**O15 ENDOTHELIAL DYSFUNCTION IN INTERMITTENT CLAUDICATION**

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**Introduction**  
Endothelial dysfunction is integral to the development of atherosclerosis and subsequent plaque progression. In coronary disease, there is an association between disease severity and arterial stiffness and endothelial dysfunction. We aimed to determine the association between disease severity, cardiovascular risk factors and endothelial dysfunction in patients with intermittent claudication (IC).

**Methods**  
A prospective observational study of consecutive patients with IC was performed. Patients underwent a constant load treadmill assessment along with pre and post exercise ABPIs and were graded according to Rutherford’s criteria. Arterial stiffness and endothelial function were measured with the ‘Endopat2000’ (Itamar, Israel). Both are measured at the capillary bed; the reactive hyperaemia index (RHI) measures endothelial function, and pulse waveform analysis measures the augmentation index (AI), which is a marker of arterial stiffness. Spearman’s correlation coefficient was used (SPSS, v19), a p<0.05 was deemed significant.

**Results**  
92 patients with IC were recruited; n=71 (77%) were male, and median age was 66 (IQR 60 to 72) years. AI was moderately associated with pre (r=0.354, p=0.001), and post (r=0.324, p=0.002) exercise ABPI, and weakly associated with smoking (r=0.301, p=0.004), and Rutherford severity (r=0.208, p=0.049). A moderate correlation between RHI and diabetes (r=0.327, P=0.001) was present. There was no association between measures of lower limb ischaemia (ABPI, walking distance or Rutherford grade) and RHI.

**Conclusions**  
The severity of lower limb ischaemia in claudication demonstrates mild correlation with arterial stiffness but not with endothelial function Disease severity cannot predict underlying endothelial function, and independent assessment should be undertaken.

**Take-home message**  
Endothelial dysfunction as measured by Endopat2000 device does not correlate with disease severity in intermittent claudication, and independent assessment should be undertaken.

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**O16 IDENTIFYING DEEP VEIN THROMBOSIS: PROXIMAL LEG ULTRASOUND VS. WHOLE LEG ULTRASOUND – WHICH IS APPROPRIATE?**

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**Background**  
DVT is difficult to diagnose clinically but carries significant morbidity and mortality if unrecognised. Ultrasound scanning the proximal leg veins only (NICE guidelines) will invariably miss a calf and pelvic vein DVT.

**Methods**  
Patients referred for DVT scans at five NHS hospitals in the North West from April-June 2012 were identified retrospectively. All five centres performed whole leg duplex scans with compression as the initial investigation.

**Results**  
A total of 3119 DVT scans were collected for analysis from April-June 2012. A total of 1860 were females and 1259 were males. Average (± SD) age was 69.2 ± 18.9 in the female and 63.0 ± 17.6 in the male population. Of these 70.5% (2200) scans were negative for DVT, 12.3% (383) were equivocal and 17.2% (536) were positive. Of the positive DVTs, 23% of patients had a thrombus located in both the proximal and calf veins. In 29% it was located in the proximal veins only, and in 48% it was isolated in the calf veins. A higher percentage of patients with isolated calf DVT were found in the inpatient group, compared to the outpatient group, 52 vs. 45% respectively.

**Conclusion**  
Limiting a scan to above knee as suggested by the NICE guidelines would give a false negative scan for DVT in 48% of all patients referred. Not only are more DVTs identified by
whole-leg scan, but repeating a proximal leg vein US as suggested by NICE after one week necessitates two scans which is time consuming and expensive.

Take-home message
Limiting a DVT scan to above knee only would give a false negative scan for DVT in 48% of all patients referred.

O17 THE AVULS TRIAL - IS SIMULTANEOUS BETTER?
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Introduction
Endovenous ablation under local anaesthetic has revolutionised the treatment of varicose veins. However, debate remains about the timing of treatment for co-existing varicosities.

Method
Consecutive patients with symptomatic varicose veins scheduled for great saphenous or short saphenous endovenous ablation were recruited into the AVULS randomised controlled trial. Patients were randomised to delayed or simultaneous treatment of varicose tributaries. Baseline, 6 week, 6 month and 12 month follow-up assessments were completed including generic and disease specific quality of life assessment.

