Aortic Aneurysms

Susan Wilson

Definition

- Permanent dilatation of an artery
- At least 50% increase in diameter
- Therefore in aorta >3cm is aneurysmal

Epidemiology

- Male preponderance 4:1
- Prevalence of 5% in men >50 yrs
- Majority are small (<5cm) although approx 50% will expand with time

Causes of Aneurysms

- Atherosclerosis
  - Male
  - Smoking
  - Hypertension
  - Family history
- Trauma
- Inflammation / infection
- Rare hereditary disorders (Marfan's)
- Syphilis

Aetiology

- Main abnormality in arterial wall is loss of elastin and smooth muscle cells in media
- Reduces tensile strength and leads to excess collagen deposit
- Disruption of matrix causes inflammatory infiltrate

Presentation

- Asymptomatic, incidental finding (75%)
- Symptomatic non-ruptured
  - Pain and tenderness
  - Embolisation
- Symptomatic ruptured

Management

- Aim is to reduce mortality from rupture
  - Screening
  - Pharmacological treatment of small aneurysms
  - Careful selection of patients for surgery
  - Reduce mortality rates of surgery

Screening

- Ultra-sound based programme proposed
- Community-based
- Aim to detect aneurysms in men aged 65

Pharmacotherapy

- Detection of small aneurysms will occur if screen
- Can we reduce rate of expansion of aneurysms?
  - Stop smoking
  - ß-blockers
  - Indomethacin
  - Doxycycline

Selection for Surgery

- Depends on aneurysm size
- UK Small Aneurysm Trial
  - Aneurysms 3.5-5cm
  - Early surgery vs. US follow up and BMT
- Diameter >5.5cm (5cm in women), consider surgery
- Rapid expansion (>1cm/year)
- Symptomatic

Balance of Risk

- Risk of surgery vs. risk of rupture
- Aneurysms expand exponentially at about 10% per year
- This population has high mortality risk from coronary disease

