432 Surgery Team

23 Benign Gastric and Duodenal Diseases

Done By:
Maha Adosary

Reviewed By:
Fahad AlShayhan

جامعة الملك سعود
King Saud University

COLOR GUIDE: • Females' Notes • Males' Notes • Important • Additional

Objectives

1. Definition.
2. Presentation.
3. Diagnosis.
4. Treatment.

Benign Gastric and Duodenal Diseases

Introduction:

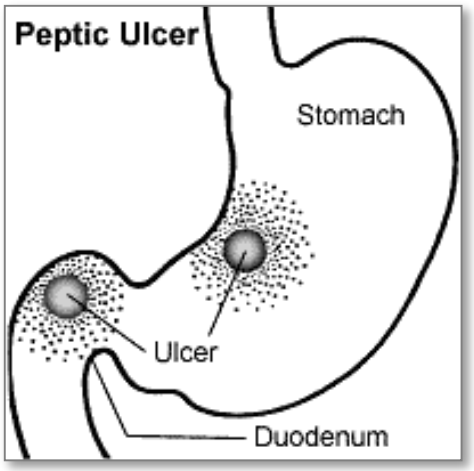
- The duodenum is divided into 4 parts, which are closely applied to the head of the pancreas.
- The 1st part of the Duodenum:
  - 5 cm in length.
  - Most common site for peptic ulceration to occur.
  - Begins at the pylorus.
  - Runs upward and backward on the transpyloric plane at the level of the 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 (that's why posterior ulcers bleed), 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.

The doctor advised us to go through the anatomy and physiology of the stomach and duodenum first.

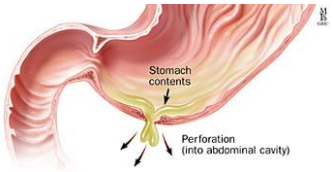
1. Peptic Ulcer:

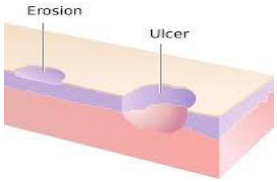
The name peptic is not used anymore because it means acidic and sometimes it's not the cause of the ulcer.

- **Most common cause** of **abdominal pain** related to the stomach and the duodenum.
- **Sites:**
  - Esophagus.
  - Stomach.
  - Duodenum.
  - Jejunum (after surgical construction of gastrojejunostomy).
  - Ileum (in relation to ectopic gastric mucosa in Meckel's diverticulum).
- Men are affected three times as often as 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. "any epigastric pain we have to exclude MI and Aortic aneurysm"
  - Bleeding. If there's fresh blood per rectum you have to first rule out upper GI.
  - Perforation.
  - Obstruction.
  - Vomiting



Ulcer: loss of full thickness of mucosa
Abrasion(erosion): loss of only part of mucosa
Perforation: loss of whole layers





❖Duodenal Ulcer:

- 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. "below age of 40"
- Normal or increased acid secretion.
- 90% caused by Helicobacter Pylori (GNCB aerophilic). GNCB= Gram-Negative-Coccobacillus.
- **Clinical Features:**
  - Well-localized epigastric pain (mid-day, noon and night).
  - Pain when hungry, and is relieved by food. ➔ Weight increases.
- **Diagnosis:**
  1. EGD (Esophageogastroduodenoscopy). **Don't** do it if you're suspecting a perforation!
  2. Gastric analysis: "by acid aspiration"
     - Basal vs. Maximal (not practical and isn't used nowadays).
  3. Gastrin serum levels: "by blood sample"
     - 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 (if there's perforation using gastrografin) 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.
- **Treatment:**
  1. Medical Treatment (80% in 6 weeks)
     - H2 antagonist (e.g. Zantac) – control acid secretion.
     - Proton pump inhibitors (e.g. Omeprazol) more effective; it stops acid from going out to the lumen instead it get stuck in the parietal cells!
     - Antibiotics (e.g. Amoxicillin): For H. Pylori eradication. "for two weeks"
  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.

❖ Gastric Ulcer:

- 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:** We don't need to know types clinically because the treatment will be the same.
  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:**
  1. Epigastric pain.

ⓘBleeding site in duodenal ulcers:
When bleeding (upper GI, presents with vomiting blood) is seen, we suspect the ulcer to be in the posterior wall of the 1st part of the duodenum. Perforation occurs in the anterior wall's ulcer, bleeding more commonly occurs in the posterior ulcer mainly due to the Gastroduodenal artery that lies behind the 1st part of the duodenum.

