
بسم الله الرحمن الرحيم

Peptic Ulcer

By

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- **Def:**

  Loss of continuity of the epithelial lining of the gastroduodenal mucosa deep down to nuscularis propria.

- **Sites**

  In that order

  1. Duodenum → the commonest site.
  2. Stomach.
  3. Jejunum in
     1. Stomal ulcer.
     2. In zollinger- Ellison's syndrome.
  4. Oesophagus.
  5. Meckel's diverticulum.

- **Pathogenesis:**

  disturbed gastroduodenal mucosal defense resulting from excess auto-peptic power of the gastric juice over the defensive power of the GIT mucosa.

- **Type:**

  1. Acute peptic ulcer.
  2. Chronic peptic ulcer.

	G.U.	D.U
Incidence	< 1%	11 times more common
Age	Older (boys)	Younger (25 - 45 ys)
Sex	♂ = ♀	♂ +++
Acidity	Normo or hypoacidity	hyperacidity
Motilty	Delyed gastric emptying	hypermotility
Samity history	- ve	+++
Blood group	- ve	group O

- **Both:**
  - Develop in the mucosa exposed to the gastric juice.
  - Same – behavior, histopathology, complications. except malignancy nay occur on top of G.U.
  - Respond to rest, antacids.
  - Excacerbation with stress.
- **Epidemiology:**
  - 5-10% of all indioiduals develop peptic ulcer in their life time.
  - G.U. → peak occurrence 40-70 ys.
  - D.U. → peak occurrence 25-45 ys.
  - ♂ > ♀ → in D.U. but equal sex ratio in G.U.

- Clinical picture:

1. **Classic presentation→**
   - pain
   - dyspepsia
2. **Complicated →**
   - Bleeding
   - Perforation
   - stenosis
     - gastric outlet obstruction
     - hour- glass stomach
   - malignancy
     - 1- 5% in G.U.
     - never in D.U.

- Investigations:
  - Radiography: → miss > 20% of D.U.
  - Endoscopy → is the investigation of choice
    - Advantage →
      - More accurate
      - Direct biopsy for histopathological
      - Safe in co-operative patient.
      - Preferable in patient
        - Bleeding.
        - Dyspepsia.
    - Malignancy is suspected if:
      - Large ulcer size
      - Outside the ulcer-beating ared
      - Nodular base.

Common forms of peptic ulcer

1. Helicobacter pylori-associated
2. NSAID-associated
3. Stress ulcer

Uncommon specific forms of peptic ulcer

1. Acid hypersecretion
   - a. **Gastrinoma: inherited-MEN I, sporadic**
   - **b. Increased mast cells/basophils**
     - **Mastocytosis: inherited and sporadic**
     - **Basophilic leukemias**
   - **c. Antral G cell hyperfunction/hyperplasia**
2. Other infections
   - **a. Viral infection: herpes simplex virus type I, CMV**
   - **b. ? Other infections**
3. Duodenal obstruction/disruption (congenital bands, annular pancreas)
4. Vascular insufficiency: Crack cocaine-associated perforations
5. Radiation-induced
6. Chemotherapy-induced (hepatic artery infusions)
7. ? Rare genetic subtypes
   - **a. ? Amyloidosis type III (Van Allen-Iowa)**
   - **b. ? Tremor-nystagmus-ulcer syndrome of Neuhauser**

- III of peptic ulcer
  - Identify the cause → tailor therapy accordingly.
  - To reduce the aggressive factors.
  - Aiming at:
    1. Rapid reduction or resolution of symptoms.
    2. acceleration of ulcer healing.
    3. ↓ the frequency of complication.
    4. to prevent recurrence.
- Lines of III
  - Stop smoking.
  - Diet
    - Regular meals to buffer the intragastric acidity
    - Avoid irritants →
    - Home remedies.

- Medical III:

1. Antacids:
   - Def: are weak bases reacting with gastric HcL to from salt & H_2O → buffering action
   - Action → to reduce – the gastric pH ≥ 4
   - Indications
     1. Symptomatic ttt of hyperacidity
     2. GERD.
     3. High dose con be used in ttt of Du → ? Compliance
   - Adverse effects.
   - Dose – response relationship of the antacid is depending on the gastric secretory capacity

- Adverse effects
- Drug interaction
- Indications →
  - Syptomatie III of hyperacudty
  - GERD
  - High dose can be used in III of DU → ? Complication

2. Mucosal cytoprotective agents.

- carbenoxalone:
  - Is a synthetic derivative of glycyrrhizinic acid → liquorices constituent.
  - Action promotes healing of peptic ulcer sp. G.U.

