

Peripheral Vascular Disease

Peripheral vascular disease is a narrowing of the arteries. It mainly occurs in arteries that supply blood to the legs, and can cause pains in the legs when you walk. Treatment usually includes: stopping smoking (if you smoke), regular exercise, and a daily aspirin. Surgery is a last resort in severe cases.

What is peripheral vascular disease (PVD)?

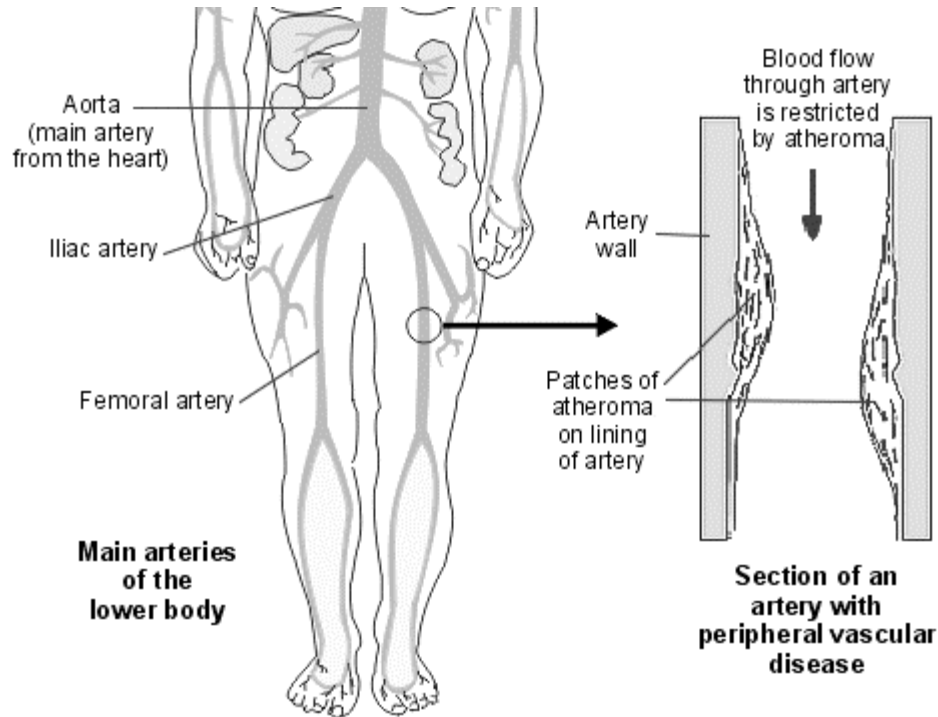
Peripheral vascular disease (PVD) is narrowing of one or more arteries (blood vessels). It mainly affects arteries that take blood to the legs. (Arteries to the arms are rarely affected and are not dealt with further in this leaflet). The condition is also known as 'peripheral arterial disease'. It is also sometimes called 'hardening of the arteries' of the legs.

Who gets peripheral vascular disease?

In the US, at least 1 in 20 people over the age of 55 have some degree of PVD. It is more common with increasing age.

What causes peripheral vascular disease?

The narrowing of the arteries is caused by atheroma. Atheroma is like fatty patches or 'plaques' that develop on the inside lining of arteries. A patch of atheroma starts quite small, and causes no problems at first. Over the years, a patch of atheroma can become thicker. (This can be likened to scale forming on the inside of water pipes.)



A thick patch of atheroma makes the artery narrower. This reduces the flow of blood through the affected section of artery. Tissues 'downstream' have a reduced blood supply, which can lead to symptoms and problems.

Atheroma can develop in any artery, but the common arteries affected are:

- Arteries taking blood to the heart - which may lead to angina and heart attacks.
- Arteries taking blood to the brain - which may eventually lead to a stroke.
- Arteries taking blood to the legs - which may lead to PVD.

What causes atheroma?

Many people have some atheroma in various arteries as they become older. It is often a small amount and causes no symptoms. However, there are certain 'risk factors', which increase the chance of atheroma becoming worse and causing problems. Risk factors include:

- Smoking
- Having diabetes
- High fat or cholesterol level in the blood
- Inactivity (little physical exercise)
- High blood pressure
- Obesity

Smoking is the most serious risk factor for PVD.

What are the symptoms of peripheral vascular disease?

The typical symptom is pain in one or both calves when you walk. This is called 'intermittent claudication'. It is due to narrowing of the femoral artery - the most common site for atheroma to develop in PVD. When you walk, the calf muscles need an extra blood and oxygen supply. The narrowed artery cannot deliver the extra blood, and so pain occurs from the oxygen-starved muscles. The pain soon goes when you slow down or stop. The pain comes on more rapidly when you walk up a hill or stairs than when you walk

on the flat.

If an artery higher 'upstream' is narrowed, such as the iliac artery or aorta, then you may develop pain in your thighs or buttocks when you walk.

