GERD

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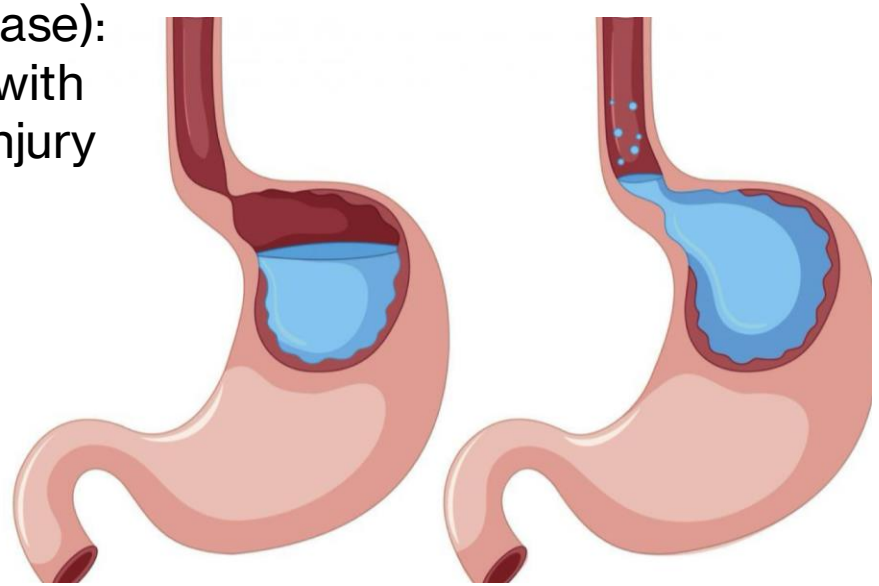
INTRODUCTION

► **Gastroesophageal reflux disease (GERD)**

Gastroesophageal reflux: regurgitation of stomach contents into the esophagus (can also occur in healthy individuals, e.g., after consuming greasy foods or wine)

The most common endoscopic finding associated with esophageal mucosal injury is reflux esophagitis.

- NERD (non-erosive reflux disease): characteristic symptoms of gastroesophageal refluxdisease in the absence of esophageal injury
- ERD (erosive reflux disease): gastroesophageal reflux with evidence of esophageal injury



► Prevalence: GERD is a very common condition.
Its prevalence increases with age.

Male =female

Etiology

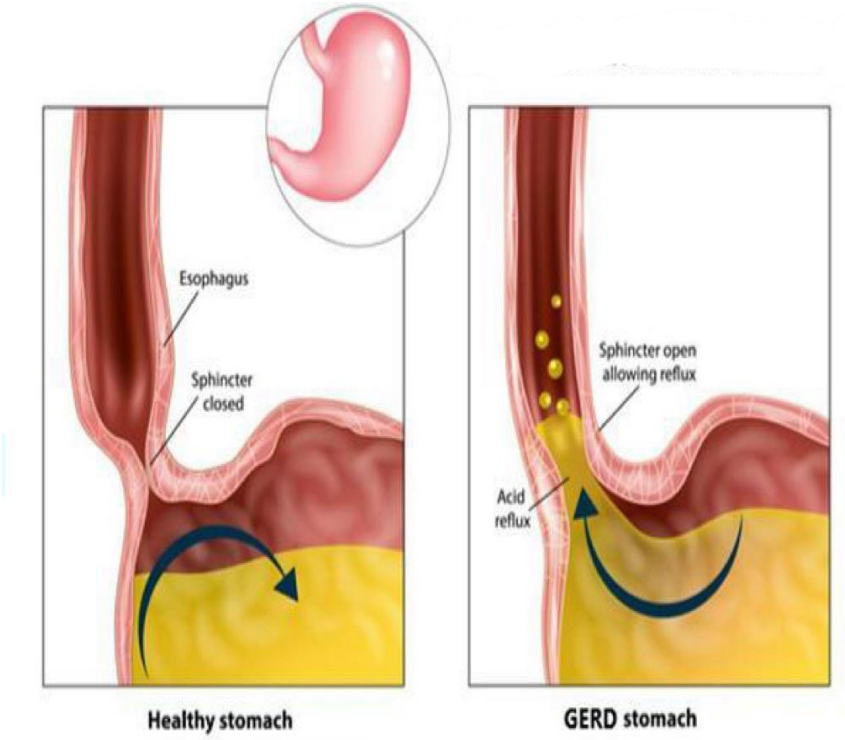
GERD is a multifactorial problem. Inappropriate relaxation of the LES (decreased LES tone) is the primary mechanism,leading to retrograde flow of stomach contents into theesophagus. Other factors that may contribute include:

