Utilising a 4f sheath first approaching the percutaneous management of lower limb peripheral vascular disease

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**Background**
Large sheaths (>6f) are associated with increasing risk of groin complication and lower limb ischaemia the latter more common if vascular closure device is used. Therefore smaller sheath size i.e. 4f should lead to lower complications. However there is little evidence on the use and safety of a 4f sheath first approach in lower limb intervention.

**Methods**
All patients undergoing lower limb angioplasty were extracted from a prospectively maintained database. The use of 4f sheath, need to upsize, procedure type and major groin complications were recorded.

**Results**
Between Nov 2013 to December 2017, 234 patients underwent percutaneous lower limb intervention. All punctures were done under ultrasound guidance. 191(80.6%) limb procedures were completed only with a 4f sheath with 48 retrograde and 143 antegrade punctures treating iliac and infra-inguinal disease. The need to upsize sheath was due to need for stenting mainly in iliac disease and for successful retrograde infra-inguinal angioplasty. There was 1 retroperitoneal haematoma and 2 groin haematoma all of which were managed conservatively in patients with 4f sheath with a groin complication rate of 1.6%. In the larger sheath usage, there was 1(2.3%) groin complication. In 12/43(27.9%) patients, vascular closure devices were used. There were no recorded incidences of acute limb ischaemia secondary to groin complications.

**Conclusions**
A 4f sheath first approach allows endovascular procedures to be performed in 80% of patients including iliac and infra-inguinal lesions with low groin complications and without the need for closure devices with both financial and patient benefit.
Local and national experience of spinal drainage in complex TEVAR: Is it time for UK guidelines?

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Spinal cord drainage (SCD) is used for spinal cord protection during complex TEVAR but is not without risk. No national guidelines exist. We present our experience of SCD in a centre with increasing experience in complex TEVAR and a survey of anaesthetists in UK involved in complex aortic procedures.

A review of prospectively collected local data demonstrating our experience of prophylactic and rescue SCD was performed. An electronic survey was sent to members of Vascular Anaesthesia Society of Great Britain and Ireland to interrogate practice at individual centres regarding the placement and usage of SCD.

Locally, 33 TEVARs were performed of which 11 had SCD with a standardised interdisciplinary protocol (mean age 69, 91% male). 91% were placed preoperatively with mean thoracic aortic coverage of 289mm (4 had prior frozen elephant trunks and 3 had carotid subclavian bypass). 3 rescue drains were placed with 2 patients having little reduction in functional outcome on discharge, 1 had complete lower limb paralysis. There was no morbidity or mortality associated directly with SCD.

Nationally, 20 of 24 responding sites used selective SCDs on day of surgery, the majority of which were inserted by anaesthetists. There was variation regarding CSF drainage pressures, duration and haemodynamic goals.

Selective SCD in our unit appears safe. High suspicion of post-op spinal cord ischemia must be maintained to ensure early insertion of rescue SCD by trained anaesthetist/neurosurgeon to try to optimise outcomes. There is national variation in many aspects of management of SCD. National guidelines are required.
Systematic review and meta-analysis of very urgent carotid intervention for symptomatic carotid disease

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Background
The optimum timing of carotid intervention for symptomatic carotid stenosis remains unclear. This systematic review and meta-analysis aims to examine the current evidence of the outcome of very urgent (within less than 48 hours of neurological event) intervention.

Method
A systematic literature review of randomised controlled trials and observational studies reporting periprocedural outcomes of carotid intervention in relation to the length of time since the neurological event was conducted. Comparative outcomes were calculated and reported as dichotomous outcome measures using the odds ratio (OR) and associated 95% confidence interval (CI) for very urgent (<48 hours since neurological event) versus urgent (>48 hours) intervention. We calculated combined overall effect sizes using random effects or fixed effect models.

Results
Thirteen observational studies, representing 5751 interventions, were included in the meta-analysis. Very urgent (<48 hours) carotid intervention were associated with increased risk of stroke within 30 days of treatment compared with urgent (>48 hours) carotid intervention (OR 2.17, 95% CI 1.54-3.06, P<0.001). No significant difference was found in mortality within 30 days (OR 1.46, 95% CI 0.77-2.77, P=0.24), transient ischaemic attack (TIA) within 30 days (OR 1.18, 95% CI 0.51-2.70) or myocardial infarction (MI) within 30 days (OR 1.34, 95% CI 0.42-4.26, P=0.62) between very urgent and urgent carotid intervention.

