Welcome to Wales and the 2024 SCTS Annual Meeting

Endoscopic Vessel Harvesting (Evh) – New devices, reduction in learning curve & patient satisfaction
Lesley Scott - Surgical Care Practitioner, Golden Jubilee University National Hospital, Glasgow, UK

Creating Innovative Ways to Enhance Patient Care
Tuesday 19 March 15:30-17:00 HALL 3D

Early Detection of Lung Cancer
Monday 18 March 11:00-12:30 HALL 2D

Evaluating outcomes of lobectomy and sublobar resection for non-small cell lung cancer: A propensity score matched analysis
Duaa Ali Faruqi - King’s College London, London, UK

Background
On small cell lung cancer (NSCLC) remains the leading cause of cancer mortality worldwide, accounting for over 80% of lung tumours. Lobectomy, the removal of an entire lung lobe, has been the gold-standard procedure for early-stage NSCLC, based on recommendations published in the Lung Cancer Study Group Randomised controlled trial in 1996. However, unprecedented advances in surgical techniques, diagnosis, and disease comprehension have propelled a need to redefine our treatment options and revisit the debate regarding sublobar resection in lieu of lobectomy.

Our research
This was a single-institution retrospective study analysing data from 3,983 patients, comprising of 3,032 lobectomy patients (76%) and 951 sublobar resection patients (24%) between 2013 and 2023. This study aimed to compare the recurrence and survival rates of lobectomy compared to sublobar resection, with significant implications for patient survival and postoperative outcomes. Propensity-matched analysis was employed, yielding 264 pairs, and incorporated eight covariates including age, sex, tumour size, staging, histology, American Society of Anaesthesiologists (ASA) score, smoking status and forced expiratory volume (FEV1). Survival and recurrence outcomes were assessed using a log-rank test and Kaplan-Meier curves.

Results
One of the study’s key findings is the non-inferiority of sublobar resection when compared to lobectomy in terms of recurrence-free survival (p=0.39) and overall survival (p=0.47) rates. Patients who underwent sublobar resections showed similar survival outcomes to those who had lobectomies, with a five-year survival rate that remained consistent across both groups. Both procedures had comparable lengths of hospital stay, complication rates, and...
Endoscopic Vessel Harvesting

Continued from page 1

CoreVista was designed to provide an on-table visualisation for complex cardiac surgical procedures, like totally endoscopic aortic valve replacement. During the COVID pandemic, its use was adapted for EVH. A robust frame attaches to the operating table, a linear actuator provides gross height adjustment and a sterile arm supports a custom, state-of-the-art, high-definition surgical monitor. The monitor is covered with a sterile disposable drape with an optically clear window for crystal-clear imaging during surgery. The screen angle can be adjusted with one hand for optimal viewing angle and minimal disruption.

We started the programme in March 2023 and now have three operators fully trained with circa 330 cases performed to date. Feedback from patients has been universally positive and we were able to reduce the average length of stay by one day. Independent operating was achieved in two weeks, which we believe is the fastest time to train from ‘novice-to-independence’ in the UK. It can be difficult to measure learning curves, so we took a pragmatic approach and measured our curve from the day the proctor arrived until departure. Verification of learning was evidenced by operators continuing to perform EVH procedures independently after the proctor had left. Of course, we continue to improve as we gain experience.

We were the first NHS hospital to use this combination of devices for EVH and we strongly recommend the set-up to others wanting to start an EVH programme. As harvesting is easier and faster to learn using this system, we also recommend it to experienced operators wanting to train new recruits, such as surgical trainees without the need for external proctors.

Evaluating outcomes of lobectomy

Continued from page 1

and postoperative mortality rates (p=0.25). Additionally, it was noted that the mean number of lymph node sampling was significantly higher in the lobectomy group (median: 5, IQR: 3–6), as opposed to a median of 2 (IQR: 0–4) in the sublobar group (p<0.001). Univariate and multivariate analysis was conducted to identify key drivers and determinants for recurrence. Multivariate cox-regression analysis revealed that sex (p=0.015), age (p=0.018) and ECOG performance status (p=0.020) were significant predictors of recurrence.

Clinical implications

These findings suggest that sublobar resection is non-inferior to lobectomy, challenging the current paradigm of surgical management for NSCLC. One of the pivotal arguments for sublobar resection is its lung-sparing nature. In an era where preserving the quality of life is as paramount as extending it, this less invasive surgery could offer significant benefits, particularly for younger patients who may face the prospect of future cancers, or patients with a high comorbidity index.

The conclusions drawn from this study suggest a shift in the landscape of lung cancer surgery. This study reinforces the need for personalised treatment strategies, emphasising the importance of patient-centred care. As thoracic oncology continues to advance, the balance between preserving healthy lung tissue and ensuring survival becomes ever more critical.

Endoscopic vein harvesting in CABG: Initial experience in a single centre

Endoscopic vein harvesting (EVH) has been well established over the past decades and has developed as the preferred technique for obtaining the long saphenous vein (LSV), a widely used conduit in coronary artery bypass graft (CABG) surgery. The evolution and refinement of EVH techniques aim to address and enhance the shortcomings associated with the conventional open vein harvesting technique (OVH), namely, a higher incidence of wound-related complications, pain and suboptimal patient satisfaction.

In our trust, the EVH program was launched in May 2023 and the proctorship was provided by the industry. At the start of the pilot program, one senior full-time surgical care practitioner (SCP) was proctored on a daily basis. There have been 50 cases performed to date, with the first 20 cases carried out under the close supervision of a proctor and progressing towards independent cases. In the trust, some consultant surgeons use the ‘bridging technique’ routinely for LSV conduit harvesting in CABG. The experience with the bridging technique has been incremental in creating a platform of experience and skillset advancing towards lesser invasive techniques.

An audit was performed to evaluate the unit’s initial experience and patient outcomes post-EVH. Thirty consecutive patients were audited 8–28 weeks after surgery. A dedicated questionnaire was designed to assess patient symptoms, wound healing, analgesia requirements, infection rates and quality of life post-operatively. The patients reported faster wound healing, lesser pain, better patient satisfaction and quality of life post-CABG. The audit results have been analysed and presented at the SCTS 2024 meeting.

The unit’s experience has shown that the transition from traditional OVH to EVH was especially challenging due to initially being accustomed to and efficient in performing the OVH and vein-bridging techniques. Some drawbacks of EVH during the initial learning period included the need for expensive equipment, prolonged duration of EVH time (30–40 minutes), compared to the departmental average vein harvesting time of 11–16 minutes with OVH and vein quality. These drawbacks were offset by gaining more experience by initially taking one vein and by improving an operator’s experience. Initially, it was also challenging to overcome difficult intraoperative situations, some of which included double vein branches and bleeding in the tunnel field, especially in obese patients. Over time, this has improved with enhanced hand-eye coordination, equipment handling and stack positioning.

The learning curve highlighted the importance of patient selection as some patients have unfavourable vein anatomy (superficial veins, thin-legged patients, varicose veins, and peripheral vascular disease). Therefore, careful selection of the appropriate incision site and preoperative ultrasound of the LSV is essential to assess the vein quality, dimension, depth, and identification of side branches. Overall, our unit’s initial experience with EVH provides evidence that with trust leadership and proctorship, EVH has become one of the major steps for safer CABG, better clinical outcomes, and patient satisfaction. During the initial learning curve, it is vital for a step-by-step approach with multidisciplinary team support, departmental leadership, adequate patient selection and improving operator’s experience.
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Mastering Endoscopic Vein Harvesting
Peter Bhinda
Surgical Support Specialist TCV EMEA
Monday 18th March 2024
8:00 – 8:30 am in Hall 1C
Transbronchial lung ablation for malignancies – Four-year results

Joyce Chan, Prince of Wales Hospital, Hong Kong

Transbronchial microwave ablation has been a novel local therapy for early lung cancers and lung oligometastases in selected patients, who typically have high surgical risks or suffer from multifocal cancers. In Prince of Wales Hospital of Hong Kong, where we have access to a hybrid operating room (Figure 1), we have performed transbronchial microwave ablation with Emory VTM Catheterator with ThermophenTM technology (CovidienTM, Plymouth, MN, USA) using electromagnetic navigation bronchoscopy guidance for over four years. Microwave is superior to radiofrequency ablation in that it provides a more uniform ablation zone in tissues with high impedance like the lung. It also has less heat sink effects compared to radiofrequency. Transbronchial access compared to percutaneous access also greatly reduces the risk of pneumothorax or other pleural-based complications. In this article, we review the safety and mid-term control rate of this technique. Between March 2019 and September 2023, 194 nodules in 128 patients were treated. Eligible lung nodules were either proven lung cancers, metastases, or radiologically suspicious. The mean maximal diameter of lung nodules was 22 mm (range 8-29 mm), and the bronchus sign was positive in 28.4% of them. Using transbronchial access tools, we can reach the majority of peripheral lung lesions even though they do not have a bronchus directly leading into them. The Technical success rate was 100%, although 43 (4.8%) nodules required double ablation and 22 (11.3%) required triple or more ablation for adequate coverage. The mean minimal ablation margin was 6.2 mm (Figure 2). The mean hospital stay was 155 days, with 77% and 96% of cases being discharged by post-ablation day 1 and 3 respectively.

Complications rates were low, which included mild pain not requiring hospitalization (8%), pneumomediastinum requiring drainage (4%), post-ablation reaction (3%), pleural effusion (2.8%) and hemoptysis (3%). There were only two cases of bronchopleural fistula which were treated with transbronchial tissue glue injection and endobronchial valve respectively, without long-term sequelae. The mean follow up was 24.8 months. For the 131 nodules which had completed at least one-year follow up computer tomography scan, 92.9% had local recurrence, which can be further treated with repeated microwave ablation or stereotactic radiation therapy.

With this review, transbronchial microwave ablation at Prince of Wales Hospital is a safe and feasible local treatment option for lung malignancies, including both primaries and secondaries. Case selection is important taking into account both patient characteristics (oligometastases, small lung nodules in poor surgical candidates, multilocular lung cancers) and nodule characteristics (size, location, proximity to blood vessels). The mid-term local control rate is reasonable and comparable to similar local treatment modalities like stereotactic radiation therapy, although direct comparison studies are lacking.
Does the initial amount of pulmonary blood flow affect outcomes in patients with Tricuspid Atresia/VSD and normally related great arteries?

Natalina Bocchetta, Dr Ratul Chiar, Mr John Stocking, Dr John Rowan, Dr Chetan Mehta
Birmingham Children’s Hospital and University of Birmingham

The initial palliation of patients with Tricuspid Atresia and normally related great arteries (TA/NRA) is dependent on their initial amount of pulmonary blood flow (PBF). This is predominantly determined by the amount of right ventricular outflow tract obstruction and ventricular septal defect size. Patients with initial low PBF undergo augmentation procedures such as MBTB shunt and patent ductus arteriosus stenting.

Those with high PBF and pulmonary congestion have pulmonary artery banding to reduce pulmonary blood flow. Meanwhile, patients with balanced PBF progress to the second stage of palliation, a cavopulmonary (CP) anastomosis when clinically indicated. Patients continue to suffer from right ventricular outflow from CP shunt to Fontan circulation. There is sparse literature on the impact of the initial amount of PBF on outcomes in this cohort.

Therefore, we aimed to investigate this, focusing on the impact on reintervention rates, palliation timings and survival between patients with differing initial PBF. This retrospective study was conducted from 2000–2015 and included all patients managed at Birmingham Children’s Hospital with TA/NRA. Patients were determined based on Stage 1 palliation. There were 55 patients included in the study.

In the low PBF group, there were 13 patients and 10 in the high PBF groups (Figure 1). Overall, there were 26 reinterventions, in 18 patients, with most reinterventions taking place between Stages 1 and 2 of palliation. The low PBF group was almost twice as much at risk of reintervention than the high PBF group (HR=1.9, 95% CI=0.5-6.7, p=0.34). For palliation timings, the median time for Stage 1 palliation was 25.9 days (IQR=14.3,4.7). The high PBF Group Received Stage 2 and 3 palliations later than the other groups (p=0.01 and 0.07 respectively). Regarding survival outcomes, all five deaths were in the low PBF group and took place between Stages 1 and 2 of palliation. Therefore, the high PBF group was three times more likely to have mortality compared to the high PBF group (HR=3.1, 95% CI=4.0, p=0.045).

In conclusion, patients with initial low PBF are at a higher risk of adverse outcomes, and higher reintervention and mortality rates compared to the high PBF group. These results highlight the importance of PBF as a factor influencing patient outcomes in this cohort and will help inform family counseling and clinical practice regarding palliation timings and outcomes.
**Aortic Surgery: Aneurysm**

**Tuesday 18 March**
**11:00-12:30**

**HALL 7A**

**DECIDE-TAD: A Partnership between Aortic Dissection Awareness UK & Ireland and the University of Leicester to develop Family Screening in Thoracic Aortic Disease**

Dr. Ricardo Abbacchio, University of Leicester

**Atrial fibrillation after cardiac surgery (AFACS) prevention care bundle: assessment of implementation fidelity and sustainability**

Rosalie Magboo, Raquel Acalle-Taylor, Ankan Patel, St Bartholomew's Hospital, London, UK

**Atrial fibrillation after cardiac surgery (AFACS) affects approximately 30-50% of patients. It is associated with longer lengths of stay, increased rates of in-hospital readmissions, and increased mortality.**

- **1 - Send in the J-blockers**
  - If cardiovascular parameters and co-morbidities allow, J-blockers should be (re)instituted early, typically post-op. D1. Avoid if bradycardia pacing-dependent, or requiring higher doses of inopressors (e.g. norad >0.03 mg/kg/min).

- **2 - Electrolytes at the higher end**
  - Frequent monitoring and context-appropriate replacement of potassium if <4.5 mmol/L and magnesium if <1 mmol/L.