► **Imbalance between intragastric and lower esophageal sphincter (LES) pressures.**

Reflux occurs when the intragastric pressure is higher than that created by the LES.

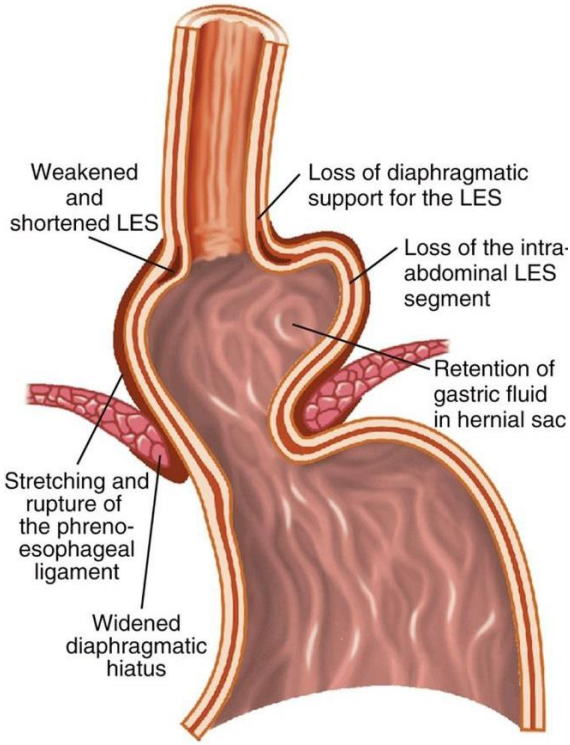
● LES tone can be decreased by substances such as **caffeine** and **nitroglycerin**, as well as by conditions that cause denervation of the muscle layer, such as **scleroderma**

● Intragastric pressure is increased in **pregnancy**, delayed gastric emptying ,and **obesity**, among other conditions.



Etiology...

► **Anatomic abnormalities of gastroesophageal junction** (e.g., hiatal hernia , tumors)

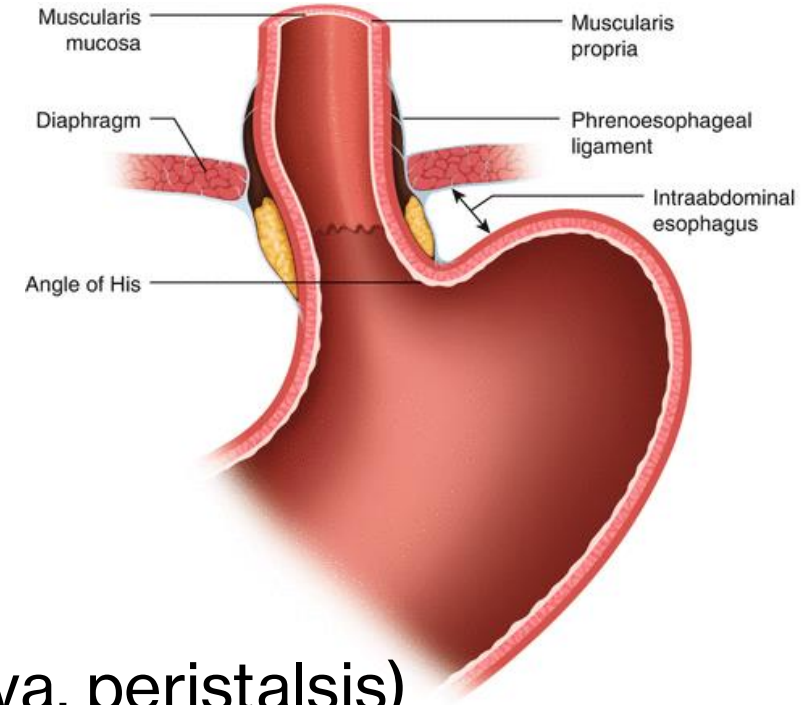


► **Impaired esophageal acid clearance**

● Normally, acid reflux is neutralized by salivary bicarbonate and evacuated back to stomach via esophageal peristalsis.

