Embryology Of Gastrointestinal Tract

Embryology of G.I.T.:

❑ Endoderm :

Epithelial lining & specific cells o

glands (liver, pancreas).

❑ Visceral Mesoderm:

Lamina propria, muscularis mucosa

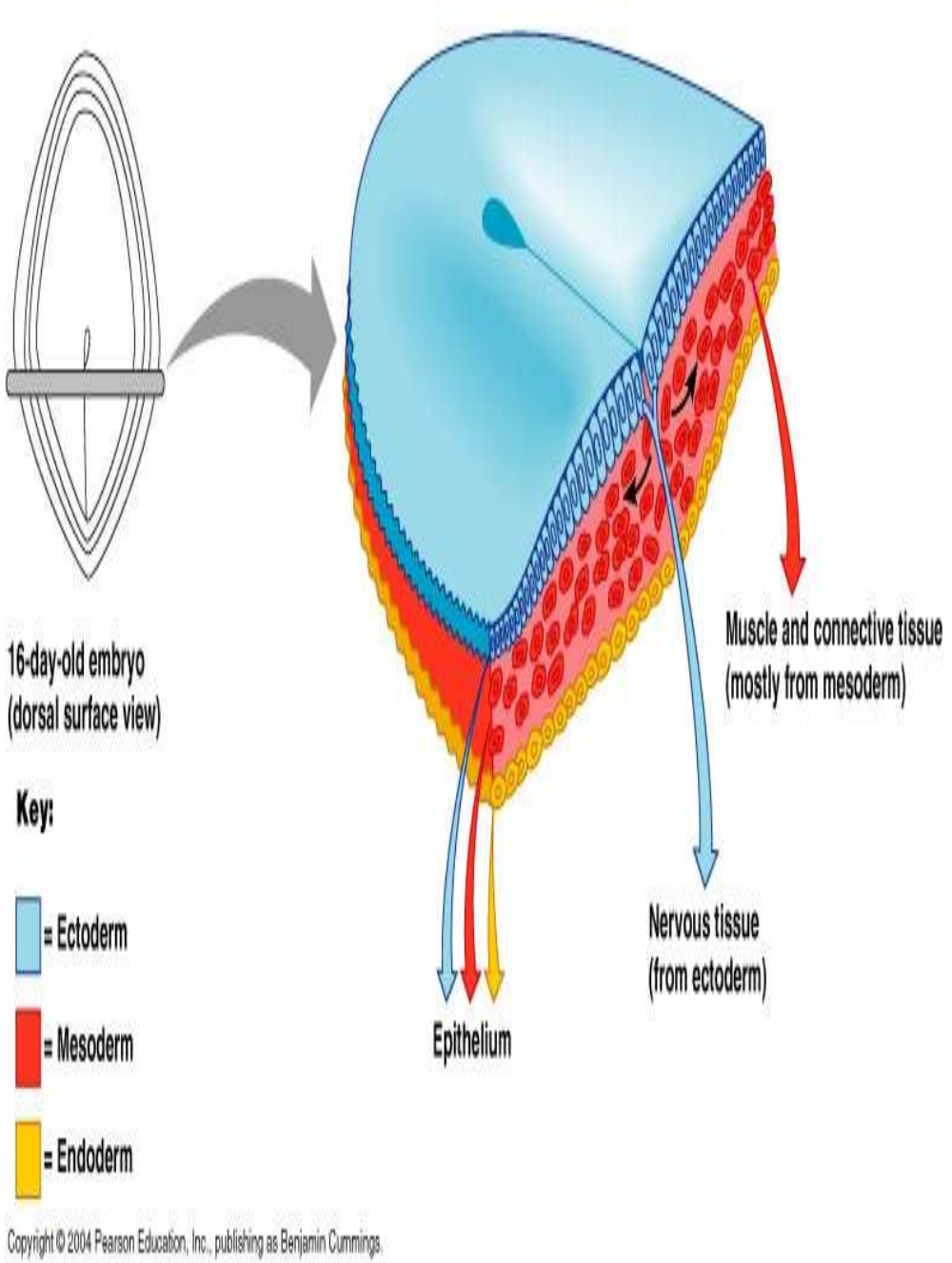
submucosa, muscularis externa ,

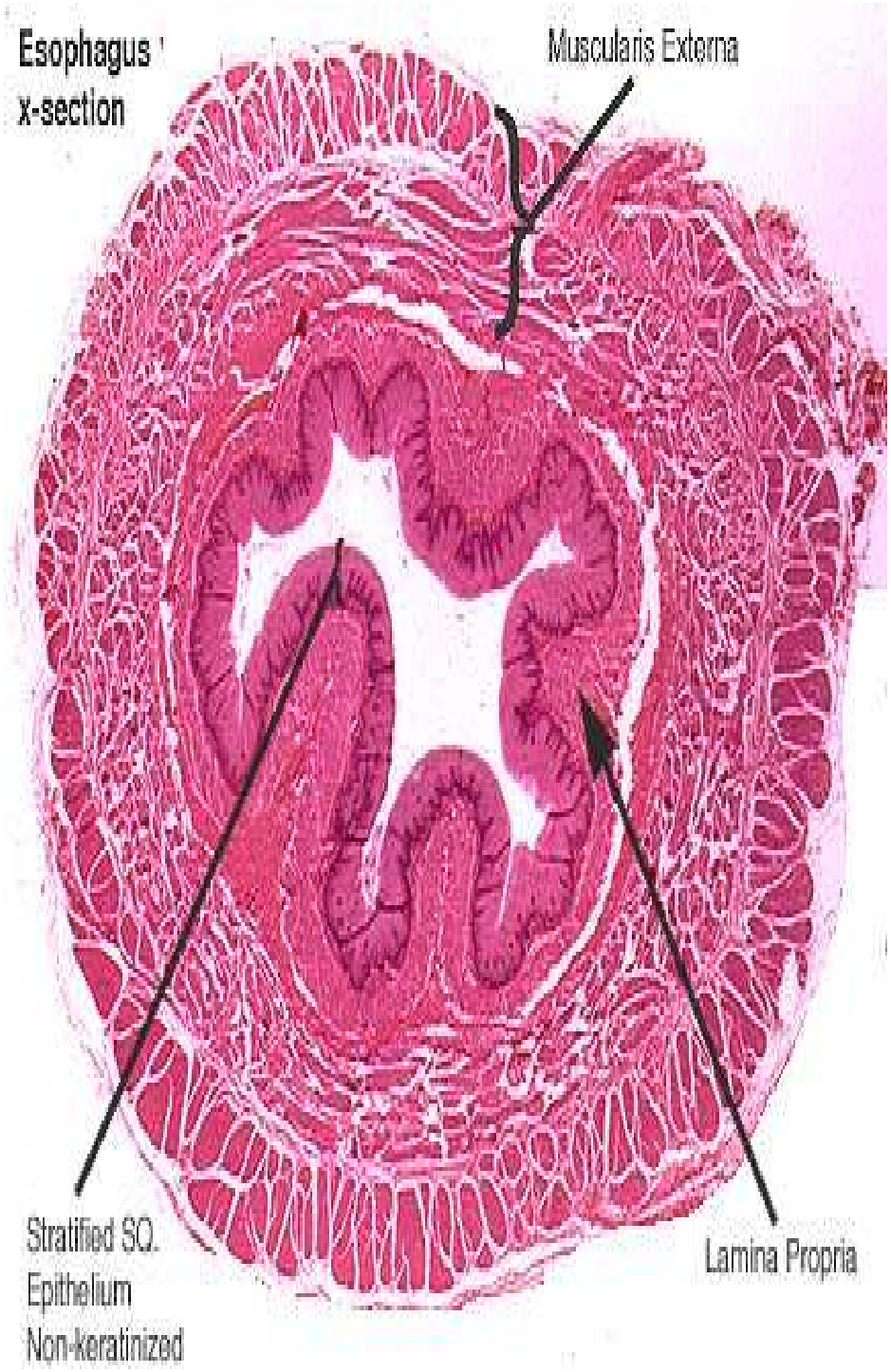
serosa , stroma of glands, mesentery

