



O N L I N E   E V E N T

# Pybus Lecture & Scientific Day

**Friday 29 April 2022 | 13.00 -17.00 BST**



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ONLINE EVENT

## Pybus Lecture & Scientific Day

Friday 29 April 2022 | 13.00 -17.00 BST



# 1.WELCOME

**We would like to warmly welcome you  
to the North East Surgical Training Academy  
Spring Meeting.**

NESTAC aims to promote high quality surgical research within the North East by promoting interaction between consultants, surgical trainees and medical students. As well as continually improving patient care, high quality research promotes development of skills in critical appraisal, organisation, team work and leadership.

Furthermore, NESTAC will seek to re-invigorate interest and enthusiasm for surgical research in the North East by providing a demonstrable career pathway and support from medical student through to senior investigator for talented, resourceful individuals.

ONLINE EVENT

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# 2. SCHEDULE

13:00	<b>Introduction &amp; NESTAC Update – John Moir</b>
13:10	NIHR opportunities in the North East – Bob Slight
13:30	Writing up and presenting research
13:50	Foundation Trainee Surgical Society (FTSS) opportunities - Corey Chan
14:00	Newcastle University Surgical Society (NUSS) opportunities - Jeremy Cheong
14:10	Parallel Abstract Sessions (NESTAC/NESS/Feggetter medals)
15:30	<b>Break</b>
16:00	<b>Pybus lecture – Regionalization of care and surgical quality for complex cancer surgery</b> Alice Wei, HPB Surgeon, MSK New York
17:00	<b>Prize announcements and close</b>

ONLINE EVENT

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### 3. PARALLEL ABSTRACT SESSIONS

#### NESTAC

Session Chairs

**Mr Moir**

**Mr Wahed**

#### NESS

Session Chairs

**Ms Booth**

**Dr. Wei**

**Mr Hamilton**

#### Feggetter

Session Chairs

**Mr Wilson**

**Ms Stevenson**

**Mr Robinson**

**14:10 - 14:20**

The use of Somatostatin Analogues in the treatment of Neuroendocrine tumours and the development of gallstones

**William Madu**

Can simvastatin reduce the inflammatory response to orthopaedic biomaterials?

**Sami Adam Anjum**

Upper airway immune dysfunction in otitis media with effusion (OME)

**Michael Mather**

**14:20 - 14:30**

The role of epidural anaesthesia in acute pancreatitis: Systematic Review of available evidence

**Nesta Baxter**

What is the effect of patient specific virtual reality rehearsal on cortical mastoidectomy performance?

**Ben Talks**

**Michael Mather**

**14:30 - 14:40**

Risk Factors Associated with Readmission Within 30 days Following Stoma Surgery: Development of a "Traffic Light" Prediction Model.

**Alexander Plonkowski**

Perioperative hypothermia and hip fracture surgery: a retrospective cohort study

**James Arkley**

Risk factors associated with not receiving adjuvant chemotherapy for locally advanced oesophagogastric adenocarcinoma

**Jakub Chmelo**

**14:40 - 14:50**

Artificial intelligence in photography of normothermic machine perfusion of livers

**Ali El-Rhalibi**

Ultrasound Guided Skip Incisions During Femoropopliteal Bypass Improves Post-Op Pain and Mobility Without Compromise To Complications or Amputation Free Survival

**Alex Green**

**Jakub Chmelo**

**14:50 - 15:00**

A selective anticoagulation policy for splanchnic vein thrombosis in acute pancreatitis is associated with increased recanalisation rates and fewer bleeding complications

**Wei Boon Lim**

The midline vertical skin incision laryngectomy approach results in reduced complications with no compromise to survival or recurrence

**Alex Green**

Comparison of the histopathological regression after neoadjuvant FLOT versus ECX in resectable gastroesophageal adenocarcinoma

**Pooja Prasad**

**15:00 - 15:10**

Impact of social deprivation on short and long term outcomes after acute pancreatitis

**Wei Boon Lim**

Intra-operative vasopressor usage in free flap reconstruction: should we be worried?

**Samuel Munro**

**Pooja Prasad**

**15:10 - 15:20**

Neonatal post-haemorrhagic hydrocephalus: A 10-year institutional experience

**Nesta Baxter**

Image-analysis algorithm to determine quality of cold perfusion in kidney transplantation

**Sam Tingle**

Data Driven decisions in Oesophageal Cancer Surgery: Role of artificial intelligence

**Khalid Munir Bhatti**

**15:20 - 15:30**

Development of a targeted Dual-Modality (PET/NIRF) radioimmunoconjugate for fluorescence guided sarcoma surgery

**Corey Chan**

# NESTAC

## 1. William Madu: The use of Somatostatin Analogues in the treatment of Neuroendocrine tumours and the development of gallstones

### Abstract:

#### Introduction

Somatostatin analogues (SSA's) are used to treat patients with Neuroendocrine tumours (NET). A potential side effect of their use is biliary stasis and subsequent development of gallstones and therefore routine ultrasound surveillance of the gallbladder is generally recommended for patients treated with SSA's. It is not clear however that in practice this routine imaging actually changes patient management.

#### Methods

All patients with neuroendocrine tumours treated with SSA's as of the 24th of February 2021 were included. Using community and hospital records, data was collected regarding gallstone pathology, USS surveillance and subsequent treatment.

#### Results

167 patients were included (105M:62F) with a median age of 70. The median duration of SSA treatment was 32 months. Over the course of treatment, n=10 (6%) of patients presented with symptomatic gallstones; n=7 (4.2%) with an emergency presentation. 3 out of the 10 patients presenting with symptomatic gallstones progressed to an emergency presentation. N=4 (2.4%) of the patients underwent a Cholecystectomy during SSA treatment. 53 patients underwent Ultrasound (USS) monitoring. On USS, gallstones were found in n=17 (32%) of patients. 2 of these patients had a subsequent cholecystectomy, with only 1 previously presenting with symptomatic gallstones

#### Conclusion

Routine USS surveillance for gallstones in SSA treated patients is not necessary and can be reserved for those patients who develop biliary symptoms.

