GNT BLOCK
Pathology, 2018

Gastrointestinal Diseases

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8 LECTURES GIT+5 LECTURES LIVER, PANCREAS, GB

Gastro-esophageal reflux disease

Peptic Ulcer Disease

Diarrhea

Malabsorption

Colonic polyps and carcinoma-1

Colonic polyps and carcinoma-2

Inflammatory bowel disease-2

Inflammatory bowel disease-1

Acute and chronic pancreatitis

Patholgy of liver cirrhosis

Complication of liver cirrhosis

Cancer of the liver and pancreas

Gallstones and cholecystitis

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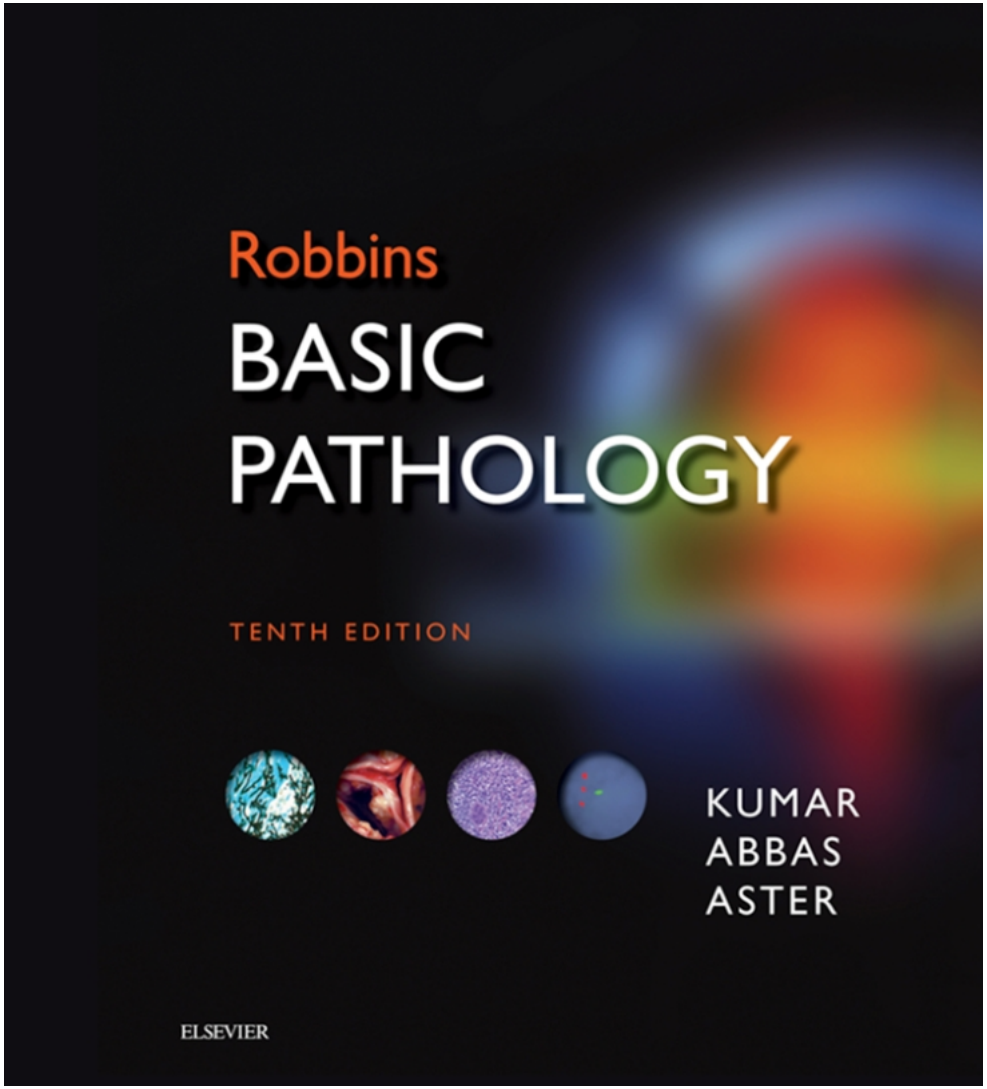

Robbins
BASIC
PATHOLOGY
TENTH EDITION
KUMAR
ABBAS
ASTER
ELSEVIER

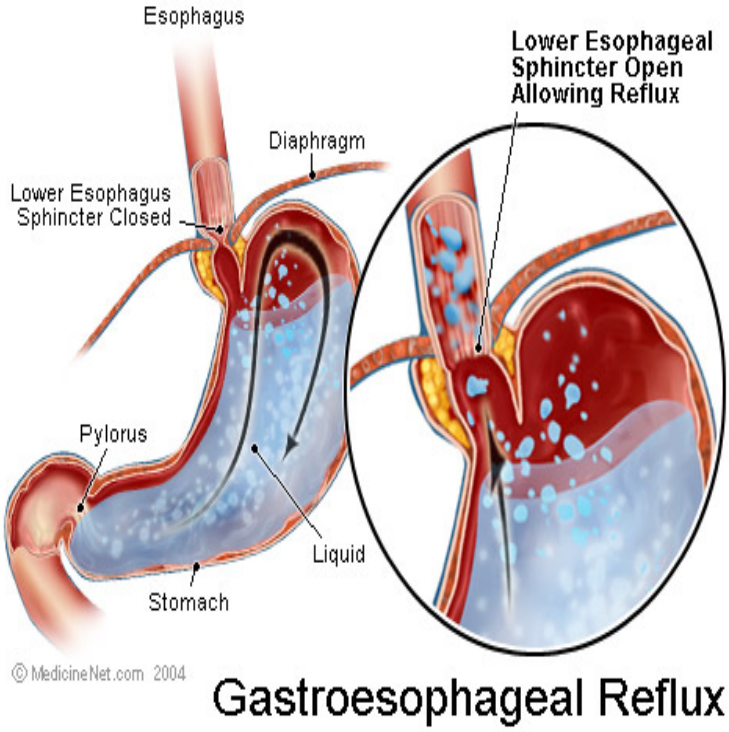
Gastro-esophageal reflux disease

OBJECTIVES

- **Describe the following aspects of reflux esophagitis:**
  1) Definition
  2) Pathogenesis
  3) Clinical features
  4) Pathology (gross and microscopic features)
  5) Complications
- **Describe the following aspects of Barrett esophagus:**
  1) Definition
  2) Main cause
  3) Pathology (gross and microscopic features)
  4) Complications (dysplasia and adenocarcinoma)

Definition

- American College of Gastroenterology (ACG)
  - Symptoms OR mucosal damage produced by the abnormal reflux of gastric contents into the esophagus
  - Often chronic and relapsing
  - May see complications of GERD in patients who lack typical symptoms



Gastroesophageal Reflux

Gastroesophageal Reflux Disease (GERD)

- Gastroesophageal reflux is a normal physiologic phenomenon experienced intermittently by most people, particularly after a meal.
- Gastroesophageal reflux disease (GERD) occurs when the amount of gastric juice that refluxes into the esophagus exceeds the normal limit, causing symptoms with or without associated esophageal mucosal injury.

Physiologic vs Pathologic

- Physiologic GERD
  - Postprandial
  - Short lived
  - Asymptomatic
  - No nocturnal symptomes

- Pathologic GERD
  - Symptoms
  - Mucosal injury
  - Nocturnal symptomes

Reflux Esophagitis

- **Esophagitis is rarely caused by agents other than reflux**
- Acute esophagitis may be caused by:

Infective agents:

- Bacterial infection is very rare, but fungal infection (mainly by Candida albicans) is common
- Viral infections of the esophagus (particularly by herpes simplex and cytomegalovirus) are seen in AIDS patient

or

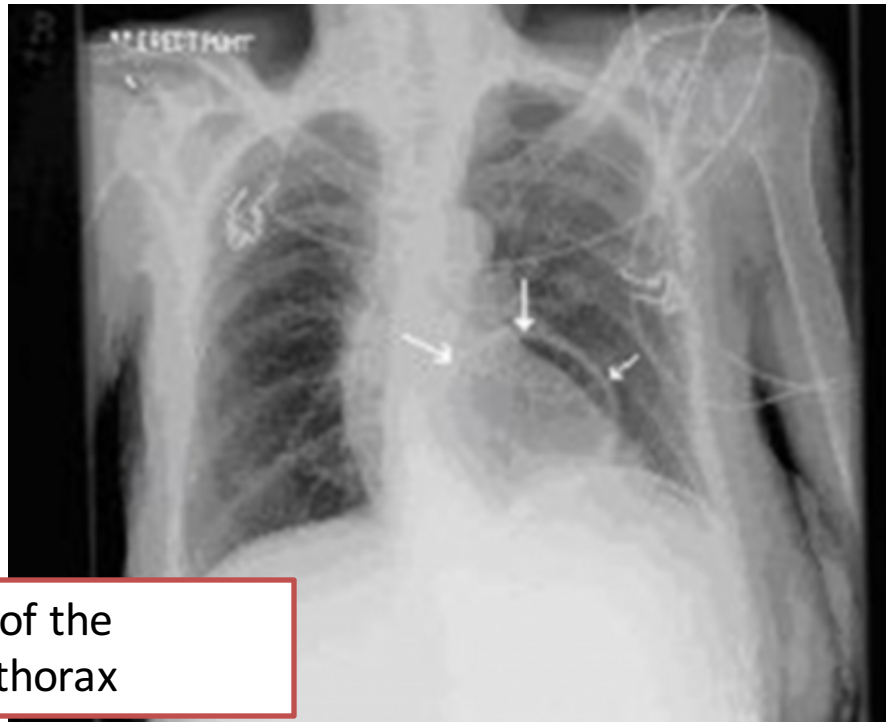
Physical agents:
irradiation and by ingestion of caustic agent

Epidemiology of GERD

- About 44% of the US adult population have heartburn at least once a month
- 14% of Americans have symptoms weekly
- 7% have symptoms daily

Epidemiology of GERD

- Approximately 80% of pregnant women have GERD.
- Hiatal hernia present in ~70% of people with GERD.
- Risk factors
  - Smoking, alcohol
  - Caffeine, fatty foods, chocolate
  - Pregnancy, obesity
  - Hiatal hernia



Herniation of a portion of the stomach into the lower thorax

GERD

Pathophysiology

- Abnormal lower esophageal sphincter
- or
- Increase abdominal pressure

GERD

Pathophysiology

A. Abnormal lower esophageal sphincter

1. Functional (frequent transient LES relaxation)
2. Mechanical (hypotensive LES)
3. Foods (eg, coffee, alcohol, smoking)
4. Medications (eg, calcium channel blockers),
5. Location ..... hiatal hernia

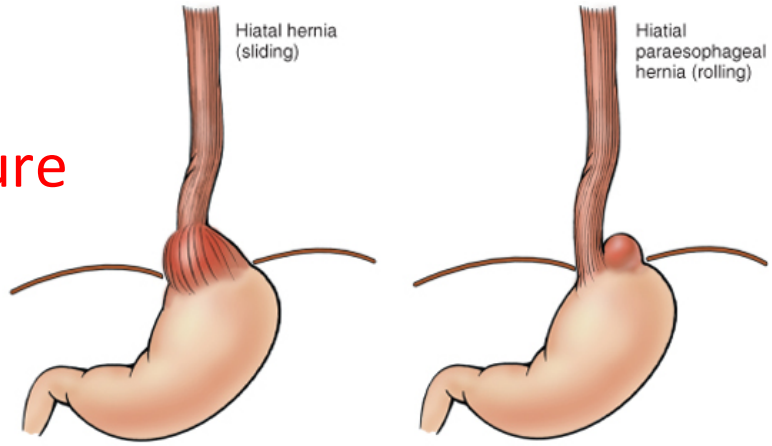
The most common cause of (GERD).

decrease the pressure of the LES.