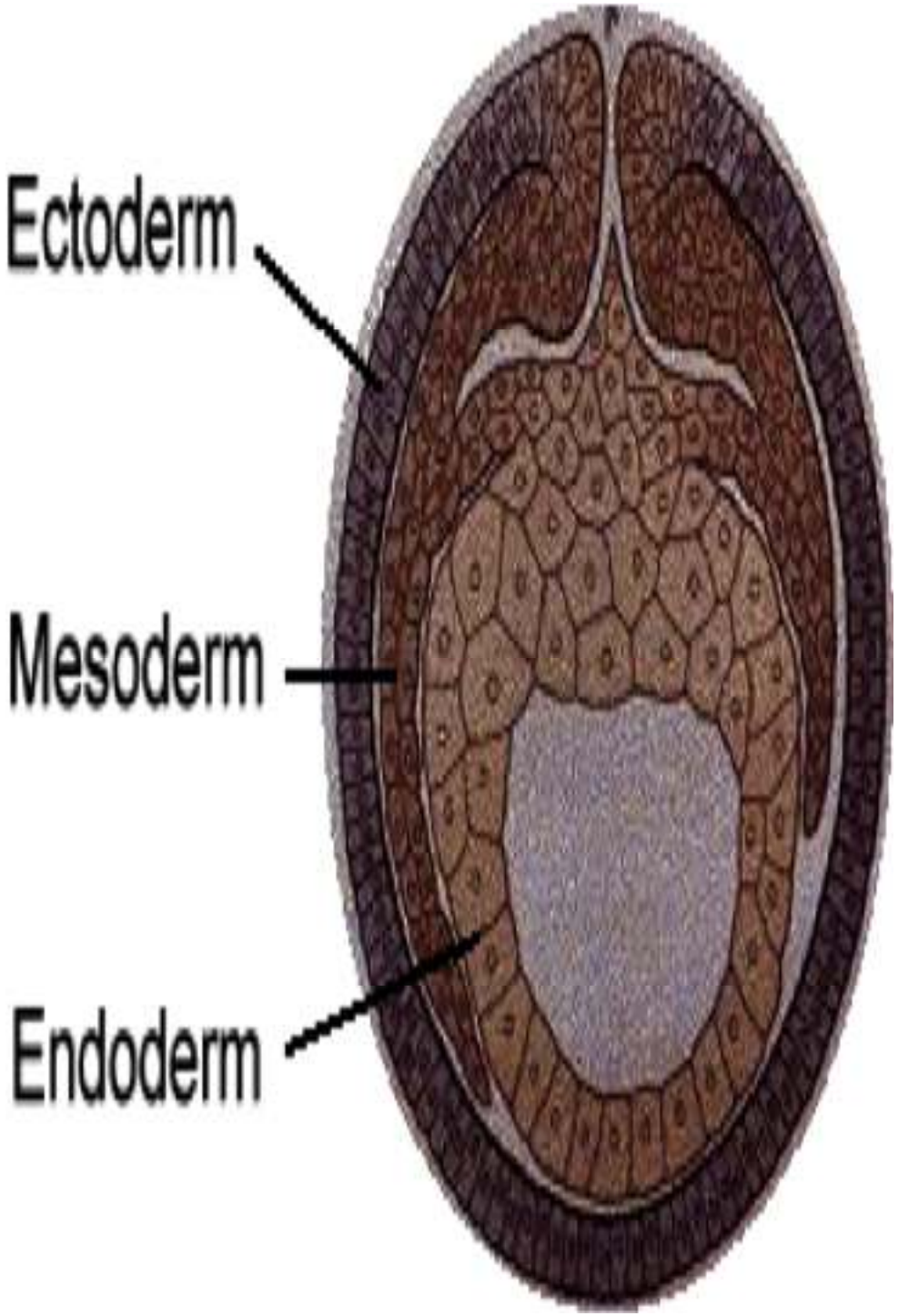
& blood vessels.

❑Ectoderm:

Enteric nervous system .



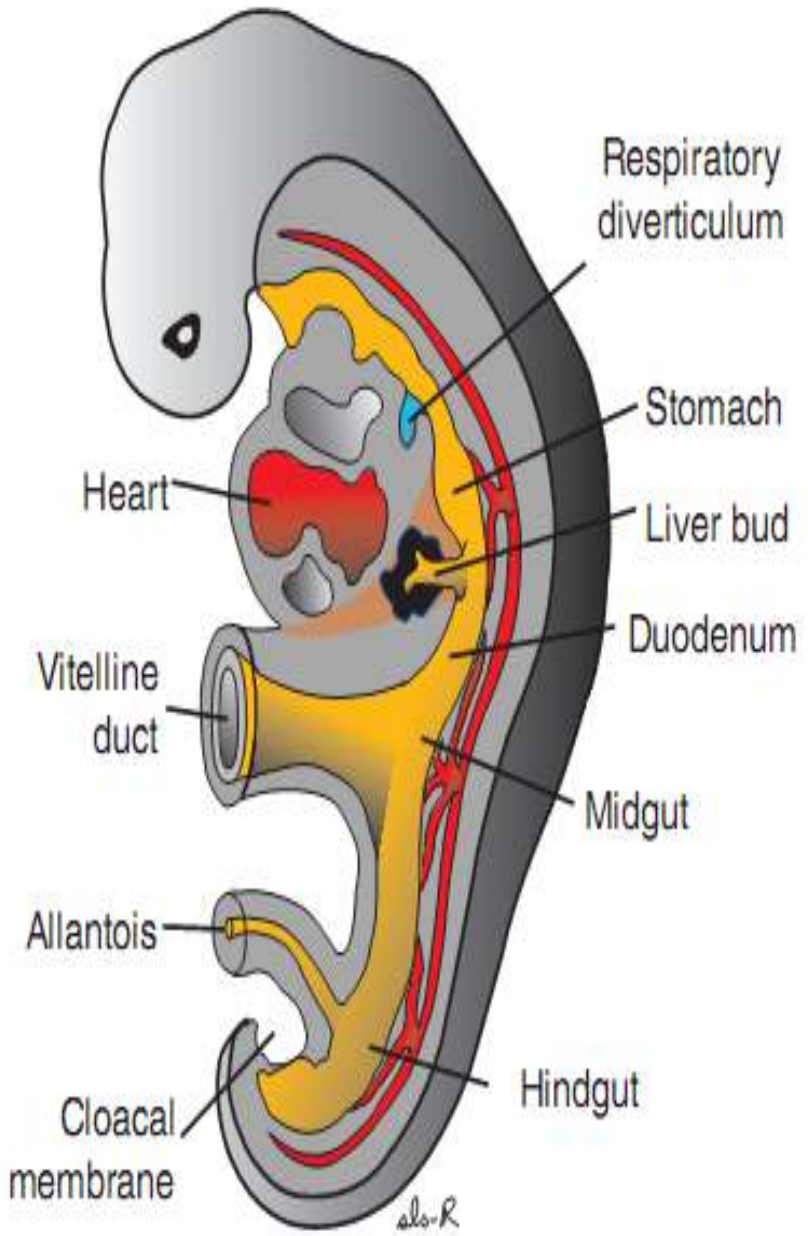

Esophagus '
x-section
Muscularis Externa
Stratified SQ.
Epithelium
Non-keratinized
Lamina Propria


Ectoderm
Mesoderm
Endoderm

Primitive Gut Tube :

➢During craniocaudal &lateral folding of the embryo.

