Gastric and duodenal diseases

Important

Notes (Doctors'/students')

431 SURGERY TEAM

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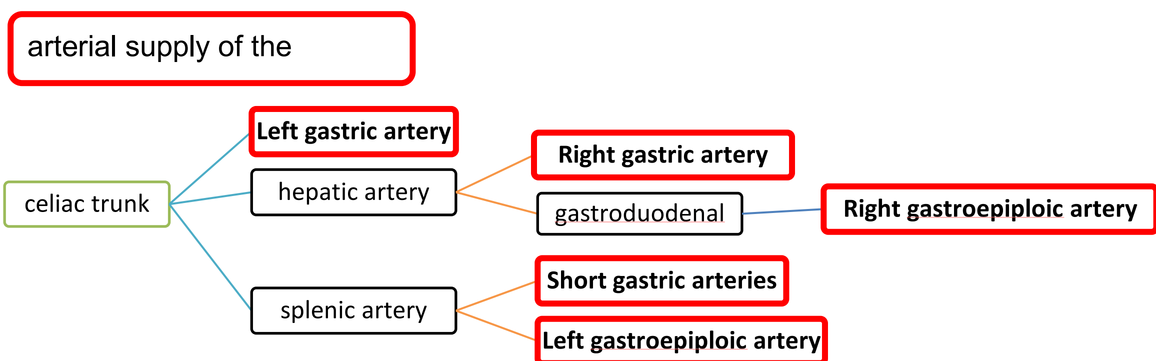
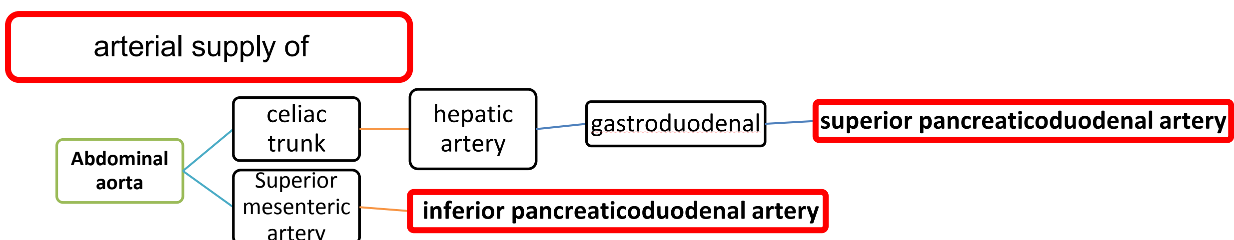
The duodenum is divided into 4 parts, which are closely applied to the head of the pancreas.

- **The 1st part of the Duodenum:**
  - 5 cm long and it is the most common site for occurrence of the peptic ulceration
  - Begins at the pylorus
  - Runs upward and backward on the transpyloric plane at the level of the
  - first lumbar vertebra
- **The relations of this part are as follows:**
  - Anteriorly: The quadrate lobe of the liver and the gallbladder
  - Posteriorly: The lesser sac (first inch only), the gastroduodenal
  - artery (the reason of bleeding in posterior ulcer), the bile duct and portal
  - vein, and the inferior vena
  - Superiorly: The entrance into the lesser sac (the epiploic foramen)
  - Inferiorly: The head of the pancreas.





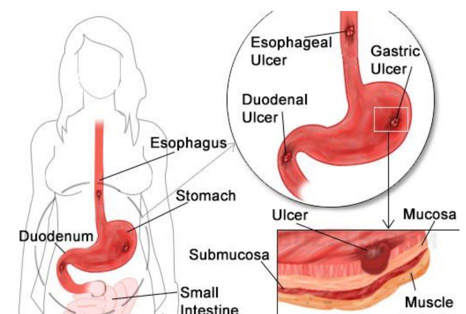
*Dr.Fahad said: before studying this lecture you have to know the mechanism (physiology) of the gastric acid secretion and the GI anatomy.

