Discussion question:

Percutaneous revascularization for SFA/popliteal arterial disease: how and when will endovascular techniques and devices become truly competitive with bypass surgery?

VDM editorial board members share their thoughts

In our experience, the "when" occurred in the late 1990's for the CLI subset of SFA/popliteal disease (in our experience, 40-50% of CLI patients will have SFA/popliteal involved and 30-40% in LACI trial) and the "when" began a year or so ago for the truly lifestyle-limiting claudicant who has failed aggressive "medical intervention." In each subset, endovascular SFA/popliteal therapy (ESPT) has become more truly competitive with the evolution of improved endovascular tools. Long ago, I became lucky enough to be able to wear both the surgeon's and interventionalist's "hat" and I have experienced the limitations, advantages and complications of both femoral bypass surgery (FBS) and ESPT. It is clear to me that these treatments are not mutually exclusive, can be and are competitive, but one should not "replace" the other and they can be utilized creatively in a hybrid fashion to improve clinical outcomes, especially in the CLI subset (Case 1). Interestingly, even though both FBS and ESPT have their recognized advantages, disadvantages and limitations, both therapies need to continue to evolve and improve, because paradoxically when FBS fails, there oftentimes is an endovascular solution. Likewise, when ESPT ultimately fails, a surgical solution is often available as the solution to the patient's problem. It is uncanny how both therapies now have very similar failure (restenosis) modes and rates at 2 and 5 years, and both require an approximately 20-30% reintervention rate at about 24 months to achieve desired outcomes (secondary successes).

When at the bedside and forced to make a clinical decision between FBS and ESPT, in general, an "interventional-first approach" has been our policy. We believe it is justified by strict adherence to the following:

1. ESPT must never take away the patient's (not the surgeon's) surgical option. Therefore, the interventionalists must acquire basic knowledge about FBS to avoid inappropriate interventions at strategic surgical sites, targets, etc.
2. ESPT should never expose the patient to greater overall risks than FBS. A well-planned interventional strategy is paramount with limitations and boundaries set to minimize and avoid major complications (major distal dissections or embolization, vessel rupture, etc.). It is very important to learn how to "stop and not hurt the patient" and this only comes with experience.
3. Make sure the patient has the appropriate indication and let the patient make the final decision after presenting unbiased pros and cons regarding FBS and ESPT. I've found few patients will choose any surgical procedure over a percutaneous, less invasive alternative even if told to accept a higher likelihood of requiring repeat percutaneous procedures and not taking away their surgical option.

The "how" part of the question continues to evolve and change, but in general, ESPT continues to improve. Slowly, data is beginning to appear to support ESPT position as "true competition versus FBS. Even with the recent questions regarding nitinol stents (SIROCCO 24-month data) and concerns about "stent fracture"), the experience of new non-stent technologies such as plaque excision, cryotherapy and larger excimer laser probes with improved adjunctive devices for crossing CTOs and re-entry catheters all hold tremendous potential to even further improve ESPT.

Pharmacologic assistance (Angiomax, GP IIb/IIIa medications, statins) and risk factor modification will be of paramount importance and all are pros in favor of ESPT.

In conclusion, considering ESPT improving data, the emergence of both improving stents and now even more promising non-stent debulking technologies, the nonsurgical approach to SFA/popliteal disease afforded the patient by ESPT makes "now" as the time for ESPT to truly be competition as a first-line therapy for infrainguinal disease as long as one never jeopardizes the patient's surgical option.

CIS Case (see images): This case illustrates a hybrid, combined FBS and ESPT performed in the OR angiosuite. This "stent-through-graft" technique allows simultaneous classical surgical and endovascular therapies used in a creative fashion to improve patient outcomes. The graft is used as endovascular access and any endovascular therapy can be used (laser, stent, plaque excision, etc.) for more distal, as in this case, or proximal interventions. The final figure (Figure next page) shows the graft in place with distal popliteal PTA/stenting.