- or

B. Increase abdominal pressure

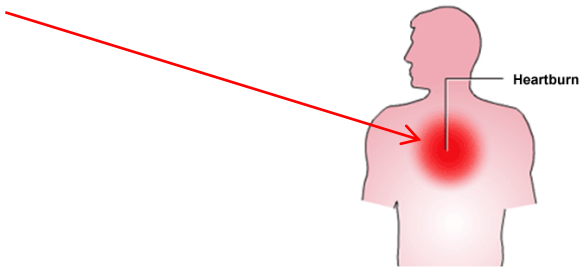
Obesity
Pregnancy
Increased gastric volume



Clinical Manisfestations

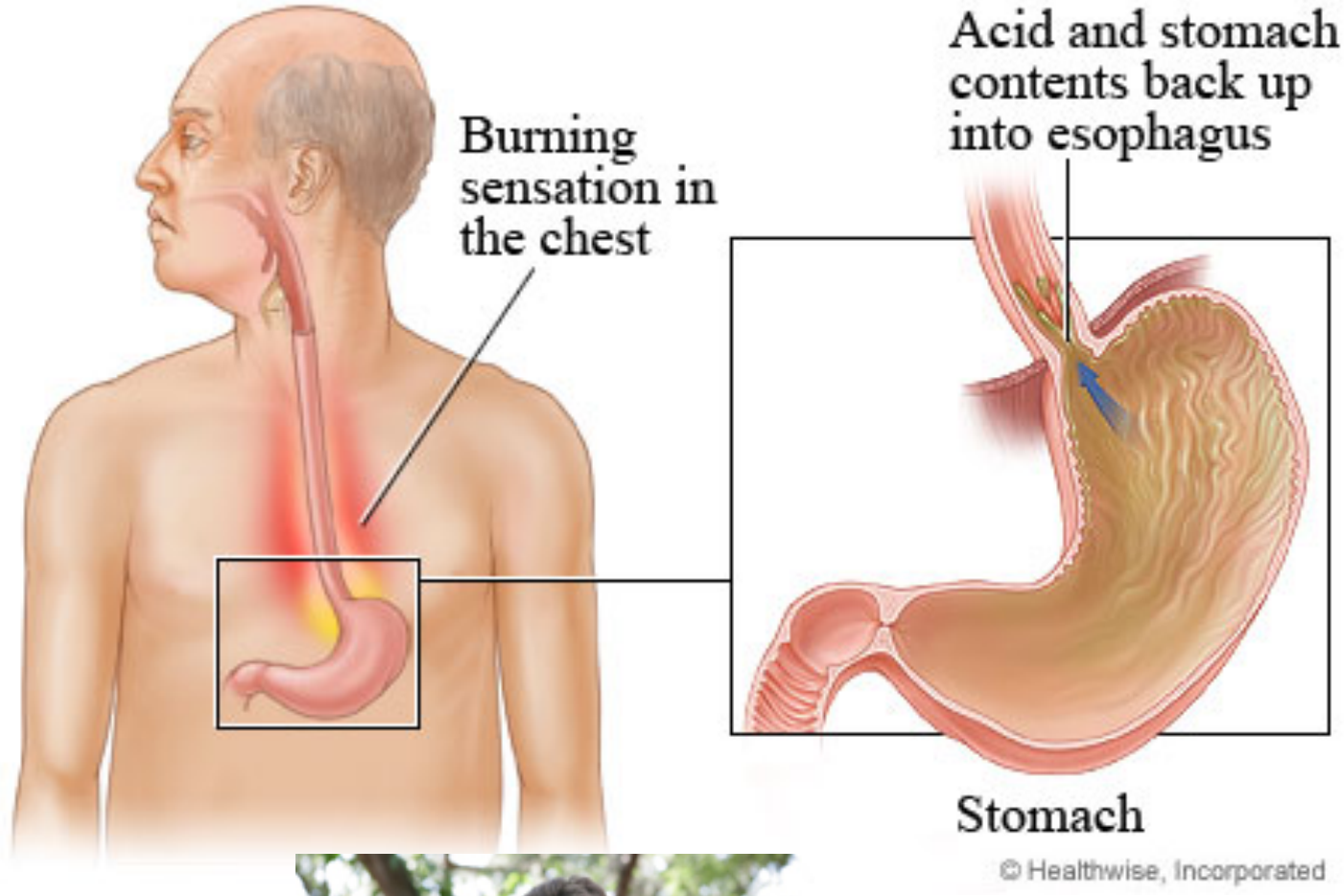
- Most common symptoms
  - Heartburn—retrosternal burning discomfort
  - Regurgitation—effortless return of gastric contents into the pharynx without nausea, retching, or abdominal contractions

Atypical symptoms….coughing, chest pain, and wheezing.



Reflux Esophagitis

Clinical features of reflux esophagitis

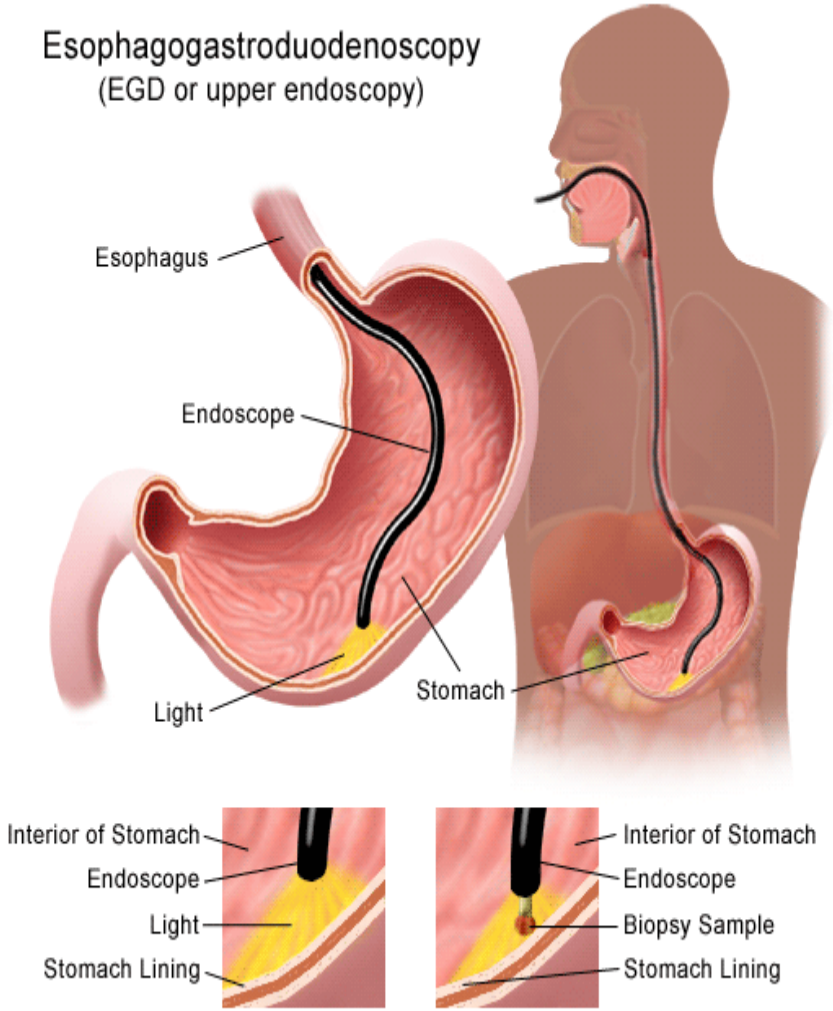


Diagnostic Evaluation

- If classic symptoms of heartburn and regurgitation exist, the diagnosis of GERD can be made clinically and treatment can be initiated

Esophagogastrodudenoscopy

- Endoscopy (with biopsy if needed)
  - In patients with unusual signs/ symptoms
  - Those who fail a medication trial
  - Those who require long-term treatment

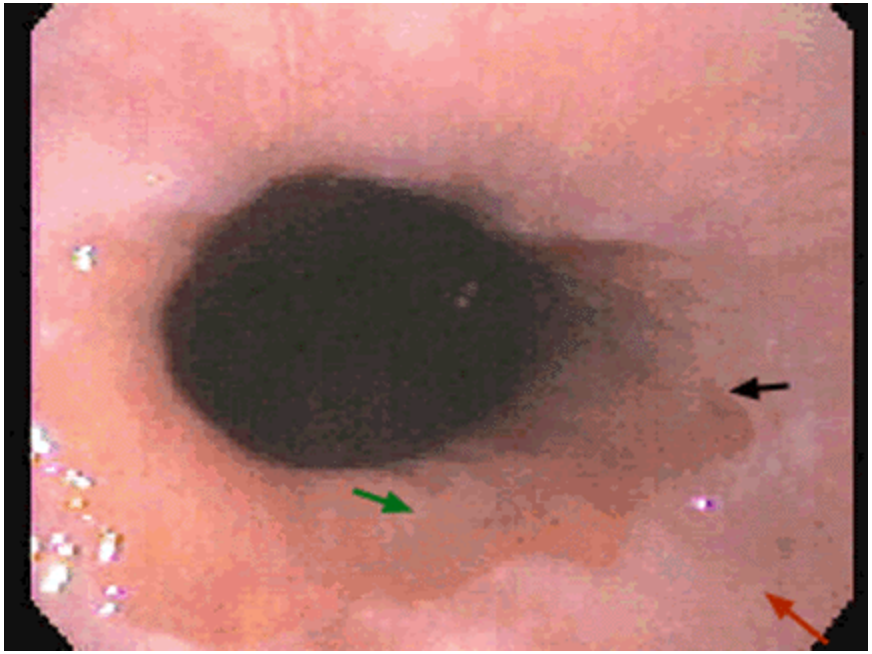


pH

- 24-hour pH monitoring
  - Accepted standard for establishing or excluding presence of GERD for those patients who do not have mucosal changes
  - Trans-nasal catheter or a wireless capsule shaped device