- **3 - Optimise fluid balance**
  - Avoid over-hydration or aggressive diuresis. Aim for a euvolemic patient and allow fluid shifts to equilibrate.

- **4 - Minimise pain**
  - The catecholamine surge can precipitate AF and patients like their pain even less than you do. Make sure there’s space to document pain scores on the peri-operative chart and be generous with intra- and post-op analgesia if symptomatic.

- **5 - Avoid hypoxia**
  - Cardiomyocytes are very sensitive to oxygen and upset rapidly if they run out. Keep saturations at levels appropriate for the patient e.g. 94-96%, 88-90%, and pO2 > >8 kPa.

Revisiting and auditing this bundle three years later (n=207) we found that appropriate J-blocker initiation occurred in 88% of patients, electrolyte abnormality correction in 76%, continuous adequate oxygenation in 81% and analgesia in 86%. Rates of AFACS in our patients had reduced from a baseline of 36% to 18.1% (p<0.001). This had maintained an improvement from the initial post-bundle implementation of 23.3% (p<0.005). Surgical, anaesthetic, and peri-operative factors have been considered. We believe this quality improvement cycle has demonstrated an effective implementation of the bundle; succeeding due to an initial emphasis in daily huddles, and continuing in the form of training at two-weekly team days in addition to staff rotations and inductions. Quantitatively, we have recognised a change in the culture of our practice due to this implementation of these techniques. We hope these results are both encouraging and motivating for cardiac units to formally implement the facets of this bundle, and empower clinical staff to care for patients following cardiac surgery both sustainably and effectively.

Enhancing Patients’ Care in CT Surgery

**Monday 18 March**
**15:30-17:00**
**HALL 2D**

**Miscellaneous Thoracic Surgery**

**Tuesday 19 March**
**15:30-17:00**
**HALL 3D**
Friday 7th June 2024
The Kings Fund, London

The Aortic Nurse Symposium offers in-depth exploration of aortic nursing, including patient care, and follow-up practices. Hear patient stories, join expert discussions on disease complexities, and receive evidence-based lifestyle guidance.

Open to nurses and allied health professionals with an interest in aortic dissection.
Free admission. Travel bursaries also available.

 Reserve your space: tadct.org/nurses
.confirmatory test that has been validated for its accuracy and reliability. The results of this test are crucial for making informed decisions about treatment options and patient outcomes.

SCTS conference news

Robotic Transcranial Doppler in aortic surgery: A new standard of care

Muhammad Usman Shah
Aortic Fellow, Liverpool Heart and Chest Hospital

In the realm of complex aortic surgery, understanding cerebral perfusion and identifying areas of potential impairment is critical. Robotic Transcranial Doppler (TCD) offers a non-invasive method to monitor blood flow in the brain, providing valuable insights into cerebral perfusion and helping to guide surgical interventions.

The objectives were clear: to assess the viability of this approach and to understand whether the increasing complexity of aortic procedures requires an immediate postoperative assessment. Through a retrospective observational study spanning from January 2019 to October 2023, 48 patients were identified who underwent valve-sparing aortic root replacement alongside Aortic Arch surgery, providing invaluable insights into the intra- and postoperative outcomes.

The study highlighted the importance of cerebral protection during complex aortic surgery. TCD-guided, patient-specific strategies are essential to advancing patient safety and surgical excellence in the field of aortic surgery. As we continue to explore new horizons in aortic surgery, collaboration, innovation, and a patient-centric approach remain paramount.

In conclusion, the findings from this study pave the way for further advancements in the field, ultimately benefiting patients worldwide.

In patients requiring Concomitant Aortic Arch and Root Surgery; is Valve sparing root replacement an effort worth taking?

Muhammad Usman Shah
Aortic Fellow, Liverpool Heart and Chest Hospital

In the ever-evolving landscape of cardiovascular medicine, the quest for innovative approaches to complex aortic pathologies continues to drive advancements in surgical techniques. Aortic arch surgery embodies a multifaceted challenge, with intricate layers of complexity spanning surgical, neurological, and perfusion domains. Introducing valve-sparing aortic root replacement into this intricate mix is akin to navigating a labyrinth within a labyrinth. While some may view this confluence as excessively intricate, we firmly believe it presents a compelling proposition with profound long-term benefits for our patients.

The objectives were clear: to assess the viability of this approach and to understand whether the increasing complexity of aortic procedures requires an immediate postoperative assessment. Through a retrospective observational study spanning from January 2019 to October 2023, 48 patients were identified who underwent valve-sparing aortic root replacement alongside Aortic Arch surgery, providing invaluable insights into the intra- and postoperative outcomes.

Among the cohort of patients, with an average age of 53.8 years, 26 had VSSR with Arch surgery for emergent type A acute aortic syndromes (mean Euroscore II 6.9) whereas 22 had non-emergent type B (mean Euroscore II 51) chronic dissections, syndromic patients, bicuspid aortic valve with aortopathy and sporadic aneurysms. In the emergent group; 18 patients had concomitant valve replacement and total arch with frozen elephant trunk was done in 8. The procedures in the non-emergent group; hemiarch replacements 14, total arch with elephant trunk 6 as total arch in two patients.

Preoperative and postoperative echocardiographic examinations revealed encouraging results, with trivial minimal aortic regurgitation postoperatively and stable stenosis fractions. Despite the complexities involved, the study demonstrated an overall in-hospital and 30-day mortality rate of 0%. While complications such as re-explorations, neurological complications, and reintubations were noted, they were effectively managed, further underscoring the safety and efficacy of the approach.

In conclusion, the findings of this study support the notion that in high-volume centres with expertise, valve-sparing root replacement with concomitant Aortic Arch Surgery is not only feasible but also safe. Regardless of emergent or non-emergent scenarios, this integrated approach represents a significant advancement in the management of aortic pathologies. It is an endowment worth pursuing, offering patients optimal outcomes and surgeons with expanded avenues for therapeutic success.
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Reveal • Interpret • Improve
Long-term outcomes from mitral valve surgery in elderly patients: A single centre experience

Anupama Barua, Lognathen Balacumaraswami
Royal Stoke University Hospital, UK

In recent decades, there has been improved life expectancy in the general population and a consequent clinical need for decisive cardiac surgical treatment for elderly patients. Patients ≥75 years of age have a disproportionate burden of comorbidity which complicates outcomes from valvular heart disease treatment. Furthermore, patients with mitral valve pathology are often 60 years or older, with a significant degree of decompensated heart failure and poor physiological reserve. This adversely impacts on postoperative morbidity and mortality rates. A recently published study, following a review of the UK national database between 2013 and 2018, reported 2.2% mortality after aortic valve surgery in elderly patients and a 15-year review of our institutional results concur with them. Likewise, a multicentre UK study regarding mitral valve surgery in patients ≥75 years published in 2018 reported a 30-day mortality of 5.5%, five-year survival of 63.7% and 10-year survival of 45.5%. We reviewed our surgical experience in patients ≥75 years undergoing mitral valve surgery along with other concomitant procedures in the last 10 years. We obtained prospective data derived from the Adult Cardiac Surgical Database of Royal Stoke University Hospital from January 2013 to July 2023. We present early and long-term outcomes following mitral valve surgery in patients ≥75 years. The study includes 166 patients from the database. The mean age is 78.2 years, mean EuroSCORE II of 4.7 and a median Logistic EuroSCORE II of 11.02. Surgery was undertaken as urgent in 41.6% and emergency in 17% of patients. The most common valve pathology was degenerative with a tendency to higher mitral valve calcium content and a predominant elderly patient population, 56% received mitral valve repair. Triple valve surgery was performed in five patients (3%), double valve surgery was performed in 1 patient (0.6%); double aortic valve or tricuspid valve surgery was performed in 19% and 11% respectively; concomitant coronary artery bypass grafting (CABG) was performed in 11% of cases; isolated mitral valve repair in 7% and left atrial appendage occlusion in 10% of cases. 12 patients (7%) had no exploration for bleeding. This study reports 3.60-30 day mortality, with 6.38±3 days mean ITU stay and 26.39±3 days hospital stay. Long-term survival was 77% of 5 years and 71% at 10 years. This study demonstrates that mitral valve surgery in association with concomitant valve or CABG operative procedures can be safely performed in patients ≥75 years with good early and late clinical outcomes. In our experience, excellent 10-year survival outcomes are seen with minimal attrition in the region of 1% per year in those patients who have survived to five years.

Cardiothoracic training in the United Kingdom: A comprehensive survey– based analysis

Mehomed Elshalkamy, Mohammed Salmassi, Ahmed Sharly, Mohamed Osman, Sunil Bhudia
Royal Brompton Hospital, London

Amongst other surgical specialties, cardiothoracic surgery is renowned in its complexity for the patient cohort, technical challenges, and above all, non-linear training pathways. Trainees in the specialty need to spend many years of extensive training and a prolonged learning curve to be capable of operating. This usually follows a disciplined surgical training system along with an organized mentorship. The UK cardiothoracic training programme has gained a national reputation over the past few decades, based on a comprehensive effort by the hands of pioneering surgeons and the left their fingerprints in the world of cardiothoracic surgery. The new national training programme is competency-based and incorporates a comprehensive curriculum to allow for an organised progression of the trainee within a specific domain over the period of seven years. To understand the variation in perceptions of trainees engaging with the UK system, we conducted a comprehensive survey to obtain feedback from cardiothoracic surgeons including overseas-trained doctors and national trainees. Our goal was to evaluate the level of satisfaction of surgical trainees (both NTN and non-NTN), and the challenges facing them, and gather suggestions along with ideas about potential points of improvement. The survey included 65 trainees from eight centres all over the UK. This included 51 males and 14 females, categorised as 39 holding national training numbers (NTNs) and 26 overseas trained doctors (OTDs). Participants possessed various experience levels, with 41% having >10 years of experience and 49% holding 4-10 years. Questions surrounded the level of training, their satisfaction with the training, competencies, research, publications, challenges they are facing, and their suggestions to improve the quality of training. Expectedly, >80% of trainees were satisfied overall with the UK training programme. All surgeons raised concerns about work-life balance. Those who were not in a formal UK training programme cited a lack of mentorship, which highlight an important disparity between formalised and non-formalised training. Our findings suggest the need for more online platforms that link non-NTNs with suitable mentors who supervise progression. In addition, there is a role for simulation-based learning to facilitate the progress of all trainees alike. The SCTS has also opened its national training courses to non-NTNs to provide equal training opportunities. Overall, we could witness yearly progress in cardiothoracic training along with education without neglecting the working environment and social balance.

A quality improvement initiative to safely reduce unnecessary chest X-rays after elective lung resection and mediastinal surgery

Mehomed Elshalkamy

Chest X-rays are empirically performed after elective thoracic surgery and are commonly misperceived as low effort, low cost and low risk to patients. Existing literature consistently demonstrates that routine chest X-rays have limited impact in changing patient care, with analysis typically performed in three classic context-correlation chest X-rays performed immediately after elective thoracic surgery (also known as recovery chest X-ray), daily routine chest X-rays in the absence of clinical changes and after chest-drain removal. Concurrently, there is limited evidence regarding the safety surrounding withholding chest X-rays after thoracic surgery. There are also no evidence-based guidelines establishing best practices amongst thoracic surgery units globally. From June 2022 to September 2023, the Department of Thoracic Surgery at the Royal Victoria Hospital Belfast embarked on a 3-phase quality improvement initiative using the “plan-do-study-act” (PDSA) methodology. Each audit cycle spanned across four months and a total of 266 elective patients were monitored in this initiative. The four main objectives are as follows:

1. To investigate existing unit practise
2. To quantify the effects of performing empirical recovery chest X-rays in changing patient postoperative care in an elective setting
3. Introduce measures to reduce routine recovery chest X-ray, including education sessions with evidence review targeted at the MOT team during clinical governance, streamlining CXR ordering practices through formalization of department protocol and regular feedback gathering to encourage stakeholder buy-in.
4. Perform re-audits to assess the effectiveness of quality improvement strategies and regularly review unit patient safety data.

The main patient exclusion criteria was patients who underwent thoracic surgery in a non-elective setting, thoracic surgeries without intraoperative chest drain insertion, pleural surgeries or procedures, pneumonectomies and patients with a hospital length of stay of less than one day. All postoperative chest-X-rays were retrospectively reviewed and classified as either radiologically abnormal (expected postoperative changes including pleural space, substantial emphysema and pleural effusion) or clinically abnormal (grossly abnormal chest X-ray features and patient deterioration). Patient demographics, operative data and postoperative outcomes were collected and compared between the pre and post-intervention patient cohorts to assess the safety of this quality improvement initiative. The study was estimated using NIHR Costing Tool (CT).

Figure 1. Overview of events after routine recovery chest X-ray in POSA 1.3

From POSA cycle 1 to cycle 3, the mean daily rate of CXR performed per elective patient successfully reduced from 125±10.8 to 81.3±3.3 while recovery CXR reduced from 100% (113, 87% (70) to 73% (48). Patient characteristics and operative data were also similar between pre and post-intervention cohorts. There was no difference in postoperative complications classified Clavien-Dindo a3 (3% vs 16%; p=0.53), hospital length of stay (7±4 vs 7±3 days; p=0.73), death within 30 days (1% vs 1%, p=0.85), re-exploration within 30 days (6% vs 6%; p=0.86) and death within 30 days (1% vs 1%; p=0.98) before and after intervention. Conservative estimate of the total cost saved through this initiative was GBP 76,988 per year. Our institutional experience demonstrated that routine CXR utilisation after elective thoracic surgery can be reduced safely and importantly, especially empirical recovery and daily chest X-ray ordering practice. An un-documented X-ray (possible patient clinical condition) is advocated in view of the limited impact of routine chest X-ray on postoperative patient care. Further POSA cycles are still ongoing within our institution to sustain this patient-benefiting and NHS cost-saving initiative.
Impact of real-world pulmonary prehabilitation classes on lung cancer surgery patients’ outcomes: Matched-case analysis

Matar Alzahrani, Salma Kadi, Helen Dackelgroth, Aya Osman, Hazem Fallouh, Maninder Kalkat, Vanessa Rogers, Babu Naidu, Rajkumar Mehta, Saffana Algaed
1 University Hospitals Birmingham; 2 Birmingham Clinical Trials Unit; 3 University of Birmingham

Pulmonary rehabilitation classes for COPD patients are widely available across the UK and have been shown to improve outcomes, including recovery from exacerbation. Many lung cancer surgery patients have COPD, and surgery could be considered a fixed COPD exacerbation. In real-world practice, it’s uncertain whether referral to pulmonary prehabilitation classes improves surgical and patient-reported outcomes. We aim to answer this question by performing a propensity-score analysis (PSA) of participants in question by performing a propensity-score analysis (PSA) of participants.

