

STOMACH

-Inflammatory disorders

Gastropathy :- When cell injury and regeneration are present but inflammatory cells are absent.

Gastritis is inflammation of the gastric mucosa.

Gastritis may be :-

1-Acute Gastritis:-When neutrophils are present, the lesion is referred to as **acute gastritis**. It is a transient mucosal inflammatory process . this inflammation accompanied by **hemorrhage and erosion in to the mucosa**. this erosion is an important cause of acute gastrointestinal bleeding.

Etiology

- 1-Reduced mucin synthesis in elderly persons .
- 2-Nonsteroidal anti-inflammatory drugs (NSAIDs) particularly aspirin.
- 3-Ingestion of harsh chemicals, particularly acids or bases, either accidentally or as a suicide attempt.
- 4-Excessive alcohol consumption.
- 5-Radiation therapy.
- 6-Chemotherapy.
- 7- Mechanical trauma (eg.nasogastric intubation)
- 8- Heavy smoking

Concurrent presence of erosion and hemorrhage is readily visible by endoscope and termed **acute erosive hemorrhagic gastritis**. which marked by mucosal edema , erosion , neutrophilic infiltrates and purulent exudates.

Clinical feature

- 1- That may be asymptomatic or
- 2- Cause variable degrees of epigastric pain, nausea, and vomiting .
- 3-In more severe cases there may be mucosal erosion, ulceration, hemorrhage, hematemesis, melena, or, rarely, massive blood loss.

2-Chronic gastritis

Characterized by presence of mucosal inflammatory changes which lead to **mucosal atrophy** and **epithelial metaplasia**.

Chronic gastritis typically are less severe but more persistent than those of acute gastritis.

Causes (etiology)

1- **Helicobacter pylori** :- infection with the bacilli is the most common cause of chronic gastritis (90%).

2- **Autoimmune Gastritis**:- which result from auto Antibodies to the parietal cells of gastric glands lead to gland destruction and mucosal atrophy with concomitant loss of acid and intrinsic factors production with resultant anemia .

Morphology

- **intestinal metaplasia** may occur replacement of gastric epithelium with columnar and goblet cells .

- **Helicobacter pylori** induce proliferation of lymphoid tissue within the gastric mucosa has been implicated as a causative of **gastric lymphoma**.

gastric ulceration

Ulcer is a breach in the mucosa of alimentary tract that extend through muscularis mucosa in to the sub mucosa or deeper.

Peptic ulcer are chronic ,most often solitary lesions that occur in any portion of gastrointestinal tract exposed to acid pepetic juice . Peptic ulcer occur either in the first portion of **deodenum** or in the **stomach**.

