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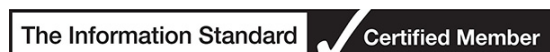
R02 Lower Limb Angiogram and Angioplasty (Radiology)

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What is an angiogram and angioplasty?

An angiogram is a procedure to look for any problems with your arteries (blood vessels) using dye (colourless contrast fluid) and x-rays. The procedure is performed by a radiologist (doctor who specialises in x-rays and scans). Sometimes an angioplasty is performed at the same time to widen or unblock an artery. It involves inflating a small balloon inside the artery. A stent (metal mesh tube) is usually used to hold the artery open.

Your doctor has recommended an angiogram and angioplasty. However, it is your decision to go ahead with the procedure or not.

This document will give you information about the benefits and risks to help you to make an informed decision. If you have any questions that this document does not answer, ask your doctor or the healthcare team.

What are the benefits of an angiogram and angioplasty?

Your doctor is concerned that there may be a problem with the flow of blood to your legs. Your tests have shown that the problem is probably caused by a blocked or narrowed artery. An angiogram will give a detailed picture (like a road map) of your arteries (see figure 1).

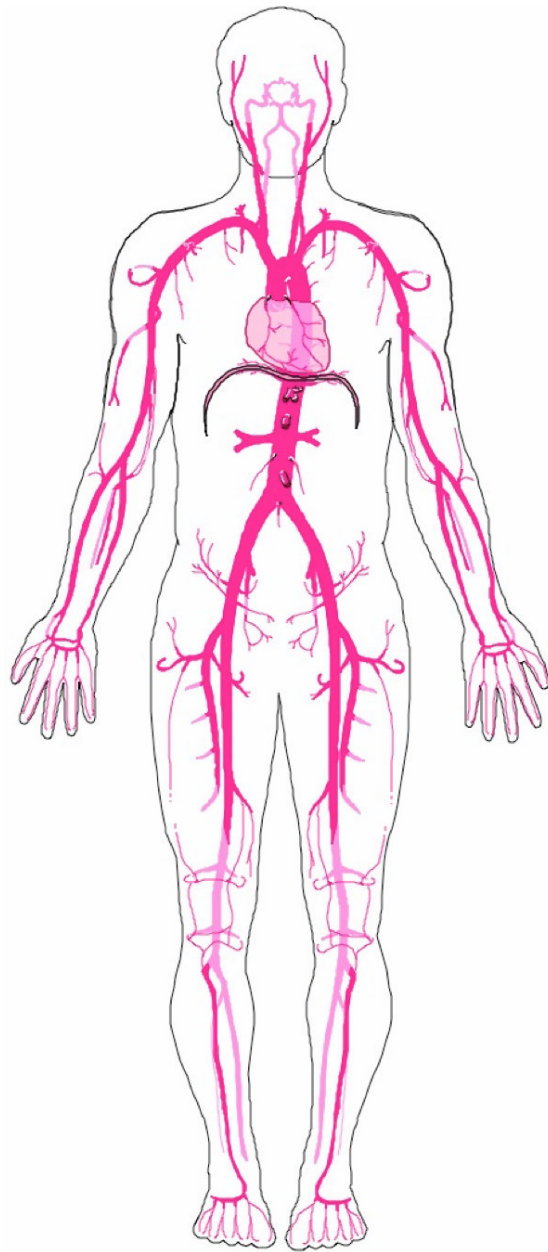


Figure 1
An intra-arterial angiogram

An angioplasty should help to improve the blood supply to your legs if an artery is narrowed or blocked. The procedure should help you to walk further and with less pain. If you have ulcers or gangrene it should help these to heal.

The problem is likely to come back quicker if you continue to smoke or if you have diabetes.

Are there any alternatives to an angiogram and angioplasty?

There are other tests that can be performed to give a picture of your arteries such as a Doppler ultrasound, MRA (magnetic resonance angiogram) or CTA (CT angiogram). However, the pictures are not as detailed and they cannot be combined with an angioplasty to improve your symptoms.

