BARRETT ESOPHAGUS.
GASTRITIS.
PEPTIC ULCER.

-Dr. Rajul Shah

- Present at lower part of esophagus.
- It is complication of long standing gastroesophageal reflux
- It is metaplastic change where esophageal squamous mucosa is replaced by columnar cells (intestinal & gastric).
- Metaplastic columnar epithelium more resistant to injury.
- More common in male.
- Presents between 40-60 years of age.

- Barrett mucosa may be focal and variable from one site to next.
- So repeated endoscopy and biopsy for definative diagnosis
- Male: female - 4:1.

- Increase risk of ESOPHAGEAL ADENOCARCINOMA.
- Metaplasia

  ↓

  mild Dysplasia

  ↓

  severe dysplasia (pre invasive change)

  ↓

  adenocarcinoma

  ↓

- Dysplasia is associated with ,
  - prolonged symptoms
  - longer segment length
  - increase patient age
  - caucasian race

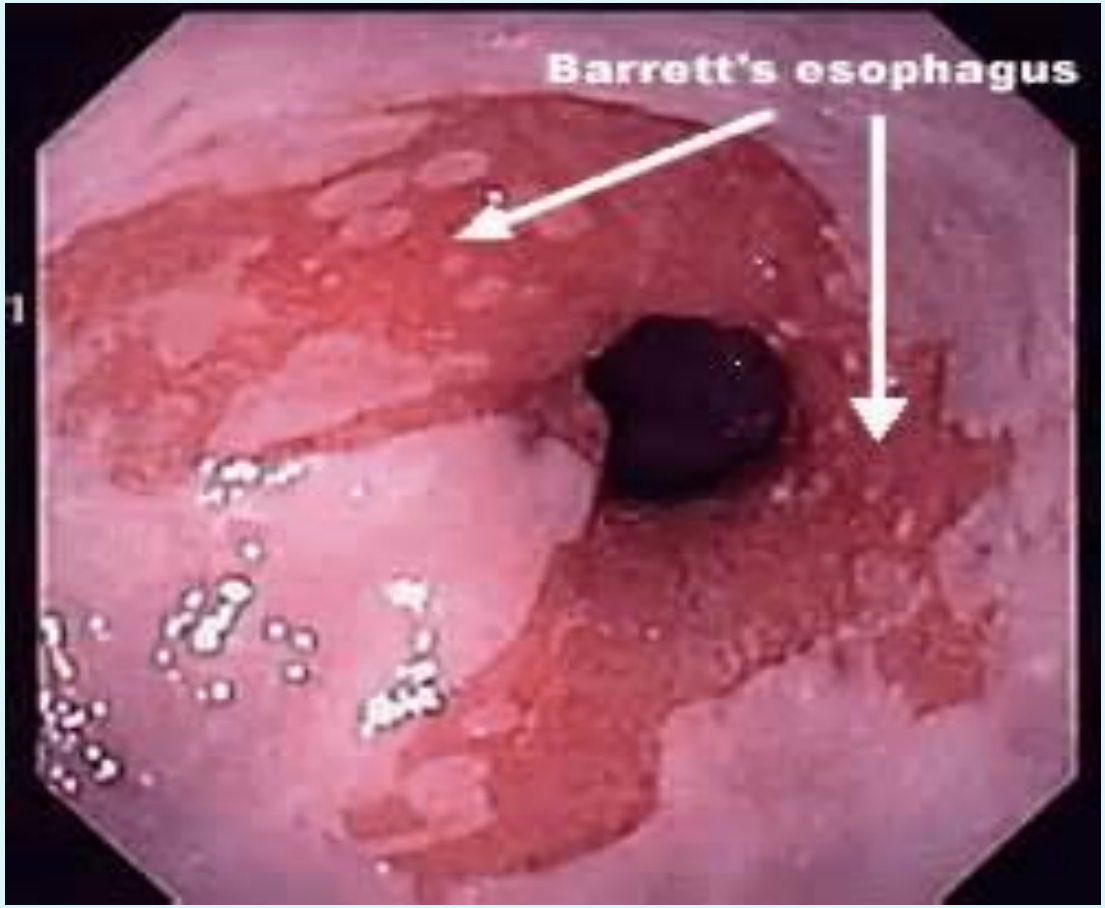
MORPHOLOGY :

- One or more foci of red velvety mucosa extending upward from GE junction.
- Red velvety mucosa alternate with pale, smooth squamous mucosa.
- long segment barrett esophagus if ≥ 3 cm
- short segment barrett esophagus < 3 cm

