



### *Peripheral Vascular Disease (PAD):*

# An Overview and Insight on New Treatments

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## What is PAD?

Peripheral vascular disease is a term to describe disease of the peripheral (noncardiac) blood vessels. We will use the term peripheral arterial disease (PAD) for diseases of the arteries which can affect various organs such as the brain, extremities, kidneys, intestines, as well as the aorta, the major blood vessel in the human body. These diseased vessels (arteries) usually lead to a lack of blood flow (or ischemia) to the affected organ and can cause heart attacks, strokes, and a variety of other symptoms.

## What Causes PAD?

The traditional risk factors for developing PAD are the same as the well known risk factors for heart disease: tobacco abuse, diabetes, hypertension, high cholesterol, as well as a strong family history. Other less common conditions can also affect the blood vessels but won't be discussed here

## What is the risk of PAD?

Patients with PAD have been shown to be at increased risk for stroke, heart disease, and death compared to patients without the disease. It also may cause complications in the affected organ system (see syndromes below).

## Common PAD Syndromes, Diagnosis, and Treatment

### Leg pain (claudication)

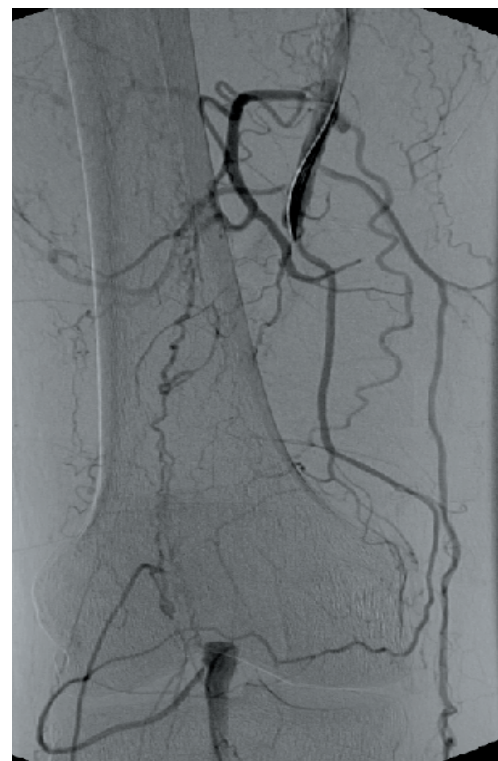
Pain in the legs due to blocked blood vessels is known as claudication. Typical symptoms are a cramping feeling in the calves or hips when one walks and relief with rest. Other

conditions that can also cause these symptoms are arthritis in the back, hips, or knees; or spinal problems such as a herniated disc. Other causes of leg pain include neuropathy, a painful disease of the nerves commonly seen in diabetics but this usually is pain that is always present and not appreciably worse with walking.

Usually adults over 40 are affected and it is much higher prevalence in patients who smoke or have diabetes. The diagnosis can be made by a screening test known as an ankle brachial index, or ABI, in which the blood pressure is measured in the legs and arms. If this is abnormal and you have symptoms of claudication you might need a referral to a physician who specializes in vascular medicine. You should also have all the previously mentioned risk factors screened for and treated.

Treatment of PAD in the legs initially starts with medicines to control risk factors, aspirin to help reduce the risk of clotting, and a walking program. Many patients can greatly improve their walking distance by use of a walking or exercise program. If a patient feels like the leg pain is significantly interfering with their lifestyle, then they may be a candidate for a procedure known as revascularization. This is a procedure which restores blood flow and traditionally was done by surgical bypass but now due to technological advancements is able to be performed oftentimes without surgery and can even be an outpatient procedure. Various factors such as the type or extent of the blockage as well as other medical conditions determine which would be the best means of

**A patient with severe claudication was found to have an occluded leg artery Figure 1 (Top). He was treated successfully with a device used to clean out the clot in a nonsurgical procedure Figure 2 (Bottom). He had dramatic improvement in his symptoms.**



## Midsouth Wellness Guide

treatment, and this should be discussed with your physician.

