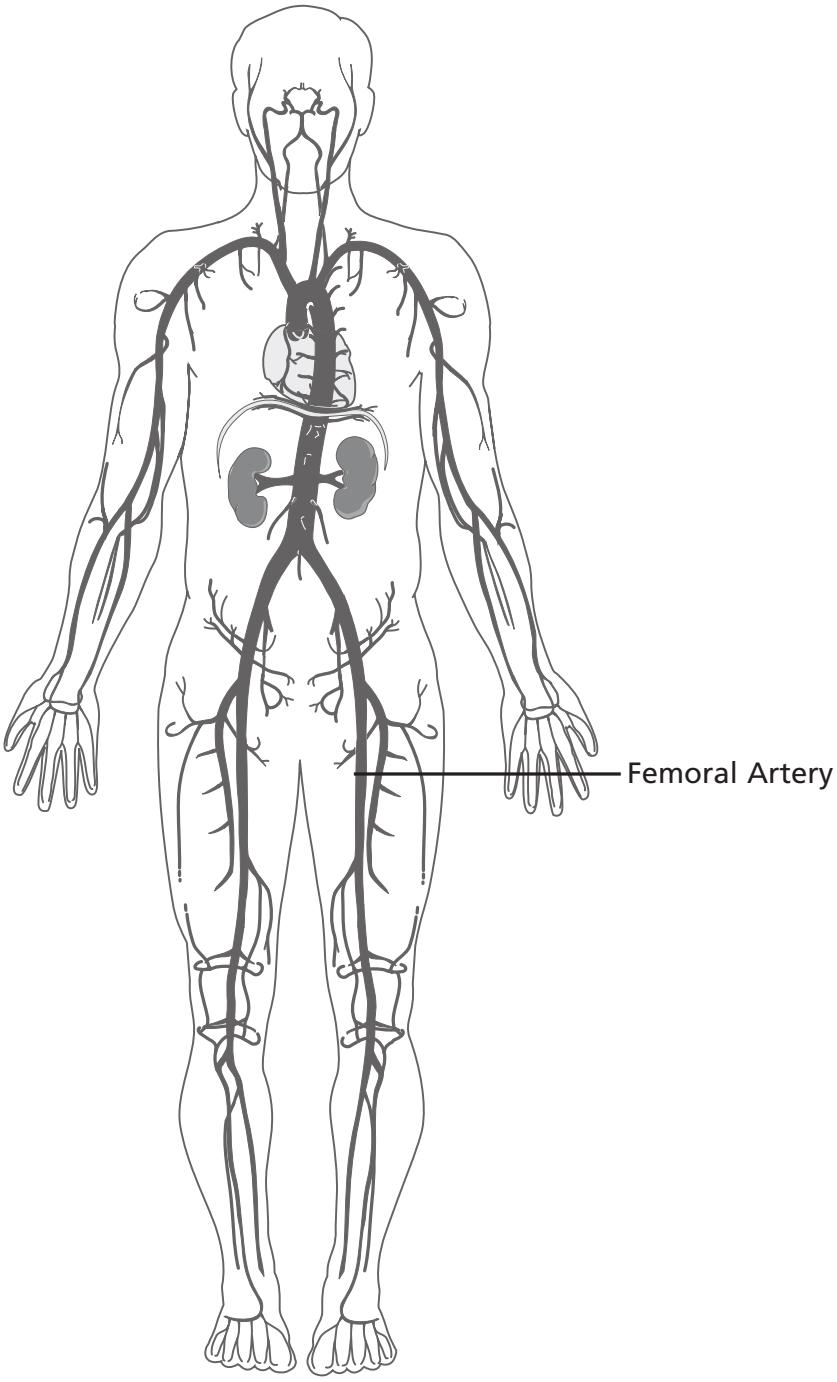
Angiography

This information sheet explains about an angiography procedure, what it involves and what to expect when your child comes to Great Ormond Street Hospital (GOSH) to have it.



What is angiography?

Angiography is a procedure that allows doctors to look at blood vessels in great detail using X-rays. It is used to help make a diagnosis, plan treatment or monitor the effects of a treatment your child might already be receiving. Angiography produces an angiogram, which is an image of the blood vessels in the body. An angiogram looks a little like a road map, showing the path of blood vessels and their junctions. Any part of the body can be studied using angiography so it is used for a wide variety of conditions. For example, a cerebral angiogram looks at blood vessels within the brain – this is explained in a separate information sheet.

