Friday Cases

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Acute Appendicitis

- Prevalence: 1 – 4% of children with acute abdominal pain
- Lifetime risk: ~ 9% in West
- M:F   3:2
- Peak age: 2nd decade

Acute Appendicitis

- Causes: LUMINAL OBSTRUCTION
  - Faecolith
  - Appendiceal calculus
  - Lymphoid hyperplasia
  - Foreign body
  - Parasite
  - Primary tumour: carcinoid, adenocarcinoma
  - Metastases: colon, breast

Anatomy

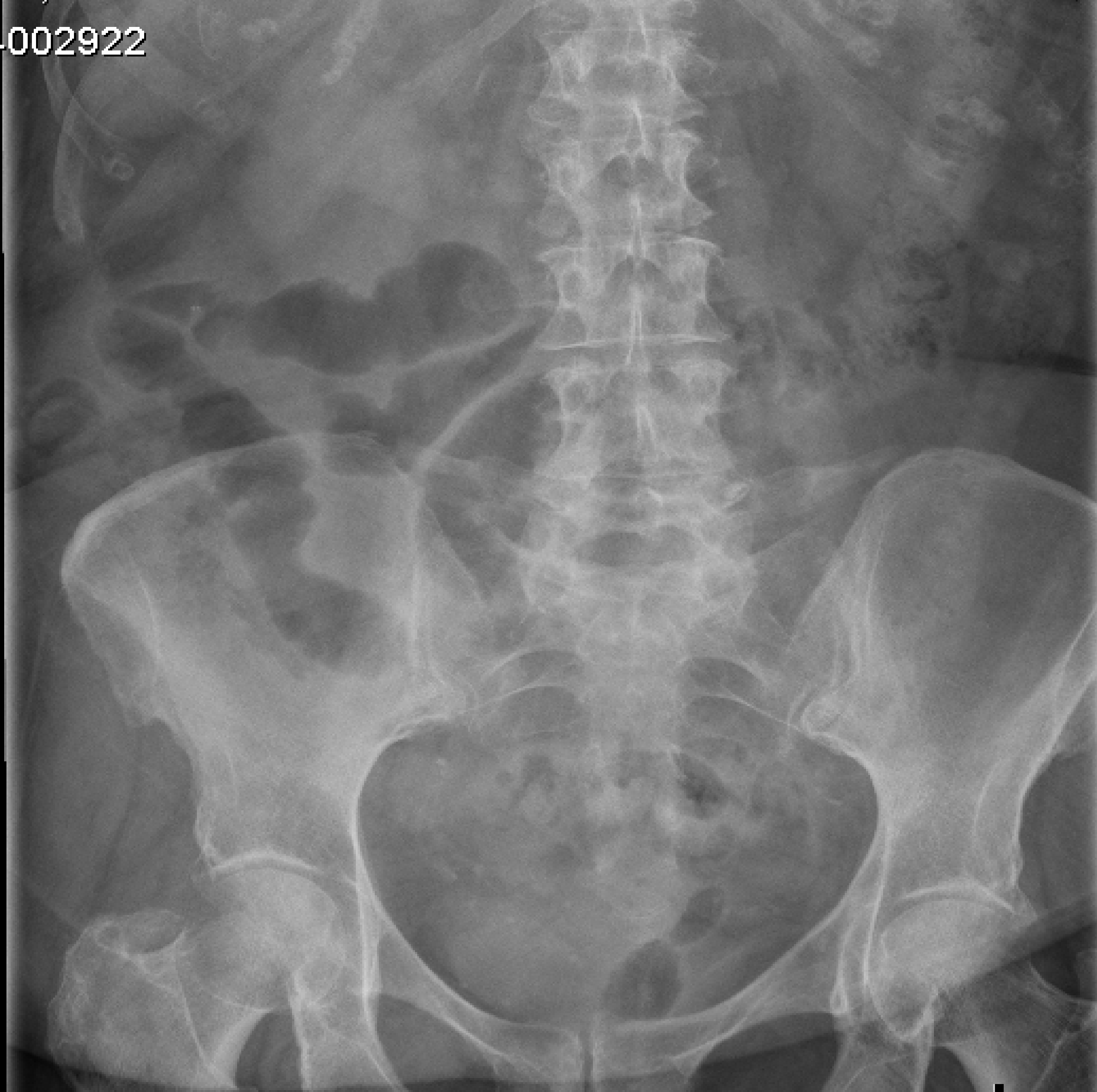
- Base of appendix: 3cm below ileo-caecal valve

