

controlled trial of dipyridimole plus aspirin for newly placed AVG.

**Methods:** Participants in the Dialysis Access Consortium trial with upper extremity prosthetic grafts of the brachial artery were studied. Multivariable analyses adjusting for treatment group, center, gender, race, BMI, diabetes, current dialysis, and prior access or catheter were performed to compare outcomes of forearm (fAVG) and upper arm (uAVG) grafts including loss of primary assisted patency (LPUP) and cumulative primary graft failure (CGF). Subgroup analyses of graft configuration and outflow vein used were conducted.

**Results:** Of the 522 participants with an upper extremity brachial artery graft, 269 had fAVG and 253 had uAVG. Participants with fAVG were less often male (33% vs 43%;  $P = .03$ ), black (62% vs 77%;  $P < .001$ ), dialysis-dependent at time of surgery (20% vs 36%;  $P < .001$ ), and had a higher mean BMI (32 vs 29;  $P < .001$ ) compared to those with uAVG. There was no difference in LPUP (69% vs 78%;  $P = .22$ ) or CGF (32% vs 36%;  $P = .53$ ) between fAVG and uAVG at 1 year follow-up. Multivariable adjustment did not change the statistical significance of the association between AVG location and either LPUP (HR, 1.26; 95% CI, 0.98, 1.62;  $P = .07$ ) or CGF (HR, 1.09; 95% CI, 0.80, 1.49;  $P = .58$ ). LPUP did not differ significantly between fAVG and uAVG among subgroups based on AVG configuration ( $P = .23$ ) or outflow vein used ( $P = .53$ ).

**Conclusions:** Patency of fAVG and uAVG was similar despite the larger caliber veins often encountered in the upper arm. Therefore, to preserve a maximal number of access sites, the forearm location should be considered first before resorting to an upper arm graft.

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## VS5.

### Video Presentation

#### Reconstruction of the Greater Saphenous Vein to Create a Viable Arterio-Venous Fistula Conduit

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**Background:** Vascular surgeons are sometimes faced with central vein occlusions and other situations where upper limb fistulas are not viable. In the lower limb prosthetic grafts have been the mainstay conduit for dialysis access with high rates of occlusion and infection. Some authors have published data on the use of the femoral superficial vein however this is a long complex procedure with significant disruption of the lower limb venous return. The greater saphenous vein (GSV) has proved previously to be a poor conduit due to its resistance to dilatation and only few reports have mentioned its effective use in dialysis.

The technique exhibited in this video results in a doubled diameter of the GSV allowing easy puncture and effective dialysis. It has all the advantages of an

autologous conduit without the morbidity associated with the superficial femoral vein graft.

We also believe that this technique can be used in other locations such as the upper limb in selected patients not candidates for prosthetic grafts.

**Technical Description:** After harvesting the required length of the GSV, it is opened longitudinally upto approximately 5 cm from the sapheno-femoral junction (but not sectioned vertically to avoid the requirement for a venovenous anastomosis). The GSV is freed from all valves and then folded in two creating one anterior and one posterior vein panel.

The lateral edges of the panels are sutured together, and the medial edges together effectively creating a cylinder, whilst doubling the initial GSV diameter. After venous testing the vein is tunneled subcutaneously and down to the superficial femoral artery (SFA). The size of the anastomosis is tailored to avoid lower limb steal syndrome. The vein is anastomosed to the SFA.

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## SS22.

### Complications of Indwelling Retrievable Versus Permanent IVC Filters

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**Objectives:** Retrievable IVC filters are appealing because they are designed for either retrieval or long term use. However, their long-term safety compared to permanent filters is largely unknown. This study was undertaken to compare complication rates and types associated with retrievable and permanent filters.

**Methods:** A retrospective review identified 1231 IVC filters (447 retrievable, 784 permanent) placed in 1227 patients from 2005-2010. Patients with retrievable filters removed electively were excluded, yielding 382 patients (group A) in whom retrievable filters were left in place. These patients were compared to those with permanent filters (group B) with respect to demographics, comorbidities, survival, and complication rate and type. Differences in patient characteristics were tested with  $\chi^2$ , Fisher exact, and Wilcoxon rank-sum tests. Logistic regression was used to identify predictors of complications.

**Results:** Group A patients were younger than those in group B (mean age, 64 vs 75;  $P < .0001$ ). Group A had significantly more complications than group B (9.7% vs 1.9%;  $P < .0001$ ) after mean follow up of 20 months (range 0-86 mo). Furthermore, retrievable filter type was a significant predictor of complications in a multivariate model (odds ratio, 5.4;  $P < .0001$ ). Filter complications were categorized as thrombotic, device related, or systemic. While the most common complication type with retrievable filters was device related (52%) and with permanent filters was thrombotic (63%), both thrombotic and device related complications occurred more frequently in group

A than group B (thrombotic, 3.6% vs 1.5%;  $P = .02$ ; device related, 5% vs 0.5%;  $P < .0001$ ).

