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Maltese Association of Radiologists and Nuclear Medicine Physicians

Peripheral Angioplasty and Stenting

Overview

Peripheral vascular disease (PVD) typically refers to long-standing narrowing and/or blockage of the vessels delivering blood to your legs (the arteries). Most cases are caused by atherosclerosis, the same condition that affects the blood vessels of the heart and the brain.

Symptoms

The majority of PVD patients experience cramping and pain in the lower leg muscles while walking, which is relieved by stopping (this is known as intermittent claudication). In more severe cases, patients may experience pain whilst resting. The most severe type of PVD causes ulcers in the feet or death of the skin (gangrene).

Diagnosis

Your doctor will diagnose you by measuring the blood pressure in your legs and comparing the pressure to that in your arms (known as the ankle/brachial index or ABI). You may need to have a picture taken of the blood vessels to document the site and severity of the blockages. This is called an angiogram and can be done using imaging techniques such as CT or MRI. You may also require a test called a digital subtraction angiography (DSA), which involves putting dye directly into your blood vessels.

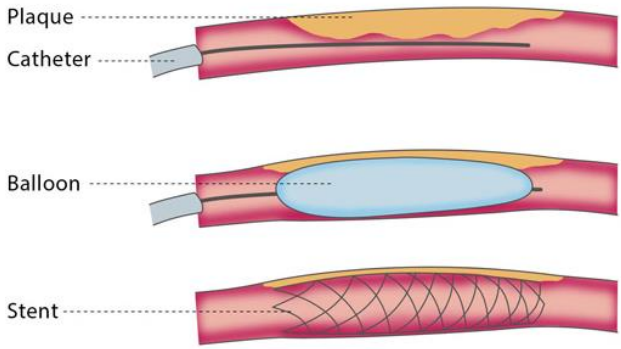
Treatment

The initial treatment you will be given is based on your lifestyle and management of risk factors, such as walking programmes, stopping smoking and controlling diabetes.

If these methods do not help you, the blockages may need to be opened. Minimally invasive approaches (also known as endovascular approaches) use tiny balloons and stents to restore blood flow through a very small hole in the artery. Another possible treatment is surgery, which can either clean out the inside of the artery (a procedure called endarterectomy) or bypass the blockage using a vein or prosthetic material.

What is angioplasty and stenting?

The arteries supplying your head, heart, kidneys and legs may become blocked over time because of smoking, high cholesterol, high blood pressure, diabetes and obesity. These can cause a progressive hardening and occlusion of the vessels (also known as arteriosclerosis). Arteriosclerosis reduces blood flow to your organs as a result of the narrowed or obstructed arteries.
Interventional radiologists are recognized experts in vascular diseases, who can use a technique involving angioplasty and stenting to restore blood flow to the brain, kidneys and legs.
Angioplasty involves the mechanical dilatation of any narrowed or occluded vessel by means of a balloon catheter and a metal stent if necessary. Balloon catheters are tiny empty balloons which are gently inflated to expand the area. A stent is a metal mesh tube that is inserted over a metallic guidewire and positioned at the point of the stenosis or occlusion. Metal stents are permanent implants and act as mechanical scaffolds to support the vessel wall and keep the vessel open



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How does the procedure work?

You will have a local anaesthetic for the procedure. The angioplasty and stenting procedure will last around an hour and tends to be performed as an out-patient procedure, though in some cases patients are admitted to hospital overnight afterwards.
The interventional radiologist will puncture an artery in your thigh with a small needle and will then thread a combination of plastic tubes (called sheaths and catheters) into your arteries. Throughout the procedure, the interventional radiologist will use imaging for guidance. A balloon catheter will be inflated across the narrowed or obstructed part of the vessel; you may experience some discomfort at this point. In some cases, the balloon angioplasty is enough to keep the vessel open, but in other cases the vessel needs more support, so a stent is placed. This means the interventional radiologist will put a stent into the vessel to ensure it stays open.
Your vital signs will be monitored during and after the procedure, and you may be able to eat a light meal later the same day.

Why perform it?

This procedure may be beneficial for you if you suffer from leg pain when walking (intermittent claudication) or if you have a restricted blood supply in your legs (leg ischaemia) as a result of diabetes. The angioplasty and stenting procedure can also be a treatment for peripheral arterial disease and for narrowed or blocked arteries in your kidneys.

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What are the risks?

The success rate of the procedure is usually around 90-95%, though it varies according to the extent and complexity of the blockages in the artery. The majority of patients experience significant clinical improvement, meaning that their pain decreases and any wounds in the area heal better.

In around 10-15% of cases (the rate depends on the location and particular structure of the artery), the affected artery becomes blocked again, known as restenosis. If this happens to you, your symptoms will return and you will need to be treated again.

Minor complications are unusual but include bleeding, bruising and infection. In rare cases, patients have an abdominal haemorrhage, which requires a stay in hospital and patients may need blood transfusions. It is possible that the artery will be damaged by the balloon, causing the vessel to rupture, in which case the interventional radiologist will place a covered stent in the vessel to control any bleeding. The balloon inflation may cause small fragments from the blockage to break off and block other smaller vessels, causing the blood flow to be restricted even more. There is a very low risk of losing a limb or stroke, depending on the location of the artery on which the procedure is carried out. Although the interventional radiologist will do all they can do minimize the risk of an allergic reaction, there is a risk of a reaction to the dye used in the imaging technique.

Compiled by Dr. Nathania Bonanno

References

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