1) Foregut.
2) Midgut.
3) Hindgut.



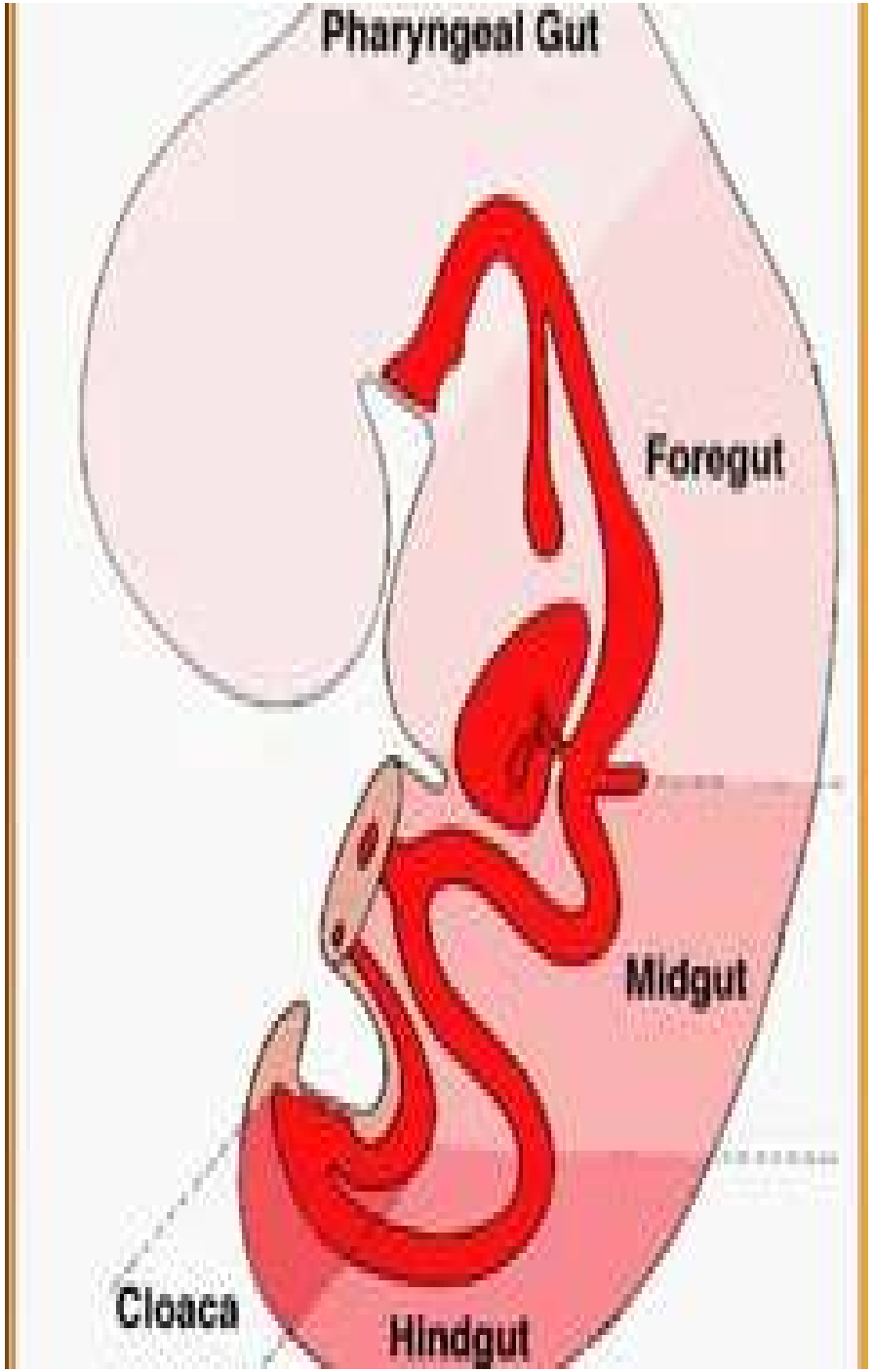
A

Foregut :

- Oral cavity, pharynx, esophagus
- Stomach ,Upper Duodenum
- Liver
- Gallbladder & bile ducts
- Pancreas

Midgut : rest of duodenum till distal1/3 of transverse colon

Hindgut : from distal1/3 of transverse colon ------ cloaca (rectum ,anus).