Methods
An enriched cohort study offering rehabilitation pre and post-surgery pragmatically by local providers in patients undergoing lung cancer resection and compared to a contemporary control group who just had usual care. The study recruited 373 participants (rehabilitation (PG) n=193, non-intervention or control (NG) n=180). Regression exposed and unexposed matching, effect estimate, and standard-errors calculations were performed.

Results
118 participants were matched PG (n=59) NG (n=59). The multivariate-linear regression indicated a reduction in length of stay (LOS) by 33% from four to three days in the PG (EE -0.33). Table 1: The multivariate-log-binomial regression revealed no difference in both groups in hospital postoperative pulmonary complications (PPC) rate (EE 0.03). Lastly, the multivariate-linear regression showed an improvement in quality of life five months after surgery (QoL) by 3.5% in the PG (EE 3.5), yet the maximum improvement could be 10 units (95%CI = -3.4 – 10), which is considered clinically meaningful.

Conclusion
Engagement in real world pulmonary prehabilitation before surgery appears to result in better patient and clinical outcomes after lung cancer surgery. However, timely access to pulmonary prehabilitation remains a real issue post-COVID.

Table: Multivariate regression results for the outcomes in the prehabilitation group

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<th>LOS (days)</th>
<th>PPC</th>
<th>QoL (4 months)</th>
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<td>Prehabilitation Group (PG)</td>
<td>2.2–3.1</td>
<td>0.33</td>
<td>1.03</td>
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<td></td>
<td>0.80</td>
<td>1.11–1.3</td>
<td>0.57</td>
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<td>0.34</td>
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EE = Effect Estimate, CI = Confidence Interval, SE = Standard Error
A new multidisciplinary lung cancer One-Stop Clinic (OSC) in a large tertiary referral centre has led to a strongly positive impact on treatment pathways for high-risk patients

**Service aiming to improve outcomes of high-risk patients**

The National Optimal Lung Pathway (NOLCP) programme launched the National Optimal Lung Cancer Pathway in 2017, updated in 2020 aiming to exclude lung cancer diagnosis within 28 days of referral. Furthermore, in 2016 an ambitious initiative by Wythenshawe Hospital, we introduced the Rapid Access to Pulmonary Investigation and Diagnosis (RAPID) protocol offering a next-day computed tomography scan which is reported by a specialist radiologist. However, the Cancer Waiting Times Annual Report, 2020-21 showed that only 68% of patients with suspected lung cancer met the two-month wait standard to receive treatment. One-Stop Clinic (OSC) is an integrated joint service dedicated to the comprehensive management of high-risk patients delivered in a holistic multidisciplinary approach. Patients are offered the opportunity to meet surgeons, oncologists, anaesthetists, specialist nurses, onco-geriatricians, and nurse specialists in one hospital visit. This service addresses several aspects: comprehensive assessment, discussion of alternative treatment options, and optimisation of modifiable risk factors without breaching the target of timely management. This initiative provides a better patient experience and obviates the need for multiple hospital appointments with resultant increased costs and delays in treatment.

We audited the efficiency of OSC in accelerating treatment pathways namely, time from referral to decision to treat (DTT), treatment outcome, and median time from DTT to treatment. We compared these findings to a historical cohort of high-risk patients prior to the introduction of OSC. The median time of DTT was five days, compared to 35 days of pre-clinical launch with a total of 36 saved days. The median time to commencing treatment from DTT was 28 days. These results showed the significant positive impact of OSC in enforcing the delivery of a timely patient-tailored cost-effective management in such a complex cohort of patients while maintaining a high standard of care.

Longer waiting times are associated with increased patients’ anxiety and increased risk of disease progression with subsequent potential drop of surgical resection rate and receipt of curative treatments, increased extent of surgical resection, higher costs, and ultimately worse prognosis. These negative outcomes are more pronounced in high-risk patients who are increasingly detected during the newly established national lung cancer screening programme.

We continue to monitor waiting times of patients referred to OSC as a key performance metric. OSC service is expanding to include patients referred for surgery following neoadjuvant treatment in which DTT and time from decision to treatment should be meticulously kept to the shortest possible length.

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**Impact of the introduction of a multi-disciplinary clinic (“One-Stop Clinic”) on the outcomes of higher risk patients with resectable Non-Small Cell Lung Cancer (NSCLC): A single centre experience**

**Introduction**

We performed a retrospective comparative analysis of the introduction of OSC on post-operative 90-day mortality in patients undergoing lung cancer surgery at Manchester Royal Infirmary. OSC was launched the National Optimal Lung Cancer Pathway (NOLCP) programme in 2017. We compared patients with advanced NSCLC delivered in a holistic, multidisciplinary clinic launch with a total of 30 saved days. The median time to commencing treatment from DTT was 28 days. These results showed the significant positive impact of OSC in enforcing the delivery of a timely patient-tailored cost-effective management in such a complex cohort of patients while maintaining a high standard of care.

Longer waiting times are associated with increased patients’ anxiety and increased risk of disease progression with subsequent potential drop of surgical resection rate and receipt of curative treatments, increased extent of surgical resection, higher costs, and ultimately worse prognosis. These negative outcomes are more pronounced in high-risk patients who are increasingly detected during the newly established national lung cancer screening programme.

We continue to monitor waiting times of patients referred to OSC as a key performance metric. OSC service is expanding to include patients referred for surgery following neoadjuvant treatment in which DTT and time from decision to treatment should be meticulously kept to the shortest possible length.

**Raphe realignment technique in Siever’s type 1 BAV repair improves leaflet motion and transvalvular gradients**

**Introduction**

Aortic valve repair for regurgitant bicuspid aortic valve has gained popularity in recent years. Continuous refinements in the understanding of valve pathology and technique are ongoing. It has been observed, however, that valve gradients following BAV repair are constantly higher than TAV. This may be explained by the arcuate valve orifice and also by the higher insertion of the conjoined leaflet which makes it sit in a more horizontal obstructive position in the outflow tract. These higher stresses may in the long term lead to earlier valve degeneration.

Our Research

We have changed our repair technique in these patients and have started to implant the raphe at the annular level (reafferentation) rather than at its original anatomical level within the surgical graft during the procedure. We hypothesise that this may improve leaflet mobility, coaptation height and postoperative flow pattern compared to reimplantation at the supra-annular level.

**Objectives**

1. To compare our pre-operative and post-operative data before and after the new technique.
2. To assess the outcomes and complications.
3. To assess the impact of the new technique on patient survival and valve function.

**Results**

We performed a retrospective case series of 40 patients who underwent BAV repair at our institution from 2017 to 2022. Patients were divided into two groups: Group S who were early in the experience and had a standard reimplantation of the raphe at the anatomical position above the aortic annulus and Group R in whom the raphe was realigned and implanted at the annular level. The aim of this study is to compare our results pre and post-implantation.

**Conclusions**

From November 2017 to March 2022, 170 patients underwent valve-sparing aortic root replacement with reimplantation at our institution. 51 (30%) patients had a bicuspid aortic valve and 44 of these had a Siever’s type 1 phenotype which was included in this study. Patients’ operative data and discharge echocardiograms were assessed for valve function. Patients were subdivided into two

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**Improving Quality in Thoracic Surgery**

**Improving Quality in Thoracic Surgery**

Tuesday 19 March 13:30-15:00 HALL 2D

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**Conference News**

**Improving Quality in Thoracic Surgery**

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**Conference News**

Tuesday 19 March 13:30-15:00 HALL 2D
A decade of ‘Hello, My Name Is...’: measuring human touch in cardiac care

Eteesha Rao
Newcastle University, Newcastle, UK

T

en years have elapsed since the National Health Service (NHS) embraced the ‘Hello, My Name Is...’ campaign, a simple yet pivotal movement aimed at fostering personal connections between healthcare professionals and patients. As we mark this decade-long journey, our recent study sheds light on how well UK cardiac surgery centres integrated the campaign's ethos into their daily ward rounds.

In 2017, Kate Granger MBE, a Consultant Geriatrician, founded the ‘Hello, My Name Is...’ campaign during her battle with terminal cancer. This began as a clarion call for clinicians to introduce themselves to patients, initiating interactions with a personal touch. Advocated by various organizations, including the Care Quality Commission and the Royal College of Nursing, the initiative sought to establish a foundation for improved therapeutic relationships.

We undertook a multi-centre observational study of daily ward round interactions to evaluate the campaign's impact on patient awareness of the medical professionals involved in their care. Conducted in two leading UK cardiac centres, the research employed a prospective review in an audit form through ward round observations followed by patient interviews utilizing a standardised protocol.

Whilst many healthcare professionals adhered to the practice of introducing themselves, the study revealed that 1 in 5 failed to do so. However, it highlighted a significant room for improvement in communication, with 23% of interactions potentially benefiting from more accessible language and better opportunities for patients to ask questions. Significant barriers to effective communication included the pace of busy environments, jargon, the call for a more patient-centred approach, and the reluctance to share personal experiences.

As medical practice continues to evolve, these findings underscore the importance of not just clinical expertise but also the human connection in the healing process. The ‘Hello, My Name Is...’ campaign may have started as a simple introduction, but as this study reveals, its principles are a cornerstone for compassionate, quality care – something to be built upon for more decades to come.

22% of patients remained unaware of the roles of the staff attending to them, a gap that could impede effective care. Patient autonomy was the weakest area noted, with less than 70% of patients at Centre 1 feeling involved in decision-making processes – a figure that dropped to 62.5% at Centre 2. The personal aspect of care was scarcer, with 80% of patients recognising personal touches in their treatment. Heartfelt patient quotes praised the dedication of all staff members, from the housekeeping staff to surgeons, suggesting that compassion remained a strong suit in these cardiac centres.

Overall, our study highlighted three key opportunities for enhancement – refining communication, clarifying roles, and bolstering patient autonomy. The latter is crucial, as it is essential that one keeps patients engaged as active participants at the ‘heart’ of all care decisions.

To conclude, despite the positive changes since the inception of the ‘Hello, My Name Is...’ campaign, significant strides are still needed. With up to 38% of patients experiencing a paternalistic approach to their care and a notable use of medical jargon, the call for a more patient-centred care paradigm is clear and urgent.

As medical practice continues to evolve, these findings underscore the importance of not just clinical expertise but also the human connection in the healing process. The ‘Hello, My Name Is...’ campaign may have started as a simple introduction, but as this study reveals, its principles are a cornerstone for compassionate, quality care – something to be built upon for more decades to come.

Impact of Advanced Nurse Practitioner-Led POCUS on Length of Stay and Cost Savings

Katie Stines, Lead Advance Nurse Practitioner in Thoracic Surgery
Mr Shazhad Raja, Consultant Cardiac Surgeon; Dr Helen Solomon-Aboumarie, Consultant Intensivist
Harefield Hospital, Harrow, UK

I

nt of Care Ultrasound (POCUS) of the lungs has gained prominence since the Covid 19 Pandemic. It is a valuable tool for deciding if patients may be ready for discharge. There is a notable delay in this process with over 60% of patients requiring further investigations prior to discharge.

This study aimed to evaluate the use of POCUS to predict length of stay and associated cost savings. A single-centre prospective study was conducted over a six-month period.

POCUS was performed by the ANP in consultation with intensivists in the critical care area on admission. The time from request to US was 6.5 days. This demonstrated that the ANP undertook POCUS to determine the time from referral to scan. The results from the re-audit revealed a reduction in length of stay (LOS) of 2.6–4.9 days respectively. This calculated to a cost saving of £44,092 during the two-month period.

The QIP highlighted delays in patients obtaining US and presented a viable alternative to reduce LOS. Not only has this shown the cost-saving implications, but patients would also benefit from optimised care facilitating an earlier and safer discharge. In an era when there is increased pressure on Trusts nationally to reduce LOS, reducing waiting lists and maximising productivity, investing in ANPs skills set may be a small yet effective initiative to tackle the complex problem of extended length of stay post-cardiac surgery.

Implementative of SMS follow-up in a thoracic surgery clinic

Nathan Tyson, Sofia Clayton, Haris Shabbir, Abdul Al-Ubeid, Edward Carcans
Oxford Heart Centre, Oxford, UK

F

ollow-up after thoracic surgery is human resource-intensive, often involving multiple patient visits over several years, particularly after surgery for cancer. The average lung cancer patient will traditionally attend 14 clinic appointments annually, mostly concentrated in the immediate area around our centre were more likely to prefer a traditional approach and value direct face-to-face contact with a member of their clinical team.

Between DOS 2022 and 2023, we piloted a new SMS-based follow-up system, across a single consultant practice, based on the AccuRx platform (AccuRx UK Ltd). Eligible patients were selected for SMS-message-based review. Patients who had abnormal imaging findings, symptoms, queries or concerns were invited for face-to-face or telephone review as appropriate. Following the implementation period, we surveyed patients who had experienced the system.

