Surgery

Aneurysm

- Localised abnormal arterial dilatation due to vessel wall weakness
  - true (intravascular) - splitting or stretching of arterial wall layers e.g. aorta, femoral
  - false (extravascular) - bleed contained within connective tissue e.g. trauma, surgery
  - caused by atherosclerosis, vasculitis, infection, trauma, congenital malformation, CTDs
- Cerebral - may present as subarachnoid haemorrhage in aged > 40 years
- Popliteal - commonest peripheral aneurysm, often bilateral; associated with AAA

Aortic aneurysm

- Majority abdominal, below level of renal arteries, diameter > 3cm; asymptomatic
- Risks - male sex, atherosclerosis, smoking, HTN, COPD, hyperlipidaemia, FH
- Symptoms - back / abdominal pain, limb ischaemia, hydronephrosis
- Management - USS, CT / MRI; conservative if < 5.5cm (USS monitoring, risk factors)
  - if > 5.5cm but stable - elective surgery (EVAR if > 1.2cm below renal arteries)
  - inform DVLA if > 6cm; cannot drive if > 6.5cm / 5.5cm if HGV
- Prognosis - 2.5% mortality for repair, 80% annual mortality if > 5cm / rupture
- Rupture - pain, hypotension, pulsatile mass, syncope, vomiting
  - requires urgent cross-match and graft surgery - up to 80% mortality

Aortic dissection

- Tear in tunica intima leading to haematoma within false lumen between intima / adventitia
  - majority occur in aortic arch or descending aorta distal to left subclavian artery
- Symptoms - sudden dynamic tearing chest pain, may be interscapular radiation, HTN
  - also aortic regurgitation, angina, SVCO, neurological deficits, transient pulse loss
- Investigations - ECG (may be ischaemia), USS / MRI (before ACS protocol if suspected)
- Management - control BP e.g. IV beta-blocker, IVT / transfusion, endovascular surgery
- Complications - branch occlusion, rupture - cardiac failure / tamponade, haemothorax

Appendicitis

- Commonest cause of acute abdomen; usually men aged 10-20 years
- Symptoms - early diffuse periumbilical pain for hours, then progressive severe RIF pain
  - associated with anorexia, nausea, constipation; exacerbated by movement, coughing
  - RIF tenderness and guarding; retrocaecal / pelvic appendix may only be PR tenderness
  - Rovsing’s sign (palpate LIF, RIF pain); McBurney’s point (1/3 from ASIS to umbilicus)
- Management - CT most reliable for diagnosis; urgent laparoscopic appendicectomy
- Complications - wound infection, adhesions, appendix / pelvic abscess, paralytic ileus
  - perforation (up to 30%; may be ‘stage of illusion’ in child) - risk of infertility in women
Bowel ischaemia

- GI tract blood supply:
  - **foregut** - pharynx to duodenum - supplied by *coeliac trunk*
  - **midgut** - duodenum to hepatic flexure - supplied by *superior mesenteric artery*
  - **hindgut** - hepatic flexure to anal canal - supplied by *inferior mesenteric artery*
- Symptoms - diffuse severe colicky abdominal pain, often with few signs prior to peritonism
- **Acute mesenteric ischaemia** - aged > 50 years, arterial thromboembolic risk, appendicitis
  - consider mebeverine, antithrombotics, *surgical embolectomy*, bowel resection
- **Chronic mesenteric ischaemia** - atherosclerosis of mesenteric arteries
  - leads to weight loss, **post-prandial pain** (‘intestinal angina’), fear of eating
  - requires vascular surgery - *mesenteric endarterectomy*, bypass, angioplasty, stents
- **Ischaemic colitis** - usually around *splenic flexure*; due to thromboembolism, surgery, drugs
  - may be **LIF pain** with nausea, vomiting, PR bleed (late); causes *metabolic acidosis*

