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Abstracts

Annual Trainee Doctors' Prize Day, Thursday 17th October 2019.

Postgraduate Medical Centre, Belfast City Hospital.

ORAL PRESENTATION

Better The Devil You Know? Comparison Of Decellularised Matrices Against Clinical Alternatives For Defect Closure in a Rabbit Model Of Congenital Diaphragmatic Hernia

Mary Patrice Eastwood, Luc Joyeux, Luca Urbani, Koichi Deguchi, Savitree Pranpanus, Rita Rynkevic, Lucie Hympanova, Eric Verbeken , Paolo De Coppi, Jan Deprest

Aim: Gore-Tex® is a widely used durable patch for repair of congenital diaphragmatic defects yet results in complications. Early reherniation has been reported in alternative xenografts such as Surgisis®. We wondered whether the matrix or decellularization (decel) process led to failure. We compared diaphragmatic reconstructions using SIS and decel porcine diaphragm (DPD), processed with a comparable decel protocol, to Gore-Tex in a fast-growing rabbit model.

Methods: Twenty-three 6-weeks-old rabbits underwent intubation, left subcostal laparotomy and 3*3cm hemi-diaphragmatic excision. Defect closure was with a 3,5*3,5cm patch of (a)Gore-Tex® (n=10), (b)Surgisis® (n=6) or (c) DPD (n=7). Rates of herniation or eventration, uniaxial biomechanical testing, and histology were studied at 90days.

Results: Eighteen (78%) rabbits survived to 90days. There was mesh failure in all decellularised matrices ($p<0.001$). Frank reherniation of abdominal contents in 14% of Gore-Tex group (n=1), 71% in SIS (n=5;fig.1e) and 25% with DPD (n=1). Eventration was observed in SIS (n=2 (29%)) or DPD (n=3 (75%); $p<0.05$) (fig.1f). Biomechanical testing was only possible with Gore-Tex. Decellularised matrices were replaced by thin fibrous tissue, almost acellular at the mesh centre. Gore-Tex induced a more vigorous inflammatory response.

Conclusion: Reconstructions with natural matrices are more likely to fail than Gore-Tex repairs. Outcomes in our fast-growing rabbit model correlate to described clinical outcomes.

The "Petechiae in children" (PiC) study: validating clinical decision rules for the management of feverish children with non-blanching rashes

Dr Thomas Waterfield, Dr Mark D. Lyttle, Derek Fairley, James Mckenna, Dr Michael Corr , Miss Bethany Patenall, Dr Kerry Woolfall, Dr Julie-Ann Maney, Dr Damian Rolan, Prof Michael D. Shields

Introduction: Children commonly present to Emergency Departments (ED) with a non-blanching rash (NBR) in the context of a feverish illness. The approach to assessment of these children is controversial.

Aims: Validate clinical practices guidelines (CPGs) for the management of fever and NBR

Methods: Prospective multicentre validation study evaluating the performance of available CPGs for feverish children with NBR.

The full protocol has been published and is available at https://rdcu.be/bFEtb.

Results: 1423 children were recruited from 37 UK sites between the 11th November 2017 to 30th June 2019. This included 77 children with serious bacterial infections (5.4%) and 17 children (1.2%) with confirmed invasive meningococcal disease (MD). Four CPGs (NICE, NBL, London & Nottingham) were prospectively validated. All four demonstrated 100% Sensitivity for identifying children with MD. NICE guidance demonstrated the lowest specificity 10% recommending that 75.3% of children receive parenteral antibiotics and admission to hospital. The NBL, London and Nottingham CPGs all demonstrated a greater specificity ranging from 28% to 41%.

Discussion: NICE guidance for the management of NBR performed poorly in this national validation exercise. The alternative CPGs were 100% sensitive and offered greater specificity. Adopting an alternate CPG would reduce painful interventions, parenteral antibiotic use and hospital admissions.

Trial registration - NCT03378258. Retrospectively registered on December 19, 2017..

Ehler-Danlos; A case of not so simple sciatica

Adam Gowdy, Adam Tweedie

Introduction: Vascular Ehler-Danlos (vEDS or type IV EDS) is the most dangerous subtype of Ehler-Danlos and is rarer

than most EDS subtypes, thought to affect 1-200,000. It is autosomal dominant affecting COL3A1 or COL1A1 genes.

Symptoms include those of EDS alongside being easily bruised, visible blood vessels on chest, late miscarriage, unusual facial features and aneurysms/dissections, bowel perforation and uterine perforation.

Case: A woman presented with acute onset back pain radiating down her right leg after bending over to pick up a heavy object. History and findings were in keeping with sciatica, she was prescribed analgesia. Discharge was delayed due to a trauma call.

On reassessment the patient had deteriorated and was noted to be hypotensive and tachycardia and subsequently transferred to resus. She underwent a CT angiogram revealing a ruptured external-iliac artery. She underwent emergency repair.

Discussion: The patient has made a full recovery but had she not remained in the department during the trauma call she may have been sent home. This case serves to highlight the dangers of Ehlers-Danlos syndrome and remind clinicians to be aware of such patients and treat them with caution.

This is an example of how younger patients compensate physiologically before acutely deteriorating

Standardisation of Immunosuppression review at Renal Transplant clinic

Michael Corr, Louise Sloan,
Camille Harron, Stephanie Bolton

Problem: The Renal Association guidelines for management of kidney transplant patients (KTP) recommend yearly review of immunosuppression (IS). Patient survival improves by addressing IS related mortality risk factors (MRF) and carefully reducing IS. In our unit, baseline data showed IS reviews were carried out every 32 months.

Strategy for change: With multidisciplinary team (MDT) input driver diagrams were generated to set out aims and objectives. Plan-Do-Study-Act cycles facilitated change which was analysed continuously using statistical process charts. A transplant clinic template letter and MDT review assessments were created which were refined through subsequent cycles.

