Results: VV surgeries were done in 162 limbs of 94 patients (both in 68, right in 18, and left in 8). There were 56 females and 38 males with the mean age of 57 years (2879). The CEAP classification was $C_{2\text{-}3}$EpAsPr in all patients. Perforators larger than 2mm near the varicose veins were detected and marked on the CT volume-rendering images. The average numbers of perforators marked by CTV were 13.4±4.22 in each limb. The perforators were evaluated by duplex for the presence of reflux (≥0.5 sec). Mean number of perforators with reflux in one limb was 1.3 ±1.35, which were ligated during the surgery. Incidental detections of other disease were done in 3 patients, including uterine myomas and ovarian cyst. Operation was performed with the CTV images on screen. CTV was helpful in designing the operation in most patients. 3D CTV images of saphenopopliteal junction especially provided thorough understanding of the complex variable anatomy of the lesion. There were no CT-related complications, such as renal dysfunction or allergic reaction.

Conclusions: CT venography can provide excellent road map for VV surgery without significant complications. It cannot replace duplex USG, but can provide powerful 3D views for designing operation as well as education and research.

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PP83.

Factors Affecting Post Operative Pain Following Endovenous Ablation of Varicose Veins

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Objectives: A variety of endothermal treatments are currently available for the treatment of varicose veins, offering the prospect of less discomfort and quicker return to normal activities compared to traditional surgery. The aim of this study was to evaluate which factors may contribute to post-operative pain following endothermal ablation procedures.

Methods: Patients treated with endovenous laser ablation (EVLA) or radiofrequency ablation (RFA) completed the Aberdeen Varicose Vein Questionnaire (AVVQ) before surgery and a 100mm visual analogue diary card to record post-operative pain scores. Initial VCSS and CEAP scores were assessed by a clinician and recorded along with demographic and operative details. Independent risk factors for post-operative pain were identified using a multivariate linear regression model.

Results: Over a 6 month period, 75 patients completed diary cards. RFA was performed in 43/75 and EVLA in 32/75. The median (range) age was 48 years (27-78) and 57/75 were female. Median (range) AVVQ and VCSS scores were 17.59 (2.47-74.3) and 4 (0-13) respectively. Age, sex, AVVQ, VCSS and CEAP scores were comparable between the treatment groups (p=0.528, 0.862, 0.186, 0.930 & 0.240 respectively, Mann Whitney U test). Overall median (range) pain scores after 3 and 10 days were 20mm (1-81mm) and 17mm (1-85mm). Pain scores were significantly higher after EVLA compared to RFA after 3 days (31mm (2-80mm) versus 16mm (1-81mm) p=0.016 Mann Whitney U) and after 10 days (24 mm (1-85mm) versus 13mm (1-68mm), p=0.003 Mann Whitney U). Using a multivariate analysis, we found that none of the other factors assessed predicted post operative pain score at 3 days or at 10 days. Table 1. Results of multivariate linear regression analysis (outcome - average post-operative pain score over 3 days and 10 days).

	Multivariate linear regression analysis over 3 days			*Multivariate linear regression analysis over 10 days*		
Risk factor assessed	*HR*	*95% CI*	*P value*	*HR*	*95% CI*	*P value*
Male sex	−0.064	(−16.702-10.620)	0.657	−0.065	(−13.143-8.196)	0.644
Patient age	−0.063	(−0.532-0.346)	0.672	−0.225	(−0.610-0.075)	0.123
Pre-op AVVQ	−0.040	(−0.707-0.558)	0.814	−0.071	(−0.601-0.387)	0.666
Pre-op VCSS	0.256	(−1.059-6.529)	0.154	0.310	(−0.295-5.632)	0.077
Pre-op CEAP grade	0.066	(−6.311-8.978)	0.728	0.064	(−4.927-7.015)	0.727
Bilateral surgery	0.008	(−12.564-13.217)	0.960	−0.070	(−12.350-7.786)	0.651
Total length of vein ablated	−0.072	(−0.284-0.180)	0.657	−0.130	(−0.256-0.106)	0.410

Conclusions Pain scores were lower after RFA compared to EVLA, however, sex, age, AVVQ, VCSS, CEAP score, bilateral intervention or the length of vein ablated were not predictive of post operative pain.

