

# Treating your abdominal aortic aneurysm by “endovascular aortic repair”

## Introduction:

This leaflet tells you about the procedure known as “endovascular aortic aneurysm repair”, explains what is involved and what are the benefits and possible risks. It is not meant to replace informed discussion between you and your doctor, but can act as a starting point for such a discussion.

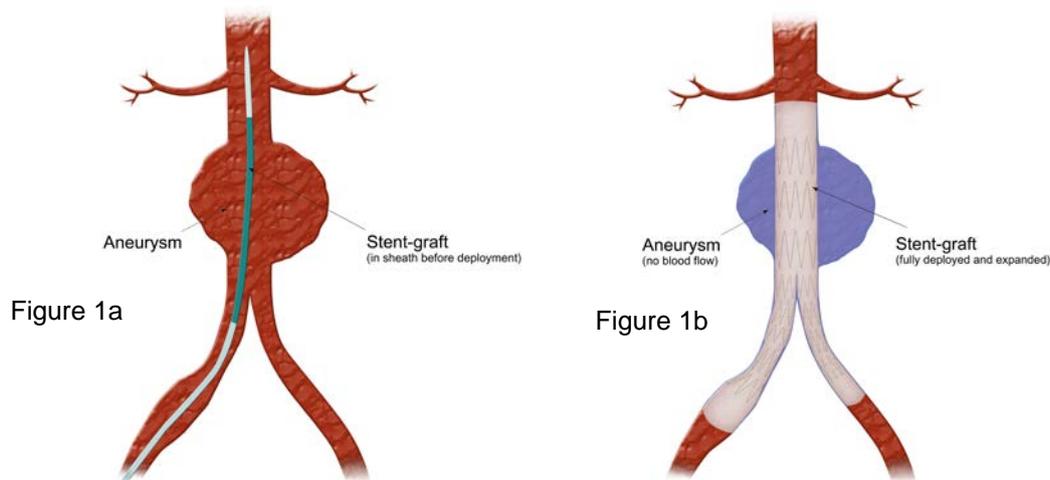
You should have plenty of time to discuss this procedure with the consultant who will be performing the procedure.

## What is an abdominal aortic aneurysm?

The aorta is the largest blood vessel in the body. It carries blood from the heart to the chest and abdomen and then divides to supply the legs. A portion of the aorta can become weakened and dilated and form a bulge or aneurysm as it passes through the abdomen. Risk factors for developing an aneurysm include increasing age, family history, smoking and high blood pressure. Aneurysms may stay the same size or increase in size slowly. Small aneurysms can simply be monitored by ultrasound to assess growth. When they reach a certain size (normally 5.5cm) they have a sufficiently high risk of rupture that treatment should be considered. Treatment avoids rupture which has a very high risk of death due to internal bleeding

## What is endovascular aortic repair?

Endovascular means “inside or through the blood vessel”. Endovascular aortic aneurysm repair (or EVAR) is a minimal access alternative to open surgery for the repair of aortic aneurysms. Open surgery involves an operation to expose the aneurysm, excision of the diseased portion of blood vessel and replacing this with synthetic graft material. EVAR involves placing stent-grafts in to the aorta under X-Ray guidance. Stent-grafts are tubes which have a metal frame covered in fabric or graft just like that used in open repair. Stent-grafts are packed tightly inside a thin plastic tube and introduced through the arteries in both sides of the groin. This can require surgical exposure of the groin artery or sometimes the device can be placed in to the blood vessel through a very small incision in the skin. Once inside the aorta the stent-graft is positioned under X-Ray guidance and then deployed and released so that they expand inside the blood vessel. All the blood is then channelled through the tube and there is no blood flow in the aneurysm (see figure 1).



**Figure 1.** Positioning and releasing the stent-graft inside the body. The device is introduced in to the aorta tightly packed in a plastic tube or sheath and correctly positioned inside the aneurysm (Figure 1a). It is then released to expand and prevent blood flow in the aneurysm (Figure 1b).

### Why am I being offered an endovascular aortic repair?

Your consultant will be considering EVAR for you only after a detailed assessment including a CT scan and special fitness tests. He will explain the alternative options including surgery or simply monitoring the aneurysm. There are benefits and risks related to any treatment option and these will be explained in detail when you give consent for the procedure. There are a number of benefits related to EVAR which are listed in Table 1 (below). Despite all these benefits EVAR is not suitable for everyone. The anatomy of some aneurysms may make them unsuitable for EVAR. Also because we are still unclear of the longer term results of EVAR we tend to reserve EVAR for more elderly patients who have the most to benefit from this minimal access approach. Younger and fitter patients are normally preferred for open repair.

Table 1

| The benefits of Endovascular aortic repair (EVAR) over conventional open repair                            |
|--|
| Minimal access procedure which avoids open surgery   |
| Reduction in operating time  |
| Reduction in post operative cardiac and respiratory complications  |
| Less blood loss and less likelihood of receiving a blood transfusion                                       |
| Shorter recovery period  |
| Shorter ITU and total hospital stay  |
| Reduced 30 day mortality rates (estimates of deaths from any cause within 30 days of a hospital admission) |

### Who will be doing the endovascular aortic repair?

Endovascular aortic repair requires a team of consultants to work together. This includes a vascular surgeon, interventional radiologist and anaesthetist.

### Where will the procedure take place?

The procedure is performed in the Angiography Suite at the John Radcliffe Hospital in Oxford where there is a special X-Ray machine required for these procedures.