Measurement of Improvement:

1.) Percentage KTP with documented IS plan and modification of MRF at each clinic

2.) Following adoption-adherence to template

Effects of change: Over 3 month period percentage KTP with IS review rose from 9% to 85% enacting 29% more changes to IS compared to pre-intervention weekly. Modifiable risk factors addressed rose from 8% to 56%. Adherence once template adopted reached 93%. Project generated other change ideas e.g. information & dermatology leaflets.

Discussion: This project demonstrates that by utilising the MDT and introducing a standardised approach increased frequency of IS review, adaptions to IS and addressing MRF. This could potentially be replicated by other transplant teams.

Does High Fidelity Virtual Reality Simulation Have A Role In Foot and Ankle Arthroscopic Training?

M. Robinson, R McKenna, D Gibson, J Wong.

Background: The traditional method for arthroscopic training relies on appropriate clinical cases, costs particularly with operative time and has implications for patient safety. The Virtamed ArthroS was released in December 2017 and is the world's first high-fidelity simulator for ankle arthroscopy. The primary aim of this study was to determine the utility of this arthroscopic simulator for training.

Methods: Volunteers were recruited from medical students through to consultants. They performed five arthroscopic procedures under control conditions. A 10-minute demonstration on the setup and operation of the simulator was given prior to testing. Performance was evaluated by obtaining predefined metrics for each procedure within the simulator with photo and video acquisition. A questionnaire was administered to evaluate previous arthroscopic and video gaming experience, levels of stress, usefulness and authenticity.

Results: Each arm consisted of a minimum of 5 participants from medical students, foundation level, core trainees, orthopaedic registrars and consultants. All groups demonstrated an improvement in time, economy and safety with 20 minutes exposure, reporting high levels of satisfaction and usefulness.

Conclusion(s): The Virtamed ArthroS ankle module provides an authentic simulated experience for all levels of training with demonstrable improvements in performance, anatomy knowledge and reductions in adverse events. In the current climate of reduced working times and increased indicative arthroscopy numbers for completion of training the real-world benefits for orthopaedic trainees is promising.

Exploiting TP53 mutation in colorectal cancer using a novel cdc7i

Dr Peter Gallagher

Introduction: Colorectal cancer (CRC) is the 4th most common cancer in the UK and approximately 50% of colorectal cancers demonstrate mutations in TP53. Cdc7 kinase is a protein with essential functions in DNA replication initiation and cell-cycle checkpoint responses. It is up-regulated in malignant cells, especially in the presence of a functional TP53 mutation.

Aims: To utilise cdc7i to exploit TP53 mutation in CRC, either alone or in combination with current standard of care (SoC) therapies.

Methods and Results: Using in-vitro analyses of a novel cdc7i (LY3177833), CRC cell lines with functional mutations in TP53 have an increased sensitivity to cdc7i. Additionally these cells arrest within S and G2/M phases of the cell cycle.

SoC chemotherapy in CRC elicits an S- and G2/M- phase accumulation in cells which lack functional p53, with an increased dependency on DNA replication checkpoints, in which cdc7 is involved. Combinations of LY3177833 and SoC chemotherapy significantly reduced long-term survival in cells lacking functional p53.

Discussion: Cdc7i either alone or in combination with SoC in CRC, may represent a potential future treatment option, particularly in TP53 mutant CRC. A phase 1 clinical trial of a novel cdc7i as monotherapy is ongoing.

Point of Care vs Lab INR –a reliable alternative?

Dr Qian Chen

Introduction: INR is one of the most common laboratory tests among hospital inpatients. Coaguchek point of care (POC) system has been introduced as a fast and minimally invasive alternative to standard laboratory INR testing in some hospitals.

Aims: To assess the correlation between Coaguchek POC and STAGO lab INR readings.

Methods: Prospective study involving all patients on warfarin on a single ward. POC and lab readings were taken at the same time and compared. The product-moment correlation coefficients (PMCC) were calculated for various INR ranges.

Results: 73 paired samples were received. 62(86%) POC INR readings were higher than lab readings. When lab INR> 2.0, 17 of 35 (49%) POC INR were higher by more than 1.0. Linear correlation between POC and lab INR was strongest between lab INR 1.0-2.0 (PMCC 0.94) but weakens at higher values. When POC INR is between 2.0-3.0, 13 of 24 (54%) lab INR were also between 2.0-3.0.

Discussion: Coaguchek system has been recommended by NICE for outpatient self-monitoring. Our data cast significant doubt in its use in hospital inpatients as lab substitute. Inpatient procedures or medications such as enoxaparin may account for the significant difference.

The rise of the submucous cleft - A single centre review over 15 years

Dr Rachel Currie

Introduction: Submucous clefts are a variant of cleft palate, usually signified by the presence of a bifid uvula. Patients with a submucous cleft tend to present later than patients with complete cleft defects resulting in late primary repair and potentially irreversible speech and language problems.

Aim: To review submucous cleft repairs as the rates were increasing in our unit.

Methods: The Northern Ireland cleft lip and palate database was used to identify patients born with a submucous cleft over a 7 year period, 1988-1995, and a further 7 year period 15 years later, 2003-2010, for comparison. The Electronic medical records system and the joint cleft palate clinic database were used to collect the data required.

Results: A significant rise in submucous cleft numbers over a 15 year period, from 6 to 25 cases. Average age at primary repair reduced from 6 to 5.2years. The unrepaired rate increased from 17->24%. Significant reduction noted in: total length of hospital inpatient stay from 6.3 to 2.7days and total outpatient appointments from 11.7 to 5.3.

Conclusions: This review highlights significant changes in the detection and management of patients with a submucous cleft over a 15 year period. Adequate provision must be made to resource the rising demands of cleft surgery.

Cleft Nurse Specialist – Patient Perspective on the Role

Dr Rachel Currie

Introduction: The Cleft Nurse Specialist (CNS) plays a key role in counselling and supporting parents from the diagnosis onwards.

Aim: The CNS started in 2012 and we aimed to perform a qualitative study to determine the benefits this brought to the cleft community from the parents' perspective.

Methods: The cleft database was used to locate babies born in 2010/2011 and 2013/2014. Parents were contacted by phone and completed a questionnaire on the care and support they received following the diagnosis.