## 2. Nesta Baxter: **The role of epidural anaesthesia in acute pancreatitis: Systematic Review of available evidence**

### **Abstract:**

#### **Introduction**

Acute pancreatitis (AP) is a potentially life-threatening disease with a high mortality rate. This systematic review aimed to determine efficacy and complications following epidural anaesthesia (EA) in patients with AP.

#### **Methods**

PubMed, EMBASE, SCOPUS and Cochrane library databases were systematically searched between 1992 and 2022 using PRISMA guidelines, to identify studies observational or comparative studies reporting clinician, institutional, and regional experiences with EA in AP.

#### **Results**

Seven studies were included in this review, two randomised controlled trials (RCTs) and five retrospective studies with an overall study cohort comprising 566 patients that were administered EA for AP. All studies demonstrated safety and feasibility of EA in AP. EA related hypotension was observed in two studies, managed with fluid replacement and amines without complications. No local or neurological complications were encountered. One RCT demonstrated significant improvement in pancreatic perfusion compared with the non-EA group, 13 (43%) vs 2 (7%) ( $P=0.0025$ ). No statistically significant difference was seen in the MODS and aggregate SOFA score. Two studies showed necrosectomy is less in EA groups 1 (7.6%) and 10 (22%) vs 4 (18.2%) 173 (19%) in non-EA groups  $P=0.63$  and  $P=0.62$ , respectively. One RCT showed a propensity score analysis for 30-day mortality was lower in AP patients receiving EA (2% vs. 17%,  $p=0.01$ ).

#### **Conclusion**

Early evidence suggests EA is safe and may have a role in reducing mortality and sequelae of AP however, larger randomised, prospective studies are needed to confirm the findings of this review.

### **3. Alexander Plonkowski: Risk Factors Associated with Readmission Within 30 days Following Stoma Surgery: Development of a "Traffic Light" Prediction Model.**

#### **Abstract:**

##### **Introduction**

Patients undergoing stoma surgery have higher risk for early readmission. Some patients may benefit from closer post-discharge surveillance to provide early detection of complications and timely intervention. However, there is a paucity of validated tools to identify those at higher risk of readmission. Here, we determine independent risk factors associated with readmission within 30 days of discharge following stoma surgery, attempt to validate previous predictive models and develop a novel prediction tool.

##### **Methods**

A retrospective review of 423 patients who underwent ileostomy or colostomy stoma formation at a UK tertiary colorectal centre (2019-2021). Univariate, multivariate and logistic regression analysis were used to analyse a large number of demographics and risk factors and the association with readmission.

##### **Results**

This study cohort included 220 ileostomy and 203 colostomy patients. 87 (20.6%) were readmitted within 30 days of discharge following index surgery. A large number of demographics were evaluated for association with readmission. Readmission was associated with chronic heart failure ( $p<0.05$ ), post-operative stoma-specific complications (bleeding  $p=0.02$ ; high-output stoma  $p=0.01$ ) and those with a loop ileostomy (34.0% versus 18.6%;  $p=0.01$ ). A previous predictive model (Iqbal et al.) was ineffective in this cohort therefore a simplified "traffic light" risk scoring system was developed and found to have improved discrimination.

##### **Conclusion**

Readmission following stoma formation is associated with key variables that potentially provide the means to triage, risk score and potentially predict readmissions. We found a novel and simplified scoring system may provide improved prediction.

## 4. Ali El-Rhalibi: Artificial intelligence in photography of normothermic machine perfusion of livers

### Abstract:

#### Introduction

Livers donated for use in transplantation are underutilised. A lack of clear guidelines regarding the visual assessment of their quality means many 'borderline' grafts are needlessly discarded; macroscopic visual assessment by transplanting clinicians is subjective and inconsistent. Deep learning (DL), a form of artificial intelligence, has previously been used to aid medical image analysis. Normothermic machine perfusion (NMP) is often used to evaluate borderline livers for transplantation. This study aimed to develop an objective DL model to visually assess organ transplantability during NMP.

#### Methods

Five DL models were trained and tested on 100 images of donor livers, each labelled with scores from three transplant clinicians on steatosis, perfusion, and transplantability. Models were trained to classify liver transplantability through either image data and transplantability scoring data, or image data and all clinician scoring data. Model accuracy, specificity, and sensitivity were calculated. Evaluations of clinician scoring agreement were carried out using intraclass correlation coefficient (ICC) and Fleiss' kappa.

#### Results

In the classification of transplantability, the highest performing models achieved training and testing accuracies of 64.3% and 76%, respectively. Sensitivity and specificity ranged between 44.1%–94.1% and 6.3%–75%, respectively. ICC and Fleiss' kappa values indicated a 'fair-to-moderate' scoring agreement between clinicians.

#### Conclusion

The performance of DL image analysis in assessing liver quality during NMP has been modest. Visual assessment during NMP is more challenging than on the "backtable" at organ retrieval. Broader, more varied data sets are required to maximise model performance.

## **5. Wei Boon Lim: A selective anticoagulation policy for splanchnic vein thrombosis in acute pancreatitis is associated with increased recanalisation rates and fewer bleeding complications**

### **Abstract:**

#### **Introduction**

There is a paucity of data on the incidence, risk factors, and treatment of splanchnic vein thrombosis (SVT) in acute pancreatitis (AP).

#### **Methods**

All AP admissions between 2018 – 2021 across North East of England were included. Anticoagulation was considered in the presence of superior mesenteric vein/portal vein (SMV/PV) thrombus or progressive splenic vein thrombus (SpVT). The impact of such a selective anticoagulation policy, on vein recanalisation rates and bleeding complications were explored.

#### **Results**

401 patients (median age 58) were admitted with AP. 109 patients (27.2%) developed SVT. The splenic vein in isolation was the most common site (n=46) followed by SMV/PV (n= 36) and combined SMV/PV and SpVT (n=27). On multivariate logistic regression alcohol aetiology (OR 2.64, 95% CI [1.43-5.01]) and >50% necrosis of the pancreas (OR 14.6, 95% CI [1.43-383.9]) increased the risk of developing SVT. The rate of recanalization with anticoagulation was higher for PVT (66.7%; 42/63) than in SpVT ( 2/11; p=0.003). 5/74 of anticoagulated patients developed bleeding complications while 0/35 patients not anticoagulated had bleeding complications (p=0.4).

