

Fenestrated and branched endograft repair of aortic aneurysm

This leaflet is to help answer some of the questions you may have about having a fenestrated or branched endograft. It explains the benefits, risks and alternatives of the procedure as well as what you can expect when you come to hospital.

If you have any questions or concerns, please do not hesitate to speak to a doctor or nurse caring for you.

What is an aortic aneurysm?

The aorta is the largest artery in the body. It carries blood away from the heart to the rest of the body. An aortic aneurysm is a bulging or ballooning in the wall of the aorta that is due to weakness or degeneration in a section of the aortic wall.

As the aneurysm gets bigger, it stretches the wall of the aorta causing it to become thinner and reducing its ability to stretch any further. At this point, the aneurysm is at risk of rupturing and causing life-threatening bleeding.

Once an aneurysm has ruptured the chances of survival are low, with 80 to 90 percent of all ruptured aneurysms resulting in death. These deaths can be avoided if an aneurysm is detected and treated before it ruptures.

What is a standard endovascular aneurysm repair (EVAR)?

EVAR (endovascular aneurysm repair) is 'keyhole' surgery to repair an aneurysm. It is performed through a small cut in your groin, rather than the large incision across your abdomen (tummy) used in traditional open surgery. With EVAR, the aneurysm is repaired using a special stent graft (also known as an endograft). This is a small, fabric wrapped, flexible mesh tube used to strengthen the artery and prevent bursting.

What is a fenestrated EVAR repair (FEVAR) and a branched EVAR repair (BEVAR)?

If your aneurysm involves the important arteries that take blood to your spinal cord, gut or kidneys, the type of stent graft described above may not be suitable. This is because the stent graft would block blood flow to those organs. In this case, it may be recommended that you have a fenestrated EVAR repair (FEVAR) or a branched EVAR repair (BEVAR).

A FEVAR is where the stent graft fabric extends over the renal arteries (arteries carrying blood to your kidneys), but blood can still flow to the kidneys through carefully placed holes (fenestrations) in the stent fabric.

A BEVAR is where a stent graft with side branches is used to maintain blood flow to these important arteries while treating your aneurysm. It is used when an aortic aneurysm involves sections of the aorta in the chest as well as the abdomen. This type of aneurysm is called a thoraco-abdominal aortic aneurysms (TAAA).

Fenestrated and branched endografts are usually custom-made for the individual patient.

Whether a fenestrated or branched device is used for the repair depends on the position of your aneurysm. The decision will be made following careful review of your CT scan (computerised tomography – a special kind of x-ray) and discussion at a multi-disciplinary team meeting of the healthcare professionals looking after you. Please note that not every aneurysm is suitable for endovascular repair.

What happens during the procedure?

The procedure is performed by a vascular surgeon (a surgeon specialising in blood vessels and the lymphatic system) and an interventional radiologist (a doctor who uses scans to help during surgery) with x-rays to guide medical instruments inside your arteries. In the procedure room you will be asked to lie on your back on an x-ray table. Monitoring equipment will be attached to you to measure your blood pressure and heart rate. A small tube (cannula) will be put into a vein in your arm for monitoring and to give you fluids.

You will have a general anaesthetic so you are asleep during the whole procedure. You should receive the leaflet, **Having an anaesthetic**, which gives you more information. If you do not, please ask us for one. You will have a tube (catheter) inserted into your bladder and in some cases a CSF (cerebrospinal fluid) drain may be inserted before or after the procedure to drain fluid from your spine.

A small cut will be made in each side of your groin. For some branched endograft repairs it is necessary to also make a small cut in the left upper arm.

A short tube, called a sheath, will then be placed into the artery to keep it open. A thin, flexible tube called a catheter is inserted into the femoral artery (the artery that provides blood to your legs) and directed to the aneurysm. Contrast (dye) is injected into the catheter and will show up on the x-ray monitor. A metallic spring with a cover (stent graft) is compressed and passed through the catheter. The stent graft is moved to the aneurysm, and then opened, creating new walls in the blood vessel through which blood flows. When the stent graft is opened it seals the aneurysm.

What are the benefits?

Having your aneurysm repaired should prevent it from bursting. The benefits of endovascular repair over traditional open surgery are:

- no large cuts in the abdomen
- no sutures (stitches), or sutures only at the groin area
- faster recovery and shorter time in the hospital
- less pain
- reduced complications.

What are the risks?

There are risks with any operation but this type of operation is usually safer than traditional open surgery to repair an aneurysm.