- Tip of appendix:
  - Retrocaecal
  - Subcaecal
  - Retro-ileal
  - Pre-ileal
  - Pelvic
  - Extraperitoneal

Appendicitis - Plain Films

- Abnormality is seen in < 50%
- Calcified appendicolith in RIF (7 – 15%)

- In presence of perforation:
  - Paucity of gas (24%)
  - Colon cut-off sign at hepatic flexure (20%)
  - Small bowel obstruction pattern (43%)
  - Extraluminal gas (33%)
  - Loss of fat planes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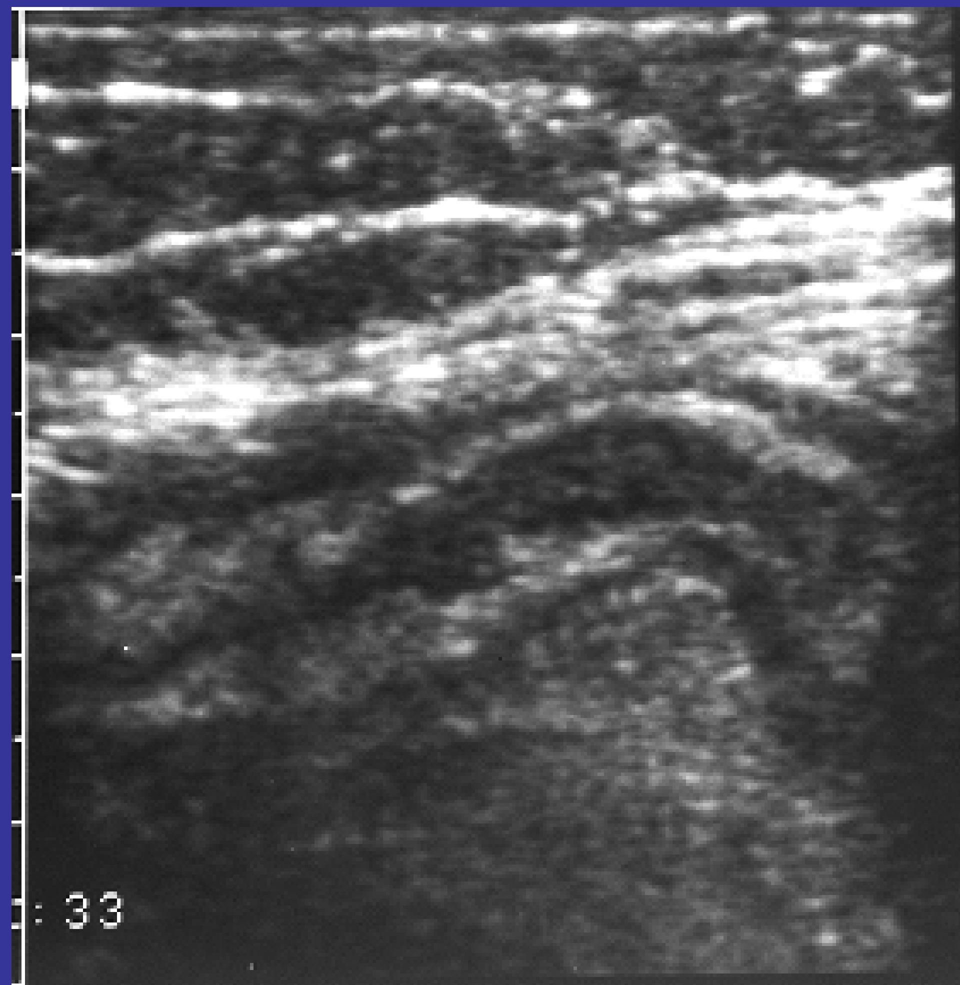
Ultrasound

- Graded compression
  - 85% sensitivity
  - 92% specificity
  - Non-diagnostic in only 4% apparently

  - Useful in ovulating women, children
    - False neg appendicectomy rate
      - 15% in men
      - 35% in women

