

Abdominal Aortic Aneurysm

Diagnosis, Treatment, Follow up

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CARDIOVASCULAR AND THORACIC SURGERY

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Disclosures

None



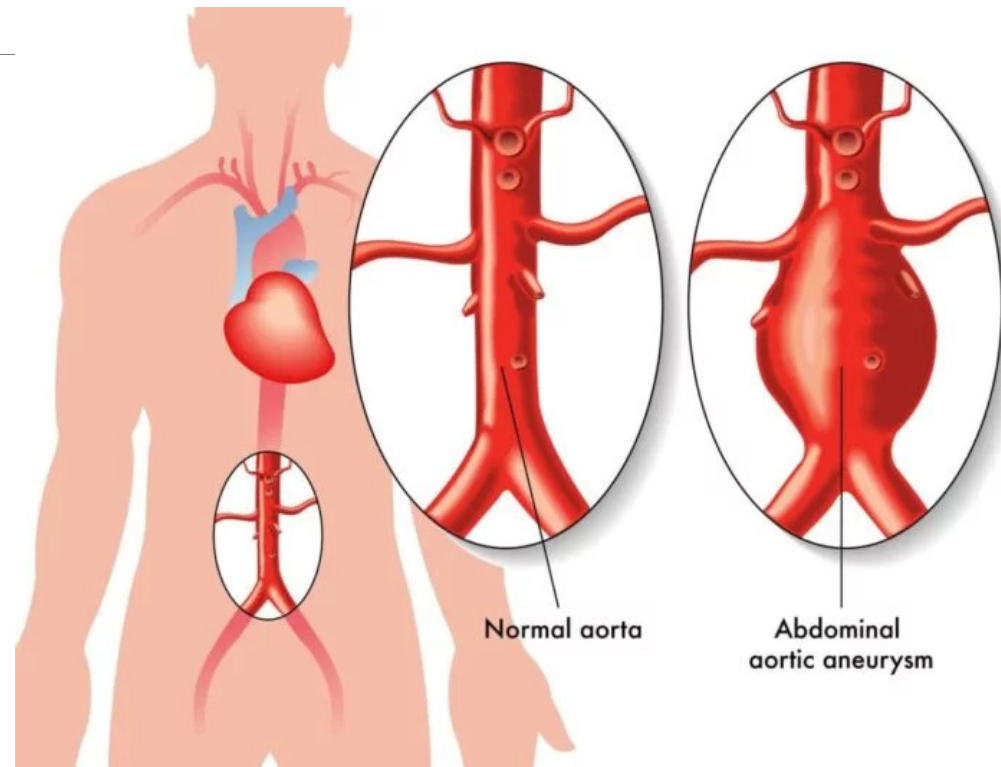
Learning Objectives:

- Understand what an Abdominal Aortic Aneurysm (AAA) is and diagnosis
- Understand indications for treatment
- Understand treatment options and details of surgery
- Understand follow up care after procedure
- Understand steps to take to prevent/help slow progression of disease process, surveillance recommendations

Definition

Pathologic dilatation of the aorta

Dilation >3.0cm (30mm)



Picture source: <https://familydoctor.org/condition/abdominal-aortic-aneurysm/>

Pathophysiology

Multifactorial: genetics, environment, infection, trauma, hemodynamics, immunologic factors

Strength of the aortic wall lies in extracellular matrix

- Collagen and Elastin
 - Degeneration of these protein components weakens the walls (with age, mediated by inflammatory cells/lymphocytes, etc)
- As walls dilate, tension increases promoting further expansion

Risk Factors

Tobacco abuse!

Male gender

- Hypothesized that estrogen has a possible protective effect for women

Age, >50

Coronary artery disease/atherosclerosis

Hypertension, uncontrolled

Genetics

- Up to 28% of first degree relatives may also have aneurysm
- Caucasians of Northern European descent, Caucasians > African Americans
- Connective Tissue Disorders (ie Ehlers-Danlos Syndrome, Marfan Syndrome, etc)

Signs and Symptoms

Majority are all found incidentally

Pulsating mass, usually near navel

Abdominal pain that is deep, usually steady in nature, may radiate to side or classically to the back, also possibly to groin and legs



When to go the ER:

- Any sudden severe abdominal and/or back pain, “tearing sensation”
- Low BP, tachycardia, N/V, Dizziness, Diaphoresis, etc

Diagnosis

Patient History, Family History

PE: medical practitioner may be able to feel the aneurysm (dependent upon size and truncal obesity)

Usually found incidentally from other imaging

Abdominal U/s – most common method, least expensive/efficient, and accurate

- Consider difficulty with greater abdominal girth/obese

CT Angiogram (CTA) Abd/Pelvis *with* contrast

So you, a loved one, a patient has been diagnosed with an AAA... but what *kind*?