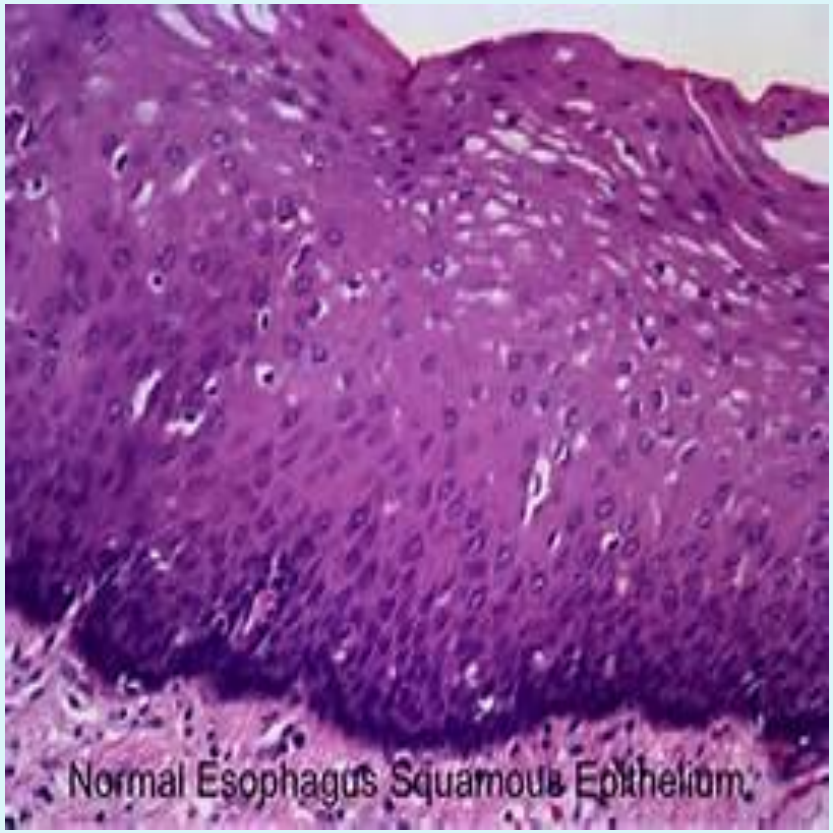
DIAGNOSIS

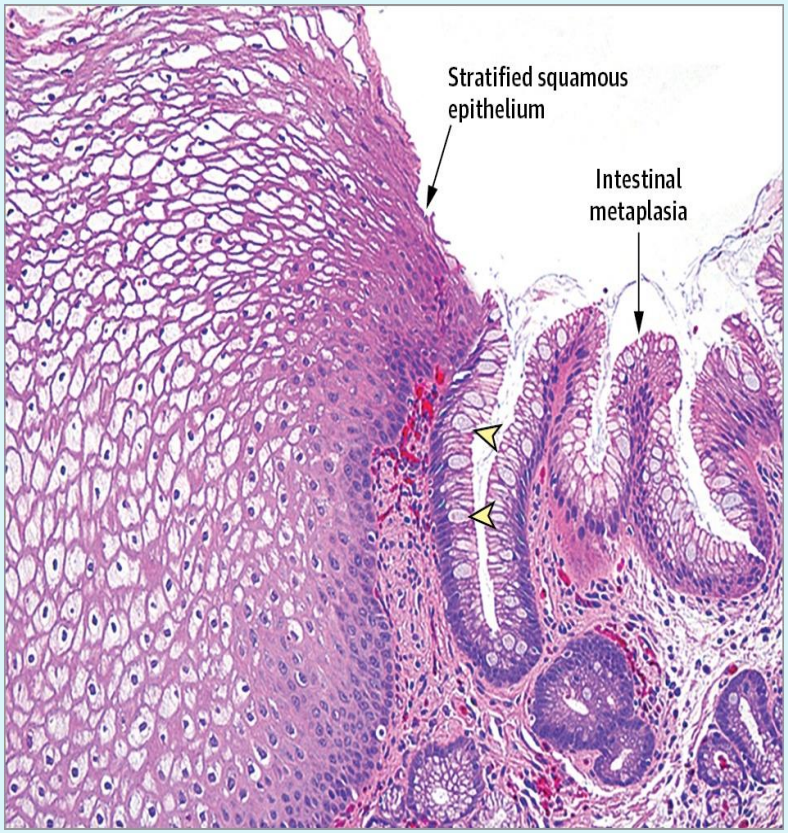
- High resolution endoscopy
- Biopsy : – intestinal type metaplasia with goblet cells replacing squamous epithelium (diagnostic)
  - non-goblet columnar cells are also present.
- When dysplasia- it should be classified as low grade & high grade

Endoscopic finding.



Normal and Barrett's Esophagus :





COMPLICATIONS :

- Ulcer
- Bleeding
- Stricture
- Esophageal Adenocarcinoma(30 to 40 fold increased risk)

MANAGEMENT :

- Regular endoscopy with biopsy
- High grade dysplasia is treated as intramucosal carcinoma

GASTRITIS

- Inflammation of gastric mucosa
- Acute gastritis & chronic gastritis
- When neutrophils are present – acute gastritis
  It resolves within few days with antacids or proton pump inhibitors

- **CHRONIC GASTRITIS** – presence of chronic mucosal inflammatory cells leading to mucosal atrophy & intestinal metaplasia.

Pathogenesis :

- infection with a bacillus H.pylori (most common cause)
- Autoimmune gastritis - < 10 % cases diffuse atrophic gastritis
- Less common causes :
  - radiation
  - alcohol & cigarette smoking
  - chronic bile reflux
  - mechanical injury (indwelling nasogastric tube)

- uremia
- systemic diseases (crohn's disease, amyloidosis ,GVH disease)

Gastritis due to H.pylori :

Pathogenesis :

- predominantly antral gastritis with normal or raised acid production.
- no hypergastrinemia.
- antral gastritis leads to duodenal ulcer.

- may progress to body and fundus and causes multifocal atrophic gastritis which leads to intestinal metaplasia and increase risk of gastric carcinoma.