Results
101 patients were recruited with an average age of 52.9 years, 57% female, mean vein diameter 9.7 mm and pre-op symptom score 22.8. Mean symptom improvement was 62% at 12 months (22.68 vs 8.51, P<0.001). Symptom improvement was greater in the simultaneous group at 6 weeks (16.34 vs 10.86 P=0.029) but not at 6 or 12 months (13.04 vs 9.42, p=0.109 and 9.53 vs 7.53, p=0.424 respectively). Clinical staging improved significantly from 7.368 to 1.978 at 12 months. The simultaneous group showed a significantly better score at all follow-up time periods. 34.7% of the delayed group needed further treatment compared to 2% of the simultaneous group (P<0.001). Relative risk of further procedure in the delayed group was 18.36. Patients requiring further treatment had almost double the symptom score at 6 weeks (21.19 vs 11.79, p=0.003) and worsened clinical score (4.0 vs 2.8, p=0.046).

Conclusion
Simultaneous Treatment provides improved clinical outcomes at up to 1 year. Initial quality of life gains at 6 weeks are not seen beyond this.

Take-home message
Simultaneous treatment of varicose tributaries and refluxing venous trunks provides long term improvement in clinical status and short term quality of life benefit, in addition to one stage treatment.

O18 A RANDOMISED CONTROL TRIAL COMPARING ENDOVENOUS LASER ABLATION AND CONVENTIONAL SURGERY FOR THE TREATMENT OF SMALL SAPHENOUS VEIN INSUFFICIENCY; A 2-YEAR FOLLOW-UP
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Introduction
Early results comparing endovenous laser ablation (EVLA) with surgery for small saphenous vein (SSV) insufficiency revealed a faster recovery, less periprocedural pain and fewer sensory complications in those treated by EVLA. A two-year RCT follow-up aims to affirm whether EVLA is as effective as surgery in the medium-term.

Methods
Patients with primary sapheno-popliteal junction (SPJ) incompetence and/or SSV-reflux were randomised to either EVLA or Surgery (SPJ ligation and stripping/excision of SSV). Follow-up at 1, 6, 12, 52 and 104 weeks assessed clinical recurrence, post-procedural complications and disease-specific quality of life (QoL) (Aberdeen Varicose Veins Questionnaire, AVVQ).

Results
106 patients were equally randomised; 88-patients (83%) were assessed at two-years with equal follow-up losses in each group (n=9). At 2-years, the surgery group consisted of 32 women:12 men with a median (IQR) age of 48 years (37-57); the EVLA group consisted of 20 women:24men with a median age of 45 (39-55) years. Recurrence: There
was no significant difference in clinical recurrence (surgery =10/44(23%) and EVLA = 7/44 (16%), p=0.74) or SSV incompetence on duplex (surgery 7/44 (16%) and EVLA 2/44 (5%), P=0.157) between the 2 groups. Complications: The early significant difference in sensory disturbance, became non-significant at 2 years (surgery =3/44 and EVLA = 1/44,P =1.000). QoL: No significant difference in median (IQR) AVVQ-scores (surgery 2.75 (0-7.25) and EVLA 3.53 (0-9.22), p=0.412) were apparent between the two groups at 2 years.

Conclusion
Two-year follow-up demonstrates that EVLA for SSV insufficiency offers highly efficacious mid-term benefits equivalent to surgery and given its early post-operative superiority, should be considered first-line treatment. This supports the recent NICE guidance.

Take-home message
Endovenous laser ablation (EVLA) for the treatment of small saphenous vein superficial venous insufficiency offers equivalent medium term success, given the short-term superiority EVLA should be first line treatment for SSV insufficiency. A finding that supports the recent NICE guidance.

O19  THE RISK OF CEREBRAL MICROEMBOLISATION AND SILENT CEREBRAL INFARCTION WITH THORACIC ENDOVASCULAR AORTIC REPAIR
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Introduction
Overt clinical stroke occurs in 2-8% of patients undergoing thoracic endovascular aortic repair (TEVAR). Silent cerebral infarction (SCI) is a brain injury detected incidentally on imaging. These lesions contribute to cognitive decline and are predictors of future stroke, dementia and depression. This study investigates the incidence of cerebral microembolisation and SCI in patients undergoing TEVAR.

Methods
Patient risk factors including aortic arch atheroma, calcification and mural thrombus were evaluated using standardised techniques on pre-operative Computed Tomography. Intra-operative cerebral microemboli were recorded using transcranial Doppler in both middle cerebral arteries (MCA) and analysed by 2 independent observers. A cohort of patients also underwent pre- and post-operative cerebral DW-MRI.