Overall, 128 patients responded, with a significant proportion of patients coming from further afield within our catchment area. A large proportion of patients reported experiencing a high degree of anxiety prior to clinic appointments, irrespective of the modality used. It was particularly interesting to note that the SMS clinic was highly regarded amongst the group, as measured by a 3.1-point Likert scale. In particular, the AccuRx system was felt to reduce the environmental impact of the clinic (median score 8.0; IQR 2.75 - 10.0) whilst saving on travel costs (6.5; IQR 2.0 - 9.0) and reducing disruption caused by scheduled appointments (6.0; IQR 4.5 - 10.0). In particular, this system scored very highly in the domain of efficiency and use of healthcare resources (9.0; IQR 8.0 - 10.0).

Despite this, a vast majority of patients would choose face-to-face follow-up if they were able to select a preference. This was particularly true of patients who had experienced several types of clinics. Additionally, and as expected, those from outside the immediate area around our centre were more likely to prefer a traditional approach and value direct face-to-face contact with a member of their clinical team.

Our pilot study showed that patients are receptive to the use of technology, including SMS-delivered follow-up, to facilitate remote alternatives to face-to-face consultations. They are also strongly supportive of its adoption in their own clinical pathways. Nonetheless, when specifically questioned, many still prefer a traditional approach and value direct face-to-face contact with a member of their clinical team. A hybrid model of care delivery is currently being developed with direct patient involvement.
The integral role of the Surgical Care Practitioner for thoracic robotic surgery

Esther Lewis and Karen Elbrow
University Hospitals Plymouth NHS Trust, Plymouth, UK

The field of thoracic surgery has undergone a transformative shift in recent years with the widespread adoption of minimally invasive techniques. Robotic-assisted thoracic surgery (RATS) offers numerous advantages over traditional open surgery and video-assisted techniques (VATS), including enhanced visualization, improved dexterity, and reduced patient morbidity.

One of the primary benefits of RATS lies in its ability to provide surgeons with a three-dimensional, high-definition view of the surgical field. This advanced visualization allows for precise identification of tissue planes and structures, enabling more complex procedures, such as segmentectomies to be performed with greater accuracy. Additionally, the full articulation of robotic arms affords surgeons enhanced dexterity, surpassing the capabilities of traditional VATS.

At University Hospitals Plymouth NHS Trust, the Cardiothoracic Surgical Care Practitioners (SCPs) play an integral role in every step of the patient journey from pre-assessment to post-operative care. The implementation of thoracic robotic surgery has enhanced the role even further. SCPs played a crucial role in setting up the initial programme but also evolved to become key members of the team, improving the continuity of care throughout the patient journey. Responsibilities have expanded the first assistant role, necessitating the acquisition of new skills such as port insertion, robot docking, table side management and the insertion of drains and paravalvular blocks, as well as supervising and training junior surgical trainees.

A retrospective analysis conducted over 16 months in 2022 included 59 patients undergoing a wide variety of thoracic procedures, combining data from a local electronic database and the intuitive app revealed the significant impact of SCPs on surgical efficiency and team dynamics. SCPs always participated in robotic surgical procedures alongside the primary surgeon, offering support to seven different rotating training registrars. While the initial learning curve may have resulted in longer surgical times, the efficiency and safety of thoracic robotic lists have steadily improved over time. Notably, the skin incision to robotic docking time has improved to as low as 15 minutes (mean 15 mins).

Improving efficiency and surgical patient flow, Competent SCP presence at the operating table has also allowed more junior surgical trainees time at the console with direct Consultant supervision.

In conclusion, the evolution of thoracic robotic surgery has been greatly facilitated by the expertise and adaptability of Surgical Care Practitioners. The indispensable role as first assistant has not only improved surgical outcomes and patient experiences but has also paved the way for continued advancements in minimally invasive thoracic procedures, as well as enhancing training opportunities for thoracic surgical trainees. Within our institution, as the field of robotic surgery continues to evolve, SCPs will undoubtedly remain at the forefront, driving innovation and excellence in patient care.

Training in CT Surgery

Tuesday 19 March 13:30-15:00 HALL 1C

Shabdirahim Mithaha
University of Southampton, Southampton

Designing cancer has always been a challenge and over the years there has been a lot of emphasis on reducing the time it takes to diagnose patients. Electromagnetic navigational bronchoscopy is a minimally invasive medical procedure that uses a unique bronchoscope to examine thoracic lesions. This technique involves a three-dimensional map to guide the surgeon through the airways to the target lesion, allowing the physician to take biopsies safely. Attending these biopsies has impacted the management of patients and helped healthcare professionals identify whether the lesion is malignant or benign.

In my research, I focused on assessing the effectiveness and safety of EBV in the management of lung tumors and its influence on cancer management. The Southampton thoracic surgery department takes referrals from eight regional lung cancer MDTs, so data collection was complex. Initially, we had 138 patients, however there was only complete data for 90 patients. All the cases were done as a day case with an average procedure time of 45 mins (11.73) and 49 (54.9%) of the patients showed cancerous lesions. The average time taken from the initial referral procedure to the treatment plan after removing anomalies and outliers was 15.6 days. Surgery was the definitive management in the majority of the cases (Figure 1). There were only two complications noted. The number of referrals per month from cancer teams increased over time (Figure 2). Overall, EBV is effective at attaining biopsies in smaller lesions allowing for earlier diagnosis and better outcomes for the patients.

As a medical student applying to go into cardiothoracic surgery, this research project was the perfect opportunity to gain insight into how the cardiothoracic team works and the current advances in this field such as robotic-assisted thoracic surgery (RATS) and ENB. After witnessing the effects surgery can have on families and patients, I understood the importance of reducing complications and improving current practice to allow for more minimally invasive surgeries which aids in reducing recovery times. There is plenty of new research being conducted in this field and I am excited to see how cardiothoracic surgery will develop in the future.

Early detection of Lung Cancer

Monday 18 March 11:00-12:30 HALL 2D

Navigational Bronchoscopy in Thoracic lesions and its effect on the cancer pathway

Bothaya Amien, Ayman Kanayea
Liverpool Heart and Chest Hospital NHS Foundation Trust, UK

Surgical repair of acute type A aortic dissection (ATAAD) still carries a significant risk of mortality and morbidity despite refinement in surgical and anaesthetic techniques, including cerebral protection. Training in (ATAAD) repair is particularly challenging due to multiple factors. Firstly, these operations are done on an emergency basis and are commonly out of hours. There are technical challenges in handling dissected tissues, bleeding risks due to poor-quality tissues and hypothermia-related coagulopathies. Moreover, familiarity with establishing peripheral cardiopulmonary bypass, managing circulatory arrest and cerebral protection techniques are essential skills that are lacking in non-low-volume Aortic units. The combination of the above-mentioned factors leads to a lack of surgical contribution from the trainee. At Liverpool Heart and Chest Hospital (LHCH), we have an established Aortic fellowship program whereby we overcome these challenges. The aortic fellow is expected -not only by the aortic consultants but also by the anaesthetic team, perfusionists, and theatre scrub personnel-to be the primary operator in all acute type A dissection operations, after appropriate, stepwise training. The success of the Aortic fellowship program is underpin by several factors that start with appropriate recruitment. The aortic fellow is expected to have completed surgical training and is an independent operator in general cardiac surgical cases. Training starts with elective, first-time, single aortic segment surgery, peripheral cannulation, management of hypothermic circulatory arrest and cerebral protection strategies. The fellows progress thereafter to operate on emergency aortic dissection cases. An important contributory factor is a standardised approach to managing these patients across all aortic consultants.

Results

In order to evaluate the safety of training in aortic surgery, we conducted a retrospective analysis to compare the outcomes of trainees vs consultants as primary operators at LHCH in the last five years. We identified the number of type A aortic dissection repair procedures between October 2018 and September 2023; the total number of cases was 128, of which 70 were performed with a consultant as the primary operator vs 58 with a trainee as the primary operator. Of the 128 patients, 36 had aortic root replacement, of which 22 patients were operated by the aortic fellows, and 19 patients had valve-sparing David re-implantation of which seven patients were operated by fellows. Thirty-three patients had total arch replacement of which 24 had frozen elephant trunk, trainees performed 12 of the total arch and seven of the frozen elephant trunk.

The overall in-hospital mortality was 9.4%, 11.4% in the consultant group vs 6.9% in the trainee group (p=0.57). 90-day overall mortality was 14.4%, 15.7% in the consultant vs 12.1% in the trainee group (p=0.74). The total number of days in ITU was similar in both groups. Elective and urgent surgeries play a pivotal role in the fundamentals of training. In the same time period, we performed elective/urgent 166 root replacements, 179 David re-implantations, 57 total arches of which 29 had frozen elephant trunks, of those 29/0/4 were operated by trainees as single operators respectively. Of note, a number of patients were operated on by either two consultants or a consultant and fellow as dual operators due to case complexities. These are counted as dual operators and not included in fellow as primary operator.

Conclusion

Training in ATAAD repair is safely feasible in high volume aortic centres with standardised surgical approach and established aortic fellowship programs.

Figure 1: Represents the definite management for patients.
Figure 2: Represents the number of referrals to Navigational Bronchoscopy over a four-year period.

Dr. Shabarish Mathava
University of Southamton, Southampton

Diagnosing cancer has always been a challenge and over the years there has been a lot of emphasis on reducing the time it takes to diagnose patients. Electromagnetic navigational bronchoscopy is a minimally invasive medical procedure that uses a unique bronchoscope to examine thoracic lesions. This technique involves a three-dimensional map to guide the surgeon through the airways to the target lesion, allowing the physician to take biopsies safely. Attending these biopsies has impacted the management of patients and helped healthcare professionals identify whether the lesion is malignant or benign. In my research, I focused on assessing the effectiveness and safety of ENB in the management of lung tumors and its influence on cancer management. The Southampton thoracic surgery department takes referrals from eight regional lung cancer MDTs, so data collection was complex. Initially, we had 138 patients, however there was only complete data for 90 patients. All the cases were done as a day case with an average procedure time of 45 mins (11.73) and 49 (54.9%) of the patients showed cancerous lesions. The average time taken from the initial referral procedure to the treatment plan after removing anomalies and outliers was 15.6 days. Surgery was the definitive management in the majority of the cases (Figure 1). There were only two complications noted. The number of referrals per month from cancer teams increased over time (Figure 2). Overall, ENB is effective at attaining biopsies in smaller lesions allowing for earlier diagnosis and better outcomes for the patients.

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<table>
<thead>
<tr>
<th>Time</th>
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<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>09:00-10:30</td>
<td>Hall 1A</td>
<td>Lunch box, UK Aortic Surgery</td>
</tr>
<tr>
<td>10:30-10:45</td>
<td>Hall 1B</td>
<td>Coffee</td>
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<tr>
<td>10:30-12:00</td>
<td>Hall 1B</td>
<td>Lunch break, British Heart Valve, Aortic Valve interventions, AF Surgery: Preventing AF related morbidity and heart failure, MDLornix, AtriCure session, Robotic Thoracic Surgery, Medical Student Session</td>
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<tr>
<td>12:20-12:30</td>
<td>Exhibition Hall</td>
<td>Grab lunch to attend session</td>
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<tr>
<td>12:30-12:45</td>
<td>Hall 1B</td>
<td>Lunch break, EDWARDS Cardiac Lunchbox</td>
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<tr>
<td>13:30-15:00</td>
<td>Hall 1B</td>
<td>Contemporary approaches to Surgical coronary revascularisation, UK AS session 1: Aortic guidelines and risk assessment, Lung Cancer, Medical Student Session</td>
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<tr>
<td>15:00-15:15</td>
<td>Hall 1B</td>
<td>Coffee</td>
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<tr>
<td>15:17-15:30</td>
<td>Hall 1B</td>
<td>State of the art Mitral Surgery, UK AS session 2: Current innovations in complex aortic surgery, Malignant pleural disease, Medical Student Session</td>
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<tr>
<td>17:00-18:00</td>
<td>Exhibition Hall</td>
<td>Welcome Reception, Trainee Meeting</td>
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<td></td>
<td>Exhibition Hall</td>
<td>Welcome Reception, Cardiac Surgery Sub-committee Executive Boardroom (17:00-18:00)</td>
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<tr>
<td>19:30-22:00</td>
<td>Plaza Foyer</td>
<td>Pub Quiz</td>
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### Tuesday 18th March

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<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>08:00-10:00</td>
<td>Hall 1A</td>
<td>KINAI</td>
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<tr>
<td>09:00-10:30</td>
<td>Hall 1B</td>
<td>Main Plenary - Auditorium, Coffee - Exhibition Hall</td>
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<tr>
<td>10:30-11:10</td>
<td>Hall 1B</td>
<td>Aortic surgery: Aneurysm, Cardiac General: Outcomes, Transplant &amp; MCS, Early detection of Lung Cancer, Chest wall disease and trauma, Clinical effectiveness and patient experience in CT surgery, Congenital 1: Abstract Session, Moderate posters: Thoracic 1, E, D &amp; I Sub-committee Meeting, RESOLVE National PPI Meeting</td>
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<tr>
<td>11:00-12:30</td>
<td>Exhibition Hall</td>
<td>Lunch - Exhibition Hall</td>
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<tr>
<td>12:30-13:30</td>
<td>Exhibition Hall</td>
<td>Research Plenary: Multidisciplinary research - Auditorium</td>
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<tr>
<td>13:00-15:00</td>
<td>Exhibition Hall</td>
<td>Congenital 2: Management of PA/ToF-US with diminished pulmonary flow, Moderate posters: Thoracic 1, Aortic Surgery, WCTS Sub-committee Meeting, PACeS Trial Investigators Meeting (15:30-16:30), PRIMARY Investigators Meeting (16:30-17:30)</td>
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<tr>
<td>15:00-15:30</td>
<td>Exhibition Hall</td>
<td>Coffee - Exhibition Hall</td>
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<tr>
<td>15:30-17:00</td>
<td>Exhibition Hall</td>
<td>Cardiac general 2, CABG: off pump, BIHS aortic valve session, Perioperative management in thoracic surgery, Other Thoracic Maligancies, Enhancing patient care in CT surgery, Congenital 2: Abstract Session, Moderate posters: Thoracic 1, Aortic Surgery, WCTS Sub-committee Meeting, PACeS Trial Investigators Meeting (15:30-16:30), PRIMARY Investigators Meeting (16:30-17:30)</td>
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<td>17:00-18:00</td>
<td>Exhibition Hall</td>
<td>Medtronic Cardiac Symposium</td>
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<td>Exhibition Hall</td>
<td>SMS Thoracic Symposium</td>
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<td>Exhibition Hall</td>
<td>UK Aortic Surgery, BOC-4 Trial Investigators Meeting (17:00-18:30)</td>
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### Wednesday 19th March