Conclusions
Very urgent carotid intervention was associated increased risk of stroke. Higher level evidence from randomised controlled trials is needed to confirm these results.
An audit of totally percutaneous EVAR (pEVAR) for Abdominal Aortic Aneurysm

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Introduction

Percutaneous EVAR, (PEVAR), has been an important refinement of EVAR with reported associated benefits including reduced morbidity and shorter hospital stay. The aim of the present study was to evaluate outcomes of percutaneous EVAR following commencement of this technique in our institution.

Method

A study of consecutive patients undergoing percutaneous EVAR in a tertiary vascular centre following a switch to totally percutaneous EVAR using the perclose Proglide device.

Results

166 patients, (148 male and 18 female), from a single centre underwent PEVAR between March 2015 to August 2017. 134 elective cases were included: 82 ‘standard infrarenal EVAR’, 45 fenestrated EVAR (FEVAR), 3 branched EVAR (BEVAR), 4 thoracic EVAR (TEVAR). 32 emergency PEVAR were performed. The average sheath size for right groin access was 16Fr, and 14Fr for left groin access. The majority (>96%) were completed totally percutaneously, with only 7 patients requiring cutdown for arterial closure. One patient developed an SFA stenosis requiring vein patch repair, one suffered a CFA occlusion requiring bypass. Mean hospital stay for elective PEVAR was 5.2 days, for emergency EVAR was 11.5 days. 5 patients died (4 emergency, 1 elective). 2 deaths occurred within 24-hours of surgery and 3 within 30 days of EVAR.

Conclusion

The current audit demonstrates that PEVAR appears to be a safe alternative to open groin access for EVAR, and is feasible in both standard and complex aortic repair using EVAR. PEVAR appears to offer an added benefit of shortening length of stay.
Outcomes in type-B aortic dissection: A time for change in the management of Acute Aortic Syndrome (AAS) and the development of a trainee led UK-AAS registry

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Background
Acute Aortic Syndrome (AAS) is associated with high pre-admission and in-hospital mortality, despite advances in treatment and centralisation of services. There is significant national variation in the management, treatment and follow up of AAS. To illustrate deficiencies in current practice we reviewed outcomes of patients presenting with acute type B aortic dissection (TBAD) at a large tertiary vascular unit.

Methods
We retrospectively reviewed outcomes and management strategies in patients with TBAD at a single hospital trust identified by searching local electronic records from 2007 onward.

Results
221 records were reviewed from 2007 onwards. 23 patients were found to have TBAD. Average length of stay was 9 days. 17% underwent aortic intervention. 13% of patients were re-admitted within 30-days of discharge. 52% suffered a major complication. Maximal aortic diameter increased from 34mm to 67mm over a mean of 55 months. Patients were followed up on average for 53 months. All-cause mortality was 30% at 12-months. Patients were managed in multiple locations throughout the hospital by multiple different specialities with no clear management strategy.

Conclusion
Current pathways of care are vague and coding is often incorrect, making any meaningful retrospective analysis impossible. In response to this, the UK-AAS registry has been designed to establish a trainee led study to accurately document current variation in provision of care and management of AAS and its relation to outcomes. This will be the first multicentre collaborative study investigating the true incidence of AAS and contemporaneous management of the condition around the UK.
The use of 18-Fluorine Fluorodeoxyglucose Positron Emission Tomography (18F-FDG PET) scan for the detection of vascular prosthetic graft infections (VPGI): A diagnostic test accuracy meta-analysis

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\textbf{Background:} Vascular prosthetic graft infection (VPGI) is usually suspected by clinical findings (raised inflammatory markers and cultures) and confirmed by a graft biopsy. If not diagnosed in a timely manner, VPGI can lead to amputation or even death. This systematic review investigates the use of 18-Fluorine Fluorodeoxyglucose (18F-FDG) Positron Emission Tomography (PET) scans to diagnose VPGI, as inflammatory cells have a higher glucose-uptake than normal cells.

\textbf{Methods:} We performed a literature search for the use of 18F-FDG scans to diagnose VPGI. Methodological quality was assessed using the QUADAS-2 tool. Sensitivity and specificity were calculated, and receiver operating characteristics curves were produced using a mixed-effects logistic regression model.