Rupture Rates

Diameter (cm)	5-year risk of rupture (%)
5.0-5.9	25
6.0-6.9	35
>7.0	75

Investigation

- Investigation of aneurysm
- Assessment of patient's risk for surgery

Investigation

- Examination of abdomen
- Plain X ray
- Ultrasound
- CT
- Angiography

Investigation

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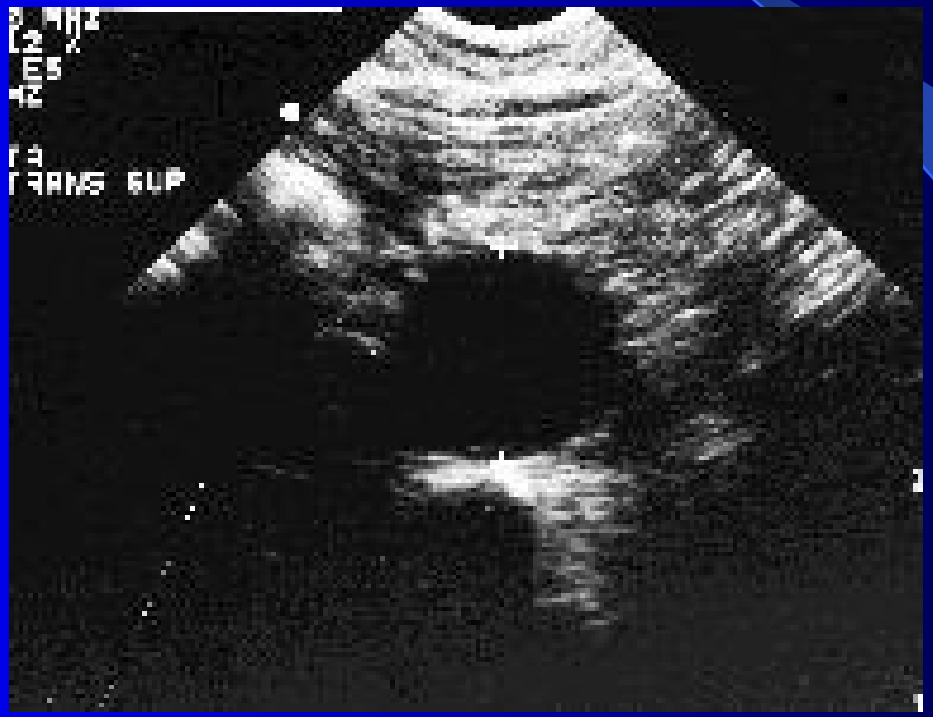
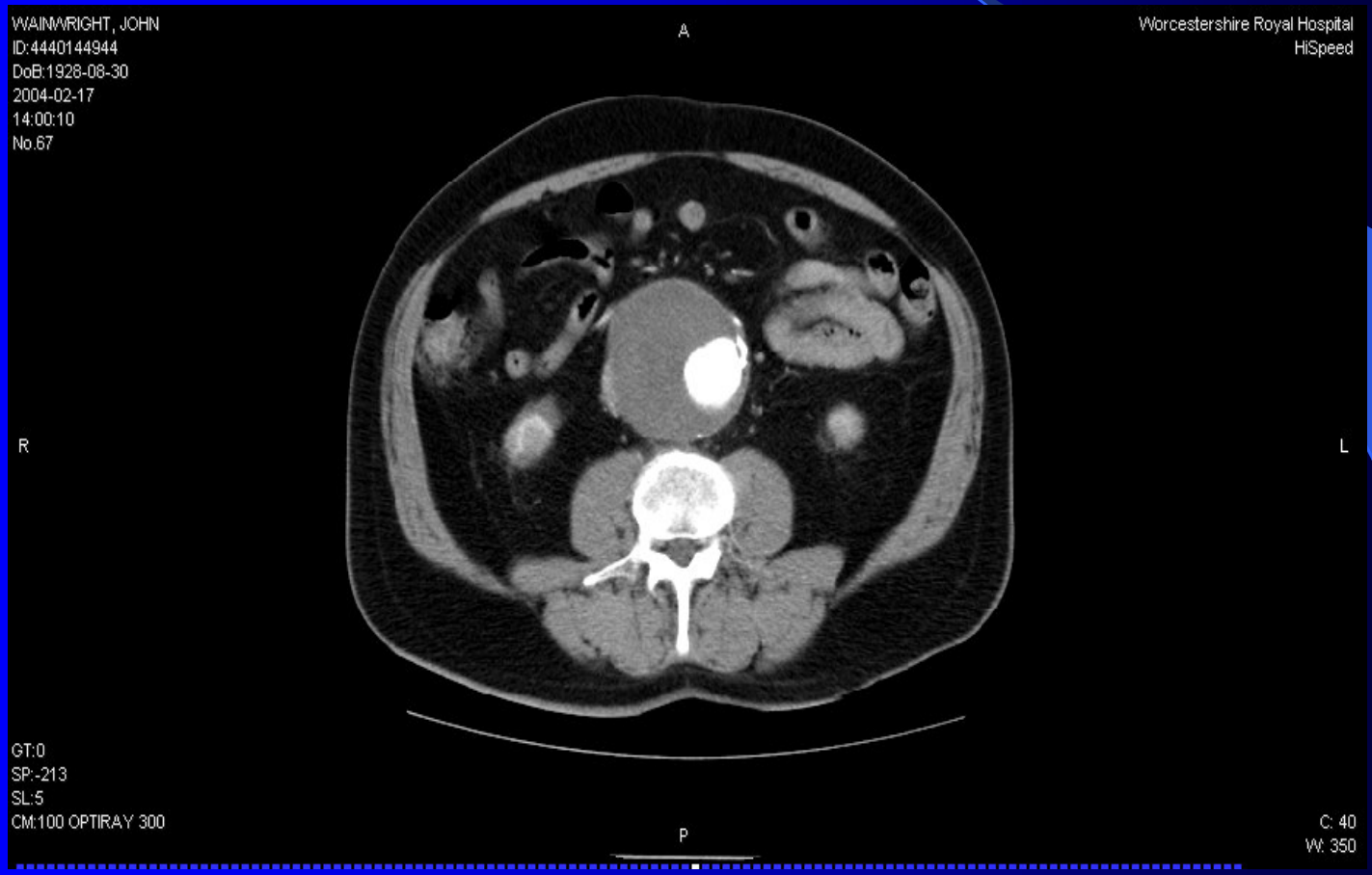
Plain X-ray

