

Renal Services

Arterio Venous Fistula (AVF) as an access for haemodialysis

This leaflet tells you about the operation to make a fistula for haemodialysis treatment and how to protect your fistula after surgery. Please read it carefully as well as discussing this with your surgeon/nurse/doctor.

What is a fistula?

For haemodialysis treatment to work, some way of taking blood from you and returning it to you after it has been “cleaned” by the kidney machine is needed. This can be done by connecting the machine to a tube that has been inserted in one of the large veins in the neck or groin (a dialysis line). A better option is usually to have a “fistula” made in the wrist or elbow by a small operation.

To make a fistula, a vein in your arm is joined to one of the arteries so that some of the blood, which goes to the hand, is diverted up the vein, almost like a “short circuit”. This makes the vein get larger during the next few weeks because of the increased blood flow. It is important that the veins used for this operation are kept healthy so please ensure that you do not have blood taken from either the wrist or elbow joint of your non-dominant arm.

For example: If you are right handed protect your left arm. If you are left handed protect your right arm.

Why would you need to have a fistula made?

A fistula operation is done because haemodialysis treatment is going to be needed long-term. Once the fistula vein has become large enough (usually it will take four to eight weeks to mature) you can be connected to the dialysis machine by putting two needles (one to remove and the other to return blood) into this big vein instead of using a dialysis line.

Where is the operation done?

The operation is usually done in Addenbrooke’s Treatment Centre (ATC) Day Surgery Unit (DSU) or in the operating theatre and takes about an hour and a half. Most of the operation is done with a local anaesthetic (so you will remain awake), and sometimes a general anaesthetic is needed (so you will be asleep). You will be sent a letter confirming your appointment for surgery and instructions about your hospital admission.

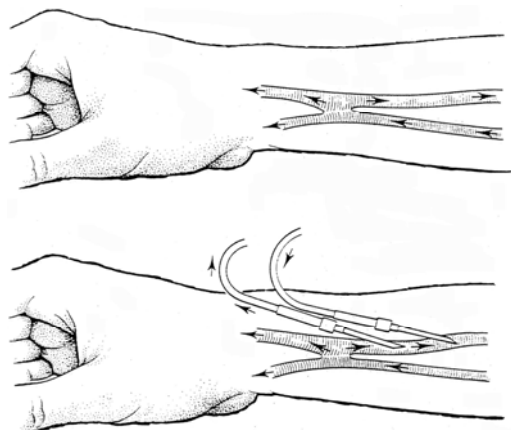
If you are having a **local anaesthetic**, you will be admitted in ward L2, as a day case on the day of your operation. If you are on the morning list, you need to arrive by 07:30, and if you are on the afternoon list by 12.30. You will **not** be able to drive yourself and therefore should make arrangements for a relation or friend to accompany you. If this is going to prove too difficult to arrange, please ring the DSU through switchboard on 01223 245151 ext 6847. If you are having a **general anaesthetic**, it may be necessary to admit you to hospital a day before your operation.

How is it done?

You will be asked to avoid eating or drinking for six hours before the procedure if it is being done with a general anaesthetic. The skin over the wrist or elbow will be cleaned with antiseptic once you have had the general anaesthetic or before the local anaesthetic is injected. As estimated, two to four inch cut is made into the skin and once the artery and vein have been found they are sewn together and lastly the skin is sewn back together again.

After the operation, your arm is likely to be swollen and sore for a few days. Therefore, it is advisable to arrange for a relation, friend or neighbour to help you with normal daily activities, such as shopping, cooking and lifting for a few days after the operation.

The simple and most common type of fistula is made at the wrist by joining the radial artery and the cephalic vein (see diagram below).



It involves a small incision usually near the wrist, and an artery and a vein are connected.

The blood from the artery is now able to flow into the vein it has been connected to. This encourages the vein to enlarge and enables the dialysis nurse to insert needles easily.

Sometimes these vessels are too small to successfully make this type of fistula, so the larger vessels higher up the arm may be used instead.

The fistula will take four to eight weeks to strengthen and mature before it is ready to use. If you are currently dialysing in the satellite unit, one of the senior staff nurses will reassess and review your fistula to check the presence of thrill and buzz.

In rare cases, if your fistula will not work, you need to be reviewed by our surgeon in the Vascular Access Clinic Level 3, Outpatient's Department Addenbrooke's Hospital. The Clinical Nurse Specialist in Vascular Access will book you for an appointment and can be contacted on 01223 349290, alternatively contact the Renal Nurse Specialist on 01223 217827.

What are the benefits of having a fistula operation?

Once the vein has grown in size it can be used to connect you to the dialysis machine. You will be less likely to develop problems such as infection or clotting than if you have a dialysis line. The dialysis line will not last long.

What are the risks of a fistula operation?

With any medical procedure there is a risk of complications and it is important you know what these are. Fistula operations have a small risk of complications. The main risk is that the artery, vein or a nerve nearby could be damaged during the operation. It is important that you tell the staff beforehand if you have a problem with easy bleeding or if you are taking tablets that affect bleeding such as **Warfarin**. There is also a small risk of complications from a general anaesthetic if you have one for the operation.

What are the alternatives to having a fistula operation?

It is possible to use a dialysis line in the long term for dialysis but this is more likely to cause complications such as infection and clotting. It is also possible to have more complicated fistula operations where the artery and vein are joined under the skin by another piece of vein or artificial material, or where the blood vessels in the thigh are used to make the fistula. These are more likely to have complications than a fistula at the wrist or the elbow. More complicated fistula operations are usually recommended when a simple fistula cannot be made.

