

# Endovascular aneurysm repair (EVAR)

If you have an abdominal aortic aneurysm (AAA), you might need an endovascular aneurysm repair (EVAR). This information explains this procedure, the types of EVAR, and what to expect when you come to hospital. If you have any questions or concerns, speak to a doctor or nurse caring for you.

## Abdominal aortic aneurysm

The aorta is the largest artery in the body. It carries blood away from the heart to the rest of the body. The abdominal aorta is in the tummy (abdomen). An abdominal aortic aneurysm (AAA) is a swelling (aneurysm) of the aorta.

An aneurysm happens when the wall of the aorta weakens, and the aorta stretches like a balloon. It is not clear what causes this weakness, but smoking and having high blood pressure are thought to increase the risk.

The abdominal aorta is usually about 2cm wide. An aneurysm can stretch the aorta to make it thinner, until the wall of the aorta cannot stretch anymore. If this happens, the aneurysm is at risk of bursting (rupturing), and causing bleeding. If an aneurysm bursts, the chances of survival are low.

An aneurysm that is 5.5cm or larger might need treatment with surgery to stop it from rupturing.

## A standard EVAR

An EVAR is 'keyhole' surgery to repair an aneurysm. It is used for aneurysms that are below the arteries that carry blood to your kidneys. It is done through a small cut (incision) in your groin, which is the area between your inner thigh and your tummy.

The aneurysm is repaired using a small, flexible, tube called an endograft. The endograft is made of metal mesh lined with fabric. It is put into the aorta where the aneurysm is, and sealed to the aorta wall. This strengthens the aorta, and lowers the risk of the aneurysm rupturing.

## Other types of EVAR

If your aneurysm involves the arteries that take blood to your gut, liver, or kidneys, a standard EVAR might not be the best treatment for you. This is because the endograft would cover the arteries that carry blood to those organs. You might have a different type of EVAR that allows blood to flow to these organs.

- **Fenestrated EVAR (FEVAR)** uses an endograft with fabric that has carefully placed openings (fenestrations). This allows blood to flow through the openings to the kidneys and other organs.
- **Branched EVAR (BEVAR)** uses an endograft with side branches. These allow blood to flow to your kidneys and other organs.
- **Thoracic EVAR (TEVAR)** is used to treat an aneurysm that is in the upper part of your aorta, in your chest as well as your tummy (abdomen). This is called the thoracic area.

Your hospital team will decide what type of EVAR you need after looking at your CT scan. The type you have depends on where the aneurysm is. Your team will talk to you about the decision, and why this type of EVAR is best for you.

## During an EVAR

EVAR can be done in the X-ray (radiology) department, or in the hospital's hybrid theatre. It is done by a vascular surgeon (who is an expert in blood vessels), and a radiologist (a doctor who uses scans to help during surgery). It uses X-rays to guide medical instruments inside your arteries.

An EVAR can be done under general anaesthetic, regional anaesthetic or local anaesthetic so that you should not feel any pain. An anaesthetist will talk to you about the type of anaesthetic you will have, and what will happen before the procedure. You may wish to read our leaflet, **Having an anaesthetic**, for more information. Ask your hospital team for a copy of this leaflet.

The procedure usually takes 2 hours, but it can take longer depending on the type of EVAR you are having. In the procedure room you will be asked to lie on your back on an X-ray table.

- A small plastic tube (cannula) will be put into your arm. We can give you medicines through the cannula if you need them during the procedure.
- Equipment will be attached to you to measure your blood pressure and heart rate.
- We will clean your groin with an antiseptic fluid, and place a cloth over most of your body.
- You will have a flexible tube (catheter) put in to your bladder.
- If you are having a FEVAR or BEVAR, you might need a CSF (cerebrospinal fluid) drain put in before or after your procedure. This drains fluid from your spine.
- A small cut (incision) will be made in the artery in your groin. If you are having a BEVAR, you might also have a small incision in your upper left arm.
- A short tube (called a sheath) will be put into the artery to keep it open. Then, a thin, flexible tube (catheter) is put in to the artery and towards the aneurysm.
- Contrast dye is injected into the catheter. This shows up on the X-ray monitor to guide the radiologist to the aneurysm.
- The endograft is passed through the catheter and put in to the aneurysm.
- When the graft is in position, it is opened. This creates new walls in the artery which blood can flow through. When the stent is opened it seals the aneurysm.
- The catheter will be removed. The hole in your artery will be closed using a closure device, or stitch. You will have a waterproof dressing put your groin.

## Other treatment options

### Watchful waiting

Small aneurysms, which are not growing quickly or causing symptoms, do not burst as often. These aneurysms might not need any treatment other than 'watchful waiting'. This is having regular ultrasound scans to see if the aneurysm has grown, or if it needs any treatment.