Results: Parents of 38 babies completed the survey. In 2010/2011 only 21% had an antenatal diagnosis compared to 47% in 2013/2014. In 2010/2011 68% were counselled by a surgeon, 42% were seen >1week after birth, with some over a month. In 2013/2014 84% were counselled by the CNS, 53% were seen within 48 hours and 100% within 7 days. Parents in 2013/2014 felt more supported by the cleft team throughout pregnancy and the early days, with home visits being particularly advantageous.

Conclusion: The introduction of the CNS to the cleft multi-disciplinary team has significantly improved the pathway for parents and is a key link with the wider cleft team.

Antenatal diagnosis of Cleft lip in Northern Ireland

Dr Rachel Currie

Introduction: The diagnosis of cleft lip and/or palate (CLP) can be a difficult time for expectant parents. Antenatal diagnosis ensures the cleft team can spend time with the parents counselling them regarding potential difficulties their baby may have in the early weeks of life as well as providing a support network.

Aim: NHS guidelines target: 75% of babies born with a cleft lip should be diagnosed on antenatal ultrasound.

Methods: The regional cleft lip and palate database was reviewed over a 5 year period (2014-2018). Numbers of babies born with CLP and rates of antenatal ultrasound diagnosis were reviewed.

Results: Over the 5 year period 168 babies were born in the regional unit with CLP. Those with involvement of the lip (cleft lip only or cleft lip and palate) made up 55% of the

cohort (92/168). Overall the rate of antenatal detection over the 5 years was 79% (73/92). The annual rates were; 2014: 75%, 2015: 74%, 2016: 89%, 2017: 77%, 2018: 86%

Discussion: Over the past 5 years the antenatal diagnosis rate has remained above the NHS guideline target. We are striving towards 100% in the future to ensure parents are counselled antenatally and have time to adjust to the diagnosis before birth.

A Qualitative Study of Transcutaneous Posterior Tibial Nerve Stimulation for Overactive Bladder: Home versus Hospital Treatment

Dr Ciara Daly

Introduction: Overactive bladder (OAB) is a prevalent, distressing condition. Approximately 40% women will not respond to routinely offered non-invasive interventions (1). Evidence is accruing for the effectiveness of Transcutaneous-Posterior-Tibial-Nerve-Stimulation (TPTNS) (2). This qualitative study is part of a mixed-methods, randomised, feasibility trial of TPTNS in the home versus hospital setting. Quantitative results will be reported separately (NCT03727711).

Aims: To explore experiences of women having TPTNS in home and hospital and discover perceived barriers/ facilitators to self-management.

Methods: Identification of a subgroup from the larger trial, with a purposive sample of 8 women from each group. Thematic analysis using the method proposed by Braun and Clarke (Nvivo 12 software used) (3).

Results: A total of 16 women were interviewed (8 home, 8 hospital). Mean age: 60 years (range 42-78 years). Data saturation was achieved. TPTNS was described as providing 'confidence' in addition to physical benefits. Home treatment was viewed favourably as 'convenient', especially if the participant was bound by work commitments. Cost of purchasing the machine was seen as a barrier to future use.

Discussion: This analysis highlights the willingness of women to use TPTNS as part of a self-management strategy; treatment at home was favoured among those who were working.

References:

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A review of obstetric anal sphincter injuries (OASIS) in the South Eastern Health and Social Care Trust: risk factors, recurrence and mode of delivery in future pregnancies.

Dr Michael Graham

Introduction: OASIS is a relatively common complication following childbirth with an increasing overall rate which is possibly due to improved reporting and better recognition.

Aims: To determine the risk factors for obstetric anal sphincter injuries (OASIS) and to investigate the mode of delivery and recurrence rate in future pregnancies.

Methods: A retrospective cohort study of singleton deliveries in the South Eastern trust between April 2012 and March 2017 (n=59236)

Results: The overall OASIS rate was 3.7% (593/59236). There was a significantly increased risk of OASIS with an instrumental delivery ($p<0.001$) fetal birth weight >4kg ($p<0.001$) maternal age >25 ($p<0.001$) and nulliparity ($p<0.001$)

The recurrence rate of OASIS in a subsequent vaginal delivery after the primary tear was 3.5% (OR = 3.9 $p=0.035$). The rate of OASIS in patients with one previous vaginal delivery with no OASIS was 0.93%.

Caesarean section rate in the subsequent pregnancy was increased after primary OASIS (41.8%) (OR 11.19 $p<0.001$). The rate in patients with one previous vaginal delivery with no OASIS was 6%.

Discussion: Despite a relatively low recurrence rate of OASIS in subsequent pregnancies there remains a high elective caesarean section rate.

Vertebral Artery Injury in Cervical Spine Fractures: A Cohort Study

Kennedy GEM, Sheppard R, Nelson A, Abdel-Meguid E, Darwish N.

Introduction: The risk of vertebral artery injury (VAI) secondary to cervical spine fracture is well recognised. Although typically asymptomatic at presentation, VAI can result in neurological deficit, stroke and death. Depending on injury grade and site, management can range from observation, to medical, endovascular and surgical intervention.

Aims: To determine the incidence and clinical features of VAI amongst patients found to have cervical spine fractures presenting to the Royal Victoria Hospital, and to establish current practice regarding VAI management.

Methods: A retrospective review of 1,894 computed tomography (CT) reports of patients who underwent imaging of their cervical spine and/or vertebral arteries over a 12-month period was conducted.

Results: Sixty-eight patients were found to have acute cervical spine fracture. Of these, five (7.4%) were diagnosed

with VAI, all of which resulted from fractures of the upper cervical vertebrae following high-energy trauma. One patient sustained an incomplete spinal cord injury. All five patients underwent repeat CT-angiography, none of which demonstrated injury progression. Three patients were commenced on aspirin therapy, one of whom also underwent posterior cervical stabilisation.

Discussion: CT-angiography is recommended following identification of fractures involving the foramen transversarium or Type C/ subluxation-type injuries and should also be considered amongst those sustaining upper cervical fractures.

