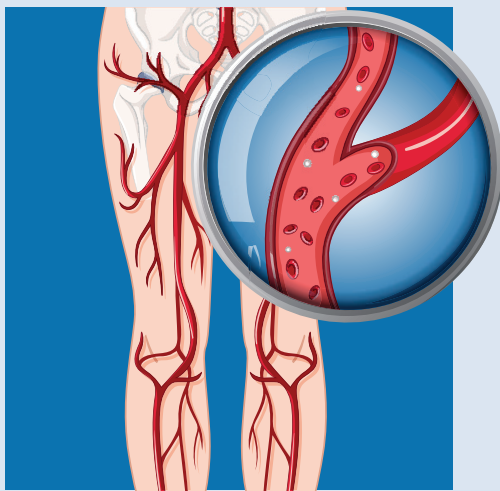


The VEU

The Vascular & Endovascular Update

Fall 2022

Technology Update: Treating Peripheral Artery Disease



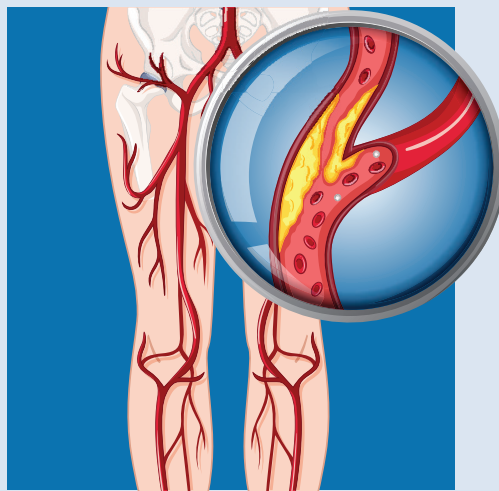
Peripheral Artery Disease (PAD) is caused by atherosclerosis, the build-up of plaque and calcification in the walls of the arteries.

Most commonly, PAD affects the arteries that supply blood to the legs and feet, but PAD can also affect the upper extremities.

As well as a narrowing and blocking of the arteries, PAD causes the artery walls to stiffen, preventing them from dilating to increase blood flow. Insufficient blood flow can result in cramping, leg pain, and muscle fatigue, making walking difficult and ultimately causing a decline in your patients' quality of life.

Symptoms of PAD include:

- **Intermittent claudication** is



described as calf, thigh or buttock pain that is worsened with walking and relieved with rest. The distance the patient walks to feel the pain, such as one block, is always the same.

- **Critical limb ischemia** is defined as when a patient has pain in the forefoot while at rest, typically when lying flat in bed. The pain is relieved when the affected limb is placed in a dependent position. Gangrene and nonhealing ulcers with the absence of pulses in the feet are also included in CLI.

About half of people who have PAD are asymptomatic, but whether or not it causes symptoms, PAD can indicate systemic atherosclerosis and an increased risk for heart disease

and stroke.

Patients with PAD are typically prescribed aspirin, Plavix (an antiplatelet), cholesterol medication and possibly an anticoagulant, such as Xarelto. They will also be strongly recommended to make lifestyle modifications, such as walking for 30 minutes daily, stopping smoking and eating a healthier diet.

No improvement in their symptoms may suggest some form of intervention is needed, such as an angiogram or bypass. Rarely, the best treatment may be an amputation.

Now, many new devices and new generations of older devices are available for minimally invasive, endovascular treatment of PAD.



According to the National Center for Biotechnology Information, there are several new technologies:

- Balloon angioplasty
- Intravascular lithotripsy
- Stent angioplasty
- Atherectomy
- Endovascular bypass

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FALL 2022 CONFERENCE

Saturday, November 12, 2022

*The Westin Michigan Avenue
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*Earn 4 CMEs in one morning, network with colleagues,
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Schedule of Events