Ultrasound

- Non-compressible, aperistaltic, blind-ending tubular structure
  - (but this occurs in 50% of normal children!)
- Laminated wall with ‘target appearance’
  - with total cross section diameter of ≥7mm
  - mural thickness ≥ 3mm
- Loss of wall layers
- Peri-caecal / peri-appendiceal fluid
- Enlarged mesenteric nodes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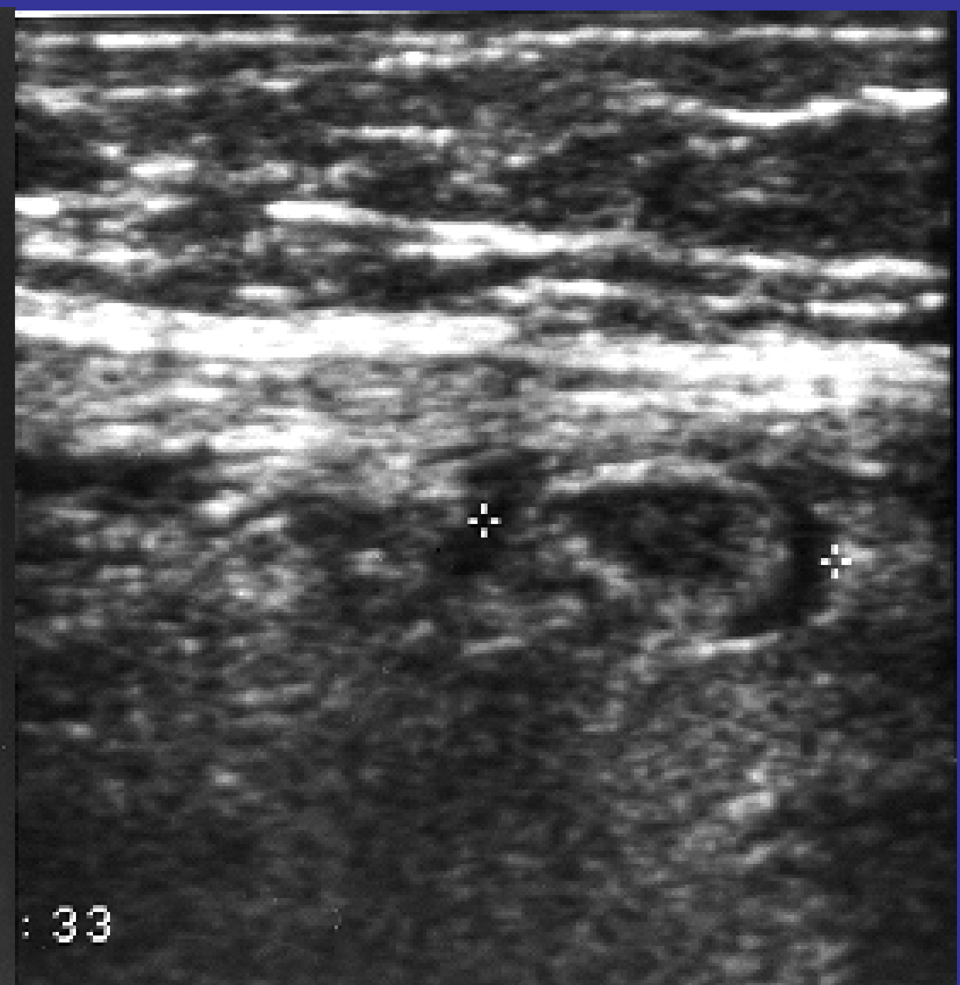
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Ultrasound - pitfalls

- False Neg
  - Failure to visualise appendix
  - Early inflammation only
- False Pos
  - Normal appendix mistaken for appendicitis (50% of children have a non-compressible appendix)
- Alternative diagnoses to remember:
  - Crohn’s disease
  - PID
  - Inflammed Meckels diverticulum

Ultrasound – Role of Doppler

- Circumferential vessels more conspicuous (increased in size and number)
- Continuous / pulsatile venous waveform
- Decreased / no perfusion (=gangrenous!)

Appendicitis - CT

- Sensitivity: 87 – 100%
- Specificity: 89 – 98%

- Possible features of appendicitis:
  1. Appendix itself looks abnormal
  2. Local inflammation (98%)
  3. Caecal thickening (80%)
  4. Evidence of perforation