● Clearance can be disrupted by reduced salivation (e.g., due to smoking) and/or decreased peristalsis (e.g., due to inflammation).

Risk factors for GERD

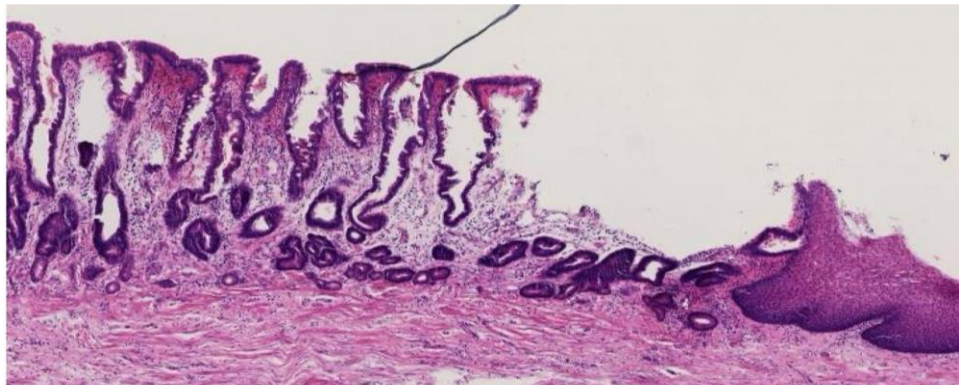


- Smoking, caffeine and alcohol consumption
- Stress , Obesity
- Pregnancy
- Angle of His enlargement (> 60°)
- Iatrogenic (e.g., after gastrectomy)
- Inadequate esophageal protective factors (i.e., saliva, peristalsis)
- Gastrointestinal malformations and tumors
- Scleroderma
- Sliding hiatal hernia: ≥ 90% of patients with severe GERD
- Asthma

Histopathology

► The histopathological findings include the following
(may vary depending on the severity of mucosal damage):

- Superficial coagulative necrosis in the non keratinized squamous epithelium.
- Thickening of the basal cell layer.
- Elongation of the papillae in the lamina propria and dilation of the vascular channels at the tip of the papillae (leading to hyperemia).
- Inflammatory cells (granulocytes, lymphocytes, macrophages).
- Transformation of squamous into columnar epithelium leads to Barrett metaplasia.