Complications are less common during planned (elective) procedures. The majority of patients have no major problems. You will need to stay in hospital for about two or three days after the procedure to make sure it is safe for you to go home. It is important to be aware of the following possible risks before you sign your consent form:

- Some patients have an allergic reaction to the dye used to obtain the x-ray pictures. This reaction is usually minor, for example a skin rash, which will clear up on its own. On rare occasions, it can be a more serious allergy to the dye, which can be treated with steroids. Please tell your nurse or doctor if you have had a previous allergic reaction.
- The iodine in the x-ray dye can affect kidney function, particularly if there is already some kidney damage. Intravenous fluids can be given (into your vein) before and after the procedure to try to reduce this risk. You will have a blood test before the surgery to check your kidney function.
- Bleeding or bruising can occur under the skin (where the catheter is inserted in the groin). This is known as a haematoma and is very common. It can take one or two weeks to disappear.
- Any procedure that involves putting a catheter inside a blood vessel (artery) carries certain risks. These include damage to the blood vessel, bruising or bleeding at the puncture site, and infection. When performed by an experienced interventional radiologist and vascular surgeon, the chance of any of these events occurring is very small.
- Bridging stents will be used which can occasionally occlude (become blocked) If this happens another operation will be required
- Although rare, there is a risk with this type of surgery, as in any type of aortic aneurysm repair surgery, of paraplegia (partial or complete loss of function in the lower half of the body with involvement of both legs). It is not yet possible to predict which patients will be affected. Your surgeon will take steps where ever possible to reduce this risk of this occurring to a minimum.
- Sometimes incorrect positioning can mean the aneurysm is not completely sealed at the time of the procedure and it may need to be corrected at a later date, either by another endograft or an open operation. There is a chance that the endograft could be positioned incorrectly, resulting in blood flow to a vital organ being blocked, and this could be fatal. If this happens to a renal artery it may result in the loss of a kidney, but usually the other kidney will take over the function. Kidney failure can occur but is usually not permanent.
- There is also a chance that debris from the aneurysm can go down and block off smaller arteries in the leg, which may require an operation to repair.

Are there any alternatives?

Surveillance

Small aneurysms (less than 5.5 centimetres or 2 inches) which are not growing fast or causing symptoms are at a low risk of bursting. They may require no treatment other than monitoring by a vascular disease specialist, usually with regular ultrasound scans to check if the aneurysm has grown.

Open surgery

In traditional open surgery the surgeon makes a large cut from just below the breastbone to the top of the pubic bone. The surgeon then clamps off the aorta, cuts open the aneurysm and sews in a graft to act as a bridge for the blood flow. The blood flow then goes through the plastic graft and no longer allows the pressure of the blood to further expand the weakened aortic wall.

How can I prepare?

We will send you information about how to prepare for your hospital stay with your admission letter. Please read this information carefully.

If you are taking any medicines that thin your blood, such as antiplatelet medicines (for example aspirin or clopidogrel) or anticoagulant medicines (for examples warfarin or rivaroxaban), please tell your doctor or the nurse as you may need to stop them temporarily before your surgery. Also tell your doctor or nurse if you have diabetes as you may need to alter the dose of your diabetes medicines, as you will need to fast before the procedure. Further information on stopping any medicines will be given to you when you come for pre-assessment. Please ask us if you have any questions.

Please let us know if you are taking any regular medicines (including anything you buy yourself over the counter or any herbal or homeopathic medicines) and if you have any allergies to any medicines.

Please do not eat or drink anything (except non-fizzy water) for six hours before your appointment. This means that you cannot suck on sweets or chew gum. You are allowed to drink water up to two hours before your appointment. **If you continue to eat or drink after this, your surgery will be cancelled.** Please continue to take your regular medicines with a sip of water before 6am on the morning of the procedure, unless you have been told otherwise.

Before the procedure

The devices that will be inserted during the procedure (stent grafts) are custom-made for each individual patient. The planning of the graft is made on the CT scan (computerised tomography – a special type of x-ray) you have before your operation. This scan will take place a few months before your operation.

Giving my consent (permission)

We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

If you would like more information about our consent process, please speak to a member of staff caring for you.

What happens before the procedure?

On the evening before you are due to have surgery you will be admitted to a ward, where you may be given intravenous fluids (through a vein) overnight in preparation for your surgery. On the morning of surgery, your ward nurse will help you to prepare. You should have a shower or bath but do not use moisturising cream or lotion on your body as the antiseptic used during the procedure may not remove it and it could cause infection. You will be asked to confirm that you understand what is going to happen and that you give your consent. When you arrive in the theatre your details will be checked by a theatre nurse and you will be given the opportunity to ask any questions you have.

