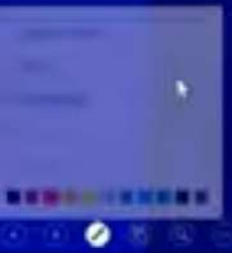


Peptic Ulcer Disease [medical problem]

↳ epigastric pain

E J Arteen
FRCSI



Peptic Ulcer Disease

↳ maybe superficial or deep [never]
کشته هسته - ابرکار داخل من ایضا دقایق ۹ ممان

- Defect in mucosa of GIT which may extend to submucosa or muscle layer.
- It occur in region which touch HCL , and pepsin.
- Imbalance between acid secretion and mucosal defense system .

*inactive pepsinogen $\xrightarrow{\text{HCl}}$ active pepsin...



enzyme help in protein digestion...

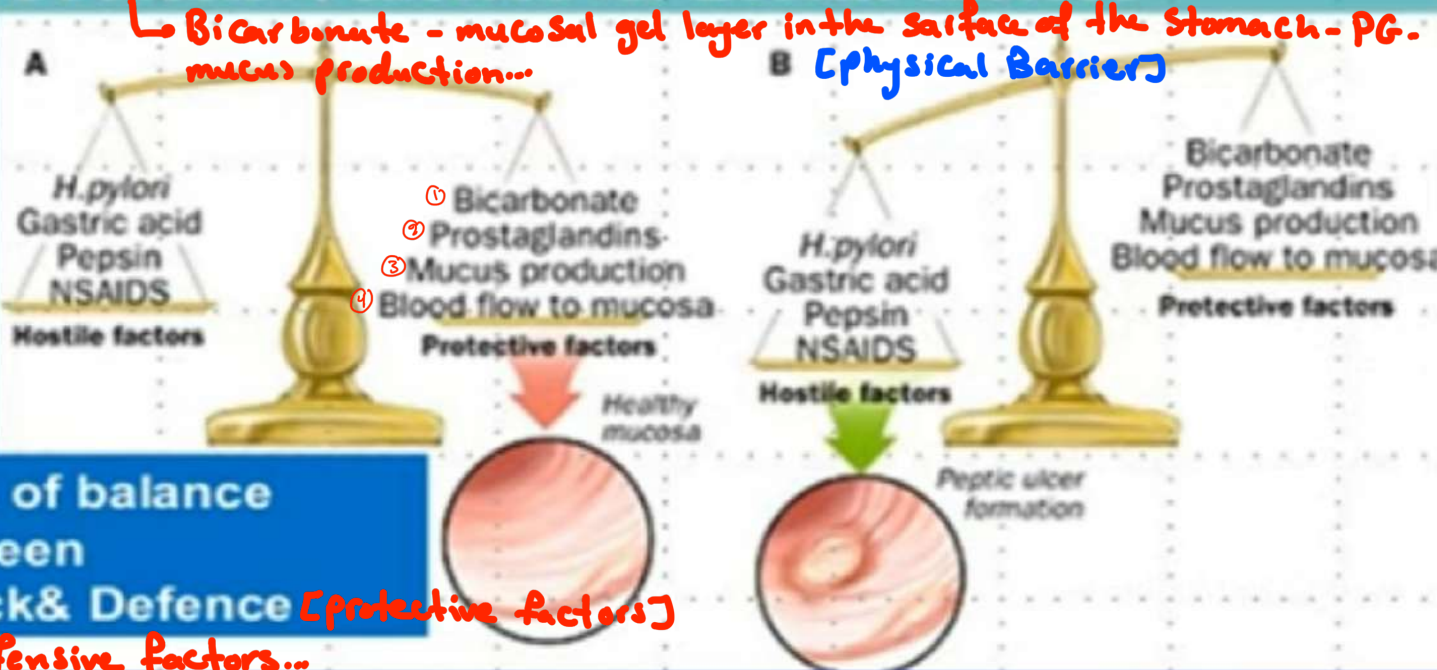


Peptic Ulcer Disease

Pathogenesis :

Ulcers are caused by loss of balance Between protective & Hostile factors.

Protective factors vs. hostile factors



Aggressive Factors

Acid/Pepsin

- ✓ H. pylori infection
- ✓ NSAIDs
- ✓ Smoking

Defensive Factors

- ✓ Mucus-bicarbonate barrier
- ✓ Barrier of apical membrane
- ✓ Mucosal blood flow
- ✓ Prostaglandins
- ✓ Epithelial cell restitution

Download

I

Aggressive
Factors ↑



Defensive
Factors ↓

II

III

Aggressive Factors ↑ + Defensive Factors ↓

PEPTIC ULCER DISEASE

FACTORS THAT PROTECT AGAINST ACIDITY

- ✓ Mucus
- ✓ bicarbonate layer
- ✓ Blood flow
- ✓ cell renewal
- ✓ Prostaglandins
- ✓ Tight junction b/w epithelium

IMBALANCE

- ✓ Acid
- ✓ Pepsin
- ✓ Bile acids
- ✓ NSAIDs
- ✓ H. pylori
- ✓ Alcohol
- ✓ Pancreatic enzymes

FACTORS THAT INCREASE ACID SECRETION

Sites of PUD

duodenal ulcer : gastric ulcer
4 : 1

one site for PUD

■ **Duodenum: 80%**

■ **Gastric: 15%**

■ **^{mixed} D1, Stomach: 4%**

■ **O-G Junction :** (rare)

