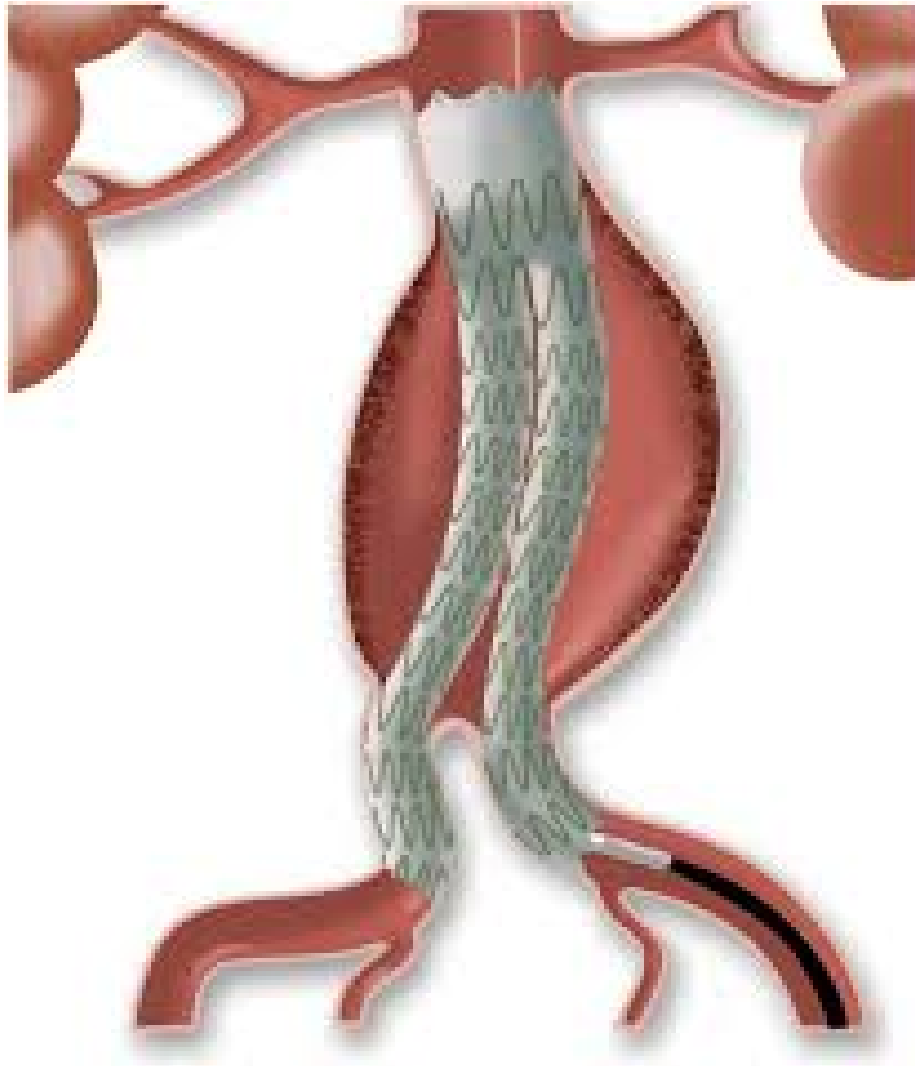


# Endovascular Aneurysm Repair (EVAR) for Abdominal Aortic Aneurysm.



**Mr. Matthew Claydon**  
**Vascular and Endovascular Surgeon**

M.B., B.S.(Hons), B.Med.Sci.(Hons)  
F.R.A.S.C.S.(General), F.R.A.C.S.(Vascular)

**Website:** [arteryandvein.com.au](http://arteryandvein.com.au)  
**Email:** [info@arteryandvein.com.au](mailto:info@arteryandvein.com.au)  
**Phone:** 9576 1491  
**Pager:** 8508 9000

## The Disease

The abdominal **Aorta** is the main artery which takes blood to the kidneys and abdominal organs as well as the legs. It is situated at the back of the abdominal cavity just in front of the vertebral column

Over time, the wall of the aorta can degrade and the aorta slowly increases in size, forming an **abdominal aortic aneurysm (AAA)**. There may then be secondary changes with inflammation and atherosclerosis changes. The dilated aorta begins to accumulate clot near the wall. As the aorta enlarges the wall becomes thinner. A thinner wall is even less able to resist arterial pressure, and thus the aorta continues to enlarge.

As the aorta expands there is an increased risk of the wall rupturing – a life threatening condition. If the **aorta ruptures, then the mortality rates are as high as 80%** or more. The risk of rupture increases exponentially with its size.

There are multiple factors associated with the causation of AAA. These include:-

- **Age** – risk increase with age.
- **Sex** – more common in males..
- **Smoking**
- **Hypertension**
- **Hypercholestromia**
- **Peripheral Vascular disease**
- **Infection** – uncommon.
- **Connective Tissue Disease**
- **Genetic** – family members have an increased risk.

