Peripheral Artery Disease and Lower Limb Bypass Patient Information

What is peripheral artery disease (PAD)?

Peripheral artery disease (PAD) is a condition where the arteries of the lower limb harden and narrow, limiting the blood flow to the leg. At first this may not cause any symptoms but as the disease progresses patients often experience pain in the calf when walking which goes away on resting - a condition known as intermittent claudication.

In more severe disease patients can experience pain at rest - usually this will be in the toes/foot and be worse when the patient has the foot elevated, such as in bed at night; this is known *as* rest pain. Alternatively, the blood supply may be insufficient to keep the tissues of the foot alive and the patient may develop ulcers that do not heal or gangrene of the toes, referred to as *tissue loss*. Rest pain and/or tissue loss are collectively known as critical limb threatening ischaemia (CLTI). This is a serious condition since if it is left untreated it will eventually lead to a need for amputation of the leg.

What is a lower limb bypass?

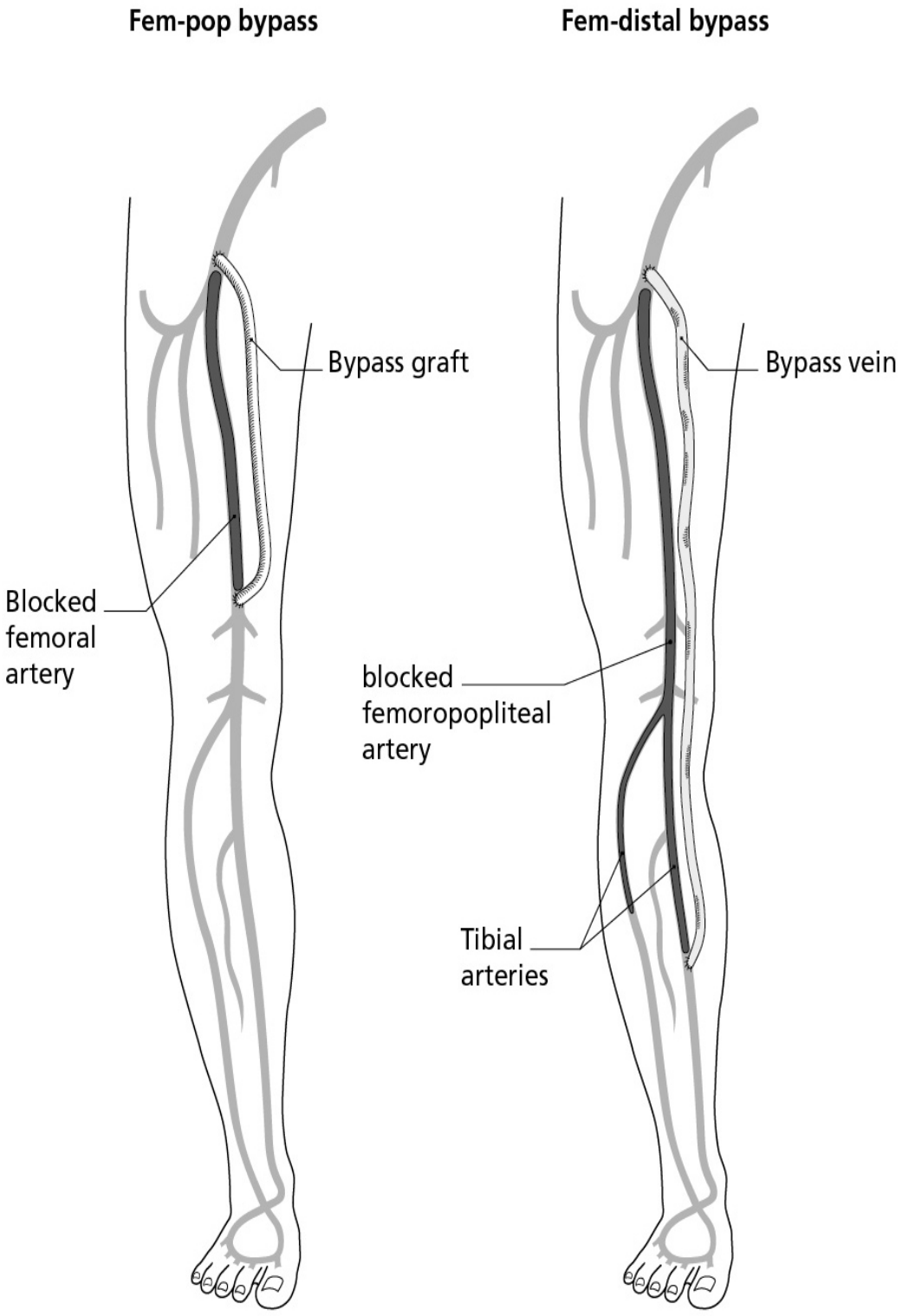
In a lower limb bypass the blockage in the arteries is bypassed, most commonly using the patient's own vein (taken either from the leg or the arm). If a vein is not available, the bypass can be performed using a man-made graft. Bypass operations are named according to the part of the leg where the blockage is bypassed (see figure 1):

- **Fem-pop bypass** - taken from the femoral (groin/thigh) artery to the popliteal (knee) artery, this can be either above or below the knee joint.

- **Fem-distal** - sometimes called a tibial or crural bypass. This is taken from the femoral (groin/thigh) artery to one of the arteries in the lower leg.

- **Pedal bypass** - this refers to any bypass onto the blood vessels in the foot. This is the most complex type of bypass and is only used when other bypasses are not possible.

Figure 1: Arteries of the leg, demonstrating a fem-pop and fem-distal bypass



The type of bypass you need will depend upon where the blockage in your arteries is and will be discussed with you by your surgeon.

