



University Hospitals Birmingham
NHS Foundation Trust



Renal Vascular Access - Having a Fistula For Haemodialysis

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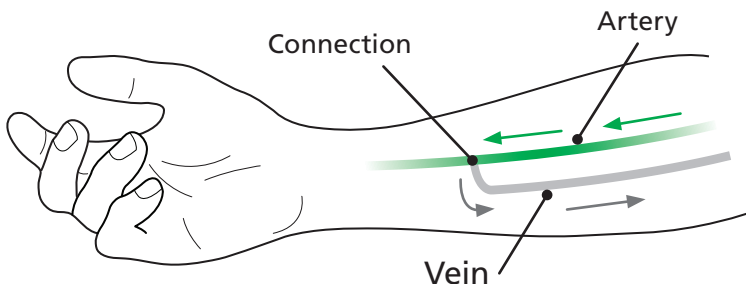
Introduction

This leaflet gives you information about having a fistula made for your haemodialysis treatment. It briefly describes the other types of dialysis access (ways to allow your blood to be cleaned by the dialysis machine) and suggests other information leaflets which may be helpful.

What is a fistula?

Before you can start haemodialysis there needs to be a way to remove blood from your body, to allow it to be cleaned using the dialysis machine, and then returned back to you. A fistula (full name arteriovenous fistula – AVF) provides easy and reliable access to your bloodstream for haemodialysis.

A fistula is made by connecting an artery to a vein under the skin. When the artery and vein are connected the pressure inside the vein increases which makes the vein stronger and bigger. Once the vein has become strong 2 needles can be put into it. One needle is used to take blood out to the machine whilst the other needle returns blood back to the body.



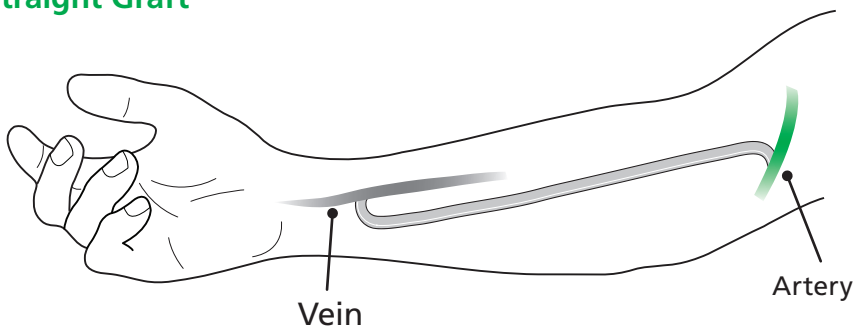
A fistula is made during a surgical procedure (operation) which will usually be done using a local anaesthetic (while you are awake but with no pain). Sometimes a general anaesthetic (while you are asleep) will be needed. A fistula is commonly made in the forearm (wrist area), however it can also be made in the upper arm (above the elbow) or very occasionally in the leg.

What are the alternatives to a fistula?

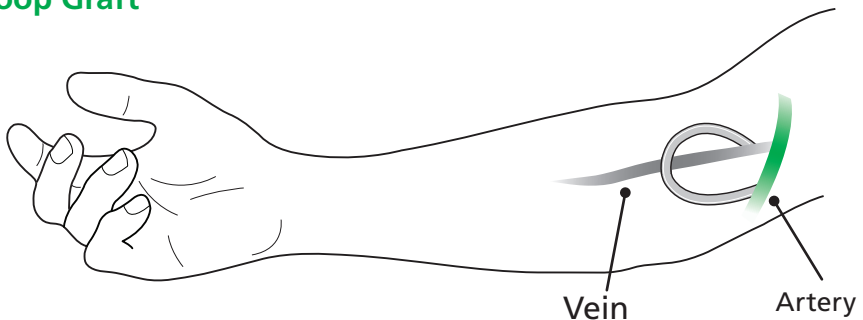
A fistula is usually considered to be the best choice for dialysis. However it is not always possible to make one and there are a few other ways that can allow dialysis to take place.