Author Disclosures: A.C. Shepherd, None; **M.S. Gohel,** None; **C.S. Lim,** None; **M. Hamish,** None; **A.H. Davies,** None.

PP84.

Iliofemoral Stenting in Venous Occlusive Disease

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Objective: Venous hypertension is a significant cause of patient morbidity and decreased quality of life. Common etiologies of venous hypertension include deep venous thrombosis (DVT) or congenital abnormalities resulting in chronic outflow obstruction. We have implemented an aggressive endovascular approach to the treatment of iliac venous occlusion with angioplasty and stenting. The aim of this study is to determine the patency rates with this approach at a large tertiary care center.

Materials/Methods: All patients undergoing ilio-femoral venous angioplasty and stenting over a 2 1/2 year period were identified from a vascular surgical registry. Charts were reviewed retrospectively for patient demographics, the extent of venous system involvement and the time course of the venous pathology. Technical aspects of the procedure including previous angioplasty or stenting attempts, presence of collaterals on completion venogram and stent patency were then recorded.

Results: A total of 34 patients (37 limbs) were stented from Jan 2005 through August 2008. Of these patients 25 were women (73%). Both lower extremities were involved in 4 patients. Thrombosis was considered acute (<30 days) in 13 patients (38%). The majority of patients who had a recognized underlying etiology were diagnosed with May-Thurner syndrome (12 patients, 48%). Mean follow-up time period in the study population was 10.5 months. One stent in the study occluded acutely and required re-stenting. Primary patency rates at 6, 12, and 24 months were 83% (67.4, 98.6), 70% (49.3, 91.2), and 58.5% (31.3, 85.8) respectively. Secondary patency rates for the same time intervals were 100.0% (100.0, 100.0), 93.8% (81.9, 100.0), and 82% (58.2, 100) respectively. Although not statistically significant, external compression and thrombophilia appear to portend less favorable outcomes.

Conclusion: Ilio-femoral venous stenting provides a safe and effective alternative to either anti-coagulation, or open surgical bypass for the treatment of iliac venous occlusive disease. Acceptable patency rates can be expected through short-term follow-up. Further experience with this approach and longer-term follow-up is necessary.

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PP85.

Venous Ablation Can be Performed Safely on High Risk Patients

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Introduction: Patients with a previous history of DVT or family history of DVT are considered at high risk for thrombotic complications (DVT) after endovenous ablation. In this study, we examine our outcomes on patients presenting for "high risk" endovenous ablation.

Methods: We reviewed our vascular registry for all patients undergoing EVA from 2006-2008. All patients were evaluated with venous ultrasonography and initially treated with a minimum of 3 months of compression stockings. Candidates for EVA were treated with laser ablation or radiofrequency ablation using a standardized technique. All patients that were identified as potential high risk for DVT had hematology consultation and were placed on peri-procedure anticoagulation prophylactically. Post procedure ultrasound was performed at 1week, 1 month, 3 months and every 6 months thereafter for two years.

Results: A total of 685 endovenous ablations were performed (480 laser, 205 radiofrequency); the majority being greater saphenous veins. A sub-group of patients n=15(2.1%) were identified to be high risk for DVT. Mean age was 44 years. CEAP classifications ranged from 2-6, with ankle edema being the most common diagnosis. The immediate technical success rate was 99.6%. Access failure occurred in 3 patients (0.4%). The most common post procedural complications included bruising 29% (n=203), phlebitis in branch varicosities in 4% (n=28) and heat induced thrombus formation in 1.9% (n=13). There was no significant difference between laser and radiofrequency groups. None of the presumed hyper congealable patients developed thrombotic complications. There were no mortalities in this series. Mean follow up was 6 months (range 1-27 months). Ancillary procedures were performed in 19% including stab phlebectomy, schlerotherapy, and perforator injection or ablations. All patients remain successfully ablated to date.