If the blood supply to the legs becomes worse, the following may be found by a doctor who examines you:

- Poor hair growth below the knee, and poor toenail growth.
- Cool feet
- No pulses in the arteries of the feet

Severe cases

If the blood supply is very much reduced, then you may develop pain even at rest, particularly at night when the legs are raised in bed. Ulcers (sores) may develop on the skin of the lower leg if the blood supply to the skin is poor. In a small number of cases, gangrene (death of tissue) of the foot may result. This is usually preventable (see below).

What is the outlook (prognosis) for peripheral vascular disease?

Studies that have followed-up people with PVD have shown that:

- Symptoms remain stable or improve in about 15 out of 20 cases.
- Symptoms gradually become worse in about 4 out of 20 cases.
- Symptoms become severe in about 1 out of 20 cases.

So, in most cases, the outlook for the legs is quite good. However, if you have PVD it means that you are more likely to form atheroma in other arteries. So, you have a higher than average chance of developing heart disease (such as angina, heart attacks), and strokes.

The chance of developing severe PVD (and heart disease, or a stroke) is much reduced by the self help measures and treatment described below.

What 'self help' measures can I do?

Stop smoking

If you smoke, stopping smoking is the single most effective treatment. Stopping smoking increases walking distance by two or threefold in over 8 out of 10 people with PVD.

See your practice nurse for help if you find it difficult to stop smoking. Nicotine gum or tablets to help you stop may be an option.

Exercise regularly

Regular exercise encourages other smaller arteries in the legs to enlarge and improve the blood supply. If you exercise regularly, there is a good chance that symptoms will improve, and the distance you can walk before pain develops will increase.

Walking is the best exercise if you have PVD. Regular exercise means a walk every day, or on most days. Walk until the pain develops, then rest for a few minutes. Carry on walking when the pain has eased. Keep this up for at least 30 minutes each day, and preferably for an hour a day. The pain is not damaging to the muscles.

Other exercises such as cycling and swimming will also help you to become fit, and are good for the heart. But, these should be done in addition to walking as walking has been shown to be the best exercise to improve symptoms of PVD.

Research studies have shown that - if you stop smoking, and exercise regularly, then symptoms of PVD are unlikely to become worse, and they often improve. Your risk of developing heart disease or a stroke will also be reduced.

Lose weight if you are overweight

Losing weight reduces the demands on the heart and leg muscles.

You should eat a healthy diet

This is the same as advised to prevent heart disease. This reduces the chance of atheroma forming. A practice nurse or dietician may advise you on how to eat a healthy diet. Also, another leaflet in this series called 'Healthy Eating' gives details. Briefly, a healthy diet means:

- MORE vegetables, fruit, cereals, wholegrain bread, poultry, fish, rice, skimmed or semi-skimmed milk, grilled food, lean meat, pasta, etc.
- LESS fatty meats, fatty cheeses, full cream milk, fried food, lard, etc.
- If you do fry, choose a vegetable oil such as sunflower or rapeseed.
- Use low fat, mono-, or poly-unsaturated spreads.
- Add less salt to food, and avoid foods that are very salty.
- Drink alcohol in moderation.

Take care of your feet

Try not to injure your feet. (Injury may lead to an ulcer or infection developing more easily if the blood supply to the feet is reduced.) Do not wear tight shoes or socks, which may reduce blood supply. Trim your toenails 'straight' across (rather than 'round'). Tell your doctor if you have:

- Any foot injury
- Pain in your feet when you are resting
- Any marked change in skin color or temperature of your feet

What are the treatments for peripheral vascular disease?

The self-help measures above are the most important part of treatment. In addition, medication is often advised. Surgery is only needed in a small number of cases.

Medicines

- **Aspirin** is usually advised. A daily low dose (75-150 mg) is usual. This does not help with symptoms of PVD, but helps to prevent blood clots (thrombosis) forming in arteries. This is an uncommon complication of PVD. However, as mentioned, people with PVD have a higher than average risk of developing heart disease or stroke. A daily low dose of aspirin reduces this risk too.
- A '**statin**' medicine is often advised to lower the cholesterol level. This helps to prevent a build-up of atheroma.
- If you have diabetes or high blood pressure, then good control of these conditions with treatment will help prevent PVD from getting worse.
- Some medicines try to 'open up' the arteries. These are usually quite disappointing in treating PVD. Sometimes they are tried, and help in some cases. But, there is no point in continuing with

these medicines if you do not notice an improvement within a few weeks.

Surgery

Most people with PVD do not need surgery. Your GP may refer you to a surgeon if symptoms of PVD become severe, particularly if you have pain when you are at rest. Surgery is considered a last resort. Surgery is not easy and not without possible complications. There are 3 main types of operation for PVD

- **Angioplasty** is where a tiny 'balloon' is inserted into the artery and 'blown up' at the section that is narrowed. This widens the affected segment of artery. This is only suitable if a short segment of artery is narrowed.
- **Bypass surgery** is where a graft (like a flexible pipe) is connected to the artery above and below a narrowed section. The blood is then diverted around the narrowed section.
- **Amputation** of a foot, or lower leg, is needed in a small number of cases. It is needed when severe PVD develops, and a foot becomes gangrenous due to a very poor blood supply.