Will I feel any pain?

It is quite normal to feel some discomfort from the wounds but this will reduce over the first few days after your operation. Painkillers will be given to you by the nurses if you need them.

What happens after the procedure?

You will be taken to the theatre recovery room where you will need to stay flat in bed. You will be closely monitored by the recovery nurses who will check your blood pressure, pulse and oxygen levels. If you had a lumbar (CSF) drain inserted it will be kept in until your surgeon feels it's no longer needed.

When your condition is stable and you are well enough to be transferred, you will be taken to a high dependency area where you will be monitored to make sure everything is alright. You will rest in bed overnight and you will be able to eat and drink normally.

The following morning you will have some blood tests and you'll be taken off the monitor that records your heart rate, pulse etc and encouraged to walk around the ward. Any cannulas or lines used to give medicines and pain relief that you have will be removed. You can expect to be allowed home two days after surgery. We will change your dressings the morning you leave hospital.

What do I need to do after I go home?

When you go home you should continue with all your usual medications. If you are taking metformin, this should be stopped for 48 hours after the procedure and then continued as usual. You should resume gentle activity and can get back to normal as and when you feel fit.

We will give you a letter which you should take to the practice nurse at your GP surgery two days after you leave hospital. They will check your wound. If you are unable to travel to your GP surgery we will refer you to a district nurse.

What can I do to help myself?

Smoking: If you are a smoker the single most important thing you can do to help yourself is to give up smoking. Stopping smoking will also help to protect all of your arteries making it less likely that you will suffer from heart attacks or strokes.

Giving up is not easy but there is a smoking cessation service and support groups that can help. If you would like to give up smoking, please speak to your nurse or call the Trust stop smoking service on **020 7188 0995**, or call the NHS Smoking Helpline on **0300 123 1044**.

Activity: Gentle exercise such as walking and cycling are recommended to help improve your overall level of fitness. Exercise helps your body to produce healthy cholesterol and this helps to protect your arteries against bad cholesterol.

High blood pressure: High blood pressure is a known risk factor for rupture of aneurysms. It is very important that you have your blood pressure checked regularly, at least every six months. If you have been prescribed medicine for high blood pressure, you must make sure that you take it according to the instructions given.

Diabetes: If you have diabetes it is important that your blood sugar levels are well controlled.

High blood cholesterol levels (fatty substance in your blood): You should eat a healthy balanced diet and try to reduce any excess weight. It is important to reduce the level of cholesterol in your blood. Your vascular nurse can refer you to a dietitian if needed. You may be prescribed medicine to help lower your cholesterol level (for example, a statin) and low-dose aspirin to help prevent blood clots from forming.

Will I have a follow-up appointment?

You will be sent a follow up appointment in the post. You will need to have regular scans using ultrasound and/or CT (different ways of checking the inside of your body) to make sure that the graft remains in the correct position. You will have your first scan 1- 3 months after your operation and you will usually see your consultant in the outpatients clinic after four months.

Contact us

If you have any questions or concerns about the information provide in this leaflet, please contact the **vascular clinical nurse specialist on 020 7188 2566** (Monday to Friday 7am – 5 pm). You can also contact **Luke Ward on 020 7188 3566 or Sarah Swift Ward on 020 7188 8842** (24 hours) and speak to the ward sister or nurse in charge.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit www.guysandstthomas.nhs.uk/leaflets

Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

t: 020 7188 8748 9am to 5pm, Monday to Friday

Your comments and concerns

For advice, support or to raise a concern, contact our Patient Advice and Liaison Service (PALS). To make a complaint, contact the complaints department.

t: 020 7188 8801 (PALS) **e:** pals@gstt.nhs.uk

t: 020 7188 3514 (complaints) **e:** complaints2@gstt.nhs.uk

Language and Accessible Support Services

If you need an interpreter or information about your care in a different language or format, please get in touch:

t: 020 7188 8815 **e:** languagesupport@gstt.nhs.uk

NHS 111

Offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day.

t: 111

NHS Choices

Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.

w: www.nhs.uk

Get involved and have your say: become a member of the Trust

Members of Guy's and St Thomas' NHS Foundation Trust contribute to the organisation on a voluntary basis. We count on them for feedback, local knowledge and support. Membership is free and it is up to you how much you get involved. To find out more, and to become a member:

t: 0800 731 0319 **e:** members@gstt.nhs.uk **w:** www.guysandstthomas.nhs.uk/membership

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