Angiography can be used to look at abnormal blood vessels in great detail. Blood vessels can narrow as part of an illness affecting the entire body, such as vasculitis – see our information sheet for further details – or neurofibromatosis. Sometimes just the arteries supplying the kidneys can become narrowed and this is called renal artery stenosis. A narrowed blood vessel causes problems because it causes reduced blood flow to the part of the body it is supplying. Narrowing of some arteries, especially the ones that supply blood to the kidneys, can also lead to high blood pressure. In other diseases, blood vessels can be widened, or dilated (sometimes called an aneurysm) and this can also cause problems.

Sometimes angiography is used to study the blood flow through blood vessels. This is important if doctors think there may be a problem such as a shunt (abnormally fast flow through blood vessels).

Angiography can also be used to look at normal blood vessels, to plan future surgery or treatment of an organ supplied by those blood vessels.

Your child's doctor will explain why the angiogram is needed and which part of the body is affected.

It is carried out in the Department of Radiology by a doctor (radiologist) who specialises in using imaging to guide procedures.

What happens before the angiography?

You will already have received information about how to prepare your child for the procedure in your admission letter. You may need to come to GOSH before the angiogram so that your child can have a pre-admission assessment to check that they are well enough. This appointment may involve taking blood samples and other tests.

The doctor will explain the procedure in more detail, discuss any questions you may have and ask you to sign a consent form giving permission for your child to have the angiogram. If your child has any medical problems, please tell the doctors. As contrast liquid (which shows up well on x-rays) is used during the procedure, which is removed from the body through urination (peeing), please tell the doctors if your child has any kidney problems.

Many of the studies we perform involve the use of x-rays. Legally, we are obliged to ask any girls over the age of 12 whether there is any chance they might be pregnant. This is to protect babies in the womb from receiving unnecessary radiation.

What does angiography involve?

Angiography is almost always carried out while your child is under a general anaesthetic, because they need to lie very still throughout the procedure and the procedure can take a while.

It is important that your child does not eat or drink anything for a few hours before the sedation or anaesthetic. This is called 'fasting' or 'nil by mouth'. Fasting reduces the risk of stomach contents entering the lungs during and after the procedure. You will be informed the night before the procedure of the time that your child should be 'nil by mouth' – in other words, have nothing to eat or drink before the anaesthetic. Fasting times are provided in your admissions letter - in broad terms, this is six hours for food (including milk), four hours for breast feeding and two hours for clear fluids before the procedure.

It is equally important to keep giving your child food and drink until those times to ensure they remain well-hydrated and get adequate nutrition. This may involve waking your child in the night to give them a drink which we recommend.

Once your child is under general anaesthetic, the radiologist will insert a needle into an artery (large blood vessel), using ultrasound to guide them. Some local anaesthetic is injected into the skin first, to make the area numb for a few hours, and a very small cut is made in the skin, though which the needle is placed. The groin artery (femoral artery) is almost always the artery that is used, even if the angiogram is needed for another part of the body as it is the easiest to access. A soft guide wire is threaded through the needle, which is then removed. Finally a catheter (thin plastic tube) is threaded over the guide wire into the artery, and the guide wire is removed.

The catheter is then threaded through the arteries until it is in the area needed. X-rays and contrast are used at various points to guide the catheter in the right direction and to check that it has reached the area that

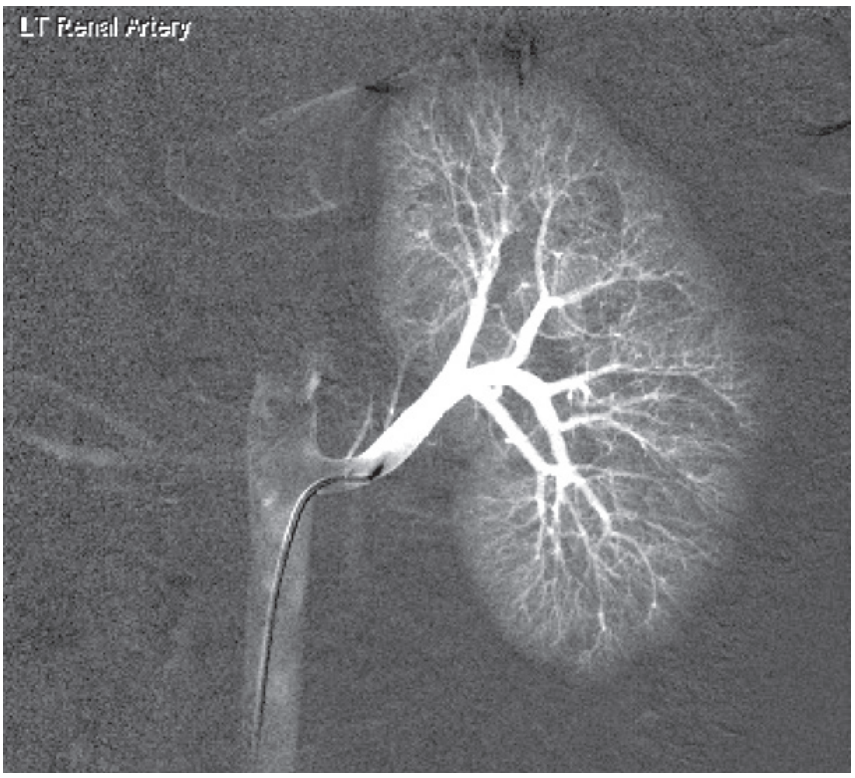
needs to be scanned. Further x-rays are then taken as the contrast flows out of the catheter into the blood vessels so that they can be seen clearly from several angles to give detailed information.

