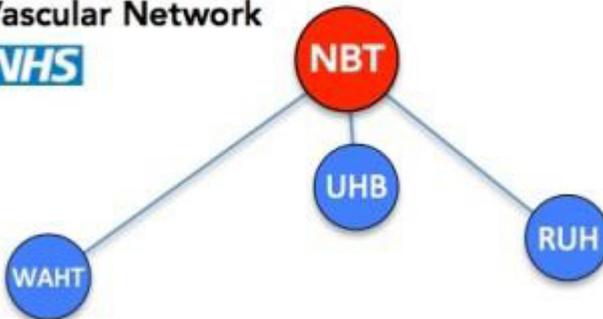


Treatment of Abdominal Aortic Aneurysms (AAA)

Bristol Bath Weston
Vascular Network



Exceptional healthcare, personally delivered

Ask 3 Questions

Preparation for your Appointments

We want you to be active in your healthcare. By telling us what is important to you and asking questions you can help with this. The three questions below may be useful:



This leaflet tells you about treatment of abdominal aortic aneurysms. You should also read our information leaflet "Abdominal Aortic Aneurysms and Surveillance".

Your aneurysm may have reached the size where it is time to consider the pros and cons of intervention. This leaflet provides information about your options for treatment. It is not meant to be a substitute for discussion with your Vascular Specialist Team.

What is the concern about an AAA?

The main concern is that the aneurysm might rupture (burst). The wall of the aneurysm is weaker than a normal artery wall and may not be able to withstand the pressure of blood inside. If it ruptures then internal bleeding occurs.

What is the chance of an AAA rupturing?

As aneurysms get larger than 5.5cm, the risk of rupture increases and it is usually at this size that the **pros and cons of repairing the AAA as a planned procedure are considered.**

For any given size, the risk of the AAA rupturing is greater in:

- Patients who smoke
- Patients with high blood pressure
- Patients with chronic chest problems (COPD)
- Patients with a family history of AAA
- Women

Each person's risk of complications from their AAA and from surgery is different so any decision on treatment must be carefully considered by you and your vascular team.

Should everyone with an AAA have surgery?

The short answer is no. The decision of whether to undergo treatment for an AAA is a balance of three things:



Nearly a quarter of patients with large AAA (>5.5cm) do not go on to have the AAA repaired.

When your AAA reaches 5.5cm or more it is the correct time to explore the benefits and risks of having a planned AAA repair with your specialists. Sometimes the patient and specialist agree not to repair the AAA at its current size, but to wait and re-assess the pros and cons when the AAA gets bigger and the risks of rupture increases.

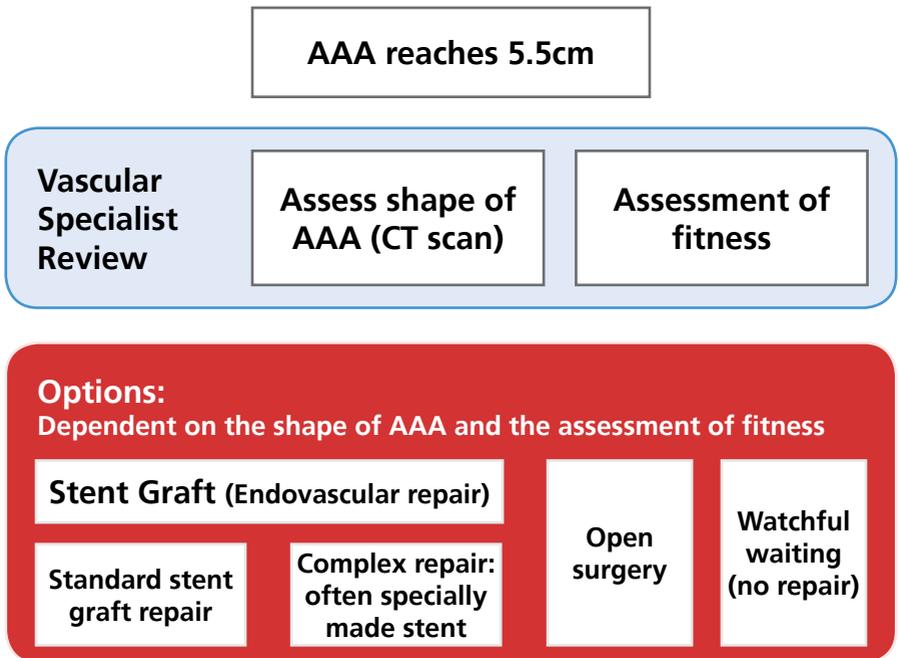
If you are unfit for surgery at the current time, your doctor may advise medical treatments aimed at keeping you healthy and reducing the risks of rupture of your AAA. These will include treating any high blood pressure and high cholesterol and improving your fitness by treating any heart lung or kidney disease so that if an operation is to be performed at a later time you are in the best possible health. Patients with diabetes are less likely to have problems with surgery if their diabetic control is good. Regular moderate exercise can also help keep your heart and lungs healthy.

