(\pm 1.9)$ years and $n=265$ (25.8%) were operated on two or more aorta segments.

Sixty-nine patients (6.7%) died within one-year of surgery due to aortic dissection/ruptured aneurysm ($n=34$ (49.3%)) and surgical complications ($n=25$ (36.2%)). MFS patients had a 1.4% probability of dying from AVS on operation day and 5.5% and 1.3% within 90 days and one year of AVS, respectively.

Of the MFS patients who had AVS, $n=958$ (93.4%) experienced subsequent hospital admissions related to AVS complications and cardiovascular problems. The number of hospital readmissions postoperatively ranges from 1 to 160 times with length of stay between <1 day to 386 days.

Conclusion: Advancement in surgical techniques resulted in low in-hospital mortality. Collaborative efforts to reduce main morbidities and impact on patients and healthcare service are needed.

A195**The Use of Vacuum-Assisted Closure (VAC) Dressings in the Management of Surgical Emphysema in Thoracic Surgery Patients**

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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1): A195**

The Use of Vacuum-Assisted Closure (VAC) Dressings in the Management of Surgical Emphysema in Thoracic Surgery Patients

Objectives: Surgical emphysema is a common postoperative complication in thoracic surgery. While generally benign, severe cases can cause significant discomfort, compromise respiratory function, and prolong hospital stays. We review our experience using VAC dressings to assist in air reabsorption and reduce subcutaneous air.

Methods: Twelve patients who developed severe surgical emphysema after thoracic surgery were treated with VAC dressings from 29/6/23 to 19/4/24. VAC dressings were applied in the mid-clavicular line on the anterior chest wall. A 3–4 cm incision was made down to muscle, and the VAC dressing was cut to size and applied following standard VAC protocols.

Results: VAC dressing application led to a marked decrease in subcutaneous emphysema in all 12 patients. Patients reported significant relief from symptoms such as chest discomfort and tightness. No complications related to VAC therapy, such as skin breakdown or infection, were observed. The mean duration of VAC therapy was 4.7 days.

Conclusion: The application of VAC dressings provides a safe, effective, and patient-friendly approach to managing surgical emphysema

in thoracic surgery patients. The rapid resolution of subcutaneous air, combined with high patient comfort and low complication rates, suggests that VAC therapy may be a viable alternative to traditional management methods. These positive outcomes warrant further investigation, including prospective trials to compare VAC therapy with standard approaches and to establish guidelines for broader use in thoracic surgery.

A196**Early extubation and mobilization reduces hospital and intensive care unit length of stay after cardiac surgery**

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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1): A196**

Objective: Enhanced recovery after cardiac surgery (ERACS) is a multimodal perioperative pathway that reduces patients' hospital length of stay (LOS). We aim to reduce our patients' LOS through early extubation and mobilisation.

Methods: Suitable patients for ERACS were identified based on an agreed criteria between June 2023 and September 2024. Kurt Lewin's model of unfreezing, changing and refreezing guided the multidisciplinary team (surgeons, anaesthetists/intensivist, nurses) in implementing ERACS. Ongoing staff education and training were provided on early extubation and mobilisation. Prospective audit was done to determine extubation/mobilisation time and hospital/intensive care unit (ICU) LOS. Descriptive statistics was utilised for data analysis.

Results: A total of $n=369$ patients were included in the ERACS pathway. Majority were male ($n=279$ (75.6%)), average age was 63 years and over half had coronary artery bypass graft ($n=200$ (54.2%)).

Median time to extubation after ERACS was 2.5 h versus 6 h for non-ERACS. ERACS patients were sat in the chair (median time: 12.7 h) and mobilized around ICU (median time: 20 h) earlier than non-ERACS patients (median time to sitting out: 24 h; mobilizing around ICU: 48 h). These reduced the ICU LOS (median=27 h) and hospital LOS (median=5.1 days) for ERACS patients, compared to 48 h and 8.5 days for non-ERACS. This translates to a cost-savings of 323 ICU and 1,255 hospital days, respectively.

Conclusion: Early extubation and mobilisation has significantly shorten patients' ICU and hospital LOS, contributing to our hospital cost-saving. Challenges identified will be addressed in the next unfreezing-changing-refreezing cycle.

A197**The impact on MDT workload and patient outcomes of one year of an ACP-led CT surveillance programme following resection of non-small cell primary lung cancer**

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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1): A197**

Objectives: As MDT workload increases, we assessed the impact of our 5 year CT Surveillance programme on the MDT and the outcomes for patients.

Methods: The five-year follow-up pathways for patients having surgery in 2018, the first full year of the ACP-led telephone service, were examined for adherence to the standard protocol of contrast CT chest, abdomen and pelvis performed 6 monthly for 2 years, then annually to five years. Standard versus non-standard follow-up, the requirement for extra intervention and MDT discussion was documented. Records were examined where imaging was not performed and surveillance ended early.

Results: The five-year follow-up pathways for 117 local NSCLC patients operated on in 2018 were examined. 2 patients died before 6 months, and 14 patients underwent adjuvant treatment and oncology

follow-up. 101 patients entered the ACP-led program. The attached table shows patients in each category at each surveillance interval and the outcomes at the end of surveillance. The level of intervention by the wider MDT was 52 discussions over 5 years. The first follow-up CT generated the highest number of interventions. There was a peak in imaging not being performed at 18 months after surgery, which coincided with the start of the COVID-19 pandemic. 7% underwent treatment of new or recurrent primary lung cancer. 75 patients were alive at 5 years.

Conclusions: ACP-led CT follow-up of resected NSCLC patients is associated with an acceptable additional workload for the lung MDT. High levels of adherence to the programme indicate it is well received by patients.

A198
Empowering Recovery: Building an Occupational Therapy service for Thoracic Surgery Patients
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A198

Objectives: Occupational therapy (OT) is an essential service for enhancing patient recovery before and after surgery. Within the UK there are few thoracic centres that have dedicated OT cover for thoracic only specialities. We aimed to evaluate the impact of one whole time equivalent OT on thoracic surgery patients journeys at our centre.

Method: Over a 9 month period data was collected in a prospective database including length of stay (LOS), OT LOS, types of interventions undertaken and time spent waiting for discharge support. A control data collection was collated retrospective from patient electronic records. Statistical analysis was undertaken using Microsoft Excel 365.

Results: 81 post-operative thoracic surgery patients have received OT intervention compared to 39 in our control group. From our analysis those patients who received interventions from a dedicated OT on average went home 4.94 days earlier. Prior to an established OT thoracic patient waited on average of 7.79 to be seen by OT and resulted in delays in DC, now with OT present this number has reduced to 2.85 days. Whilst out of county patients who experienced delayed discharges awaiting care packages, has now reduced by 20.5% (6.52 vs 5.31). During the 9 months, 143 bed days were saved equating to a cost saving of £54,340 which we predict circa £72,000 for the whole year.

Conclusion: Our findings have shown the positive impact on the integration of OT services within thoracic surgery in reducing LOS, improving patient flow within the thoracic speciality and providing a cost saving.

A199
Feasibility and effectiveness of pre-operative inspiratory muscle training, in patients at risk of post-operative pulmonary complications, prior to cardiac surgery in the United Kingdom (UK)
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A199

Background: Prehabilitation is an established practice for surgical candidates¹. There is limited implementation in cardiac surgery populations. Inspiratory muscle training (IMT) improves the strength of inspiratory muscles through imposing a resistance to inspiration².

Objective: To assess the feasibility and effectiveness of a pre-operative IMT clinic prior to cardiac surgery at a single UK cardiothoracic centre.

Method: Patients were screened in pre-operative clinic and included if had a productive cough for the last five days, an FEV1 < 70% predicted and FEV1/FVC < 70% or a current or recent ex-smoker within the last 12 months. The physiotherapist assessment consisted of maximal inspiratory pressure (MIP), short physical performance battery (SPPB) and subjective assessment of respiratory symptom burden (Clinical COPD Questionnaire (CCQ)). An IMT device was prescribed at 30% of MIP. Telephone follow-up included alteration of

the prescribed resistance based on feedback. MIP was reassessed on admission pre-surgery.

Results: Over a 2-year period a total of 167 patients were referred, of which there were 52 complete data sets for analysis. Clinical characteristics and results are shown in table 1. Patients completed a median (Inter-quartile range) of 81 days (52–162) of IMT, with a mean of 3 telephone call follow ups. Mean (SD) change in MIP was 11.3 (19.6) p<0.001. There was no significant change in CCQ.

Conclusion: Pre-operative IMT prior to cardiac surgery was feasible and demonstrated change in inspiratory muscle strength and qualitative outcomes. Further refinement of the clinic should now be considered, along with more detailed analysis of key clinical effectiveness outcomes.

Table 1 (abstract A99) Results and Demographics of patients

Sex, Male n (%)	42 (80%)		
Mean age in years (SD)	67.1 (9.3)		
Type of surgery, n (%)	CABG 22 (42%)	Valve 16 (30%)	Other 14 (28%)
Reason for referral, n (%)	Reduced pulmonary function (FEV1 < 70% predicted and FEV1/FVC < 70%) 31 (60%)	Smoking (current smoker or quit within last 12 months) 20 (38%)	Cough (productive of sputum for last 5 days) 1 (2%)
Lung function (SD)	FVC %pred 79.1 (17.7)	FEV1 %pred 72.1 (18.2)	
MIP cmH2O, mean (SD)	Pre IMT 67.47 (24.92)	Post IMT 78.78 (23.02)	

Key: SD: Standard Deviation, FEV1: Forced Expiratory Volume in 1 s, FVC: Forced vital capacity, %pred: Percentage of predicted value for age, MIP: Maximal inspiratory pressure.

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A200
Optimising Post-Operative Outcomes: The Synergistic Role of the Surgical Site Infection Surveillance Nurse and the Isla Digital Platform
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Abstract
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A200

Background: Surgical Site Infections (SSIs) represent a significant burden in surgical care, leading to increased morbidity, prolonged hospital stays, and elevated healthcare costs. The role of the Surgical Site Infection Surveillance Nurse is pivotal in monitoring infection rates and implementing strategies for SSI prevention.

Objective: This study aims to delineate the critical functions of the SSI Surveillance Nurse and assess the efficacy of Isla, a digital

post-discharge platform designed to enhance patient engagement and mitigate SSI incidence.

Methods: The SSI Surveillance Nurse engages in systematic data collection and analysis, collaborates with surgical teams to formulate and enforce infection control protocols, and provides comprehensive education to healthcare staff and patients. Isla functions as a digital intervention that delivers tailored post-operative care instructions, enables real-time recovery monitoring, and fosters enhanced communication between patients and healthcare providers.

Results: Preliminary findings indicate that Isla significantly enhances post-discharge outcomes by facilitating timely symptom reporting, thereby promoting early intervention. The platform's integration with electronic health records allows for robust data analysis regarding patient outcomes and SSI trends, while improved communication channels encourage a proactive approach to post-operative care.

Conclusion: The incorporation of digital platforms such as Isla within the operational framework of the SSI Surveillance Nurse presents a novel and effective strategy for improving post-operative care and reducing the risk of SSIs. This integrative approach not only empowers patients in their recovery journeys but also fosters a culture of safety and continuous quality enhancement in surgical practices.

A201

Criteria Led Discharge in Adult Cardiac Surgery: Our experience and an audit of the pilot project

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A201

Background: Criteria Led Discharge (CLD) is a process that uses pre-defined clinical criteria to guide clinical decisions regarding hospital discharge. It empowers healthcare teams to discharge patients based on these parameters, without ongoing clinician approval. We introduced CLD via digital clinical note for adult cardiac surgery, with the aim of facilitating timely discharges and reducing Length of Stay (LOS) without compromising patient safety.

Methods: Following the creation of Clinical Criteria for discharge, Workflow Process and SOP, the Digital Clinical Note for CLD went live in July 2023. Our aim was for 33% of patient discharges before midday via CLD. Pilot data was collected over 6 months between 01/01/2024 – 31/06/2024, analysing the number of patients eligible for CLD, actual discharge rates and LOS. Comparison was then made between Medical Led Discharge (MLD) and CLD by clinical area and time of the week.

Results: There were 597 discharges, of which, 62 (10.3%) patients were discharged via CLD. The average LOS in hours comparing CLD with MLD was 69.1 h and 90.4 h respectively. There was small reduction in the weekend discharges between CLD (17.9%) and MLD (20.3%). Discharges before midday for MLD and CLD were 10.2% and 8.9% respectively.

Conclusions: CLD is feasible in cardiac surgery, demonstrating reduction in patient's LOS without compromising safety. This approach not only improves flow but also enhances resource allocation. Further work is required in identifying suitable patients to be included in CLD and implementing the process to its completion.

A202

Nurse-led Enhanced Recovery Unit significantly improves flow of cardiac surgical patients

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A202

Background: With increasing numbers of cardiac surgical cancellations due to competing demands on our critical care, we established a nurse-led enhanced recovery unit (ERU) to ringfence beds for cardiac surgery and train and develop a team of nurses focused on immediate postoperative cardiac surgical management. The aim of this work is to describe our unit and report early outcomes.

Method: Over a period of 3 months our ERU went from concept to reality. With oversight of consultant surgeon and intensive care clinical leads, our nurse-led ERU was developed. Each shift an in-house trained and upskilled 'cardiac surgical specialist' oversees the immediate post-operative management of patients in the ERU, making autonomous decisions, for example stopping sedation, timing of extubation and removal of drains, working within our ERU protocol and closely with the medical teams when required.

Results: Over the first 4 months of opening, the ERU expanded from a 5 to a 10-bedded unit. Over 400 patients have been admitted with 89.5% discharged to the ward <48 h. The readmission rate to critical care is <1%. In the 4 months prior to ERU opening there were 57 elective cancellations. Since opening there have been just 5. Surgical capacity has increased and waiting lists are falling. The morale of nursing staff is high.

Conclusion: Opening of the ERU has been associated with a significant increase in the number of cardiac surgical operations performed. It has empowered nurses in the critical care area and has improved the decision making and their professional identity.

A203

A pilot study to evaluate the role of immersive head mounted virtual reality meditation and relaxation simulations for perioperative anxiety and stress inpatients undergoing first time lung resection

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Up to 28% of patients undergoing lung resection suffer from anxiety and 19% from depression perioperatively. This study aimed to evaluate the effectiveness of immersive head-mounted virtual reality (VR) meditation in reducing perioperative anxiety in patients undergoing first-time lung resection surgery.

A prospective, single-centre, pretest-posttest quasi-experimental pilot study was conducted with 22 patients. VR sessions occurred 1 h before or on days 1–3 after surgery. Primary outcome was change in the State-Trait Anxiety Inventory (STAI) score; secondary outcomes included physiological parameters, pain, and fatigue after 15-min immersive VR meditation. Patient experience was examined using a validated questionnaire.

Overall STAI scores significantly decreased, with a median reduction from 39.00 IQR [30.00, 43.00] to 27.00 IQR [25.00, 35.50], $p<0.001$. In the preoperative group ($n=14$), mean STAI scores decreased from 33.78 (SD $\pm$ 7.76) to 28.78 (SD $\pm$ 7.28), $p=0.009$. In the postoperative group ($n=7$), the median pre-VR STAI score was 45.00 IQR [39.00, 49.00], which decreased to 32.00 IQR [26.00, 38.00] post-VR, $p=0.018$. Physiological improvements were noted only postoperatively, including reductions in pain ($p<0.001$), fatigue ($p=0.001$), and increased relaxation ($p=0.042$). Patient feedback showed high satisfaction, 81% found the VR enjoyable, and 76% would recommend it to other patients. Minimal discomfort was reported, with 1 dropout due to dizziness. Most felt calmer, less stressed and more relaxed. Immersive VR meditation was feasible, well tolerated, and effective in patients undergoing lung resection. Larger study would be necessary to confirm significance of findings and recommend wider use.

A204
Effects of aortovascular surgery on health-related quality of life and psychosocial health of English Marfan syndrome patients
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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1):** A204

Objective: Marfan Syndrome (MFS) is associated with life-threatening aortovascular manifestations. There is limited evidence worldwide on health-related quality of life (HRQoL) and psychosocial effects of surgical intervention. This study aims to identify the HRQoL and the psychosocial effects of aortovascular surgery (AVS) in MFS patients.
Methods: This multi-centre quantitative observational exploratory study included adult MFS patients (≥ 18 years) who had AVS, and consented to participate. Sample size required was $n=28$. Participants completed seven validated questionnaires relating to HRQoL (SF36, EQ-5D-5L) and psychosocial health (depression[CESD], illness perception[IPQ], fatigue[FSS], self-esteem[RSES], stigma[PSQ]) before and after AVS. Descriptive and inferential statistics were used for analysis.
Results: Of 27 consented participants, final analysis was conducted on $n=25$ with completed questionnaires. The majority were men ($n=21$ (84%)), were White British ($n=18$ (72%)) and the average age was 43 years. Initial analysis showed that HRQoL in MFS was significantly lower than the general population in all SF36¹ and EQ-5D-5L² subscales at baseline ($p<0.0001$) and 6-weeks follow-up ($p<0.0001$). Participants experienced increased depression and fatigue postoperatively and more participants experienced pain after AVS (Table 1). However, self-esteem remains positive and is comparable with the UK general population³. Participants did not feel devalued/discriminated due to their condition.
Conclusion: The results showed that MFS patients have generally worse HRQoL and psychosocial health after AVS than the UK general population. This highlights the need for the development of new clinical pathway and interventions that include psychosocial care before and after surgery.

Table 1 (abstract A204) Comparison of the psychosocial effects of aortovascular surgery in Marfan syndrome patients.

Psychosocial effects	Baseline n= 25 Freq (%) / Mean ($\pm$ SD)	6-weeks follow up n=21 Mean ($\pm$ SD)
CES-D (Depression)	19.48 ($\pm$ 12.3)	20.05 ($\pm$ 14.01)
FSS (Fatigue)	4.80 ($\pm$ 1.40)	5.34 ($\pm$ 1.49)
Pain	22 (88%)	20 (95.2%)
RSES (Self-esteem)	30.2 ($\pm$ 5.4)	29.6 ($\pm$ 5.9)
PSQ (Devalue)	1.81 ($\pm$ 0.73)	1.98 ($\pm$ 0.83)

A205
Could AI-Created Virtual Patient Models be used for Cardiothoracic Surgical Training
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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1):** A205

Objectives: Traditional cardiothoracic surgical training often lacks exposure to complex or rare cases, limiting opportunities for trainees to practice decision-making in high-stakes scenarios. This study explores the potential of AI-created Virtual Patient Models (VPMs) as a tool for enhancing cardiothoracic surgical training, offering trainees a controlled, risk-free environment to refine their skills.
Methods: A literature review was conducted to assess the feasibility and benefits of integrating AI-powered VPMs into surgical training. Key themes included the use of data-driven simulations based on extensive radiological and echocardiographic datasets, allowing trainees to practice varied patient scenarios. Model types such as Generative Adversarial Networks (GANs) and Transformer-based architectures were examined for their ability to generate realistic, case-specific training modules.
Results: Findings suggest that VPMs can provide safe, on-demand training opportunities, enabling iterative learning through real-time feedback. These models could simulate complex pathologies, diverse anatomical variations, and multiple management pathways, supporting a comprehensive and immersive training experience.
Conclusions: AI-generated VPMs hold significant promise as an adjunct to traditional cardiothoracic training, enhancing diagnostic and decision-making skills in a simulated environment. With multidisciplinary development, these models could transform surgical education, preparing trainees for independent practice in a safe and ethical manner. Further studies are needed to refine these models and evaluate their integration into cardiothoracic training programs.
Final category: Pat Magee (Medical Students)

A206**Early Post-operative Predictors of Right Ventricular Failure Following Left Ventricular Assist Device Implantation**Shruti Rajendra¹, Yousuf Salmasi^{1,2}, Binu Raj², Espeed Khoshbin^{1,2}¹National Heart & Lung Institute, Imperial College, London, United Kingdom. ²Harefield Hospital, Royal Brompton, and Harefield as part of Guys and St Thomas NHS Trust, London, United Kingdom**Correspondence:** Shruti Rajendra*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A206*

Objectives: Right ventricular failure (RVF) remains an important post-operative complication following Left Ventricular Assist Device (LVAD) implantation. Current pre-operative risk scores show limited discriminatory power in validation studies. This study aims to identify early post-implantation haemodynamic predictors of RVF to aid the development of an internally validated predictive model.

Methods: Patients who underwent HeartWare or HeartMate LVAD implantations between March 2013 and March 2023 at a large-volume tertiary centre were retrospectively analysed. Early post-implant RVF was the primary outcome. Post-implant haemodynamic data were analysed using univariate logistic regression. Predictive models were developed using stepwise multivariate logistic regression. The selected model was internally validated using k-fold cross-validation.

Results: This study included 210 patients. 64 patients (30.5%) experienced early post-implant RVF. Multivariate logistic regression revealed the following post-implant haemodynamic parameters as significant predictors of RVF post-LVAD: decreased cardiac index (OR: 0.012, $p=0.001$), decreased mean arterial pressure (OR: 0.932, $p=0.008$) and simultaneously increased cardiac index and pulmonary pulse pressure (OR: 1.13, $p=0.021$). Pre-implant IV inotrope therapy was a significant confounder (OR: 3.96, $p=0.021$). Our proposed predictive model achieved an area under the curve (AUC) of 0.830, and a high negative predictive value of 89.2% at the selected risk score cut-off of $p>0.322$.

Conclusions: Decreased cardiac index, decreased mean arterial pressure, and simultaneously increased cardiac index and pulmonary pulse pressure are significant post-implant predictors of RVF following LVAD. The significant discriminatory power of our proposed model highlights the value of post-implant haemodynamic parameters and their interactions for developing models to predict RVF post-LVAD.

A207**Paediatric Advanced Cardiac Training (PACT): a medical student's report on improving confidence in postoperative management of paediatric cardiac patients in L'viv, Ukraine**Alexander Reynolds¹, Stefanie Patsyurko², Andriy Plylypets², Jessica Greene³, Petr Jirasek⁴, Joanna Thirsk⁴, Alicia Said⁵, Vanessa Rama³, Jack Cornell⁶, Oleksandr Yachnik², William Novick⁶, Oliver Ross⁴¹Swansea University Medical School, Swansea, United Kingdom.²St. Nicholas Paediatric Hospital, L'viv, Ukraine. ³Alder Hey Children's Hospital, Liverpool, United Kingdom. ⁴University Hospital Southampton, Southampton, United Kingdom. ⁵Minnesota Children's Hospital, Minneapolis, USA. ⁶Global Cardiac Alliance, Tennessee, USA**Correspondence:** Alexander Reynolds*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A207*

Context: Paediatric cardiac surgery continues in Ukraine despite the persistent conflict since 2021. A recurrent visiting collaboration with the local clinical team in L'viv aims to meet the shared goal of clinically-excellent paediatric cardiac care. In addition to surgical assistance during all standard two-week trips to Ukraine, the need for cardiac-focused intensive care knowledge and skill has been traditionally approached by impromptu teaching alone.

Methodology: A bespoke didactic/kinaesthetic course was designed and delivered before a standard trip to improve confidence during postoperative care of trip cases.

The three-day course was delivered in April 2024. A confidence survey for different topics was completed before and after. Confidence change per topic was analysed via Wilcoxon test & null hypothesis of "no confidence change" (alpha score = 0.05).

Findings: Participants who completed the full course had their confidence scores matched ($n=11$; 27% PICU Nurse, 55% Intensivists and 18% Other).

Significant confidence change was shown in: postoperative assessment, basic airway interventions and recognition of cardiac arrhythmia. However, five other topics (intubation, recognition and treatment of respiratory failure, indication for CPAP, initiating CPR and recognising cardiac tamponade) showed no confidence change (likely in part due to type II statistical error).

Conclusions: Confidence scores in paediatric intensive care were significantly improved for some key clinical scenarios, but improved confidence could not be detected in the majority of clinical scenarios covered in this pilot study.

Greater-sized delegations, and pooled datasets from future courses will attenuate any type II statistical error present in this pilot dataset.

A208**Compliance and management of diabetic patients prior to cardiac surgery and the postoperative impact: A Single centre retrospective study**Natasha Bocchetta¹, Ayush Balaji¹, Rishab Makam², Nabil Hussain², Mahmoud Loubani²¹Hull York Medical School, Hull, United Kingdom. ²Hull University Teaching Hospital, Hull, United Kingdom**Correspondence:** Natasha Bocchetta*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A208*

Background: Diabetic patients make up 35% of elective cardiac revascularization surgeries and are at increased risk of adverse outcomes. NICE guidelines recommend long term glycated hemoglobin (HbA1c) <53 mmol/mol meanwhile Diabetes UK and Centre for Perioperative Care (DUCPC) recommend <69 mmol/mol within three months of surgery. Optimisation of preoperative HbA1c improve post-operative outcomes.

Aim: Evaluate the compliance of diabetic patients prior to cardiac surgery, assess preoperative management and impact of HbA1c on post-operative outcomes.

Methods: We assessed the last 100 diabetic patients undergoing cardiac surgery, prior to 06/12/2023. Patients were analysed by preoperative HbA1c levels. Optimisation was defined as referral to diabetic nurse specialist. Statistical analysis was conducted using R version 4.2.2.

Results: Of 100 patients, 62% had a preoperative HbA1c, with 79% performed within three months of surgery. Of the 38 without a HbA1c 37 were urgent cases. The median HbA1c was 55 mmol/mol, with 53% of patients >53 mmol/mol and 11% >69 mmol/mol. Nine patients received diabetic optimisation and 71% of patients with HbA1c >69 mmol/mol received optimization ($p<0.001$). Higher preoperative HbA1c levels demonstrated increased risks of complications and prolonged ICU stays.

Conclusion: Overall, there was poor diabetic compliance in this cohort, exceeding NICE guidelines. Nine patients had diabetic optimisation despite 33 being >53 mmol/mol HbA1c. Reinforcing the evidence that patients with HbA1c >53 mmol/mol are at an increased risk of adverse outcomes. Raising the question, should DUCPC guidelines lower the referral threshold to >53 mmol/mol, to improve outcomes? We implemented recommendations to improve this and aim to conduct a national study to investigate this.

A209**Chest Drains Reimagined: The Future of Chest Drains Post Cardiac Surgery**Natasha Bocchetta¹, Ayush Balaji¹, Rishab Makam², Mahmoud Loubani²¹Hull York Medical School, Hull, United Kingdom. ²Hull University Teaching Hospital, Hull, United Kingdom**Correspondence:** Natasha Bocchetta*Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A209*

Background: Post cardiac surgery all patients require multiple chest drains in the mediastinum. These play an important role in the

post-operative period and are carefully monitored for bleeding and infection. These multiple drains leave scars for patients. In paediatric patients in particular these scars are for life and cosmetically can be detrimental to mental health. As cardiac surgery adopts more minimally invasive techniques why doesn't our postoperative care as well? We propose a new drainage system to overcome this.

Methods: We have designed a drainage system that results in one incision with the potential for multiple drains in a range of areas in the chest. The standard drain will have three drains encased by one lumen. Therefore, all through come out of the chest via one incision. With this system each drain output can be measured individually. Furthermore, drains can be removed one at a time or all together depending on the patients' clinical indication. This is possible due to an inert lubrication of the lumen to allow ease or removal. This approach can cater for two or three drains in the chest.

Conclusion: This new device will reduce postoperative scars for patients, which is particularly important in the paediatric population. Children with congenital heart disease often require multiple surgeries throughout palliation, with this technique the same incision can be reused, further reducing scars. This cheap alternative will have a profound impact on patients scars postoperatively.

A210

Is the CLAS Score a Predictor of Successful Mitral Valve Repair

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Objective: The mitral valvar apparatus is categorized into four sub-units: Commissures (C), Leaflet (L), Annulus (A), and Sub-valvar apparatus (S). Each component receives an individual score, with the total score indicating the complexity of the repair. A score of 8 or less signifies a simple repair, while a score of 9 or higher indicates a complex one.

Methods: Retrospective review of consecutive cases involving degenerative mitral valve pathology that underwent surgical intervention. CLAS score was retrospectively assessed on preoperative echocardiograms. Data analysis was conducted using Unistat, presenting results as median (inter-quartile range) and n (%).

Results: 30 patients, with an age of 68 years (14) and a Euroscore of 4.0 (2.9), met the inclusion criteria. The most prevalent pathology was isolated P2 prolapse, observed in 5 patients (16.7%). The overall CLAS score was 6 (6), with mitral valve repair successfully performed in 21 out of 30 cases (70%). Among the repaired cohort, the CLAS score was 6 (6), with 13 out of 21 (62%) scoring ≤ 8 . For those who underwent replacement, the CLAS score was also 6 (5), with 6 out of 9 (67%) scoring ≤ 8 . However, the senior surgeon noted that 5 out of 9 (56%) replacements could have been repaired with 3 out of 5 scoring ≤ 8 . In-hospital mortality was zero. There was a significant association between the CLAS score and successful repair ($p=0.01$).

Conclusion: A CLAS Score of ≤ 8 is a strong predictor of successful mitral valve repair, suggesting the need for further research on this concept.

A211

10 Year follow up of Orthotopic Heart Transplantation

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Background: The 10-year mortality outcome is a key metric to assess the quality adjusted life year (QALY) provided by any intervention.

Methods: Retrospective review of patients who underwent orthotopic heart transplantation (OHT) at our institution from 2010 to 2014 with minimum follow-up period of 10 years. Primary outcome measure was 10-year mortality. Results presented as median values (inter-quartile range) and counts (percentages).

Results: 54 patients underwent OHT between 2010 and 2014. Median age of recipients was 49 years (IQR 19), predominantly male (36/54, 66.7%) with a body mass index (BMI) of 26 (IQR 5). Preoperatively, 12 patients (22.2%) were on mechanical circulatory support (MCS), intra-aortic balloon pumps (IABP) in 10 cases (83.3%), with one case each utilizing a left ventricular assist device (LVAD) and a combined strategy of IABP, ECMO, and BiVAD. Donor age was 45 years (IQR 17) with left ventricular ejection fraction (LVEF) of 63% (IQR 10). Size mismatch as described by Pettit was: green (23/37, 62%), yellow (3/37, 8%), and red (11/37, 30%). Implantation and cardiopulmonary bypass (CPB) times were 59 min (IQR 19) and 217 min (IQR 95), respectively. Primary graft dysfunction (PGD) occurred in 16 patients (30%), necessitating ECMO in 3 cases (19%), IABP in 8 cases (50%), and both ECMO and IABP in 5 cases (31%). 30-day mortality rate was 16.7% (9/54), whilst overall 10-year survival was 53.7% (29/54).

Discussion: This study indicates that heart transplantation can lead to sustained long-term improvements in both the quantity and quality of life for recipients.

A212

A single-centre early experience of donation after circulatory death (DCD) heart transplantation

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Background: Donation after circulatory death (DCD) hearts has the potential to increase the donor pool considerably in the UK.

Methods: A single-centre retrospective review on all patients that underwent orthotopic heart transplantation from DCD donors at our institution between November 2019 and April 2024. The primary outcomes were recipient 30-day, 1-year survival, post-transplant primary graft dysfunction (PGD) requiring mechanical circulatory support (MCS) usage. Results presented as median values (inter-quartile range) and counts (percentages).

Results: 22 patients underwent DCD heart transplantation, 19% of our heart transplantation activity. Recipient age was 57 (13), ischaemic cardiomyopathy aetiology was 10/22 (45%). Pre-transplantation MCS was required in 6/22 (27%), 1 Impeller, 4 ECMO, and 1 BiVAD. Donors were male 17/22 (77%), age of 35 (16). Donor size mismatching, 10–15% below recipient predicted heart mass was seen in 3/22 (14%). Duration on TransMedics Organ Care System (OCS) was 251 min (70). The Functional Warm Ischaemic Time—Cardioplegia, (FWITCP) and the Functional Warm Ischaemic Time—Organ Perfusion, (FWITOP), was 17 min (3) and 30 min (5) respectively. PGD requiring MCS support occurred in 3/22 (14%) of cases including one of the donor size mismatched recipients compared to UK PGD rate of 23.4%. DCD heart transplant 30-day and 1-year survival was 95.6% versus DBD heart transplant matched centre cohort of 93.5% and 91.6% respectively.

Conclusion: Our results suggest that DCD heart transplantation provides non-inferior post-transplant survival and a lower PGD rate compared with the UK heart transplantation results and encourages broader utilisation of this practice.

A213**Surgical Revascularization of the Diagonal Artery in Coronary Artery Bypass Graft Surgery: Is this necessary?**Machaela Miskell¹, Eiran Gannon¹, Alan Soo.²¹School of Medicine, University of Galway, Galway, Ireland. ²Department of Cardiothoracic Surgery, University Hospital Galway, Galway, Ireland**Correspondence:** Machaela Miskell**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A213**

Objective: Coronary artery bypass grafting remains the most performed cardiac surgical procedure worldwide. The diagonal artery is a side branch of the left anterior descending artery of the heart. This study aims to establish whether revascularization of the diagonal artery is an omissible step during coronary artery bypass grafting.

Methods: This single-centre retrospective analysis was conducted between 2016 and 2024. Patients with coronary artery disease who chose coronary artery bypass grafting as their technique of revascularisation were included. In terms of demographics, the average age of participants was 64.33 years (SD 12.28). The control group consisted of patients with less than 50% diagonal artery stenosis.

Results: There were 355 patients included in this study. The study included 29% (n=101) patients with significant diagonal artery stenosis. Of the 101 patients with significant stenosis, 84.2% (n=85) were still alive while 15.8% (n=16) were deceased. This was compared with the control group, of which 10.2% (n=26) of 254 were deceased. Of the 101 patients with diagonal artery stenosis, 15 suffered post-operative complications, the most prevalent of which was atrial fibrillation/a-flutter (occurring in 10 patients). 5 patients required a re-sternotomy often due to bleeding from the body of the vein graft. One patient requiring a further PCI.

Conclusions: It's been proposed that failing to bypass the diagonal artery results in an incomplete CABG, which can lead to potential complications. Our results showed no significant discrepancies in morbidity or mortality between the study and control group, indicating that bypassing the diagonal artery is unnecessary.

A214**Cryoablation Plus Erector Spinae Plane Block versus Cryoablation Alone in Patients with Pectus Excavatum Undergoing the Nuss Procedure: A Meta-Analysis**

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Background: Pectus excavatum is a common congenital chest wall deformity associated with aesthetic and functional concerns. The Nuss procedure is widely used for correction; however, managing postoperative pain remains a significant challenge. While cryoablation has shown promise in reducing postoperative pain, its peak therapeutic effect is not immediate. The use of erector spinae plane block (ESPB) as an adjunct is emerging as a promising regional anaesthesia technique to address this challenge and enhance postoperative analgesia.

Objective: To compare the outcomes of cryoablation plus ESPB versus cryoablation alone in patients undergoing the Nuss procedure focusing on operative time, hospital length of stay, postoperative pain, opioid use, and complication rates.

Methods: A comprehensive literature review was performed using MEDLINE, Scopus, and Cochrane databases. Studies comparing cryoablation alone versus cryoablation plus ESPB and reporting the outcomes of interest were included.

Results: Three studies, including 161 patients (55 received cryoablation+ESPB and 106 received cryoablation alone), were identified. Cryoablation with ESPB significantly reduced hospital length of stay [MD 0.769, 95% CI 0.270–1.268, p=0.003], post-operative morphine use [MD 0.668, 95% CI 0.318 – 1.019, p=0.000], and pain scores [MD 1.299, 95% CI 0.639 – 1.959, p=0.000] compared to cryoablation alone. No statistically significant differences were noted in operative time or complication rates.

Conclusion: The combination of cryoablation and ESPB may provide a more effective analgesic strategy compared to cryoablation alone in

patients undergoing the Nuss procedure for pectus excavatum. However, additional randomised controlled trials with larger sample sizes are required to corroborate these results.

A215**Comparison of Supra-Aortic Vessel Reimplantation Techniques in Total Arch Replacement Surgery: A Meta-Analysis**

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Background: Total arch replacement surgeries pose a formidable surgical challenge, as they necessitate the meticulous reimplantation of supra-aortic vessels to preserve blood flow to the brain and upper body. Two widely adopted techniques for this critical procedure are the en bloc (EB) and branched graft (BG) approaches, however, their comparative superiority remains unestablished.

Objective: To compare the outcomes and complications associated with these two supra-aortic reimplantation techniques in patients undergoing total arch replacement.

Methods: In accordance with PRISMA guidelines, a comprehensive literature search was performed across the MEDLINE, Cochrane, and Scopus databases. Studies that met the inclusion criteria and reported on the key outcomes of interest, including intraoperative mortality, in-hospital/30-day mortality, cardiopulmonary bypass (CPB) time, cross-clamp time, and neurological events such as cerebrovascular accident (CVA) and transient ischemic attack (TIA), were included in the final analysis.

Results: The systematic review identified 6 observational studies involving a total of 4,451 patients. The pooled analysis revealed a statistically significant reduction in intraoperative mortality for the BG technique compared to the EB approach [OR 0.344, 95% CI 0.152–0.776, p<0.05]. However, no statistically significant differences were detected between the two techniques in other outcomes such as CPB time, cross-clamp time, postoperative CVA and TIA.

Conclusion: The BG technique for supra-aortic vessel reimplantation appears to offer superior intraoperative mortality outcomes compared to the EB technique in patients undergoing total arch replacement. However, further prospective, randomised trials are warranted to conclusively elucidate the comparative effectiveness and safety of these two surgical approaches.

A216**Unilateral vs. Bilateral Antegrade Cerebral Perfusion in Aortic Arch Surgeries: An Updated Meta-Analysis of Comparative Studies**

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Background: Complex aortic arch surgeries employ various cerebral protection techniques to protect the brain and mitigate cerebral complications during circulatory arrest. Selective antegrade cerebral perfusion (ACP) is widely used, with options for unilateral (uACP) or bilateral (bACP) perfusion. The relative merits of these two approaches have been extensively discussed and debated.

Objectives: To provide an updated assessment of the available evidence regarding the mortality, neurological, and other crucial post-operative outcomes associated with these two ACP strategies in aortic arch surgeries.

Methods: A comprehensive literature search of MEDLINE, Scopus, and Cochrane databases identified relevant studies up to November 2024. Pooled odds ratios and mean differences with 95% confidence intervals were calculated using a random-effects model.

Results: The analysis included 23 studies comprising 8,087 patients. No statistically significant differences were observed in cardiopulmonary bypass duration, cross-clamp time, length of hospital stay, and 30-day mortality. Interestingly, the bACP cohort exhibited a significantly shorter intensive care unit stay [MD: 0.742 days, 95% CI: 0.051

to 1.433, $p < 0.05$). Post-operative complications including acute kidney injury and permanent neurological dysfunction also did not differ significantly between the two cohorts. Finally, although transient neurological dysfunction was numerically higher in the uACP group, the difference did not reach statistical significance [OR 1.244, 95% CI 0.974–1.589, $p > 0.05$].

Conclusion: This updated meta-analysis indicates that uACP and bACP are comparable cerebral protection strategies in arch surgeries, with no significant differences observed in mortality and key postoperative outcomes. Larger multicentre studies are warranted to further elucidate the optimal approach in these complex operations.

A217

Comparison of Self-Expandable and Balloon-Expandable Stents in Adults with Aortic Coarctation: A Meta-Analysis

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Background: Aortic coarctation (CoA) is a congenital narrowing of the aorta, often treated surgically, or more recently, via endovascular techniques. While balloon angioplasty exhibited acceptable initial patency, notable rates of recoarctation and postprocedural aneurysm formation have limited its appeal, leading to the increased employment of stent-based strategies. Self-expandable and balloon-expandable stents are the two main types; however, their relative efficacy remains underexplored due to limited direct comparative studies.

Objective: To compare the outcomes of self-expandable and balloon-expandable stents in adult CoA patients, specifically evaluating stent migration, peri- and post-procedural outcomes, and persistence of hypertension.

Methods: A thorough literature search in the MEDLINE, Scopus, and Cochrane databases including both randomised controlled trials (RCTs) and observational studies that directly compared self-expandable and balloon-expandable stents in adult CoA patients was conducted. Pooled odds ratios (ORs) with 95% confidence intervals (CIs) were calculated using the random-effects model.

Results: The analysis comprised a total of 282 patients across three studies, including one RCT. No statistically significant differences were observed in terms of stent migration and persistent hypertension. Although the balloon-expandable stents demonstrated numerically higher peri- and post-procedural outcomes, these differences did not reach statistical significance [OR 0.425, 95% CI 1.75 to 1.030, $P = 0.058$].

Conclusion: Self-expandable and balloon-expandable stents demonstrate comparable safety and efficacy in the percutaneous treatment of adult CoA. Nevertheless, given the paucity of available studies, larger RCTs are necessary to further investigate potential long-term differences in outcomes, such as aortic recoarctation, residual gradient, and the requirement for re-stenting.

A218

Service Evaluation of Patients Undergoing Lung Volume Reduction (LVR) at a Regional Thoracic Centre

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Objective: To evaluate clinical outcomes and functional improvement following lung volume reduction (LVR) in COPD patients at a regional thoracic centre.

Methodology: This service evaluation comprised two parts. First, clinical data from LVR patients at a large regional unit were collected pre-surgery (within 2 years) and post-surgery at 1, 2, and 5 years. Key measures included spirometry, gas exchange, 6-min walk test results, and physical ability to assess the impact of LVR. Data were analysed using SPSS. In the second part, a survey of 20 randomly selected LVR patients was conducted to assess clinical improvement, satisfaction, and physical and mental outcomes using an 18-question questionnaire in Qualtrics.

Results: At 1- and 5-year follow-ups, 67% and 53% of patients showed improved FEV1. The percentage change in FEV1 compared to baseline was 30.9% (95% CI: -14.5%, 76.5%) at 1 year, 35.0% (95% CI: -22.9%, 92.9%) at 2 years, and 21.6% (95% CI: -5.8%, 48.9%) at 5 years. Among surveyed patients, there were 12 surgical LVRS and 8 bronchoscopic LVR cases; 70% were satisfied with the intervention, 45% reported improved breathing, 55% experienced a better quality of life, 50% reported improved mental health, and 95% found the information provided clear.

Conclusions: LVRS demonstrates a positive impact on lung function, breathing, quality of life, and mental health in COPD patients. However, the beneficial effects tend to diminish over time, highlighting the need for continued patient follow-up and supportive care.

A219

Enhancing Consent in Thoracic Surgery: Tailored Forms for Better Care

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Aim: As thoracic surgery becomes more complex, procedure specific consent forms are essential. These forms must clearly explain risks versus benefits in language accessible to all. Tailored consent forms are crucial for informed consent, trust, and transparency between patients and healthcare professionals. The project aimed to create procedure-specific consent forms and patient information leaflets (PILs) to standardise explanations and ensure patients receive these materials in advance. Thus, allowing time for informed consent as per the Royal College of Surgeons (RCS) guidelines.