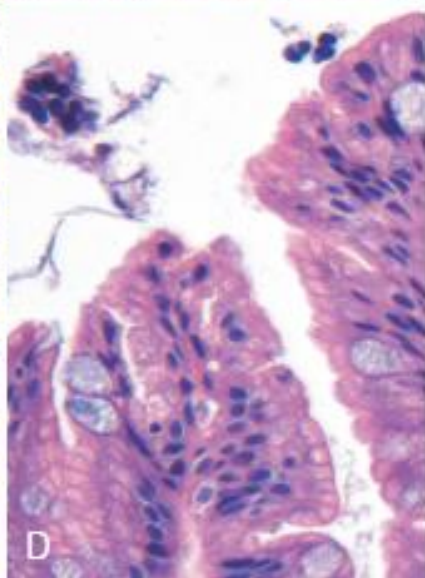
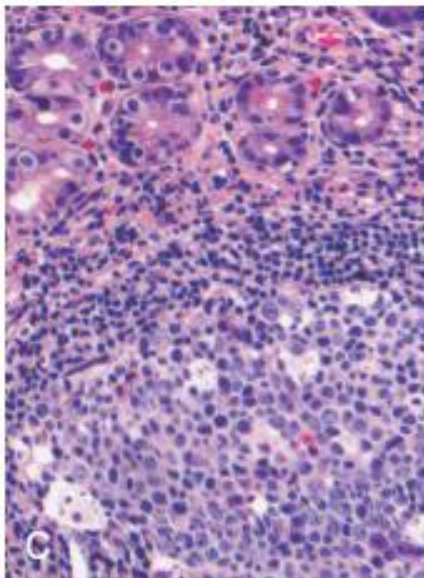
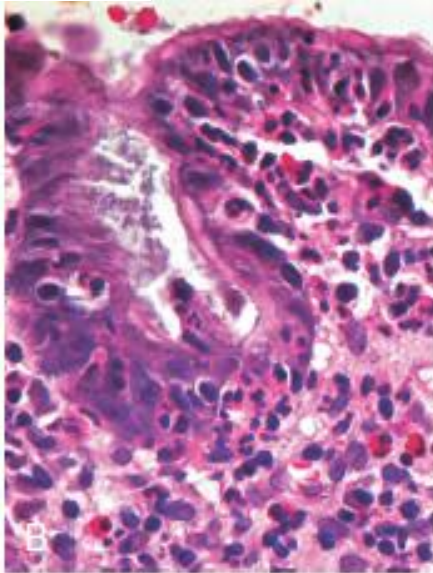
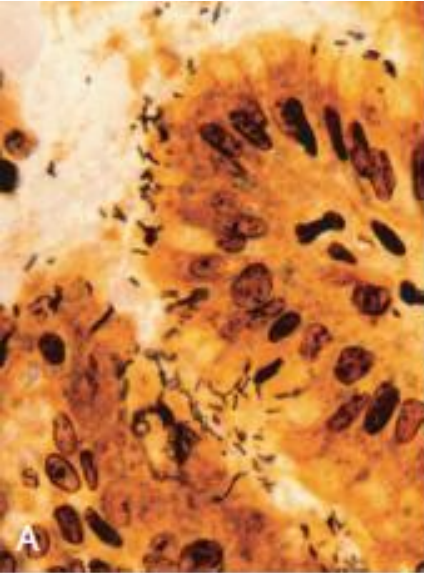
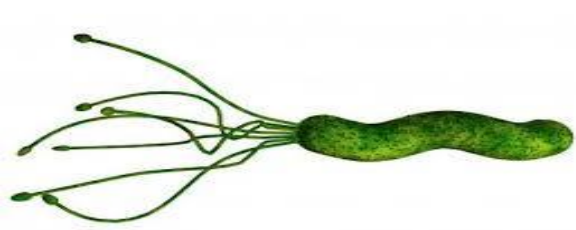
Causes :-

There are two important causes:-

- 1-mucosal exposure to gastric acid and pepsin.
- 2-H pyloric infection and non steroidal anti inflammatory drugs (NSAID).

The mechanisms by which the H.pylori cause gastric ulcer :-

- 1- **H.pylori** do not invade the tissue ,but induce inflammatory response by production of inflammatory cytokines as interleukin which recruit and activate neutrophils.
- 2- Several bacterial product (**ex .urease**) cause epithelial cell injury and induction of inflammation as well as (**phospholipases**) that damage the surface epithelial cell. Urease and phospholipases breakdown the gastric mucus membrane ,thus weakening the first line of mucosal defense.
- 3- H.pylori enhances gastric acid secretion and impair duodenal bicarbonate production thus reducing luminal PH in duodenum .
- 4- Several H.pylori proteins are immunogenic which evoke immune response in mucosa. This will activate B and T cells which can be seen in chronic gastritis caused by H.pylori .



Chronic gastritis. **A**, Spiral-shaped *Helicobacter pylori* bacilli are highlighted in this Warthin-Starry silver stain.

B, Intraepithelial and lamina propria neutrophils are prominent.

C, Lymphoid aggregates with germinal centers and abundant subepithelial plasma cells within the superficial lamina propria are characteristic of *H. pylori* gastritis.

D, Intestinal metaplasia, recognizable as the presence of goblet cells admixed with gastric epithelium, can develop and is a risk factor for development of gastric adenocarcinoma.

The mechanism by which NSAID cause peptic ulcer

1-NSAID inhibit the prostaglandin synthesis and increase the secretion of HCL and reduce the bicarbonate and mucin production .