If you agree to have a fistula operation you will be asked to sign the hospital's consent form which will also state that you have received information about the procedure and have discussed it with your surgeon/nurse/doctor.

What happens afterwards?

After the anaesthetic has worn off, you may feel some pain where the skin was cut and you may need to take a mild painkiller. Also, there may be some swelling of the arm for a few days. You will have the fistula arm padded to keep it warm and this must be kept on until the following day.

An important indication that the fistula is working is a slight buzzing sensation at the scar, and the vein should start to be more visible under the skin. It is **vital** that from the day of the operation, you check that this buzzing is present. The stitches usually used are dissolvable. If they are not dissolvable, the stitches can be removed at 7-10 days if the wound has healed. This can be done at either your G.P. surgery or at the nearest dialysis centre or satellite unit with prior arrangement.

Things to look out for

The fistula does not work

The most common problem is that the blood going through the fistula clots. Usually this is shortly after the operation but can occur at any time. This is more common in people with small veins. You may be given tablets to thin the blood such as aspirin to try to prevent this happening. A sign that the fistula is not working can be an absence of the buzzing sensation. If you think the fistula does not work please contact the Renal Unit immediately (contact details at end).

Bleeding

There is a small risk of bleeding after the operation and it is important that you tell the staff beforehand if you have a problem with bleeding easy or if you are taking tablets that affect bleeding such as **Warfarin**. It is normal to have a small amount of bleeding at the wound site, but if there is a lot of bleeding **you need to go to your nearest Accident & Emergency Unit straight away**.

Infection

After the fistula operation, there is a small risk that the wound could become infected and this can usually be prevented by keeping the area as clean as possible. If infection does occur, there will be a hot red area over the wound site, which may be sore. This may need to be treated with the use of antibiotics. **Please contact your GP or the Renal Unit if you suspect this.**

Steal syndrome

Occasionally most of the blood in the arm flows through the fistula and not enough goes to the hand. This may make the hand feel colder than usual. In addition you may feel pins and needles in the hand or aching pain. Sometimes the symptoms are mild and may settle down, but if they are more severe, you will need further surgery on the fistula. If you experience pain or numbness that you cannot relieve with painkillers or gentle rubbing of the hand, **please contact us immediately**. This "steal syndrome" does not always start at the time of surgery and may come on a couple of days later. It is slightly more common in patients with diabetes. If you are going to have this operation it is important that you are aware of these potential risks.

How can I protect my fistula and reduce the risks?

It is important for you to guard and protect your fistula all the time. It is the vital link between you and the kidney dialysis machine, therefore, it is regarded as a kidney patients' "**lifeline**".

Following the operation there are some easy steps to follow:

1. You will have a clear plaster dressing to allow the wound to be seen. If there is any bleeding or infection it can then be easily detected. Do not cover it with restrictive clothing i.e. elastic cuffs, watchbands or bandaging.
2. The fistula site needs to be checked at least twice a day to ensure there are no problems such as infection or bleeding. If there is any doubt that the fistula is not working then contact the Renal Unit for advice.
3. Exercise the hand by clenching and unclenching the fist. Do not exercise immediately after fistula operation, ideally hand exercise will start once your pain and swelling subsides from the operation. Fistula arm exercise will help develop the blood vessels. This exercise needs to be carried out twice a day for 10 minutes.
4. Keep your arm warm. In cold weather wear extra long sleeved loose clothing and gloves when outdoors.
5. Avoid knocking the wound and be particularly careful during manual work when the arm is exposed.
6. If an accident occurs causing bleeding apply firm pressure and elevate your arm. Go to the nearest Accident and Emergency Department immediately as it will be difficult to stop the bleeding.
7. Avoid becoming dehydrated. This can occur in hot weather or any illness causing diarrhoea and vomiting.
8. Always inform members of the medical profession that you have a fistula to prevent them using your fistula arm.
9. Never allow your blood pressure to be measured on your fistula arm as this will interrupt the blood flow to your arm, and may cause your fistula to stop working.
10. Never allow someone to take blood samples from your fistula arm to prevent clotting.

To contact us

If you have any queries or concerns about your fistula or have not understood anything you have been told, please do not hesitate to ring us.

- Monday-Friday 8:00 – 17:00, please ring 01223 245151 and ask for the Clinical Nurse Specialist on bleep number 154-590.
- Monday to Saturday 07:00 – 12:00 midnight please ring 01223 217832.
- At all other times or if the above number is unavailable, please ring the hospital switchboard Tel: 01223 245151 and ask for the Transplant Surgeon on call.

The Satellite Units:

Kings Lynn HD Unit: 01553613544

West Suffolk HD Unit: 01284 712921

Hinchingsbrooke HD Unit: 01480 421850

References

The Renal Association and the British Transplantation Society. (01/06/11). Renal Association/British Transplantation Society Standardised Patient Information Sheet. Making a fistula for haemodialysis.

British Journal of Renal Medicine (2004). "What I tell my patients about needing a fistula" Department of Health – N.S.F. for Renal Services Part 1 Standard 3. Dialysis and Transplantation

Privacy & Dignity

We are committed to treating all patients with privacy and dignity in a safe, clean and comfortable environment. This means, with a few exceptions, we will care for you in same sex bays in wards with separate sanitary facilities for men and women.



We are currently working towards a smoke free site. Smoking is only permitted in the designated smoking areas.

For advice and support in quitting, contact your GP or the free NHS stop smoking helpline on 0800 169 0 169

Help with this leaflet:

If you would like this information in another language, large print or audio format, please ask the department to contact Patient Information: 01223 216032 or

patient.information@addenbrookes.nhs.uk

**Document history**

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