



Peptic Ulcer Disease

Presented by:

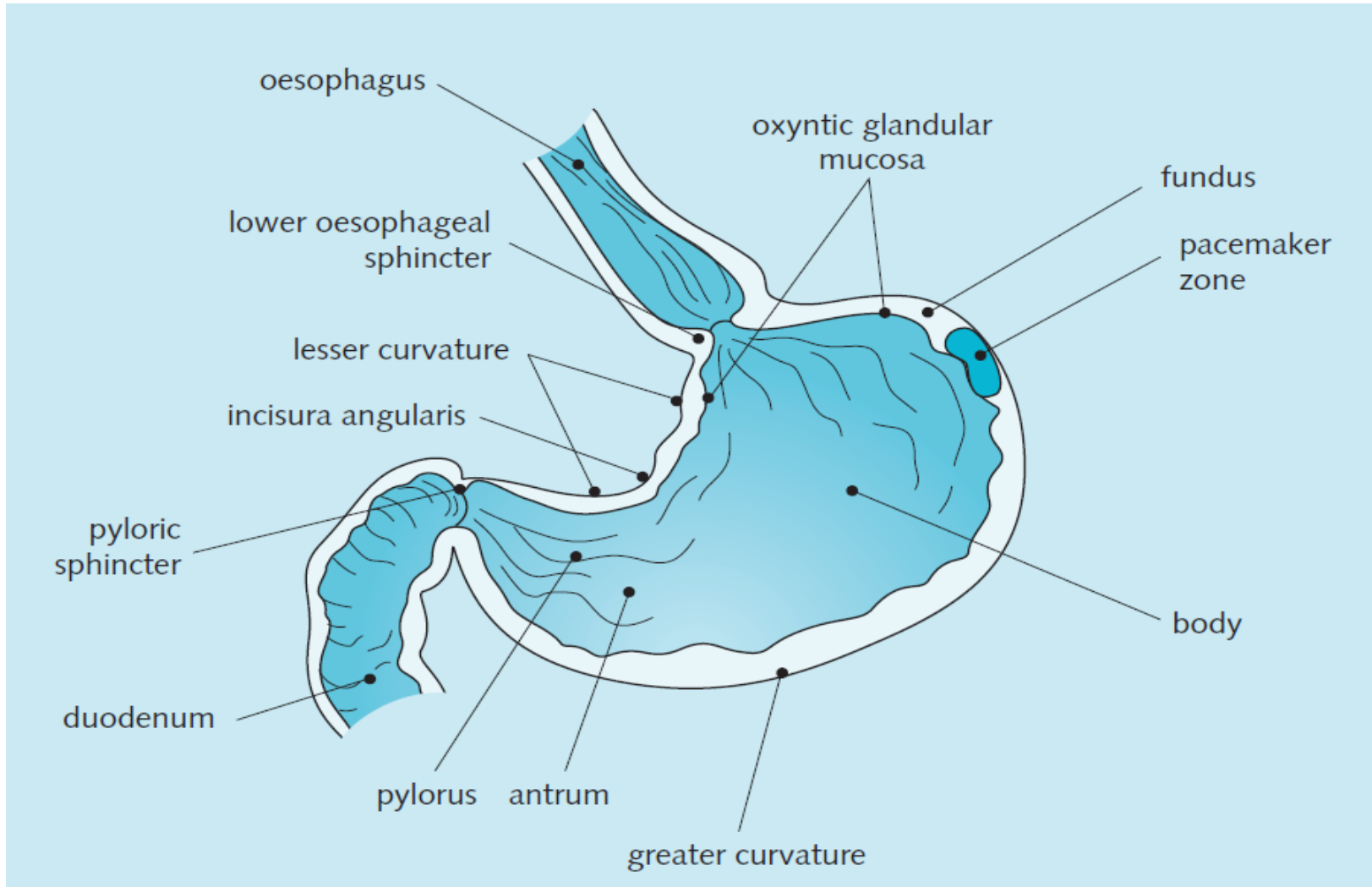
Bayan Alzomaili



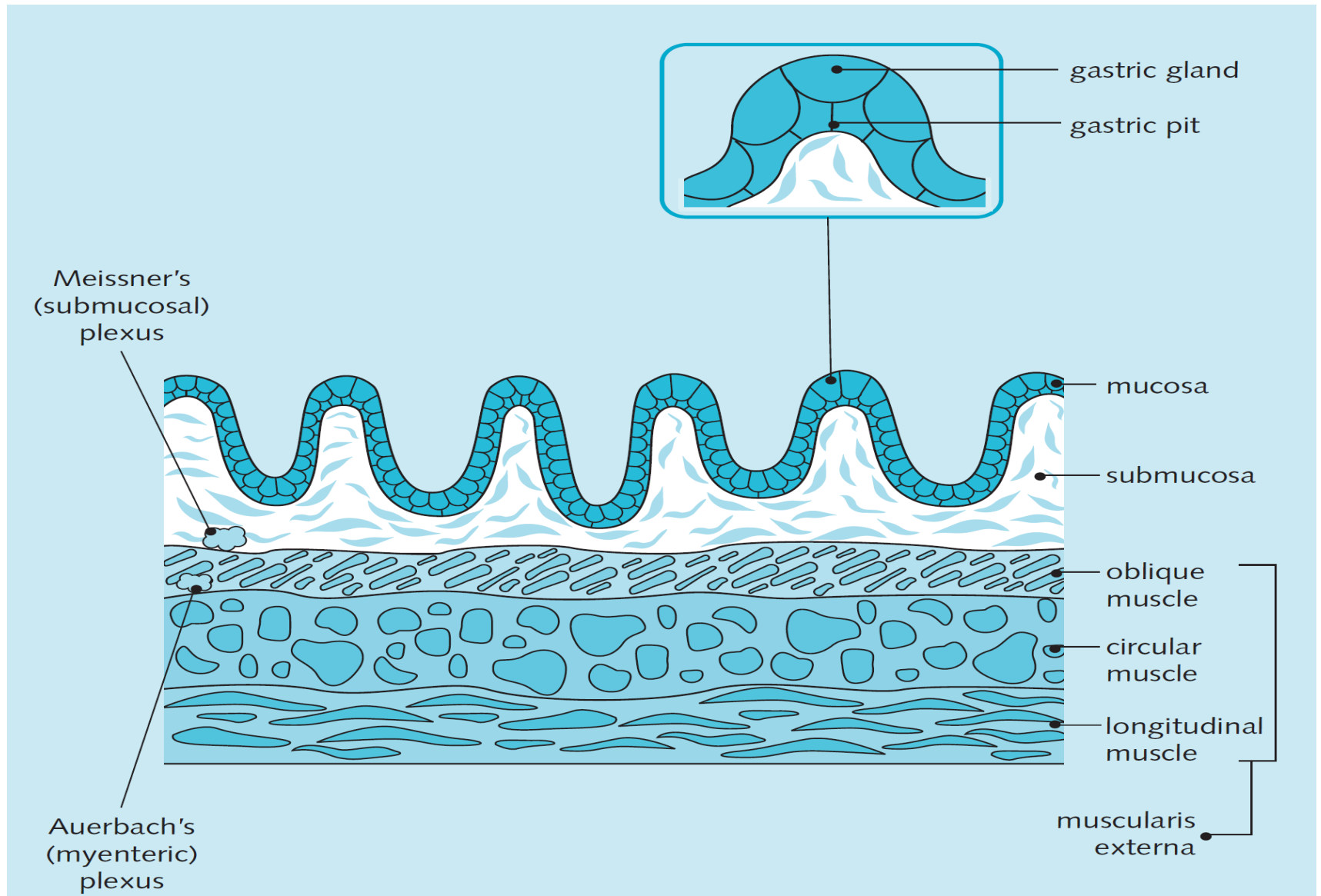
Outline:

1. Anatomy
2. Histology: Gastric Mucosa
3. Physiology of acid secretion and regulation (briefly)