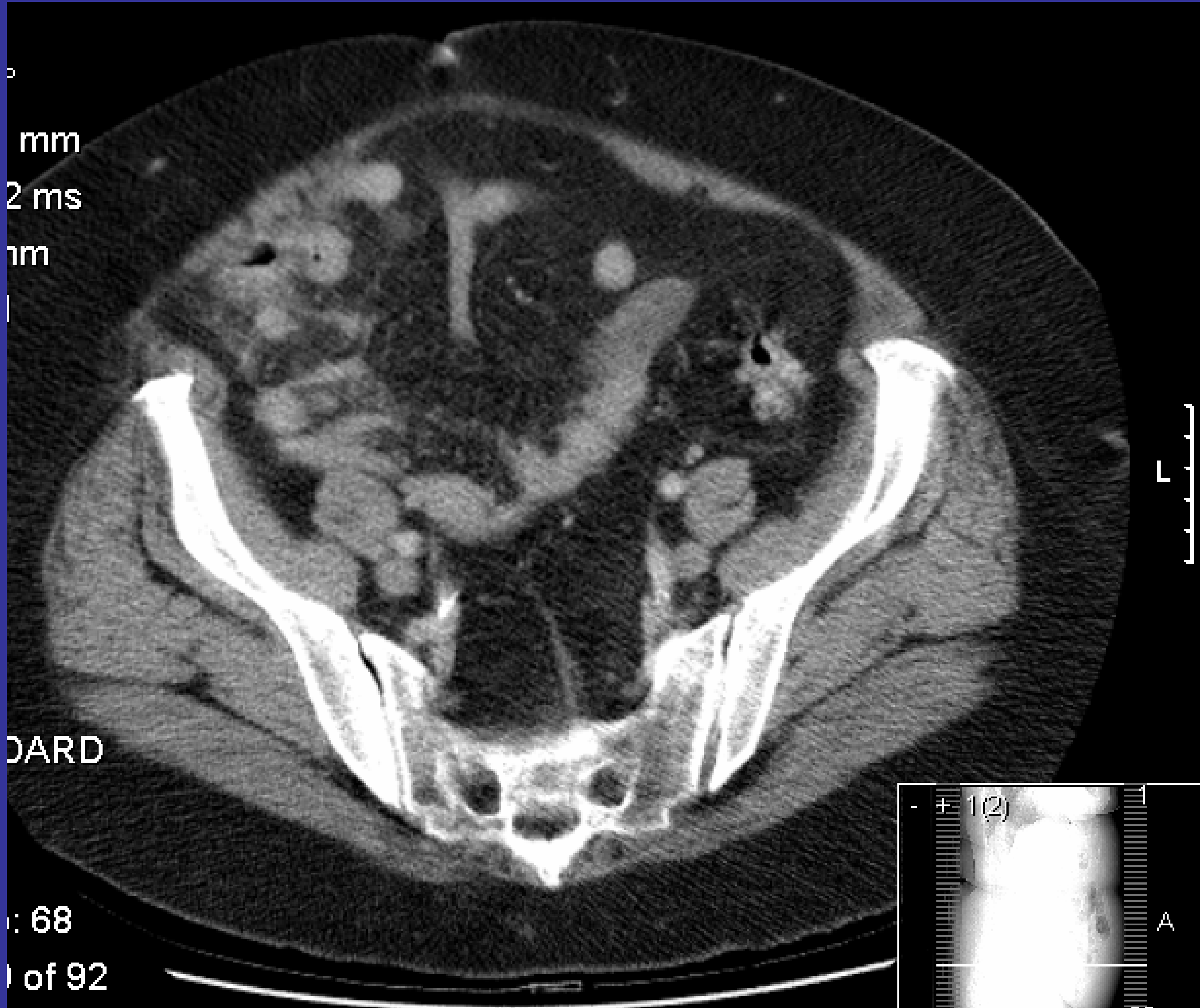
CT: 1. Abnormal Appendix

- Distended lumen and total diameter ≥ 7mm
  (normal can be up to 10mm!)
- Wall thickening and target sign
- Appendicolith (25%)

CT: 2. Local Inflammation

- Found in 98%

- Linear streaky densities
- Clouding of mesentery
- Free peritoneal fluid
- Mesenteric lymphadenopathy



