

**Conclusions:** Our study highlights pertinent factors for discussion in the surgical consent process. Formal training remains infrequent.

#### 0279: INCIDENCE OF UNDIAGNOSED AND UNDERTREATED HYPERTENSION IN ELECTIVE VASCULAR PATIENTS

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**Introduction:** Hypertension is a common and potentially modifiable cardiovascular risk factor. For patients with increased risk, NICE recommends a target systolic pressure of 135mmHg. We performed an audit to investigate the incidence of undiagnosed and undertreated hypertension amongst elective vascular patients.

**Methods:** All patients who underwent elective arterial operations with pre-operative assessments between November 2010 and November 2011 were included. Hypertension was defined as a systolic blood pressure >135mmHg in both pre-operative assessment and inpatient observation prior to their operations.

**Results:** 98 patients were identified with a median age of 74(40-90) and BMI of 26.5(16.8-39.5). 27.5% of patients were diabetic, and 57% current/ex-smokers. 30% had a history of IHD, 37% CVA/TIA. 61 patients were on treatment for hypertension, of which 33 remained hypertensive i.e. undertreated hypertension. 24 patients were shown to be hypertensive whilst not on any hypertensive treatment i.e. undiagnosed hypertension.

**Conclusions:** In this retrospective study we found that over half (54%) of our elective vascular patients who were on antihypertensive medications were inadequately treated, and 24% of patients who were shown to be hypertensive were not diagnosed in the community. This highlights the need for improving the monitoring and management of hypertension in the community, particularly in vascular patients.

#### 0302: THE INCIDENCE OF HYPOMAGNEAEMIA FOLLOWING ABDOMINAL AORTIC ANEURYSM (AAA) SURGERY

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**Introduction:** Post-operative hypomagnesaemia is a known phenomenon in cardiac surgery. No studies have investigated the incidence of post-operative hypomagnesaemia after AAA surgery.

**Methods:** Retrospective analysis of patients who underwent elective AAA repair at a vascular centre. Patients were subdivided into open repair(OR) and endovascular repair(EVAR). Online pathology system was used to identify the first post-operative serum magnesium.

**Results:** Total of 211 patients studied. 101 patients underwent OR[age range 51-86(mean 71)]. 110 underwent EVARs[age range 62-92(mean 76)]. 73(73%) patients in the OR group and 35(32%) patients in the EVAR group were hypomagnesaemic. Median length of stay was the same for hypomagnesaemic and normomagnesaemic patients in both groups: OR 9 days, EVAR 4 days. All 3 mortalities in the open group had hypomagnesaemia. No deaths reported in the EVAR group. A T-test analysis showed a statistically significant difference in hypomagnesaemia between the two groups ( $p<0.001$ ).

**Conclusions:** We hypothesize that AAA repair surgery is associated with a high incidence of post-operative hypomagnesaemia. Our results demonstrate a significant difference in post-operative levels between open and EVAR groups, which may result in more cardiac complications in the OR subgroup. A prospective study is proposed to further investigate this and its potential implications on AAA surgery.

#### 0332: DOES OPERATING OUTSIDE THE INSTRUCTION FOR USE AFFECT OUTCOME IN ELECTIVE AND RUPTURED ENDOVASCULAR AORTIC ANEURYSM REPAIR?

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**Introduction:** The long-term durability of endovascular repair of AAA remains a major concern. The aim of this study is to compare the mid-term re-intervention rates and compliance to the manufacturer's instruction for use (IFU) between elective (EVAR) and ruptured (REVAR) endovascular repair of AAA at our institution.

**Methods:** Retrospective analysis of EVAR and REVAR performed between January 2007 and July 2011. Patient demographics, anatomical parameters,

compliance to manufacturer's IFU, complication and re-intervention rates were compared.