The operation typically takes between 2½-5 hours depending on the type of bypass performed and always requires a general anaesthetic.

What are the alternatives to surgery?

Intermittent claudication can be managed by stopping smoking, taking medication and exercise. Critical limb threatening ischaemia usually needs an operation to prevent amputation and the main alternative to bypass is angioplasty. Angioplasty involves passing a balloon down the arteries under x-ray guidance and using it to 'balloon' open the blockages. Not all blockages are suitable for angioplasty and your surgeon will explain to you why they have recommended a bypass operation.

What are the risks/complications of surgery?

All operations have risks, although the surgical team will do everything they can to minimise them for you.

General risks of any operation

- Death - the risk of dying is related to your underlying health. Death after bypass operations is most commonly due to a heart attack, stroke, or clot in legs (deep venous thrombosis - DVT) which travels to the lungs (pulmonary embolism).

- Kidney damage - injury to the kidneys can occur due to a drop in your blood pressure during the operation. For most patients this is not a problem and any damage will quickly recover, however, patients with pre-existing kidney problems can see a decline in their kidney function which may lead to a need for dialysis.

- Allergic reactions - most commonly due to anaesthetic drugs, antibiotics, or latex. If you have any allergies let your surgical team know before the operation.

- Chest infection - chest infections are more common in patients who are unwell or have had COVID-19 or another respiratory infection in the weeks before the operation.

Specific risks of bypass operation

- **Limb loss** - this is the main risk since this operation is usually performed in patients with critical limb threatening ischaemia who will end up with an amputation if untreated. The need for amputation is usually due to another complication such as blockage of the bypass or infection (see below).

- **Bypass blockage** - there is a 20% risk of vein graft failure at 5 years (50% if a man-made graft is used). The risk of bypass blockage is significantly increased by smoking. Early graft failure will lead usually to a recurrence of symptoms and a need to attempt to redo the operation. When the graft fails after several months/years, it may or may not lead to a recurrence of symptoms depending upon the exact nature of the disease in the arteries at that point.

Wound infection - minor superficial infections are common and usually resolve with antibiotics. More severe infections are less common but may require an operation and long course of antibiotics to treat.

- **Bleeding** - all operations on blood vessels have a risk of bleeding. Major bleeding will be controlled during the operation but occasionally patients may need a second operation for bleeding that occurs after the operation.

- **Swelling of the leg** - this is common after this operation and will usually improve with time. Avoiding sitting with feet down for prolonged periods of time and plenty of walking and leg exercises will also help with this.

- **Fluid leak from the wounds** - this is common and occurs most frequently from wounds in the groin. It normally settles with time.

- **Changes to skin sensation** - this commonly occurs around wounds due to cutting small nerves in the skin. It usually improves over months but can be permanent.

What happens after the operation?

You will wake up with cuts along the leg at the locations of the bypass site, and a long cut in the leg or arm to remove the vein used for the bypass. Most commonly the vein from the same leg being bypassed will be used to limit the number of cuts required. You will also wake up with a drip in one or both arms, or sometimes the neck, and catheter inserted into the bladder.

There is no harm in moving your leg or foot immediately after the operation, and we would usually encourage you to get out of bed the day after the operation and start walking as soon as you feel able to after that.

How long will I be in hospital?

As soon as you are confident to walk and are assessed as safe to return home you can leave. For uncomplicated cases this is typically around 3-6 days, although for some patients this can be longer particularly if there have been complications.

What can I do to look after my bypass?

By far the most important thing is to not smoke. It is impossible to over emphasise how important this is, patients who continue to smoke, even only a few cigarettes a day, are at a massively higher risk of bypass blockage and subsequent amputation. It is important you take your medication as prescribed, for most patients this will usually include lifelong blood thinning medication, cholesterol lowering tablets, and blood pressure medication, if you have high blood pressure. Adopting healthy lifestyle changes - exercise, balanced diet, limited alcohol intake, and weight control, will benefit your general health.

When do the stitches/staples come out?

For most wounds dissolvable stitches are used, however sometimes this is not possible and non-dissolvable stitches are used which can be removed by your district nurse or GP practice nurse around 11-14 days after the operation.

Can I shower or have a bath?

If your wounds are closed you can shower or bathe within a few days of the operation, however we would discourage soaking wounds in the bath for long periods of time, until they are completely healed.

Can I exercise?

Walking and gentle exercise will help your recovery. Do what you feel able to do, which may change day by day. Excessive exercise is usually limited by pain but is unlikely to cause actual damage so do not be afraid to exercise. By six weeks most patients should be back to their usual activities.

Information for Patients

When can I go back to work?

Most patients can return to work around six weeks after the operation if there have not been any complications.

When can I drive again?

To be insured to drive you must be able to safely perform an emergency stop. If you drive a manual car you need to be able to lift both legs at the same time to press down on both the brake and clutch. Most patients are able to return to driving around 4-6 weeks after the operation, but if you have any concerns check with your GP and insurance company.

When can I fly?

Once you have been discharged there is no reason why you cannot fly. If you are going abroad, it is worth checking with your insurance company that there will be no issues with your travel insurance.

What follow up will I get?

Most patients are followed up in clinic approximately six weeks after discharge from hospital. If you have made a good recovery at this point and have no complications, you will be enrolled in our graft surveillance program which involves having an ultrasound scan of your graft every 3-6 months for two years to check the graft is running well. If a problem should be detected with your graft by surveillance you may be offered a procedure to try and fix it.

Contact Details

If you are going to have an operation you may be asked to attend the hospital for a pre-operative assessment. Please ask our staff any questions you may have about your treatment. Alternatively, you can phone our Vascular Secretary's on 0121 371 5517 or 0121 424 1430.

If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email interpreting.service@uhb.nhs.uk