GERD

General characteristics:

🔵 it's a **chronic** disease that develops when the **retrograde reflux of gastric contents into the esophagus** (**imbalance between refluxed material and defensive mechanisms**)

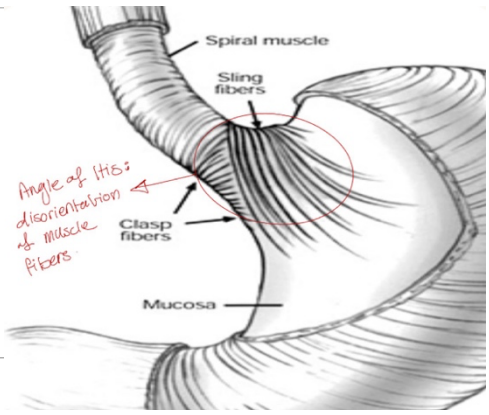
🔵 common in 20% of USA population
🔵 M > F
🔵 Severity of disease depends on:

1. **frequency**
2. **Duration of mucosal acid exposure.**

Normal physiology:

1-Lower esophageal sphincter (It is a **high pressure** zone and the most imp mechanism) → made from multiple components such as:
🔴 A. **Angle of His** (normally shouldn't be more than 60°)
🔴 B. **crus of diaphragm** at T10
🔴 C. **normal contraction** of lower esophageal muscles
🔴 D. **Intra-abdominal esophagus**
2- Fundic compliance → fundus should be **relaxed** to reduce intragastric pressure since normally it should be **less than LES** pressure
3- Normal gastric emptying (Delayed in **DM** and **post-operative** patients)
4- Salivary production and buffering of the acid
5-Normal epithelial barrier function (**tight junction** and **lipid rich matrix** which prevent acid penetration)

Pathophysiology:



🔷 Defensive mechanisms **fail** in 3 ways :

1. **esophageal clearance**→ Salivary, dysmotility
2. **against epithelial injury = failed integrity**
3. **gastric function** = 1) delayed emptying 2) increased pressure 3) ⬇️ compliance

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RF and clinical symptoms:

🔷 RF:

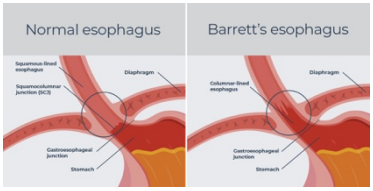
1. Hiatus hernia
2. Obesity
3. Pregnancy
4. Smoking
5. Alcohol
6. High fat + high carb with low protein (**induce relaxation of LES**)

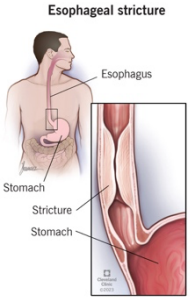
🔵 **Typical clinical symptoms :**
💥 **Heartburn** → MC

💥 **Regurgitation**→ MC
💥 Dysphagia
💥 Odynophagia
💥 Hypersalivation = Water brash

🔵 **Atypical Symptoms :**

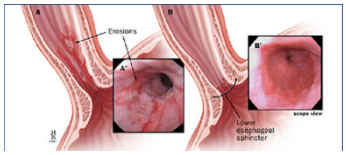
- Chest pain
- Cough
- Adult onset of asthma (50% with asthma have esophagitis abnormal distal esophageal acid exposure)
- Otitis
- **Chest infx and lung fibrosis = aspiration**
- Laryngitis
- Dental erosion
- sinusitis





Complications:

❗ 2 factors makes complications **worse** ⬇️
1- Mechanically defective LES
2- **Mixed** reflux (exposure to acid and alkaline duodenal juice)



🔴 complications include:

1. **Stricture**
2. **Erosive esophagitis**
3. **Barrett esophagus** : premalignant phase - salmon colored esophagus -
   ➡️ metaplastic phase where squamous epithelium is replaced by columnar epithelium (intestinal)
   ➡️ risk of **cancer** (0.2–0.5%) ➡️ occurs in **(10–15%) of GERD patients**
   ➡️ **1/3 of patients are presented with cancer**

Diagnosis:

- **Starts clinically**
- Subjective dx by **PPI** (↤ Medical)→🔷 if it **works** then this is therapeutic and diagnostic
- Detection of **structural abnormality:** (1-Endoscopy with biopsy) = initial evaluation tool + obligatory before Surgery
  ➤ it helps with **grading of esophagitis (↤ using Los Angeles system)**
  ➤ also helps with **hiatus hernia** and grading using **HH system**
  ➤ also with premalignant pathologies / Detect for other pathologies

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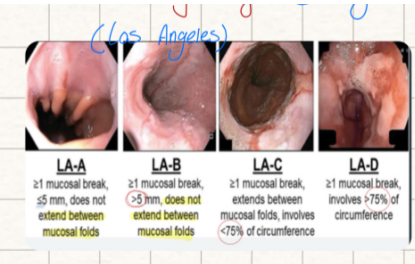
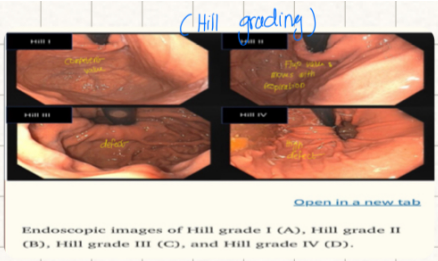
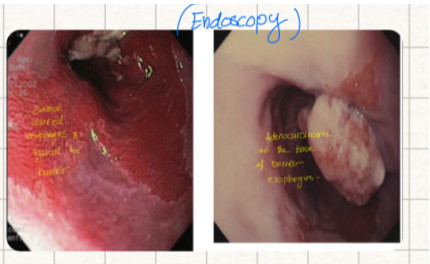
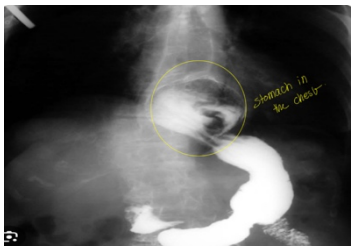
Hill1= competent value Hill 2 = flap value (moves with resp.) Hill 3 = defect Hill 4 = high defect