4. Mucosal protection
5. Peptic Ulcer:
 - Overview
 - Causes/Pathophysiology
 - Presentation
 - Management
 - Complications

1- Anatomy overview



2- Histology

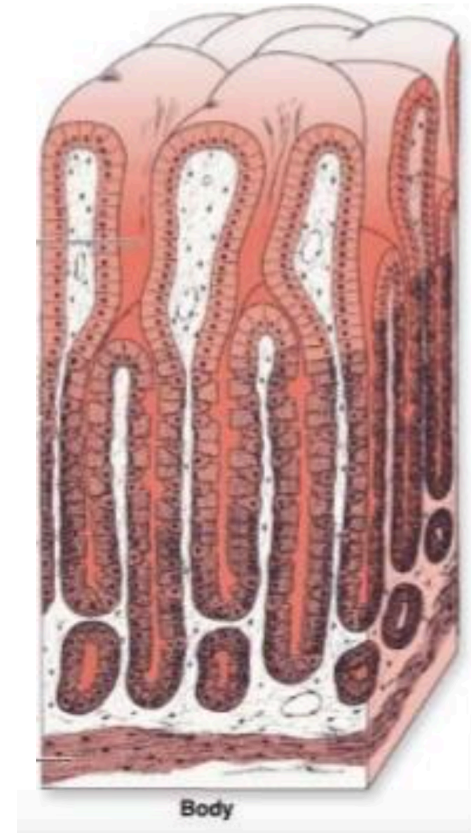


Mucosa:

1- Epithelium

2- Lamina propria

3- Muscularis mucosa



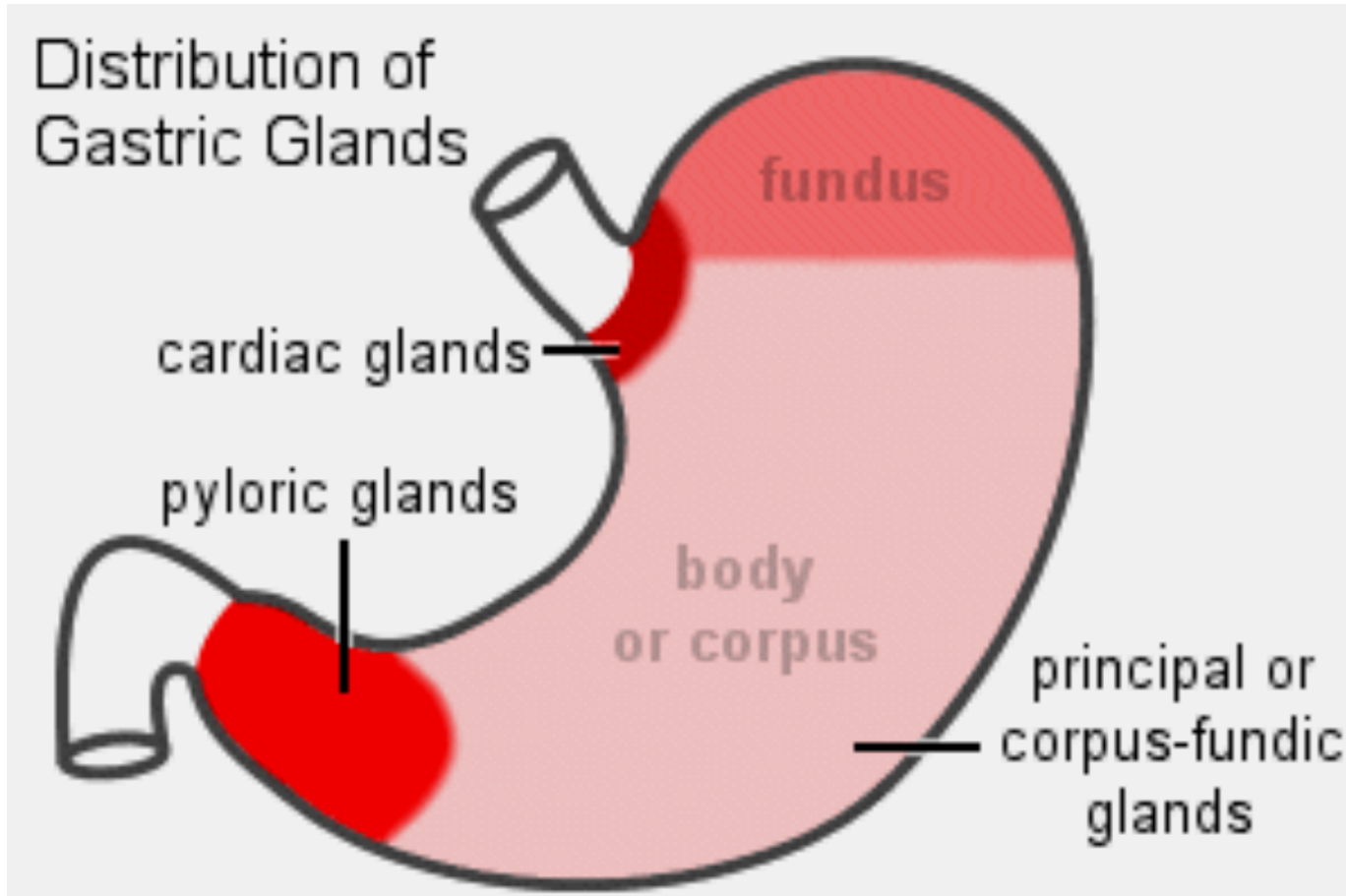




Fig. 3.7 Types of gastric cell. (APUD cells = amine precursor uptake and decarboxylation cells; VIP = vasoactive intestinal polypeptide).

