King's College Hospital
NHS Foundation Trust

Fistulogram, fistuloplasty and venoplasty – image guided

Information for patients

This leaflet explains fistulogram, fistuloplasty and venoplasty. It covers what to expect on the day of the procedure, as well as the benefits, the possible risks and the alternatives.

Before the fistulogram/fistuloplasty/venoplasty, a clinical staff member will explain the procedure to you in detail. This leaflet is not meant to replace that discussion. If you have any questions or concerns, please do not hesitate to speak to the doctors or nurses caring for you. It is important that you feel well informed before agreeing to having the procedure and signing the consent form.

Confirming your identity

Before you have a treatment or procedure, our staff will ask you your name and date of birth and check your ID band. If you do not have an ID band we will also ask you to confirm your address. If we do not ask these questions, then please ask us to check. Ensuring your safety is our primary concern.

What is a fistulogram?

It is an examination of the blood vessels that make up your fistula. We place a small plastic tube into your fistula and inject dye (contrast). This dye shows up on x-ray imaging and provides a picture (like a map) of the blood vessels.

What is a fistuloplasty, venoplasty and stent?

Occasionally, the blood vessels that make up a fistula can become narrow. We often diagnose this using ultrasound before you have a fistulogram. The fistulogram gives us a more detailed picture of these vessels, which we use as a guide to treat the problem.

We put a special balloon called an angioplasty balloon into the narrowing inside your fistula. We inflate this balloon for a few moments to make the vessel larger and

improve blood flow. Once the vessel has been widened, we deflate the balloon and take it out. You then have another fistulogram to check the result.

- If the balloon treatment is in the fistula it is called a **fistuloplasty**.
- If it is in a central vein it is called a **venoplasty**.
- Rarely, a special metal tube called a **stent** is inserted into the fistula. This is permanent and stays in the vein to keep the narrowing open. We generally only use stents if the balloon does not widen the vessel enough or if there is a complication.

Image guided means that we will use images from ultrasound scans and real time x-ray (fluoroscopy) to ensure we inject the dye and position the balloon in the correct place.

Why do I need a fistulogram, fistuloplasty, venoplasty or stent?

Your renal doctor feels that there may be a problem with your dialysis fistula (or graft). The fistulogram is the best way to diagnose any problem and the fistuloplasty, venoplasty or stent are the best way of treating it. You may already have had a Doppler ultrasound scan to assess the flow in your fistula to help decide the best way of treating this problem.

Your renal doctors, the renal vascular access nurse and the Interventional Radiologist have discussed your care and believe that this is the most appropriate next step.

What are the risks of a fistulogram?

It is a very safe procedure. However, there are risks and possible complications with all procedures, even though every effort is made to prevent them.

- **Bleeding at the puncture (needle-entry) site:** You may have a small bruise after the procedure, but this usually fades within a week or two. Less commonly, ongoing bleeding in this area means you have to stay in hospital for a short time (one – two patients in every 100).
- **Fistula damage:** Very rarely the fistula is damaged and has to be repaired by the Interventional Radiologist (the specialist doctor who does the procedure) or a small operation.
- **Infection:** The risk of infection is very low.
- **Allergic reaction to the dye (contrast):** This is rare. Less than one in every 1,000 patients has a severe reaction to the dye.

What are the risks of a fistuloplasty/venoplasty?

These are also very safe procedures. However, there are risks and possible complications with all procedures, even though every effort is made to prevent them.

Treatment fails: You usually have a fistulogram before a fistuloplasty/ venoplasty as part of the same treatment. There is a small risk that the treatment will fail. Sometimes the fistuloplasty/venoplasty does not widen the narrowing in your fistula and you need to have a stent.