2- Barium Swallow



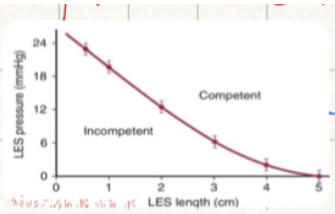
➤ to assess the **size** and **type** of Hiatus hernia
➤ also for the **peristalsis of esophagus with evaluation of the stomach and duodenum**
➤ Demonstration of **reflux** (40% only but that doesn't exclude it)

→Assess **Functional abnormalities**:
🅰 Esophageal manometry → assesses→ **Sphincter status and peristalsis**

🔷 Note that we consider the sphincter defective when: 1- Pressure <6mmHg 2- Intra-abdominal esophageal length <1 cm 3- Sphincter length <2 cm

Normal manometric values of the distal esophageal sphincter, n = 50

PARAMETER	MEDIAN VALUE	2.5TH PERCENTILE	97.5TH PERCENTILE
Pressure (mmHg)	13	5.8	27.7
Overall length (cm)	3.6	2.1	5.6
Abdominal length (cm)	2	0.9	4.7

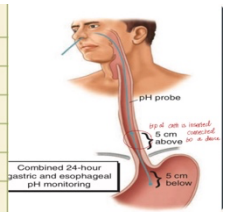


length ∝ 1/pressure

🅰 **24-h pH ambulatory impedance Study:**
🔷 Indicated ? **Atypical symptoms** / **absence of esophagitis** / **atypical response to medical tx**
🔷 Not obligatory→ In **typical symptoms and esophagitis**
🔷 Before doing the test you should **Stop PPI in 2 weeks** and **H2 in 3 days**
🔴 Note that it also detects **non-acidic reflux** + also **detection of retrograde movements of bolus such as gas or liquids**

🅰 **Gastric emptying Study:**
🔷 In **severe DM / N / V**
🔷 using radiolabeled meal →Usually it should empty 60% of the meal in 90 minutes

COMPONENT
Total time
Upright time
Supine time
No. of episodes
No. >5 min
Longest episode



💡 So:
👉 You give **medical tx**, then **if it doesn't work** or there are **persistent symptoms** / **Hiatus hernia** / **Red flags** / **uncertain diagnosis**, **before surgery** you should do the next steps.

Treatment:

🔷 All patients should receive **(2–3 months)** of PPI before surgery
🟦 → Start with them if there's **no Red Flags** such as (Anemia, wt loss, dysphagie , odynophagia)
🔷 Sometimes it works then this is **therapeutic and diagnostic**
🟥 BUT if there are **Red Flags** you should **investigate** with **endoscopy immediately** or go to endoscopy when **PPI fails**

🔧 **Surgical options:**

1- Lifestyle modifications
2-Endoscopic therapy
3- Medical treatment

🟨 Notice that:

- **PPI** reduces acidity by (80–90%)
- It heals **most mild esophagitis and half of severe esophagitis**
- Regarding **mixed reflux**, would **relieve** the symptoms with **persisting mucosal damage**
- 80% of patients would have **recurrent symptoms** after 6 months

4- surgery : success rate = 90%

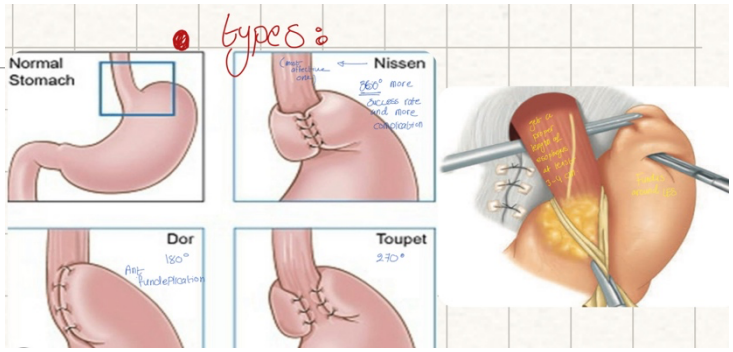
- Studies have shown →who have **poor response to medical therapy** would also have **poor response to surgery**
- Outcome is disappointing in **delayed gastric emptying patients**
- Indicated in:
  ✅ No response to PPI
  ✅ Hiatus hernia
  ✅ Continuous medical therapy But the patient is young and doesn't want that
  ✅ Markedly **hypotensive** LES

🔪 **Surgery: choice of approach:**

▶️ Transabdominal vs transthoracic
▶️ Complete vs partial wrap **(90% success rate in long term follow up)** → fundus around LES **(bigger = more successful)**
✔️ With or without **mesh** (if large hiatus hernia)
✔️ Short esophagus (**lengthening** procedure: Collis–Nissen)
✔️ Resection (BE with dysplasia, stricture)

🔴 **Complications:**

- Dysphagia (early 19–30%; late 5–10%)
- Gas bloating syndrome
- Inability to belch
- Failure (5–10%)
- Intrathoracic migration of the wrap



✅ **Types:** (illustrations: Nissen, Toupet, Dor)