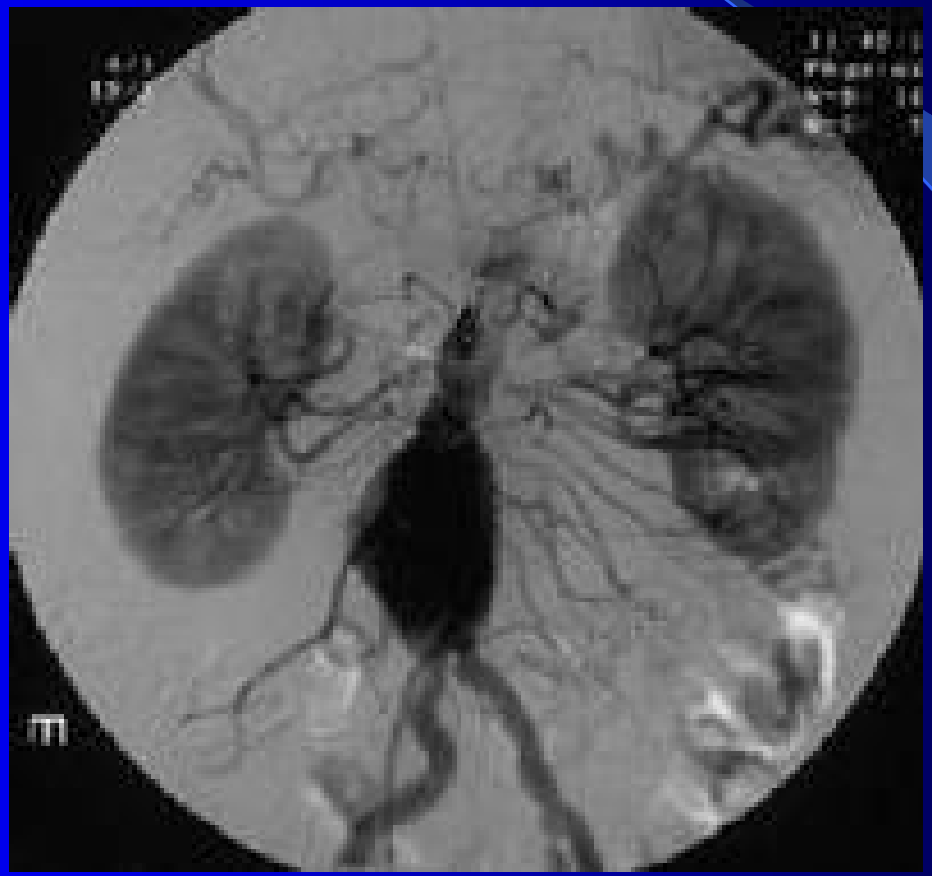
Ultrasound



Computed Tomography



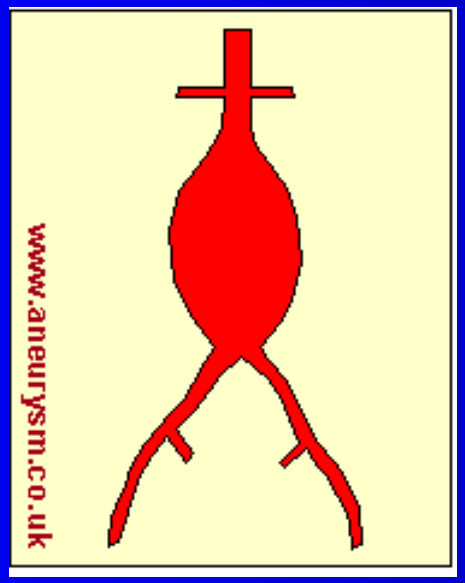
Angiography

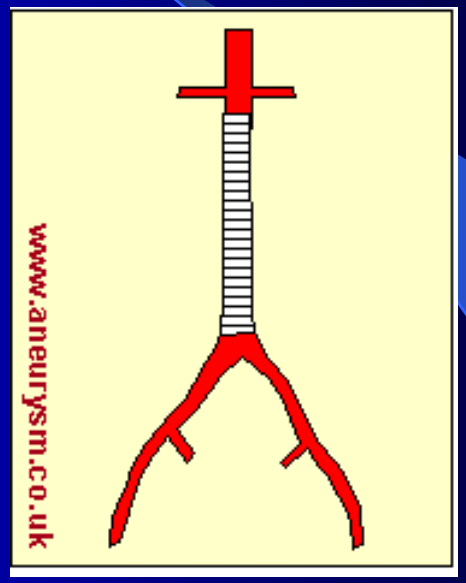