Cholelithiasis

- Common with increasing age, FH, sudden weight loss, DM, COCP; mostly asymptomatic
  - drugs - COCP, co-amoxiclav, erythromycin, flucloracillin, sulphonylureas
  - smoking, obesity, parity increase risk of becoming symptomatic
- Primarily **cholesterol** stones (large, solitary); also **pigment** (small, irregular; in haemolysis)
  - majority are *radiolucent* (cf. renal stones); 10% radio-opaque (mixed, calcium)
  - reside in *Hartmann’s pouch* (gallbladder neck), may proceed through cystic duct to CBD
- **Obstructive jaundice** usually only occurs once stones reach the CBD
  - **Mirizzi’s syndrome** - large stone in Hartmann’s pouch externally compresses CBD/HD
  - **Courvoisier's law** - palpable gallbladder makes gallstones unlikely cause of jaundice
- Investigations - USS finds most proximal to CBD; MRCP / CT for more distal stones
  - CBD dilatation > 7mm suggests stones, even if they cannot be visualised on USS
- Management - analgesia (e.g. morphine, PR diclofenac); NBM, IVT if systemically unwell
  - consider IV antibiotics e.g. 1.2g co-amoxiclav 8-hourly infusion
  - **ERCP** - to remove bile duct stones / stent ducts
  - **laparoscopic cholecystectomy** unless biliary cancer, portal hypertension
    - **post-cholecystectomy syndrome** - chronic GI upset / pain / diarrhoea
  - **PTBD** - transhepatic biliary duct drainage e.g. if distal biliary tumour

Biliary colic

- Commonest presentation; **gallstone impaction** in or beyond cystic duct
- Symptoms - **RUQ pain** radiating to back / interscapular, lasts hours; nausea, vomiting
  - may follow fatty meal; patients *restless* but systemically well; spontaneously resolves
Acute cholecystitis

- Presents similar to biliary colic but with *systemic upset* - fever, local peritonism, high WCC
  - **Murphy’s sign** - arrest of inspiration on palpation of RUQ (should not be bilateral!)
  - patients prefer to stay still (cf. biliary colic)

Ascending cholangitis

- Biliary infection secondary to gallstones, ERCP, tumours, parasitic obstruction (liver flukes)
  - infective organisms - *Klebsiella, E. coli, Enterobacter, Enterococci, Streptococci*
- Symptoms - **Charcot’s triad of fever, RUQ pain, jaundice** (hypotension, confusion - pentad)
  - Investigations - WCC (high), blood cultures, LFTs (obstructive), amylase (high)
- Endoscopic drainage may be required

Diverticulosis

- **Mucosal herniation** - mostly in the *sigmoid and descending colon* - 5-20mm diameter
  - common in old age - 50% by age 50; low-fibre diets, NSAIDs; majority asymptomatic
- Symptoms - *left-sided abdominal pain* exacerbated by eating, relieved by defecation
- **Diverticulitis** - LLQ pain, bowel habit change, fever, tachycardia, nausea, anorexia
  - treat with 7 days co-amoxiclav; **mesalazine** may be more effective
- **Haemorrhage** - painless frank PR bleed / clots, majority cease spontaneously, may recur
  - Investigations - flexible sigmoidoscopy, colonoscopy (not in acute diverticulitis), CT
  - Management - high-fibre diet, consider ispaghula husk; surgical resection if severe
  - Complications - **fistulae** (vesicular, vaginal), abscess, stricture, obstruction, perforation

GI surgical procedures

- **Stomas** - *end or loop*; RIF usually *ileostomy* (with spout), LIF usually *colostomy*
- **Hartmann’s procedure** - sigmoid colectomy, rectal stump, temporary end colostomy
- **Ileal pouch anastomosis** (IPA) - pancolectomy, ileorectal pouch, temporary loop ileostomy
- **Abdomino-perineal resection** (APR) - rectosigmoidectomy, end colostomy (distal ca.)
- **Anterior resection** - sigmoid colectomy, colorectal anastomosis (e.g. sigmoid ca.)
- **Whipple’s procedure** - removal of gallbladder, head of pancreas, D1/2 (pylorus-sparing)
  - tail of pancreas joined to D3, CBD and gastric outlet to proximal jejunum
- **Nissen fundoplication** - gastric fundus wrapped 360° around distal oesophagus

Hernias

- **Hiatus** - cause of *dyspepsia* common in West (dietary differences - low fibre, straining)
  - risk factors - age, obesity, ascites, chronic oesophagitis; pregnancy
  - **sliding** (majority; gastro-oesophageal junction ascends); **rolling** (stomach herniates)
  - management - reduce intra-abdominal pressure, high-dose PPI; fundoplication if severe
  - complications - Barrett’s oesophagus, *oesophageal carcinoma*, gastric volvulus
- Inguinal - affect men / premature babies; also obesity, constipation, chronic cough
  - above / medial to pubic tubercle; enter inguinal canal via deep ring / transversalis fascia
  - indirect (majority, may be painful, into testis); direct (affects the elderly)
  - management - routine surgery (Lichtenstein technique - prosthetic mesh); or truss
    - day-case, avoid driving for 1wk, gradually resume activities over 3-6wks
- Femoral - affect women esp. elderly; less common, mostly urgent repairs for strangulation
  - site - below and lateral from pubic tubercle (between inguinal and pectineal ligaments)
  - strangulation - red, tender, tense, irreducible with colicky abdominal pain, vomiting
- Epigastric - affect men; along linea alba; may be pain, nausea; all repaired (strangulation)
- Umbilical - affect multiparous women; may be pain; usually repaired
- Littre's - contains Meckel's diverticulum; usually inguinal