#### **Conclusion**

The risk of SVT increases with AP severity and with pancreatic necrosis. A selective anticoagulation policy for PVT and progressive SpVT was associated with increased recanalisation rates and fewer bleeding complications.

## 6. Wei Boon Lim: Impact of social deprivation on short and long term outcomes after acute pancreatitis

### Abstract:

#### Introduction

This study evaluated the impact of social deprivation on short- and long-term outcomes in patients with Acute pancreatitis (AP).

#### Methods

All AP admissions between 2018-2021 at a high-volume pancreatic centre were analysed. Deprivation (index of multiple deprivation [IMD]) data was sourced from the English indices of deprivation, by postcode. Primary outcome was overall survival. Secondary outcomes included length of hospital stay (LOS) and complications. Cox-proportional hazard analyses were conducted.

#### Results

396 patients were included in the analysis. Patients were grouped into five individual quintiles (IMD 1-2; 3-4; 5-6; 7-8; 9-10). The quintiles were comparable in baseline demographics for gender, past medical history, pre-morbidity scores and laboratory results. However, a higher proportion of patients living in more deprived areas were younger (52.4 in Q1 vs 65.2 in Q5, ( $P<0.001$ )), smokers (39.1% in Q1 vs 23.7% in Q5,  $P=0.044$ ) and has ischaemic heart disease (95.0% vs 92.1% in Q5,  $P<0.001$ ). There was no significance difference in pancreatitis complications, severity, and overall LOS between quintiles. Univariate regression showed lower IMD scores were not associated with ICU admission, as well as worst short and long-term survival outcomes. Multivariate analysis demonstrated significantly poorer survival outcomes with older age, high prothrombin time and need for ventilation support.

#### Conclusion

Social deprivation does not appear to significantly impact short- and long-term outcomes in patients with AP. Advancing age and need for ICU admission were more likely to determine survival outcomes in AP.

## 7. Nesta Baxter: Neonatal post-haemorrhagic hydrocephalus: A 10-year institutional experience

### Abstract:

#### Introduction

Intraventricular haemorrhage (IVH) is a frequent prematurity complication, potentially leading to hydrocephalus. Treatment for hydrocephalus in IVH varies with temporising methods used to delay definitive shunting, whilst others advocate primary shunting. This retrospective case series compares outcomes between primary and delayed shunting.

#### Methods

Premature neonates (<29 weeks gestational age) born between 2010-2020 were identified from the neonatal database. Babies with IVH were identified and case notes were reviewed. Data collected included demographics, temporising methods, shunt failure rates, and neonatal outcomes. SPSS v27 statistical analyses were performed.

#### Results

Twenty-seven neonates were treated. Median gestational age was 26 weeks with median 750g birth weight. 59.3% suffered Papile grade 4 IVH. 33.3% underwent shunt insertion as first-line treatment, median age 90 days. Seventeen neonates (63.0%) were temporised with fontanelle taps and/or reservoir insertions before delayed shunting, median age 94.5 days. Median birth weight at delayed shunt insertion was 3.2kg and 3.0kg at primary shunt insertion. Shunt infection rate was 33.3%; 5 months median time to infection. Infection rates were double in primary shunting (44.4%) compared to delayed shunting. Total shunt revision rate was 63.0%; median of 2 revisions. Revision rates were similar in primary and delayed shunting groups (28.6% vs 27.8%). Outcomes: 51.9% cerebral palsy; 74.1% visual deficit; 26.0% hearing deficit; 59.3% respiratory support; and 37.0% nutritional support.

#### Conclusion

Primary shunting is associated with a higher infection rate, but total revision rates were similar compared to delayed shunting. Time to primary and delayed shunting were similar. Outcomes were comparable to published literature.



# NESS

## 1. Sami Adam Anjum: Can simvastatin reduce the inflammatory response to orthopaedic biomaterials?

### Abstract:

#### Introduction

The most common indication for revision surgery following total hip arthroplasty is aseptic loosening of implants secondary to osteolysis, caused by immune-mediated reactions to implant debris. These debris can cause pseudotumour formation. Toll-like receptor 4 (TLR4) has been shown to mediate immune responses to cobalt ions. Statin use has been associated with reduced risk of revision surgery and there is evidence that statins can modulate TLR4 activity. This study investigates simvastatin's effect on orthopaedic biomaterial-mediated changes in protein expression of key inflammatory markers and soluble-ICAM-1 (sICAM-1), an angiogenic factor implicated in pseudotumour formation.

#### Methods

Human macrophage THP-1 cells were pre-incubated with 50µM simvastatin for 2-hours or a vehicle control (VC), before being exposed to 0.75mM cobalt chloride, 50µm<sup>3</sup> per cell zirconium oxide or LPS as a positive control, in addition to a further 24-hour co-incubation with 50µM simvastatin or VC. Interleukin -8 (IL-8), sICAM-1, chemokine ligand 2 (CCL2), CCL3 and CCL4 protein secretion was measured by enzyme-linked immunosorbent assay (ELISA). Statistical analysis included a one-way ANOVA.

#### Results

Pre-treatment with simvastatin significantly reduced LPS and cobalt-mediated IL-8 secretion (n=3) and sICAM-1 protein secretion (n=2) in THP-1 cells. Pre-treatment with simvastatin significantly reduced LPS-mediated but not cobalt ion-mediated CCL2 (n=3) and CCL3 protein (n=3) secretion in THP-1 cells. Simvastatin significantly reduced zirconium oxide-mediated CCL4 secretion (n=3).

#### Conclusion

Simvastatin significantly reduced cobalt-ion mediated IL-8 and sICAM-1 protein secretion in THP-1 cells. This in-vitro finding demonstrates the potential for simvastatin to reduce leukocyte recruitment which mediate the deleterious inflammatory processes driving implant failure.