Severe blockages may lead to cramping pain at rest and may cause the feet/legs to become cool or bluish in color. Occasionally there may be ulcers or nonhealing wounds on the feet or legs. This is an urgent medical condition which should be treated promptly to avoid irreversible damage which could lead to amputation.

### Carotid Artery Disease and Stroke

The carotid arteries are blood vessels which supply the brain. Disease of these blood vessels, or carotid artery stenosis (CAS) have been associated with strokes. Often, the disease is asymptomatic and may be found incidentally during a physical exam if the physician hears certain sounds called bruits (broo-eez) which signify blocked vessels. Patients most at risk are those over age 65 and especially if they have atherosclerosis in other areas such as heart disease or PAD. Symptoms from significant CAS include stroke warning symptoms known as transient ischemic attacks, or TIA. This includes symptoms such as slurred speech, transient loss of vision in one eye, or transient weakness/numbness on one side of the body. Anyone experiencing possible TIA symptoms should see a physician immediately. It is important to know that many other conditions can cause stroke which are not related to CAS and any patient with TIA symptoms should be seen by a specialist in stroke or vascular medicine.

Your physician may order an ultrasound of the carotid vessels, a noninvasive test to determine if there are any significant blockages. If you are found to have significant CAS by this test, you should be referred to a physician who specializes in the treatment of CAS.

If your blockage is severe enough, you may require further treatment to reduce your risk of having a stroke. Traditionally, a surgical procedure known as carotid endarterectomy in which the blockage is “cleaned out” has been effective in the treatment of this disease. However, a nonsurgical method known as carotid artery stenting has been shown to be effective in the treatment of these blockages, especially if the patient is at high risk for surgery. At the present time, clinical trials comparing surgery and carotid stenting are underway and the best treatment for each individual patient is something to be discussed with their physician and the appropriate specialist.



**Figure 1 (Top) shows severe blockage of a carotid artery. Figure 2 (Bottom) shows the carotid artery after successful stent placement**

### Renal Artery stenosis and hypertension

Most patients with high blood pressure, or hypertension (HTN) have no known cause and are classified as having “essential” hypertension which is usually well controlled with less than 3 medications. However, if a very young (<30) or an older (>50 year old) patient has new onset difficult to control HTN, there may be an underlying cause, or

“secondary” HTN. One cause of this is a blocked artery to the kidney known as renal artery stenosis (RAS) which causes the release of chemicals which dramatically raise the blood pressure. This is the most common cause of “secondary” HTN and can be screened for with a noninvasive test such as a CT scan or Magnetic resonance (MR) angiogram. Simple treatment with nonsurgical methods to open these vessels with devices called stents has been shown to reduce HTN and improve or stabilize kidney function in many patients, although a minority of patients may experience no benefit and possibly worsening of function. This should be discussed with your physician should you be found to have RAS.

### Summary

PAD is a disease of the noncardiac blood vessels which can result in conditions such as stroke and claudication. Any patient who fits the profiles mentioned should be screened appropriately. Traditional treatment includes medical therapy, risk factor modification, as well as revascularization with either surgery or newer less invasive endovascular nonsurgical approaches.

Visit these Websites for more information:

[www.padcoalition.org](http://www.padcoalition.org)

[www.strokeassociation.org](http://www.strokeassociation.org)

[www.sterncardio.com](http://www.sterncardio.com)

[www.lenoxhillheartvascular.com](http://www.lenoxhillheartvascular.com)

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### About The Author

Dr. Klemis is a cardiovascular specialist who treats heart and vascular disease. He is board certified in internal medicine, cardiovascular disease, interventional cardiology, vascular medicine, and endovascular medicine. He completed training in internal medicine and cardiology at the University of Tennessee where he also served as chief medical resident and chief cardiology fellow. He went on to the Lenox Hill Heart and Vascular Institute in New York City to work with the pioneers in the field of carotid artery stenting and peripheral vascular disease. At Lenox Hill, he completed a 1 year interventional/peripheral vascular fellowship and joined the faculty for another year before relocating to Memphis to join the Stern Cardiovascular Center. He has served as the director of a carotid training course and served on the faculty of international vascular meetings. He can be reached at 901-271-1000.

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