Reflux Esophagitis

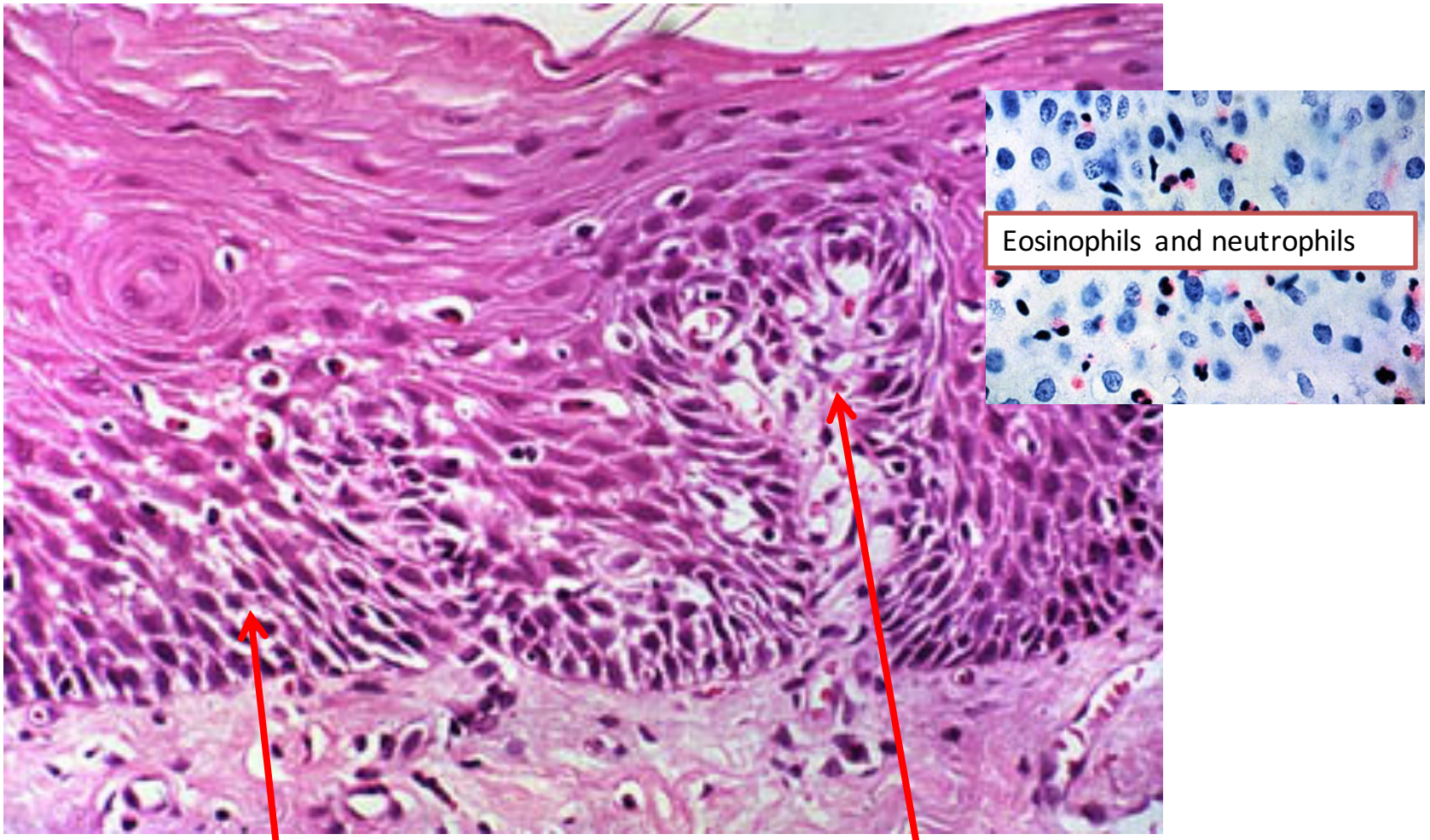
Morphology



Simple **hyperemia**

Reflux Esophagitis

Morphology of GERD



Treatment

- H 2 receptor Blockers
- Proton pump inhibitors

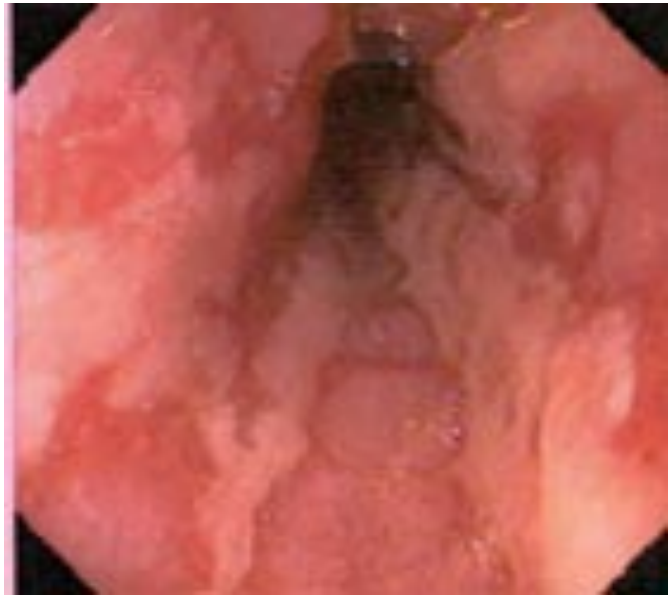
Antireflux surgery

Complications

- Erosive esophagitis
- Stricture
- Barrett’s esophagus

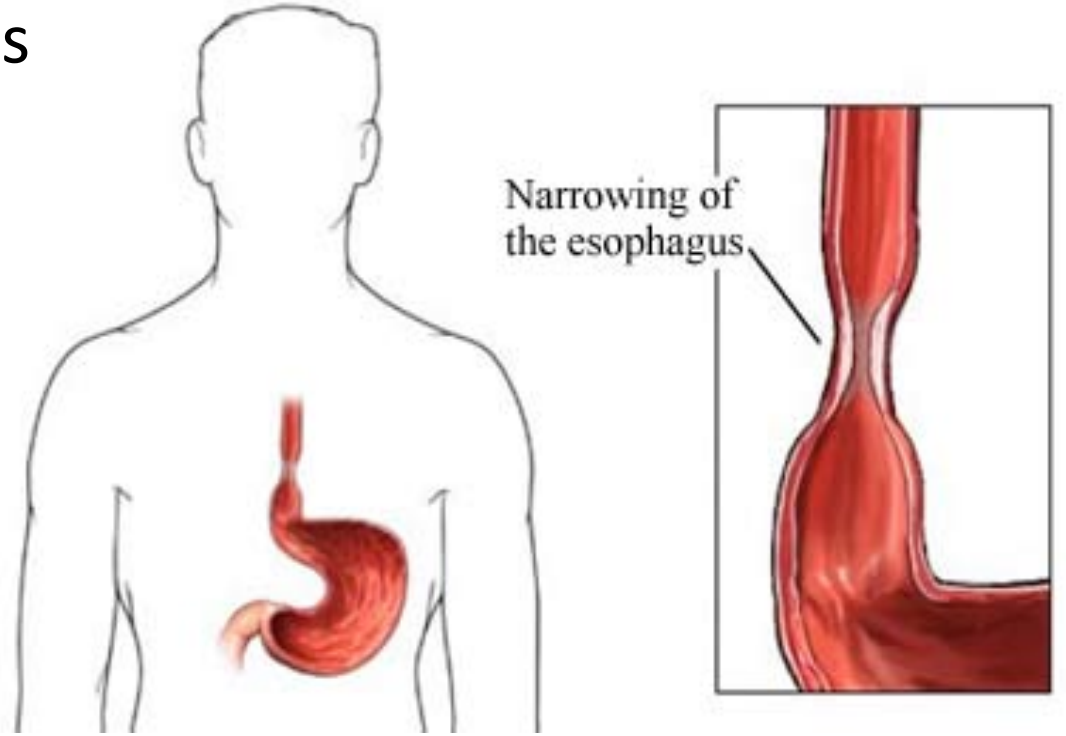
Complications

- Erosive esophagitis
  - Responsible for 40-60% of GERD symptoms
  - Severity of symptoms often fail to match severity of erosive esophagitis
  - Red mucosa with erosions

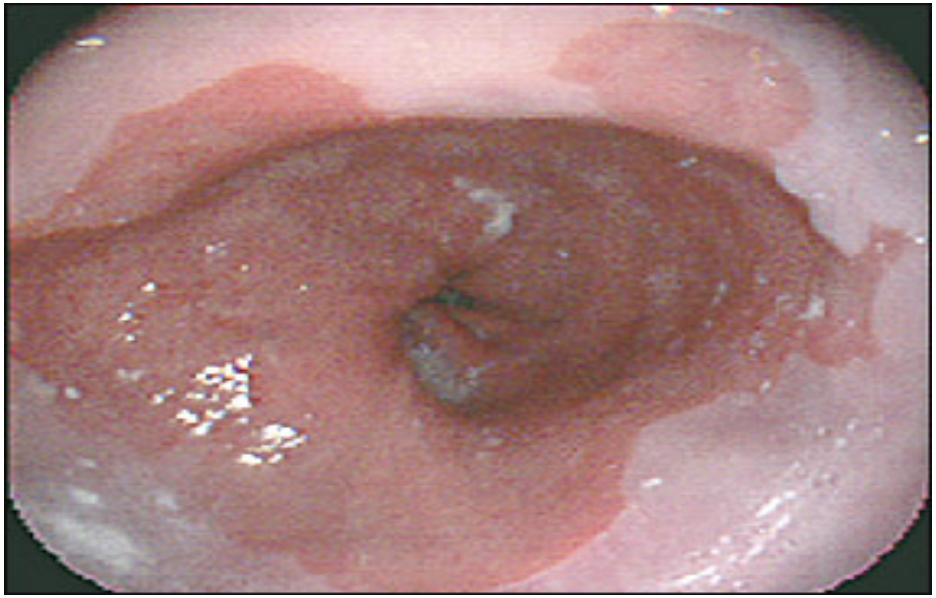


Complications

- Esophageal stricture
  - Result of healing of erosive esophagitis
  - May need dilation



