

# Balloon Angioplasty and Stenting of Arteries and Veins

## Introduction

This leaflet tells you about the procedure known as Balloon Angioplasty and Stenting of Arteries and Veins. It explains what is involved and what the possible risks are. It is not meant to replace informed discussions between you and your doctor, but can act as a starting point for such a discussion.

You should have sufficient explanation before you sign the consent form.

Radiologists are doctors specially trained to interpret the images and carry out more complex examinations. They are supported by radiographers who are highly trained to carry out X-rays and other imaging procedures.

We expect you to make a rapid recovery after your balloon angioplasty and to experience no serious problems. However, it is important that you should know about minor problems which are common after this procedure, and also about more serious problems which can just occasionally occur. The section "What problems can occur after balloon angioplasty or stenting?" describes these, and we would particularly ask you to read this. Headings from this section of the booklet will be included on the consent form you will be asked to sign before your treatment

## What is balloon angioplasty?

Balloon angioplasty (Percutaneous Transluminal Angioplasty – PTA) is most often used to improve blood flow to the legs. A small balloon is positioned within the narrowing or blockage in the artery, and then inflated to stretch up the artery and improve blood flow. Balloon angioplasty is sometimes used for blocked or narrowed veins, but this description will concentrate on arteries.

Balloon angioplasty is usually performed in the special procedures room of the Medical Imaging Department by a Radiologist (X-ray specialist).

A local anaesthetic is injected into the skin of the groin over the main artery. A tiny incision is made in the skin and a catheter (thin tube) is placed in the artery. X-ray dye (contrast) is injected and X-ray pictures are taken to show up the narrowing or blockage. This often gives a "warm" feeling and sometimes a sensation of having urinated (wet oneself).

A flexible guide wire is then threaded through the arteries to the area of narrowing or blockage. By manipulating the wire it is usually possible to get it through the narrowing, or to advance it gently through the blockage. All this is done under X-ray guidance.

### **\*\*An important note about tablets you may be taking\*\***

If you are taking **WARFARIN** or any other blood thinning medication or tablets for diabetes (**METFORMIN – Glucophage**) please telephone Special Procedures Department in Medical Imaging as soon as you receive an appointment for imaging (X-rays) of your arteries. The telephone number is **01392 402336** selecting option 1 and then option 7 for Special Procedures. They are likely to advise you stop those tablets around the time of your investigation and treatment.

Once the wire has been passed through the narrowing or blockage a special catheter (tube) is threaded over the guide wire with a sausage shaped balloon at its far end. Once the balloon is in position within the narrowing or blockage it is inflated. This widens the artery by “cracking” the disease (atheroma or atherosclerosis) which has narrowed the artery. The outer wall of the artery is strong and allows the disease inside to be cracked and pushed to one side, so widening up the passage for blood. Sometimes it is necessary to inflate a balloon more than once in order to widen up a long narrowing or blockage.

Further X-ray pictures are then taken using special dye (contrast) which shows up the inside of the artery and gives a picture of how successful the balloon angioplasty has been.

Balloon angioplasty is sometimes done for other arteries, such as those in the arm (when the balloon is introduced through an artery at the elbow).

## When is a stent necessary?

In certain special situations a metal stent (like a cylindrical cage) is placed in the area which has been stretched to keep the artery open in the long term. Evidence suggests that stents can help to give better long term results in certain special situations (for example after opening up a blockage of one of the arteries above the groin). Sometimes stents are used to improve a poor result from balloon angioplasty or to treat complications (such as damage to the artery).

## Why do I need an angioplasty or stent?

Your history or examination and other tests will suggest that there is a narrowing in an artery (or vein), and that treatment to widen that narrowing might improve your symptoms.

## What are the alternatives treatments?

There is always the alternative of having no treatment. The vascular specialists will have discussed with you the expected benefits of

balloon angioplasty or stenting compared with continuing as you are.

Surgical treatment (for example operations to clear out, widen or bypass arteries or veins) is often an alternative. Operations usually mean that you need to have a general anaesthetic, incisions, a longer stay in hospital and a more uncomfortable and prolonged recovery compared with angioplasty or stenting. Complications such as wound infection, heart attack or chest problems are significantly more common after operations. That is why we would normally suggest angioplasty or stenting if that looks possible. If angioplasty or stenting do not produce a good result for you, then an operation is occasionally needed later.

## Who has made the decision?

The consultant team in charge of your case. He or she will feel that this is the best thing to do. However, you will also have the opportunity for your opinion to be considered, and if, after discussion with your doctors, you do not want the procedure carried out, you can decide against it.

