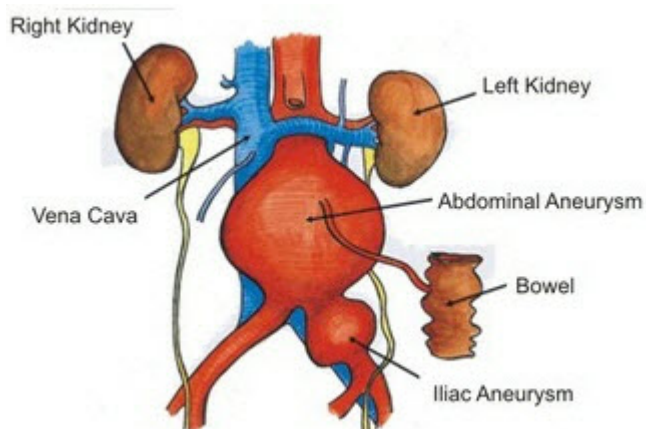


MIDLAND VASCULAR CENTRES

Abdominal Aortic Aneurysm (AAA) Information for patients. May 2010

First let us define a few terms:

- **Abdominal** - within the abdomen (tummy)
- **Aortic** - relating to the aorta. The aorta is the body's major artery. It comes out of the top of the heart, loops around and runs down in front of the spine through the chest and into the abdomen. Various other arteries branch off the aorta including those that supply blood to the head, arms, liver, kidneys and intestines. At around the level of the tummy button the aorta divides into two smaller arteries (called the common iliac arteries) to carry blood down into the legs.
- **Aneurysm** - an aneurysm is an abnormal swelling or stretching of a blood vessel due to weakness in the wall of the vessel. This can occur in any blood vessel but is most common in the abdominal aorta just below the level of the kidney arteries.



Thus an abdominal aortic aneurysm is an abnormal swelling of the aorta in the tummy

A normal aorta measures up to 2.5cm (1") across in a man (about 25% smaller in a lady). An aortic aneurysm is said to be present if the aorta measures over 4cm across.

Aneurysms generally develop over many years and it is unusual for them to give rise to symptoms until they get large and complications develop.

So, most AAA are discovered incidentally in the course of investigations, such as an ultrasound scan for other health problems affecting the abdomen and pelvis; for example suspected gallstones or prostate trouble.

The main cause of AAA is smoking and high blood pressure; high levels of cholesterol in the blood may also be important.

AAA can also run in families.

For example, if a man has an AAA there is about a one in four chance that a brother of similar age will also have an AAA, especially if that brother smokes (AAA are very uncommon indeed in people who have been life-long non-smokers)

Age for age, AAA are about three times commoner in men than women.

However, as women smoke more these days than they used to this difference between men and women will probably gradually disappear. In addition, women live on average about 5-10 years longer than men.

Up to 5% of men over the age of 65-70 years will have an AAA although most of these are small; much less than 1% will have an AAA that requires surgery.

Once an aortic aneurysm has developed it tends to get gradually larger.

This is especially so if the patient continues to smoke and does not control their blood pressure.

Eventually an AAA may get so large that the wall of the aorta gives way and it leaks or bursts; this is commonly referred to as a ruptured aortic aneurysm (RAAA).

Only a minority of people with a RAAA live long enough to reach hospital and of those that get to the operating theatre only about 50% survive. So, overall, about 80% of people with a RAAA die of the condition within a few hours

It is widely believed that the annual risk of RAAA increases as the AAA gets bigger in diameter; up to:

5.5cm = 1-2% risk per year

6.5cm = 3-5%

7.5cm = 5-10%

Treatment for AAA

The UK Small Aneurysm Trial (UKSAT) has clearly shown that AAA that are not giving rise to symptoms can be safely kept under surveillance by means of repeated ultrasound scan until such time as they reach 5.5cm

If and when the AAA reaches this size (most do not) surgeons will generally send patients for a CT scan to get accurate pictures of the aneurysm and its surrounding structures prior to planning surgery

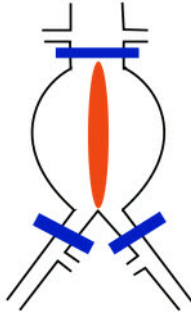
- **Best medical therapy** - All patients with AAA, regardless of the size of the aneurysm, should be receiving so called *best medical therapy* unless medically contraindicated. This consists of aspirin to thin the blood, a statin to lower cholesterol and good control of blood pressure and diabetes as necessary.
- **Smoking cessation** - smoking causes AAA to develop and also to grow and rupture. It is absolutely vital, therefore, that patients with known AAA stop smoking completely and permanently. Stopping smoking also greatly reduces the risk of post-operative complications should the AAA reach a size where it needs surgical treatment.
- **Surgery** – AAA repair is a major undertaking and patients usually undergo a series of tests on the heart (echocardiogram), lungs (respiratory function tests) and kidneys (blood test) to see how fit they are and how well they would cope with the stress of surgery.

There are two distinct types of surgical treatment for AAA; the traditional *open repair* and the more recent and less invasive *endovascular aneurysm repair* (EVAR).

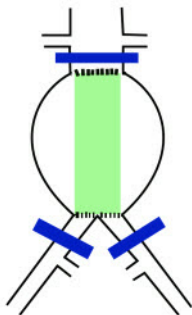
Each has its pros and cons which are outlined in the following pages.