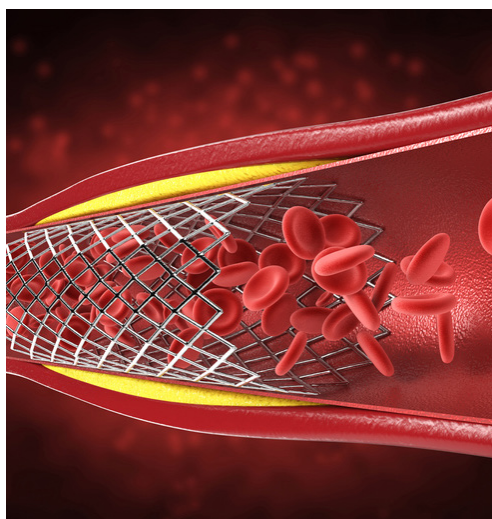
- 8:00 am** Check in and Breakfast
- 8:30 am** Welcome
- 9:00 am** **Wound Care in the Vascular Patient**
Soeaker to be announced
- 10:00 am** **Latest Technologies in Vascular Care**
Sanjeev Pradhan, MD - Vascular Specialists
Dr. Pradhan will discuss the most advanced, minimally invasive modalities to treat DVD, PAD, CAD and more.
- 11:00 am** Break
- 11:15 am** **Pharmacotherapy in the Vascular Patient**
Paul Crisostomo, MD
Dr. Crisostomo presents the latest evidence-based data on prescription and over-the-counter medications that will improve or help maintain the health of patients experiencing PAD, atherosclerosis, DVT and more.
- 12:15 pm** **COVID-19 Effects on Vascular Health**
Kambiz Zorriasateyn, MD
Dr. Zorriasateyn discusses how COVID-19 continues to cause thrombosis and compromise circulation, detailing the latest treatment data.
- 1:15 pm** Luncheon, Raffles and Thank You



Scan Here For Details

**Discover topic details, CMEs,
venue and location, register
for the Conference and book a
hotel room!**





Drug Eluting Stents versus Bare Metal Stents

Many advancements have been made in the use of stents.

Stents were developed to combat the biologic processes that lead to restenosis. These stents are metal, made of nitinol.

Compared to balloon angioplasty without stents, the use of stents dramatically improved the primary patency rate when adjusted for lesion length.

Unfortunately, there is decreased patency with longer lesions, specifically those greater than 15 cm.

With lesions less than 15 cm, the 12-month primary patency averages about 70%. Depending upon the patient's health status, when the lesion is greater than 15-20 cm, bypass would be the treatment of choice. Consultation with your vascular/endovascular surgeon would be prudent at this time.

Drug-eluting stents were developed with the goal of reducing in-stent restenosis. Available drug-eluting stents are coated with sirolimus or paclitaxel. Unfortunately, current studies have failed to show superiority of drug-eluting stents over bare metal stents.

Strict adherence to dual antiplatelet therapy with aspirin and Plavix is required after stent

placement, and the premature discontinuation of therapy is the most important risk factor for acute stent thrombosis.

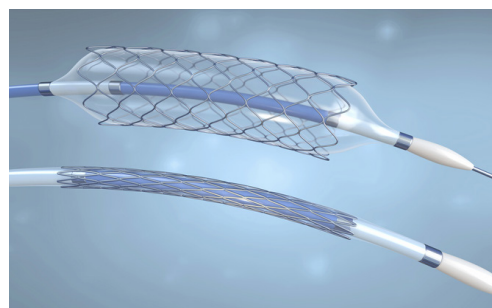
More recent data has shown a tendency to lower incidence of acute limb ischemia and amputation when patients are treated with Xarelto 2.5mg BID and aspirin, although there is no head-to-head comparison to date comparing aspirin/Plavix to aspirin/Xarelto.

It is essential to establish and maintain adequate communication between vascular surgeons, cardiologists and primary care physicians. Collaborative efforts between specialities will result in the best outcomes for these vascular-compromised patients.

Minimally Invasive Treatments

Minimally invasive endovascular treatments to recanalize the artery, such as angioplasty or atherectomy, are now used more often than bypass surgery as the *initial* treatment approach for PAD.

However, bypass surgery still remains the gold standard of treatment for PAD. Despite all the new technologies, no modality has been able to result in better long-term outcome for patients than bypass surgery.

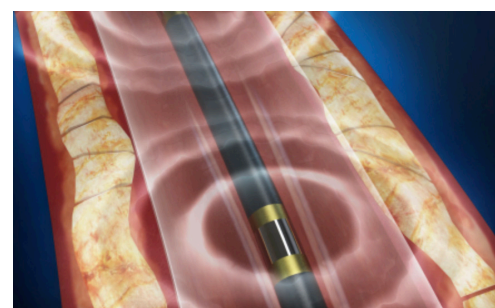


Balloon Angioplasty

Also called percutaneous transluminal angioplasty, this procedure uses a balloon-tipped catheter advanced over a

thin guide wire and filled with contrast fluid to push the plaque against the wall of the artery, widening the opening to increase blood flow. Some of the newer angioplasty technologies also use a drug-coated balloon to reduce post-treatment cell proliferation or restenosis, when narrowing of the diameter of the artery recurs after treatment.

Due to the low patency rate, balloon angioplasty is used in conjunction with other therapies and less as a standalone treatment.



Shockwave Lithotripsy

Lithoplasty is the newest balloon treatment for PAD. This technology combines a balloon angioplasty catheter with the use of sound waves, similar to that used for kidney stones. Calcified stenoses are more difficult to treat and the calcium deposits make the use of drug-coated balloons and stents less effective.