- Mechanism.
  - ↑ mucosal – resistance →
    - ↑ Secretion ↑ viscosity of mucus
    - Alter its composition
    - ↓ back diffusion of H^+ into mucosa
    - Slows down gastric epith. turnover
  - Affects pG metabolism
  - Reduces: pepsin chomotryptic activity
- Indications:
  - Biogastrone → ttt of G.U.
  - Duogastrone sustained release cap → ttt of D.U.
  - Pyrogathone → ttt of GERD.

- **S.E:**
  - Mineralocorticoid action.
  - More marked in hepatic, renal, cardiac & elderly patients.
- Deglycyrrhizinzed liquorice → caved –S
  - Less mineralocticoid action.
  - Less ulcer healing efficacy.

- **Sucralfate:**
  - Aluminum sucrose sulphate → sulfated disaccharide.
  - Used for ttt of P.U.D.
  - Mechanism of action.
    - Polymerization & selective binding to the ncerotic ulcer tissue → acts as a barrier to acid, pepsin, bile salts also, inhibits the pepsin activity.
    - Requires an acidic PH to be activated.
    - **S.E:** constipation.
    - **Dose:** 1gm 4 times on empty stomach " before meals".

- Colloidal- Bismuth compounds.
  - T.B.D → Denol.
  - Pepto-Bismol → bismuth subsalsylate.
  - Mechanisms.
    - Acts locally in the presence of acidic medium by combing with the mucus, exudates in the ulcer crater providing a protective coat.
    - May stimulate mucus production.
    - Eradicate gastric H.P.
  - **S.E:**
    - Black stool.
    - Teeth discoloration.
    - Unpleasant ammonical small
    - In CRF→ Enacephalopathy.
  - **Dose:** 120mg tab 1x4 before meals.

- **P.G analogues:**
  - Misoprisol
  - Inoprostil
  - **Action:**
    - Mild inhibitory effect on gastric HCL secretion.
    - Mucosal cytoprotection against NSAID included injury.
      - ↑ mucus production
      - ↑ bicarb. secretion.
      - Maintain the gastric mucosal blood flow
      - Stimulates cell reneural & regeneration.
    - Misoprostol
    - E.g (Cytotic 20 ug tab t.d.s)
    - S.E: diarrhea & ↑ uterine contractions.
    - CI → pregnancy.

Gastric anti secretary drugs include:

- **H_2 receptor antagonists as :**
  - Cimitidine → tagamet
  - Ranitidine → Zantac.
  - Famotidine → pepcid.
  - Nizatidine → axid.
- **Indication:**
  - DU – Bengin G.U.
  - Z.E. Syndrome.
  - Hyperscretory conditions → as systemic mastocytosis-MEN_1

- **Mechanism:**
  - Competitive inhibition of the histamine action at the H_2 receptors of the parietal cells.
  - Side effects:
    - GIT
    - CNS
    - Endocrinal
  - Drug interactions → inhibition of the cytochrome P450 enzyme system.
  - **Rantidine:**
    - More potent 5-10times.
    - More selective H_2 – receptor antagonst.
    - Slightly longer duration of action.
    - Less side effects.

- **Famotidine:**
  - 8-10 times more potent as Rantidine.
  - Not inhibit cyt. P450.
- Nizaitidine → Similar to Famotidine.
- For refractory cases:
  - Shift to other H_2 receptor blocker or PPI.
  - need > 4wks +++.
- **Proton pump inhibitors (PPI) as :**
  - Omeprozole.
  - Lanzoprazole
  - Pantoprazole
  - Esomeprozole (Nexium)

- Produce dose related long lasting inhibition of basal & ↑ed gastric acid secretion.
- Acts as a specific irreversible inhibition of the partial cell H^+/K^+ Atpase enz. after being activated by the strong acid environment of the secretory canalliculus of the parietal cell→ single dose → inhibit 100% gastric acid secretion.