Conclusions: In our experience, EVA can be safely performed in appropriate candidates with excellent clinical outcomes and minimal morbidity and mortality. Preliminary data suggests that patients with hypercoagulable conditions or strong family history of thrombosis can be considered for EVA with peri-procedural anticoagulation.

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PP86.

Intravenous Leiomyomatosis with Inferior Vena Cava and Heart Extention: A Report of 6 Cases

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Background: Intravenous Leiomyomatosis(IVL)is a rare, histological benign but biological behavior malignant tumor. Literature reports on IVL are less than 200 cases, and most majority of them are individual reports.

Methods: Six patients with intravenous leiomyomatosis involved in the cava inferior vena were analyzed.

Results: Three patients received one-stage operation and two received two-stage operation. All the operations were successful. No perioperative death or other complications were observed. Among the six patients, primary tumor and intravenous tumor embolus were completely resected from four patients. Residual tumor was remained in one patient who had serious adherence due to multiple operations. However, with the anti-estrogen therapy, the residual tumor had significantly regressed. All the patients had tumor relapse after the operation.

Conclusion: We believe that IVL is group of disease and not a single disease entity. Although IVL is extremely rare, vascular surgeon must pay more attention to this disease. There are many therapeutic methods to choose from when uterine leiomyomatosis involves the cava inferior vena, among which operation is the best choice. Anti-estrogen therapy seems to be justified in patients with ER(+) and PR(+).

Author Disclosures: B. Liu, None; **C. Liu,** None.

PP87.

Iliac Venous Stenting for Lower Extremity Venous Stasis Disease

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Introduction: In a small subset of patient presenting with severe venous stasis disease, we have been unable to identify the sources of reflux with standard duplex imaging of the superficial, deep and perforating veins. Recently we have been examining the iliac veins with IVUS and venography to identify stenotic lesions. We herein review our finding with this technique.

Study Population: Patients with chronic venous stasis symptoms not responding to conventional methods of treatment (leg elevation, compression stockings, Unna boots, radiofrequency ablation/stripping of varicose veins/perforators/great saphenous vein). 54 patients were included, all of which underwent iliac-femoral venography with assessment for stenosis. 24 (44.4%) patients had no detectable stenotic lesions are had no further intervention. 30 (55.6%) patients had stenotic lesions and underwent vein stenting. The stents spanned across the inguinal ligament in all but 3 patients (90%).

Results: The venography-only group included 24 patients with an average follow-up period of 4.5 months (range 1 week to 8 months). 11 (45.8%) had a CEAP of 6, only one of which (9.1%) healed their ulcers after 3 months.The vein stenting group included 30 patients with an average follow-up period of 3.4 months (range 1 week-10 months). 22 (73.3%) had a open ulcers, 11 (50%) of which healed their ulcers over a period of 1 week to 8 months (average 3.25 months). (p=0.02) (5.5%) patients developed complications. Two developed stent thrombosis (one with a documented hypercoagulable state, the other with a suspected hypercoagulable state). Both were re-opened and re-stented. One patient developed a superficial femoral artery pseudoaneurysm which was repaired with a stent graft. All patient not needing postoperative anticoagulation were able to be stented on an outpatient basis.

Conclusion: Many patients with lower extremity venous stasis symptoms have a component of iliac vein stenosis, and iliac vein stenting may especially help patients with open ulcers. In contrast to pre-existing series, only one-half of the patients were able to have lesions identified to be stented. The procedure is relatively simple and safe, and can be performed on an ambulatory basis.

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PP88.