Incidence of cutaneous melanoma in patients with histologically confirmed dysplastic naevus: A long-term follow-up study in a Northern Ireland Healthcare Trust

Dr Louise McDonald

Introduction: Management of Dysplastic naevi (DN) is controversial with opinion divided regarding their significance. A recent systematic review and US multi-centre study evaluated subsequent cutaneous melanoma (CM) risk in patients with DN but a paucity of outcome data remains amongst UK and Irish patients.

Aims: To evaluate long-term outcomes of histologically confirmed DN in a Northern Ireland Healthcare Trust and incidence of subsequent CM.

Methods: Retrospective study of histologically confirmed DN recorded in Trust Pathology Database between 01.01.2008 - 31.12.2013. Cases analysed for demographics, referral source, site, procedure, margins, severity and development of CM.

Results: 248 reports were evaluated in 237 patients (104 male, 133 female). Median (range) age 44 (16,82) and mean follow-up period 7.5 years. 93% of DN were removed by excisional biopsy (93%). The back was commonest anatomical site (39%). The majority of cases had clear histological margins (93%). No patients developed CM at the site of a previously excised DN. 2.53% (6/237) patients developed subsequent CM at separate site.

Discussion: This is the first long-term study of outcomes for patients with DN in Northern Ireland. Findings support previous studies suggesting subsequent CM risk is low in patients with histologically confirmed DN without prior history of CM.

Reliability of VPOSSUM as a Predictor of Outcome in Patients Undergoing Major Lower Limb Amputations (MLLA)

Mr Waleed Riaz

Introduction: Risk-prediction scoring systems are widely used by surgeons to calculate operative morbidity and mortality. They help to stratify level of post-operative care, enable patients to make a fully informed consent and facilitate surgical audit and comparison of units' performance. Multiple systems have been used for prediction of patient outcome following abdominal aortic aneurysm repair; not much has been done in patients undergoing MLLA.

Aim: Our aim was to evaluate VPOSSUM for accuracy of prediction of early mortality and morbidity following MLLA.

Methods: Retrospective case review of MLLA carried out in a regional vascular service between Jan-2014 and Jul-2017. Demographic, pre-operative, operative and post-operative data were collected from patient notes and hospital database. VPOSSUM scores were calculated for every procedure and compared with observed morbidity and mortality using SPSS.

Results: 181 patients (male=133, female=48, average age 67.6y) underwent MLLA during this study period. Of these, 20 had re-interventions. Revision to a higher level was required in 7 patients on ipsilateral limb within a mean 14.3 days (range=5-33). 13 patients required MLLA on contralateral limb within a mean 216 days (range=5-648). 7 patients had bilateral MLLA at the same session; these procedures were recorded as a single event. Therefore, total number of events was 201. Receiver-Operator Curve (ROC) showed an area-under-curve (AUC) of 0.833 (95% CI 0.740-0.926) for 30-day mortality, suggesting that VPOSSUM was a good score for predicting patient outcome; but was poor for predicting post-operative morbidity (AUC 0.640 (95% CI 0.556-0.724)).

Discussion: VPOSSUM performed well with respect to predicting 30-day mortality in patients following MLLA and could be used to stratify patients' risk from surgery, thus helping us plan level of post-operative care for this group of patients.

Introduction of Laparoscopic-assisted Oesophagectomy to a Tertiary Referral Centre and a Treatise on Surgical Outcome and Survival

Mr Waleed Riaz

Introduction/Aim: Oesophagectomy is a complex procedure and associated with high morbidity and mortality. In an effort to reduce the postoperative morbidity associated with open esophagectomy, laparoscopic-assisted oesophagectomy (LAO) has been introduced and developed in recent years. The aim of this study was to present our experience with LAO and assess surgical and oncological outcome and survival.

Methods: 100 patients were identified from a prospectively-filled database from July 2010-2017 at a tertiary referral centre. All underwent MIO performed by a single consultant surgeon. Laparoscopic abdominal and trans-hiatal phase plus mini-thoracotomy was performed. Outcome data was retrieved from hospital, laboratory, GP, NHS Spine and coroner's records. National average (NA) statistics were obtained from National Oesophago-gastrectomy Cancer Audit (NOGCA) 2016 and 2018.

Results: Median age of patients 68y (range=41-80). 85% male, 15% female. Pulmonary complications were most common (pneumonia 34%, pleural effusion 19% and

pneumothorax 8%). 5% patients had an anastomotic leak. 30- and 90-day mortality was 1 and 2% respectively, compared to NA of 2.4 and 3.9%. Median length of stay 11.5d compared to NA of 9d. Median number of lymph nodes excised was 17 (range=3-32); 58% patients had adequate number of lymph nodes examined (>15). 3-year survival for Stages 1, 2 and 3 was 86.1, 85.7 and 35.3% respectively, compared with NA of 84, 71, and 34%.

Discussion: LAO appears to offer marginal benefit to open surgery and is not inferior in the outcomes measured here. This is consistent with current RCTs and adds to the growing body of evidence supporting minimally-invasive surgery.

The price of beauty – Deep partial-thickness thermal burn from fingernail glue on clothing

Ms Rachel Currie

Introduction: Severe fingernail glue burns arising from the exothermic polymerization reaction of cyanoacrylate with the cellulose in cotton fibres have been documented. However, warnings on nail glue bottles, packaging and websites remain poor. We also consider what the optimal first aid should be for such an injury and suggest the publication of this for nail glue consumers, practitioners and pharmacists.

Description of Case: A healthy 18-year-old female spilled nail glue whilst applying her acrylic nail tips. The glue eroded through her jeans to leave a substantial deep partial thickness burn on her left medial thigh. No first aid was given. The burn was managed conservatively with silver-impregnated dressings and regular follow-up.

Discussion: Review of literature highlighted that pre-teen and teenage girls are most at risk with the majority of incidents occurring in this age group. They are also at high risk of surgical intervention with 80% requiring excision and split-thickness skin grafting compared to 0% of the young children described. The authors recommend publication of first aid advice including: removal of the source - immediate removal of clothing unless already adherent to skin (soak first) and reducing the temperature of the skin as rapidly as possible to minimize thermal injury by soaking in cool water.

