References

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Intermittent Claudication

Vascular Surgery
Pilgrim Hospital

www.ulh.nhs.uk

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Aim of the leaflet

This leaflet is aimed at patients with claudication.

This leaflet aims to tell you about claudication, what it is and how to manage the condition and options available in relation to treatment.

What is claudication?

Claudication is pain and/or cramping in the lower leg due to inadequate blood flow to the muscles. The pain usually causes the person to limp. The word "claudication" comes from the Latin "claudicare" meaning to limp. Claudication typically is felt while walking and subsides with rest. It is commonly referred to as "intermittent" claudication because it comes and goes with exertion and rest.

What causes claudication?

Several medical problems can cause claudication, but the most common is peripheral arterial disease. Peripheral arterial disease (PAD) is caused by atherosclerosis, which is a hardening of the arteries from accumulation of cholesterol plaques on the inner lining of the arteries. This is especially common at branching points of the arteries in the legs. Blockage of the arteries from these plaques cause low blood flow to the muscles in the legs. When walking or exercising, the muscles in the legs require more blood flow to increase oxygen to the cells. Atherosclerotic plaques cause decreased blood flow and decreased oxygen. The muscles of the legs can ache as a result of inadequate oxygen. This is felt as cramping in the legs.

What are the symptoms of claudication?

Pain and cramping in the legs are the main symptoms of claudication. Pain can be sharp or dull, aching or throbbing, or

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The Vascular Education and Research Unit
Pilgrim Hospital
Sibsey Road
Boston
Lincolnshire
PE21 9QS

What is the prognosis of patients with intermittent claudication?

The prognosis of claudication is generally favourable, with the symptoms becoming worse only in a quarter of patients. Over 5 years, only 1 to 3% will progress significantly to require a major amputation.

In patients with claudication and peripheral vascular disease, they are at higher risk of atherosclerotic diseases at other sites. A finding of claudication or peripheral arterial disease should be considered a warning sign of other potential atherosclerotic blockages in the body.

burning. The severity of the peripheral arterial disease, the location of the plaque and the activity of the muscles determine the severity of symptoms and location of pain. Calf pain is the most common location for leg cramps. This is because the atherosclerotic plaques often begin in the arteries farthest from the heart. If the blockage or plaque formation is further up the leg, the pain from claudication may be in the thigh. If the blockage is in the aorta (the main artery from the heart to the legs) then symptoms may include pain in the buttocks and thighs, or erectile dysfunction.

Why does claudication come and go?

The usually intermittent nature of the pain of claudication is due to a temporary inadequate supply of oxygen to the muscles of the leg. The poor oxygen supply is a result of narrowing of the arteries that supply the leg with blood. This limits the supply of oxygen to the leg muscles and is especially noticeable when the oxygen requirement of these muscles rises with exercise or walking. Claudication that comes with exercise and goes with rest is often referred to as intermittent claudication.

What can cause the artery narrowing that leads to claudication?

Intermittent claudication can be due to permanent artery narrowing due to atherosclerosis, or from the complete blockage of an artery of the leg.

Who typically is affected by claudication?

Intermittent claudication is more common in men than in women. The condition affects 1 to 2% of the population under 60 years of age, increasing in incidence with age.

How is claudication diagnosed?

A physician will take a history and the diagnosis will be based on the patient's symptoms.

Testing for claudication may include:

- Ankle-arm (brachial) pressure index. This measures the blood pressure at the ankle compared with the blood pressure in the arm. An abnormal result may be an indication of peripheral arterial disease.
- Ultrasound (Duplex) is most commonly used to determine location and severity of the narrowing in the blood vessels.
- Computed Tomography (CT) and Magnetic Resonance Angiography (MRA) are other non-invasive tests that can help a doctor map the blood flow in the affected areas.

These tests may be considered if the patient's doctor thinks that a procedure (revascularization) to treat peripheral arterial disease may be helpful.

Can claudication be prevented?

Some of the risk factors for claudication are behaviours that can be modified such as:

- Quit smoking.
- Managing diabetes and high blood pressure.
- Maintaining a healthy diet to keep cholesterol levels normal.

Medications that help thin the blood (like Clopidogrel or Aspirin) can be used to help prevent symptoms of claudication, but they do not treat the underlying cause.

Exercise is recommended for patients with claudication symptoms.

Frequent exercise, especially walking, greatly reduces symptoms and increases symptom-free walking distance.

What is the treatment for claudication?

There are two main ways to treat claudication: medication plus exercise treatment and a surgical treatment called revascularization.

A surgical procedure called a revascularization is used in patients who do not respond to medications. There are two types of revascularization procedures: endovascular (inside the blood vessel) and surgically grafting or bypassing the artery.

Endovascular procedures include:

- **Angioplasty:** a balloon is placed in the blocked area and inflated to widen the diameter of the artery and increase blood flow.
- **Stenting:** wire mesh used to hold a blood vessel open after angioplasty and prevents scar tissue from narrowing the blood vessel.

Surgery

- **Surgical grafting or bypassing an artery** involves an open surgery with an incision and sewing in of a graft using either the patient's vein or a synthetic tube to increase blood flow around the blocked area.