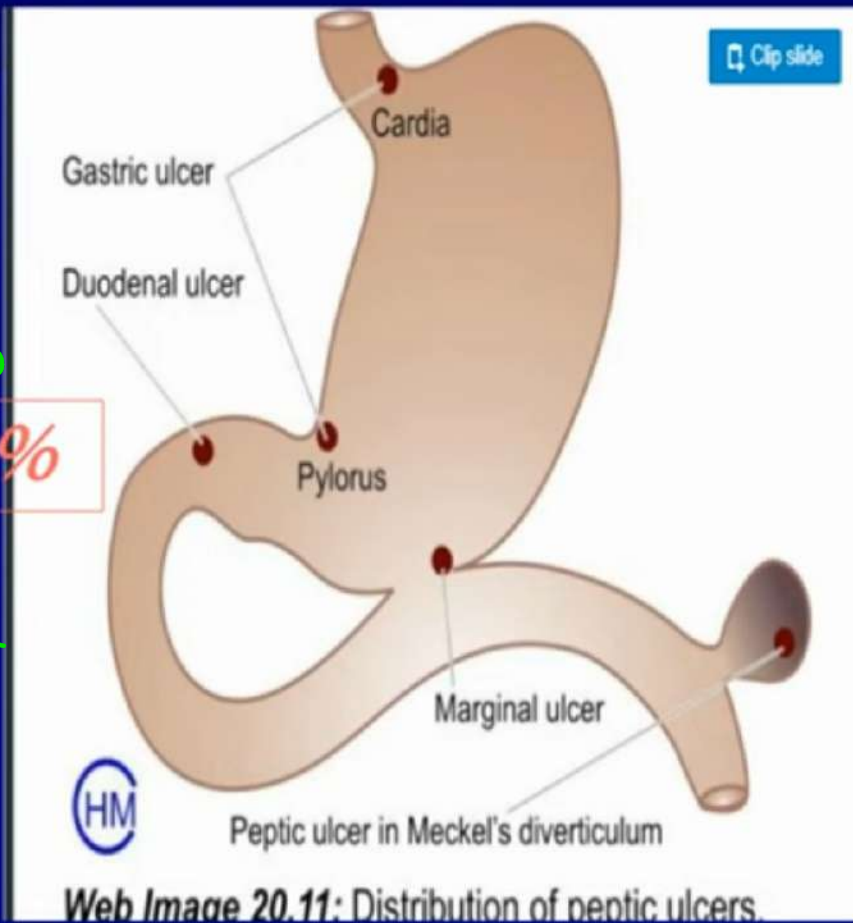
■ **Meckel's D:**

■ **Marginal :** عند مكان انشعاب

1 %

2 inch - 2 feet from ileocecal valve - 2 type of mucosa → gastric...
→ pancreatic...

* **Barret esophagus:** columnar metaplasia of stratified sq. epith. of lower 1/3 of esophagus [maybe in this site there is ulcer]...



Epidemiology

* duodenal ulcer more in Males than females...

- Estimated life long prevalence is 10%.
- Male : female 4:1.
- DU:GU 4:1.
- DU emerge 10-20 year earlier. *DU occur in younger age...*
- *HLO is Responsible for 95% of DU and 75% of GU.*

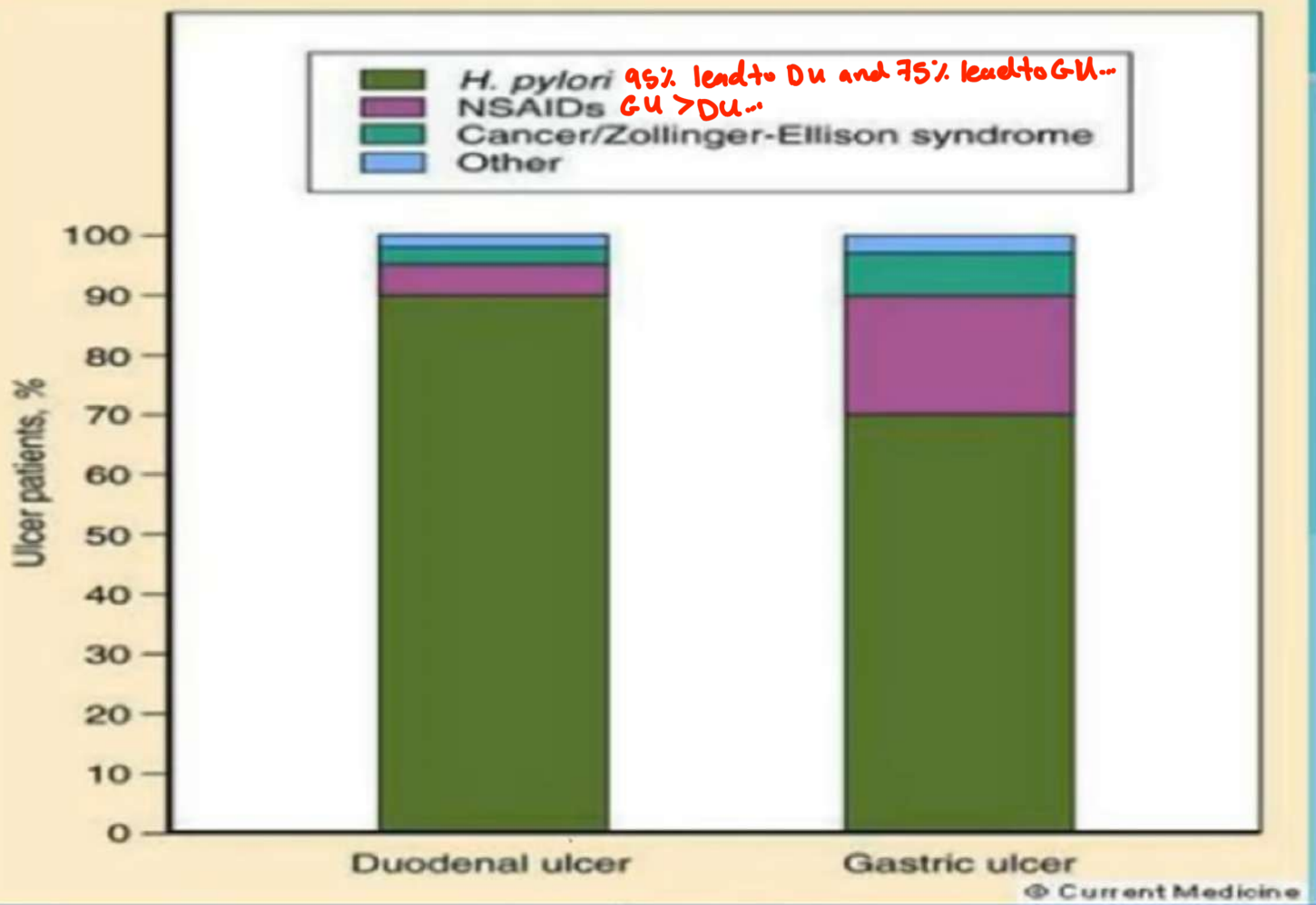


* DU occur in → *هري - woky - كاري - stress...*
 [استابل] كاري - woky - هري
 استابل - هري