Bleeding at the puncture (needle-entry) site: The risk of bleeding at the access site is slightly higher than for a fistulogram (about three in 100 people).
Fistula damage: There is a small risk that the treatment may damage or even rupture the fistula/vein. If this happens, the fistula may fail and could not be used for dialysis. You might need a small operation at the time but more likely you will have a line put in and a new fistula will be created. When considering this risk, please bear in mind that leaving a narrowing in a fistula or vein without treatment means it is likely your fistula would continue to give poor dialysis because of low blood flow and would go on to fail without treatment.
Radiation risk: In order to be performed safely, your procedure requires to be performed under x-ray guidance. X-rays are a type of ionising radiation. Studies have shown that people who have been exposed to high doses of ionising radiation have an increased chance of developing cancer many years or decades after they have been exposed. However, while more complex or difficult cases might require a slightly higher radiation dose, the radiation exposure associated with this procedure is moderate. It is the assessment of your doctor and the radiology doctor who will be performing the procedure that the benefit of the procedure outweighs the risk from the exposure to radiation. The specialist radiologist and radiographer will ensure that your radiation exposure is kept as low as possible during the procedure. If you have any concerns about the risk of exposure to radiation during this procedure, you can discuss this further during the consent process with the radiologist who will performing your procedure. Please notify the clinical team if you think you may be pregnant.

Consent

We must by law obtain your written consent to any operation and some other procedures, including a fistulogram / fistuloplasty / venoplasty beforehand. Staff will explain all the risks, benefits and alternatives before they ask you to sign a consent form. If you are unsure about any aspect of this procedure, please do not hesitate to ask to speak with a senior member of staff again. We will inform your GP that you have had this procedure, unless you specifically instruct us not to.

What are the benefits?

- Venoplasty can improve symptoms caused by veins narrowing.
- Fistuloplasty increases the lifespan of your haemodialysis fistula and prevents the need for alternative methods of haemodialysis, such as surgical treatment.
- In a fistula which has not developed properly, this procedure can help mature the fistula so it can be used for dialysis.

Are there any alternatives?

You can have open surgery which usually involves having a general anaesthetic. But this is not the best option in most cases. If you do not have your narrowed fistula treated, it can become clotted and cannot be used for dialysis. You would need to

have an operation to create a new fistula and it is best to try to prevent having to do this.

Where will I have the procedure?

You will have it in the Interventional Radiology Department, 1st Floor Denmark Wing, King's College Hospital (KCH), Denmark Hill.

When will I have the procedure?

Your renal vascular access nurse and/or renal doctors will request you have the procedure. The IR Coordinator team will offer you the next available and suitable slot.

How can I prepare for the procedure?

Pre-assessment appointment: Your renal vascular access nurse will arrange for you to have a pre-assessment appointment. You will have this appointment either in person or by phone. The nurse will ask you questions about yourself, your health and the medications you take. They might take a blood sample to check that you are in good general health and how well your blood clots. But you are more likely to have it done at least a day before your procedure, after your dialysis session, in the Renal Dialysis Department at King's College Hospital or on your local dialysis unit.

Drugs and alcohol: Do not use any recreational drugs or drink alcohol for 24 hours before the procedure.

Medications: Please make sure the doctor or nurse knows if you are diabetic and are taking tablets such as metformin or insulin injections.

Also inform them if you are taking any of the following blood-thinning medications (anticoagulants): aspirin, clopidogrel, warfarin, apixaban, rivaroxaban, edoxaban, ticagrelor, prasugrel, phenprocoumon, acenocoumarol, dagibatran, argatroban, heparins, fondaparinux, enoxaparin.

They will tell you when to stop these medications and when it is safe to start taking them again.

If in doubt, please bring with you all the medications that you are taking, whether they have been prescribed for you or you have bought them over the counter at your local chemist store.

What type of anaesthesia will I have?

You usually have local anaesthesia. This means you will be awake during the procedure but will not feel pain in the area being treated. Sometimes, you may need to have the procedure under general anaesthesia, which means you will be asleep. If you have general anaesthesia you will be admitted to the hospital.

If you pass the STOP-BANG and Conscious Sedation Assessment, which you will have when you arrive at the IR department, you will be able to have sedation as well as the local anaesthesia. If you do not pass this assessment because of your health issues or there are other factors that could increase your risk of complications from

the sedation, we can either go ahead with the procedure using only pain relief medication to help ease any discomfort or give you another appointment at a later

date so you can have the procedure under general anaesthesia. Please note that patients with kidney conditions are more likely to have difficulty passing the above assessments due to associated medical co-morbidities. In cases where general anaesthesia or anaesthetic-led sedation is deemed essential, we will schedule you for the next available slot.

Will I be admitted to hospital for the procedure?

You will have your procedure as a day case patient or a TCI patient. We explain what this means below. We will let you know which one applies to you:

Day case patient: You will usually have the procedure in the morning and, if everything is normal and you are stable, you will be discharged home later in the day. Please arrive at Interventional Radiology at 8am so you can be admitted to the unit.