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>09:00-11:00</td>
<td>Hall 1A</td>
<td>Mitral valve surgery, Heart Research UK, Contemporary Lung Cancer management, Collaborative shared learning experiences in CT surgery, Moderated posters: Cardiac 2, Audit Sub-committee Meeting (09:30-10:30), RESTORE Trial Meeting</td>
</tr>
<tr>
<td>11:00-12:30</td>
<td>Exhibition Hall</td>
<td>Innovations in CT Surgery - Hall 1A/1B</td>
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<tr>
<td>12:30-13:30</td>
<td>Exhibition Hall</td>
<td>Lunch - Exhibition Hall</td>
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<tr>
<td>13:30-15:00</td>
<td>Exhibition Hall</td>
<td>Cardiothoracic Oncology, Training in CT Surgery, Improving Quality in Thoracic Surgery, Improving CT surgical outcomes, Thermic 4 Investigators Trial Meeting, Moderate posters: Thoracic 2, Communications Sub-committee Meeting (13:30-14:30), National Trials Initiative Steering Group Meeting</td>
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<tr>
<td>15:30-16:00</td>
<td>Exhibition Hall</td>
<td>Coffee - Exhibition Hall</td>
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<tr>
<td>15:30-17:00</td>
<td>Exhibition Hall</td>
<td>Aortic surgery: Dissection, CABG, Miscellaneous Thoracic Surgery, Creating innovative ways to enhance patient care, Moderate posters: Cardiac 3, Sustainability in CT Surgery Working Group Meeting (14:30-15:30)</td>
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A screening process to identify prehabilitation needs for patients awaiting in-house urgent (IHU) cardiac surgery

Michael Rice* Sheffield Teaching Hospitals, Sheffield (the project was completed at Royal Papworth Hospital, Cambridge, UK).

Methods

Over the period of April to September 2022, 58 patients awaiting IHU cardiac surgery were screened using a newly created tool focusing on musculoskeletal, neurological and respiratory diagnoses. Diagnosis codes were obtained from the electronic patient record database based on the electronic patient record, selected from a full list and included into the above specialties. IHU patient notes were reviewed to identify patients who may require enhanced physiotherapy input prior to IHU surgery.

Research Question

To evaluate the patient journey through cardiac surgery by highlighting those patients who may require enhanced physiotherapy input whilst awaiting IHU surgery.

Objective

To identify the patient journey through cardiac surgery by highlighting those patients who may require enhanced physiotherapy input prior to IHU surgery.

Results

Fourteen patients were screened in due to having comorbidities and were reviewed for a range of inputs including: smoking status, physical activity advice, bedtime breathing advice, and exercise to maintain functional capacity. A few patients had prior cardiothoracic surgery, which was also highlighted. Future research is needed to establish if improving a patient's physical and mental condition pre-surgery affects their post-operative outcomes. Novel ideas to specify those patients who would get the most benefit from physiotherapy input by using a screening tool would streamline resources. Further to this, the importance of establishing potential social issues via occupational therapy or shared discharge planning must be considered for a timely post-operative course.

Conclusions

It has not yet been established if prehabilitation is of benefit to IHU patients despite being a focus of cardiac surgeons to improve outcomes. This is particularly important in the context of increased surgical wait times, although suitability needs clarification with the cardiac team. It has not yet been established if prehabilitation is of benefit to IHU patients despite being a focus of cardiac surgeons to improve outcomes. This is particularly important in the context of increased surgical wait times, although suitability needs clarification with the cardiac team.

Figure 1. SCTS distribution of patients for each input

**Aortic Repair of aortic root aneurysms in young populations**

Hayden Simmons* University of Bristol, UK.

**Methods**

A contemporary meta-analysis of valve-sparing and composite valve graft root replacements

This research seeks to uncover the differences in post-operative outcomes between these two main aortic root replacement techniques.

**Results**

This study included 26 studies and a total of 742 patients (valve-sparing n=442, composite valve graft n=301). The mean age of patients in both groups was below 50 years. The analysis of early mortality yielded an SMD of 0.20 (1.186; 1.47), indicating a small effect size. For CVA, the SMD was 0.08 (1.12; 1.193), with a large effect size, while reoperation for bleeding resulted in an SMD of -0.01 (0.072; 0.02). As all confounders included in our analyses showed statistically significant differences, our conclusion is that valve-sparing is superior to composite valve grafts in terms of early mortality and reoperation for bleeding.

Conclusions

This meta-analysis suggests that there is no statistically significant difference in early mortality, CVA, or reoperation for bleeding between valve-sparing (David) and composite valve (Bentall) root replacement procedures. The recommendation made is to be informed by individual patient characteristics featuring such as a bicuspid aortic valve, and to encourage shared decision-making between surgeons expressing their preferences, and aligning these with patient wishes.
The SCTS Annual Dinner 2024

Monday 18th March
19.30 - 1.00

Ticket includes welcome drink, 3 course meal, wine, entertainment and music

Ticket £75 available online when registering for the Annual Meeting

Dress Code: Gala

ICC WALES
The Coldra, Catsash Rd, Caerleon,
Newport NP18 1HQ

www.scts.org
Electromagnetic Bronchoscopy Scoring Curve, Pneumothorax Rate and Diagnostic Yield

Table 1: Patient characteristics and lobar distribution of lesions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total patients, n</th>
<th>Affected lobes</th>
<th>UL</th>
<th>LL</th>
<th>HML</th>
<th>YML</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean ± SD</td>
<td>246</td>
<td>68.07 ± 9.23</td>
<td>68.07 ± 9.23</td>
<td>67.98 ± 9.32</td>
<td>67.26 ± 9.35</td>
<td>0.456</td>
<td></td>
</tr>
<tr>
<td>Size (cm), mean ± SD</td>
<td>246</td>
<td>1.13 ± 1.34</td>
<td>1.13 ± 1.34</td>
<td>1.14 ± 1.35</td>
<td>1.08 ± 0.57</td>
<td>0.169</td>
<td></td>
</tr>
<tr>
<td>Pneumothorax rate</td>
<td>328</td>
<td>24 (8.57)</td>
<td>18 (5.67)</td>
<td>32 (12.65)</td>
<td>32 (12.65)</td>
<td>0.388</td>
<td></td>
</tr>
</tbody>
</table>

Values are presented as mean ± SD or counts, *p* values unless otherwise indicated. **Mean**, **Lower limit**, **Upper limit**, **Right-middle lobe** 

Table 2: Diagnostic yield stratified by periods of ENB procedure

<table>
<thead>
<tr>
<th>Period</th>
<th>True positive</th>
<th>False negative</th>
<th>True Negative</th>
<th>False Positive</th>
<th>True diagnostic yield (TD)/(TD+ND) X100</th>
<th>Overall diagnostic yield TD/(TD+ND) X100</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020-2021</td>
<td>20</td>
<td>50</td>
<td>115</td>
<td>13</td>
<td>55.9%</td>
<td>61.3%</td>
</tr>
<tr>
<td>2022-2023</td>
<td>22</td>
<td>48</td>
<td>117</td>
<td>10</td>
<td>60.7%</td>
<td>66.0%</td>
</tr>
<tr>
<td>Overall</td>
<td>42</td>
<td>98</td>
<td>232</td>
<td>23</td>
<td>59.4%</td>
<td>61.3%</td>
</tr>
</tbody>
</table>

PCC prolongs the need for respiratory support and extends hospital stays, increasing hospital costs. The expenses of critical level 2/3 support per day amount to £1000, significantly higher than ward care at £60 per day.54 Consequently, a single PCC can lead to considerable financial burdens per patient, underscoring the imperative need for targeted interventions.

Inspiratory muscle training (IMT) prehabilitation offers a cost-effective solution, strengthening cardiopulmonary patients’ respiratory muscles and cardiopulmonary fitness.55 It provides resistance to inhaled, thereby training inspiratory muscles, reducing PCC rates, accelerating recovery, facilitating shorter hospital stays, and improving patient satisfaction. In the preoperative assessment of cardiac patients, a comprehensive risk assessment is necessary to identify individuals who would benefit from respiratory prehabilitation.56 Incorporating such strategies into routine preoperative optimisation, healthcare providers can enhance the quality of outcomes and for cardiac patients undergoing surgical interventions.

The cost of the IMT device stands at £60 per patient. Most studies have opted for a threshold IMT device to facilitate effective training.57,58 Although there is no optimum duration of IMT, many studies set the Minimal Invasive Pressure (MIP) between 15-40% for training intensity and the preoperative project chose a training regime of 40% of the MIP twice daily. High-intensity training is more effective in reducing PCC than endurance training.59 While direct supervision by healthcare professional IMT is considered, in clinical settings, current challenges such as short staffing and increased workloads necessitate innovative approaches. Our initial IMT session is led by a physiotherapist, who equips patients with necessary guidance and monitors their progress and also reduces access and accessibility, and thereby reduces the time spent on therapy.

An evidence-based approach to targeted respiratory prehabilitation addressing frailty, deprivation, and malnutrition to reduce postoperative pulmonary complications (PPC)

Cardiac 2: Monday 18 March 15:30-17:00 HALL 1A

R

espiratory prehabilitation has emerged as a vital component of the inpatient improvement project for cardiac patients awaiting surgery (see Coronary Artery Bypass Grafting (CABG) and valve procedures). Addressing preoperative challenges requires a multifaceted approach encompassing lifestyle modifications, comorbidities management, smoking cessation interventions, and targeted respiratory prehabilitation steps tailored to the individual needs of cardiac patients.66 Prehabilitation of inactivity, including frailty, can lead to decreased lung capacity and efficiency, as the lungs may not be able to meet the oxygen demands of the patient.70 Comorbidities prevalent in cardiac patients, such as diabetes, chronic obstructive pulmonary disease (COPD), can further exacerbate respiratory issues by imposing additional strain on the respiratory system.71 These factors increase the risk of perioperative complications (PPC), morbidity, and mortality.66 Optimising respiratory health significantly reduces the incidence of PPC, including complications like prolonged postoperative ventilation (>48h), atelectasis, and infections, ultimately leading to reduced hospital stay and mortality.66,71

A local clinical audit revealed that over two years, PPC affected 29% of surgical cases. Frailty emerged as a significant factor associated with its occurrence, particularly evident in 40% of frail patients. Frailty presents a similar risk of PPC as malnutrition, doubling both the risk of mortality and frailty.66

PPC proceeds the need for respiratory support and extends hospital stays, increasing hospital costs. The expenses of critical level 2/3 support per day amount to £1000, significantly higher than ward care at £60 per day. Consequently, a single PCC can lead to considerable financial burdens per patient, underscoring the imperative need for targeted interventions. Inspiratory muscle training (IMT) prehabilitation offers a cost-effective solution, strengthening cardiopulmonary patients’ respiratory muscles and cardiopulmonary fitness.65 It provides resistance to inhaled, thereby training inspiratory muscles, reducing PCC rates, accelerating recovery, facilitating shorter hospital stays, and improving patient satisfaction. In the preoperative assessment of cardiac patients, a comprehensive risk assessment is necessary to identify individuals who would benefit from respiratory prehabilitation. Incorporating such strategies into routine preoperative optimisation, healthcare providers can enhance the quality of outcomes and for cardiac patients undergoing surgical interventions.

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An evidence-based approach to targeted respiratory prehabilitation addressing frailty, deprivation, and malnutrition to reduce postoperative pulmonary complications (PPC)
SAVE THE DATE

SCTS ANNUAL MEETING 2025

Sunday 16th - Tuesday 18th March

Edinburgh
International Conference Centre

www.scts.org
Ending the transfusion threshold debate: have we peaked the hierarchy of evidence?

Alexander Reynolds
Bristol Heart Institute, Bristol, UK

Might I start by saying what a great pleasure it will be to attend the SCTS Annual Meeting and, on behalf of my fellow south Walians, say, “Crozos i Gymru” to all who attend? I have lived in Wales since beginning my medical training and have found the beautiful land and the people to whom it belongs to be most welcoming and friendly. It will always be the second home where my professional career began.

This year is exciting in that I have the privilege to present a piece of work undertaken with my collaborative research group. We wanted to club together the experiences of multiple trials in the field of cardiothoracic peri- and post-operative care; investigating the restrictive transfusion threshold technique and the resulting effects on mortality, major cardiovascular and cerebrovascular events, and duration of stay in both ITU and hospital in the pre-selected group of patients. Having become proficient in the field of systematic reviews and meta-analyses, we were keen to avoid the pitfalls that such a controversial piece of work may lead to. Of particular concern is the attention given to the clinical context in which the restrictive technique is performed; no team is going to hold onto blood transfusion in the context of trauma or acute presentation when it is indicated, and our data does not comment on such a scenario. Rather, we have examined the data of non-emergency cardiac patients in the postoperative period whose haemoglobin would usually indicate blood transfusion. Enrolled patients were randomised to either receive transfusion or undergo active surveillance – whereby transfusion may only be offered if their haemoglobin drops to the lower threshold value.