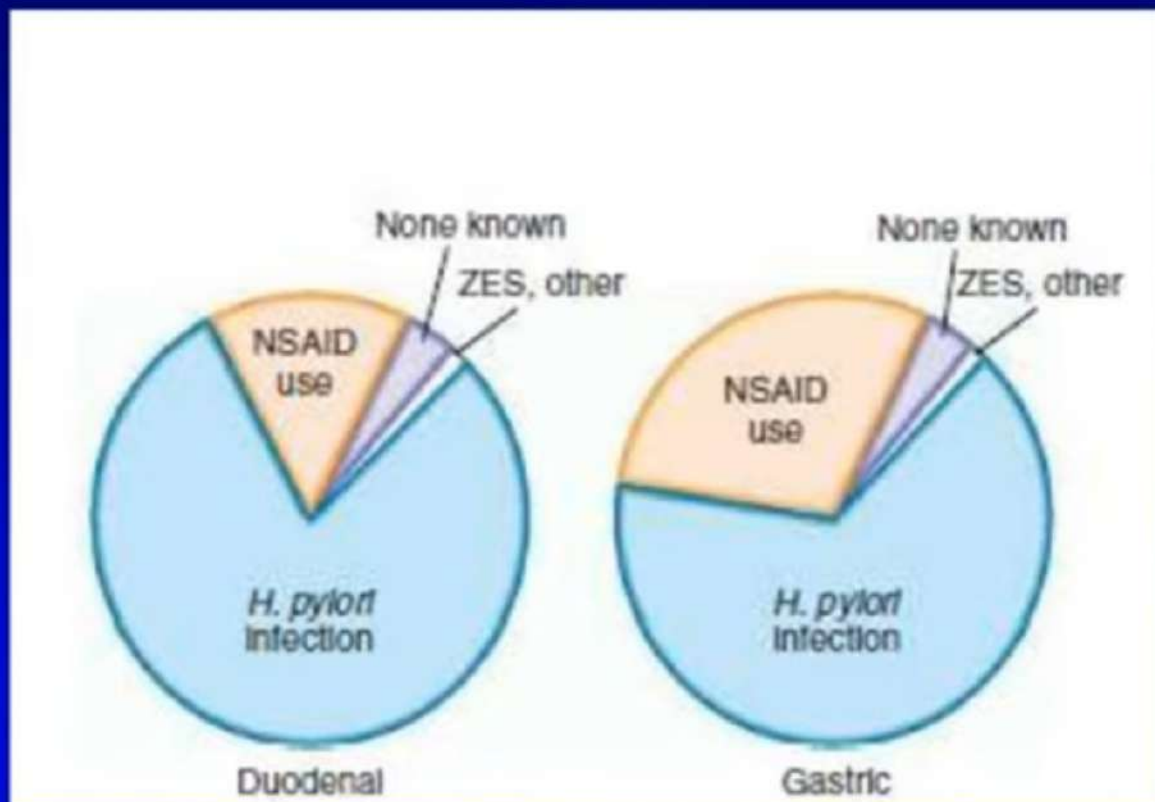
* The commonest cause of Duodenal ulcer:-
 1- H. pylori...
 2- NSAID...

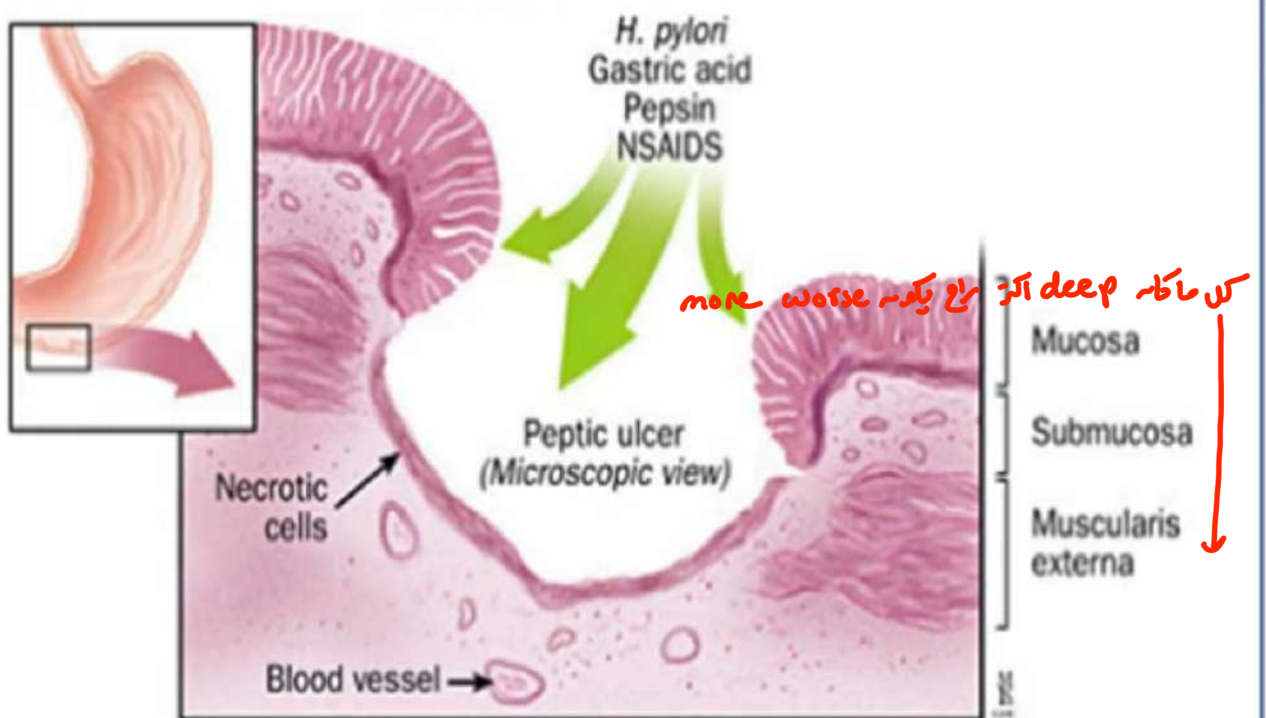
Etiology of PUD

- **H Pylori**: جرثومة المعدة [the urease transform the urea into Ammonia]
 has { **Urease** → **Stimulate gastrin release increase**
 HCL secretion .
 destruct the mucous layer ↓
- **Protease**: Breaks glycoprotein of mucus layer.
- **Hyperacidity**: ↑ Z- E syndrome , MEN I , Antral G cell hyperplasia .
 { gastrinoma. [↑gastrin] ↑HCL ↓ } → SP: pituitary problem
 parathyroid hyperplasia (most common one)
 pancreas tumor..
- **Drugs**: NSAIDS , Steroids - Aspirin..
- **Smoking , Alcohol**.
- **Rapid gastric emptying** : Localized dumping syndrome... → so the Acid not neutralize with duodenum Alkali
- **Systemic stress** . [worry]