Diseases of the Stomach and Duodenum:

Peptic Ulcer:

The most common cause of abdominal pain in relation to the stomach and duodenum

Most common sites:
- Esophagus
- Stomach
- Duodenum
- Jejunum (following a gastrojejunostomy)
- Ileum (in relation to ectopic gastric mucosa in Meckel's diverticulum)
- Men are affected three times more than women
- Duodenal ulcers are ten times more common than gastric ulcers in young patients
- In the older age groups the frequency is about equal



- **Clinical presentation:**
  - Pain (mostly epigastric)
  - Bleeding
  - Perforation
  - Obstruction

	Duodenal Ulcer	Gastric ulcer
Information	- 95% occur in the duodenal bulb (2 cm), the first part of the duodenum - They may be acute (ulcers with a history of less than 3 months with no evidence of fibrosis) or chronic Common in young and middle-aged males. - Normal or increased acid secretion - 90% caused by Helicobacter Pylori (GNCB aerophilic)	**95% occur along the lesser curvature in the distal half of the stomach** - Gastric ulcers generally run a chronic course - Common in 40-60 year old males (**Gastric ulcer is more prevalent with older age**) - Gastric ulcers may develop into malignancy much more often than duodenal ulcers **Types:** 1. In Incisura Angularis with normal acid 2. Prepyloric and DU with high acid - Most common type 3. In the Antrum due to NSAIDs 4. At the Gastroesophageal Junction (GEJ)
Clinical Features	- Well-localized epigastric pain (mid-day, noon and night) - **Pain with hunger, and relieved by food**	1. Epigastric pain 2. **The pain occurs during eating and is relieved by vomiting (Patient might lose weight) (very helpful to differentiate it from duodenal)**
Diagnosis	**1.** EGD "Esophageo-gastro-duodeno-scopy" **2.** Gastric analysis: ▪ Basal vs. Maximal (not practical and isn't used nowadays) **3.** Gastrin serum levels: Severe or Refractory (Done if Zollinger-Ellison Syndrome is suspected or the treatment was not effective) **4.** Contrast meal (Used when either endoscopy is contraindicated or complications of the ulcer have occurred) - Before doing all the tests, you must first treat the patient if you suspect duodenal ulcer for at least 6 weeks	- EGD with biopsy (Biopsy is important here to exclude malignancy) - Contrast swallow (Filling defect)
Treatment	**Medical Treatment (80% in 6 weeks)** - H2 antagonist (e.g. Zantac) – control acid secretion - Proton pump inhibitors (e.g. Omeprazol) - Antibiotics (e.g. Amoxicillin): For H. Pylori eradication 2. Surgical Treatment [It has been limited to patients in whom complications have occurred or to block hormonal stimulation] - Vagotomy - Antrectomy and vagotomy - Subtotal gastrectomy	- Medical Treatment: Not common Eradication of H. Pylori - **Surgical Treatment: Usually done to make sure that the ulcer does not develop into cancer** H. Pylori: • Gram –ve, • coccobacilus, • aerophilic

- **Complications of surgical treatment for peptic ulcers:**

1. Early complications:
Leakage, bleeding and retention.

2. Late complications:
   A. Recurrent ulcer (marginal, stomal or anastomotic ulcers)
   B. Gastrojejunocolic and gastrocolic fistula
   C. Dumping syndrome
   - There is no pylorus due to surgery, so the food will go to the small bowel directly due to eating food with osmotic potential
   - Patient will suffer from fainting and sweating
   - Early dumping
   - Late dumping is caused by hypoglycemia
   - Late dumping occurs 1-3 hours after a meal. The pathogenesis is thought to be related to the early development of hyperinsulinemic (reactive) hypoglycemia.
   - Advise the patient to eat less sugar or give him acarbose

   D. Alkaline gastritis
   E. Anemia
   - Iron deficiency
   - Vit. B12 deficiency (Pernicious anemia)

   F. Postvagotomy diarrhea
   G. Chronic gastroparesis
   H. Pylroic obstruction/ stenosis

Dumping syndrome symptoms: (Important)