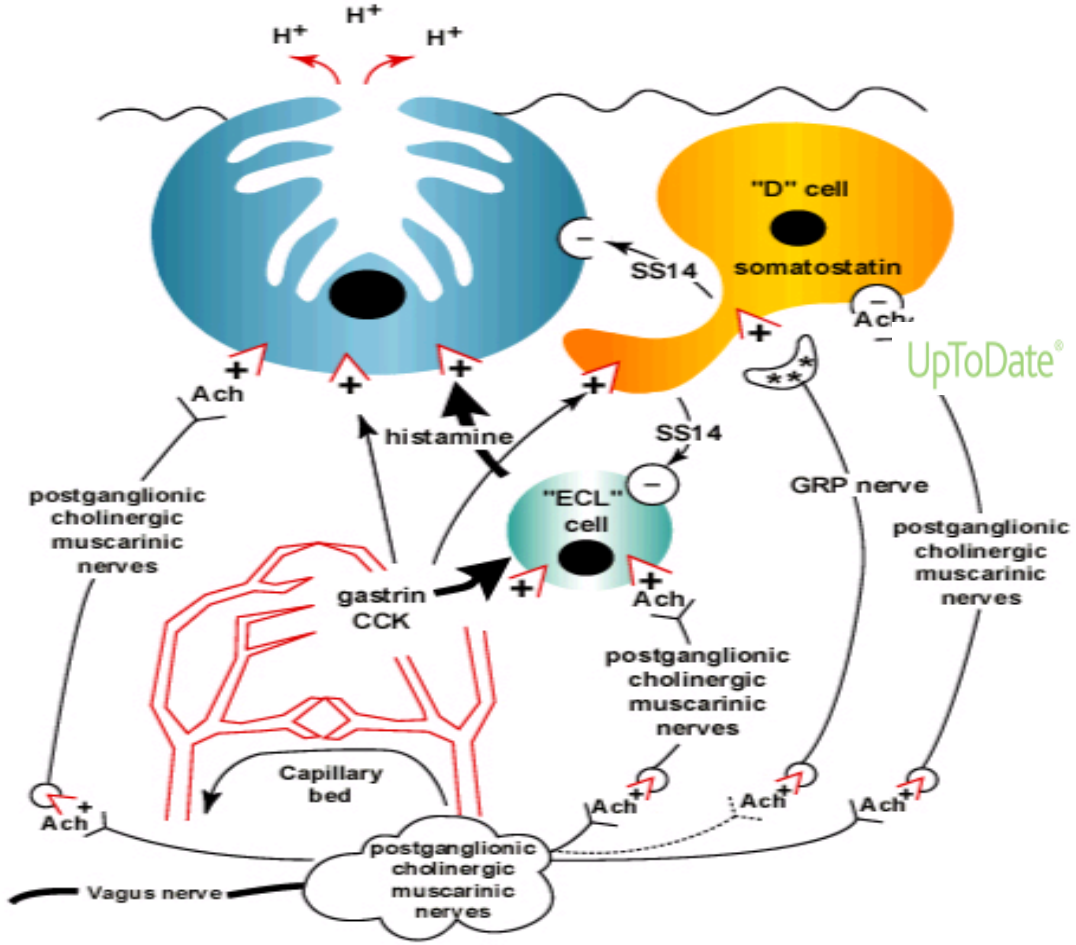
Cell type	Area of stomach		Function
Mucous cells	Cardiac	Many	Secrete mucus to protect the epithelium from acid secretions
	Gastric	Fewer	
	Pyloric	Many	
Parietal cells (oxyntic cells)	Cardiac	Few	Secretion of HCl and intrinsic factor (for vitamin B ₁₂ absorption)
	Gastric	Many	
	Pyloric	More near the pyloric sphincter	
Chief cells (zymogen cells)	Cardiac	Many	Secretion of pepsinogen, the precursor of pepsin, a proteolytic enzyme
	Gastric	Few	
	Pyloric		
Enteroendocrine (APUD cells)	Cardiac	Few	Secretion of protein hormones such as VIP and somatostatin. (gastrin is secreted in the pyloric region)
	Gastric	Many	
	Pyloric	Few	
Stem cells	Cardiac	Present	These give rise to new cells to replace the old mucosal and glandular epithelial cells
	Gastric	Present	
	Pyloric	Present	



