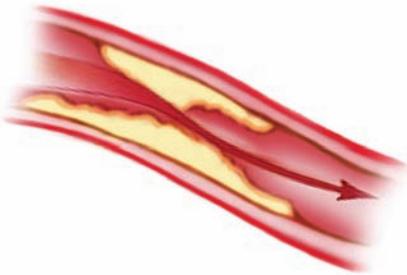


PERIPHERAL ARTERY DISEASE

WHAT IS PERIPHERAL ARTERY DISEASE (PAD)?

Your arteries carry oxygen-rich blood from your heart to all of your organs and tissues. When the arteries in your legs become narrowed or blocked, your muscles do not receive enough oxygen and nutrients. This is a condition called peripheral artery disease, or PAD.



Peripheral artery disease is caused by a process called atherosclerosis, which is a hardening of the arteries. Atherosclerosis is caused by the buildup of plaque, a substance composed of cholesterol, calcium, and other fibrous tissue that causes your arteries to narrow and stiffen. Eventually, the buildup of plaque progresses and causes the blood flow to your lower extremities to be reduced. Peripheral artery disease may cause symptoms of pain, and if severe may lead to limb loss.

WHAT ARE THE RISK FACTORS?

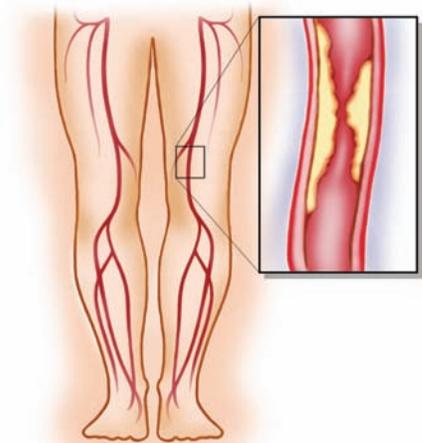
There are several risk factors that may predispose you to developing peripheral arterial disease. As you age, your risk for developing PAD increases. The following increase your chance of developing arterial disease:

- Smoking
- Diabetes
- High blood pressure
- High cholesterol or high triglycerides
- Being overweight

WHAT ARE THE SYMPTOMS?

Initially, you may not experience any symptoms from your peripheral arterial disease. If you become symptomatic, you may experience intermittent claudication, rest pain, and ulceration. Following is a description of each symptom.

- *Intermittent claudication* is characterized by muscle cramping, fatigue, and discomfort that occurs after walking short distances. This pain can occur within your calves, thighs, or buttocks. Pain from claudication resolves when you stop walking.
- When your legs do not receive enough oxygen at rest, you may experience pain in your leg, foot, toes, or heel, which is called *rest pain*.
- As your PAD progresses, you may develop painful *ulcerations* or sores on your extremities. These sores may eventually progress to gangrene.

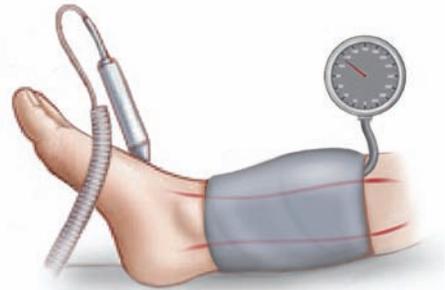


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WHAT TESTS WILL I NEED?

First, your physician will conduct a thorough history and physical examination. After your examination, if your surgeon suspects peripheral arterial disease, he or she will conduct noninvasive studies to determine the extent of disease.

- *Ankle-Brachial Index (ABI)*: A noninvasive test that compares the blood pressure in your ankles to that in your arms. From these measurements, a number is calculated to determine the extent of disease.
- *Pulse Volume Recordings*: A test used to measure the volume of blood at various levels along the lower extremities using a pressure cuff and a Doppler.
- *Duplex Ultrasound*: An imaging study that uses high frequency sound waves to measure blood flow and detect plaque or other structural abnormalities
- *Computed Tomographic Angiography (CTA)*: An imaging test that uses specialized CT scans to create detailed pictures of the arteries in your extremities to determine the degree of narrowing.
- *Angiography*: A test that is used as a road map for surgery. A catheter is inserted into an artery in your groin and contrast dye is injected to show the location and degree of blockage. This procedure takes about 1 hour. Afterwards, you will be asked to lie flat for a few hours. (Angiography may require coming to the Hospital for routine lab tests beforehand.)



PERIPHERAL ARTERY DISEASE

TREATMENT OPTIONS

After the medical evaluation along with imaging studies, your surgeon will discuss your treatment options and plan with you. Initially, conservative therapy may be initiated before surgical intervention is planned.