Medscape

Early dumping

Gastrointestinal symptoms

- Abdominal pain, diarrhea, borborygmi, bloating, nausea

Vasomotor symptoms

- Flushing, palpitations, perspiration, tachycardia, hypotension, syncope

Late dumping

Hypoglycemia

Perspiration, palpitations, hunger, weakness, confusion, tremor, syncope

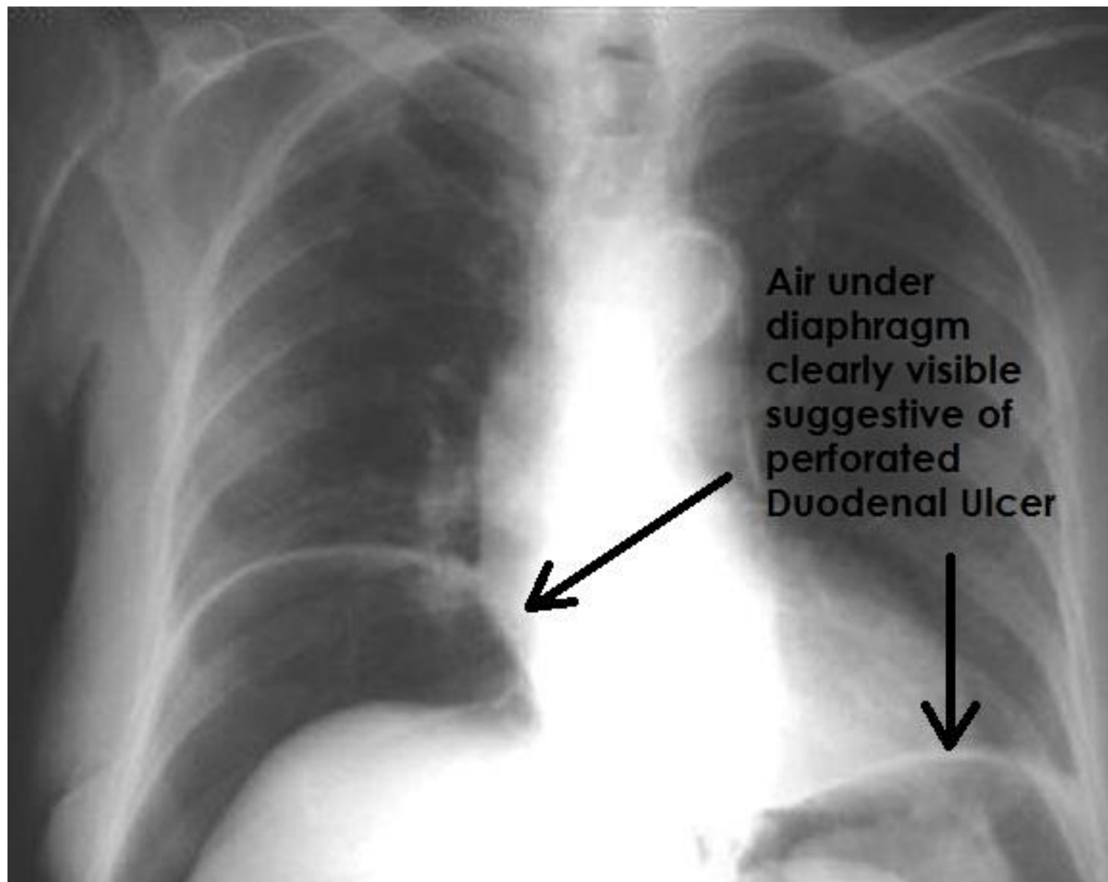
Source: Nat Rev Gastroenterol Hepatol ©2009 Nature Publishing Group

- **Complications of Peptic ulcers:**
  - Pyloric obstruction:
    Dull epigastric pain & projectile vomiting of large volumes of undigested food matter.
    Could be due to stricture formation
    Medical treatment (must make sure pt is taking their medication even if the pain stops)
  - Surgical treatment
    1. Remove and anastomose
    2. Bypass

- **Perforation:**
  Occurs in acute ulcers (duodenal mostly)
  On the anterior wall of the duodenum (duodenal ulcer)
  Anterior ulcers cause perforation, whereas posterior ulcers cause bleeding
  High risk: Female, old age, gastric ulcer
  Acute onset of severe unremitting epigastric pain

Diagnosis: X-ray will demonstrate free air under the diaphragm [which means air in the peritoneum indicating that there is perforation of the viscus] (85%) and fill 400 cc of air by the Nasogastric tube (NGT) [Never do gastroscopy]

Treatment: NGT, ABS, Surgery



ZOLLINGER-ELLISON SYNDROME (Gastrinoma)	
information	- Peptic ulcer disease (often severe) in 95% - Gastric hypersecretion + very high no. of ulcers + gastroma - Elevated serum gastrin - Single one is usually malignant - Multiple is benign (MEN 1)
Presentation	- Diarrhea (steatorrhea due to the inactivation of the pancreatic lipase) and severe persistent epigastric pain
Diagnosis	○ Gastrin levels more than 500 pg/ml ○ CT Scan, somatostatin scan ○ Portal vein blood sample
Treatment	1. Medical treatment: Acid control (massive dose of PPI) 2. Surgical treatment: Distal hemi-gastrectomy and ulcer excision

Upper Gastrointestinal Bleeding:
- Hematemesis
- Melena (passage of dark tarry stools containing decomposing blood that is usually an indication of bleeding in the upper GI)
- Hematochazia (passage of fresh blood through the anus) "Rare"