- **Side effects:**
  - Hypochlorhydria, 2ry hypergastrinaemia.
  - Prolonged administration
    - Gastric carcinoid syndrome.
    - Bacterial colonization.
  - Interfere with the oxidation of some drugs.
- **Octreotides & their analogues:**
  - Long acting somatostatin analogue.
  - Significantly inhibit the secretion of the gastric & pancreatic hormones.
  - Indications
    - ZES → ↓ tumor growth
    - ↓ size of the metastasis.

- **Anti-cholinergic drugs:**
  - Used only as adjuvants to H_2 blocker specially in patients refractory to ttt or with nocturnal pain.
  - Limited use by their adverse effects.
  - **Ex:**
    - Antrenyl 5mg t.d.s.
    - Merbenyl 7.5mg t.d.s.
- **Selective antimuscarinic drugs:**
  - Action: selection → blockers of the peripheral M, muscarinic receptors near the gastric parietal cells
  - Selective inhibition of the gastric acid secretion.
  - Poorly penetrate BBB → minimal SE.
- Containdications to antichotinergic drugs.
- Eradication of Helico-bacter pylori.

ANTIMICROBIAL THERAPIES FOR TREATMENT OF H. PYLORI INFECTION

Therapy	Hp Drug 1	Hp Drug 2	Hp Drug 3	Notes	Success
Triple	Tetracycline HCl 500 mg q.i.d.	Metronidazole 250 mg t.i.d.	Bismuth subsalicylatet 2 tablets q.i.d.	With meals for 14 days plus an antisecretory drug	> 90%
Triple	Tetracycline HC1 500 mg q.i.d.	Clarithromycin 500 mg t.i.d.	Bismuth subsalicylate 2 tablets q.i.d.	With meals for 14 days plus an antisecretory drug	> 90%
Triple	Amoxicillin 500 mg q.i.d.	Clarithromycin 500 mg t.i.d.	Bismuth subsalicylate 2 tablets q.i.d.	With meals for 14 days plus an antisecretory drug	> 90%
Triple	Amoxicillin 500 mg q.i.d.	Metronidazole 250 t.i.d.	Bismuth subsalicylate 2 tablets q.i.d.	With meals for 14 days plus Drug an antisecretory	> 80%
Triple	Clarithromycin 250 mg b.i.d.	Metronidazole 500 mg b.i.d.	Omeprazole 20 mg. b.i.d.	For 7 to 14 days	> ~%
Dual	Amoxicillin 750 mg t.i.d	Clarithromycin 500 mg t.i.d		With meals for 14 days plus an antisecretory drug	> 90%
Dual	Amoxicillin 750 mg t.i.d.	Metronidazole 500 mg t.i.d		With meals for 14 days plus an antisecretory drug	> 85%
Dual	Clarithromycin 500 mg t.i.d.	Omeprazole 40 mg q.A.M.		With meals for 14 days	70-80%
Dual	Amoxicillin 1 gram b.i.d.	Omeprazole 20 mg b.i.d.		With meals for 14 days	35-60%1

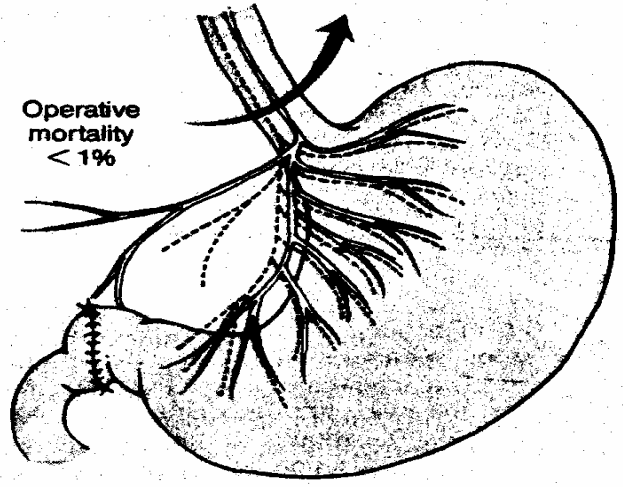
Nutrational supplement

- α – Leinoleic acid
- Flaxseed oil
- Vitamin A – E – C
- Omega-3 fatty acid
- High fiber content
- Probiotecs