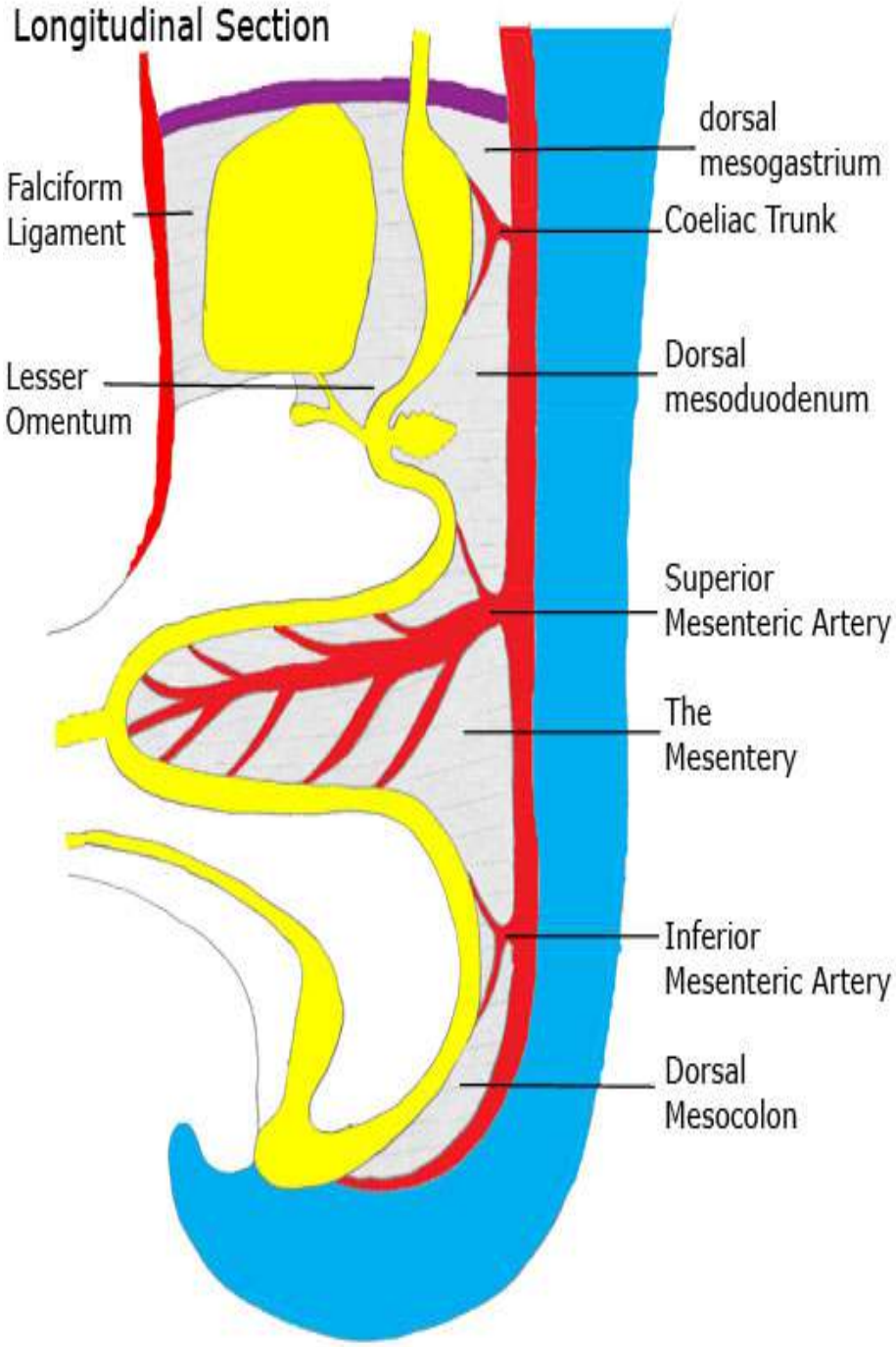


Mesentery:

Primitive gut has :

1)Dorsal mesentery: initially it connects gut to posterior abdominal wall but at 5th wk ,it narrowed and presented in :

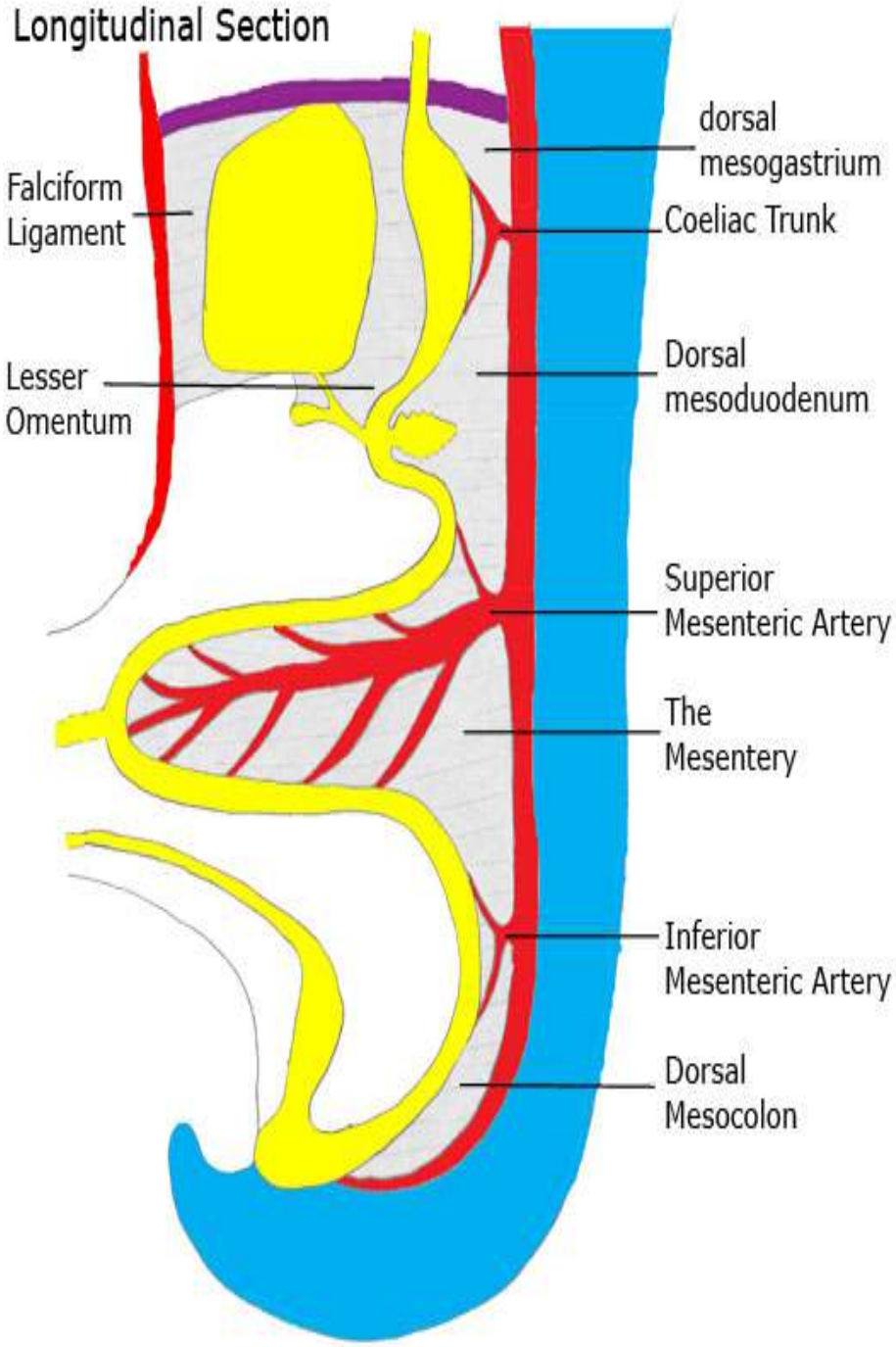
- **Stomach region** (dorsal mesogastrium or greater omentum)
- **Duodenum** (dorsal mesoduodenum)
- **Colon** (dorsal mesocolon)
- **jejunum &ileum** (mesentery proper)



2) Ventral mesentery:

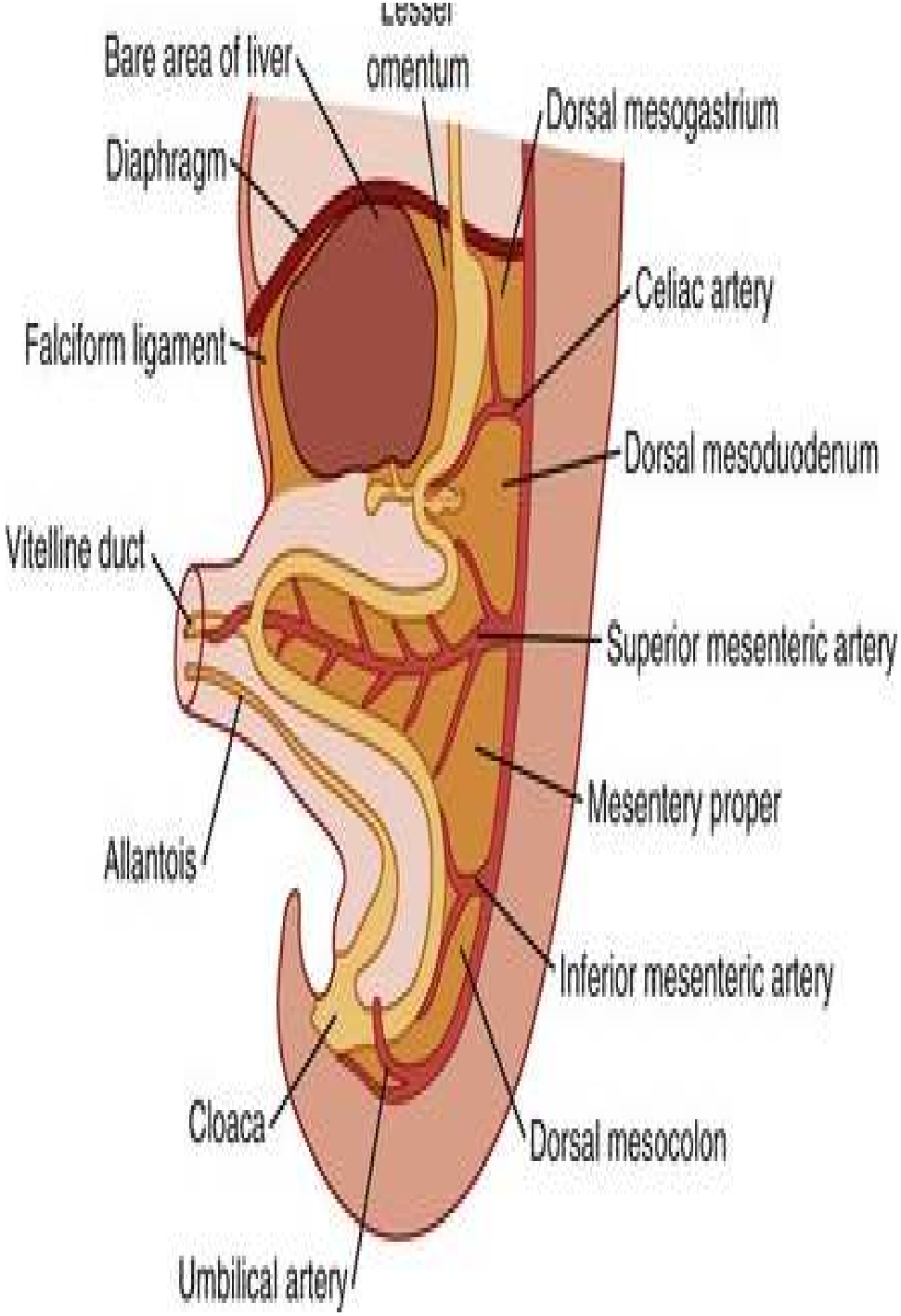
- It presented in terminal part of esophagus , stomach &upper duodenum .
- once the liver invade & grow, it divided the ventral mesentery to :

➢ **ventral mesogastrium or lesser omentum** which connect t terminal part of esophagus , stomach &upper duodenum to liver .



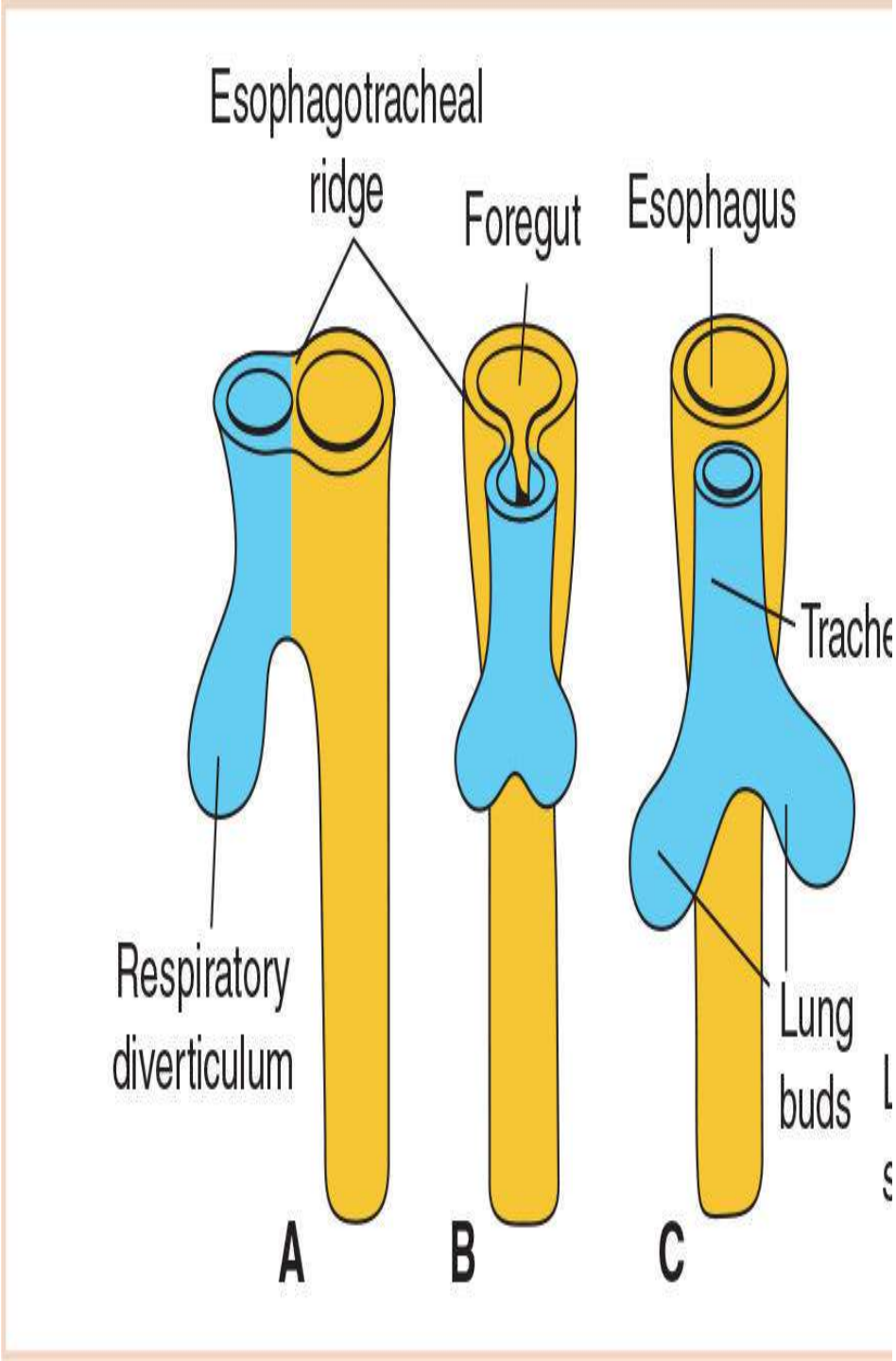
➢**Falciform ligament** which connect liver to ventral body wall.

The Free margin of falciform ligament contain umbilical vein which obliterated after birth.



Esophagus :

- It developed at **4 wk** .
- Foregut caudal to pharyngeal gut started budding of **respiratory diverticulum (lung bud)** ventrally then tracheoesophageal septum form to separated lung bud from esophagus.
- at first time the esophagus is short but because descent of heart & lung it rapidly lengthen.



Stomach:

- It arised at **4 wk** of fetal life.
- Its appearance & position is greatly changed during development .**why?**
- The positional changes assumed when stomach rotates around the longitudinal ، anteroposterior axis.

