Angiography and Angioplasty

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Welcome to Radiology department

Angiography and Angioplasty

This leaflet has been prepared to tell you about angiography, angioplasty and stents. It will explain what will happen during each of these procedures and we hope that it will answer some of the questions you may have about your examination.

Who has made the decision about my treatment?

The doctors in charge of your case and the radiologist doing the angiogram will have discussed the situation and feel that this is the next step. However, you will also have the opportunity for your opinion to be taken into account and, if after discussion with your doctors, you do not want the procedure carried out, then you can decide against it.

What is an angiogram?

An angiogram (also sometimes called an arteriogram) is a special x-ray examination of blood vessels. Normally, blood vessels do not show up on ordinary x-rays. However, by injecting a “dye” called contrast medium into an artery through a fine plastic tube called a catheter, and taking x-rays immediately afterwards, detailed images of arteries and veins can be produced.

Why do I need an angiogram?

Your doctors feel that there may be a problem with part of your circulation. Other tests that you might have had done, such as Doppler ultrasound, can provide useful information, but it is felt that in your case the best way of obtaining the amount of detail required is by an angiogram.

What is an angioplasty?

An angioplasty is a way of relieving blockage or a narrowing in an artery without having an operation. A catheter is inserted through a blockage in an artery and a special balloon on the catheter is then inflated to open up the blockage and allow more blood to flow through it.
Why do I need an angioplasty?
Your doctors know that there is a problem with part of your circulation. You may already have had an angiogram that has shown a blockage in an artery. While this might need treatment by surgery, in your case it has been decided that an angioplasty is the best way of proceeding.

What is a stent?
A stent is a hollow mesh tube about the size of your little finger. It is made of fine sterile metal and is used to hold open an artery. When it is used, unlike an angioplasty balloon, it is left inside the artery after the procedure is completed and remains there forever. Once it is in position, the stent does not give any discomfort or sensation, but it is important to remember it is there, and to tell any doctors treating you in the future of its presence. It can be placed in the artery using similar equipment to an angioplasty and usually requires no additional anaesthetic.

Why would I need a stent?
Stents are often used if there is a blockage in a large artery. They may also be used if, after an angioplasty, the result is not as good as had been hoped for or the artery remains ragged. Also, if with time, a narrowing successfully treated by angioplasty recurs in the same place a stent may be placed to decrease the likelihood of the narrowing recurring again.

Who will be doing the angiogram or angioplasty?
The procedure will be performed by a team of specialists, including radiology nurses and radiographers. They are led by a consultant vascular radiologist, often assisted by a radiologist undergoing further specialist training. Radiologists have special expertise in using x-ray equipment and also in interpreting the images produced. They need to look at these images while carrying out the procedure.

Where will the procedure take place?
In the x-ray department, in a “screening” room, which is adapted for specialised procedures.
How do I prepare for an angiogram?

Usually you will be admitted to hospital on the day of, or on the day before, your angiogram. On the ward you will be seen by a doctor who may ask you to sign a consent form. You may be asked not to eat for 4 hours before your examination, but in most cases you will be encouraged to continue to drink water up to the time of the procedure so that you do not become dehydrated.

As the procedure is generally carried out using the big artery in the groin, you may need to shave the skin around this area. You will also be asked to put on a hospital gown. A needle may be put into a vein in your arm so that the radiologist can give you a sedative or painkillers during the procedure if necessary. Once in place, this will not cause any pain.

If you have any allergies, you must let the doctor know. If you have previously reacted to intravenous contrast medium, the dye used for kidney x-rays and CT scanning, then you must also tell the doctor about this. You should also tell the doctor if you are diabetic and if you have previously had any problems with kidney function, blood clotting or asthma.

What actually happens during an angiogram?

- You will lie on the x-ray table, generally flat on your back. You may also have a monitoring device attached to your chest and finger and may be given oxygen through small tubes in your nose or a mask.

- The radiologist will keep everything as sterile as possible and will wear a theatre gown and operating gloves.

- The skin near the point of insertion, probably the groin, will be cleaned with antiseptic, and then most of the rest of your body will be covered with a theatre towel.

- The skin and deeper tissues over the artery will be anaesthetised with local anaesthetic and then a needle will be inserted into the artery.
Once the radiologist is satisfied that this is correctly positioned, a guide wire is placed through the needle, and into the artery. Then the needle is taken out allowing the fine, plastic tube (catheter) to be placed over the wire and into the artery.

The radiologist uses the x-ray equipment to make sure that the catheter and the wire are moved into the right position and then the wire is taken out. The contrast medium is then injected through the catheter and x-rays are taken.

What actually happens during an angioplasty?