Results
Twenty-three patients underwent TEVAR, arch and visceral hybrid procedures. Microemboli were more frequently detected: (i) in patients with greater aortic arch atheroma, calcification and mural thrombus; (ii) in the left MCA territory (median 93,interquartile range 35-179 vs. 41,21-78,p=0.001); and (iii) during the treatment phase (stent-graft manipulation) compared to the diagnostic phase (wire and catheter manipulation)(53,14-160 vs. 28,18-45,p=0.016). There were two post-operative strokes (8.7%) and SCI was found in 6/10 patients who underwent MRI.

Conclusions
Cerebral microembolisation occurs more frequently to the left hemisphere and during stent deployment, and is associated with increased arch disease. Identification of high-risk patients and procedural phases will inform future strategies to minimise risk of neurological injury. Sixty percent of patients who underwent MRI had evidence of SCI; this is a previously unknown burden and means the risk of neurological injury following TEVAR is higher than currently recognised.

Take-home message
This novel study demonstrates a 60% risk of silent cerebral infarction (SCI) on MRI following thoracic endovascular aortic repair. This is a previously unrecognised burden, with significant consequences as SCI is a predictor of future stroke, dementia and depression.

O20  POST-TRANSCRIPTIONAL DYSREGULATION OF EXTRACELLULAR MATRIX MODIFYING GENES IN PATIENTS WITH ABDOMINAL AORTIC ANEURYSMS
**Introduction**

MicroRNAs are crucial in the regulation of cardiovascular disease and represent novel therapeutic strategies to decrease abdominal aortic aneurysm (AAA) expansion. The aim of this study was to identify circulating microRNAs associated with AAA and explore their functional effects.

**Methods**

754 microRNAs in whole blood from 15 AAA and 10 controls were quantified using qRT-PCR. Significant microRNAs were validated in 200 patients (40 each screened controls, peripheral arterial disease (PAD), small AAA (30-54 mm), large AAA (>55mm), post-operative) peripheral blood and plasma using digital PCR.

**Results**

29 differentially expressed microRNAs were identified in the discovery study. Validation study analysis revealed let-7e (fold change -1.82; P=0.001), miR-15a (FC -2.22; P<0.001), and miR-196b (FC -2.27; P<0.001) were downregulated in peripheral blood from AAA patients, and miR-411 (FC -5.90; P=0.001) was upregulated. Mir-196b was also downregulated in plasma from the same individuals (FC -3.75; P=0.029). Neither exclusion of the aneurysm nor aneurysm size altered miRNA profiles. The same miRNAs were similarly differentially expressed in patients with PAD, although results were not replicated in aortic tissue. Target prediction analysis using MirWalk revealed that the AAA associated miRNAs were all regulators of AAA related genes; let-7e (COL1A1, COL1A2, COL3A1, MTHFR, MMP1); miR-15a (DAB2IP, MMP3, MTHFR); miR-196b (COL1A1, COL1A2, COL3A1); miR-411 (MMP12, MMP13, MTHFR).

**Conclusions**

Circulating levels of let-7e, miR-15a, miR-196b and miR-411 are differentially expressed in patients with AAA compared to healthy controls, with miR-196b replicated in plasma. Regulation of these miRNAs and their target genes represents a new therapeutic pathway to decrease AAA progression.

**Take-home message**

Circulating levels of let-7e, miR-15a, miR-196b and miR-411 are differentially expressed in patients with AAA compared to healthy controls, with miR-196b replicated in plasma. Regulation of these miRNAs and their target genes represents a new therapeutic pathway to decrease AAA progression.

**O21 HAEMODYNAMIC EFFICACY OF THE GEKOTM ELECTRICAL EUROMUSCULAR STIMULATION DEVICE IN CLAUDICANTS**

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**Introduction**

Claudication results from arterial insufficiency. Increasing arterial flow to the lower limbs may alleviate symptoms and improve function. Spinal cord stimulation has been shown to be efficacious in improving flow in claudicants but has a high rate of complications. This study aimed to establish the efficacy of the gekoTM, transcutaneous electrical neuromuscular stimulation device on arterial, venous and microcirculatory flow.

**Methods**

A prospective observational series. All claudicants attending the departmental exercise programme were approached for inclusion. Following a 30minute acclimatisation period, baseline measurements of arterial, venous and microcirculatory flow (Laser Doppler) were taken bilaterally. The gekoTM device was applied for 40 minutes, unilaterally, and flow measurements repeated. The difference in flow from baseline was calculated for each measurement and statistical analysis performed utilising SPSS.