## Who will be performing the Angioplasty / Stent?

A specially trained doctor called a Radiologist. Radiologists have special expertise in using X-ray and ultrasound scanning equipment, and also in interpreting the images produced. They need to look at these images while carrying out the procedure.

Radiographers and Radiology Nurses will be present in the room to assist during the procedure, they will introduce themselves at the start of the procedure.

Occasionally student radiographers or medical students will be present to observe the procedure.

## Where will the Angioplasty / Stenting take place?

Usually in the Medical Imaging Department.

## How do I prepare for balloon angioplasty or stent?

- You may need to be an inpatient in the hospital, although many stents can be performed as an outpatient / day case.
- You will have had some blood tests performed before the procedure to check that you do not have an increased risk of bleeding.
- You are asked not to eat for 4 hours prior to the procedure. You may drink a little water.
- You will need someone to drive you home and to look after you for 24 hours.
- You should be prepared to stay overnight if necessary.
- If you have any allergies or you have previously reacted to intravenous contrast medium, you must let the doctor know. Intravenous contrast medium is the injection we give you during some scans.
- If you are diabetic, please contact the Medical Imaging Department on **01392 402336 selecting option 2, in-patient enquiries, option 7** X-ray Special Procedures.
- If you normally take any medication to thin your blood (anticoagulation or antiplatelet drugs) such as: **warfarin / clopidogrel / aspirin / non-steroidal anti-inflammatory drugs (NSAIDS / brufen / ibrufen / nurofen) / dabigatran (Pradaxa) / rivaroxiban (Xarelto) / Apixaban (Eliquis) / phendione / acenocoumarol – then these may need to be stopped or altered. Please contact the Medical Imaging Department on 01392 402336 selecting option 2, in-patient enquiries and then option 7 for X-ray Special Procedures.**
- Other medication should be taken as normal.
- A pregnancy test may be performed on arrival.
- You are advised to leave all jewellery and valuables at home.

## What actually happens during and angioplasty / stent?

When you arrive you will be asked to change into a hospital gown.

A needle will be placed in a vein, usually in the back of your hand, for necessary drugs to be given (such as a drug to reduce the risk of thrombosis). A nurse will ask you a series of questions and will do some measurements, including your blood pressure.

You will be asked to sign a consent form if you have not already done so. Finally, a safety check list called "Time Out" will be gone through, to double check that all is in order. The procedure is described on page 2.

## Will it hurt?

Most angioplasties / stents do not hurt at all. When the local anaesthetic is injected, it will sting to start with, but this soon passes off, and the skin and deeper tissues should then feel numb. Later, you may be aware of the contrast / X-ray dye passing into your body.

There will be a nurse, or another member of the clinical staff, standing next to you and looking after you. If the procedure does become painful for you, then they will be able to arrange for you to have more painkillers through the needle in your arm.

## How long will it take?

Every patient's situation is different, and it is not always easy to predict how complex or straightforward the procedure will be. It may be over in 30 minutes, although you may be in the Medical Imaging Department for up to 2 hours.

## What happens after balloon angioplasty?

Firm pressure is applied to the groin for about ten minutes after the procedure to try to be sure that the artery has sealed off properly. Often a small stitch or closure device is inserted through the tiny skin incision to seal the hole in the wall of the artery. We normally ask you to lie flat for about four hours after balloon angioplasty and to stay in hospital overnight. Nurses will look at the

groin puncture site at regular intervals to make sure that there is no bleeding and will record your pulse and blood pressure.

## What will happen to the results?

A report of the procedure will be recorded in your notes immediately and also sent to your specialist.

## What happens next?

It may sometimes be possible for you to go home on the day of your treatment if it is done early in the day and if everything has settled well. Somebody would need to drive you home and to be with you overnight. We would discuss all this with you.

The day after treatment, you can resume normal activity immediately. This includes walking any distance you want. You may bath or shower 24 hours after the angioplasty. There should be no problem with passing urine or opening your bowels normally after angioplasty.

## Are there any risks or complications?

### Failure of the treatment.

Balloon angioplasty may not be successful, either because it is impossible to pass the guide wire through the blockage or narrowing, or because the balloon simply will not unblock or widen the artery. If this happens you will be advised about other possibilities for treatment.

### Bruising and lumpiness.

After the procedure there will be bruising around the groin. Sometimes this is extensive. The bruising will settle completely. A bruise is caused by bleeding into the tissues, and sometimes this can result in an obvious lump in the area where the procedure was done. It may take many weeks for the lump to settle: it is not harmful.