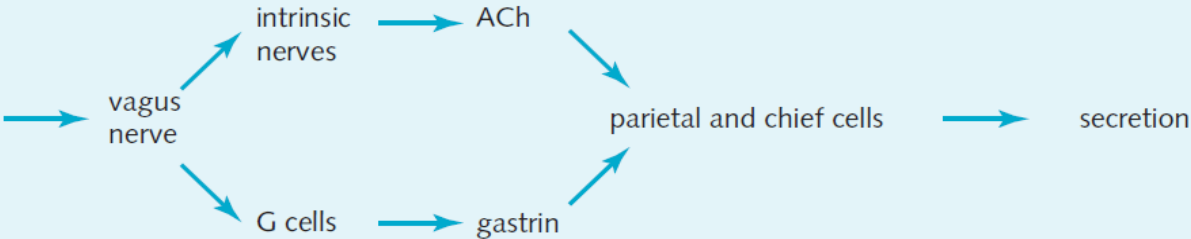
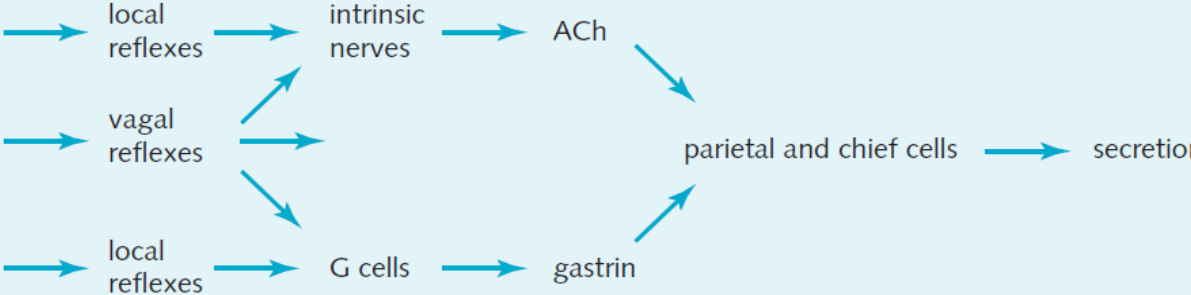

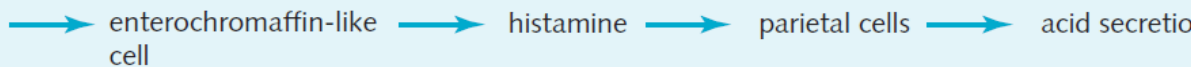
3- Physiology of acid secretion and regulation

- Secreted by Parietal cells
- Parietal cells +ve:
 - Ach (parasympathetic)
 - Gastrin (G cells)
 - Histamine (ECL)
- Parietal cells –ve:
 - Somatostatin (D cells)

Regulation of acid secretion



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phase	stimuli	mechanism
cephalic	sight, smell and taste of food	 <pre> graph LR Vagus[vagus nerve] --> Intrinsic[intrinsic nerves] Vagus --> G[G cells] Intrinsic --> ACh[ACh] G --> Gastrin[gastrin] ACh --> Cells[parietal and chief cells] Gastrin --> Cells Cells --> Secretion[secretion] </pre>
gastric	distension of stomach, amino acids and peptides (products of protein digestion); also alcohol and caffeine	 <pre> graph LR LR1[local reflexes] --> Intrinsic[intrinsic nerves] LR2[vagal reflexes] --> Intrinsic LR3[local reflexes] --> G[G cells] Intrinsic --> ACh[ACh] G --> Gastrin[gastrin] ACh --> Cells[parietal and chief cells] Gastrin --> Cells Cells --> Secretion[secretion] </pre>
intestinal	amino acids and peptides (products of protein digestion)	 <pre> graph LR IG[intestinal G cells] --> Gastrin[gastrin] Gastrin --> Cells[parietal and chief cells] Cells --> Secretion[secretion] </pre>
all phases	gastrin, ACh	 <pre> graph LR ECL[enterochromaffin-like cell] --> Histamine[histamine] Histamine --> PC[parietal cells] PC --> AS[acid secretion] </pre>



4- Mechanism of mucosal protection

1. Acid production regulation
2. Mucosal barrier
3. Epithelial repair



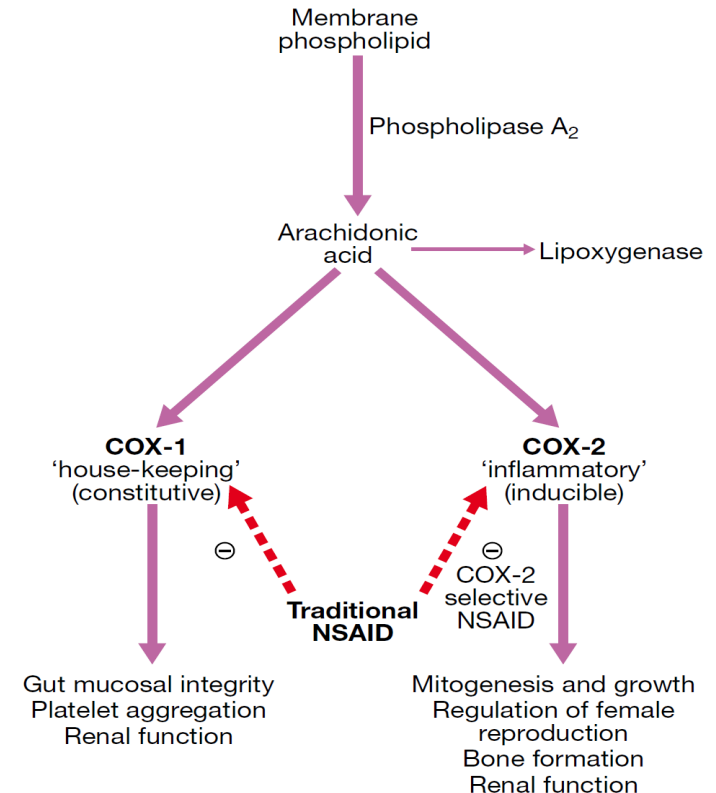
5- Peptic Ulcer disease (overview)