90% of AAA are degenerative age related aneurysms.

## Symptoms and Complications

- **Asymptomatic** – Most patients do not know they have a AAA until there are complications. Fortunately, the increased use of CT and ultrasound have meant more aneurysms are being discovered **before** complications.
- **Rupture** - this usually presents with severe abdominal or back pain and sometimes symptoms of low blood pressure, such as fainting or dizziness. Rupture is a **medical emergency**
- **Emboic complications** – this less common complication , but includes clot from the aneurysm sac traveling to the legs and feet, kidneys or bowel. This may present with small spots of gangrene on the feet and toes.
- **Tender Aneurysm** – this presents with abdominal or back pain, and the aneurysm is sore when pressed on from the abdomen. It

is a sign of impending rupture and requires urgent attention.

- **Aortic Blockage** - A rare presentation
- **Family History** – in some cases a relative may have been diagnosed with a AAA, and advised you to have a check examination and ultrasound scan.
- **History of Aneurysms in other vessels** – If you have been treated or have aneurysms in the chest or legs, you have an increased risk of having an abdominal aortic aneurysm, and a check scan may have been recommended.

## Risks of Rupture

There is no exact figure for risks of rupture, and the risk is different for every patient. It is thought that females rupture at a smaller average size compared to males. For *males*, the risks are approximately as outlined below:-

< 4cm	0.25% /Year
4-5 cm	2% /Year
5-7 cm	10%/Year
>7cm	30% Year
>8cm	40%/ Year +

## Investigations

There are multiple investigations used for the investigation of Abdominal Aortic Aneurysm disease. These include:-

- **Duplex ultrasound scan** - usually very accurate and an excellent initial diagnostic and screening tool.
- **CT Angiography** – the main diagnostic tool for assessment of AAA before repair.
- **Angiography** is occasionally used before treatment.
- **Blood Tests**
- **Cardiac function testing and lung function testing** to assess the suitability for treatment.

## Treatment Options

- **Conservative Management** – small aneurysms are usually observed because the risk of treatment outweighs the benefits.
- **Open Aneurysm Surgery** – This is still the gold standard treatment, but carries risks.
- **Endoluminal Aneurysm Repair** – this is a much less invasive form of therapy available to **some** patients –it does not carry as many immediate risks as open surgery does. There is long term monitoring after the procedure and further procedures at a later date may be required.



The suitability and requirement for treatment are made after careful clinical assessment, focused investigations and discussion with all relevant doctors and the patient.

### **Endoluminal AAA Repair (EVAR)**

Endoluminal treatment of a AAA involves small incisions usually in both **groins** which allow the aneurysm to be treated from within the arterial system with the use of a covered stent, which excludes the aneurysm from the circulation by sealing into the vessel above and below the aneurysm.

The technique avoids some of the major risks involved in open AAA repair, and has a lower peri-operative mortality (2% vs 5%)

Not everyone is suitable for open repair. There are some complications which are unique to endoluminal repair.

After endoluminal repair, patients need to have regular long term surveillance in the form of ultrasound and CT scans.

### **Side effects and Complications**

Unfortunately, no treatment is perfect or without risk. While not exhaustive, the more common and important risks are outlined below. The risks for each patient are different depending on their other medical problems and the anatomy of the aneurysm

General risks include-

- **Death** - average 2-3%.
- **Heart Attack**
- **Stroke**
- **Deep Venous Thrombosis** – a clot in the deep veins of the leg.
- **Pulmonary Embolus** – a clot traveling to the lung, which can occasionally be life threatening.
- **Renal Failure** requiring temporary or permanent dialysis.
- **Infection**

The specific risks include:-

- **Endoleak** – a condition in which the aneurysm sac is not completely excluded from the circulation. These may seal spontaneously, or may need further radiology or surgical procedures.
- **Rupture** of the aneurysm can occur if there is an untreated endoleak.
- **Bleeding** possibly requiring a blood transfusion or urgent return to theatre.
- **Conversion** to open repair.
- **Damage** to access vessels in the groin or pelvis requiring further procedures.

- **Emboli** to the legs requiring urgent further surgery to restore circulation. Occasionally this can result in limb loss.
- **Bowel Infarction** requiring bowel resection and possibly temporary or permanent colostomy.
- **Graft Infection** – a fortunately rare but severe complication require excision of the graft.
- **Weakness/Paraplegia** – a rare complication.
- **Graft Migration** which may occur months to years after implantation which can cause endoleak or blockage of important vessel to the legs, kidneys or bowel.
- **Stent Graft deterioration** – very rare
- **Re-Intervention** – Improving graft designs are reducing these.