Open surgical repair of AAA

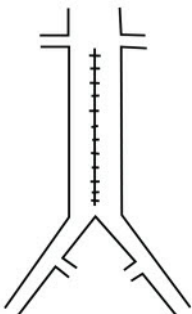
This is performed under a general anaesthetic (with the patient asleep). A tube (catheter) is inserted to drain the bladder and monitor urine output. Often a tube is passed up the nose and down into the stomach to stop the patient feeling sick after the surgery. The operation involves making a large (30cm) incision across the abdomen (tummy). Very occasionally it might also be necessary to make smaller cuts in the groins as well. The small intestines are moved to one side to expose the aortic aneurysm.



Clamps (shown in blue) are then placed on the aorta above the aneurysm and the iliac arteries below the aneurysm to exclude it from the circulation. An incision (in red) is made in the wall of the aorta and any clot inside the aneurysm is removed.



A synthetic vascular graft (shown in green) is stitched onto the normal healthy artery above and below the aneurysm. If the aneurysm extends into the iliac arteries at the end of the aorta a bifurcated graft (like a pair of trousers) is used.



The walls of the aorta are stitched together to enclose the graft within the vessel. The clamps are then removed allowing blood to flow down into the legs

Most patients are admitted to intensive care or a high dependency unit for a day or so after this surgery. Patients usually stay in hospital for a total of around 7-10 days.

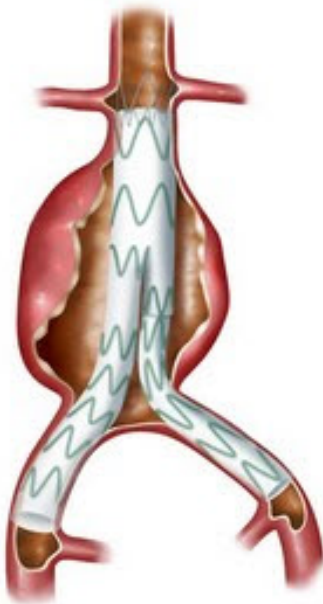
The bowels stop working for a few days after surgery so patients are not allowed to eat and drink but will be given fluids through a drip until the bowels start to work again. A blood transfusion may also be required during or just after the operation.

Risks of open surgical repair of AAA

- **Death** - the risk of dying within one month of the operation is around 5 to 10% (1 in 10 to 1 in 20)
- **Other major complications** - the risk of having one or more of the following during or soon after the operation is around 10% (1 in 10): heart attack, stroke, chest infection, kidney failure, problems with circulation to one or both legs (which may require further surgery or possibly amputation), problems with circulation to the bowel (which may require removal of part of the bowel and a colostomy), problems with blood supply to the spinal cord (which might result in weakness or paralysis of the legs)
- **Wound infection** - This is unusual and can be treated with antibiotics
- **Problems with the vascular graft** - Graft infection is a serious complication but is rare, occurring in less than 1 in 200 (0.5%) of patients. To reduce this risk patients are given antibiotics at the time of surgery and the graft is soaked in antibiotics before it is stitched in place.
- **Erectile dysfunction** - About 1 in 10 (10%) of male patients who were able to achieve an erection prior to surgery may have a problem doing so afterwards

Even when the operation goes well it is usually several months before patients feel as good as they did they day before surgery.

Endovascular Aneurysm Repair (EVAR)



EVAR is a newer technique where the plastic tube (called a stent-graft) that is used to repair the AAA is introduced into the aneurysm from the arteries in the legs ('keyhole surgery') under x-ray guidance.

Once in position the stent-graft opens up inside the aorta a bit like an umbrella and relines the aneurysmal section of the aorta. In this way the AAA is excluded from the circulation.

The main advantages of EVAR are that it can be performed under epidural anaesthesia with the patient awake and there is no need to make a large cut in the tummy. This means that EVAR is associated with a lower risk of death and complications (less than half of that associated with open repair), there is no need for admission to intensive care, the patient can usually be discharged from hospital within a couple of days, and the patient returns to their pre-operative level of well-being in a few weeks rather than months.

Risks of EVAR

- **Death** - The risk of dying within 30 days of the operation is less than 1 in 20 (5%)
- **Other major complications** - the risk of other major complications (as listed at the top of this page) following EVAR is around 2 in 100 (2%)
- **Groin wound infection** - rare and can be treated with a course of antibiotic tablets
- **Kidney damage** - this can occur due to the special x-ray dye that is used during the procedure. This is rare and kidney function usually recovers without treatment
- **Stent graft migration** - the graft is held in place against a normal section of the aorta above the AAA, but occasionally it might become displaced and move. If this happens it is usually necessary to perform a further (usually minimally-invasive) procedure to correct this problem. For this reason patients undergoing EVAR are followed up annually with scans and x-rays

Advantages and disadvantages of EVAR versus open repair for AAA

Advantages of EVAR	Disadvantages of EVAR
<ul style="list-style-type: none">• Less chance of death or major complication during or immediately after the procedure• Smaller cuts• Can be done under epidural so usually no need for general anaesthetic• Shorter stay in hospital	<ul style="list-style-type: none">• Probably a less durable procedure than open repair.• Probably affords less protection against rupture than open repair.• EVAR patients not infrequently have to undergo further procedures to prevent or correct problems due to stent-graft migration, kinking or fracture• Rarely the stent-graft has to be taken out and an open repair performed• For these reasons EVAR patients have to attend for annual ultrasound scans and x-rays to check that the stent-graft is still in the right place and working properly

Limitations of the EVAR technique

Not all patients are suitable for EVAR. Much depends on the size, shape and position of the AAA.

For this reason all patients with a 5.5cm AAA or larger undergo a CT scan to accurately define these parameters. The results of this will be discussed with the patient before any procedure is planned.

For further information or to book an appointment:

E-mail: postmaster@midlandvascularcentres.com

Telephone: 0800 078 9093

Mail: PO Box 13581, Solihull B91 9GD

Website: www.midlandvascularcentres.com

