

Endovascular aneurysm repair (EVAR)

This leaflet is to help answer some of the questions you may have about having an EVAR. 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 aneurysm?

Arteries carry blood away from your heart to the rest of your body. An aneurysm occurs when the artery walls weaken.

When blood flows through the aorta (the main blood vessel in the stomach), the pressure of the blood beats against the weakened walls and makes them bulge like a balloon, forming an aneurysm. This type of aneurysm is called an abdominal aortic aneurysm.

If the 'balloon' grows large enough, there is a danger that it will rupture (burst). We treat aneurysms to prevent them from rupturing.

Once an abdominal aortic 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 EVAR?

EVAR is a minimally invasive 'keyhole' surgery to repair an aneurysm. It is performed through a small hole in your groin, rather than the large incision across your abdomen used in traditional surgery. It is performed in the radiology (x-ray) department by an interventional radiologist (a doctor who uses x-ray to diagnose illnesses and is trained to perform minimally invasive procedures to treat them) and a vascular surgeon.

With EVAR, the aneurysm is repaired using a special stent graft (also known as an endograft). It is a small, fabric wrapped, flexible mesh tube used to 'patch' the ballooned section of blood vessel by fitting it inside the artery, to strengthen it and prevent bursting.

What happens during EVAR?

EVAR is performed by an interventional radiologist and a vascular surgeon, using x-rays to guide medical instruments inside your arteries.

You will be given an epidural and sedative, which is medication to help you to relax. However, this will not put you to sleep, so you will be awake and be able to talk throughout the procedure. A small plastic tube (cannula) will be inserted into your arm. This means that we can give you more sedative medicine during the procedure, if you need it.

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. The nurse will clean your groin area with an antiseptic skin fluid, and place a sterile drape over most of your body. The radiologist will give you an injection of local anaesthetic which will make you numb from the groin downwards. The injection will sting you instantly and then settle.

Once your groin is numb, a small incision will be made in an artery in your groin. A short tube, called a sheath, will then be placed into the artery to keep it open while a thin, flexible tube called a catheter is inserted into the femoral artery and directed to the aortic 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) that is compressed into a small diameter is passed through the catheter. The stent graft is advanced to the aneurysm and then opened, creating new walls in the blood vessel through which blood flows. When the stent is deployed (opened) it seals the aneurysm.

When the procedure is completed the catheter will be removed. The holes in the femoral arteries will be stitched and the groin wounds closed. You will then have a waterproof dressing applied to the groin that will stay for two days.

What are the benefits – why should I have EVAR?

Having EVAR should prevent your aneurysm from bursting. The benefits of EVAR over traditional surgery are:

- No large abdominal surgical incision
- No sutures (stitches), or sutures only at the groin area
- Faster recovery and shorter time in the hospital
- No general anaesthesia (in most cases)
- Less pain
- Reduced complications.

What are the risks?

There is no procedure that is a 100% safe but EVAR is usually safer than a conventional open aneurysm repair. The risks of the operation can be reduced with EVAR, but not every patient is suitable for this. The stent grafts are made in certain sizes, and the patient's anatomy must fit the graft.

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 and medication can be given before and after the procedure to try to reduce this risk. A routine pre-procedure blood test will always be done to assess your renal (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, and can take one/two weeks to disappear.
- Occasionally the artery can be damaged during the procedure. This can sometimes be treated in the same department by putting a stent with a covering around it (stent-graft) into the artery to seal the tear. If this is not possible an operation may be required to repair the artery. The risk of needing this operation is less than 1%.
- The most common complications are groin wound infections which in most cases can be managed by a course of oral antibiotics.
- Around one in 10 patients will need to have a further smaller operation in the future if a leak is detected around the stent at your follow-up appointment.
- General complications of this type of surgery include a heart attack and chest infection, but these are very rare.
- Nationally, the risk of death from EVAR is around 4.3%. In other words nearly 96 in every 100 patients will make a full recovery from the operation. The risk of this surgery at Guy's and St Thomas' is 0.3% (99 in every 100 patients will make a full recovery).

Disadvantages of EVAR:

- Possible movement of the graft after treatment (migration), with blood flow into the aneurysm. This means that the risk will return of your aneurysm growing or rupturing.
- Probable need for follow-up studies throughout life to be sure the stent graft is continuing to function. This is still a new technology and we don't yet have long term data to show that this will be a durable repair.

Are there any alternatives?

Small aneurysms (less than 5.5 centimetres or 2 inches), which are not rapidly growing or causing symptoms, do not burst as often and may require no treatment other than "watchful waiting" under the guidance of a vascular disease specialist. This typically includes follow-up ultrasound examinations at regular intervals to determine if the aneurysm has grown.

