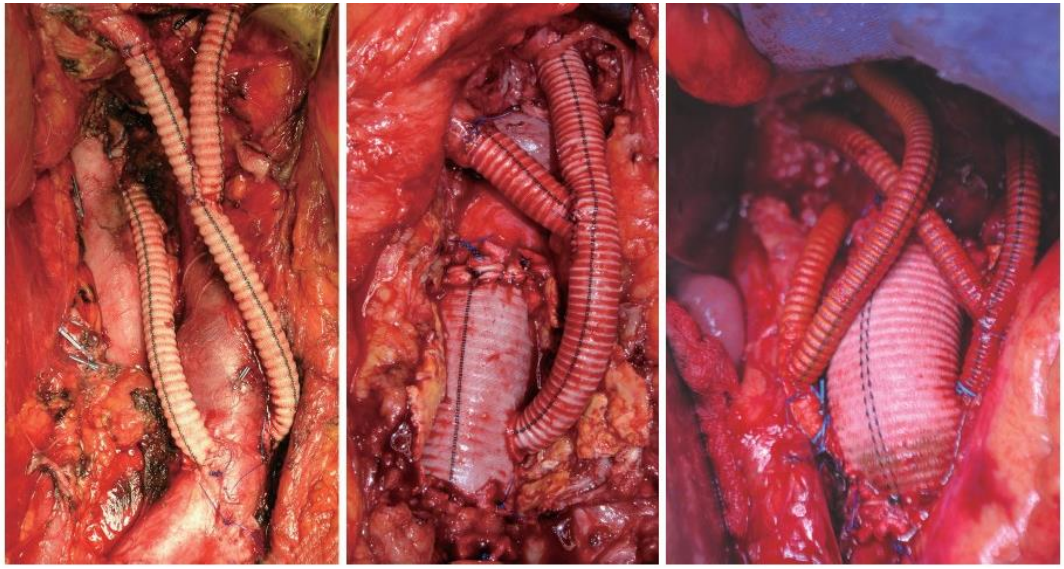

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Aortic Aneurysm Disease

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Cumbria and Lancashire Vascular and Endovascular Centre
ASiT MRCS Part B (OSCE) Course – 7th September 2016

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Learning Outcomes

- Background – Why treat?
- Therapeutic Strategies and Treatment Options.
- Operative Technique.
- Clinical Outcomes.
- Current Research.

Definition

- Arteriomegaly - Diffuse enlargement of an artery but not enough to meet criteria for an aneurysm.

- Ectasia - Diffuse dilatation of an artery with increase in diameter < 50% - Aorta 2cm to 3cm.

- Aneurysm - Increase in diameter of 50% (1.5x) its normal diameter – Aorta > 3cm.

Aetiology

- Aortic aneurysmal disease is a degenerative process associated with;
  - Atherosclerosis.
  - Cystic Medial Necrosis.
  - Dissection.
  - Ehlers-Danlos Syndrome.
  - Syphilis.

- Main risk factors;
  - Smoking.
  - Male gender.
  - Hypertension.

Aetiology

- Elastin degradation due to matrix metalloproteinases (2, 9 and 12) in the aortic media;
  - Increase in the collagenase and elastase activity.
  - Decrease in collagen and elastin in arterial wall.
  - Elastin becomes fragmented leading to arterial elongation and dilatation.

- Law of Laplace - Luminal dilation results in increased wall tension and a cycle of progressive dilation and increased tension.

Epidemiology

- 30-60 cases per 1000.
- Increasing incidence over past 3 decades.
- 7-8% of patients > 65 years of age.

Incidence of AAA

Autopsy	1.5-3.0%
Ultrasound Screening	3.2%
Patients with coronary artery disease	5.0%
Patients with peripheral arterial disease	10.0%
Patients with femoral / popliteal aneurysms	50.0%

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Approximately 10% of patients with AAA will have a popliteal aneurysm

Clinical Presentation

- Asymptomatic – 75%.