- Virulance of H.pylori is due to ,

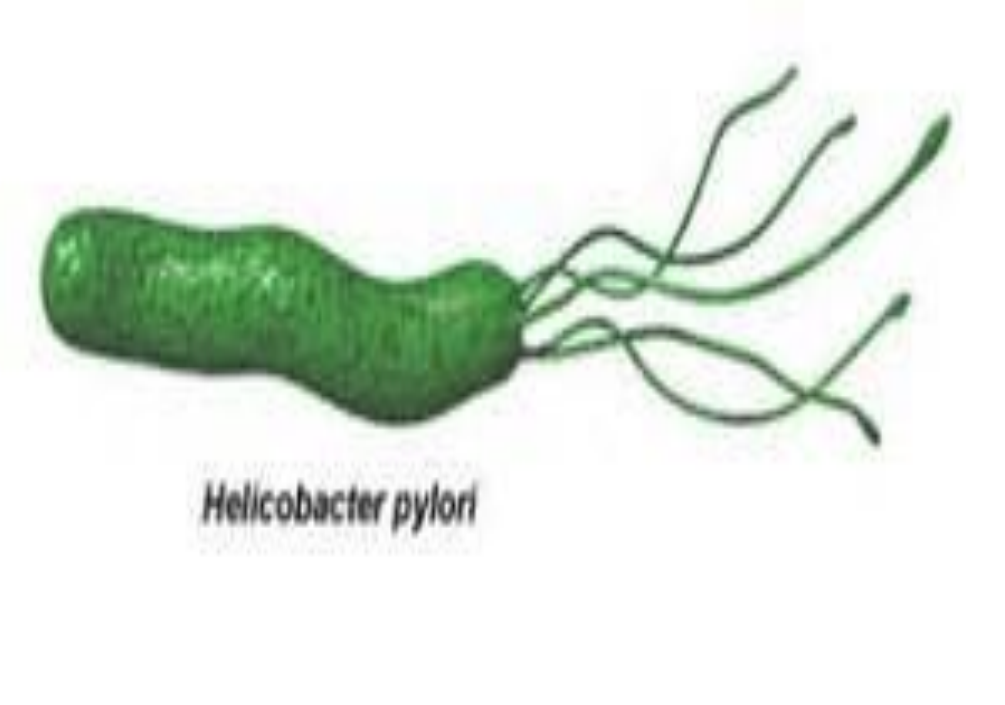
  Flagella – motility in viscous mucous

  Urease – produces ammonia,lowers pH and enhances bacterial survival

  Adhesins – enhances adhesion to surface epithelium

  Toxins - Cag A (cytotoxin associated gene A) causes disease progression

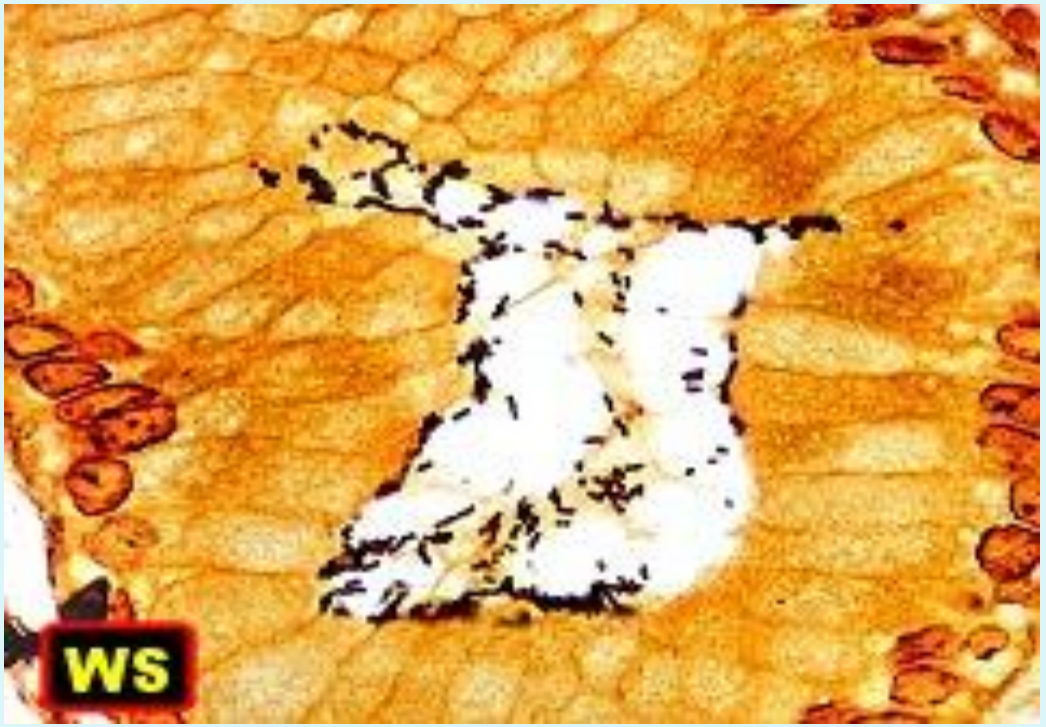
Curvilinear H.Pylori with flegella :



MORPHOLOGY :

- H.pylori is concentrated within mucous overlying epithelial cells of surface
- Most easily demonstrated within warthin starry silver stain
- Most often found in antrum, so antral biopsy is preffered for H.pylori gastritis.
- Less common in body and fundus (due to acid producing mucosa)

Warthin starry silver stain :



- Intraepithelial neutrophils and subepithelial plasma cells are characteristic.
- Lymphoid aggregates with germinal centres are seen.(potential to transform into MALT lymphoma).
- In long standing cases, atrophy ⟹ intestinal metaplasia ⟹ increased risk of gastric adenocarcinoma

DIAGNOSIS :

Non-invasive :

1. Serological test (detection of antibodies to H.pylori)
2. Fecal bacterial detection
3. Urea breath test(detection of ammonia production)

Invasive : biopsy – 1. microscopy

2. bacterial culture
3. urease test
4. PCR for bacterial DNA

AUTOIMMUNE GASTRITIS :

- < 10 % of cases of chronic gastritis

  it spares the antrum

  associated with hypergastrinemia

  (in contrast to H.pylori associated gastritis)

- It is characterised by
  - antibodies to parietal cells & intrinsic factor.
  - reduced serum pepsinogen I concentration.
  - endocrine cell hyperplasia