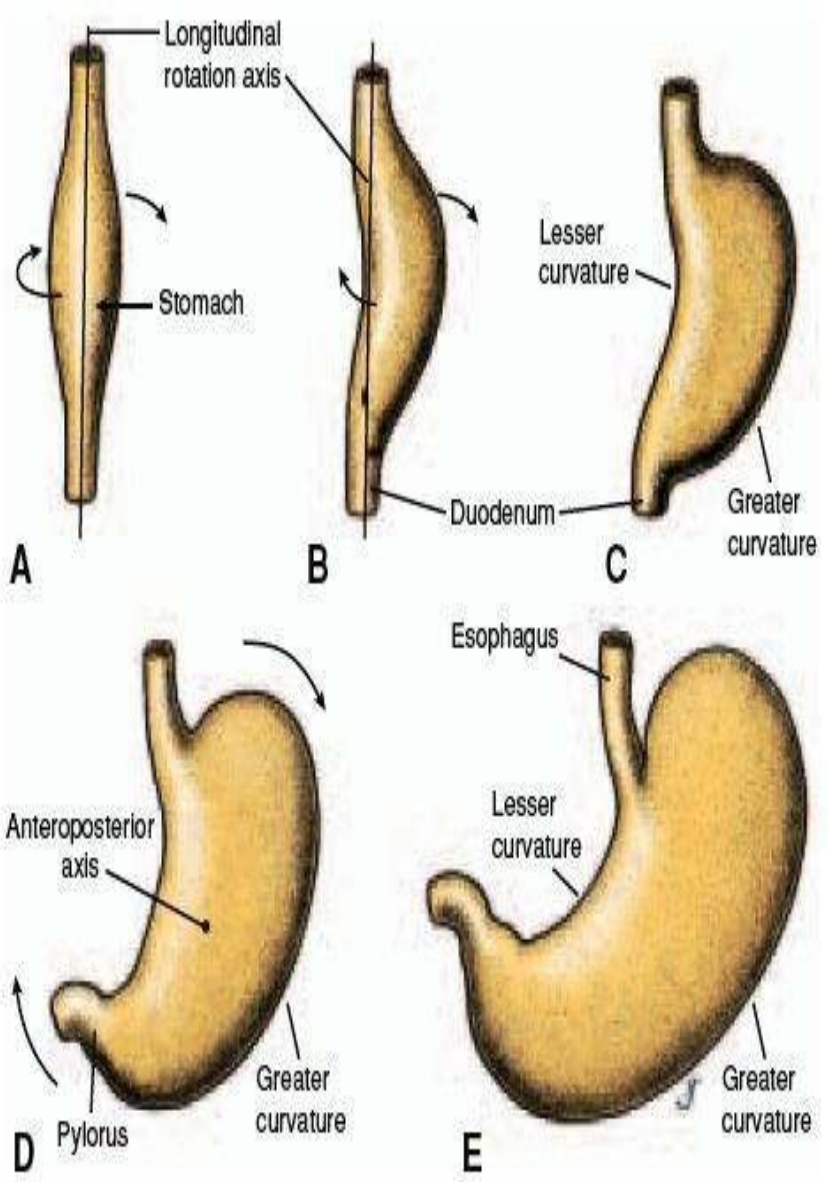
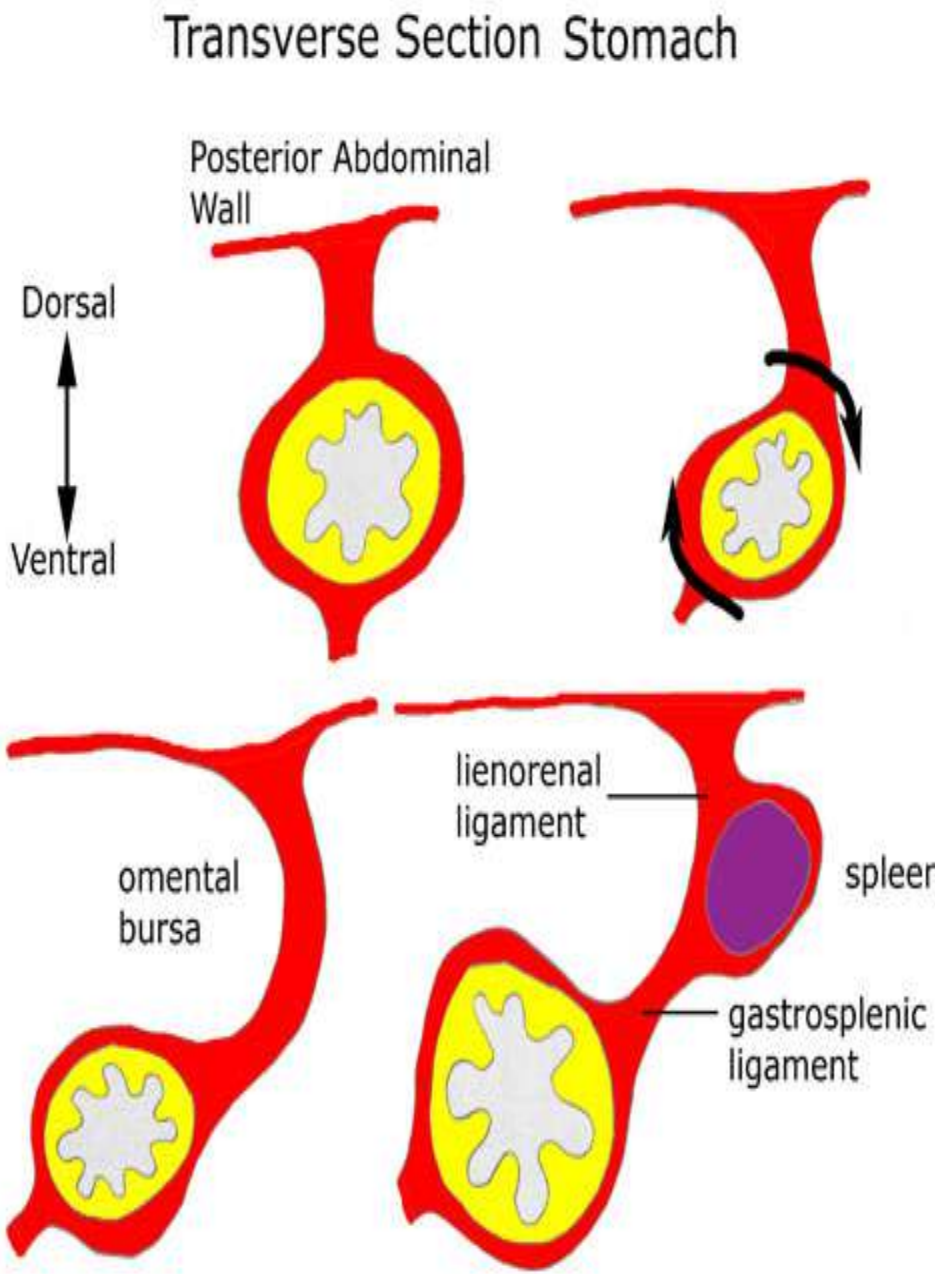
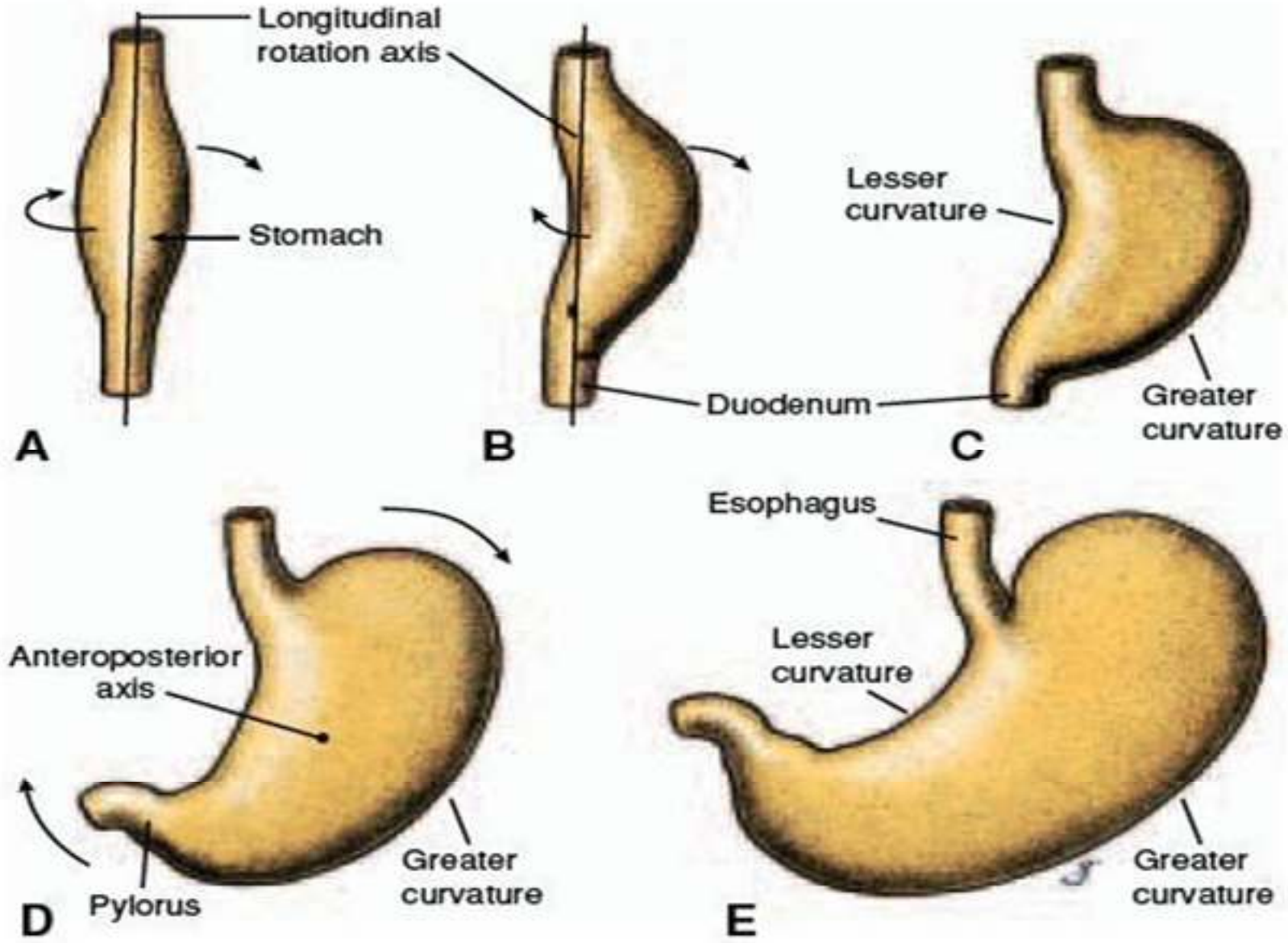