2. The pain occurs during eating and is relieved by vomiting (Patient might lose weight) **(very to help differentiate from duodenal).**

- **Diagnosis:**
  - EGD with biopsy (Biopsy is important here to exclude malignancy).
  - Contrast swallow (Filling defect). "if above not available"
- **Treatment:**
  - Medical Treatment:
    - Not common.
    - Eradication of H. Pylori.
  - Surgical Treatment: Distal hemi gastrectomy & ulcer excision; usually done to make sure that the ulcer does not develop into cancer.
- **Complications:** 1st step in management in ER with shock, bleeding per mouth or rectum is **ABCs**, No need to wait until reach diagnosis

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: Next page!
      - There is no pylorus due to surgery, so the food will go to the small bowel directly due to eating food with osmotic potential.
      - **Early dumping:** Patient will suffer from hypotension, tachycardia, flushing fainting and sweating. "because of hypovolemia"
      - **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) hypoglycaemia.
      - 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.

Of Peptic ulcers

1. **Pyloric obstruction:**
   A. Dull epigastric pain & projectile vomiting of large volumes of undigested food matter.
   B. Could be due to stricture formation.
   C. Medical treatment (must make sure pt is taking their medication even if the pain stops).
   D. Surgical treatment:
      - Remove and anastomose.
      - Bypass.
2. **Perforation:**
   A. Occurs in acute ulcers (duodenal mostly).
   B. On the anterior wall of the duodenum (duodenal ulcer)
   C. Anterior ulcers cause perforation, whereas posterior ulcers cause bleeding.
   D. **High risk:** Female, old age, gastric ulcer.
   E. **Acute** onset of severe unremitting epigastric pain.
   F. **Diagnosis:** X-ray will demonstrate free air (85%) under the diaphragm [which means air in the peritoneum indicating that there is perforation of the viscus] and fill 400 cc of air by the Nasogastric tube (NGT) [Never do gastroscopy].
   G. **Treatment:** NGT, ABS, Surgery. Also folly's catheter

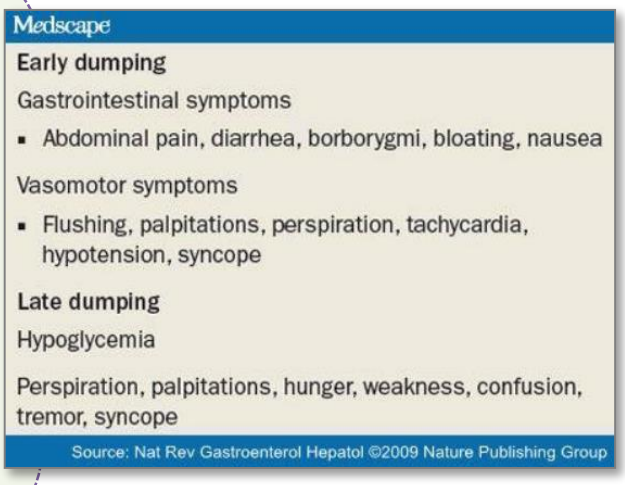
Notes:

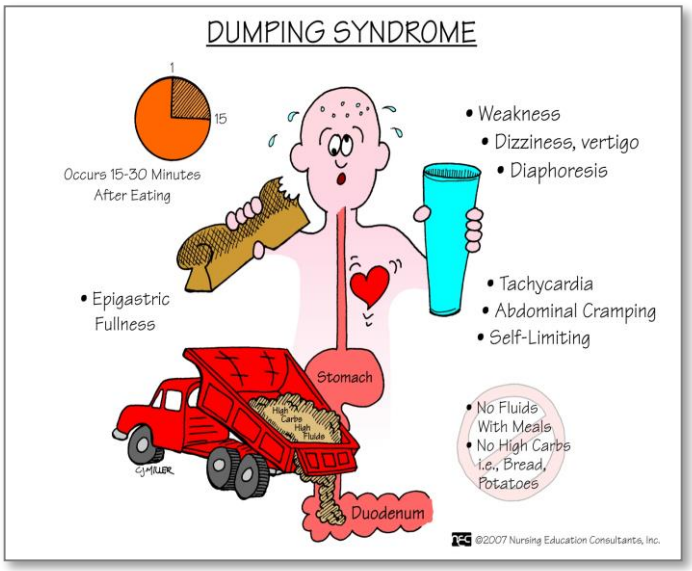
Presentation of obstruction: Vomiting, obstipation and abdominal distension.
How to know where is the obstruction (stomach, small bowel or large bowel)?
1. *Pt. was obstipated first then got distended and then pain then started to vomit ➔ Large bowel.*
2. *Colicky pain, distension and then vomit ➔ Small bowel (most common)*
3. *Only vomiting ➔ Stomach or Duodenal. "with bile →duodenum, without bile →stomach"*