### Intestinal obstruction

- Small bowel obstruction significantly more common than large bowel
  - extraluminal causes - adhesions, strangulated hernia, volvulus, compression
  - mural causes - tumours (caecal, colonic), infarction, Crohn’s disease, strictures
  - intraluminal causes - impacted faeces, gallstone, foreign body, polyps, intussusception
- Symptoms - diffuse colicky abdominal pain / distension, constipation, vomiting
- Signs - dehydration, visible peristalsis, hyper-resonance, active / tinkling bowel sounds
- Investigations - erect CXR (air under diaphragm), AXR (small bowel ‘laddering’), USS
  - valvulae conniventes (small bowel) span width of bowel loops, normally < 4cm diameter
- Management - NBM, NG decompression, IVT; consider surgical intervention if severe
- Complications - perforation (e.g. caecum), ischaemia, peritonitis, septicaemia

### Paralytic ileus

- usually post-operative but may be due to pseudo-obstruction
  - Oglivie’s syndrome - megacolon after pneumonia, MI, stroke, trauma, DKA, CABG
  - treat with neostigmine, colonoscopic decompression, gastrografin enema
- Volvulus - most commonly sigmoid (‘coffee bean’ appearance); causes bilious vomiting
  - risk factors - elderly, Alzheimer’s, Parkinson’s, MS, psychiatric illness

### Meckel’s diverticulum

- Small intestinal embryological remnant of vitellointestinal duct in distal ileum
  - often asymptomatic but may contain heterotypic tissue (e.g. gastric mucosa)
- Complications - small neoplastic risk; rarely vesicodiverticular fistula, daughter diverticula
  - haemorrhage - painless frank PR blood, may be melaena; can cause significant loss
  - obstruction - may mimic appendicitis (‘Meckel’s diverticulitis’)
  - umbilical anomalies - fistula, cyst, sinus leading to infection, abscess, excoriation
- Surgical resection if complications, age < 40, large / narrow / inflamed / heterotypic
Neck lumps

- **Lipoma** - soft, mobile, fluctuant, may become very large
- **Sebaceous cyst** - common on scalp, soft, attached to skin, central punctum
- **Neurofibroma** - small, firm, smooth, mobile; neurofibromatosis
- **Ganglia** - usually dorsum of wrist; synovial origin; ‘strike with bible’ / excise
- **Anterior triangle** (borders sternocleidomastoid, midline, mandible)
  - goitre - midline, moves on swallowing; may be smooth or nodular
  - thyroglossal cyst - midline, embryological remnant, rises on tongue protrusion
  - branchial cyst - at anterior border of SCM, in young adults, contain cholesterol
  - pharyngeal pouch - left-sided, rarely palpable, associated with dysphagia / vomiting
  - carotid body tumour - may be bilateral, in middle-age, pulsatile, 10% malignant
- **Posterior triangle** (borders sternocleidomastoid, clavicle, trapezius)
  - cystic hygroma - in supraclavicular fossa, in infants, soft, transilluminates

Oesophageal obstruction

- **Strictures, webs** (mucosal), **rings** (mucosal or muscular) leading to dysphagia
  - also reflux, regurgitation, weight loss, dry cough
- **Benign strictures** usually caused by GORD; also postoperative, alendronate, NSAIDs
- **Rings** - type A (rare, near LOS), type B (Schatzki, hiatus hernia), type C (crural indentation)
- **Extrinsic compression** - aortic aneurysm, lung ca., retrosternal thyroid, hilar lymph nodes
- Management of strictures / rings - *endoscopic balloon dilation*, PPIs

Paterson-Brown-Kelly (Plummer-Vinson) Syndrome

- **Post-cricoid web** due to iron deficiency anaemia affecting middle-aged women
  - painless upper oesophageal intermittent solid food dysphagia; weight loss, glossitis
  - risk of oesophageal carcinoma and aspiration pneumonia
- Investigations - barium swallow or videofluoroscopy; biopsy if suspected carcinoma
  - *identify and address cause of iron deficiency anaemia*
- Management - iron supplements usually sufficient; balloon dilatation if persistent