- Symptomatic – 25%:
  - Pain.
  - Collapse.
  - Pain / Fever / Weight loss and raised inflammatory markers suggests an inflammatory aneurysm (up to 10%).

Investigation

Ultrasound

CT scan

Investigation

Ultrasound

CT scan

Beware of FAST Scans from the ED

Why Treat ??

- Risk of AAA rupture;
  - Below 5cm <2%
  - 5cm to 5.9cm 5%
  - 6cm to 6.9cm 6.6%
  - 7cm to 7.9cm 20%
  - Greater than 8cm 30-50%

- UK Small Aneurysm Trial;
  - Multicentre RCT across 93 UK hospitals.
  - 1276 patients between 60-76 with AAA between 4.0 and 5.5cm.
  - Safe to monitor AAA up to 5.5cm unless tender or growth rates >1cm per year.

Lancet 1998; 352: 1649-55.

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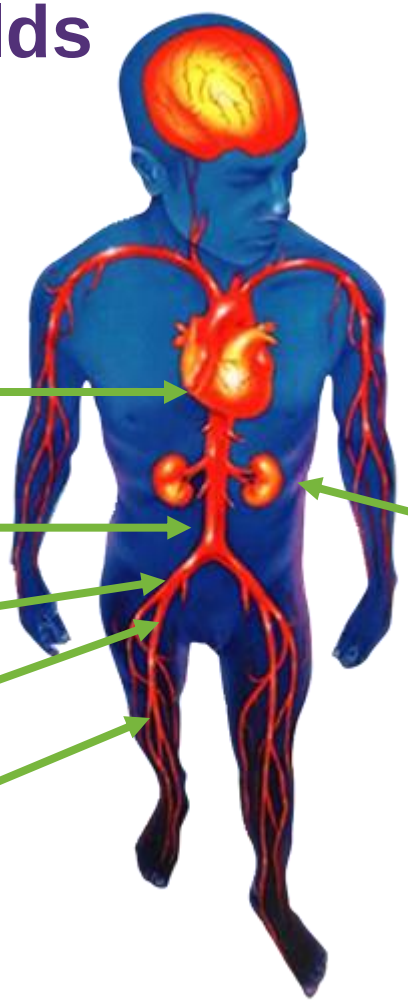
Aneurysm Thresholds



Thoracic Aorta 6cm

Abdominal Aorta 5cm

Iliac 4cm

Femoral 3cm

Popliteal 2cm

2cm Visceral Aneurysms
- Splenic
- Hepatic
- Renal

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Consent

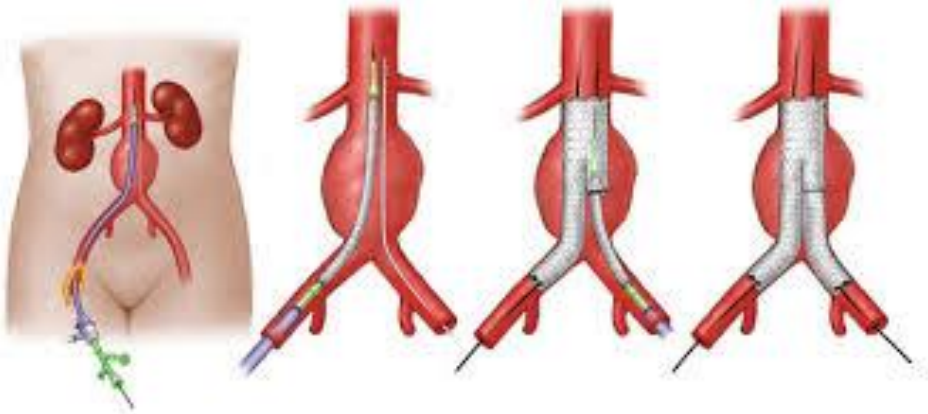
- General Local Complications;
  - Pain, Bruising, Bleeding, Wound infection.