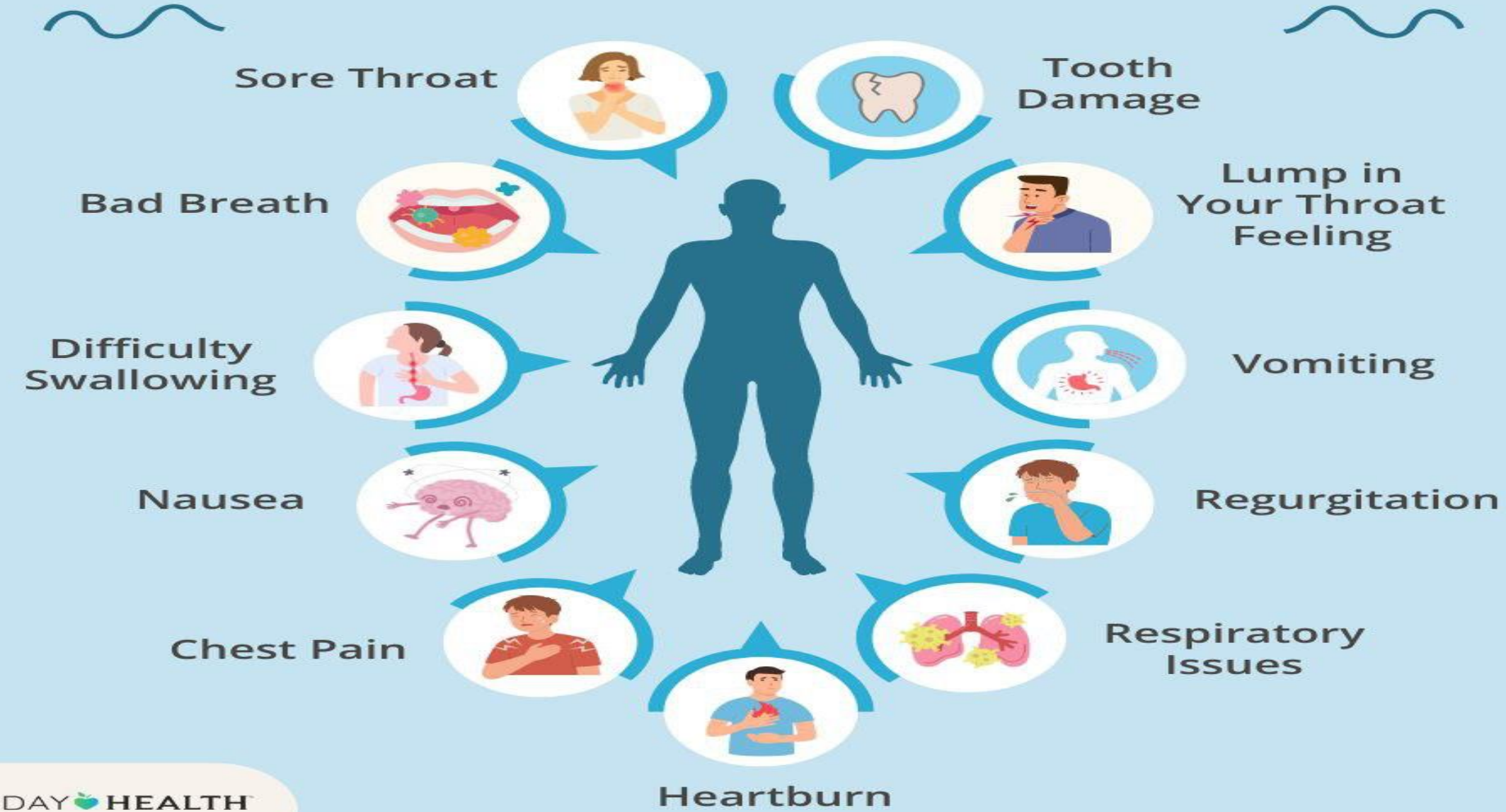
Clinical Features

- Heartburn, dyspepsia
  - Retrosternal pain/burning shortly after eating (especially after large meals)
  - Exacerbated by lying down after meals
  - May mimic cardiac chest pain (which may lead to unnecessary workup for IHD)
- Regurgitation
- Waterbrash, reflex salivary hypersecretion
- Cough, due to either aspiration pneumonia of refluxed material or a reflex triggered by acid reflux into the lower esophagus
- Hoarseness, sore throat, feeling a lump in the throat
- Early satiety, postprandial nausea/vomiting
- Halitosis
- Bronchospasm
- Dental erosion

Alarm Symptoms

- Dysphagia, odynophagia.
- Anemia
- Unintentional weight loss.
- Vomiting.
- Signs of GI bleeding.
- Presence of more than one risk factor for Barrett esophagus.

How GERD Affects the Body



DIAGNOSIS

HISTORY & SYMPTOMS

EMPIRICAL TREATMENT TRIAL

DIAGNOSTIC TESTS

CLINICAL HISTORY & SYMPTOMS:

HEARTBURN

TOOTH EROSION

BELCHING

REGURGITATION (ACID OR FOOD)

SOUR TASTE IN MOUTH

CHRONIC COUGH, SORE THROAT, OR HOARSENESS

DIFFICULTY SWALLOWING (DYSPHAGIA)

CHEST PAIN (MUST BE DIFFERENTIATED FROM CARDIAC CAUSES)

EMPIRICAL TREATMENT TRIAL:

A DOCTOR MAY PRESCRIBE A PROTON PUMP INHIBITOR (PPI) LIKE OMEPRAZOLE FOR 2-4 WEEKS. IF SYMPTOMS IMPROVE, GERD IS LIKELY.