Common causes	Uncommon causes5%
Common causes Peptic ulcer 45%: **Duodenal ulcer** 25% **Gastric ulcer** 20% Esophageal varices 20% Gastritis 20% Mallory-Weiss syndrome 10%	Gastric carcinoma Esophagitis Pancreatitis Hemobilia Duodenal diverticulum

- **Management:**
  - Resuscitation (ABC)
  - History and physical examination
  - Endoscopy
  - (If the cause is an ulcer we can either put a clip on it, burn it, use a rubber band or injection of a sclerosing agent to form a clot and stop the bleeding)
  - Surgical management

MALLORY-WEISS SYNDROME (mostly young patient with retching or forceful vomiting which will cause bleeding in the UGI)
- Usually caused by severe retching, coughing, or forceful vomiting ⓘ
- 10% of Upper Gastrointestinal Bleeding (UGIB) cases
- 1-4cm longitudinal tear in gastric mucosa at esophageal-gastric junction (most common site)
- EGD is done to confirm diagnosis
- 90% of bleeding stops spontaneously:
  - By cold gastric wash (To induce vasospasm to stop the bleeding)
  - If it doesn't stop, we perform EGD
  - If the tear is small, we can burn it (cautery). If not, it will need surgical intervention.

STRESS GASTRODUODENITIS, STRESS ULCER & ACUTE HEMORRHAEGIC GASTRITIS

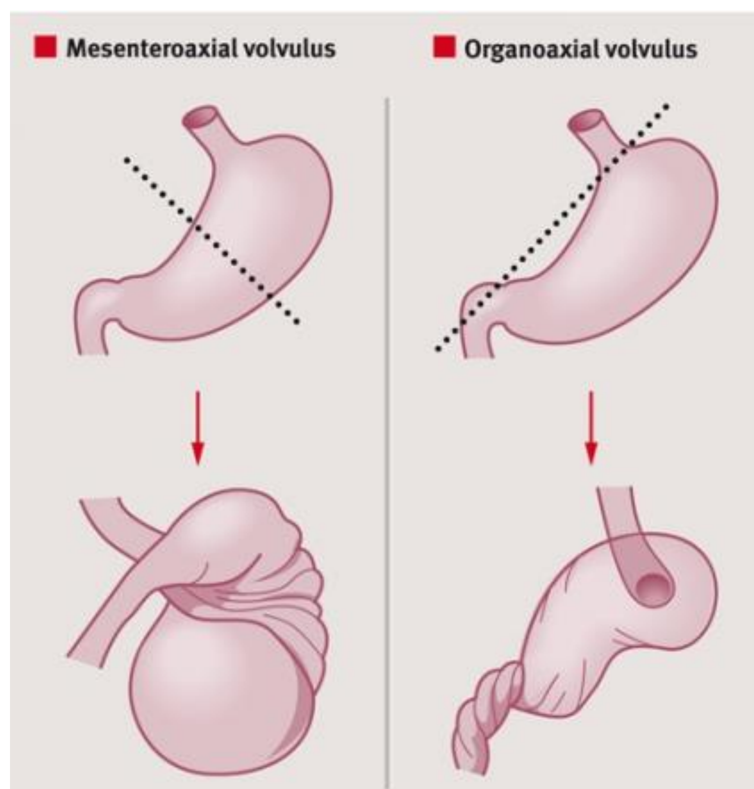
- Curling's ulcer: Ulcer due to burns
- Cushing's ulcer: Ulcer due to the presence of a CNS tumor or injury (more to perforate, high acid production)
- Acute Hemorrhagic Gastritis.

Gastric Polyps Incidentally detected by scope	Gastric Leiomyomas	MENETRIER'S DISEASE	PROLAPSE OF THE GASTRIC MUCOSA Incidentally detected by scope
• Incidental finding • **Type of Gastric polyps:** 1. Hyperplastic – treat with Omeprazole 2. Adenomatous (Premalignant) – most serious 3. Inflammatory • Affects distal part of the stomach • **Presentation:** Anemia • EGD to R/O malignancy • You have to resect the adenomatous type due to its malignant potential	• Incidental finding • Benign smooth muscle tumor • Common submucosal growth • 90% asymptomatic, less than 1% present with massive bleeding • **Diagnosis:** EGD and CT scan (bulging mass in the mucosa on endoscopy) • Never take biopsy (the capsule will break) • Surgical wide excision	• Giant hypertrophy of the gastric rugae (fold) (thick rugae) • Presents with hypoproteinemia • Diarrhea, edema and weight loss • **Treatment:** ○ Atropine (to reduce the secretion) ○ Omeprazole ○ H. Pylori eradication ○ If the patient still has symptoms we perform a gastrectomy (rarely so)	• Occasionally accompanies small gastric ulcer • **Presentation:** Vomiting and abdominal pain • **X-Ray:** Antral folds into duodenum (Double ring on X-ray) [not well defined] • **Treatment:** Antrectomy with Billroth 1