\textbf{Results:} We identified 12 studies reporting a total of 433 vascular graft prostheses. 5 different methods of assessment of the index test were used. The pooled sensitivity and specificity were 0.89 (95% CI 0.73 to 0.96) and 0.61 (95% CI 0.48 to 0.74) respectively for graded uptake, 0.93 (95% CI 0.83 to 0.97) and 0.78 (95% CI 0.53 to 0.92) for focal uptake, 0.98 (95% CI 0.42 to 0.99) and 0.80 (95% CI 0.70 to 0.88) for maximum standard uptake value, 0.57 (95% CI 0.39 to 0.73) and 0.76 (95% CI 0.64 to 0.85) for total background ratio and 1.00 (95% CI 0.48 to 1.00) and 0.88 (95% CI 0.68 to 0.97) for dual-time point.

\textbf{Conclusions:} 18F-FDG PET scan has a high sensitivity and specificity in the detection of VPGI. This might decrease the need for invasive interventions to diagnose VPGI.
Poster 7

Decision making for Abdominal Aortic Aneurysms in women

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Background
Current evidence suggests that women fare worse after aortic surgery than men, possibly due to associated co-morbidities and unfavourable anatomy. However, there is a paucity of evidence as to why women with an Abdominal Aortic Aneurysm (AAA) may not be offered surgery.

Method
We reviewed the records of 98 consecutive female patients with an AAA, discussed at the weekly Multi-Disciplinary Meeting (MDT) of a tertiary referral centre, between January 2013 and December 2016. The outcome of the MDT, any surgery the patient underwent as well as the reasons for no surgery were recorded.

Results
A total of 98 female patients with a median age of 81 years (range: 25-94) were included; median AAA size was 6.0cm (3.0 - 8.8cm). Overall, 70 infrarenal, 25 juxtarenal, and 3 suprarenal AAAs were identified. Thirty-six patients had no adverse morphological features seen on CT angiogram.
Nine patients underwent elective open repair, 23 endovascular repair and 66 had no surgery. Of those who did not have surgery, 19 were below treatment threshold, 16 patients refused intervention, and 34 were deemed unfit. In 28 patients adverse morphology precluded endovascular repair; 22 of these patients had concurrent co-morbidities which led to a decision for conservative management.

Conclusion
The decision to not offer surgery was often multi-factorial, but in the majority multiple co-morbidities deemed the patient unfit for surgery, even in the presence of adverse morphology. Identifying female patients with AAA earlier may allow successful repair before age and/or co-morbidities prohibit surgery.
Single centre experience with the Aptus Heli-FX EndoAnchor System in the management of aortic aneurysms

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Background:
There is early encouraging evidence from the ANCHOR registry that EndoAnchors can be used as a primary adjunct or secondary therapeutic modality in prevention and treatment of type 1 endoleaks respectively. We describe our experience with the technique.

Methods:
We reviewed all cases using Aptus Heli-FX EndoAnchors in the management of aortic aneurysms at our institution. Indications for insertion were recorded whilst follow-up imaging was studied to determine treatment success and longevity.

Results:
EndoAnchors have been utilised in 14 cases. A “primary” cohort of 6/14 patients underwent adjunctive EndoAnchor implantation during initial EVAR. A “revision” cohort of 6/14 patients used EndoAnchors after primary EVAR to treat type 1a endoleaks or prevent device migration. 3 of the revision cohort used EndoAnchors alone, whilst 2 cases combined EndoAnchors with ChEVAS and 1 combined EndoAnchors in a FEVAR main body with renal stent relining. The remaining cases used EndoAnchors to secure short landing zones during TEVAR. Number of EndoAnchors per case ranged from 2-10. There was no procedure-related aneurysm rupture. Follow-up (range 1-12 months) of primary cases showed no evidence of type 1 endoleak or subsequent re-intervention. One revision case demonstrated persistent type 1a endoleak after treatment whilst one EndoAnchor maldeployed but was safely caged by ChEVAS endobag.

Conclusion:
Early data suggests EndoAnchors are versatile with a range of potential indications. Used, alone or in combination with other techniques they are a safe and effective method to prevent type 1a endoleaks in adverse neck anatomy and in treatment of late endograft migration.
Surgeon modified stent graft: Feasible endovascular bailout in emergency!

