

Angioplasty and Stenting

An information guide



Angioplasty and Stenting

This leaflet tells you about having an angioplasty and stent insertion. It explains what is involved and what the possible risks are. It isn't meant to replace informed discussion between you and your doctor, but can act as a starting point for discussion. If you have any questions about the procedure please ask the doctor who has referred you or the department which is going to perform it.

What is an Angioplasty?

An angioplasty is a way of relieving a narrowing or blockage in a blood vessel as an alternative to having an operation.

A thin plastic tube (catheter) is inserted into the artery and passed through the blockage. A special balloon on the end of the catheter is placed across the narrowing or blockage to keep the artery open.

What is a stent?

A stent is a special device made of metal mesh that is placed across the narrowing or blockage to help keep the artery open.

Why do you need an Angioplasty?

Your doctor has identified that there is a narrowing or blockage in one of your blood vessels that is causing you a problem. If the arteries in your legs are affected this may be causing pain in your calf or thigh. This may occur after you have walked a certain distance or may be causing more severe symptoms such as severe pain in your foot especially at night.

Other tests such as a Doppler ultrasound scan, a computerised tomography (CT) or a magnetic resonance scan (MR) may have already been performed.

Are there any risks?

Angioplasty is generally a safe procedure but as with any interventional procedures there are some risks and complications that can arise.

A small bruise (haematoma) around the site of the needle puncture can occur, but this is quite normal (10%: 10 in every 100 procedures). The bruise might be sore for a few days but will disappear in a few weeks.

Bleeding at the puncture site can occur which may cause a clot to form around the artery (haematoma). The bleeding can be stemmed by somebody other than you, pressing on the artery for about 10 minutes. If the bleeding persists or the haematoma is very large a small operation may be needed to place a stitch to stop further bleeding (risk of requiring an operation is less than 1%: less than 1 in 100 procedures).

A 'closure' device' is often used at the end of the procedure to help stop any bleeding at the puncture site and they have well documented success rates. There are rare complications (1 to 3%) associated with the use of the device eg blockage of the artery; failure of deployment with bleeding that could require additional surgery. To safeguard against these risks the radiologist carries out an assessment of the artery using ultrasound, at the start of the procedure to determine its suitability.

Occasionally a tender pulsating swelling called a false aneurysm may develop over a few days due to ongoing leakage of blood from the arterial puncture site. This can usually be treated by an injection of a blood clotting agent under ultrasound guidance.

When the balloon is inflated it is possible for the artery to rupture. This is very rare and can sometimes be repaired in the x-ray department with a stent. If this is not possible, an urgent operation may be required to repair the artery.

When wires and tubes are being passed through the blockage it is possible for small fragments of the material causing the blockage to be dislodged. If this happens they may pass further down the leg and cause another blockage (embolisation). In this circumstance a further operation may be required to remove these fragments. Most times these can be removed at the time of the procedure, without the need for surgery (risk 1-2%: or 1 or 2 in 100 patients).

Although very rare, it is possible for the artery to become completely blocked. In extreme circumstances this could lead to complete loss of blood supply to the limb.

Some patients have an allergic reaction to the x-ray dye (contrast agent) (risk 1 in 3000 patients). This can result in a rash or breathing difficulties. This is usually minor but some people need to take medication to help the reaction settle.

The contrast dye can also cause damage to the kidneys. This occurs mainly on those patients whose kidney function is abnormal already and this will be identified on the blood tests that are performed prior to the procedure. There is a separate leaflet available for information on the effects of the contrast agent.

If the artery in the elbow/upper arm is used for access, the tube will pass one or more of the arteries that supply the brain. There is a small risk (1-2%: 1 or 2 in 100 patients) that a blood clot can form and cause a stroke.

The procedure may not be successful due to technical difficulties (5-10%: 5-10 in every 100 procedures).

This examination does involve using a small amount of radiation. This dose is kept to a minimum to reduce the risks to yourself and is monitored by radiographers, who are highly trained to carry out x-rays and other imaging procedures.

If you think you are pregnant or you are breast feeding please contact the department as soon as possible, PRIOR to your procedure, as radiation may be harmful to the unborn child.

Are you required to make any special preparations?

An angioplasty is usually carried out as a day case procedure under local anaesthetic but sometimes an overnight stay is required. You will know if it is planned for you to stay overnight when you get your appointment.

Before coming into hospital, you will have been asked about certain risk factors for vascular disease, unless you have to come into hospital as an emergency. These factors include checking your blood pressure; your kidney function and identifying if you are on treatment for diabetes or blood clots. You may require extra fluids either through a cannula in your arm or orally before and after the procedure if your kidneys are not functioning fully.