Lower Extremity Occlusive vs Non-occlusive DVT and the Risk of Pulmonary Embolism

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Introduction: Acute DVT has been appreciated as a risk factor for pulmonary embolism (PE). However, it is not known whether having an incomplete occlusion of the vein (Acute Non-Occlusive-ANO DVT) confers a higher risk of PE when compared to completely occlusive thrombi (Acute Occlusive-AO DVT). An incomplete occlusion indicates that there is some flow of blood around the clot, and whether that flow could dislodge the clot. Conversely, a completely occlusive clot may indicate a higher thrombus load and thus confer a higher risk of PE.

Methods: We reviewed 2894 consecutive lower extremity venous duplex studies performed for 2248 inpatients between November 2007-July 2008.All studies to evaluate for PE were noted.We divided the patients into 3 groups based on the location of their DVT: IVC/Iliac, Femoral-popliteal, and Infra-popliteal DVTs. Analysis was done on two sets of data.The first set included comparison of DVTs isolated to only one of the three anatomical groups. The second set compared DVTs based on the location of the most proximal clot.

Results: DVTs isolated to one anatomical group:In the IVC/Iliac vein group, only one isolated AO DVT was found with no evidence of PE (0%). Two ANO DVTs were identified with evidence of PE in one (50%). (p=0.667).In the Femoral-popliteal group, 31 isolated AO DVT were found with evidence of PE in 6 patients (19.3%). 64 isolated ANO DVT were found with evidence of PE in 8 patients (incidence of 12.5%). (p=0.374).In the Infra-popliteal group, 140 patients with isolated AO DVT were identified with evidence of PE in 12 of them (incidence of 8.6%). 21 patients with isolated ANO DVT were identified with evidence of PE in one (incidence of 4.8%). (p=0.471)Analysis based on the most proximal DVT:In the IVC/Iliac vein group, 41 AO DVT was found with evidence of PE in four (9.75%). 30 ANO DVTs were identified with evidence of PE in two of them (6.67%). (p=0.496).In the Femoral-popliteal group, 83 AO DVT were found with evidence of PE in 17 patients (20.5%). 125 ANO DVT were found with evidence of PE in 14 patients (11.2%) (p=0.075).

Conclusion: There is no difference in the risk of pulmonary embolism between acute occlusive and acute non-occlusive DVTs, and hence both should be treated similarly.

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Endovascular AAA

PP89.

Treatment of Acute Iliofemoral Deep Vein Thrombosis: A Systematic Review and Meta-analysis

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Objectives: To conduct a systematic review of the literature to identify and summarize the best available evidence about the efficacy of the different treatments for acute iliofemoral deep vein thrombosis (catheter-directed thrombolysis, surgical thrombectomy and systemic anticoagulation).

Methods: Electronic databases (MEDLINE, EMBASE, Cochrane CENTRAL, Web of Science, and SCOPUS) were searched with appropriate terms through February 2008. Eligible studies were controlled trials (randomized or non randomized) that enrolled participants with acute iliotibial thrombosis. Relative risks (RR) were pooled from each study using random effects model and I^2 statistic was used to assess heterogeneity.

Results: Compared with systemic anti-coagulation, thrombectomy was associated with a statistically significant reduction in the risk of developing postthrombotic syndrome (RR 0.67 (95% confidence interval [CI], 0.52-0.87; I^2=0%) and venous reflux (RR 0.68; 95% CI, 0.46-0.99; I^2=43%), and a trend for reduction in the risk of venous obstruction (RR 0.84; 95% CI, 0.60-1.19; I^2=66%). Compared with systemic anti-coagulation, catheter-directed thrombolysis was associated with statistically significant reduction in the risk of postthromotic syndrome (RR 0.19; 95% CI, 0.07-0.48; I^2=64%), venous reflux (RR 0.21; 95% CI, 0.09-0.53; I^2=0%) and venous obstruction (RR 0.35; 95% CI, 0.17-0.34; I^2=68%). Subgroup analyses showed no significant interactions between effect size and the time lapsed since symptoms onset or the proportion of patients lost to follow up. The superiority of thrombectomy over anticoagulation was significant in