**Conclusions:** Indwelling retrievable IVC filters were associated with significantly higher complication rates than permanent filters. Both thrombotic and device related complications were more common with retrievable filters. Long term use of retrievable filters should be avoided, especially considering the younger population in whom they are placed.

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### SS23.

#### Venous Ulceration and Perforator Sclerotherapy: Successful Injection Predicts Healing

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**Objectives:** Describe and quantify the effects of perforator sclerotherapy on venous ulcers (CEAP 6) without axial reflux

**Methods:** Retrospective analysis of ultrasound (US)-guided perforator injections from 1/2010-11/2012 identified 73 venous ulcers in 62 patients. Patients had no axial reflux. Perforating vein identification and closure were assessed with US. Refluxing perforators near the ulcer were injected with polidocanol foam created in a 4:1 mixture with air. 98.4% of patients had US follow-up performed 2-6 weeks after injection. Ulcers were divided into two groups: group 1 healed ulcer(s); group 2 either healed and recurred/never healed. All patients were treated with compression therapy. Demographics, comorbidities, treatment details and outcomes were analyzed.  $P \leq .05$  was significant.

**Results:** 32 patients had healed ulcers; 30 had at least 1 non-healed ulcer. Comparisons of patients with healed vs non-healed ulcers were: age 60.2 vs 61.3 years; male gender 50% vs 60%; history of deep vein thrombosis (DVT) 31.3% vs 33.3% ( $P = NS$  for all). Of the 73 total ulcers, 43 ulcers were healed (group 1); 30 ulcers recurred/never healed (group 2) for a healing rate of 59.9%. Initial ulcer size was  $3.44 \text{ cm}^2$  vs  $15.1 \text{ cm}^2$  ( $P = NS$ ).

189 injections were performed with a 53.8% successful closure rate per injection. Successful thrombosis occurred in 68.8% of group 1 vs 37.8% of group 2 ( $P < .001$ ). Group 1 ulcers averaged 2.2 injections per ulcer vs 2.9 in group 2 ( $P = .16$ ). 24.7% of ulcers healed with a single perforator injection. Post procedure DVTs were seen: 5.8% of injections (11/189); four in group 1; seven in group 2 ( $P = NS$ ). No other injection complications were seen. 88.1% of group 1 ulcers had perforator closure at the end of follow-up vs 67.8% of group 2 ulcers ( $P = .038$ ).

**Conclusions:** Successful thrombosis of pathologic perforators with compression therapy increases ulcer healing and was found to be the only predictor of ulcer closure.

Perforator closure may require multiple injections and is associated with low DVT rates.

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### S6: SVS Plenary Session VI

#### SS24.

#### Is Current Recommended Management of Isolated Degenerative Femoral Artery Aneurysms (IFAA) Too Aggressive for Its Natural History?

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**Objectives:** Previous studies have combined anastomotic, catheter-induced, and IFAA to achieve adequate numbers for analysis, and have recommended repair of asymptomatic IFAA with diameters  $\geq 2.5$  cm and all symptomatic IFAA. This study evaluates the contemporary management of IFAA, using these criteria.

**Methods:** Patients with IFAA were evaluated using a standardized, prospectively maintained database by a research consortium.

**Results:** From 2002-2012 236 IFAA were identified in 182 patients (mean age, 72; M:F, 16:1) at eight institutions. Nonoperative mean diameter was  $2.8 \pm .7$  cm; operative diameter was  $3.3 \pm 1.5$  cm. IFAA location was: CFA (191), SFA (34), and PFA (11). Synchronous aneurysms (mean = 1.7/patient) occurred in the aorta (181), iliac (126), popliteal (96), hypogastric (63), mesenteric (17) arteries, and contralateral SFA (7) and PFA (2). 66% of repaired aneurysms were asymptomatic; other indications included: claudication (18%), local pain (8%), nerve compression (3%), rupture (3%), acute thrombosis (1%), embolus (1%), and rest pain (.5%). Acute complications (rupture, thrombosis, embolus) were associated ( $P < .05$ ) with IFAA diameter  $> 4$  cm and intraluminal thrombus, but not location. Mean diameter of symptomatic aneurysms was: rupture,  $5.7 \pm 1.3$  cm; thrombosis,  $4 \pm 1.1$  cm; and embolus,  $3.6 \pm .1$  cm. 174 IFAA were repaired with interposition or bypass graft; three underwent endovascular repair. There were two perioperative deaths at 30 days (MI, MSOF); operative complications included wound infection (6%), seroma (3%), and bleeding (2%). No amputations occurred up to 5 years in either the nonoperative or operative groups. Survival was: 3 months = 99% (138), 1 year = 92% ( $n = 104$ ), and 5 years = 81% (20) in operated patients.