• GASTRIC VOLVULUS

Benign disease, but lethal (can lead to death)

- **Types:**
  1. Its longitudinal axis (Organoaxial volvulus): More common and associated with HH (hiatal hernia)
  2. Transverse (Mesenterioaxial volvulus): Line drawn from the mid lesser curvature to the mid greater curvature - Associated with vomiting (obstruction)



- **Presentation:** Severe abdominal (epigastric) pain and Brochardt's triad

Brochardt's Triad:

- Vomiting followed by retching and then inability to vomit
- Epigastric distention
- **Inability to pass a nasogastric tube**
- **Diagnosis**: Confirmed by a Ground Glass appearance on X-Ray
  – If diagnosed, we should immediately take him to the OR

• GASTRIC DIVERTICULA

- Uncommon
- Asymptomatic
- Weight loss, diarrhea
- It causes anemia
- **Diagnosis:** EGD, X-Ray
- Surgery

•DUODENAL DIVERTICULA

- Affects 20% of the population
- Asymptomatic – incidental finding
- 90% in the medial aspect of the duodenum
- Rare before 40 years of age
- Most are solitary and 2.5 cm peri-ampullary of vater
- It can cause obstruction, bleeding and inflammation
  - If it's asymptomatic, we leave it. If there is superficial cancer, we excise it.

•BEZOAR

Retained concretions of indigestible foreign material in the stomach (foreign body in the stomach)

- **Types:**

1. Trichobezoars: Formed from hair (psych)
2. Phytobezoars: Indigestible plant material

- **Presentation:** Obstruction
- **Diagnosis:** EGD, X-Ray
- **Treatment:** Surgical removal

•BENIGN DUODENAL TUMORS

- Brunner's gland adenomas
- Carcinoid tumors
- Heterotopic gastric mucosa
- Villous adenomas

•SUPERIOR MESENTERIC ARTERY OBSTRUCTION OF THE DUODENUM

- Obstruction of the third portion of the duodenum leads to compression of the Superior mesenteric artery (SMA) and Aorta
- Appears after rapid weight loss following injury
- Distance between two vessels is 10-20 mm
- Proximal bowel obstruction symptoms and signs (Vomiting)
- **Diagnosis:** CT Scan
- **Treatment:** Bypass surgery

Fat is the only thing that lies between the duodenum and the SMA. So when a person is cachexic and chronically ill, the fat will diminish and this will bring the duodenum and SMA closer to each other, leading to the obstruction.

•REGIONAL ENTERITIS OF THE STOMACH & DUODENUM

- Food poisoning
- **Presentation:** Pain and diarrhea
- Clinical diagnosis
- Observation of the patient

MCQs

1- Which of the following is a premalignant condition:

A- Adenomatous gastric polyps
B- Hyperplastic gastric polyps
C- Inflammatory gastric polyps

2- H. Pylori is:

A- Game positive coccobacilus, aerophilic bacteria
B- Game negative coccobacilus, aerophilic bacteria
C- Game positive diplococci anerophilic bacteria

3- All of the following are true regarding Brochardt's Triad except:

A- Patient will present with Vomiting followed by retching
B- Constipation.
C- Inability to pass a nasogastric tube.

4- Features of Dumping syndrome include all of the following except:

A- Tachycardia
B- Sweating
C- Palpitations
D- Constipation
E- Diarrhea

5- Regarding the treatment of duodenal ulcers:

A- Most duodenal ulcers are treated medically with no need for surgical intervention.
B- Endoscopy in bleeding ulcers is a useful diagnostic modality but has no place in therapy.
C- When a vagotomy is performed only one vagus should be divided in order to preserve the pyloric function.

6- Which one of the following statements is true about Mallory-Weiss syndrome:

A- It is caused by H. Pylori organism infection
B- It is a 1-4 cm longitudinal tear in gastric mucosa at EGJ
C- It causes 80% of upper GI bleeding

Answers: 1:A, 2:B, 3:B, 4: D, 5: A, 6:B

Thanks to previous years' team work.