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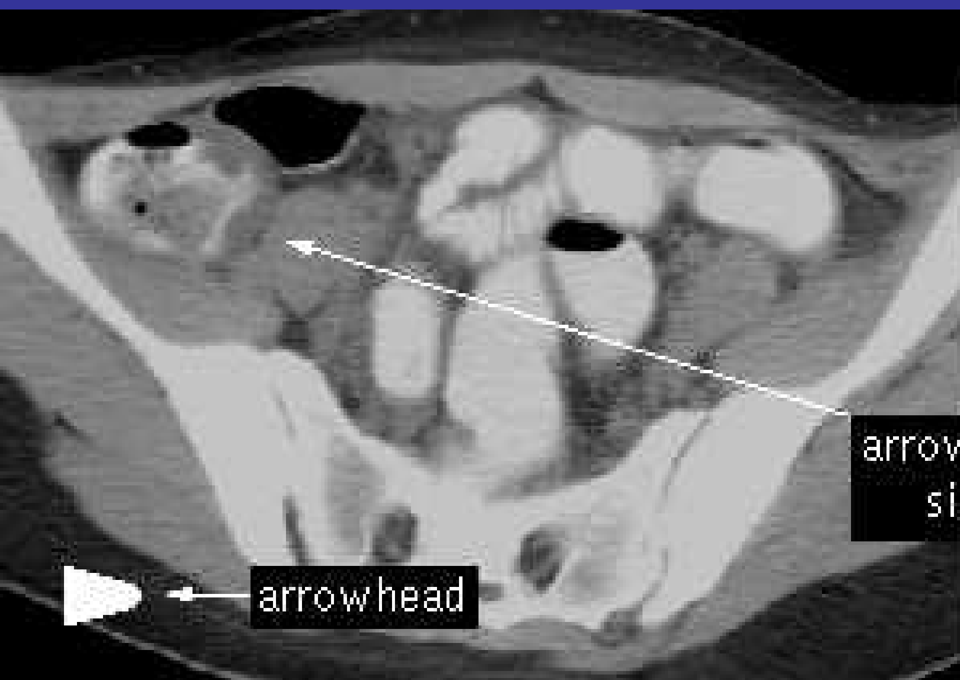
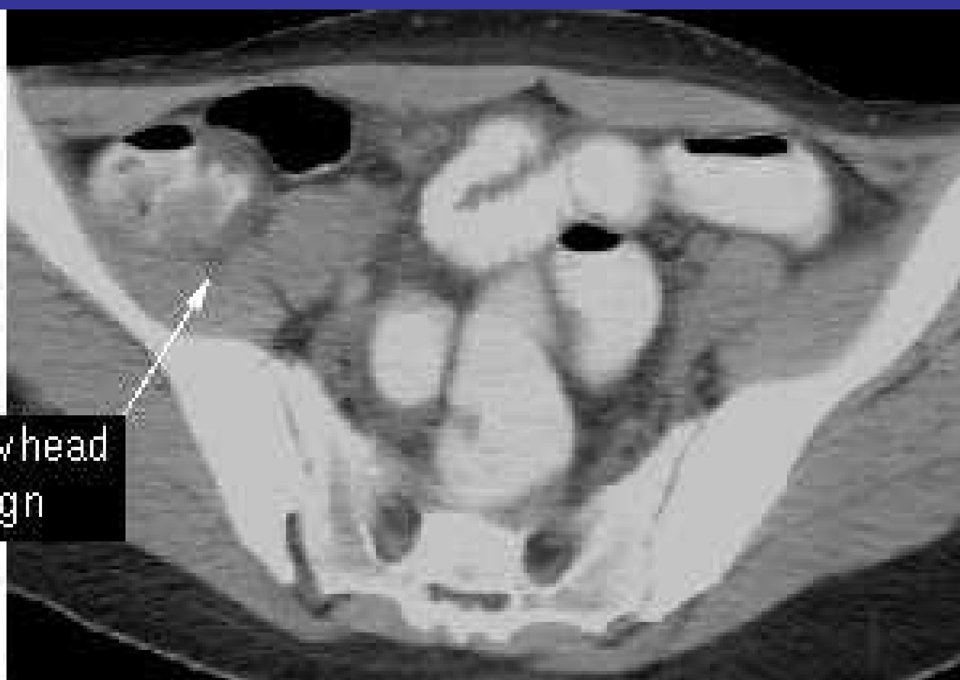
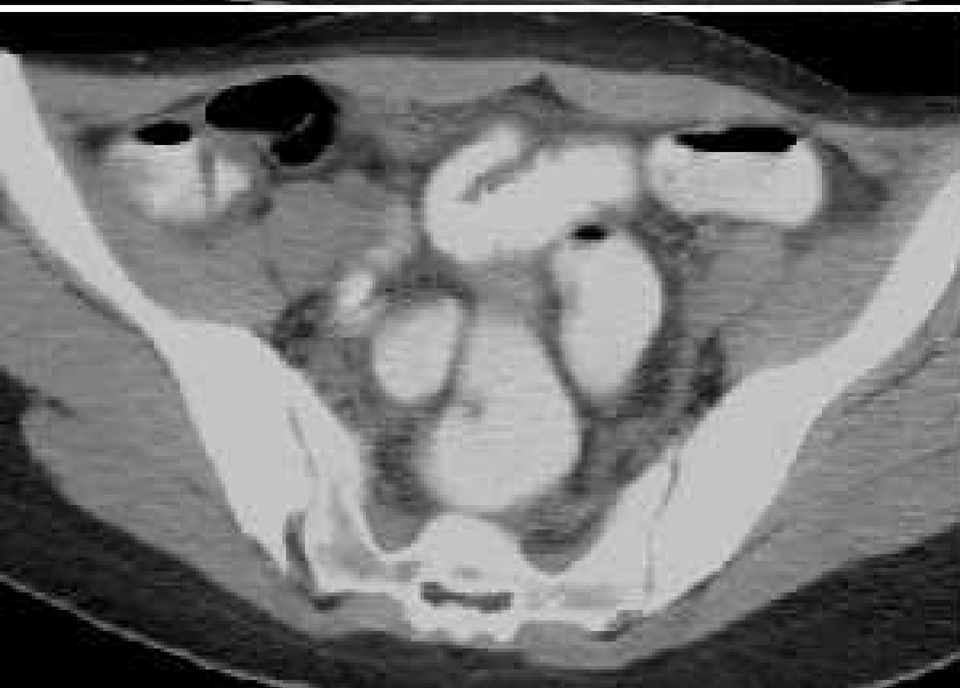
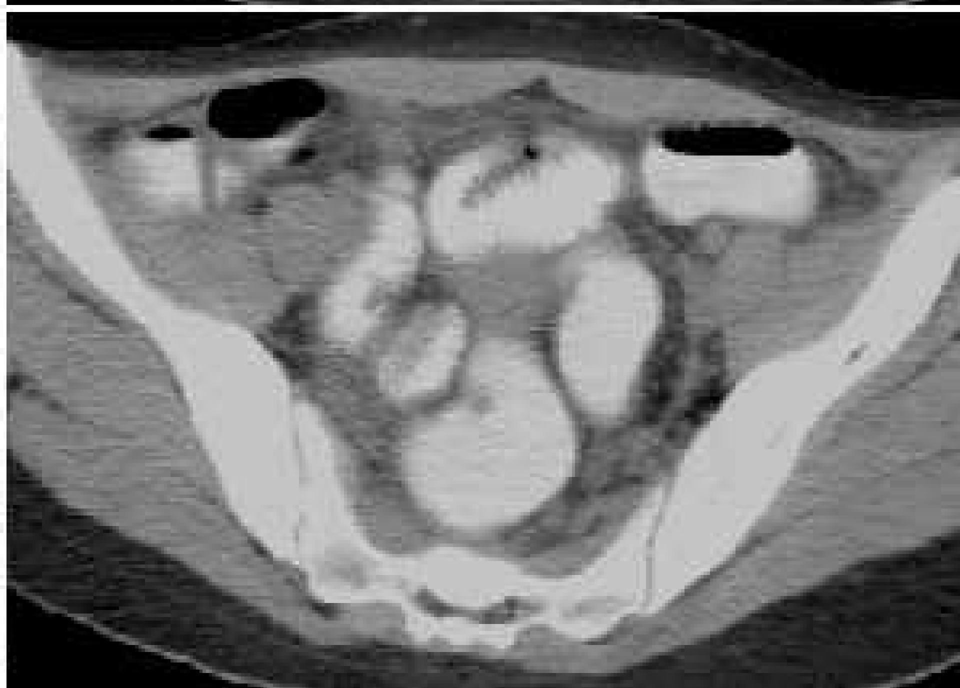
CT: 3. Caecal thickening

- Present in 80%
- ‘Arrowhead sign’
  - Funnel of contrast medium in caecum symmetrically centred about an occluded appendix orifice


arrowhead
arrowhead sign







CT: False Negatives

- Overlap in range of maximal appendix diameter (inflammed v. uninflammed?)
- Mistaken for unopacified bowel
- Inflammation confined to tip of appendix

Appendicitis

- Mortality rate 1%

- Differential Diagnosis
  - Mesenteric adenitis
  - Colitis / Crohns
  - Diverticulitis
  - Ovarian torsion
  - PID
  - SBO
  - Pancreatitis

- Only ~ 30% of children referred for "?appendicitis" actually had it