**Results**

16 patients, 11 male, 5 female, with a mean age of 67 years (SD 7.7) were recruited. The mean resting ABPI of the active limbs was 0.68(SD 0.23). The mean change in arterial volume flow in the active limb was 0.65 L/min compared to control limb 0.003L/min(p=0.026). Venous volume flow increased by 0.041L/min in the active limb versus control 0.0005L/min(p=0.023). Microcirculatory flow, measured by laser Doppler
increased by a mean of 21.16 flux units in the active compared to a decrease of 6.21 in the control group (p<0.01).

**Conclusion**
Transcutaneous electrical neuromuscular stimulation with the gekoTM device augments arterial, venous and microcirculatory flow in patients with claudication and may prove a useful treatment adjunct in this cohort of patients. The effects appear to be local and not systemic.

**Take-home message**
Transcutaneous electrical neuromuscular stimulation, with the gekoTM device, may prove a useful treatment adjunct in patients with claudication.

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**O22 1H-NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROMETRIC IDENTIFICATION OF BIOMARKERS OF ATHEROSCLEROSIS IN THE APOLIPOPROTEIN-E KNOCKOUT MOUSE**

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**Introduction**
Atherosclerosis is still one of the principal causes of death in the western world and is increasingly involved in the aetiology of cardiovascular diseases worldwide. Recent studies using animal models have suggested that Nuclear Magnetic Resonance (NMR) spectroscopy can be used to determine differences in blood metabolite profiles of subjects with and without atherosclerosis. In doing so, new atherosclerotic biomarkers may be established.

**Methods**
9 Apolipoprotein-E knockout mice versus 11 controls, all male, were used for this study. All animals were fed western diet for 12 weeks. The housing and care of the animals, and all the procedures used in this study, were in accordance with the UK Home Office regulations. Blood was collected for metabolomic profiling using a 500-MHz 1H-NMR spectrometer with Carr–Purcell–Meiboom–Gill (CPMG) and Diffusion-Ordered Spectroscopy (DOSY) pulse sequences. Spectral analysis was performed using multivariate analysis techniques.

**Results**
Using Principle Components Analysis (PCA) of the high molecular weight components of plasma present in DOSY spectra, the two groups could be differentiated on the basis of their spectra. At least three potential lipid metabolite biomarkers of atherosclerosis were identified (VLDL1, VLDL2 and N-Acetyl-L-Cysteine-2). The same differentiation was seen with the low molecular weight data (CPMG) only when using OPLS-Discriminant Analysis and a number of potential biomarker were identified (3-Hydroxybuterate, Lactate, Acetate, Valine and Pyruvate).

**Conclusion**
These preliminary data add to the current evidence to determine links between components of the metabolome and atherosclerosis, and further support the concept that NMR based metabolic profiling may offer a minimal-invasive test for detecting biomarkers of atherosclerosis.

**Take-home message**
Nuclear Magnetic Resonance based metabolic profiling may, in future, offer a minimal-invasive test for detecting biomarkers of atherosclerosis.

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**O23 FACTORS INFLUENCING SURVIVAL FOLLOWING ELECTIVE ABDOMINAL AORTIC ANEURYSM REPAIR**

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**Introduction**
Elective AAA repair is indicated when aneurysm rupture is likely during a patient’s expected lifetime. Although perioperative mortality is well studied, little is known about
long-term survival. The objective of this study was to identify preoperative prognostic indicators of long-term survival after elective abdominal aortic aneurysm (AAA) repair.

**Methods**
We analysed 4070 elective AAA repairs using a prospective database from 24 UK hospitals. Survival was described using Kaplan Meier survival methods and the influence of preoperative risk factors by Cox proportional hazards.

**Results**
The mean age at AAA repair was 73.5±7.3 years; overall median survival was 8.1 years, with 5 and 10 year survival rates of 70.2% and 41% respectively. Age (hazard ratio [HR] 1.05/year; p <0.001), female gender (HR1.32; p <0.001), ischaemic heart disease (HR1.16; p=0.03), abnormal serum sodium (HR1.40; p <0.001), serum creatinine >120 µmol/l (HR1.28; p <0.001), anaemia (HR1.30; p <0.001) and abnormal ECG (HR1.19; p <0.001) were associated with reduced survival. We used these risk factors to develop risk strata for four risk groups with survival of 86%, 76.3%, 66.1% and 55.4% at 5 years. Statin (HR0.8; p <0.001) and platelet-inhibitory therapy (HR0.85; p=0.02) were associated with improved survival in patients surviving to discharge.