To come in (TCI) patient: You will often be admitted to the hospital the day before your procedure and stay overnight before your procedure. Occasionally, you may be admitted on the morning of your procedure. The bed manager will call you to let you know when to arrive and which ward to go to.

What happens on the day of the procedure?

Eating and drinking: You must **not** eat anything for at least **six hours** before your fistulogram/fistuloplasty/venoplasty. You can drink clear fluids up to **two hours** before your procedure. It is very important that you follow these instructions because you will be lying flat on your back during the procedure.

Medications: Keep taking your regular medications, except for any blood-thinning ones (unless instructed otherwise). Remember to take your blood pressure medication on the morning of the procedure (if applicable). If your blood pressure is too high on the day of the procedure, you might need to have it on another day.

What to bring with you: Please bring all your medications and something to read. Also bring a small overnight bag in case you need to stay in hospital overnight after the procedure. This happens in fewer than 1% of cases.

What not to bring with you: Do not bring valuables, jewellery or large sums of money with you. If this unavoidable, please ask a relative or friend to take them home for you. The hospital cannot accept liability for the loss of items that are not handed in for safekeeping.

What happens before the procedure?

Day case: When you arrive in Interventional Radiology, one of our nurses will ask you to change into a gown. They will check your blood pressure, heart rate and temperature, and ask you some questions. They will put a small, thin tube called a cannula into a vein in your hand or arm so we can give you medications such as pain relief if you need them during or after the procedure.

TCI: One of the ward nurses will ask you to change into a gown. They will check your blood pressure, heart rate and temperature, and ask you some questions.

They will put a small, thin tube called a cannula into a vein in your hand or arm so we can give you medications such as pain relief if you need them during or after the procedure. They will then take you to the Interventional Radiology Department.

What happens during the procedure?

An Interventional Radiologist – a specialist doctor trained in image-guided procedures who will carry out your procedure – will explain the procedure to you and ask for your consent. They will be assisted by interventional radiology nurse(s) and a radiographer who operates the special x-ray machine inside the procedure room.

You will be taken to the angiography suite or procedure room and asked you to lie flat on your back on a special x-ray table.

We will attach you to a monitoring device to check your heart rate, breathing, oxygen level and blood pressure. We will give you oxygen through a face mask if you need it.

We will ask you to confirm your details before the start of the procedure and the doctor doing the procedure will confirm the procedure plan with the specialist team.

The skin over the area of your fistula will be cleaned with disinfectant and sterile covers place over it.

The doctor will use an ultrasound machine to look at your fistula and decide the best place to inject the dye for the fistulogram. They will give you a local anaesthetic injection to numb the area. They will then put a needle, usually followed by a fine plastic tube (catheter), into your fistula and inject the dye. You may feel a warm sensation at this point and it can feel like you are passing urine. The doctor may ask you to hold your breath for a few seconds while the x-ray images are taken.

Once they have found the narrowing or blockage on the fistulogram, the doctor will insert a balloon into the catheter and inflate it, to open up the blood vessel and improve blood flow. More x-rays will be taken and once the doctor is satisfied that the blood vessel has widened, they will take out the catheter.

They usually place a stitch around the access site to help prevent any bleeding. Firm pressure may also be applied to the skin entry point, for about 10 minutes or longer, to prevent any bleeding. The stitch will be taken out after about two hours while you are in recovery or on the ward before you go home. You will be advised at the end of the procedure about wound/dressing care.

Will the procedure hurt?

It may sting a little when the local anaesthetic is injected. To make you comfortable, we usually give you sedation when the procedure starts, as long as you have passed the sedation assessment (see page four). Occasionally, when the balloon is inflated, you may have a dull ache or pressure, but this goes away when the balloon is deflated.

How long does the procedure take?

It usually takes about 30 minutes to have a fistulogram and one to two hours to have fistuloplasty or venoplasty. As a guide, expect to be in the procedure room for one to three hours.

What happens after the procedure?

You will be taken to the recovery area, where the nursing staff will monitor you and the area where you had the needle/plastic tube placed, to make sure there are no complications.

If you have had a simple fistulogram, light pressure is usually applied for a few minutes to the area where the needle/plastic tube was placed, to prevent bleeding.