### Bleeding

If bleeding from the groin continues, whilst you are in hospital, an operation may be needed to repair the bleeding artery.

## Blockage of arteries

There is a very small risk of dislodging pieces of atheroma or blood clot from within an artery which can then be carried by the blood flow into arteries further down the leg, so blocking them. If this happens then it may be possible to remove the blood clots using fine catheters passed down the arteries in the Medical Imaging Department, to dissolve the clot using "clot busting" drugs (thrombolysis) or by an operation. Occasionally the closure device used to seal the hole in the wall of the artery may become displaced, causing blockage or bleeding. An operation may be needed to correct this.

## Amputation

If arteries become blocked during angioplasty and cannot be unblocked then there is a risk that the limb could require amputation. The risk of losing a leg as a result of angioplasty is very small (less than 1%) but it is important that anyone having an angioplasty or stenting should understand that this tiny risk does exist.

## Infection

Infection of the angioplasty wound or of blood clot beneath it is a very rare problem.

## False aneurysm

This is also very rare. It means that the artery does not seal off normally, so that blood can flow into a space outside the artery wall. Treatments include injection of a clot forming solution or an operation.

## Death

The risk exists of death (for example due to serious bleeding or heart attack during the angioplasty or stenting). This risk is less than 1 in 1,000.

The total risk of serious complications such as major bleeding (arterial rupture) or blockage of an artery (requiring further treatment in the Medical Imaging Department or surgery) during angioplasty or stenting is about 2-3%. This means that the vast majority of people having balloon angioplasty do not suffer any serious side-effects.

## What should you do if there is a problem?

Generally it is best to consult your general practitioner first. Your GP may then arrange an appointment with the surgical team in clinic, if necessary. If the problem is an emergency then you should attend the Accident and Emergency Department. The duty surgical team would look after you in the first instance, and would then involve the vascular surgical specialists.

## How long will the result of a successful angioplasty or stent last?

This depends on exactly which artery was treated; whether there was a narrowing or a block; and how long this was. The results are best for larger arteries (above the level of the groin); for narrowing rather than blockages; and for shorter lengths of diseased artery, rather than longer ones. Overall, the chance of a continued good result in arteries above the groin is about 80% at two years. In arteries below the groin and further down the leg the chance of a successful result after two years is only about 50%. It is sometimes possible to repeat a balloon angioplasty if an artery blocks off again. Whether or not this is possible depends on what the new narrowing or blockage looks like, and particularly how long it is.

It is very important that people with blocked or narrowed arteries should not smoke, because smoking increases the risk of further blockages.

Low dose aspirin (we usually recommend 75mg aspirin daily) thins the blood a little and is particularly important during the first few weeks after angioplasty. In the long term taking aspirin helps to guard against blocked arteries throughout the body. Treatment with statin tablets to lower cholesterol levels, and treatment of high blood pressure or diabetes also help to reduce the risk of further blockage. Keeping active with some regular walking is also helpful in the long term.

## Finally...

Some of your questions should have been answered by this leaflet, but remember that this is only a starting point for discussion about your treatment with the doctors looking after you. Make sure you are satisfied that you have received enough information about the procedure, before you sign the consent form.

## Contact us

If you found reading your leaflet difficult, you do not understand what it means for you, if you have any queries or concerns you can contact us on: **01392 402336** and we can talk it through.

## How to get to the Royal Devon & Exeter Hospital at Wonford

Please refer to the enclosed "Welcome to the Medical Imaging Department" leaflet or use the Trusts website for the latest information: **[www.rdehospital.nhs.uk/patients/where](http://www.rdehospital.nhs.uk/patients/where)**

For more information on the Medical Imaging Department, please visit our website: **[www.rdehospital.nhs.uk/patients/services/medical-imaging](http://www.rdehospital.nhs.uk/patients/services/medical-imaging)**

Some of your questions should have been answered by this leaflet, but remember that this is only a starting point for discussion about your treatment with the doctors looking after you. Make sure you are satisfied that you have received enough information about the procedure, before you sign the consent form.

*Modified with acknowledgment of,  
and permission from,  
the Royal College of Radiologists.*

The Trust cannot accept any responsibility for the accuracy of the information given if the leaflet is not used by RD&E staff undertaking procedures at the RD&E hospitals.

© Royal Devon and Exeter NHS Foundation Trust

Designed by Graphics (Print & Design), RD&E