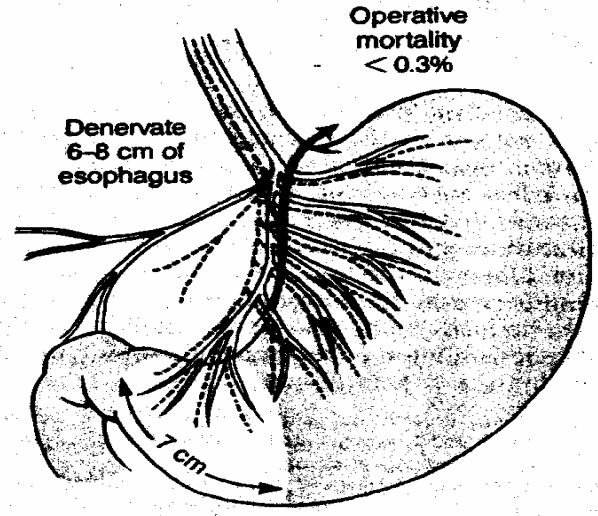
- Homeopathies.

- **Surgical +++:**
  - **Indications:**
    - Intractable ulcers, recurrent, jejunal ulcer.
    - Complicated ulcers:
      - Malignant ulcer.
      - Perforated ulcer.
      - Gastric outlet obstruction.

- **Alternative medicine:**
  - Acupunctue
  - Chiropractic → spinal manipulative therapy.
  - Relaxation techniques & psychotherapy.
  - Yoga
  - Herbal remedies.
    - Cat claw
    - Evening primprose
    - Liquorice
    - Tumerice
    - Peppermint
    - Aloe-vera

