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Patient information: Peripheral artery disease and claudication (Beyond the Basics)

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CLAUDICATION OVERVIEW

Claudication, which literally means “to limp”, is one of the symptoms of lower extremity peripheral artery disease (PAD), but can also occur in patients who have other vascular problems (eg, aneurysm). Claudication is defined as a pain or discomfort in a group of muscles, usually the legs, thighs, or buttocks, that is worsened by exercise (ie, walking) and relieved with rest.

Although many underlying medical problems can cause claudication, the most common cause is peripheral artery disease, which causes deposits of fatty plaques (atherosclerosis) on the vessel walls. These plaques may progress and result in narrowing or completely block blood flow in the leg arteries ([figure 1](#)).

Another important, but less common, arterial cause of claudication is aneurysm. An aneurysm is an abnormally dilated artery, which is often filled with debris or blood clots that can break off and clog arteries in the leg, sometimes causing claudication as a first symptom. (See "[Popliteal artery aneurysm](#)", section on '[Chronic ischemia](#)' and "[Clinical features and diagnosis of abdominal aortic aneurysm](#)", section on '[Asymptomatic AAA](#)'.)

PERIPHERAL ARTERY DISEASE RISK FACTORS

The major risk factors for developing PAD include:

- Cigarette smoking (see "[Patient information: Quitting smoking \(Beyond the Basics\)](#)")
- Diabetes (see "[Patient information: Diabetes mellitus type 2: Overview \(Beyond the Basics\)](#)").
- Hyperlipidemia (elevated blood levels of lipids, including cholesterol and triglycerides). (See "[Patient information: High cholesterol and lipids \(hyperlipidemia\) \(Beyond the Basics\)](#)".)
- Hypertension (high blood pressure). (See "[Patient information: High blood pressure in adults \(Beyond the Basics\)](#)".)

One study found that these risk factors cause claudication in 69 percent of patients with PAD; cigarette smoking was the most important factor [1]. In contrast, alcohol consumption, in moderation, may reduce the risk of PAD and claudication.

CLAUDICATION SYMPTOMS

The pain and discomfort associated with claudication varies from person to person. Some people have severe, debilitating discomfort while others have minimal symptoms.

The severity of your symptoms will depend upon how many arteries are affected, how narrowed your arteries are, the number of "alternate" secondary (collateral or detour) vessels available to provide blood when the damaged vessels cannot (so-called collateral circulation), how quickly you walk, and whether you walk up an incline or stairs.

The location of your pain depends upon the location of PAD. A person may have foot, calf, thigh or buttock pain, either alone or in combination. Calf claudication is the most frequent location of pain, and most commonly results from blockage of the superficial femoral artery in the mid thigh. Foot claudication may occur from narrowing of an artery in the lower part of the leg (the tibial or peroneal artery).

Calf pain — Calf pain is the most common complaint. It is usually described as a gradually restrictive cramp-like pain that always occurs with exercise and is relieved with rest. Claudication pain in the upper two-thirds of the calf is usually due to the narrowing of the main artery in the thigh (the superficial femoral artery), whereas pain in the lower third of the calf is due to disease in the artery behind the knee (the popliteal artery).

Thigh pain — Thigh claudication often results from the narrowing of the superficial femoral artery in the upper thigh or from the artery in the groin (the common femoral artery), but can also be caused by blockage of the vessels above the groin (iliac arteries).

Buttock pain — When symptomatic, people with a blockage in the artery of their abdomen (the aorta) complain of buttock, hip, or thigh pain. The pain is often described as aching, and there may also be weakness while walking up stairs. Other physical signs include loss of muscle mass and hair loss on the lower extremities. Erectile dysfunction (ED) may also occur when the aorta or iliac arteries are blocked. (See "[Overview of male sexual dysfunction](#)", section on 'Association with cardiovascular disease'.)

CLAUDICATION DIAGNOSIS

The diagnosis of claudication is based upon the signs and symptoms described above. Noninvasive tests can be performed to confirm the diagnosis and estimate the severity of the disease.

Ankle-arm index — The ankle-brachial index (ABI), also called the ankle-arm index, is used to confirm the diagnosis of PAD. The ABI measures the resting blood pressure at the ankle compared with the blood pressure in the arm. A normal value is between 0.9 and 1.3. If the test is normal at rest in a patient with symptoms of claudication, it is often repeated following exercise, comparing values at rest and following treadmill walking.

Segmental blood pressure — Blood pressure can be measured at other levels in the legs (calf, low thigh, high thigh) to determine the level and extent of PAD. Such measurements are called segmental limb pressures.

Imaging — Ultrasonography is a noninvasive test that can be used to see the location and severity of the narrowing in the blood vessels. Computed tomography (CT) and magnetic resonance angiography (MRA) are other noninvasive ways of looking at blood vessels. These tests are usually used if symptoms do not improve with medical treatment or if they suddenly get worse. In this situation, invasive imaging tests (ie, arteriography) might also be considered, especially if your doctor thinks that a procedure