2-loss of mucin degrade the mucosal barrier that normally prevent the acid from reaching the epithelium.

3-NSAID also impair angiogenesis . thus impeding healing of ulcer.

Morphology

Peptic ulcers are four times more common in the proximal duodenum than in the stomach.

Peptic ulcer has typical volcano like, erythematous and elevated margins with crater .

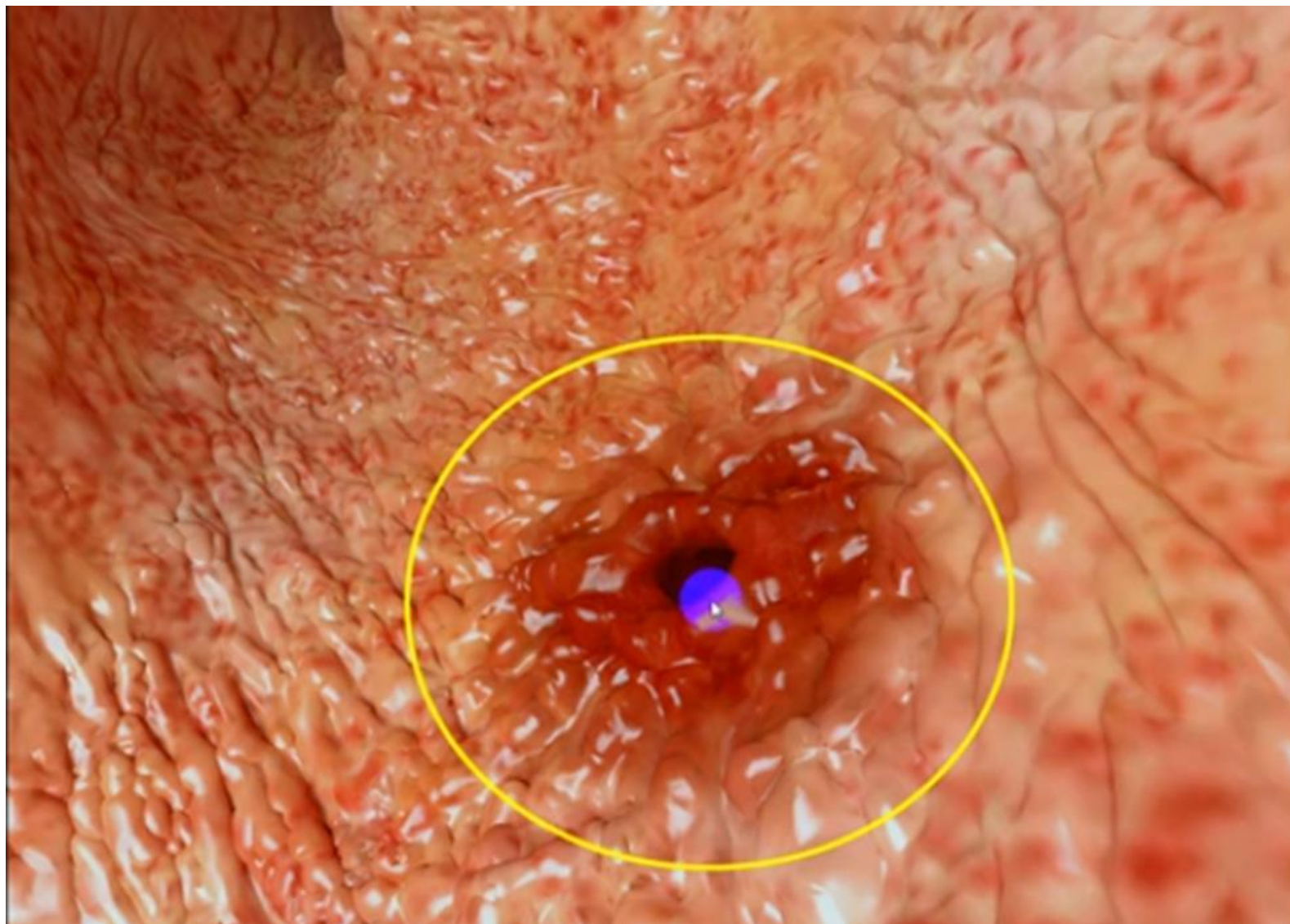
In Peptic ulcer (chronic ulcer) four zones can be distinguished :-

A- the base and margins have thin layer of necrotic debris underlain by

B- zone of inflammatory infiltration of neutrophils, underlain by

C- granulation tissue ,deep to which is

D- Fibrous, collagenous scar that fans out widely from the margins of ulcer.