Conservative management of peripheral artery disease includes many lifestyle changes. Among them are:

- Medication to lower your blood pressure or cholesterol
- Medication to thin your blood and reduce blood clotting (aspirin, clopidogrel [Plavix®], or warfarin [Coumadin®])
- Medication that may improve walking distance (Pletal™)
- Walking exercise of at least 30 minutes, 3 times a week
- Smoking cessation
- Healthy diet

Less invasive procedures, such as angiography along with balloon angioplasty and stenting may be the first step in your treatment. If the attempts at less invasive procedures are unsuccessful, or if your individual case warrants a more extensive surgery, endarterectomy, bypass surgery, or amputation may be recommended to relieve your symptoms.

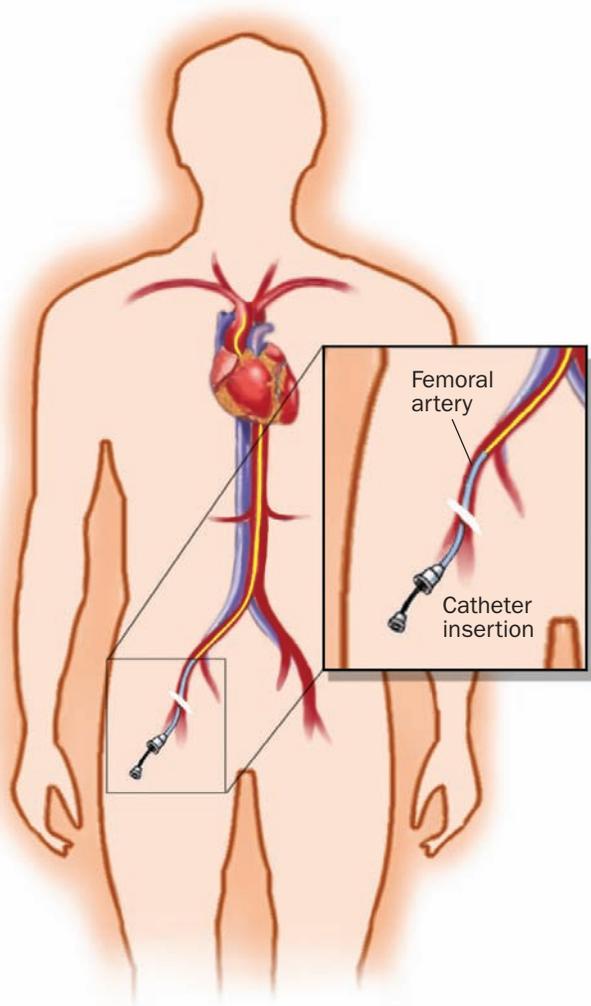
ANGIOGRAM

Your surgeon may recommend an angiogram to study blockages or malformations that may be causing you to have symptoms. Angiography can diagnose many vascular conditions including:

- Peripheral artery disease
- Aneurysms
- Malformed arteries
- Blood clots in your veins, also called deep vein thrombosis
- Narrowing of arteriovenous fistulas
- Problems with the arteries going to your kidneys

WHAT IS AN ANGIOGRAM?

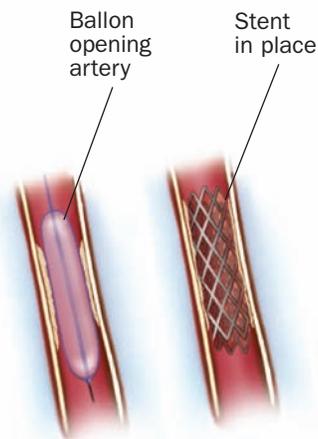
An angiogram is an invasive imaging test that uses contrast dye and x-rays to visualize your blood vessels. When the arteries are being studied, this is called an angiogram. A venogram is used to study veins. Angiography is often performed before a more invasive surgical procedure. Angiography is considered a road map for surgery.



PERIPHERAL ARTERY DISEASE

HOW IS AN ANGIOGRAM PERFORMED?

- Ultrasound is used by your surgeon to access an artery in your arm or leg. A catheter is then inserted into your artery or vein. Contrast dye is injected through the catheter, making blood flow visible on x-ray.
- X-ray pictures are then taken allowing the surgeon to get a more detailed perspective on your condition and treatment.
- At that time, your physician may decide to treat your condition with angioplasty or stenting.
- During angioplasty, a balloon is threaded over the catheter and inflated several times to open up a narrowed segment of your artery or vein.
- Sometimes, a stent is placed after the narrowed segment is treated with balloon angioplasty.
- A stent is a tube composed of metal and mesh that is permanently inserted at the area of narrowing to ensure that the artery remains open.
- The catheter is then removed and pressure is held over the insertion site for approximately 20 minutes to stop any bleeding.
- When the procedure is over, you will be asked to lie flat for approximately 4 to 6 hours to prevent additional bleeding from the access site.
- You may be asked to drink additional fluids to prevent dehydration and to clear any contrast dye from your kidneys.