## 2. Ben Talks: What is the effect of patient specific virtual reality rehearsal on cortical mastoidectomy performance?

### Abstract:

#### Introduction

Surgical rehearsal – patient specific preoperative surgical practice – can be provided by virtual reality (VR) simulation and offers a novel way of increasing the operative volume of surgical trainees. This study investigated the effect of surgical rehearsal on cortical mastoidectomy performance and procedure duration in a novice cohort.

#### Methods

University students ( $n=40$ ) were recruited and randomised evenly into a rehearsal and control group. After watching a video tutorial on cortical mastoidectomy, participants completed the procedure on a VR simulator as a pre-test. Participants completed a further 8 cortical mastoidectomies on the VR simulator as training before drilling two 3D printed temporal bones. The rehearsal group received 3D printed bones they had previously operated on in VR, whilst the control group received two new bones. Cortical mastoidectomy was assessed using the newly developed Melbourne Mastoidectomy Scale by three blinded graders.

#### Results

There was high interrater reliability between the three graders (Intraclass Correlation Coefficient,  $r=0.8533$ ,  $p<0.0001$ ). There was no difference in the mean surgical performance on the two 3D printed bones between the control and rehearsal group ( $p=0.2791$ ). There was no significant difference in the mean procedure duration between the control and rehearsal group for both 3D printed bones ( $p=0.8709$ ). However, there was a significant decrease in procedure duration between the first and second 3D printed bones ( $p<0.0001$ ).

#### Conclusion

In this study, preoperative VR patient-specific rehearsal provided no additional advantage to cortical mastoidectomy performance compared to generic practice on a VR simulator.



### 3. James Arkley: Perioperative hypothermia and hip fracture surgery: a retrospective cohort study

#### Abstract:

#### Introduction

Perioperative hypothermia regularly occurs in hip fracture care despite routine active warming. Few studies have focussed on hypothermia rates in hip fracture surgery, instead, principles from general surgery papers are applied.

#### Methods

We performed a retrospective cohort study investigating patient body temperature pre, intra and postoperatively for hip fracture patients undergoing surgery. The primary outcome was the incidence of hypothermia (<36 degrees). Secondary outcomes included 30-day mortality, 30-day readmission, length of stay, Nottingham hip fracture scores, age, method of warming and temperature decrease between post anaesthetic care unit and the ward.

#### Results

We identified 95 patients, 84 of which had full sets of data for analysis. 48/84 (57.1%) patients experienced hypothermia at some point either 3 hours preoperatively, intraoperatively or 3 hours post-operatively. In total 167 hypothermic episodes were recorded across all patients with the vast majority occurring in the postoperative period (65.3%). There was a significantly higher age in hypothermic patients 83.7 ( $\pm 8.4$ ) compared to normothermic counterparts 78.2 ( $\pm 12.8$ ) ( $p=0.03$ ). Secondary outcomes such as mortality rates, NHFS and 30-day readmission did not reach statistical significance.

The point at which patients were most likely to be hypothermic was within the first 30 minutes after returning to the ward, with a hypothermia rate of 37/84 (44%).

This indicates that the transfer between post anaesthetic care unit (PACU) and the ward is a crucial timeframe where patients may become hypothermic. This is new evidence, previously unreported.

#### Conclusion

We have demonstrated significant variance in temperature control in the hip fracture population disproportionately affecting older and frailer patients. Units must focus on vigilance and interventions to keep patients warm during the post-operative transfer phase.



#### **4. Alex Green: Ultrasound Guided Skip Incisions During Femoropopliteal Bypass Improves Post-Op Pain and Mobility Without Compromise To Complications or Amputation Free Survival**

##### **Abstract:**

##### **Introduction**

Femoropopliteal (and femoro-tibial) bypass is a well recognisable and durable surgical option for occluded femoro-popliteal segment. Ipsilateral great saphenous vein, if suitable, has been the most usable graft. It could be reversed or used in situ after valvulotomy. Previous studies have demonstrated no difference in patency between the two modalities. However, by using ultrasound guided ligation of GSV tributaries through stepped incision, this could have a positive impact on post operative pain and mobility. There is no current evidence to suggest superiority of this approach over a continuous incision. We present our retrospective data at a single regional vascular centre.

##### **Methods**

Retrospective analysis of 62 venous bypass procedures of the lower limb 2018 to 2021 was conducted at a regional vascular surgery centre in the North-East of England. The time to mobilisation, length of stay, pain scores and clinical outcomes were compared between those who had complete dissection of the GSV and those who had selective incisions with percutaneous ligation of tributaries.

##### **Results**

Stepped incisions were associated with a reduced mean time to mobilisation (4.5 days to 2 days,  $p=0.015$ ). Mean pain scores were improved at 4-hours post-operatively (5/10 vs 2.5/10,  $p= 0.012$ ) and 48 hours post-operatively (2.4/10 vs 0.6/10,  $p=0.022$ ). There were no statistically significant differences between the mean length of stay or amputation-free survival.

##### **Conclusion**

In this observational study, using stepped incision for in-situ bypass grafting using the GSV improves post-operative mobility and pain without causing effecting post-operative complications or clinical outcomes.



## 5. Alex Green: **The midline vertical skin incision laryngectomy approach results in reduced complications with no compromise to survival or recurrence**

### **Abstract:**

#### **Introduction**

A total laryngectomy (TL) involves removal of all laryngeal structures and a portion of the trachea and is typically used to treat locally advanced laryngeal or hypopharyngeal cancer. The literature describes various incisions, but very limited research exists on the impact of different incision location on clinical outcomes. Thus, this study aims to compare the clinical outcomes between two incision types; vertical midline and apron-type incisions.

