OVERVIEW OF PERIPHERAL ARTERIAL DISEASE

Peripheral arterial disease (PAD) refers to any pathologic process causing obstruction to blood flow in the arteries exclusive of the coronary and cerebral vessels. PAD is a common, but an often undiagnosed disease, which limits the functionality of the patient and carries risk of early vascular mortality. PAD affects approximately 20% of adults older than 55.[[1]](#endnote-1) About half of all people with PAD are asymptomatic. The prevalence of PAD increases with age and prolonged exposure to smoking, hypertension, and diabetes.

The most practical and reliable marker for estimating the prevalence of this disease is an ankle brachial index (ABI).[[2]](#endnote-2) The ABI is the ratio of the ankle systolic blood pressure and the higher of the 2 brachial systolic pressures. An ABI of less than 0.90 is up to 95% sensitive in detecting angiogram-positive PAD.[[3]](#endnote-3)

About one fifth of people with PAD have typical symptoms of intermittent lower limb claudication, “rest pain”, ulceration, or gangrene, and another third have atypical exertional leg symptoms.[[4]](#endnote-4) Among individuals with asymptomatic PAD, about 5% to 10% develop symptoms of PAD over 5 years. Although PAD is characterized by a low rate of local symptoms and complications, it is also characterized by ongoing atherogenesis in other vascular beds and a high rate of mortality (approximately 25%–30% within 5 years for patients with symptomatic PAD) due mainly to stroke and myocardial infarction.[[5]](#endnote-5)

The diagnosis of PAD begins with an accurate history and physical examination. Comprehensive imaging of the peripheral vasculature has traditionally been possible only with catheter-based angiography. Duplex ultrasonography, magnetic resonance angiography, and multislice computed tomography angiography are also useful in assessing for the presence of PAD with increasing accuracy.

Treatment of PAD involves risk factor modification, exercise, medications and revascularization. Smoking is the dominant modifiable risk factor for PAD; a dose-dependent relationship is present between smoking and severity of PAD.[[6]](#endnote-6) In patients with stable intermittent claudication, exercise significantly improves maximal walking time and overall walking ability. Multiple trials have shown substantial benefit in decreasing the incidence of new claudication and the progression of PVD with aggressive cholesterol and diabetes control.[[7]](#endnote-7) [[8]](#endnote-8)

Contrary to prior belief, beta-adrenergic antagonist drugs do not worsen intermittent claudication in patients with PAD. Treatment with cilostazol (Pletal) has been demonstrated to improve maximum and pain-free walking distance.[[9]](#endnote-9) A variety of strategies to stimulate new collateral channels in peripheral ischemia, such as the use of growth factors and autologous bone marrow cells, are being evaluated.

Aspirin therapy reduces the risk of MI, stroke, or cardiovascular death by about one quarter in patients with PVD.[[10]](#endnote-10) Aspirin has not been shown to improve claudication, but it delays the rate of progression, reduces the need for intervention, and reduces graft failure in patients with prior revascularization procedures.  Clopidogrel (Plavix) has been shown to reduce the risk of MI, stroke, or cardiovascular death compared with aspirin. The greatest benefit was evident in the subgroup of patients with PVD.[[11]](#endnote-11)

Revascularization remains a mainstay of therapy when medical treatments fail to resolve or improve claudication symptoms. As the endovascular techniques and equipment have improved, fewer patients are requiring vascular surgery for revascularization. Endovascular therapies have progressed due to improvements in balloon technologies, but also due to alternative modalities including stenting, cyoplasty, and arthrectomy.

The self-expanding, nitinol stents are resistant to compression and are ideally suited for areas such as the superficial femoral and popliteal arteries. Stent grafts also may be useful for aneurysmal disease, given their unique ability to exclude the vessel wall from the lumen. There are no approved peripheral drug-eluting stents, but studies are ongoing. Cryoplasty is a technique that combines balloon angioplasty and cold therapy by use of liquid nitrous oxide. A variety of atherectomy and laser systems have seen increasing use.

Aggressive diagnosis, prompt medical treatment, and use of newer endovascular techniques have lead to improved outcomes and decreased amputation rates in patients with PVD. Risk factor modification remains a mainstay of therapy in these patients due to their high cardiac mortality. At the Orlando Heart Center we use the latest techniques available for the diagnosis and treatment of your patients with peripheral vascular disease.

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