Methods: A departmental audit identified that consent forms were not routinely provided during pre-assessment, lacking procedure-specific details, leading to inconsistent patient education. Addressing this, new standardised forms with pre-filled information were developed. The supervising consultant and registrar agreed on the content, reflecting current statistics, surgical techniques, and health guidelines. The medical student then translated this into accessible language. The forms were approved for use after departmental review.

Results: The introduction of pre-filled forms and PILs standardise patient education, providing procedure-specific information. However, challenges remain, particularly for patients with language barriers, visual impairments, and intellectual disabilities. Research indicated that eConsenting software can address these issues by offering various formats to facilitate informed consent. This software has been successfully implemented in several trusts, prompting the department to consider its adoption to ensure all patients can effectively provide informed consent.

Conclusions: Creation of procedure-specific consent forms is a critical step towards improving patient care and ensuring ethical and legal standards are met in the thoracic department, according to RCS guidelines.

A220**Pilot Study of Experience of Dry Lab Teaching in Thoracic Surgery**Ghaith Qsous¹, Phei Lim², Aditya Roshan², Malcolm Will¹¹Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. ²University of Edinburgh, Edinburgh, United Kingdom**Correspondence:** Phei Lim**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A220**

Objective: We aim to introduce thoracic surgery dry lab teaching using simulated training to medical universities' curriculum to increase interest in thoracic surgery. This could potentially increase number of applicants for thoracic surgery specialty training in the future.

Methods: The questionnaire was co-created by two thoracic surgeons and two clinical year medical students via Microsoft Forms. It was sent out to clinical year medical students at Edinburgh Medical School.

Results: This pilot study received 56 responses, of which 58.9% (n = 33) respondents have had thoracic surgery lectures. 50% (n = 28) preferred surgical lectures delivered by both surgeons and physicians, 37.5% (n = 21) preferred them by surgeons. 89.3% (n = 50) agreed that dry lab teaching would encourage specialty training applications. The best mode of surgical skills teaching was explored, to which 75% (n = 42) answered with more practical teaching, either through dry lab, clinical skills teaching including suturing, or more surgical placements.

Of 33 who have had thoracic surgery lectures, 51.5% (n = 17) had lectures by thoracic surgeons, 6.1% (n = 2) had lectures by respiratory physicians, 9.1% (n = 3) had lectures by both. Regarding the quality of these lectures, 78.8% (n = 26) rated them as 'very good' or 'good'. Of 33, only 36.4% (n = 12) have been exposed to thoracic surgery dry lab teaching. 91.7% (n = 11) found it very engaging or more engaging than traditional lectures, while 8.3% (n = 1) found it the same.

Conclusion: Thoracic surgery teaching and incorporation of dry lab were key factors to improve the specialty interest. These should be included in medical school curriculum nationwide.

A221**Prevalence of Bullying, Undermining and Harassment in Cardiothoracic Surgery**Heen Shamaz¹, Zaidhan Latif Khan², Hesham Zalghana¹, Mohammed Ma'arij Anwar¹, Farah Bhatti³¹The University of Edinburgh, Edinburgh, United Kingdom. ²Lancaster Medical School, Lancaster, United Kingdom. ³The Cardiac Centre, Morriston Hospital, Swansea, United Kingdom**Correspondence:** Heen Shamaz**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A221**

Objectives: Findings from the GMC Trainees Survey 2024 and the Independent Working Party report into 'Sexual Misconduct in Surgery' have brought the issues of unacceptable behaviour in our profession into sharp focus. This study aims to evaluate the current UK cardiothoracic training environment, as well as the experiences of consultants with the aim to see where to target interventions for improvements.

Methods: A cross-sectional survey was conducted from March to May 2024, in person at the SCTS Annual meeting and online. Demographic data included gender, ethnicity and career stage. Questions on undermining and being a subject of or witness to unacceptable behaviour were included.

Results: There were 85 responses (69 male, 15 female). 45% of the surgeons were trainees and 55% consultants.

30.6% of respondents had felt undermined by colleagues (26% men, 50% women). 37% had been a subject of, or witness to, unacceptable behaviour (31% men, 60% women).

Compared to consultants, trainees were more likely to report feeling undermined (40% vs 23%) and being subjected to (or witnessing) unacceptable behaviour (42% vs 32%).

Overall, the training environment was felt to be supportive, but challenging.

Conclusions: This survey confirms that unacceptable behaviours of bullying, undermining and harassment are prevalent during cardiothoracic training and beyond; women surgeons are particularly impacted. We all need to robustly challenge poor behaviours, acting as

allies and active bystanders. We suggest a new SCTS code of conduct which role models good professional behaviours.

A222**Preoperative Albumin Levels and Heart Transplant Outcomes**Sylvia Yew¹, Amy Tang¹, Laxmikant Umate², Hari Doshi³, Yasser Hegazy³, Jonathan Jonathan Dalzell³, Philip Curry³, David Varghese³, Sadia Aftab³¹Glasgow Medical School, Glasgow, United Kingdom. ²Datta Meghe Institute of Higher Education and Research, Maharashtra, India. ³Golden Jubilee National Hospital, Glasgow, United Kingdom**Correspondence:** Sylvia Yew**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A222**

Background: Preoperative serum albumin levels have gained recognition as crucial indicators of outcomes in patients undergoing heart transplantation. This study aims to evaluate the impact of pre-operative serum albumin levels on patient survival.

Methods: We conducted a retrospective analysis of orthotopic heart transplantations performed in our unit from 2010 to 2024, specifically focusing on donors who were declared brain dead (DBD). The study examined how preoperative albumin levels influenced overall survival duration. Results are presented as median values (inter-quartile range) and counts (percentages).

Results: A total of 204 patients out of 209 cases had a recorded pre-operative serum albumin level (g/L) and were included in the analysis. The pre-operative albumin level was 41 (IQR 8), ranging from a minimum of 20 to a maximum of 59. Linear regression analysis indicated a significant association between albumin levels and survival, $p < 0.02$. Notably, patients requiring pre-operative mechanical circulatory support (MCS) had lower albumin levels of 36 (IQR 8), compared to those not on MCS, 42 (IQR 7), $p < 0.001$.

Discussion: This study supports prior findings that lower preoperative serum albumin levels correlate with higher mortality rates post-heart transplantation. It highlights the need for more aggressive nutritional therapy aimed at increasing albumin levels particularly in patients requiring MCS before surgery, potentially leading to improved survival outcomes.

A223**Tricuspid Annular Plane Systolic Excursion as a Predictor of Survival in Patients with Tricuspid Regurgitation Undergoing Isolated Tricuspid Valve Surgery**Tanisha Rajah¹, Edouard Long², Sara Volpi³, Rajdeep Bilkhu³, Ronak Rajani³, Gianluca Lucchese³¹University of Birmingham, Birmingham, United Kingdom. ²King's College London, London, United Kingdom. ³St Thomas' Hospital, London, United Kingdom**Correspondence:** Tanisha Rajah**Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A223**

Objectives: Isolated tricuspid valve (TV) surgery is associated with high morbidity and mortality. Tricuspid annular plane systolic excursion (TAPSE) is known to correlate with right ventricular function. We hypothesised that TAPSE may predict survival in patients undergoing isolated TV surgery and aimed to assess its prognostic value.

Methods: In this retrospective study, we analysed patients with tricuspid regurgitation (TR) who underwent isolated TV surgery from 2000 to 2023. Receiver operating characteristic (ROC) curve analysis was used to find the optimum value of TAPSE to predict survival and the study population was dichotomised according to this value. The primary endpoint of all-cause mortality was assessed using Kaplan-Meier analysis and multivariable Cox regression.

Results: Among 38 patients analysed (median follow-up: 6.6 years, median age: 70y (38–74), female: 47%), ROC curve analysis identified 22.5 mm as the best prognostic threshold. After dichotomisation, 26 patients had TAPSE < 22.5 mm and 12 patients had TAPSE ≥ 22.5 mm. Kaplan Meier analysis revealed significantly higher mortality in patients with TAPSE < 22.5 mm (log-rank: $p = 0.028$). After adjustment for hypertension, multivariable analysis revealed TAPSE trends towards

significance as an independent predictor of survival (HR: 0.87, 95% CI: 2.12–2.76, $p=0.078$).

Conclusions: In patients undergoing isolated TV surgery, TAPSE < 22.5 mm was associated with poorer outcomes. Further studies are warranted to investigate the potential role of TAPSE in the risk stratification of TR patients and its possible integration into contemporary scoring systems for isolated TV surgery.

A224

What Patients Want

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Communication with patients is an overlooked aspect of NHS management, with nametags and introductions being rapidly changed, differing across regions. The aim of this study is to ascertain what patients want in a nametag, and how to standardise nametag production with the intention of being readable and useful, without being bloated with information or text.

Our pilot study took place in GSTT hospitals, encompassing 54 patients of varying age, ethnicity and gender. Patients were opportunity sampled, approached and asked if they were able to take part in a questionnaire. They were given an online, anonymous survey, of 9 questions. Of these 9, 3 were used to gather information about the participant data set for analysis, and 6 were used to test perceptions. This data was tabled, and organised, of which the data is listed below. Patients reported, with a 79.6% majority that they preferred the role of the person they are speaking to being displayed. In a similar vein, 72.2% wished for the titles and qualifications of the healthcare worker they are speaking to be displayed on their name badge. 81.4% preferred a full name on the name badge compared to a given name or nickname. 74.1% wished for pronouns of the person they are speaking towards to be displayed. However, 16.6% wished to have a greeting or introduction displayed. Patients weren't keen on the usage of a photo displayed on the name badge, with 25.9% stating they wanted a visual identification. All questions were answered by all participants.

A225

"Failure To Rescue" - a Useful Measure of Quality of Care?

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Failure-to-rescue (FTR) assesses a hospital's ability to prevent mortality in patients with postoperative complications. The STS recently introduced a risk-adjusted FTR metric for adult cardiac surgery, highlighting outcome variations across care units with similar risk factors. This study aimed to evaluate a UK cardiac surgery unit's outcomes against the STS FTR model predictions.

Analysed 2,167 adult patient records from a single UK unit database, focusing on seven index procedures: CABG, AVR, MVR, and MVRe ($\pm$ CABG) performed between 2017 and 2022. Patients were categorised by the presence or absence of major complications (reoperation, stroke, prolonged ventilation > 24 h, and renal failure), and FTR rates for each and combined complications. Frequencies were compared to STS model predictions using Chi-square and Fisher's exact tests.

FTR rates for all four complications were similar to STS model predictions. However, mortality was statistically significantly lower than expected in patients without complications, with a rate of 0.3% in the UK unit versus 0.9% in the STS model ($p=0.00428$). The unit had significantly higher reoperation rates (5.17% vs. 2.90%, $p<0.00001$) and lower rates for PV (1.38% vs. 8.85%, $p<0.00001$) and RF (1.11% vs. 2.42%, $p=0.00007$).

The UK cardiac unit's mortality outcomes met benchmarks from the STS risk-adjusted FTR model. Although the UK unit had higher reoperation rates, this did not significantly increase FTR, indicating effective management. Despite lower PV rates, the FTR rate was not significantly lower, though trends suggest slightly higher mortality. Increased mortality in cases with combined complications indicates limited resources potentially affecting the management of complex cases.

A226

Exploring the Efficacy of Melatonin as a Reactive Treatment in Post-Operative Delirium Among Patients in the Cardiac Intensive Care Unit: A Retrospective Cohort Study

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Post-operative delirium poses a challenge in the cardiac intensive care unit (ICU), often resulting in prolonged admissions, extended hospital stays, and heightened mortality rates. Traditional pharmacological interventions, such as benzodiazepines and antipsychotics, are associated with notable side effects, underscoring the necessity for safer alternatives. Prior investigations have suggested melatonin's efficacy as a prophylactic measure against delirium in ICU settings.

This study aimed to assess the potential of melatonin as a reactive treatment for post-operative delirium in cardiac ICU patients. We conducted a retrospective cohort analysis involving 127 patients diagnosed with delirium, confirmed by a positive CAM-ICU score. Participants were divided into two groups: those receiving melatonin ($n=57$) and those who did not ($n=70$). The primary outcome was delirium regression, indicated by a negative CAM-ICU score, while secondary outcomes included duration of ICU stay, total hospital stay, and mechanical ventilation duration.

Our results revealed that delirium regression occurred in 42.1% of the melatonin group compared to 32.9% in the non-melatonin group ($p=0.356$). Binomial regression analysis indicated an odds ratio of 0.845 (95% CI: 0.329–2.172, $p=0.727$), suggesting no significant association between melatonin use and delirium regression. However, ICU length of stay (OR: 1.126, $p=0.003$) and duration of mechanical ventilation (OR: 0.897, $p=0.004$) were statistically significant predictors.

In conclusion, while prior studies support prophylactic melatonin use, our findings suggest that it may not be effective as a reactive treatment for post-operative delirium in cardiac ICU patients. Further research with larger sample sizes and improved control of confounding variables is warranted to clarify results.

A227

Long-term outcomes following the Ross Procedure: a meta-regression analysis

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Introduction: The Ross procedure offers several benefits compared to prosthetic aortic valve replacements. Pulmonary autografts can limit the need for anticoagulants and offer superior valve haemodynamics. However, the impact of neo-aortic root remodelling on adult autograft durability remains unclear. Synthesis of published data can help delineate predictors of long-term outcomes for this procedure.

Methods: A systematic review was conducted, searching Embase and Medline for studies assessing long-term outcomes of the Ross procedure in adults (age > 16 years). At least 10 years of follow-up was required, and procedures involving externalised aortic support were excluded. Meta-analyses of proportions were conducted, with additional meta-regression analyses to explore predictors of outcomes, including survival and reintervention rates.

Results: Eventually, 26 studies incorporating 5431 patients were analysed. Pooled estimates revealed 90% [CI 0.88–0.93] long-term survival, 79% [CI 0.74–0.85] freedom from reoperation and 11% [CI 0.08–0.16] of patients undergoing reoperation due to aortic regurgitation. Inter-study heterogeneity (mean $I^2=92.52$) was partly explained by covariates, with concomitant procedures ($\beta=-0.0038$, 95% CI [-0.0061, -0.0014], $p=0.002$) and prior cardiac surgery ($\beta=-0.0035$, 95% CI [-0.0067, -0.00037], $p=0.029$) showing a significant negative correlation with survival, and age associated with all three outcomes. A secondary outcome of early mortality was estimated at 1% [CI 0–0.01], significantly associated with cardiopulmonary bypass time ($\beta=0.0044$, 95% CI [0.000011, 0.0087], $p=0.049$).

Conclusion: The Ross procedure can offer excellent long-term outcomes in younger adults. Analysing predictors, as shown in the present study, can help improve patient selection.

A228

Propensity Matched Review of the Need for Post-operative Extra-corporeal Membrane Oxygenation (ECMO) after Orthotopic Heart Transplantation (OHT) by a Novel Implantation Perfusion Technique That Eliminates Warm Ischaemic Time (WIT)

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Introduction: Recipient WIT is measured by the organ implantation period, which starts from the removal of the organ from cold preservation solution until its reperfusion with the recipient's warm blood. During this WIT, the donor heart is at considerable risk of injury by a variety of mechanisms. Our novel implantation perfusion technique, only the left atrial and ascending aortic anastomoses were performed with the aortic cross-clamp on, with our perfusion technique with cold blood antegrade cardioplegia followed by continuous aortic cold blood perfusion during the heart implantation procedure until the release of the recipient aortic cross-clamp and reperfusion with warm blood then the remaining anastomoses were completed during reperfusion (MICAP). The aim of this study was to see how the elimination of WIT with our novel implantation perfusion technique and the need for post-operative extra-corporeal membrane oxygenation.

Methods: Propensity score matched review of patients that underwent OHT with and without MICAP from 2010 to 2024. Results are expressed as mean and standard deviation and counts and percentages. Logistic regression was used for further statistical analysis.

Results: There were 65 patients in each group. MICAP recipient age was 46 ± 12 , mostly male 44/65 (68%) vs 46 ± 122 , again male 44/65 (68%), $p=0.64$. There was no size mismatch as per Pettit $p=0.07$. Post-operative ECMO was needed for MICAP in 3/65 (4.6%) cases vs 11/65 (16.9%), $p=0.03$.

Discussion: Our study shows that MICAP is associated with less need for post-operative ECMO and by proxy reduced primary graft dysfunction.

A229

Virtual Reality in Cardiothoracic Training – current practice and perceptions

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Objectives: Virtual Reality (VR) has been introduced into surgical education and identified as a tool to support trainee education as an adjunct to clinical opportunities. We sought to gain insight

into cardiothoracic surgeons' experiences with VR and to explore perceptions of its current accessibility and future use in cardiothoracic training.

Methods: An electronic survey was submitted to consultant cardiac and thoracic surgeons, and cardiothoracic trainees in centres across the United Kingdom. Responses were collected during October 2024. Open and closed questions were used to gain insights into current VR practice and perceptions of its use as a training tool.

Results: Overall, 23 responses from 15 centres were received, representing 10 training regions. Results showed 62% had experience with VR in any capacity, ranging from one-off to weekly use. Of surgeons with VR experience, one-third had attended surgical skills courses which included VR. Two centres reported having access to VR for educational purposes, and two training regions had access to VR for cardiothoracic-specific skills training. In total, 52% felt VR was currently not an accessible means of training in cardiothoracic surgery, with respondents citing cost, poor availability and lack of cardiothoracic-specific content. Nevertheless, 91% felt VR should be integrated into the cardiothoracic training programme, with most in agreement VR would be useful for learning across several domains (Figure 1).

Conclusion: Although VR is recognised as a useful training tool, its use is currently limited with perceived poor accessibility. Further assessment of the practical applications of VR within cardiothoracic training is needed.

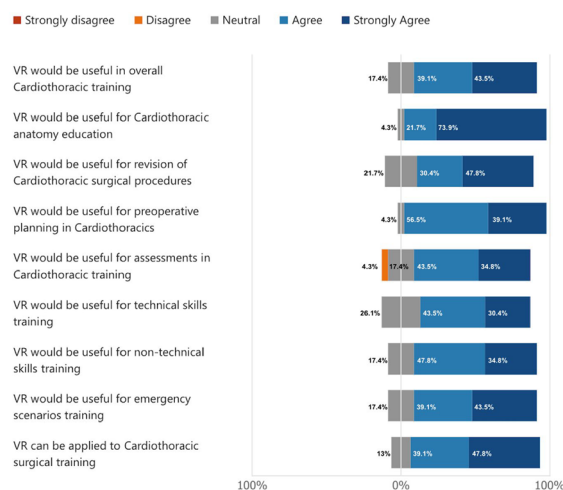


Figure 1: Perception on the usefulness and application of Virtual Reality (VR) in different areas of training, using a 5-point Likert scale

Figure 1 (abstract A229)

Perception on the usefulness and application of Virtual Reality (VR) in different areas of training, using a 5-point Likert scale.

A230

A retrospective audit on peri-operative management of heart failure pharmacotherapy in adults with heart failure with reduced ejection fraction undergoing cardiac surgery

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We sought to assess if pharmacological management of heart failure with reduced ejection fraction (HFrEF) is interrupted, re-instated and optimised peri-operatively in accordance with the most current guidelines.

Aim: To improve appropriate prescription post-operatively for cardiac surgery patients with HFrEF through education.

Method: ESC guidelines 2021 were used as the standard. Patients included underwent cardiac surgery over a 10 month period and had an echo with LVEF $\leq 40\%$ pre- or post-operatively.

Results: 51 of 446 patients screened were included.

Pre-operatively 37 patients had LVEF $\leq 40\%$ with six patients (16.2%) prescribed all five recommended medications.

Post-operatively 40 patients had LVEF $\leq 40\%$, with 15 patients (37.5%) prescribed the recommended medications. Individual prescriptions of medications were higher (see Figure 1), with beta-blocker and diuretic prescriptions $>95\%$ compared to limited SGLT2 inhibitor prescription of 43.2%.

De-escalation of medication for patients with LVEF $> 40\%$ post-operatively did not provide any significant conclusions as the data set was limited.

Conclusion: There is room for improvement for heart failure prescribing at our trust. A limited number of patients were prescribed ESC guideline recommended medications to optimise their HFrEF, both pre- and post-operatively. Individual prescriptions were better with two satisfying the audit target of $>95\%$. Limitations include no consideration of clinical indication, symptoms, or fine tuning of medication in the 6-week post-operative clinic.

A poster was produced as a prescribing prompt and a re-audit plan has been scheduled, along with auditing the 6-week post-operative clinic prescriptions to further evaluate heart failure medication prescriptions within the trust.

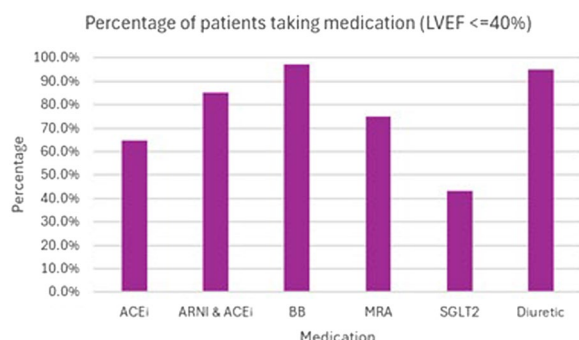


Figure 1 (abstract A230)

Percentage of medications prescribed post-operatively (LVEF $\leq 40\%$).

A231

Is there time to optimise malnutrition prior to surgery for infective endocarditis?

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Background: Low albumin levels are associated with higher mortality in patients undergoing surgery for infective endocarditis (IE). The aim of this study was to identify the time interval from referral to surgery and to ascertain the feasibility of preoperative intervention to improve outcomes.

Methods: Retrospective analysis of all patients who underwent surgery for IE from 2012 to 2020 at our unit. We used logistic regression to test for an association between preoperative albumin and in-hospital mortality and the Wilcoxon log-rank association to assess for an association between preoperative albumin and length of survival after surgery. Results are expressed as median values and inter-quartile-range, total number of cases and percentages for categorical variables.

Results: 168 patients underwent surgery for IE, median age was 59 years (19), Logistic Euroscore was 9.8% (16.8), 122 (73%) were male and 151 (90%) were non-emergency operations. The in-hospital mortality was 6.6% (11/168), 2/11 (18%) in the emergency group and 9/11 (82%) in the non-emergency group. The median pre-operative albumin level of the non-emergency dead patients was 27 (9) vs 36 (8)

for the survivors. The interval from referral to non-emergent surgery was 20 (48) days. Logistic regression suggests an association between preoperative albumin levels and in-hospital mortality, $p=0.0008$. Log-rank showed that preoperative albumin levels were associated with length of survival after surgery, $p=0.03$.

Conclusion: Ideally, all patients with IE should be referred to a dietitian once the diagnosis has been made to ensure treatment of the catabolic state.

A232

Minimally Invasive and Endoscopic Cardiac Surgery: The Road to Our Future

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Objectives: The primary objective of this study is to explore the benefits, challenges, and advancements in minimally invasive and endoscopic cardiac surgery. This presentation aims to outline current techniques, compare outcomes with traditional full sternotomies, and highlight technological innovations shaping the future of cardiothoracic surgery.

Methods: A comprehensive literature review was conducted, examining the development of minimally invasive and endoscopic cardiac procedures, including mitral valve repair as well as aortic and mitral valve replacements, atrial septal defect closure, myectomies and atrial ablation utilizing the Cox-Maze technique. Results of patient outcome, surgical duration, complication rates, and recovery times were compared between minimally invasive techniques and conventional open surgery.

Results: The data shows that minimally invasive and endoscopic cardiac surgeries result in shorter hospital stays, reduced pain, and faster recovery compared to open-heart surgery. Complication rates are generally lower, with reduced risk of infection and bleeding. However, these techniques require specialized training and experience. Furthermore, patient selection remains critical to achieving optimal outcomes. Robotic-assisted systems demonstrate promise in enhancing accuracy and reducing surgeon fatigue, cost and access remain barriers to widespread adoption.

Conclusions: Minimally invasive and endoscopic approaches represent a significant advancement in cardiac surgery, benefitting both patients and healthcare systems. With the continuous evolution of this technology, these methods will likely become the standard of care in many cardiothoracic procedures. However, further research and training are essential to overcome current limitations and improve accessibility to pave the way for a future where cardiac surgery is less invasive and more precise.

A233

Warfarin Loading in Post-Cardiac Surgery Patients

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Objectives: There is a lack of established guidelines for initiating warfarin in post-cardiac surgery patients, resulting in inconsistent practice. A problem of balance exists with rapid dosing, INR overshoots and bleeding complications vs slow dosing and delayed reaching of INR targets. We sought to create a protocol which was suitable for use by the ward advanced nurse practitioners and resident doctors.

Methods: The loading guideline has been refined after two audit cycles, with 68 patients per cycle, and discussion with relevant stakeholders including the ward-based teams and the haematology department. We have developed a guideline using a fixed-dose of 5 mg on the first and second days, followed by a variable dose on the 3rd

and 4th days depending on INR (Figure 1). The present (third) cycle included thirty-six patients.

Results: We have found reduced compliance on fixed-dose days compared to the previous cycles. However, there is better uptake in the variable dosing with higher compliance on day 3 and similar compliance on day 4 to the previous cycle. Only 4 patients followed guidelines on all 4 days, of which one patient suffered an INR overshoot and bleeding complication, although they had risk factors including hepatic dysfunction.

Conclusions: We have developed a post-cardiac surgery specific warfarin loading strategy which appears to be safe and is something our ward-based teams are comfortable using. Our next steps are to increase uptake and adherence to the guidelines, which will also help yield more information on the safety and efficacy in a larger cohort.

Figure 1 – Warfarin Loading Guidelines

Day 1	Day 2	Day 3		Day 4	
		INR	Dose	INR	Dose
5mg	5mg	< 2.0	5mg	< 1.7	7mg
		2.1-2.5	3mg	1.8-1.9	6mg
		2.6-3.0	1 mg	2.0-2.3	5mg
		>3.0	0 mg	2.4-2.7	4mg
				2.8-3.0	3mg
				3.1-3.5	2mg
				3.6-4.0	1mg
				>4.0	0mg

A234

Atrial fibrillation – Demographic, clinical and echographic factors following cardiac and thoracic surgery with review of management at a tertiary centre

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Objectives

- Describe the characteristics of patients developing Post-Operative Atrial Fibrillation (POAF) after cardiac and thoracic surgery
- Explore relationships between patient factors and POAF outcomes
- Assess management of POAF at University Hospital Southampton (UHS) to aid development of a local protocol

Method: Patients were screened for AF from a cohort of 525 cardiac procedures from January to December 2016, and 7971 thoracic procedures from April 2017 to August 2023 performed at UHS. Details including prior medical history, echocardiographic reports, postoperative recovery and follow up were analysed. Mann-Whitney U and Pearson Chi-square tests were used to assess relationships between factors and outcomes (including hospital stay, time to onset, discharge rhythm) and Kaplan Meier survival analysis was conducted to assess mortality.

Results: Prevalence in the cardiac and thoracic cohorts were 51.0% and 1.49% respectively. POAF was associated with longer hospital stay ($p=0.009$). Successful cardioversion was associated with shorter hospital stay ($p>0.001$). Younger patients ($p=0.03$) and those undergoing isolated aortic valve replacement ($p=0.011$) were more likely to be successfully cardioverted. Pre-operative statin use appeared to delay onset of POAF ($p=0.002$). Post-operative amiodarone use was associated with improved survival ($p=0.027$). Anti-arrhythmia surgery was only used in 5.4% of patients, echocardiography (especially of the left atrial appendage) was underutilised and CHA₂DS₂-VASC assessment was documented in only 5.9% of thoracic patients.

Conclusion: Pre-operative statin use should be investigated further in relation to POAF outcomes. Medical management of POAF was generally adequate, however anti-arrhythmia surgery was under-utilised and stroke risk assessment required improvement.

A235

Advancing Cardiothoracic Trauma Care: The Role of AI-Driven Robotic-Assisted Surgery in Enhancing Precision and Outcomes in Traumatic Thoracic Injuries

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Introduction: The United Kingdom is advancing its adoption of Robotics and Artificial Intelligence (AI) enhancing trauma surgery for managing cardiothoracic injuries linked to urban violence, road traffic accidents, and battlefield wounds. Supported by the NHS Long-Term Plan and the Royal College of Surgeons' Robotic and Digital Assisted Surgery (RADAR) advisory group, the UK has potential to lead in innovation in trauma care. Recent reports underscore the potential for robotic-assisted surgery and AI-enhanced diagnostics to support timely interventions in complex thoracic trauma cases.

Aim: This study explores the potential impact of robotics and AI on cardiothoracic trauma surgery within NHS settings, analysing clinical benefits and challenges, especially in response to increased trauma from violent incidents and high-risk accidents.

Methods: A synthesis of relevant peer-reviewed studies, NHS audits, and national policy reports was conducted, focusing on AI diagnostic initiatives, trauma statistics, and robotic-assisted thoracic surgery developments. Emphasis is placed on robotic systems and AI-driven imaging tools that have demonstrated effectiveness in high-stakes trauma settings.

Keywords: Cardiothoracic; Thoracic; Trauma; Surgery; Robotic; Robotic Assisted; Artificial Intelligence; AI.

Results: Robotic-assisted surgery (RAS) and AI diagnostics show promise in reducing intraoperative variability, enhancing precision, and improving response times for urgent thoracic interventions. Data from NHS centres indicate that AI-assisted imaging notably improves triage accuracy, aiding rapid interventions for penetrating thoracic injuries from violence. Robotic platforms further contribute to precise surgical outcomes.

Conclusion: AI and robotics are advancing thoracic trauma surgery within the NHS, crucial for optimising patient outcomes amid rising injuries from violence and accidents.

A236

Genetic screening in patients undergoing emergency surgery for type A aortic dissection

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Introduction: Recent advances in genetic research have identified more connective tissue disorders linked to Type A Aortic Dissection (TAAD). The EACTS/STS Guidelines recommend genetic screening for patients under 60 years old, those with a family history of aortic disease, arterial aneurysms, or syndromic features. This study aims to report findings from genetic screening in a cohort of TAAD patients.

Methods: The study reviewed patient records from 2017 to 2022 of individuals who underwent emergency aortic surgery at a single institution. The goal was to identify how many patients had an undiagnosed genetic predisposition to TAAD.

Results: A total of 184 patients were included, with 88 patients under 60 years old at the time of surgery. Among these, 44 patients (50%) met the genetic screening criteria, and 13 (29.5%) had positive results for a pathogenic variant linked to TAAD. Seven of these patients had variants in the FBN1 gene, associated with Marfan's Syndrome. Additionally, three patients had variants of unknown significance.

Interestingly, four patients with pathogenic variants had normal histology in their dissection samples, showing no predisposing factors.

Conclusion: Genetic screening in patients with TAAD can identify genetic conditions that influence disease management. Referral to clinical genetics or specialists in inherited cardiovascular diseases is recommended to improve patient care and inform treatment strategies.

A237

Improving Adherence to Postoperative Antimicrobial Prescribing Guidelines for Pulmonary Resections: A Single Centre Study

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Introduction: Antibiotic prophylaxis is vital in general thoracic surgery to minimize infection risks, yet adherence remains problematic due to lack of clearly defined national guidelines indicating the type of antibiotic required and duration of administration.

The 2013 consensus guidelines from Infectious Diseases Society of America (IDSA) states that all patients should receive post-operative antibiotics for up to 24 h. This formed the basis of our Trust's local guidelines.

This audit evaluates compliance with Trust protocols for postoperative antibiotics in patients undergoing pulmonary resections, aiming to highlight areas for immediate improvement to reduce postoperative infection rates and improve patient outcomes.

Methods: We conducted a retrospective review of 50 patients undergoing pulmonary resections between April-June 2024 at a single centre. Using electronic prescribing systems and patient records, we assessed adherence to local guidelines for post-operative antibiotic administration.

As per protocol, Cefuroxime (1.5 g IV) is indicated at induction, followed by doses at 8, 16, and 24 h postoperatively, with discontinuation at 24 h unless clinically indicated. Compliance at each dosing interval was assessed.

Results: Compliance with all three postoperative doses was low. None of the patients received all doses at scheduled times (8, 16, and 24 h); only 24% patients received all doses, but not at scheduled times.

Conclusions: Our findings highlight the urgent need for better awareness and streamlined processes to improve postoperative antibiotic adherence. Consequently, implemented interventions need local guideline integration into electronic prescription order sets and targeted staff training. A re-audit in early 2025 will evaluate compliance and subsequent infection rates.

A238

The impact of intercostal nerve-sparing and cryoneurolysis on thoracotomy-related postoperative recovery: a Patient Comfort after Thoracic Surgery (PCaTS) exploratory study

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Objectives: We sought to evaluate the impact of modifications to conventional thoracotomy techniques on pain and recovery after surgery.

Methods: Patients undergoing their first ipsilateral serratus-sparing posterolateral thoracotomy for pulmonary/mediastinal procedures from September 2023 to July 2024 were included. Three groups were identified: [1] conventional, [2] intercostal nerve sparing (ICNS) and [3]

ICNS with cryoanalgesia (ICCA) using the AtriCure cryoSPHERE device. [UHL Registration: 11677b].

Results: 167 patients—80 (47.9%) male, age 66.7 ± 12.7 years—were included, with 119 (71.3%) in the conventional group, 27 (16.2%) ICNS and 21 (12.6%) ICCA. Groups were well-balanced for age and gender, but with higher Thoracscore in the ICNS and ICCA groups (2.5 ± 1.5 vs 3.4 ± 2.5 vs 3.1 ± 1.9, p = 0.035).

There was no difference in pain scores (p = 0.859) or total opiate use in the first three days (p = 0.508) between groups. Patients undergoing ICNS or ICCA were more likely to mobilise on the day of their operation (13.4% vs 37% vs 61.9%, p = < 0.001). There were fewer physiotherapy contacts (p = 0.068) and days of physiotherapy input (5.1 ± 7.0 vs 3.3 ± 2.0 vs 1.9 ± 1.2, p = 0.042) in both intervention groups. Postoperative hospital stay was significantly shorter in ICNS and ICCA groups (7.1 ± 6.3 vs 4.4 ± 2.7 vs 3.2 ± 2.2, p = 0.003).

Conclusion: Modifications to conventional thoracotomy techniques can improve in-hospital outcomes, and may achieve results similar to those reported for minimally-invasive approaches in large national trials. Both frugal and resource-intensive innovations appear to have value in this regard. Prospective well-designed studies are required to validate these findings.

A239

Gender Differences in Pain Experience and Recovery after Thoracotomy: a Patient Comfort after Thoracic Surgery (PCaTS) exploratory study

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Objectives: We sought to assess gender differences in pain and recovery following first ipsilateral posterolateral serratus-sparing thoracotomy, in patients undergoing pulmonary or mediastinal procedures.

Methods: Data was collected retrospectively for patients operated from September 2023 to July 2024 at a single institution. Opiate dosages are reported as Morphine Milligram Equivalents (MME). Chronic pain was defined as persisting at three months or later. Patients were followed-up with a dedicated questionnaire, which included the short form Brief Pain Inventory (BPI). Analysis was performed in SPSS v.29. [UHL Registration: 11677b].

Results: 167 patients were included; 80 (47.9%) male. Female patients were younger (64.6 ± 14.3 vs 68.5 ± 10.0, p = 0.047), with lower calculated Thoracscore (2.0 ± 1.2 vs 3.5 ± 1.9, p < 0.001).

In-hospital reported pain scores were similar between genders (p = 0.156). Female patients required less opiate analgesia on each of the first three days postoperatively (98.33 ± 65.94 vs 134.71 ± 88.78, p = 0.003) and upon discharge (41.27 ± 39.34 vs 58.20 ± 42.17, p = 0.009).

Female patients were less likely to report moderate to severe chronic pain (16.5% vs 37.3%, p = 0.003), were more likely to regain their preoperative level of activity within three months (27.6% vs 15.0%, p = 0.038), and reported significantly less pain interference (1.8 ± 2.4 vs 3.5 ± 3.40, p = 0.026). Table 1 reports individual rating items of the BPI at three months after surgery, showing a difference in five of seven interference items.

Conclusion: There are significant gender differences in pain experience and recovery after thoracic surgery. Recognising these differences may guide gender-sensitive analgesic strategies and tailored post-operative advice.

Patient-reported data at least three months postoperatively			
Gender	Female (N=87)	Male (N=80)	p-value
Brief Pain Inventory Score (Pain Severity Score)	2.89 ± 1.97	3.99 ± 2.99	0.029
In the last 24 hours, how has pain interfered with your?			
Walking ability	1.46 ± 2.64	3.46 ± 3.65	0.016
Normal work (includes both work outside the home and housework)	2.20 ± 2.75	3.96 ± 3.56	0.033
Relations with other people	0.97 ± 2.23	2.85 ± 3.51	0.013
Sleep	1.83 ± 2.83	3.65 ± 3.96	0.040
Enjoyment of life	1.57 ± 2.81	3.73 ± 3.83	0.014
General activity	2.74 ± 3.20	3.88 ± 3.30	0.183
Mood	2.00 ± 2.71	3.08 ± 3.43	0.176

A240

Evaluating the need for intervention in Spontaneous Pneumomediastinum: a systematic review and meta-analysis

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Objectives: Spontaneous pneumomediastinum (SPM) is often benign and self-limiting. We sought to determine the proportion of patients presenting with SPM who go on to require invasive procedures as part of their clinical management.

Methods: A protocol was registered at PROSPERO; CRD42024589211. MEDLINE, Embase and Cochrane databases were searched in August 2024. Studies reporting on the management of adult patients with SPM were included. A meta-analysis of single proportions was conducted.

Results: 1150 patients were included, across 15 studies. Meta-analysis estimated that 9% of patients (95% CI: 4% to 18%) presenting with SPM required invasive procedures (Figure 1). Significant heterogeneity was observed (p < 0.001; I² = 78%) across studies. This may be attributable to variations in patient demographics, differences in study design, or inconsistent criteria used to determine the need for intervention. Qualitative synthesis of potential factors predictive of invasive management included younger age, elevated white cell count, and pleural effusion, however, these associations were inconsistent across studies. Sensitivity analysis limited to nine studies (totalling 790 patients) reporting specifically on invasive procedures with a therapeutic component (that is excluding diagnostics) indicated that 7% (95% CI: 3% to 17%) of patients fell into this category.

Conclusion: The majority of patients with SPM may be managed conservatively without the need for invasive procedures. Literature synthesis revealed significant variability in care delivery, and could not identify consistent predictors of the need for therapeutic intervention. This work highlights the need for a standardised approach to the management of SPM to address variations in clinical practice.

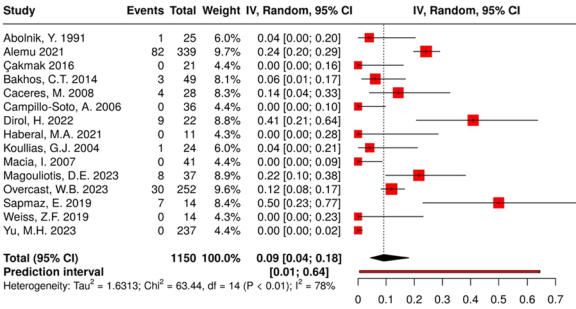


Figure 1 (abstract A240) Forest plot depicting the estimated proportion of patients with SPM requiring invasive procedures.

A241

Impact of gender on surgical outcomes of infective endocarditis: a systematic review and meta-analysis

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Objective: Outcomes after surgical management of infective endocarditis (IE) for male and female patients is controversial, with some studies suggesting worse outcomes for female patients. The aim of this systematic review was to assess all studies reporting post-operative outcomes after IE stratified by patient gender.

Methods: A systematic review and meta-analysis was conducted in accordance with Preferred Reporting in Systematic Review and Meta-Analysis (PRISMA) guidelines. A comprehensive search of Medline, Embase, and Scopus databases was conducted from inception until 15th September 2024. Two authors independently conducted study screening and data extraction. Outcomes included: mortality (< 30 day and > 1 year), postoperative (< 30 day) stroke, sepsis, acute kidney injury (AKI), and length of stay (LOS).

Results: Database search yielded 3102 results, and 13 studies were included with 20,824 patients (14,479 male and 6345 female). Women had a 36% increased risk of short-term mortality compared to men (95% confidence interval (CI): 1.15–1.61, p < 0.01), 34% increased risk of > 1-year mortality (95% CI: 1.04–1.73, p = 0.02) and a 20% increased risk of developing AKI (95% CI: 1.03–1.41, p = 0.02). No significant differences were found in postoperative stroke (odds ratio (OR): 1.12, 95% CI: 0.95–1.30, p = 0.17), sepsis (OR: 1.03, 95% CI: 0.62–1.71, p = 0.92), or length of stay (standardised mean difference: -0.06, 95% CI: -0.71–0.59, p = 0.78).

Conclusions: Female patients had significantly worse short- and long-term term mortality and increased risk of developing AKI than men, however stroke, sepsis, and length of stay outcomes were comparable. Further research is needed to determine the reasons for worse mortality outcomes in females.

A242

The Role of Extended Thromboprophylaxis After Lung Cancer Surgery: Insights From a Local Audit and Evidence Review

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Objectives: Incidence of venous thromboembolism is raised in patients undergoing oncological lung resection compared to other solid malignancies, with a substantial postdischarge burden. However, extending thromboprophylaxis in this population is controversial. To determine the optimal regime in our centre, we summarised existing

literature on postdischarge thromboprophylaxis and investigated local practices.

Methods: We searched MEDLINE in June 2024 for primary studies on extended pharmacological thromboprophylaxis in thoracic surgery published within the last ten years, identifying 12 suitable studies.

Additionally, we retrospectively audited 415 patients discharged following diagnostic or therapeutic oncological lung resection at our centre from April 2020 to March 2023, noting postoperative chemoprophylaxis duration and related outcomes.

Results: A literature review uncovered a lack of high-quality randomised controlled trials exploring the efficacy of extended thromboprophylaxis after oncological lung resections. Despite a continued thromboembolic risk postdischarge, the routine use of extended chemoprophylaxis remains disputed, with international variation in attitudes and practices.

Within our centre, all eligible patients received in-hospital chemoprophylaxis, with only one patient discharged on an extended regime in the three-year study period. The incidence of pulmonary emboli was 1.2% at 30 days, comparable to rates of <2% seen in literature, with 40% of cases occurring postdischarge.

Conclusions: Our evaluation did not reveal a need to routinely extend chemoprophylaxis postdischarge in this unit, supporting the continuation of our current regime. There may be a selective role for extended thromboprophylaxis in high-risk populations, though this must be better defined by high-quality prospective studies to establish a strong evidence base.

A243

Exploring Gender Differences in Incidence and Survival after Lung Adenocarcinoma Resection: a Propensity-Matched Analysis

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A243

Introduction: Adenocarcinoma is the most common histological subtype of lung cancer, accounting for approximately 40% of all non-small cell lung cancers. Global trends indicate that adenocarcinoma incidence has risen more rapidly in women than men. However, women generally experience better survival outcomes, particularly in early-stage disease. There is limited research identifying causal factors for incidence. This study aims to analyze gender-specific incidence trends and survival outcomes and identify influencing factors over a ten-year period.