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**Introduction:** On-site surgeon modification of endovascular grafts is an alternative endovascular platform to manage a range of vascular conditions when off-the-shelf stent-grafts are not available and urgent intervention is necessary.

**Background:** 66 years old female presented to our unit 2015 with tender pulsatile swelling in her left groin. Past medical history of SLE, TIA, MI and aortic endarterectomy for aortic occlusion secondary to arteritis in 1982 and recurrent aortic occlusion 1983, that she had Thoracic aorta to bilateral Superficial Femoral arteries bypass with Dacron graft. On Admission she had a CTA showed left graft-SFA pseudoaneurysm 69x49mm and blocked right limb of the graft, as well showed the right leg perfused through retrograde flow from left CFA through native CIAs to right femoral vessels. She was high-risk patient for open surgical repair.

**Method:** Retrograde puncture of left SFA used to deploy a Surgeon modified EVAR limb 9X90 with postero medial fenestration to accommodate 10X38 mm covered stent. The EVAR limb relined the Left SFA to Dacron graft and the fenestration deployed to face the native left CFA.

**Results:** Satisfactory completion angiographic result was obtained. At 3-month follow up, USS duplex shows resolution of the pseudoaneurysm and she has resumed her activates of daily living. A follow up CTA done in November 2016 showed patency of the stents and thrombosis of the pseudo aneurysm.

**Conclusion:** Surgeon modified stent grafts can extend stent-graft technology to treat a wide range of vascular conditions when off-the-shelf grafts are not available and open repair is unfavourable.
Onyx syndrome post embolization for Type II endoleak!

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**Background:** Onyx is a non-adhesive non-absorbable permanent embolic liquid approved for the embolization of a variety of vascular conditions. Systemic complications are rare and limited to case reports post embolization of cerebral Arterio-Venous Malformations, with no described literature in complications after onyx embolization for type II endoleak. Symptoms reported are adverse pulmonary reactions that can include transient hypoxemia during embolization, pulmonary oedema and the development of ARDS.

**Case:** We present a case describing pulmonary, renal and liver complications following use of Onyx for a type II endoleak. Patient was found to have a type II endoleak causing sac expansion. He underwent embolization with 18cc Onyx-34 to a left ilio-lumbar artery and aneurysm sac with a satisfactory result. Over the week after the procedure, he developed shortness of breath, peripheral odema, peri-oral parathesia, pruritis and a sickly-sweet body odour. Blood tests showed elevated creatinine levels as well as elevated alkaline phosphatase and gamma-glutamyl transpeptidase levels. Follow-up CTA showed evidence of bilateral moderate pleural effusions and signs of pulmonary oedema (hepatic reflux). He was managed conservatively and symptoms subsided spontaneously over 8-week period. At 8 months follow up, his liver and kidney functions were all back to normal and symptoms were resolved completely.

**Conclusion:** To our knowledge this is the first case report describing the renal, liver and pulmonary complications related to use of Onyx embolization in type II endoleak. Following onyx embolization, although rare, systemic complications should be considered to allow prompt detection and management of any physiological insult.
Meta-analysis and trial sequential analysis of local versus general anaesthesia for carotid endarterectomy

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Background: Controversy exists regarding the best choice of anaesthetic for carotid endarterectomy. We aimed to evaluate the peri-operative outcomes of local anaesthesia versus general anaesthesia for carotid endarterectomy.

Method: We conducted a systematic search of electronic information sources and applied a combination of free text and controlled vocabulary searches.

Results: We identified 12 randomised controlled trials and 21 observational studies reporting a total of 58,212 patients undergoing carotid endarterectomy under local anaesthesia or general anaesthesia. Analysis of observational studies demonstrated that local anaesthesia was associated with a significantly lower incidence of stroke (mean (SD) OR 0.66 (0.55-0.80), p<0.0001), transient ischaemic attack (OR 0.52 (0.38-0.70), p<0.0001), myocardial infarction (OR 0.55 (0.41-0.75), p=0.0002), and mortality (OR 0.72(0.56-0.94), p=0.01) compared with general anaesthesia. Analysis of randomised controlled trials did not find any significant difference in the risk of stroke (OR 0.92 (0.67-1.28), p=0.63), transient ischaemic attack (OR 2.20 (0.48-10.03), p=0.31), myocardial infarction (OR 1.25(0.57-2.72), p=0.58), or mortality (OR 0.61(0.35-1.05), p=0.07) between local anaesthesia and general anaesthesia. On trial sequential analysis of the randomised trials, the Z-curve did not cross the alpha-spending boundaries or futility boundaries for stroke, mortality and transient ischaemic attack, suggesting that more trials are needed to reach conclusive results.