### How do I prepare for an endovascular aortic repair?

You will be given an appointment to attend a pre-assessment at the John Radcliffe Hospital. All preparation details will be discussed with you and you will be able to ask questions of your own. We will also carry out some blood tests at this time.

### What happens on the day of the endovascular aortic repair?

Most patients are admitted in the morning at 7.30am and kept nil by mouth from midnight, you may have clear fluids only up to 2 hours before. The nurse will make sure you are in a hospital gown, check your blood pressure and confirm your details. A cannula (plastic tube) will be inserted in to your arm for the administration of fluids and drugs. You will be seen by your consultant and the anaesthetist before the procedure. Your consent for the procedure will be confirmed and you will have an opportunity to ask any questions.

### What actually happens during the endovascular aortic repair?

Most procedures are performed under general anaesthesia (you are asleep). EVAR can also be performed under epidural anaesthesia with or without sedation. Once asleep the anaesthetist may insert further tubes in the neck and wrist to monitor your heart and blood pressure. A tube is passed in to the bladder to monitor urine output. The groin area is cleaned with antiseptic and most of your body covered with sterile theatre drapes. Local anaesthetic is injected in to the groin and either a 10cm surgical incision to expose the artery is performed or the artery is punctured through the skin using a small needle. A wire is then passed through the needle in to the aorta and after removal of the needle the device which contains the stent-graft is loaded on to the wire and passed up the aorta to the aneurysm. Dye is injected to ensure the position of device relative to the aneurysm is correct. The device is carefully positioned and then released. Once released the stent graft tube expands quickly to push against the sides of the aorta and exclude blood flow within the aneurysm.

Further stent-grafts are then inserted through both sides of the groin to attach to the main tube and channel blood flow down each leg. Once completed, all wires are removed and the artery and the overlying incisions are closed with stitches. If the artery was punctured through the skin, surgical closure is not necessary.

### Will it hurt?

Insertion of a cannula (plastic tube or drip) in to the veins before the procedure should be no more painful than an injection. Since the procedure is normally performed under general anaesthetic you will not be aware of anything. If performed awake under an epidural anaesthetic you will be constantly monitored to ensure you are comfortable. You will not feel wires or the stent-graft in side the blood vessels as there are no nerves there. After the procedure any soreness from bruising in the groin can be treated with injections or tablets on the ward.

### How long will it take?

Every patient's situation is different and it is not always easy to predict how complex or straightforward the procedure will be. A typical EVAR takes between 2 and 3 hours, some may take longer.

### What happens afterwards?

The general anaesthetic will be reversed in the X-Ray room and you will be transferred to a surgical recovery area. Most patients can then be transferred to a vascular ward for further observation. A few patients are transferred to the Intensive Care area if more intensive monitoring is required. You will be assessed daily and normally encouraged to mobilise the next day. Patients are normally discharged within 2 or 3 days. An ultrasound scan or CT scan of the aneurysm repair will be performed before discharge. Imaging studies of the repair are usually performed then at 1 month, 6 months and at one year. Thereafter, yearly imaging assessment will be made at the Royal Berkshire Hospital in Reading.

Please remember that after EVAR you will be required to have life long routine (at least yearly) follow up scans with ultrasound or CT to ensure satisfactory repair.

### Are there any risks or complications?

There are risks related to any procedure. Risks in common with open aneurysm repair include reaction to anaesthetic, excess blood loss, blood clots in the legs and lungs and death. Risks particular to EVAR include loss of position of the stent-graft (migration), blood leaking in to the aneurysm sac (endoleak) and blockage or fracture of the stent-graft. Injection of contrast dye can cause kidney function to deteriorate. This is normally transient. Rupture of the aneurysm during the procedure could require conversion to an open operation. The likelihood of complications varies between patients and your doctor will discuss the risks particular to your case in detail.

## Finally

This leaflet is part of our commitment to providing the best possible care we can to you. The National Institute for Clinical Excellence (NICE) has also recommended that all centres that provide EVAR treatment collect information on a national electronic database or registry to see how safe the procedure is and how well it works. This information will be confidential and will not include your name. If you do not agree to this you will still be allowed to have the procedure. The clinical team will also hold a separate electronic database of your repair details to help in your care. This will contain identifiable information just like your hospital notes but will be available only to those involved in your care. A doctor looking after you can fully explain why we do this and what details are recorded. Some of your questions should have been answered by this leaflet but remember this is only a starting point for discussion about your treatment with the doctors looking after you.

## Useful numbers

### Royal Berkshire Hospital

|  |               |
|--|---------------|
| Denise Alston, Vascular Nurse Specialist | 0118 322 8627 |
| Clinical Admin Team (CAT 3)              | 0118 322 1883 |

### John Radcliffe Hospital

|                           |              |
|---------------------------|--------------|
| Ward 6a                   | 01865 221802 |
| Pre-operative assessment  | 01865 857635 |
| Theatre direct admissions | 01865 221055 |

## Further information

- National Institute for Health and Clinical Excellence (NICE)  
Website: [www.nice.org.uk](http://www.nice.org.uk)
- [IPG163 Stent-graft placement in abdominal aortic aneurysm - information for the public](#)  
British Society of Interventional Radiology (BSIR)
- The Circulation Foundation  
Website: [www.circulationfoundation.org.uk](http://www.circulationfoundation.org.uk)
- For further information about the Trust, visit our website [www.royalberkshire.nhs.uk](http://www.royalberkshire.nhs.uk)

This document can be made available in other languages and formats upon request.

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