If you are taking Apixaban, Rivaroxaban or Dabigatran it will be stopped before the procedure. If you are taking Warfarin or alternative anticoagulant you will be advised on stopping the medication before the procedure under the supervision of the anticoagulant team.

If you are taking Clopidogrel, Plavix or Prasugrel it will need to be stopped for 5 days prior to the procedure and Ticagrelor will need to be stopped for 7 days. You are advised to speak with your doctor as an Aspirin alternative may be required.

If you have heart stents could you please inform the nurses in the radiology day case unit so that you can receive special instructions about your blood thinning medications (0161 778 5314).

If you are diabetic, you will be advised about any changes needed to your normal medication.

If you have any allergies or have previously had a reaction to the dye (contrast agent), you *must* tell your doctor and the radiology team.

On the day of the procedure you may have a light breakfast (am patients) or a light lunch (pm patients).

Consent to store your personal information

Vascular surgeons and radiologists record information about the angiography interventions on a National Vascular Registry (NVR).

This is a secure database that is used to monitor and improve vascular services throughout the country. Therefore, you may be asked to give permission for your personal information to be stored on the NVR.

Although the database is a national system, strict data governance means personal details on the NVR can only be accessed by staff directly involved in an individual's care. You need to confirm with your vascular surgeon whether you are happy for them to store your personal information on the NVR.

How is angioplasty performed?

The procedure is performed in hospital by an Interventional Radiologist (a doctor specially trained in interventional procedures performed with the help of x-rays and other imaging technologies). The procedure is performed in the x-ray department in the interventional x-ray room.

Before the angioplasty, the interventional radiologist will repeat the information that you have already had from the vascular surgeon about the procedure, its risks and benefits. You will then be asked to sign a consent form.

Please feel free to ask any questions that you may have and remember that even at this stage, you can decide against going ahead with the procedure if you so wish.

You will be asked to get undressed and put on a hospital gown. A small cannula (thin tube) may be placed into a vein in your arm. You may require a fluid drip to help your kidney function before the angioplasty. You will be asked to lie on the X-ray table, generally flat on your back. The X-ray machine will be positioned above you. You may have monitoring devices attached to your chest and finger and may be given oxygen.

The procedure is performed under sterile conditions and you will be awake throughout the procedure. You will be asked to lie on the x-ray bed and the artery in your groin (or arm or neck) will be scanned with an ultrasound machine. You will have an identified nurse looking after you and he/she will connect you to some monitoring equipment so that we can observe your blood pressure, heart rate and respirations throughout the procedure.

The skin will be cleaned at the puncture site and you will be covered with sterile drapes. Local anaesthetic is used to numb the skin and then a small needle is put into an artery in the groin (usual puncture site).

This needle is then exchanged for a small tube (catheter) which sits inside the artery and allows wires and tubes to be passed into the artery. The radiologist injects x-ray dye into the small tube and uses x-rays to identify the area where the artery is narrow or blocked.

The x-ray dye will give you a warm feeling each time it is injected and may give you a feeling of passing urine. The radiologist then passes a thin wire through the narrow or blocked section of artery. Another small tube with a deflated balloon on the end is passed over the wire.

When the balloon is in the right place, it is inflated. Whilst the balloon is inflated you might experience some pain at the angioplasty site which can usually be managed with Entonox (gas and air).

The balloon is then deflated and removed from the artery. More dye is injected to see if the narrowing or blockage has been successfully treated or if the balloon needs to be re-inflated. The radiologist uses x-rays to see where the wires and tubes are throughout the procedure. Sometimes angioplasty is not successful and a wire mesh stent needs to be placed in the artery (see stent information).

At the end of the procedure the small tube is removed from the groin and a doctor or nurse will need to press on the artery in the groin for around 5-10 minutes. This is to reduce the risk of bleeding and bruising. Sometimes a small device is used to help stop the bleeding more quickly.

Will it hurt?

It may sting a little when the local anaesthetic is injected.

You may feel a warm sensation for a few seconds when the dye is injected and feel like you are passing urine. Angioplasty is generally not a painful procedure although you may feel some pain when the balloon is inflated.

What happens afterwards?

The procedure generally takes about 60-90 minutes to perform.

You will be taken to the ward/day case unit for a period of recovery. You will have instructions to lie in bed/ trolley for 2-4 hours after the procedure followed by a period of observation once you are mobile.

This period of recovery is important to reduce the risk of bleeding from the puncture site. The nursing staff will carry out routine observations including pulse, blood pressure, foot pulses and will also monitor the puncture site.

How successful is angioplasty?

The success rate is approximately 70%. Patients who are not successfully treated may be offered an open operation to improve their symptoms.

When is stenting used/Why use a stent in addition to angioplasty?