Conclusions: Our meta-analysis suggests that the use of local anaesthesia during carotid endarterectomy may be associated with lower peri-operative morbidity and mortality compared to general anaesthesia. Although randomised studies have not confirmed any advantage for local anaesthesia, possibly due to lack of pooled statistical power in these trials.
The introduction and evolution of an innovative endovascular device for venous arterialisation: A systematic analysis of current practice

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Introduction The regulation and evaluation of innovative surgery and novel devices is very different to that required for new drugs. Understanding the current situation will inform future developments in standardisation of innovation reporting. Venous arterialisation is a novel procedure used to treat patients with chronic limb threatening ischaemia (CLTI). This study is an in-depth analysis of methods used to introduce and modify venous arterialisation and a CE marked endovascular device, LimFlow (Paris, France).

Methods Systematic searches in Medline, EMBASE and Pubmed databases identified all clinical studies in English reporting venous arterialisation. Data about study design, rationale for use of novel procedure, components of the procedure and co-intervention, outcomes, and governance arrangements were recorded.

Results Searches identified 262 abstracts; 21 full-text papers were included (4 case reports, 11 case series, 5 cohort studies, 1 non-randomised study). 4 studies gave no inclusion criteria. The other 17 included patients in whom standard revascularisation approaches were not feasible for CLTI, but diagnostic methods identifying these patients varied. Only 24% (5/21) studies described more than half of the standardised components of the procedure. Co-interventions (e.g. anaesthesia or heparin administration) were inconsistently reported. The most commonly reported outcomes were amputation (100%, 21/21) and wound/ulcer healing (52%, 11/21), although definitions varied. Ethical approval was reported in 14% (3/21).

Conclusion It is not possible to reliably assess the safety and efficacy of this technique for treatment of patients with CLTI at present. Reporting of surgical innovations must be standardised to allow quality evaluation of new procedures/devices.
**Poster 13**

Carotid - Subclavian Bypass (CSB) - Is routine Trans-Cranial Doppler (TCD) indicated to reduce neurological adverse events?

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CSB is performed to increase landing zone for TEVAR and ensure collateral spinal perfusion. However this carries risk of stroke (1-10%) the mechanism for which is unclear. Literature suggests routine shunting is unnecessary. We present our experience of using TCD for cerebral protection in CSB.

The results of CSB from 2014 at a University Hospital undergoing CSB with TCD and the need for intraoperative carotid shunting and post-operative monitoring were analysed, along with assessment for possible risk factors.

8 patients with mean age 70 (50-84), 88% male were included. All were treated for hypertension and 50% for hypercholesterolaemia, none were current smokers. 2 patients had prior history of cerebrovascular events and all were on dual antiplatelets perioperatively. 4 (50%) had bilateral mild (20-40%) ICA stenosis, 1 patient had a mild plaque on the left ICA with normal right ICA. All patients had bilateral antegrade vertebral artery flow. All but one patient had perioperative TCD (patient had no TCD window). Two (25%) were noted to have a significant drop in perfusion upon carotid cross-clamping and were shunted intraoperatively (Pruit shunt) with no neurological sequale. No post-operative embolisation was seen. One patient with no TCD window had a post-operative TIA.

Carotid cross clamping can result in a reduction in cerebral perfusion in some patients. If the mechanism for perioperative stroke is hypo-perfusion, then CSB with TCD may enhance the safety profile of this procedure by allowing selective shunting. Further research into CSB perioperative stroke aetiology will enhance our understanding of this area.
Background: Renal artery aneurysm (RAA) is a rare clinical entity with an incidence rate of 0.1%. Clinically, only one-third of patients are symptomatic and studies suggest that aneurysm growth rate is slow. However, in cases of an acute rupture, mortality is 10%. Elective management of RAA is only recommended if the size is >2cm in diameter.