**Results:** 219 patients (196 male, age 75±6.8) and 50 patients (42 male, age 77±7) underwent EVAR and REVAR respectively. The median follow-up were 26.2 (IQR 16.7-45.4) and 15 (IQR 1.6-24) months. The 30-day mortality was 0.5% and 20% respectively. During follow-up, type 1 endoleak occurred in 7.3% (13 early and 3 late, 56% treated outside manufacturer's IFU) and 14% (3 early and 4 late, 50% treated outside manufacturer's IFU) in the EVAR and REVAR groups ( $P=0.2$ ). Operating outside IFU did not affect re-intervention rates (11% within vs 14% outside IFU,  $P=0.6$ ), neither did indication (13% in EVAR vs 10% in REVAR,  $P=0.8$ ).

**Conclusions:** The mid-term re-intervention rates are comparable in both EVAR and REVAR. Operating outside manufacturer's IFU did not affect re-intervention rate.

#### 0343: LAPAROSCOPIC ABDOMINAL AORTIC ANEURYSM (AAA) REPAIR: CONDUCTING THE LEARNING CURVE SAFELY IN THE UK

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**Introduction:** To describe a single centre experience of total laparoscopic(TL) and laparoscopic-assisted(LA) AAA repair in patients in whom endovascular surgery was inappropriate.

**Methods:** All patients having TL and LA procedures since commencement of the laparoscopic aortic programme were included. Patients were divided into 3 groups by chronological order of operation (T1 (n=17), T2 (n=17), T3 (n=17)).

**Results:** 51 Patients (94.1% male, median age 72[66-75]years) underwent laparoscopic AAA surgery over the study period (6TL, 43LA, 2Patients were converted to open). LA procedures were quicker than TL (325[270-383] vs. 450[375-660]minutes,  $p=0.016$ ). Incisions used included: transverse (8.5%), midline (10.6%), paramedian(55.3%). Laparoscopic approaches included: retrocolic (9.8%), visceral rotation (33.3%), anterior approach(56.9%); All of T3 had paramedian incisions and used the anterior approach. T1 received more epidural analgesia than T2 and T3 ( $p<0.0001$ ). No differences were found in post-operative pain at days 1, 3, 5 and 7. T2 and T3 started drinking ( $p=0.01$ ) and mobilising ( $p=0.001$ ) sooner than T1. T3 were discharged from hospital sooner than T1 (3.5[3-6] vs. 7[5.5-9] days,  $p=0.0052$ ) and had a trend towards fewer complications than T2 ( $p=0.085$ ).

**Conclusions:** LA and TL techniques have been carried out safely over the course of the learning curve and patients required less post-operative analgesia, mobilised sooner and were discharged from hospital sooner.

#### 0347: REVIEWING THE MAXIMUM SURGICAL BLOOD ORDER SCHEDULE FOR ELECTIVE AND COMPLEX EVAR

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**Introduction:** Patients undergoing EndoVascular Aneurysm Repair (EVAR) are routinely cross-matched 4 units of blood. This is overcautious in elective EVAR but necessary in complex cases (fenestrated, chimney or branched). Operations can be considered for group and save only if they have a cross match to transfusion ratio (CTR) of greater than 3.

**Methods:** Patients undergoing any non-emergency aneurysm repair between August 2009-2012 were included. Number of units cross-matched and transfused were the primary measures of interest. Pre- and post-operative haemoglobin and volume of cell salvage were also analysed.

**Results:** 178 elective aneurysm repairs were included. CTR of OR, elective EVAR and complex EVAR were 3.05, 4.99 and 1.76 respectively. Almost 70% of elective EVARs did not receive a transfusion during their admission, compared to less than 40% of open repairs and 30% of complex EVARs. The rate of transfusion of complex EVARs ( $M=0.47$   $SD=0.40$   $N=23$ ) was significantly higher than both elective EVARs ( $M=0.18$   $SD=0.31$   $N=86$ ) and open repairs ( $M=0.26$   $SD=0.24$   $N=38$ ).