Achalasia

- **LOS hypermotility** causing impaired peristalsis: dysphagia / regurgitation in young adults
  - commonly associated with reflux / retrosternal chest pain, nocturnal cough / aspiration
  - risk of oesophageal carcinoma
- Investigations - diagnosed with manometry (pressure measurement)
  - classical ‘bird’s beak’ on barium swallow; may be oesophageal dilatation on CXR
- Management - *pneumatic dilatation* (risk of perforation, GORD)
  - laparoscopic Heller myotomy also effective but higher risk of GORD
  - also endoscopic botox injection (low efficacy; if infirm), CCBs, nitrates
Pancreatitis

- Normal exocrine secretions - **proteolytics** (e.g. trypsin), **amylase**, **lipase** (specific)
- Pancreatitis causes **enzymatic autodigestion** and **necrosis**

### Acute

- Majority mild and self-resolving with **reversible damage** but up to 30% mortality if severe
- Causes - **gallstones**, **alcohol**, trauma, **ERCP**, **steroids**, hyperparathyroidism, hepatitis
- Symptoms - sudden onset severe **upper abdominal pain** radiating to back, **vomiting**
  - also **jaundice**, ascites / rigid abdomen, ileus, pleural effusion, **umbilical / flank bruising**
- Investigations - **amylase** (urinary / lipase are diagnostic), calcium (low), USS (gallstones)
  - Glasgow score - pO2, age > 55, neutrophils, calcium, creatinine, LDH, amylase, glucose
  - CT more useful later to assess complications e.g. necrosis
- Management - if mild **supportive care** only - NBM, IVT, pethidine; NG feeding if severe
  - if necrosis - 2wks IV antibiotics; **surgical debridement** if confirmed infection
- Complications - necrosis (infection), pleural effusion, abscess, **pseudo-cyst** (late; juicy)
- Long-term - **cholecystectomy** if gallstones, Creon if severe; **IGT** common but DM rare

### Chronic

- Not clearly related to acute pancreatitis; chronic inflammation causes **irreversible damage**
  - large duct - men; calcification, steatorrhoea; small duct - women; normal imaging
- Causes - uncertain; **alcohol** (moderate or excessive), trauma, **CF** (reduced bicarbonate)
  - also **hereditary** (rare; high carcinoma risk), tropical, autoimmune (common in Japan)
- Symptoms - similar to acute pancreatitis but **episodic** or **continuous** with reduced appetite
  - also **malabsorption** (diarrhoea, steatorrhoea, weight loss), DM
- Investigations - **faecal elastase** (marker of exocrine insufficiency), USS (calcification)
- Management - **enzyme replacement** (Creon), pancreatic suppression (e.g. octreotide)
  - surgery - pancreateoduodenectomy, Beger’s (duodenal-preserving), radical
- Complications - vitamin deficiency, DM, pseudo-cyst, haemorrhage, **pancreatic carcinoma**

### Penile conditions

- **Paraphimosis** - tight prepuce trapped behind swollen glans e.g. post-catheterisation
  - treat initially with damp swab compression and manual reduction
  - if severe consider foreskin punctures, hyaluronidase injection, dorsal incision
- **Peyronie’s disease** - fibrous plaque in **tunica albuginea** causing erect penile angulation
  - associated with Dupuytren’s contracture, DM, IHD, erectile dysfunction, alcohol
  - mostly self-limiting; consider para-aminobenzoate; topical verapamil in trial setting only
  - surgery - Nesbit tuck (shortens penis), plaque excision
Perianal lesions

- **Haemorrhoids** - common; may be above **dentate line** (internal) or below (external)
  - *internal* - I, no prolapse; II, spontaneous reduction; III, manual reduction; IV, irreducible
  - *external* - have sensory innervation; may be visible externally
- risk factors - constipation / straining, ascites, parity, chronic cough, anal sex
- management - high fibre diet, topical steroids, **rubber band ligation**, sclerosant therapy
- surgery - dearterialisation (GA), (stapled) haemorrhoidectomy

- **Anal fissure** - **topical GTN** may be effective; avoid topical steroids

- **Anorectal abscess** - mostly perianal / ischiorectal; chronically will result in **anal fistula**
  - risk factors - anal fissure, anal sex, STDs, IBD, diverticulosis, DM, immunocompromise
  - symptoms - perianal pain / painful defecation, lump, PR pus, fever, constipation
  - management - surgical drainage, close any fistulae