Types and Classifications

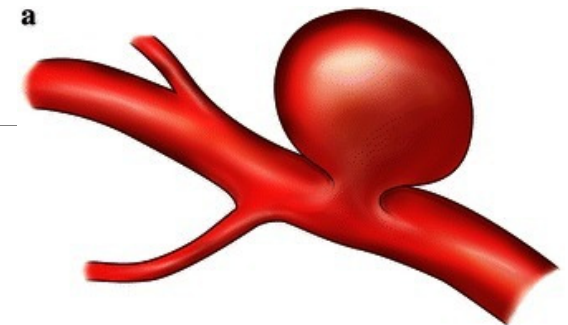
Classified by location, size, shape, cause

Location:

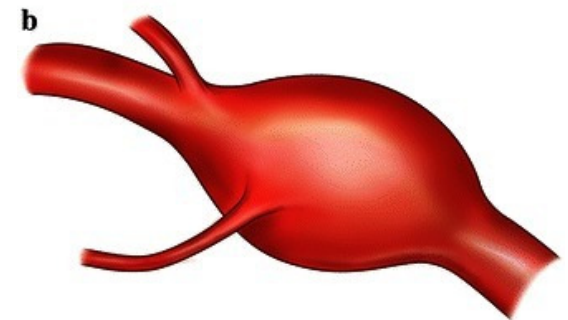
- Thoracic and Abdominal (below diaphragm)
- Also brain aneurysms, aneurysms in legs, etc

Shape

- Fusiform, Saccular



Saccular Aneurysm



Fusiform Aneurysm

When To Repair?

Guideline Recommendations: >5.5cm Men, >5.0cm Women

More than 1cm in year or 0.5cm in 6 months → considered rapid expansion

Symptomatic → due to expansion, vascular complications, compression of adjacent structures

Ultimately a discussion between the patient and physician

Contraindication: life expectancy <2years



Why Repair?

Goal is to reduced risk of expansion and rupture

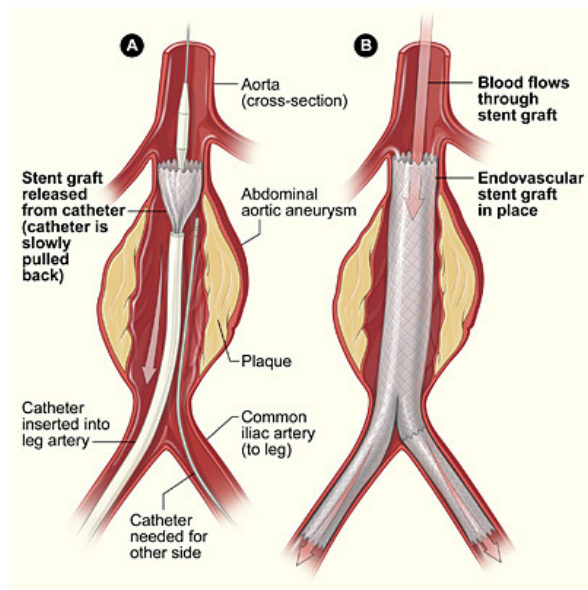
***Overall mortality of patients in the field with AAA rupture is 80%, and 50% mortality of those who reach a hospital that is even equipped to handle ruptured AAA*

Annual Risks of Rupture:

- <4.0cm: 0.3%
- 4.0-4.9cm: 1.5%
- 5.0-5.9cm: 6.5%

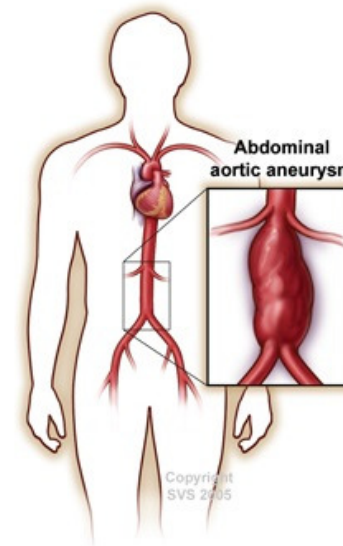
Treatment Options: Surgery

ENDOVASCULAR ANEURYSM REPAIR (EVAR)



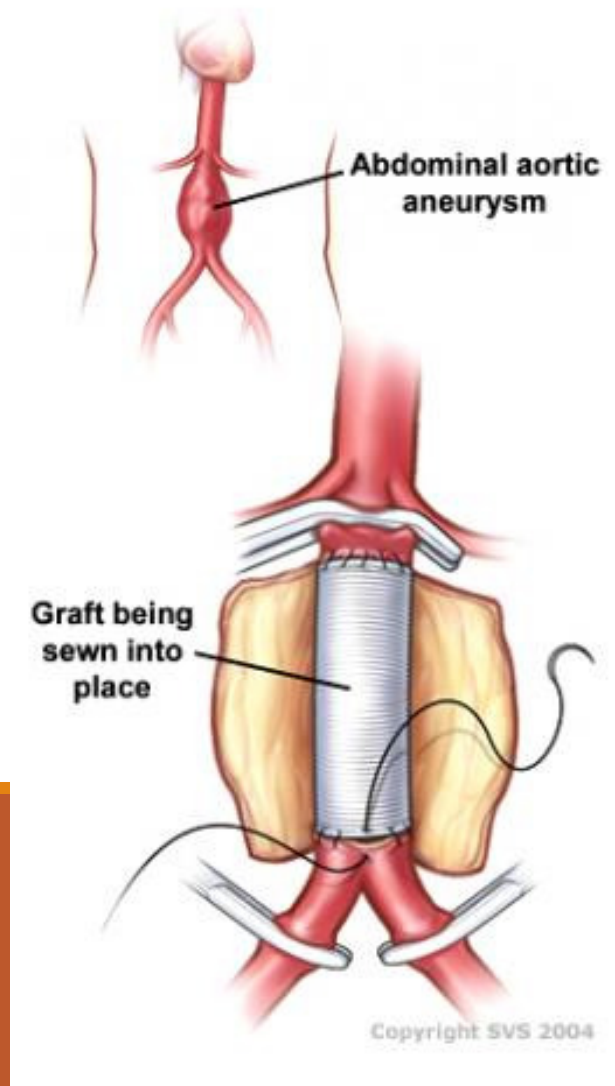
https://en.wikipedia.org/wiki/Endovascular_aneurysm_repair#/media/File:Aneurysm_endovascular.jpg

OPEN REPAIR



<https://vascular.org/patient-resources/vascular-conditions/abdominal-aortic-aneurysm>