- Systemic Complications;
  - Cardiovascular, Respiratory, Thromboembolic.
  - Renal.

- Procedural Specific Complications;
  - Graft sepsis.
  - Graft occlusion and distal ischaemia.
  - Intra-abdominal adhesions.
  - Bowel ischaemia.

Treatment

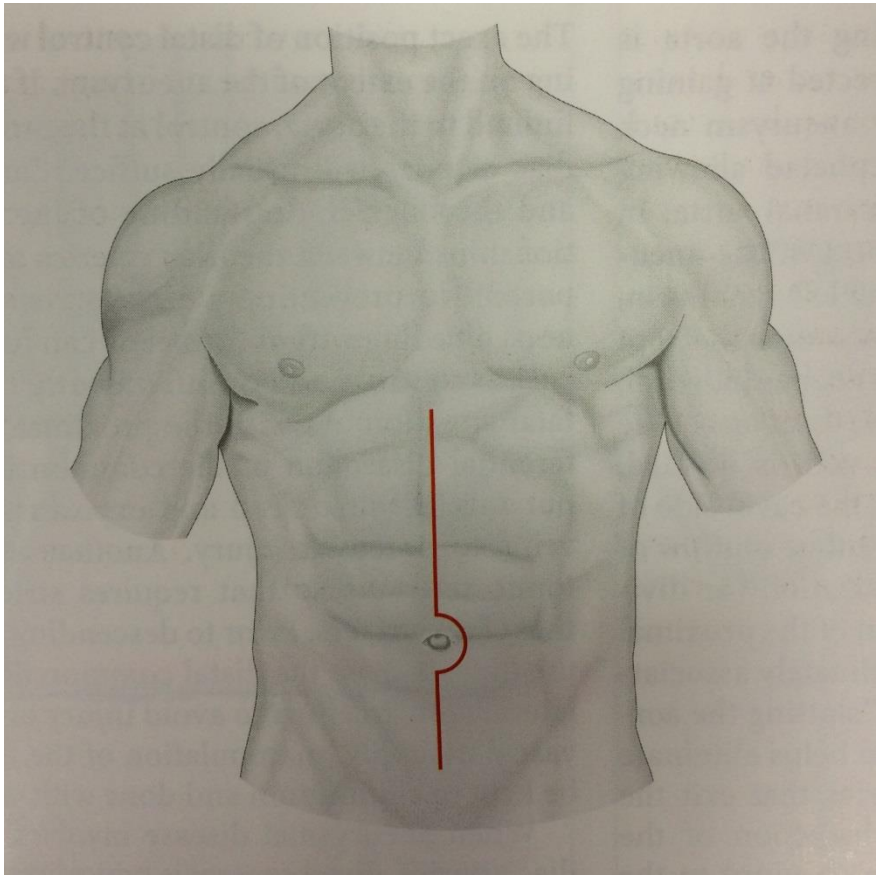
- Endovascular Repair:
  - Repair through an incision in the groin with expandable prosthesis under fluoroscopic guidance
  - Requires both surgical and radiological assistance
  - Significantly reduced morbidity.
  - Long term result unknown
  - Hospital stay 2 days, Recovery time 1-2 weeks