- Types:
 - Gastric Ulcers: Male to female ratio is 2:1
 - Duodenal ulcers: Male to female ratio is 5:1 to 2:1

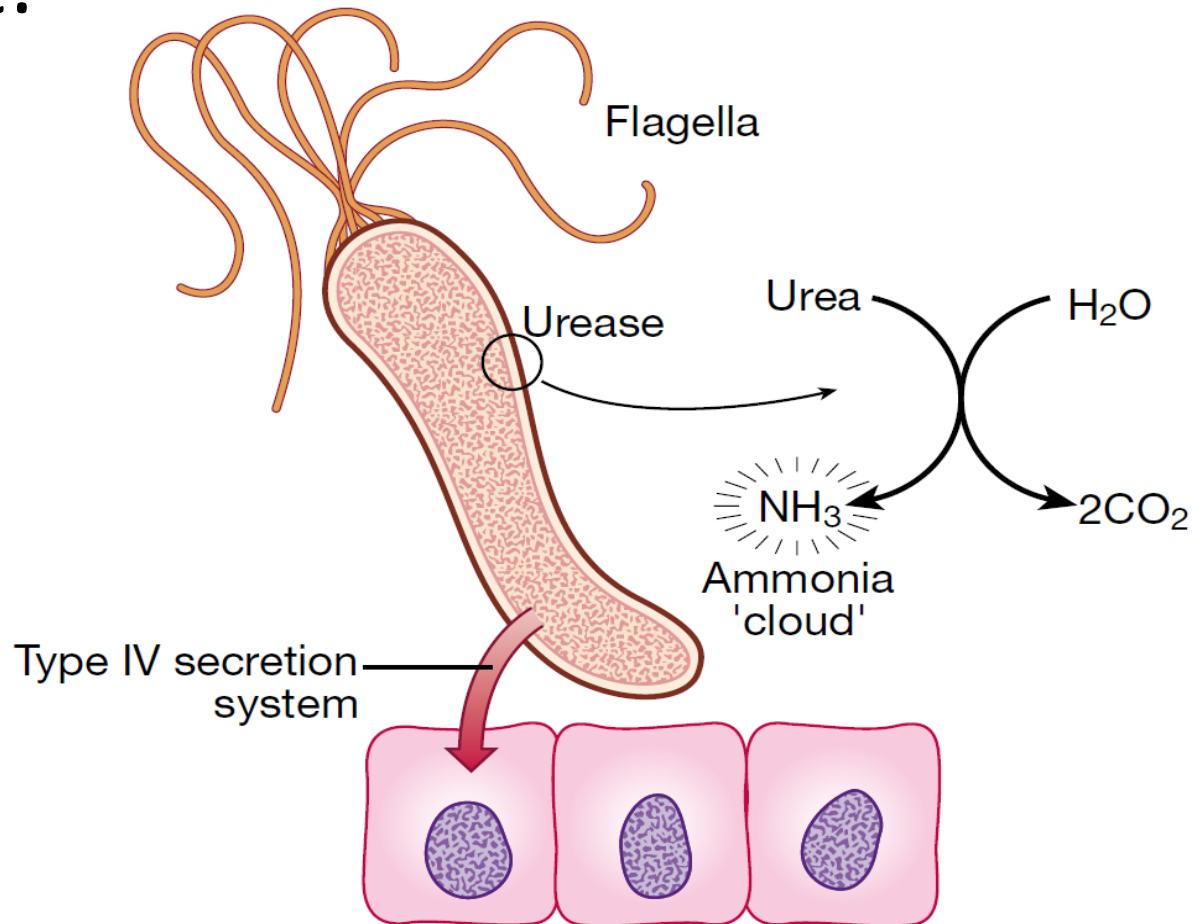


5- Peptic Ulcer disease (causes)