A Wolff in sheep's clothing

Dr Peadar Devlin

We report an unusual case of a nineteen-year-old man with Wolff-Parkinson-White syndrome who successfully underwent accessory pathway catheter ablation but subsequently suffered ST segment myocardial infarction (STEMI) through a previously unrecognised mechanism.

Post-ablation, the patient complained of new and severe central chest pain. Electrocardiography suggested inferior STEMI and coronary angiography revealed a distal occlusion of the posterior left ventricular branch of the right coronary artery. Flow was established using a 'standard' angioplasty wire and a 2.5mm compliant balloon. Given the vessel's tendency to recoil, despite using a drug coated balloon, stent insertion was necessary to maintain luminal patency. Intravascular ultrasound revealed an oedematous extrinsic compression at the site of the lesion. Subsequent high sensitivity Troponin T assay and echocardiogram were consistent with posterior myocardial infarction.

Immediate ECG changes following catheter ablation have been acknowledged and linked to the proximity of ablation site and coronary arteries. This is the first case of post-ablation STEMI caused by oedematous extrinsic coronary obstruction we have noted in our facility, and we have not found any other report in the literature.

We recommend that patients describing new post-procedural chest pain should undergo urgent clinical and ECG assessment to consider ischaemia.

Personalised External Aortic Root Support: Introducing a Novel Approach to the Surgical Management of Aortic Root Dilatation

Dr Samara Fleville

Introduction: Aortic dissection is a devastating cause of mortality in patients with connective tissue disorders. Personalised external aortic root support (PEARS) is a pioneering approach that utilises a personalised 3D mesh to prevent aortic root dissection without the need for anticoagulation.

Description: We describe a retrospective case series of all PEARS procedures performed to date at the Cardiac Surgical Unit, Belfast. Twelve patients have undergone the PEARS procedure of which 2 had concomitant mitral valve repair (9 males; 3 females; median age: 37 years). All cases had evidence of aortic root dilatation. The procedure was technically successful in all cases.

Complications: 6 developed tachyarrhythmias, 3 demonstrated ST changes not in keeping with infarction, 1 developed a right coronary artery pseudoaneurysm requiring reoperation and 1 developed circumflex artery occlusion requiring bypass grafting. There were no deaths. The median total hospital admission was 8.5 days (range: 6 – 118 days).

Discussion: Although our experience thus far is limited, we demonstrate that a single centre can safely establish a PEARS programme. Our experience highlights the significant learning curve associated with beating heart dissection. Nevertheless, the PEARS procedure offers young patients the advantage of avoiding lifelong warfarin therapy whilst likely preventing further expansion of aortic root aneurysms.

Use of Subtraction PET to identify the source of recurrent sepsis after bomb blast injury - A difficult diagnosis

Dr Ben Forte

Introduction: Timely diagnosis of osteomyelitis is essential for its successful treatment but it is often difficult to recognise despite extensive radiological workup.

Case: We outline a case of recurrent sepsis over a seven year period in a patient injured by a car bomb blast and the use of an innovative imaging technique to localise two culprit foci of osteomyelitis. This was a prolonged and difficult diagnosis due to extensive shrapnel injury and associated inflammation as well as significant anatomical disruption from the blast.

Discussion: Sites of inflammation associated with shrapnel injury acted as decoys to the true foci of active infection on Fluorodeoxyglucose (FDG) Positron emission tomography/ Computed Tomography) (PET/CT) and a new technique was required to differentiate these. This involved administering a course of antibiotics between two separate FDG-PET/ CT scans and is known as Subtraction PET. Two sites of osteomyelitis were identified among 20-30 other sites of benign granulomatous inflammation and calcification. These two sites of infection were characterised by a significant drop in tracer uptake on FDG-PET/CT after a course of antibiotics while tracer uptake at the remaining sites remained relatively unchanged. This ultimately guided surgical excision of the sequestra and at follow up of two years, the patient has experienced no further septic episodes.

New Year, New You, A surge in Cosmetic Tourism in Northern Ireland

Ms Rebekah Long

Introduction: Over the new year period we recognised a high number of admissions with complications following cosmetic surgery abroad. We aimed to determine the driving forces behind this and financial impact on the NHS.

Cases: 6 patients were admitted to the regional unit after independently organising surgery abroad. Countries visited included; Turkey, Belgium, Poland, Estonia and India. Reasons included; cost and access to procedures not recommended by UK surgeon. Type of surgery included; Breast (5), abdominoplasty (2), liposuction (2), labiaplasty (1) and 50% had multiple procedures. Complications included; necrotic wounds (33%), infected breast implant (33%), VTE investigated (33%), wound infection (17%). Overall, 67% required surgery on the NHS. The estimated total cost was £23,976.82 with an average of £4000/patient.

Discussion: This surge in cosmetic complications occurred over the New Year. Complications were seen after a range of surgical procedures. All patients required an inpatient stay and 2/3 required surgery with a significant cost burden to the NHS. Patients are unaware of the risks involved, highlighted by the lack of pre-operative counselling and follow up. In addition, this series has highlighted the risks associated with travelling in the peri-operative period.

Pharyngoplasty for Speech Disorders following Brain Injury

Ms Serena Martin

Introduction: Dysarthria is one of the commonest neurological speech disorders resulting from brain injury. It adversely affects psychosocial functioning and rehabilitation due to the inability to communicate effectively. In the majority of patients, it is irreversible. It may be possible to improve the intelligibility and articulation of speech with a pharyngoplasty procedure. This procedure is more commonly performed in patients with velopharyngeal insufficiency (VPI) and a cleft palate.

Methods: Data was collected from the regional plastic surgery unit over a ten-year period. Medical records and speech and language notes were reviewed.

Outcomes; speech improvement, complications and need for surgical revision.

Results: Six patients had a pharyngoplasty. Either a Hynes or the Jackson variant of a flap pharyngoplasty were performed. The majority were male (5/6). Mean time between injury to surgery; 5-years. Overall, 83% of patients had a clear improvement in speech intelligibility and articulation. One patient experienced self-limiting sleep apnoea and one patient developed obstructive symptoms and required a revision.