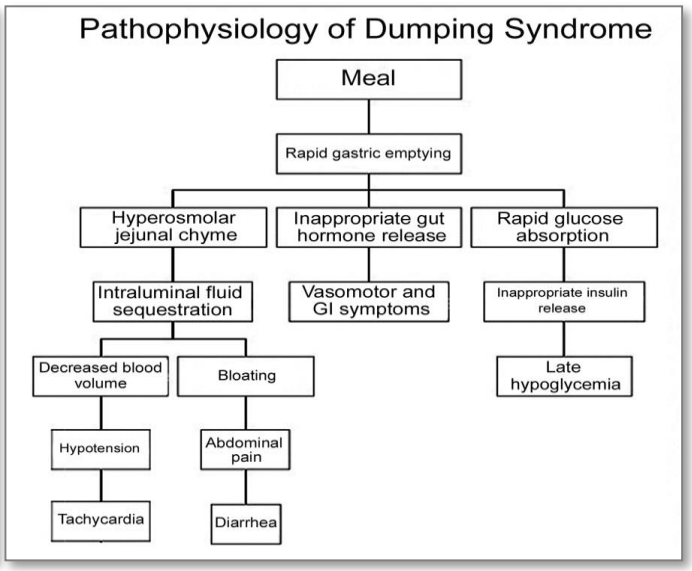
How to diagnose obstruction? Abdominal X-ray.

Dumping Syndrome:

- A condition where the ingested food bypasses the stomach too rapidly and enters the small intestine largely undigested. It happens when the upper end of the small intestine, the duodenum, expands too quickly due to the presence of hyperosmolar food from the stomach. Clinical presentation: Tachycardia, hypotenstion, Flushing, Sweating, Colicky pain, Hypoglycemia and may lead to fainting (seen more in late dumping).







2. Zollinger-Ellison Syndrome (Gastrinoma):

- 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). Could be malignant.
- **Diagnosis:**
  - Gastrin levels **more than 500 pg/ml.**
  - **CT Scan**, somatostatin scan.
  - Portal vein blood sample. "to determine the source"
- **Presentation:** Diarrhea (steatorrhea due to the inactivation of the pancreatic lipase) "because this enzyme doesn't work in acidic media" and severe persistent epigastric pain.
- **Treatment:**
  1. Medical treatment: **Acid control (massive dose of PPI).**
  2. Surgical treatment: Distal hemi-gastrectomy and ulcer excision.

Notes:

Zollinger-Ellison Syndrome is a severe form of ulcers.
If you treat the pt. from ulcer but the pain was persistent with therapy then you have to think of this syndrome!
Elevated Gastrin ➔ tumor in G cells.
How to diagnose? CT scan.
It's always difficult to find.

3. Upper Gastrointestinal Bleeding:

- **Presentation:**
  - Hematemesis.
  - Melena.
  - Hematochezia [Occurs very rarely].
- **Causes of massive upper gastrointestinal hemorrhage:**

Common Causes	Uncommon Causes
• Peptic Ulcer 45%	• Gastric Carcinoma
• Duodenal Ulcer 25%	• Esophagitis
• Gastric Ulcer 20%	• Pancreatitis
• Esophageal Varices 20%	• Hemobilia
• Gastritis 20%	• Duodenal Diverticulum
• Mallory-Weiss Syndrome 10%	

Notes:

Management:

1. *Resuscitation. (ABC) + NGT+ Folly Catheter "to determine fluid volume"*
2. *Detection and endoscopic treatment (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).*
3. *Surgical management.*

4. Mallory-Weiss Syndrome:

- Usually caused by severe retching, coughing, or **forceful vomiting.** In young patients.
- 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.

5. Stress Gastroduodenitis, Stress Ulcer & Acute Hemorrhagic Gastritis:

- Stress ulcer: Ulcer due to shock or sepsis.
- 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.

6. Gastric Polyps:

- Incidental finding; Asymptomatic.
- **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 rule out malignancy.
- You have to resect the adenomatous type due to its malignant potential.

Notes:

*If found through endoscopy, remove the polyp. If the polyp is found to be adenomatous, we do further investigation.**" Need biopsy"***

7. Gastric Leiomyomas: "bulging behind normal mucosa in submucosa"

- Incidental finding. "might present with massive upper GI bleeding"
- 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). "if malignant will spread"
- Surgical wide excision.

8. Menetrier's Disease: Differentiate it from meniere's disease *MCQ*

- Giant **hypertrophy** of the gastric rugae (thick rugae).
- **Presentation**: pt. comes 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 done).

