

CLI Revascularization Advice From a Surgeon Who Performs Distal Bypass

Decisions regarding type of therapy and insights from a surgeon to endovascular specialists.

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Over the past 20 years, trends in critical limb ischemia (CLI) revascularization have shifted dramatically toward endovascular intervention, with the number of lower extremity bypass procedures decreasing considerably.¹ In my own practice, the number of patients with CLI who undergo endovascular revascularization for limb preservation has increased to 75% over the past 20 years, with 25% currently being offered bypass as the initial mode of revascularization. Unless a meaningful addition to the endovascular armamentarium is developed, such as refinement of drug-eluting technology, I expect this ratio in my lower extremity practice to continue for the remainder of my career.

MAKING THE DECISION: ENDOVASCULAR THERAPY OR SURGICAL BYPASS

Current considerations in deciding whether to pursue endovascular or surgical intervention include the indication for revascularization, patient comorbidity and life expectancy, ambulatory status, arterial anatomy, angiosome revascularization, and a history of failed revascularization attempts. In terms of clinical indication, larger wounds with increased volume of tissue loss often heal more completely and rapidly with the robust flow obtained through surgical bypass, which can establish direct, pulsatile, inline flow to the appropriate angiosome. Surgical bypass may also be advantageous for patients with a longer life expectancy and less medical comorbidity, where durability is important.² Arterial anatomy also plays a role in this decision-making process, with bypass remaining the choice for total occlusions (TransAtlantic Inter-Society Consensus [TASC] D lesions) in the femoropopliteal anatomy and, more importantly, in patients with long, complex tibial artery occlusive disease.³ A compilation of this viewpoint was reflected in a survey of endovas-

cular surgeons, who perform both percutaneous and open procedures.⁴ In this survey, factors identified with consideration of a “bypass-first approach” for patients with CLI included common femoral artery pathology, extensive foot gangrene and sepsis, younger age, a requirement for extensive soft tissue reconstruction, and long tibial occlusive disease (especially with a single distal tibial target).

INSIGHTS FROM A SURGEON TO ENDOVASCULAR SPECIALISTS

Based on available literature and personal experience, what advice would I advocate as the surgeon performing distal bypass toward the endovascular specialist? Here are a few insights:

- **The relationship between a surgeon and interventionalist is critical.** A collegial relationship should exist between the surgeon and interventionalist to optimize communication and patient outcomes. Certainly, the aforementioned factors (eg, patient health, clinical indication, arterial anatomy) should be considered in the discussion.
- **Use extreme caution when using aggressive endovascular techniques to treat the patient with intermittent claudication.** Successful clinical outcomes for the patient with claudication can often be achieved through maximal medical therapy, including statins, antiplatelet agents, blood pressure and glucose control, and the possible addition of cilostazol. Combined with a structured exercise program, which is now reimbursed, claudication symptoms can often be alleviated without the risk of conversion to CLI symptoms in the case of failed intervention and a threatened limb. Improved walking distance and patient function can be obtained with an exercise program, as compared with iliac angioplasty and stenting.⁵

SCENARIOS TO INITIATE DISCUSSION BETWEEN BYPASS SURGEONS AND INTERVENTIONALISTS

PATIENT CHARACTERISTICS

- Reasonable life expectancy
- Good periprocedural medical risk
- Reasonable level of function
- Patient's wishes and motivation

INDICATION FOR REVASCULARIZATION

- Significant tissue loss

ANATOMIC CHARACTERISTICS

- Long segment, tibial occlusive disease (TASC D)
- Femoral bifurcation occlusive disease
- Popliteal (P2, P3) occlusive disease

TECHNICAL CHARACTERISTICS

- Presence of an ipsilateral or contralateral great saphenous vein
- Angiosome revascularization
 - Bypass to directly revascularize the appropriate angiosome
- Failed endovascular therapy
 - History of failed endovascular therapy
 - Lack of healing or symptom relief despite endovascular therapy

- **Early discussions between the interventionalist and surgeon are essential, especially when certain anatomy is involved.** Certain anatomic considerations warrant direct communication between the interventionalist and the surgeon at an early stage. Common femoral artery disease remains problematic for endovascular therapy, but it is a fairly simple and standard surgical procedure and is often combined with an endovascular component (hybrid revascularization). Common femoral endarterectomy, usually with patch angioplasty, is a durable and fairly straightforward mode of revascularization. Other anatomic scenarios that should stimulate discussion with a surgeon include popliteal artery disease that may require stenting; tibial artery atherectomy and stenting, especially with single-vessel runoff; and prior to consider-

ation of endovascular intervention using a retrograde pedal approach with single-vessel runoff.

- **Repeat interventions should stimulate discussion between the interventionalist and the bypass surgeon.** If the wound is not healing after an endovascular procedure, a timely discussion can allow possible surgical revascularization before bypass options are severely impacted.^{2,6} Repeat endovascular interventions can result in the loss of time and tissue, and continued and extensive endovascular interventions may limit what could have been a relatively straightforward surgical option. At the very least, a discussion of the case is important to optimize limb preservation.

SUMMARY

The current era of lower extremity revascularization for CLI should foster communication between the interventionalist and bypass surgeon to optimize results and limb preservation. Even in situations where the vascular surgeon performs both modalities of revascularization, the aforementioned considerations should hold. Timely communication is important, especially when considering repeat interventions or when there is lack of healing after endovascular therapy. However, the most important aspect of this process is to develop a relationship of communication and trust between physicians dedicated to CLI in order to take advantage of individual talents, institutional capabilities, and appropriate technology to maximize patient outcomes. ■

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