We recommend that when thinking about the treatment of your AAA you consider the factors that are relevant and important to you.

What are my options – do I need special tests?

There are a number of ways of treating AAA.

The type of repair that we are able to offer and the risks associated with that repair, depend on the shape of the AAA, and in particular the relationship between the AAA and the branches of the aorta that supply the kidneys and the intestines. The shape of the AAA is evaluated using a **CT scan**. As part of your assessment by a vascular specialist you will also have an assessment of your fitness. This usually takes the form of a stationary bicycle test called a **Cardiopulmonary Exercise Test** ("CPET" or "CPEX" for short).



Treatments

Broadly there are two types of treatment to prevent AAA rupture; stent grafting and open repair.

STENT GRAFTING (ENDOVASCULAR REPAIR) FOR AAA

What does standard stent grafting (EVAR) involve?

A stent graft consists of synthetic fabric tubes (the graft) mounted onto metal skeletons (stents). It comes pre-loaded in a slim line delivery system, which is used to position the stent-graft in the aorta. The delivery system is small enough to be inserted through an artery in the groin, and we use X-rays to guide the graft into place.

The stent graft is then precisely opened up inside the AAA by withdrawing parts of the delivery system in sequence or by stretching up the stents with a balloon. The aim of stent grafting is to allow blood to only flow through the stent graft tubes and not into the bulging sac of the AAA. In this way we “exclude” the AAA and prevent it from rupturing. Over time the AAA shrinks back down around the stents.

There are several types of stent grafts available.

A standard stent fixes in below the kidney arteries. Not every patient or every aneurysm is suitable for this. In the UK around 65% of planned AAA repairs are done using standard stents.

If you have access to the internet you can watch video animations of how the standard stent grafts treat AAA at the websites below; alternatively ask your specialist. Please note these are animations principally designed for specialists so do have “technical” language.

http://www.goremedical.com/products/excluder---resource-library/resources?locale=mpd_na

https://www.cookmedical.com/products/ndo_aaamain_webds/

Stent grafting (EVAR) has a number of **advantages**, over traditional open surgery, which requires an abdominal incision and temporarily clamping off the main blood vessels going to the lower half of the body. In particular with stenting there is a:

- Lower risk of death around the time of operation
 - In the UK the in hospital risk of death following stent grafting AAA is 0.4%* (1 patient every 250 AAA repairs)
- Lower risk of major complications as an in-patient after surgery
 - Just over 6% (1 in 17 patients) have a major complication*
 - Compared to open surgery there are
 - Less chest infections
 - Less heart attacks
 - Less kidney problems
- Rarely need high dependency or intensive care
- Less pain
- Quicker discharge from hospital (on average 2 days) and quicker return to normal activity (approximately 2 weeks)
- No risk of hernia or adhesions in the abdomen in the long term

*Data from the UK National Vascular Registry Report 2016

There are **disadvantages** to stents (EVAR) compared to open surgical repair:

- The incisions in the groin may result in problems
 - o Bleeding from or blockage of the artery in the groin
 - o Burning pain in the thighs due to bruising of nerves
 - o Wound infection, fluid discharge or lumps in the area of the incision
- Patients must have continued follow-up of the stent, with scans and x-rays required at least once a year to make sure that
 - o the stents remain in the correct place, do not kink or break
 - o blood is flowing through the stent and not around the stent and into the AAA (i.e make sure the AAA is excluded)
 - o the AAA is not starting to grow again
- Such problems arise in up to **1 in 5 patients** in their lifetime. In the vast majority the problem can be fixed by doing further procedures under x-ray control, without needing a general anaesthetic.
- Stents can block unexpectedly causing one or both legs to lose the blood supply. This may require emergency surgery.
- Very rarely we may need to remove the stent and perform open surgery on your AAA.
- Some studies have suggested that in the long term (> 8 years) that patient survival is lower after stent repair compared to open repair.