Methods and Result:
We report a case of a 77-year old frail lady presenting with symptomatic anaemia to the physicians who was diagnosed with a ruptured renal artery aneurysm with associated retroperitoneal haematoma on CT angiography. Due to patient’s haemodynamic instability and medical frailty, decision was made to manage this endovascularly. Digital subtraction angiography (DSA) confirms a 7 x 5 cm left renal artery aneurysm. The ruptured RAA was successfully embolized with 10 concerto coils and an AMPLATZER plug. The patient regained haemodynamic stability and post-operative duplex confirms thrombosis of the ruptured left RAA.

Conclusions: There is currently no established consensus regarding management of a ruptured RAA. But, Endovascular approach such as in this case has proven to be a safe and effective treatment option particularly for medically unfit patients with haemodynamic compromise.
Open versus endovascular intervention for chronic mesenteric ischaemia: A systematic review

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Background: The management of chronic mesenteric ischaemia (CMI) remains controversial. The 2 primary treatment options include endovascular (EV) intervention via stenting or angioplasty or open revascularization (OR).

Methods: 2 independent individuals performed a literature search using the listed keywords and MESH terms using Medline and Embase. A standardised proforma was then used for data collection. Primary outcome measure was 30 day mortality. Secondary outcome measures were peri-operative morbidity / mortality and primary / secondary graft patency at 1 year.

Results: 293 articles were identified from the literature search, of which 14 were selected as appropriate for the systematic review. None of these were randomised control trials. Only 1 study showed a statistically significant advantage for EV over OR in terms of 30 day mortality. 2 studies reported significantly better cardiac or neurological morbidity following EV and 1 study reported significantly worse cardiac morbidity following EV. Primary and secondary graft patency at 1 year were superior in the OR treatment group. Hospital length of stay was increased in the OR treatment group.

Conclusions: There is no clear benefit in terms of 30 day mortality or morbidity with either EV or OR intervention for CMI. Though hospital length of stay was increased with OR, primary and secondary patency data were much superior in the OR group, suggesting better long term outcomes, disease free survival, quality of life and reduced need for re-intervention. There is a need for higher quality data to make more robust conclusions.
Endobag separation- An ominous sign after endovascular aneurysm sealing with the Nellix device

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Background
Aneurysm rupture after Nellix endovascular aneurysm sealing (EVAS) system is a rare entity with only few cases reported in the literature. We hereby report a unique case of aneurysm rupture following EVAS describing endobag separation as an ominous imaging sign.

Clinical Case
63-year-old man underwent EVAS with the Nellix device (Endologix, Inc, Irvine, Calif, USA) to treat a 5.4cm abdominal aortic aneurysm (AAA) in March 2014 with instructions for use (IFU). Post-EVAS surveillance computed tomographic angiography (CTA) in 2014 and 2015 demonstrated satisfactory position of the stent graft. Subsequent surveillance CTA in 2016 and 2017, revealed a 13mm and 20 mm caudal migration of the device respectively, and a slight increase (3mm) in aneurysm sac size, but no evidence of endoleak or bag separation. It was decided to treat patient expectantly. In June 2017, patient developed new onset of atrial fibrillation (AF) and left lower quadrant abdominal pain. CTA showed enlargement of the aneurysm sac (66mm), separation of endobags and peri-aortic fat stranding with no evidence of retroperitoneal haematoma, rupture or bowel pathology. The patient developed increasing abdominal pain and fast AF while awaiting aneurysm repair. Laparotomy showed a large retroperitoneal hematoma and aneurysm rupture. The Nellix device was explanted and aneurysm repaired with tube Dacron graft.

Conclusion
Our report aims to alert physicians performing endovascular aneurysm sealing with Nellix endoprosthesis to the risk of rupture when endobag separation is noticed on computed tomography. Endobag separation when seen with acute presentation with abdominal pain is an indicator of imminent rupture.
Type A aortic dissection with visceral malperfusion; should malperfusion be treated prior to central aortic repair? A systematic review and summary of best evidence

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**Background:** Type A aortic dissection (TAAD) is complicated by visceral malperfusion in around 3% of cases. It may be treated in a number of ways; firstly the central aortic repair itself may lead to spontaneous resolution. Secondly fenestration of the side branch may be attempted. Thirdly extra-anatomic bypass grafting can be used to re-perfuse the affected organ(s). Previous published series have reported rates of spontaneous resolution in lower extremity malperfusion of around 90%. In visceral malperfusion this proportion is much lower, around 20%. The research question was: In patients with acute TAAD and pre-operative visceral malperfusion, does treating the malperfusion prior to central aortic repair reduce mortality?

