**Objectives:** The aim of our study is to evaluate the preoperative presence and anatomy of intramural thrombus in infrarenal abdominal aortic aneurysms and correlate these findings with type II endoleaks and the associated vessels after endovascular aneurysm repair (EVAR).

**Methods:** This study included 90 patients that underwent EVAR at our institution from January 2006 to February 2012 for abdominal aortic aneurysm. All patients had pre- and postoperative contrast computed tomography (CT) and/or dedicated abdominal U/S at 1, 6, and 12 months. All patients without the described CT, U/S, and follow-up were excluded. Preoperative CTs were reviewed for coverage of IMA and lumbar artery origins with thrombus. Follow-up CT and U/S were reviewed and presence and culprit vessel of type II endoleak was noted.

**Results:** A total 15 of 90 patients had type II endoleaks (16.7%). Five endoleaks were identified in the 15 patients without intramural thrombus; whereas 15 endoleaks were found in the 75 patients with intramural thrombus (33.3.% vs 13.3%; $P = .058$). Two patients had endoleaks involving more than one vessel. The presence of intramural thrombus was found to be protective for right lumbar type II endoleaks (0% vs 13%; $P = .027$), and the same observation was found in left lumbar type II endoleaks (0% vs 10%, $P = .040$). Intramural thrombus obstructing the IMA orifice trended toward protection but was not statistically significant (5% vs 13.3%; $P = .21$) (Table).

**Conclusions:** Our findings suggest that intramural thrombus protects against type II endoleak. Understanding the anatomy of the thrombus and aneurysm sac can identify patients at increased risk for type II endoleak. These patients may benefit from aneurysm sealing with new endovascular products such as polymer, fibrin, or endobags at the time of endografting.

**Table.** Results

| | *IMA thrombus (n = 60)* | *No thrombus (n = 30)* | |
|---|---|---|---|
| IMA type II endoleak | 3 (5%) | 4 (13.3%) | $P = .21$ |
| | *RL thrombus (n = 43)* | *No thrombus (n = 47)* | |
| RL type II endoleak | 0 (0%) | 6 (13%) | $P = .027$ |
| | *LL Thrombus (n = 49)* | *No thrombus (n = 37)* | |
| LL type II endoleak | 0 (0%) | 4 (10%) | $P = .040$ |
| * | | | |

**Use of Drug Eluting Coronary Stents for Infrageniculate Lesions in High Risk Patients with Critical Limb Ischemia: Intermediate Follow-Up Demonstrates Favorable Outcomes**

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**Objectives:** Patients with critical limb ischemia pose a significant therapeutic challenge due to high rates of associated comorbidities and increased risk of limb loss. We evaluated the role of drug eluting stents in below the knee revascularizations in patients with critical limb ischemia who are deemed high-risk candidates for open revascularization procedure.

**Methods:** A retrospective review of 24 high-risk patients (18 males and 6 females) underwent drug eluting stent placement over a period of 24 months (26 limbs, 30 lesions). The mean age was 78.5 ± 9.2 years. Patient comorbidities included hypertension (90%), diabetes (65%), coronary artery disease (60%), smoking (50%), chronic renal insufficiency (50%), and hyperlipidemia (75%). The mean American Society of Anesthesiologists class was 3.5 ± 0.7 and the Rutherford category of the lesions was 4.9 ± 0.8. In addition, 36% of patients had cellulitis present. Standard percutaneous techniques were used for stent placement. Outcomes were measured in terms of wound healing, limb salvage, relief of symptoms, and stent patency.

**Results:** The lesions included 3 below knee popliteal, 5 tibioperoneal trunk, 4 anterior tibial, 4 peroneal, 8 posterior tibial, and 6 distal anastomotic stenoses. Simultaneous proximal interventions were performed during 32% of the procedures. Median stent diameter was 3.0 ± 0.5 mm. Median follow-up was 20 months (11-1037 days). Five patients died of causes unrelated to the procedure. Of the remaining patients, pain relief was observed in 82%, amputation free rate was 83%, and wounds healed in 75% of patients. In addition, duplex ultrasound at follow-up showed the patency of the stents to be 85%. Three patients had minor complications (two hematomas and one puncture site pseudo aneurysm).