DIAGNOSTIC TESTS (IF NEEDED):

ENDOSCOPY WITH BIOPSY (TEST OF CHOICE)IF REFRACTORY TO TREATMENT, OR WITH ALARM SYMP OR IF ⩾55YRS
TO CHECK FOR ESOPHAGIAL MUCOSA CHANGES
PH MONITORING: MOST SENSITIVE & SPECIFIC MEASURES ACID LEVELS IN THE ESOPHAGUS OVER 24 HOURS.

ESOPHAGEAL MANOMETRY: EVALUATES ESOPHAGEAL MUSCLE FUNCTION ,PERISTALSIS AND PRESSURE IN LES .
BARIUM SWALLOW: X-RAY IMAGE IDENTIFIES STRUCTURAL PROBLEMS (E.G., HIATAL HERNIA, STRICTURES,ULCERATION).

TREATMENT

CHANGE LIFESTYLE

MEDICATION

SURGERY

1. LIFESTYLE MODIFICATIONS:

EAT SMALL, FREQUENT MEALS.

AVOID TRIGGER FOODS (SPICY, FATTY, CAFFEINE, ALCOHOL, CHOCOLATE).

DO NOT LIE DOWN IMMEDIATELY AFTER EATING (WAIT 2-3 HOURS).

ELEVATE YOUR TRUNK WHILE SLEEPING.
LOSE WEIGHT IF OVERWEIGHT.

STOP SMOKING.

2. MEDICATIONS:

ANTACIDS (NEUTRALIZATION): QUICK RELIEF BUT NOT LONG-TERM,COULD BE USED FOR HEARTBURN ETC...

H2 BLOCKERS (E.G., RANITIDINE, FAMOTIDINE): BLOCK HISTAMINE RECEPTORS ON PARYTAL CELS ,REDUCE ACID PRODUCTION.

PPIS 1-2PILL /DAY MOST EFFECTIVE (E.G., OMEPRAZOLE, ESOMEPRAZOLE, PANTOPRAZOLE): REDUCE ACID,RELIEVE SYMPTOMS & TREAT COMPLICATIONS

PROKINETICS (E.G., METOCLOPRAMIDE, DOMPERIDONE): IMPROVE STOMACH EMPTYING &INCREASE THE **LES** TONE (USED LESS OFTEN).

3. SURGERY (FOR SEVERE CASES):

NISSEN FUNDOPLICATION 360: STRENGTHENS THE LOWER ESOPHAGEAL SPHINCTER.

PARTIAL FUNDIPLICATION 270⩾ :WHEN POOR ESOPHAGEAL MOTILITY TO BE MORE FLEXABLE

LINX DEVICE: A MAGNETIC RING PLACED AROUND THE ESOPHAGUS TO PREVENT REFLUX.

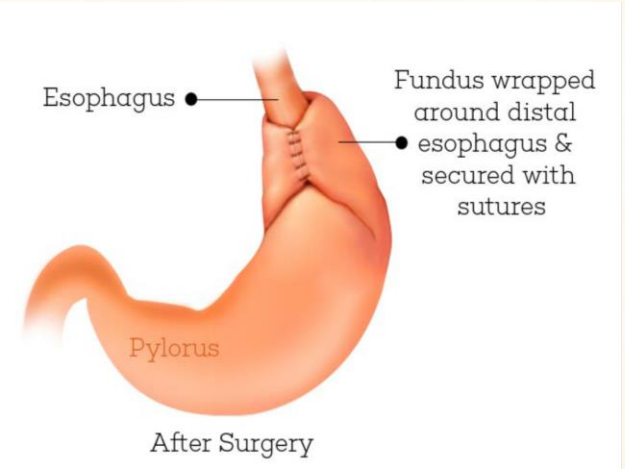
INDICATIONS:

INTRACTABILITY

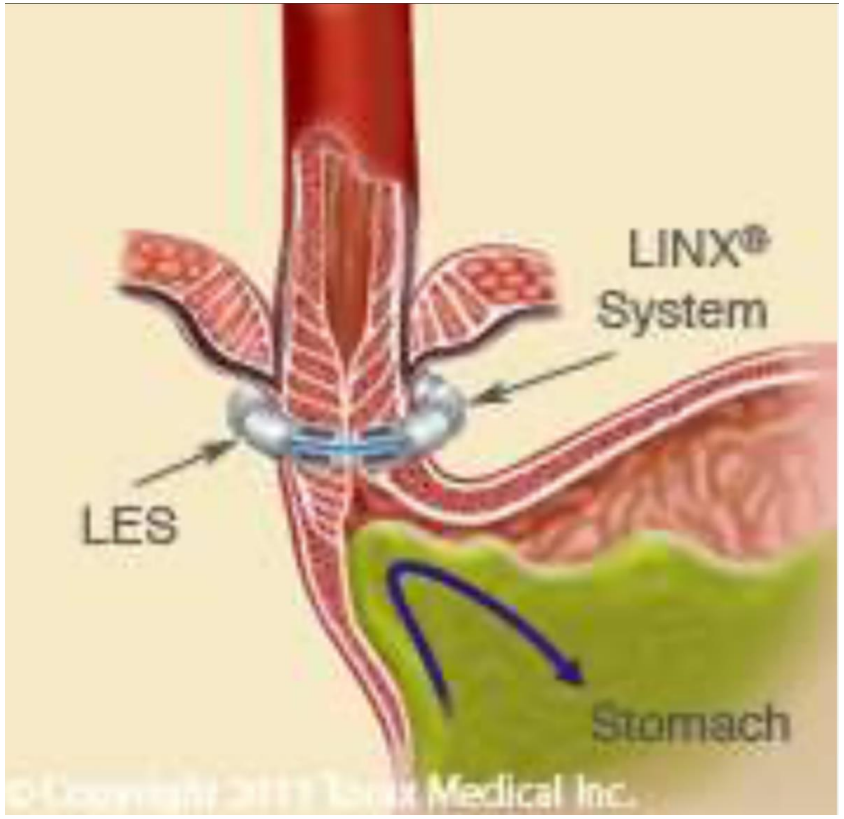
ASPIRATION AND RESPIRATORY PROBLEMS

SEVERE ESOPHAGEAL INJURY

EXCELLENT RESULTS



Linx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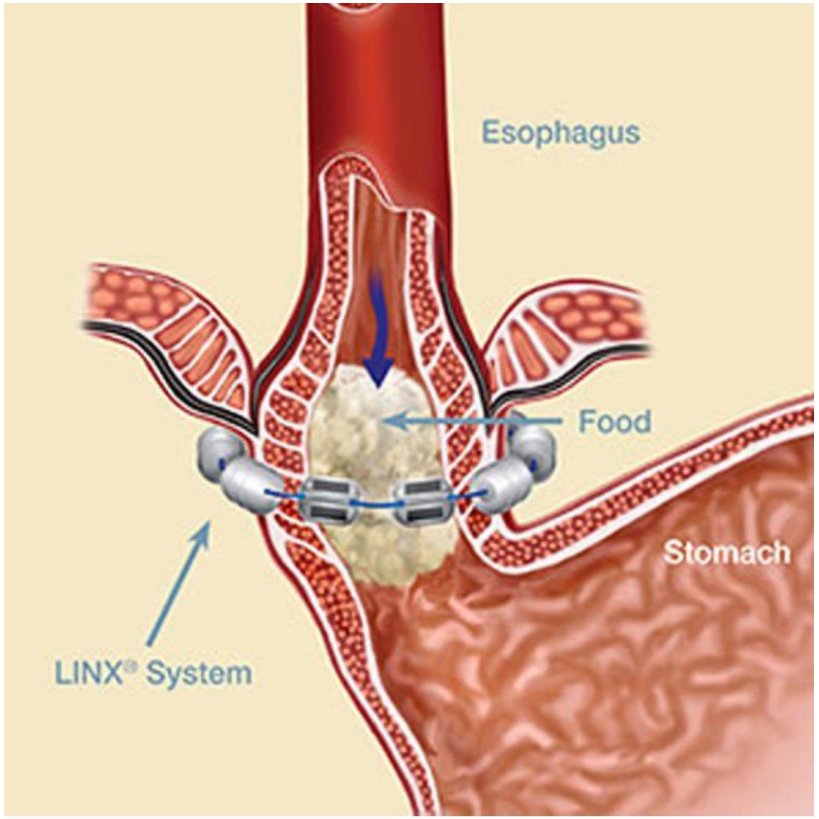
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EXCELLENT RESULTS