**Methods:** The English language literature published between 1990 and 2017 was searched using HDAS (Healthcare Databases Advanced Search, www.hdas.nice.org.uk) (Medline and EMBASE). We included original studies reporting at least 10 cases of TAAD with visceral malperfusion, where survival data and the management strategy are described.

**Results:** Of 520 relevant titles and abstracts identified, 21 full texts were included in the final review. Studies were largely heterogeneous. Studies are described, with outcomes compared. Overall mortality for patients is high. It is unclear whether pre-operative re-perfusion procedures improve mortality.

**Discussion:** Management differs between centres. Level of evidence is low, most studies are case series and most are not randomised. Endovascular reperfusion may decrease mortality, however it is unclear whether pre-operative reperfusion is superior to post-operative or hybrid procedures. This review was registered as follows - PROSPERO 2017: CRD42017079516.
Exploring factors influencing outcome in Thoracic Endovascular Aortic Repair [TEVAR]

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Introduction
Thoracic endovascular aortic repair [TEVAR] is an alternative to traditional open surgery for the repair of thoracic aortic pathology. It is less invasive and studies have suggested it may reduce mortality and morbidity. However, this procedure is expensive and has a limited long-term evidence base. The primary challenge is predicting long term benefits. This retrospective study aims to identify factors that may influence all-term outcome following TEVAR.

Methods
A database of all patients who have undergone TEVAR is held by the vascular unit at UHS. This cohort contains 80 separate surgeries performed between March 2003 and September 2017. The database was expanded to include additional demographic and aortic morphological variables. Initial data screening was performed for univariate significance. Kaplan Meier survival curves were constructed comparing groups of significance. p<0.05 was considered significant.

Results
The mean age of patients was 68.9 years (n=80, SE=1.76). Mean aortic diameter 55mm [range 25-130]. 62% of cases were “Emergency” or “Emergent”. Analysis of variables by binary logistic regression showed ‘age at time of operation’ (p<0.01), ‘radiation exposure’ (p=0.02) and ‘post-procedural cardiac and blood pressure complications’ (p=0.03) all displayed significance. It should be noted maximal aortic diameter was not significant (p=0.61), despite being identified as a factor contributing to mortality in previous studies.

Conclusion
Patient age at time of operation, radiation dose, and post procedural cardiac complications were all factors associated with increased mortality risk. Optimising peri-operative cardiac care may therefore improve outcomes following TEVAR in the long term.
Evaluation of the Utility of Endovascular Sealing for Aortic Aneurysmal Disease  
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**Background:** Currently the preferred treatment method for Abdominal Aortic Aneurysm (AAA) is Endovascular Aneurysm Repair (EVAR) due to benefits associated with a minimally invasive procedure over open repair. Limitations of EVAR include limited applicability, higher rates of endoleak and reintervention. A novel technique aiming to overcome these limitations is endovascular sealing (EVAS), using the Nellix device.

**Aims:** Retrospective service evaluation was performed to: Evaluate outcomes of all patients treated with EVAS at Southampton General Hospital (SGH). Explore any difference in outcome between EVAS patients treated within the Nellix instructions for use (IFU) versus those outside it.

**Methods:** Data including aneurysm morphology and demographics from all patients treated with EVAS at SGH was collected retrospectively from patient records and computed tomography scans. This was utilised for assessment of survival at 30 days and 1 year, and occurrence of aneurysm related complications or reintervention post-EVAS.

**Results:** 1/26 study patients was female. Mean age and baseline eGFR was 76.9 ± 6 and 62.7 ± 21.4 respectively. 11/26 patients were treated off-IFU. No deaths occurred within 30 days post-operatively. Overall, 5 mortalities occurred by 1 year post-op - none were aneurysm related. 3/5 deaths occurred in patients treated off-IFU. Difference in survival between patients treated within vs off-IFU was not statistically significant (p=0.176; Log-Rank, p=0.260; Generalized Wilcoxon). 3 patients developed aneurysm related complications, however only one reintervention was performed.

**Conclusion:** Mortality post-EVAS was higher than expected - may be reflective of high risk patients chosen for a novel technique due to unsuitability for other treatment modalities. Endoleak and reintervention rates are low - in line with other centres. Longitudinal studies evaluating long-term outcomes post-EVAS are needed to demonstrate its role in the treatment of AAAs.