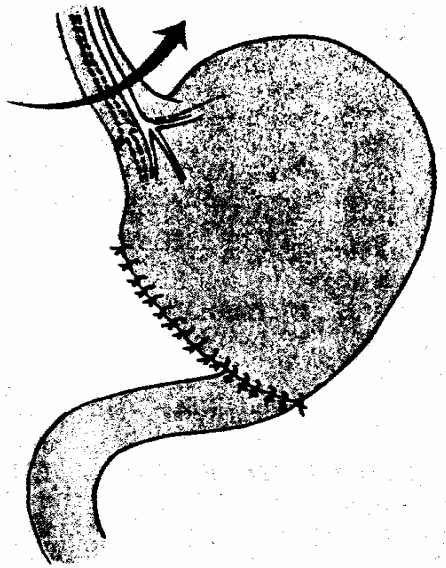


Truncal vagotomy and pyloroplasty

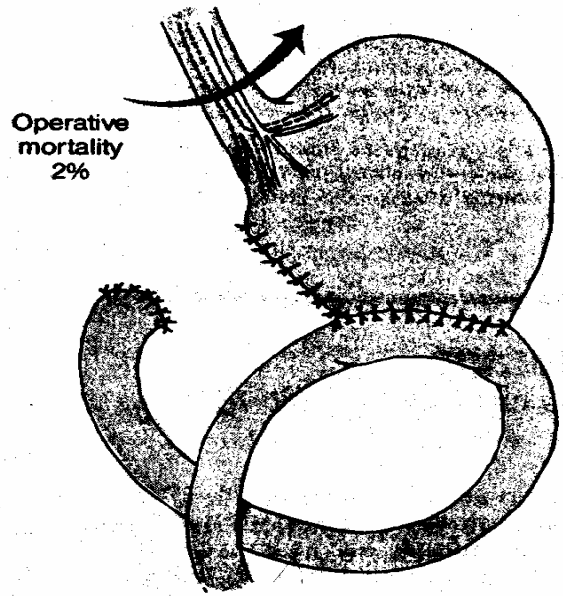


Highly selective vagotomy
without pyloroplasty

- Proximal gastric vagotomy
- Parietal cell vagotomy



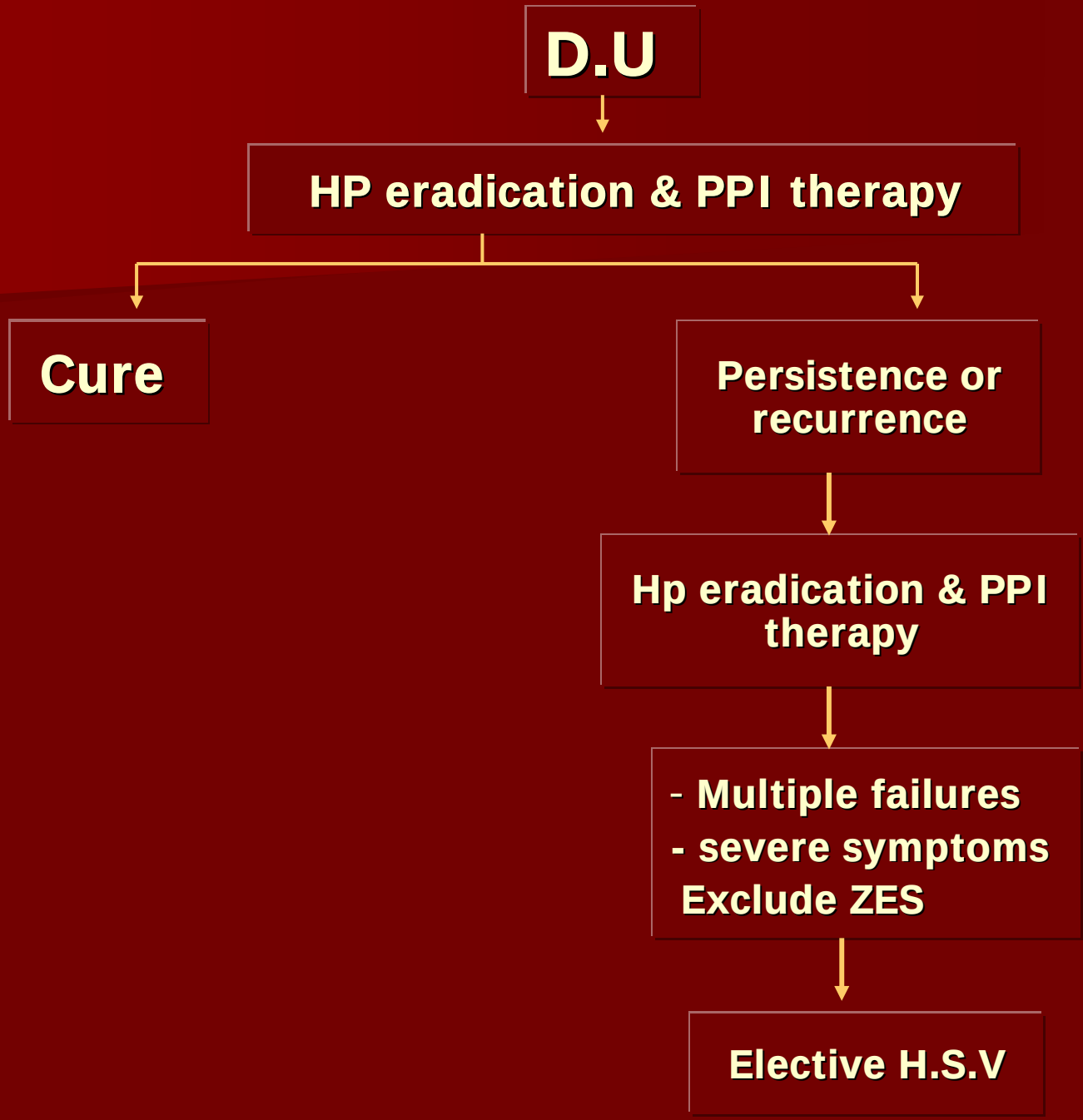
Vagotomy and antrectomy
with Billroth II anastomosis