**Conclusions:** Intermediate term follow-up demonstrates that the use infrageniculate drug eluting stents is a safe and effective method for treatment of critical limb ischemia in high-risk surgical patients. Further studies to determine long-term follow-up are warranted.

## Scientifc Session IV: Aortic I

**Accuracy and Utility of Intravascular Ultrasound for Fenestrated Endovascular Aortic Aneurysm Repair**

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**Objectives:** Intravascular ultrasound (IVUS) is frequently used to determine neck measurements and location of renal arteries for endovascular aortic aneurysm repair (EVAR), however, its utility for fenestrated endovascular aneurysm repair (FEVAR) has not been addressed. The purpose of this study was to assess the utility and accuracy of IVUS to aid with location and cannulation of target vessels during FEVAR.

**Methods:** In a series of 81 FEVAR procedures, aortic IVUS was obtained during FEVAR. During the first 30, routine precannulation of at least two target vessels was used to aid with proper alignment of the corresponding fenestrations. For the last 51 FEVARs, precannulation was no longer performed and IVUS was instead used for fenestrated endograft orientation. The 2 × 2 table method, kappa statistic, and Bland-Altman analysis were used to characterize the ability of IVUS to discriminate target vessel location and clock position confirmed angiographically.

**Results:** To determine target vessel location, the sensitivity of IVUS was 95% for the celiac artery, 96% for the superior mesenteric artery, and 90% for the renal arteries. For juxtarenal aneurysms, the sensitivity was 100% for both visceral and renal artery locations, whereas in those with suprarenal aneurysms, the sensitivity was 98% for the visceral arteries and 90% for the renal arteries. For paravisceral and thoracoabdominal aortic aneurysms, IVUS sensitivity was >80% for the celiac artery and SMA, and 60% for the renal arteries. The accuracy of IVUS to determine clock position of target vessels was > 90%. In addition to fenestration alignment, the operative technique for FEVAR was altered based on the findings of IVUS in 16 procedures (20%), in which the distal bifurcated component was deployed prior to target vessels stenting to prevent stent deformity with the tip of the delivery system given the path of the stiff guidewire used to deliver the endografts.

**Conclusions:** IVUS is accurate in determining the location of target vessels during FEVAR and may alter the operative plan in 20% of the procedures. Although IVUS is less reliable for the precise location of visceral and renal vessels in thoracoabdominal and paravisceral aortic aneurysms, it can accurately predict target vessel location in most juxta/suprarenal aneurysms, which may facilitate safe and expeditious FEVAR.

**An Expanding Right Popliteal Artery Aneurysm with a Type-II Geniculate Endoleak 5 Years after Exclusion and Bypass**

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**Objectives:** Popliteal artery aneurysms (PAAs) are managed by open bypass graft with ligation (OBGL) or by endovascular (ENDO) repair. OBGL is the gold standard for PAA repair. Complications of OBGL are rare; however, reports of continued growth of the excluded PAA, mass effects, embolization, and rupture have all been described. In this report, we describe an uncommon presentation of an expanding aneurysm of a popliteal artery after OBGL.

**Methods:** A 77-year-old man with a history of a PAA, who previously had been treated with OBGL, presented 5 years later with leg pain and a palpable popliteal mass. Physical exam showed patent bypass and full distal pulses.

**Results:** Computed tomographic angiogram revealed a large fusiform PAA, 7 × 9 cm, with a predominantly thrombosed aneurysm sac with "faint" contrast (Fig 1). Angiogram revealed a popliteal aneurysm. The original bypass graft remained patent; however, there was evidence of graft compression by the expanding aneurysm at the level of the knee joint. A large, type-II geniculate endoleak was identified (Fig 2). Given the angle to the tibial vessel, endovascular options could not be performed. An open, lateral approach was used to open the aneurysm sac. A large amount of mural thrombus was removed. There were two small feeding vessels filling the aneurysm sac that were ligated from the inside (Fig 3). Further examination of nearby structures revealed