Service: Vascular Surgery

Endovascular Aneurysm Repair (EVAR)
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You have been diagnosed with an abdominal aortic aneurysm (AAA). This means that the main artery in your abdomen (the aorta) is enlarged, and there is a risk of it rupturing if left untreated. Not everyone with an aneurysm is suitable for endovascular aneurysm repair (EVAR). It depends on the shape of your aorta and that is why a CT scan has been performed. A team of Vascular Specialist doctors have decided that it is possible to offer you treatment with EVAR. However, you always have the final decision about whether or not the procedure is carried out.

The purpose of this leaflet is to provide you with some information about EVAR and hopefully some of your questions will been answered by it. It is not meant to be a substitute for discussion with your vascular specialist team.

What is EVAR?

EVAR stands for EndoVascular (which means inside a blood vessel), Aneurysm Repair and is a procedure to repair an aneurysm. Instead of surgically opening up your tummy, a team of vascular specialist surgeons and radiologists make a small cut in both of your groins in order to get access to your femoral arteries (blood vessels supplying the legs). The team of vascular specialists puts in the graft through the inside of the femoral arteries. It goes in collapsed inside a plastic tube and then x-rays are used to show the radiologist where it is on the inside of your body. When it is in the correct place the Vascular Specialists allow it to open up into the shape of a tube, which allows the blood to flow inside it. It is sometimes called a ‘stent graft’ as the graft is supported by a hollow tube made of fine metal mesh called a stent. This acts like scaffolding to keep the tube open. Endovascular repair reduces the time spent in hospital and also has a faster recovery in comparison to open surgery, but you should still expect to spend 3 – 5 days in hospital for your procedure.
Like any other medical procedure, this procedure carries a risk of complications. This leaflet contains information about the complications that are associated with EVAR. After the procedure is completed, it is important to return to the outpatients department and radiology department for routine follow up of your EVAR stent graft. These routine follow-ups include routine blood tests, X-rays, ultrasound and CT scans. Follow up of your stent graft will be necessary every year for many years to ensure it continues to fit you correctly when the shape of your body changes with time. After a few months it may be easy to forget that you have a graft in your abdominal aorta, but it is still very important to inform any doctor treating you that you have one.

**Who will be doing my EVAR?**

The procedure will be carried out by an experienced and specialised team. This team consists of radiologists, surgeons, radiographers and nurses. Radiologists are specialised in using X-ray equipment and also in assessing images produced; they use the images to position the graft correctly.

A team of anaesthetists are responsible for putting you to sleep and waking you up again.

**Where will the procedure take place?**

The EVAR takes place in a room specially equipped for this procedure with facilities for X-ray imaging and anaesthesia and is located either in the radiology department or within the operating theatres.

**How do I prepare for an EVAR?**

Usually you have to come to hospital the day before the EVAR takes place. You will be admitted to a ward and there you will have an opportunity to talk to a doctor about your procedure and sign a consent form if you decide to have
the procedure carried out. In addition, you need to talk to your anaesthetist about what to expect with regard to the anaesthesia.

A doctor will take blood from you and you will also be asked to stay nil by mouth, which means that you should not eat anything before the procedure. You should also be given a hospital gown to wear. If you feel nervous, please tell the nurses or doctors on the ward and you may be given a sedative to ease anxiety.

It is very important to let the doctor know about all your allergies and medications. Tell the doctor, if you have reacted to intravenous contrast medium, the dye used for CT scanning or angiogram, or have had any complications with general anaesthetics before. You should also inform the doctor if you are diabetic, especially if using Metformin, and if you have had any kidney problems, asthma or problems with blood clotting as you may need additional care.

What actually happens during an EVAR?

- You will usually be put to sleep by your anaesthetist, though for some patients it is possible to have regional or possibly local anaesthesia. The anaesthetist then monitors your general state throughout the procedure ensuring everything remains stable at all stages of the operation. If you have any questions about the type of anaesthesia you will receive and exact order of events, you should ask your anaesthetist, when he or she visits you on the ward before the procedure.

- The surgical nurses will shave your skin around the groins and disinfect and prepare the skin for surgery. The vascular specialist team wear theatre gowns and operating gloves throughout the procedure.
The vascular surgeons will make an incision in the skin of both groins, in order to gain access to your femoral arteries. Once the arteries are visible, plastic tubes called catheters are inserted into the arteries by the radiologist.

The stent graft is then inserted through the tubes. Throughout the whole procedure the radiologist will check progress by injecting contrast medium into your arteries and looking at the X-ray images. This allows correct positioning of the stent graft. Once the vascular specialist team are satisfied with the position of the graft inside your abdominal arteries, they will remove the catheters, sew up the holes made in the femoral arteries and close your skin incisions by using sutures.

Wound dressings are applied over the suture and the anaesthetists will wake you up again in the recovery room.

Will it hurt?