Methods: A retrospective analysis was performed on patients undergoing resection following an adenocarcinoma diagnosis between January 2014 and June 2024. Pre-operative characteristics included patient demographics, comorbidities, staging, surgical approach (Video-Assisted Thoracoscopic Surgery (VATS) versus open thoracotomy) and postoperative outcomes. Propensity score matching was performed. The Log-rank test and Cox regression was used to analyze gender-stratified survival outcomes.

Results: 1281 patients were included in the matched sample with 511 males and 770 females in the population (mean age 70 ± 8.32 and 69 ± 8.71). A larger number of new cases were observed in women compared to men annually. Median survival time was significantly higher for women than men. Multivariate Cox analysis indicated that age (HR 1.022), smoking (HR 1.193) influenced survival. Logistic regression showed VATS and insulin-dependent diabetes significantly influenced mortality (OR 0.51 and 2.01 respectively) ($p < 0.05$).

Conclusion: This study highlights the impact of gender on survival outcomes for patients following resection. The impact of smoking and a minimally invasive surgical approach underscores the importance of gender-specific considerations in preventing and managing lung adenocarcinoma.

A244

3D segmentation and printing as a tool to understand duct morphology in window type duct: A case presentation

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A244

Objectives: Differentiating between window-type arterial duct (wtPDA) and aortopulmonary window (APW) is challenging due to similar imaging and hemodynamic presentations. Precise anatomical understanding is essential as management may involve different surgical approaches (thoracotomy/sternotomy), and bypass strategies (On-Pump/Off-Pump). This study assesses the role of 3D segmentation in clarifying ductal morphology in complex cases.

Methods: A 2.8 kg, term neonate presented collapsed and cyanotic to our hospital. Postnatally, prostin was initiated. The patient had multiple severe comorbidities. Echocardiography indicated a possible distal APW, prompting a CT-scan that revealed a 15 mm diameter duct from the undersurface of the aortic curvature and a dilated main pulmonary artery. A manual 3D-segmentation and 3D-print was performed by a medical student using the cardiac pulse phase of the CT-Scan to act as a visual aid to support diagnosis and management.

Results: 3D-reconstruction and printing using a clinically approved software revealed a short-wide duct forming a large communication within the arch curvature distal to the origin of the pulmonary branches from the trunk. This was validated intraoperatively and a transfixion with ligation was performed. The distinction between the wtPDA and an APW is essential and is based on the angle of the duct insertion, head-and-neck vessels branching pattern, and origin of pulmonary arteries. It informs whether a ligation or complex repair is needed.

Conclusions: 3D-segmentation enhances morphological understanding of wtPDA and APW, enables accurate diagnosis, guides surgical planning, and as an educational tool supports understanding of complex congenital cardiac defects.

Final category: Scientific/Experimental

A245

Lymphatic-macrophage crosstalk during neonatal mouse heart regeneration and transition to fibrotic repair following surgical MI

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In adult mice, surgically-induced myocardial infarction (MI) activates the cardiac lymphatics, which undergo sprouting angiogenesis, draining interstitial fluid and trafficking macrophages to mediastinal lymph nodes (MLNs), improving cardiac function.

Given the importance of the adult cardiac lymphatics post-MI, we investigated their role across the neonatal "regenerative window". At post-natal day 1 (P1) neonatal mice fully regenerate their heart following MI, in a macrophage-dependent manner, whereas equivalent injury at P7 leads to macrophage-driven scarring. We hypothesised that lymphatics respond differently during this window to clear macrophage subtypes depending upon their requirement for regeneration versus fibrotic repair.

The response to injury revealed limited lymphangiogenesis and minimal macrophage clearance from P1 versus P7 infarcted hearts, coincident with maturation of lymphatic endothelial cell (LEC) junctions. Unbiased scRNA-Seq datasets from neonatal hearts post-MI demonstrated altered signalling between LECs and macrophages across the regenerative window, most notably of the lymphangiocrine factor Reelin.

Finally, in mice lacking the lymphatic endothelial receptor-1 (LYVE1), that exhibit impaired transmigration of macrophages to lymphatic vessels, MRI revealed surprising functional impairment in P1 mice post-MI. Given macrophages at P1 are not trafficked, this suggested a distinct role for LYVE1 in tissue-resident (TR) macrophages, where it is also expressed. Macrophage-specific deletion of *Lyve1* revealed impaired heart regeneration post-MI, characterised by reduced neo-vascular response and function.

Collectively, we reveal that cardiac lymphatics are developmentally compromised for clearance in early neonates, enabling retention of pro-regenerative macrophages, and that LYVE1 plays an essential role in macrophages to facilitate heart regeneration via the induction of coronary angiogenesis.

A246

Neutrophil activation in Acute Type A Aortic Dissection

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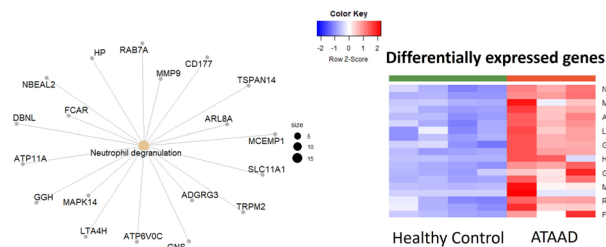
Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A246

Objectives: Increased systemic inflammatory markers are associated with poorer clinical outcomes in many different conditions, including aortic disease such as acute type A aortic dissection (ATAAD), but the significance of the inflammatory cell infiltration and activation is not fully understood. This presentation will highlight results from a series of experiments to investigate the role of neutrophils in ATAAD.

Methods: Human aortic tissue and serum samples from aortic patients (ATAAD, chronic dissection and aneurysm) and healthy controls were probed for neutrophil markers and neutrophil extracellular trap (NET) debris. RNAseq of isolated neutrophils was performed alongside assessment of neutrophil activation. Additionally, relationship between baseline systemic inflammatory markers, time to presentation and outcomes in a retrospective ATAAD cohort will be presented.

Results: Higher levels of NET DNA were detected in serum from ATAAD patients compared to healthy controls ($p=0.0095$). Additionally, NET marker, citrullinated histone 3 was also increased in ATAAD compared to aneurysm tissue samples ($p=0.002$). Reactome from RNAseq of isolated neutrophils identified multiple genes connected to neutrophil degranulation as differentially expressed between healthy controls and ATAAD (Figure). Data also indicated that neutrophils isolated from ATAAD patients produce different patterns of oxidative burst and gene expression compared to healthy controls. Baseline neutrophil levels are a key marker of post-operative clinical outcome.

Conclusions: Taken together data indicates that elevated levels of inflammatory markers are associated with poorer outcomes and that neutrophils from ATAAD patients exhibit an activated phenotype. Further investigations are needed to fully elucidate the importance of tissue level inflammation on postoperative healing.



A247

Potential Role, Safety, and Efficacy of Paclitaxel-Eluting BalloonAngioplasty (ELUTAX) for Treatment of Restenosis after CarotidEndarterectomy (CEA) or after In-stent Restenosis (ISR) compared with Cutting Balloon.

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Introduction: Endovascular treatment of carotid stenosis has recently emerged as an alternative to surgical endarterectomy. A common complication of both procedures is neointimal hyperplasia, leading to restenosis in the stent (ISR) or the post-CEA carotid artery (r-CEA). Restenosis after stenting, with an incidence ranging from 3 to 20%, remains a limitation, and no standardized treatment guidelines exist.

Objectives: This study aims to assess the safety and efficacy of paclitaxel-coated balloon angioplasty (ELUTAX™) for restenosis treatment post-CEA or ISR, comparing it to the Cutting Balloon (WOLVERINE™). Paclitaxel-coated balloons have shown positive outcomes in other vascular regions, like coronary and peripheral arteries.

Methods: We conducted a single-center, retrospective cohort study on 24 patients with significant restenosis ($>70\%$, PSV >240 cm/s) at Istituto di Cura Città di Pavia. Among 677 patients treated from 2019–2024 (125 with Stent-PTA and 552 with CEA), 12 had prior CAS and 12 had CEA. Follow-ups at 3, 6, and 9 months included Ecolor Doppler. Outcomes for the Cutting Balloon and Elutax were compared.

Results: Of the 24 patients, 12 treated with Elutax had 100% patency at follow-up, while the Cutting Balloon group showed 100% patency in only 4 patients; 8 experienced significant restenosis. No vascular death, TIA, or stroke occurred in the treated ICA territory.

Discussion: A Z-test for two proportions showed a significant difference ($Z=3.46$, $p=0.00053$), indicating a higher success rate with Elutax (100%) compared to Cutting Balloon (33.3%).

A248

No One Size Fits All: Insights from a Reusable Scrub Hats Pilot for a Sustainable Thoracic Theatre

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A248

Introduction: The NHS contributes 4% of the UK's overall carbon emissions but has pledged meet a net-zero carbon target by 2045, however theatres alone are generating 50–70% of all hospital waste. We identified disposable surgical hats as a target for improvement in theatre footprint. Previous studies show low adoption rates following distribution of reusable hats, yet none have investigated the underlying reasons. We conducted interviews with team members to identify barriers to adoption, aiming to achieve a higher conversion rate by its conclusion.

Methods: 24 members of the thoracic surgery team were surveyed. The responses were analysed to gain understanding of the barriers to adopting reusable scrub hats.

Results: We identified the convenience of disposable scrub hats as the primary barrier to adopting reusables. Participants viewed laundering and remembering to bring reusable hats as an additional burden. Interestingly, environmental concerns were rarely cited as a motivating factor for change. Instead, personal expression emerged as a key theme. Individual choice regarding pattern, colour, and style, was the most frequently reported motivator for continued use of reusables.

Conclusion: Environmental concerns alone were insufficient to drive change; however, offering choices that allow self-expression proved to be a powerful driver of sustained adoption. This underscores the importance of considering personal preference when promoting the use of reusable scrub hats. The next phase of our project will provide team members with pilot reusable hats to further explore barriers to

adoption and strategies for enhancing staff acceptance of reusable hats, ultimately improving sustainability in operating theatres.

A249

The Future of Chest Drain Management After Cardiac Surgery

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Background: Post cardiac surgery all patients require multiple chest drains in the mediastinum. These play an important role in the post-operative period and are carefully monitored for bleeding and infection. These multiple drains leave scars for patients. In paediatric patients in particular these scars are for life and cosmetically can be detrimental to mental health. As cardiac surgery adopts more minimally invasive techniques why doesn't our postoperative care as well? We propose a new drainage system to overcome this.

Methods: We have designed a drainage system that results in one incision with the potential for multiple drains in a range of areas in the chest. The standard drain will have three drains encased by one lumen. Therefore, all through come out of the chest via one incision.

With this system each drain output can be measured individually. Furthermore, drains can be removed one at a time or all together depending on the patients' clinical indication. This is possible due to an inert lubrication of the lumen to allow ease of removal. This approach can cater for two or three drains in the chest.

Conclusion: This new device will reduce postoperative scars for patients, which is particularly important in the paediatric population. Children with congenital heart disease often require multiple surgeries throughout palliation, with this technique the same incision can be reused, further reducing scars. This cheap alternative will have a profound impact on patients scars postoperatively.

A250

Senescence and the Senescence Associated Secretory Phenotype (SASP) as a prognostic biomarker of remodelling following myocardial infarction

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A250

Introduction: Senescence is characterized by activation of cyclin dependent kinase inhibitors p16 and p21 leading to cell cycle exit and expression of the proinflammatory senescence-associated secretory phenotype (SASP). In mice, myocardial infarction induces senescence which promotes myocardial remodelling and thereby cardiac dysfunction. However, the role of senescence in humans remains poorly defined.

Objectives: To investigate the relationship between senescence, SASP and biomarkers of cardiovascular disease in human tissue samples.

Methods: Quantitative RT-PCR and immunohistochemistry were used to identify correlations between the expression of senescence markers, myocardial disease and adverse remodelling in myocardial tissue from 16 organ donors.

Results: A significant association between senescence markers and key parameters of myocardial remodelling and cardiovascular disease (CVD) was identified with p16, correlating with donor age and ANP. In contrast, p21 correlated with BNP, GDF15 and fibrosis. Both senescence markers correlated with immune cell infiltration. This data suggests p16 and p21 expressing cells represent distinct senescent cell populations.

Conclusions: While this data suggests an association between senescence and remodelling in humans, further characterising is required

in well-defined cohorts to dissect the roles of different senescent cell populations in clinical heart disease. We therefore are now investigating SASP profiles in coronary sinus blood, peripheral blood, and right atrial appendage in patients undergoing intervention due to myocardial infarction. Correlations will be drawn between senescence, CVD biomarkers, and surgical outcomes. This study will elucidate the distinct senescence phenotypes and molecular pathways in human CVD, with the ultimate goal of identifying novel therapeutic targets to mitigate myocardial pathologies.

A251

Comparison of FREE and RESILIA Pericard Treatment for Prosthetic Heart Valve Tissue in a Small Animal Model

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A251

Introduction: As structural valve deterioration is mainly caused by calcification, numerous anticalcification treatments have been developed. The aim of this study was to evaluate in a small animal model the mineralisation of two recently developed bovine pericardial tissue treatments used in the manufacturing of bioprosthetic heart valves. Pericardial tissues subjected to two different anti-calcification treatments (FREE, Corcym™ and RESILIA, Edwards™) were tested and compared to each other as well as to glutaraldehyde fixed pericard used as control treatment (PC).

Methods: Twelve juvenile rats were implanted subcutaneously with a pericard sample from each treatment. After retrieval at 8 weeks, macroscopic examination, x-ray, calcium quantitative determination and histology were performed.

Results: All PC samples were homogeneously stiffened by calcifications. No macroscopic calcification was visible in samples from the FREE and RESILIA treatments. X-ray showed plain calcifications on all PC samples but none in the 2 other treatments. Calcium content was statistically lower in the FREE ($3.03 \pm 0.73 \mu\text{g Ca} / \text{mg dry weight}$, $p < 0.001$) and RESILIA (3.36 ± 1.45 , $p < 0.001$) treatments when compared to the PC treatment (120.51 ± 16.85). There was no significant difference between FREE and RESILIA ($p = 0.982$). At histological examination, FREE samples showed no calcifications and mild inflammation, which was comparable to RESILIA samples.

Conclusion: The FREE treatment for bovine pericardial valve tissue shows excellent results in a subcutaneous implantation rat model and is as effective as RESILIA. No calcification was observed macroscopically, nor on x-ray or histology, and calcium content was significantly lower than calcium content in control treatment.

A252

Exploring Collagen Degradation and Mechanical Properties in Degenerative Versus Bicuspid Aortic Valve Aneurysmal Tissue: A Pathway to Refined Therapeutic Approaches

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A252

Congenital heart conditions such as bicuspid aortic valve (BAV) disease are associated with increased risk of aortic diseases such as thoracic aortic aneurysms (TAA). Previous work has shown that despite the presence of a similar diameter aneurysm to idiopathic degenerative aneurysms (DA), BAV patients appear to have a more structurally intact dilated aorta with stiffer tissue and compact elastin fibres.

Aortic wall tissues were obtained from 10 BAV patients with mean age of 62.2 ± 14.06 ($P = 0.241$) years, 7 males and 3 females. Additionally, 10 DA samples were collected from patients with mean age of 69.8 ± 9.93 years with the cohort consisting of 6 males and 4 females. The tissues were cryosectioned to $5 \mu\text{m}$ and imaged with atomic force microscopy (AFM). The morphology of the outer, middle and inner layers of the tissue were examined with a silicon nitride tip with 8 nm

radius. Collagen fibril organisation and mechanical properties were determined with the PeakForce QNM modality. In the BAV group (figure 1.) (A-C) the collagen fibrils seemed unidirectionally oriented, had conserved morphology and were significantly less stiff than DA. On the contrary, in DA tissue (D-F) the collagen fibrils were disorganised, their morphology was disrupted and they were stiffer than the BAV collagen.

The results demonstrate fewer ultrastructural changes to the ECM of BAV patients tissue compared to DA tissue, which could suggest that the BAV aortic tissue could be considered to function as normal tissue. Further experimentation is needed to unveil the process of collagen degradation in TAAs.

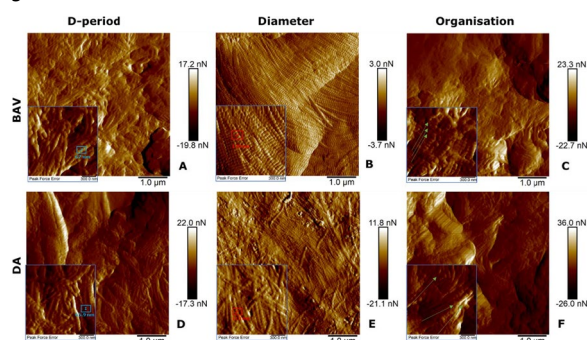


Figure 1 (abstract A252) Collagen fibril images obtained from the three distinct layers of BAV aortic aneurysm samples (A-C) and DA samples (D-F) via Atomic Force Microscopy

A253

Unravelling the Circadian Connection: BMAL1 Alterations in Aortic aneurysms and Insights into Cardiovascular Health

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Understanding the intricate molecular mechanisms that govern vascular health is crucial to reducing cardiovascular mortality and morbidity. Emerging data has shown that many indices of human cardiovascular function are regulated by the innate circadian rhythm, and disruption of cardiovascular clocks in preclinical models can lead to adverse cardiovascular effects. Morning hours are the period of the day characterized by the highest incidence of major cardiovascular events including myocardial infarction, sudden death or aortic aneurysms. We focused on how a circadian marker Bmal1, is altered in thoracic aortic aneurysms (TAAs) in idiopathic aneurysms (DA), Bicuspid aortic valve (BAV) and Marfan syndrome (MS). Sections obtained from NHS-BT control (n=6), BAV patients (n=5), MS patients (n=4) and DA patients (n=5) were immunohistochemically stained using Bmal1 primary antibody. Our data to date revealed significantly increased Bmal1 in inner (23% increase ($p < 0.05$)) and outer regions (17% increase ($p < 0.05$)) of the DA tissue compared to control tissue. Marfan patient's cohort exhibited a 9.41% ($p < 0.05$) increase in the inner layer and 7.6% ($p < 0.05$) increase in Bmal1 compared to control samples. Bmal1 is known to activate the NF- κ B signaling pathway, which upregulates the expression of MMP9 known for its role in the degradation of collagen and elastin. Our data suggests that BAV patient's aortic aneurysm tissue is more closely related to non-pathogenic tissue than DA tissue. Further investigations into this pathway may assist understanding of the pathogenesis of thoracic aortic aneurysms.

A254

Taming the Beast: Overcoming Arterial Spasm in Sheep Carotids with Novel Vascular Grafts

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A254

Objectives: Large animal models are the gold standard for pre-clinical experimentation of small vessel vascular grafts. Ovine models are notorious for encountering arterial spasm, which may confound results. This study aimed to mitigate carotid arterial spasm to facilitate the study of small vessel grafts.

Methods: Under general anaesthesia, 4 male Merino cross White Suffolk sheep had imaging via doppler ultrasound and invasive angiography to demonstrate flow and patency of native common carotid arteries (CCA). Following heparinisation, a 3 cm segment of left CCA was replaced with a novel vascular graft, while sham surgery was performed on the right CCA via transection and re-anastomosis. Post-surgery angiography and Doppler was performed bilaterally to demonstrate patency. Different combinations of cannulation strategies were utilised for angiography, via CCA or common femoral artery (CFA). In addition, anti-spasmodic agents were administered at varying doses and times.

Results: Cannulation of the CCA for angiography was strongly associated with arterial spasm. This was effectively reduced by downsizing to a smaller sized catheter, and even more so by converting to CFA cannulation. Thrombus was a salient finding upon re-opening severely stenosed vessels, especially in the novel synthetic graft. Administering intraarterial papaverine-verapamil markedly reduced spasm, but only when used prophylactically. When used in combination with CFA cannulation, prophylactic papaverine-verapamil completely prevented arterial spasm and facilitated promising results for the study.

Conclusions: Carotid artery spasm and thrombosis poses a significant challenge in this sheep vascular graft model. Minimising vessel trauma and administering prophylactic anti-spasmodic agents may be effective in reducing these confounders.

A255

Pulsatile Flow Device Assistance for Fontan Circulation: A Novel Extracorporeal Contractile Device for Inferior Vena Cava Venous Return

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Objectives: Patients with Fontan circulation often experience systemic venous congestion and reduced cardiac output due to the absence of a subpulmonary ventricle. This study introduces a novel extracorporeal pulsatile flow device designed to augment venous return by converting passive Fontan flow into pulsatile flow, aiming to improve venous return, increase preload, and enhance cardiac output.

Methods: A linear actuator-driven device was engineered to wrap around the extracardiac conduit of the Fontan circuit, using sequential compression from distal to proximal to mimic natural venous flow through the inferior vena cava. CAD-based simulations were conducted to evaluate the mechanical feasibility of this concept, and 3D-printed prototypes were developed to assess structural integrity.

Results: Initial CAD models and 3D-printed prototypes demonstrated the mechanical functionality of the actuator system, achieving the desired pulsatility through sequential compression. Further development is underway to create a mock circulatory environment for

benchtop testing, which will include fluid dynamic analysis to assess the impact on flow augmentation and risk of cavitation.

Conclusions: This extracorporeal pulsatile flow device, still in the developmental phase, shows promise for enhancing the hemodynamics of Fontan patients by transforming passive venous return into a pulsatile flow system. Future testing will determine its clinical viability and potential as a less invasive support option, bridging Fontan patients toward improved outcomes.

A256

Should Cavitation Differences Be Explored Between Gravity-Assisted and Vacuum-Assisted Drainage in Cardiopulmonary Bypass? Implications for Postoperative Outcomes

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A256

Objective: In cardiopulmonary bypass (CPB), vacuum-assisted drainage (VAD) enhances venous return efficiency compared to traditional gravity-assisted drainage (GAD). However, the negative pressure inherent to VAD may increase cavitation risk, potentially impacting blood integrity and cellular damage, and thereby influencing postoperative outcomes.

Methods: Fluid dynamics principles, including Bernoulli's equation, Hagen-Poiseuille's law, and the cavitation number, were applied to compare theoretical cavitation risks in GAD and VAD systems. Cavitation risk was examined in relation to pressure thresholds in VAD, where localized low-pressure zones increase the probability of vapor bubble formation. The potential relationship between these principles and clinical outcomes, such as blood trauma markers and minor neurological events, was hypothesized based on theoretical considerations.

Results: The theoretical analysis suggests a higher propensity for cavitation in VAD systems due to lower cavitation numbers associated with increased negative pressure, especially at elevated flow velocities. This effect, absent in GAD, may result in a greater incidence of mechanical blood cell damage and embolic microbubbles. However, empirical evidence on the frequency and clinical implications of this phenomenon remains limited.

Conclusions: The theoretical foundation of cavitation differences between GAD and VAD in CPB underscores the importance of further investigation into potential clinical impacts. To evaluate these effects, a retrospective study should be initiated, comparing propensity-matched patients undergoing GAD versus VAD in terms of postoperative outcomes. This initial analysis could inform a prospective trial, aiming to quantify cavitation incidence in clinical settings and elucidate its relevance to patient recovery and complications.

Final category: Thoracic – Benign

A257

A Rare Complication of Robotic-Assisted Thoracoscopic Surgery Diaphragm Plication: Abdominal Compartment Syndrome*

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A257

Diaphragm plication is an effective treatment for diaphragmatic paralysis, in which the affected diaphragm is sutured in place. Robotic-assisted thoracoscopic surgery (RATS) diaphragm plication combines the advantages of standard open thoracotomy and conventional thoracoscopic technique, gaining popularity as a less invasive alternative to improve the overall lung function. We present a case, to our knowledge, of the first described instance of abdominal compartment syndrome in the literature following RATS diaphragmatic plication. Abdominal compartment syndrome potentially developed as a consequence of downward hepatic shift and reduced intra-abdominal volume. This was inferred by changes in the patient's liver enzymes

and was manifested by his oliguria and raised intra-abdominal pressure. The usual treatment of abdominal compartment syndrome is debatable as it usually involves conservative decompression including percutaneous options, but definitive surgical management includes decompression of the abdomen, often by emergent laparotomy, in those with moderately elevated intra-abdominal pressure. Conservative treatment by means of supportive therapy and abdominal decompression with nasogastric tube and passing of a flatus tube was performed in our case.

*The patient has confirmed explicit consent to be in the Journal.

A258

A Video-Assisted Thoracic Surgery Simulation Scenario Design for Training Junior Surgical Trainees

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Background: Core surgical training in the United Kingdom consists of first two years surgical training; the grounding for further specialty training¹. During this period of training, allocated theatre time is highly variable in volume and quality. Despite this, trainees are expected to consistently demonstrate evidence of meeting syllabus requirements. This simulation project has been designed to be an adjunct to improve the performance of core surgical trainees in the thoracic surgery theatre for minor video-assisted thoracic surgery (VATS) cases.

Methods: The core surgical training ISCP curriculum and syllabus for the United Kingdom were consulted as a guideline in forming intended learning objectives. Once the learning objectives were formed, the simulation scenarios were designed and written, taking into account the initial briefing, location and resources required and a full storyline for facilitators with triggers and prompts. These scenarios have been written taking into consideration that simulation facilitators may not have deep specialist knowledge of thoracic surgery.

Results: Four linked VATS scenarios were designed to test candidates' ability in included surgical instrument and camera utilisation, performing a minor VATS procedure (pleural biopsy), identification of a complication and non-technical skills such as communication with the team. The scenarios also provide clear points which could be discussed at a debrief.

Conclusions: This simulation design meets the needs of core surgical trainees by being directly linked to the curriculum through specific learning objectives. The scenarios are realistic, feasible and provide valuable points for discussion at the debrief.

A259

Novel plating system for Open reduction internal fixation of chronic lung hernia and associated costal arch fracture: Stryker VAR small fragment plating and RibLoc U Plus plating system: technique and outcome*

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A259

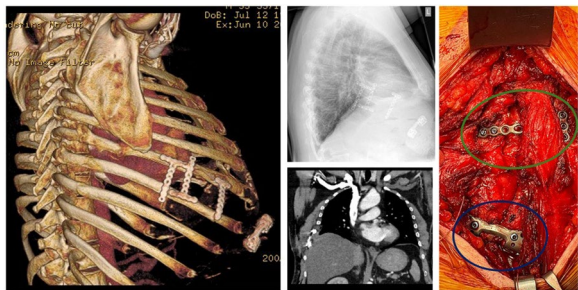
Introduction: Lung hernias are characterised by the protrusion of lung tissue through chest wall defects. Open reduction and internal fixation (ORIF) of these defects is associated with high failure rates in truncally obese patients with associated costal arch fractures. We report a novel technique for ORIF of chronic traumatic lung hernias with associated costal arch fracture, using Stryker VariAx2 Small Fragment & Acumed RibLoc U-Plus chest wall plating systems.

Technique: A 53-year-old male presented with persistent chest pain, clicking anteriorly and a visible cough-induced bulge, spontaneously fracturing his 8th rib. Imaging revealed herniated lung through a defect at the fracture, costal arch disruption and splaying of 7th and 8th ribs. Reconstruction involved reduction of herniated lung,

and costal arch stabilisation between 7th & 8th ribs using 3 'VariAx2' T-plates, with a RibLoc used anteriorly to bridge the costal arch [Figure 1]. No mesh reconstruction of soft tissue was required.

Results: Clinical and radiological outcomes were favourable, with resolution of pain, clicking, and discomfort, with no lung hernia recurrence at 6-month follow-up. 2 Alternating T-plates increased stability, maintaining appropriate intercostal distance. Plates were fixed with 2 mm bicortical locking screws, placed in 'square' configuration, reducing risk of torque. Concurrent use of Ribloc & short plate for the costal arch fracture had a significant advantage for the anterior chondral arch stabilisation with U-shape ends allowing for bicortical screw-locking.

Conclusion: Thoracic surgeons have many plating devices and techniques for rib fixation and chest wall reconstruction. Combining T-plates and the RibLoc allows for accurate stabilisation with minimal complications.



Post-operative imaging: alternating 5-hole T-plates, 3-hole plate equivalent, with RibLoc across the chondral arch. Intraoperative image shows 2 plates: RibLoc (blue) placed across the costal arch fracture, 3-hole T-plate (green).

*The patient has confirmed explicit consent to be in the Journal.

A260

Impact of intraoperative microbiology sample analysis in the video assisted thoracoscopic surgery management of empyema: a single centre study

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Objectives: The BTS and AAT guidelines recommend early empirical antimicrobial therapy after fluid sampling. Intraoperative fluid sampling for further microbiology analysis is part of routine surgical management. We analyzed intraoperative pleural fluid sampling for microbiology to understand its use, results, and influence on post-operative surgical/microbiological management.

Methodology: A retrospective single-center review of consecutive 100 patients who underwent VATS treatment for stages I/II/III empyema from July 2021 to July 2024. Data collected include patients' demographics, results of initial fluid sample and antibiotics treatment, intra-operative microbiology sample analysis and subsequent management.

Results: A total of 100 patients were included, with 72% male and a mean age of 54.2 years; 75 patients had stage III empyema; 97 patients had closed thoracostomy tube drainage (CTTD) done at presentation prior to surgical referral. Microbiological sampling (MCS) result was documented prior to VATS in 75 patients (70 results retrieved); 52 patients yielded no growth while 18 had positive cultures. These determined the preoperative antibiotics management. All patients subsequently underwent VATS debridement, and intra-operative microbial samples were sent for analysis regardless of prior MCS. The positive rate of intra-operative MCS was 10% with 90% being negative. There was a change in the antimicrobial course in 6 patients out of the 10 positive results. The mean durations of chest tube drainage and hospital stay were 4.98 days (SD 2.23) and 7.10 days (SD 4.23) respectively.

Conclusion: We conclude that the influence of intra-operative MCS does not significantly affect the course of post-surgical management of empyema.

A261

Is a benign diagnostic segmentectomy such a bad thing?

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Objective: Robotic assisted thoracoscopic surgery (RATS) facilitates targeted segmentectomy of suspicious small pulmonary nodules in a one-stage diagnostic and therapeutic procedure. The main criticism is the high rate of benign results and presumed harmful futile operations. To answer these questions, we explored the characteristics and outcomes of the benign resections in our initial experience.

Method: A total of 571 patients underwent diagnostic RATS segmentectomy without preresectional diagnosis between December 2017 and May 2024. A non-malignant diagnosis was found in 79 patients (13.8%) [36 M:43F, median age 54(33–88) years].

Results: The median nodule size in these cases was 15(8–30) mm with 69% PET avid. The median Herder risk score was 35(9–97) %. The length of stay was 3(0–23) days with no 30- or 90-day mortality, and two required reoperation for persistent air leak/empyema. The diagnoses included 23 patients with proven tuberculosis or granulomatous inflammation who went on to receive definitive medical treatment. In 10 patients a specific benign diagnosis was made including: hamartoma (4), aspergilloma (3), rheumatic nodule, neuroendocrine hyperplasia, Langerhans cell histiocytosis and intrapulmonary lymph node (1 each). (**Table 1**).

Conclusion: Robotic assisted diagnostic segmental biopsy of suspicious pulmonary nodules leads to a benign result in less than 1 in 7 cases with minimal harm. A truly futile result which did not lead to treatment or specific outcome for the patient was found in 1 in 12. We continue to advocate this approach in carefully selected cases.

Diagnosis	n	% of total (n=571)
Granulomatous inflammation	23	4
Emphysema	13	2.3
Organising pneumonia	11	1.9
No nodule (resolved)	11	1.9
Specific benign diagnosis	10	1.7
Fibrosis	9	1.6
Mycobacterium Kansalii	2	0.3
TOTAL	79	13.8

A262

Management of an acquired, non-malignant trachea-oesophageal fistula due to an impacted denture: a rare case and literature review*

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Background: Ingested dental prosthesis are susceptible to impaction in the gastrointestinal tract due to sharp edges, size and contour. Misdiagnosis occurs due to the radiolucency of denture material on plain radiography. Surgical management of trachea-oesophageal fistulae (TOF) secondary to denture impaction is rarely reported in literature and no previous case reports have described the two-staged reconstruction approach that we present.

Case presentation: A 61-year-old male presented with over one year of dysphagia, recurrent chest infections and weight loss. Barium swallow and computed tomography identified an ingested denture causing a TOF (Figure 1). Endoscopic removal was attempted but denture was firmly impacted. This case underwent multidisciplinary two-staged reconstruction approach. The first procedure involved excision of the impacted foreign body, repair of underlying defects with tracheal resection and anastomosis, and creation of an oesophageal diversion with cervical oesophagostomy. Secondary procedure achieved continuity of the gastrointestinal tract with gastric pull-up and pharyngo-gastric anastomosis.

Literature review of reported cases of acquired non-malignant TOF explored complexities with delayed diagnosis, challenging surgical field and peri-operative complications as we experienced. A 10-year review of 85 cases of ingested and aspirated dentures showed open surgery for removal was required for 32% of cases. Time from ingestion to diagnosis was the most influential prognostic factor.

Conclusions: Early recognition and removal of impacted dental prosthesis is essential to prevent morbidity and mortality. We highlight safety of a two-staged procedure for delayed impacted dental prosthesis. There is need for a collaborative multi-disciplinary approach in the surgical management of such complex cases.

*The patient has confirmed explicit consent to be in the Journal.

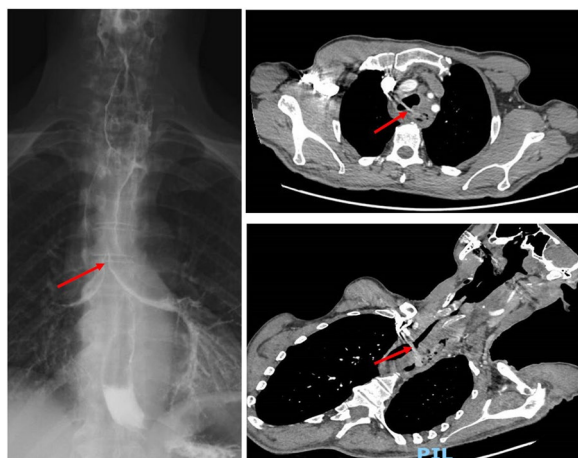


Figure 1 (abstract A262) Pre-operative barium swallow fluoroscopy study and CT imaging demonstrating linear hyperdense shadow extending from the oesophagus to proximal trachea causing fistulous communication.

A263

Anthropometric and Postural Characteristics of Young Patients with Pectus Deformity Compared to a UK Paediatric Population: Recognition of a Morphological and Musculoskeletal Profile: Single Centre Experience

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Introduction: Pectus Excavatum (PE) and Pectus Carinatum (PC) are common congenital chest wall deformities often associated with specific musculoskeletal and postural abnormalities. Understanding the anthropometric and postural profiles of these deformities is essential for diagnosis, treatment planning, and improving non-surgical management options. This study examines the anthropometric characteristics, musculoskeletal issues, and postural changes in pediatric patients with PE and PC, using UK90 growth charts and posture assessment data.

Methodology: Data from 954 patients aged 7.2 to 18 years were analyzed for height, weight, and Body Mass Index (BMI) percentiles, calculated using Lambda Mu Sigma (LMS) methods. Postural abnormalities

such as forward head posture, thoracic kyphosis, scoliosis, lumbar lordosis, and scapulothoracic dysfunction were also assessed. Patients' engagement in formal physical therapy (PT) or parental-driven exercises was evaluated, using R (Version 4.3.3) and RefCurve 0.4.2 for analysis.

Results: Patients exhibited significantly higher height percentiles compared to the UK90 median ($P < 0.001$), with PC patients showing higher BMI percentiles than PE patients ($P < 0.001$). Postural abnormalities were prevalent, with 42.7% exhibiting forward head posture, 54.7% with rounded shoulders, and 13.7% with thoracic kyphosis. Formal PT participation was 30%, with improvements noted among those attending.

Conclusion: This study underscores the importance of comprehensive management of pectus deformities, integrating anthropometric and postural evaluations. Early recognition of height and BMI deviations, coupled with targeted physical therapy, can address musculoskeletal issues effectively.

A264

Outcomes of Anatomical Lung Volume Reduction Surgery (LVRS) compared with traditional LVRS

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Objective: Anatomical lung resection is performed in cancer patients with severe emphysema who can benefit from Lung Volume Reduction (LVR) at the same time. However, anatomical LVRS for solely emphysema purposes is not usual. Aim of this study was to compare the outcomes of anatomical LVRS with those after traditional LVRS.

Materials: Within 2 years, patients who underwent surgery for emphysema were retrospectively analyzed. They were divided into an anatomical LVRS (A-LVRS) and a traditional LVRS (T-LVRS) group. Different clinical outcomes were compared between the 2 groups.

Results: In total, 19 patients were divided in 8 A-LVRS and 11 in T-LVRS group. Age, gender, preoperative lung function tests, CAT and MRC dyspnea scores, 6-min walking tests, oxygen usage and co-morbidities were similar between the groups.

Overall complications, patients discharged with flutter bag, critical care complex (CCC) re-admission and hospital re-admissions were similar. Length of stay (LOS) and drain duration were shorter in A-LVRS group vs T-LVRS (6.88 vs 12.18 days, $p = 0.04$, and 6.75 vs 14.91 days, $p = 0.012$, respectively). Improvement of CAT and MRC scores was greater in A-LVRS group vs T-LVRS (18.25 vs 10, $p = 0.048$ and 3 vs 4, $p = 0.038$, respectively). FEV₁ was improved by 6.85% in A-LVRS vs 2% in T-LVRS group ($p = 0.039$) while RV was reduced by 61% in A-LVRS vs 44% in T-LVRS group ($p = 0.041$). More lung volume was removed in A-LVRS vs T-LVRS (2337 vs 371 cm³, $p = 0.018$). In-hospital/30-days deaths were similar.

Conclusion: A-LVRS is safe and in some compared outcomes better than T-LVRS.

A265**Pectus Before Spine: Dilemma in Managing Extreme Pectus Excavatum and Severe Scoliosis***

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Objectives: To review our institution's experience with Nuss procedure for managing severe pectus excavatum (PEX) in patients with concomitant scoliosis, focusing on a multidisciplinary approach, surgical timing, challenges, and patient outcomes.

Methods: Retrospective analysis was performed on patients with severe scoliosis who underwent PEX correction before spinal surgery. Preoperative evaluations by spinal and thoracic surgeons determined that performing Nuss procedure before spinal correction was essential, as the severity of pectus deformities would result in life-threatening compression if spinal correction were performed first. Clinical management strategies and postoperative outcomes were assessed.

Results: Two cases were identified. The first involved a 13-year-old with extreme PEX (**negative** Haller index) with severe scoliosis requiring urgent surgery. Following Nuss procedure, scoliosis correction was performed successfully three-months later with patient scheduled for bar removal three-years postoperatively.

The second, also 13-years-old, with Marfan syndrome and severe PEX (Haller index 90) underwent Nuss procedure, followed by two-stage scoliosis correction a year later. Post-operative complication included stabilizer protrusion, necessitating removal. This patient remains under multidisciplinary follow-up, with plans for bar removal ± modified Ravitch procedure.

Conclusions: These cases underscore the critical need for prioritizing pectus surgery to prevent cardiovascular compromise during spinal manipulation in patients with severe scoliosis and PEX. Thoracic surgeon involvement during spinal fixation is recommended to mitigate bar displacement risks. Dual stabilizers should be employed in patients likely to undergo spinal surgery. Additionally, scheduling spinal correction at least six-months post-Nuss procedure is optimal to allow scarring for bar stability and optimizing long-term outcomes in these complex patients.

*The guardians of both patients gave their informed consent for the patient information to be published in an open access journal.

A266**Dividing opinion or opening up new opportunities? Robotic division of the fissure to facilitate endobronchial volume reduction**

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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1)**: A266

Background: Endobronchial lung volume reduction (EBLVR) has similar benefits to lung volume reduction surgery (LVRS) but reduced hospital stay. However, its use is limited by collateral ventilation across an incomplete interlobar fissure. By applying the surgical techniques of interlobar dissection, used in segmentectomy and facilitated by robotic assisted thoracic surgery (RATS), we aimed to assess the feasibility of dividing incomplete fissures to permit successful concurrent EBLVR.

Methods: In this initial prospective study, the indications for treatment included: redo post LVRS or pleurodesis, high risk and non-response to prior EBLVR under general anaesthesia, flexible bronchoscopy and Chartist assessment confirmed collateral ventilation. EBLVR to the target lobe was followed by RATS division of the oblique fissure (Figure 1). Target lobe collapse was confirmed on reventilation

before extubation. Perioperative course and functional improvement at 6 months were recorded.

Results: We treated 6 patients (3 male), age 65 (58–77) with 89 (71–97) % fissure integrity, FEV1 median of 28% (19–51%) and residual volume median of 223% (155–242%). Operative time was 110 (95–180) minutes. Target lobe collapse was achieved in all patients with no open conversion. One required haemothorax evacuation. Median duration of air leak was 3 (2–27) days. 6-month survival was 100% with 50% having improvement in dyspnoea.

Discussion: One-stop EBLVR with RATS fissure division is a feasible and safe option for patients in whom LVRS/lobectomy is high risk or in non-responders to initial EBLVR. Further studies are indicated.

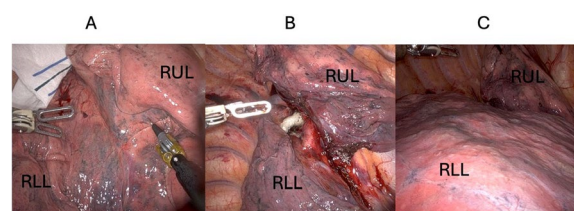


Figure 1 – Intra-operative images displaying A. Incomplete fissure, B. Fissure division C. Target Lobar Collapse

A267**Improving rational prescribing: Reducing high strength opioid prescribing without simple analgesics for patients being discharged following lung cancer surgery**

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Aim: To reduce the number of opioid naïve patients, who had lung cancer surgery, being discharged home on high strength opioid analgesics without simple analgesics, by 20% from beginning of October 2023 to end of June 2024.

Methods and interventions: Quality improvement methodology was utilised to assess processes and outcomes. A driver diagram and fishbone diagram were used to study the current system and identify potential change ideas. Change ideas included education sessions for prescribers and implementation of guidelines for prescribing discharge analgesia.

Regional electronic healthcare records were used to determine discharge medication, and whether any additional analgesics had been prescribed in the week following discharge.

Results: Prior to the introduction of change ideas, a median of 31% of patients were discharged with high strength opioids in the absence of simple analgesia. Following the implementation of the education sessions there was an improvement in prescribing however this was not sustained. Following the implementation of prescribing guidelines there was a sustained improvement in prescribing practice (new median of 0%). In the week following discharge no patients required an increase to their prescribed analgesics, suggesting that the new guidelines were ensuring that patients were still receiving adequate analgesic control.