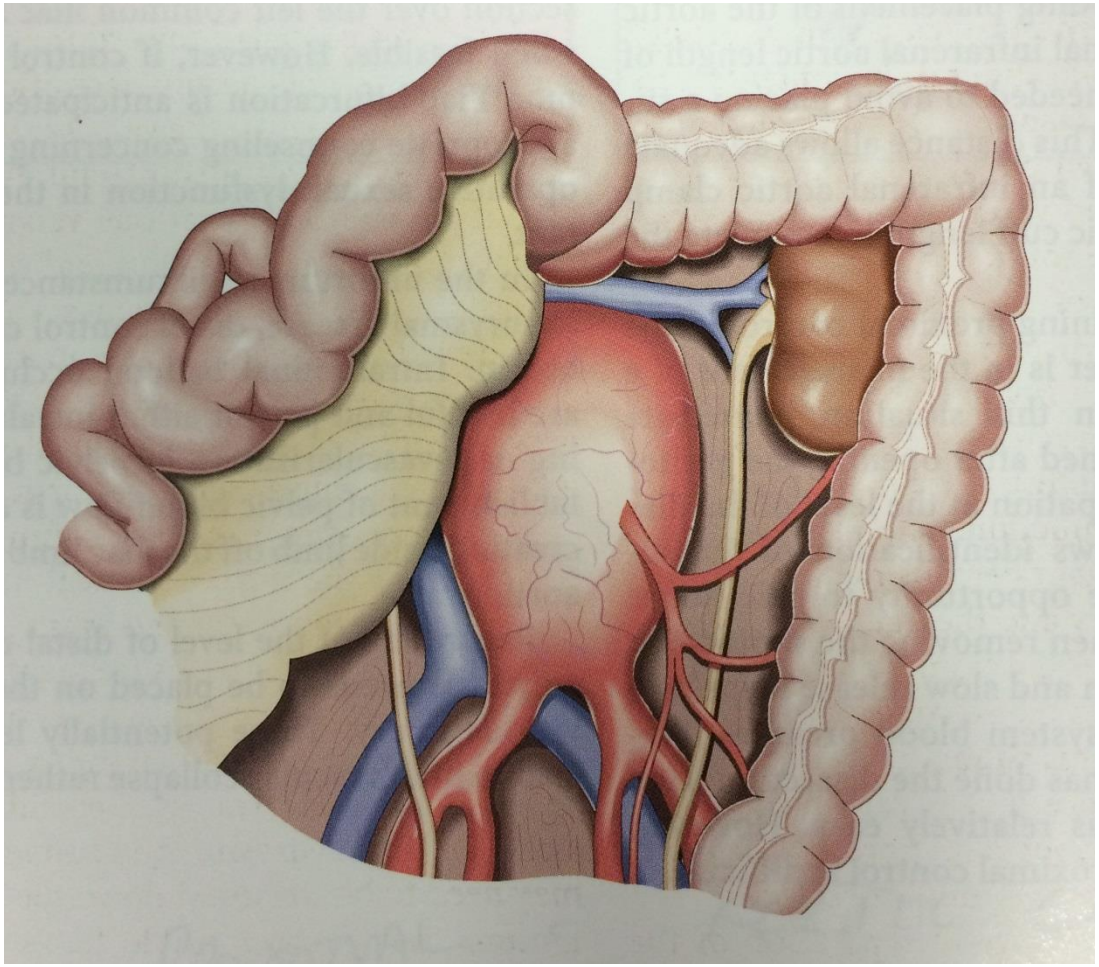
Treatment

- Standard Surgical Repair:
  - Replace diseased aorta with artificial artery.
  - Requires 7 day hospital stay.
  - Recovery time 3-6 months.
  - Proven method with good long term results.