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RISKS AND COMPLICATIONS

You may be at increased risk for developing complications after an angiogram if you have the following:

- Kidney disease
 - It is important to keep your kidneys well hydrated, especially since you'll be receiving contrast dye.
 - If you have chronic renal disease you may be instructed to come in early for IV fluids.
- Allergic reaction to contrast dye
- You may be given a prescription for Benadryl® and prednisone to be taken before your angiogram. These medications will help to prevent any allergic reactions.
- Medications
 - If you currently take the oral diabetic medication glucophage (metformin), you must **stop taking it 24 hours before and 48 hours after your angiogram.**
 - If glucophage (metformin) is not stopped, a serious condition called lactic acidosis may occur.
- Congestive heart failure
- Blood clotting problems

It is important to inform your surgeon if you have any of the above conditions.

PREPARING FOR AN ANGIOGRAM

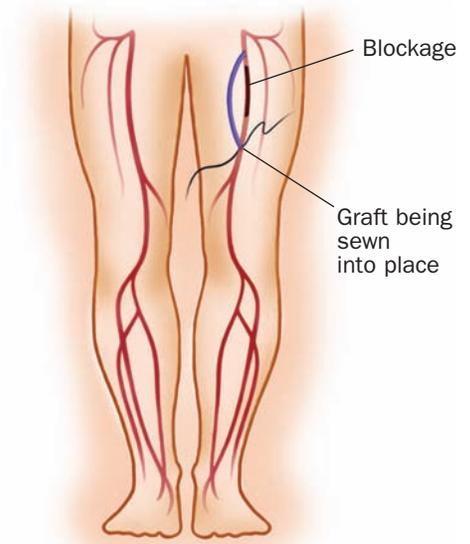
- Before an angiogram, you will need blood tests to determine your kidney function and to look at your blood's ability to clot.
- You may continue taking aspirin.
- If you are taking warfarin (Coumadin®), ask your surgeon for a stop date.
- If you are taking clopidogrel (Plavix®), your surgeon may ask you to stop prior to the angiogram.
- You will be asked to not eat or drink anything within 6 hours of your angiogram.

PERIPHERAL ARTERY DISEASE

BYPASS SURGERY

Your surgeon may determine that you are a candidate for bypass surgery. Bypass surgery creates a detour around a segment of blockage or narrowing within your artery. There are several types of bypass procedures. The procedure you will need depends on where your particular blockage is.

- In order to create a bypass, your surgeon may use one of the veins in your legs or a synthetic graft. Depending on your anatomy and the quality of your veins, your surgeon will determine the appropriate conduit for your bypass procedure.
- During your bypass surgery, your surgeon will make an incision in your groin to expose the normal segment of your artery, above the area of blockage. An incision will be made into the artery and one end of the graft will be sewn in.
- Another incision is made to expose the artery beyond the area of blockage or narrowing. An incision is made into the artery in this location and the end of the graft is sewn in place. The blocked segment of artery is bypassed to create a new passage for blood.
- After the graft is sewn in place and good blood flow is confirmed, the incisions are closed with stitches or staples.



RISKS AND COMPLICATIONS

- Infection
- Bleeding
- Blood clots
- Breathing problems
- Nerve damage and numbness
- Need for second bypass procedure or possibly amputation

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RECOVERY

You should plan on staying in the hospital from 3 to 7 days. The length of your stay depends on the type of bypass procedure and any other medical conditions you may have. To ensure a timely recovery, please do the following:

- Take medications as prescribed.
- Do not perform strenuous exercise or heavy lifting over 10 pounds for 3 weeks.
- Keep your incisions clean and dry.
- Follow up with your surgeon in 1 to 2 weeks.
- Continue to walk. Walking reduces swelling, promotes healing, and reduces your chances of having blood clots.
- When sitting, ensure that your feet remain elevated as high as you can tolerate.

WHEN TO CALL YOUR PHYSICIAN

- If you notice drainage, warmth, pain, or redness around your incisions
- Bleeding from your incision site
- You notice a change in color or temperature of your feet or toes
- Fever greater than 101° F
- If you feel short of breath or have chest pain

ENDARTERECTOMY

An endarterectomy is the removal of plaque from a diseased artery.

- An incision is made in your groin and the diseased segment of the artery is exposed.
- Your artery is opened and the plaque is removed from the inner lining.
- The defect in the artery wall is sewn back together and the incision is closed.
- Blood flow is restored through the artery.

AMPUTATION

In cases of extreme peripheral artery disease that is accompanied by gangrene or infection, your surgeon may recommend amputation. Amputation is considered the last resort of treatment when the extremity is no longer salvageable or cannot be treated by other surgical interventions. The level of amputation depends on the extent of arterial disease that exists.