Discussion: We have shown that surgical intervention is an effective method of improving speech intelligibility and articulation in patients with both traumatic brain injury and following CVA. Although speech and language therapy is the pillar of management, certain patients have the potential to benefit further from surgical intervention. The aim of this paper is to highlight this option and heighten the awareness that a pharyngoplasty has the potential to make a significant difference to the lives of patients with brain injury by restoring communication.

Isolated Chyle Leak following Blunt Abdominal Trauma

Mr Petr Polak

Introduction: Forces capable of causing chyle leak usually result in bowel and pancreatic injury. High index of suspicion required to avoid missing concurrent injuries. Only 10 reported isolated chyle leaks following blunt trauma.

Description: A 34-year-old male presented with a blunt injury to the epigastrium after falling onto the handlebar of a bicycle. On examination, he had epigastric tenderness with no evidence of peritonism. CT demonstrated a fluid collection posterior to proximal jejunum, with appearances suggestive of jejunal perforation but no free air was observed.

The patient developed worsening generalised abdominal pain 12 hours after admission. Clinical examination revealed 4-quadrant peritonism, prompting an emergency laparotomy.

At laparotomy, no free fluid was observed. Retroperitoneally, milk-coloured diffuse fluid infiltration was noted. Inspection of the duodenum, small bowel and pancreas revealed no obvious injury. Drains were placed at the tail and head of the pancreas where largest pooling of fluid. There was an uncomplicated post-operative recovery with discharge at day 6.

Discussion: Diagnostic uncertainty intra-operatively prompted an urgent radiological consult on CT imaging, suggesting pancreatic transection. Intra-operative amylase analysis of the retroperitoneal fluid guided surgical management, which would otherwise have proceeded with a distal pancreatectomy and its associated consequences.

The Impact of Patient Suicide on Psychiatric Trainees: A Psychodynamic Exploration

Dr Ruth Carville

Introduction: All psychiatrists will encounter patient suicide during their careers, however little has been written about the impact this can have on them, professionally and personally.

Aims: To examine the unconscious communications between suicidal patients and psychiatric trainees based on the trainees' lived experience. To consider how this data could be used to support trainees in their clinical practice, and inform and shape institutional processes, such as serious adverse incident reviews, as well as the training programme.

Methods: Semi-structured interviews were carried out with 3 psychiatry trainees and the material analysed using Interpretative Phenomenological Analysis (IPA).

Results: Three main themes were identified, namely "A Deep and Painful Wound", "Strategies for Survival", and "A Path to Recovery". They describe how patient suicide affected the participants personally and professionally, how their colleagues and the organisation responded to them and their thoughts about what was helpful and what could be changed in future.

Discussion: Losing a patient to suicide can be an extremely distressing, isolating and anxiety provoking experience All trainees felt that the training programme inadequately prepared them for it, and it is important that training organisations address this.

Assessment of junior doctor confident in the management of patients with tracheostomies and laryngectomies

Dr Emma Keelan

Introduction: In 2014, NCEPOD reported hospital patient care for those with tracheostomies and laryngectomies posed significant safety issues. Subsequently Intensive Care Society guidelines stipulated staff exposed to such patients be competent in managing airway emergencies. Medical patients with tracheostomies and laryngectomies are typically cared for by junior doctors yet juniors often express concern in respect to managing such patients, particularly in the emergency setting.

Aim:

1. To establish junior doctor training for tracheostomy and laryngectomy patients.
2. Evaluate junior doctor confidence in the acute and non-acute assessment of such patients.

Methods: Junior doctors attached to the acute medical and respiratory wards of a local hospital were invited to complete an online survey regarding previous training and their current confidence regarding managing tracheostomy and laryngectomy patients.

Results: Twenty-four junior doctors received the survey with 18 respondents. 55.56% reported previous undergraduate training in this area with 44.4% receiving postgraduate training. Despite this, 77.7% of respondents stated they were not confident in conducting routine reviews of patients with trachyectomies or laryngectomies. 66.6% did not feel confident in managing an acutely unwell patient with a tracheostomy/laryngectomy with 66.6% stating they were ill equipped to manage an airway emergency in such patients. Respondents felt simulation (88.8%) and clinical bedside teaching (77.8%) would improve their confidence.

Conclusion: Results indicate junior doctors working with tracheostomy and laryngectomy patients demonstrated low confidence, both in the acute and non acute management setting, an issue which may generate significant patient harm. Evidently there is a need for additional training with the authors proposing such training form a formal component of hospital induction.

Paediatrics

Dr Patrick McCrossan

Aim: To determine if students and paediatric trainee doctors level of knowledge meets a non-faculty clinician-determined minimum accepted competency (MAC).

Methods: A 30-item multiple-choice (MCQ) paper (MAC exam) was created, formed of questions proposed by practising non-academic consultant paediatricians, which are deemed as 'must know' for paediatric trainees prior to commencing clinical work.

A 'passing score' was determined using the Angoff technique by the paediatric faculty. The paper was given to undergraduate students and also paediatric senior house officers (SHO's). Student's performance on the MAC was compared with their performance on their official university examination. Test item analysis and psychometrics were also performed.

Results: The passing score was determined at 13/30 (41.2%) 366 undergraduate students participated. Mean score 45.9% (s.d 9.9%, range 23-73%). 240/366 (65.4%) of students achieved the passing score whereas 99% of these students passed their official university exam. However, positive correlation between students result in the MAC exam and results from their official university exams (spearman R=0.44. $p<0.01$).
58 paediatric SHO's sat the exam. Mean score 64.2% (s.d 11.8%, range 40-80%) significantly higher than students ($p<0.01$). We identified a pattern of consistently poorly answered questions in order to highlight areas of knowledge deficit.

Conclusion: Novel approach to assessment, enabling clinicians as propsed to academics to design the content. Students results were significantly worse on the MAC compared with their official university exam. We need to explore further if this is due to a lack of knowledge (requiring curriculum change) or unreasonable expectations from clinicians.