Emitters on the Lithoplasty catheter deliver pulses of sound waves around the interior of the artery wall to break up superficial and deeper calcifications before angioplasty balloon inflation.

The Lithoplasty system is intended to fracture calcifications and allow lower pressure balloon expansion, while minimizing damage to the artery wall.

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Atherectomy

This procedure is also performed using a catheter inserted within the blood vessel to remove or debulk plaque and enlarge the internal opening of the arterial lumen. It may be used alone, or in combination with balloon angioplasty and/or the placement of stents.

Atherectomy technologies debulk and remove plaque using different mechanisms, including cutting, shaving, drilling, sanding, or lasering.

The type of blockage and location of the lesion can affect the choice of atherectomy device used. Some atherectomy devices are indicated for use only in the larger arteries above the knee, while other devices have smaller catheters that allow them to be used in the arteries below the knee.

Atherectomy devices can reduce the burden of soft atheromatous or calcific plaque, change the vessel compliance, reduce vessel wall trauma, leading to a decrease in the need for bail-out stenting. But each method has its favored uses.

To date, there are several atherectomy devices approved by the FDA and they are often categorized by the way in which they remove the plaque:

Directional or excisional atherectomy

Plaque is removed by cutting in one direction and is captured in the nose cone or other part of the catheter and removed when the device is withdrawn.

Directional or extractive atherectomy devices have the advantage of avoiding barotrauma, which may decrease the risk of neointimal hyperplasia and dissection. Distal

embolization remains a concern with these devices, given that these devices require retrieval of removed plaque, and the use of distal protection devices may be needed, particularly in cases of heavily calcified lesions.

Orbital atherectomy

Plaque clears continuously as it is pulverized into tiny particles by the sanding action of the crown of the catheter as it spins in various elliptical orbits.

Orbital atherectomy is used to reduce the total atheroma burden and decrease the vessel-wall trauma, particularly in calcified vessels. Orbital atherectomy utilizes a diamond-coated tungsten crown that orbits 360 degrees eccentrically within the vessel, while employing circumferential plaque removal by differential sanding.

The CONFIRM registry series evaluated the use of orbital atherectomy in peripheral lesions of the lower extremities and showed that it effectively reduced the degree of stenosis from 88% to ~10% with the use of adjunctive low-pressure balloon angioplasty.

Laser ablation (photoablative) atherectomy

Plaque is vaporized.

Excimer laser atherectomy or Spectranetics uses the high-energy, monochromatic light beam to alter, dissolve or vaporize the plaque without damaging the surrounding tissue.

These devices include a Turbo Elite ablation catheter as well as a Turbo-Tandem system that combines a laser guide catheter with an excimer laser atherectomy catheter. The excimer laser has an advantage of not only debulking, but also being able to penetrate the proximal fibrous cap in chronic total occlusions. Thus, it may be advantageous for utilization when the intention is to enhance crossing capability as well as further debulk the occluded vessel.

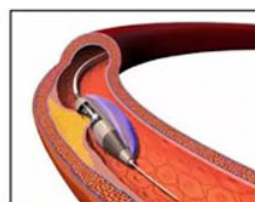
Rotational atherectomy

Plaque is cut using tiny blades on the tip, and in some systems, the neck or side, of the catheter, and aspirated into the catheter.

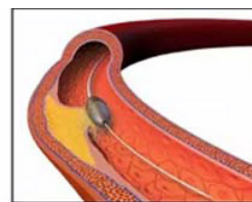
Rotational atherectomy uses a front-cutting tip that allows it to go through severely stenotic lesions without predilatation. It is the only atherectomy device to offer continuous aspiration and active removal of atherosclerotic debris and thrombus.

This device may be particularly useful in lesions of mixed morphologies, particularly those with presence of thrombus such as acute or subacute occlusions.

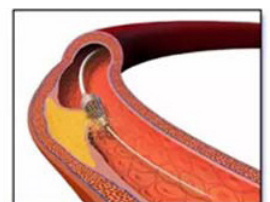
In a multicenter study of 172 patients, Jetstream use had a 99% device success, and six-month and 12-month clinically-driven, target-lesion revascularization rates of 15% and 26%, respectively; with a one-year restenosis rate of 38% based on duplex imaging.