#### **Methods**

A retrospective analysis was conducted of patients (n=79) undergoing a TL in two academic head and neck centres. The effects skin incision technique on postoperative outcomes were analysed using cross-tabulations and regression modelling

#### **Results**

A total of 79 patients were included in the study. Of which, 54 patients underwent an apron incision and 25 underwent a vertical midline incision. Vertical midline incisions were significantly associated with reduced risk of lymphoedema ( $p=0.011$ ), pharyngocutaneous fistula (PCF) ( $p=0.031$ ). Regression analysis demonstrated incision type did not influence recurrence (HR 2.28, 95%CI 0.61- 8.53,  $p=0.219$ ) or survival (HR 1.41, 95%CI 0.55-3.65,  $p=0.477$ ). However, binomial regression apron incisions increased the odds of minor (OR 9.59, 95%CI 1.34-68.82,  $p=0.025$ ) and major (OR 3.59, 95%CI 1.71-78.21,  $p=0.045$ ) complications.

#### **Conclusion**

The vertical midline incision for TL provides superior post-operative outcomes; including major and minor complications, lymphoedema and PCF, without compromising recurrence or survival. Thus, this approach should be considered for all laryngectomy and pharyngolaryngectomy procedures unless extensive lateral nodal metastasis complicates the resection.



## 6. Samuel Munro: Intra-operative vasopressor usage in free flap reconstruction: should we be worried?

### Abstract:

#### Introduction

The role of vasopressors has long been a subject of debate in microsurgery. Conventional wisdom dictates the avoidance of vasopressor use, due to concerns that by causing peripheral vasoconstriction, inducing vasospasm of the anastomoses and leading to failure in perfusion. It has since become common practice in some centers to avoid intraoperative vasopressor use during free tissue transfer surgery. Recent studies have suggested that this traditional view may not be supported by clinical evidence. However, none of these studies have separated vasopressor use by method of administration.

#### Methods

We conducted a retrospective review of our experience of vasopressor use in free flap surgery at a single high-volume center. The outcome measures were flap failure, flap-related complications and overall postoperative complications (reported using the Clavien-Dindo classification). Groups were compared using Chi-squared or Fisher's Exact test where appropriate.

#### Results

A total of 777 cases in 717 patients were identified. 59.1% of these had vasopressors administered intraoperatively. The overall failure rate was 2.2%, with 9.8% experiencing flap-related complications. There was no difference in flap loss when vasopressors were administered, but an increased rate of microvascular thrombosis was noted ( $p=0.003$ ). Continuous administration of vasopressors were associated with reduced venous congestion, whereas intermittent boluses increased risk of microvascular thrombosis.

#### Conclusion

Our study confirms previous findings that intraoperative vasopressor use in free flap surgery is not associated with increased failure rate. Administering vasopressors continuously may be safer than via repeated boluses.



## 7. Sam Tingle: Image-analysis algorithm to determine quality of cold perfusion in kidney transplantation

### Abstract:

#### Introduction

Surgeon assessment of visual 'quality of perfusion' (QOP) influences kidney discard and predicts transplant outcome. However, this assessment is subjective and bias-prone. We aimed to design an "App" utilising a smartphone camera to make this assessment objective and enhance decision making.

#### Methods

The QOP in photographs of backbench kidneys was graded from 1 (ideal) to 5 (very poor) by three independent surgeons. A training cohort was used to develop an image-analysis algorithm, which was validated in a separate cohort.

#### Results

Analysing surgeon scores of 174 kidney images revealed that inter-rater agreement was good for kidneys displaying the best (rated 1) and worst (rated 4 or 5) QOP. However, for intermediate scores inter-rater agreement was poor. Inter-rater agreement between surgeons decreased as they graded more images; as surgeons fatigued, their ability to classify images worsened. A training cohort ( $n=174$  kidneys) was used for algorithm development. First, small regions within each image were mapped within the 'Red-Green-Blue' colour-space, where well-perfused and poorly-perfused areas show clear separation. To generate a score for each kidney these regions are compared with ideally flushed kidney tissue. Testing our algorithm (validation cohort -  $n=29$  kidneys) revealed strong correlation between image-analysis QOP score and surgeon assessment;  $r=0.789$  ( $0.587-0.899$ ),  $P<0.001$ .

#### Conclusion

Surgeon inter-rater agreement on kidney QOP is low for kidneys with borderline QOP, and worsens with fatigue. We provide a QOP score utilising an image-analysis algorithm, which correlates with surgeon scoring. With additional images and training this could provide an objective, numerical, point-of-care assessment of organ quality.



## 8. Corey Chan: Development of a targeted Dual-Modality (PET/NIRF) radioimmunoconjugate for fluorescence guided sarcoma surgery

### Abstract:

#### Introduction

Fluorescence guided surgery (FGS) for sarcoma resection is an evolving field, with the aim of reducing the positive margin rate and improving patient outcomes. Currently, only non-targeted dyes such as indocyanine green are adopted for clinical use, with known limitations. A sarcoma specific agent is an important next step. MT1-MMP is a cell surface proteinase overexpressed in sarcoma tissue, representing a promising molecular target.

#### Methods

Suitability of MT1-MMP as a molecular target was assessed using HT1080-WT and KO sarcoma cell lines in vitro. Development and evaluation of a novel dual-labelled radioimmunoconjugate ( $[89\text{Zr}]\text{Zr-DFO-anti-MT1-MMP-IRDye800CW}$ ) and a non-specific IgG control were synthesised through a chemoenzymatic site-selective conjugation method and underwent characterisation, stability testing, and immunoreactivity assessment. A dedifferentiated chondrosarcoma mouse model by orthotopic intra-femoral injection of HT1080-WT or HT1080-KO cells in NSG mice was used to evaluate target binding and biodistribution of the probe.

#### Results

Fluorescence and Cerenkov radiation images acquired 24, 48, and 72 h post injection of  $[89\text{Zr}]\text{Zr-DFO-anti-MT1-MMP-IRDye800CW}$  indicated preferential tumour uptake in the WT mice compared to KO mice. Ex vivo gamma counting of the inoculated femur showed significantly higher uptake in the targeted tumour group ( $17.64 \pm 3.84 \text{ %ID/g}$ ) compared to controls ( $p=0.0006$ ), with a significantly greater tumour-to-blood ratio. Analysis of invaded muscle tissue sections showed higher fluorescence and autoradiography signal in the targeted group.