Conditions associated with PUD





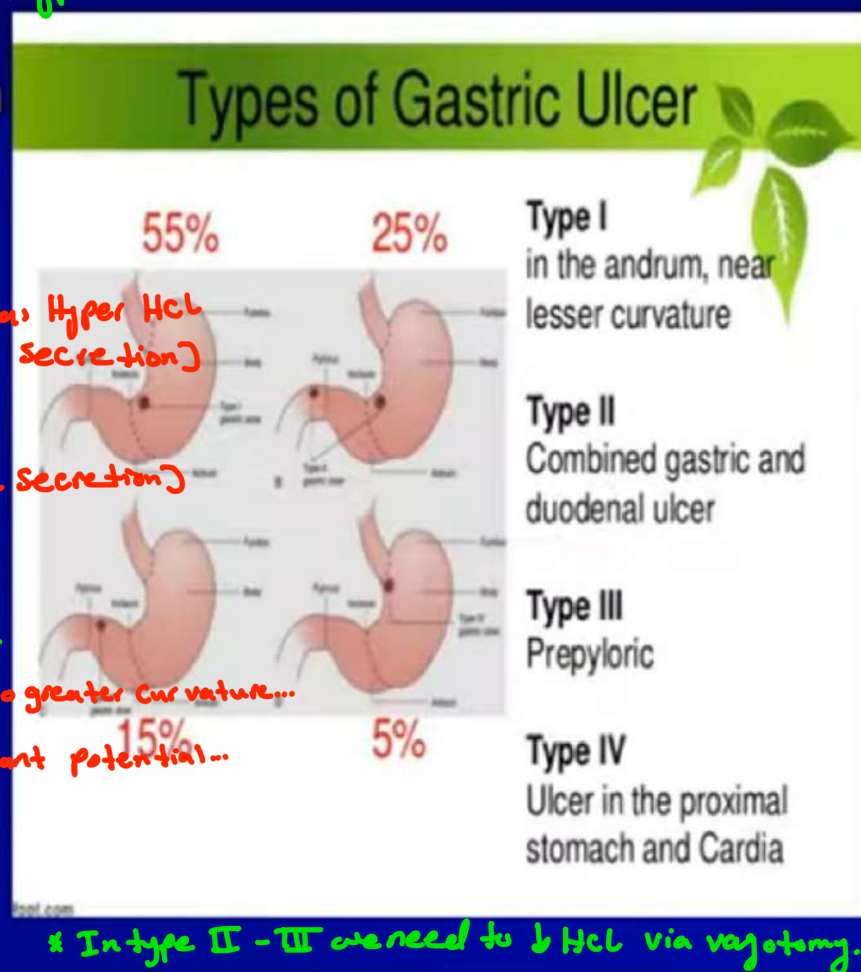
* erosion → loss of mucosa [more recent - acute]...

* ulcer → more deep than erosion ...

Gastric Ulcer Types

- **Type I:** Near Incisura angularis 60%. *in lower lesser curve [Hypo-HCL secretion]*
- **Type II:** Pre pyloric and Duodenal ulcer. *has 2 types of ulcer [Has Hyper HCL secretion]*
- **Type III:** Pre pyloric ulcer. *6% near to duodenum upper [Hyper HCL secretion]*
- **Type IV:** High lesser curve ulcer. *0-6 junction, 1st [Hyper HCL secretion]...*
- **Type V:** Any where else in stomach. *near to greater curvature... has malignant potential...*

* 2/3 Cases are type I and IV → we don't need decrease the HCL in surgery [no need for vagotomy]..

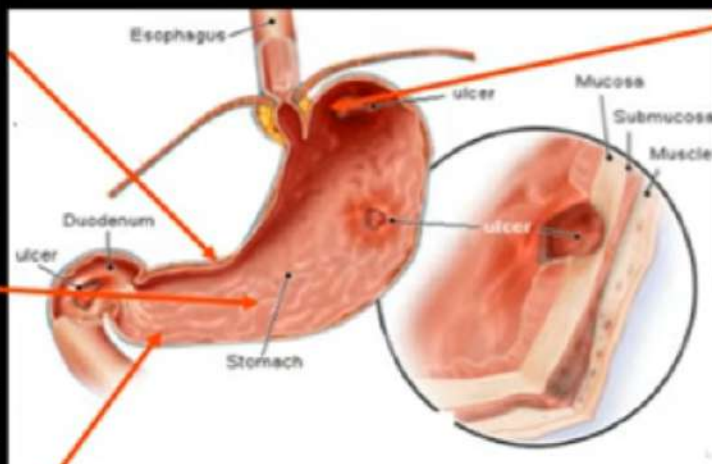


PU Types (Johnson Classification)

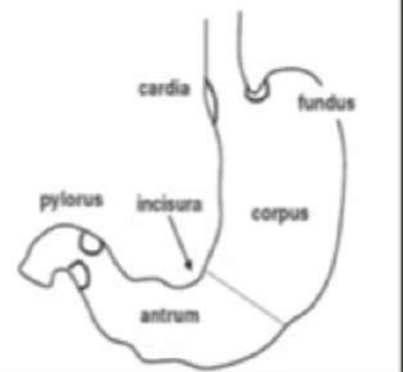
Type I: Near Angularis incisura, lesser curvature, *N* or ↓ acid secretion

Type II: Associate with DU, *N* or ↑ acid secretion

Type III: Prepyloric, *N* or ↑ acid secretion



Type IV: Associate with active DU, *N* or ↓ acid secretion



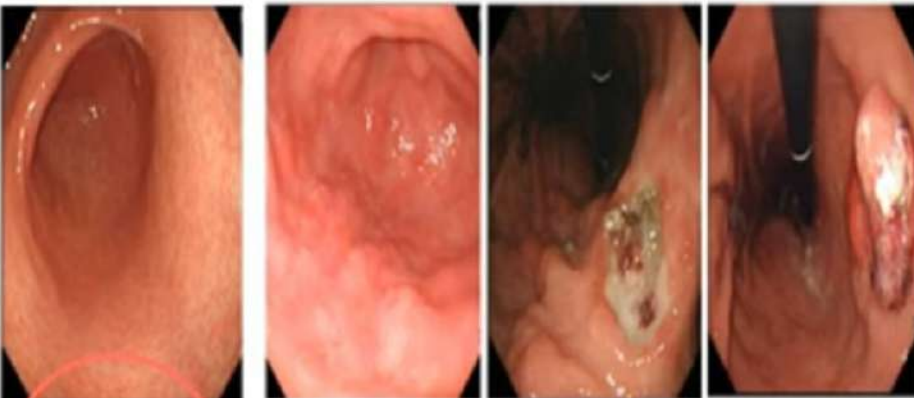
Helicobacter Pylori → Killed by HCL...

- Gram -ve Comma Shaped Bacteria Micro Aerophilic with 4-6 Flagella ^{مثل حرف الوام} ^{بجانب بقيته بعيد عن حمض} ^{help to move deeply in mucous layer of the stomach}
- Is most common cause of PUD, gastric antrum MC site of colonization. ^{mc site...}
- Transmission is Feco - Oral.
- Secrete urease convert Urea to Ammonia.
- Produce alkaline environment to survive in stomach.
- Higher prevalence in low socio economic.
- ^{75%} Almost all patient with DU and ^{75%} 2/3 of GU are HLO +.