Pre-operative Work Up

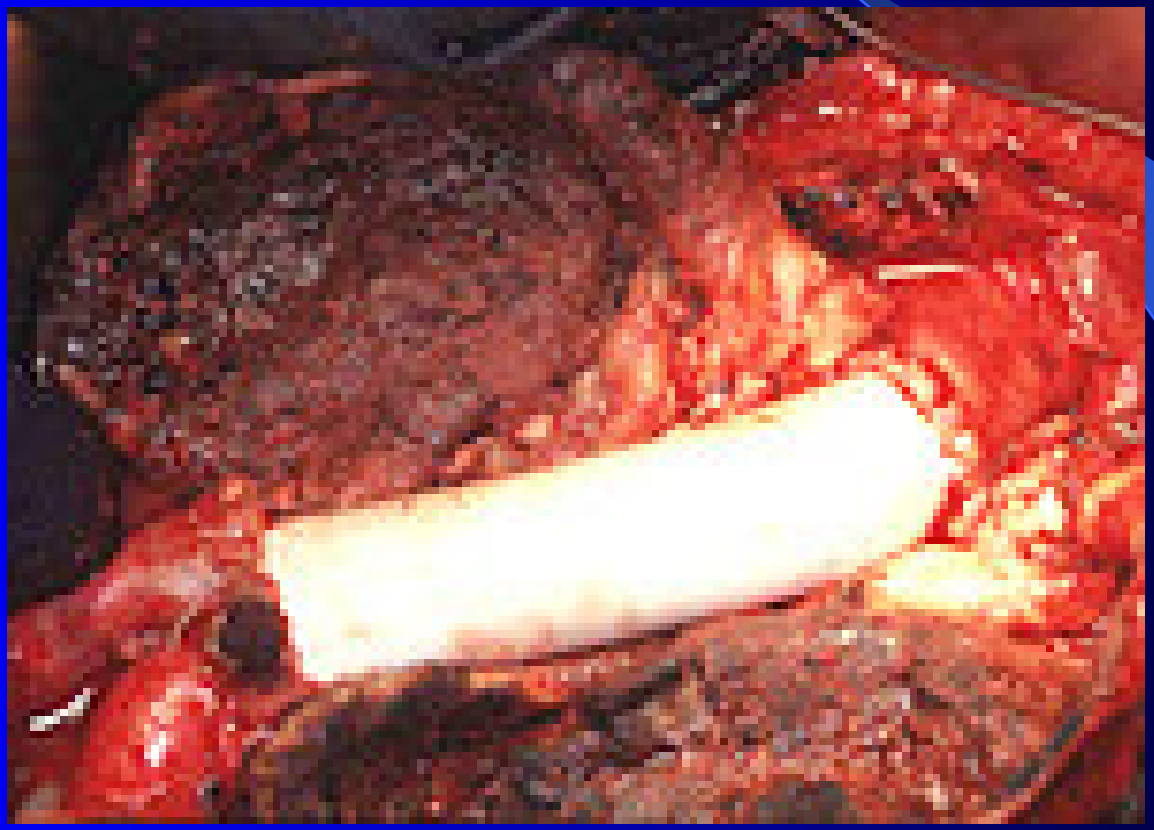
- History and clinical examination
- Blood tests
- CXR
- ECG
- Echo
- Lung function tests
- Cardiac stress testing