- **Arteriovenous graft** – this is a synthetic tube which is placed under the skin to form a bridge between an artery and a vein. Grafts are used as the long-term choice of dialysis access when veins are unsuitable for a fistula. The graft may appear as a 'straight' or 'loop' connection and it is put in during a surgical procedure usually under a general anaesthetic. A graft can be used more rapidly than a fistula; some can be used immediately and others two weeks after insertion

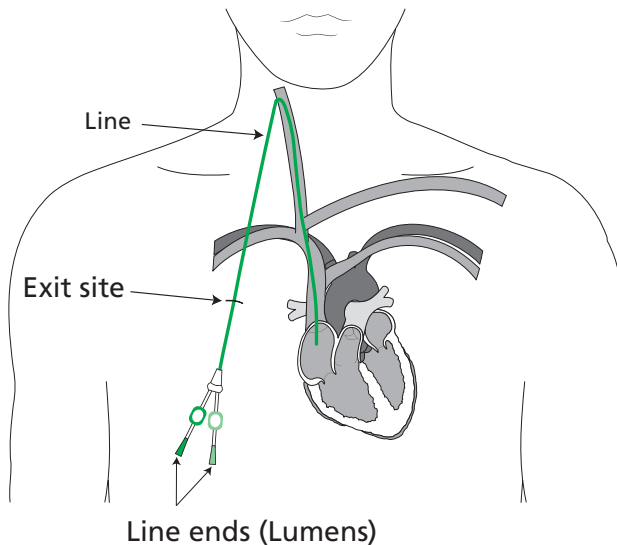
Straight Graft



Loop Graft



- **Haemodialysis line** – this is a flexible tube that is inserted through the skin into one of the large veins usually in the neck or groin. The line will usually be tunneled under the skin unless in a real emergency when a non-tunneled line may be used. Generally, lines are used if you need dialysis before you have a functioning fistula or graft. For some patients, a fistula or graft is not possible and therefore a tunneled line will be used as the long term access (see the separate information leaflet on having a haemodialysis line)



What are the benefits of a fistula?

Having a fistula is the 'gold standard', first choice, way of getting access to the bloodstream for haemodialysis. It provides the best type of access for long term dialysis.

The benefits of a fistula include:

- Freedom from plastic lines
- Much lower risk of getting an infection (five times less than a haemodialysis line)
- More reliable and lasts the longest of all the forms of access with generally fewer problems

- Allows you to have a good quality of dialysis which will help make you feel better

Will I be able to have a fistula?

Before a fistula is made it is important for a nurse or doctor to map the blood vessels (arteries and veins) in your arms using an ultrasound machine. The ultrasound machine makes a picture of the blood going through your blood vessels. The picture shows if a fistula can be made and allows the best blood vessels to be chosen for the fistula.

An ultrasound normally takes no more than 20 minutes and no special preparation is needed beforehand. Gel is placed on your skin and a probe is moved along the surface of your arm. There is no pain or discomfort with the ultrasound, although the gel may feel a little cold.

Sometimes a fistula cannot be made as the blood vessels are too small or they're not suitable. We will then talk to you about alternative options such as a graft or a dialysis line.

When will I need to have a fistula?

A fistula takes time to develop and become strong enough to use. The time it takes to develop varies from person to person. It can be used after about four to eight weeks but it may take longer. It is therefore very important that, if possible, your fistula is planned, made and ready to use before you start haemodialysis. This means that when your kidney doctor and nurse feel that the level of your kidney function means dialysis is needed to keep you well, your fistula is ready and you will not need a haemodialysis line.

If you've suddenly had to start haemodialysis with less than three months warning and don't have a working fistula, you will need to have a tunnelled haemodialysis line. If you decide

that you want to stay on long-term haemodialysis (and not have peritoneal dialysis instead), we will try and form you a fistula as quickly as possible so that you use the haemodialysis line for only a short amount of time.

