

# Endovascular aneurysm repair (EVAR)

**This leaflet aims to answer some of the questions you may have about having an endovascular aneurysm repair. 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 further questions or concerns, please 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 walls of an artery weaken.

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

If this '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 80-90% (between 80 in 100 and 90 in 100) 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?

Endovascular aneurysm repair (EVAR) is a minimally invasive 'keyhole' surgical procedure to repair an aneurysm. It is performed through a small incision (cut) in your groin, rather than the large incision across the 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.

In 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 the artery 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.

This procedure can be performed under general anaesthetic, regional anaesthetic or local anaesthetic. The type of anaesthetic you have will be discussed with you by your anaesthetist before the procedure. You may wish to read our leaflet, [Having an anaesthetic](#) for more information.

A small plastic tube (cannula) will be inserted into your arm. This may have already been inserted on the ward. This means that we can give you medication during the procedure, if you need it.

In the procedure room, you will be laid 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. If the procedure is to be performed under local anaesthetic, the radiologist will give you an injection which will make you numb from the groin downwards. The injection will sting you instantly and then settle.

A small incision will be made in your femoral artery (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 stent graft that is compressed into a small diameter (made narrower) 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 can flow. When the stent is opened it seals the aneurysm.

When the procedure is completed the catheter will be removed. The hole in the femoral artery will be closed using a closure device or stitch. You will then have a waterproof dressing applied to your groin.

The average length of time the procedure takes is two hours, however it may take longer depending on each individual patient.

## **What are the benefits of having EVAR?**

Having EVAR should prevent your aneurysm from rupturing.

The benefits of EVAR over traditional open AAA (abdominal aortic aneurysm) surgery are:

- no large abdominal surgical incision
- no stitches, or stitches only in the groin area
- faster recovery and shorter time in hospital
- less pain
- reduced risk of complications.

## **Disadvantages of EVAR:**

- Possible movement of the graft after treatment (migration) with blood flow into the aneurysm. This means that the risk of your aneurysm growing or rupturing will return.
- You are likely to need follow-up scans (CT or duplex) throughout your life to be sure that the stent graft is continuing to function.

## What are the risks?

There is no procedure that is 100% safe. The risks of the operation can be reduced with EVAR, but not everyone is suitable for this. The stent grafts are made in certain sizes, and the patient's anatomy must fit the graft sizes that are currently available.

Complications are less common during planned (as opposed to emergency) procedures. The majority of people have no major problems.

It is important to be aware of the following risks before you sign your consent form.

- Some people may 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 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 you already have some kidney damage. Intravenous fluids can be given before and after the procedure to try to reduce this risk. A routine blood test before the procedure will always be done to assess 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, and can take one or 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 (a stent graft) into the artery to seal the tear. If this is not possible, an operation may be required to repair the damaged artery. The risk of needing this operation is less than 1% (1 in 100).
- The most common complications are groin wound infections, which in most cases can be treated with a course of oral antibiotics.
- Around 1 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 for any type of surgery can include a heart attack and chest infection, but these are very rare.

## Are there any alternatives?

Small aneurysms (less than 5.5 cm or 2 inches), which are not growing rapidly or causing symptoms, do not rupture 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 see whether the aneurysm has grown.

The most common treatment for a large, unruptured 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 then flows through the graft and the pressure of the blood cannot further expand the weak aorta wall.

## Before going into hospital

Before aneurysm surgery, there are a number of tests you need to have. These are done for two reasons:

- to assess your general fitness for surgery
- to assess your suitability for different types of aneurysm surgery.

The following tests may be done before your doctor decides whether or not to operate:

- blood tests
- electronic heart monitoring (ECG)
- echocardiogram (an ultrasound scan of the heart)
- breathing test
- CT scan (which shows an image of the size and position of your aneurysm)
- chest x-ray.

## 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 or a direct oral anticoagulant (apixaban, dabigatran, edoxaban or rivaroxaban)), then you may need to stop them temporarily before your procedure. If you are taking any medicines for diabetes (such as metformin) or using insulin, then these may also need to be stopped temporarily or the dose altered near the time of the operation. You will be given instructions 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 before your surgery. Fasting means that you cannot eat or drink anything (except water). We will give you clear instructions on when to start fasting. It is important to follow these 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.

## What happens before the procedure?

You will be admitted to a vascular ward (Luke Ward or Sarah Swift 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 (see below). You will be taken to the interventional radiology department for the procedure. When you arrive in radiology, you will be checked by a radiology nurse and given the opportunity to ask any questions you may have. A cannula (small tube) may be inserted into your arm so that we can give you a sedative during the procedure if you need it.

## Consent - asking for your consent

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 after the procedure?

You will be taken to the recovery room where you will need to stay lying flat in bed and you 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 check your wound 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 will 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 after endovascular repair takes between two and four weeks. The speed of recovery will also be affected by your age and general fitness.

Discussions with patients who have had endovascular repair suggest that it can be normal to make a full recovery in about two weeks, however some people can tire and take several months to regain the state of health they had before the operation. During this time, you should gradually build up your activity level until you are 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. However if you are taking metformin, this should be stopped 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. Please speak to your vascular specialist 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, is 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.

## Blood pressure

High blood pressure is known to increase the risk of an aneurysm rupturing. It is very important that you have your blood pressure checked regularly, at least every six months. If you have been prescribed medication 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.

## Blood cholesterol (fatty substance in your blood) levels

You should eat a healthy, balanced diet and try to lose 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 (such as 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 four to six weeks and you will see your consultant in outpatients within three months.

You will be contacted by one of our aortic vascular nurse specialists shortly after you have been discharged to see how you are getting on.

## Useful sources of information

### Contact us

If you have any questions or concerns before or after you have left hospital, please contact:

**Aortic pathway clinical nurse specialist, t: 07824 523807** (Monday to Friday, 8am-4pm)

**Vascular specialist nurses, t: 07825 503902** (Monday to Friday, 8am-4pm)

You can also contact **Luke Ward, t: 020 7188 3566** or **Sarah Swift Ward, t: 020 7188 8842** (24 hours) and speak to the ward sister or nurse in charge.

The above contacts can put you in touch with a vascular consultant if needed.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit [www.guysandstthomas.nhs.uk/leaflets](http://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](mailto:pals@gstt.nhs.uk)

**t:** 020 7188 3514 (complaints)      **e:** [complaints2@gstt.nhs.uk](mailto: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](mailto: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](http://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, please get in touch.

**t:** 0800 731 0319      **e:** [members@gstt.nhs.uk](mailto:members@gstt.nhs.uk)      **w:** [www.guysandstthomas.nhs.uk/membership](http://www.guysandstthomas.nhs.uk/membership)

### Was this leaflet useful?

We want to make sure the information you receive is helpful to you. If you have any comments about this leaflet, we would be happy to hear from you, fill in our simple online form, **w:** [www.guysandstthomas.nhs.uk/leaflets](http://www.guysandstthomas.nhs.uk/leaflets), or **e:** [patientinformationteam@gstt.nhs.uk](mailto:patientinformationteam@gstt.nhs.uk)

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