David E. Allie, MD
Director of Cardiothoracic and Endovascular Surgery; Director of Noninvasive Vascular Labs
Cardiovascular Institute of the South/Lafayette, Lafayette, LA
david.allie@cardio.com
The choice of therapy for femoropopliteal arterial disease depends on the clinical presentation of the patient. Symptomatic claudicants in the Rutherford-Baker classification Class 1 and 2 have no major life-style limitations and certainly deserve a conservative trial with pharmacologic therapy (statins, clopidogrel and cilostazol) and a supervised exercise program. Currently, we have no convincing data that shows that surgical or percutaneous therapy alters the natural history of peripheral vascular disease in these patients and therefore a conservative approach is warranted. We believe that claudicants with advanced symptoms (Rutherford-Baker Class 3, i.e. with marked limitation of ordinary physical activities) and TransAtlantic Inter-Society consensus (TASC) A to C lesions are good candidates for percutaneous interventional therapy in addition to risk factors modifications. In these patients complication rates appear to be very small with very low mortality and limb loss and functional improvement is quickly noticeable. In our experience, conservative therapy alone in these patients, although might offer some improvement in symptoms, it is generally not enough for the majority of these patients to achieve their desired goals for activity level. Patients, however, need to be well informed that the choice of angioplasty could mean an approximate 50% chance of returning back to the endovascular laboratory for retreatment of restenosis and in order to sustain a long-term clinical success. The surgical choice in these patients appears to offer similar long-term results to percutaneous angioplasty with less repeat revascularization at the expense of higher initial mortality and morbidity rates. When my patients are faced with these options, their choice of percutaneous intervention is almost predictable.

Severe claudicants with TASC D lesions are clearly a challenge to the interventionalists. Although the traditional approach to treat these patients has been surgical, recent data from our group presented at ACC 2004, showed that the acute success of the procedure is achievable in 90.2% of the cases with a subsequently clinically driven target lesion revascularization rate of 11.8% at 12 months. The Walking Impairment Questionnaire was used to assess quality of life pre and post procedure, and it was markedly improved with revascularization at a mean follow-up of 374 +/- 321 days. More data are needed in this group of patients to decide on the best course of therapy. At our institute, we currently attempt percutaneous intervention on these patients with intense subsequent follow-up with ankle-brachial indices (ABI) and for recurrence of symptoms. Surgery is reserved for those who fail percutaneous or conservative therapy.

Rest ischemia patients (Rutherford-Baker Class 4-5) are a high-risk population for complications following revascularization, whether percutaneous or surgical. Mortality, limb loss, acute thrombosis, urgent salvage revascularization, myocardial infarction and other serious complications are not uncommon in this group of patients with revascularization. This group of patients typically presents itself with significant below the knee disease and poor runoffs, but more often has multiple level arterial disease that frequently involves the femoropopliteal vessels. Percutaneous intervention for critical limb ischemia of femoropopliteal vessels is increasingly replacing bypass surgery without compromising primary patency, limb salvage, patient survival, or subsequent vascular intervention.1 Percutaneous treatment of SFA/ popliteal disease in the limb ischemia patient can have potentially several advantages. This includes alleviating limb ischemia with or without the presence of infrapopliteal disease by enhancing forward flow to the lower extremity. Also, it can be the treatment of choice in certain patient subgroups such as poor surgical candidates, or as a palliative measure in those with reduced life expectancy. Furthermore, it might reduce the need for a femoropopliteal bypass surgery and will lead to a better visualization of the tibial vessels facilitating the selection of the best method to treat them (surgical or percutaneous). Although long-term patency of percutaneous therapy is again challenged with surgery, we believe closer monitoring of these patients (objectively and clinically), with a low threshold to intervene if necessary, maintains long term overall clinical success and reduce the need for bypass surgery.

Recent data by Anderson et al. showed that endovascular therapies have increased by 97% since 1995. The recent widespread acceptance of percutaneous interventions for treating peripheral vascular disease has reduced the role of surgery as a first line therapy irrespective of lesion characteristics. At our Institute, we adopted an aggressive risk factors modification approach coupled with endovascular therapy in the very symptomatic patients irrespective of lesion classification.

Nicolai W. Shamma, MS, MD Cardiovascular Medicine, PC Davenport, IA

shamma@mcbs.com

References