More detailed information can be found in the “Stent graft repair for AAA” patient information leaflet.

Getting back to normal activities after EVAR

After uncomplicated endovascular repair, most patients return to the hospital ward for one to three days.

You should be able to eat and drink normally once fully awake following your aneurysm repair. The nurses will aim to get you sitting up and walking as soon as possible. If you have a urinary catheter (tube into the bladder put in during surgery) we aim to remove this on the first night or morning after surgery.

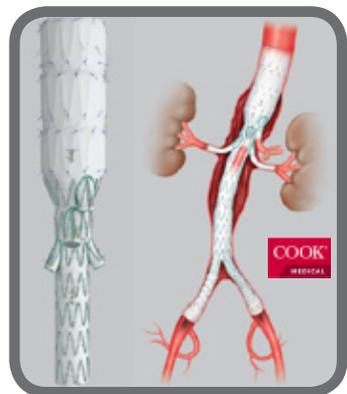
Once you are up and about, you should be able to leave hospital, but may need painkilling tablets for up to a week. Discussions with patients who have undergone endovascular repair suggest that it can be normal to make a full recovery in about 2 weeks, however some people take longer and can tire and take several months to return to the health state they had prior to the operation. During this time, you should gradually build up your level of activity back to normal. You may resume normal sexual relations as soon as you as you feel comfortable.

Most people who are treated with endovascular repair can return to work within a month after having surgery.

What does complex stent grafting involve?

In some patients, the shape of the AAA is such that there is not enough normal artery below the kidney arteries for the stent to fix in place. To treat these AAA it is possible to use stent grafts that are custom made to fit individual patients.

Instead of fixing below the kidney arteries such stents fix around the arteries supplying the kidneys, the intestine and the liver.



These stents are made with holes (“fenestrated” stent) or side branches (“branched” stent) in the exact position where each artery comes off the aorta to ensure that the main stent “seals” the aneurysm but that blood supply to the vital organs are maintained.

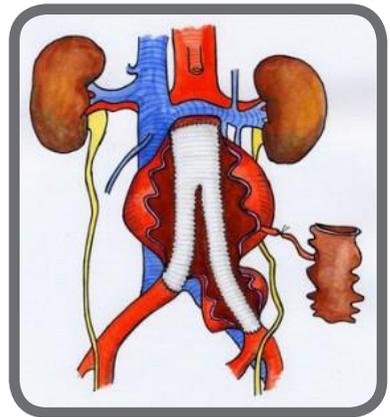
Complex stent grafting has higher risks than standard EVAR. In some studies the risks of death and complication around the operation are similar to open repair. There is also more risk of needing further procedures to keep the stents working correctly. Please read our “Complex Stent Grafts for AAA” patient information leaflet for more details.

OPEN REPAIR FOR AAA

What does open repair of AAA involve?

The traditional operation involves cutting open your abdomen to replace the aneurysm with an artificial piece of artery (a graft).

This is a major operation and requires the surgeon to stop the blood flowing in the aorta and down to the legs with clamps for a period of time whilst the graft is stitched into place. This can place a great strain of the heart and patients can lose large amounts of blood.



Advantage of open repair over EVAR:

- Very low rate of people ever needing further procedures on the aorta. Once the surgery is done the AAA is “fixed”. There is rarely need for long term x-ray follow-up
- Studies suggest that in the longer term (>8 years) patients who have open repair live longer than those who have stent grafts.

Disadvantages of open repair compared to EVAR:

- Need to have a high dependency or intensive care bed after the operation – this is not always available. This can lead to the procedure being postponed
- Higher risk of death following surgery – 3%* (1 in every 33 patients dies following planned surgery for AAA)
- Higher risk of major complications:
 - 1 in 4* patients have a complication
 - Chest infections/Breathing – 1 in 8* patients
 - Heart problems – 1 in 15* patients
 - Kidney problems – 1 in 20* patients
 - Reduction in blood supply to a leg/legs – 1 in 30 patients*
- All patients go to the high dependency unit or intensive care for at least one night following surgery
- Length of stay in hospital is longer (7 to 11 days total) and recovery back to full fitness is longer than EVAR
- Risk of wound complications in the long term (hernias 1 in 10)
- Risk of adhesions forming inside the tummy cavity causing problems with the bowels in the future

*Data from the UK National Vascular Registry Report 2016

Open surgery places more stress on the body than EVAR. Your specialist may recommend that the risks of open surgery are too great to contemplate. This is very much dependent on your general health and the shape of your aneurysm. If you have an aneurysm which extends above or around the kidney arteries, or an aneurysm that involves the arteries going to the legs (iliac aneurysms) it will be technically more difficult to repair and the risk of a complication will be much higher.

