

General features of the wall of the GIT its wall is composed of 4 layers:

□ Mucosa:

Epithelium

CT (Lamina propria, corium) (CT)

Muscularis mucosa (s. ms.)

□ Submucosa: C.T.

□ Muscularis : 2 layers of smooth muscles (IC & OL)

□ Adventitia or serosa

Serosa: double layer membrane made of epithelium

Adventitia: is not epithelial is loose CT

The esophagus • Muscular tube connects the pharynx with stomach, transport food

• Its wall consists of 4 layers:

▪ **Mucosa:***

*Epithelium: Non-keratinized stratified squamous epith.

*Lamina propria: B.V., nerves,

lymphatics(!Cardiac orifice contain gland)

*Muscularis mucosa: smooth ms.

▪ **Submucosa:** loose C.T. contains BV, lymphatics, Meissner's plexus of nerves & esophageal mucous glands

▪ **Musculosa** :IC &OL (OL: upper 1/3 Striated *, middle 1/3 mixed & lower 1/3 smooth ms.)

NB: swallowing start with controllable motion but finishes with involuntary peristalsis

▪ **Adventitia:** covers most of the esophagus except the most distal portion which is located in the abdominal cavity is covered by serosa

Changes at gastro- esophageal junction

1. stratified Squamous to simple columnar

2. lamina propria of stomach is wide & contains gastric glands (branched tubular)

3. The esophageal glands in the submucosa of esophagus stops in that of stomach

4. The musculosa more thick in stomach due to the inner oblique layer

The stomach

• The mucosa in empty stomach forms longitudinal folds called gastric rugae

• The mucosa of stomach contains gastric glands (cardiac, fundic , pyloric)

• These glands secrete gastric juice which contains: ➤ Acid:

HCl ➤ Mucus ➤ enzymes:

pepsinogen, lipase

The fundus & body of the stomach

1- The mucosa:

• epithelium: simple columnar cells, secrete neutral mucus for lubrication & protection*

• lamina propria: contains **gastric glands** & C.T. fills the spaces between the glands . It also contains B.V., lymphatics, nerves

• Muscularis mucosa: layer of smooth muscles arranged as (IC & OL) inner circular & outer longitudinal

2-The submucosa: loose C.T. with B.V., lymphatics, meissner's plexus of nerves

3-The musculosa: formed of 3 layers of smooth ms. Inner oblique - middle circular - outer longitudinal. Auerbach's plexus is present between middle & outer layers

4- The Serosa: is the peritoneal covering, is formed simple squamous mesothelium & loose C.T. It contains B.V lymphatics, & nerves

Gastric glands (fundus)

1-simple branched tubular

Gastric glands (fundus)

1-simple branched tubular

2-occupy the entire thickness of the mucosa .

3-They open onto the surface epithelium through gastric pits

Each gland is formed of 3 parts: isthmus, neck & base

6 types of cells line the fundic glands:

1- **Surface mucous cells (Foveolar cells):** cover the surface & line the gastric pits & isthmus. They sec. neutral mucus for protection

2- **Mucous neck cell:** present in neck of gastric glands, low columnar cells e foamy cytoplasm. They secrete acidic mucus.

3- **stem cells:** present in neck region, low columnar. They differentiate to other gastric cells.

4- **- Parietal (oxyntic) cells** : • triangular in shape e acidophilic cytoplasm & rounded central nucleus. present mainly in the upper half of the glands – fewer in the base

E/M : their apical surfaces show branching Intracellular canaliculi that open at the apex.

↑ mitochondria, ↑SER, NO sec. granules They secrete HCl.

intrinsic factor(glycoprotein) needed for vit. B12 absorption.

5-Peptic (Chief, Zymogenic) cells: mainly at the base of gastric glands. columnar cells e basal rounded nuclei. • The basal cytoplasm is basophilic due to ↑rER, while the apical part contains ↑↑ zymogen granules

E/M : protein secreting cells • These cells secrete pepsinogen & G. lipase

5- Entero-endocrine cells : • present in the base of the glands. •the secretion in the basal part to be released to the B.V. • They secrete: ✓ Gastrin ✓ Enteroglucagon ✓ Serotonine ✓ Somatostatin(D cells)

The difference between fundus & pylorus:

Fundus:

Thick mucosa

Pits are narrow & short

F. Glands are simple branched tubular & long

• occupy most of mucosal thickness

• Lined e 6 types of cells

• Corium: lymphocytic infiltration

• Muscularis: thinner formed of 3 layers of ms. (IO, MC,OL)

Pylorus

• Thin mucosa

• Pits are wide & long

• P. Glands are coiled branched tubular & short

• Occupy ½ of mucosal thickness

• Lined e mucous secreting cells No oxyntic, No peptic cells

• Lymphocytic infiltration & lymph nodules

• Thicker , formed of 2 layers of muscles.

Thick IC to form the p. sphincter & OL

Changes at gastro duodenal junction :

• intestinal villi start to project from mucosa

• Intestinal crypts replace pyloric glands in the corium of duodenum

• Surface columnar cells with brush border. Goblet cells appear between cells

• Muscularis mucosa: pass unchanged

• Brunner's glands appear in duodenal submucosa

• Muscularis is thinner in the duodenum

• Serosa pass unchanged

Gastric mucosal barrier:

1-epithelial cell lining. Cells in the epithelium of the stomach are bound by tight junctions

2- A special mucus covering, secreted by surface epithelial cells. This insoluble mucus forms a protective gel-like coating over the entire surface of the gastric mucosa.

3- Bicarbonate ions, secreted by the surface epithelial cells. The bicarbonate ions act to neutralize harsh acids that find access to cells.