The fistula operation

Before the operation the surgeon will explain the procedure to you and answer any questions. You will then need to sign a consent form saying that you understand the operation that you are going to have.

If you take any of the following blood-thinning medications: aspirin, clopidrogel or warfarin, they may need to be stopped a few days before the operation.

The operation should take less than one hour to complete, but can sometimes take longer.

Risks of the fistula operation

- Although they are rare, you need to be aware of the possible problems following the operation to make a fistula:
- The fistula may bleed which may occasionally require a blood transfusion
- You may experience some discomfort and tenderness after the operation and pain killers can be taken to help with this
- There can be swelling of you arm. This may be helped by raising the arm on a pillow
- The fistula may become blocked and stop working after the operation. If this happens it may be able to be repaired but this is not always possible and we will need to plan another operation at a later date

- There may be an infection in the wound. This can be treated with antibiotics
- You may experience pain in your hand and cold numb fingers. Please contact one of the clinic or dialysis nurses if this happens as this may mean that the blood flow to your hand has been reduced

How long will I stay in hospital?

If you're having the operation with a local anaesthetic you will come in as a day case. You should be able to go home 2–6 hours after the operation as long as you are well enough and there have been no difficulties. You will need to make arrangements for someone to take you home as you will be unable to drive. Occasionally you may need to stay overnight and should be able to go home the next morning, so please be prepared for this. If you are having a general anaesthetic you will need to be fasted, which means nothing to eat or drink for 6 hours before the operation.

Follow up after the operation

When you are sent home after your operation, you will be seen by one of the specialist nurses or doctors. This will either be in clinic or on one of the dialysis units and will allow them to check that the fistula is working well.

Keeping your arm and hand warm, along with gentle exercises, such as squeezing a rubber ball, will encourage the flow of blood and help your fistula develop.

Looking after your fistula

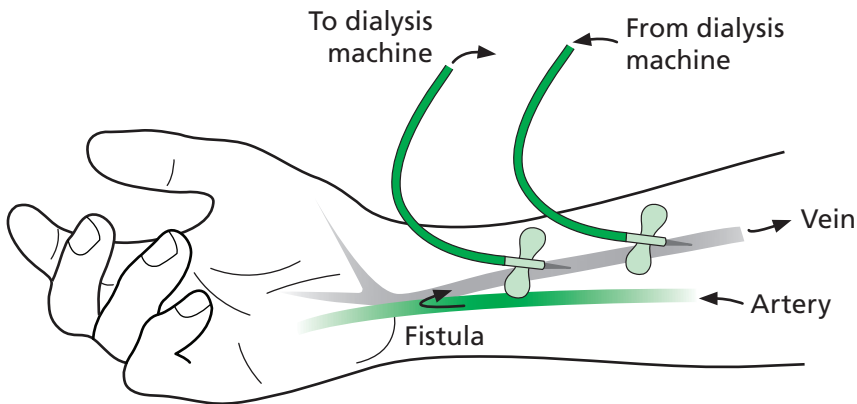
A nurse will explain and show you how to look after your fistula. There are a few simple tips when looking after your fistula:

- When a fistula is touched a “buzzing” can be felt. Check for this every morning and evening. If it becomes weaker or stops please contact your local renal unit as soon as possible
- Keep the dressing clean and dry until the wound has healed. If you have stitches that need to be removed this will be done after 10 days either in clinic or by your practice nurse at your GP surgery. If you are already on dialysis, nurses from the unit will remove the stitches
- Avoid wearing tight clothing or a wrist watch if your fistula is in your wrist
- Take care when lifting heavy objects. Do not place heavy weight over the fistula
- Do not let anyone put a drip in the fistula arm
- Do not allow anyone to take your blood pressure on your fistula arm
- Do not allow anyone to take blood from your fistula (unless it’s during your dialysis treatment)
- Let your kidney doctor or dialysis nurse know if you notice any change with your fistula (e.g. feels hot or has got bigger)
- Wash your fistula with soap and water every day and pat dry
- Do not pick the scabs off the needle sites as this can cause bleeding or an infection
- Try not to become dehydrated. This can occur in hot weather or if you have diarrhoea or vomiting

