Renal angioplasty (including transplant kidneys) and stent insertion

What is an angioplasty?

An angioplasty is a way of opening up a narrowed or blocked artery, without having an operation. A fine plastic tube, called a catheter, is inserted into an artery, usually via the groin, and manipulated to the artery to the kidney. A test called an angiogram is then performed. This involves injecting X-ray dye into the kidney artery to confirm whether it is narrowed or not. If it is felt to be particularly narrow a special balloon on the catheter is then inflated, to open up the narrowing and allow more blood to flow through it. A specially trained doctor called an interventional radiologist performs the procedure in the Interventional Suite within the X-ray department. Radiologists have special expertise in using catheters, X-ray and imaging equipment, and also in interpreting the images produced.

What is a stent?

A stent is a small meshwork cylinder made of metal, approximately the size of a biro spring. It is introduced on a special balloon catheter and placed by inflating the balloon. A stent is used to keep the artery open if the balloon inflation alone has not worked sufficiently.

Why do I need an angioplasty/stent?

Your doctors know that there is a problem with part of your kidney circulation. You will already have had either a CT scan or an MRI scan with a dye injection, which has shown a possible narrowing in the artery supplying one or both of your kidneys. This scan will have been done either because you have high blood pressure or your kidney function is not as good as your doctors feel it should be. Following the result of the scan it has been decided by a team of doctors that an angioplasty and/or stent placement is the best way to treat this problem.

Who has made the decision?

The consultant in charge of your case, and the interventional radiologist doing the procedure, 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.

How do I prepare for an angioplasty?

You will be admitted to the hospital at least for the day, possibly overnight. You will probably be asked not to eat for four hours beforehand, though you may be told that it is all right to drink some water. You may be given a drip to supply extra fluids to your body; this has a protective effect during the procedure. You will be asked to put on a hospital gown. If you have any allergies, you must let your doctor know. If you have previously had an allergic reaction to intravenous contrast medium, the dye used for the CT scan and the angiogram then you must also tell your doctor or the nurse on the ward about this.

What actually happens during an angioplasty?

The radiologist will speak to you before you enter the X-ray theatre to explain the procedure, check that you are happy to continue and ask you to sign a consent form.

You will lie flat on your back on the X-ray table, in the interventional radiology suite. You will have monitoring devices attached to your chest and finger, and may be given oxygen through small tubes in your nose, or a facial mask. The radiologist will wear a theatre gown and operating gloves as will the assisting nurse in order to keep everything sterile.

The catheter is usually inserted through the artery in the groin (occasionally a vessel in the arm) and the skin here will be cleaned with antiseptic. The rest of your body will then be covered with a theatre towel. The skin and deeper tissues over the artery will then be numbed 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 into the artery. The needle is then withdrawn allowing the fine, plastic tube (catheter) to be placed over the wire and into the artery. The radiologist will use the X-ray equipment to make sure that the catheter and the wire are moved into the right position.

Once the narrowing has been confirmed, the wire and a different catheter will be positioned in the narrowed segment and the balloon will be inflated. This part can sometimes be painful in the back, painkilling injections can be administered if the pain is too severe. The radiologist will check progress by injecting X-ray dye 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, the balloon catheter is removed.

If the artery has not opened up sufficiently the radiologist may decide to insert a stent to hold the vessel open. This is done by inserting a new catheter which has the stent already on it. At the end of the procedure the radiologist will either press firmly on the skin entry point for several minutes to prevent any bleeding or they will insert a special device to close the hole that has been made in the groin artery.

Will it hurt?

When the local anaesthetic is injected it will sting to start with but this soon wears off. After this, the procedure should not be painful. There will be a nurse near by to look after you. If the procedure does become uncomfortable for you, the nurse will be able to arrange for you to have some painkillers through the tube in the groin. As the dye or contrast medium passes around your body, you may get a warm feeling, which some people can find a little unpleasant however, this soon passes and should not concern you.

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. 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 skin entry point to make sure there is no bleeding from it.

You will need to rest in bed for 2–4 hours but the drip will continue running for up to 6 hours. Depending on when your procedure takes place, you may be allowed home on the same day or kept in hospital overnight.

Are there any risks or complications?

Angioplasty 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 - this is quite normal. The bruise may be sore, but this will go away in a few days
- There is a chance that the bruise may become very large and uncomfortable and need a small operation, but this does not happen very often
- Very rarely, some damage can be caused to the kidney artery by the catheter, or the balloon. This happens in less than 1 case in 100 and can usually be treated by placing a stent to repair any damage
- There is also a small chance that the X-ray dye injected into the kidney can affect the function of the kidney resulting in worsening blood tests

The radiology team employ special precautions to reduce the risk of this happening including the drip both before and after the procedure. Should this happen it usually recovers after between 3–5 days. Sometimes it is not possible to open up the vessel where it is narrowed, either because the narrowing is too complex or the tissue in the wall is resistant to being stretched by the balloon.

You must make sure you are satisfied that you have received enough information about the procedure, before you sign the consent form.

Please use the space below to write down any questions you may have and bring this with you to your next appointment.

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