Complications



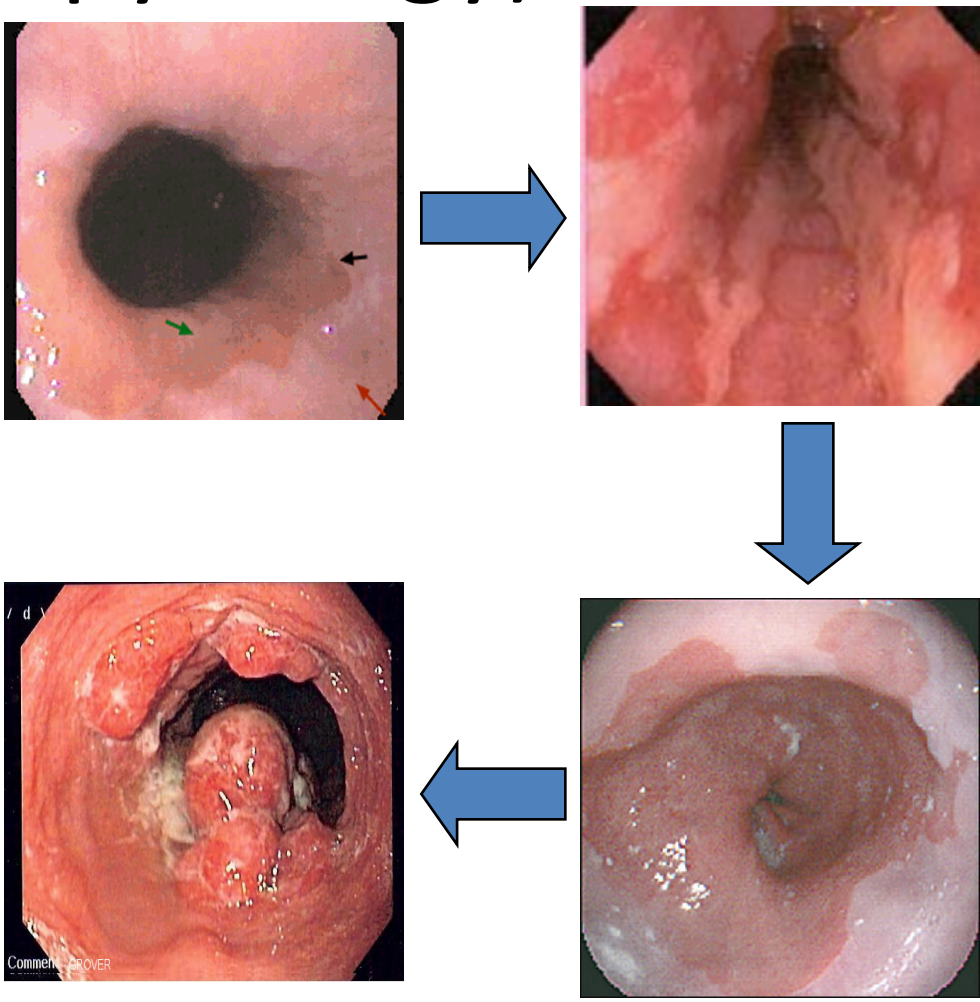
8-15%

- Barrett's Esophagus
- Definition:
  - Intestinal metaplasia of the esophagus

Barrett esophagus

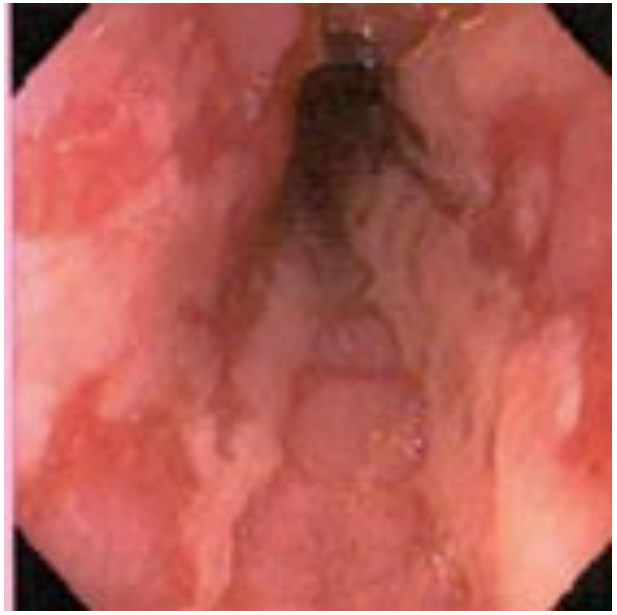
Main cause (Pathopysiology)

- Barrett's Esophagus
  - Acid damages lining of esophagus and causes chronic esophagitis
  - Damaged area heals in a metaplastic process and abnormal columnar cells replace squamous cells
  - Associated with the development of adenocarcinoma

