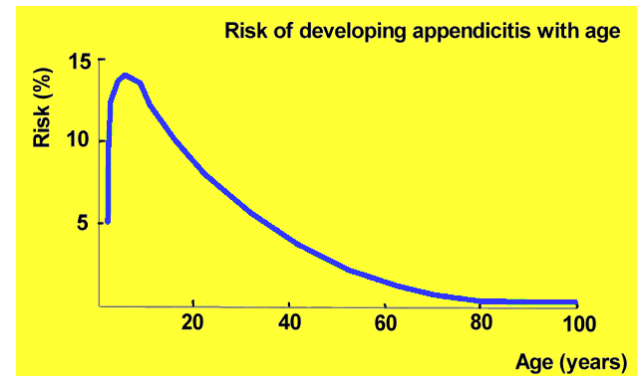


Sudden inflammation of appendix usually caused by luminal obstruction (e.g. by faecolith, worms, tumour, or infective lymphoid hyperplasia) resulting in invasion of appendix wall by gut flora. If it ruptures may → peritonitis, or inflamed appendix may be surrounded by omentum → appendix mass or abscess.

### Epidemiology

- Commonest cause of an acute abdomen.
- 6-10% lifetime risk. The incidence is falling.
- Uncommon aged <2 or >80.
- Accounts for about 2% of hospital admissions
- 93% of repeated assessments gives right dx
- Normal appendix removed at 10-20% appendicectomies.
- M>F.
- Living in the Antarctic (high incidence)



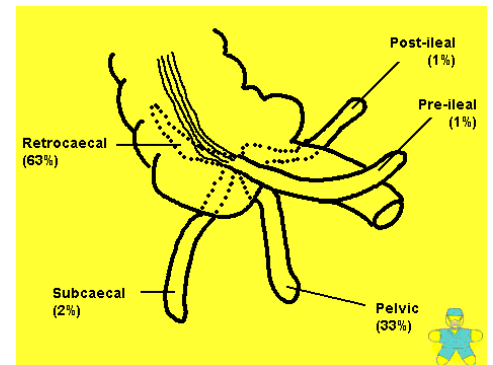
### Presentation

*History:* Classic symptoms often missing.

- Central const abdo pain migrating to RIF, worse on moving
- Anorexia (60-90%)
- Nausea (75%) & vomiting (55%)
- Constipation or small volume diarrhoea (10%)
- May have foetor or coated tongue

*Exam:*

- Low-grade pyrexia, tachycardia
- Localised tenderness in RIF (65%) with guarding (10%) & rebound (50%)
- Rovsing's sign = pain in RIF on rebound palpation of the LIF
- Psoas sign = RIF pain with hyperextension of right hip
- Obturator sign = RIF pain with internal rotation of right hip
- May be maximally tender at McBurney's point & on PR depending on appendix orientation



### Differential Diagnosis

*Causes of right iliac fossa pain*

- Mesenteric adenitis
- Urinary tract infection
- Non-specific abdominal pain
- Pelvic inflammatory disease
- Renal colic
- Ectopic pregnancy
- Constipation

*Causes of right iliac fossa mass*

- Crohn's disease
- Caecal carcinoma
- Mucocele of the gallbladder
- Psoas abscess
- Pelvic kidney
- Ovarian cyst

### Investigations

Essentially a clinical diagnosis.

*Urine:* NB 30% may have RBC or WBC & 15% have bacturia.

*Bloods:* FBC (↑WCC/neut ~80%, Pos LR1.5-2.5), βhCG, CRP (non-specific & often normal early on)

*Imaging:* USS (unable to visualise in ~10%, sens ~85%, spec ~95%), CT (93% sens & 98% spec)

*Other:* Therapeutic laparoscopy (particularly in young F as perforation may → infertility)

## Scoring systems

Alvarado (MANTRELS) score:

- Migration of pain +1
- Anorexia/UA ketones +1
- Nausea - vomiting +1
- Tenderness in RIF +2
- Rebound tenderness +1
- Elevated temp +1
- Leucocytosis +2
- Shift left (neutrophils) +1 [Excluded in Modified Alvarado score]

Score interpretation:

- <5 unlikely (92-100% NPV), 5-6 possible (imaging/obs).  $\geq 7$  = likely (OT)
- Poorer with F and at extremes of age.

## Computer-aided diagnosis

- Sensitivity 90%
- Decreases perforation & -ve laparotomy rate by 50%.
- But requires hospital to collect & generate local patient DB

## Management

*Supportive:* NBM, IVF, analgesia (opiate analgesia does not mask peritonism). Observation for 12-24hr in children if diagnosis uncertain is safe if afebrile & normocardic.

*Antibiotics:* should not be given until a decision to operate has been made.

*Surgery:*

- If classical signs OT, else if afebrile & normocardic may be safely observed for 12-24h
- If perforated, surgery often delayed by ~6hr for aggressive resus first
- Lower threshold for OT in women of child bearing age.
- Negative appendectomy rate ~10-20%
- Laparoscopy: ↓Operative mortality & morbidity, but time consuming & req expertise.
- Open laparotomy: if normal Appdx check for Meckel's, salpingitis, Crohn's disease

## Complications

- Perforation at presentation ~20% (more common in the <5y (~50%) & elderly (30%))
- Appendix abscess: surgical drainage.
- Appendix mass: Initial Rx - fluids, analgesia & ABx. OT if mass enlarges or patient deteriorates otherwise consider delayed OT in ~3mo.
- Post-op wound infection 5-20%, decreased by perioperative antibiotics
- Other acute Cx include pelvic abscess, subphrenic abscess, paralytic ileus & septicaemia.
- Long term complications: adhesions (uncommon), infertility (females)
- Stump appendicitis
- In pregnancy miscarriage rate 5% if non-perforated or up to 30% if perforated.

## Prognosis

- Mortality: Non-perforated appendicitis <0.1%, perforated 0.5%

## Paediatric Appendicitis Score

| Pain   |   |           |
|--|---|-----------|
| Migration of pain                              | 1 |           |
| Right lower quadrant tenderness                | 2 |           |
| Cough / hopping / percussion tenderness in RLQ | 2 |           |
| GI Symptoms                                    |   |           |
| Anorexia                                       | 1 |           |
| Nausea or vomiting                             | 1 |           |
| Inflammation                                   |   |           |
| Fever >37.2 C                                  | 1 |           |
| <b>Clinical Subtotal-PAS (Sub-PAS score)</b>   |   | <b>8</b>  |
| White cell count >10,000                       | 1 |           |
| White blood cell count >75% neutrophils        | 1 |           |
| <b>Total PAS score</b>                         |   | <b>10</b> |

Risk Level of Appendicitis:

| Risk level              | Score                           |
|-------------------------|---------------------------------|
| High risk score         | Sub-PAS $\geq 6$ , PAS $\geq 8$ |
| Intermediate risk score | Sub-PAS 3-5, PAS 5-7            |
| Low risk score          | Sub-PAS $\leq 2$ , PAS $\leq 4$ |