- * No *H. pylori* → No ulcers...
- حيث ان *H. pylori* ليس سبب *ulcers*
- * PUD is infectious disease...

The Clinical Outcomes of *Helicobacter pylori* Infections

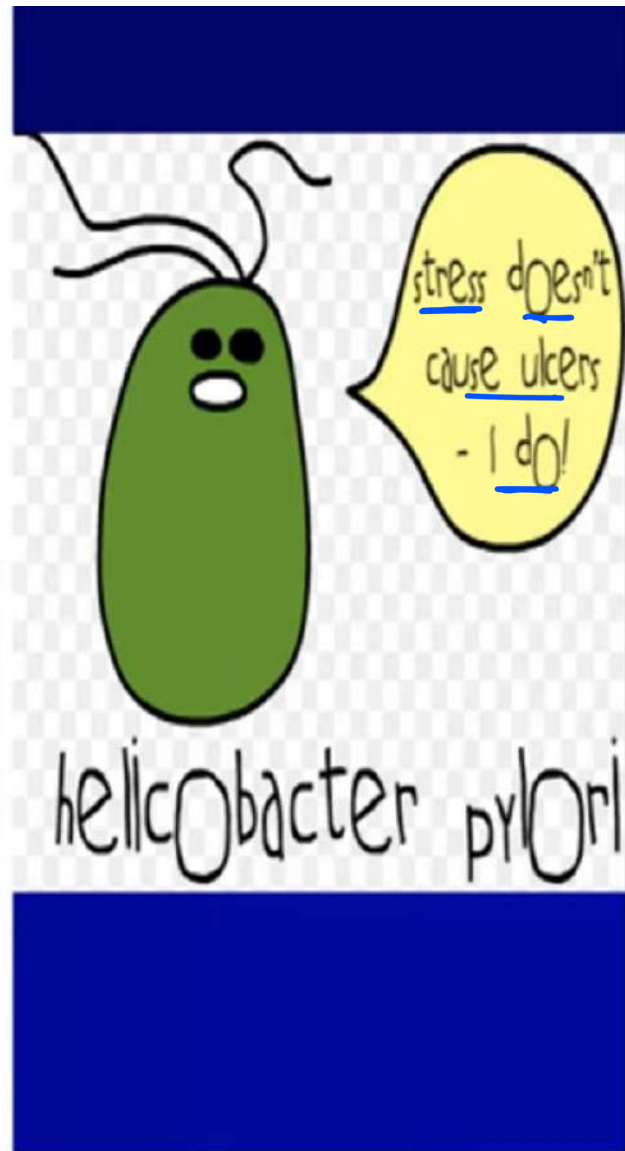


Asymptomatic
or chronic gastritis

Chronic atrophic gastritis
Intestinal metaplasia

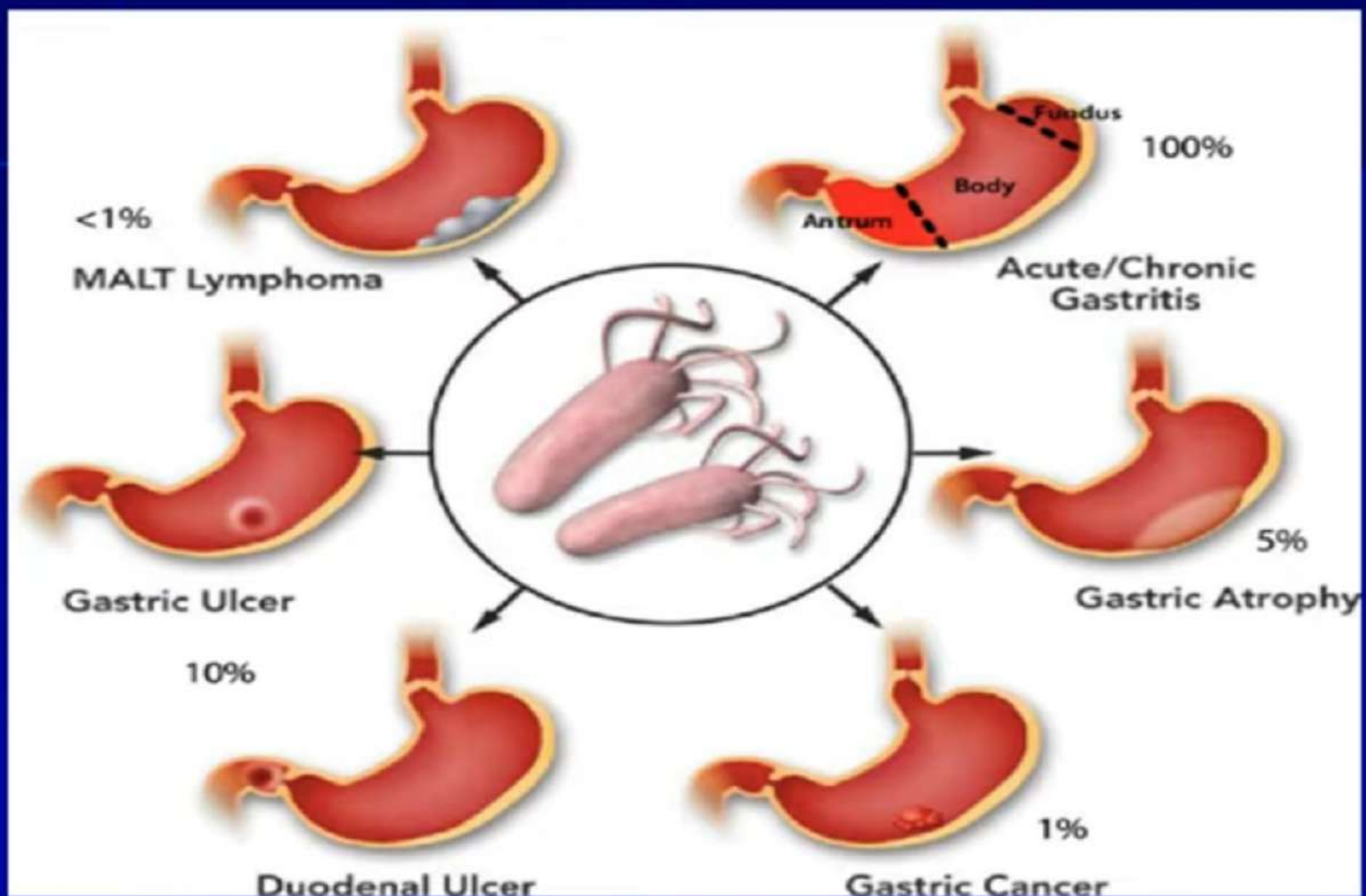
Gastric or
Duodenal ulcer

Gastric cancer
MALT lymphoma



- * More than 80% of *H. pylori* outcome is → Asymptomatic carrier or chronic gastritis
- * 5-20% of *H. pylori* outcome is DU-GU- Atrophic gastritis-
- * <1% of *H. pylori* outcome is Adenocarcinoma of the stomach or lymphoma of the stomach-

HLO OUTCOME



Urease Breath Test.

we put part of mucosa in the urea media so the urease in the bacteria convert the urea to the ammonia so the color convert from yellow to red...