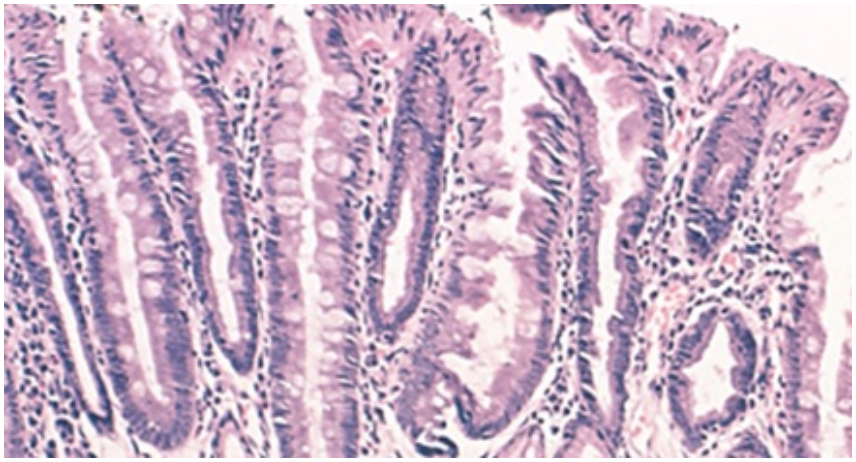


Many patients with Barrett's are asymptomatic

Morphology

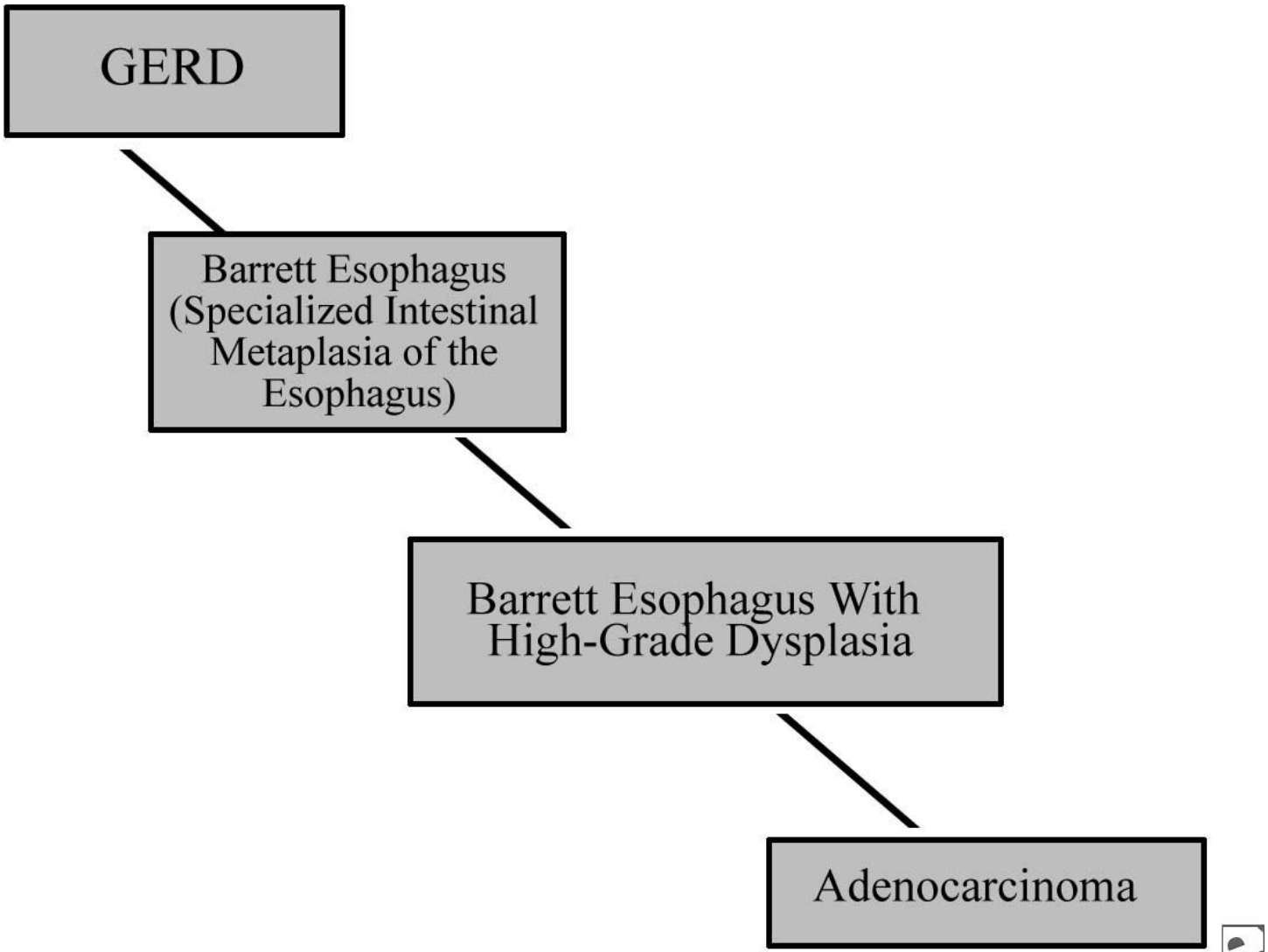


- **Endoscopic image of Barrett's esophagus: An area of red mucosa**

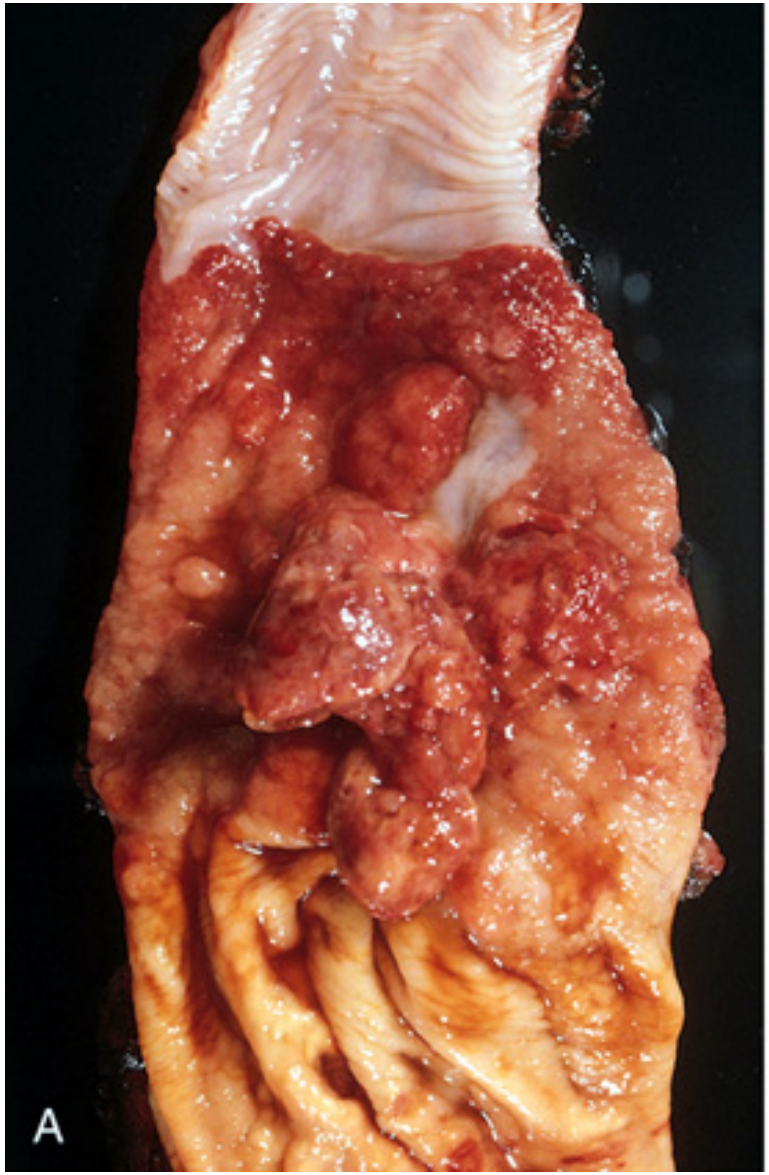


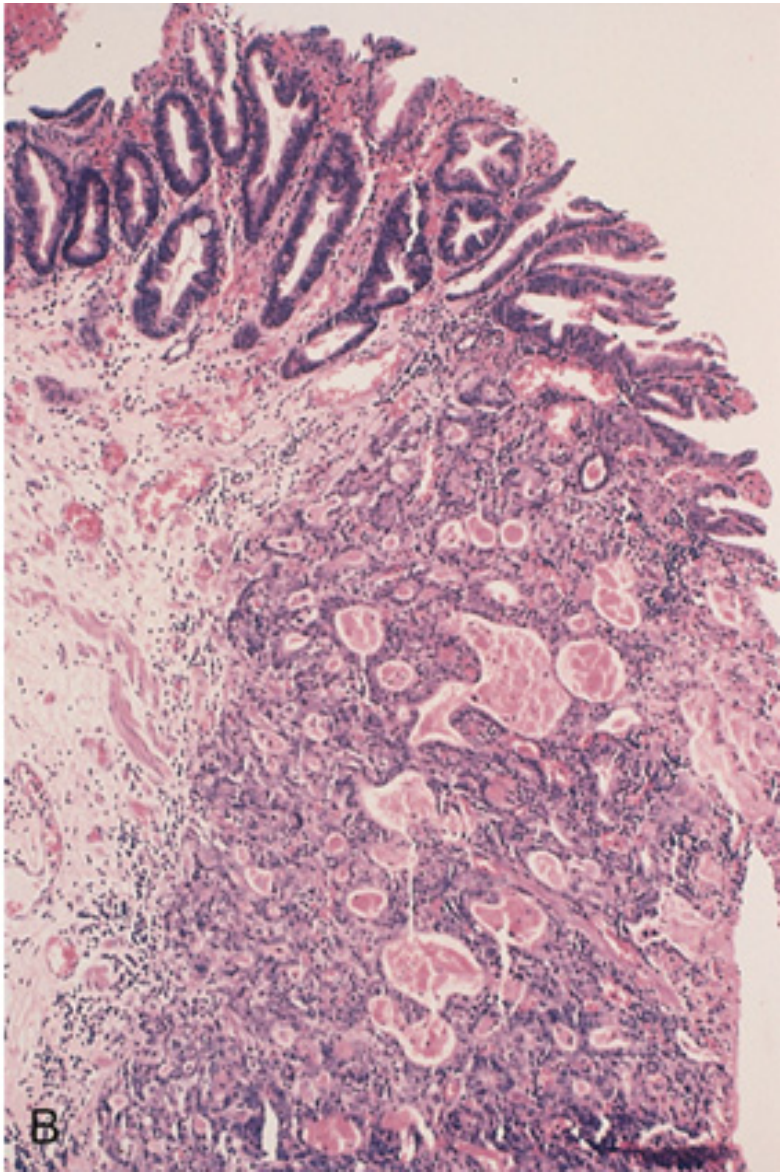
- **Barrett's esophagus is marked by the presence of columnar epithelia in the lower esophagus, replacing the normal squamous cell epithelium**

Summary


GERD
Barrett Esophagus (Specialized Intestinal Metaplasia of the Esophagus)
Barrett Esophagus With High-Grade Dysplasia
Adenocarcinoma

Barrett esophagus





- Complications: Dysplasia and adenocarcinoma

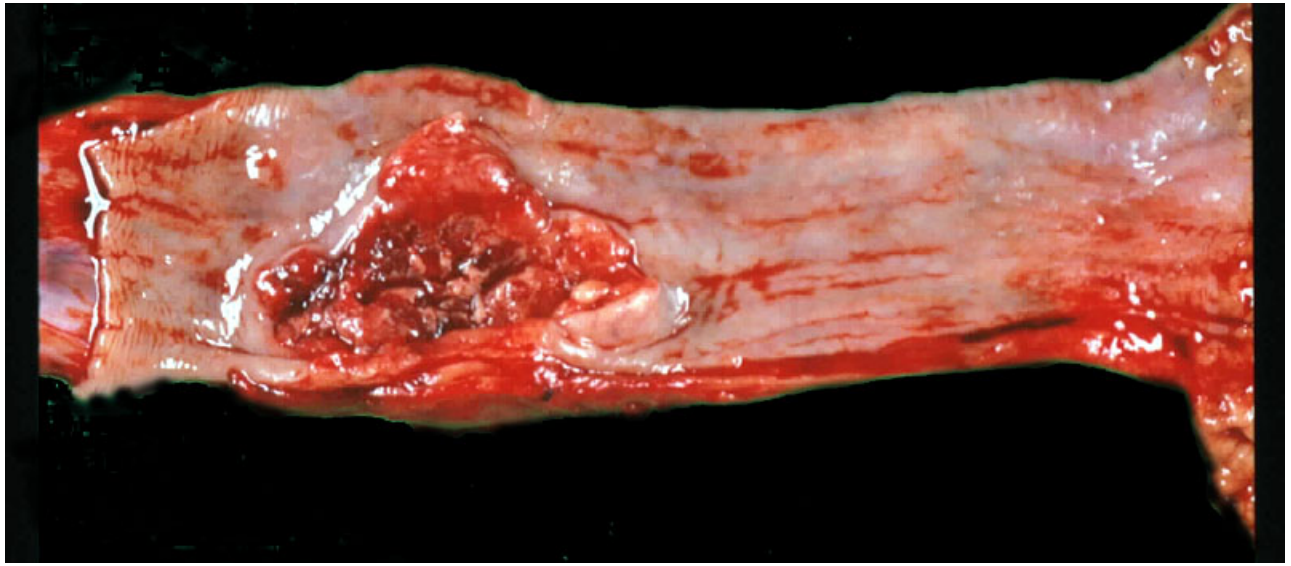
- **The most common malignant tumors of the esophagus are squamous carcinomas and adenocarcinomas**

- The prognosis for both types of carcinoma is poor

Squamous carcinomas

are most common in the middle and lower esophagus. They mostly develop in men who are heavy alcohol drinkers or heavy smokers, and may be preceded by epithelial dysplastic change.

- Not related to GERD



Case scenario: A man with retrosternal pain

- A 57-year-old presents with a history of a retrosternal burning sensation, particularly after large meals, and often on retiring to bed at night. Treatment with antacids has had little effect and he has been referred by his GP for endoscopy.
- Upper gastrointestinal tract endoscopy reveals reddening of the lower esophageal mucosa from the level of the gastroesophageal junction to a point 32 cm from the incisors. There is no evidence of a hiatus hernia. The proximal border of the reddened area is irregular, and this area is biopsied. The biopsy shows gastric and intestinal-type glandular mucosa.

1. What is the likely cause of the symptoms?

- The symptoms of ‘heartburn’ are suggestive of gastroesophageal reflux disease (GERD), with or without the presence of a hiatus hernia.
- Other important causes of retrosternal pain should not be overlooked, including cardiovascular causes, especially myocardial ischaemia, as well as other rarer causes including pneumothorax and musculoskeletal pain.

2. What is the final diagnosis?

- The endoscopic and biopsy appearances confirm a Barrett's oesophagus. This is a metaplastic process which develops as a result of persistent reflux of gastric contents into the esophagus, the normal squamous mucosa being replaced by glandular mucosa of gastric or intestinal type

3. What further information do you require from the biopsy report?

It is important to look for dysplastic change in the biopsy which may herald the development of adenocarcinoma.

4. What are the major causes of reflux esophagitis?

- Reflux of gastric contents is the major cause of reflux esophagitis. Many factors play a role:

(a) the presence of a sliding hiatal hernia is the most common

(b) heavy alcohol use

(c) heavy tobacco use

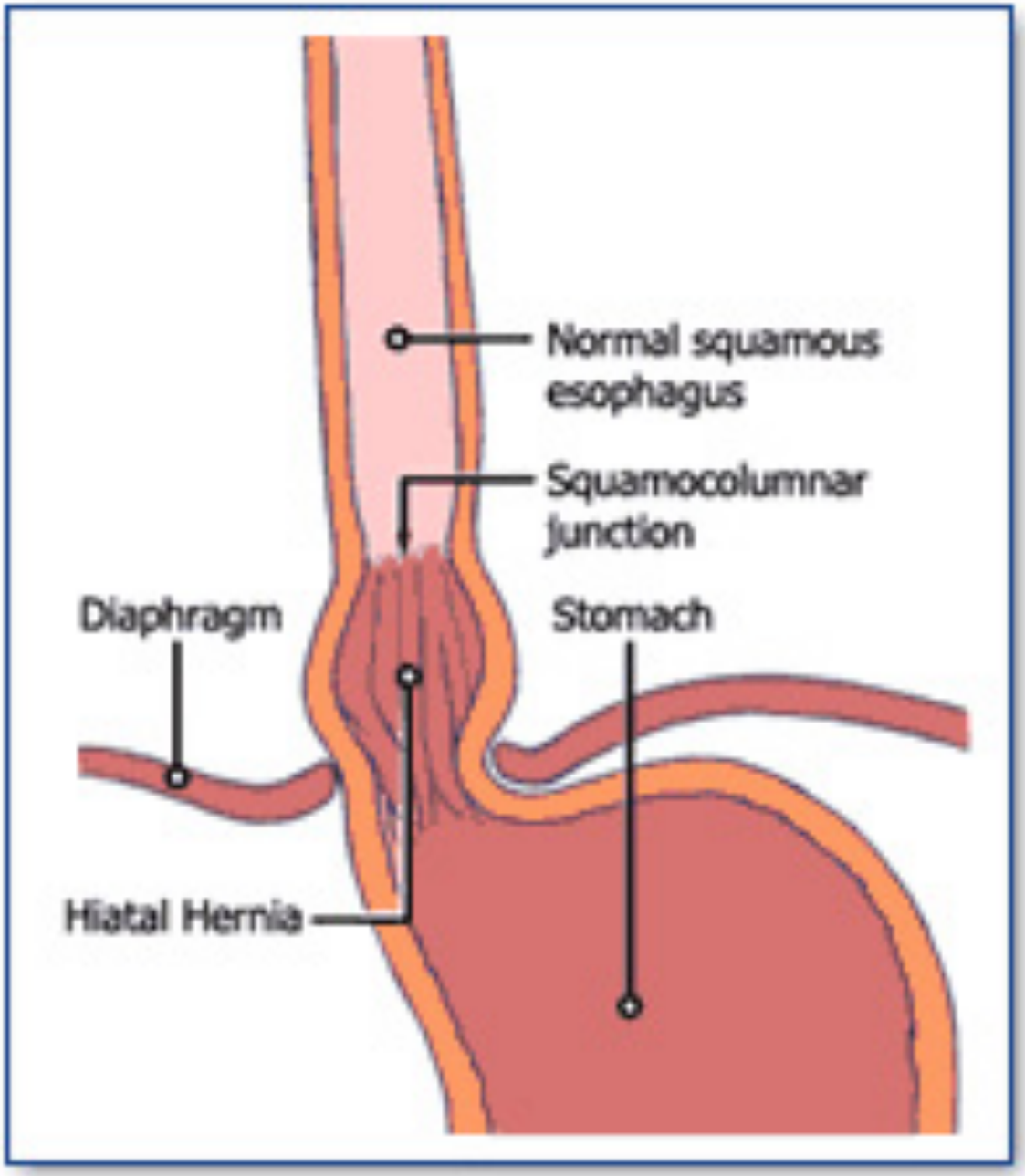
(d) increased gastric volume

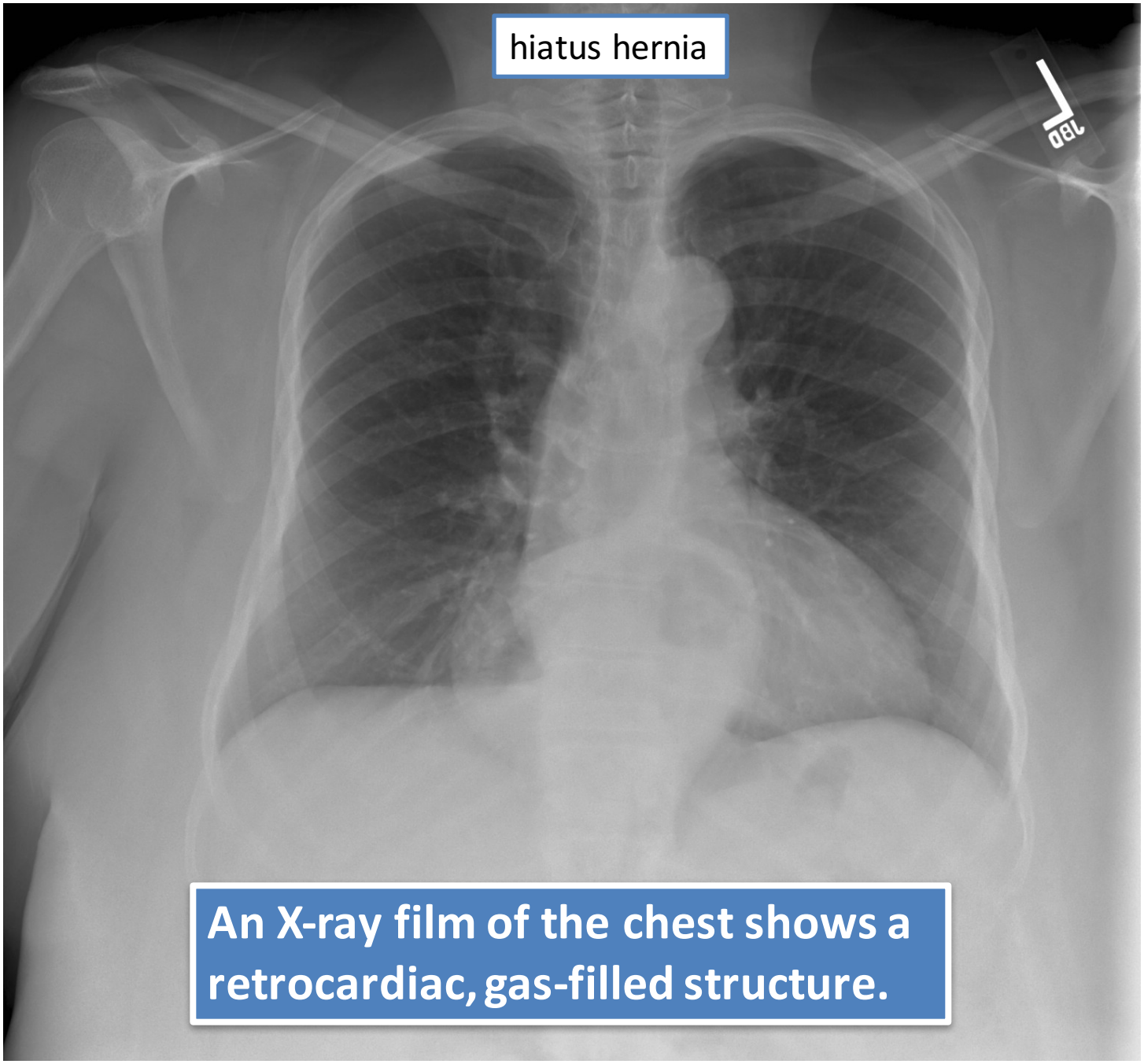
(e) decreased efficacy of LES

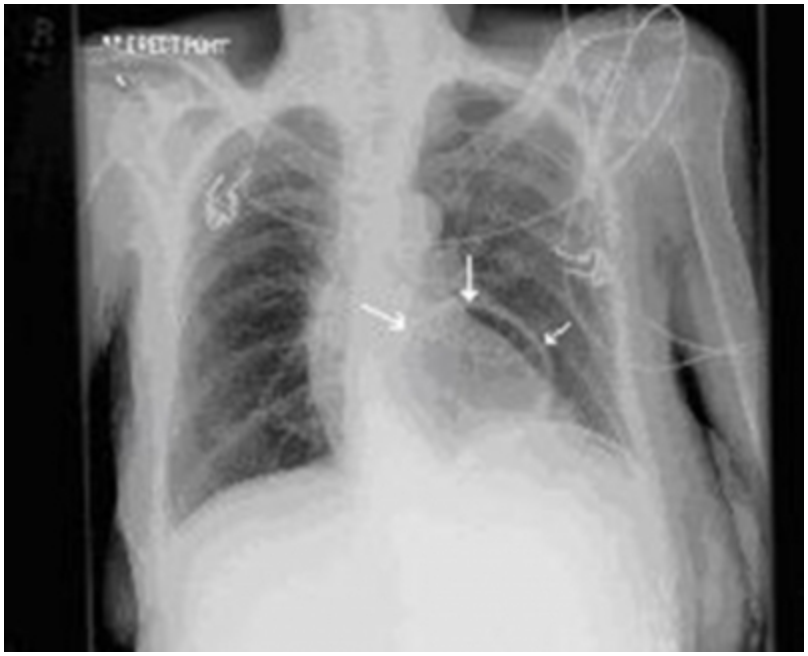
(f) pregnancy

(g) CNS depressants

(h) hypothyroidism


Normal squamous esophagus
Squamocolumnar junction
Diaphragm
Stomach
Hiatal Hernia


hiatus hernia
An X-ray film of the chest shows a retrocardiac, gas-filled structure.



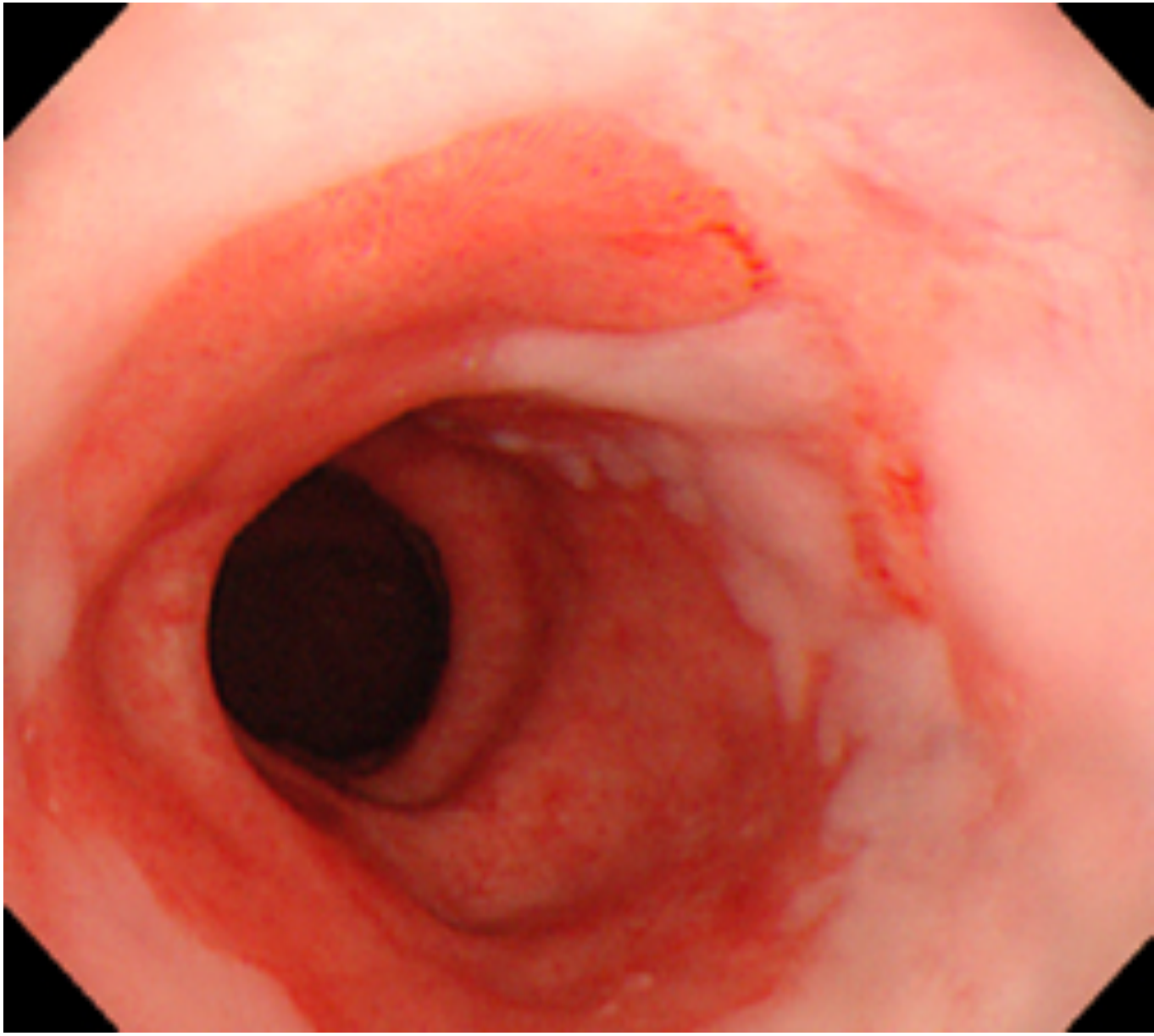
CT scan of the abdomen with contrast was done which showed marked distention and distortion of the stomach with herniation of a portion of the stomach into the lower thorax, representing a combination of hernia through the esophageal hiatus hernia

5. What are other causes of esophagitis?

Ingestion of irritants (eg, alcohol, corrosive acids); infections in immunosuppressed hosts by fungi (eg, Candida) or viruses (eg, CMV, herpes); uremia; radiation therapy; graft-versus-host disease; and cytotoxic anticancer therapy.