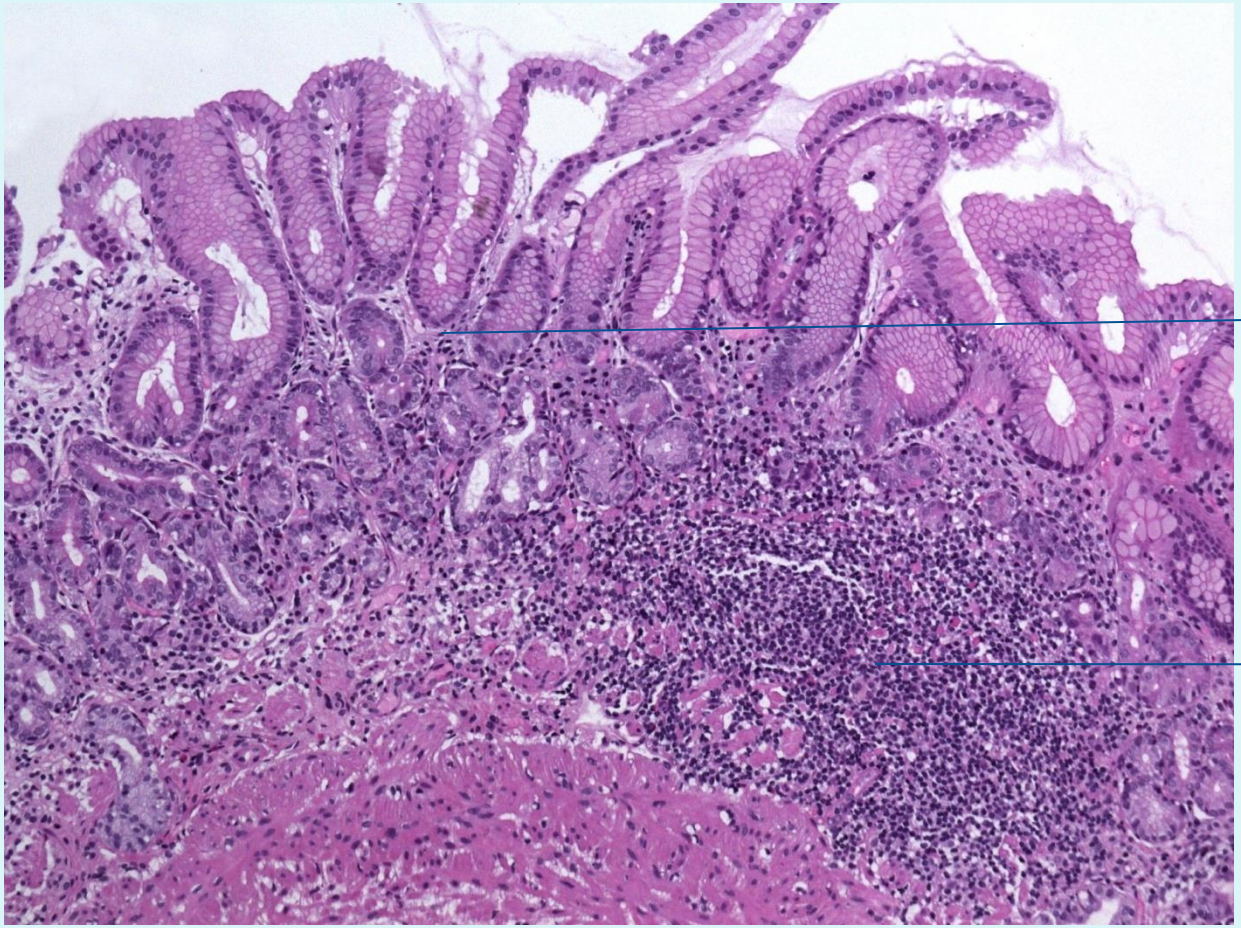
- vit-B-12 deficiency
- defective gastric acid secretion

- Loss of parietal cells leads to reduce gastric acid secretion & intrinsic factor deficiency.
- CD_4+ T cells directed against parietal cell components like H+ , K+ & ATPase causes injury to them & gastritis.
- Autoantibodies to parietal cells are present in 80% of patients.

MORPHOLOGY :

- Diffuse mucosal damage of the oxyntic (acid producing) mucosa within body & the fundus.
- In incomplete atrophy, oxyntic & chief cells & intestinal metaplastic cells produce elevations.
- Endocrine cell hyperplasia
- Rarely it evolves into carcinoid tumor.(NE tumor)
- Inflammatory infiltrate is composed of lymphocytes , macrophages & plasma cells often associated with lymphoid aggregates.

Microscopic picture of chronic gastritis:



Intestinal metaplasia :

CLINICAL FEATURES:

- F > M
- Median age of diagnosis is 60 years.
- Often associated with other autoimmune diseases like Hashimoto thyroiditis ,IDDM , Addision disease , graves disease , myesthenia gravis , etc.
- Concordance in some monozygotic twins
- Clinical presentation is that of Vit-B 12 deficiency.

- Uncommon forms :
- Eosinophilic gastritis
- Lymphocytic gastritis
- Granulomatous gastritis (crohn's dis.,TB , Sarcoidosis, fungi & CMV)

COMPLICATIONS:

- Peptic ulcer
- MALT lymphoma
- Gastric carcinoma

Feature	H.Pylori gastritis	Autoimmune gastritis
Inflammation	Neutro ,plasma	lympho & macrophage
Acid production	normal or increased	decreased
Gastrin	normal or decreased	Increased
Other lesion	polyps	Neuroendocrine hyperplasia
Serology	Antibodies to H.Pylori	Antibodies to parietal cells
Sequelae	ulcer,lymphoma ,adeno carcinoma	Atrophy,anemia,carcinoid adeno carcinoma
Association	low socioeconomic ,rural areas	other auto immune diseases
Location	Antrum	Body

PEPTIC ULCER DISEASE (PUD) :

- Breach in mucosa of alimentary tract that extends through muscularis mucosa.
- Erosion- Breach in epithelium of mucosa - Heals with in days.
- **PEPTIC ULCERS** - Peptic ulcers are chronic, most often solitary lesions that occurs in any portion of GIT exposed to aggressive action of acid peptic juices

Location in following sites in order of decreasing frequency :

- Duodenum first portion.
- Stomach usually antrum.
- Barrett esophagus.
- Within margin of gastro-jejunostomy.
- In duodenum, stomach and/or jejunum of patients with Zollinger - Ellison Syndrome.
- Meckel's diverticulum that contain ectopic gastric mucosa.

- Nearly all peptic ulcers are associated with H.pylori infection , NSAIDs , or cigarette smoking.
- Occurs within gastric antrum or duodenum as a result of H. pylori induced antral gastritis
- In cigarette smokers & persons having CV disease , it occurs due to decrease mucosal flow , oxygenation & repair & regeneration.

NSAIDS :

- Next major cause of peptic ulcer.
- Most commonly used medicine.
- Risk depends upon-Age of pts.
  -Dose of drugs .
  -Duration of therapy.
- Aspirin is direct irritant.
- It suppresses mucosal prostaglandin synthesis.

PATHOGENESIS:

- Peptic ulcers induced by imbalance between gastrodudenal mucosal defences and aggressive forces that overcome such defences.
- People with blood group ‘o’ appears more prone to peptic ulcers. H.pylori expresses bacterial adhesins such as BabA enhances binding to blood group ‘o’ antigen bearing cells.