**Conclusions:** Elective EVAR requires group and save only. Complex EVARs should retain the 4-6 unit cross-match order. The high CTR in ORs can be accounted for by the use of intra-operative cell salvage in this group.

#### 0355: HAPPILY EVAR AFTER? – RETROSPECTIVE ANALYSIS OF LONG-TERM OUTCOMES FOLLOWING ENDOVASCULAR ANEURYSM REPAIR IN SCOTLAND

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**Introduction:** Endovascular aneurysm repair (EVAR) is the dominant treatment strategy for Abdominal Aortic Aneurysms. Several large RCTs have demonstrated early survival benefits when compared to open surgical repair. However long-term outcome data is limited. The aim of this study was to investigate long-term outcomes following EVAR in Scotland. **Methods:** Retrospective analysis of surveillance data, between Jan 2001–Dec 2012, in the four main Vascular Units was performed. Patients were identified locally and imaging data was collected by manually searching a combination of databases. Primary outcome measures included operative mortality, aneurysm-related mortality and all-cause mortality. Secondary outcome measures included long-term graft-related complications and re-intervention.

**Results:** Data was available for 569 patients. All centres had data available for a minimum of 5 continuous years. Mean patient age was 75.6years, 89% were male. Mean follow-up was 36.3months. 138 patients were recorded to be cease of which 19 died from aneurysm-related causes. 30day mortality was 1.2%, aneurysm related mortality and all-cause mortality at 5-years were 4.5% and 33.5%, respectively. Complications and re-intervention report at 5-years were 44.2% and 11.2%.

**Conclusions:** Operative mortality, aneurysm-related mortality and all-cause mortality in Scotland are similar to previously published data. Complication rates were also comparable; however re-intervention rate were lower.

### 0383: OUTCOMES FOR SURGICAL AND ENDOVASCULAR REVISION PROCEDURES IN ARTERIOVENOUS FISTULAE: STEVENAGE EXPERIENCE

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**Introduction:** To assess the AV fistula patency rate after 1 year following surgical and endovascular revision procedures

**Methods:** A retrospective case-note review was performed on patients identified from theatre and vascular access databases as having undergone revision procedure for upper arm and forearm AV fistulae. Patency at 1 year is defined as successful dialysis after one year from the revision procedure.

**Results:** 27 cases were reviewed over a 16-month period. 14 cases underwent endovascular revision and 13 cases underwent open surgical repair. Indications for revision in endovascular cases were: Venous outflow stenosis (n= 12), Juxta-anastomotic anastomosis (n=2). Indications in Surgical cases were: Failure to Mature (n=5), Clotted Fistula (n=4), Stenosis (n=4). Types of fistulae revised: RCF (n=14), BCF (n=13). Types of surgical procedures used: Tying off tributary vessels (n=2), Thrombectomy (n=3), Revision/higher anastomosis (n=5), interposition synthetic graft (n=2), Superficialization (n=1). Outcomes of Revision: Endovascular Cases: Technical Success rate: 13/14 (92.6%), Patency rate at 1 year:11/14 (78.5%). Surgical Cases: Technical Success rate: 11/13 (84%), Patency rate at 1 year:11/13 (84%). Total Success rate:22/27 (81.5%). Total patency rates: 20/27 (74%)

**Conclusions:** The outcomes outlined in this review prove the effectiveness of endovascular means in salvaging AV fistulae and highlights the fact endovascular management is possibly underused in thrombosed fistulae.

### 0460: A TWELVE-YEAR REPORT OF IATROGENIC VASCULAR INJURIES: IS VASCULAR CENTRALISATION SAFE?

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**Introduction:** Iatrogenic vascular injuries are often cited as a mitigating factor against centralisation of vascular surgery. The aim of this study is to examine the trend and pattern of iatrogenic vascular injuries in a tertiary referral centre.

**Methods:** Cases were identified from a prospectively collected departmental operative registry from 2000 to 2011. Operative and case notes were reviewed to determine the nature of injuries and their management.