### Open repair operation

If you do not have an EVAR, you might have an open repair operation. This is the most common treatment for a large aneurysm. It involves an incision across the tummy (abdomen) to replace the aorta with a synthetic tube (graft). Ask your hospital team for a leaflet about an open repair operation if you would like more information.

## Benefits of an EVAR

An EVAR or an open repair operation should stop your aneurysm from rupturing. The benefits of an EVAR over an open repair operation are:

- you will not have large cuts in your abdomen, and only need stitches in your groin area
- you will have a faster recovery, and shorter time in the hospital
- you will have less pain after surgery

## Risks of an EVAR

There is no procedure that is completely safe. Risks are less common during planned (rather than emergency) EVARs. Most people have no major problems, but there are possible risks.

- **Wound infection** at the groin is the most common risk of an EVAR. In most cases this can be treated with antibiotics.
- **Groin haematoma** is bleeding or bruising under the skin. This can happen where the catheter is put in the groin. It can take 1 or 2 weeks to get better.
- **Damage to blood vessels** when you have a catheter put in. This is a very small risk.
- **Loss of blood flow to the legs or feet** can be caused by blood clot from the aneurysm, which breaks off and travels into smaller arteries. This can block the arteries. You might need more surgery to re-open them.
- **Kidney damage** can be caused by the contrast dye used. You will have a blood test before an EVAR to check how your kidneys are working. There is more of a risk if you already have kidney disease. You might be given fluids through a drip before and after an EVAR to lower this risk.
- **Kidney failure** is a risk if the arteries carrying blood to the kidneys are blocked. If this happens, you might need another procedure to unblock the endograft.
- **Bleeding** where the catheter was put in is a risk, as you might need a blood transfusion.
- **Endograft leaks** happen if the endograft does not fully seal the aneurysm, and it is still at risk of rupturing. About 1 in 10 people will need more surgery if a leak is found. Your surgeon will check this at your follow-up appointment.
- **Graft slipping** is when the endograft moves. If this happens, there is a risk of the aneurysm coming back. You will need scans after an EVAR to check the graft is working.
- **Loss of function in the lower half of your body** (spinal cord injury, or paraplegia) is very rare, but is a risk. Your surgeon will take steps where ever possible to lower the risk.

Your surgeon will talk to you about all possible risks, and how they might affect you. You will be able to ask any questions you have. You will sign a consent form before the operation.

## Asking for your consent

We want to involve you in decisions about your care and treatment. If you decide to have an EVAR, you will be asked to sign a consent form to say 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.

## Before going into hospital

### Pre-assessment appointment

You will be seen in a pre-assessment clinic before an EVAR. You will have tests to check that you are well enough for the procedure. Some people are seen by the POPS (proactive care of the older person undergoing surgery) team, who will do medical and social checks.

Your regular medicines will be checked. You will be given advice on which ones you might need to stop taking for a short time before your procedure. This might include antiplatelet medicines (such as aspirin, or clopidogrel) or medicines that thin the blood (such as warfarin).

If you are taking medicines for diabetes (for example, metformin) or using insulin, the amount you take (the dose) might need to be changed near the time of your EVAR. Please ask your hospital team if you have any questions.

### Eating and drinking before surgery

We will send you information about fasting before your procedure. Fasting means that you cannot eat or drink anything (except water). This is usually for 6 hours before your EVAR. We will give you instructions if you need to fast, and when to start fasting. It is important to follow these instructions.

Please take your regular medicines with a sip of water before 6am on the morning of the procedure, unless you have been told otherwise.

## Preparing for an EVAR

There are ways you can improve your health before your operation.

- **Stopping smoking** helps to protect your arteries. This means you are less likely to have a heart attack or stroke. There is support to stop smoking. Call the **Trust Stop Smoking Service**, [phone 020 7188 0995](tel:02071880995) or the **NHS Smoking Helpline**, [phone 0300 123 1044](tel:03001231044).
- **Keeping active** by doing gentle exercise (such as walking and cycling), can help your fitness and protect your arteries. Exercising might be difficult if you have pain in your arms and legs when you walk, but it is important to keep active.
- **Blood pressure.** High blood pressure can increase the risks of surgery. It is important to have your blood pressure checked often, at least every 6 months. If you have been given medicine for high blood pressure, make sure you take it following the instructions given.
- **Diabetes.** If you have diabetes, it is important that your blood sugar levels are well controlled.
- **Cholesterol (fatty substance in your blood) levels.** It is important to lower the level of cholesterol in your blood. You might be given medicine to help, and low-dose aspirin to help stop blood clots. Your vascular nurse can refer you to a dietitian if needed.
- **Weight.** There are more risks during surgery if you are overweight. Losing weight and having a healthy diet will help lower these risks. Your GP might be able to refer you to a dietitian if you need help.