Figure 13.8 A, B, and **C.** Rotation of the stomach along its longitudinal axis as seen anteriorly. **D** and **E.** Rotation of the stomach around the anteroposterior axis. Note the change in position of the pylorus and cardia.

When stomach rotates 90° around longitudinal axis :

- LT side of stomach be anteriorly (LT vagus be anterior)
- RT side of stomach be posteriorly (RT vagus be posterior)
- Original posterior wall grow faster than anterior so appears greater curvature & lesser curvature.
- Dorsal mesogastrium move to LT & leaving a space behind stomach called lesser sac but ventral mesogastrium move to RT .





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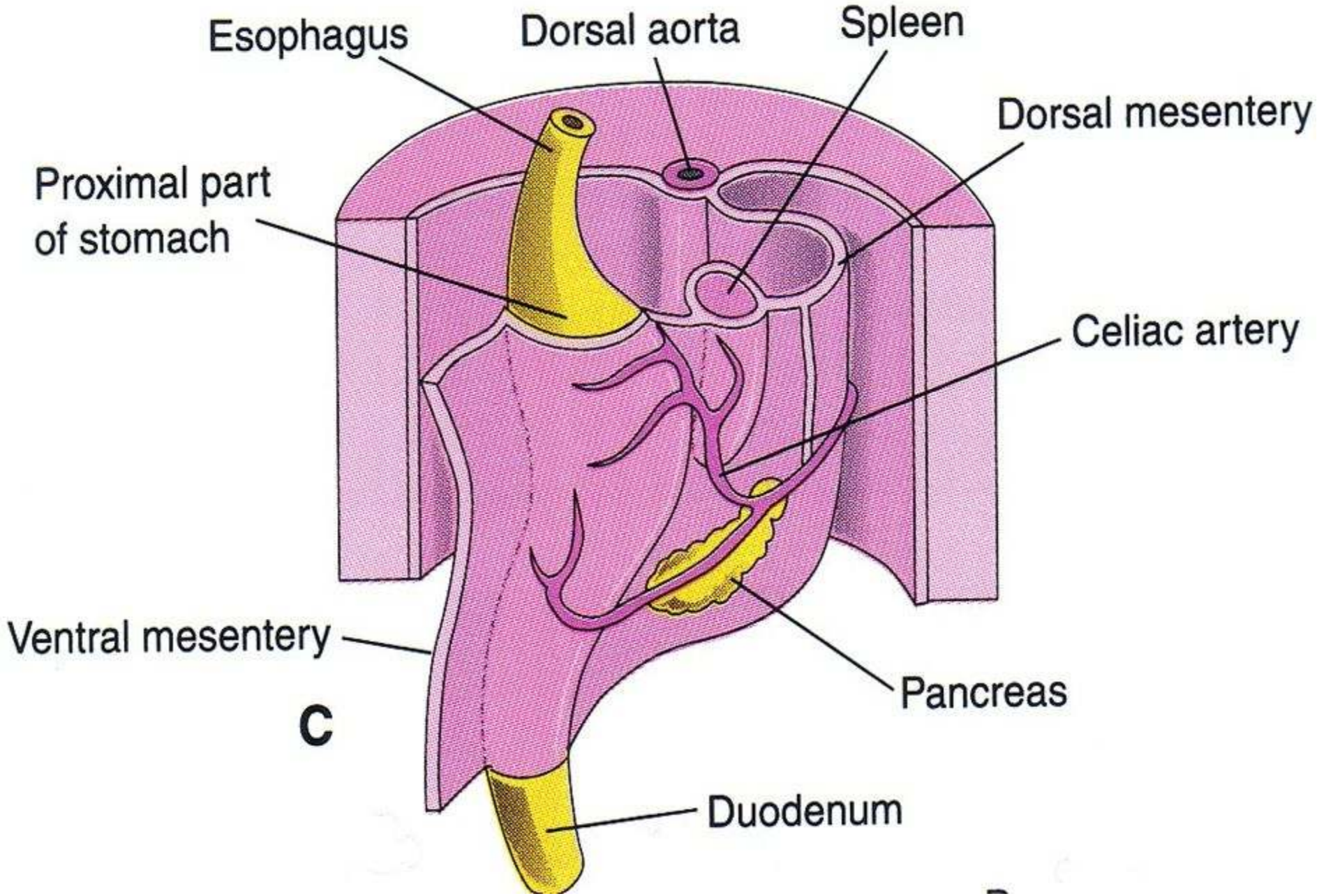
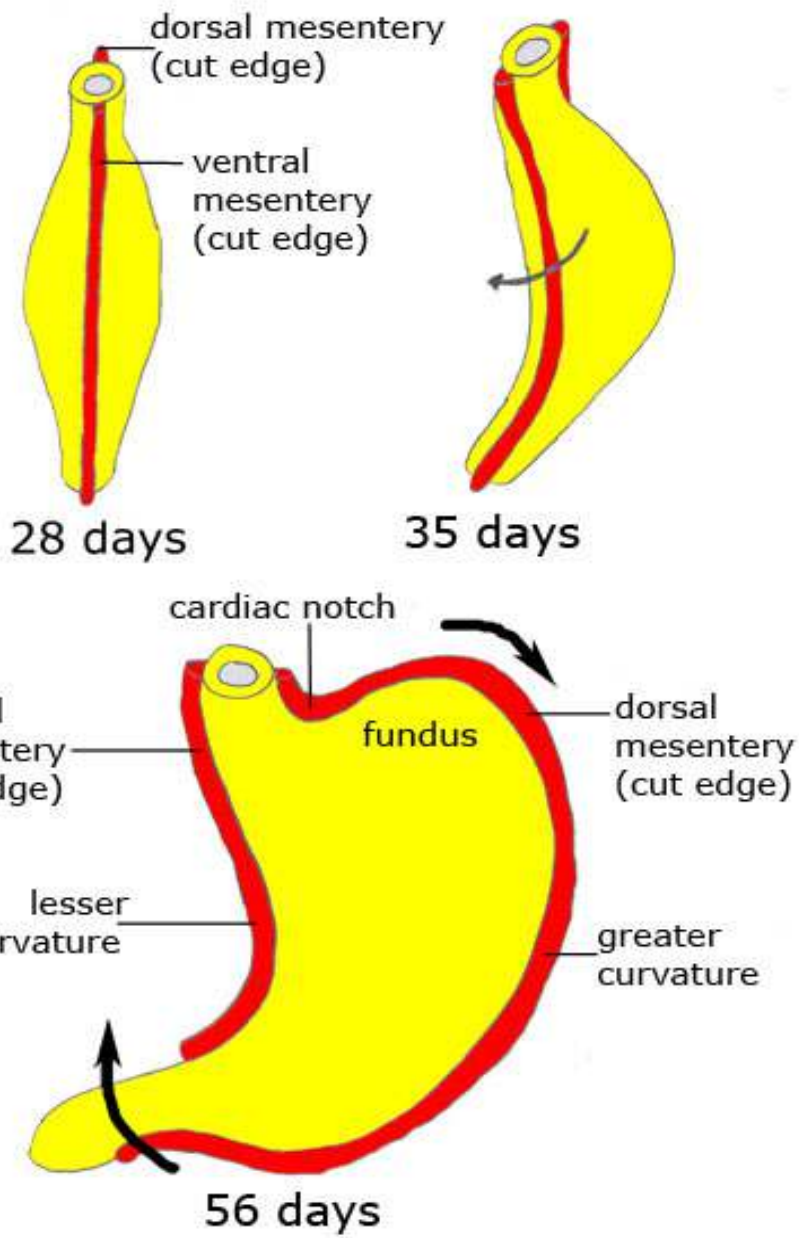