**Results:** Ninety-six cases were identified from 9001 vascular procedures performed over twelve years. The number of iatrogenic vascular injuries increased from 11 cases (2000–2003) to 47 cases (2008 – 2011). Most referrals were from interventional radiology (26%) and cardiology (25%).

Urgent vascular surgical input in theatre was required on twenty occasions, predominantly from general surgery and orthopaedics, followed by urology and gynaecology. Twelve injuries were sustained at other hospitals. Of these, three patients required urgent transfer to our unit and tow received treatment locally.

**Conclusions:** Iatrogenic vascular injuries are increasingly common and form a significant part of emergency admissions. This appears to be associated with a rise in minimally invasive procedures. Referrals from other hospitals were few, suggesting that iatrogenic vascular injuries should not be a deterrent to centralisation of vascular services.

### 0527: ROUTINE CHEST X-RAYS ARE NOT REQUIRED AFTER PLACEMENT OF TOTALLY IMPLANTED VEIN ACCESS DEVICES (TIVADS)

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**Introduction:** To audit the number of immediate post-operative chest complications reported in patients undergoing image-guided insertion of a TIVAD without routine post-insertion chest x-rays.

**Methods:** Retrospective analysis of a prospective database of patients who underwent image-guided (US-guided central venous puncture and fluoroscopy-guided catheter placement) TIVAD insertion from 1st April 2011 to 31st December 2013 inclusive.

**Results:** 27 patients (22 female, 5 males) underwent day case image-guided TIVAD insertion (Titajet light II Contrast; pfm medical, Stockport, Cheshire, UK) via right jugular (n=19), left jugular (n=7), and left subclavian (n=1) approaches. No patient had post-operative chest x-rays as a routine. 1 patient had a negative x-ray due to discomfort. There were no pre-discharge chest complications or complications of misplaced catheters on clinical grounds.

**Conclusions:** Use of image guidance during central venous catheter insertion has been shown to decrease complication rates; indeed, NICE have issued guidance that such should be performed under US guidance. Post-operative x-ray is used to check the position of the catheter and for any haemothorax or pneumothorax. The effective combination of US-guided insertion and fluoroscopy -guided catheter placement - our standard approach - as described in this audit, suggests no need for routine check post-procedure chest x-ray.

### 0552: SYSTEMATIC REVIEW OF PERIOPERATIVE OUTCOMES FOLLOWING LAPAROSCOPIC ABDOMINAL AORTIC ANEURYSM REPAIR

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**Introduction:** To collate information in the literature regarding perioperative outcomes following elective laparoscopic abdominal aortic aneurysm repair, to better inform decision-making.

**Methods:** Electronic databases were searched and a systematic review of the literature was performed. 1256 articles were screened, from which 8 studies were included. Perioperative outcomes which were analysed included overall mortality at 30 days, inpatient stay, ITU stay and re-interventions and complications within 30 days.

**Results:** In the totally-laparoscopic repair of infra-renal aneurysms (n = 203), thirty-day mortality ranged between 3–6% and in the laparoscopic-assisted cases (n = 497), this ranged between 0–7%. In-patient stay ranged from 5–10 days with an average ITU stay of 1–2 days, and 4–7 days with average ITU stay of 1–14 days respectively. Of the totally-laparoscopic group, 6–30% of cases were converted to open repair, with a 6% re-intervention rate, whereas the rates were 5–10% and 3% respectively in the laparoscopic-assisted cases.

**Conclusions:** The outcomes from these studies demonstrate that laparoscopic repair of aortic aneurysms is comparable in safety to open repair. It remains unclear, however, whether there are marked advantages of this method compared with open and EVAR. Further training and research from high-output centres will enable firmer conclusions to be drawn.

### 0553: FORECASTING AORTIC ANEURYSM RUPTURE – A SYSTEMATIC REVIEW OF SEASONAL AND ATMOSPHERIC ASSOCIATIONS

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