Perioperative assessment

- **Pre-operatively** - young, fit people undergoing elective surgery do not require routine tests
  - U&Es - if renal impairment suspected e.g. HTN, diabetes, diuretic therapy
  - CXR - if significant pulmonary disease e.g. COPD
  - ECG - if significant cardiac disease e.g. past MI
- **Diabetics** may require either GKI or withheld short-acting oral hypoglycaemics
- **Post-operatively** - resume feeds / insulin, assess for general / specific complications
  - *immediate* - anaesthetic / intraoperative complications, **haemorrhage**
  - *early* - HAI esp. **pneumonia**, UTI, wound infection / dehiscence, urinary retention, bed sores, DVT, fluid / electrolyte imbalance
  - *late* - PE
  - *specific* - ileus, RLN damage (thyroid), peritonitis (lap. chole.), pancreatitis (ERCP)

Peripheral vascular disease (PVD)

- Symptoms - **intermittent claudication**, ulceration, gangrene, rest pain (esp. night)
  - claudication affecting thighs / buttocks may be associated with **impotence** (Leriche’s)
- **Critical ischaemia** - pale, pulseless, paraesthesia, paralysis, perishing cold
- **Arterial ulcer** - uncommon; affect distal legs / feet; ‘punched-out’, typically nocturnal pain
- Investigations - **Doppler**, **ABPI** (< 0.8 abnormal, < 0.5 severe, < 0.3 impending gangrene)
- Management - **clopidogrel** (lifelong); consider naftidrofuryl oxalate (peripheral vasodilator)
- **Revascularisation** - when high risk, critical ischaemia, lifestyle measures inadequate
  - endovascular techniques (inc. stents) safer but higher recurrence; otherwise **bypass**
  - 1% diagnostic angiograms result in **limb amputation**
- **Gangrene** - tissue death with putrefaction; **dry** (non-infective) or **wet** (purulent, infective)
  - treat with broad-spectrum antibiotics, revascularise, surgical debridement, amputation
Varicose veins

- Symptoms - pruritis, discomfort, night cramps, restless legs, oedema, paraesthesia
  - short saphenous - below knee, posterolateral; long saphenous - whole leg, medial
- Management - compression stockings (if no arterial disease), surgery if severe
- Varicose eczema - scaling, erythema, vesicles, pigmentation (haemosiderin), ulceration
  - lipodermatosclerosis - hard, tight skin; may lead to ‘champagne bottle leg’
  - atrophie blanche - depressed white scars with surrounding pigmentation; post-ulcer
  - treat with topical steroids when acute, emollients to soothe
- Venous ulcer - common; large, shallow, painless, oedematous; lower legs / medial malleoli
  - often involve perforator damage; risk factors - varicose veins, DVT, trauma, surgery

Testicular disease

Testicular torsion

- Spermatic cord torsion, usually left testis; commonly affects adolescents
- Symptoms - sudden severe testicular pain / swelling, abdominal pain, nausea, vomiting
  - signs - reddened scrotum; swollen, tender, retracted testis with horizontal long axis
- Investigations - doppler USS if doubt; usually clinical diagnosis
- Management - manual reduction, consider nicotinamide (may improve testicular perfusion)
  - orchidopexy (scrotal fixation; usually bilateral); orchidectomy if non-viable
  - if orchidectomy - attempt semen salvage / cryopreservation essentially in all cases
- Complications - testicular infarction, subfertility, recurrence (inc. contralateral)

Testicular swellings

- Epididymal cyst - common age > 40, benign; indistinguishable from spermatocoele
  - swelling posterior to and distinct from the testicle
  - often multiple / bilateral, fluctuant, cystic - transilluminate
  - associated with CF (congenital vas deferens absence), PKD
  - treatment usually unnecessary; surgical excision only if substantial and symptomatic
- Hydrocele - fluid in tunica vaginalis; may be communicating (with peritoneum - newborns)
  - usually idiopathic but may be secondary to infection (e.g. TB) or malignancy
  - soft, non-tender anteroinferior swelling of the hemi-scrotum; transilluminates brightly
  - infantile hydroceles generally repaired (inguinal approach) if unresolved by age 2yrs
- Varicocele - venous dilatation in pampiniform plexus; associated with subfertility
  - commonly on left side, asymptomatic; ‘bag of worms’; may be cough impulse
  - if painful or subfertile consider surgery; may cause testicular damage
Trauma