Conclusion: The education sessions alone did not have a sustained effect on prescribing practice; however, the introduction of new prescribing guidelines was associated with a lasting improvement. This was achieved without patients requiring an increase in analgesics shortly after discharge. This easily implemented intervention can improve discharge opioid prescribing following lung cancer surgery.

A268**Enhancing implementation fidelity to the formal documentation of bedside chest drain insertions among cardiothoracic surgical patients on a newly installed electronic health record system—A Clinical Audit and Quality Improvement Project (QIP)**

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Objectives: Assessing local concordance to the formal documentation process for inpatient bedside chest drain insertions on EPIC electronic patient record system and to implement the required changes.

Methods: We included adult cardiothoracic surgical patients admitted between January to February 2024 who required bedside chest drain insertions during the first cycle. We excluded chest drains inserted in theatres and recovery. Following analysis of data obtained prospectively from electronic patient records, the findings were presented in a cross-site governance meeting. Thereupon, data was collected prospectively for the second cycle between April to June 2024 and then re-audited from July to October 2024.

Results: Baseline data analysis revealed that 86%(n=6) bedside chest drain insertions had either been documented on non-specific notes (n=5) without following any standardised pattern or had not been documented at all (n=1). Only 14% (n=1) had been clerical incompletely on the in-built EPIC proforma. Post-intervention, second cycle auditing revealed that documentation had increased to 90% (n=9) on the in-built proforma and was complete for all patients. The remaining 10% (n=1) had a non-specific progress note in place. Upon re-auditing, a total of 7 bedside drains were inserted, out of which 86%(n=6) were documented on EPIC and 14%(n=1) were documented on a progress note.

Conclusion: This clinical audit and QIP showed a significant lack of adherence to the formal documentation of bedside chest drain insertions. On raising awareness within the surgical teams, subsequent cycles revealed improvements during the pre, intra and post-procedure electronic documentation process.

A269**Medicine meets Surgery: The Application of RAPID Score in Surgical Practice**

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Objectives: The RAPID score (renal-urea, age, purulence, infection source, diet-albumin) has been used to risk-stratify patients with pleural infection but has had minimal, if any, surgical application to risk stratify patients with empyema, and how this affects mortality and length of stay (LOS). Can this tool be used and applied in thoracic surgery for empyema?

Methods: We identified 334 in a single-centre retrospective study, admitted, and treated with surgery for empyema and assessed their surgical risk based on pre-operative parameters. Patients were divided into three risk categories based on their RAPID score, low (0–2), medium (3–4), high (5–7).

Results: Based on our findings, the RAPID score is a statistically significant for length of stay in hospital, high score (95% CI 13.7–20.8) compared to low score (95% CI 10.3–13.1). The statistically significant factors influencing this outcome are urea level, purulent fluid and albumin level. Non-purulent fluid was shown to increase the likelihood of death, OR 3.7 (95% CI 2.0–6.9), which supports the initial RAPID score paper as there are more loculations posing a risk to incomplete drainage. Patients with higher urea levels and lower albumin have the worst median survival.

Conclusions: The RAPID score can be used to successfully risk-stratify surgical candidates, in alignment with clinical judgment. This can be used to identify sick patients, and may help predict mortality.

A270**First Post Operative Clinic CXR**

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Objective: In our institute all patients after thoracic resection should be seen within 2 to 4 weeks from discharge with a follow up chest x ray irrespective of their symptomatology. We aim to assess the importance of their first follow up chest x ray. Should we continue doing it routinely or should we only target those with symptoms that would justify a radiological investigation.

Methods: We performed a retrospective analysis of 100 randomly selected patients who underwent lung resection surgery for both primary and secondary lung cancer from August 2023 to August 2024. We compared their post operative chest x ray with their last chest x-ray before discharge and commented on any significant radiological changes. Significant changes included increase or new pleural effusion, lung collapse and any other finding that would justify further investigations. X ray findings were compared with patients' symptomatology. All x-rays were reported by our radiologists.

Results: Only 3 patients showed evidence of significant change (3%). One had an x ray suggestive of chest infection and was managed with antibiotics and 2 had an increase in pleural effusion, one required drain insertion and hospital admission and the other only needed a follow up chest x ray.

Conclusion: We could be more selective in ordering post operative chest x rays. Patients seen in clinic without an increase in SOB, with acceptable chest x rays on discharge and good air entry on auscultation could avoid post operative follow up chest x rays.

A271**Management Of Chronic Sternal Wound Infection: A Novel Technique With Biodegradable Antibiotic Carriers: Case Report***

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Objective: Chronic Sternal wound infections one of the well-established complications post cardiac surgery. It puts burden on both the patients and the health system as it takes long time to be managed. The current practice in our centre is to treat it with Vacuum Assisted Closure (VAC) dressing which takes weeks and in some cases months. Here we present a case report of chronic sternal wound infection followed coronary artery bypass grafting managed ultimately with new technique using biodegradable antibiotics carriers. The filler comprised of 40% hydroxyapatite, 60% calcium sulphate and incorporated gentamicin and vancomycin.

Case Presentation: A 47-year-old female had coronary artery bypass grafting complicated with chronic sternal wound infection with sternal dehiscence and did not respond to multiple debridement along with VAC dressings and antibiotics. Thorough debridement of necrotic tissue and bone fragments until viable tissue was exposed. The supra-sternal dead space was filled with two absorbable biocomposites to optimize infection control. The wound was subsequently closed using tension sutures, ensuring precise wound closure and effective tissue apposition. This case is the first one in the literature on using

biodegradable antibiotics carriers for sternal wound infection post cardiac surgery.

Results: Postoperatively, patient made a marked clinical improvement up to 4 months follow up.

Conclusion: A novel technique has been presented for the first time for chronic sternal wound infection management with biodegradable antibiotic carriers. it opens a door for the management of chronic sternal wound infection. further follow-up and more cases are required to establish this practice.

*The patient gave explicit, informed consent regarding publication of their case in an open access journal.

A272

New Technique for Rib Stabilization in Slipped Rib Syndrome Using a Ladder Plate for Selected Primary and Revision Surgeries: Preoperative Protocol and Surgical Description

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Introduction: Slipped Rib Syndrome (SRS) is an under-recognised condition characterized by hypermobility of the lower ribs, causing chronic pain due to intercostal nerve irritation. Traditional conservative treatments often fail, necessitating innovative surgical solutions. This study introduces the use of a "ladder plate" for rib stabilization in SRS patients requiring surgery. Patients undergo clinical assessment and dynamic ultrasound (DUS) to diagnose SRS, determine rib involvement, and identify the stability point. Preoperative 3D chest CT further aids in planning (Figures 1a & 1b).

Novel Technique: A modified sternal "H plate" (Zimmer Biomet), typically used for sternal fractures, is adapted for rib fixation. Its flexibility and multiple screw options make it suitable for stabilizing rib interspaces. Preoperative paravertebral or serratus anterior blocks are given for pain control. Through a left antero-lateral incision, the slipping rib is exposed, and the rib tip cartilage is excised. The ladder plate is then secured from a stable cranial rib, typically the 8th, to the slipping rib, creating a "ladder" of stability. The H plate's multiple fixation points provide even stress distribution, enhancing stability and reducing hardware failure (Figures 1c, 1d & 1e).

Results: In six cases (four primary, two revisions), patients reported minimal postoperative pain and reduced analgesic needs. Follow-up imaging confirmed stable rib fixation, with no displacement or hardware complications, demonstrating effective dynamic thoracic stabilization.

Conclusion: The ladder plate technique shows promise for SRS stabilization in primary and revision surgeries. Further studies are needed to validate these findings and establish protocols for thoracic surgery applications.

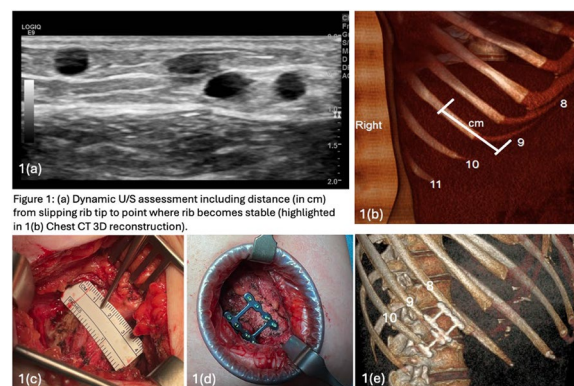


Figure 1: (a) Dynamic U/S assessment including distance (in cm) from slipping rib tip to point where rib becomes stable (highlighted in 1(b) Chest CT 3D reconstruction).

Figure 1 (abstract A272)

(a-b) Ultrasound and CT for rib stability. (c) Intraoperative measurement. (d) Ladder plate in position. (e) 3D CT showing stabilized ribs with ladder plates.

A273

An Orthopod's guide to fixing ribs: What does a Thoracic surgeon need to know about rib fractures and fixation devices?

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Introduction: A thoracic surgeon needs to be well-versed in techniques and principles for using rib fixation plates to ensure effective treatment of rib fractures and optimise patient outcomes. In addition, thoracic surgeons seldom receive formal training in principles of fracture fixation. Orthopaedic surgeons on the other hand (of which some fix rib fractures) have a foundation in fracture fixation basics and principles.

Methodology: We conducted a literature search including resources from major international authorities in orthopaedic surgery such as the 'Arbeitsgemeinschaft für Osteosynthesefragen' (AO), Orthopaedic Trauma Association (OTA), British Orthopaedic Association Standards for Trauma (BOASTs), along with a systematic search and filter of papers on the 'Medline' database and consultation of popular orthopaedic textbook resources.

Results: Our literature review provides a guide of what thoracic surgeons need to know about fracture fixation, and what devices and techniques can be used to fix ribs specifically. Thoracic surgeons will already be familiar with indications for open reduction and internal fixation, and operability of patients from case to case, as well as some models of rib plates available to them.

Conclusions: We provide a guide to orthopaedic principles underlying fracture fixation to deepen and broaden the knowledge base for thoracic surgeons in how they assess fractures, understand modes of plating (neutralisation, compression, bridging and buttressing), types of screw (locking, non-locking, self-tapping and self-drilling) and concepts of absolute and relative stability, primary and secondary bone healing, bone biology, and how this could potentially alter the method of fixation of ribs.

A274**Is Quicker Better? Intraoperative and Early Postoperative Comparative Study Between Pleurodesis and Pleurectomy in Patients with Primary Spontaneous Pneumothorax: Resource and Financial Implications**

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A274

Introduction: Prevention of recurrence in primary spontaneous pneumothorax (PSP) is commonly achieved with mechanical or chemical pleurodesis. Following widespread adoption of thoracoscopy, both procedures can be performed quickly and with minimal complications. Considering the constantly increasing costs of thoracic surgical interventions and the growing demand for theatre time to accommodate cancer operations, could this be the time to consider whether less is more?

Methods: We conducted a retrospective observational study on 45 cases of primary spontaneous pneumothorax treated with either pleurectomy (n=24) or talc pleurodesis (n=21) at St George's Thoracic Surgery Department between 01/02/2022 to 24/08/2024, either Male (n=38) or female (n=7). The analysis included intraoperative time, early postoperative pain scores, drain output, patient-controlled analgesia (PCA) duration and attempts, and total hospital stay, there were no mortalities in the two groups. Subgroup analyses were performed for patients with and without concomitant bullectomy.

Results: The attached table shows that Operating times were significantly higher for pleurectomy, while there was no difference between the two procedures in terms of early postoperative pain scores (assessed during movement on the first two postoperative days), drain output, patient-controlled analgesia (PCA) duration and attempts, and total hospital stay.

Conclusion: Pleurectomy was associated with nearly double the intraoperative duration compared to talc pleurodesis, leading to a significant increase in theatre costs and staff payment (extra 452 £) despite the higher reimbursement associated with pleurectomy. Early postoperative outcomes, showed no significant differences between the two groups, favouring pleurodesis for its lower financial burden due to significantly shorter operating times.

A275**Strategy for intense post-operative physiotherapy based on pre-operative lung function: a model of care in a resource-limited tertiary Cardiothoracic Centre: analysis of 93 patients undergoing lung resections**

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Introduction: This study aims to establish a model of care based on preoperative lung function parameters to prioritize physiotherapy resources for high-risk patients undergoing lung cancer resections.

Methods: We conducted a retrospective observational study on 93 cases; ((Male=40) and (female=53)); of lung resections at St George's Thoracic Surgery Department; Lobectomy=59, Wedge Resection=25, Lung Volume Reduction Surgery=5, segmentectomy=3, Lingulectomy=1. The analysis included an initial analysis of PFT in long-term versus short-term patients. Then stratification of patients based on TLCO (the most significant factor to be correlated) as high, moderate,

and low-risk groups, which assessed for Demographic, postoperative complications, mobility scoring of early 72 h. post-operative (based on physiotherapy follow-up notes), hospital stay and need of antibiotics administration.

Results: Primary analysis showed that negative correlation coefficient between PFT and length of hospital stay (FEV1, FVC, TLCO; -0.4, -0.2, -0.5; respectively) and significant difference between long and short hospital stay in terms of FEV1 and TLCO ($P < 0.05$ and $P < 0.0001$ respectively) while FVC was not significantly different ($P > 0.05$). Accordingly, the patient was stratified into high, moderate, and low-risk groups and their data was traced. Causes of prolonged hospital stay were prolonged air leak (PAL)=17 cases, respiratory=6 cases, resend to theater=5 cases, severe surgical pain=6 cases, cardiac only=5 cases, respiratory plus cardiac=2 cases, CNS.=1, reallocation=1.

Conclusion: High-risk patients with preoperative low TLCO are subjected to higher postoperative complications, need of antibiotics and longer hospital stays and they will benefit from a structured, intensive physiotherapy program.

A276**Successful surgical solutions for Slipping Rib syndrome**

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Background: Slipping rib syndrome (SRS) occurs when the abnormal mobility of one or more false ribs causes impingement on the costal nerve of the above rib resulting in often debilitating pain. Novel definitive surgical corrections of SRS involving rib plating have been recently described. We aimed to evaluate the long-term efficacy of these procedures for patients with SRS managed at our centre.

Method: We interviewed all patients who underwent SRS surgery at our centre and compared Örebro musculoskeletal pain questionnaire scores at present to scores obtained pre-operatively and tested for significance using a t-test. We also compared the use of opioid analgesics pre- and post-operatively.

Results: Between 2018 and 2024, 22 patients with SRS (78% female, median age 44.2) underwent surgical repair (32% required 2 or more operations). The median length of follow-up post-operatively was 25.4 months. The mean pain score (/100) pre-operatively was 72.7, which improved to 45.9 after surgery, a 36.9% improvement ($p = 0.0000558$). At follow-up, the use of regular opioid pain relief had reduced from 77.2% of patients to just 18.1%. When asked, 64.7% of patients believed their operation had been successful and 70.6% said they would recommend their procedure to a friend with the same symptoms with most stating the procedure had allowed them to resume their normal daily activities and return to work.

Conclusion: Novel slipping-rib surgery significantly improves patient reported pain and quality of life. It also reduces dependence on opioid pain relief and should be considered in the management of this frequently underdiagnosed condition.

A277**Case Study: Endobronchial Valve Insertion in a Young Patient with Congenital Bullous Lung Disease. A novel Approach?***

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Although Congenital Bullous Lung disease is a rare entity, it is being increasingly diagnosed in adults. This can present as early as the

newborn stage, during childhood, or as an adult. Historically, congenital lung disease and hyperinflation is managed conservatively if mild disease, but if clinically progressive or severe, requires surgical intervention in the form of lobectomy. Due to the difficulties and morbidity associated with surgical intervention, alternative strategies ought to be investigated.

We present a case of an 18-year-old gentleman, with previously asymptomatic and undiagnosed congenital bullous lung disease requiring lung volume reduction. This appears to be the first case managed with insertion of endobronchial valves for lung volume reduction in a patient of this age or for anyone with congenital lung disease. The patient presented with dyspnoea and intermittent pleuritic chest pain for the past 5 months only. Radiographic and echocardiographic evaluation revealed congenital bullous lung disease. There was significant mediastinal shift to the left side causing external compression of the right atrium. Sequelae from this was demonstrated with a dilated inferior vena cava with decreased inspiratory collapse, and a markedly abnormal liver with dilatation of the portal vein and increased enhancement.

Our Thoracic Surgery team proceeded to evaluate him with bronchoscopy and Chartis assessment, followed by placement of endobronchial valves. The overall result was immediate radiological improvement, with the desired lung volume reduction effect, without invasive surgical management.

We would suggest that this may be a suitable alternative management strategy warranting further investigation, ongoing evaluation and research.

*The patient gave their explicit, informed consent to publish their details in an open access journal.

A278

Aspergilloma: is pre-operative antifungal treatment required?

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Background: Pulmonary Aspergilloma (PA) is an uncommon yet challenging disease to treat. Studies lack evidence on the effect of antifungals being given as neoadjuvant treatment, but show a decreased incidence of disease relapse.

Purpose: We aim to study the effect of NAT on PA to find out if there is any long-term benefit.

Methods: Patients with PA surgically treated at Southampton General Hospital (2010–2024), were retrospectively evaluated. Surgical procedures, co-morbidities, ICU admission, hospital length of stay, complications, and neoadjuvant antifungal treatment (NAT) were studied.

Results: The study included 13 male (48.1%) and 14 female (51.9%) patients with a median age of 48 (ranging from 15 to 81 years), of which 17 (63%) with underlying lung disease and 10 (37%) with no underlying lung disease. 6 were smokers (22.2%), 2 with DM (7.4%) and 5 with HTN (18.5%).

A total of 7 patients had NAT.

We performed 10 wedge resections, 11 lobectomies, 1 bi-lobectomy, 1 lobectomy and a wedge resection, 2 segmentectomies, 1 LVRS and 1 pleurectomy. 4 patients did not have a pre-operative PA diagnosis. 16 patients developed complications post-op (59.2%), including 3 with AF (18.75%), 5 with chest infections (31.25%), 8 with air leak (50%) and 3 with surgical emphysema (11.1%).

There was no significant difference between the groups with respect to postoperative complications rates ($P=0.25$), hospital stay ($P=0.48$), or the approach of surgery (either VATS or Open) ($P=0.28$).

Conclusions: Giving NAT must be considered carefully as it comes with both benefits and side-effects.

A279

Comparative Outcomes of Surgical Fixation Versus Nonsurgical Management In Patients with Flail Chest: Experience from a Lower Middle-Income Country – A Retrospective Study

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Background: Flail chest resulting from trauma is associated with considerable morbidity and mortality and has traditionally been managed with invasive mechanical ventilation(1). This study aims to analyze the outcomes of surgical fixation in patients with flail chest.

Method: This retrospective study was conducted at a Level 1 trauma center in Sri Lanka which included patients admitted to intensive care unit (ICU) with flail chest from July 2023 to August 2024. Outcome measures included demographics, ICU length of stay (LOS), hospital LOS, injury severity score (ISS) and management.

Results: The study comprised 39 patients, with a mean age of 49.26 ± 15.1 years and 53.85% being male. Nineteen patients (48.72%) underwent surgical fixation, while 20 patients (51.28%) received non-surgical management. The ISS did not differ significantly between the two groups (mean ISS: surgical group, 32.42; nonsurgical group, 30.25; $p=0.338$). Lengths of stay in the ICU and hospital were significantly shorter for the surgical group, with means of 3.89 days versus 10.9 days ($p<0.001$) and 10.61 days versus 18.50 days ($p<0.001$), respectively. During the ICU stay, ventilatory days was significantly lower in the surgical group, averaging 1.72 days compared to 5.25 days in the non-surgical group. Additionally, the PaO₂/FIO₂ ratio showed significant improvement in the surgical group, with a mean gain of 149 compared to just 22 in the conservative group upon ICU discharge.

Conclusion: Surgical fixation of flail chest in polytrauma patients significantly reduces ventilatory requirement, ICU LOS and hospital LOS compared to nonsurgical management.

A280

Guidance on Vacuum Bell treatment of Pectus Excavatum: An Evidence Based Best Practice Review

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Background: In pectus excavatum (PE), surgery remains the mainstay treatment, however, the emergence of vacuum bell therapy (VBT) has provoked consideration of its use in PE, especially in the mild cases. We aim to provide a systematic review of non-surgical treatment of pectus that supports guidance on VBT in PE.

Methods: We conducted a systematic review of comparable studies on non-surgical treatments of pectus excavatum or carinatum. A literature search was performed from six electronic databases of non-surgical treatment for pectus excavatum. The evidence outlined formed the basis for best practice guidance for non-surgical pectus care of pectus excavatum using vacuum bell therapy.

Results: 14 studies were included from the literature search. All were retrospective case series. A total of 1025 patients were analysed. Age range 4–52 years old. Outcome measures included patient population demographic, severity and type of pectus excavatum, wearing protocols, time to treatment, success and adverse effects (Table 1). This determined the best practice recommendations for VBT.

Conclusion: Non-surgical treatment for pectus provides a viable alternative to the traditional surgical correction. We aim for this best practice guidance to provide support to pectus treatment units and its patients/families in applying VBT safely and effectively to the right target population, so as to maintain excellence in pectus care.

Table 1 (abstract A280) Summary overview of Vacuum bell treatment for Pectus Excavatum.

Authorship	Country	Study Design	Patient Group (Age, Total, SS)	Outcomes Measure
Schier F et al, 2005	Germany	Retrospective Case Series	60 pts, Aged 6.1-34.9 years (median 14.8 years)	Sternal Elevation 1cm achieved in 85% Complete elevation in 20% after 5 months
Haecker F-M et al, 2006	Switzerland	Retrospective Case Series	34 pts, 6-52 yrs.	Sternal Elevation 1. elevation lasted longer in adult group (30-60 min) 2. paediatric subgroup in first 6-9 months 27/34 pts had complete elevation
Haecker F-M et al, 2011	Switzerland	Retrospective Case Series	133 Pts, 3-61 years (median 16.21 years)	Sternal Elevation >1cm elevation, 79% after 3 months, 17% at 18 months, 10% at 19.9 months Decreasing motivation (n=9), poor results (n=4)
Lopez M et al, 2016	France	Retrospective Case Series	73 pts: aged >18 (n=17, mean age 22.8 years), II: aged <18 (n=56, mean age 11.5 years)	Sternal Elevation 9mm(0-30mm) at6 months I: 22-17mm at 6 months II: 22-11mm at 6 months Sternal flattening, n=23at 10 months Abandoned treatment (n=1) and follow-up (n=3) due to unsatisfactory outcome
Togoro SY et al 2018	Brazil	Level 4 - Retrospective Case Series	30 Pts 8-35 years old	Haller Index Significant HI improvement (P <0.001): n=30
Lei W et al, 2024	China	Retrospective Case-control study	72 pts age 11 years+/- 4.8	Pectus Correction Index - 23.22 ± 13.47, Obermeyer's classification of degree of excavation correction - Outcomes of correction - Excellent n=18,
Prada Arias M et al, 2023	Spain	Retrospective Case series	50 pts 12.52 yrs (10-14)	Repaired chest sinking 23.58 ± 30.53 (%). Repaired chest sinking improved with daily hours used (<3hours - 14.99 ± 31.12, >6hours - 45.51 ± 17.70, Obermeyer's classification of degree of excavation correction, Outcomes of correct Excellent n=2
Toselli L et al, 2022	Argentina	Retrospective Case-control study	186 pts	Obermeyer's classification of degree of excavation correction 35% had excellent/good, 25% fair, and 40% poor/worse results, longer treatment duration = better outcome
Luo D et al, 2022	China	Retrospective Case series	139 pts, mean age 4.6 yrs.	Sternal Depth Decrease The median depth decrease during treatment was 3.94 (IQR 2.1-6.7) mm
Jung Y et al, 2021	S Korea	Retrospective Case (VBT)-control series (Nuss)	33 pts, Age - 16.48±8.21	Haller Index HI improvement - 0.55±0.47 in 1yr post treatment
Furuta S, Nagae et al 2021	Japan	Retrospective Case series	15 pts, 6-17 years (mean: 11.1 years)	Sternal Depth Decrease The depth of depression reduced in 93.3% of 15 patients (mean; 8.7 mm). Minimal change occurred in the Haller index but the subcutaneous fat thickened significantly (11/15 patients).
St-Louis E et al 2018	Canada	Retrospective Case series	31 pts	Haller Index Improvement in HI
Obermeyer RJ et al, 2018	USA	Retrospective Case series	115 pts	Sternal Depth Decrease An excellent correction (depth≤0.51cm) was achieved in 23 (20%) patients. Variables predictive of an excellent outcome include ages 11 years, chest wall depths ≤1.5cm, chest wall flexibility, and vacuum bell use over 12 consecutive months.
Sesia SB et al, 2017	Switzerland	Retrospective Case series	53 pts 6-20 yrs	Sternal Elevation no statistically significant difference between the groups was found when comparing the sternum elevation to the patient's age (p=0.4574) and the elevation to pressure ratio to the patient's age (p=0.8048)

A281
Abdominal Drain Following Pancreatic Necrosectomy Causing a Bronchoperitoneal Fistula: A Case Report*
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A281

Introduction: Bronchoperitoneal fistula formation is extremely rare, typically resulting from subphrenic abscesses or iatrogenic diaphragmatic rupture following biliary procedures. We present a unique case where an abdominal drain placed after a pancreatic necrosectomy caused diaphragmatic erosion and led to a bronchoperitoneal fistula.
Case Report: A 28-year-old male with idiopathic chronic pancreatitis was admitted with severe epigastric pain and diagnosed with acute on chronic pancreatitis, initially stratified as moderate acute. Despite ICU management, he deteriorated and was re-stratified as severe acute pancreatitis necessitating an exploratory laparotomy and pancreatic necrosectomy. Postoperatively, the patient was monitored in the ICU with a pancreatic bed drain and a pelvic drain. While the pelvic drain was removed on post operative day 04, pancreatic drain remained in place. Although the drain output was nil, drain bag was noted to be filling with air which gradually increased over time. After 14 days a CECT revealed a bronchoperitoneal fistula connected to the left lower lobe of the lung through a 5 mm diaphragmatic defect. During left anterolateral thoracotomy, necrosis of the left lower lobe's basal segment required a segmentectomy and the Fistula track was excised en-block with diaphragmatic repair.

Discussssion: This case represents the first report of an abdominal drain causing a bronchoperitoneal fistula in a post-pancreatic necrosectomy patient. Timely identification and management are critical, as such fistulae can lead to rapid deterioration.
Conclusion: Bronchoperitoneal fistula is a rare but life-threatening condition that requires prompt intervention to prevent severe complications and improve outcomes.
*The patient has confirmed explicit consent to be in the Journal.

A282
Five Years of Advancements: Revolutionising Thoracic Surgery with Robotic Assistance—A Single-centre Experience
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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A282

Objectives: Robotic assisted thoracic surgery has emerged as a significant advancement in minimally invasive surgical techniques, offering an alternative to traditional open surgery and video-assisted thoracoscopic surgery (VATS) for treating a wide range of thoracic conditions. We aim to present our 5-year robotic surgical experience.
Methods: A retrospective study was conducted on all patients underwent robotic assisted thoracoscopic surgery (RATS) between (04/10/2019–31/08/2024). Data was collected from electronic health records. Data analysis was performed using SPSS V.29.
Results: 475 patients who underwent RATS were included in the study. The median age of patients at time of operation was 69 years. Most patients had a performance status of 1, ASA grade of 3 and they were current/ex-smokers. Most of patients had an FEV1 and DLCO of 85% and 82% respectively. 48.2% of patients had isolated lobectomy as a primary operation, complex lung resection (requiring chest wall resection, Pancoast tumour resection, or sleeve resection) was performed in 3.2%, mediastinal mass resection in 10.5% and tracheobronchial surgery in 0.6%. Rate of conversion to open was 2.9%. Median length of hospital stay is 3 days and 30-day in hospital mortality is 0.8%.
Conclusion: Our five-year experience demonstrates that RATS is the safest and most effective approach for almost all thoracic procedures. The low conversion rate to open thoracotomy, short hospital stay, and minimal in-hospital mortality reflect the clinical advantages of robotic technology in thoracic surgery. RATS is beneficial for complex lung resections, mediastinal mass excisions and tracheobronchial surgeries offering enhanced precision with favourable patient overall outcomes.

A283
Is Lung Volume Reduction Surgery (LVRS) by Robotic Assisted Thoracic Surgery (RATS) associated with less air leak?
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Objectives: With the rise of robotic LVRS, there has been anecdotal evidence that RATS LVRS may confer some benefit over more conventional forms of surgery. This case series set out to identify if performing minimally invasive LVRS via a robotic approach had an impact on the length of post-op air leak or hospital stay compared with Video-Assisted Thoracoscopic Surgery (VATS).
Methods: Retrospective review of prospectively collected data was performed from the unit database. Patients undergoing LVRS via either VATS and RATS approaches in the 5-year period from 2019–2024 were isolated and examined for this study. A total of 53 patients were identified. The main areas of study were length of hospital stay and total duration of chest drainage.
Results: Of the 53 patients, 2 were excluded due to in hospital mortality (1 RATS and 1 VATS). In the remaining study group, 29 were RATS (M:F = 20:9) and 22 were VATS (M:F = 15:7). The mean age for RATS was 62.7 years [39–76] with the mean age for VATS 60.4 years [46–79]. The

mean length of stay was 13.2 days for RATS and 12.9 days for VATS ($p=ns$). Length of chest tube drainage was used as a surrogate for air leak. The mean for RATS was 13.8 days [2–46] and 13.6 days for VATS [2–55]. ($p=ns$).

Conclusions: Early experience does not suggest that robotic LVRS is associated with reduced air leak and does not impact on total length of stay.

A284

Descending Necrotising Mediastinitis: The Scottish National Experience

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Descending necrotising mediastinitis is a rare but severe form of mediastinitis which arises from tissue damage as the infection descends from the cervical fascial planes into the mediastinum. Mortality within the literature is around 50% if left untreated. We present our experience in the management of DNM across Scotland over a 5-year period. 21 patients were referred to two tertiary referral centres with DNM, with 13 requiring immediate debridement. The median age at presentation was 53 years (33–62). 15/21 patients were male (71.4%) with a pharyngeal infection preceding 57.1% of patients, odontogenic infection in 4 patients, oesophageal source in 4 patients and one patient having concurrent odontogenic and pharyngeal infection during presentation. The retro-visceral route was the most common for spread of infection and Endo Type IIB was the most common type of presentation. Median time between medical assessment to surgical drainage was 1 day. VATS and thoracotomy were the access of choice for draining the mediastinum with 7 patients each. 10 patients required further re-exploration after their index procedure. Positive microbiology cultures were available in 18 patients with 4 in-hospital mortalities documented.

The median length of stay was 42 days (26–77) and ITU admission was 18 days (9–36). 3/21 patients had failed swallows at the time of discharge with 1 patient requiring a PEG insertion. 1 patient had an elevated right hemidiaphragm post-operatively.

DNM is a surgical emergency. The recovery is often protracted, requiring multispecialty input. Early referral and recognition is pivotal to successful outcomes in these patients.

A285

Does The Glenfield BFG Score Accurately Predict Outcomes in Lung Volume Reduction Procedures?

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Objectives: Lung volume reduction (LVR) procedures, either surgery (LVRS) or endobronchial valves (EBV) or coils, are offered to patients with hyperinflated emphysematous lungs. Glenfield Score (GFS) is an individualised risk assessment score used to predict peri-operative

mortality in LVRS patients. This study evaluates the accuracy of GFS in predicting mortality in LVR procedures.

Methods: A retrospective analysis of a prospective database was conducted on patients with available GFS referred to University Hospitals Birmingham from 2012 to 2023. GFS was used to stratify patients into risk-groups and mortality-rates were compared for each intervention group.

Results: 254 patients were included, 127 (50%) underwent intervention. 60 (47.2%) patients underwent LVRS; 83.3% were low-risk according to GFS and 16.7% were moderate-risk. 55 (43.3%) patients had EBV insertion; 74.5% were low-risk and 23.6% were moderate-risk. 12 (9.4%) patients had coils fitted in; 58.3% were low-risk patients and 33.3% were moderate-risk. Only two patients classified as high-risk had an intervention, one underwent an EBV insertion and the other had a coil fitted in, with no mortality at 1-year.

Conclusions: Overall, outcomes at 30- and 90-day were encouraging. The GFS seems to overestimate mortality for moderate-risk LVRS patients while underestimating long-term outcomes for low-risk LVRS group. In contrary, GFS correlated better with the lower- and moderate-risk EBV patients.

A286

Performance of the new NHS England Pectus Care service

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A286

Objectives: We report high-level performance of the new NHS England (NHSE) national Pectus Care service, created expeditiously following urgent re-commissioning of surgery for very severe pectus excavatum on the 11th of April 2023. A quorate multi-disciplinary team (MDT) assesses [set criteria](#). Three units have been commissioned to deliver surgery.

Methods: A prospective database was maintained by a single research assistant. The data was surveyed both by the NHSE national speciality advisor and in quarterly operational delivery meetings. Results were censored on 31/10/2024 for 50 MDTs (14/04/2023–25/10/2024) and for all pectus surgeries completed between 14/04/2023–30/09/2024.

Results: The national Pectus Care MDT opened on 14/4/2023 with all meetings being held virtually. 22 centres referred cases (median=4). 245 discussions on 226 patients have taken place (Figure 1), with four possible outcomes: accepted for surgery (141), referral to NIHR-RESTORE trial (35), awaiting further investigation (11), and rejected for surgery (10). Initially fortnightly, MDTs increased to weekly after a process re-organisation. 27 patients were operated in 2023–2024 (Q1–Q4) and 39 in 2024 (Q1–Q2), making the current rate of surgery 4.9 times higher than in the first year.

Conclusions: In the eighteen months since re-commissioning and opening the NHSE Pectus Care MDT in April 2023, we have achieved a progressively effective national service. Surgery is provided in three centres at an overall increasing rate, with a high degree of participation by referring units and established links to the NIHR-RESTORE trial. Ongoing service improvement is expected to lead to further pathway development.

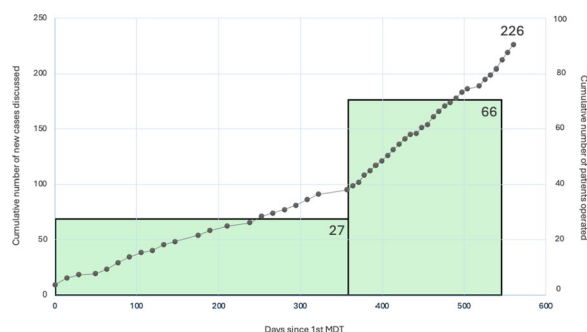


Figure 1 (abstract A286) Line-graph: Cumulative number of unique cases discussed for all MDTs 14/04/2023–25/10/2024. Bar Chart: Cumulative number of patients operated 14/04/2023–30/09/2024.

A287

Enhancing Surgical Knowledge: Impact of a Focused Workshop on Complex Oesophageal Surgery for Third-Year Surgical Trainees

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Background: Oesophageal surgery is a critical component of the general surgery training program in Sri Lanka. However due to scarcity of cases, limited expertise and resources concentrated in few centers, not all trainees have the opportunity to observe these procedures during their core training. This study aims to evaluate the effectiveness of an 8-h workshop designed to enhance the understanding of the steps involved in complex esophageal surgery among third-year surgical trainees.

Method: A total of 33, third-year surgical trainees participated in this workshop which included lectures, video presentations, interactive discussions, and practical demonstrations focusing on the intricacies of complex esophageal surgical procedures. Participants completed a 20-question questionnaire before the workshop, which was administered again after the workshop to assess knowledge retention.

Results: The mean pre-workshop questionnaire score was 12.42 (± 3.01) out of 20, while the post-workshop mean score increased to 16.97 (± 1.51). The mean difference of 4.55 was statistically significant ($p < 0.001$) based on a paired t-test. The effect size, calculated using Cohen's d, was 2.16, indicating a large effect (> 0.8) and demonstrating a substantial impact of the workshop on participants' knowledge. Notably, participants with lower pre-workshop scores demonstrated the greatest improvement, highlighting the workshop's effectiveness in addressing knowledge gaps.

Conclusion: The workshop significantly improved participants' understanding of complex esophageal surgery, as evidenced by a large effect size and substantial increase in post-workshop scores.

A288

Role of the Thoracic Surgeon in the Management of Blunt Chest Trauma

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Introduction: Rib fractures from blunt chest trauma account for 15% of global emergency admissions. While surgical intervention is rare, thoracic surgeons frequently assess and manage these patients. This

study evaluated thoracic surgeon involvement in managing rib fractures at a Major Trauma Centre.

Methods: Data was prospectively collected over six months (Jan 2023-July 2023) for rib fracture referrals at our Major Trauma Centre, excluding external referrals due to follow-up limitations. Demographics, injury type, management, length of stay, survival, and discharge details were analyzed. Patients with isolated rib fractures were admitted under Thoracics (T), while multi-system trauma cases were managed by the Major Trauma Team (MTT). All patients received daily reviews under Thoracics and until thoracic input was no longer needed under MTT.

Results: Of 266 patients referred, 117 were included after excluding incomplete records. The median age was 64 years, with a median hospital stay of 10 days. Thoracic team input duration ranged from 1–78 days (median=4). Flail segments, pneumothorax, and hemothorax were present in 25.6%, 45.3%, and 40.2% of cases, respectively. Only 5.1% required surgical fixation. Patients under Thoracics had shorter stays than those under MTT (median=6 vs. 14 days, $P < 0.001$). No significant differences in age, battle score, or need for surgical fixation were observed between patients admitted under both teams.

Conclusion: Most rib fracture patients do not require surgical stabilization, yet thoracic resources are highly utilized due to current referral pathways. Further research is needed to explore patient outcomes and rehabilitation needs post-rib fracture admission.

A289

Guidance on Dynamic Compressive Bracing Treatment of Pectus Carinatum: An Evidence Based Best Practice Review

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Background: Pectus carinatum (PC) is a condition from infancy and dynamic compressive bracing (DCB) therapy has superseded traditional surgical correction as first line in correction of PC deformity.

Methods: We conducted a systematic review of comparable studies on DCB for PC. A literature search was performed from six electronic databases of non-surgical treatment for pectus carinatum. The evidence outlined formed the basis for best practice guidance for non-surgical pectus care of pectus carinatum using DCB.

Results: 9 studies were included from the literature search (8 retrospective case series, 1 prospective case series). A total of 3115 patients were analysed. Median age of 14 (4–21) years old. Outcome measures included patient population demographic, severity, wearing protocols, time to treatment, success, adverse effects and attrition rate (Table 1). This determined the best practice recommendations for DCB.

Conclusion: Non-surgical treatment for PC provides a viable alternative to the traditional surgical correction and is recommended as first line therapy for compliant PC deformity by the American Pediatric Surgical Association. We aim for this best practice guidance to provide support to pectus treatment units and its patients/families in applying DCB safely and effectively to the right target population, so as to maintain excellence in pectus care.

Table 1 (abstract A289) Summary overview of dynamic compressive treatment for Pectus Carinatum.

Authorship	Country	Study Design	Study period	Total Patients	Protocol	Outcomes	Adverse Effects	Attrition Rate
van Braak It et al. 2022.	Netherlands	Retrospective Case series	10 year	631 pts	Bracing/corrective phase 4-6 weeks. Retainer phase 4-6 months	A total of 73.8% (n = 468) of these patients finished treatment successfully, 13.6% (n = 75) experienced treatment failure, and 12.7% (n = 76) were lost to follow-up.	6.7% minor complications	26.2%
de Beer S et al. 2022	Netherlands	Retrospective Case series	2013-2020	537 pts	Personal treatment period till correction. Correction phase, review every 4-6 weeks, once corrected then weaning phase	468 success, 74 not success. Patients who were unsuccessfully treated had a significantly higher PIC (gressure of initial correction) than patients with successful treatment (7.6 +/- 1.8 psi vs. 6.7 +/- 1.7 psi)	Pain during exercise 9.6%, pain during rest 7.4%	
Haje DP et al. 2021	Brazil	Retrospective Case series	1977-2017	556 pts	Localised PE trace on lower costal margin, wear brace 18-23 hrs per day, patient controlled compression force on 66 patients comfortability, specific exercises with brace 5x week. Treatment 24 months atleast	The results were considered good in 58% (58%), average in 36 (31%), and poor in 13 (11%)	15% pain, 5% skin changes	11.0%
Fraser S. et al. 2019	UK	Retrospective Case series	2015-2018	159pts	Clinical assessed - 3 groups of mild deformity, flexible, mod-severe deformity and flexible and stiff chest. 5 day continuous wearing of brace and depending on severity and flexibility, weaning commenced early or in stiff chest, progressive tightening. Length of bracing complete at 32 weeks.	Self reported score of appearance improved 3/10 to 9/10. Reduction in self reported anxiety depression (initial 66% to 29%)	18% Skin irritation	3.1%
Dekonenko C et al. 2019	USA	Retrospective Case series	2011-2018	460 pts	Correction phase (23 hrs/day) and retainer phase after correction pressure of <1psi.	Fifty-seven percent were compliant with brace use, and median time to retainer mode in this subset was significantly shorter than noncompliant patients (3.5 months versus 10 months, P<.001)	8.3% including pain and skin erythema	Non compliance 69%
Poola AS et al 2018	USA	Retrospective Case series	2011-2016	340 pts	>10 hrs/day with median duration 18 months	133/340 success, 39%	Skin complications 10%, Pain 2%	
Walton G et al. 2017	Canada	Retrospective Case series	2012-2015	32pts	active phase 8-12 hours, maintenance <8 hours and 6 months at night	Success rate 93.8%, full correction or improvement	6.2% had erythema, 3.1% breathlessness	6.2%
de Beer SA et al. 2017	Netherlands	Retrospective Case Series	2013-2016	286 pts	Wear brace as much as possible, seen every 4-6 weeks adjust to 2.5PSI. After correction, retainer mode,night time wear and weaning 2-3 months	78 pts completed, if PIC <5PSI 12 month, PIC >5.75PSI 14 month, PIC >7.5PSI 17 month	1% Skin complications	9.4%
Emil Set et al.2016	Canada	Prospective Case series	2011-2015	114 pts	Brace adjusted to 2-3PSI, active phase 23hr day, maintenance minimum 6 months, 8-12 hours	56% success, active phase 566+/- 3.81 months, maintenance 8.8+/- 3.34. Showed asymmetry and smaller first response associated with brace failure	11.4% skin complication	14.9%

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Choice of pre-incisional regional analgesia in patients undergoing thoracotomy with cryoanalgesia: a Patient Comfort after Thoracic Surgery (PCaTS) exploratory study

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Objectives: We sought to evaluate the impact of combined analgesia with cryoneurolysis on thoracotomy patients on pain and recovery outcomes.