## Before an EVAR

You will be admitted to a ward the night before, or on the morning, of your EVAR. On the day, you will be taken to either the radiology department or the hybrid theatre for your EVAR. You will be checked in by your team, and can ask any questions you have.

## After an EVAR

After an EVAR, you will be taken to the recovery room, or an overnight intensive recovery (OIR) ward. This will depend on the type of EVAR you have had. You will need to stay lying flat in bed, and you will be closely monitored by your team.

If you have had a standard EVAR, you will be taken back to a ward when you are well enough. You will be monitored, and be able to eat and drink as normal. When you are able to, you will be asked to sit up or move around the ward. You will stay on the ward overnight. The next day, you will have some blood tests and be checked by your team. If you can move around safely and your test results are fine, you should be allowed to go home.

If you have had a FEVAR or BEVAR, you will need more monitoring in the overnight intensive recovery (OIR) ward, or a high dependency area. You will be taken back to a ward when you are well enough, and be allowed to go home when you can move around safely and your test results are fine. You can expect to be in hospital for about 2 days after your procedure.

It is quite normal to feel some discomfort from the wounds, but this will get better over the first few days after your procedure. Your nurse can give you painkillers if you need them.

## Going home

Your dressing will be removed before you leave hospital. If you need a dressing when you go home, you might be given some to change yourself. Or, your GP practice nurse can change it for you. If your stitches need removing, your GP practice nurse will remove them for you. They will also check your wound. Your hospital team will give you a letter to take to the GP surgery 2 days after you leave hospital to arrange this. If you are not able to travel to your GP, your hospital team will refer you to a district nurse who can visit you at home.

Once your wounds are dry you can have a bath or shower as normal. This will usually be before you leave the hospital. You might feel very tired (fatigue) and weak for many weeks after an EVAR. You might have less of an appetite and lack of taste. This will get better as time goes by.

Full recovery after an EVAR can take 3 to 6 weeks. This time is different for everyone and depends on your age and general fitness.

- **Exercise** such as a short walk, along with rest, is recommended for the first few weeks. After this time, you can slowly return to your normal activity. You should not lift heavy objects for 6 weeks after surgery.
- **Driving.** You will be able to drive once you are free of pain and can safely perform an emergency stop. This will usually be 3 to 4 weeks after your operation. If you are not sure when to drive, check with your GP. You should tell your insurance company that you have had a major operation, to make sure that you are covered to start driving again.
- **Working.** You should be able to return to work 6 to 12 weeks after surgery. Your GP will help you decide when to go back to work when you see them for your fit note (sick note).
- **Medicines.** You will usually be sent home with an antiplatelet medicine (aspirin or clopidogrel) and a statin (such as atorvastatin), if you were not already taking them.

## Follow-up appointment

You will need to have regular scans (CT and ultrasound scans) to make sure that the endograft is in the correct position. If you had a standard EVAR, you will need a scan after about 3 months. If you had FEVAR or BEVAR, you will need a scan after 4 to 6 weeks. Your scan might be earlier depending on your situation.

Your scan might be before your follow up appointment. Your follow-up appointment will be with your surgeon 4 months after an EVAR. The appointment will be sent to you in the post. We will try to make sure this is at your local hospital, but this is not always possible. To make sure everyone always has up-to-date information about your health, we might share information about you between the hospitals. Ask your team if you have any concerns about this.

### Contact us

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

Out of hours, please leave a message and a member of staff will call you back in working hours. You can also contact your GP, NHS 111, or your admitting ward. The ward is open 24 hours a day, and you can speak to the ward sister or nurse in charge.

- **Sarah Swift Ward, phone** 020 7188 8842
- **Doulton Ward, phone** 020 7188 8841
- **Evan Jones Ward, phone** 020 7188 8804
- **Stephen Ward, phone** 020 7188 8843
- **Beckett Ward, phone** 020 7188 8839

For more information on conditions, procedures, treatments and services offered at our hospitals, please visit **web** [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 contact our helpline, **phone** 020 7188 8748 Monday to Friday, 9am to 5pm, **email** [mymedicines@gstt.nhs.uk](mailto:mymedicines@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, **phone** 020 7188 8815 **email** [languagesupport@gstt.nhs.uk](mailto:languagesupport@gstt.nhs.uk)

### NHS 111

This service offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day, **phone** 111 **web** [www.111.nhs.uk](http://www.111.nhs.uk)

### NHS website

This website gives information and guidance on all aspects of health and healthcare, to help you take control of your health and wellbeing, **web** [www.nhs.uk](http://www.nhs.uk)

**Leaflet number: 2884/VER4**

Date published: July 2021

Review date: July 2024

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A list of sources is available on request