More detailed information can be found in the “Open repair for AAA” patient information leaflet.

Getting back to normal activities after open repair

If your recovery is straightforward, you will be in hospital between 7 and 11 days. It is not unusual for patients to spend one or two nights on the high dependency or intensive care unit. You will be allowed to eat and drink once you are fully awake following surgery. You may not feel like eating immediately, but usually you will be eating normally within 3 days of your operation. The nurses will aim to getting you sitting up and walking as soon as possible.

Once you are well enough to return home, you will be discharged. At this stage, you may still need painkilling tablets. You may also notice that you tire easily. It is usual for it to take 3 to 6 months, and sometimes longer, to get back to your normal level of activity. During this phase of recovery, you should plan periods of rest into your day, gradually reducing them as you get stronger. The best way to recover is to gradually increase your level of physical activity over three months. You may resume normal sexual relations as soon as you as you feel comfortable.

Your wound should be dry and healed within 10 days. If you develop redness or swelling in the wound, you should see your doctor about this. You will be referred back to your surgeon if your doctor has any concerns.

There is no set time for returning to work but you may need to wait 6-12 weeks before you are able to work. You should ask your surgeon about this. If you drive for a living, especially HGVs, you will need to be fully recovered before returning to work.

Ask 3 QUESTIONS: summary

What are the options?

- Watchful waiting
- Stent grafting
- Open repair



What are the pros and cons of these options?

Option	Stent graft	Open repair	Watchful waiting
Pros	<ul style="list-style-type: none"> - Low risk of death - Low risk of complications (1/20) - Short hospital stay - Speedy recovery 	<ul style="list-style-type: none"> - Low risk of further procedures on AAA 	<ul style="list-style-type: none"> - No risk of "operative" complications
Cons	<ul style="list-style-type: none"> - 1/5 chance of further procedure in the future to keep AAA fixed 	<ul style="list-style-type: none"> - Higher risk of death - Higher risk of complications (1/4) - Longer hospital stay - Lengthy recovery - Risk of hernias 	<ul style="list-style-type: none"> - Risk of rupture (1/20 per year for AAA >5.5cm)

What help do I need to make my decision?

We have produced information leaflets to help you make your decision. Pointers to further resources are signposted at the end of this leaflet. We are very happy to answer any queries you have having read these information leaflets.

There are always pros and cons for each choice, it is a good idea to think about what is important to you. Your specialist and the wider team may have a strong recommendation for you; however we always want to come to a shared decision for your treatment.

Weighing up the pros and cons

The role of the specialist and the MDT

Every patient with an AAA is discussed at a multi-disciplinary team meeting. This is a meeting which involves all the specialists who may be involved in your care; that is vascular surgeons, interventional radiologists, vascular specialist nurses and vascular anaesthetists.

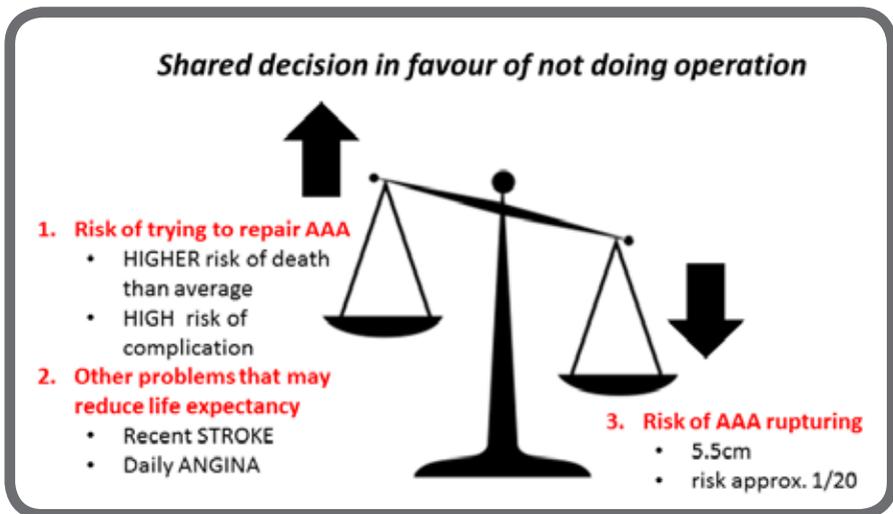
At this meeting we discuss the investigations you have had; in particular we review your CT scans, your fitness assessment and your other medical problems (if you have any). From this discussion, the specialist team will agree whether the shape of your AAA is suitable for standard stent graft repair and the team may arrive at a clear recommendation for a specific type of treatment. Very occasionally there is not clear agreement about the way of treating your AAA. Your vascular specialist should inform you about the result of the MDT discussion.