Managing Obstetric Emergencies: Simulation based training for non-specialty trainees

Dr Josh McMullan

Introduction: The SHO rota (first on call) in most hospitals is staffed mainly by GP specialty trainees or Foundation doctors on rotation. They are required to attend obstetric emergencies whilst on call. This can be a daunting experience as there is limited postgraduate training for non-specialty trainees in O+G.

Aims: Improve training, confidence + competence for all non-specialty trainees in managing obstetric emergencies.

Methods: An afternoon of simulation based training was held for all junior doctors currently working in O+G within the SEHSCT. Scenarios included shoulder dystocia, Post-Partum haemorrhage, maternal collapse and eclampsia. A questionnaire was completed by all delegates pre and post training.

Results: All delegates reported a significant increase in confidence to manage obstetric emergencies for all scenarios post training.

Discussion: Working within O+G can be a daunting experience for non-speciality trainees covering the SHO rota. This programme has shown that simulation based training in managing obstetric emergencies not only will improve the clinician's confidence and competence but also will improve patient safety.

Antibiotic Prescription in Acute Cholecystitis and Cholangitis

Dr Lará Armstrong

Problem: The poor compliance to local guidelines for antibiotic prescription in acute cholecystitis and cholangitis.

Strategy for change: A 3 week prospective review of antibiotic prescription in all patients admitted with suspected or confirmed acute cholecystitis or ascending cholangitis. 22 patients admitted within audit window, 18% of which received correct antibiotics. Teaching delivered to surgical team on current antibiotic guidelines and appropriate escalation, information posters displayed in ED and wards and guidelines included in trust induction pack.

Measurement of Improvement: Following education on correct prescription, further audit period carried out. 25 patients admitted with suspect or confirmed diagnosis, 84% of which received correct antibiotic therapy as per local guidelines.

Effects of change: Correct education to surgical and emergency department staff led to an improvement of 66% in compliance to local antibiotic guidelines.

Discussion: Acute cholecystitis and cholangitis are some of the most common presentations on the acute surgical ward, with the mainstay of treatment being intravenous or oral antibiotic therapy, IV fluids and analgesia. Correct antibiotic therapy can ultimately lead to improved patient safety and avoid future potential antibiotic resistance.

Are you M.F.D?

Ms Catherine Eves

Problem: Preparing accurate discharge documentation is a central aspect of good clinical practice in accordance to guidelines outlined by SIGN. Seeking clarification regarding a patient's medications, follow up and correct diagnosis is a common, time-consuming frustration for F1 doctors upon discharge.

Strategy for change: A commonly used acronym, 'MFD' – 'Medically Fit for Discharge' was modified to 'Medications, Follow up, Diagnosis' as an aide memoire. We aimed to improve the inclusion of 'MFD' information in the notes/kardex by 50%.

Measurement of Improvement: F1s completing discharge letters collected 'MFD' data from 100 patients. Baseline data was recorded and two PDSA cycles implemented; Cycle 1 – presentation delivered at departmental teaching and Cycle 2 – posters outlining MFD placed at ward level.

Effects of change: At baseline, 20% of discharge letters had 'MFD' documented without need for further enquiry. Following PDSA cycles 1 & 2, full documentation was 54% and 62% respectively, representing a 210% improvement from baseline.

Discussion: The MFD acronym use increased significantly following simple interventions.

Follow-up information was the most commonly omitted.

Scope for further improvement includes: Qualitative data regarding time improvement for F1s comparison of consultant diagnosis versus immediate discharge summary diagnosis.

A decade-long journey reducing Catheter Related Bacteraemia (CRB)

Dr Éadaoin Hannon

Problem: For vascular access in haemodialysis (HD) the mantra is 'arteriovenous fistula first' as one benefit is a reduction in bacteraemia incidence. However, a significant proportion of the HD population require a central venous catheter (CVC) for dialysis. Thus, the morbidity and mortality associated with CRB is a relevant and preventable problem.

Strategy for change:
2009-11: Improved documentation to facilitate prospective monitoring of CRB rates.

2011: Antimicrobial catheter locks implementation.
2012: Monthly infection MDT meetings.
2016: Visual CVC score streamlined to increase detection of exit site infection (a CRB precursor).
2016: A 'DRESS' survey implementation to ensure exit site covered.
2016: Process for swab result review.

Measurement of Improvement: CRB rates are quoted between 0.6 – 6.5/1000 catheter days in international studies. Prior to practice change, our unit CRB incidence was 0.41/1000 catheter days. Present incidence is 0.17/1000 catheter days representing a >50% reduction.

Effects of change & Discussion: Introduction of antimicrobial catheter locks produced the most significant impact on CRB rates however; it has been the establishment of a collaborative quality improvement culture within the Ulster Renal Unit that has sustained improvement. Meaning for patients, the chance of getting a CRB is 3.5 times less than the lowest rate quoted in the literature.

CTPA Quality Improvement Project

Dr Ronan Lambon

Problem: The gold standard for diagnosis of acute pulmonary embolism (PE) is radiological investigation with Computed Tomography Pulmonary Angiogram (CTPA). Patients undergoing CTPA examinations receive a full volume CT scan of the chest (lung apices to extreme bases) which, after reviewing literature, is unnecessary and leads to higher than necessary radiation doses to the patient.

Strategy for Change: Audit current practice to find out radiation dose to patients having CTPA examinations and ascertain whether important diagnoses would be missed by the introduction of a truncated scan range from aortic arch to base of heart.

Measurement of Improvement: Re-audit after the implementation of the truncated scan range to see if there is a significant reduction in radiation dose to the patient.

Effects of change: Reducing the scan range form aortic arch to base of heart results in an average dose reduction of 56% to the patient whilst still being able to accurately diagnose acute pulmonary embolus.

Discussion: With increasing requests for CTPA studies, using the principle to keep radiation dose 'as low as reasonably possible', a reduced scan range can help to reduce radiation dose to patient whilst still maintaining diagnostic accuracy.