Fractured neck of femur
- Types - intra/extracapsular, subcapital, transcervical, inter/subtrochanteric
- Symptoms - hip/knee pain, inability to weight-bear, shortened / adducted / externally rotated
- Surgery:
  - **internal fixation (DHS)** - if undisplaced or young / no joint disease (even if displaced)
  - **hemiarthroplasty** - if displaced intracapsular for older / less fit
  - **total hip replacement** - if displaced intracapsular with joint disease but fit, independent

Colles fracture
- Distal radial fracture 4cm proximal to articular surface with dorsal displacement of fragments
  - **dinner-fork deformity**, radial shift of distal fragments, radial shortening
  - may be associated with ulnar styloid fracture and median nerve damage
- Management - **reduction** under LA, consider external fixator
- Complications - carpal tunnel, chronic pain / deformity, arthritis

Compartment syndrome
- **Ischaemia** resulting from compartment pressure exceeding capillary pressure
- Causes - fractures, crush injury, burns, infection, compression, re-perfusion, IM injection
- Symptoms - **pain** (esp. passive movement), tenderness, swelling, sensory deficit
- Management - **surgical decompression** e.g. open fasciotomy
- Complications - necrosis, muscle fibrosis / shortening (Volkmann’s ischaemic contracture)

Upper GI bleed
- More common than lower GI bleed; up to 10% mortality
- Causes - **peptic ulcer**, varices, GI-itis, Mallory-Weiss tear, malignancy, AVM, diathesis
  - **Dieulafoy’s** - submucosal ectatic artery, often gastric; severe bleeding; in men aged 50
- Risk factors - alcohol, NSAIDs, age, chronic renal failure
- Management - fluid resuscitation, **endoscopy**, platelets if active bleeding, FFP if high INR
  - if non-variceal - clipping / coagulation with **adrenaline**; PPI post-endoscopy
  - if variceal - **terlipressin**, band ligation / TIPS if uncontrolled, prophylactic antibiotics

Urinary tract obstruction
- Mostly at pelvi-ureteric and vesico-ureteric junctions, or where ureters cross the pelvic brim
  - intralumenal - **calculi**, thrombus
  - intramural - stricture, tumour
  - extralumenal - **BPH**, tumour, retroperitoneal fibrosis, pancreatitis, Crohn’s, phimosis
- Complications - hydronephrosis, renal impairment, UTI, calculus formation
Benign prostatic hyperplasia (BPH)

- Symptoms - urinary frequency / urgency / hesitancy, strain, nocturia, incomplete emptying
- Management - initially alpha-blocker e.g. tamsulosin - consider doxazocin if HTN
  - 5-alpha reductase inhibitor - finasteride - reduces prostate volume / slows progression
- Surgery - TURP, holmium laser enucleation (HoLEP), open; incision / needle ablation if unfit
- Complications - urinary retention, recurrent UTI, micturition syncope

Renal calculi

- Result from high salt / mineral content in urine; heralded by Randall’s plaque
  - commonly affect men in their 40s; many pass spontaneously over weeks; often recur
  - most calcium-based; others include struvite (stag-horn), cystine, xanthine, urate
  - risk factors - dehydration, hyperparathyroidism, RTA, UTI, HTN, FH, gout, cystinuria
- Symptoms - sudden severe loin to groin pain with fever / rigors, nausea, vomiting, dysuria
  - patients classically writhe around in discomfort
- Investigations - USS, KUB, CT / IVU, sieve urine; serum calcium, phosphate, urate
- Management (conservative) - NSAIDs (IM / PR diclofenac 75mg), PO fluids, anti-emetics
  - consider CCB (e.g. nifedipine) or tamsulosin to encourage stone passage
  - JJ stent if ureteric blockage likely; ESWL for high stones <2cm; uretoscropy / PCNL
  - prevention - thiazides (calcium), allopurinol (urate), calcium citrate (oxalate)

Retroperitoneal fibrosis

- Rare autoimmune inflammatory condition with fibrosis affecting aorta and ureters
  - mostly idiopathic but also beta-blockers, AAA, renal trauma, infection, chemotherapy
  - associated with PBC, RA, SLE, AS, hypothyroidism, glomerulonephritis
- Symptoms - early abdominal / loin / back pain, late obstructive uropathy / renal failure
  - also PVD, fever, weight loss, nausea, vomiting, peripheral oedema
- Management - surgical drainage / ureterolysis, stents; consider prednisolone, azathioprine
- Complications - HTN, intestinal obstruction, jaundice, lower limb neurology