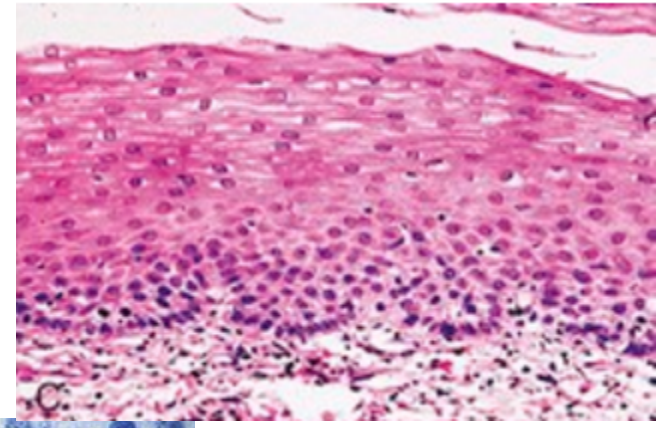
6. **What are the gross and microscopic features of reflux esophagitis?**

Gross featurs:
- Simple **hyperemia**
- Erosion
- Ulceration
- Stricture
- Development of Barrett esophagus
- Development of mass: adenocarcinoma

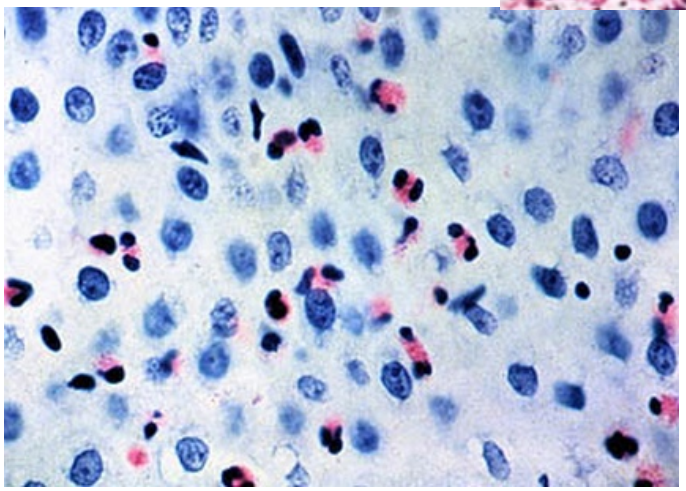


Microscopic features of reflux esophagitis

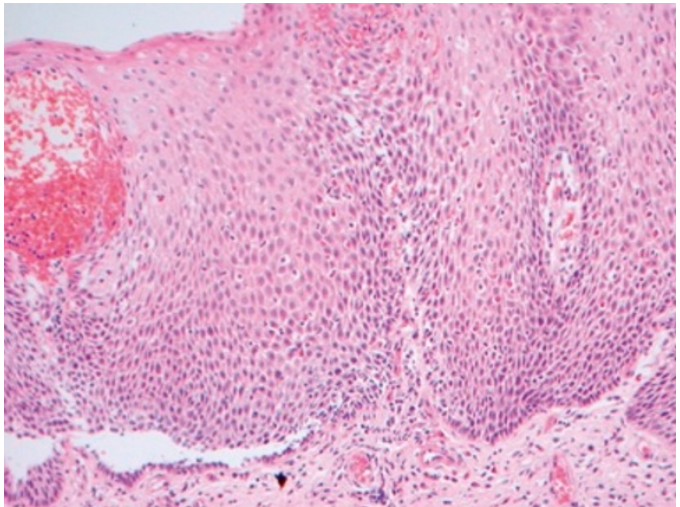
1. basal zone hyperplasia,

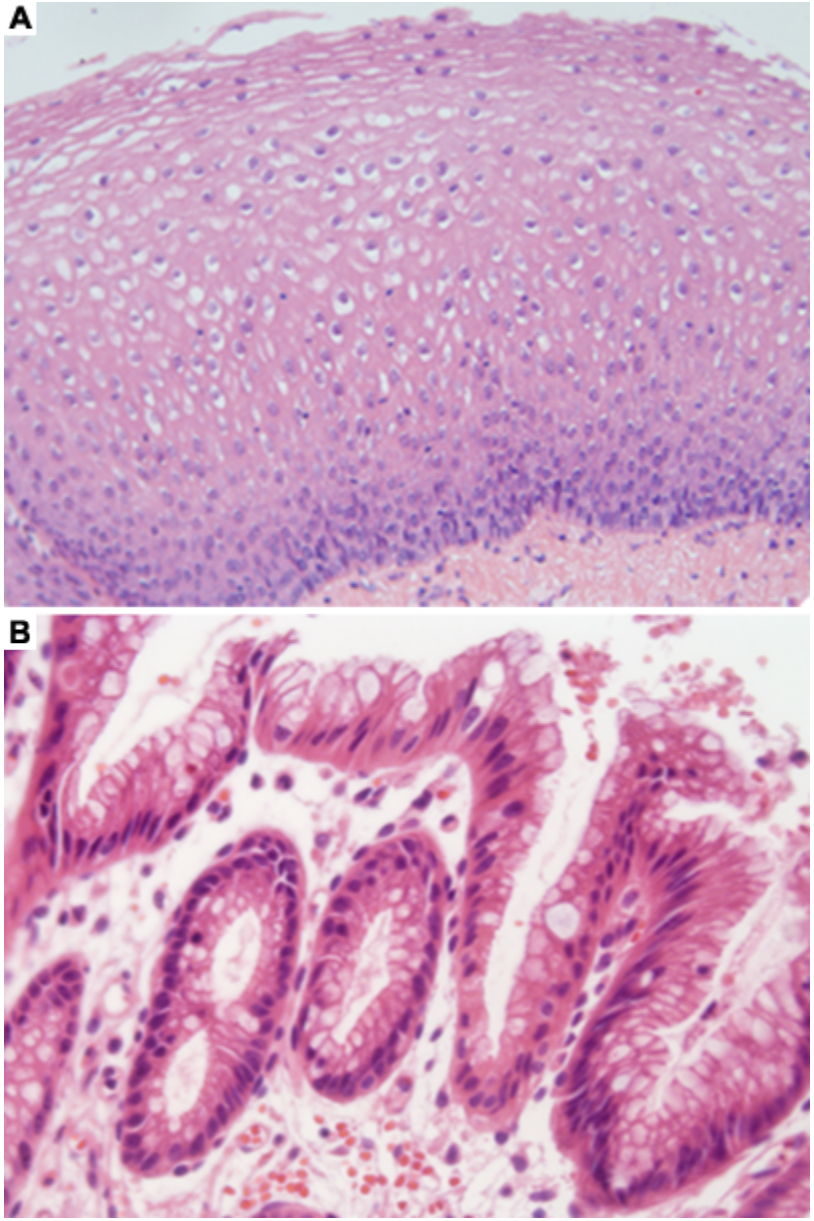


2. Eosinophils and neutrophils

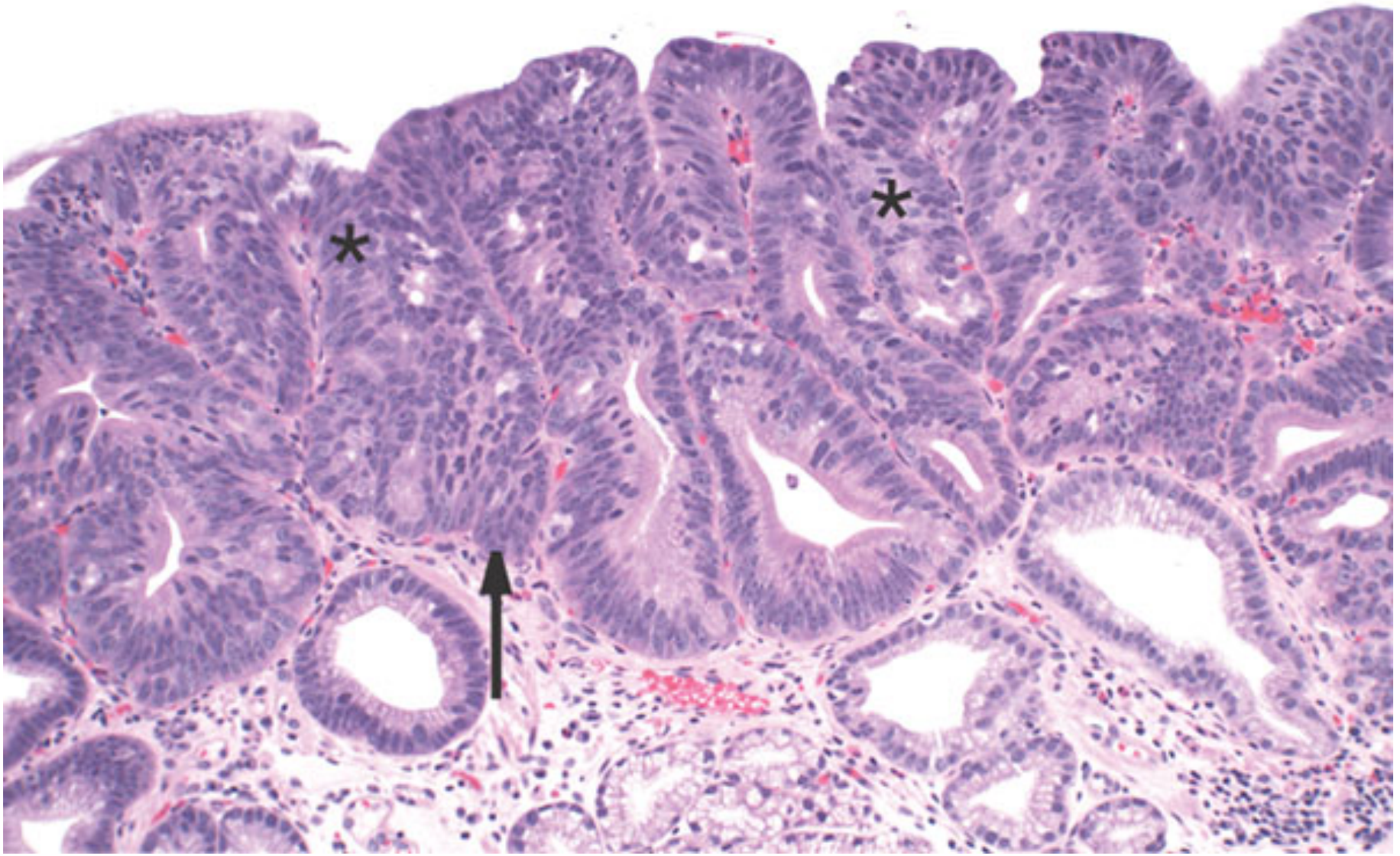


3. Elongation of lamina propria papillae

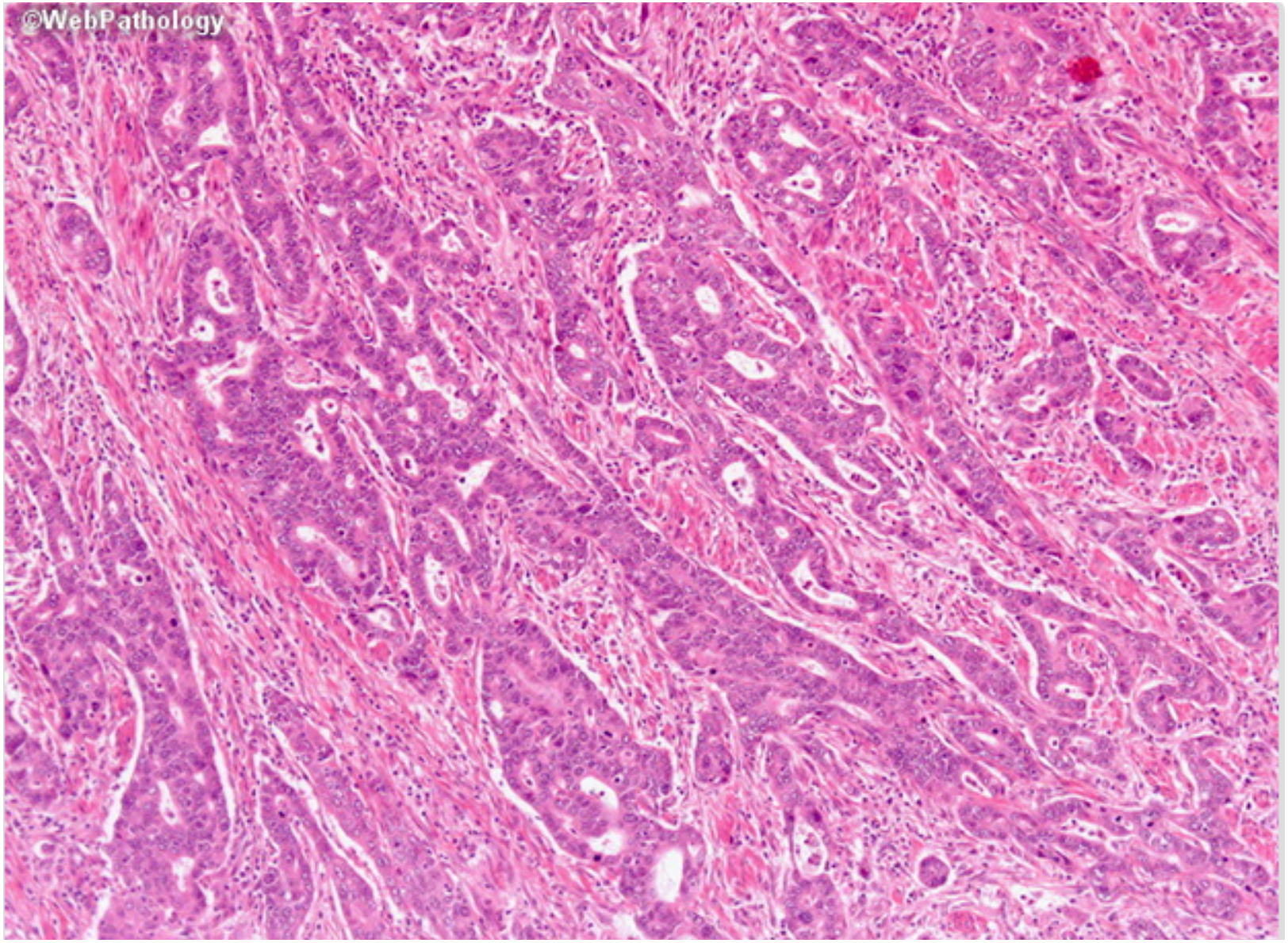




Barrett esophagus without dysplasia



Barrett esophagus with dysplasia