1. Smoking
2. NSAIDs
3. H. pylori
4. Other



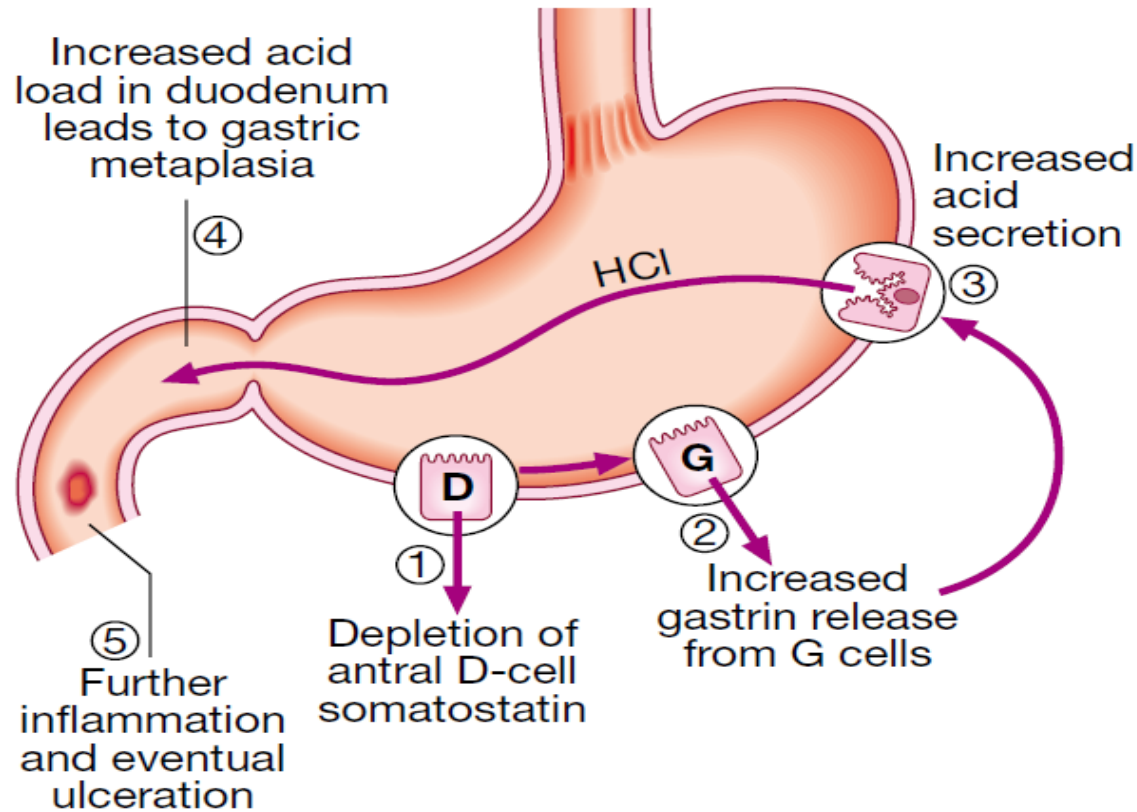
Cont.



Other factors

- Vacuolating cytotoxin (vacA)
- Cytotoxin-associated gene (cagA)
- Adhesins (BabA)
- Outer inflammatory protein A (oipA)

Duodenal Ulcer??





5- Peptic Ulcer disease (presentation)

1. Ulcer-like or acid dyspepsia
2. Food-provoked dyspepsia or indigestion
3. Reflux-like dyspepsia



5- Peptic Ulcer disease (Diagnosis)

1. Blood tests
2. Endoscopy
3. H pylori testing



Gastric Ulcer

- **In the junction between the antrum and the acid secretory mucosa**
- **Can happen in the fundus but rare**
- **H. pylori infection in 70%**

- **Gastritis, shallow or deep ulcer**

- **Inflammatory cells**

- **Can cause hematemesis or melena**
- **Vomiting occurs**

- **Pain starts and aggravated after a meal 1-2 hours (weight loss)**

- **High risk of malignancy**

Duodenal Ulcer

- 95% in the first part of the duodenum
- Most common type of ulcer
- H. pylori infection in almost 100%

- Usually small <1 cm
- Sharply demarcated lesion

- Eosinophils specially on the base of the ulcer

- Can cause melena or hematoschezia

- Pain starts after 3-5 hours after the meal
- Pain is relieved by food and increase in intensity during the night (weight gain)



5- Peptic Ulcer disease (Management)