Host factors that prevents gastric ulceration:

- Secretion of mucus by surface epithelium
- Secretion of bicarbonate-buffering sub.
- Secretion of acid-pepsin from gastric pits as 'jets' entering lumen directly without contacting surface epithelium.
- Rapid gastric epithelial regeneration.
- Mucosal blood flow to sweep away H+ ion.
- Elaboration of prostaglandins-which maintain mucosal blood flow.

Aggressive forces:

1. H.pylori infection - Duodenal ulcer: 70 - 90%
   - Gastric ulcer : 70 %
2. NSAIDS.
3. Gastric hyperacidity.e.g. Zollinger - Ellison syndrome.

   excess gastrin secretion by tumor.

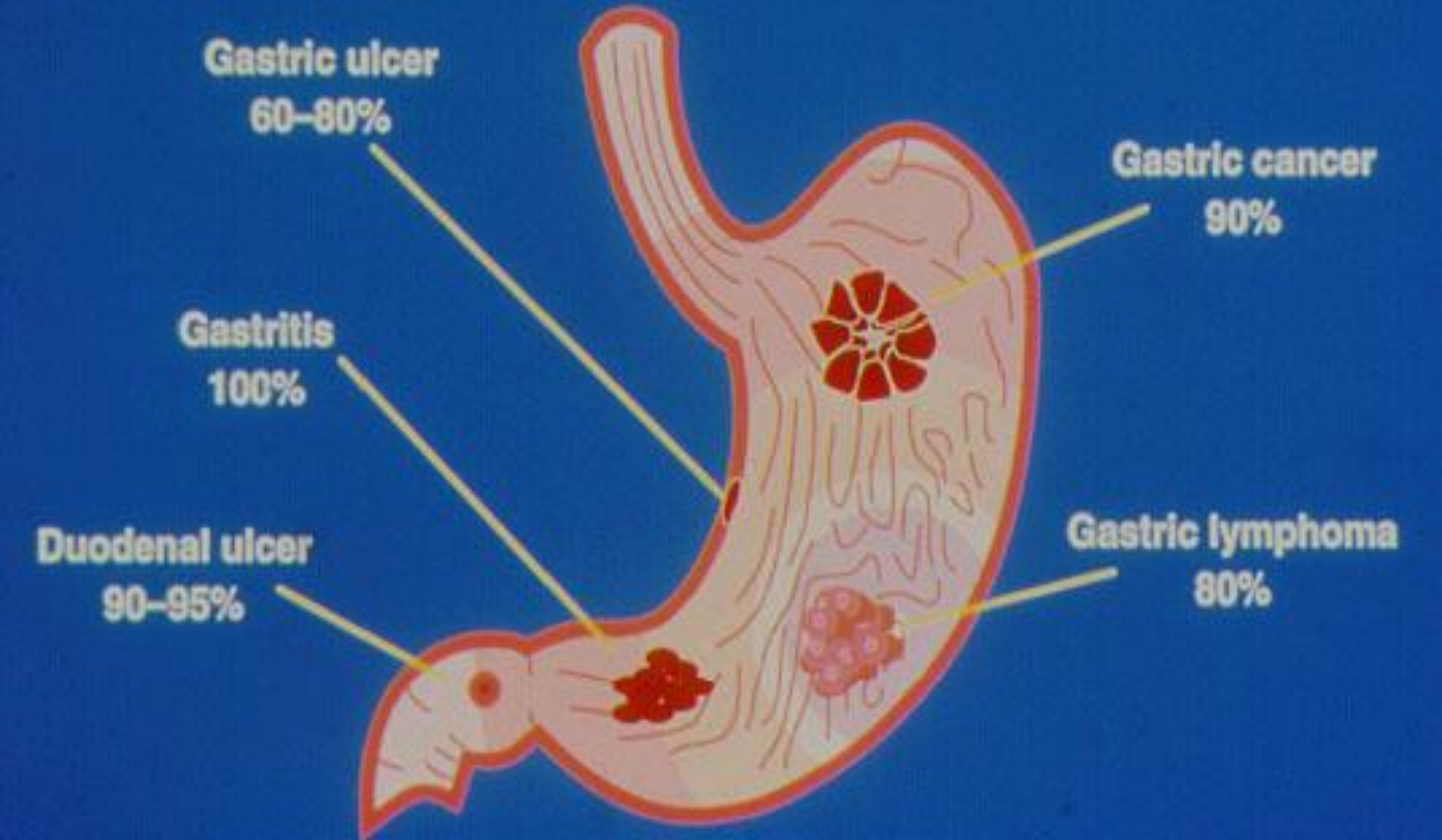
   secrete more acid and pepsin.

4. Cigarette smoking : Impairs blood flow and healing.
5. Corticosteroids : Promote ulcer formation.
6. Alcohol : Alcoholic cirrhosis associated with peptic ulceration.
7. Personality and psychological stress.
8. In some pts. with duodenal ulcer too rapid gastric emptying exposing duodenal mucosa to excessive acid load.

DISEASE ASSOCIATED WITH H.PYLORI :

- CHRONIC GASTRITIS.
- PEPTIC ULCER.
- GASTRIC CARCINOMA.
- GASTRIC MALT LYMPHOMA.