The pooled data confirmed the insignificant differences when comparing patients who received transfusions at a liberal (normal indication) haemoglobin and a restrictive (lower) haemoglobin. Such results made us consider the known risks associated with blood transfusions and suggest whether the guidelines should now factor in restrictive transfusion thresholds for low-risk non-emergency patients for whom a blood transfusion could pose more risks than the benefit of elevated haemoglobin. Furthermore, the upcoming TRICS-IV RCT may clarify the effect of restrictive transfusion thresholds in high-risk patients – which would develop on our findings considerably.

As an aspiring surgeon, currently undertaking a year of research at an academic cardiac surgery centre, I am most intrigued to see how data influences the opinion of those with real-world experience in making clinical decisions and owning the outcomes. I am particularly keen to hear the views of the audience and the chairs, one of whom was the principal investigator on one of the original prominent RCTs that our dataset includes. Our presentation will take place during the General Cardiac: Outcomes session on Monday 19th March at 1100 in Hall 1B and we will welcome all debate and discussion surrounding this topic.

Surgical site infection after endoscopic and open saphenous vein harvesting for coronary artery bypass grafting

Sincy Joseph, Anikulor Sanakamhli Amnaah, Chandrashekar Chowdappa, Jeremy Chan, Cha Rajaruna
Bristol Heart Institute, Bristol, UK

Endoscopic vein harvesting (EVR) provides an alternate way to harvest the saphenous vein for CABG to reduce the incidence of surgical site infection. We aim to compare the incidence of surgical site infection (SSI) after EVH and open saphenous vein harvesting (O VH) in the Bristol Heart Institute. We examined our local cardiac surgery database with all patients requiring a conduit from 2021. Currently, EVH is performed by three SCPs while O VH is performed by SCPs as well as the surgical team, in particular out-of-hours. We then compared the incidence of in-hospital SSI in patients who underwent EVH and O VH.

A total of 1042 patients were included, of which 342 (32.6%) of patients underwent EVH. There were no patients who had a confirmed surgical site infection after EVH, while sixteen patients were diagnosed with surgical site infection by the wound care specialist after open vein harvesting. In addition, 20 patients (2.86%) had haematoma after O VH that was managed conservatively.

Our study demonstrated that EVH is associated with a low incidence of post-operative haematoma and surgical site infection. EVH could be considered in patients with high risk of surgical site infection.

Impact of COVID-19 on completion of cardiothoracic training programme in the UK – an evaluation of the Joint Committee on Surgical Training database.

Jeremy Chan, Daniel Fudulu, Tim Dong, Ronald Veule, Gianni D Angelini
Bristol Heart Institute, Bristol, UK

Coronavirus 2019 (COVID-19) have overwhelmed healthcare systems internationally. It is widely reported that the volume of cases logged by cardiothoracic trainees significantly reduced during the COVID-19 pandemic. However, less known is the effect on trainees’ completion during/post-pandemic.

We use the Joint Committee on Surgical Training (J CST) Surgeons Information Management System (SIMS) database, the Intercollegiate Surgical Curriculum Programme (ISCP) database, and the Intercollegiate Surgical eLogbook (isLogbook) database to evaluate the Impact of COVID-19 on Cardiothoracic surgical training programme graduates during/post-pandemic.

We demonstrated trainees who undertook part of their training during COVID-19 were more likely to undertake time out of the program and required a longer period to complete the training. There was a significant reduction in cases logged by cardiac-themed trainees. However, an opposite trend was seen in thoracic-themed trainees. COVID has a significant impact on cardiothoracic surgical training, increasing the duration of the training period and the number of trainees taken out of the program for research/clinical training. The impact on surgical volume was greater in cardiac-themed trainees.

Training in CT Surgery

Tuesday 19 March 13:30-15:00 HALL 1C

CABG Off Pump

Monday 18 March 15:30-17:00 HALL 1B

Long-term survival after off-pump coronary artery bypass grafting in a high-volume centre

Jeremy Chan, Daniel P Fudulu, Pradeep Narayan, Tim Dong, Gianni D Angelini
Bristol Heart Institute, Bristol, United Kingdom

Previous studies have demonstrated equivalent short/mid-term results between on-pump and off-pump coronary artery bypass grafting in high-volume/experience centres. However, the long-term follow-up results are less known.

A total of 1813 patients who underwent first-time, elective or urgent isolated coronary artery bypass grafting at the Bristol Heart Institute from 1996 to 2023 were included in this study. Of these 834 (46%) underwent off-pump CABG.

We concluded that off-pump when compared with on-pump coronary artery bypass grafting has better short-term clinical outcomes and equivalent long-term survival in high volume centres.

BHVS Aortic Valve Session

Monday 18 March 15:30-17:00 HALL 1C

Trend, early outcome, and long-term survival, in patients between the ages of 50-70 years undergoing aortic valve replacement.

Jeremy Chan, Pradeep Narayan, Daniel P Fudulu, Tim Dong, Gianni D Angelini
Bristol Heart Institute, Bristol, United Kingdom

The last two decades have seen an incremental use of biological over mechanical aortic valve prosthesis in patients between the ages of 50-70 years, mainly due to advancement in transcatheter aortic valve implantation and avoidance of long-term anticoagulation. While short-term outcomes are largely equivalent, the long-term outcomes remain controversial.

We examined the local cardiac surgery database including all patients between the ages of 50-70 years undergoing elective or urgent isolated aortic valve replacement at our institute between 1996 to 2023. Trends, early outcomes, long-term survival, valve size, patient prosthesis mismatch (PMM), and repeat valve interventions were investigated in patients receiving biological or mechanical prostheses, first in the whole patient cohort and then using Propensity Score Matching (PSM).

Our study demonstrated that patients, aged between 50-70 years, who received a mechanical prosthesis had better long-term survival than those with a biological valve prosthesis. The use of a mechanical prosthesis particularly in patients with a small annulus and in the presence of patient prosthesis mismatch was associated with better long-term survival than with the use of biological valve prostheses. Further studies, including randomised controlled trials, should be conducted before the rapid expansion of the use of biological aortic valve prostheses in this cohort.
<table>
<thead>
<tr>
<th>Course</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST7.1 Phase 3: Cardiothoracic Pre-Consultant Course Practical</td>
<td>Keele Anatomy &amp; Surgical Training Centre</td>
<td>17th–18th April</td>
</tr>
<tr>
<td>ST5.2 Phase 2: Cardiothoracic Intensive Care and Critical Conditions Course</td>
<td>Ashorne Hill</td>
<td>29th–30th April</td>
</tr>
<tr>
<td>ST5.1 Phase 2: Cardiothoracic Surgery Sub-Specialty Course</td>
<td>Keele Anatomy &amp; Surgical Training Centre</td>
<td>8th–9th May</td>
</tr>
<tr>
<td>ST3.1 Phase 1: Operative Cardiothoracic Surgery Course</td>
<td>Medizin im Grünen, Medical Competence Centre, Berlin</td>
<td>16th–17th May</td>
</tr>
<tr>
<td>SCTS Harefield Core Thoracic Organ Transplantation Course</td>
<td>STaR Centre</td>
<td>23rd–24th May</td>
</tr>
<tr>
<td>ST4.2 Phase 2: Core Thoracic Surgery Course</td>
<td>Ashorne Hill</td>
<td>10th–12th June</td>
</tr>
<tr>
<td>Congenital Heart Disease Course</td>
<td>Ashorne Hill</td>
<td>19th–20th June</td>
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<tr>
<td>ST2.2 Phase 1: Introduction to Specialty Training Course (ST3A)</td>
<td>Ashorne Hill</td>
<td>18th–19th July</td>
</tr>
<tr>
<td>Cardiothoracic Surgery Update and Wetlab for Trust-Appointed Doctors</td>
<td>Ashorne Hill</td>
<td>11th–12th September</td>
</tr>
<tr>
<td>ST2.1 Phase 1: Essential Skills in Cardiothoracic Surgery Course</td>
<td>Nottingham City Hospital</td>
<td>16th–17th September</td>
</tr>
<tr>
<td>CESR Application Course</td>
<td>Ashorne Hill</td>
<td>8th November</td>
</tr>
<tr>
<td>ST1: Introduction to Cardiothoracic Surgery Course</td>
<td>Ashorne Hill</td>
<td>15th November</td>
</tr>
<tr>
<td>ST4.1 Phase 2: Core Cardiac Surgery Course</td>
<td>Ashorne Hill</td>
<td>18th–20th November</td>
</tr>
<tr>
<td>ST7.2 Phase 3: Leadership and Professionalism Course</td>
<td>Ashorne Hill</td>
<td>2nd–3rd December</td>
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</table>
AVSD repair, using a two-patch technique, in a 3D printed model with a novel removable AV valve

We attempted to prove the feasibility of using a 3-Dimensional (3D) printed replica to model complex, intracardiac anatomy and repair. This would be shown by replicating and repairing an atriointerventricular septal defect (AVSD). Such a model would permit tangible insight into both native and post-surgical anatomy. The educational value of such an endeavour was evident, enhancing the learning of the multidisciplinary team, overcoming current limitations in trainee exposure to complex operative cases and supporting informed patient consent.

A 3-D AV model, including a first-of-its-kind removable atriointerventricular (AV) valve, was designed and printed with compliant resins [Figure 1]. The choice of specific ‘inks’ being used was based on results of previous research that proved their competency in fine/microsurgical procedures. The removable AV valve allowed for an in-depth appreciation of the complexity of the defect and the common AV junction characterizing the AVSD. The leaflets were carefully designed and sized to allow for adequate coaptation, resembling a competent AV valve prior to any repair. The papillary muscles were added to the already existing 3D mesh, augmenting the already segmented model. Chordae tendineae were added following the print of the model, being sized appropriately. An experienced surgeon, septated the heart and divided the AV valve, utilizing the two-patch technique. [Figures 2.2.3] An extensive questionnaire was used to document the operator’s impression of the texture, elasticity, and appropriateness of the model for simulating surgery, with the latter being sized in a way to resemble infantile AVSD repair.

The pre- and post-operative models were individually appraised by trainees, cardiologists, cardiac surgeons, and scientists, with the use of questionnaires to assess the model’s potential for training and consent purposes. We documented strong support regarding the accuracy of the model, with 94.48% (n=19) of pre-operative appraisals identifying fine anatomical features and 100% of post-operative appraisals (n=21) finding the model an accurate representation of two-patch AVSD repair.

In addition, we saw that there is a demand for models like this to be used for the training and education of medical professionals with 100% of respondents finding both the pre-operative (n=20) and post-operative (n=26) models useful for training, with 100% of surgeons (n=6) agreeing such a model should be used in surgical training. In addition, we saw support in using models like this to deliver information for patients with 96.64% (n=21) and 96.64% (n=22) of surgeons (n=6) and trainees (n=21) responding to the model’s use for consent, in the pre- and post-operative appraisal groups, respectively.

With our study, we can conclude that there is strong support for the utility of 3D-printed models as a tool to in-depth, morphological understanding and surgical training. We look forward in carrying on replicating models for a series of rare and complex cardiac abnormalities as an adjunct to training, patient education and in vitro trialling of novel surgical techniques.

Virtual reality for enhanced preoperative planning and intracardiac baffle design for double outlet right ventricle

Double outlet right ventricle (DORV) is a form of congenital heart disease in which both great arteries arise from the morphologic right ventricle (RV). DORV is a spectrum, and within it, less many anatomic variations, including the position of the interventricular communication (IVC) as well as aortic arch morphogenesis. Arch malformations are reported in 50% of cases, with 20% of cases requiring neonatal arch augmentation.3 As surgical repair strategies for DORV vary based on anatomic and haemodynamic subgroups, a detailed assessment of intracardiac anatomy is required preoperatively. Repair typically involves the intracardiac re-routing of the left ventricle (LV) to either the aorta or pulmonary root, depending on the location of the IVC.

Our study aims to advocate for the utility of virtual reality (VR) in optimizing preoperative planning for DORV procedures. We aim to tailor surgical repair and design intracardiac baffles while mitigating reported complications such as heart block, residual small RV, and intracardiac channel narrowing. A multidisciplinary team of cardiac surgeons, morphologists, and engineers reconstructed precise intracardiac morphology within VR environments, from data sets of routine clinical imaging of DORV hearts/‘Leveraging our in-house developed VR platform ‘VHealth’, we conducted virtual surgical simulations within the VR environment. After decoding complex DORV pathology, we identified surgical landmarks within carefully defined local coordinates in an algorithmically correct fields. We successfully planned and undertook interventions for complex DORV cases, including a case where the IVC, despite being perimembranous, was not surgically compatible to either outflow tract, as well as a case in which raised pulmonary pressures necessitated complex intracardiac repair in place of the originally planned Fontan pathway. Additionally, the immersive VR environment has enabled us to engineer two precisely designed baffles, facilitating optimized sized outflow tracts between the LV and both the pulmonary root and the aorta. These baffles were carefully computationally sized and positioned through the process of creating an outline, followed by a ‘body’, ensuring an undistorted left ventricular outflow tract, regardless of arterial routing.

Future directions involve transitioning from 3D to 4D reconstructions, and simulating dynamic changes in the LV outflow tract diameter throughout the cardiac cycle. By incorporating MRI studies and simulating the physiological motion of the cardiac fibres, we aim to further refine our baffle designs. In conclusion, VR has refined preoperative planning for DORV repair by enhancing our understanding of complex intracardiac lesions, customizing surgical repair strategies, and facilitating the design of two intracardiac baffles. The potential applications of VR in this field appear limitless, encompassing areas such as training, precision medicine, surgical practice refinement, global surgical education, and providing crucial support to low-volume centres.