#### Conclusion

Our novel  $[89\text{Zr}]\text{Zr-DFO-anti-MT1-MMP-IRDye800CW}$  radioimmunoconjugate shows promise for potential use in fluorescence guided sarcoma surgery and pre-operative PET imaging to help guide planning and tumour resection. Future work will involve early phase clinical trials.

# FEGGETTER

## 1. Michael Mather: Upper airway immune dysfunction in otitis media with effusion (OME)

### Abstract:

#### Introduction

Otitis media with effusion (OME; 'glue ear') is the most common cause of reversible hearing loss in developed countries. In the UK every year 24,000 children undergo surgery (grommets +/- adenoidectomy) for OME. Despite this, the mechanism by which adenoidectomy improves the resolution of OME remains unknown. Understanding this would aid the development of a 'medical adenoidectomy' – mitigating surgical risk in young children.

#### Methods

Paediatric patients (aged 2-6 years) undergoing adenoidectomy with and without OME were recruited (n=10). Adenoid biopsies were processed for single cell RNA sequencing and surface proteomics. 44,622 cells and 20,634 genes were analysed based on transcriptional signatures using bioinformatic pipelines (Scanpy, Dandelion, Milo) and compared between the OME vs non-OME cohorts.

#### Results

Adenoid tissue consists of 19 unique cell types; primarily composed of various forms of B and T cells – critical mediators of adaptive immunity. Innate immune cells were also identified, including: natural killer, dendritic, and innate lymphoid cells. Children in the OME cohort exhibited reduced IgA secretion and impaired memory T cell formation. Further, we identify a previously unknown cell type akin to Follicular Dendritic Cells (which functionally assist in antibody production) but which lack characteristic cytokine secretion, suggesting an alternative means of modulating antibody production.

#### Conclusion

We have comprehensively profiled adenoid tissue in health and disease. Children with OME exhibit a characteristic mucosal immunodeficiency in both innate and adaptive immune pathways. We have unexpectedly identified a previously unknown cell type with apparent importance in antibody production. This has importance in future intranasal vaccine strategies in children.

## **2. Jakub Chmelo: Risk factors associated with not receiving adjuvant chemotherapy for locally advanced oesophagogastric adenocarcinoma**

### **Abstract:**

#### **Introduction**

Perioperative chemotherapy is standard of care in the curative treatment of locally advanced oesophagogastric adenocarcinoma (OGA) in the UK. There is however large number of patients who don't undergo adjuvant component of both of these perioperative regimens. This study aimed to investigate factors which are associated with not receiving adjuvant chemotherapy after neoadjuvant chemotherapy followed by surgical resection for oesophagogastric adenocarcinoma.

#### **Methods**

All patient receiving neoadjuvant chemotherapy for OGA followed by curative surgery between 2010-2019 were identified from prospectively maintained single institution database. Patients who died in-hospital or within 90 days of surgery were excluded from analyses. Risk factors which could be associated with receiving/not receiving adjuvant component were studied. Multivariable logistic regression was carried out to identify risk factors independently predictive of not receiving adjuvant chemotherapy.

#### **Results**

Analyses included 624 patients of whom 273 received adjuvant chemotherapy (44%). Age, Charlson comorbidity index, return to theatre, severe postoperative complications (Clavien-Dindo grade III+) and R1 resection were associated with not receiving adjuvant chemotherapy ( $p = 0.005$ ,  $p = 0.006$ ,  $p = 0.026$ ,  $p = 0.043$ ,  $p = 0.004$  respectively). Only R1 resection was independently associated with not receiving adjuvant component (OR 0.18,  $p = 0.007$ ) in multivariable model.

#### **Conclusion**

This study confirms that only less than half of patients who undergo neoadjuvant chemotherapy followed by surgery with curative intent receive adjuvant chemotherapy. Reasons for this are multifactorial but age, comorbidities, severe complications and positive longitudinal margin might play important role. These results also highlight the importance of prevention, early detection and appropriate management of postoperative complications.

### **3. Pooja Prasad: Comparison of the histopathological regression after neoadjuvant FLOT versus ECX in resectable gastroesophageal adenocarcinoma**

#### **Abstract:**

#### **Introduction**

Neoadjuvant chemotherapy (NAC) with the FLOT regimen is increasingly used in the treatment of resectable oesophagogastric cancer (OGC). Histopathological tumour regression (TRG) is associated with a prognostic benefit. There is paucity of data on whether pathological complete response (pCR) rates between FLOT and ECX groups translate to comparable outcomes outside clinical trials. This study evaluated differences in pCR and downstaging between patients receiving neoadjuvant FLOT versus ECX.

#### **Methods**

Consecutive patients treated for OGC in a single, high-volume UK centre between 2018-2021 were reviewed. TRG was assessed by the Mandard classification with major pCR defined as TRG 1-2. A comparison of T- and N stage migration between FLOT and ECX was performed.

#### **Results**

The study included 162 patients (ECX n=84, FLOT n=78). pCR was achieved among 6 (7.1%) patients receiving ECX and 5 (6.4%) patients receiving FLOT ( $p=0.853$ ). Major pCR was achieved among 11 (13.1%) receiving ECX and 12 (15.4%) receiving FLOT ( $p=0.677$ ). When comparing stage migration by T-stage, 36 (42.9%) were downstaged and 6 (7.1%) patients were upstaged with ECX. Amongst FLOT patients, 42 (53.8%) were downstaged and 8 (10.3%) upstaged ( $p=0.189$ ). When comparing N-stage, 29 (34.5%) achieved downstaging and 28 (33.3%) were upstaged with ECX. With FLOT, 30 (38.5%) were downstaged and 20 (25.6%) were upstaged ( $p=0.563$ ).

#### **Conclusion**

There was no significant difference in pCR and stage migration rates between patients receiving neoadjuvant ECX and FLOT. pCR rates were lower than previously reported, and it is unclear if the difference in prognosis will translate into comparable clinical outcomes.