Download



Difference between HLO and NSAIDS ulcer

- **HLO** ulcers are more common in D1 superficial less severe bleeding .
- **NSAIDS** ulcer more in Stomach Deep more severe bleeding sometimes asymptomatic.

12

Differences between GU & Du ulcer

Duodenal ulcer	Gastric ulcer
D ulcers <u>X 4 times</u> more common than GU.	Common in <u>late middle age 50Y</u>
Most common in <u>young and middle age</u> peak incidence <u>25-50 years</u> .	<u>NSAIDS</u> ↑ risk 4 times.
Male : female <u>4:1</u>	Male: female <u>2:1</u>
More common with <u>blood group O</u>	More common with <u>blood group A</u>
<u>95%</u> with <u>HLO</u> , ↑ pepsin production	<u>80%</u> with <u>HLO</u> . 75%.
<u>Smoking is twice as common.</u>	<u>10%</u> of <u>gastric ulcer</u> have also <u>D ulcer</u> . type II gastric ulcer.

٢٠٢٢ Symptoms off GU,DU

Duodenal ulcer

Upper abdominal pain 2 h after food to Rt of midline.

Relieved by food eats everything night pain , less severe pain.

Remissions i.e. seasonal variations. ✓

[Hunger pain] → ما ياكل بيرتاح

Wt gain , Never vomit. Symptoms improve by anti acids.

No cancer risk ✓

Hyper secretion of HCl

Bleeding less likely more Melena.

Gastric ulcer

Epigastric pain 1/2 h after food to LT of midline.

راح يتا لم من اكل

Afraid to eat , certain food make pain worse pain is more severe recurs quickly after 1/2 h

Infrequent remissions. , No seasonal variation...

Wt loss , Nausea Induce vomiting. Less relief by anti acids. especially in type I , IV

Cancer risk 4% ✓

Usually low HCl secretion.

↳ 2/3 cases

1/3 case are Hyper HCl secretion...

Bleeding more likely more Hematemesis

Acute peptic stress ulcer

* Cushing ulcer occur with the intracranial pathology...
[due to ↑ vagal stim. will ↑ HCL]...

- Multiple, small mucosal erosions seen in Stomach and less frequently in Duodenum.
- Etiology
- Psychological stress i.e. worry.
- Physiological stress Shock, Septicemia, Polytrauma, Extensive Burns Curling's Ulcer. due to Brain.
- Cushing's Ulcer : Intracranial Pathology ✓
- Drug Intake : Aspirin, Steroids, NSAIDS : most important
- Local Irritant : Coffee, Bile salts, Smoking, Alcohol Vinegar. je

Diagnosis

■ Endoscopy Versus Radiology

- Endoscopy gold standard method → therapeutic
→ diagnostic

- More accurate.

- Take biopsy & Rule out malignancy.

- Diagnose HLO. (3) we can stop the bleeding if it presented..

- Treat complication.

Zollinger-Ellison Syndrome

- **Clinical Characteristics** [$\uparrow$ HCl secretion]
 - Peptic ^①ulcer with ^②**Diarrhea**. indicate Z. E Syndrome.
 - Peptic ulcer in an usual location. ^③in C-G junction for ex.
 - Multiple ^④ulcers : at same time...
 - Refractory ^⑤ulcer. مستعصم بيطيب
 - Complications. ^⑥
 - ^⑦**NO HLO NO INSAIDS**. ^⑧→ so exclude the PUD...
 - **Diagnosis**
- Serum gastrin level CT, MRI ^{PET-CT} for pancreas - duodenum

General Strategy of Treatment

- Determine Etiology of Ulcer. ^{and treat it} ← NSAID
H. pylori
- ^① Discontinue NSAIDS if possible .
- ^② Eradicate HLO if present .
- Non pharmacological treatment . [stop smoking - Alcohol -
tea - Caffeine]
- Use PPIs to decrease HCL secretion in case of HLO – Ve . or H₂R antagonist...
- Improve mucosal defense . ✓
- Treat complication if present . ✓

Eradicate *H. pylori* infection

↳ 2 Antibiotic + PPI ± Bismuth...

**PPI (H₂-RA)
or
Bismuth**

+

**Two
Antibiotics**

Colloidal Bismuth
Subcitrate (CBS)
240mg

Clarithromycin 250-500mg
Amoxicillin 500-1000mg
(Tetracycline)
Metronidazole 400mg
Furazolidone 100mg

Triple therapy, bid for 1 week

Healing Rates of DU After 4 Weeks Treatment with Various Anti-ulcer Agents

Placebo

Misoprostol

Bismuth

Sucralfate

H2-RA

PPIs

0 20 40 60 80 100 %

benefit if we can't stop the NSAIDs...

most benefit for PUD...