1. Ulcer due to H. pylori
2. Ulcer due to other causes



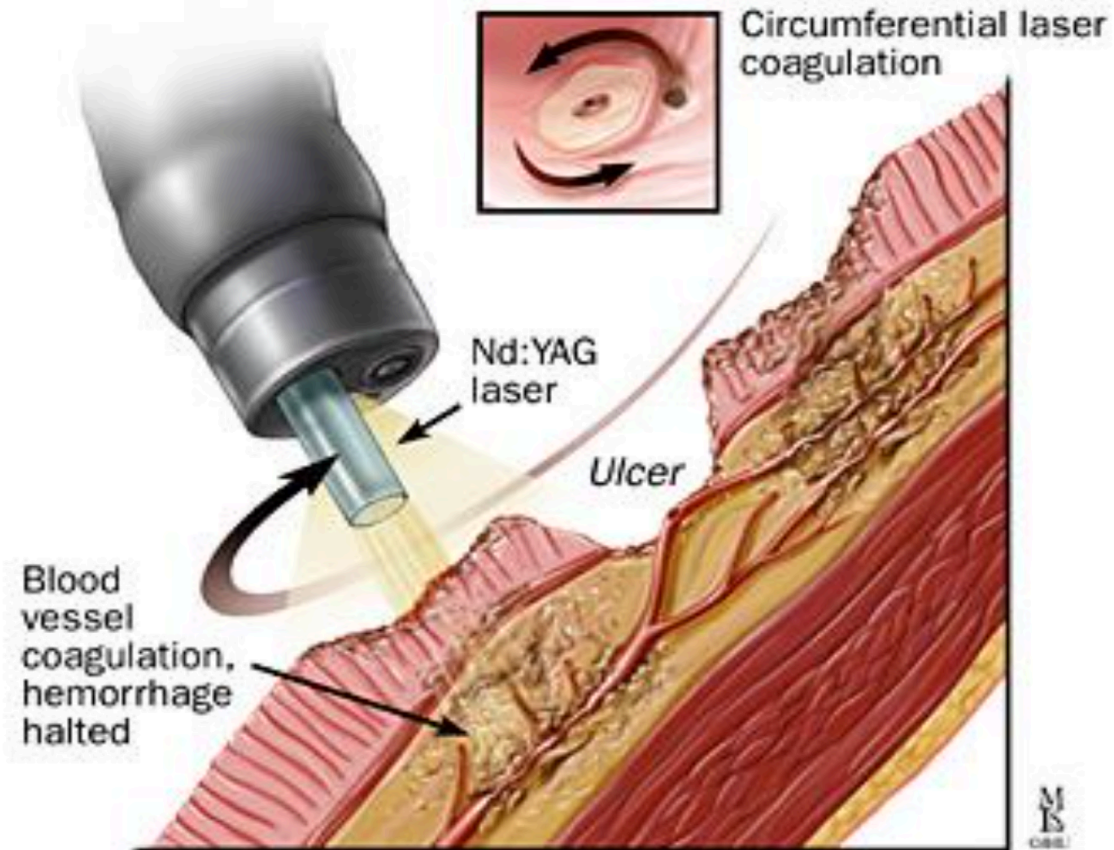
5- Peptic Ulcer disease (Management)

A. Endoscopy therapy

B. Surgical management indications:

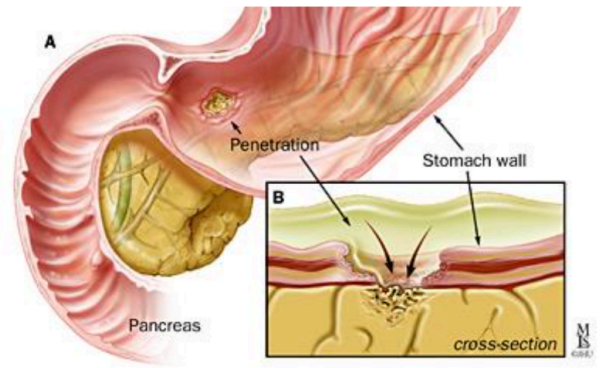
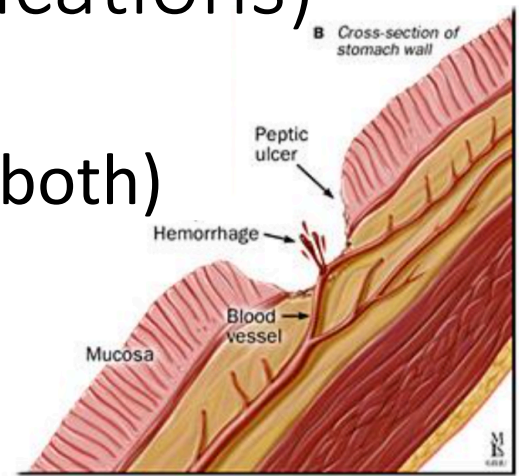
1. Peptic ulcer disease refractory to medical management
2. Suspicion of malignancy
3. Management of peptic ulcer disease complications
 - Bleeding peptic ulcer
 - Perforated peptic ulcer
 - Gastric outlet obstruction

A- Endoscopy therapy



5- Peptic Ulcer Disease (complications)

1. Bleeding (hematemesis, melena, or both)
2. Perforation
3. Penetration
4. Gastric outlet obstruction
5. other





References:

- Up to date
- Davidson's Principles and Practices of Medicine
- Crash Course (GI)
- Wheater's Functional Histology
- Table done by Roaa Amer



For any questions or comments
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