OPEN REPAIR




Open Surgical Repair

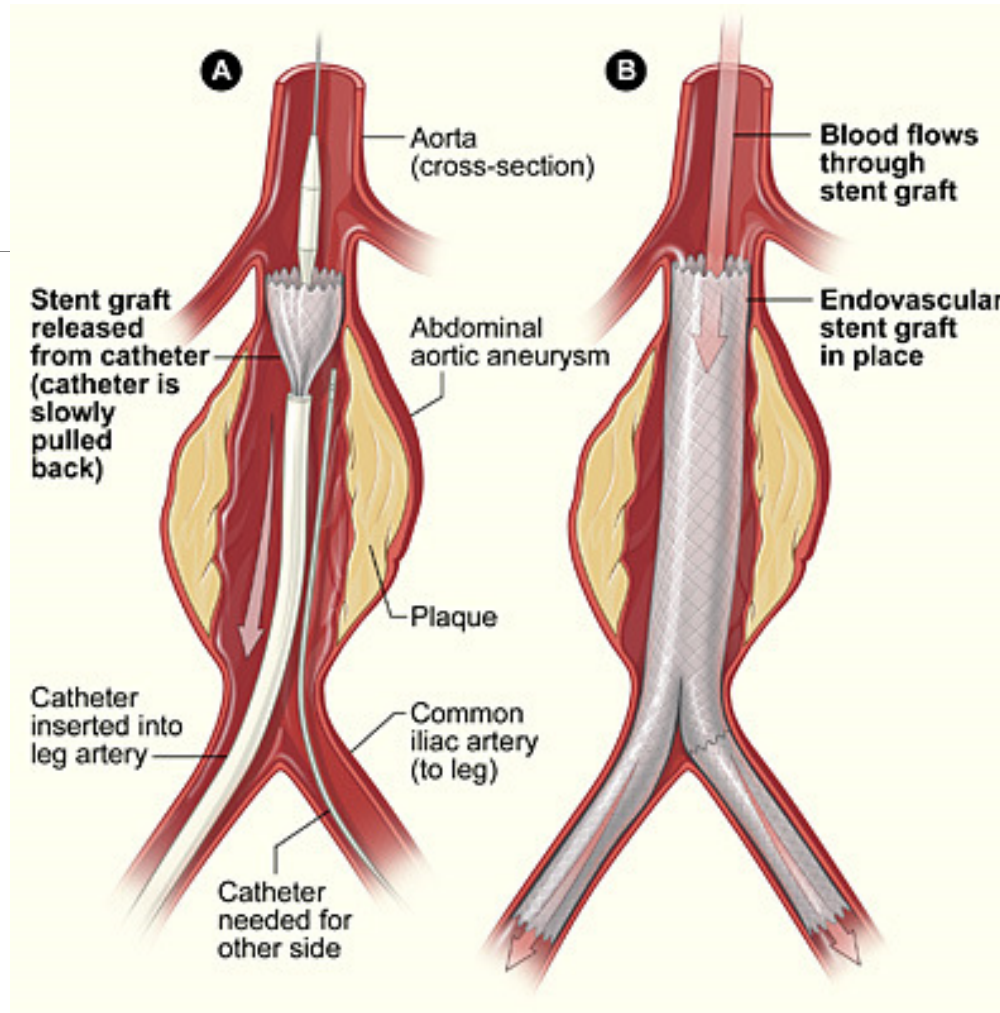
Pros:

- Aneurysm is essentially completely removed
- Long term survival rates just as good EVAR after 2 years
 - Less issues like of an endoleak, concern for stent migration, secondary sac rupture
- Do not require CT scans for surveillance (no need to look for endoleak)

Cons:

- Large abdominal surgery that comes with it's own risks (infection, blood loss, pseudoaneurysms, aortic enteric fistulas, anesthesia issues, etc)
 - Longer recovery time
 - May not be candidate due to extent of comorbidities
- 

EVAR



Endovascular Aneurysm Repair

Pros:

- Generally much easier recovery
- Usually single night hospital stay
- Smaller incisions, less invasive

Cons:

- Must have the right anatomy, not everyone is a candidate
- Require more follow up and CT scans
 - Concern for endoleaks, stent migration, secondary sac rupture
- Consider not all patients may be very reliable for follow up

Follow Up

EVAR

- 1mo Post-op with CTA and ABIs
- 6mo with CTA and ABIs
- Yearly with CTA and ABIs

Open Repair

- 1mo Post-op ABIs
- 6mo with ABIs
- Yearly with ABIs

What To Decide...

Every patient is different!

- Discuss with your local vascular surgeon to determine best course of action, open repair vs EVAR vs med management
- At Oklahoma Heart Institute: Dr. John Weber, Dr. Adel Barkat, Dr. Michael Phillips



What Can Be Done Now to Prevent

STOP TOBACCO

BP control

Some evidence to support statin therapy

Get screened

- USPSTF Preventive Services Database: (app on phone)
- Man/Woman who is 65-75 and smoked: class B recommendation for screening
- Man/Woman 65-75 and NOT smoked: class C selectively recommended, consider other risk factors



Screening

Surveillance recommended:

- AAA 3.0-3.5 cm – q 3 years
- AAA 3.5-4.4cm – q12 months
- AAA 4.5-5.5 cm – q6 months

(Society for Vascular Surgery)

Most insurances cover one time screening for those meeting recommendations

References

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