Adenocarcinoma in Barrett Esophagus

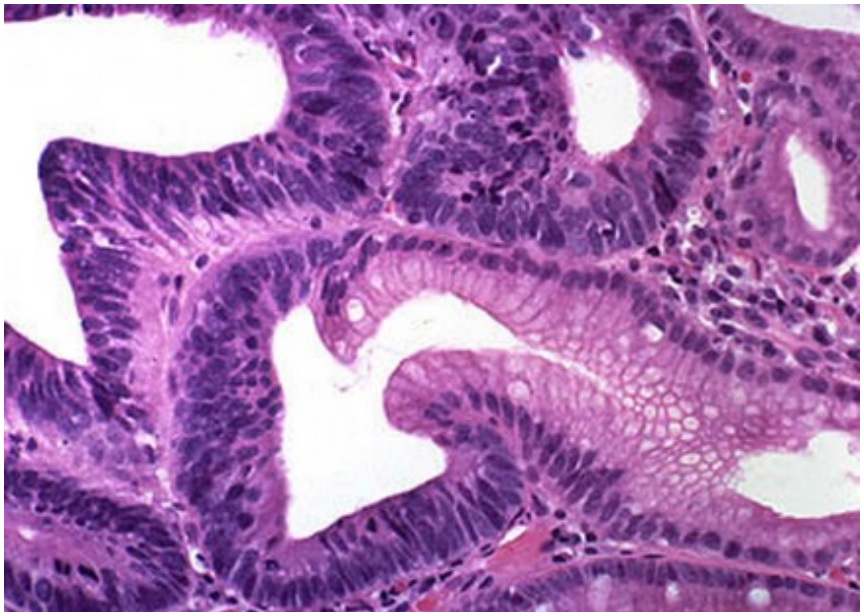

Mass , need biopsy
adenocarcinoma

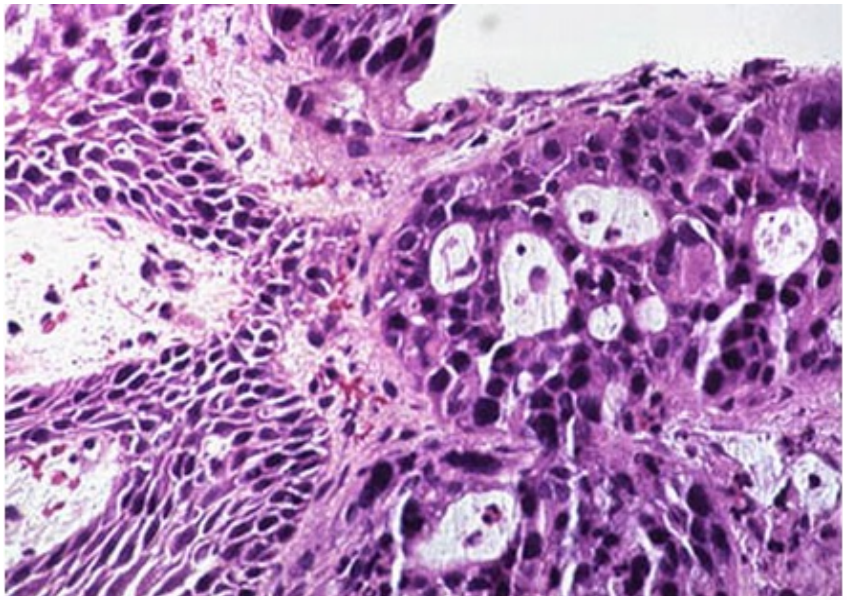
7. What are the major complications of reflux esophagitis?

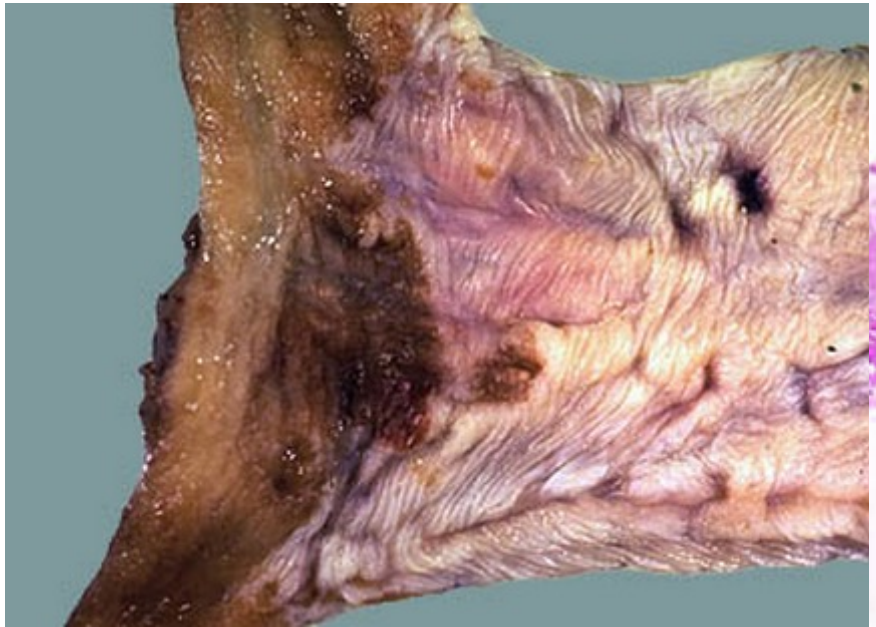
The potential complications of severe reflux esophagitis are (a) ulcer; (b) bleeding; (c) development of stricture; (d) development of Barrett esophagus and adenocarcinoma.

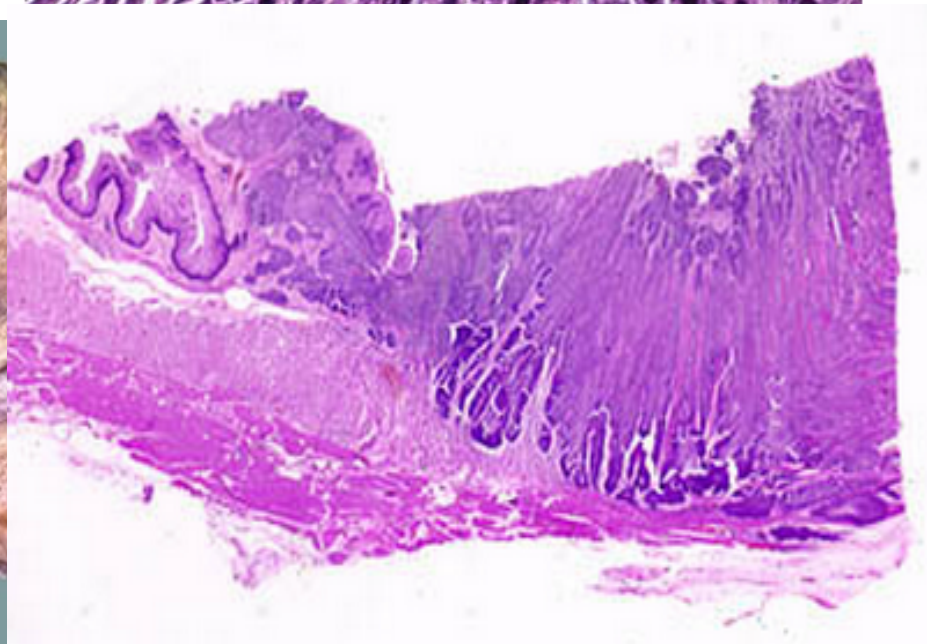
complications of reflux esophagitis

-development of Barrett esophagus and adenocarcinoma









- linear-oriented dilated and tortuous veins (arrows) in the submucosa of the distal esophagus

Esophageal varices