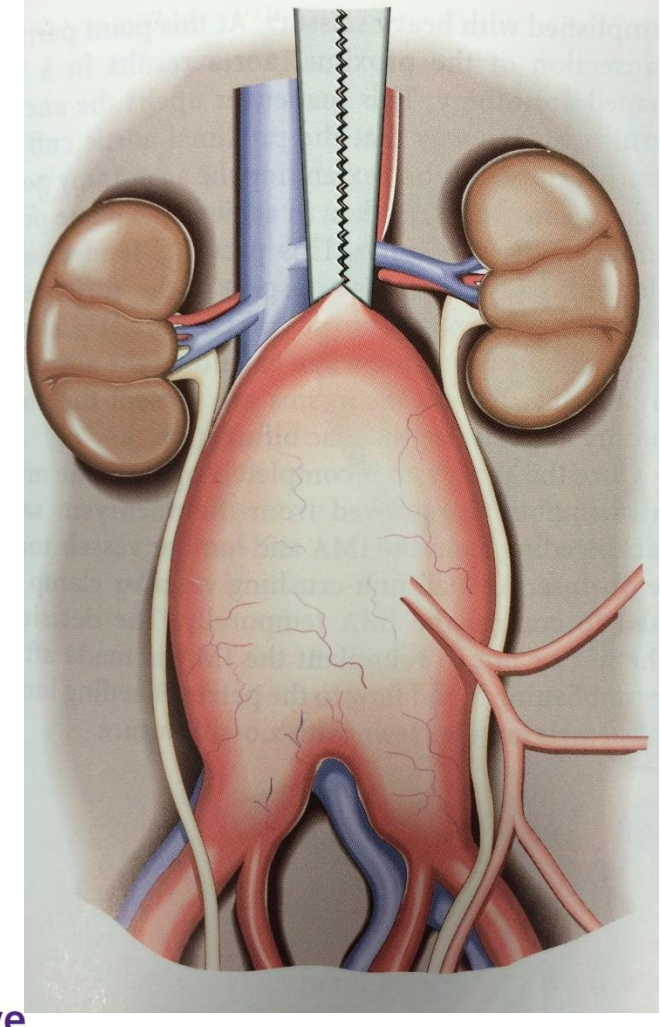
1 – Patient Positioning



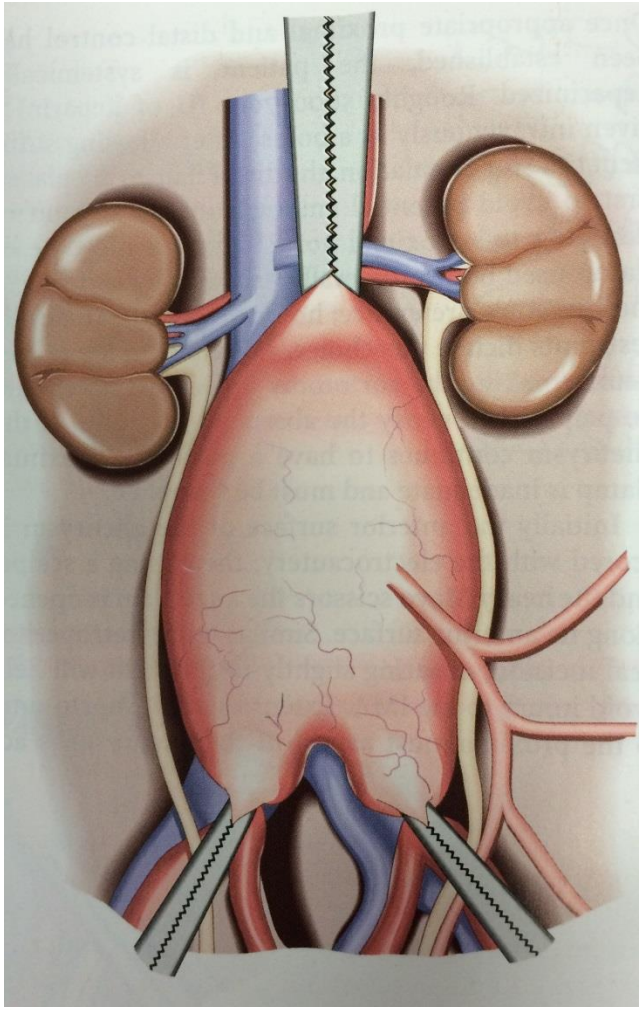
2 – Dissection down onto aorta



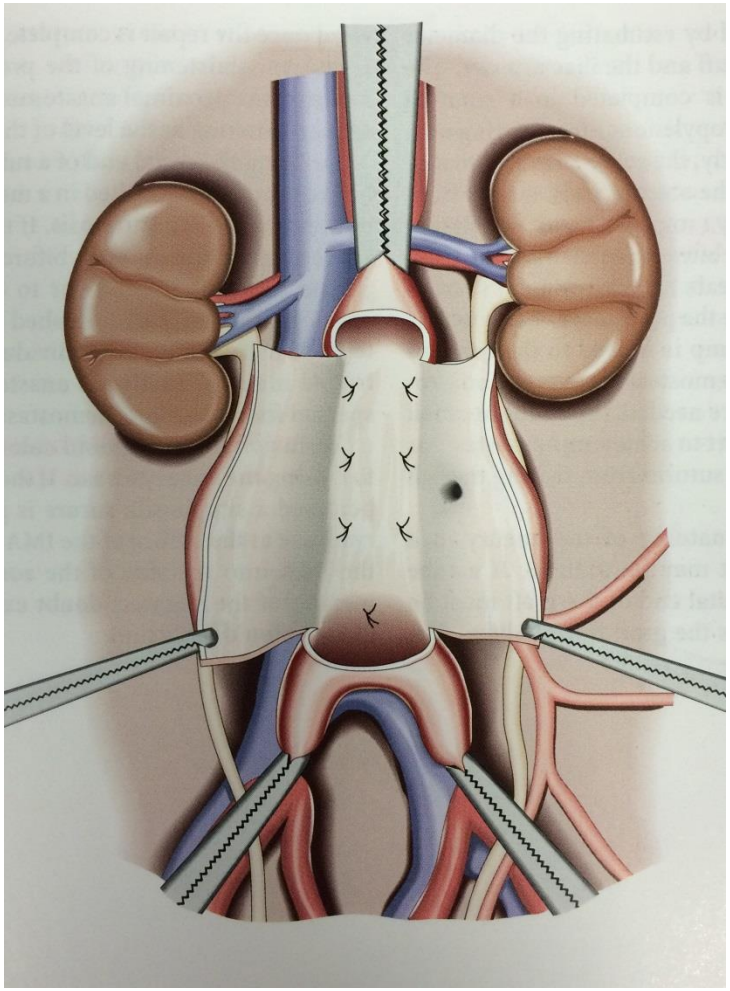
3 – Control of proximal aorta



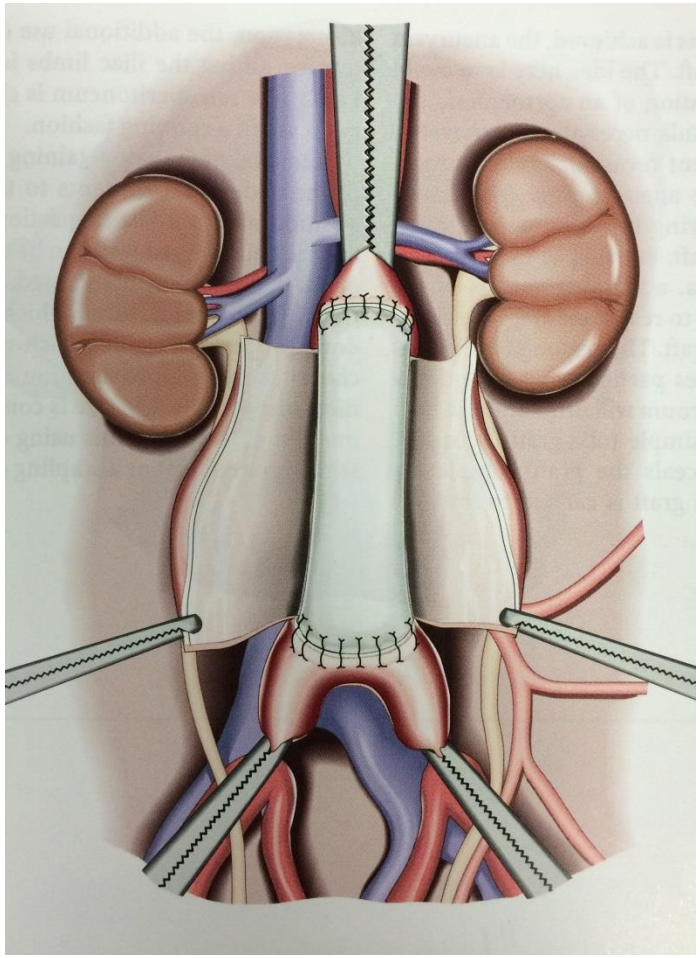
4 – Clamping of distal vessels



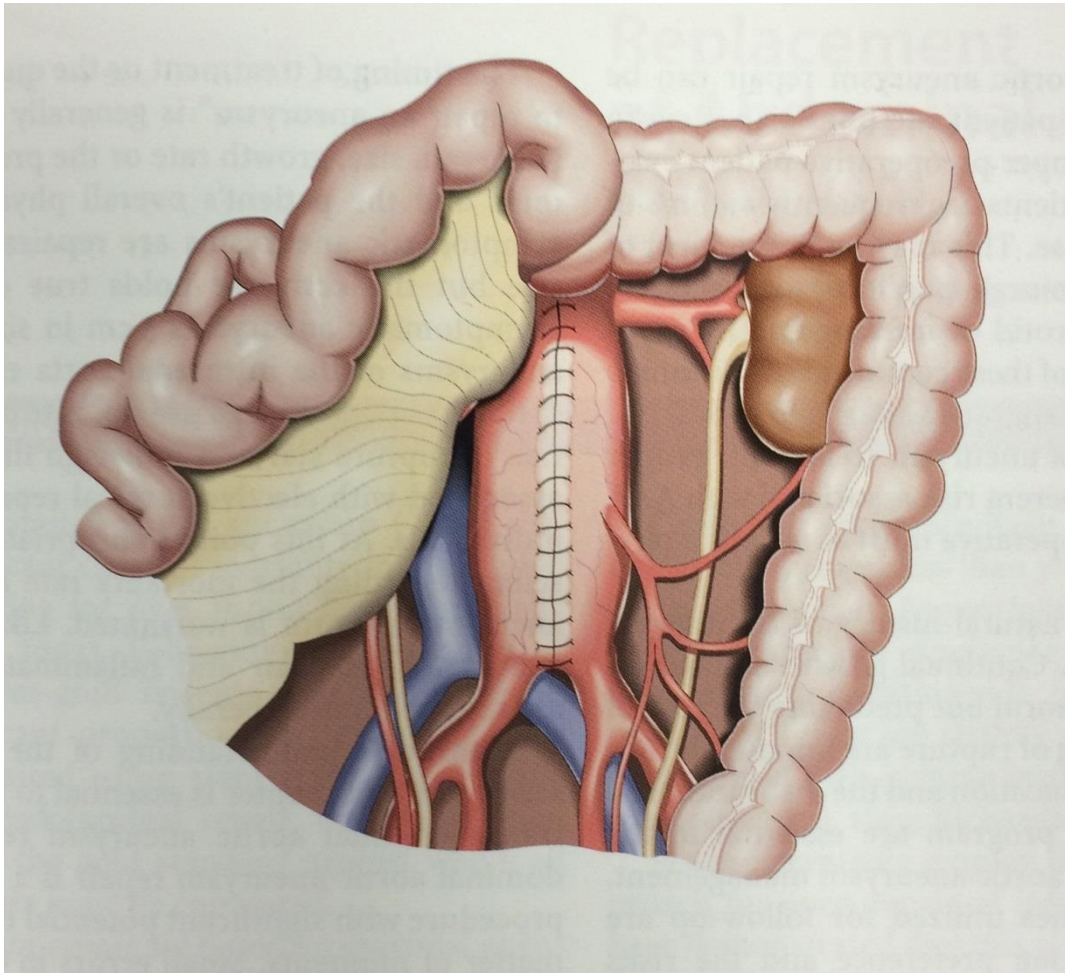
5 – Arteriotomy



6 – Graft suturing



7 – Aneurysmal sac closure

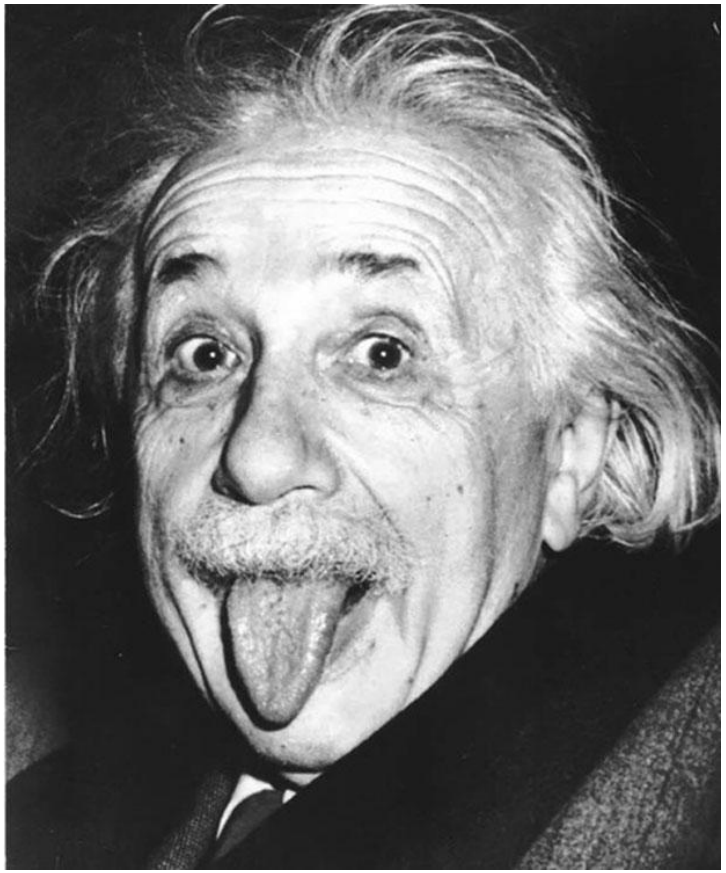


Post-procedural care

- Open AAA repair;
  - Usually POCU / HDU / ICU.