Using your fistula

As soon as the fistula has developed, two needles will be placed into different positions along the fistula. Before placing the needles the nurse may inject some local anaesthetic under the skin to make the area feel numb or apply local anaesthetic cream. The local anaesthetic can sting but this will soon disappear.

Once the needles have been placed into the fistula, tubing from the dialysis machine is attached to each needle. One needle (called the arterial needle) allows blood to be taken out. The blood travels round the dialysis machine, through the filter where waste products and fluid are removed and is returned into the body through the second needle (called venous needle).



New fistulas can be quite soft and this may cause a few problems when needles are first placed into the fistula. Sometimes the needle may need to be removed and replaced and the fistula can become quite bruised. These are common problems and do not mean that your fistula is not working.

As soon as your fistula has been needled three or four times in a row without any problems, a plan must be made to remove the dialysis line. If your fistula is being needled and you've not been given a date for your line to be removed, please remind one of your kidney doctors or nurses on the dialysis unit. This is to prevent you developing infections from the line.

Fistula Complications

There are a number of problems that can occur with a fistula:

- A clot can form and block the fistula (called thrombosis). This is the most common cause of a fistula to stop working. Often a fistula can be unblocked so you should always let your nurses and doctors know if the buzzing stops. However, sometimes this does not work and you may need a dialysis line whilst a new fistula is made
- A narrowing of the blood vessels in the fistula can occur so that it does not allow your blood to be cleaned as well as it should be. Your doctors may recommend a special X-ray test to be performed which looks carefully at the blood vessels and allows narrowings to be opened up by tiny balloons (see leaflet on fistulograms and fistuloplasty)
- Infection: If the skin over your fistula becomes very red and sore you should let your unit know. You may need some antibiotic treatment
- Steal syndrome: This occurs if too much blood is diverted into the fistula causing a lack of blood supply to the lower arm or hand. Signs and symptoms of Steal syndrome are tingling, coldness, numbness and pain in the hand or fingers. If you experience these symptoms you will be checked by the surgeons - this may mean the fistula needs to be tied off or treated to prevent permanent problems. Very rarely fistulas can cause such poor blood flow to the nerves or the hand that the tissue is threatened. This will require urgent treatment and pain, severe coldness or total numbness of that arm should be taken seriously
- Weakening of the fistula wall (called aneurysm): This can happen if the fistula is always needled in the same area and can lead to a large swelling in one particular area of the fistula. It can be prevented by moving the needling areas. Speak to your nurses or doctors if this is not happening

Contact numbers

Renal Assessment Unit

Telephone: 0121 371 3017/3024.

The Renal Assessment Unit is available 08:00–20:00 Monday–Friday, 08:00–16:00 Saturday and Sunday. Outside of these hours the on-call renal registrar can be contacted by ringing the Queen Elizabeth Hospital Birmingham switchboard on 0121 371 2000.

If you have any concerns, please contact your dialysis unit, or call the Queen Elizabeth Hospital Birmingham vascular access nurse specialist or BHH Access Nurse on the number provided in text box below between 09:00 – 17:00 Monday– Friday.



Where can I get further information?

Further information can be obtained from:

The National Kidney Federation website

www.kidney.org.uk

NHS Choices website for more information about a wide range of health topics

www.nhs.uk/Pages/HomePage.aspx

References

UK Renal Association (2011) Clinical practice guidelines:
Vascular Access

If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email patientexperience@uhb.nhs.uk.

Renal Unit
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Telephone: 0121 424 1068