

Best Practices for Lower Extremity Bypass

Surgical and endoluminal treatment considerations for femoropopliteal lesions.

WITH RUSSELL H. SAMSON, MD, FACS, RVT, DFSVS



PATIENT CONSIDERATIONS

What are the patient and case dynamics that you take into consideration when deciding whether to treat surgically or endovascularly for femoropopliteal lesions?

I consider whether the patient is having a procedure for claudication or truly limb-threatening ischemia. For claudication, I will first try to do an endovascular procedure, assuming that the lesion is appropriate (< 25-cm long and ends at least 2 to 3 cm above the knee joint on angiography). I have not been happy with endovascular treatments of longer lesions, especially if they start at the origin of the superficial femoral artery. I am also somewhat suspect of an endovascular approach for heavily calcified lesions. However, if I have to cross the knee, I will perform an endovascular approach in extremely symptomatic patients who do not have an available saphenous vein with the proviso that there is at least some popliteal artery to land the distal end of the stent. The patient also must understand the downsides of an intervention for claudication and the potentially limb-threatening complications.

For most patients with moderate claudication and long, heavily calcified lesions or those extending to the knee joint, I will either try to convince the patient to follow a noninterventional approach or, if directed by a fully informed patient, I will do above-the-knee bypass.

For patients with limb-threatening ischemia, the dominant factors that I take into account—other than the lesion I am treating—are how quickly I need to restore adequate blood flow, the status of the saphenous vein, and the patient's long-term life expectancy. If the patient can tolerate a bypass operation and has poor runoff (eg, an isolated popliteal), I am more likely to go directly to bypass using saphenous vein.

In the majority of cases, however, the above-the-knee popliteal bypass will be with a GORE®

PROPATEN® Vascular Graft based on our data showing patency rates that are superior to standard expanded polytetrafluoroethylene (ePTFE).¹ However, in young, healthy patients who require a bypass, I am more likely to use saphenous vein because our data have shown inferior results in individuals under 60 years of age.

How might the patient's treatment goals change your approach?

Under some circumstances, I will allow the patient to direct the type of treatment and even the choice of graft. For example, I recently had a patient who had extensive obligations that required him to be ambulatory after the procedure. He understood that there may only be a short-term treatment effect, but he was insistent on an endovascular treatment, which has fortunately worked well for this patient.

As you know, there is often controversy around the idea of "saving a vein for later." Do you subscribe to this philosophy as it relates to above-the-knee bypass? In your opinion, when is this approach most appropriate for above-the-knee bypass cases?

I do believe in saving the saphenous vein for a future operation because the saphenous vein below the knee, especially to the tibial arteries, has superior patency rates compared to a prosthetic graft. In our practice, we use prosthetic grafts above the knee preferentially rather than the saphenous vein (except in younger patients and some of the scenarios outlined previously). Interestingly, we very rarely have had to perform a subsequent distal saphenous vein bypass. This may be explained by the more durable patency of heparin-bonded ePTFE. Further, heparin-bonded ePTFE above-the-knee grafts can be implanted quickly with just two small incisions, and patients return to normal activity more rapidly than those who have the saphenous vein as the conduit. This better suits their lifestyles.

“SURVEILLANCE SAVES LEGS! OUR DATA HAVE PROVIDED US WITH CONFIDENCE THAT THE GORE PROPATEN VASCULAR GRAFT WILL PROVIDE GOOD 5-YEAR PRIMARY PATENCY APPROACHING 85%.¹”

OUTCOMES AND FOLLOW-UP

What are some of the key procedural best practices when using the GORE PROPATEN Vascular Graft to ensure optimal device performance?

Preventing infection and wetting of the graft are key aspects of using the GORE PROPATEN Vascular Graft. Infection is controlled by applying BD® CHLORAPREP Applicator, a chlorhexidine gluconate and isopropyl alcohol solution, followed by wrapping the leg in 3M IOBAN Antimicrobial Incise Drape, thus preventing skin contamination. We use a SCANLAN® Vascular Tunneling System to prevent dragging the graft through tissue. Wetting occurs if the graft is filled with saline under pressure or if the proximal anastomosis is opened with the distal anastomosis still occluded. We also never infuse saline into the graft. We use 4-0 suture thread on a C1 needle, which decreases needle hole bleeding. We also routinely only use 15-mm arteriotomies and do not use vein patches for above-the-knee grafts.

What is your approach to patient follow-up as it relates to dual antiplatelet therapy and surveillance?

All patients are placed on 75 mg of clopidogrel for life. We do not object to aspirin as well, but we do not

routinely prescribe dual antiplatelet agents. Data suggest that vein bypasses would have prolonged patency if placed on warfarin, but we do not use warfarin or novel anticoagulants; we use clopidogrel for vein grafts as well. There is no science to support this, but it may also reduce cardiac complications. All patients are maintained on a statin. New data from the COMPASS trial suggest that perhaps we should be using low-dose rivaroxaban to decrease mortality and amputation, but I am awaiting further confirmation.²

We perform duplex ultrasound scans and measure ankle-brachial index (ABI) at 1, 3, and 6 months. ABI is measured every 6 months thereafter, with duplex ultrasound evaluation if we see evidence of stenosis in any part of the inflow, graft, or outflow. Although some insurers will not pay for such duplex ultrasound scans, we will do them at no charge if necessary. Surveillance saves legs! Our data have provided us with confidence that the GORE PROPATEN Vascular Graft will provide good 5-year primary patency approaching 85%.¹ ■

1. Samson RH, Morales R, Showalter DP, et al. Heparin-bonded expanded polytetrafluoroethylene femoropopliteal bypass grafts outperform expanded polytetrafluoroethylene grafts without heparin in a long-term comparison. *J Vasc Surg.* 2016;64:638-647.

2. Eikelboom JW, Connolly SJ, Bosch J, et al. Rivaroxaban with or without aspirin in stable cardiovascular disease. *N Engl J Med.* 2017;377:1319-1330.

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