If you are also having an angioplasty this may require a catheter to be placed into the other groin. This would be performed in the same way as for an angiogram with additional local anaesthetic.

The radiologist will use the x-ray equipment to make sure that the catheter and the wire are moved into the right position, very close to the blockage in the artery. Then the wire and the catheter will be moved so that they pass into the narrowed area. The balloon is then inflated. It may be necessary to inflate the balloon several times in order for the narrowed area to open up enough to improve the blood flow.

The radiologist will check progress by injecting contrast medium down the catheter to show how much the narrowed artery has opened up. When he or she is satisfied that a good result has been obtained, (and) the catheter is removed. If the narrowing has not improved as much as expected the radiologist may place a stent within the artery at this stage.

Once the radiologist is satisfied that the x-rays show all the information required, the catheter will be removed and the radiologist will then press firmly on the skin entry point, for several minutes, to prevent any bleeding.
Will it hurt?

- When the local anaesthetic is injected, it will sting to start with, but this soon wears off, and the skin and deeper tissues should then feel numb. After this, the procedure should not be painful. There will be a nurse, or another member of clinical staff standing next to you and looking after you. If the procedure does become uncomfortable for you, then they will be able to arrange for you to have some painkillers through the needle in your arm. As the contrast medium passes around your body, you may get a warm feeling which some people can find a little unpleasant. However, this soon passes off and should not concern you.

- Some people feel a degree of discomfort during the time that the angioplasty balloon is inflated, but this generally passes off swiftly when the balloon is removed.

How long will it take?

Every patient’s situation is different, and it is not always easy to predict how complex or how straightforward the procedure will be. Some angiograms, for example those looking at the large arteries in the legs, are generally straightforward and do not take very long, perhaps half an hour. Other angiograms looking at much smaller vessels, may be more complex, and take rather longer, perhaps over an hour. As a guide, expect to be in the x-ray department for about an hour and a half altogether.

What happens afterwards?

You will be taken back to your ward on a trolley. Nurses on the ward will carry out routine observations, such as taking your pulse and blood pressure, to make sure that there are no problems. They will also look at the point where the catheter was inserted to make sure there is no bleeding from it. You will generally stay in bed for a few hours, until you have recovered. You may be able to go home on the same day or be kept in hospital overnight.
Are there any risks or complications associated with angiography?

Angiography is a very safe procedure, but there are some risks and complications that can arise. There may occasionally be a small bruise, called a haematoma, around the site where the needle has been inserted and this is quite normal. There is a chance that the bruise may become very large and uncomfortable, delaying discharge from hospital, but this does not happen very often (approximately 3 in 100 chance). Very rarely, some damage can be caused to the artery by the catheter and this may need to be treated by surgery or another radiological procedure. The overall risk of requiring an operation is low (1-2%) The majority of people who have angiography notice a small lump in the groin, which remains after the procedure for a couple of months. This is part of the body’s natural healing process, and is caused by the formation and gradual absorption of scar tissue. The lump will disappear with time.

Are there any risks or complications associated with angioplasty?

Angioplasty is a very safe procedure but there are some risks and complications that can arise. Sometimes it is not possible to manoeuvre the wire through the blockage and occasionally, despite inflating the balloon several times, the narrowing is so severe that it does not open up as much as anticipated. The risk of bleeding is higher than for angiography (4 in 100 chance), but the risk of vessel damage is similar for the 2 procedures. There is also a 1 in 100 chance that the angioplasty will fail and lead to deterioration and the need for urgent surgery. In very severely diseased arteries the risk of requiring urgent surgery rises to 3 in 100. In the worst case this may rarely lead to amputation.

Despite these possible complications, angiography and angioplasty are normally very safe, and are carried out with no significant side effects at all.
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.
References and Sources of further information

The figures for complications given in this leaflet have been taken from recommended standards for complications published by the Royal College of Radiologists. At North Bristol our figures for complications are routinely audited and are within the Royal College standards.

This leaflet is based on material prepared by the British Society of Interventional Radiology (BSIR) and the Clinical Radiology Patients’ Liaison Group (CRPLG) of the Royal College of Radiologists. ©The Royal College of Radiologists, July 2000.

You can access the original leaflets on the following web site: www.rcr.ac.uk [accessed April 2008] and follow links via “patients and carers” to “patient information leaflets” [last accessed February 2010]

Further information may also be found at: www.circulationfoundation.org.uk and follow the links via “vascular disease” to “angiogram or angioplasty and stent” [last accessed February 2010]

NHS Constitution. Information on your rights and responsibilities. Available at www.nhs.uk/aboutnhs/constitution
If you or the individual you are caring for need support reading this leaflet please ask a member of staff for advice.

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