Another alternative to an angioplasty is surgery to bypass the blocked or narrowed artery. Surgery is not suitable for everyone and has a higher risk of complications than an angioplasty.

What will happen if I decide not to have an angiogram and angioplasty?

Your doctor may not be able to treat your problem and improve your symptoms. If you have ulcers or gangrene, it is likely that these will not heal properly and you may need an amputation.

What does the procedure involve?

Before the procedure

If you are female, the healthcare team may ask you to have a pregnancy test. They need to know if you are pregnant because x-rays are harmful to unborn babies. Sometimes the test does not show an early-stage pregnancy so let the healthcare team know if you could be pregnant.

If you take warfarin, clopidogrel or other blood-thinning medication, let the radiologist know at least 7 days before the procedure.

If you have diabetes and take medication containing metformin, let the healthcare team know as soon as possible. You may need to stop taking it on the day of the procedure and for the next two days. You may need to have a blood test after the procedure before continuing with your medication.

You will be admitted to hospital. The healthcare team will carry out a number of checks to make sure you have the procedure you came in for and on the correct side. You can help by confirming to the radiologist and the healthcare team your name and the procedure you are having.

The healthcare team will ask you to sign the consent form once you have read this document and they have answered your questions.

Do not eat in the four hours before the procedure. If you have diabetes, you will need special advice depending on the treatment you receive for your diabetes.

You may drink water before the procedure.

Because the catheter (tube which is used to inject the dye) is inserted in your femoral artery near your groin, you may be asked to shave this area at home.

In the x-ray room

An angiogram and angioplasty usually takes about one to two hours.

The radiologist will ask you to lie on your back. If appropriate, they may offer you a sedative or painkiller which they can give you through a small needle in your arm or the back of your hand.

The healthcare team will monitor your oxygen levels and heart rate using a finger or toe clip. If you need oxygen, they will give it to you through a mask or small tube in your nostrils. They will also monitor your blood pressure using a device that is strapped to your arm.

The radiologist will keep everything as clean as possible and will wear a theatre gown and operating gloves. They will use antiseptic to clean the area where the needle will be inserted and most of your body will be covered with a sterile sheet.

The radiologist will insert the catheter in your femoral artery using a needle and guidewire (thin flexible wire). They will inject local anaesthetic into the area over the artery. This stings for a moment but will make the area numb, allowing the radiologist to insert the needle into your femoral artery with much less discomfort for you.

When the radiologist is satisfied that the needle is in the right position, they will replace it with a catheter.

Sometimes they will insert the catheter in the side that is not causing any symptoms. The radiologist will still be able to get good pictures of all your arteries because all your arteries are connected.

When the dye is injected into the catheter, you will feel warm and flushed for a few seconds. You may feel this all over your body or only in some areas. You may feel as if you are passing urine but do not worry as this is not the case.

The radiologist will also use the catheter to give you medication that will thin your blood during the procedure. This will help prevent blood clots.

The radiologist will take x-rays of your arteries and veins.

If an angioplasty is being done to help improve your symptoms, they will thread a fine tube, with a balloon at the end, through the catheter into your groin. When the balloon is in the narrowed or blocked area of the artery, the radiologist will inflate the balloon to stretch the artery (see figure 2).

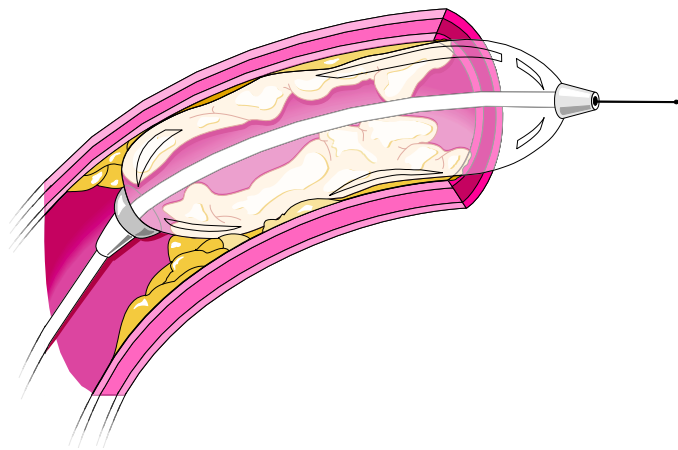


Figure 2

An inflated balloon inside the narrowed artery

They will deflate the balloon and remove it. The radiologist may also insert a stent inside the artery to keep it open.