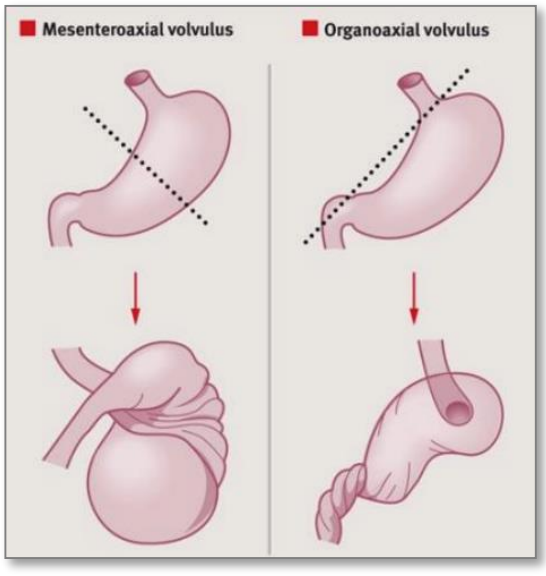
Notes:

Mucosal hypertrophy may lead to abnormally large secretion of protein-rich mucus and acid (This over-secretion contributes to symptoms of epigastric pain and hypoproteinaemia).

9. Prolapse of The Gastric Mucosa:

- 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.

10. Gastric Volvulus: Important!!



- Benign disease, but lethal (can lead to death).
- **Types:**
  1. Its longitudinal axis (Organoaxial volvulus):
     - More common and severe.
     - 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**. "may lead to stomach necrosis"

11. Gastric Diverticula:

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

Notes:

True Diverticulum: from all layers of the tissue
False Diverticulum: only mucosa

12. 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.

Notes:

2nd part of the duodenum is the most common site for diverticulum formation in the GI tract.

13. Bezoar:

- Retained concretions of indigestible foreign material in the stomach (foreign body in the stomach).
- **Types:**
  1. Trichobezoars: Formed from hair.
  2. Phytobezoars: Indigestible plant material.
- **Presentation:** Obstruction.
- **Diagnosis:** EGD, X-Ray.
- **Treatment:** Surgical removal.

14. Benign Duodenal Tumors: The doctor didn't go through it!

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

15. Superior Mesenteric Artery Obstruction of the Duodenum: Very Very Important

- 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:** Feed the pt. to build the fat by naso-duodenal tube; if didn't work do Bypass surgery.

Notes:

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 obstruction.

16. Regional Enteritis Of The Stomach & Duodenum:

The doctor didn't go through it!

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

Notes:

Three emergencies that need immediate intervention:

1. *Gastric volvulus*
2. *Superior mesenteric artery syndrome*
3. *Mesenteric thrombosis*

- E.g. history of Atrial fibrillation; will cause embolization.
- Severe pain, do CT.

SUMMARY

1. Peptic ulcer is the most common cause of abdominal pain related to the stomach and the duodenum.
2. Men are affected three times as often as women.
3. Duodenal Ulcer: Young age and relieved by food ➔ increase weight.
4. Gastric Ulcer: Common in 40-60 of age and relieved by fasting ➔ weight loss.
5. We do scope to diagnose ulcers unless we're suspecting there's perforation then we do x-ray.
6. The most important complication of ulcer surgical treatment: Dumping syndrome.
7. Complications of ulcers: Pyloric obstruction and Perforation.
8. Anterior duodenal ulcers cause perforation, whereas posterior ulcers cause bleeding.
9. If the pain persisted even with therapy; you must consider Zollinger-Ellison Syndrome.
10. Gastric Polyps, Gastric Leiomyomas, Gastric and Duodenal Diverticula are asymptomatic.
11. 2nd part of the duodenum is the most common site for diverticulum formation in the GI tract.
12. Gastric volvulus is a benign disease, but lethal.

Questions

1) Features of Dumping syndrome include all of the following except:
   a. Tachycardia
   b. Sweating
   c. Palpitations
   d. Constipation
   e. Diarrhea

2) Regarding the treatment of duodenal ulcers:
   a. Most duodenal ulcers are treated medically with no need for surgical intervention
   b. Arteriography in bleeding ulcers is a useful diagnostic modality but has no place in therapy
   c. Endoscopy in bleeding ulcers is a useful diagnostic modality but has no place in therapy
   d. When a vagotomy is performed only one vagus should be divided in order to preserve the pyloric function
   e. A Billroth 2 gastrectomy is more physiological and anatomical than highly selective vagotomy

3) 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
   d. 5% of the bleeding stops spontaneously

Answers:

1st Questions: D

2nd Questions: A

3rd Questions: B