Surgery





Surgery



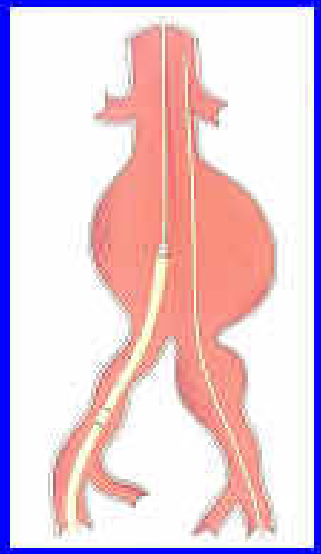
Post-operative Management

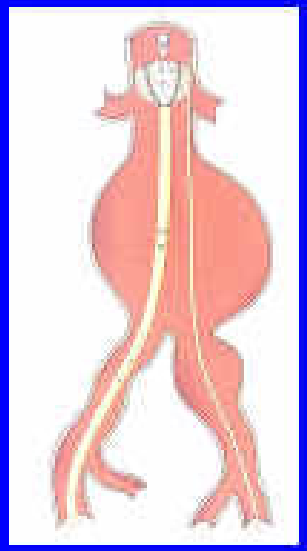
- Transfer to ITU or vascular HDU
- Epidural analgesia
- Monitor BP, pulse, temp, CVP, urine output
- Gradual re-introduction of oral fluids and food over 3-4 days
- Mobilise early
- Home 5-7 days
- OPD review 6 weeks

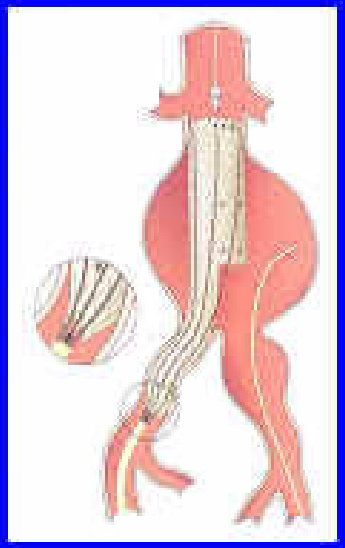
Complications

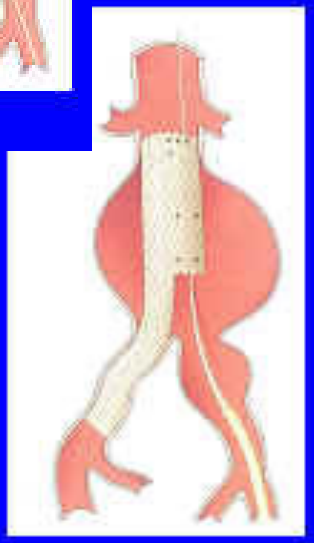
- Death (Elective 5-7%, Emergency 50%)
- Myocardial infarction
- Bleeding
- Embolisation
- Chest infection
- Renal impairment
- Ileus

