

The whole process normally takes between 30 and 90 minutes. You will usually be able to watch what is happening on a TV monitor (if you want to).

## After the procedure

You will return to the ward from X-ray as soon as the X-ray staff are happy that there is no bleeding from the groin puncture.

On the ward you will stay on bed rest for 12 hours. After this you will be able to get up and walk around. You will be given something to eat later in the day.

Normally you will return home the day after the X-ray. Usually a blood test will be done before you leave the hospital.

## At home

When you get home, there will be some discomfort in the groin for up to a week. Sometimes this is associated with visible bruising.

You can take as much exercise as you like after this procedure as soon as you get home.

The kidney specialists will review you as an outpatient within a few weeks of your discharge from hospital.

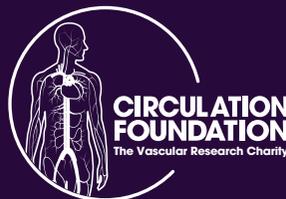
## Complications

- **Wound infection: Wounds sometimes become infected and this may need treatment with antibiotics. Bad infections are rare.**
- **False aneurysm: Sometimes, if the arterial puncture doesn't seal completely blood leaks out to form a cavity beneath the skin called a false aneurysm. A false aneurysm is associated with discomfort in the groin and a pulsatile lump. False aneurysms are rare (about one in 100).**

- **Major Complications: As with any procedure, there is a small risk of you having a medical complication such as a heart attack, stroke, kidney failure, chest problems, or loss of circulation in the legs or bowel. Each of these is rare, but overall it does mean that some patients may have a fatal complication from their operation. For most patients this risk is about 1% - in other words 99 in every 100 patients will make a full recovery from the operation. The doctors and nurses will try to prevent these complications and to deal with them rapidly if they occur.**

If your risk of a major complication is higher than this, usually because you already have a serious medical problem, then your surgeon will discuss this with you.

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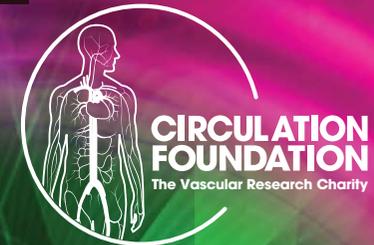


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# RENAL ANGIOGRAM AND ANGIOPLASTY

## - THE PROCEDURE EXPLAINED

Vascular disease is as common as both cancer and heart disease and accounts for **40% of deaths in the UK**, many of which are preventable.

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## Kidney disease

One of the main jobs of the kidneys is to filter the waste out of the blood. They also balance the volume of fluids and minerals in the body.

Another function of the kidneys is to produce hormones:

- **Renin keeps blood pressure normal. People with kidney disease may also develop high blood pressure, which can in turn be associated with other problems such as heart attacks and stroke.**
- **Erythropoietin tells the body to make red blood cells. Lack of this hormone can result in anaemia.**

They also help transform vitamin D so that the body can use it to absorb calcium.

For the kidneys to be able to work properly they need a good blood supply. If there is limited blood supply, the kidneys will not be able to filter the waste from the blood, urine will not be produced and waste is not removed from the body properly.

If the kidney function worsens you may require dialysis to filter your blood for you.

The blood is carried into the kidneys by the renal arteries. If these arteries become narrowed by a build up of plaque (atherosclerosis or hardening of the arteries) the blood supply to the kidneys becomes increasingly restricted (stenosis). This is known as **Atherosclerotic Renovascular Disease or ARVD.**

Symptoms of ARVD may be some of the following:

- **High blood pressure that does not respond to common drug treatments**
- **Loss of kidney function or acute renal failure**
- **Chronic Kidney Disease**
- **Fluid retention**

Most people who have ARVD will have other vascular diseases and atherosclerosis elsewhere in their body.

## Angiogram

An angiogram is used to have a closer look at the blood supply to your kidneys. It is an X-ray of the arteries and is performed by puncturing the artery under local anaesthetic, and injecting contrast (dye) to outline the blood vessels.

If the renal arteries are narrowed and the blood flow is restricted, they can be stretched with a balloon (angioplasty) (LINK) to improve blood flow, reduce blood pressure and maintain better kidney function.

## The operation

The procedure is usually performed by a consultant radiologist. You will be asked to come directly to the ward the day before, or on the morning of the procedure and will need to stay in overnight.

## The anaesthetic

The procedure is performed under local anaesthetic, sometime supplemented by sedation.

Local anaesthetic is used to numb the skin and a small tube is placed in the artery in the groin, this is the only uncomfortable part of the procedure. The local anaesthetic stings a little for about 45 seconds, and then you should feel nothing.

If you are nervous, please ask your nurse about sedation.

## The procedure

A small nick is made in the anaesthetised skin at groin level, usually about 8mm long (1/3 inch). The femoral artery is punctured with a needle, and a fine wire is passed through the needle up the artery into the artery in the abdomen. A flexible narrow tube (cannula) is passed along the wire and up the artery from groin level to diaphragm level (just under your ribs). You don't feel this at all.

Once the tip of the cannula is in position, the wire is temporarily removed, and contrast (dye) is injected. We can get an outline of the arteries from your diaphragm down to your feet.

As the contrast is injected you might get a warm feeling in your legs. This is a temporary and not normally an unpleasant sensation.

The contrast will outline the arteries to the kidneys. Usually there is just the one artery to each kidney, but sometimes there may be as many as four. If there is a narrowing in the artery, it will be clearly visible.

Next, the radiologist will proceed to pass a balloon catheter along the wire from groin level up and just into the narrowed kidney artery. Again you cannot feel this at all.

Once in position, the balloon is inflated and the narrowing is gradually widened. This procedure is called angioplasty.

In some cases the artery is successfully stretched open, but sometimes the narrowing recoils somewhat when the balloon is deflated.

If the dilation is not entirely satisfactory, the radiologist may place a stent at the point of persistent narrowing. Again you do not feel this at all.

A stent is a tube made of a special metal alloy looking like chicken wire. It is inserted squashed down small and can be opened to its maximum width with an angioplasty balloon.

The stent is also passed in from groin level over the wire. Once positioned at the point of narrowing, the stent is opened up to a predetermined width and holds the kidney artery open.

When the procedure is completed, the cannula and wire are withdrawn. The puncture in the artery must be sealed to prevent bleeding.

Sometimes the puncture will be sealed with a device called an Angioseal, a small collagen plug. It is inserted as the cannula is removed. It seals the opening in the artery immediately. If an Angioseal is not used, the radiologist will press on the puncture site with his hand for up to 20 minutes to make sure the puncture seals.