#### **4. Khalid Munir Bhatti: Data Driven decisions in Oesophageal Cancer Surgery: Role of artificial intelligence**

##### **Abstract:**

##### **Introduction**

During the Covid-19 pandemic, it was postulated that there might be a delay in cancer patients' presentation, stage migration, changes in management leading to excess mortality in head neck cancer patients (HNC). However, there is a paucity of real time objective data to support this, which our study has attempted to provide.

##### **Methods**

A retrospective observational study conducted by reviewing patient records. Two cohorts of diagnosed HNC patients compared - COVID 19 cohort (April-December 2020) to baseline pre-Covid-19 cohort (April–December 2019).

##### **Results**

There was 33% decrease in new confirmed HNC cases during Covid-19 (223 vs 150 patients). There was significant reduction in T1 stage (25.0% vs 36.3%, p 0.003) and significant increase in T4 stage at presentation during the Covid-19 period (36.5% vs 25.0%, p 0.022), which led to reduction in overall stage I (14.0% vs 25.1%, p 0.009) and increase in overall stage IVb (13.3% vs 5.8%, p 0.012). Almost 7% increase in palliative intent between cohorts, (difference is not statistically significant). There was a significant reduction in radical surgery as the only treatment modality (20.0% vs 30.9%, p 0.023).

##### **Conclusion**

To the best of my knowledge, this is first such report confirming the relative change in T-stage and overall up-stage migration in HNC patients. Our study also showed that there was trend towards an increased use of palliative treatment and significant reduction in use of radical surgery as sole treatment modality, suggesting that the pandemic is likely to impact long-term survival of HNC patients.

## **4.FACULTY AND CHAIRPEOPLE**



**Colin Wilson**

[colin.wilson6@nhs.net](mailto:colin.wilson6@nhs.net)

I have been a Consultant Surgeon at the Freeman for 7 years now and have active research projects in transplant organ perfusion and meta-analysis. Keen to help medical students and junior doctors with anything related to transplantation.



## **Neil Jennings**

[Neil.Jennings@chsft.nhs.uk](mailto:Neil.Jennings@chsft.nhs.uk)

Neil is a Consultant Upper GI surgeon based in Sunderland who has a clinical practice in Bariatric surgery and is a Principal Investigator on the By-Band-Sleeve trial amongst others. Apologies for the photo Neil - only one I could find!



## **Professor Naeem Soomro**

[n.soomro@nhs.net](mailto:n.soomro@nhs.net)

RCS (Eng) Co-Director in Robotic and Digital Surgery:  
Developing and implementing strategy of wider adoption  
of robotic and digital surgery across the UK.

Director of Robotic Surgery Newcastle: Leading biggest  
robotic surgery programme in the UK with three Da Vinci  
and one Mako system. Twenty-five surgeons delivering  
robotic surgery across eight surgical specialities, >35000  
operations done.

Robotic and AI lead Newcastle Health Innovation Partners

Executive Director, Newcastle Surgical Training Centre:  
Delivering 300 minimally invasive and robotic surgical  
training courses each year.

Past Chairman, Joint Surgical Colleges Fellowship  
Examination (JSCFE) Board in Urology.



## Mr Kevin Etherson

[kevin.etherson1@nhs.net](mailto:kevin.etherson1@nhs.net)

I am a consultant colorectal surgeon with a research background in surgical clinical trials, where I have completed and published 2 RCTs to date within a research team. I am particularly interested in surgical observational cohort studies and surgical randomised controlled studies. I am currently a PI for CIPHER, IMPRESS, FRAILTY2 and I am currently trying to expand my research portfolio by designing a surgical RCT for emergency Crohn's disease resections. I would be willing to engage with, collaborate with and supervise students and junior doctors undertaking colorectal cohort studies, and middle grade doctors wanting to undertake a thesis in surgical clinical trials.



## Professor Amar Rangan

[amar.rangan@york.ac.uk](mailto:amar.rangan@york.ac.uk)

Amar Rangan is current President of the British Elbow and Shoulder Society and a Trustee / Director of the British Orthopaedic Association. He is a Shoulder & Elbow Surgeon at South Tees Hospitals NHS Trust in Middlesbrough and is Professor of Orthopaedic Surgery, holding the Mary Kinross Trust & Royal College of Surgeons Chair at Department of Health Sciences and Hull York Medical School, University of York. He also holds a full Professorship with the Faculty of Medical Sciences & NDORMS, University of Oxford.

Amar leads a programme of clinical and translational research, including NIHR funded multi-centre clinical trials. He has published widely in Trauma & Orthopaedic Surgery, particularly in the field of Shoulder & Elbow surgery, where his work has influenced clinical practice, national guidelines and policy. He is a member of the NIHR i4i Challenge Awards Committee and is a surgeon member of the Steering Committee of the National Joint Registry.

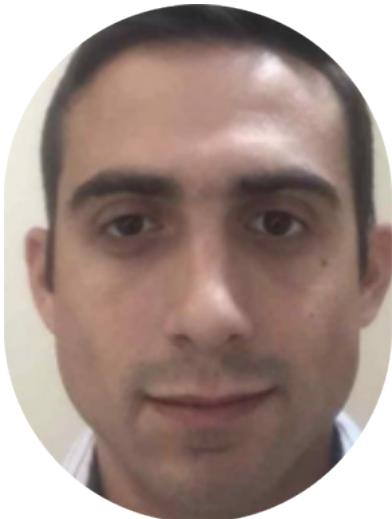


## Mr Chris Harding

[c.harding@nhs.net](mailto:c.harding@nhs.net)

A Consultant Urological Surgeon at Newcastle upon Tyne Hospitals NHS Foundation Trust. He trained at the University of Cambridge, Addenbrookes Hospital Cambridge, Kings College London and Freeman Hospital Newcastle. He has a particular interest in bladder dysfunction, continence, neurourology, urinary tract infections and clinical research. He is an Honorary Clinical Senior Lecturer at Newcastle University and is the Chief Investigator for the ALTAR trial and co-Chief Investigator for the PRIMUS study.