**Conclusions**
Survival following AAA repair was strongly influenced by age, female gender, ischaemic heart disease, renal insufficiency and anaemia. Expected patient survival should be part of the decision on whether or not to repair.

**Take-home message**
Routine preoperative factors can be used to predict long-term survival after elective AAA repair and assist in patient selection for surgery.

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**O24 ANEURYSM GLOBAL EPIDEMIOLOGY STUDY: PUBLIC HEALTH MEASURES CAN FURTHER REDUCE ABDOMINAL AORTIC ANEURYSM MORTALITY**

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**Introduction**
Current data suggest steep declines in abdominal aortic aneurysm (AAA) mortality however international trends are unclear. This study aimed to investigate whether this trend was global and to analyse its associations with common cardiovascular risk factors.

**Methods**
AAA mortality data (1994-2010) were extracted from the WHO mortality database and age standardised. WHO InfoBase and International Mortality and Smoking Statistics (IMASS) provided risk factor data. Nineteen WHO member states were included (Europe=14, Australasia=2, North America=2, Asia=1). Regression analysis of trends (1946-2010) in cardiovascular risk factors were analysed independently for correlations to AAA mortality trends.

**Results**
Global AAA mortality shows substantial heterogeneity with the USA and UK revealing the fastest declining mortality. Males and those under 75 demonstrated the greatest reduction (P=0.0008). AAA mortality decline was not universal and in fact has increased in Hungary, Romania, Austria and Denmark. A positive linear relationship exists between global trends in systolic blood pressure (P=0.028), cholesterol (P=0.0082) and smoking prevalence (P=0.017) in males and females. However BMI demonstrated a negative linear association with AAA mortality (P=0.0072) whilst fasting blood glucose showed no association.

**Conclusions**
AAA mortality has not declined globally and this study shows that differences between nations can be explained by variations in traditional cardiovascular risk factors. Declines in smoking correlated most closely with declines in AAA mortality. A novel ‘obesity paradox’ in patients with AAA has been identified in addition to evidence that public health measures could further reduce global AAA mortality, with greatest benefits in the younger age group.

**Take-home message**
This study provides robust evidence that AAA mortality is not declining globally and that variation between countries may be secondary to population trends in traditional cardiovascular risk factors. The importance of this finding is that public health measures could further reduce global AAA mortality.

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**O25 MODELLING OUTCOMES FOLLOWING LOWER LIMB SURGICAL**
**REVASCULARISATION: THE VASCULAR SOCIETY BYPASS OUTCOME MODEL (VS BOM)**

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**Introduction**

Despite increasing use of endovascular techniques, lower limb surgical revascularisation (LLSR) is commonly performed with associated mortality risks. Few studies have reported on robust outcome models to aid patient selection. This study aimed to develop robust outcome models using data from the UK National Vascular Database (NVD).

**Methods**

Consecutive entries of LLSR into the NVD (January 2008-October 2012) were analysed for demographics, co-morbidity, symptoms and type of intervention. The primary outcome measure was in-hospital mortality. Other outcome scores were calculated for comparison (FinnVasc, Prevent III, POSSUM). Multiple imputation methodology was employed to mitigate for missing data. The dataset was divided non-chronologically into model development (2/3) and validation (1/3) subsets. Minimisation of the Schwartz-Bayes criterion was used to select pre-operative variables and generate an optimal logistic regression model to predict in-hospital mortality. Model performance was assessed with receiver operating characteristic (ROC) curve analysis. Hosmer-Lemeshow analysis was used to assess calibration.

**Results**

17,980 operations were analysed. Overall in-hospital mortality was 2.9%. The model generated, which utilised age, ASA grade, statin use, creatinine, white cell count, albumin and heart rate, provided excellent discrimination, with area under the ROC curve (AUC) of 0.83 (95% CI: 0.80-0.86). It performed significantly better than the other models assessed (FinnVasc (AUC: 0.72), Prevent III (AUC: 0.69) and POSSUM (AUC: 0.78); p<0.01). There was no evidence of mis-calibration on Hosmer-Lemeshow analysis (p=0.74).

**Conclusions**

Using rigorous techniques for handling missing data, analysis of the NVD has allowed the development of an optimal new model predicting in-hospital mortality following LLSR. Prospective validation of the model is now required.