Download

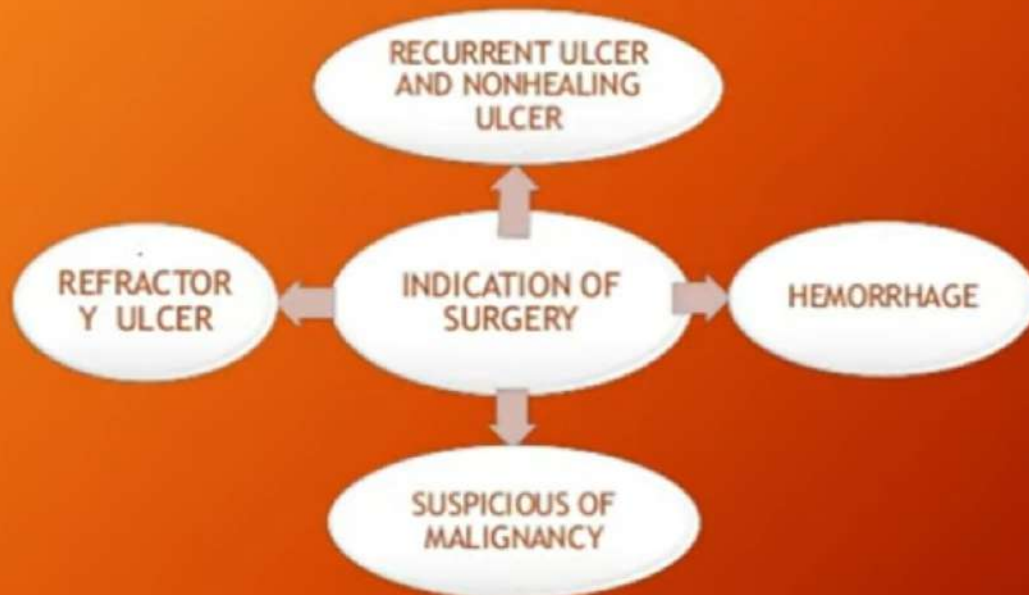
Complication of PUD

- Intractability → not improved by medical treatment
- Bleeding 15-20% ✓ [commonest complication]
- Perforation 2-8 % ✓
- Pyloric Obstruction 5 % ✓
↳ or pyloric stenosis
- Penetration .
- Inflammation .
- Malignant transformation 4% in gastric ulcer...
- **N.B. Silent Ulcer** : **Discovered by Chance or present by Complication i.e. Bleeding perforation 10-20% .**

↳ hematemesis
↳ melena

silent ul. - لا أعراض - past hx of abdominal pain is not enough

Indication of surgery



Complications of PUD on Endoscopy



① Bleeding DU



② Perforated GU



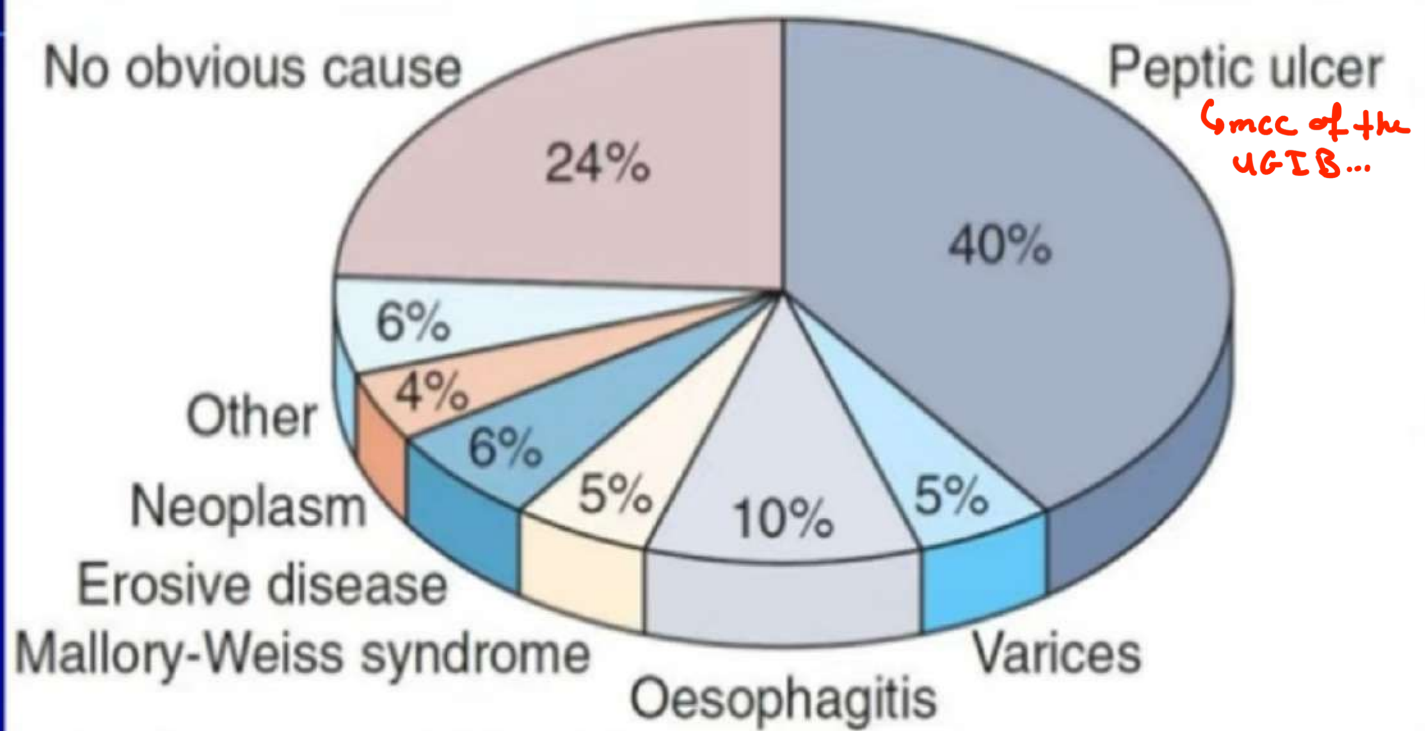
③ Duodenal stricture

Bleeding

- 15% of PUD cases more with NSAIDS.
- 15 -20% no warning signs. [silent]
 - < 60 y → 0.5%
 - > 60 y → 10%
- Bleeding ulcer mortality is related to age. *Fig 14*
- 50% of patients present with hematemesis and melena, 30% with only hematemesis.
- Initially step is assessment of stability of patient (P, BP, RES, Mental status).
 - pulse
 - change in shock cases...
- Where pt. go type of care ??
- Endoscopy when ? 24 hours (diagnostic and therapeutic).
 - within
 - Best time for endoscopy
- Most pt will be discharged 3 days post admission.
 - لا يظل 3 days في المستشفى يعني مستباح يخرج...

~ 80% of hematemesis - Melena have stopped bleeding by the time they reach the hospital...

Causes of upper GI bleeding



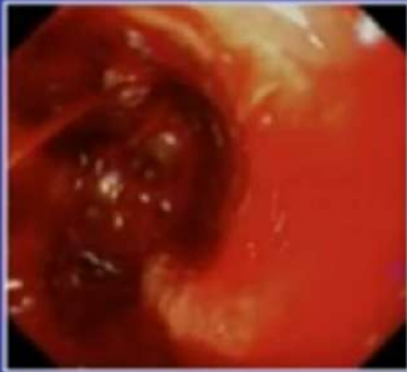
The Forrest classification of severity of bleeding from the ulcer and the risk of re bleed depending on the Upper GI endoscopic picture. [for HH]

Grade	Endoscopic Picture	Risk of rebleeding
I	Active haemorrhage	very high.
IA	Spurting	85-100%
IB	Oozing	10-27%
II	Signs of recent haemorrhage	
IIA	Visible vessel	50% ✓
IIB	Adherent clot	[25%] 30-35% ✓
IIC	Haematin covered flat spot	5-8% <8%
III	No signs of haemorrhage – <u>clean bed of ulcer</u>	Rare <3%

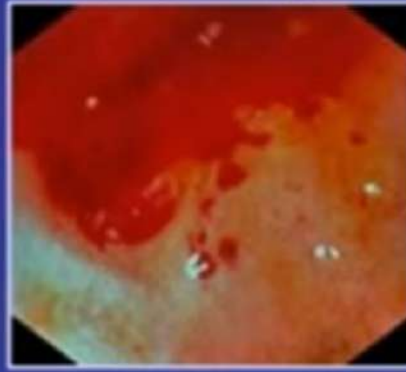
↳ clear ulcer.

