

Endovascular arteriovenous fistula creation (endoAVF)

This leaflet is intended to provide you with information regarding the formation of an endovascular arteriovenous fistula (endoAVF), also known as a percutaneous arteriovenous fistula (pAVF).

What is haemodialysis?

Haemodialysis removes waste products from the blood by passing it out of the body through a filtering system which is called a dialyser (artificial kidney) and then returning it, cleaned, to the body.

If you decide to choose haemodialysis, you may have the option of having a haemodialysis machine installed in your home. This means that you will not have to make regular visits to a dialysis unit. There are a number of criteria that usually have to be met for home haemodialysis to be considered as a suitable treatment option. This can be discussed with you at a later date.

Haemodialysis is carried out three to four times per week and each session lasts approximately 3-4 hours. Your renal doctor will advise you on the length of time that you will need.



Gaining access

In order for you to accomplish haemodialysis, it is necessary for us to have easy access to your blood vessels. If you choose to receive haemodialysis, usually the first step is getting assessed for permanent access suitability in our vascular access clinic. One option that you may have is creating a fistula. Currently, there are two types of fistula, a surgical arteriovenous fistula (sAVF) and an endovascular arteriovenous fistula (endoAVF).

Following your assessment at the vascular access clinic and identification to have the endoAVF option, you will be booked for another scan which is called 'vein mapping' to ensure suitability for endoAVF.

An endoAVF is a **non-surgically** modified blood vessel that is created by joining an artery to a vein. The endoAVF is usually created in the midsection of your arm just below the antecubital fossa or elbow crease.

A very small needle is passed along the vein and into the artery, a small tube is then inserted through which the Ellipsys device is passed and used to make a small connection between the

artery and vein using thermal energy. The connection is then made larger using a small balloon on the inside which stretches the vein. The small balloon and small tube are removed and gentle pressure applied to the vein to stop any bleeding. As this is a non-surgical technique of creating a fistula, there will be no surgical wound and therefore no surgical scar.

The endoAVF is ready to use when the vein has become strong enough to support the dialysis needles. This can take a minimum of 4-6 weeks but can take longer in some individuals.

The creation of the endoAVF will require a short procedure under a local regional anaesthetic (arm block) in an operating theatre or the interventional radiology suite. If you believe you may need additional medication to help you feel more relaxed, please discuss this with the doctor. Occasionally a general anaesthetic may be required. You will be advised of this by your doctor. This is usually carried out as a day case unless an overnight stay is required.

Once you have had your procedure you should be able to feel a 'buzzing' sensation over your skin. This sensation is called a '**bruit**' or '**thrill**'. This is a good sign as it shows that your fistula is working well. You will be shown how to feel for this 'buzz' before you are discharged home after the procedure.

Advantages of having an endoAVF:

- There is less risk of infection.
- Minimally invasive procedure and there is no surgical scar.
- Shorter maturation time of 4 weeks.
- Average fistula flow between 425ml/min to 1440ml/min. This means your fistula is unlikely to overload your heart if you have any heart conditions.
- An endoAVF is unlikely to become aneurysmal or big lumpy veins over time which may be cosmetically more acceptable for some patients.
- There is evidence from trials that endoAVF require less interventions in the long term to keep the fistula working and also, in one large trial at 5 years, 92% of endoAVF were functioning.

Disadvantages of having an endoAVF:

- This is a new procedure in the UK. Surgical AVF has been performed here for many years.
- You may need additional procedures in the first 2 to 8 weeks to either mature the endoAVF or divert flow to veins to allow cannulation or needling.

Are there any restrictions following the procedure?

- After your operation a dressing may be applied to your arm to protect the endoAVF.
- After the administration of the arm block anaesthesia, your arm will feel weak for up to 2-7 days. The team will give you an arm sling to protect your arm. Most patients recover from the procedure after 2 days.
- You are advised **not** to drive for 2 weeks after the procedure. Please check details with your insurance company first.
- After your fistula procedure there may be a slight swelling of the arm for a few days. We recommend that you **do not** do any heavy lifting or play contact sports for at least two weeks after your procedure.

Care of my fistula

We recommend the following actions to ensure that your endoAVF remains healthy and working:

- **Do not** wear anything tight on your fistula arm, this includes watches and clothing.
- **Do not** carry anything heavy with your fistula arm, this includes carrying young children.
- **Never** allow blood samples or needles for infusions to be taken or placed in your fistula arm.
- **Do not** have your blood pressure taken from your fistula arm.
- If you become unwell, or during hot weather, ensure that you **do not** become dehydrated as this may cause your endoAVF to stop working. Seek further advice from your dialysis nurse.
- Regularly check for your bruit four times each day.
- Avoid sleeping on your fistula arm.

