Department of Pathology
Yong Loo Lin School of Medicine

Gastrointestinal tract

Main Function:

- To regulate the intake, processing and absorption of ingested nutrients and disposal of waste products.
- Several specific processes occur during the passage of food – movement (due to peristalsis of the gut), secretion, digestion, absorption and excretion
- All these processes must work well in order for the gut to achieve its ultimate role in the nutritional state of the body

Main function of specific Components

Oesophagus	Conduit between oral cavity and stomach
Stomach	Storage, acid and pepsin secretion for early digestion
Small bowel	Most of the action happens here. Digestion (enzymes provided by pancreas; bile acids for fat emulsification provided by liver) and absorption of nutrients.
Colon	Storage of digested material, small amount of water absorption

Clinicopathologic Correlates:

Structure and Function

Clinical manifestations of GI disease are closely related to its STRUCTURE and FUNCTION.

Structure

- Hollow organ – diseases cause ulceration, perforation, obstructions, bleeding
- Long tubular segments with attached adipose tissue –> possibility of mechanical twisting or telescoping

Function

- Responsible for absorption of ingested nutrients and excretion of waste – hence nutritional deficiencies can occur

Mindmap of Clinicopathologic correlates:
https://medicine.nus.edu.sg/pathweb/pathology-demystified/gastrointestinal-tract/git-ii-clinicopathologic-correlates/

Cardinal signs and symptoms

- Abdominal or chest pain – due to inflammation, obstruction (colic)
- Altered ingestion of food – nausea, vomiting, dysphagia (difficulty in swallowing), or anorexia (lack of appetite)
- Altered bowel movements – diarrhoea or constipation
- Bleeding – Acute or chronic
  Acute GI bleed can result in severe blood loss and hypotensive shock
  Some characteristics of the bleeding / blood provide clues as to source (upper vs lower GIT).
  Chronic bleed results more in anaemia – eg. fatigue, pallor, shortness of breath

Complications:

Acute

- Dehydration – if the GIT is not able to absorb water properly (this is a systemic condition arising from a GIT condition)
- Sepsis
- Hypotensive shock from GI bleeding

Chronic

- Malabsorption(malnutrition, deficiency states)
- Obstruction

Classification of disease

Simplest way is to use both aetiological and anatomical classifications

Anatomy: The GIT can be divided into Upper and Lower GIT. There are several schemes of division:

Upper GI tract – Mouth to Duodenum (Note: For upper GI bleed, usually regarding bleeding above DJ junction)

Lower GI tract – Distal duodenum to Anus

Aetiological classification (table only shows few condition):

Aetiology	UGI	LGI
Vascular	Oesophageal varices	Colon - ischaemic bowel; Angiodysplasia Anal canal - haemorrhoids
Inflammatory / Infectious	Stomach, duodenum - Peptic ulcer disease	Colon, small bowel – Inflammatory bowel disease Appendix – Acute appendicitis
Traumatic / Mechanical	Gastro-oesophageal reflux disease	Colon – Volvulus, diverticular disease
Autoimmune	Stomach – Autoimmune gastritis with pernicious anaemia	Small bowel – Coeliac disease
Neoplastic	Oesophagus – Squamous cell carcinoma, adenocarcinoma	Colorectal carcinoma Familial polyposis coli Other tumours
Congenital	Stomach - Congenital pyloric stenosis	Distal large bowel – Hirschsprung disease

Mindmap GIT diseases overview:
https://medicine.nus.edu.sg/pathweb/pathology-demystified/gastrointestinal-tract/git-iii-classification-of-diseases/

GIT Tumours

The GIT is a good example of learning about neoplasms, in terms of:

1. Nomenclature
2. Progression of premalignant conditions to malignant tumours (eg. Adenoma – Carcinoma sequence)
3. Grading and Staging of malignant tumours

- Where to start? The main types of neoplasms in the GIT follow the layers of the gut wall – so revise your histology and look at the layers one by one.
- Pathology may arise from any of the layers – most tumours arise from the mucosa and the histologic type depends on the native mucosa, which the video will elaborate on.

Mindmap Crash course on GIT tumours:
https://medicine.nus.edu.sg/pathweb/pathology-demystified/gastrointestinal-tract/git-iv-git-tumours-crash-course/

Talking Pots and Slides
https://medicine.nus.edu.sg/pathweb/pathology-demystified/gastrointestinal-tract/git-v-talking-pots-and-slides/

Quiz
https://medicine.nus.edu.sg/pathweb/pathology-demystified/gastrointestinal-tract/git-quiz/