Complications

1. Barrett esophagus

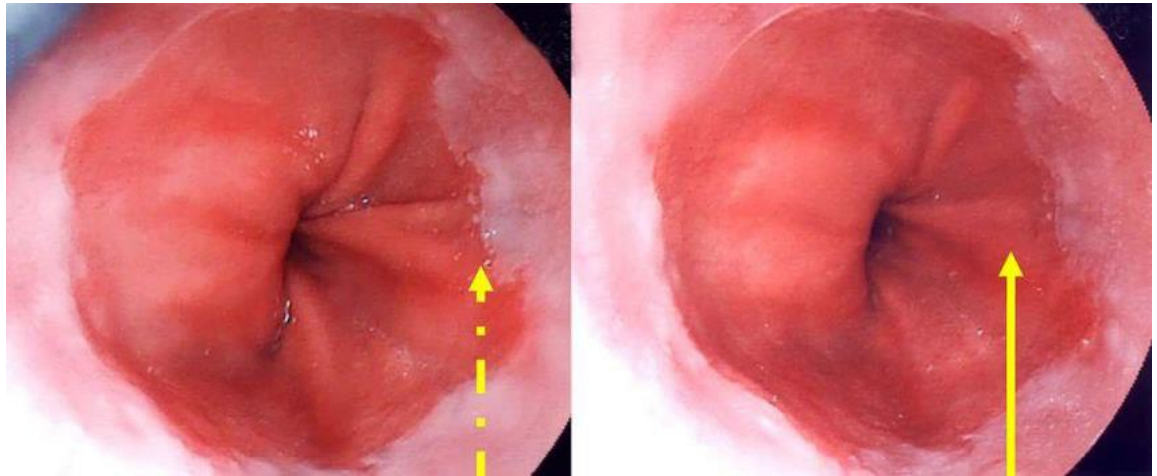
- Definition: intestinal metaplasia of the esophageal mucosa induced by chronic reflux.

- Histopathological examination of the mucosa shows a columnar epithelium instead of the normal squamous epithelium.

- Incidence: up to 15% of patients with GERD

- Risk factors for Barrett esophagus :

  - Male sex
  - European descent
  - Age ≥ 50 years
  - Obesity
  - Symptoms ≥ 5 years



- Pathophysiology:

  - Reflux esophagitis → stomach acid damages mucosa of distal esophagus
    → non keratinized stratified squamous epithelium is replaced by non ciliated columnar epithelium and goblet cells

  - The physiological transformation zone (Z line) between squamous and columnar epithelium is shifted upwards.

  - Short-segment (< 3 cm of columnar epithelium between Z line and GEJ)
  - Long-segment (> 3 cm of columnar epithelium between Z line and GEJ) :higher cancer risk

- Complications: esophageal adenocarcinoma (Esophageal cancer)

Images: Normal oesophagus

Examples of Barrett's oesophagus

- Management and surveillance :