How is my fistula used for dialysis?

Once your endoAVF is ready to use, two needles will be inserted and then taped into place.

One needle will take blood out from your body which is then cleaned in the filter known as a dialyser (artificial kidney). The 'dirty' dialysate fluid is then pumped out of the dialyser, and the 'clean' blood is passed back into your body via the second needle.

Once the dialysis session is complete, the needles will be removed and a plaster will be applied to prevent bleeding.

What are the possible complications of having the procedure?

With any medical procedure there is a risk of having a complication. It is important that you know what they are. Some of these are listed below:

- There is a small risk of bleeding from where the tube was placed in the vein after the procedure. You will be observed for 2 hours in the recovery area.
- Infection is a possible risk from the insertion site but this is extremely rare as the procedure itself is minimally invasive.
- You may have a small bruise where the endoAVF was created, this is normal and nothing to worry about.
- The procedure may fail and not be successful in creating a fistula.
- There is a small risk the fistula may block off and fail in the first few weeks. Your endoAVF will need to be scanned 1 week, 4 weeks and 8 weeks after creation to ensure everything is working well.
- Sometimes it may take longer than 4 to 8 weeks to develop.
- There is a very small risk of damage to the artery resulting in blockage of the artery.
- In some cases, a ballooning of the artery and the vein junction (anastomosis) might be needed to facilitate endoAVF maturity. This is usually done through a small tube inserted into the artery at the wrist under local anaesthetic and with some sedation.

What are the possible complications once you have a fistula?

Many good fistulas cause very few problems over the years, however, the following problems may occur:

- The fistula may develop a blood clot which may cause the AVF to stop working or the blood vessels which form the AVF may narrow over time. This can often be treated.
- Sometimes the circulation to the hand is reduced by the presence of an AVF. The affected

hand may feel cold and your fingers may become discoloured. You may also experience a tingling sensation or discomfort in the hand. If this occurs we will get you to see one of our surgeons.

- Your AVF may become too large over a period of time. If this happens you may need an operation to try and reduce the size.

What happens next?

Before the procedure you will be sent preprocedure information in the post. Fasting instructions will be given together with details of what medication you can take prior to the procedure.

Important - You must tell staff beforehand if you have a problem with bleeding or if you are taking tablets that affect bleeding, such as warfarin. If you are a diabetic, you will be given specific instructions according to individual need regarding fasting and medication for the day of the procedure.

What happens if my procedure is on my dialysis day?

Occasionally, the appointment for your fistula creation may coincide with your usual dialysis day. Please contact your dialysis unit who will arrange for you to have dialysis the day before.

What do I need to bring in with me on the day of the procedure?

You will need to bring into hospital your usual medication and some comfortable clothes or nightwear to change into. You are advised to bring in toiletries in case of an overnight stay.

You are advised not to wear jewellery, make-up or nail varnish.

When will I go home?

If there are no complications, you may be able to go home later the same day. Prior to discharge, you will be taught how to feel for the 'buzzing' of your fistula.

You will need someone to drive you home after discharge. It is advisable to have someone at home with you the night following the procedure.

Please discuss with the doctor the time that you will need to take off work.

What if I have some questions about the fistula?

The renal access clinical nurse specialist (CNS) is available Monday to Friday, 8am – 4pm and can be contacted on 01438 284624 if you have any questions regarding your access. A message can be left on the answer phone.

Further information

NHS Website www.nhs.uk

Kidney Care UK www.kidneycareuk.org

National Kidney Foundation www.kidney.org

Kidney Patient Guide www.kidneypatientguide.org.uk

Useful contact details

East and North Hertfordshire NHS Trust:

- Website www.enherts-tr.nhs.uk
- Telephone 01438 314333

Renal Access CNS:

- Telephone 01438 284624

Ward 6B, Nephrology (Renal) Ward, Lister Hospital:

- Telephone 01438 285063

Advanced Kidney Care Department:

- Telephone 01438 285255

Lister Haemodialysis Unit:

- Telephone 01438 284152

St Albans Haemodialysis Unit:

- Telephone 01727 897588

Chiltern Kidney Centre:

- Telephone 01438 288850

Bedford Renal Unit:

- Telephone 01438 286750

Harlow Renal Unit:

- Telephone 01279 278205

Leaflet information

You can request this information in a different format or another language; please speak to your doctor or nurse.

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