He is co-chair of the NIHR National Benign Urology group and Urology lead for the Department of Health Modernising Scientific Careers MSc course. He is current chair of the European Association of Urology Guidelines Panel for Female Non-Neurogenic Lower Urinary Tract Symptoms and also immediate past Chairman of the executive committee of the British Association of Urological Surgeons Female Neurological and Urodynamic Urology subsection. He sits on the International Continence Society Urodynamics, Conservative Management of Male LUTS and Mesh Complications Committees.



## Mr Andrew Pieri

[andrew.pieri@nhs.net](mailto:andrew.pieri@nhs.net)

Mr Andrew Pieri is a consultant oncoplastic breast surgeon with a specialist research interest in innovative intra and perioperative technology.

Mr Pieri sees and treats patients with breast cancer and harmless breast disorders. He provides services in breast reconstruction, advanced oncoplastic breast conservation and performs innovative axillary surgery using cutting-edge technology.

He has a keen interest in medical education and is the Newcastle Hospitals surgical lead for multiple medical student programmes in partnership with the medical school at Newcastle University. He is also the chief investigator for the PREVENA trial.



**Mike Jones**  
[mike.jones13@nhs.net](mailto:mike.jones13@nhs.net)

Mike is a Specialist Trainee in General Surgery with an interest in HPB. He previously managed the NOSTRA website. Along with research, he is interested in Medical Education.



**Mr Sandip Nandhra**  
[sandip.nandhra@nhs.net](mailto:sandip.nandhra@nhs.net)

I am a vascular surgeon and clinical lecturer in vascular surgery here at Newcastle's Freeman Hospital. My research is aimed at improving patient's quality of life and clinical outcomes following vascular intervention.

I am developing the national knowledge base around frailty, sarcopenia, anaemia and multi-morbidity in vascular disease in order to begin to develop interventions to improve care and outcomes. I work with a wide network of clinical and academic teams from surgery, anaesthesia, care of the elderly, cardiology and nutrition. I also chair the national Vascular and Endovascular research Network; VERN) and represent vascular research at the Royal College of Surgeons England. Research is a team sport so please get in touch with expressions of interest. It's great to see so many enthusiastic academic surgeons at NESTAC.



## Mr Richard Brady

[Richard.brady32@nhs.net](mailto:Richard.brady32@nhs.net)

The Newcastle Centre for Bowel Disease Research Hub undertakes research related to colorectal surgery and related specialities. We have active and fully funded research streams in microbiome research and digital surgery (which would suit MSC students) or short research projects on virtual learning, social media, technology and surgical outcomes.

We are a busy and friendly unit who deliver services across the full range of colorectal subspecialty interests and are early adopters of emerging technology. We run a large number of national NIHR portfolio studies with a number of ongoing commercial trials evaluating developing technology in colorectal surgery. Please feel free to get in touch to discuss a project or idea that you would wish to pursue.



## Mr Shaj Wahed

[shajahan.wahed@nhs.net](mailto:shajahan.wahed@nhs.net)

Mr Wahed is a Consultant Surgeon in the Northern Oesophago-Gastric Unit (NOGU). He was awarded a Royal College of Surgeons of England Research Fellowship and his doctorate (MD) from Newcastle University for research in oesophageal cancer. He leads on NOGU's translational research, and is also co-PI on multi-centre trials in oncology and reflux.

He acts as a supervisor for trainees and postgraduates undertaking a PhD or MD. He has authored numerous book chapters and peer-reviewed publications. Mr Wahed is the Association of Upper GI Surgery Northern representative and sits on the Oesophago-Gastric Cancer subcommittee.



## Miss Susan Stevenson

[Susan.stevenson9@nhs.net](mailto:Susan.stevenson9@nhs.net)

I am a hand and plastic surgery consultant with an interest in hand surgery research.

I am PI for 2 national RCTs and as lead clinician, have supported trainees and medical students get involved in projects via the Reconstructive Surgery Trials Network.



## Mr Sanjay Pandanaboyana

[s.pandanaboyana@nhs.net](mailto:s.pandanaboyana@nhs.net)

I have been a Consultant Surgeon at the Freeman for 2 years, having previously worked in Auckland, NZ as a consultant for 4 years.

My areas of research interest are acute and chronic pancreatic and pancreatic cancer with a particular emphasis on systematic reviews. I am keen to foster and support medical students do develop interest in research with a view to pursuing a career in academic surgery



## **Ms Karen Booth**

**[Karen.booth16@nhs.net](mailto:Karen.booth16@nhs.net)**

Ms Karen Booth MSc FRCS is an adult aortic and cardiothoracic transplant surgeon who was appointed in August 2017. Appointed Lead for Education in the North East for Cardiothoracic Surgery, she also is the SCTS Student Education and WICTS Co-Lead. Her research interests are in donor utilisation in lung transplantation and frailty in cardiac surgery.



## **Mr John Moir**

**[John.moir1@nhs.net](mailto:John.moir1@nhs.net)**

Having undertaken all my training in the North East I know what a brilliant place it is to thrive in both the clinical and academic aspects of all surgical specialties. Having helped set up NESTAC in 2017, with the invaluable support of HENE, NESS and NUSS, the organisation is going from strength to strength as we aim to facilitate student and trainee involvement in surgical research.

Please do look at our website ([www.nestac.org.uk](http://www.nestac.org.uk)) for local administrative and training resources, as well as contact details for NESTAC mentors who are more than happy to be emailed for research opportunities. Personally, my research interest is in pancreatic cancer, having undertaken a PhD and published extensively on the subject, as well as receiving a number of awards and research grants/fellowships.

I am actively involved in a number of steering committees for regional and national projects, and would be more than happy to be contacted ([John.moir1@nhs.net](mailto:John.moir1@nhs.net)) for current and future opportunities in HPB-related research, or simply advice on a career in academic surgery.

## 5.THE PYBUS LECTURE



### Dr Alice Wei

HPB Surgeon, MSK New York

## Regionalization of care and surgical quality for complex cancer surgery

We have an illustrious international Pybus speaker  
this year Dr Alice Wei from MSK, USA.



[nestac.co.uk](http://nestac.co.uk)