H. pylori: Association with gastroduodenal disease

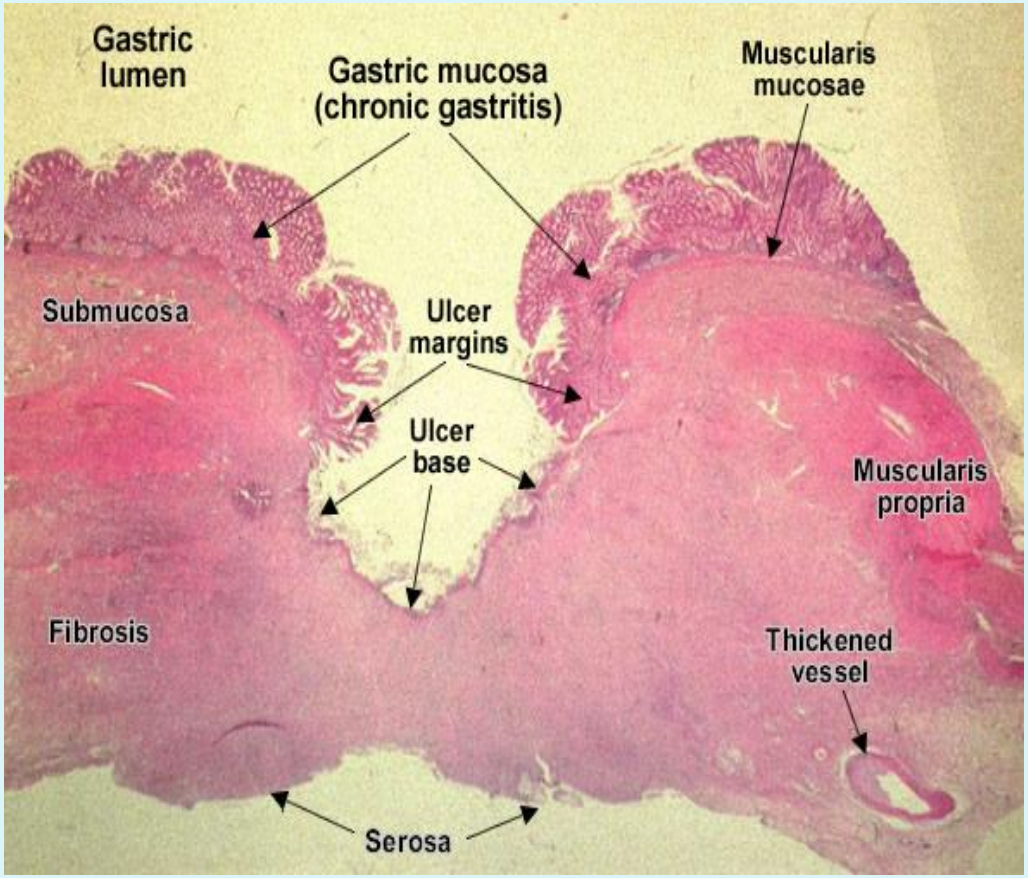


MORPHOLOGY

- All peptic ulcers gastric or duodenal.
  -Identical gross appearance.
  -80% of cases solitary.
  -10% to 20% of cases both gastric and duodenal ulcer.
- Site : 90% of peptic ulcers occur in 1st portion of duodenum.
  Ant. wall more common than post wall.
  Gastric ulcer-antral mucosa-lesser curvature in or around border zone between corpus and antral mucosa.

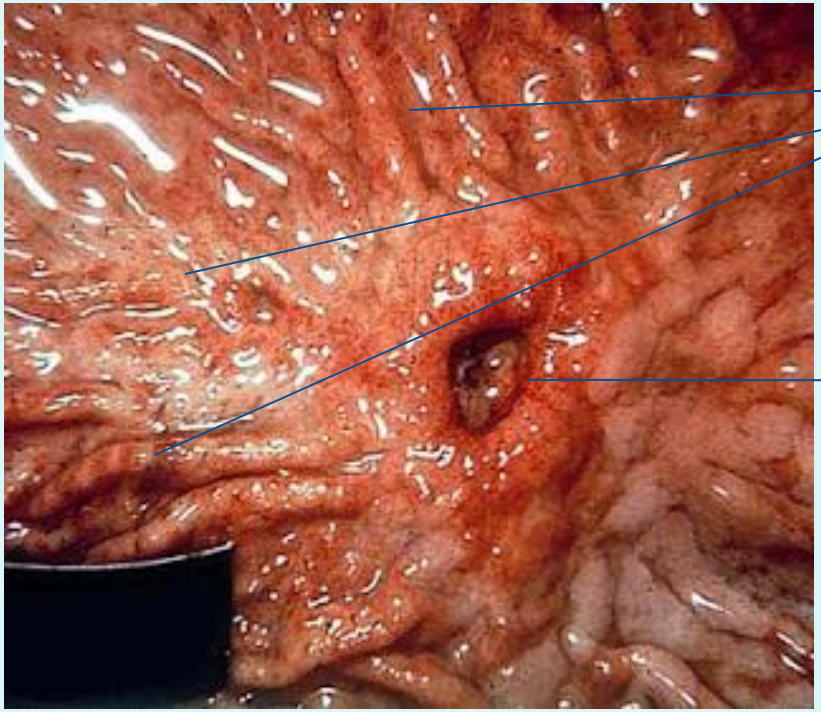
- Size :
  - > 50% of peptic ulcer < 2 c.m. -
  - 10% of peptic ulcer > 4 c.m.
- Shape : Round to oval with punched out defect.
- Margins : Level with surrounding mucosa or slightly elevated.No heaping up of these margins.
- Depth : Varies from superficial lesion involving only mucosa to deeply excavated penetrating ulcer, their base in muscularis.Penetration of entire wall base formed by adjacent pancrease, omental fat or adherent liver.

- **Base :** • smooth and clean, owing to peptic digestion of exudate.
  - At time thrombosed or even patent vessels provided source of fatal haemorrhage project in to base.
- Underlying scarring causes puckering of surrounding mucosa, mucosal folds radiate from crater in spoke like fashion.
- Surrounding ulcer- Gastritis.


Gastric lumen
Gastric mucosa (chronic gastritis)
Muscularis mucosae
Submucosa
Ulcer margins
Ulcer base
Muscularis propria
Fibrosis
Thickened vessel
Serosa

Benign ulcer	Malignant ulcer
1.base-clear due to peptic digestion of exudate	Dirty necrotic
2.Straight margins	Heaped up margins.
3.Inflammatory cells	Malignant cells