  - Clinical observations.
  - Restart medications – BMT and LMWH.
  - Slow restoration of diet.
  - Out-to-sit, slowly mobilise.
  - Ward transfer and hospital stay 5-10 day

- EVAR;
  - Ward transfer.
  - Restoration of normal diet.
  - Clinical observations / Restart medications.
  - Mobilise and Home day 1-2.

Important Literature



EVAR Trials

- EVAR I;
  - UK Endovascular Aneurysm Repair (EVAR) I trial evaluated fit patients.
  - 30-day mortality for EVAR was 1.7% versus 4.7% for open repair.
  - Longer term (4-years) all-cause mortality similar.

- EVAR II;
  - Unfit patients.
  - No difference between EVAR stenting and conservative patients.

Lancet 2005; 365: 2179-92.

IMPROVE Trial

- 29 UK and 1 Canadian centre recruiting patients with a ruptured AAA;
  - 613 patients randomised to EVAR first strategy or open repair.
  - At one-year all-cause EVAR mortality was 41.1% versus 45.1% for open surgery.
  - EVAR patients had faster discharge with better quality of life.
  - EVAR group more cost effective.

Eur Heart J 2015

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Cases

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Case 1

- 64 year old male patient brought to emergency department following collapse at local shopping centre.

Case 2

- 76 year old patient referred from colorectal surgery with incidental 6.9cm aortic aneurysm.

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Questions

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