Methods: Patients undergoing their first ipsilateral serratus-sparing posterolateral thoracotomy for pulmonary/mediastinal procedures from September 2023 to October 2024 at a single institution were included. All patients had an intercostal nerve-sparing approach with cryoanalgesia using AtriCure cryoSPHERE device; and were grouped according to whether they had pre-incisional epidural (Epi) or not (Oth) for regional analgesia. The Oth group was heterogeneous, with paravertebral, fascial plane, intercostal or no regional block. [UHL Registration: 11677b].

Results: 35 patients were included—40% (n=14) male, age 69±14 years—with 46% (n=16) in the Epi group. Total postoperative opiate use in days 0 to 3 was lower in the Oth group (120.4±86.0 vs 67.5±48.5, p=0.029). There was no difference in the total number of episodes of moderate-severe acute pain from days 0 to 3 postoperatively (p=0.322), worst daily pain scores across days 0, 1, 2 and 3 (p=0.646, p=0.126, p=0.301, p=0.416), total number of physiotherapy contacts (p=0.257) or number of days for which physiotherapy was required (p=0.161), or postoperative hospital stay (p=0.731).

Conclusions: There appears to be no meaningful or consistent clinical difference between epidural and other forms of pre-incisional regional analgesia in patients undergoing thoracotomy with cryoanalgesia.

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Patient-reported return to function and satisfaction with postoperative pain experience after thoracotomy: a Patient Comfort after Thoracic Surgery (PCaTS) exploratory study
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Objectives: We sought to assess patients' satisfaction with their pain experience in the acute to medium term after thoracotomy, and the postoperative time to return to baseline function.

Methods: Patients undergoing their first ipsilateral posterolateral thoracotomy for pulmonary/mediastinal procedures at a single institution between September 2023 and June 2024 were included. Patients were followed up postoperatively by text/telephone questionnaire for at least three months. [UHL Registration: 11677b].

Results: There were 141 responses from 153 eligible patients (92% response rate). The majority of patients were 'very satisfied' with their pain—75% (n=105) in hospital, 65% (n=92) in the first month and 72% (n=88) at three months. At any given time point, less than 1 in 13 patients expressed being 'somewhat' or 'very' dissatisfied with their pain experience. 50% (n=75) of patients required prescription analgesia for less than a month, with 26% (n=36) continuing it beyond three months. 15% (n=19) of patients reported a return to baseline function within a month, however, 49% (n=69) had not achieved this return even at three months.

Conclusions: Most patients report high levels of satisfaction with their pain experience after thoracotomy, and half discontinue prescription medication within less than a month. Nonetheless, reported return to preoperative functioning remains low in the medium term. Potential causes and mitigations for this require further qualitative investigation in larger and diverse cohorts.

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A review of local referral practice of patients with empyema, and its effect on outcome

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Aim: We aimed to review the time taken to referral for patients with empyema treated in our unit, and to determine whether a longer time to referral affects the operative time and length of post-operative stay. We also aimed to compare this time between in-house referrals and referrals from district general hospitals (DGH).

Methods: Our operative database was used to identify patients who had undergone debridement of empyema between 2018 and 2022, and their operative time and post-operative length of stay. Date of diagnosis of empyema was defined as the date of positive CT scan.

Results: 134 patients (38 female) fit the inclusion criteria. The mean time to referral was 6.5 days. This was slightly longer when looking at referral time from each DGH individually and comparing to hospitals in our trust (in days): Princess of Wales Hospital: 7, Grange Hospital: 4.8, Prince Charles Hospital: 9, Royal Gwent Hospital: 8, Nevill Hall Hospital: 8.33, Glangwilli Hospital: 28, compared with University Hospital Wales: 4.87 days and University Hospital Llandough: 3.58 days. There was no correlation between time to referral and operative time and length of post-operative stay.

Conclusion: The average time to referral of patients with empyema was within the time frame suggested by GIRFT (Getting It Right First Time) guidelines, but district general hospitals take slightly longer. The time to referral did not correlate with operative time nor length of stay, suggesting that disease and/or patient specific features are more important in predicting outcomes.

A293

Revised Risk Prediction Model (RAAFTS) for Post Operative Atrial Fibrillation Following Thoracic Surgery

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Objectives: Post operative atrial fibrillation (POAF) is the most common arrhythmia following thoracic surgery. The aim of the study is to refine our additive risk stratification tool (RAAFTS – Risk Assessment for Atrial Fibrillation after Thoracic Surgery) to predict new onset AF after thoracic surgery, which is associated with morbidity and prolong length of stay.

Methods: We performed retrospective analysis of patients (n=2643) undergoing pneumonectomy, lobectomy or segmentectomy for primary lung cancer between January 2012 – December 2019. We categorised patients in low, medium and high-risk groups to calculate an additive score using our revised risk prediction tool (Table 1).

Results: 6.81% (n=180) patients developed new onset POAF and revised RAAFTS model managed to predict 74% of the patients in our cohort. 9.4% of patients were in high-risk, 64.4% in moderate risk and 26.1% in the low-risk category.

Conclusion: In summary, our revised risk prediction model (RAAFTS) is a reliable tool to identify patients developing new onset atrial fibrillation after thoracic surgery. However useful, a larger sample size is required to test the effectiveness of this model to be widely utilised.

Table 1 (abstract A293) Revised (RAAFTS) POAF Risk Prediction Model: 0–4 = Low Risk, 5–8 = Medium Risk, > 9 = High Risk.

Variable	Additive Weight
Age (Continuous)	1 per 5 years >60
Male	1
IHD	1
Peripheral Vascular Disease	1
Hypertension	1
Diabetes	1
COPD	1
BMI <18 or >30	1
Thoracotomy	1
Pneumonectomy	2

A294

Does Suction vs. No Suction on Chest Drains Impact Outcomes After Lung Resection?

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Background: Postoperative chest drains are commonly used after thoracic surgery to prevent complications such as air leak (AL). The choice between suction versus no-suction remains controversial. Negative suction is routinely practiced after lung resection to re-establish intrapleural vacuum and promote lung re-expansion. The aim of our study is to investigate different levels of negative suction and their impact on outcomes. i.e. No suction or free drainage (– 0.8 kpa), low suction (–1.5 kpa) and high suction (–2.5 kpa).

Methods: A single-centre prospective study was conducted. Patients (n=53) undergoing elective VATS pulmonary resection were recruited from January to April 2024. Primary outcomes included length of stay, drainage duration, total air leak and volume drained.

Results: Our study showed no difference in postoperative length of stay, chest drain duration or volume of air leak. However, total volume of fluid drained was significantly higher in high suction (–2.5 kpa) group compared to low or no suction groups (Table 1).

Conclusion: Variability in negative suction applied to drains had minimal impact on postoperative length of stay, chest drain duration or air leak. However, high negative suction promoted better evacuation of fluid, superior to low grade or no suction, which can prevent pleural effusion in early post operative period.

Table 1 (abstract A294) Comparison of Post Operative Outcomes.

	Total Cohort n = 53	No Suction (-0.8 kpa) n = 18	Low Suction (-1.5 kpa) n = 15	High Suction n (-2.5 kpa) n = 20	p value (one way ANOVA)	Post hoc Tukey Pairwise comparison p value in following order -0.8 kpa : -1.5 kpa -0.8 kpa : -2.5 kpa -1.5 kpa : -2.5 kpa
Length of stay (Days) ± SD	4.6 ± 3.0	5.4 ± 3.3	4.2 ± 2.2	4.1 ± 2.8	0.303	p = 0.39 p = 0.35 p = 0.99
Chest drain in-situ (Days) ± SD	2.5 ± 1.2	2.6 ± 1.2	2.7 ± 1.1	2.2 ± 1.1	0.291	p = 0.95 p = 0.29 p = 0.46
Total Air Leak (mls) ± SD	477.7 ± 542.3	210.8 ± 843.5	851.6 ± 1206	921.9 ± 2483	0.346	p = 0.45 p = 0.38 p = 0.99
Total Volume drained (mls) ± SD	636 ± 610	788 ± 432	644 ± 294	1411 ± 1355	< 0.008*	p = 0.83 p = <0.04* p = <0.01*

*Significant p value ≤ 0.05.

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Prevention of prolonged air leak in thoracic surgery; a novel application of a haemostatic agent

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Introduction: Lung resection surgery is a lifesaving procedure; however, there are associated risks. Prolonged air leak due to an alveolar-pleural fistula is the most common complication after lung surgery, which has an associated increased risk of morbidity and mortality, a longer chest drain duration, and ultimately prolonged hospitalization¹.

Method: Data was collected retrospectively from January 2024 to August 2024 from a single institution. PuraBond (5mls) was applied at the end of lung resection procedures at the staple line prior to re-inflation of the lung. Patient outcomes were collected up to the discharge of the patient.

Results: Forty patients (N=42) were included. Indications for surgery included primary and metastatic cancer and bullous lung disease. PFT was available for all patients.

4.8% (n=1) developed prolonged air leak in Purabond group and 33.3% (n=7) in the comparative group. A P.000 shows a statistical difference between both groups using independent T test analysis.

Mean duration of chest drain requirement was 2.1 days in cases which used Purabond in comparison to 8.1 in comparative group. The mean duration of hospital stay was 3.7 days and 11.3.

Conclusion: PuraBond, used in lung resection surgery, is safe and feasible in reducing air leak. This retrospective review has shown a statistical difference in the presence of prolonged air leak when Purabond was used. The use of PuraBond has the potential to reduce the risk of morbidity and mortality associated with prolonged air leak, reducing chest drain requirements and hospital stays. This study demonstrates the need for a RTC.

Reference:

¹Aprile V, Bacchin D, Calabrò F, Korasidis S, Mastromarino MG, Ambrogi MC, et al. Intraoperative prevention and conservative management of postoperative prolonged air leak after lung resection: a systematic review. Journal of Thoracic Disease [Internet]. 2023 Feb 28 [cited 2024 Feb 8];15(2). Available from: <https://jtd.amegroups.org/article/view/72683>

A296

The Hidden Thyroid: A Case of Recurrent Retrosternal Goiter with Malignant-Looking Imaging*

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Introduction: Anterior mediastinal masses present a broad differential diagnosis, including both benign and malignant conditions. In patients with a history of thyroid surgery, recurrent retrosternal goiter should be considered. This case describes a 50-year-old woman with a background of partial thyroidectomy, presenting with a symptomatic anterior mediastinal mass.

Case Description: A 50-year-old woman with partial thyroidectomy 10 years ago was referred for 6 months of shortness of breath (NYHA class 3) and productive cough. Imaging revealed a large anterior mediastinal mass with necrosis, calcification, heterogeneous enhancement, and right pleural effusion. The differential diagnosis included malignant thymic tumours and lymphoma.

Biopsy showed thyroid follicles, and a second opinion confirmed thyroid acini, suggesting recurrent retrosternal goiter. A thyroid scan revealed a left thyroid lobe with heterogeneous uptake, consistent with recurrent multinodular goiter, with no evidence of retrosternal extension.

On examination, the patient had elevated JVP, palpable cervical lymph nodes, and reduced air entry on the right side. Thyroid function tests showed suppressed TSH with normal T3 and T4 levels.

Operative Findings: Surgical resection was performed due to mass effect. Intraoperatively, a large bilobar goiter (7×15 cm left lobe, 13×17 cm right lobe) was found, compressing the pericardium and left innominate vein, the mass was resected and sent for histopathology. Histopathology confirmed nodular colloid goiter.

Conclusion: Recurrent retrosternal goiter is rare but an important cause of mediastinal masses in patients with prior thyroid surgery. Early imaging, biopsy, and surgical resection are key for diagnosis and treatment, particularly when mediastinal compression occurs.

*The patient has confirmed explicit consent to be in the Journal.

A297

Prognostic Value of CT-Based Classification in Spontaneous Pneumomediastinum: A 20-Year Retrospective Analysis

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Objectives: Spontaneous pneumomediastinum (SPM) is a rare, generally benign condition, often managed conservatively. However, in rare cases, SPM can progress to life-threatening complications requiring surgical intervention. Patients with SPM frequently undergo extensive investigations, sometimes unnecessarily, leading to increased radiation exposure and delays in management. This study aims to assess the prognostic value of a new CT-based classification for the extent of surgical emphysema.

Methods: We conducted a retrospective analysis of SPM cases diagnosed over 20 years. Patient demographics, clinical presentations, investigation methods, management approaches, and outcomes were reviewed. SPM extent on CT imaging was classified as small, intermediate, or extensive based on emphysema distribution. Association analyses were performed to examine its relationship with clinical outcomes, including morbidity, mortality and length of hospital stay.

Results: Among 280 patients with pneumomediastinum, 89 cases were confirmed as SPM and included in the study. Initial diagnoses were mostly made using chest radiographs, followed by CT imaging with oral and/or IV contrast as needed. Chest radiographs reliably identified pneumomediastinum, while CT with oral contrast was preferred by radiologists for evaluating potential oesophageal tears. Preliminary results showed extensive surgical emphysema in 44 patients, intermediate in 31, and small in 14. Notably, the extent of pneumomediastinum did not predict clinical outcomes.

Conclusions: Our findings suggest that while chest radiographs are effective in identifying SPM, CT with oral contrast is useful for assessing oesophageal tears. The extent of pneumomediastinum on imaging does not correlate with clinical outcomes, indicating that imaging severity alone may not predict prognosis.

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The influence of COVID-19 on chest wall reconstructions for blunt chest trauma

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Objectives: Rib fractures affect over 20% of patients suffering from blunt thoracic trauma. Safety and logistical challenges caused by COVID-19 greatly impacted the number of chest wall reconstructions undertaken. We review outcomes from a single Major Trauma Centre in the UK before and after COVID 19 to study recovery to pre-COVID practice.

Methods: All consecutive patients from April 2018 to 2023 were included in this single centre study. 478 patients with blunt chest trauma having AIS ≥ 3 were identified. The patients undergoing chest wall reconstructions during the same period were identified from the thoracic surgical database. The period was inclusive of pre-(2), COVID (2) and post-COVID (1) years.

Results: 12.13% with an AIS score ≥ 3 overall underwent chest wall reconstruction 17.55% in pre CoVID-1 yrs(2018–2020), 11.76% in CoVID years (2020–2022) and 9.57% in post CoVID. The average LOS for rib fixation patients with an AIS score ≥ 3 was 10.75 and the mortality was 5.17%. The patient numbers in the different groups are mentioned in Table 1.

Conclusions: There was shortage of staff and theatre space and caution to subject patients to GA as COVID in peri-operative period had poor outcomes. Age typically does not influence surgery but can be associated with more comorbidities. The number of rib fixations fell in the initial post-COVID period for AIS ≥ 3 inspite of acuity, presumably due to fear of peri-operative COVID-19 infection. Further studies are required to investigate QALY in this cohort of patients, return of independence and regular activity.

Table 1 (abstract A298) No of patients.

	No of patients		
	AIS <3 with rib fixation No of patients	AIS ≥ 3 w/o rib fixation No of patients	AIS ≥ 3 with rib fixation No of patients
Pre-CoVID-19 /yr	35.5	16	17.5
CoVID-19/yr	35	11	11.76
Post-CoVID-19 /yr	2	12	11

A299

Primary Pericardial Synovial Sarcoma requiring Emergency Salvage Right Atrial Debulking: a case report*

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Objectives: The objective of this study was to document a rare case of primary pericardial synovial sarcoma presenting as acute respiratory failure. The study aims to address the clinical presentation, diagnostic approach, and management strategies for this aggressive tumor, especially in critical cases requiring urgent intervention.

Methods: This case involved a 52-year-old man admitted for acute breathlessness and type 1 respiratory failure. Initial imaging via CT pulmonary angiogram (CTPA) revealed a large, heterogeneous pericardial mass with right atrial involvement and pulmonary metastasis, suggesting primary cardiac sarcoma. Given the severity, an emergency salvage debulking surgery was performed to relieve the right atrium obstruction, followed by histological and immunohistochemical analyses, which confirmed synovial sarcoma. The patient underwent intensive postoperative care and follow-up chemotherapy.

Results: The debulking surgery successfully removed the obstructive portion of the right atrial tumor, improving hemodynamic stability. Pathological analysis identified a Grade 3 synovial sarcoma with specific immunohistochemical markers (CD56, CD99). The patient showed a positive response to adjuvant chemotherapy, with follow-up scans indicating reduced tumor size and no mortality observed at 15 months post-surgery.

Conclusions: This case underscores the feasibility of emergency surgical debulking in managing acute presentations of pericardial synovial sarcoma, even in critical respiratory failure. While the tumor's aggressive nature typically yields a poor prognosis, this patient's outcome highlights the potential benefits of prompt surgical intervention combined with chemotherapy. Rapid diagnosis and treatment can be pivotal in improving survival rates, with long-term oncology follow-up essential to managing recurrence and overall patient prognosis.

*The patient has confirmed explicit consent to be in the Journal.

Final category: Thoracic – Oncology

A300

Outcomes Of Rats Lung Resections For Malignancy In High-Risk Patients In Comparison With Vats And Thoracotomy

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Objectives: Robotic-assisted thoracoscopic surgery (RATS) is a relatively new approach in thoracic surgery. We reviewed high-risk patients at our local high-risk multidisciplinary team (MDT) comparing outcomes of RATS versus video-assisted thoracoscopic surgery (VATS) and thoracotomy (open).

Methods: Retrospective analysis of patients who underwent lung resection between May 2019 – August 2023 looking at pre-, intra-, and post-operative variables. Pneumonectomy patients were excluded as none performed via the RATS/VATS approach.

Results: 133 patients were eligible, divided into RATS (48), VATS (60), open thoracotomy (25). Mean age 70.9 $\pm$ 9.6 years and 61(45.9%)

were females. Similar pre-operative characteristics among all 3 groups, including performance status (PS). FEV1 and TLCO were similar between groups, (0.536 and 0.950). However, factors like MVO2 was lower in the RATS group, and higher in the VATS and OT groups, (15.6±2.7 ml/Kg/min, 16.1±3.4 ml/Kg/min, 19.3±5.1 ml/Kg/min, $p=0.040$). Overall/respiratory complications were less in the RATSvsVATSvsOT group, (38.1%, 53.6%, 70.8%, $p=0.031$ and 11.9% vs 35.7% vs 41.7%, $p=0.024$). Overall deaths were less in the RATS group during, but survival was similar. (log-rank 2.052, $p=0.358$).

Conclusions: Our study has shown that the RATS approach is a safe, minimally invasive technique which can improve patient outcomes without the conversion to thoracotomy, as it allows for comparable outcomes and can help even high-risk patients, which otherwise may not have been offered a surgical option. In some aspects, RATS surgery had better outcomes, but larger scale studies would be required for further assessment.

A301

Psoas muscle index as a novel measure of frailty and predictor of post-operative outcome in octogenarians with non-small cell lung cancer

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Background: High body mass index (BMI) is a prevalent risk factor in a growing octogenarian population undergoing curative surgery for non-small cell lung cancer (NSCLC). Whilst BMI is paradoxically protective, its correlation with clinical frailty or objective fitness is unclear, due to the discrepancy of the ratio between muscle and adipose tissue. We aim to assess the relationship between sarcopenia and post operative survival and complications.

Methods: Demographic and clinical outcome data from octogenarians undergoing resections for primary NSCLC (January 2016-December 2021) was analysed retrospectively. Routine pre-operative Positron Emission Tomography (PET-CT) scan was used to derive Psoas muscle index (PMI) (bilateral measurement of cross-sectional psoas muscle area at the level of L3, divided by height-squared) as a measure of sarcopenia.

Results: A total of 189 patients were recruited with a mean age 82 years. Overall survival (OS) was longer with higher BMI (HR 0.5 95CI 0.3–0.9)($p=0.04$), higher PMI, and in females (3.0 vs 2.7 years in males). Mean disease-free survival (DFS) was worse with performance-status ≥ 1 (HR 1.4, 95%CI 0.9–2.2)($p=0.04$) and extremes of PMI and BMI. Mean hospital stay was 4 days longer in males, and doubled with higher BMI (12 days (range 8–12 days) ($p=0.76$). Complication rates were higher in females with lower PMIs($p=0.04$). BMI and PMI correlated positively in both males ($r=0.36$, $p=0.0004$), and females ($r=0.32$, $p=0.0016$).

Conclusion: Radiologically derived PMI is feasible and replicable, which alongside BMI, may identify high-risk octogenarians in whom prehabilitation may achieve superior outcomes post-surgery for NSCLC.

A302

Trends in anatomical oncologic lung resections in the Da Vinci era

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Objectives: The Da Vinci robotic system provides enhanced visualisation and precision of instrumentation through magnification. We evaluate the trend in anatomical lung resections in our institution since the introduction of robotic surgery.

Methods: We retrospectively reviewed consecutive cases of anatomical oncologic lung resections in a single tertiary centre between May 2018 and May 2024. Da Vinci robotic system was introduced in July 2021. Surgical access utilising video-assisted thoracoscopic surgery (VATS), robotic or open were evaluated and trend in proportions of different anatomical lung resections performed each month was observed.

Results: During the study period, 1938 anatomical oncologic lung resections were performed: 1555 lobectomies (80.2%), 342 segmentectomies (17.6%), and 41 pneumonectomies (2.1%). Among lobectomies, VATS was the initial approach in 1098 cases (70.6%; 73 converted to open), robotic in 306 (19.7%; 8 converted), and open in 151 (9.7%). For segmentectomies, VATS was used in 190 cases (55.6%; 8 converted), robotic in 142 (41.5%; no conversions), and open in 10 (2.9%). The VATS lobectomy-to-segmentectomy ratio was 6:1, compared to 2:1 for robotic cases. Left upper tri-segmentectomies were performed in 26.3% of VATS and 15.5% of robotic segmentectomies; robotic procedures more often involved isolated segments. An increase in robotic segmentectomies from September 2023 coincided with a monthly decline in lobectomies.

Conclusion: Complex segmentectomies are becoming technically feasible due to the enhancements provided by the Da Vinci robotic system. With the expected shift toward early detection of lung cancer through screening, robotic will become a valuable tool in lung preservation surgery.

A303

Timing Matters: The Critical Role of Early Surgery in Reducing Non-Small Cell Lung Cancer Progression

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Objectives: This study assesses the effect of surgical timing on disease progression in non-small cell lung cancer (NSCLC), with a focus on stages II and III, to determine optimal surgical windows and minimise progression risks.

Methods: A retrospective cohort study of 561 patients with primary NSCLC who underwent lung resection between April 2020 and April 2024 was conducted. Patients were grouped by stage (I-IV) and progression status. Disease progression was measured through changes in staging and tumour size. Statistical analysis included Wilcoxon tests and logistic regression. A critical cutoff of 46.5 days for increased progression risk was identified using Youden's Index.

Results: Disease progression was observed in 40.7% of stage I, 45.8% of stage II, 38.6% of stage III, and 70% of stage IV patients. Logistic regression analysis revealed that for stage II patients, the odds of progression increased by 3% for each day that surgery was delayed ($p=0.04$). Additionally, for the entire NSCLC cohort, a 50-day delay corresponded to a 3–6% rise in progression risk, with a predicted 45% progression rate by 100 days. A critical cutoff of 46.5 days was identified for increased progression risk in the entire population of NSCLC patients.

Conclusions: Early surgical intervention, ideally within 46 days of diagnosis, is essential to minimize progression risk, particularly for stages II and III. While the odds of progression increase daily, delays beyond 46.5 days significantly heighten the risk, emphasising the importance of prompt surgical management to prevent disease advancement in NSCLC.

A304**Scan to Skin incision time; evaluating delay in lung cancer surgery and contributing factors**Ahmed Saad, Somshekar Anti

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Introduction: Lung cancer is the leading cause of cancer death and the third most common cancer in the UK (13% of all new cases). Prognosis is tied to stage, with 92% five-year survival at stage IA1, dropping to 36% by stage IIIA. Delays before treatment may lead to tumour progression. Cancer Research UK recommends no more than 62 days between referral and treatment initiation.

Aim: This study assesses the time required to initiate lung cancer surgery from the first CT scan. It also compares treatment times between higher-stage (T3, T4, central) and lower-stage (T1, T2) tumours, and identifies process delays.

Methods: Patients undergoing lung resection for primary lung cancer in October 2023 at Wythenshawe Hospital were included, excluding those under surveillance and those with carcinoid tumours. Time intervals from the initial scan to surgery were recorded.

Results: The mean time from scan to surgery was 110 days. Image-guided biopsy was the main delay. Higher-grade tumours were treated faster than lower grade ($P=0.0067$). T stage was upgraded in 16% of patients, though this was not statistically significant ($P=0.122$). N stage was upgraded in 5.2% of cases.

Conclusion: Treatment times exceeded the recommended 62-day window. Longer waiting times is associated with tumour progression.

A305**Are operation notes written to a high standard in Thoracic Surgery?****A Single Centre Audit**Jasmine Bawa, Feba Peter, Jeessoo Choi

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Objectives: The Royal College of Surgeons (RCS) provides guidance on what surgeons should include in operation notes. Our aim was to benchmark whether operation notes for Thoracic Surgery in our centre follow RCS guidance and included all recommended datapoints at a standard of 100%.

Methods: We obtained forty-seven Thoracic Surgery operation notes from January 2024 through the EPIC software and assessed them against RCS guidance.

Results: 100% of operation notes included date, time, name of operating surgeon and anaesthetist, operative procedure, operative findings, details of tissue removed, added or altered and the surgeon's signature. No operation note stated whether the procedure was elective or emergency, nor did any record anticipated blood loss. For other datapoints, compliance was variable. 81% recorded the incision performed and 72% recorded closure details. 89% included post-operative care instructions. Only 43% recorded a diagnosis and 38% recorded details of prostheses used (if applicable). Antibiotic and DVT prophylaxis were included in 15% and 9% respectively.

Conclusion: The EPIC software used in our Trust auto-generates operation notes from information already provided in patient records, which ensured many recommended datapoints were automatically included. Presence of the remaining datapoints varied. To improve compliance, we recommend surgeons include information such as diagnosis, incision and closure technique. All surgeons should document plans for DVT and antibiotic prophylaxis, including if not required. This information is essential to ensure safe handover of care from operating teams to recovery and ward teams, as well as reduce the incidence of post-operative complications.

A306**Title: Is next day discharge feasible in Robotic – Assisted Thoracic Surgery Anatomical lung resections?**

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Objectives: Robotic – Assisted Thoracic Surgery (RATS) is perceived that it improves patient clinical outcomes.

Aim of this study was to investigate if discharging patients, who underwent RATS anatomical lung resection, the next day from their surgery is safe.

Methods: Patients who underwent RATS anatomical lung resections and who had uncomplicated intra-hospital postoperative recovery, were retrospectively investigated. The patients were divided into a next-day-discharge group A and a group B, with patients who stayed longer (personal preference, X-Ray/paperwork delayed etc.). All patients received similar postoperative care. Re-admission rate and other safety variables were compared.

Results: Overall, 145 patients were included in the study from which 42 (29%) were discharged 24 h from surgery. The mean age was 68.3 ± 9.08 years while 86 (59.3%) were females. The 2 groups were similar in terms of age, gender and lung function tests. Readmission was recorded in 2 cases in group A and 5 in group B ($p=0.668$), while no 30-day mortality was recorded for both groups. Re-intervention was needed only in 1 patient from group B. More sublobar anatomical resections were performed in group A (59.5% vs 41.7%, $p=0.041$) and regression analysis showed that sublobar anatomical resection performance is a predicting factor of next day discharge.

Conclusion: Next day discharge in patients who undergo RATS anatomical lung resection is feasible and safe and does not lead to more re-admissions or other related issues to early discharge. Sublobar anatomical resections can lead to earlier discharge.

A307**Sublobar Resection or Lobectomy for Stage Ia Non-Small Cell Lung Cancer: A Systematic Review and Meta-analysis**

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Background: For patients with stage Ia non-small cell lung cancer (NSCLC), an increasing number of studies have evaluated how the outcomes of sublobar resections (segmentectomy and wedge resections) compare with lobectomy. This systematic review and meta-analysis combines estimates from both randomised trials and observational studies to determine whether lobectomy or sublobar resection results in improved outcomes for patients with stage Ia NSCLC.

Methods: A systematic review and meta-analysis were performed of studies that compared lobectomy against sublobar resection for clinically diagnosed NSCLC stage Ia (< 2 cm). Meta-analysis was conducted using a random effects model. Risk of bias was assessed using the Cochrane Risk of Bias tools.

Results: The review included 19 studies, including four randomised trials. Overall survival at five years following lobectomy and sub-lobar resection for stage Ia NSCLC was equivocal (HR=1.00; 95% CI: 0.84 to 1.19; $I^2=26\%$). Disease-free survival at five years was similar (HR=1.05; 95% CI 0.90 to 1.23; $I^2=0\%$). However, sublobar resection was associated with higher rates of local disease recurrence (OR=1.86; 95% CI: 1.07 to 3.25; $I^2=73\%$). No difference was found for ten-year survival

(OR=0.99, 95% CI: 0.27 to 3.59; $I^2=86\%$) or post-operative reduction in Forced Expiratory Volume in one second (FEV₁) (Mean difference=-4.70, 95% CI=-11.15 to 1.76, $I^2=99\%$).

Conclusion: A meta-analysis of studies found that long-term survival following lobectomy and sub-lobar resection for stage Ia NSCLC was equivocal. Disease-free survival at five years was also similar between the two surgical approaches. However, sublobar resection is associated with higher rates of local disease recurrence.

A308

Comparison of length of stay from 2020 and 2023 for prehabilitation patients following the establishment of an embedded Perioperative medicine for the Older Person undergoing Surgery (POPS) for thoracic surgery patients

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The surgical population is ageing and with this increased frailty and multi-morbidity (1). Patients have medical co-morbidities that coincide and can lead to a complicated and prolonged post-operative stay. Hamel et al. found that the number of patients aged 80 and above who undergo thoracic surgery have almost double the complication rate post operatively (2). POPS preoperative review in the vascular population reduced length of stay (LOS) and reduced cost (3,4). In 2022 an embedded geriatric liaison service commenced reviewing thoracic patients pre and postoperatively using a co-management structure. A geriatrician was embedded in the prehabilitation clinic previously run by physiotherapists and clinical nurse specialists. A retrospective study was completed comparing patients in 2020 and 2023.

70 patients were reviewed in 2020 by the prehabilitation team with an average length of stay (LOS) of 10.4 days (SD 5.92). The average clinical frailty score (CFS) 2.27, 71.4% (50/70) CFS 1-4, with 5.7% (4/70) CFS 5-9 and 22.9% (16/70) < 65.

In 2023 174 patients were reviewed by both prehabilitation and a geriatrician with an average LOS of 8.53 days (SD 9.55). Average CFS 2.85, 73.6% (128/174) CFS 1-4, 11.5% 20/174) CFS 5-9, 15% (26/174) CFS < 65.

LOS was reduced in 2023 following POPS input despite the increase in frailty (CFS 5-9 11.5% vs 5.7% in 2020) of the patients reviewed. However, the overall CFS of thoracic patients did not change significantly. POPS is effective in reducing LOS across different surgical specialities. Further studies are needed to examine the post-operative complication rate.

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A309

Carinal Reconstruction Using Cross Table Ventilation – A Novel Robotic Surgical Technique*

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Background: Carinal reconstruction remains technically challenging due to the complexity of airway resection and difficult intra-operative airway management. Cross table ventilation is a commonly used technique for complex carinal procedures. Its application to robotic-assisted surgery has never been documented in the literature.

Patient Case: A 39-year-old male patient was diagnosed with inflammatory myofibroblastic tumour invading the left main bronchus and proximal bronchus intermedius. Following MDT discussion, the patient was put forward for robotic-assisted resection of the tumour with carinal reconstruction, using cross table ventilation (**Figure 1**).

Discussion: Intraoperative airway management of patients undergoing surgical resection of tumours involving the carina is highly challenging. Common modalities used for intra-operative ventilation include: cross table ventilation, veno-venous extra corporeal membrane oxygenation (ECMO), and cardiopulmonary bypass. Cardiopulmonary bypass is usually avoided due to the requirement of full heparinisation which increases the demands on a technically challenging procedure, in addition to its contraindication in oncologic resections. ECMO is not readily available in most thoracic units. This leaves cross table ventilation, which is commonly used for open thoracotomy and sternotomy cases, but has never been reported for minimally invasive procedures.

Conclusion: Carinal reconstruction using cross table ventilation is feasible and effective with robotic-assisted surgery. This is the first case, to the best of our knowledge, to combine robotic surgery and carinal reconstruction without extra corporeal membrane oxygenation (ECMO). The replacement of ECMO with cross table ventilation opens opportunities for thoracic centres with no additional corporeal circuits to push the boundaries for carinal reconstruction procedures

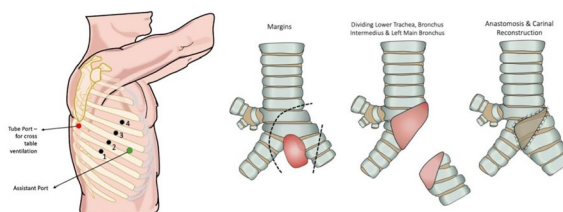


Figure 1: Principles of Carinal Reconstruction and Port Set-up

Figure 1 (abstract A309) Principles of Carinal Reconstruction and Port Set-up

*The patient has confirmed explicit consent to be in the Journal

A310

Analysis of readmission causes and predictive factors following thoracic surgery: Insight from a cohort of 544 patients

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Background: The National Lung Cancer Audit identified a readmission rate of 41% following lung cancer surgery, with rates ranging from 22.7% to 53.8% across different trusts. However, this readmission rate encompasses both elective and acute admissions for various conditions. Consequently, the precise rate and causes of readmission remain unclear.

Objective: To determine the precise rate of readmission after thoracic surgery, as well as the predictive factors and impact associated with readmission.

Patients and Methods: This study analyzed patients who underwent thoracic surgery from January 1 to June 30 (total of 544 patients). Data were collected for each patient individually, identifying those who were readmitted. Patients were divided into two groups: the readmission group (42 patients) and the non-readmission group (502 patients). Statistical comparisons were performed between the two groups.

Results: The overall readmission rate was 7.7%. Statistically significant predictive factors for readmission included male sex ($P=0.039$), right-sided surgery ($P=0.001$), conversion from VATS to thoracotomy ($P=0.034$), discharge on an ambulatory bag ($P<0.001$), and prolonged hospital stay ($P=0.002$). The most common causes of readmission were pleural effusion (31%), pneumothorax (22%), and pneumonia (12%).

Conclusion: Efforts to reduce readmissions should focus on minimizing operative and postoperative complications, specifically targeting the reduction of conversions from VATS to thoracotomy, prolonged air leaks necessitating discharge on an ambulatory bag, and extended post operative hospital stays.

A311

Unmasking Thymic Mysteries: A Decade of Insights into Non-Thymoma Pathologies Following Thymectomy

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Objective: This study investigates non-thymoma pathology outcomes in patients undergoing thymectomy over a 10-year period, with a secondary aim to review radiological findings of presumed thymomas subsequently revealing alternative pathology postoperatively.

Methodology: A retrospective analysis was conducted on prospectively collected data from a single surgeon's thymectomy cases at a single centre over a decade. A total of 107 patients were initially referred for thymectomy due to a suspected thymic mass. Three patients, managed with non-operative imaging surveillance, were excluded from the study.

Results: Of the 104 cases analysed, 77 were histologically confirmed to have thymoma. In 18 patients, initial imaging suggested thymoma, but postoperative histology indicated alternate pathologies. An additional 7 masses were identified through preoperative multidisciplinary team input and confirmed on postoperative histology to be non-thymoma. Non-thymoma pathologies included: carcinoid tumour (1), Hodgkin lymphoma (1), bronchogenic cyst (1), ganglioneuroblastoma (1), seminoma (1), teratomas (5), thymic cysts (9), thymic hyperplasia (5), foregut duplication cyst (1), thymolipoma (1), and arteriovenous malformation (1). Two patients passed away within five years, although their deaths were unrelated to postoperative complications.

Conclusion: Our findings emphasise the need for a thorough preoperative evaluation, with radiological review and MDT input, to accurately assess thymic masses. Enhanced understanding of radiological features may reduce the likelihood of benign lesion resections, improving diagnostic precision and patient outcomes. This study highlights the critical role of comprehensive diagnostic protocols in managing thymic masses beyond thymoma.

A312

Stereotactic Ablative Radiotherapy (SABR) Versus Surgery in Octogenarian Patients With Early-Stage Lung Cancer—Propensity Matched Study

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Objective: With the adoption of lung cancer screening and evolving in thoracic surgery worldwide we will start to have more patients presenting with early-stage lung cancer. Many of these patients are

elderly (≥ 80 years old). We aim to find the best treatment option for this group of patients.

Methods: Between 2013 and 2023, 160 patients aged ≥ 80 years old with early-stage lung cancer (T1-2, N0) underwent surgical resection (78 patients) or stereotactic ablative radiotherapy (SABR) (82 patients). A propensity score-matching system was implemented to match groups by age, performance status (PS), forced expiratory volume in the first second (FEV1), and Charlson Comorbidity Index (CCI).

Results: After the propensity score-matched analysis was performed, 74 matched pairs were yielded. The overall survival (OS) was significantly better in patients who underwent surgery (log-rank $p=0.0011$). The 1-year, 3-year, and 5-year survival were not significantly different between groups (log-rank $p=0.679$, 0.528 and 0.279 respectively). The SABR group had a lower rate of recurrence when compared to the surgery group, but this difference was not significant (6.4% vs. 15.4%; $p=0.079$). In the unmatched cohort, there was no 30-day mortality in either group, and only one mortality within 90-days in the surgical group.

Conclusion: Surgery may show a potential long-term survival benefit over SABR in elderly patients with early-stage lung cancer, however longer follow-up is needed to confirm these findings. SABR remains as an important consideration in those that may not tolerate surgery, especially in the short-term when compared to surgery.

A313

The impact of nutritional markers on outcomes for patients with stage I lung cancer undergoing lung resection

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Objectives: Poor nutritional status is recognised as a marker of occult advanced disease. We aimed to examine the impact of serum albumin levels and body mass index (BMI) on outcomes for patients with stage I non-small cell lung cancer (NSCLC) undergoing lung resection.

Methods: All consecutive patients with post-operative pathological confirmation of stage I NSCLC undergoing lung resection between 2012 and 2018 in two thoracic surgery centres were included. BMI groups were as per World Health Organisation definitions.

Results: The study cohort comprised 1939 patients. The average age was 68.6 years (± 9.0) and 43.4% ($n=842$) were male. 90-day mortality was 2.2% ($n=42$). Mean BMI was 27.0 kg/m² (± 5.3). Overall, 2.6% ($n=50$) were underweight, 32.1% ($n=622$) were normal weight, 39.6% ($n=767$) were overweight and 25.8% ($n=500$) were obese. 90-day mortality was 2.0% ($n=1$), 2.1% ($n=13$), 2.9% ($n=22$) and 1.2% ($n=6$) for the four groups, respectively. Mean serum albumin was 41.2 g/dL (± 3.9). Median follow-up time was 79 months (44-102) and estimated median overall survival was 101 months (95-107). Cox regression analysis showed that advanced age, male sex, lower pre-operative serum albumin levels, lower % predicted diffusion capacity of the lung for carbon monoxide and being underweight were all independently associated with reduced overall survival, whilst obesity was independently associated with longer overall survival.

Conclusions: For patients with stage I lung cancer, nutritional markers did not affect short-term outcomes. However, lower albumin levels and being underweight were independently associated with reduced long-term survival, whilst obesity emerged as a protective factor.

A314**Examining the impact of reclassification of T1N1 non-small cell lung cancer as part of the TNM9 lung cancer staging update**

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Objective: The TNM9 updates to lung cancer staging include the downgrading of T1N1 lung cancer from stage IIB to IIA. The aim of this study was to examine if existing local data supports this reclassification.

Methods: All consecutive patients with post-operative pathological confirmation of stage II (as per TNM8) non-small cell lung cancer undergoing lung resection with curative intent between 2012 and 2019 in two thoracic surgery centres were included. Kaplan-Meier curves and log rank analysis were utilised to examine survival differences between lung cancer stage subgroups.

Results: The study cohort comprised 1290 patients. As per TNM8, patients were staged as IIA (T2bN0, 18.1%, n=234) and IIB (81.9%, n=1056). The IIB groups included T3N0 (39.5%, n=509), T1N1 (17.0%, n=219) and T2N1 (25.4%, n=328). Median follow-up time was 60 months (25-91) and estimated median survival was 71 months (68-74). T1N1 patients had significantly longer overall survival compared to both T2N1 patients ($p < 0.001$) and T3N0 patients ($p = 0.019$). Overall survival was similar between T1N1 patients and T2bN0 patients ($p = 0.279$). Overall survival was also similar between T2N1 patients and T3N0 patients ($p = 0.173$). Finally, there was significantly longer overall survival for IIA patients (as per TNM9: T2bN0 & T1N1) compared to IIB patients (as per TNM9: T3N0 & T2N1), ($p = 0.002$).

Conclusions: Our findings suggest that reclassification of T1N1 lung cancer from stage IIB to IIA is appropriate. Similar survival was seen for the two IIA subgroups and also for the two IIB subgroups whilst a survival difference between stages IIA and IIB was also seen.

A315**Blood Transfusion and Survival Following Lung Cancer Resection Surgery**

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Objective: Several studies have been published regarding the effect of allogenic blood transfusion in patients overall survival and disease recurrence following cancer surgery. A number of these studies were targeting patients operated for lung cancer. We aim to identify the effect of blood transfusion in patients operated for lung cancer resection surgery.

Methods: A total of 1356 patients diagnosed with NSCLC who had lung cancer resection surgery, selected randomly from 2011 to 2024, were divided into 2 groups. Group A (61 patients) received blood transfusion during hospital stay and Group B (1295 patients) did not. Stages I, II and III were included in our study. We compared both the 1-year and 5-year survival between both groups.

Results: Both the one year and 5-year survival between both groups showed a significant difference with $p < 0.001$. The 5-year survival rates for stages I, II and III between both groups were 61.9% versus 67.9%, 23% versus 47% and 28.7% versus 33.9% respectively. However, when we excluded all patients who died in the first year, the 5-year survival rate showed no significant difference ($P = 0.210$)

Conclusion: So far blood transfusion does not seem to have an impact on patients long term survival, rather the difference was related to mortality in the first year.

A316**Overall and Surgical Outcomes of a Regional Targeted Lung Health Check (TLHC) Screening Programme**

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Journal of Cardiothoracic Surgery 2026, **21(Suppl 1)**: A316

Background: Lung cancer is the leading cause of cancer-related death in the world. It progresses without symptoms and is typically detected in its advanced stages. Survival rates often depend on staging. Therefore, early detection can lead to more curative surgeries and a better prognosis. Lung cancer screening has been successful, with a proven 20% decrease in mortality.

Aims: This study aims to evaluate the effectiveness of the targeted lung health check (TLHC) service in a major English city. Data from 2020-2024 were used to assess diagnosis rates and outcomes of lung cancer patients identified through the screening programme, in particular those who had undergone surgical resections.