During the procedure you should not feel any pain. After waking, analgesics (medication used to relieve pain) will be used so you should not feel much pain. The medication will be continued throughout your stay in hospital, making life as painless as possible, though the groin area is likely to be sore for a couple of weeks at least.

How long will it take?

It really depends on the shape of your abdominal aorta which is different in individuals. The procedure often lasts up to three hours but it may seem much longer to you because of the anaesthetic.

What happens afterwards?

You will be transferred from the radiology department to the recovery room on a trolley.
There you will be monitored by the anaesthetic team, until they feel you are ready to be taken back to the ward. Back at the ward, nurses will perform routine observations, such as taking your pulse and blood pressure and inspect the wound dressings in your groins to confirm there is no bleeding. Occasionally patients may feel sick or vomit after the procedure, but you should not be in great pain. Usually your stay in hospital will last between three and five days.

**When can I resume normal activities?**

You will probably need to convalesce for a week at least, but during this time will gradually be able to resume normal activities and will be able to drive when you can safely perform an emergency stop without experiencing any pain, usually at 10 days - two weeks. You will be able to return to work one to two weeks after discharge from hospital, depending on your type of work.

**Are there any complications associated with EVAR?**

As mentioned before, like any other medical procedure, EVAR has a risk of complications. Most of the EVAR complications are minor and can be treated easily if necessary at the time of the procedure or with a second less invasive radiological procedure. Only in a few cases is surgery necessary.

Complications may occur at the time of the procedure (procedural complications) or afterwards (late complications).

**Procedural complications**

One of the most frequent EVAR complications is to have an endoleak. This means that some blood still flows into the aneurysm outside the graft. The vast majority of endoleaks only need to be monitored by the radiologist by annual CT scan, but sometimes they can require further treatment. Endoleaks occur in around two to four patients out of every ten undergoing EVAR. Most resolve spontaneously in about three to six months.
There is a small risk of damage to the function of your kidneys either from the radiological contrast medium used or from blockage of the renal arteries at the time of the procedure. There are also risks from the anaesthetic and a small risk of infection (less than 1 in 100).

A different, rarer complication causes problems with the blood supply to the legs (approximately 8 in 100 patients). These problems can almost always be dealt with by the vascular specialist team of surgeons and radiologists at the time of procedure before you wake up and may include extra radiology or surgery.

A rare EVAR complication is rupture of the aneurysm at the time of the procedure. This needs to be treated with rapid stent graft deployment or emergency surgical conversion. Fortunately this complication occurs very rarely, in about two out of a thousand patients.

**Late complications**

Growth of the aneurysm sac after the procedure can also be counted as an EVAR complication. This is rare (approximately 1 in 100 patients) but could occur months or years after your procedure and may require a further radiological or surgical procedure. Another rare, late complication is a change in the shape of your arteries, which can result in movement or displacement of the graft within your arteries. The small risk of late complications is difficult to quantify as this is still a relatively new procedure with no significant, long term data (estimated at five in 100 over 10 –15 years of late complications after treatment with EVAR).

Because of the small risk of late complications it is crucial to attend all follow up appointments both at outpatients and in the radiology department as once detected both of these rare complications can almost always be prevented from causing serious consequences by a further radiological or surgical procedure.
What are the risks of EVAR in comparison with open surgery?

Research has shown that for every 100 patients treated with EVAR, three more patients survive the procedure than would survive with open surgery. This benefit is maintained for at least four years after the procedure/surgery. (The risk of death from EVAR is two in 100 patients; the figure for open surgery is five in 100 patients. However, if a patient is not well enough to have open surgery then the risk of death from EVAR rises to nine in every 100 patients.)

EVAR does require annual follow up with CT or ultrasound not needed in open surgery and the long term (10 – 20 year) results of EVAR are still not known as it is a relatively new procedure.

When will I need to see the vascular team again and what further imaging investigations will I need?

It will be necessary for you to have “follow up” scans to ensure there are no developing problems with your graft. The first of these “follow up” scans is generally at four to six weeks after the procedure, then at six months, one year and annually thereafter. These scans will be arranged for you automatically, and you should expect to receive appointment letters for them directly from the radiology department at Southmead. If at any stage you believe you are due for a scan but have not received an appointment, please contact either the radiological secretaries or our vascular specialist nurse at Southmead Hospital.

In addition you will have an outpatient appointment arranged with your vascular specialist team two months after your procedure.
References:


The Royal College of Radiologists: [www.rcr.ac.uk](http://www.rcr.ac.uk) last accessed February 2010.

NHS Constitution. Information on your rights and responsibilities: [www.nhs.uk/aboutnhs/constitution](http://www.nhs.uk/aboutnhs/constitution)
How to contact us:

See your appointment letter for the number to phone with any queries you may have.

www.nbt.nhs.uk

If you or the individual you are caring for need support reading this leaflet please ask a member of staff for advice.

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