References

Long-term diagnostic yield for navigational bronchoscopy: Analysis of over 600 procedures

Arvind Muthirevula, Joshua Lodha, Elaine Teh, Richard Milton, Alessandro Brumalli, Marco Nardin, Peter Tcherveniakov, Nilanjan Chaudhuri
Leeds Teaching Hospital, Leeds, UK

In lung lesion diagnosis, particularly in cases where routine diagnostic methods prove inadequate or unsuccessful, navigational bronchoscopy emerges as a pivotal tool. Our study delved into its diagnostic efficacy and associated outcomes, aiming to provide comprehensive insights into its utility.

Our methodology encompassed a retrospective analysis from 2018 to 2022, evaluating navigational bronchoscopy procedures conducted by multiple surgeons. The primary measure of interest was diagnostic accuracy, gauged through pathology from per-lesion biopsies. We ensured long-term validation by corroborating findings with follow-up CT scans and treatment records spanning at least one year post-procedure. Additionally, we investigated post-procedural complications such as pneumothorax, the procedure's occurrence of pneumothorax, as well as its impact on costs and bed utilization.

Throughout the study period, we scrutinized 603 procedures, revealing a commendable 99% diagnostic accuracy per lesion biopsied. Interestingly, when dissected across various surgeons, each with a minimum experience of 30 procedures, diagnostic efficacy ranged from 54% to 67%. Noteworthy findings included a 38% incidence of true positive identifications and a 21% rate of true negatives. Pneumothorax occurred in 7% of cases, necessitating drain insertion, and the duration of hospital stays.

Moreover, the audit highlighted the clinic's role in on the day of surgery. In conclusion, our extensive analysis underscores the substantial diagnostic accuracy afforded by navigational bronchoscopy, particularly in scenarios where conventional methods faltered. Despite the occurrence of pneumothorax, the procedure's efficacy shines through its ability to facilitate brief post-procedural hospital stays. These findings advocate for the widespread adoption of navigational bronchoscopy, offering clinicians a robust diagnostic tool to navigate challenging cases of lung lesions effectively.

Are we utilising the service effectively? Audit on specialized chest drain clinic in Nottingham University Hospital NHS Trust

Nur Binti Yusri, Rashad Abdelrahman, Slokha Pimparkar
Department of Thoracic Surgery, Nottingham City Hospital, NUTH, Trust

In the ever-evolving landscape of healthcare, the pursuit of efficient and cost-effective services is an ongoing challenge. Nottingham City Hospital, under the Nottingham University Hospital NHS Trust, has been at the forefront of development with its Chest Drain Clinic, a service designed to provide post-discharge follow-ups for patients with ambulatory chest drains. This audit critically evaluates the clinic's effectiveness in ensuring safety, regular reviews, and its impact on costs and bed utilization.

The audit, conducted over a one-year period, focused on 97 patients who were discharged home with ambulatory chest drains. The meticulous retrospective analysis tracked patients' progress and identified any complications during their follow-up visits. Additionally, the number of bed days saved and service costs from the day of discharge to chest drain removal were carefully calculated and analysed.

Results from the audit revealed that a staggering 64% of patients required only one clinic visit before their drains were considered safe for removal. This accomplishment translated to a remarkable 60% reduction in inpatient admissions, equating to a total of 1,038 saved bed days. The financial implications were equally impressive, with cost savings reaching approximately £361,200 over the study period (Table 1). These savings not only bolstered the financial health of the institution but also facilitated the care of an additional 173 inpatients, generating an estimated income of £1,038,000 for the trust.

Moreover, the audit highlighted the clinic's role in expediting re-admission procedures for the 7.2% of patients experiencing complications such as pain, infection, or worsening surgical emphysema. By allowing direct re-entry to care from the chest drain clinic, these patients bypassed the emergency department, saving both time and valuable resources.

In conclusion, the Chest Drain Clinic at Nottingham City Hospital has proven its efficacy on multiple fronts. Beyond ensuring patient safety and regular reviews, the clinic has demonstrated substantial cost savings and increased bed availability. The efficiency in re-admission procedures further solidifies its importance in the healthcare landscape. This study underscores the significance of expanding and optimizing such specialized services within healthcare institutions. By doing so, we not only enhance patient outcomes but also empower healthcare providers to navigate the complex landscape of resource management and financial sustainability. Nottingham City Hospital's Chest Drain Clinic serves as a benchmark, showcasing how strategic and patient-centric services can positively impact both individuals and the healthcare system at large. It stands as a shining example of effective healthcare delivery and resource utilization.
The management of a prolonged air leak (PAL) presents a challenge post-thoracic surgery. The PAL presents a challenge post-thoracic surgery. A prolonged air leak (PAL) can indicate a complication of post-operative airway injury, requiring further intervention to ensure the patient's safety. The management of PAL is crucial, as it can lead to prolonged hospitalization, increased healthcare costs, and potential complications such as lung hypoxic injury.

**Clinical effectiveness and patient experience in CT surgery**

Monday 16 March 11:00-12:30 HALL 3D

Nurse practitioner-led prolonged air leak clinic

Denise Baillie and Nicole Spence
Royal Infirmary of Edinburgh, Edinburgh, UK

The management of a prolonged air leak (PAL) is critical to prevent complications and improve patient outcomes. We introduced a nurse-led PAL clinic to address this issue effectively. Our approach involved a comprehensive pathway to evaluate and manage PAL, focusing on timely intervention and patient-centred care.

**Summary**

A nurse-led PAL clinic was developed to promote early discharge while addressing the complexities of PAL management. The clinic was led by nurse practitioners with expertise in post-thoracic surgery care, enabling prompt intervention and reducing delays in treatment.

In summary, we set out to provide a more cohesive service that incorporated valuable experience and resources to improve the patient pathway. Our findings validate the feasibility and importance of the nurse-led PAL service, demonstrating the need for such initiatives to optimize patient outcomes.

**Recommendations**

Further research is recommended to evaluate the impact of the nurse-led PAL clinic on patient outcomes and healthcare costs. Collaboration between healthcare professionals is essential to enhance the effectiveness of decision-making pathways and ensure patient safety.

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**Platelet activation and platelet-leukocyte aggregates are associated with acute kidney injury after cardiac surgery**

Naomi Brown
University of Leicester, Leicester, UK

Acute kidney injury (AKI) is a significant complication of cardiac surgery, with a high incidence of mortality. A prolonged air leak (PAL) can independently increase patient morbidity and mortality. AKI occurs following an acute decrease in glomerular filtration rate (GFR), determined by changes in serum creatinine (SCr) and urine output. Overall, the pathogenesis of AKI is poorly understood, and no individual biomarker has been established as the gold standard for diagnosing or assessing the risk of AKI following cardiac surgery.

Our current research focuses on exploring the pro-inflammatory mechanisms associated with platelet activation, such as extracellular vesicles (EVs) and microRNAs. We aim to elucidate the role of platelets in AKI, investigating the potential of EVs and microRNAs as diagnostic markers.

**References**


**Heart Research UK**

Tuesday 19 March 9:00-10:30 HALL 1C

Platelet activation and platelet-leukocyte aggregates are associated with acute kidney injury after cardiac surgery.
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Better skills, better surgery, better patient outcomes
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The specialty of thoracic surgery’s research base is growing and evolving. Bibliometric citation analysis has long been utilized to infer an article’s impact. Altmetrics are an alternative measure of a paper’s research impact, which considers the social media and online conversations that occur in and around academic research. It is pertinent to be cognizant of the potential that altmetrics have to advance important studies within their field. The purpose of this study was to analyse the altmetric and citation data of thoracic surgery articles, to discern if there was a correlation between research impact and distribution through web-based platforms.

To discuss if there was a correlation between altmetrics and bibliometric data, we analysed the top 100, top 500, and top 1,000 English language articles by searching “thoracic AND surgery” in the Clarivate Web of Science platform. Thereafter, statistical analysis of retrieved and formatted models were generated. The search returned 179,930 results. The greatest number of citations an article accrued was 2,772, while the highest altmetric score was 796. A significant association was established between citation and altmetric scores (p=0.001), and between altmetric scores and impact factor upon regression analysis (p=0.051). A significant difference was found between the citation score and journal five-year impact factor upon regression analysis (p=0.001). Forecast models show predicted that altmetric hits are predicted to accumulate at a greater rate than traditional citations, over the next five-year period. These results demonstrate that the potential of these insights can be fundamentally altered, with the greater influence and use, of social media and web-based platforms. It is important to consider not only how altmetric means may be utilized to improve the distribution of medical research, but also how they may complement bibliometric analyses to appraise the significance of a study’s findings, more responsively. Therefore, based on findings, altmetric data has been shown to possess value in predicting the prospective impact of research within the discipline of thoracic surgery.

**Contemporary Lung Cancer Management**

**A small number of JCOGs in a big segmentectomy wheel**

How real-life historical practice compares to the JCOG0802/WJOG4607L trial

George Hudson
Bristol Royal Infirmary, Bristol, UK

Historically, exact surgical treatment for low-grade, non-small cell lung cancers (NSCLC) has been controversial. Indeed, initial trials examining Lung Cancer Study Group showed higher recurrence rates in sublobar resections compared to lobectomy. Meanwhile, recent trials such as JCOG0802/WJOG4607L have showed no difference, with clearly relapse-free survival as high as 89%. As such, it is relatively unclear how transplantable these newer findings are to historical practice.

In our current work, we retrospectively reviewed a 10-year data series of segmentectomy operations at the Bristol Royal Infirmary. We yielded a total of 255 segmentectomies of which 136 were JCOG-adherent, our data subsequently compared to the inclusion/exclusion criteria in the JCOG0802/WJOG4607L trial. This analysis revealed that 43 NSCLC segmentectomies were performed within the JCOG0802/WJOG4607L criteria, the 10-year average for 2017-2021 and five-year average for 2012-2016. Moreover, 20/43 (47%) of these were JCOG-adherent and non-adherent groups were comparable in age, sex, and smoking status. However, the JCOG group was enriched with COPD patients (45%) relative to the non-JCOG group (36%). Contraryingly, the non-JCOG group had lower proportions of ischemic heart disease (9% vs 0%)

Segmentectomies not adhering to JCOG criteria showed no significant difference in pre-op WHO performance [median=1 vs 1.6 (p=0.437)], Clavien-Dindo score [median=1 vs p=0.222], length of stay [median=4 vs 5 days, p=0.373], or 30-day mortality [median=1 vs 1 deaths, p=0.581] compared to JCOG-adenhergent segmentectomies. Importantly, though overall mean margin was 22.3 mm for JCOG-adenhergent patients, 14.4 mm for non-JCOG-adenhergent patients (p=0.004), with four incomplete resections (R1) in the non-JCOG adherent group. Moreover, whilst the dataset was too small for survival analysis, there was a crude recurrence rate of 0.15% per year of follow-up for the non-JCOG adherent group compared to 0.03% in the JCOG adherent group.

Taken together, this work suggests that segmentectomies are becoming more common and complex, particularly after the publication of the JCOG trial. This makes it important than ever to continue to develop evidence-based practice. Although our JCOG group was too small for survival analysis, we identified a higher proportion of incomplete resections and recurrences in the non-JCOG group not adhering to JCOG criteria; a finding which may make it difficult to achieve comparable good outcomes. We, therefore, suggest lobectomies should still be offered for larger tumours and when resection margins cannot be confirmed.

**Contemporary Lung Cancer Management**

**Real-life experience of neoadjuvant chemotherapy and immunotherapy in Non-Small Cell Lung Cancer**

Tony Baxley
Liverpool Heart and Chest Hospital

Lung cancer remains a significant global health challenge, particularly in the UK, and continuous advancements in treatment strategies. Among the treatment options, the Checkmate-816 trial has gained attention for exploring the potential benefits of neoadjuvant therapy in resectable non-small cell lung cancer (NSCLC).

The Checkmate-816 trial was a landmark study to evaluate the effectiveness of neoadjuvant immunotherapy in comparison to neoadjuvant nivolumab, plus chemotherapy in patients with resectable NSCLC, showed evidence of improved event-free survival and an increase in the proportion of patients achieving pathological response (pCR) compared to chemotherapy alone. The addition of Nivolumab to neoadjuvant treatment didn’t increase the incidence of adverse events or impede the feasibility of surgery.

Owing to the successful study outcomes, the NICE guidelines recommended the use of neoadjuvant Nivolumab and chemotherapy in patients with NSCLC for tumours greater than 4 cm, or node positive, since the start of April 2023.

In our current work, we report our experience in Liverpool of delivering neoadjuvant chemos-immunotherapy to 40 patients receiving neoadjuvant Immunotherapy neoadjuvant treatment before surgery between 1st of April and 30th of September. All patients in our centre who received neoadjuvant treatment went on to receive surgery. The percentage of pCR was similar to that of the Checkmate-816 trial.

There were quite a few challenges that we faced in delivering neoadjuvant treatment. One of which was the time lag between each stage of treatment including the wait for the outpatient clinic, the wait for ALK and EGFR mutation status, the wait for oncology assessment and finally the wait for surgery. That led us to try to develop ways to overcome these obstacles by developing our local clinical pathway and employing a neoadjuvant cancer patient tracker. We will show in our presentation, that for all patients eligible for neoadjuvant patients, we have managed to decrease delays and avoid losing track of what stage patients are at in the pathway.

However, not all patients were referred for neoadjuvant treatment received it due to several reasons including patients declining it and medical co-morbidities. In addition, some of the eligible patients were not referred because of a lack of access to neoadjuvant treatment in part of the region we cover (the till the 1st of August), and uncertainty at the start.