Methods: Using the TLHC's database, patients eligible for the study were identified. The timelines of their screening, treatments, surgical interventions, and outcomes were collected using the hospital's database. Microsoft Excel was used to analyse the data.

Results: 240 lung cancer patients (2.94%) were detected from a screened population of 8154 over that period. 121 of these patients had surgery (50.42%), 99 had undergone other treatment (41.25%), and 54 of these patients received palliative care (22.50%). Please see the figure below for the details per year.

Conclusion: For histologically proven cancer, the average surgical resection rate for England is 24.6% (range 14.2%-34.4%). A significant proportion of patients who were referred via the TLHC program were able to access curative surgery at an earlier stage. In this population, the TLHC programme has proven beneficial in improving the number of asymptomatic patients undergoing surgery.

A317**Intraoperative lung ultrasound (ILU) enhances the detection rate and prevents thoracotomy conversion during surgery for pulmonary nodules – A first-ever systematic review and meta-analysis**

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Objectives: To evaluate the safety and efficacy of real-time intraoperative ultrasonography in the management of pulmonary nodules and its implications on surgical outcomes.

Methods: We conducted a PRISMA-compliant systematic search across databases for studies on the intraoperative application of ultrasound in adult patients with lung nodules. Primary outcomes included nodule detection rate, prevention of conversion to thoracotomy and lung deflation rates. Secondary outcomes were nodule detection time, total operative time, complication rates and margin accuracy. Comprehensive Meta-Analysis was used for data analysis with odds ratio (OR) as the effect measure.

Results: 15 studies with 554 patients met our eligibility criteria. The nodule detection rate was 93.2% (95% CI 0.897–0.956, I² = 33.368%, $p = 0.001$), thoracotomy conversion was prevented in 29.1% patients (CI 0.178- 0.439, I² = 84.818%, $p = 0.007$) and satisfactory lung deflation was achieved in 95.5% cases (CI 0.908- 0.979, I² = 0.001%, $p = 0.001$).

The mean nodule detection time was 8.7 min (range 4.0-12.3) and the total operative time was 103.4 min (range 73.4-153). No significant prolongation of surgery or ILU-associated complications were reported and the margin accuracy was 100% (n=440) across studies.

Conclusion: ILU is a safe and effective imaging modality that helps improve nodule detection rates and prevents conversion to thoracotomy in selected cases without significantly prolonging total operative time. It demonstrates high sensitivity and specificity in detecting sub-centimeter pulmonary nodules although further studies are needed to establish its applicability in distinguishing benign versus malignant lesions.

A318

Pericardiectomy for Malignant Pericardial Effusion: A 10-year review of Outcomes

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Objectives: Malignant pericardial effusion occurs in late-stage malignancy with a very poor prognosis. A pericardiectomy serves to drain and prevent re-accumulation; an important bridge to further oncological therapy, or palliative management. We reviewed our outcomes for pericardiectomy in malignant effusion over 10 years.

Methods: A retrospective search was performed for patients who underwent a pericardiectomy. Only those with malignant effusions were included. Primary outcomes included repeat intervention, post-operative ECHO findings, receipt of further oncological treatment and overall survival.

Results: 20 patients were identified: 11 (55%) males, and a median age of 61.5 years (IQR 48.2-70.5). Lung cancer was the commonest malignancy (10, 50%), followed by breast (3, 15%), thymus (2, 10%), mesothelioma (5%), leukaemia (5%), gynaecological (5%), and 2 cancers of unknown primary (10%). On ECHO the average effusion depth was 32 mm (IQR 18.2-37.5).

Surgical access included 18 (90%) VATS, 1 (5%) subxiphoid and 1 (5%) emergency conversion to sternotomy. The average pericardiectomy size was 2.5 cm (IQR 1.5-3). Metastatic invasion of the pericardium was identified in 9 (45%) patients on post-operative histology.

9 patients had an ECHO post-operatively: with 30% (n6) demonstrating a persistent pericardial effusion, average size 20 mm (IQR 16.2-26.5). No patients required repeat intervention. Median survival post-operatively was 34 days (IQR 17-86), with 6 (30%) receiving further oncological treatment. 90-day mortality post procedure was 60% (n12).

Conclusions: Malignant pericardial effusion carries a poor prognosis even after surgical drainage. However, 30% of patients received further oncological treatment, and no patients required further intervention, despite a 30% recurrence rate.

A319

Are surgical High-Risk MDTs an effective way to identify and manage high-risk patients?

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Objectives: High-risk multidisciplinary teams (HR-MDTs) facilitate comprehensive discussions of complex, high-risk patient cases, informing decisions on the most appropriate treatment options. This project aims to evaluate the prevalent characteristics of high-risk

patients, document HR-MDT treatment recommendations, and assess local outcomes in comparison to contemporary data.

Methods: We reviewed HR-MDT minutes in the Somerset Cancer Register, categorising patients by diagnosis, indication, and outcome. Deaths within 30 days post-surgery were classified as surgical-related, while others were non-surgical. We calculated an overall 90-day mortality rate and a post-MDT life expectancy and compared it to recent national data.

Results: Most patients discussed in the HR-MDTs were diagnosed with a subtype of lung carcinoma. The primary consideration for high-risk classification was their eligibility for surgical versus non-surgical management, with 61% deemed suitable for surgical intervention.

Of the 143 patients reviewed by the HR-MDT between 2021 and 2023, 26 have died. No deaths were surgery-related, and only 5 of these patients had received surgical treatment. 90-days mortality rate in this cohort was of 2.81% (n=4). Among those who died, the mean post-MDT life expectancy was of 373 days.

Conclusions: This project highlights the prevalence of disease and high-risk characteristics in HR-MDT patients. In conclusion, HR-MDTs effectively identify high-risk surgical candidates and guide optimal treatment, as demonstrated by the local 90-day mortality in line with contemporary published data.

Criticism: No selection criteria for patients discussed, as it's at the surgeon's discretion. Comparison with patients not undergoing HR-MDT discussion is underway.

A320

Does the Targeted Lung Cancer Screening Programme (TLHC) influence the extent of surgical resection such as segmentectomies?

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Objectives: The TLHC programme has been successful in identifying lung cancer at an early stage, where surgical resection can be offered. The possibility of a parenchyma sparing procedure, such as a segmentectomy, can be more advantageous to the patient, reducing morbidity and providing better functional outcome. We want to assess this in a regional screening programme and whether 3-D image planning can further contribute to the precision and effectiveness of these procedures.

Methods: Clinical and imaging data were collected from both those presenting via the TLHC and the routine referral route, over the same period and analysed using Excel and SPSS.

Results: There were 331 patients who had segmentectomies over a period of 56 months, of which 50 were referred through the TLHC. Within this group, post-operative survival at 1, 2 and 3 years was higher than the non-TLHC group. TLHC patients had a 169% extension to post-operative years before death than non-TLHC patients (p-value=0.005). Further sub-analysis of TLHC patients who had pre-operative planning using 3-D images showed a reduced percentage of post-operative complications (p-value=0.01) and an increased number of disease-free days (p-value=0.001) than without the imaging.

Conclusion: This evaluation demonstrated the positive effect the TLHC programme has on the number of segmental resections, and it's superior outcomes in reducing morbidity and improving overall and disease-free survival. This can be explained largely through early stage migration as reported in the literature and in the subset of patients who had 3-D image planning, by more precise anatomical resections.

A321**Chest Wall Resection and Reconstruction in Paediatric Patients with Primary Sarcoma: A Retrospective Analysis of Mesh Selection and Postoperative Outcomes**

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Objectives: Chest wall resection and reconstruction in paediatric patients are challenging, with limited global experience and ongoing debate over optimal techniques, mesh selection, and flap use. Additional concerns include the impact on growth and development.

Methods: This study retrospectively analysed and prospectively followed paediatric patients (≤ 18 years) who underwent chest wall resection and reconstruction for primary chest wall tumours from April 2014 to April 2024. Data included demographics, surgical outcomes focused on biological versus synthetic mesh use, and postoperative complications.

Results: Among 35 patients (median age 15), most had Ewing sarcoma, followed by chondrosarcoma, osteosarcoma, and synovial sarcoma. Reconstruction involved mesh in 31 cases (18 biological, 13 synthetic), with five requiring myocutaneous flaps. Postoperative chest infections occurred in five of 13 patients with synthetic mesh but in none with biological mesh ($p < 0.01$). No surgical site infection, late mesh infections, postoperative bleeding or 90-day mortalities were recorded.

Conclusions: Paediatric chest wall reconstruction remains complex, with synthetic mesh, particularly those involving polypropylene and cement, linked to a higher infection risk due to potential respiratory restriction. Biological mesh may offer a safer alternative with fewer respiratory complications and no recorded wound or mesh infections, potentially making it more suitable for paediatric patients in terms of growth and development.

A322**Evaluation of the severity and management of surgical emphysema using a grading system: a single thoracic surgical centre experience**

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Objectives: This service evaluation aims to address the disparity in the documentation and management of subcutaneous emphysema (SE) in a surgical thoracic unit using a SE grading system.

Methods: A grading system categorising SE severity was developed through literature review and discussion with unit consultants, and was incorporated into clinical documentation. Data on post-thoracic surgical patients who have developed SE were collected, incorporating co-morbidities, operation details, SE grades and interventions over time, lengths of stay, morbidity and mortality. Association between initial, maximum SE grades and SE grade at discharge against the types of intervention (invasive vs. non-invasive) was assessed. The timings of interventions were explored in relation to SE grades and their progression. Individual variations in practice were explored using clinical documentation.

Results: Data on fifty patients with SE post thoracic surgery were collected over six months. Mean age was 70 ± 9.83 years. 37 (74%)

patients received intervention, of which increased suction ($n=27$) and Vacuum Assisted Closure (VAC; $n=15$) were the most common. Eleven patients received interventions when SE reached grade 5 (the highest grade). SE reached maximum grades in 2 (IQR 2-3) days, while interventions tended to take place 2 (IQR 0-5) days later. Individuals with higher initial and maximum grades were more likely to have received interventions ($p=0.048$; $p=0.008$).

Conclusions: Our findings suggest utility in the SE grading system in guiding decision-making on intervention choices. Data collection will continue to sufficiently compare the effectiveness of SE intervention types in managing SE of different grades of severity.

A323**Early Postoperative CRP as a Potential Prognostic Factor for Prolonged Hospital Stay in Patients Undergoing Lung Resections for Primary Lung Cancer: A Target for Early Intervention**

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Introduction: C-reactive protein (CRP) is a marker of systemic inflammation and has been associated with negative prognostic outcomes following lobectomy for lung cancer. This study investigates whether early postoperative CRP levels and pain management metrics could serve as indicators for prolonged hospital stays in patients undergoing lung resections for primary lung cancer.

Methods: A retrospective analysis of 91 patients (35 males, 56 females) at St George's Thoracic Surgery Department included lobectomy ($n=68$), wedge resection ($n=19$), and segmentectomy ($n=4$). Patients were categorized into short-term (≤ 4 days, $n=50$) and long-term (≥ 5 days, $n=41$) hospital stays. Data on cancer stage, CRP levels on Days 1 and 2, patient-controlled analgesia (PCA) duration, paravertebral block (PVB) catheter use, chest drain duration, and total hospital days were collected.

Results: Results indicated significantly higher CRP levels in the long-term stay group on both Days 1 and 2 ($p < 0.05$ and $p < 0.01$). Additionally, longer PCA and PVB catheter durations, as well as chest drain times, were observed in this group ($p < 0.001$). Notably, patients with Day 2 CRP levels ≥ 170.5 mg/L had a 90% complication rate and an average hospital stay of 10.9 days. See attached table.

Conclusion: The findings suggest that elevated early postoperative CRP levels and increased analgesic needs can serve as prognostic indicators for longer hospital stays, aiding in the identification of high-risk patients for targeted earlier intervention such as pain referral or more intense physio.

A324**Comparison of Early Postoperative Outcomes Between VATS and RATS Lobectomy for Early Lung Cancer: Single-Center Study**

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Introduction: Robot-assisted thoracoscopic surgery (RATS) is increasingly favored over video-assisted thoracoscopic surgery (VATS) for early resectable lung cancer despite its higher initial costs. This study aims to prospectively compare postoperative pain and recovery

between VATS and RATS lobectomy by assessing mobilization and length of stay in a single thoracic center.

Methods: We analyzed 62 consecutive minimally invasive VATS and RATS lobectomy cases for stage I and II non-small cell lung cancer over a three-month period in our department. Excluded were patients undergoing wedge resection, segmentectomy, or pneumonectomy, as well as non-lung cancer lobectomies. Pain was assessed using maximal pain scores during movement, PCA attempts and doses delivered, PCA and PVB stay durations, and total hospital stay. Demographic data including age, sex, and clinical stage were also analyzed.

Results: Patients who underwent RATS (n = 37) had a median hospital stay of 4 days, while VATS (n = 25) patients had a median stay of 5 days. The median PCA stay was 1 day for both RATS and VATS patients. PVB usage was higher in VATS (64.9%) compared to RATS (48%). The complication rate was higher in VATS (48.6%) than RATS (40%), with prolonged air leak being more common in VATS.

Conclusion: No significant difference was found between VATS and RATS lobectomy in terms of postoperative pain management or overall recovery. However, VATS procedures had a slightly higher rate of complications and PVB usage. Further studies are needed to explore long-term recovery and post-discharge analgesia between the two approaches.

Table 1 (abstract A324) Summary Table

Metric	RATS (37 cases)	VATS (25 cases)
Total Cases	37.0	25.0
Complication Rate (%)	40.0	48.64864864864865
PVB Usage (%)	48.0	64.86486486486487
Median Hospital Stay (days)	4.0	5.0
Median PCA Stay (days)	1.0	1.0

A325

Exploring male–female differences in long-term survival outcomes following lung resection for non-small cell lung cancer: a landmark survival analysis

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Introduction: Lung cancer accounts for over 49,000 new cases annually in the UK and 21% of all cancer deaths, making it the leading cause of cancer-related mortality for both sexes. Despite an approximate one-third drop in overall lung cancer mortality since the 1970s, the decline is uneven by sex: male rates have fallen by over 20%, while female rates have only decreased by around 5%.

Methods: This retrospective cohort study included all patients who underwent lung resection for primary non-small cell lung cancer (NSCLC) at two UK tertiary centers between 2012 and 2019. Primary outcomes were 90-day mortality and overall survival. Missing continuous data was addressed by mean and median imputation. Multivariable regression including all clinically relevant variables was used to assess the impact of sex on the two primary outcomes. Yearly landmark analyses examined the temporal link between sex and survival.

Results: 5,467 patients (51.8% female; mean age, 68.6 years) were included in the study. The median follow-up duration was 4.8 years (interquartile range [IQR], 2.7–9.9). Male sex was independently associated with 90-day mortality (odds ratio [OR], 1.6; 95% confidence interval [CI], 1.15–2.21; P:0.005). Sex was not linked to long-term survival (hazard ratio [HR], 1.1; CI: 0.93–1.28; P:0.27) and showed no annual survival difference over six years (P:0.34–0.89). Key predictors of long-term mortality were higher dyspnoea group, smoking, and hypertension (HRs: 1.65, 1.32, 1.22).

Conclusion: In this study, male sex was independently linked to 90-day mortality but not to long-term survival after lung resection for NSCLC.

A326

Liposomal Bupivacaine in VATS Lung Resections

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Objective: To assess the efficacy and safety of liposomal bupivacaine as part of multimodality analgesia, in patients undergoing thoracoscopic lung resections.

Methods: Patients undergoing video-assisted thoracoscopic (VATS) lung resections were divided into 2 groups (29 patients each). All patients received pre-incision paravertebral blocks (PVB), and intraoperative intercostal blocks (ICBs). Group A had the blocks using 0.25% plain levobupivacaine (30 mls for PVB, 20 mls for ICBs). Group B had PVB using a mixture of liposomal (133 mg/ 10 ml) and plain 0.25% levobupivacaine (20 ml), and ICBs using 10 ml (133 mg) of liposomal and 10 ml of 2.5% plain levobupivacaine. The same injection techniques were used for both groups. Data collected included demographics, PCA and other analgesic use over 96 h, pain scores, length of stay, requirement for antibiotics, requirement for ventilatory support, admission to critical care.

Results: Patients receiving Liposomal Bupivacaine had significantly lower opioid PCA (18.8 vs 40.7 mg/96 h, p-value=0.004), and oral opiate (37.2 vs 50.4 mg/96 h, p-value=0.03) requirements. They were less likely to require gabapentinoids (20.7% vs 55.2%, p-value=0.007). They required fewer local-anaesthetic plasters (3.4% vs 75.9%). Cumulative pain scores were lower with the liposomal group. The median hospital stay was 1 day shorter (3 vs 4 days, p-value=0.15), yet not statistically significant.

Conclusions: Liposomal levobupivacaine for PVB and ICB during VATS lung resections promises to be associated with lower analgesic requirements, better pain scores and shorter hospital stay. Full RCT is needed ascertain size of difference in groups and significance.

A327

Is Sparing the Lateral and Posterior Basal Segments Worth It?

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Objectives: Minimally invasive segmentectomy provides adequate oncological treatment while sparing lung parenchyma and offering low associated morbidity. However, the resection of lateral and posterior basal segments remains technically challenging and potentially associated with consequences of significant tissue manipulation.

Methods: We retrospectively analysed robot-assisted (RATS) S9/S10 performed in 2019–2024. Preoperative demographic and oncological data, as well intraoperative timings and postoperative adverse events, survival and recurrence have been recorded. Analysis has been conducted on Excel (Microsoft).

Results: 30 (5 S10 and 25 S9+10) out of 571 segmentectomies were included, males 47% (14/30), mean age 67.03 years (±12.37), median height 163 cm [156–173] and BMI 26 [24.12–30.01]. No conversion was recorded. The median operative and anaesthetic time were 243 min [203–308] and 295 min [260–353]. The median hospital-stay was 5 days [3–7.75] and the length of chest drain was of 2 days [1–3]. Severe postoperative complications (Clavien-Dindo >= 3) were identified in 16.66% (5/30). In hospital stay was complicated by a concerning CXR requiring a CT chest in 13.33% (4/30). The mean follow-up was of 26.77 months (±15.91). 1 death was recorded (3.33%, 1/30) on postoperative day 52. 1 recurrence was identified (3.33%, 1/30) after 26 months postop.

Conclusions: This is the first report describing the short- and long-term surgical and oncological outcomes of an S9/10 population. The data constitute the first demonstration about safety. Results need

to be validated against a propensity matched population of basal segmentectomies.

A328

The impact of Targeted Lung Health Checks (TLHC) on the Lung Cancer Pathway in East Birmingham with a focus on surgical outcomes

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Objectives: Multiple RCTs demonstrate that screening is a game changer for lung cancer outcomes. As pilot Targeted Lung Health Check (TLHC) schemes expand across the UK, we describe outcomes from 21,107 screenings in East-Birmingham from November 2022, focusing on thoracic surgery.

Methods: 21,107 ever-smokers aged 55–74 were invited for screening, resulting in 210 TLHC CT scans reported as ‘Red Alerts’ (suspicious for lung cancer). Of these, 32 (15.2%) underwent surgical resection, 5.2% radiotherapy, 4.8% chemotherapy, and 2.4% palliative care.

Retrospective analyses of a prospective clinical database of lung cancer patients undergoing thoracic surgery at our centre from December 2022-March 2024 compared 2 groups – those diagnosed via TLHC and non-TLHC pathways. Baseline characteristics (age, sex, comorbidities, pre-operative lung function tests, surgical approaches) and post-operative outcomes were collected.

Results: 32 TLHC surgical cases were compared to 336 non-TLHC pathway surgeries. Baseline characteristics were mostly similar, except for lower thoracotomy rates in the TLHC group (9.4% vs. 23.8%). VATS was the most common surgical approach in both, followed by RATS in TLHC but thoracotomy in non-TLHC group. The non-TLHC pathway had more females.

Post-operatively, TLHC patients experienced shorter hospital stays (6.2 vs. 7.7 days) and had a 0% 30-day mortality rate, in contrast to 3.6% in the non-TLHC group. Furthermore, the TLHC group presented with fewer advanced-stage lung cancers, with only one stage 4 case compared to 21 in the non-TLHC group.

Conclusions: TLHC demonstrates improved surgical outcomes from lung cancer screening by ensuring timely detection, less invasive procedures, and reduced mortality.

A329

Acceptability of the Fit4Surgery (F4S) Personalised Digital Prehabilitation Programme and its impact on Physical Function and quality of life of Lung Cancer Patients

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Background & Aim: Exercise training for 2–6 weeks before chest or abdominal surgery improves fitness for surgery, but face-to-face interventions are limited by costly, overburdened rehabilitation programmes. This study aimed to evaluate the acceptability level of the Fit4Surgery (F4S) digital prehabilitation programme and its impact on physical function and quality of life (QoL) in lung cancer surgery patients.

Methods: Thirty-eight lung cancer patients undergoing resection surgery were recruited between 2022 and 2023. Exercise capacity was measured using the Incremental Shuttle Walk Test (ISWT) and the Sit-to-Stand Test (STS). ISWT was assessed at recruitment and one-month post-surgery, while STS was measured at recruitment, on the day of surgery, and one month post-surgery. Acceptability was evaluated through semi-structured interviews one-month post-surgery. QoL was measured using the EORTC QLQ-30 at recruitment, on the day of surgery, and at one- and six-months post-surgery.

Results: A statistically significant difference was found in ISWT scores pre- and post-surgery ($p=0.000$). Furthermore, a clinically significant median improvement of 100 m was observed post-surgery (minimum meaningful improvement: 40 m). Significant STS improvements were observed from pre-intervention to one-month post-surgery ($p=0.002$) and from the day of surgery to one-month post-surgery ($p=0.02$). Emerging themes of acceptability levels are shown in Figure 1. Repeated measures ANOVA indicated significant differences in EORTC QLQ-C30 functioning and global health domains across time points.

Conclusion: The F4S programme may be acceptable to lung cancer patients and could enhance their physical function and QoL. Nonetheless, a larger trial is recommended to robustly confirm its efficacy.



Figure 1 (abstract A329)

Emerging themes of acceptability levels of the F4S app

A330

A Comparative Study of Medium-Term Outcomes Between cryoanalgesia intercostal nerve block and Paravertebral Catheter Following Thoracotomy

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Objectives: This study aims to compare short and medium-term outcomes of cryoanalgesia intercostal nerve block (AtriCure CryoSphere) versus paravertebral catheter (PVB) following lung resection via thoracotomy. Given the limited data on medium term outcomes for cryoanalgesia, we evaluate whether cryoanalgesia provides effective and sustained pain relief while mitigating concerns about neuropathic pain.

Methods: We conducted a concurrent single centre comparison study, comparing thoracotomy patients following lung resection, treated with either cryoanalgesia (April 2023–February 2024, n=48) or PVB (October 2023–April 2024, n=43). Key outcomes measured included length of hospital stay (LOS), complication rates, and patient perceived pain levels at follow-ups ranging from six to 15 months. Pain was assessed using the Mankoski Pain Scale, and each patient was additionally evaluated for six neuropathic pain parameters: allodynia, hyperalgesia, hypoalgesia, hypoesthesia, neuralgia, and paresthesia.

Results: The cryoanalgesia group demonstrated a shorter average LOS (6 vs. 11 days) and a lower Mankoski Average Pain Score beyond 6 months (1.13 vs. 1.2) compared to the PVB group. Neuropathic pain assessment revealed 12.2% of cryoanalgesia patients reported symptoms of allodynia, hyperalgesia or neuralgia at follow up compared to 13.3% of the PVB group.

Conclusions: The AtriCure cryosphere probe provides advantageous inpatient and medium-term outcomes, with shorter hospital stays and comparable rates of neuropathic pain when measured against the PVB group. This study suggests that cryoanalgesia may be a reliable alternative for managing post-thoracotomy pain with minimal risk of medium-term neuropathic symptoms. Further prospective studies are warranted to confirm these findings.

A331

In-house patient-specific preoperative three-dimensional visualisation for anatomical lung resections

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Introduction: For patients with local non-small cell lung cancer < 2 cm with poor pulmonary function, a segmentectomy might be considered as a treatment option. However, a segmentectomy is a complex and low-volume procedure. Using three-dimensional (3D) models is proven to be of added value for these procedures and can potentially decrease intraoperative blood loss, operative time and patient complications. Commercial services are costly and require transfer of sensitive patient data to external entities.

This study aims to facilitate pre-operative planning of segmentectomies using 3D models produced with an in-house segmentation protocol compared to standard 2D contrast-enhanced CT scans.

Methods and results: 14 patients with stage 1A1-2 NSCLC who underwent a segmentectomy from 2023 to August 2024 were included in the study. An in-house CT-scan segmentation protocol was developed using Mimics software and compared to 3D Slicer segmentation. Informed consent was obtained after local ethics approval. Additionally, surgeons retrospectively filled in questionnaires to estimate changes in the surgical plan. Moreover, each 3D model was given an quality score.

Questionnaires revealed that surgeons felt comfortable creating a preoperative plan using 3D models (96%). Quality was perceived as good or excellent in all but one case. The use of 3D models changed 32% of all surgical plans compared to 2D CT. For patients prospectively planned with our 3D models, all relevant structures were correctly identified, and confirmed during surgery.

Conclusions: In all cases, preoperative 3D models showed to have added value in increasing the understanding of patient-specific anatomy, and should be validated externally.

A332

Feasibility Study for Introduction of a Day 1 Discharge Programme Post Anatomical Lung Resection and Major Thoracic Surgery

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Introduction: Prolonged length of stay (LOS) post-surgery reduces hospital bed capacity, increases costs, and potentially exposure to infection. Our unique Community Thoracic Service provides post-discharge visits at home that has already reduced LOS. At SCTS 2024, Plenary speaker Dr Cerfolio showcased his POD1 Discharge Programme at NYU Langone.

Objectives: Assess feasibility of a POD1 Discharge Programme following anatomical lung resection. Reduce length of stay whilst also preventing readmissions and further enhance patient experience.

Methods: Our team visited the established New York program to learn from their experiences. A Standard Operating Procedure was agreed for the feasibility programme locally. Prospective database maintained for 10 consecutive patients discharged POD1 after anatomical resection May-October 2024.

Results: Average age was 62 (range 44 – 71), with 6 female and 4 male patients. 9 underwent lobectomy (4 RUL, 2 RLL, 3 LLL) and 1 segmentectomy (RS6). All patients had a community visit POD2 and 5 patients received a second visit. There was 1 readmission deemed unlikely to have been preventable by prolonging index admission.

A successful bid was made to the Regional Cancer Alliance to fund a dedicated Discharge Coordinator and a Band 7 Prescribing Community AHP aiming to expand for additional community visits on POD3-5.

Conclusion: The regional funding award forms the basis for a 2-year Pilot Phase allowing the programme to be further developed. We recognise patients may encounter difficulties in the days that follow review on POD2 and so we propose multiple community reviews to reduce potential readmissions and improve patient experience.

A333

A comparative analysis of nodal upstaging in robotic-assisted and VATS lung resections

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Objectives: Lymphadenectomy is essential in oncologic lung resections for accurate nodal evaluation and follow-on systemic treatment. Three-dimensional high-definition views and precision of instrumentation provided by the robotic platform (RATS), in theory, should enhance lymph node dissection compared to video-assisted (VATS) approach. This study compares quality of lymphadenectomy and nodal upstaging between RATS and VATS.

Methods: A retrospective review of consecutive lung resections for presumed primary lung malignancy, performed RATS and VATS, was conducted between May 2021 and May 2023 in a single United Kingdom tertiary centre. Data analysed included time from diagnosis to surgery, preoperative radiological stage, postoperative histology and staging, and number of lymph nodes sampled.

Results: 574 lung resections were performed; 220 (38.3%) RATS and 354 (61.7%) VATS. Time to surgery was shorter for RATS (1 ± 1 month vs 2 ± 2 months, p < 0.01). Primary lung malignancy was confirmed on final histology in 184 RATS and 319 VATS cases. Distribution of preoperative radiological staging was similar in both groups; most were clinical Stage I non-small cell lung cancer. Of these, nodal upstaging occurred in 23 (12.5%) RATS cases (12 pN1, 11 pN2) and 37 (11.6%)

VATS cases (19 pN1, 18 pN2) ($p=0.76$). RATS sampled an average of 4 ± 1 lymph nodes, with greater sampling at mediastinal stations 4 ($p < 0.01$), 7 ($p < 0.01$) and 8 ($p < 0.01$), compared to VATS (3 ± 1 nodes, $p < 0.01$).

Conclusion: While RATS achieved a higher nodal yield and more frequent sampling of mediastinal stations, this did not affect nodal upstaging rates when compared to VATS.

A334

Two-Center Experience of a 10-Year Analysis of Post-Pulmonary Resection Chylothorax Management and Impact on Length of Hospital Stay

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Introduction: Chylothorax is a serous complication following pulmonary resection with comprehensive lymph node dissection. This study evaluates the incidence of post-pulmonary resection chylothorax, aims to establish a management protocol, and assesses the impact on Length-Of-Hospital stay (LOH) across two centers.

Patients and Methods: A retrospective analysis was performed on a cohort of patients who underwent pulmonary resections, including lobectomy and sub-lobar resections, at Royal Brompton and Harefield hospitals over 10-years. Data was obtained from the Intellect/Patient Analysis and Tracking System (PATS) and included patient demographics, diagnosis, surgical details, postoperative chylothorax management, LOH, and discharge status. Statistical analysis was conducted using SPSS and Excel.

Results: Postoperative chylothorax was identified in 100 thoracic surgery patients; 32 were excluded due to non-pulmonary resections and 13 for incomplete data, resulting in 55 patients with chylothorax. Management strategies included a free fat diet, medium-chain triglyceride (MCT) diets, total parenteral nutrition (TPN), octreotide, washouts, lymphangiography, lymphoscintigraphy, and mass ligation. Conservative management succeeded in one group, while others required surgery. MCT diet ($p=0.049$) was significant in the conservative group, and mass ligation was the key approach in 14% in the whole cohort. The average LOH was 17 ± 8 days, and all patients were discharged alive.

Conclusion: Though rare, effective management of chylothorax is essential to reduce LOH. Mass ligation consistently proved effective, suggesting that prophylactic mass ligation may improve outcomes. A multi-center study is recommended to establish standardized management protocols for post-pulmonary resection chylothorax.

A335

Utilisation of high-dependency unit (HDU) beds post-lung resection: single centre experience

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Background: To date, there is no validated risk scores routinely used in thoracic surgery to determine postoperative destination. HDU admission varies depends on local resources and expertise.

Methods: We retrospectively evaluated patients who underwent lung resection between 1st May to 31st July 2024. We analysed planned and unplanned HDU admission, to assess length of stay and interventions received.

Results: 195 patients were reviewed. 57 (29%) patients were planned to be admitted to ICU preoperatively however, 10 returned to the ward. Therefore, 47 (23.6%) patients were effectively admitted to HDU. 6 of these patients (13%) had unplanned admission. 29 patients (62%) spent one day. Of those, 20 (42.5%) required only monitoring, 7 (19%) required only nasal high flow. Only one

patient was re-admitted to HDU, while two patients who went to the ward were admitted to HDU due to complications.

Conclusion: 62% of patients only stayed in HDU for one day and 42.5% of them required only monitoring for one day. Postoperative HDU admission is cost and resource-exhausting and should be reserved for high-risk patients with expected need of close monitoring and organ support. In absence of pre-agreed criteria for HDU admission and variable institutional practices and infrastructure, this is a call for development of clinical scoring system to guide the decision making and risk stratification to reduce unnecessary HDU admissions. In addition, there is a need to establish monitored beds within thoracic wards which can deliver patients' monitoring and advanced oxygen therapy.

A336

Surgical Outcomes and Challenges of Lung Resection Following Neoadjuvant Chemotherapy: A Retrospective Analysis

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This study investigates early postoperative outcomes and predictors of surgical success in lung cancer patients who received neoadjuvant chemotherapy before resection, focusing on improving treatment for locally advanced non-small cell lung cancer (NSCLC).

Methods: A retrospective analysis of 10 NSCLC patients treated with neoadjuvant chemotherapy followed by resection from 9/2023 to 10/2024 assessed surgical outcomes through factors like operative time and challenges from post-therapy tissue changes. Primary endpoints were postoperative complications and hospital stay duration, with secondary endpoints evaluating early recurrence and survival. Correlations between pathologic response, complications, and short-term prognosis were statistically analyzed.

Results: Neoadjuvant chemotherapy led to tissue fibrosis and adhesions in 90% of cases, extending operative times to an average of 4 h and 7 min, with 20% of cases exceeding 7 h. Minimally invasive methods were applied in 70% of surgeries (5 RATS, 2 VATS), while 20% required thoracotomy, and one case converted from robotic to open due to cardiac arrest. Complication rates were mostly Clavien-Dindo I-II (80%), with no mortalities. Complete responders had fewer complications and shorter hospital stays (3 days versus 5.6 days for partial responders). Early recurrence was minimal, with only one case showing recurrence at the six-month follow-up.

Conclusion: Neoadjuvant chemotherapy is feasible with acceptable complication rates, despite increased surgical complexity. Strong pathologic response may lower surgical risk and improve recovery, underscoring the value of patient selection and preoperative planning in NSCLC management. Further research should aim to refine surgical protocols post-neoadjuvant therapy.

A337

An Analysis Of Open Versus Minimally Invasive Thymectomy For Stage I To Iii Thymoma: A Retrospective Study From National Database Of A Lower Middle-Income Country

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Background: Thymectomy for thymoma has traditionally been performed through a median sternotomy. However minimally invasive surgery (MIS), specifically video assisted thoracoscopic surgery (VATS) has recently gained popularity due to its lower perioperative complication rates and comparable oncological outcomes.

Method: Perioperative outcomes and oncological clearance of patients who underwent open vs MIS thymectomies for Masaoka-Koga

stage I-III thymomas from January 2022 to June 2024 at national hospital for respiratory diseases Sri Lanka were evaluated retrospectively. Outcome measures included demographics, intensive care unit (ICU) length of stay (LOS), hospital LOS and resection status.

Results: Of the 74 thymectomies evaluated, 33(44.6%) were performed using minimally invasive approach. The mean age of patients was 51.6 years (± 14.59) with 57.3% being male. The lengths of stay in both the ICU and hospital were significantly shorter for the MIS group, with means of 1.48 days versus 3.37 days ($p < 0.001$) and 5.12 days versus 0.63 days ($p < 0.001$) respectively. Among the cohort, 11 out of 74 (13.5%) had incomplete resection, with no significant difference noted between open and MIS approaches ($p = 0.32$). Furthermore, 11 patients with incomplete resection showed a significant relationship with surgery for recurrence and conversion from VATS to open ($p = < 0.05$).

Conclusion: MIS thymectomy significantly reduces perioperative complications, including ICU and hospital LOS while providing oncological efficacy comparable to that of open thymectomy.

A338

Chest wall reconstruction utilizing OviTex® Reinforced Tissue Matrix: Early single centre experience

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A338

Background: Reconstruction of chest wall defects continues to be a challenging scenario. Several synthetic, biological and hybrid materials have been utilised. Each has its respective strengths and weaknesses, and no single material proves to be ideal. OviTex® Reinforced Tissue Matrix is a hybrid biosynthetic ovine derived polymer reinforced mesh which has shown promising results in small series of chest wall and hernial repairs.

Methods: We reviewed all patients who underwent chest wall resection and reconstruction with OviTex® Reinforced Tissue Matrix from 06/2022 to 09/2024. En-block resection was performed with partial or complete sternectomy, resection of pericardium/diaphragm or spinal transverse processes when indicated. Soft tissue coverage was completed by the plastic team.

Results: 15 patients underwent chest wall reconstruction using OviTex mesh. One patient needed a redo surgery due to involvement of one margin and was completed with OviTex® mesh. None of the patients received postoperative chemo/radiotherapy treatment. One patient died as an inpatient following cardiac event. No reported deep wound infection.

Conclusion: OviTex® 2S Reinforced Tissue Matrix is a safe and feasible option to cover large defects obviating the need for traditional rigid reconstruction. It is associated with satisfactory short-term outcome of restoration of chest wall dynamics and resistance to infection. OviTex® 2S Reinforced Tissue Matrix is optimal for reinforcement of costal and abdominal wall defects. The unique design allows for durable repair and early tissue regeneration and remodeling without compromising chest wall mechanics.

A339

Can Expansion of Robotic Thoracic Surgery Programmes Ensure Adequate Training Provision? Experience of the 1st Thoracic Robotic Fellow in a Robotic Training Programme

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Objective: Robotic Thoracic surgery is an expanding subspecialty in the UK. Training has mostly been focused on developing the skillsets of current Thoracic Surgery Consultants, with limited console access to current Trainees and Fellows. Robotic specific fellowships are on offer

in a limited number of high volume centres. We have reviewed the current experience of our 1st Robotic Fellow within an established Thoracic Robotic training programme.

Methods: Cases undertaken by the fellow were recorded. Data collected were: operation, total operative time (knife-to-skin to end of procedure), drain days and length of stay as per patient records. Console time was obtained from the MyIntuitive App. Pathology was obtained from patient records. Competence, as per ISCP Global outcomes, was recorded for each case, determined by Responsible Consultant.

Results: Within a 3 month period the Robotic fellow undertook 36 cases as primary operator. 27 of these were anatomical lung resections (19 Lobectomies, 7 Segmentectomies, 1 bilobectomy). Median total operating time was 186 min (70—303 min) and median console time 141 min (42—267 min). There were no instances of conversions to open. Median drain duration was 2 days (1-13 days), and median length of stay of 4 days (2-14 days). Only 1 R1 resection due to unexpected N2 disease with extracapsular spread. Global outcomes progressed from 2A for 1st 4 cases to 4B after 30 cases.

Conclusion: Currently our experience demonstrates feasibility of safe and effective training of senior thoracic surgical trainees in a high volume robotic surgery unit.

A340

Comparison of 5-Year and Overall Survival Rates Between Anatomical and Non-Anatomical Resection in Early-Stage Lung Cancer

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Objective: Several trials have been published comparing survival rates between anatomical and non-anatomical resections in early-stage lung cancer. Using data from our institute dating back to 2012, we compared the survival rates of lobectomy, segmentectomy, and wedge resection.

Methods: We conducted a retrospective analysis of 706 patients who underwent surgery for early-stage non-small cell lung cancer (NSCLC) between 2012 and 2018. We updated the lung cancer staging system to ensure that all patients were staged according to the 8th edition criteria. Early-stage lung cancer was defined as encompassing both stage IA and IB.

Results: 706 patients were included, comprising 333 males (47.2%) and 373 females (52.8%). 546 patients underwent lobectomy, 59 patients underwent segmentectomy, and 101 patients underwent wedge resection. Histological analysis revealed that 448 patients had adenocarcinoma, while 260 had squamous cell carcinoma.

The 5-year survival rates for the lobectomy, segmentectomy, and wedge resection groups were 68.7%, 69.5%, and 53.5%, respectively. The 10-year survival rates were 41.9%, 27%, and 21.6%, respectively. No significant difference in overall survival was observed between the lobectomy and segmentectomy groups ($P = 0.51$). However, a significant difference was noted when comparing the segmentectomy and wedge resection groups ($P < 0.05$). Similarly, the 5-year survival rates showed no significant difference between the lobectomy and segmentectomy groups ($P = 0.89$), but a significant difference was found when comparing the segmentectomy group to the wedge resection group ($P < 0.05$).

Conclusion: In early-stage lung cancer, the overall and 5-year survival rates were similar for anatomical resections and superior compared to non-anatomical resections.

A341**Evaluation Of Efficacy Of Intercostal Cryo-analgesia: Early Single-Centre Experience**

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A341

Background: Cryoanalgesia nerve block (CryoNB) has been recently introduced as an effective, non-narcotic analgesic modality replacing catheter-delivered analgesia and reducing opioid consumption. Several small studies showed promising outcomes.

Methods: We prospectively reviewed patients who had CryoNB between April 1st and August 1st 2024 excluding patients known chronic pain and/or opioid dependence. Atricle cryoprobe was applied between the 3rd–8th intercostal nerves for a minimum of 3 levels. All patients received patient-controlled analgesia (PCA), intercostal blocks, ± paravertebral catheter. Patients who underwent thoracotomy had paravertebral catheter inserted. Numeric pain rating scale (NPRS) at rest was assessed 4 h, 24 h, and 4 weeks. Morphine equivalent dose (MED), NPRS at 4 h and 24 h were compared to a matching cohort receiving standard analgesic approach (intercostal block, epidural catheter, PCA).

Results: A total of 132 patients received CryoNB. 97 patients were analysed. NPRS of cryoNB cohort were similar to the standard approach at 4 h. However, CryoNB group showed better pain control and less MED at 24 h. There was no significant difference in PCA utilization between the two groups at the first 12 h. Subgroup analysis of cohort of patients receiving CryoNB only (without epidural catheter) showed the same outcomes. Long-term results at 6 months will be available by the time of presentation to assess the incidence of chronic pain.

Conclusion: CryoNB is effective in reducing postoperative surgical pain and opioid consumption at 12 h postoperatively and onwards. Cryoanalgesia is feasible and well tolerated as an adjunct in analgesic protocols.

A342**Thymic pathologies conundrum requires a Central MDT**

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Objectives: Significant variation exists in the management of thymic pathologies due to the challenges in terms of gap in research, early detection, precise referrals, complex histology, limited awareness, and clinical diversity. A West Midlands Thymoma MDT was established to provide evidence-based management of thymic conditions. The aim of this study is to evaluate the outcomes of this MDT.

Methods: MDT comprising of oncologist, pathologist, surgeons, radiologist, neurologist, and immunologist was setup. A retrospective analysis of cases discussed at the MDT during October 2023 to October 2024 was carried out.

Results: Ninety four patients were discussed including 51 males. The mean age was 57.03 ± 8.5 years. The thymic mass was picked as incidental finding in 82% of cases. The symptoms of Myasthenia gravis were present in 16 (18.6%) with 12 (75%) positive antibodies. The most common speciality referring to MDT for discussion was thoracic surgery followed by respiratory and neurology (n = 39, 25, 10 respectively). A total of 19 underwent thymectomy most commonly through robotic approach in 11 (57.8%), followed by sternotomy in 4 (36.3%). Thymoma (n = 10) was most common histopathologic diagnosis, with hyperplasia in 3. The most common subtype was AB, B2 (3 each). It is noted that 13 patients are still awaiting procedure till date.

Conclusion: A core group has been established who have agreed to a referral criteria, pathway and guidelines for the region that has led to

structured management plan. The future goal is to prospectively audit, improve closed loop communications, timely management and raise awareness among the population.

A343**Can We Safely Train the Next Generation in Uniportal Video-Assisted Thoracic Surgery?**

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Objective: With the widespread use of video-assisted thoracic surgery, establishing the impact of surgical training on outcomes is crucial. A question often raised is if a case performed by a trainee surgeon would take longer, extend hospital stay, or lead to increased complications. This study reports the impact of training in uniportal VATS.