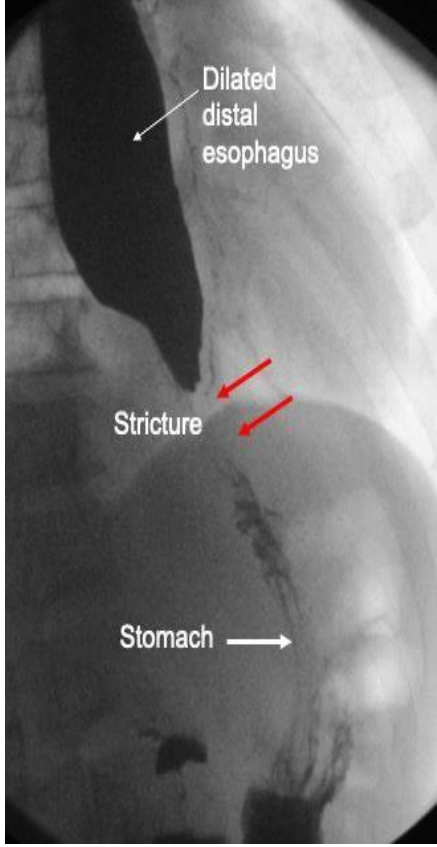
- **PPI therapy**
  - Consider if asymptomatic.
  - Continue maintenance therapy long-term if symptomatic.

- **Endoscopy with four-quadrant biopsies**

at every 2 cm of the suspicious area (salmon-colored mucosa)

  - If no dysplasia → Repeat endoscopy every 3–5 years.
  - If indefinite for dysplasia → Repeat endoscopy with biopsies after 3–6 months of optimized PPI therapy.
  - If low-grade dysplasia → Endoscopic therapy of mucosal irregularities. Alternatively: surveillance every 6-12 months with biopsies every 1 cm
  - If high-grade dysplasia: endoscopic treatment of mucosal irregularities, e.g., radiofrequency ablationd → Consider antireflux surgery or resection of the segment based on a specialist's evaluation.

2. Esophageal stricture



- Consists of fibrotic rings that narrow the lumen and obstruct the passage of food

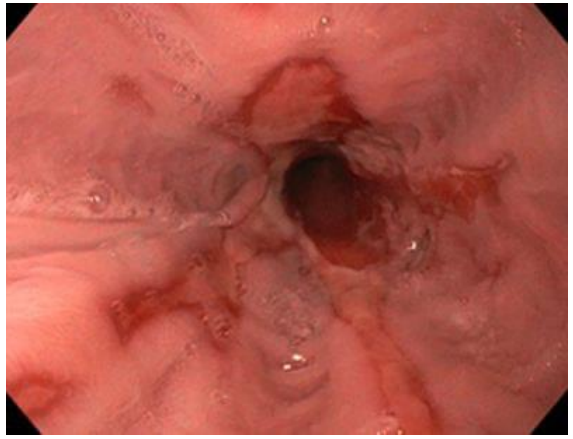
- Etiology:
  - Reflux esophagitis or ingestion of caustic substances
  - Radiation
  - Systemic sclerosis

- Clinical features: solid food dysphagia

- Diagnostics:
  - Barium esophagram (best initial test): narrowing of the esophagus at the gastroesophageal junction
  - Endoscopy with biopsies: to rule out malignancy and eosinophilic esophagitis

- Treatment:
  - First-line treatment: dilation with bougie dilator/balloon dilator and PPIs in patients with reflux
  - In refractory cases (multiple recurrences): steroid injection prior to dilation; endoscopic electrosurgical incision

3. **Erosive esophagitis:** these patients are at high risk of developing complications such as stricture, ulcer, or Barrett esophagus. These patients are candidates for long-term PPI therapy.



4. **Reflux esophagitis:** most common complication of GERD
5. **Iron deficiency anemia:** mucosal erosions and ulcerations → chronic bleeding → anemia
6. **Esophageal ulcer:** possible cause of upper GI bleeding
7. **Aspiration pneumonia** and/or aspiration pneumonitis
8. **Chronic bronchitis**
9. **Asthma** (exacerbation)
10. **Reflux laryngitis:** hoarseness (due to laryngopharyngeal reflux)

Paediatric GERD

- Caused by Immature LES and undeveloped angle of his. (the esophagus making a vertical junction with the stomach)

- Presents with:
  frequent Vomiting
  crying
  irritability during feeding
  not gaining weight

- Over time, when stomach acid backs up into the oesophagus, it can also lead to:
- esophagitis.
- Sores or ulcers in the oesophagus, which can be painful and may bleed.
- A fall in RBCs, from bleeding sores(anaemia).

نذكركم وأنفسنا بقوله تعالى:
"يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنكُمْ
وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ"

وفقكم الله وسدد خطواتكم