When the procedure is complete, the radiologist will remove the catheter from your groin. The radiologist or a nurse will press firmly for a few minutes where the catheter was inserted to help the hole in the artery to heal.

The radiologist may close the hole using a stitch or plug.

What complications can happen?

The healthcare team will try to make the procedure as safe as possible but complications can happen. Some of these can be serious and can even cause death. The possible complications of an angiogram and angioplasty are listed below.

Any numbers which relate to risk are from studies of people who have had this procedure. Your doctor may be able to tell you if the risk of a complication is higher or lower for you.

- Bleeding causing a collection of blood (haematoma). Small haematomas causing bruising are common but are not serious. If you get a large haematoma, you may need a blood transfusion or further surgery (risk: less than 2 in 100).
- False aneurysm (lump that connects to the artery) (risk: 1 in 500). This results in more widespread bruising or a lump. You may need further treatment. Rest for at least four hours after the procedure to reduce this risk.
- Damage to the artery when performing an angioplasty (risk: 1 in 100). The risk depends on the type of angioplasty you have. For most people the risk is small and any damage can usually be treated during the procedure. If the damage cannot be treated, you may need surgery (risk: less than 1 in 100).
- Loss of a limb, if a damaged artery cannot be treated by surgery (risk: less than 1 in 500).
- Allergic reaction to the equipment, materials, medication or dye. This usually causes a skin rash which settles with time. Sometimes the reaction can be serious (risk: less than 1 in 2,500) or even life-threatening (risk: 1 in 25,000). The healthcare team is trained to detect and treat any reactions that might happen. Let the radiologist know if you have any allergies or if you have reacted to any medication or tests in the past.
- Kidney damage, as your kidneys need to filter the colourless dye from your bloodstream (risk of serious damage: less than 1 in 100, risk of needing dialysis: less than 1 in 500). The risk is higher if you already have problems with your kidneys or have diabetes.
- Radiation exposure (the extra risk of developing cancer over a lifetime). This risk is small. The risk increases the younger you are. The radiologist will keep the number of x-rays as low as possible.
- Failed angioplasty. Sometimes the procedure does not improve symptoms. The risk is increased if the artery is completely blocked and if the area is lower down in your leg where the arteries are smaller.

You should discuss these possible complications with your doctor if there is anything you do not understand.

How soon will I recover?

After the procedure you will be transferred to the recovery area where you can rest. The healthcare team will monitor your heart rate and blood pressure to check for any problems.

They will check your groin for any bleeding. If you notice any bleeding or swelling in your groin, let the healthcare team know straightaway.

You should be able to go home the same day. However, your doctor may recommend that you stay a little longer. If you were given a sedative and go home the same day, a responsible adult should take you home in a car or taxi and stay with you for at least 24 hours. Be near a telephone in case of an emergency. Do not drive, operate machinery or do any potentially dangerous activities (this includes cooking) for at least 24 hours and not until you have fully recovered feeling, movement and co-ordination. You should also not sign legal documents or drink alcohol for at least 24 hours.

It is important not to do strenuous exercise for one to two days.

Lifestyle changes

If you smoke, stop smoking now to reduce the risk of your arteries narrowing even more. Stopping smoking will improve your long-term health.

Try to maintain a healthy weight. You have a higher risk of developing complications if you are overweight.

Regular exercise should improve your long-term health. Before you start exercising, ask the healthcare team or your GP for advice.

Summary

An angiogram and angioplasty is usually a safe and effective way of finding out if you have any problems with your arteries and improving your symptoms. However, complications can happen. You need to know about them to help you to make an informed decision about the procedure. Knowing about them will also help to detect and treat any problems early.

Keep this information document. Use it to help you if you need to talk to the healthcare team.

Acknowledgements

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