Methods: This study encompassed 212 patients who underwent uniportal VATS anatomical lung resections and thymectomies. This included a group of 101 cases performed by trainees at different training stages, compared with a control group of 111 cases performed by consultant surgeons with extensive VATS experience. The study spans the period from April 2023 until mid August 2024, with subxiphoid VATS thymectomies going back to May 2022.

Results: Both training and non-training groups were comparable in terms of age, gender, comorbidities, as well as pre-op tumour staging. No statistically significant differences were found in post-op hospital stay (training 6.3 versus non-training 5.4 days, p = 0.486). Operative times were comparable (p = 0.247), and so were conversion rates, complications, and mortality. From an oncological perspective, complete resection, number of lymph node stations resected, and nodal upstaging were similar (p = 0.569, p = 0.973, p = 0.928, respectively).

Conclusions: Surgical training in uniportal video-assisted anatomical lung resections and thymectomies can be undertaken in a safe and timely manner without impacting the quality of surgery, operative times, patients' outcomes, or hospital stay. The decision of whether a case is suitable for training remains complex, and supervision by experienced surgeons is crucial to ensure safe practice.

A344**Evaluation of an Artificial Intelligence Model for Identification of Thymomas on CXR**

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Introduction: In recent years, the development of AI-enabled tools has accelerated, allowing diagnostic adjuncts in clinical decision making. MRI has also become increasingly valuable in differentiating thymic masses, reducing resections for benign disease.

Chest X-rays (CXRs) are the most common first-line investigation for thoracic pathology, however as thymic masses are often detected incidentally, they may be overlooked by reporting radiologists.

Methods: Retrospective data collection was conducted on consecutive surgical patients who underwent thymoma resection at a single institution over a 10-year period. CXRs prior to surgery were analysed by radiologists and Annalise CXR software, in line with DPIA requirements.

Results: Between 2011 and 2021, 84 patients had histological diagnosis of thymoma. Patients with no preoperative CXR were excluded (19). 65 patients were included in final analysis with a median age of 62 years, range 23-77; 57% female. Imaging was anonymised and processed by Annalise CXR in November 2024. Returning data would outline primary and secondary diagnoses, along with a confidence score. Primary comparison metrics include diagnostic sensitivity, specificity, and inter-rater reliability between radiologists and AI software.

Conclusions: AI-enhanced CXR interpretation may improve patient outcomes by earlier detection of abnormalities, allowing for quicker

diagnosis and treatment pathways. Given that mediastinal masses are often incidental findings, AI software could highlight these abnormalities even when the initial focus is elsewhere. Future research will aim to expand the cohort size, analyse earlier CXRs in these patients, and quantify the minimum size of thymoma able to be detected by both AI and human interpretation.

A345
Optimising Frozen Section Turnaround Times: A Quality Improvement Initiative at Imperial College Healthcare
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Background: Following the closure of Hammersmith Hospital's histopathology lab during the COVID pandemic due to budget restraint, frozen section samples had to be transferred to Charring Cross Hospital for analysis, resulting in delayed times and theatre inefficiencies. This quality improvement project aimed to reduce the delays and improve operative workflow.

Methods: We collected data from 52 cases throughout 2023, recording four key time stamps: (1) Sample Collection, (2) Handover to Courier, (3) Arrival at Charring Cross, and (4) Result. Average times were calculated between stages, with a total turnaround time of 1 h 28 min from sample collection to result. To address delays, we proposed placing an in-house lab technician to prepare frozen sections and link images directly for review by pathologists within the trust. This solution was implemented in September 2024, and a provisional re-audit of 10 cases was conducted in October 2024.

Results: Average transport times were significantly reduced: Time A (sample collection to courier) decreased from 16 to 3 min, and Time B (courier transit) decreased from 34 to 10 min. Processing time (Time C) initially increased from 36 to 53 min due to technician training. Despite this, total turnaround time (Time D) improved from 1 h 28 min to 1 h 7 min.

Conclusion: Introducing an in-house technician at Hammersmith led to substantial reductions in frozen section turnaround times, improving overall theatre efficiency and reducing operating length. However, a 6 month follow up is needed to assess a larger set of data for accurate comparison.

A346
Lung cancer resection: comparing an established VATS programme with a new RATS programme
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Introduction: An increasing number of lung cancer resections are performed via robotic assisted thoracic surgery (RATS). We have a long-established enhanced recovery after surgery (ERAS) programme for video assisted thoracic surgery (VATS), and have recently started a RATS programme. We sought to compare outcomes from our first nine months of RATS lung cancer resections with case-matches from our VATS ERAS database.

Methods: We included our first 57 patients who underwent RATS lung cancer resection (October 2023 to July 2024). From our ERAS database of 1432 patients who underwent VATS procedures between January 2021 and July 2024, we matched patients for age, ASA status, Clinical Frailty Score, ICD10, and operation (left vs. right, wedge vs. segment vs. lobe). We excluded mediastinal, thymectomy and converted procedures.

Results: 34 patients underwent single lobe resection, one underwent bilobar resection, four underwent wedge resection, and 18 underwent segmentectomy. Mean operative duration was longer for RATS cases than VATS. There was no difference in median length of stay, use of

paravertebral catheter, early food intake or early mobilisation. RATS operative times have not reduced across the nine-month introduction period.

Discussion: It is reassuring that length of stay for our early RATS cases is no longer than for VATS case matches, and suggests we might see length of stay fall as the programme becomes more established. That we have not yet seen reduced operative times despite increasing theatre-team familiarity with RATS suggests a long learning curve, and may be material to centres considering commencing RATS.

A347
Do we really treat left and right upper lobe tumours in the same way?
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Objectives: The reliance on conventional anatomical boundaries may result in treatment discrepancy.

Methods: We reviewed anatomical lung resections performed in 2019-2023 for T1a-T2a primary lung cancer (lower lobes excluded). We compared the number of resected segments on the right and left side (T test). Subpopulation analysis was conducted for T stage. We recorded the estimate of Horizontal Fissure (HF) integrity and correlated this with the emphysema severity in the right upper and middle lobes (Pearson coefficient).

Results: 392 resections were included: 45.6% males (179/392), age 68.67 years (± 9.7). 58.67% (230/392) were right-sided. The number of resected segments on the right/left side was of 2.4 (± 0.79) and 3.08 (± 1.39). The difference was of 0.66 (± 0.1) ($p=0.001$). In Table 1, T stage subgroup analysis is shown (retained findings). In a population of 100 ex-smokers (males 52% (52/100), age 68.6 years (± 7.2)) the HF integrity was 76.8% ($\pm 17.47\%$). N=4 (4%) had a 100% complete HF. The severity of emphysema in the right upper and middle lobes was 54.25% ($\pm 16.65\%$) and 46.25% ($\pm 14.89\%$). No correlation was found between HF integrity and severity of emphysema (Pearson Index: RUL=0.152; RUML=0.153; RML=0.044).

Conclusions: We found a significant higher number of segments removed on the left. The finding was retained in each T-stage group. There was no correlation between severity of disease and HF integrity. The excessive conduct of a left upper lobectomy cannot be supported by the belief in the anatomical barrier of the HF.

	Lung Resection for T1a N=68	Lung Resection for T1b N=150	Lung Resection for T1c N=104	Lung Resection for T2a N=70	Lung Resections Overall N=392
Left N=162	2.15 segments ± 1.1	2.80 segments ± 1.28	3.64 segments ± 1.31	3.67 segments ± 1.39	3.08 segments ± 1.39
Right N=230	1.93 segments ± 0.88	2.28 segments ± 0.8	2.7 segments ± 0.68	2.79 segments ± 0.47	2.4 segments ± 0.79
Difference	0.22 segments ± 0.08 $p=0.384$	0.52 segments ± 0.09 $p=0.005$	0.94 segments ± 0.09 $p<0.001$	0.88 segments ± 0.09 $p=0.003$	0.66 segments ± 0.1 $p=0.001$

A348
Preoperative Imaging Timing and Surgical Outcomes in Lung Cancer: A Surgical Audit of Guideline Adherence – A Single Unit Experience
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Introduction: Timely preoperative imaging is essential for optimal lung cancer surgery outcomes. As per 2019 NICE guidelines, chest CT and PET-CT scans should be performed within 4-6 weeks and 4 weeks, respectively, to limit disease progression and ensure accurate staging.

Delays in surgery may necessitate repeat imaging to reassess tumor status. This study evaluates our center's adherence to these imaging guidelines and investigates the effect of imaging-to-surgery intervals on postoperative outcomes like length of stay and complications.

Method: We retrospectively reviewed records of 50 patients who underwent lobectomy for primary lung cancer, mostly via minimally invasive surgery. Descriptive statistics assessed adherence to recommended imaging intervals.

Results: The interval from chest CT to surgery ranged from 0 to 157 days (Mean=49, Median=40), and PET-CT to surgery ranged from 19 to 209 days (Mean=71, Median=63). Only 50% of chest CTs and 10% of PET-CTs were performed within recommended timelines. Three patients had chest CTs on the day of surgery, and inpatient scans had significantly shorter intervals to surgery than outpatient scans (Median=1 day vs. 46 days, $P=0.002$). No postoperative renal complications occurred.

Conclusion: The audit reveals suboptimal adherence to preoperative imaging timeframes, especially for PET-CT. While no immediate outcome differences were found, timely imaging is vital for accurate staging and effective resection. Future audits should examine surgical staging, survival, and minimally invasive feasibility to understand the long-term impact of imaging closer to surgery.

Table 1 (abstract A348) Table Summary

Table 1. Characteristics of the included patients.	
Variable	N (%) or Median (IQR)
Operation	
RATS	29 (58%)
VATS	20 (40%)
Open	1 (2%)
Time from chest CT to operation	40 (17-69) days
Time from PET-CT to operation	63 (45-91)
Setting of chest CT	
Inpatient	6 (12%)
Outpatient	44 (88%)
Local hospital	
East Surrey Hospital	13 (26%)
Croydon Hospital	6 (12%)
Epsom Hospital	4 (8%)
Kingstone Hospital	5 (10%)
Royal Marsden	1 (2%)
Royal Surrey Hospital	5 (10%)
St George's	10 (10%)
St Helier Hospital	1 (2%)
St Peter's Hospital	2 (4%)
St Richard's Hospital	3 (6%)

A349

Incidence of Ipsilateral Shoulder Pain Following Thoracic Surgery at a Single UK Centre

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Objectives: To evaluate the incidence of ipsilateral shoulder pain following lung resection at a tertiary cardio-thoracic centre in the UK.

Methods: The local hospital database was reviewed for patients undergoing thoracic surgery between August and October 2023. All patients undergoing lung resection were included. During this period, the nursing staff were reminded to record patients' general and ipsilateral shoulder pain score up to 48 h post-operatively as part of routine care. Patient demographic, comorbidities, operative details, analgesic regime and post-operative complications were reviewed retrospectively. Descriptive statistics were used for analysis.

Results: 61 cases (26 male, 35 female; average age 67 ± 11 years, range 22-84) were included for analysis after removing cases with incomplete data. 8 operations were via thoracotomy, of which 1 was converted, and 53 operations via Video-Assisted Thorascopic Surgery (VATS); this included a total of 21 wedge resection, 15 anatomical segmentectomy, and 25 lobectomy operations. 56% (34/61) of patients experienced ipsilateral post-operative shoulder pain; 63% (5/8) following thoracotomy and 55% (29/53) following VATS. The majority

reported shoulder pain within the first 4 h post-operatively, with pain intensity subsiding over the next 20 h. There was no statistical significance between the incidence of post-operative shoulder pain and thoracotomy ($p=0.68$), post-operative chest infection ($p=0.33$), air leak ($p=0.27$), or hospital length of stay ($p=0.34$).

Conclusions: The incidence of ipsilateral shoulder pain is high following lung resection. This was unexpected for VATS and additional studies are required to define the true incidence of shoulder pain after minimally invasive thoracic surgery.

A350

Using liquid biopsy as a diagnostic tool in lung nodules: A systematic review of health economic analyses

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Objectives: A national targeted lung screening programme was introduced in the UK in 2023. Alongside with the increased use of chest computed tomography in routine medical practice, an increased finding of lung nodules is to be expected. Integrating liquid biopsy (LB) into the diagnostic pathway can potentially reduce the need for invasive investigations and lead to faster diagnosis. The objective was to investigate the cost-effectiveness of using LB in lung cancer diagnosis through systematic review of the literature.

Methods: A systematic literature search was conducted on EMBASE, MEDLINE, Cochrane Library, HTA database, and Research Papers in Economics. Qualitative analyses were used to combine the findings of the eligible articles. Areas of focus included the type of LB, unit costs and sensitivity profiles of LB, types of economic evaluations and health outcomes, and the cost-effectiveness outcomes.

Results: Three studies with full economic analyses fulfilled all the eligibility criteria. Two studies focussed on lung cancer screening population while one study included all patients with indeterminate pulmonary nodules. LB biomarkers used were circulating genetically abnormal cells, micro-RNA signature classifier, and a hypothetical biomarker with various sensitivity profiles. Primary health outcomes were quality-adjusted life years and life years gained. All studies demonstrated that integrating LB into the lung cancer diagnostic pathway is cost-effective when compared against the current diagnostic pathway.

Conclusion: The use of LB can be cost-effective in lung cancer diagnosis. New lung cancer diagnostic pathways with the addition of LB should be examined. (PROSPERO registration number: CRD42024567800)

A351

Feasibility and benefits of Subxiphoid utility port for Robotic Assisted Thoracic Surgical (RATS) Anatomical lung resection

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Objectives: Conventional RATS anatomical lung resection utilises a utility-port, usually in the 4th or 7/8th Intercostal space. Subxiphoid utility-port (SUP) have been used in VATS, with reported reduction in neuropraxia and pain. We describe our audit on the feasibility of using Subxiphoid utility-port from RATS anatomical lung resection.

Methods: 83 consecutive cases of RATS lobectomy using SUP were audited. Operation was performed via standard Da Vinci port sites and Subxiphoid utility port (SUP). Patients with history of epigastric hernia, hiatus hernia, previous epigastric/subcostal incision

for abdominal surgery and scoliosis; and cardiomegaly (for left-sided procedure) were excluded.

Parameter collected included: Pain score on Postop day1 (PSD1, delayed pain(DP) at 4-6 weeks, intercostal drain duration(ICDD), length of Hospital stay(LOS), any intraoperative or postoperative complications.

Results: 4 patients were excluded from the analysis as they underwent conversion to thoracotomy for technical reasons (n=3) and bleeding (n=1); remaining cases were performed without problems. There was 1 death (89-year-old due to gut ischaemia). Mean ICDD was 1.4 days (Std 1-3), median LOS was 2(IQR2-5). Median PSPD1 was 3/10(ISR1-4). Incidence of delayed pain at 6-8 weeks follow-up was 10.4%. There was one epigastric hernia due patient's high BMI.

Conclusion: RATS anatomical lung resection with a Subxiphoid utility-port is safe. Subxiphoid port is associated with a favourable postoperative pain profile. Caution needs to be exercised in patients with raised BMI.

A352

Single surgeon experience after performing over 450 Robotic assisted Thoracic surgery (RATS) anatomical lung resection

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Objective: Outcomes after RATS anatomical lung resections performed by a single surgeon

Methods: Total number of RATS cases=522. RATS anatomical lung resections=451. Demographic and outcome data were collected prospectively.

Results:

- There is an acquisition/learning phase (pre 2018), followed by a consolidation phase (2018–19), followed by a phase of refinement (2021 onwards)
- Despite no RATS operating due to COVID-19, the mean operating time did not increase when RATS procedures were resumed
- Increased volume of RATS cases (from 2021 onwards) has further reduced times due to improved team experience and performance
- Average operating time was 98 min in 2024
- Conversion rate = 24(5.33%) cases
17(3.77%) due to physiological reasons
7 (1.55%) Bleeding
- Bleeding:
Controlled bleeding but elected to convert to thoracotomy—5 cases
Uncontrolled bleeding required emergency thoracotomy -2 cases
No death directly relating to bleeding
- Death = 3 (0.67%): 1 in-hospital, 2 after initial discharge

Conclusion: Our experience corroborates the 3 phases of learning RATS (acquisition, consolidation and refinement) as described by other researchers

Successful RATS lung resection programme requires multi-disciplinary collaboration

Shared learning and training is paramount for the entire Robotic theatre team to deliver good outcome and 1operating efficiency.

This is an experience from a "non-VATS" surgeon, learning curve may be faster for a surgeon with VATS experience

A353

The Lung MDT histology Gap: The missing piece in the pathway

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Abstract: The 2024 lung cancer audit found that 40% of cases were referred for resection without pre-operative histology, causing significant delays in treatment. We evaluated the undiagnosed pre-op histology in our lung cancer multidisciplinary team (MDT).

A retrospective audit of all lung cancer cases reviewed in our local MDT from August 1st to September 16th, comparing pre-operative diagnoses, imaging, biopsy attempts, nodule size, location, and outcomes between surgical and non-surgical cohorts.

Of the 49 patients, 12 underwent surgery, with one (8%) having a pre-operative diagnosis. Seven (14%) of all patients had a histological diagnosis. The median brooks scores were 18.6% and herder were 88%. Of the surgical patients five (42%) underwent a CT guided biopsy (CTBx) and only one (8%) yielded a diagnosis. From the non-surgical patients seven (19%) underwent CTBx. The time from the first MDT to surgery was 91 days for undiagnosed patients and 123 days for the pre-surgical diagnoses case. In the non-diagnostic cohort, 15 patients (35%) had peripheral nodules averaging 14.4 mm, while central undiagnosed nodules averaged 16.4 mm. Three (25%) surgical cases were deemed not amenable to CTBx due to peri-fissural and basal locations. Peripheral lesions ≥ 15 mm were more likely to yield a diagnosis (37.5%) compared to central lesions (4%). Of the 25 nodules < 15 mm (51%), two (8%) had a histological diagnosis.

There is a large 'GAP' in diagnostic tools for majority of lung cancer cases, especially central, peri-fissural and basal nodules. In the era of lung cancer screening, the pathway requires more advanced diagnostic tools.

A354

Spread through air spaces (STAS) over 20 Years: A Single-Centre Retrospective Analysis of Survival Outcomes

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Objectives: Spread through air spaces (STAS) in lung cancer involves tumour cells extending beyond the primary margin into air spaces is often associated with higher recurrence, particularly in sub-lobar resection and poorer survival. Inconsistent STAS reporting and a lack of consensus regarding management complicates survival analyses. This study examines the effect of STAS on survival over 20 years in a single-centre cohort, stratified by pathological stage.

Methods: We retrospectively reviewed 84 patients who underwent lung resections from 2000 to 2012, follow-up through October 2024. Haematoxylin and Eosin slides were reassessed by two thoracic pathologists, with 81 of 84 slides suitable for STAS assessment. Kaplan–Meier estimates and log-rank tests evaluated survival differences between STAS-positive and STAS-negative groups. Pathological staging was updated to TNM8, enabling stage-specific survival analysis within STAS-positive cases.

Results: STAS was identified in 39 of 81 cases (48%). The median survival in years, in the STAS-positive group was 12.5, compared to 14.4 in STAS-negative cases (P=0.17). Survival within the STAS-positive group varied by pathological stage: stage 1A (28/81) showed a median survival of 14.5 years, stage 1B (21/81) 11.8 years, stage 2B (17/81) 5.2 years, and stage 3A (5/81) 6.4 years. Significant differences in survival were observed among advanced stages (P=0.01).

Conclusions: This 20-year analysis suggests STAS may be associated with reduced survival, particularly in advanced stages, though survival differences were not statistically significant. These findings highlight

the need for larger studies to clarify STAS's prognostic value, improve preoperative identification, and refine surgical decision-making.

A355

Outcome of Robotic versus Video Assisted Thoracoscopic Resection for Early-Stage Lung Cancer

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Introduction: We compared the outcomes of robotic assisted thoracic surgery (Robotic) versus video-assisted thoracoscopic lung resection (VATS) in Stage I non-small cell lung cancer (NSCLC).

Methods: A retrospective study was conducted. Data for 960 patients with Stage I NSCLC who underwent surgical resection between January 2019 to August 2024. Data was analysed. Of these patients, 831 underwent VATS and 129 underwent Robotic lung resection.

Results: 43 cases had conversion to thoracotomy. Conversion rate was higher in the VATS group 4.8% (40 patients) than Robotic 2.3% (3 patients), $p=0.14$. The converted cases were excluded from further analysis.

Number of harvested lymph nodes stations in VATS and Robotic group were 3.2 ± 1.5 vs 3.6 ± 1.1 , ($p=0.004$). Post operative major and minor complications in VATS group was 30.7% vs 22.2% in Robotic group ($p=0.03$).

30 days mortality were 0.1% in VATS vs 0% in Robotic group ($p=0.8$). Readmission rate was 5.6% in VATS vs 3.2% in Robotic group, ($p=0.18$). Post operative hospital stay in VATS was 4.8 ± 4.1 vs 4.4 ± 3.4 days in Robotic group, ($p=0.35$). Overall one and three survival in VATS and Robotic group was: 97.4% vs 98.8% and 84.8% vs 88.2%, ($p=0.6$).

Conclusion: Robotic lung resection showed favourable outcomes regarding less post operative complications and higher number of lymph nodes station harvested. It also showed less conversion rate and no difference regarding mortality and survival.

A356

The era of sublobar resections in early-stage primary lung cancers: is there still a role for frozen section?

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Objectives: Preoperative tissue diagnosis and staging guide lung cancer management. Where this is not possible, intraoperative wedge resection may be sent for frozen section to confirm malignancy before undertaking anatomical resection. However, wedge resection distorts segmental anatomy, complicating segmental resections. This study evaluates the role of frozen section in early-stage primary lung cancers.

Methods: Retrospective analysis of patients undergoing video-assisted (VATS)/robotic-assisted (RATS) lung resection for presumed primary lung malignancy was conducted from May 2021 to May 2023. Collected data included preoperative radiological staging, resection type and final histology. Differences between RATS and VATS cohorts were also evaluated.

Results: 545 patients underwent lung resection; 348 (63.9%) lacked preoperative tissue diagnosis. In these patients, preoperative biopsy was either undiagnostic or technically not feasible. Majority (263, 75.6%) were radiologic Stage I. 155 (44.5%) had intraoperative frozen section analysis; 145 confirmed malignancy, 5 indeterminate diagnosis proceeded to anatomical lung resection, and 4 benign lesions led to resection being abandoned. Among 193 without frozen section analysis, 26 (13.5%) were benign on final histology (vs 9/155, $p=0.02$). Frozen sections were more commonly performed in radiologic T1b

stage (104vs68, $p<0.01$) and VATS (123vs36 in RATS, $p<0.01$). Segmentectomies were more frequently performed in RATS compared to VATS (31, 17.0% vs 30, 9.4%, $p=0.02$); this could account for the observed difference.

Conclusion: As complex segmentectomies are increasingly performed for early-stage lung cancers particularly with RATS, frozen section may be less essential. Evaluating disease-free survival in these patients could further clarify the role of frozen section in lung preservation surgery.

A357

Clinical Outcomes of Chest Wall Resection and Reconstruction in locally advanced and recurrent Breast Cancer: Time to formalise NICE guidelines

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Background: Despite significant advances in the systemic treatment of breast cancer the management of locally advanced breast cancer involving the chest wall remains a complex clinical scenario that is rarely discussed in breast MDTs. Yet the few cases that are referred to thoracic surgery get excellent result and survival rates.

Methods: Between 2015 and 2020, only 4 patients with mean age of 50 (range 38-69) with locally advanced recurrent breast cancer involving chest wall were referred by oncologists for the treatment via chest wall resection and reconstruction at tertiary care hospital.

Results: The median time from the initial surgery to chest wall resection was 5 years (range: 2-30). All four patients had an uneventful postoperative recovery, although one developed wound infection, which was successfully managed conservatively. There were no in-hospital mortalities. The one, three, and five-year survival rates were 100%, 100%, and 75%, respectively. One patient had residual disease, necessitating further oncological treatment. All patients had soft tissue and bone resection (involving sternum and ribs) along with reconstruction with myocutaneous flap.

Conclusion: Chest wall resection and reconstruction can offer extended disease-free survival for some locally advanced breast cancer patients. However, despite promising survival rates, there is a lack of standardized evidence and guidelines regarding the surgical treatment pathway for locally advanced tumours as demonstrated by the lag between presentation and definitive treatment and low number of cases. Further research is needed to establish clearer protocols and national guidelines for the broader clinical practice in breast cancer management.

A358

Is the Outcome of Major Lung Resection for Non Small Cell Lung Cancer in Elderly Patients as Good? Our Ten Years Experience

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A358

Objectives:

- The elderly population in the UK is expected to double in the next two decades
- Clinicians are faced with increasing number of geriatric patients with NSCLC which is technically resectable
- Surgery is the cornerstone of treatment for early-stage non-small cell lung cancer. However, reluctance in offering surgical treatment to octogenarian patients is generally seen
- With improvement in surgical techniques, age on its own is not a contraindication to surgical resection in suitable patients
- We aim to find out if the major lung resection as part of the treatment of lung cancer is safe in octogenarians.

Methods:

- All the patients who underwent major lung resection for the treatment of NSCL cancer from 2013–2024 were included in this study
- All the patients undergoing thoracic surgery other than major lung resection were excluded
- Data was collected retrospectively from electronic departmental database
- The patients were grouped into octogenarians and non-octogenarians and the outcome variables were compared

Results

- All cause mortality, All cause morbidity, Length of postoperative stay, Return to theatre during same admission, Air leak for more than seven days, Reintubation for positive pressure ventilation, and infection were recorded as outcome measures
- Despite the fact that elderly patients had more comorbidities there was no statistically significant difference in the patients' outcome data amongst octogenarians and non-octogenarians

Conclusion

- We have found that the outcome of major lung resection is comparable to that in non-octogenarians
- Careful selection based on performance status will result in equally good outcome regardless of comorbidities

A359**Real-World Implementation of Neoadjuvant Chemo-Immunotherapy for Resectable Non-Small Cell Lung Cancer: A Single-Centre Experience**

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Background: In March 2023, the National Institute for Health and Care Excellence (NICE) recommended neoadjuvant chemo-immunotherapy for select patients with resectable non-small cell lung cancer (NSCLC) to improve survival. However, real-world data on its implementation and effectiveness are limited.

Objective: To evaluate the feasibility, safety, and effectiveness of neoadjuvant chemo-immunotherapy in patients with resectable NSCLC at a single UK centre.

Methods: Between 22 March 2023 and 30 March 2024, we retrospectively reviewed patients referred for neoadjuvant chemo-immunotherapy at the Liverpool Heart and Chest Hospital, following publication of the NICE guidance. During this period, 590 patients underwent lung resection for primary lung cancer. Of the 117 patients referred for neoadjuvant chemo-immunotherapy, 96 initiated nivolumab plus platinum-based chemotherapy, and 93 proceeded to surgery (3.1% attrition rate). Data collected included demographics, treatment adherence, surgical outcomes, pathological responses, peri-operative complications, and mortality rates.

Results: Neoadjuvant treatment adherence was high; 88% completed all three cycles. Minimally invasive surgery was performed in 84% of cases, with an 8% conversion rate. Standard lobectomy was conducted in 85% of patients; the pneumonectomy rate was 3.5%. A major pathological response occurred in 56% of patients, with a complete pathological response in 42%. The in-hospital mortality rate was 2.2% (2 patients).

Conclusion: Neoadjuvant chemo-immunotherapy is feasible and well tolerated in a real-world setting, with low attrition and encouraging pathological response rates. The high utilisation of minimally invasive surgery and low peri-operative complications, along with low in-hospital mortality, support its integration into standard care for select patients with resectable NSCLC.

A360**Major Lung Resection After Neo-adjuvant Treatment: Our Early Experience**

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A360

Objectives: Lung Cancer is one of the leading causes of death worldwide.

Surgery is the corner stone of treatment in early-stage non-small cell cancer of the lung.

However, recent advances in multimodal treatment of non-small cell lung cancer (NSCLC) have led to introduction of neoadjuvant treatment in stage 3 lung cancer patients followed by resection within six weeks of neoadjuvant therapy.

The rationale of neoadjuvant treatment is that the antigen load of the tumour increases tumour recognition by the immune system.

We aim to look at the outcome of surgery after neo-adjuvant treatment in Non Small Cell Lung Cancer patients

Methods: All the patients who had received neo-adjuvant treatment were included into this study.

Retrospective data were collected from the electronic departmental database

Results: Total 14 patients were identified as suitable for inclusion into this study. 50% of the patients were successfully downstaged, 92.85% patients showed pathologic response, 71% had the surgery through thoracotomy incision and 14.28% were deemed inoperable. The most common complication was infection 21.4% followed by prolonged air-leak 14.28%.

Conclusion: We have found good pathologic response to the neoadjuvant treatment in stage 3 cancer patients. A good number of patients had the cancer completely resected successfully. A higher proportion of patients received open thoracotomy because the body's immune response against the tumour made surgical resection challenging. Further prospective studies with larger number of patients are required to confirm our findings.

Limitation: study population consists of only those patients who were considered fit for surgery

A361**Lobectomy vs Sublobar resection for primary non-small cell lung cancer, is there a difference?**

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A361

Objectives: Lobectomy is considered the gold standard for treating non-small cell lung cancer (NSCLC) since the 1960s. However, with technological advances leading to earlier detection, there is increasing interest in sublobar resections to be a valid alternative to lobectomy. While large clinical trials have shown sublobar resections to be comparable to lobectomy in terms of overall survival and recurrence, we aim to determine whether this is applicable to our subject population at Mid and South Essex, United Kingdom.

Method: This retrospective study reviews a cohort of 250 patients who were diagnosed with NSCLC between 2017-2023 and were managed at the Essex Cardiothoracic Centre. The service evaluation aims to compare the difference in survival of patients following a lobectomy or sublobar resection in the form of segmentectomy or wedge resections.

Results: The study consists of 140 female and 110 male patients, with mean age of 73. 82% were smokers. Majority were diagnosed with early-stage NSCLC (stage I/II), adenocarcinoma present in 185 patients, while 60 had squamous-cell carcinoma. Out of 250 patients, 190 underwent lobectomy, 15 segmentectomy and 12 wedge resections. A combination of lobectomy and a sublobar procedure was used on 30 patients.

Conclusion: This study investigates the feasibility and efficacy of sublobar resections as an alternative to lobectomy for NSCLC patients at Mid and South Essex. While lobectomy remains the standard of care, our findings indicate a growing trend towards sublobar procedures, particularly in selected patient populations. Further analysis will assess the impact of these procedures on patient outcomes.

A362

Evaluating the Impact and Mitigation Strategies of Early Implementation of a Robotic Thoracic Surgery Program: A Comparative Quantitative Local Unit Study and a Mixed-Methods National Analysis on Inclusivity, Equity, Training, Waiting Lists, Service Provision, Economics, and Quality Assurance

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A362

Objectives: The growth of robotic thoracic surgery in the UK presents challenges, including learning curves, productivity dips, access and equity for consultants and patients, quality assurance, and structured training. This study shares one unit's implementation strategy, mitigating actions, and presents national qualitative comparisons across robotic units. Key Performance Indicators (KPIs) compare outcomes of pre-robotic cases with the initial 50 robotic lung resections, evaluating metrics like mortality, air-leak incidence, upstaging, ITU readmission, lymph-node resection count, segmentectomy, and conversion rates. Moreover, we compare the impact and mitigation strategy against these challenges with other robotic units in the UK.

Methods: Qualitative and quantitative methods were employed. A UK-wide survey explored robotic surgery's impact on service provision, focusing on concentrated experience vs. inclusivity, equity, junior training, productivity, waiting lists, and economic effects. Quantitative analysis compared robotic vs. non-robotic outcomes over 13 months in a major UK unit compared with the last 50 non-robotic cases

Results: There was notable practice variability across units concerning the learning curve, equity, and waiting lists, mainly tied to access levels. In the our unit, implementation we had access to 90% of one Da Vinci system, 100% consultant training (5/5) within 12 months, and 1.2 robotic sessions per week. KPIs showed consistency, with robotic cases revealing significant lymph node upstaging (19% vs. 0%, $P < 0.05$) despite similar lymph node counts.

Conclusion: Early robotic thoracic surgery implementation can be safe, effective, and inclusive with well-managed access. This unit's phased all consultants inclusion and resource allocation may serve as a model for others

Final category: Training

A363

Enhancing Thoracic Robotic Surgery Education in the Digital Realm: A Learner Analysis

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A363

Introduction: This study examines the role of Virtual Learning Environments (VLEs) in teaching thoracic robotic surgery skills to surgical trainees. It focuses on how an e-module by the Royal College of Surgeons of England aids in acquiring these skills.

Materials and Methods: The study involved 360 participants, including surgical specialty trainees and surgical consultants from various specialities. The e-module, a self-paced, self-contained unit, enhances learning through videos, interactive elements, reflective questions, and case studies. It includes formative and summative assessments with

short answer and multiple-choice questions (MCQ). Using a mixed-method approach, this research combines qualitative interviews and questionnaires with quantitative statistical analysis, grounded in Knowles' theory of andragogy, to assess the e-module's alignment with adult learning characteristics like self-directedness and motivation.

Results: Results show strong positive correlations between e-module use and educational alignment. Participants' scores on multiple-choice questions improved from 60% pre-module to 75% post-module ($t_{99} = 6.32$, $P < 0.001$). There was a strong positive correlation ($r = 0.7$) between frequent virtual training sessions and alignment with trainees' educational needs. Analysis of Variance, (ANOVA) demonstrated significant differences based on prior experience ($F_{2, 97} = 4.56$, $P = 0.013$).

Conclusion: The study highlights the transformative potential of VLEs in adult education, particularly for thoracic robotic surgery. VLEs address learner needs, promote self-directed learning, and foster intrinsic motivation, paving the way for enhanced surgical education. Ongoing research and development are crucial for further improving VLEs and the educational experience for adult learners across various fields.

A364

Trainee and Consultant Perspectives on the UK Cardiothoracic Training Pathway

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A364

Objectives: The UK cardiothoracic surgery (CTS) training pathway has undergone changes to meet evolving educational and workforce needs. This study aims to evaluate the impact of these changes by surveying trainees and consultants to understand their experiences and perceptions and identify areas for improvement.

Methods: A cross-sectional survey was conducted from March to May 2024, in person at the SCTS Annual meeting and online. Questions included training experience e.g., theatre exposure, supervision, and mentorship, using a Likert scale. Open-ended questions captured concerns and suggestions.

Results: There were 85 responses (47 consultants, 38 trainees). Whilst 60.5% of trainees and 68.1% of consultants agreed that trainees receive adequate supervision, 29% of trainees and 40.4% of consultants felt there was inadequate exposure in theatre. 26.3% of trainees and 17% of consultants felt trainees do not receive adequate mentorship. While 42.6% of consultants felt that trainees have a good work/life balance, only 15.8% of current trainees agreed with this.

Free text answers revealed that trainees enjoy operating the most and consultants enjoyed mentoring the most. However, there were concerns raised about the shorter training pathway and lack of operative exposure.

Conclusions: In conclusion, there are significant differences reported in experiences of trainees in the current UK CTS training pathway compared to the perceptions of their trainers. Trainees have raised concerns about inadequate theatre exposure, poor work-life balance and lack of mentorship. This work benchmarks the current status and provides insights into improving the programme.

A365

Safe management of tension pneumothorax in tertiary centre: A quality improvement project

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Journal of Cardiothoracic Surgery 2026, 21(Suppl 1): A365

Background: Tension pneumothorax is a life-threatening situation, and its management requires a quick diagnosis and decisive treatment. We aim to evaluate the current alertness of the junior doctors at

the tertiary centre and the availability of resources necessary to deliver safe and effective treatment for tension pneumothorax.

Method: During normal working hours, unannounced simulations would take place. Junior doctors were presented with a scenario of acute shortness of breath, leading to a diagnosis of tension pneumothorax. They have to follow a diagnostic process and present a management plan. Primary recorded endpoints show the time taken to attain the correct diagnosis, adherence to guidelines including needle decompression and the correct use of LocSSIP forms. Following the results of the first cycle, an intervention was organised consisting of teaching and sending distribution of information outlining the algorithm for decision making.

Results: Twenty simulations involving junior doctors working at the tertiary centre were recorded. (Table 1) We compared the results pre- and post-intervention and have demonstrated an improvement in each of the endpoints.

Discussion: We managed to achieve some improvement in all endpoints and we believe regular participation in hands-on training helped to prepare our team for what can be a very stressful clinical scenario. We plan to turn this into a cyclic audit to help maintain the skills, especially given the rotation of doctors.

Conclusion: Training through simulation of clinical scenarios is a proven method. We believe that this audit could be useful to every medical or surgical department.

Table 1 (abstract A365) Pre- and post-intervention after the intervention

Median (Range)	Pre-intervention (minutes:seconds)	Post-intervention (minutes:seconds)	P value
Correct diagnosis (minutes:seconds)	02:35 (01:48-03:21)	02:25 (01:15-03:41)	0.2489
Time to needle decompression (minutes:seconds)	03:05 (02:15-03:51)	02:47 (01:50-03:30)	0.1561
Completion of LocSSIP form	20% (2/10)	40% (4/10)	0.3291

A366

Lights, Camera, Anastomosis: Transforming CTS Training Through Procedural Movie Analysis

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Objective: To evaluate the efficacy of procedural movie analysis as a tool for assessing improvement during microanastomosis training in cardiothoracic (CTS) trainees.

Methods: Five CTS trainees participated in a structured training program incorporating 20 simulated end-to-side anastomoses using realistic silicon vessels with 2 mm internal lumen diameter.

Simulation attempts were performed in four batches with performance scoring and visual feedback provided after each batch. Movies were recorded of each anastomosis using a smartphone. Results were conveyed via a web-based overview and expert feedback was provided on a one-on-one basis after simulation attempt number 10 and 20. Trainee improvement was subsequently analysed with respect to needle passage and suture organising times.

Results: Three participants were in their first year of CTS training with no previous anastomosis experience, and had poor initial performance. Over the training program they displayed excellent improvement, as measured by a decrease in the overall anastomosis time, which was derived from efficiency in suture organisation between tissue bites. Analysis of variance (ANOVA) testing demonstrated a significant reduction in the time spent organising sutures compared with needle passage, in novice trainees. ($p=0.03$).

Conclusion: CTS trainees responded positively to the structured quantitative feedback, describing training as "an immersive learning experience which has improved my skill and confidence in anastomosis" (final participant debrief session). Results demonstrated that junior trainees improved their results significantly over the training period. Procedural movie analysis provided important quantitative evidence, highlighting that the observed improvements were linked to an increase in their economy of movement.

A367

Bridging the Gap for Early Trainees: A Novel Digital Cognitive Simulator for Cardiothoracic Surgical Training

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Background: Opportunities for early trainees to gain experience in Cardiothoracic surgery are limited, with few centres across the country. Undergraduate medical education often lacks surgical procedure teaching, leaving trainees to rely on attending live operations and self-study using disparate and self-organised resources. Advanced simulation tools (e.g. VR) are scarce, costly, and inaccessible. Video learning resources often lack interactivity and can make procedural steps difficult to follow.

Objectives: We aim to develop an affordable, accessible tool that provides a comprehensive overview of Cardiothoracic procedures, including elements of surgical decision-making, covering each stage of the surgical journey in a structured, user-friendly format.

Methods: We created a Digital Cognitive Simulator (DCS), a computer-based application designed specifically for early trainees. Our prototype replicates the Coronary Artery Bypass Grafting (CABG) procedure, guiding the learner from preoperative imaging and patient optimisation to the intraoperative stages and postoperative recovery, with interactive questions to promote active learning. To evaluate the perceived value of this DCS, we are conducting a qualitative study with medical students to gather insights into the educational impact of the DCS.

Results: Initial feedback from the ongoing study indicates that students perceive the DCS as a valuable resource for enhancing their understanding of the CABG procedure.

Discussion: The DCS represents a novel approach to Cardiothoracic education, providing a practical alternative to passive video materials and mitigating the barriers of cost and inaccessibility associated with traditional surgical learning resources. Further studies will help refine the DCS and evaluate its effectiveness in improving surgical competencies among trainees.

A368

Five-year Mini-AVR trainee outcomes: a single-centre retrospective cohort study at King's College Hospital, London

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Objective: The steep learning curve of minimally invasive aortic valve surgery (mini-AVR) means that it is historically a procedure carried out by consultants as first operator. We sought to compare mini-AVR outcomes between consultants and SpRs to ascertain any differences.

Methods: A retrospective cohort study was conducted using a prospectively maintained institutional database. All patients undergoing isolated mini-AVR at a single institution between April 2018 and

September 2023 were included. All analyses were conducted using the Stata (StataCorp LLC, version 18, Tx, USA) software package.

Results: 204 patients met the study inclusion criteria. 152 (75%) of procedures were undertaken by consultants (Group A) and 52 (25%) by SpRs (Group B). Median post-operative stay was 7 days in Group A and 6 days in Group B ($p=0.13$). Median cross clamp time was 52 min in Group A and 58 min in Group B ($p=0.04$). Paravalvular leak rate was 1% in Group A and 2% in Group B ($p=0.42$). All patients were alive at discharge. No patients required pacemaker insertion. The most commonly implanted valve size was 23 mm in both cohorts ($p=0.52$). After adjusting for valve type, an increase in valve size of 1 mm lead to a reduction in postoperative mean gradient of 0.5 mmHg (95% CI -0.14–0.79 $p=0.006$). Post-operative details are shown in Table 1.

Conclusion: Training SpRs in mini-AVR is a safe practice. Although the learning curve is steep, trainee outcomes can be comparable with consultants in a training centre with a dedicated minimally invasive training program.

Table 1 (abstract A368) Outcome measures for mini-AVR between April 2018-September 2023.

	Group A Consultant (n=152)	Group B SpR (n=52)	p-value
Pre-operative peak gradient (mmHg)	69	60	0.25
Pre-operative mean gradient (mmHg)	41	30	0.19
Post-operative peak gradient (mmHg)	17	21	0.17
Post-operative mean gradient (mmHg)	9	10	0.37
Paravalvular leak	1 (1%)	1 (2%)	0.42
Euroscore II (%)	1.3	1.4	0.95
Postoperative stay (days)	7	6	0.13
Bypass time (minutes)	70	79	0.06
Cross clamp time (minutes)	52	58	0.04

A369

Five-year training outcomes for Cardiothoracic trainees at King's College Hospital, London

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Objective: Hands-on experience is essential in training cardiothoracic registrars (SpR). With the rising number of trainee-led operations, it is important to collate operative outcomes to fine-tune training programs.

Methods: A retrospective cohort study was conducted using a prospectively maintained institutional database in one cardiothoracic department. All patients undergoing cardiothoracic surgery in the institution between 2018 and 2023 were included. All analyses were conducted using the Stata (StataCorp LLC, version 18, Tx, USA) software package.