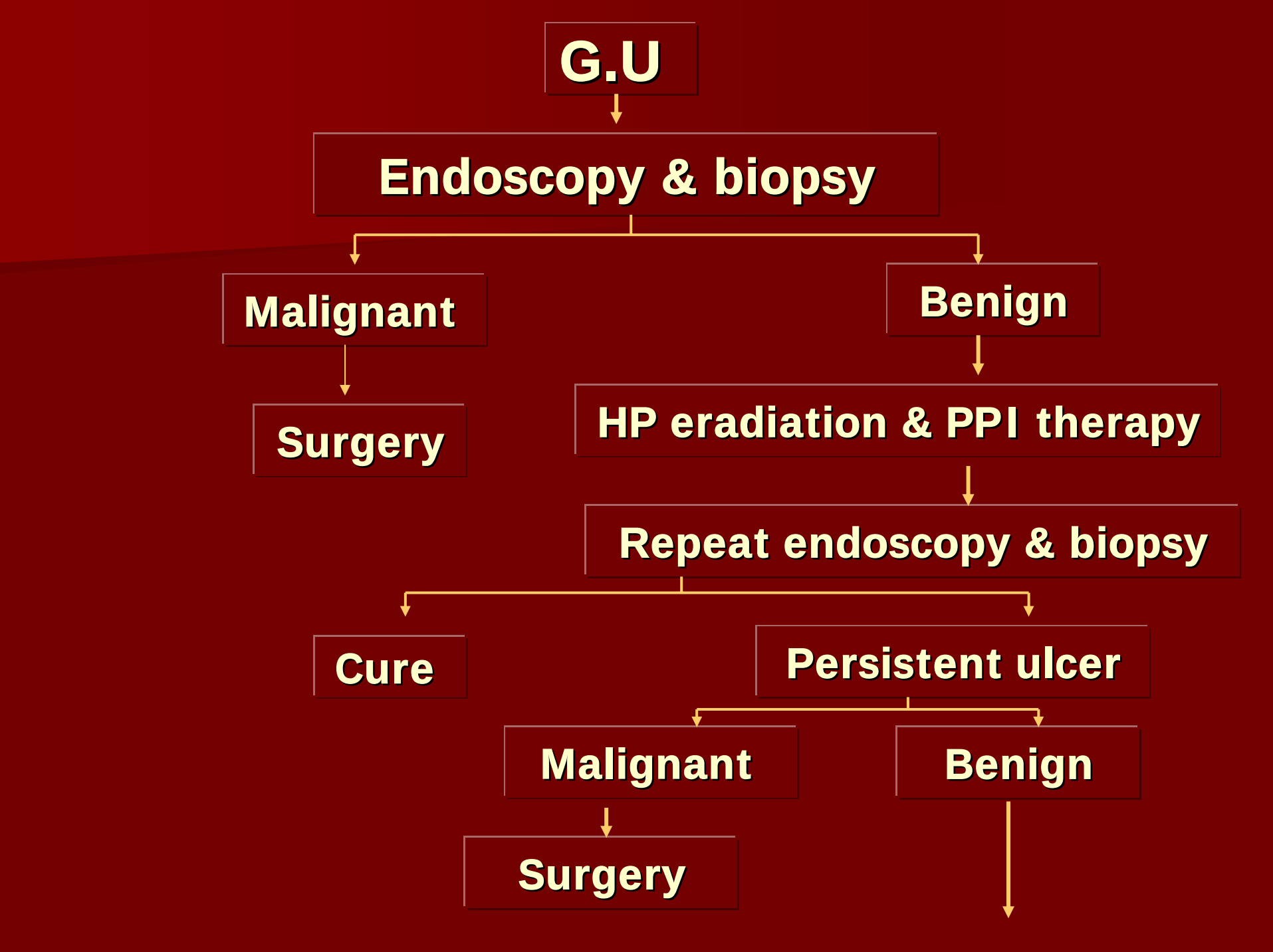


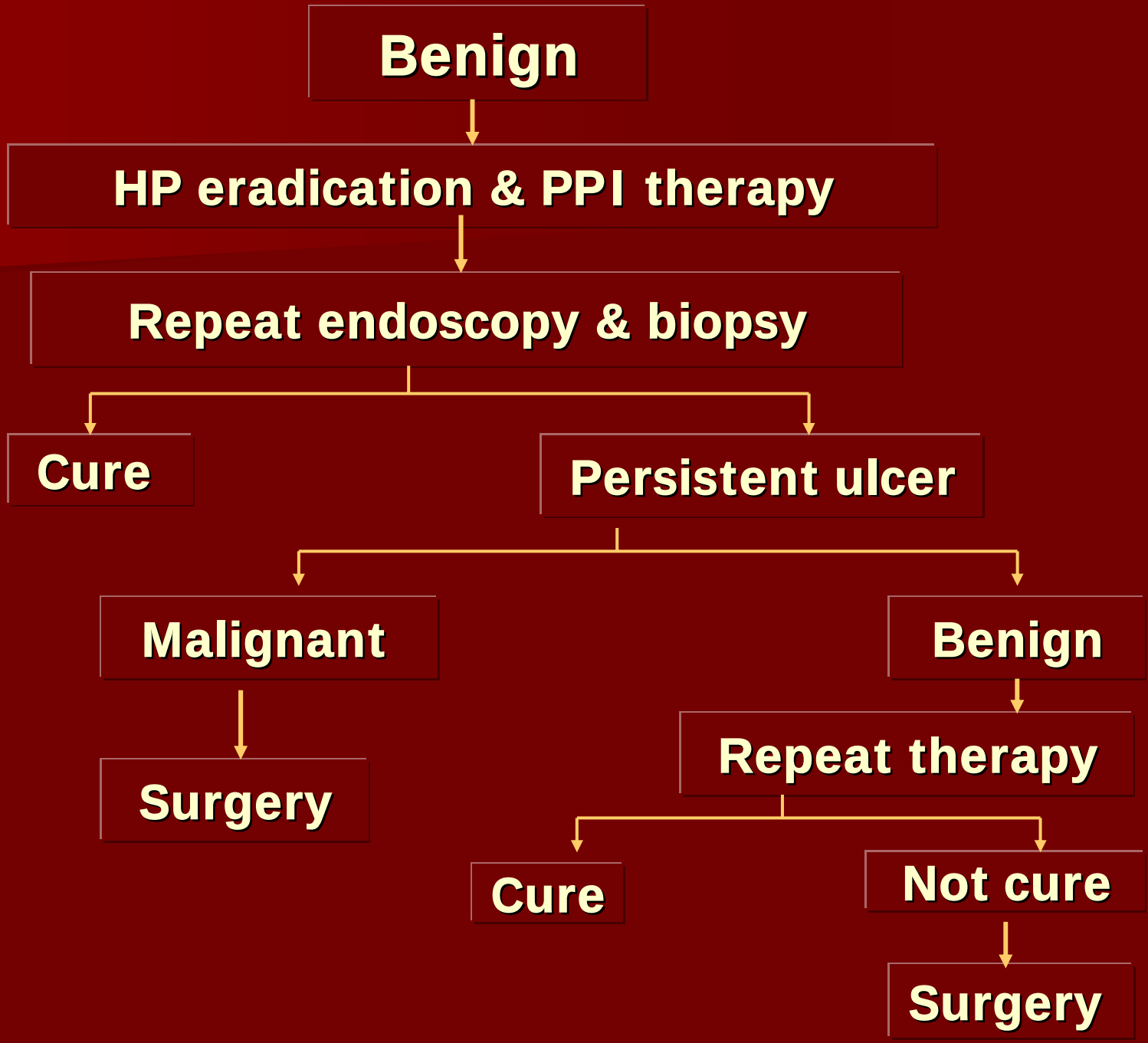
Vagotomy and antrectomy
with Billroth II anastomosis