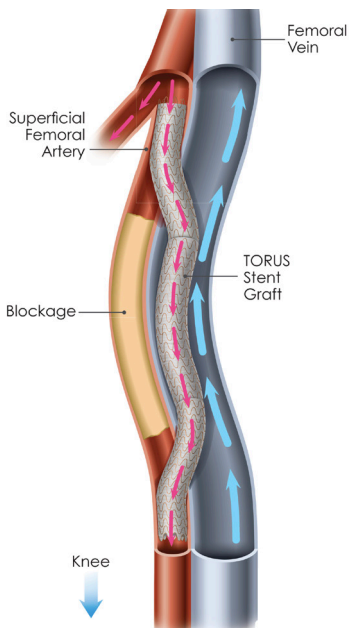
**Directional
Atherectomy**



**Rotational
Atherectomy**



**Orbital
Atherectomy**



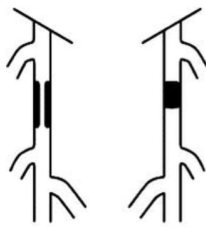
Endovascular femoropopliteal bypass

A novel technique that utilizes the deep femoral vein as a conduit, endovascular femoropopliteal bypass is currently recommended for patients who have no other option for revascularization. It is considered the last measure prior to amputation. Access to the venous and arterial systems is required. A recent study published in the Journal of Vascular Surgery revealed an 81% primary patency at 6 and 12 months, but more data is needed.

Endovascular versus Open Surgical Treatment

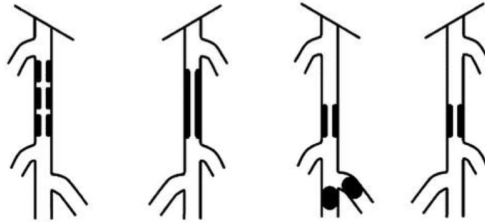
Should your patient choose endovascular or open surgical treatment for Femoral-Popliteal disease?

Based on published data, most authorities recommend endovascular therapy first for TASC A, B, and C lesions and surgical bypass for TASC D lesions, except in high surgical risk patients. Bypass surgery is generally recommended for complex, extensive, superficial femoral/popliteal artery lesions for patients with more than a 2-year life expectancy.



Type A lesions

- Single stenosis ≤ 10 cm in length
- Single occlusion ≤ 5 cm in length



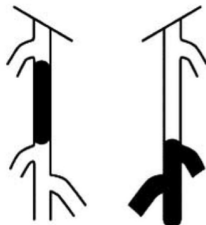
Type B lesions

- Multiple lesions (stenoses or occlusions), each ≤ 5 cm
- Single stenosis or occlusions ≤ 15 cm not involving the infrageniculate popliteal artery
- Single or multiple lesions in the absence of continuous tibial vessels to improve inflow for a distal bypass
- Heavily calcified occlusion ≤ 5 cm in length
- Single popliteal stenosis



Type C lesions

- Multiple stenoses or occlusions totaling > 15 cm with or without heavy calcification
- Recurrent stenoses or occlusions that need treatment after two endovascular interventions



Type D lesions

- Chronic total occlusions of CFA or SFA (> 20 cm, involving the popliteal artery)
- Chronic total occlusion of popliteal artery and proximal trifurcation vessels

Consult your expert vascular surgeon

Vascular surgery today has evolved into a truly hybrid speciality. With years of extensive training in both endovascular and open modalities, a vascular surgeon will use an unbiased opinion to make the best recommendations for your patient. A vascular surgeon will consider your patients' overall health, their unique health challenges and their family history to determine whether your patients are best served with endovascular treatment, surgical bypass or endarterectomy, or a combination of two or more modalities to achieve the most successful outcome possible.

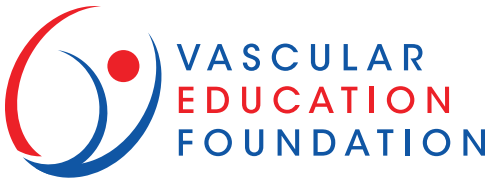
If your patients are having symptoms suggestive of arterial insufficiency, make a referral to your trusted fellowship-trained, board-certified vascular and endovascular surgeon partner.

When you have questions about vascular health or vascular medicine, please call or text Dr. Eugene Tanquilut at 708-305-0248.

About the author, Dr. Eugene Tanquilut

Dr. Eugene Tanquilut is board-certified in both vascular and endovascular surgery. Award-winning and recognized as a Vitals Top 10 Doctor and a Patient's Choice Doctor, he earned Vascular and Endovascular Fellowships at Cleveland Clinic.

Dr. Tanquilut is the President of Vascular Specialists in Tinley Park and has participated in numerous research studies, published papers and is a widely-requested speaker.



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Fall 2022

The VEU The Vascular & Endovascular Update

The Vascular Education Foundation was established to increase awareness of the dangers and severity of vascular disease through the education of both the community and healthcare professionals.