Stents are frequently used in conjunction with balloon angioplasty.

The angioplasty part of the procedure opens the artery however, if the narrowing cannot be extended sufficiently by means of a balloon dilatation a stent can be placed into the vessel to hold the artery open.

Sometimes stents are used without prior angioplasty (this is usually because we have found that a stent will be needed in either the short or longer term). Over time, the artery wall heals around the stent.

Another possible benefit of using a stent in addition to angioplasty is that it may decrease the number of procedural complications associated with just angioplasty alone. Sometimes drugs can be attached to stents (Drug Eluting stents) to try to reduce the longer term risk of the artery narrowing where the stent has been placed.

Drug eluting stents are frequently used in the heart (coronary stents), but are relatively infrequently used in the remainder of the body. This is because they have not been shown to be beneficial, are expensive and have a higher risk of some complications (such as sudden stent clotting and blockage).

How is stenting done/Is it a bigger procedure?

The stenting procedure is almost identical to the angioplasty procedure (mentioned above) with a short additional step of deploying the stent in the blood vessel.

Initially the stent is delivered on a small diameter delivery system to allow its access into the blood vessel. Once in position within the artery it is expanded to fit the size, shape and bend of the artery.

The stent remains in the artery after the procedure to help keep the artery open. Within several weeks the artery wall grows into the stent which usually gets incorporated into the artery wall.

In many cases a balloon is still the first treatment step to stretch the artery open however, in some cases implanting a stent is performed without initial balloon dilatation first.

Post-procedure advice

The effects of the local anaesthetic will wear off within a few hours. If you feel any discomfort, take your usual painkillers or simple analgesia such as Paracetamol.

You should rest for the rest of the day and possibly the day after depending on how you feel. You can then resume normal activities.

You should:

- Have an adult with you to stay overnight should you have any bleeding during the night
- Eat normally and drink a little more water than usual
- Continue with your normal medications unless you have received instruction otherwise
- Do not drive for 24 hours
- Do not exercise for 24 hours
- You may shower the next day
- Check your puncture site (groin) once a day for the next 7 days and contact the hospital if you have any concerns.

Excessive bleeding or swelling at the puncture site: lie down and have someone apply firm pressure: call 999 for an ambulance.

Coldness, blueness, numbness or excessive pain in the affected leg or arm: call 999 for an ambulance.

Bruising around the puncture site is fairly common. However, if you have any concerns either contact the x-ray department on 0161 778 5314 or the vascular ward on 0161 627 8850 for advice.

If you haven't had any complications from the procedure you should be safe to fly 7 days after the procedure however, please

discuss with your doctor before making any travel plans and speak with your insurance company.

Angioplasty or stenting will improve the blood flow in your artery but it will not cure the underlying cause of the blockage - arteries may become narrow again (called restenosis), which is why it is important to follow the advice below.

Any patient with this arterial disease, no matter which arteries are affected, will benefit from eating a low fat diet, getting regular exercise, and controlling blood cholesterol.

Angioplasty improves artery blood flow for most people. But, results will depend on where your blockage was and how much blockage you may have in your other arteries. In many cases you will be prescribed aspirin or a similar medication in an attempt to prevent the problem occurring again and to reduce the risk of other artery related diseases such as heart attack and stroke.

If you are a smoker, it is very important that you **stop smoking**. Smoking causes the arteries to become narrowed and can also cause the blood to clot more rapidly.

The risk of progression or recurrence of disease of the arteries and its complications can be reduced after angioplasty and/or stent insertion by simple lifestyle modifications including:

1. Weight reduction and exercise
2. Eating a healthy diet, which is low in saturated fats
3. Elimination of smoking
4. Controlling high blood pressure, Diabetes mellitus and high cholesterol. Medications to reduce blood cholesterol ("statins") are usually recommended and started by either the GP or the hospital doctors.

Keep a record of any questions you may want to ask about your procedure

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Useful contact numbers:

Vascular Nurse Specialist 0161 778 5090

Vascular Consultant Secretaries 0161 627 8981/ 8698 and 0161 720 2253

Interventional Radiology Day Case 0161 778 5314

Useful websites

www.circulationfoundation.org.uk

www.BSIR.org

If English is not your first language and you need help, please contact the Interpretation and Translation Service

Jeśli angielski nie jest twoim pierwszym językiem i potrzebujesz pomocy, skontaktuj się z działem tłumaczeń ustnych i pisemnych

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☎ : 0161 627 8770

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For general enquiries please contact the Patient Advice and Liaison Service (PALS) on 0161 604 5897

For enquiries regarding clinic appointments, clinical care and treatment please contact 0161 624 0420 and the Switchboard Operator will put you through to the correct department / service

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