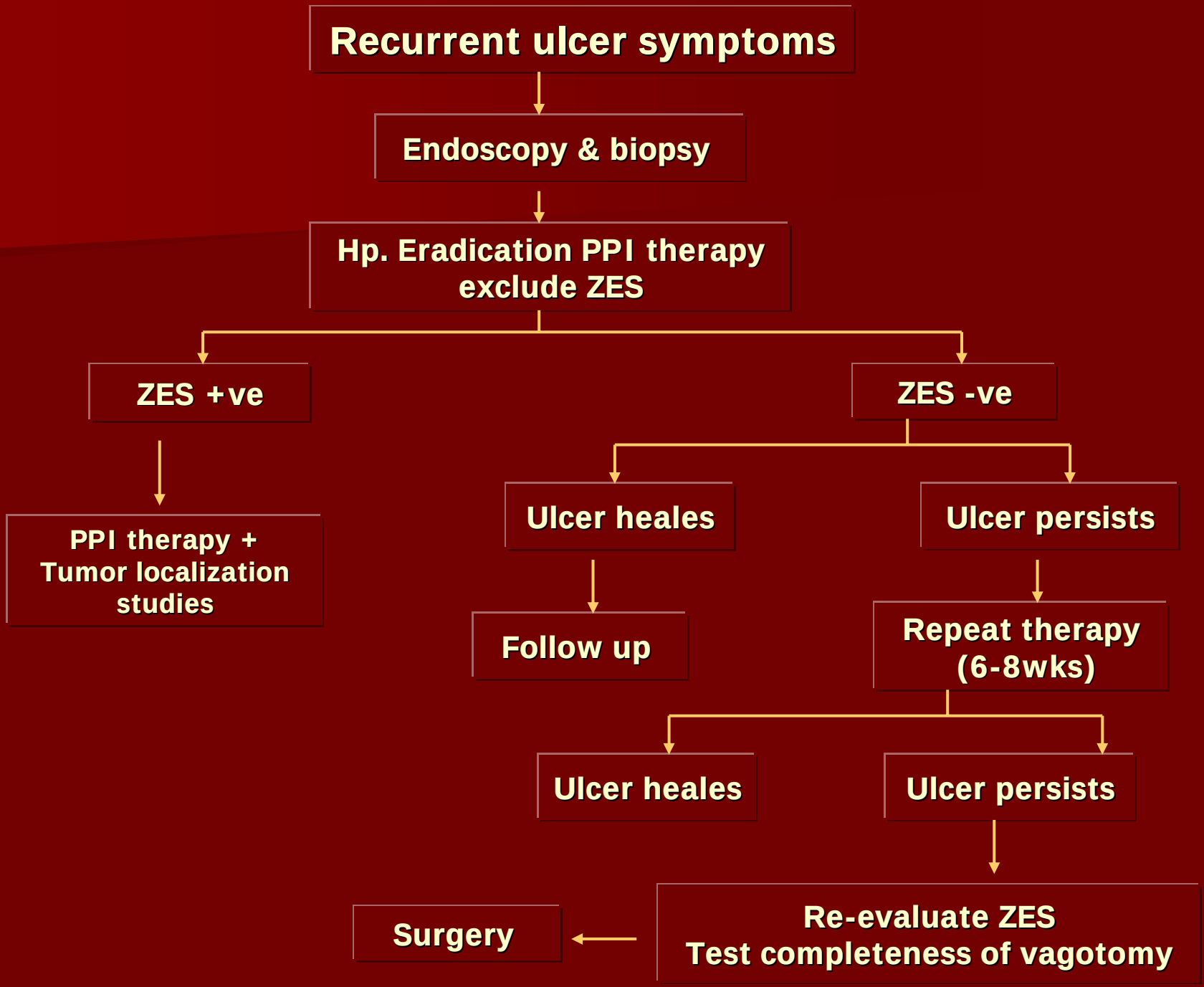
SURGICAL OPTIONS FOR PEPTIC ULCER

Type	Location	Incidence	Treatment of Choice	Comments
I	Body (lesser curve)	55-60%	Antrectomy (Billroth I)	Ulcer resected with specimen. Mortality/recurrence rate of 2%
II	In association with duodenal ulcer	20-25%	Vagotomy and antrectomy	Acid reduction and ulcer excision accomplished
III	Prepyloric	20%	Vagotomy and antrectomy	Behaves like duodenal ulcer
IV	High-lying near gastro esophageal junction	<5%	Resection and esophago-gastrojejunostomy (Csendes)	More common in South America


D.U
HP eradication & PPI therapy
Cure
Persistence or recurrence
Hp eradication & PPI therapy
- Multiple failures
- severe symptoms
Exclude ZES
Elective H.S.V


G.U
Endoscopy & biopsy
Malignant
Benign
Surgery
HP eradiation & PPI therapy
Repeat endoscopy & biopsy
Cure
Persistent ulcer
Malignant
Benign
Surgery


Benign
HP eradication & PPI therapy
Repeat endoscopy & biopsy
Cure
Persistent ulcer
Malignant
Benign
Surgery
Repeat therapy
Cure
Not cure
Surgery


Recurrent ulcer symptoms
Endoscopy & biopsy
Hp. Eradication PPI therapy
exclude ZES
ZES +ve
ZES -ve
PPI therapy +
Tumor localization
studies
Ulcer heales
Ulcer persists
Follow up
Repeat therapy
(6-8wks)
Ulcer heales
Ulcer persists
Surgery
Re-evaluate ZES
Test completeness of vagotomy

Thank You