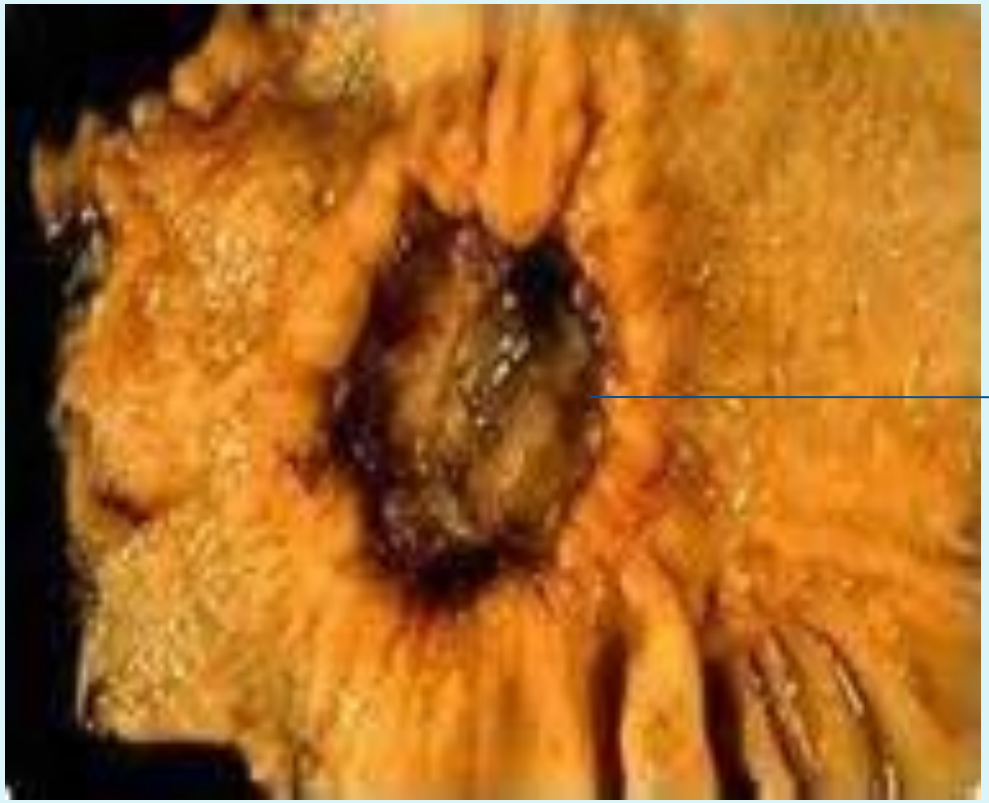
Peptic ulcer with straight margin :



Surrounding mucosa like spokes of a wheel

Clear base

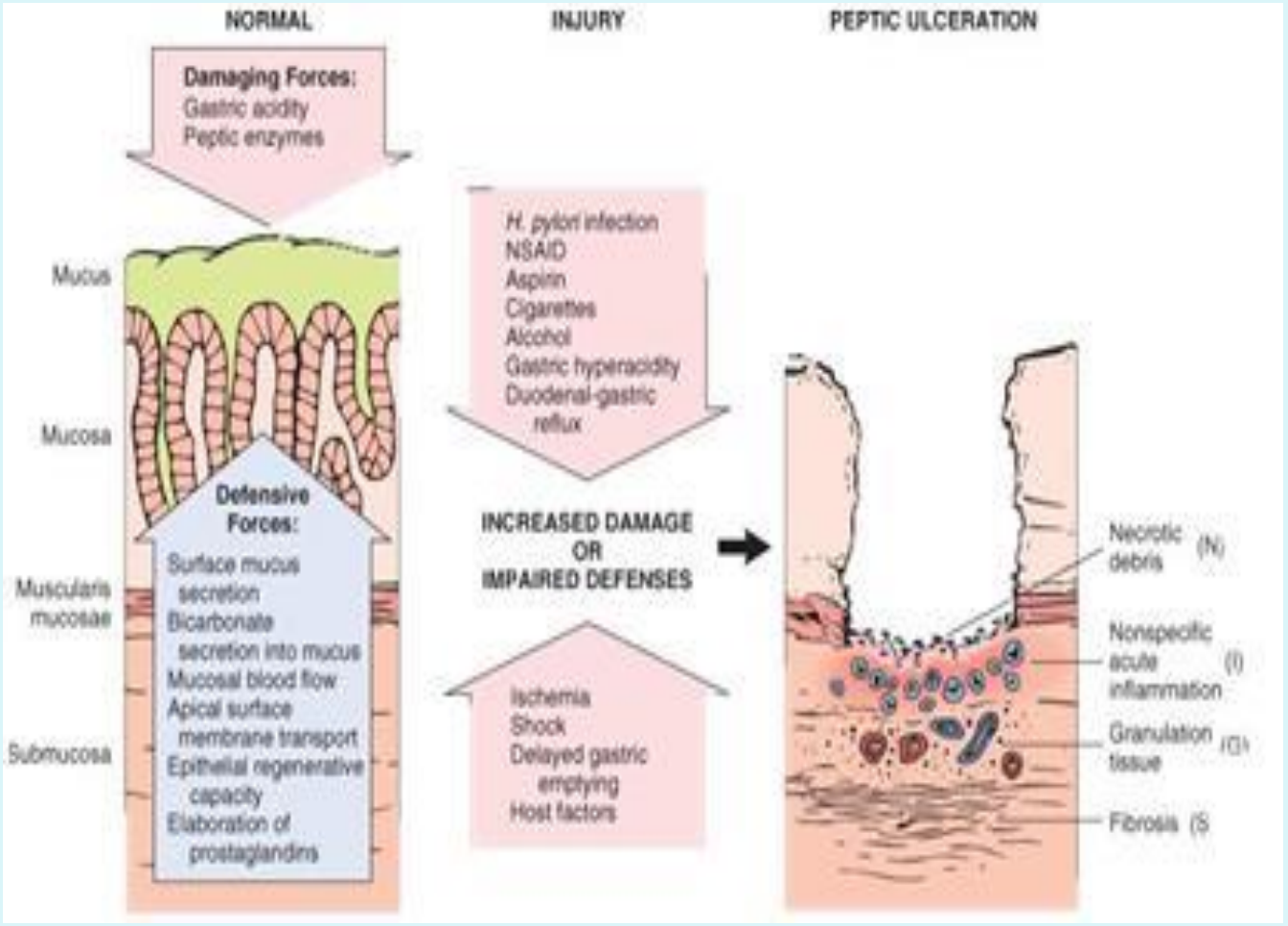
Malignant gastric ulcer :