Balancing the benefits and risks

You will recall the decision about whether to have your AAA repaired is a balance of 3 factors.

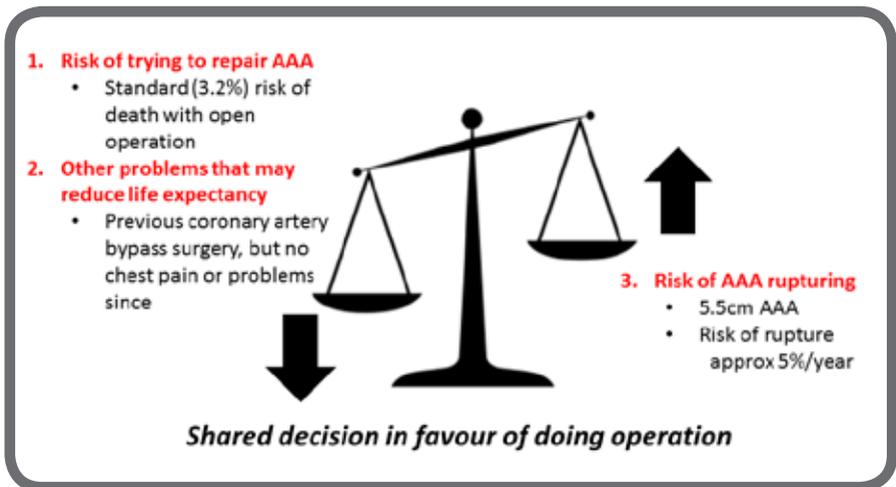


Let us take as an example a 75 year old man who has a AAA which has a shape which can only repaired with a high risk operation. He has had a stroke, and gets pains in his chest every day due to angina. He is not only at high risk during the operation, but he is likely to have a reduced life expectancy due to these other problems, rather than due to his AAA. If the AAA is around 5.5cm, the risk of the AAA bursting in the next year is less than 5% (i.e. one patient in 20 will have a ruptured AAA).



In the above example, the balance of risk favours choosing to do nothing, rather than attempting to repair the AAA. The patient and specialist make a shared decision not to proceed with either planned or emergency treatment of the AAA.

As a second example, let us take a 67 year old man who 2 years after a heart bypass operation for angina has been found to have a 5.5cm AAA which is of a shape which requires open surgery. He no longer gets any chest pains.



In this situation repairing the AAA is likely to prolong the patient's life and the shared decision is to go ahead with an operation, even though the operation carries with it risks.

We recommend that you try to think about how these factors relate to you.

Where can I find out more about this treatment?

We recommend the following websites for more information about vascular surgery conditions and treatments:

The Circulation Foundation

www.circulationfoundation.org.uk

The Vascular Society of Great Britain & Ireland

www.vascularsociety.org.uk

Society for Vascular Surgery (USA)

<https://vascular.org/patient-resources>

National Institute for Clinical Excellence (NICE)

www.nice.org.uk

Abdominal Aortic Aneurysms

NHS Choices

<http://www.nhs.uk/conditions/abdominal-aortic-aneurysm-screening/Pages/Introduction.aspx>

AAA Screening Info

<http://www.aaascreening.info/>

Where can I find out more about my specialist?

North Bristol NHS Trust Website

www.nbt.nhs.uk/our-services/a-z-consultants

www.nbt.nhs.uk/our-services/a-z-services/vascular-surgery

Vascular Society of Great Britain & Ireland

www.vascularsociety.org.uk/patients/surgeons/default.aspx

Surgeon Outcomes

www.vsqip.org.uk/surgeon-outcomes/

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www.nbt.nhs.uk/vascularsurgery

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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in research



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To find out more visit:
www.nbt.nhs.uk/research



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