At the end of the test, the catheter is drawn back through the blood vessels and removed from the groin. No stitches are needed where the catheter was inserted, as only a small mark is left, which should heal completely within a few days.

Are there any risks?

Complications of angiography are extremely rare.

Angiography is usually carried out while the child is under general anaesthetic. Although every anaesthetic carries a risk, this is extremely small. There is only a small risk of infection. Your child may bleed from the area where the catheter was inserted, but this can be minimised by applying pressure for a few minutes after the procedure. There is often a bruise in the area and it might feel a bit sore, but pain relief such as paracetamol or ibuprofen is usually enough to deal with this.



There is a very small chance that the blood vessels being studied could be damaged, either by a blockage or a tear in the blood vessel wall. Damage to the blood vessels is very unlikely as the progress of the catheter through the blood vessels is checked frequently using x-rays.

Rarely a clot can form in the leg artery where the catheter was inserted or the artery can go into spasm. This may affect the blood circulation in the leg. If this happens, it may be necessary to give medicine to thin your child's blood for a short time. Rarely, further treatment may be required.

Long-term, the artery wall where the catheter went into the vessel (usually the groin), may be weakened by having had the catheter there, as the vessel wall may lose some of its elasticity. With the high pressure of the blood flow through the vessel, this may lead to a small bulge in the vessel wall (like a weakness in a hosepipe wall). We call this a pseudoaneurysm. If this happens, you might notice a small bulge under the skin near where the catheter went in, which has a pulse in it. This is not dangerous but it should be treated. The treatment options are usually straightforward. If you notice this, please inform your family doctor (GP) or hospital consultant.

It is extremely unusual to have an allergic reaction to the contrast. If your child has any allergies, please tell the radiologist before the procedure starts. The contrast is removed from your child's body by the kidneys and is passed when peeing.

Are there any alternatives to angiography?

The doctor may be able to gain information about your child's blood vessels using another type of imaging procedure, such as an MRI or CT scan. Usually, angiography gives more detailed pictures than other types of scans. Angiography is often just one of many tests and procedures your child will have to help the doctors make a diagnosis or plan and monitor treatment. Angiography is not usually carried out unless less invasive tests cannot provide the necessary information.

What happens afterwards?

Your child will return to the ward after they have recovered from the anaesthetic. Some children feel sick and vomit after a general anaesthetic. Your child may have a headache or sore throat or feel dizzy, but these side effects are usually short- lived and not severe. Your child can start eating and drinking as normal once they feel like it.

The doctors will come to check your child's progress on the ward and will give you some information about what they have done during the procedure.

The nurses on the ward will check the area where the catheter was inserted regularly. Your child will need to lie flat on their back in bed for at least four hours afterwards. This will reduce the risk of bleeding from the catheter site. They will also check your child's vital signs, including pulse, breathing and blood pressure regularly. Rarely an overnight stay may be required for further monitoring.

Going home

Your child will usually be able to go home when their vital signs are normal, the catheter site is not bleeding, and they have had something to eat and drink. There will be a small dressing in the area, which you should keep in place and dry for at least 48 hours. We advise that your child avoids games or PE for at least five days after the procedure.

Getting the results

The pictures taken during the procedure need to be studied carefully by the radiologist, who will write a report for your child's doctor. The results will not be available straightaway and usually we will make an outpatient appointment to discuss them with you.

You should call the hospital if:

- Your child starts bleeding from where the catheter was inserted. If bleeding happens, apply pressure to the area immediately.
- Your child is in a lot of pain and pain relief does not seem to help.
- The area where the catheter was inserted looks red, swollen and feels hotter than the surrounding skin.
- The leg where the catheter was inserted looks or feels different to the other leg.
- Your child is not drinking any fluids after the first day back at home.

Compiled by the Interventional Radiology team in collaboration with the Child and Family Information Group
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