Small intestine

- 2-3m in length
- Enlarged surface area via VILLI and enterocytes
- Main function: absorption, mostly in the duodenum and jejunum
- Peyer’s patches are lymphoid aggregates that take up antigen which stimulate B cells to differentiate into IgA secreting plasma cells to deal with intraluminal antigen
- Brunner’s glands: secrete alkaline mucus to neutralise acid contents entering the duodenum from the stomach. Located in duodenum. Hypertrophy of Brunner’s glands is seen in PUD
- 2 litres of alkaline fluid secreted daily contain mucus and digestive enzymes
- blood supply is from the SMA (at ampulla of vater)

Colon

- approx 1 m in length
- main function: absorption of water, Na and Cl
- blood supply: SMA and IMA

Pectinate line
- Pain not well localised (autonomic nerves)
- Pain at embryological origin (foregut, midgut, hindgut)
- May radiate to specific sites
  - Gall bladder - tip of right scapula
  - Diaphragm - shoulder tip
  - Ureter - inguinal/scrotal
- Associated with visceral Sx
  - Nausea
  - Anorexia
  - Pallor
  - Sweating
- Colic: Characteristic type of visceral pain caused by contraction of smooth muscle against an obstruction, come's and go's in waves, associated with writhing/rolling around and vomiting

**PARIETAL PAIN**
- Parietal peritoneum is innervated by pain sensitive fibres (somatic nerves)
- Pain is therefore well localised to the area overlying the inflammation or irritation
- It is aggravated by movement and characterised by guarding and rebound tenderness

**Abdominal scars**

- **SUBCOSTAL/KOCHER'S**: cholecystectomy
- **RIGHT PARAMEDIAN**: laparotomy
Causes

- Mechanical block
  - In the lumen
    - Food bolus
    - Foreign body
    - Plummer-vinson syndrome (post-cricoid web & chronic iron deficiency anaemia)
  - In the wall
    - Malignant stricture: pharyngeal, oesophageal or gastric cancer
    - Benign oesophageal stricture (caused by GORD, corrosives, RT). Rx: endoscopic balloon dilatation
    - Pharyngeal pouch
    - Trauma e.g. endoscopy
  - Outside the wall
    - Retrosternal goitre
    - Lymphadenopathy
    - Lung Ca
    - Aortic aneurysm

- Motility disorders
  - Achalasia: degeneration of the myenteric plexus which leads to failure of relaxation of the lower oesophageal sphincter, associated with squamous cell carcinoma
    - Sx: dysphagia, regurgitation, substernal cramps and weight loss
    - Barium swallow: dilated tapering oesophagus (bird beak)
  - Rx
    - endoscopic balloon dilatation
    - Heller’s cardiomyotomy
    - Botulinum injection (new technique has good results)
  - Bulbar/pseudobulbar palsies
  - Crest disease
  - Chagas disease
  - Myasthenia gravis
  - Oesophageal spasm
    - causes intermittent dysphagia +/- chest pain
    - Barium swallow: abnormal contractions
Bulking agents
- E.g. Fybogel, isphagula husk
- Increase faecal mass therefore stimulate peristalsis

Stimulant laxatives
- E.g. senna, sodium decussate, picosulfate
- Increase intestinal motility (prolonged use may cause hypokalaemia)

Osmotic laxatives
- E.g. lactulose, phosphate enemas
- Retain fluid in the bowel

Lower GI bleed
- Causes
  - V
    - Haemorrhoids
    - Anal fissures
    - Mesenteric ischaemia
    - Angiodysplasia
  - I
    - Diverticulitis
    - Infectious colitis
    - IBD
  - T
    - Malignancy

Steatorrhoea
- Def: “fatty pale stools that are difficult to flush”
- Causes
  - 1. Chronic pancreatitis
  - 2. Coeliac disease
  - 3. Pancreatic/ampulla of Vater obstruction

Pathology
Salivary gland tumours
Disorders of the oesophagus
Motility disorders
Clinical features

▪ 1. Haliptosis
▪ 2. Regurgitating food
▪ 3. Sensation of gurgling in the neck

Ix
▪ Barium swallow

Infectious esophagitis

▪ Cause
  ▪ Candida albicans
  ▪ HSV
  ▪ CMV
  ▪ N.B. most commonly occurs in immunosuppressed patients

▪ Sx
  ▪ Dysphagia

Diffuse Oesophageal Spasm

Def: “Non-peristaltic contractions of the oesophagus”

▪ Sx:
  ▪ Dysphagia, odynophagia, chest pain
  ▪ Precipitated by ingestion of hot/cold liquids
  ▪ Relieved by nitroglycerin (takes few minutes whereas angina takes seconds)

Ix
▪ Barium swallow: “corkscrew shaped oesophagus”
▪ Oesophageal manometry shows high-amplitude, simultaneous contractions

Rx
▪ M
  ▪ Nitrates
  ▪ CCB’s
▪ S
  ▪ Oesophageal myotomy for severe symptoms

Upper GI bleed

▪ Mallory-weiss tear
▪ Oesophageal varices
Gliadin provokes an inflammatory response that results in villous atrophy in proximal small bowel. Caused by an immunological reaction to gliadin found in Wheat, Barley, and Eye Sx
- Asymptomatic
- W/L
- Abdo pain
- Steatorrhoea
- Malaise
- Failure to thrive
- Associations
  - Other autoimmune diseases
  - Dermatitis herpetiformis (Itchy rash, Rx with dapsone)
  - Iron deficiency anaemia
  - Osteomalacia
  - Small bowel lymphoma

Ix
- Antiendomyseal ABs
- Antigliadin ABs (may become negative after treatment)
- Upper GI endoscopy with duodenal Bx’s (increase in lymphocyte density, villous atrophy, crypt hyperplasia)

N.B. Idiopathic mucosal enteropathy is a disorder that presents in the same way as coeliac disease, a jejuna Bx shows villous atrophy but the disorder is unresponsive to dietary gluten withdrawal.

Rx
- Gluten-free diet
  - N.B. Gluten is not found in rice and maize

Carcinoid Tumours

Epid
- Relatively common (50% of small bowel tumours) but carcinoid syndrome is rare

Pathophysiology
- Originate from neuro-endocrine cells
- Most common sites: appendix, terminal ileum, rectum
- Carcinoid syndrome occurs when secondaries in the liver release serotonin into the systemic circulation

Clinical features (carcinoid syndrome)
- Lindsey Davies Fed Brown Rav
  - Local e.g. obstruction
  - Diarrhoea
  - Flushing
  - Bronchospasm
ABx – all the ‘C’s
- Clindamycin
- Ciprofloxacin
- Cephalosporins (third generation)

Ix
- Toxin in stool
- PCR
- Endoscopy shows inflamed mucosa with ‘yellow pseudomembranes’

Rx
- Oral vancomycin
- Metronidazole

Peutz-Jegher’s syndrome
- Autosomal dominant syndrome featuring multiple non-malignant hamartomas throughout the GIT along with hyperpigmented mouth, lips, hands and genitalia
- Associated with ↑ risk of CRC

Haemorrhoids
- Def: “Congested vascular cushions”

RF
- 1. Low fibre diet
- 2. Pregnancy
- 3. Colorectal Ca

Sx
- Fresh blood PR
- Painless (unless thrombosed)

Classification
- First degree: reduce spontaneously
- Second degree: manually reduce
- Third degree: remain prolapsed

Rx
- C
  - Increase fibre intake
  - Toilet behaviour modification
- S