Clinical features

- peptic ulcers cause epigastric burning or aching pain, significant complications such as iron deficiency anemia, hemorrhage, or perforation.
- The pain tends to occur 1 to 3 hours after meals during the day, is worse at night, and is relieved by alkali or food .

Complication

1-Persistent bleeding within the ulcer base may cause life-threatening hemorrhage.

2-Perforation is a complication that demands emergent surgical intervention..

- Tumors of stomach

- Gastric Polyps:- is a nodules or masses that project above the level of the surrounding mucosa of agastrointestinal tract . Polyps may develop as a result of epithelial or stromal cell hyperplasia, or neoplasia .

There are many different types of polyps:-

1-Hyperplastic Polyps Up to 75% of all gastric polyps.its usually arising in a background of chronic gastritis .

2-Fundic Gland Polyps (about 10%) of gastric polyps occur sporadically and in individuals with familial adenomatous polyposis)

3- Adenomatous polyps (about 5%)

- Gastric carcinoma

1-Adenocarcinoma the most common malignancy of the stomach, comprising more than 90 -95 % of all gastric cancers. Early symptoms resemble those of chronic gastritis, including dyspepsia, dysphagia, and nausea. at advanced stages weight loss, anorexia, anemia, and hemorrhage .

2- lymphoma 5% of all gastric cancers.

3- Carcinoid Tumor 3-4 %.

- **H. pylori** infection is the most common etiologic agent for gastric adenocarcinoma .

- the risk is high with chronic gastritis . this will develop to **gastric atrophy, intestinal metaplasia** and **dysplasia** and **cancer**.

Morphology

According to morphology gastric carcinoma is classified in to:-

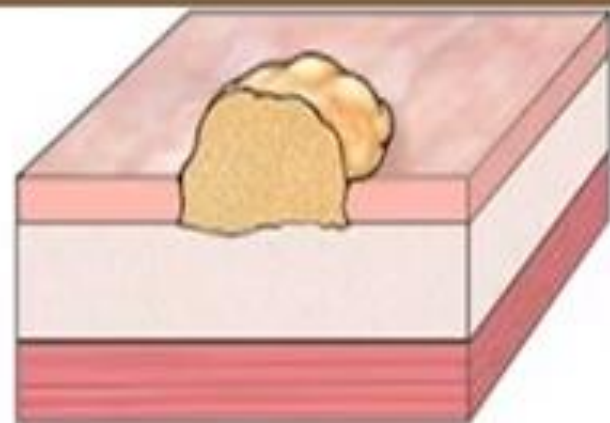
1- exophytic :- protrusion of tumor mass into the lumen.

2- flatt or depressed :- in which there is no obvious tumor mass within the mucosa.

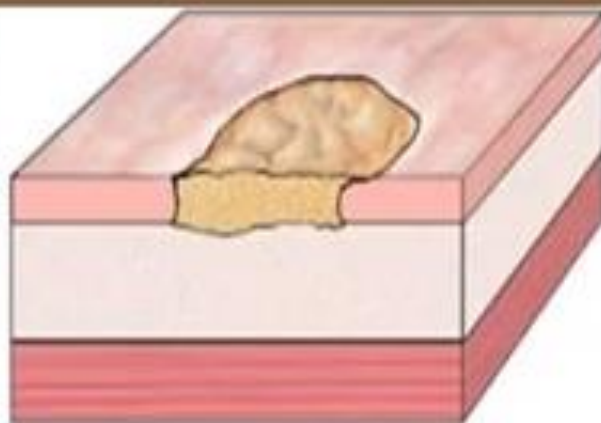
3- excavated (ulcerated):- shallow or deep erosive area present in the wall of stomach.

