

Peripheral Vascular Disease

Patient Awareness

Interventional Radiology:
your minimally invasive alternative

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Cardiovascular and Interventional Radiological Society of Europe

PERIPHERAL VASCULAR DISEASE (PVD)

(also known as Peripheral Arterial Disease - PAD)

Peripheral vascular disease includes a range of symptoms often brought about by atherosclerosis which can lead to occlusion (blockage) of the arteries away from the heart.

Atherosclerosis:

the thickening or hardening of the wall of large-body arteries or the deposition of lipid-rich fatty material.



An artery affected by atherosclerosis

Cross-section of body artery:

Increasing degree of atherosclerotic artery damage



Normal

Slight lesion

*Advanced
lesion*

*Subtotal
occlusion*

The Facts

Risk Factors for PVD

- increased blood lipids (fats and cholesterol)
- smoking
- hypertension (high blood pressure)
- diabetes
- lack of physical exercise
- being overweight

These risk factors increase the normal aging process of the arteries, which can be fatal even at a young age. If a coronary artery is occluded a heart attack can occur, and an obstructed carotid artery can cause a stroke. In western countries, heart attack and stroke are the most common causes of death. Obstruction of the leg arteries can lead to gangrene and amputation.

The affected blood vessels continue to narrow over months and years, and at some point the arteries become completely blocked.

Symptoms

- Pain or numbness in leg muscles or buttocks when exercising, walking, or going up stairs (claudication)
- Continued leg pain at night or a red-coloured foot
- Non-healing ulcers or wounds

Affected individuals will often have to interrupt exercise, stand still, and after some minutes of rest can continue walking. As the disease progresses the pain-free walking distance decreases and the pauses necessary when walking become more frequent. At advanced stages pain can occur after a few metres of walking or during slight physical exercise.

Eventually, reduction of blood flow to parts of the legs and feet can be so severe that there is pain at rest and a risk of gangrene. This stage of the disease is termed critical limb ischaemia (CLI).



PVD: a progressive condition

"Stop smoking and keep walking"

The most important basic advice as given by E. Housley, a Scottish specialist in PVD

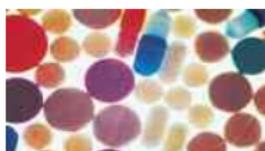
Lifestyle

In most PVD patients, treatment requires changes in lifestyle. Smoking cessation and a structured exercise programme are often all that are required to alleviate symptoms and prevent further progression of the disease.



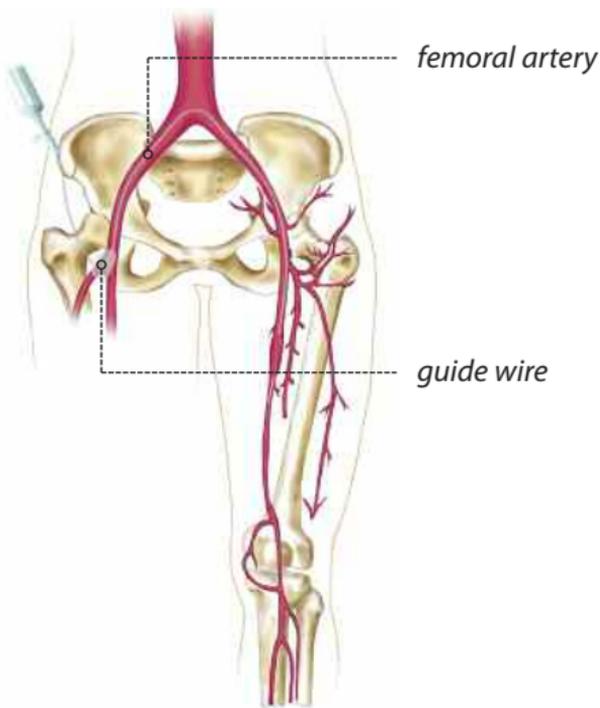
Medication

PVD patients frequently have elevated blood lipids that contribute to the disease. A low-fat diet and cholesterol-lowering drugs are often part of the treatment plan. Drugs that control high blood pressure may be prescribed. Many patient studies have demonstrated that antiplatelet medication such as aspirin can prevent blood clots and therefore should be taken by patients with symptomatic PVD.

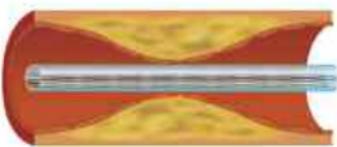


The Interventional Response: Angioplasty and Stenting

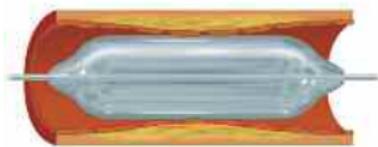
These minimally invasive procedures do not require general anaesthetic. Through a small puncture in the groin the interventional radiologist threads a guide wire into the femoral artery, and along to the occluded vessels. By gaining access to the site of disease in this way, the procedure can be done.



Principle of angioplasty:
the path through the blocked vessel is physically widened with the help of a balloon catheter, stent, or combination of both.

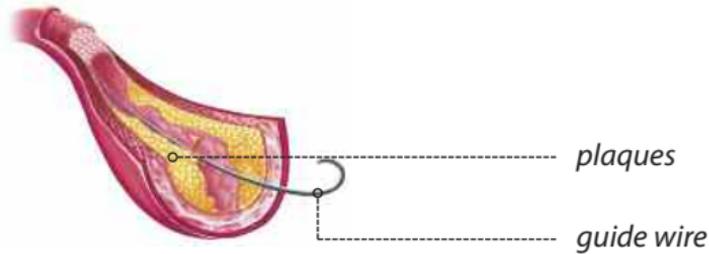


Placement of a Stent

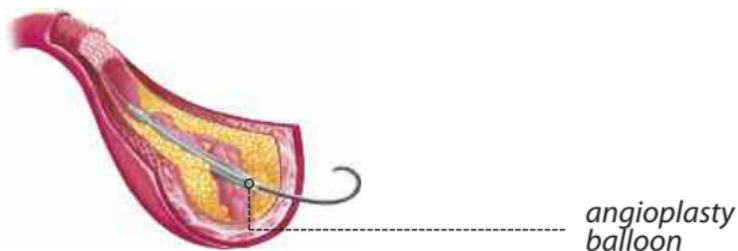


Balloon Angioplasty

Angioplasty procedure step-by-step



First of all, a guide wire is negotiated through the lesion site.



An angioplasty balloon is pushed over the guide wire.



The balloon is inflated so as to widen the artery walls and compress the plaques (build up of cholesterol and other fatty deposits on the artery walls).



In some cases, a stent (small, metal mesh tube supporting the inside of the artery) is implanted. This can either be carried on a balloon or delivered on a separate device when it is self-expandable.



The stent is positioned at the level of the lesion, the balloon is deflated and the guide wire removed, only the stent remains in place.



The stent remains in place and the artery walls are now widened.

Before



plaques
blood

An artery obstructed by plaques. Very poor blood circulation accounts for the related symptoms.

After



With plaques compressed against the walls, the blood flow is restored.

Currently, new methods for reopening obstructed blood vessels are being researched, but all have the same end point of restoring blood flow.

(cryoplasty, laser angioplasty, rotation ablation angioplasty)

Organisation

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