Forrest's classification for bleeding PU

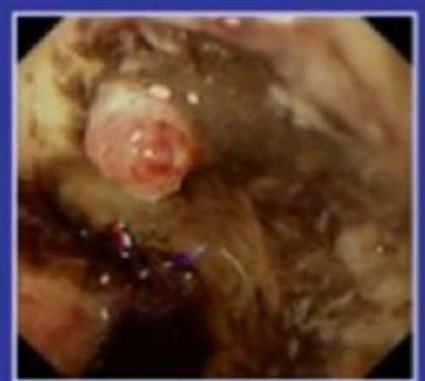
I-a (arterial jet)



I-b (oozing)



II-a (visible vessel)



II-b (adherent clot)



II-c (black spot)



III (clean base)





* 95% of PUD Bleeding management is Medical 5% without surgery...

Perforation

❖ 6-7% Either

- Free in to peritoneal cavity or to stomach bed [post wall of the stomach]
↳ localized perforation...
- Or Penetration into lesser sac pancreas T. colon.
- Perf is chemical at first (inflammatory) and then bacterial in 6 to 12 hours.
- Elderly above 60 y, comorbidities, taking ulcerogenic drugs → declofin - volturine - Cortison
- Time of perforatio: Severe upper abdominal pain radiating throughout abdomen and possibly to shoulder.
↳ sudden 9/10 or 10/10...
[بعض قاع ما بترد] من الحطة + thoracic Breathing...
- Abdomen becomes rigid, Board Like with absent bowel sounds; lying still symptoms of shock.
حزب الصقة
- Older adults may present with mental confusion and non-specific symptoms. So there is delay diagnosis...
[the moving increase the pain]

Diagnosis

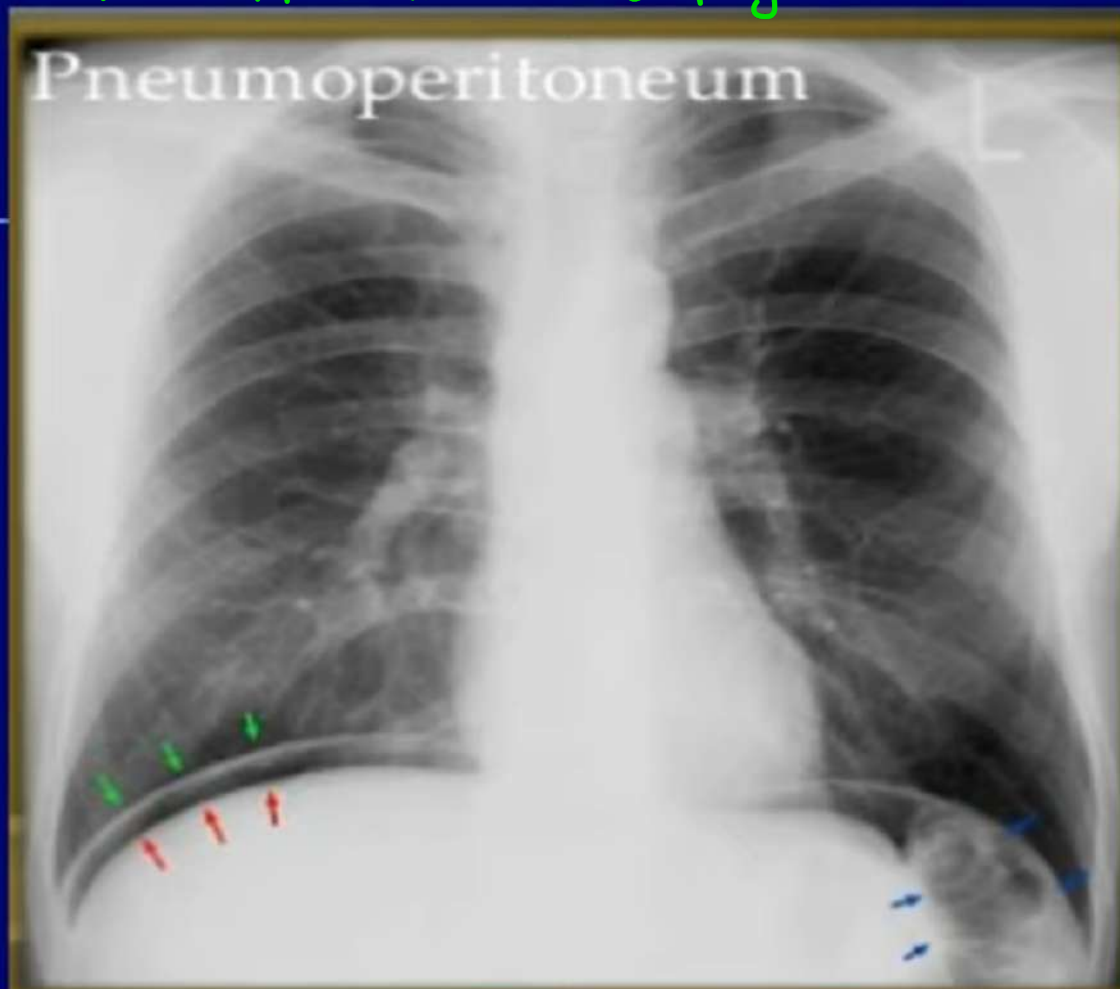
- PFA [plain film abdomen]

- US & CT SCAN ✓

- Contrast study water soluble Barium meal
(Gastrograffin) ← perforation by fistula →
level to peritonitis ←

↳ used in perforation... [safe]

* 80% of PUD has air under diaphragm → indicate perforation...



Contrast study water soluble (Gastrograffin)



Treatment

- High risk patient is defined as:

- Older patient → conservative
- Multiple co morbidities
- Perf > 24 hours.
- Hypotension at presentation.
- So conservative treatment in these cases.
- NG tube suction. ✓
- Antibiotics. ✓
- IV fluids resuscitation. ✓
- Failure to improve in 24 h → Surgery