Some times, advanced gastric carcinoma involve the entire thickening of gastric wall producing very thick wall known as **leather bottle or linitis plastica**

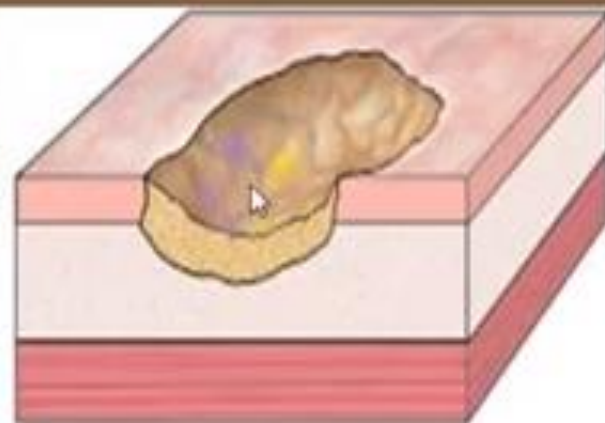
Diagram shows types of gastric carcinoma



A. Exophytic



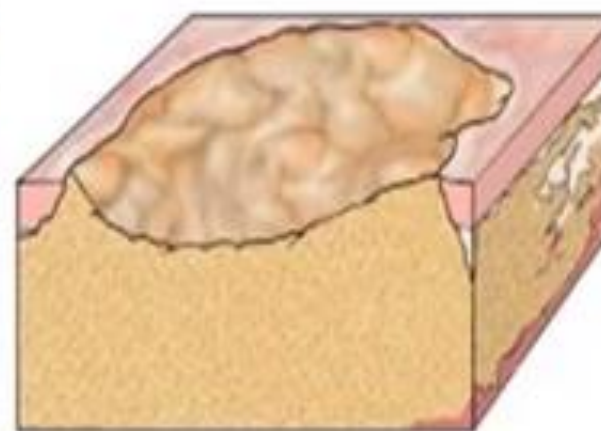
Flat or depressed



Excavated



B. Exophytic

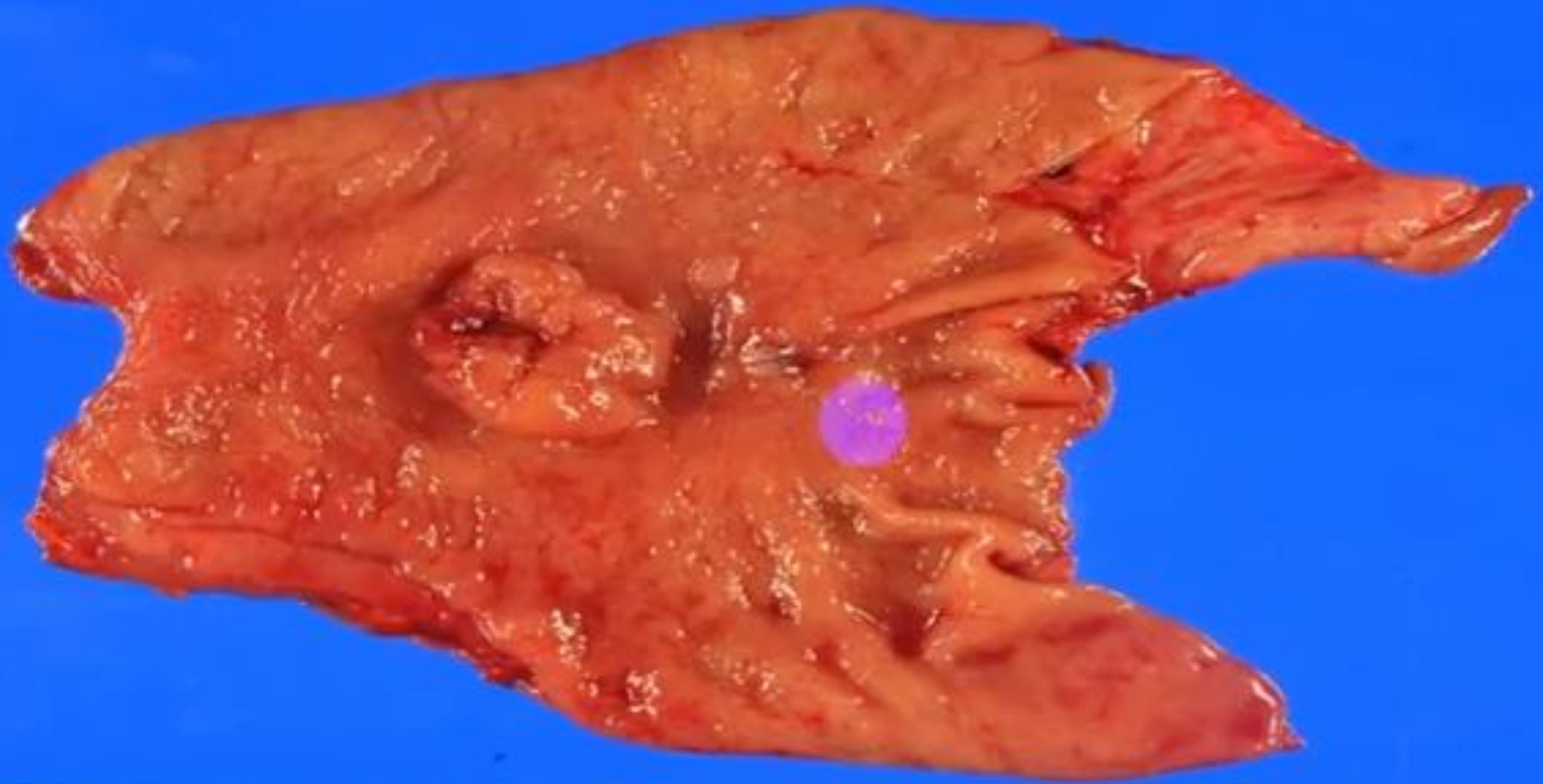


Linitis plastica



Excavated

Exophytic gastric carcinoma



Excavated gastric carcinoma



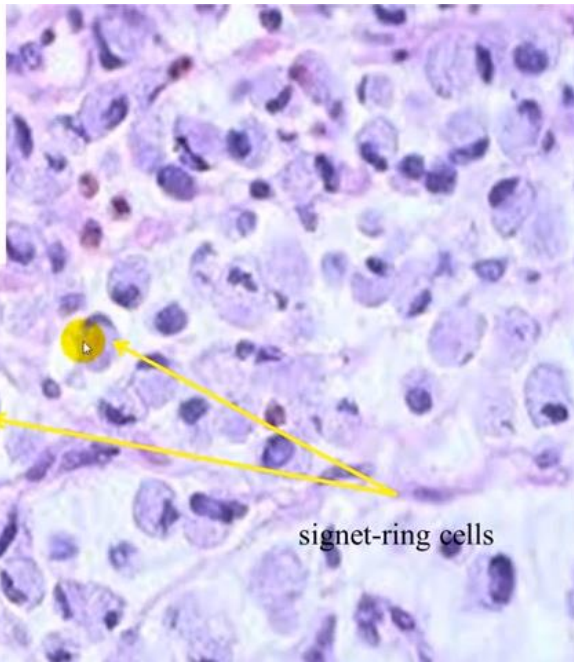
Linitis plastica (leather bottle stomach)



Histological appearance of gastric cancer have two types :- **intestinal type** and **diffuse type**.

- **intestinal type**:- is composed of malignant cells forming neoplastic intestinal glands.

- **diffuse type** :-composed of gastric type mucous cell that do not form gland but permeate the mucosa as scattered individual cell called "**signet ring**"



-Early lymph node metastasis involve supraclavicular lymph node (**virchows node**).

-an other usual mode of intraperitoneal spread in female is to both the ovaries ,giving rise to the so called **krukenberg tumor**.

Clinical feature

- **Early gastric carcinoma :-** is **asymptomatic** and can be discovered only by endoscopic examination.
- **advanced carcinoma:-** is also may be **asymptomatic**, but is often first come to light because of **abdominal discomfort** or **weight loss**.