The most common treatment for a large, un-ruptured aneurysm is open surgery. This procedure involves an incision 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 weak aorta wall.

How can I prepare for EVAR?

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

We will review your regular medicines when you come to hospital for your pre-admission appointment. If you are taking any antiplatelet medicines (such as aspirin or clopidogrel) or any medicines that thin the blood (such as warfarin), then you may need to stop them temporarily before the procedure. If you are taking any medicines for diabetes (for example, metformin) or

using insulin, then these may also need to be stopped temporarily or the dose altered near the time of the procedure. You will be given full information on any changes that you need to make to your medicines at the pre-admission clinic – please ask us if you have any questions.

We will ask you to fast for six hours prior to the surgery. Fasting means that you cannot eat or drink anything (except water) for six hours before surgery. We will give you clear instructions when to start fasting. It is important to follow the instructions. If there is food or liquid in your stomach during your operation it could come up to the back of your throat and damage your lungs. 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.

You will be admitted to the vascular ward (Luke ward) and given a hospital gown to wear. You will be asked to confirm that you understand what is going to happen and that you give your consent. For the procedure you will be taken to the interventional radiology department. When you arrive in radiology, you will be checked by a radiology nurse and given the opportunity to ask any questions you have.

Giving my consent (permission)

We want to involve you in all decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This confirms that you agree to have the procedure and understand what it involves. You should receive the leaflet, **Helping you decide: our consent policy**, which gives you more information. If you do not, please ask us for one.

What happens before the procedure?

After you have arrived in the interventional radiology department, you will be checked by a radiology nurse. You will be given the opportunity to ask any questions you have. A small plastic tube (cannula) may be inserted into your arm. This means that we can give you a sedative during the procedure if you need it.

What happens after the procedure?

You will be taken to the recovery room where you will need to stay flat in bed and will be closely monitored by radiology nurses.

When your condition is stable and you are well enough to be transferred, you will be taken back to your ward on a bed. Nurses in the vascular bay (V-Bay) on Luke ward will carry out routine observations, such as taking your pulse and blood pressure, to make sure that there are no problems. They will also look at the skin entry point to make sure there is no bleeding from it. You will generally stay in bed for a few hours, until you have recovered. You will rest in bed overnight and you will be able to eat and drink normally.

The next morning we will do 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 administer medications 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?

Full recovery takes between two to four weeks after endovascular repair. The speed of recovery will also be affected by your age and general fitness.

Discussions with patients who have undergone endovascular repair suggest that it can be normal to make a full recovery in about two weeks, however some people take longer and can tire and take several months to return to health state they had prior to the operation. During this time, you should gradually build up your level of activity back to normal. You may resume normal sexual relations as soon as you feel comfortable.

When you go home you should continue with all your usual medications. If you are taking metformin, this should be withheld for 48 hours after the procedure and then continued as usual. You may be given painkillers to take home with you to help with pain control.

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.

Most people who are treated with endovascular repair can return to work within a month after having surgery.

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. Your vascular specialist nurse or GP practice nurse can advise you about these.

Inactivity: 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 medications 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 dietician if needed. You may be prescribed medication to help lower your cholesterol level (e.g. 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 scans at regular intervals to make sure that the graft remains in the correct position. You will have your first scan after three months and see your consultant in outpatients after four months.

Appointments at King's

We have teamed up with King's College Hospital in a partnership known as 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 King's. To make sure

everyone you meet always has the most up-to-date information about your health, we may share information about you between the hospitals.

Contact us

If you have any questions or concerns before or after you have left hospital, please contact the **vascular specialist nurses on 07825 503902** (Monday to Friday 8am to 4pm).

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.

The above contacts can put you in touch with the following vascular consultants should you wish to do so: **Miss Rachel Bell, Mr Stephen Black, Mr Tom Carrell, Mr Michael Dialynas, Mr Tommaso Donati, Mr Bijan Modarai, Mr Morad Sallam, Mr Mark Tyrell, Mr Hany Zayed, Mr Said Abisi, Mr Andrew McIrvine.**

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

Patient Advice and Liaison Service (PALS)

To make comments or raise concerns about the Trust's services, please contact PALS. Ask a member of staff to direct you to the PALS office or:

e: 020 7188 8801 at St Thomas' **t:** 020 7188 8803 at Guy's **e:** pals@gstt.nhs.uk

Language Support Services

If you need an interpreter or information about your care in a different language or format, please get in touch using the following contact details.

t: 020 7188 8815 **fax:** 020 7188 5953

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