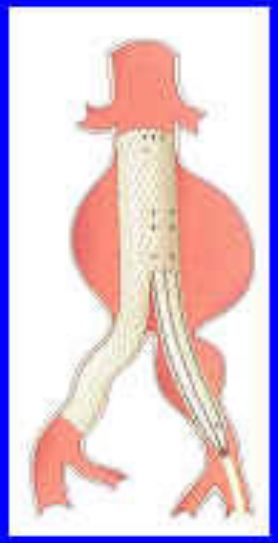
Endovascular Repair

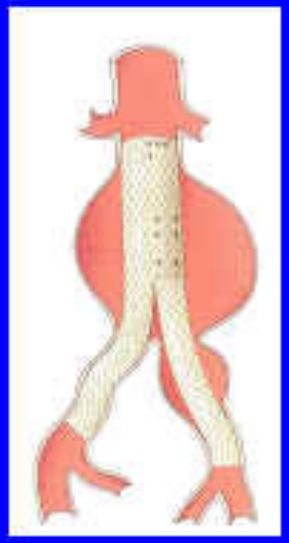




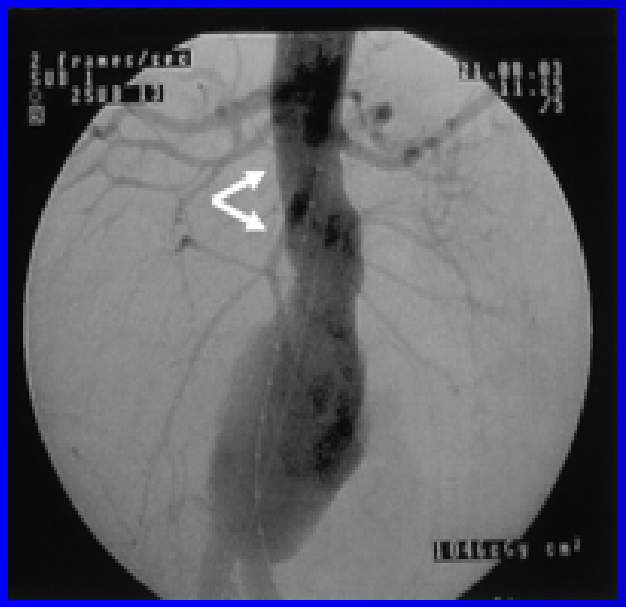




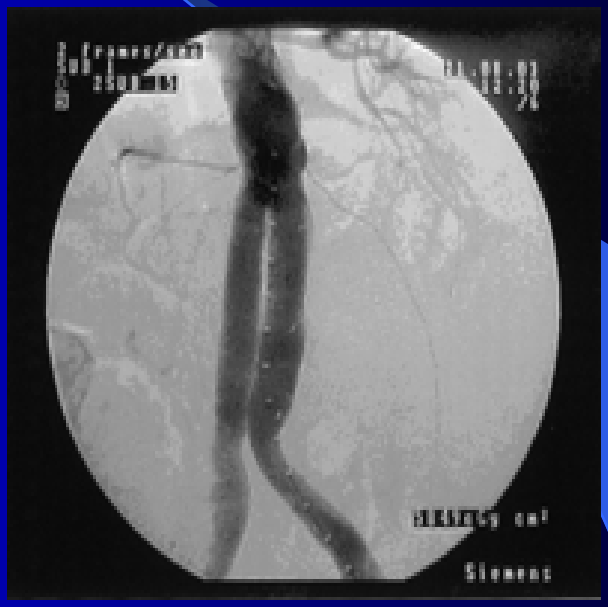




Endovascular



Before



After

Advantages

- Less invasive
- Can be done under epidural
- Rapid recovery
- Lower mortality

Disadvantages

- Long term follow up with CT/ultrasound essential
- Risk of neck dilatation and stent migration
- Endoleaks – further procedures
  - Primary
  - Secondary

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Summary

- Atherosclerotic aneurysmal disease is a common cause of morbidity and mortality
- Surgery in selected patients is of benefit
- Risk vs. benefit must be discussed with patients
- Endovascular repair will have a role in managing these patients