



endoAVF

Please note that this leaflet is not meant to replace discussion between you and your doctor. You should raise any questions you may have with the doctor who has referred you for, or is performing, the procedure.

What is an endoAVF?

This is the endovascular (inside the vessel) creation of an arteriovenous dialysis fistula (AVF) using minimally invasive techniques to produce a connection (a fistula) between a forearm artery and vein. This fistula can then be used for dialysis. The procedure is performed by an Interventional Radiologist, who is a doctor with a specialisation in image-guided procedures.

Why do I need an endoAVF?

If your kidneys are not working properly (End-Stage Kidney Disease) you may require haemodialysis, which is the process of filtering the waste products from your blood via a machine, as your kidneys can no longer do this effectively. The most effective way to do this is by creating an "access" to the blood stream in order to administer haemodialysis treatment.

An AVF creates a direct connection between an artery and vein in your arm. Arteries normally have high blood flow and pressure, and veins have lower flow and pressure. The joining of these two vessels in your arm leads to the vein next to the connection enlarging and achieving adequate blood flow for haemodialysis.

Once this segment of vessel is deemed to have adequately matured, it can then be accessed with two needles which connect to the dialysis machine. Your blood is then withdrawn through the first needle, cleaned through the dialysis machine and returned to the body through the other needle.

Traditionally, AVFs have been created by open surgery where a cut is made in the skin using a scalpel and the vessels joined with stitches. EndoAVF is a modern minimally invasive alternative to open surgery. Using x-ray or ultrasound guidance, the EndoAVF is created via special catheters (flexible tubes) that are temporarily placed inside the blood vessels through the skin.

Is an endoAVF right for me?

EndoAVF is not a replacement for an open surgical fistula and you may still be more suitable for a traditional surgical fistula. Though there are advantages and disadvantages of each fistula type, your kidney doctor will tailor their specific advice to find the right and best choice for you. This is dependent on a patient's individual anatomy, lifestyle considerations, and preferences.

Patients who already have other pre-existing forms of dialysis access (including previously failed surgical fistulas) may still be eligible for endoAVF. An essential part of fistula planning (open surgical and endoAVF) is ultrasound scanning of the blood vessels in the arm and this would be the first step before suitability for endoAVF can be determined. You will be involved in every part of the discussion and decision making and have the opportunity to ask questions.

What are the advantages of an endoAVF?

The creation of an endoAVF does not require surgical incision of the skin and tissues, and the fistula itself is very unlikely to become aneurysmal (stretched and distended), leading to improved long-term cosmesis (physical appearance). EndoAVFs have high rates of maturation and low requirements for repeat treatments. If an endoAVF becomes non-functional, this does not prevent the creation of other forms of future dialysis access, including surgical fistulas.



How do I prepare for the endoAVF procedure?

If you are deemed suitable for endoAVF after scanning and discussion with your kidney doctors and interventional radiologists, you will be booked for the procedure in the X-ray dept. Usually, this is carried out as a day-case, where you go home a few hours after the procedure.

You will be asked not to eat or drink anything for 6 hours before the procedure as you may require an injection of a sedative because these procedures are usually carried out under local anaesthetic with you awake.

You will be given specific instructions on time and location, prior to the day of the procedure.

How is the endoAVF procedure carried out?

EndoAVFs are made deep in the arm just below the elbow. There are 2 types of endoAVF systems currently available and your doctors will have discussed which type is most suitable for you. This will largely be determined by your blood vessels and also, local expertise as these are relatively new procedures.

An anaesthetic doctor may give you a nerve block to temporarily numb your arm for a few hours, so you don't feel any pain or discomfort during your procedure. The anaesthetist may also give you some sedative medication through your vein to make you more relaxed if needed.

You will be positioned lying flat with your arm outstretched and supported by an arm board. In certain cases, especially if a nerve block is not used, local anaesthetic may be administered to numb the area and this may sting initially before it starts to work.

The actual procedural steps will differ slightly depending on the type of endoAVF creation system being used, but the interventional radiologist will go through this with you in detail. With one system they will put a small specialised tube, called a catheter, in your vein, and another one in the artery. Once these catheters are aligned in the right place, a generator will be activated to make the connection between the blood vessels creating the fistula. This may cause your arm muscles to momentarily undergo involuntarily spasm, but will not be painful.

At the end of the procedure one of the veins above your elbow (which is distant to the fistula) may also be treated in order to encourage more blood to flow to the fistula vein nearest to the skin which will eventually be used for dialysis. Obtaining initial access into your blood vessels can take some time depending on your anatomy and the size of the blood vessels. This is generally at the wrist and/or above the elbow but the fistula is always created just below the elbow.

The other endoAVF system involves passing a needle from the vein in your elbow crease, then deep into the arm and eventually into the artery. A fistula between the artery and vein is then created with the help of a generator. With this type of endoAVF, a balloon angioplasty is also needed during the same procedure to widen the connection and sometimes again around 4 weeks later.

Once the procedure is finished, to prevent bruising and bleeding, the doctor will either attach a special pressure device if the access is on your wrist, or will manually press on your arm if the access is at your elbow.

What are the potential risks and complications of endoAVF?

EndoAVF creation is generally a safe procedure, but no procedure is without risk. Common risks include discomfort after the procedure and bruising. Bleeding, infection and damage to the vessels and nerves of the arm during the procedure is uncommon but a possibility. Like all medical procedures, there is a risk of procedural failure. There is also a risk that the endoAVF does not mature successfully. You will be given the opportunity to discuss procedural risks with the interventional radiologist before the procedure.



What happens afterwards?

Generally, patients are able to go home the same day of the procedure, but must be accompanied by a responsible adult. It is more than likely that your arm will still be numb from the nerve block if it has been administered and you will not be able to move the arm. We will provide you with an arm sling that will provide support until you gradually recover arm sensation over the following few hours.

Do not bend your arm for 24 hours and it is important you avoid carrying any heavy weights for a few days. You will be able to eat and drink, shower, and take your prescription medications as normal after the procedure.

The endoAVF cannot be used for dialysis immediately. You will be invited at regular intervals after your procedure for ultrasound scans. It is important to attend these appointments to check how your fistula is functioning. After assessment, it may be necessary to undergo further procedures to help your endoAVF mature before it can be used. On average it takes 6-12 weeks for an endoAVF to mature.

If you are already on dialysis you will be able to continue to undergo your normal dialysis schedule using your current dialysis access until the endoAVF is ready for use.

Notes