In summary, our results suggest that in real life, similar results can be achieved to the Checkmate-816 study in terms of achieving pCR. Complications appear similar compared to patients who do not undergo neoadjuvant treatment.
The system:
- Can be used for hospitals and national registries
- Integrates with other clinical information systems
- Includes export to national registries

To request a demonstration or additional information please contact

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PROMs function is designed to collect follow-up data directly from patients

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**Cardiac General: Outcomes**

Monday, 18 March 11:00-12:30 HALL 1B

**Peri-operative cannabinoids significantly reduce postoperative opioid requirement in cardiac surgery patients**

Ujjwal Kumar
University of Cambridge, UK

Postoperative pain after cardiac surgery is a significant issue for patients and often necessitates large amounts of analgesia to achieve adequate pain control. Opioid-based analgesics are the mainstay of pain management during cardiac surgery. However, opioids have adverse effects that prolong recovery, including respiratory depression, extended mechanical ventilation, and increased duration of hospital stay. In the longer term, patients may also experience tolerance and (re)addiction, with potentially hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions. In the longer term, duration of intensive care unit (ICU) and hospital admissions.

Cannabinoids are a class of molecules of emerging interest – they interact with the body’s endocannabinoid system to modulate pain perception and inflammation, acting synergistically with opioids. Therefore, cannabinoids have potential as an adjunct to opioid-based analgesia. Our study investigated the potential role of cannabinoids in reducing opioid requirements to achieve postoperative pain control.

A prospective study examining the impact of dronabinol, a synthetic cannabinoid, on opioid requirements after coronary artery bypass grafting (CABG) surgery was undertaken. Patients were randomised to receive either standard opioid-based postoperative analgesia (control group, n = 37), or to the dronabinol group, who received dronabinol + standard opioid-based analgesia (dronabinol group, n = 30). Three days of dronabinol was administered: an anesthetic induction, in the ICU prior to extubation, and on the first postoperative day. There were no significant differences between the two groups in terms of patient demographics and comorbidities.

Compared to the control group, the dronabinol group showed a significant reduction in postoperative opioid requirements (39.62 vs 23.86 morphine mg/m²/day, p = 0.0037), representing a 40% reduction in postoperative opioid requirements. There were no adverse events associated with treatment. Additionally, a trend towards shorter durations of mechanical ventilation, inotropic support, and ICU admission was noted in the dronabinol group, though this did not reach statistical significance. Interestingly, a significantly greater improvement in left ventricular ejection fraction (LVEF) was noted in the dronabinol group (suggesting potential suppression of cardiac function by opioids). Though the difference did not reach statistical significance.

**Mitrail Valve Surgery**

Tuesday, 19 March 9:00-10:30 HALL 1F

**Patient selection for robotic mitral valve repair – experience of a conservative screening algorithm**

Ujjwal Kumar
University of Cambridge, UK

Mitrail valve repair is the procedure of choice in degenerative mitral valve regurgitation due to degenerative mitral valve disease. A robotic approach has the added advantages of smaller incisions, reduced postoperative pain, shorter hospital stay, and lower complication rates. However, selecting the right patients for robotic mitral valve surgery can be challenging. Optimal patient selection is crucial to ensure a successful surgical outcome.

During my elective in summer 2023, supported by an SCTS/Heart Research UK Medical Student Fellowship, I spent a month with the robotic mitral valve team at the Cleveland Clinic. The institutional patient selection algorithm compares 60.8% of patients presenting with degenerative mitral valve regurgitation for robotic mitral valve repair, with excellent outcomes.

This intentionally conservative screening algorithm aims to identify suitable patients for successful robotic mitral valve repair. It is an imaging-based algorithm developed based on institutional early experiences with robotic mitral valve surgery. It utilises preoperative transoesophageal echocardiography alongside computed tomography scanning to assess patient suitability.

A total of 1001 consecutive patients with severe mitral valve regurgitation were evaluated using this algorithm (Figure 1). Of these, the algorithm successfully identified 60.8% of patients as suitable candidates for robotic mitral valve repair (n = 605). By virtue of the algorithm’s exclusion criteria for robotic surgery, patients selected tended to be younger, with a greater ejection fraction, and fewer non-cardiac comorbidities such as smoking, hypertension, hyperlipidaemia, diabetes, and COPD.

Successful robotic-assisted mitral valve repair was achieved in 100% of patients selected using the algorithm. Moreover, the robotic mitral valve surgery group also experienced better clinical outcomes (reduced rates of postoperative atrial fibrillation, red blood cell transfusion, ICU admission length, and overall hospital stay) compared to the group undergoing mitral valve surgery via sternotomy. All-cause 30-day mortality in both groups was zero, and rates of postoperative stroke and re-operation for valve dysfunction or bleeding were similar between these groups.

These results suggest that this algorithm is a promising tool for selecting patients for robotic mitral valve repair. Subsequent expansion of patient eligibility has occurred with increasing institutional experience. While not intended to be prescriptive for other institutions, the algorithm is a useful conservative strategy to utilise with the potential to improve patient outcomes while ensuring the most suitable patient selection for this advanced surgical technique.

**Key findings**

- **Algorithm development:** The algorithm was developed based on institutional early experiences with robotic mitral valve surgery. It utilises preoperative transoesophageal echocardiography alongside computed tomography scanning to assess patient suitability.
- **Patient selection:** A total of 1001 consecutive patients with severe mitral valve regurgitation were evaluated using this algorithm. Of these, the algorithm successfully identified 60.8% of patients as suitable candidates for robotic mitral valve repair.

**Protocol for pre-operative ultrasound conduit assessment in patients undergoing coronary artery bypass grafting – A Q project**

Eilyn Small
Royal Infirmary of Edinburgh, Edinburgh, UK

The creation of educational content, crafting questions reflective of those found in surgical exams such as the CEMP exam, is a complex task. The Royal Infirmary of Edinburgh, with a growing interest in surgical education, Large Language Models like GPT-4 have the potential to revolutionise the creation of educational content, crafting questions reflective of those found in surgical exams such as the CEMP exam.

The results of this study underscore the potential of Large Language Models like GPT-4 in surgical education and training. Demonstrating an impressive ability to accurately engage with complex surgical content, we show how LLMs can improve the quality of preoperative planning, with a growing interest in surgical education and training. Demonstrating an impressive ability to accurately engage with complex surgical content, we show how LLMs can improve the quality of preoperative planning.

The results of this study underscore the potential of Large Language Models like GPT-4 in surgical education and training. Demonstrating an impressive ability to accurately engage with complex surgical content, we show how LLMs can improve the quality of preoperative planning.
Understanding patient’s experiences and their involvement in treatment decision-making for early-stage non-small cell lung cancer

Nimaangi Chavan
University of Manchester and Royal Brompton Hospital, UK

Surgical treatment remains the gold standard in early-stage non-small cell lung cancer (NSCLC). It offers overall survival benefits, either on its own or as a part of multimodality treatment. Stereotactic ablative radiotherapy is an alternative option for those patients deemed unfit for or declined surgery. Managing early-stage non-small cell lung cancer requires increasingly complex decision-making by healthcare professionals. In this setting, it is important to have shared decision-making with the patient to ensure they understand the risks, side effects, and treatment options. However, there are limited studies addressing healthcare professionals’ perspectives on treatment decision-making and patients’ experiences within this treatment decision-making process for early-stage non-small cell lung cancer. This study aimed to explore patients’ experiences and involvement in treatment decision-making for early-stage non-small cell lung cancer using a qualitative pragmatic approach.

The patients and their healthcare professionals were recruited and a total of 47 transcripts were included in the analysis. The multi-source data collection started with patients’ first consultation with surgeons or oncologists to discuss treatment options for early-stage non-small cell lung cancer and three months after treatment. Participants were recruited from two centres—surgery and oncology. Data collection included audio recordings of the first consultation and in-depth semi-structured interviews with patients and their healthcare professionals. Reflexive thematic analysis methods were used to analyse the data.

The synthesis of the key findings (Figure 1) is discussed in three overarching themes. These are ‘Dilemmas in treatment options and treatment decision-making process’, ‘Information sources and systemic barriers to treatment decision-making’, and ‘Deliberation and strategies to improve treatment decision-making’.

The study shows the complexity of treatment decision-making in early-stage non-small cell lung cancer. Currently, shared decision-making is not often used in practice. Instead, consultations focused on informing MDT recommendations, gathering information, and consenting to the procedure. Patients’ preferences, values, alternative options, and long-term treatment outcomes were not explicitly discussed. Patients preferred professionals to facilitate treatment decisions by presenting the information clearly and comprehensively. Findings highlight the need to adopt a patient-centred approach, provide emotional support throughout the treatment process, and acknowledge their values in treatment decision-making.

Recommendations

- MDT discussion includes specific information on the patient’s preferences for treatment outcomes and values alongside the patient’s medical history.
- Complex, high-risk patients (e.g., COPD and emphysema) discussed in the specialist MDT meeting with thoracic surgeon input.
- Advanced communication training specific to lung cancer care, treatment and consultation.
- Active involvement of lung clinical nurse specialist in early-stage NSCLC.
- Develop clinical decision aid specifically for early-stage NSCLC.

Study highlights

- Non-adherence to the shared decision-making guidelines, consent process and quality standard guidelines for assessing patients with borderline threat.
- Disparity in the treatment of early-stage NSCLC particularly in older patients, comorbidities (e.g., COPD) and poor performance status.
- Disparity in the level of involvement of lung clinical nurse specialists during the first consultation and follow-ups.
- Patients satisfied with the treatment option but dissatisfied with the professionals’ failure to meet the expectations of the professionals’ role and provide patient-centred care.

Is Virtual Reality Mindfulness effective in improving peri-operative well-being and pain in patients admitted for elective thoracic surgery? – A feasibility study

Natawade Chantima
Glenfield Hospital, University Hospitals of Leicester NHS Trust, Leicester, UK

Procedure-induced anxiety and stress negatively affect patient recovery and worsen the perception of pain, which may lead to increased opioid use and extended hospital stays. Mindfulness-based interventions have been promoted to benefit physical and psychological well-being. This study investigates the effectiveness of virtual reality (VR) mindfulness in improving anxiety and well-being in patients undergoing elective thoracic surgery with the aim of improving pain and enhancing recovery.

Patients scheduled for elective thoracic surgery (benign and malignant) were recruited to undergo one immersive seven-minute mindfulness session using the Rescape VR Headset. Wellbeing, stress, anxiety, and pain levels were assessed using pre- and post-experience questionnaires. Physiological observations were recorded before and after each session.

We recruited 15 thoracic surgery patients (seven pre-operative and eight post-operative). A significant 80% of patients felt the session was enjoyable and reported increased relaxation. 73% of patients felt less stressed and 87% felt noticeable calmness after the experience. Three out of eight post-operative patients (37.5%) with pre-existing pain had reported relief, suggesting a differentiated response in pain management. No significant physiological changes post-experience were observed. VR-facilitated mindfulness sessions were associated with positive psychological outcomes and stress reduction by most participants. This is a potentially promising adjunct as a non-pharmacological intervention to enhance peri-operative thoracic surgery experience and patient recovery.

This pilot study’s findings advocate for further research into VR mindfulness efficacy on postoperative pain and patient recovery, possibly by regular multi-session VR mindfulness exercises throughout the duration of hospitalisation.
Surgical management of costal margin rupture associated with intercostal hernia: Evolution of techniques

John Edwards and Peadupe Wijeratne
Northern General Hospital, Sheffield, Sheffield, UK

Costal margin rupture (CMR) injuries in association with intercostal hernia (IH) are believed to be rare. However, we have been able to generate a large series through prospective data collection, since we first recorded a case at Northern General Hospital, Sheffield, in 2008. In 2018, Michael Dickson published the “Shelford Classification” based on a radiological analysis in 19 patients. In an expanded series, we have 36 patients with clinical and radiological characteristics of 54 patients, such as the bimodal distribution of the level of CMR, according to the aetiology.

In this study, Peadupe Wijeratne presents the evolution of surgical techniques, based on iterative learning from successes and failures in 71 cases with CMR-related injuries. Those with a related IH pose a significant surgical challenge, due to the forces associated with the contained clinical bulbus of multidisciplinary failure. Rate failures of up to 66% are reported after surgery.

We have characterised the injuries seen and recorded patient management and follow-up. Surgical techniques evolved with experience of complications and patient outcomes, from a repair without and then with extraforaminal mesh, to three iterations of double layer mesh repair (DLMR). The Mk1 repair used polypropylene mesh and intercostal sutures supported with polyglycolic acid felt buttons. The “intercostal nerve-sparing” Mk2 repair used biologic mesh secured with sutures passed through holes drilled in the rib caudal to the IH. The Mk3 DLMR added titanium buttress plates to the ribs adjacent to the IH, with sutures passed through the spare screw holes in the buttress plates. Associated surgical stabilisation of acute rib fractures (SSRF), or surgical stabilisation of non-united rib fractures (SSNSRF), was performed when required. If costal margin repair could be reduced successfully and it was of sufficient quality to accept a plate, and then external cortical plates and screw fixation were carried out. Of 25 patients with CMR-IH and 11 with TOH, 25 patients underwent surgery, with six reoperations in five patients. There were eight suture repairs (SR), three extraforaminal mesh repairs (EMR), DLMR was performed in 14 patients (3 Mk 1, 5 Mk 2 and 6 Mk 3).

An analysis of complication and patient outcomes revealed that the MK3 repair, with the titanium buttress plates, was successful twice at the level of the seventh but failed twice out of three times at the ninth costal cartilage. The Mk3 repair has, to date, been reproducible and durable, with no failures or significant post-operative pain.

As a Chest Wall Injury Society (CWIS) Collaborative Centre, we have visited other centres to help perform the Mk 3 DLMR, with reproducible results. CWIS is commissioning a multi-centre registry, CWIS-DiMar, in order to record outcomes from different surgical outcomes and to determine the optimum surgical management of these challenging injuries.
Hospital and database installations
Our innovative system has become the preferred clinical governance tool at over 250 major hospitals throughout the world.

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Our registries are empowering professional societies, hospitals, clinical departments and clinicians with their own data, allowing them to make informed decisions leading to improved outcomes for patients.