If you have had a fistuloplasty or venoplasty, a special device is used to help manage bleeding in the area where the needle/plastic tube was placed. This is stitched in place and you have a plastic film dressing over the top. You usually have this for two hours before the nurses remove it. It may need to stay in place longer if there is any sign of bleeding.

You will also be asked to keep your arm straight, avoid bending it and putting pressure on it for two hours or until the device and the stitches have been taken out..

If you are admitted to the hospital, you will go back to the ward and stay overnight. The nurses will closely monitor your blood pressure, pulse and the puncture site. They will give you painkillers if you need them. It is important to let them know if you are in pain so they can help you. You can start eating as normal.

When can I go home?

If you have been admitted to hospital: If there are no complications, you may be discharged the day after the procedure

If you are a day case patient: If there are no complications, you will be able to go home later in the afternoon on the day of the procedure.

Remember, you will not be able to drive yourself home after the procedure, so make sure someone can accompany you. Important: A responsible adult must collect you from the hospital and take you home by car or taxi (not public transport). Alternatively, you can go home via hospital transport which you or the renal department has discussed and pre-booked. You should be accompanied by a responsible overnight post-procedure. You must not drive any vehicle for 24 hours after the procedure and you must make sure you feel well enough to drive after that time.

How do I care for the cut?

You will have a small dressing over the puncture site which you can change if necessary. Keep the site dry for at least two days, then remove the dressing and wash the area with soap and water. Avoid using any body lotion or powder. Make sure the cut has healed before bathing or soaking it in water.

When can I exercise and go back to work?

For the next one to two weeks, avoid heavy lifting, contact sports and strenuous exercise. When you can go back to work depends on the type of job you do. If it involves heavy lifting, you may need to take a week off. If not, you should be able to return to work two to three days after your procedure.

When can I start taking blood thinners again?

If you take anticoagulants, your clinical team will let you know when it is ok to start taking them again. This will depend on how well the procedure went and the medication you are taking.

What should I look out for after the procedure?

If there are problems after the fistulogram, fistuloplasty or venoplasty, they usually happen while you are still in hospital. But when you go home it is important to follow the advice we will give you about who to contact if you:

- have bleeding from the puncture site
- feel light headed or dizzy
- have any discomfort at the puncture site which is getting worse rather than better.

If you feel very unwell, call 999 or go to your nearest Emergency Department (ED/A&E).

What should I do if I cannot come for my appointment?

Please let your renal vascular access nurse or us know as soon as possible so we can arrange another date and time. This also enables us to offer your appointment time to someone else.

King's College Hospital Denmark Hill, tel: **020 3299 3490**, **020 3299 6730** or **020 3299 3280**

Who can I contact with queries or concerns?

If you have any questions about your procedure, please contact either:

King's Renal Vascular Access Nurses, King's Renal Unit, Denmark Hill, tel: **020 3299 8510** or 020 3299 6776, Monday to Friday, 9am – 5pm
or
Interventional Radiology Nurses, Denmark Hill, tel: **020 3299 3490** or **020 3299 2060**, Monday to Friday, 9am – 5pm.

More information and support

- King's College Hospital: www.kch.nhs.uk
- NHS: www.nhs.uk, tel: 111
- British Society of Interventional Radiology: www.bsir.org (click on Patients, click on patient information leaflets, select leaflet)

Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

MyChart

Our MyChart app and website lets you securely access parts of your health record with us, giving you more control over your care. Visit **www.kch.nhs.uk/mychart** to find out more.

Sharing your information

King’s College Hospital NHS Foundation Trust has partnered with Guy's and St Thomas' NHS Foundation Trust through the King’s Health Partners Academic Health Sciences Centre. We are working together to give our patients the best possible care, so you might find we invite you for appointments at Guy's or St Thomas' hospitals. King’s College Hospital and Guy’s and St Thomas’ NHS Foundation Trusts share an electronic patient record system, which means information about your health record can be accessed safely and securely by health and care staff at both Trusts. For more information visit **www.kch.nhs.uk**.

Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

PALS

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. They can also pass on praise or thanks to our teams.

Tel: **020 3299 4618**
Email: **kings.pals@nhs.net**

If you would like the information in this leaflet in a different language or format, please contact our Interpreting and Accessible Communication Support on 020 3299 4618 or email kings.access@nhs.net

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