Improving patient safety in the peri-operative period "5 steps to safer surgery".

Mr Scott Matthews

Problem: No pre or post list briefs were being performed in the RVH trauma theatres

Strategy for change: A formal pre-list brief and post-list debrief was implemented into two orthopaedic operating theatres over a 2 week period (January 2019). All operating lists were included (15 lists). A post-implementation survey was performed assessing impact (n=17).

Measurement of improvement: The initial audit identified non-adherence to mainland policy of pre and post list briefs. All staff surveyed before introduction of pre-list briefing felt it would improve communication, patient safety, staff morale and theatre efficiency thereby advocating its introduction. Resurveyed staff confirmed improvement of each factor by 65%, 47%, 53% and 53% respectively.

Effects of change: Furthermore >75% staff surveyed before introduction of post-list debriefing felt it would aid identification of issues and improve communication, which on resurveying equated to and improvement 59% and 71% respectively.

Discussion: Our initial audit highlighted non-adherence of NPSA guidance. This project supports the implementation of pre and post list briefing. They take minimal time and can save significant time overall, reducing delays and identifying issues early.

Fit Families for the Future: Addressing The Gap In Paediatric Obesity Services

Dr Anne-Marie McClean

Problem: 25% of N.Ireland's children are overweight/obese but there has been a lack of specialist services to support children with BMI> 98th centile achieve a healthier weight.

Strategy for Change: We launched N.Ireland's first multidisciplinary paediatric obesity service in May 2019. Children are referred from school nurses, general practitioners and paediatricians. Families are invited to participate in holistic assessment by a paediatrician, physiotherapist, associate psychologist and dietician.

Measurement of Improvements: Outcome measures including BMI, 6-minute walk test, grip strength, blood pressure, dietary history and quality-of-life are assessed at baseline, 3,6 and 12 months. Parents/siblings also have their weight/BMI monitored. Personalised family plans are co-produced. Treatments include educational evening classes and/or one-to-one input from dietetics/physiotherapy/psychology.

Effects of Change: Currently 30 children (4-16 years) have attended multidisciplinary assessments and are in the treatment phase. 8 families completed the first 5-week cycle of evening classes. Attendance averaged 73%. 75% (6/8) reduced their BMI including one family who collectively lost >12kg. One child's BMI increased, and another's remained static.

Discussion: After positive family feedback we have extended our evening programme to 6-weeks, introduced appointment text reminders and developed a more extensive outreach programme with local councils. We are excited to recruit more

families and develop a sustainable business plan for this gap in paediatric services.

Paediatric burns assessments: Is there anyone in the building?

Ms Abigail Nelson

Problem: Paediatric burns referred to Plastic Surgery are often given an appointment within the week to attend Paul Ward (RBHSC) for assessment. Plastics trainees are not always scheduled to work in RBHSC however, and the closest staff are in the Burns Unit (RHV). Trainees there manage the ward, admissions, theatre and clinics and so leaving is difficult.

Strategy for change: The aim was to encourage appointments to be made on days where staff work in RBHSC. Weekly rota was not being sent to staff nurses, and there were issues in interpreting it.

Interventions:

- Ensuring rota sent to ward staff
- Teaching session to Plastics trainees
- Ensuring ward staff understand rota

Measurement of Improvement: Change measured by percentage of days medical staff were required that they were scheduled to be in RBHSC.

Effects of change: In February 2019 staff were present on 16% of the days they were required, rising following interventions to 88% in June 2019.

Discussion: It is not realistic to achieve 100%, as emergency admissions should not be delayed. However where there is flexibility it is better for patient and staff if assessments can be carried out promptly.

QI Project: To improve adherence to DVLA guidance in T&F hospital Acute inpatients ward

Dr Vivian Sing

Problem: Patients with certain mental health diagnosis are required to inform DVLA of their diagnoses and refrain from driving. It is medical professionals' responsibility to advise patients to adhere to DVLA guidelines. Patients can be fined up to £1000 if they failed to inform DVANI of their medical condition.

Strategy for change: Cycle 1 – baseline and review guidance; Cycle 2 – medical staff education and developed driving advice pathway and patient leaflet; Cycle 3 – admin staff was involved for putting driving advice pathway in admission pack; Cycle 4 – medical staff was educated again regarding importance of documenting electronically.

Outcome: Completeness of driving advice given to consecutive patients discharged from T&F hospital from April 2019 to early August 2019 in % Process: Document in electronic and written notes on following - (1) has driving status been asked (2) has patient been advised to inform DVA if required (3) has patient been advised likely how long he/she is to refrain from driving for.

Effects of change: After cycle 3, there was an increase of mean of 25% completeness of driving advice to over 90%.

Discussion: This QI project has shown improvement in the completeness of driving advice given. Further cycles are to be completed to obtain patient feedback.

Corticosteroid-Induced Hyperglycaemia: Anticipate, identify, treat!

Dr Catherine Stewart

Problem: 50-70% of hospitalised patients without a formal diagnosis of Diabetes Mellitus will develop corticosteroid-induced hyperglycaemia. An audit cycle conducted on an inpatient respiratory ward identified deficiencies in recognising and treating this common, but important complication of steroid therapy- some 90% of clinical episodes failed to comply with national and trust guidance.

Strategy for change: A PDSA cycle was employed to address this issue, with focus placed upon 3 key areas:

- Multi-disciplinary educational seminars
- Changes in ward-based documents
- Enhancing accessibility of guidelines through poster displays.

Measurement of Improvement: Closed loop audit cycle (n=140) of blood sugar monitoring frequency, HBa1c measurement and implementation of appropriate hyperglycaemic therapy compared with national standards.

Effects of change: Universal improvements in audited standards with >90% of patients on appropriate monitoring regimes and >50% receiving appropriate hyperglycaemic therapy.

Discussion: Corticosteroids are employed by physicians in a variety of clinical circumstances. Corticosteroid-induced hyperglycaemia is a common but often overlooked side effect, with important implications for inpatient morbidity and mortality. National and Hospital Trust guidance is readily accessible but requires multi-disciplinary engagement for effective implementation.