



Use of Endovascular Devices in Recurrence of PAD

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Introduction

Peripheral artery disease (PAD) is a significant source of morbidity in the United States, affecting ~8 million adults today, according to the CDC.

Many of the following risk factors for coronary artery or cerebrovascular disease predispose individuals to PAD:

- Smoking (previous or current use)
- Type II diabetes mellitus
- Dyslipidemia
- Hypertension

While as many as 40% of patients with atherosclerotic lower extremity PAD experience symptomatic claudication, there remains significant under-diagnosis and treatment. Symptomatic claudication and critical limb ischemia (CLI) are two indications for percutaneous or surgical intervention on a peripheral lesion. Current medical treatments for cardiovascular disease like lipid-lowering statins, antiplatelet therapy, and glycemic and hypertensive control benefit patients with PAD for the same reasons they reduce morbidity and mortality in coronary artery disease.¹ CLI can be rapidly treated with endovascular techniques to restore limb perfusion and delay or avoid the need for amputation. Unfortunately, the natural course of the disease can be progressive, sometimes requiring multiple interventions to maintain vessel patency. Rates vary by study, but between 20 and 50% of TASC D lesions will require target vessel revascularization within one year of initial intervention.²

Our goal was to characterize the population of patients at Long Island Jewish Medical Center who present more than once with either CLI or symptomatic PAD due to a restenotic lesion. In describing these patients for whom ultimately require repeat interventions, we may better identify a population of patients who would benefit from more aggressive medical management and surveillance, as perhaps benefit from bypass surgery to preserve viable tissue below the knee.

References

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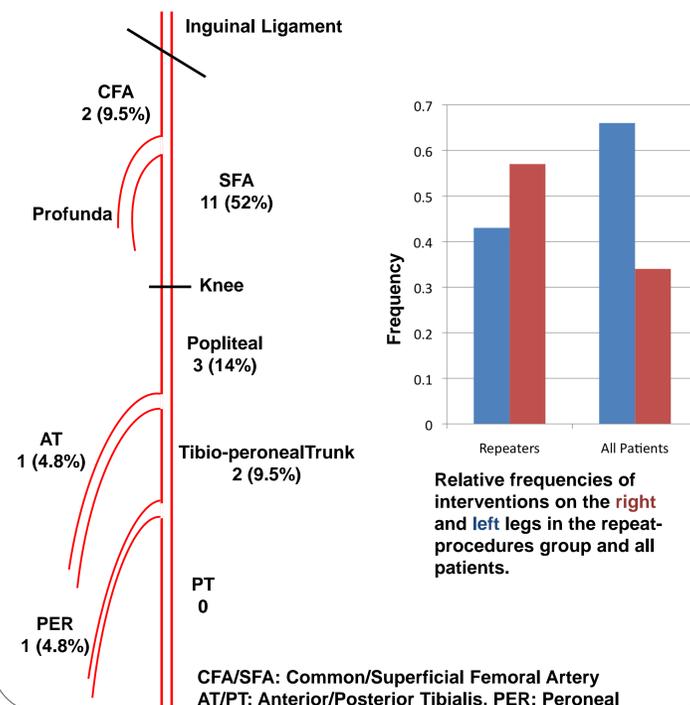
Methods

In order to characterize the population of patients susceptible to restenosis of lower limb arteries, the catheterization and medical records of patients at LIJMC were retrospectively reviewed to help determine risk factors that placed patients at higher risk for restenosis requiring repeat intervention.

Records of peripheral interventions procedures performed between August 2009 and October 2011 were examined. We analyzed the patients who had multiple procedures within this pre-designated timeframe. We then identified a sub-group that ultimately required interventions on the same lower extremity arterial lesion (as indicated on the catheterization report), or had progression of disease immediately distal to the previously intervened lesion. Factors that were analyzed included lesion length, percent of initial and subsequent stenoses, and time to repeat intervention. We also compared the devices used (balloon, stent, or atherectomy device) in each intervention. A group of individuals who returned for a procedure on the contralateral leg were used to analyze patency rates over time. These individuals had interventional procedures on the contralateral leg; patency of the original lesion was examined.

Limitations of this study include its single-center design, small sample size and the limitations of many patients entering our system as referrals, depriving us of their past interventions and referrals. This was a qualitative chart review, which is always limited in scope and the conclusions which can be drawn.

Location and Frequency Of Repeat Interventions



Results

There were a total of 17 iliac and femoropopliteal repeat procedures. Over the same time, there were 236 individuals who had a procedure on the femoral or popliteal artery. The return rate within the timeframe evaluated was 6%. In below-the-knee vessels, there were four individuals who returned for repeat procedures. Two returned for occlusions within the tibioperoneal trunk, one for the anterior tibial, and one for the peroneal. Of note, six of the seven repeat patients were octogenarians (>80 yo).

The patients who returned after restenosis for endovascular therapy tended to be older than the general population of patients seen in the catheterization lab for endovascular therapy (75.8 ± 11.2 years old compared to 70.7 ± 11). Diabetes mellitus type II, hypertension and a past history of smoking were common risk factors among the patients.

There was an increase in right-sided vessel interventions seen in the returning patients. Across all patients, there was a 2.05:1 ratio of left- to right-sided vessel interventions. In the repeat intervention group, there were 12 right-side vessels compared to nine on the left. That approximately two-to-one ratio was consistent among all arteries of the leg and for balloon-only angioplasty and stenting.

Eight of 21 patient limbs presented with critical limb ischemia. These patients had an average over 84 years old and all had a documented history of coronary artery disease requiring percutaneous interventions or surgery to treat. No patients in the comparison group presented with critical limb ischemia.

Conclusions

In this qualitative review of patients who returned for revascularization procedures at LIJMC we found that they tended to be older at first intervention than non-returned. Critical limb ischemia is a good predictor of future target vessel revascularization as CLI indicates an advanced disease state, not likely to be successfully medically managed.

A larger sample of patients requiring repeat revascularization of the same site would allow us to better develop characteristics of patients likely to need multiple interventions. These patients should receive more aggressive medical therapy earlier in their disease course. These patients could also then be considered candidates for bypass surgery to avoid repeated failed endovascular interventions.

Endovascular Treatment of an SFA Stenosis

The patient is a 65 year old man with one-vessel coronary artery disease requiring PCI, hypertension and dyslipidemia. His Right ABI is 1.03 and left is .57. Distal pulses are not felt in the left lower extremity.



A: Near total occlusion of the left superficial femoral artery in a patient who presented with a worsening history of left leg pain on exertion. The lesion was treated with rotational atherectomy and balloon angioplasty. From LIJMC