Results: 2761 patients met the study inclusion criteria. 1790 (65%) of procedures were undertaken by consultants and 971 (35%) by SpRs, whose caseload was upwards trending, performing 34% of cases in 2018 to 48% in 2023. Consultants undertook higher risk cases than SpRs with a median Euroscore II of 2.05 (1.14-4.21) Vs 1.44 (0.95-2.32) $p<0.001$. SpRs undertook more isolated CABGs than consultants (69% VS 52.7%, $p<0.001$). After adjusting for the procedure undertaken, Euroscore II, gender, and bypass duration, surgical intervention by an SpR was associated with an odds ratio of inpatient death 0.47 times lower than a consultant (95% CI 0.18-1.26 $p=0.13$). There was therefore no statistically significant difference in in-hospital mortality between trainees and surgeons. Further details are shown in Table 1.

Conclusion: We have demonstrated a prospering five-year training initiative at our centre with trainees performing similarly to consultants. An avid cardiothoracic training program through hands-on experience is essential and may be achieved without any detriment to operative outcomes.

Table 1 (abstract A369) Five year outcomes at a single centre comparing cases performed by consultants and registrars (SpRs).

	Consultant (n=1790)	SpR (n=971)	p-value
Number of operations	1790 (65%)	971 (35%)	
Gender			
Male	1334 (75%)	763 (79%)	
Female	456 (25%)	208 (21%)	0.01
Euroscore II	2.05 (1.14-4.21)	1.44 (0.95-2.32)	<0.001
Mortality	50 (2.8%)	5 (0.5%)	<0.001
Postoperative stay (days)	7 (5-11)	6 (5-8)	<0.001
Sternal wound infection	10 (0.7%)	3 (0.3%)	0.32
Stroke	39 (2.2%)	12 (1.2%)	0.08
Return to theatre	60 (3.4%)	19 (2.0%)	0.03
Cross clamp time (minutes)	61 (46-88)	55 (43-71)	<0.001
Bypass time (minutes)	100 (78-131)	86 (67-105)	<0.001

Continuous data is presented as median (IQR) and categorical as counts (%).

A370

Safety and Efficiency of Trainee-Led Surgery for Acute Aortic Syndrome: A Retrospective Analysis

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Introduction: Acute aortic syndrome (AAS) is a life-threatening condition requiring complex surgical intervention. It is crucial to ensure that cases involving trainees do not compromise patient outcomes. In this study we investigated the safety and outcomes of AAS surgery performed by trainees as the primary operator under consultant supervision compared to consultant-led procedures.

Methods: We retrospectively analysed 171 patients undergoing surgery for AAS over a 5-year period at a single institution. Patients were grouped by the primary operator: 62 surgeries were performed by trainees and 109 by consultants. Demographics including age, sex, and comorbidities (EuroSCORE II), were well matched between groups. Postoperative outcomes, including acute kidney injury (AKI), stroke, and short-term (30-day) mortality, were compared. Cardiopulmonary bypass (CPB) times were also analysed.

Results: There were no significant differences between the trainee and consultant groups in rates of postoperative AKI (42% vs 41%, $p>0.9$), stroke (18% vs 19%, $p=0.8$), or 30-day mortality (16% vs 20%, $p=0.5$). CPB times were significantly shorter in the trainee group compared to the consultant group (199 min vs. 241 min, $p=0.003$). However, consultants performed more total arch replacements than trainees as primary operator (13% vs 4.8%, $p=0.093$).

Conclusions: Our analysis demonstrates that acute aortic syndrome surgeries can be safely performed by trainees under consultant supervision, without negatively affecting key postoperative outcomes. The finding of shorter CPB times in trainee-led cases suggests that training cases may involve simpler procedures. Nonetheless, these results support the feasibility of surgical trainees being trained to operate on acute aortic syndrome presentations.

A371

3D printed mini-Mitral simulator as an adjunctive aid to human cadaveric training: a short exploratory survey

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Objectives: The superior clinical outcomes of minimal access Mitral surgery (MIMS) in comparison to conventional surgery are incentives to increase MIMS volume. Effective surgical training, including cadaveric training, may play a pivotal role in the safe transition to MIMS. Patient-specific training platforms, enabled by advances in

three-dimensional printing (3Dp) and materials technologies, could supplement or replace cadaveric training. We aim to evaluate and compare the training experience of a 3Dp MIMS Trainer (CAROSIM) to human cadaveric training amongst senior surgical trainees using a retrospective questionnaire.

Methods: 10 surgical trainees attending the Heart Research UK MIMS course underwent simulation training on CAROSIM followed by human cadaveric training, including performing a supervised mitral repair. They completed a short questionnaire survey at the end of the course.

Results: 90% of trainees reported a superior training experience on the cadaver. 40% rated the anatomical accuracy of CAROSIM to be the same or better than the cadaver. While 60% rated the suturing experience as equivalent between the two platforms, 40% rated leaflet resection experience as equivalent. All participants thought CAROSIM to enhance surgical training, with a 50% "extremely beneficial rating" for enhancing MIMS training, and 60% for cadaveric training. 90% of delegates thought CAROSIM could improve their technical surgical skills.

Conclusions: Our exploratory survey found cadaveric simulation training to be superior to a 3Dp platform, although the latter was deemed an effective adjunct to cadaveric training for improving technical surgical skills. Further substantive work is required to define the role of 3Dp simulators in MIMS.

A372

Bridging Theory and Practice in Cardiothoracic Surgery Training with 3D Segmentation

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Background: Traditional cardiothoracic training relies on in-theatre experiences, dissection, and two-dimensional imaging, which often challenge the development of spatial reasoning and accurate understanding of the heart's orientation. Discrepancies between textbook anatomy and surgical reality hinder trainees' transition from theory to practice.

Objectives: To evaluate how three-dimensional (3D) segmentation enhances cardiothoracic surgical training by addressing limitations of traditional methods in developing spatial reasoning and anatomical understanding.

Methods: A narrative review synthesised current literature on 3D segmentation in cardiothoracic education. A comprehensive literature search was conducted using terms such as "3D segmentation," "cardiothoracic surgery," and "surgical training," focusing on high-impact studies and clinical experiences related to its educational application.

Results: Traditional methods relying on two-dimensional imaging hinder spatial reasoning and accurate anatomical understanding. 3D segmentation bridges this gap by offering interactive, patient-specific models that enhance visualisation and spatial awareness. Trainees using segmentation better understand complex anatomical relationships, reconcile discrepancies between textbook and actual anatomy, and improve preoperative planning and intraoperative decision-making. Our experience shows potential for improvements in trainees' anatomical comprehension, spatial skills, and confidence in performing complex procedures. Challenges include time constraints, costs, and variability in imaging quality.

Conclusions: Integrating 3D segmentation into cardiothoracic surgical training enhances spatial reasoning and anatomical understanding, effectively bridging the gap between theoretical knowledge and practical application. Adopting segmentation is essential for preparing future surgeons to navigate the complexities of modern surgical practice with greater confidence and precision.

Final category: Transplant and Failure

A373

'Successful use of the Berlin heart as a bridge to heart transplantation, despite severe septicemia and thrombocytopenia for dilated cardiomyopathy induced end-stage heart failure in an 18-month-old': A Case Report and Literature Review*

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Dilated Cardiomyopathy (DCMP), a non-ischaemic heart disease characterised by ventricular enlargement and systolic dysfunction, is the second most common cause of heart failure worldwide, with a prevalence of approximately 1 in 2500 individuals. It represents a significant cause of paediatric heart failure and long-term morbidity and mortality in children.

Few studies document the use of paediatric Ventricular Assist Devices (VADs), such as the Berlin Heart EXCOR (BHE) device, in children with DCMP complicated by sepsis. We report the case of an 18-month-old patient diagnosed with DCMP-induced refractory heart failure, complicated by superadded septicemia and thrombocytopenia. Thrombocytopenia is generally considered a contraindication to BHE implantation due to the risk of bleeding complications.

However, in this instance, the device was used as a last-resort bridge to heart transplantation, despite this concern. Remarkably, the patient survived the procedure, highlighting the potential for successful outcomes even in high-risk scenarios. This case underscores the importance of an individualised approach to managing VAD use in complex clinical scenarios, particularly when existing guidelines might not offer clear solutions. By presenting this case, we emphasise the need for careful management of VADs in high-risk, compassionate-use situations, encouraging a more personalised approach to patient care in paediatric cardiology.

*The patient's parents have confirmed explicit consent to be in the Journal

A374

A Systematic Review of the Contribution of Large Animal Ex Vivo Lung Perfusion Models to Lung Transplantation Research, Development, and Clinical Practice.

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Objectives: Lung transplantation (LTx) is a life-saving procedure for individuals with end-stage lung disease, however limited availability of suitable donor lungs remains a major challenge. Ex vivo lung perfusion (EVLP) has effectively addressed this issue, with animal models playing a key role in preclinical research. This review aimed to evaluate the contribution of large animal models to EVLP development and application in LTx.

Methods: A strategic literature search was conducted across MEDLINE (PubMed), Embase, and Cochrane databases, with the last search performed in January 2024. Relevant data were extracted from included studies. A thematic analysis was used to synthesize findings, while study quality and risk of bias were assessed using the SYRCLE's Risk of Bias tool. Certainty of evidence was evaluated using the GRADE framework.

Results: Thirty studies met inclusion criteria, with models including porcine, ovine, rabbit, and canine. All studies examined EVLP-treated donor lung function. Key themes included EVLP as a platform for lung reconditioning, protocol optimization, lung-injury treatment, and novel applications. Two studies also explored more cost-effective abattoir animal models for EVLP research.

Conclusions: Large animal models, particularly the porcine model, are the most established for EVLP research, contributing to protocol optimization, lung preservation, and improved LTx outcomes. Evidence suggests the porcine model could expand EVLP applications to

surgical education, pulmonary research, and pharmaceutical testing. Further research is needed however, to improve investigator adherence to EVLP protocols as to enhance reliability and clinical applicability of study outcomes.

A375

The implementation of prehabilitation on patients on the urgent heart transplant waiting list

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Objectives: The aim was to implement a physiotherapy prehabilitation programme for those on the urgent heart transplant waiting list and evaluate post-operative outcomes. Those in heart failure on the urgent heart transplant list can wait months for transplant as inpatients. This provides an ideal teachable moment and opportunity for prehabilitation, to optimise patients for heart transplant.

Methods: Participants were assessed issued with a prehabilitation programme within two days of urgent listing for heart transplant. This included an exercise programme, a step programme and an inspiratory muscle trainer. Their programme was reviewed and adjusted weekly until transplant. Post-operative outcome measures were recorded and were compared retrospectively with those who underwent urgent heart transplant prior to the implementation of prehabilitation.

Results: Twenty patients were included. Ten patients were part of the prehabilitation group (p) and ten who didn't have prehabilitation input (np). No adverse events were reported with the introduction of prehabilitation. Time until first mobilisation (4.72 days (p) vs 5.88 days (np)), ICU length of stay (7.09 days (p) vs 11 days (np)), time until discharge from physiotherapy (19.90 days (p) vs 29.10 days (np)) and time until discharge home (26.54 days (p) vs 32.70 days (np)) all showed improvement with the implementation of prehabilitation.

Conclusion: This was a small pilot study. However, results are encouraging. A prehabilitation programme for patients on the urgent heart transplant waiting list is safe and effective. Prehabilitation demonstrated improved post-operative outcome measures when compared with those who underwent heart transplant before prehabilitation was implemented.

A376

How Organ Care System Saved the Day During a DCD Heart Transplant: A Case of Complicated Sternal Re-entry*

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Introduction: Sternal re-entry during left ventricular assist device (LVAD) explant and heart transplantation risks injuring structures including the driveline, outflow tract, ascending aorta, or heart. Pre-operative imaging is vital for planning re-entry. This report highlights a pitfall with CT imaging and an advantage with using the Organ Care System (OCS) in minimising ischemic time during complex re-sternotomy.

Case Report: A 56-year-old male with ischemic cardiomyopathy and a LVAD underwent a DCD heart transplant. CT imaging post-LVAD implantation two years prior suggested low re-entry risk. However, during re-sternotomy, a vascular injury occurred between the outflow graft and ascending aorta causing catastrophic bleeding. Rapid chest proximation was attained using pre-placed Ethibond sutures (see Figure), controlling bleeding whilst obtaining femoral access for cardiopulmonary bypass (CPB). After deep hypothermic circulatory arrest (26 min), the

heart with LVAD were explanted. The OCS optimally perfused the donor heart, extending preservation time (OCS perfusion time of 241 min and total warm ischaemic time of 96 min). Following donor heart anastomosis, the patient was weaned from CPB. Postoperatively, he required a tracheostomy but recovered well and was discharged on day 40.

Conclusions: The OCS enabled a positive outcome by extending preservation time, allowing increased flexibility. Preoperative planning and intraoperative techniques, including the use of pre-placed Ethibond sutures, were crucial. The discrepancy between preoperative imaging and intraoperative findings suggests serial imaging could improve planning, as anatomical changes following LVAD implantation may not be appreciated on initial scans. Research into the evolving proximity of structures to the sternum is essential.

*The patient has confirmed explicit consent to be in the Journal



A377

Optimizing Pressure-Volume Loop Analysis: Developing a Predictive Model for PVL Measurements during Ex-Situ Machine Perfusion for Cardiac Functional Measurements

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Objectives: Pressure-volume loop analysis (PVL) is the gold-standard for cardiac functional analysis during ex-situ perfusion (ESMP) experiments. However, published PVL results are highly variable preventing adequate comparison. We have collated these results to discern benchmark PVL values and time-based prediction models during ESMP. We anticipate an ESPVR reduction (load-independent

contractility), and EDPVR increase (load-independent filling), showing a fall in systolic and diastolic function.

Methods: A literature search was performed for ESMP studies using PVL analysis, with published numerical PVL results. Of the initial 58 studies, 34 were duplicates and 18 were excluded. Results from 5 local studies were added for a total of 11 studies. Load-independent PVL results at 1,2 and 4 h of ESMP were analysed to produce a linear mixed-effects predictive model and initial benchmark values (P_{60} , P_{120} , P_{240}).

Results: Systolic measurements decreased over time (P_{60} to $P_{240} = -39\%[\text{ESPVR}]$, $-21\%[\text{dp/dt}_{\text{max}}]$), whilst diastolic measurements increased (P_{60} to $P_{120} = +40\%[\text{EDPVR}]$, $+2\%[\text{dp/dt}_{\text{min}}]$), matching our predicted systolic and diastolic dysfunction (Fig 1). Overall, studies had similar trends at each measurement. However, study variation accounted for greater variability compared to time alone. This, combined with many outliers, highlights the variability of biological PVL results.

Conclusions: This initial PVL model shows a 39% reduction and 40% increase in ESPVR and EDPVR, matching expected outcomes. However, the accuracy of benchmark models are hindered by a lack of published numerical PVL results. With more results, improved models can be devised, improving the validity of PVL results during ESMP.

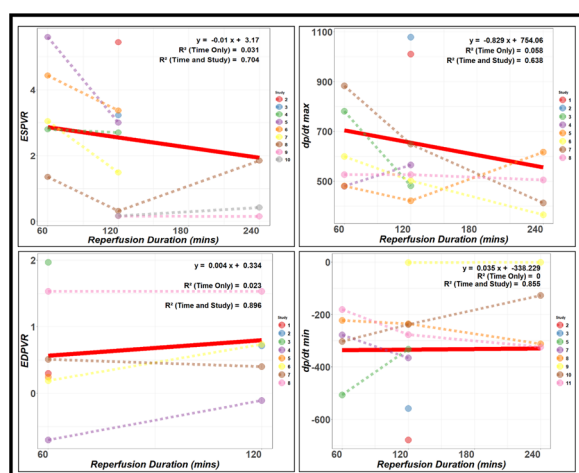


Figure 1 (abstract A377) Linear mixed-effect regression models for ESPVR, dp/dtmax, EDPVR and dp/dtmin. Red line=Line of Best Fit. Dotted lines=Raw values for each study.

A378

Changes in Echocardiographic Parameters, Hemodynamics and Exercise Performance after Heart Transplantation for Hypertrophic Cardiomyopathy

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Purpose: Heart transplantation is indicated for patients with hypertrophic cardiomyopathy in end-stage phase. Pre-transplant assessment includes cardiopulmonary exercise testing (CPET), echocardiogram, and right heart catheterization (RHC). This study reports outcomes after heart transplantation and changes in CPET, echo, and RHC parameters.

Methods: A single-center retrospective study identified adult patients who underwent isolated heart transplant for hypertrophic cardiomyopathy from 2007 to 2021. Clinical data were collected via chart review. Primary outcome was changes in CPET parameters post-transplant. Secondary outcomes were changes in echo and RHC parameters. Paired t-tests were used for comparisons.

Results: 35 patients were identified, median age 45 years, 37.1% female. Baseline median percentage predicted peak VO₂ (ppVO₂) was 39%, and ventilatory equivalent of carbon dioxide (VE/VCO₂) was 35 l/

min/l/min. Post-transplant, ppVO₂ increased significantly to 53% at one year and 64% at five years. VE/VCO₂ did not significantly decrease at one or five years.

Baseline LVEF was 45%. It increased significantly to 62% at one and five years. Baseline cardiac index was 2.2 l/min/m², increasing to 3.3 l/min/m² at one year and 2.6 l/min/m² at five years.

Conclusions: Post-transplant, echocardiographic and hemodynamic parameters significantly improved to normal levels at one and five years. However, exercise parameters only improved to moderately impaired levels, suggesting further research is needed to understand this disparity.

A379

Recipient Hospital theatre team mobilization timing for heart transplantation: What is the right time?

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Background: The heart transplant process is dynamic with complex logistics. Ideally, the donor heart should arrive in the Recipient hospital (RH) theatre when the recipient is ready to begin heart implantation to minimize the organ ischemia time. Over-consciousness prompts early mobilization for the RH theatre team, impacting emergency and routine cardiac surgeries.

Methods: 13 heart transplant timelines utilizing donor hearts retrieved by donation after brain death (DBD) from September 2023 to May 2024 were evaluated.

Results: The mean time for the recipient transfer to the RH theatre was 12±4 min with the mean anaesthetic time of 78±37 min. The difference in the expected and actual arrival of the retrieval team at the donor hospital (DH) was 35±29 min. Donor arrived in the DH theatre after the retrieval team's arrival- mean 32±34 min. The RH team was mobilized a mean of 45±32 min before the donor arrived in the DH theatre and a mean of 3 h and 21 min±84 min before the recipient arrived in the RH theatre. The RH team was mobilized 5 h and 23 min±78 min before the start of the recipient operation.

Conclusions: The ideal time for the RH theatre team mobilization for a heart transplant is the donor arrival time in DH Theatre. This will incorporate unexpected DH delays and should minimize RH staff burn-out and impact on other RH cardiac theatre activity.

A380

Beyond Ischaemia: Outcomes of Mechanical Support in Non-Ischaemic Cardiogenic Shock

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Objectives: Non-ischaemic cardiogenic shock (NICS) is a critical condition, which has been overshadowed by ischaemic cardiogenic shock (ICS). We aimed to further characterise current research via a meta-analysis of mechanical circulatory support (MCS) in NICS.

Methods: A systematic search strategy was utilised against several comprehensive databases following PRISMA guidelines. Articles were included if they were full texts describing patients with MCS for NICS. Exclusion criteria included subjects under 18 years old, and if there was insufficient data available. Data collected were baseline characteristics and outcomes in-hospital or 30-day mortality, stroke and bleeding. These results were analysed and a meta-analysis was performed to compare mortality to ICS patients.

Results: Seven studies were identified 18,709 patients with a mean age of 56.3 (SD 7.53) years who received MCS for NICS. The in-hospital or 30-day mortality rate was 32.1% (CI 31.2-33.0%), while the mean incidence of bleeding and stroke were 5.2% (CI 5.06-5.34%) and 7.0%

(CI 6.71-7.29%), respectively. A meta-analysis of mortality outcomes in five papers compared MCS in NICS (n=285) with ICS (n=301). There was no significant mortality risk associated with NICS compared with ICS (HR 0.31 [-0.37, 1.00], p=0.37). The observed heterogeneity (I²=66%) suggests moderate to substantial variability across studies.

Conclusions: MCS in NICM is associated with a high early mortality rate and significant risk of bleeding and stroke. Survival was comparable between NICS and ICS. The heterogeneity of data highlights the diversity of underlying presentations, but also the need for more rigorous research into this under-studied area.

A381

Lactate concentrations during normothermic ex-situ heart perfusion do not correlate with primary graft dysfunction after DCD heart transplantation—Royal Papworth Experience over the last nine years

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Purpose: Normothermic ex-situ heart perfusion (ESHP) maintains donor hearts in a beating, metabolically active state outside the body. An early study had demonstrated an association between lactate > 5 mmol/L during ESHP of brain-dead donor hearts with poorer post-heart transplant (HTx) outcomes. However, its reliability as a predictor of outcome in donation after circulatory death (DCD) heart transplantation is uncertain. This study aims to evaluate lactate concentration during ESHP as a predictor of requirement of VA-ECMO in DCD HTx recipients.

Methodology: This is a single-centre retrospective study of consecutive HTx using DCD hearts directly procured and preserved (DPP) from February 2015 to July 2024. The patients were divided according to the requirement for VA-ECMO post-HTx. Arterial and venous lactate levels and trends during ESHP in both groups were compared. Post-HTx outcomes of recipients with final arterial lactate ≥ 5 mmol/L were also analysed.

Results: Of 103 DCD HTx included in the analysis, 25 (24.3%) required VA-ECMO support post-HTx. There were no significant differences in arterial and venous lactate values or trends between the group with and without VA-ECMO, as shown in Table 1. Recipients of DCD hearts with final lactate concentration < 5 (n=51) and ≥ 5 mmol/L (n=52) had similar rates of VA-ECMO (21.6% vs 26.9%, p=0.53) and 90-day survival (92.2% vs 94.1%, p=0.7).

Conclusions: In our series of DCD hearts procured with DPP, lactate concentrations during ESHP did not correlate with the risk of VA-ECMO post-HTx. Our results suggest that carefully selected DCD hearts retrieved onto ESHP with final arterial lactate concentration ≥ 5 mmol/L can be transplanted with good outcomes.

Table 1: lactate concentrations during ex-situ heart perfusion for recipient with and without PGD post-transplant

	No PGD post-transplant (n=78)	PGD post-transplant (n=25)	P
Final arterial lactate, mmol/L	5.0 ± 2.2	5.4 ± 2.1	0.448
Final venous lactate, mmol/L	4.8 ± 2	5.2 ± 2.1	0.516
Difference final arterial-venous lactate, mmol/L	0.1 (0 - 0.3)	0.1 (0 - 0.5)	0.465
Final lactate venous > arterial (%)	19 (24.4%)	6 (24%)	0.971
Initial arterial lactate, mmol/L	7.2 (6.2 - 9)	8.1 (6.4 - 9.5)	0.344
Initial venous lactate, mmol/L	7.2 ± 1.6	7.6 ± 1.5	0.322
Maximum arterial lactate, mmol/L	7.7 (6.5 - 9.1)	8.9 (7.1 - 9.7)	0.096
Maximum venous lactate, mmol/L	7.3 ± 1.7	7.8 ± 1.6	0.162
Time to maximum arterial lactate, min	15 (0 - 45)	30 (15 - 45)	0.564

A382

Early graft dysfunction requiring VA-ECMO following donation after circulatory death (DCD) heart transplantation impact on short- and long-term survival

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Purpose: Clinical DCD heart transplantation (HTx) was established in the UK in 2015 and now accounts for > 30% of UK HTx. Early graft dysfunction (EGD) post-transplant requiring veno-arterial extra-corporeal membrane oxygenation (VA-ECMO) support is more common in DCD heart recipients. There is paucity of data on the impact of early graft dysfunction requiring (VA-ECMO) on recipient survival in DCD HTx.

Methods: This is a single-centre retrospective study of consecutive DCD HTx performed between February 2015 and July 2024. Multi-organ transplants were excluded. The recipients were divided in two groups according to those with and without EGD post-transplant. Donor and recipient characteristics, duration of ICU and hospital stays were compared using logistic regression. Post-transplant survival was assessed with Kaplan-Meier analysis and compared with log-rank test.

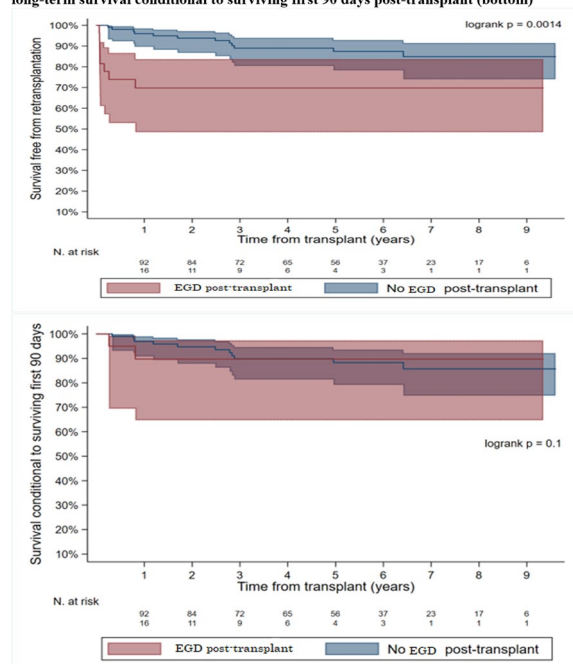
Results: There were 128 DCD HTx of which 27 (21.1%) developed EGD and required VA-ECMO support. Baseline characteristics are summarized in Table 1. EGD post-transplant was associated with longer ICU stay (5 vs 18.5 days, p<0.001) and hospital stay (20 vs 42 days, p<0.001). Survival free of re-transplantation was significantly worse in the EGD group at 90 days (74.1% vs 99% ys, p<0.001). However, long-term conditional survival of recipients who survived the first 90 days post-transplant was similar (Figure1).

Conclusion: In this study, DCD heart recipients who developed EGD requiring VA-ECMO support after HTx had longer ICU and hospital stays and lower survival. However, EGD recipients who survived the first 90 days post-transplant, their long-term survival was comparable to those without EGD.

Table 1: Baseline donor and recipient characteristics

	No EGD post-transplant (n=101)	EGD post-transplant (n=27)	P
Donor characteristics			
Thoracotomical normothermic regional perfusion, n	21 (20.8)	2 (7.4)	0.158
Age, years	35.7 ± 9.8	34.9 ± 9.8	0.72
Female sex, n	23 (22.8)	2 (7.4)	0.101
BMI, kg/m ²	25.3 (22.4 - 28.7)	26.9 (22.9 - 29.8)	0.414
Cause of death, n			0.598
*Hypoxic brain injury	28 (27.7)	11 (40.7)	
*Intracranial bleed	36 (35.6)	8 (29.6)	
*Trauma	34 (33.7)	8 (29.6)	
*Brain tumour	3 (3)	0 (0)	
FWIT, min	24 (21 - 29)	25 (23 - 31)	0.326
Ex-situ perfusion time, min	245.1 ± 62.7	278.7 ± 77.7	0.023
Implant time, min	44 (37 - 53)	55 (47 - 62)	<0.001
CPB time, min	151 (125 - 201)	263 (188 - 315)	<0.001
Recipient characteristics			
Age, years	53.7 (45 - 61.2)	54.1 (48.2 - 59.4)	0.733
Female sex, n	23 (22.8)	7 (25.9)	0.731
BMI, kg/m ²	26 ± 4.3	26.3 ± 4.8	0.705
Recipient primary disease (%)			0.269
*Ischaemic CM			
*Dilated CM	20 (19.8)	8 (29.6)	
*Hypertrophic CM	54 (53.5)	11 (40.7)	
*Other	16 (15.8)	7 (25.9)	
	11 (10.9)	1 (3.7)	
Diabetes, n	17 (16.8)	4 (14.8)	1
Previous sternotomy, n	40 (39.6)	15 (55.6)	0.137
RA pressure, mmHg	9 (6 - 14)	8 (6 - 13)	0.616
PVR, Wood units	2 (1.39 - 2.82)	2.28 (1.71 - 2.84)	0.336
TPG, mmHg	7.8 ± 3.1	8 ± 3.3	0.741
Inotropes, u	37 (36.6)	8 (29.6)	0.498
Temporary MCS, n	9 (8.9)	5 (18.5)	0.155
Durable LVAD, n	19 (18.8)	6 (22.2)	0.691
Gender mismatch, n	26 (25.7)	7 (25.9)	0.318
Weight mismatch, %	0 (-10.3 - 22.4)	3.3 (-9.1 - 29.9)	0.557
Predicted heart mass mismatch, %	2.3 (-5.3 - 16.8)	9.8 (-3.4 - 24.8)	0.13

Figure 1: long-term survival free of re-transplantation in EGD vs no EGD groups (top) and long-term survival conditional to surviving first 90 days post-transplant (bottom)



A383

Changes in Echocardiographic Parameters, Hemodynamics, and Exercise Performance after Heart Transplantation for Restrictive Cardiomyopathy

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Objective: Restrictive cardiomyopathy is a diverse disease process with heart transplantation being a treatment for end-stage heart failure. We sought to report outcomes after heart transplantation for restrictive cardiomyopathy and longitudinal changes in cardiopulmonary exercise testing (CPET), echocardiogram, and right heart catheterization (RHC).

Methods: We identified 62 adult patients who underwent heart transplants for restrictive cardiomyopathy between 2007 and 2021. Baseline characteristics, operative data, CPET, echocardiogram, RHC, and postoperative outcomes were collected and analyzed.

Results: Median age was 56 years, and 42 patients (67.7%) were male. 52 patients (83.8%) were on inotropes or mechanical support at the time of transplantation. There were 3 operative mortalities. Baseline median percentage predicted peak VO₂ (ppVO₂) was 44% and the median ventilatory equivalent of carbon dioxide (VE/VCO₂) was 34. There was a significant increase in ppVO₂ at one year to 65% ($p < 0.001$) and at five years to 75% ($p < 0.001$). There was a significant decrease in VE/VCO₂ at one year to 32 ($p = 0.002$) and five years to 31 ($p = 0.016$).

Baseline LVEF was 38%. There was a significant increase at one year to 63% ($p < 0.001$) and five years to 61% ($p = 0.001$). Baseline cardiac index was 2.2 l/min/m². There was a significant increase at one year to 3.3 l/min/m² ($p < 0.001$) and five years to 3.1 l/min/m² ($p < 0.001$).

Conclusions: After heart transplantation for restrictive cardiomyopathy, there is an excellent recovery of echocardiographic, hemodynamic, and exercise parameters to near-normal values.

A384

Outcomes of Veno-Arterial Extra-Corporeal Membrane Oxygenation for Post Cardiectomy Syndrome.

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Background: Post-cardiotomy syndrome (PCS) is a serious condition that arises in about 0.5% to 1.5% of cases after cardiac surgery and can develop any point from separation from cardiopulmonary bypass or at any time during the immediate post-operative period. Veno-Arterial Extracorporeal membrane oxygenation (VA-ECMO) is a life-support technique that can be used to provide temporary mechanical circulatory support for patients who are in refractory cardiogenic shock. The aim of this study was to review our outcomes with the use of VA-ECMO.

Methods: We conducted a retrospective analysis of all patients that underwent VA-ECMO for PCS over a 3 year period in our unit from 2022 to 2024. VA-ECMO was instituted in classical central way or peripherally with side graft to the common femoral artery or in hybrid central aortic and peripheral venous. Results are presented as median values (inter-quartile range) and counts (percentages).

Results: Twenty-seven patients underwent ECMO for PCS most commonly for isolated coronary artery bypass grafting in 4/27 (15%) cases. Age 55 (16), time on ECMO 5 (5) days, total ICU stay 11 (22) days. 14/27 (52%) were discharged home successfully. 30-day survival was 13/27 (48%), 90-day 10/27 (37%), and 1 year was 4/27 (15%). There were no cases of stroke or limb ischemia post-operatively.

Conclusion: Our results suggest that the use of VA-ECMO provides effective management for PCS. Our survival to discharge rates are considerably higher than reported in literature,

A385

A single-centre early experience of donation after circulatory death (DCD) heart transplantation.

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Background: Donation after circulatory death (DCD) hearts has increased the donor heart pool in the UK over the last five years.

Methods: A single-centre retrospective review on all patients that underwent orthotopic heart transplantation from DCD donors at our institution between November 2019 and October 2024. The primary outcomes were recipient 30-day, 1-year survival, post-transplant primary graft dysfunction (PGD) requiring mechanical circulatory support (MCS) usage. Results presented as median values (inter-quartile range) and counts (percentages).

Results: 22 patients underwent DCD heart transplantation, 19% of our heart transplantation activity. Recipient age was 57 (13), ischaemic cardiomyopathy aetiology was 10/22 (45%). Pre-transplantation MCS was required in 6/22 (27%), 1 Impeller, 4 ECMO, and 1 BiVAD. Donors were male 17/22 (77%), age of 35 (16). Donor size mismatching, 10-15% below recipient predicted heart mass was seen in 3/22 (14%). Duration on TransMedics Organ Care System (OCS) was 251 min (70). The Functional Warm Ischaemic Time—Cardioplegia (FWITCP) and the Functional Warm Ischaemic Time—Organ Perfusion (FWITOP), was 17 min (3) and 30 min (5) respectively. PGD requiring MCS support occurred in 3/22 (14%) of cases including one of the donor size mismatched recipients compared to UK PGD rate of 23.4%. DCD heart transplant 30-day and 1-year survival was 95.6% versus DBD heart transplant matched centre cohort of 93.5% and 91.6% respectively.

Conclusion: Our results suggest that DCD heart transplantation provides non-inferior post-transplant survival and a lower PGD rate compared with the UK heart transplantation results and encourages broader utilisation of this practice.

A386**Novel approach of Combined Plasmapheresis and Intravenous Immunoglobulin therapy for Heparin-Induced-Thrombocytopenia in Orthotopic Heart Transplantation***

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Introduction: Heparin-induced thrombocytopenia (HIT) continues to present a challenge for cardio-pulmonary bypass (CPB) and need for mechanical circulatory support (MCS). We present a novel method of HIT management allowing systemic heparinisation during orthotopic heart transplantation (OHT).

Case Summary: A 22-year-old lady presented with a two-year history of palpitations and shortness of breath. An echocardiogram confirmed biventricular systolic dysfunction, left ventricular thrombus and dilated cardiomyopathy. The associated haemodynamic instability required intra-aortic balloon pump insertion, IV furosemide and IV milrinone.

Four days on the transplant urgent list, the patient developed Type 2 HIT with ELISA assay levels returning 4.06 and 8.76 respectively. Anti-coagulation was switched from IV heparin to an argatroban regime.

A novel approach was undertaken to give three sessions of therapeutic plasmapheresis within a week, following two doses of intravenous immunoglobulin (IVIg). Her HIT assay reduced to 3.13 and 0.9. Further clinical deterioration requiring MCS escalation with central Veno-Arterial Extracorporeal Membrane Oxygenation (cVA ECMO), upgraded her to the national super-urgent transplant list.

Prior to her transplant procedure, an additional 1gm/kg IVIg dose was given due to concerns of CPB with heparin. Intra-operatively, ACT times were acceptable with no difficulties achieving haemostasis. Post-operatively, the patient required cVA ECMO for 72 h for primary graft dysfunction, managed with Argatroban. ELISA HIT assays remained <0.07 throughout her post-operative course.

Conclusion: A combined approach of plasmapheresis and IVIg therapy should be considered as a form of HIT management in preoperative recipients requiring MCS and the subsequent high-risk transplant cases where prolonged heparinisation is required.

*The patient has confirmed explicit consent to be in the Journal

A387**Heterotopic Cardiac Transplantation Utilising Isolated Parallel Circulations in Adults with Univentricular Heart Failure**

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Objective: To assess heterotopic cardiac transplantation (HHT) as a novel approach for adults with univentricular heart failure or severe one-sided ventricular dysfunction. This technique aims to establish separate pulmonary and systemic circulations, using one heart for each function, potentially reducing overall cardiac workload and coronary demand.

Methods: We designed a dual-circulation model where the donor heart independently supports either the pulmonary or systemic circulation, effectively offloading the native ventricle. Surgical protocols were developed using computer-aided design (CAD) and three-dimensional reconstructions. We are constructing an in-vitro model

to simulate the circulatory dynamics of this setup, with applications underway for in vivo testing. The separation of circulations allows for reduced ventricular size and lower coronary oxygen demand, addressing challenges of high cardiac workload in univentricular physiology.

Results: Initial in-vitro testing indicates that separate pulmonary and systemic circulations can be achieved, providing stable hemodynamics with lower stress on each heart. The offloading of one ventricle allows the remaining ventricular function to be optimized for its specific circulation, enhancing physiological efficiency.

Conclusion: HHT offers a viable alternative for adults with complex cardiac conditions, potentially improving outcomes by establishing isolated parallel circulations. This approach holds promise for reducing ventricular strain and optimizing long-term heart function. Further validation through in vivo testing will be critical to confirm its clinical applicability and benefit for this challenging patient population.

A388**From an Idea to Great Success – A Mixed Methods Quality Evaluation of the SCTS Harefield Cardiothoracic Transplant Course**

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Objectives:

- To understand the overall outcomes of the course.
- To evaluate the quality and value of the course curriculum design, teaching and presentations.
- To make recommendations for future learning needs and desired topics.

Method:

- Quantitative data collected and analysed from the course survey are presented using the descriptive method.
- Qualitative data collected and analysed from the open-ended questionnaires are developed in five themes applying the thematic analysis approach.
- A joined display presentation of integrated data.

Results: Nearly 80 healthcare professionals come from 14 professional groups at Harefield Hospital.

The course feedback was received from 12 hospitals, including NHS hospitals and international hospitals.

1. 100%—Covered most of the topics in heart and lung organ donation, procurement and transplantation.
2. 100%—Definitely recommend to others.
3. 97.1%—Course curriculum met job role and practising fields.
4. 94.1%—Excellent course planning, organisation and management
5. 91.2%—Comprehensive knowledge and understanding delivered to all disciplines.

Qualitative themes developed:

Theme One: Amazing and fantastic planning and management.

Theme Two: Feeling come back home with great preparation.

Theme Three: Excellent and comprehensive course design and all the extraordinary speakers.

Theme Four: Extremely informative, and the latest techniques and research presented.

Theme Five: More transplant-related topics suggested and keeping sessions timely advised.

Conclusions: a brief summary of your interpretations and conclusion

- The most comprehensive transplantation course benefits all.
- More practical and hands-on sessions in future.
- More professional groups will be invited and presented.
- Time management needs to be improved.

A389

Expanding the Donor Pool: Thoracoabdominal Normothermic Reperfusion and Ex-situ Machine Perfusion Techniques, For Retrieval of Hearts from Donation After Circulatory Death Donors: a Systematic Review and Meta-Analysis

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Background: Heart failure remains a significant cause of morbidity and mortality internationally. With significant disparities in supply and demand for donor organs and recipients, there has been a growing need to expand the donor pool. DCD heart transplantation offers such a method, with direct procurement and ex-situ perfusion and thoracoabdominal normothermic reperfusion (NRP) offering two potential methods of procuring DCD organs. This systematic review and meta-analysis aims to evaluate the current literature and compare methods of DCD transplantation

Methods: A systematic literature review was performed according to PRISMA guidelines. Primary outcomes were 30 day, 6 and 12-month survival as well as primary graft dysfunction and acute rejection. Secondary outcomes were ICU hospital LOS and temporary dialysis. Mean weighted averages were utilised to summarise data with funnel plots utilised for comparisons.

Results: 10 studies were included evaluating 923 DCD recipients and 7236 DBD recipients. Survival for DCD patients at 6 and 12 months was 93% respectively and was similar to DBD patients. Acute rejection was 15% and 19% in DCD and DBD patients respectively. Primary graft dysfunction was higher in DCD (17%) compared with DBD (8%) patients. 30-day survival was similar between NRP (96.9%) and ex-situ machine perfusion (97%) as was primary graft dysfunction with 21% and 14% respectively.

Conclusion: DCD heart transplantation offers comparable outcomes to DBD in short and mid-term outcomes, although primary graft dysfunction remains a concern. Further comparative research is required to delineate the role of both retrieval techniques in the current transplant landscape.

A390

SCTS Annual Meeting 2024 Sinus Valsalva Aneurysm With Fistula To The Right Atrium Presented With Acute Dyspnoea In A Young Male

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Being a very rare cardiac pathology; sinus valsalva aneurysm (SVA) rupture most commonly occurs in the right coronary cusp and develops a fistulisation towards the right atrium. A 35-years-old male presented with sudden exertional dyspnoea and palpitations which started one day before his admission. Transthoracic echocardiographic examination was evident with rupture of sinus valsalva. Trans-oesophageal Echocardiography (TEE) was performed to assess rupture of sinus valsalva and status of fistula. Aortic valve noncoronary cusp was fistulised into the right atrium. We performed surgical operation as a standard cardiac surgery. After aortotomy and right atriotomy incisions were performed; "windsock fistula" opening from the non-coronary cusp of the aorta to the right atrium was discovered. The fistula sac in the right atrium was excised. The fistula opening in the non-coronary cusp was repaired with pledged sutures.

The right ventricle is the most common location of rupture, followed by right atrium. Echocardiography is the standard diagnostic method of SVAs. Ruptured SVAs generally require surgical intervention and

still surgery is the method of first choice. The surgical technique commonly used is the 'dual imaging technique', in which both the aorta and the chamber of termination are explored. As a conclusion, it is thought that surgical intervention should be performed in the early period, as rupture of sinus valsalva may cause mortality and serious heart failure. In our opinion, surgical repair of both ruptured SVAs and symptomatic un-ruptured SVAs should be performed early, so that complications that may develop can be prevented.

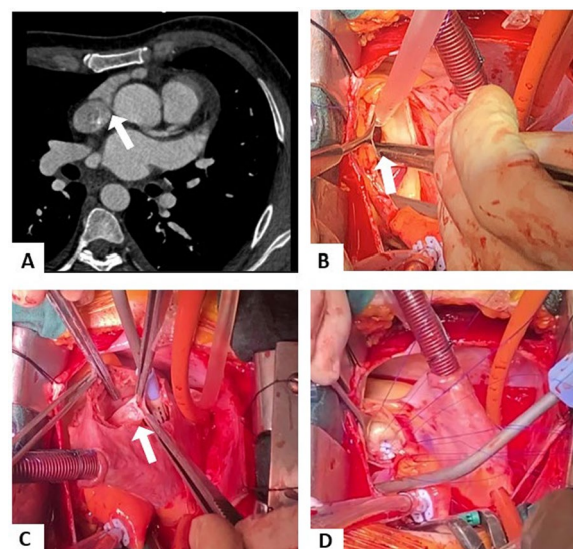


Fig A. CT Scans Fistula tract **B.** The opening between the right atrium in the noncoronary cusp **C.** Windsock fistula in right atrium **D.** Repair with pledged sutures

The patient gave their written, informed consent to publish their information in an open access journal

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