**Take-home message**

Using rigorous techniques for handling missing data, analysis of the UK National Vascular Database has allowed the development of an optimal new model predicting in-hospital mortality following lower limb surgical revascularisation. The model displays excellent discrimination (area under ROC curve 0.83) and is significantly better than all previous models analysed (P<0.01).

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**O26 PREDICTORS OF OUTCOME IN PATIENTS WITH PERIPHERAL ARTERIAL DISEASE AND DIABETIC FOOT ULCERATION**

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**Introduction**

Few data exist to identify which patients with diabetic foot ulceration and peripheral arterial disease (PAD) benefit from revascularisation and which may achieve good outcomes without. We sought to determine the predictors of poor outcome in a large population of patients with diabetic foot ulceration and PAD who did not undergo revascularisation.

**Methods**

Consecutive patients presenting to 14 European centres with diabetic foot ulceration underwent a standardised assessment using the PEDIS system. We used Cox regression to identify predictors of major amputation and non-healing in a cohort of patients from the EURODIALE study with PAD who were not revascularised.

**Results**

In total PAD was present in 46% (505/1088) of patients, 28% (142/505) of whom underwent a revascularisation procedure. Revascularisation rates in patients with PAD varied significantly across the 14 participating centres, ranging from 0% to 50% (p<0.001). Those who underwent revascularisation were more likely to have coexisting infection, large and deeper ulcers, multiple ulcers and symptomatic PAD. Previous
contralateral amputation, rest pain, ulcer duration >3 months, presence of a deep ulcer and ulcer area >1 cm² were independent predictors of non-healing in patients not revascularised. Independent predictors of major amputation in these patients included previous contralateral amputation, rest pain, presence of multiple ulcers and ulcer location on the posterior heel.

**Conclusions**
Ulcer characteristics at baseline are important predictors of poor outcome in patients with a diabetic foot ulcer and PAD. The large variation in revascularisation rates between participating centres underscores the need for better selection criteria for revascularisation.

**Take-home message**
Patients with a diabetic foot ulcer and PAD with a previous contralateral amputation, rest pain, ulcer duration >3 months, a deep ulcer with an area >1cm², multiple ulcers, an ulcer located on the posterior heel and an ABPI below 0.9 appear to be at increased risk of non-healing and major amputation if they are not revascularised.

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**O27 PROSPECTIVE COHORT STUDY COMPARING CONCOMITANT AMBULATORY PHLEBECTOMIES OR FOAM SCLEROTHERAPY TO VARICOSE TRIBUTARIES DURING EVLT: 2 YEAR RESULTS**

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**Introduction**
The addition of ambulatory phlebectomies to Endovenous Laser Therapy (EVLT) results in fewer secondary interventions and quicker disease specific quality of Life improvements at 12 weeks. Ablation of varicose tributaries with foam sclerotherapy is hypothesised to result in a similar improvement.

**Methods**
Patients undergoing EVLT for primary sapheno-femoral junction (SFJ) incompetence with Great Saphenous Vein reflux elected to receive EVLT with ambulatory phlebectomies (EVLTAP) or EVLT with concomitant tributary foam sclerotherapy (EVLTFS). Patients were reviewed at 1, 6, 12, 52, 104 weeks post-operatively. Outcomes were procedure duration, pain, analgesia requirements, VCSS Score and disease specific Quality of life after 2 years.

**Results**
25 and 21 patients underwent EVLTAP and EVLTFS respectively. All patients successfully underwent EVLT, 3 patients in the EVLTFS group with difficult tributary access didn’t receive sclerotherapy. Baseline characteristics were well matched. Follow-up at 5 year for EVLTAP was 80% and EVLTFS was 90%. Procedure time was less in during EVLTAP (48min (40-56min) vs 65min (53-75 min) P=0.012). There was no statistical difference in interoperative pain, daily pain over the subsequent week or additional analgesia requirements. Return to normal activities was similar (EVLTFS 2 days (1-19.25 days) vs EVLTAP 7 days (2.75-18.0 days) P=0.371) but return to work was quicker with EVLTFS (2 days (1.5-7.5 days) vs 12 days (7.0-14.0) P=0.003). A 2 years both groups improved significantly but there was no difference in VCSS (p 0.569), EQ5D (p0.343), AVVQ (p 0.957)

**Conclusion**
In treating superficial venous incompetence, EVLTFS appears to have similar benefits in treating varicose veins.

**Take-home message**
When treating superficial vascular insufficiency with endovenous laser therapy; ambulatory phlebectomies or foam sclerotherapy result in good outcomes and have their own distinct advantages.