Esophagus
Dorsal aorta
Spleen
Dorsal mesentery
Proximal part of stomach
Celiac artery
Ventral mesentery
Pancreas
C
Duodenum

When stomach rotates around anteroposterior axis :

- At 1st both cardiac end & pyloric end of stomach lie in mid line but after this rotation cardiac end move down & LT but pyloric end moved up & RT.
- After this 2 rotations the stomach assumed final position.

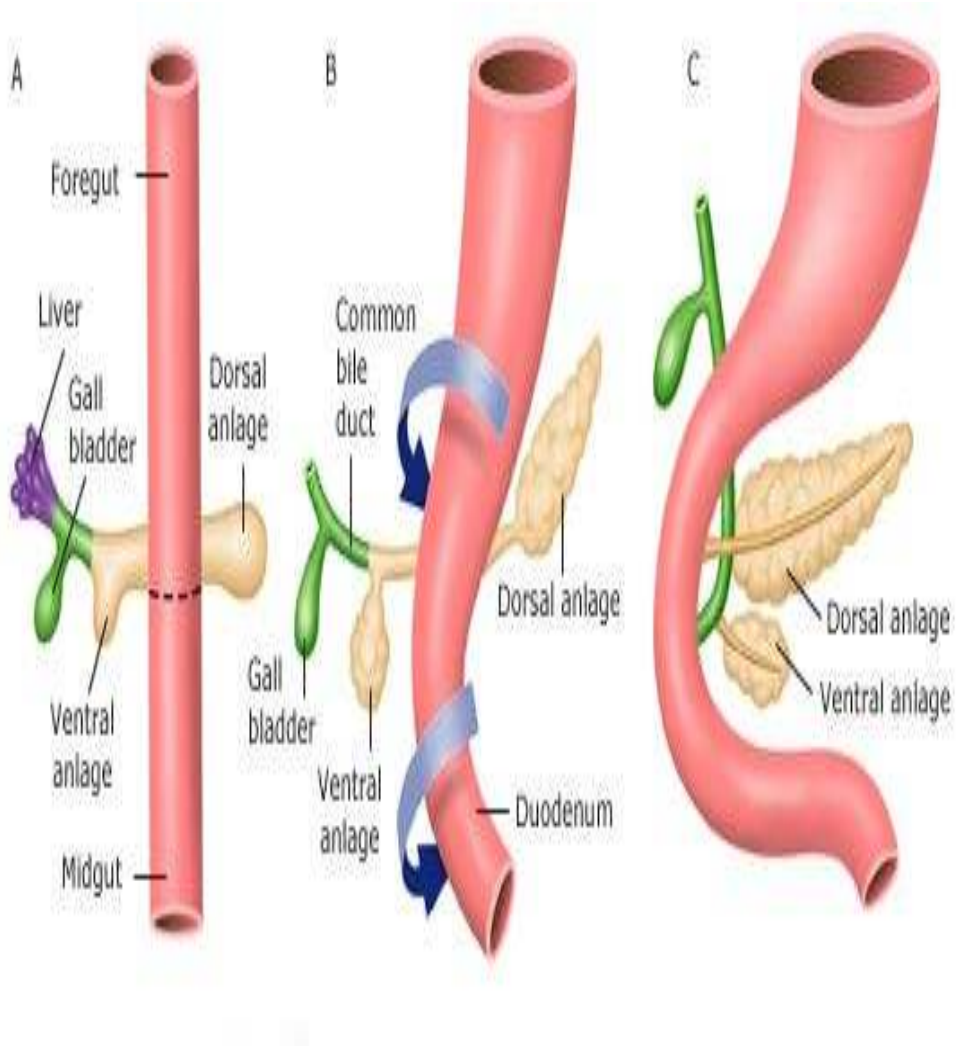


Duodenum:

Its junction of both:

- **Terminal part of foregut & cephalic part of mid gut.**

- When stomach rotate the duodenum also rotate to RT as C shape . This rotation cause swing of duodenum from initial midline to RT side abdominal cavity .



❑Duodenum & head of pancreas press against dorsal body wall so dorsal mesoduodenum fused & disappears except in 1st part of duodenum .

❑ At end, rest of duodenum & head, neck & body of pancreas is fixed secondary retroperitoneally.