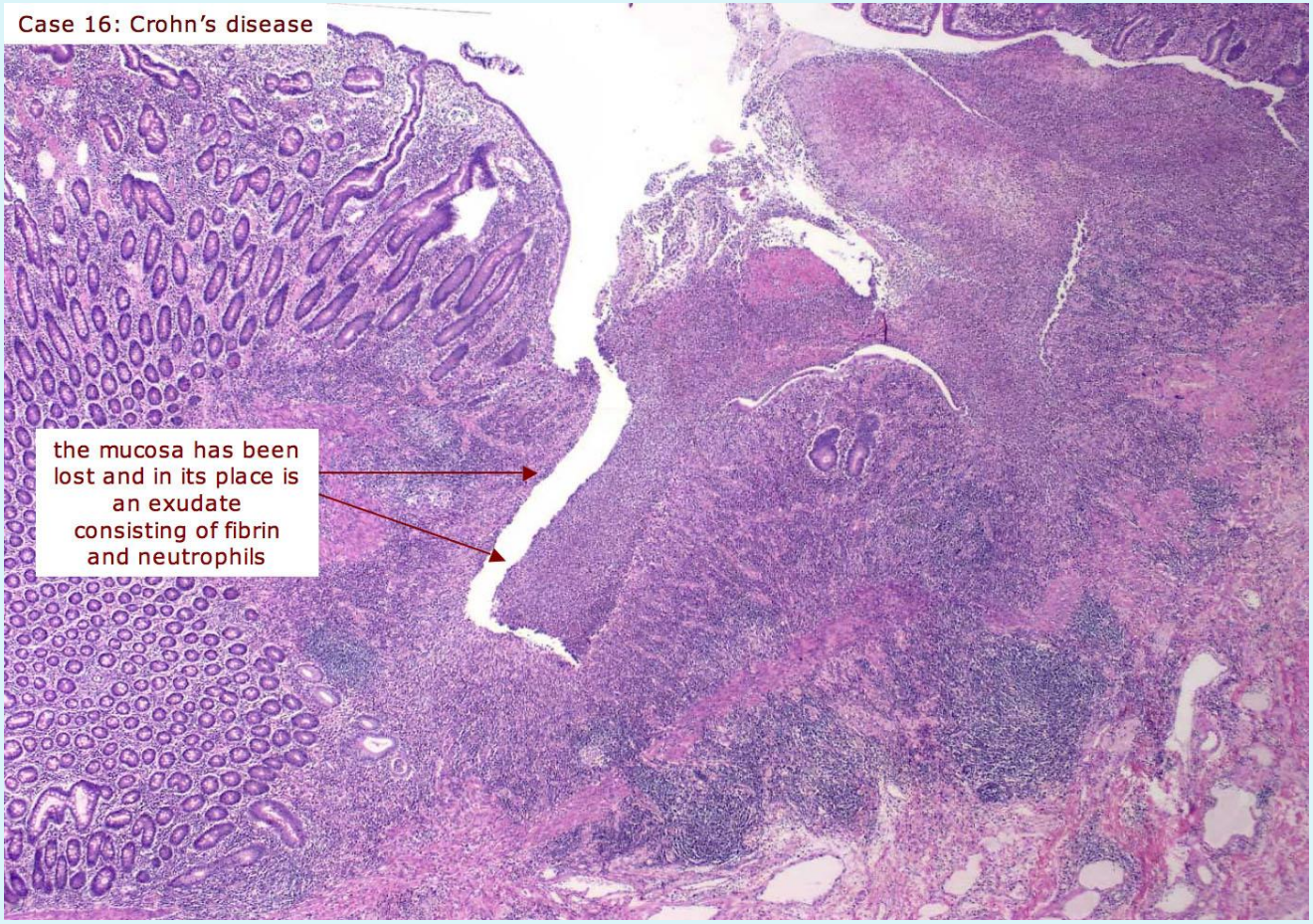
HISTOLOGY

- Histologic appearance varies from active necrosis, chronic inflammation to healing.
- With active necrosis four zones are demonstrable.

1. Base and margin necrotic fibrinoid debris not visible to naked eye.
2. Non specific inflammatory infiltrate neutrophils predominating.
3. Active granulation tissue with mononuclear leucocytes.
4. Solid fibrous or collagenous scar.


NORMAL
INJURY
PEPTIC ULCERATION
Damaging Forces:
Gastric acidity
Peptic enzymes
Mucus
Mucosa
Muscularis mucosae
Submucosa
Defensive Forces:
Surface mucus secretion
Bicarbonate secretion into mucus
Mucosal blood flow
Apical surface membrane transport
Epithelial regenerative capacity
Elaboration of prostaglandins
H. pylori infection
NSAID
Aspirin
Cigarettes
Alcohol
Gastric hyperacidity
Duodenal-gastric reflux
INCREASED DAMAGE OR IMPAIRED DEFENSES
Ischemia
Shock
Delayed gastric emptying
Host factors
Necrotic debris (N)
Nonspecific acute inflammation (I)
Granulation tissue (G)
Fibrosis (S

Peptic ulcer :



CLINICAL COURSE

- Chronic , recurring leison.
- Epigastric gnawing, burning or aching pain.
- Pain worse at night.
  during day-occurs 1 to 3 hrs. after meals.
- Pain relieved by alkali or food.
- With penetrating ulcer pain is referred to back, left upper arm or chest.(simulates cardiac pain)
- Anemia.
- Nausea, vomitting, bloating , belching and significant wt. loss.

DIAGNOSIS AND LOCALIZATION

- ENDOSCOPY- GASTROSCOPY.
- ENDOSCOPY- BIOPSY.
- CYTOLOGIC EXAMINATION OF GASTRIC ASPIRATE OR BRUSHING TO RULE OUT CARCINOMA.

Endoscopic appearance of peptic ulcer:

COMPLICATIONS:

- bleeding.
- perforation.
- obstruction from edema or scarring most often due to pyloric channel ulcer

- rarely total obstruction with intractable vomiting.

TREATMENT :

- H.Pylori iradication
- Proton pump inhibitors (PPI)

Hour glass deformity :

Thank You