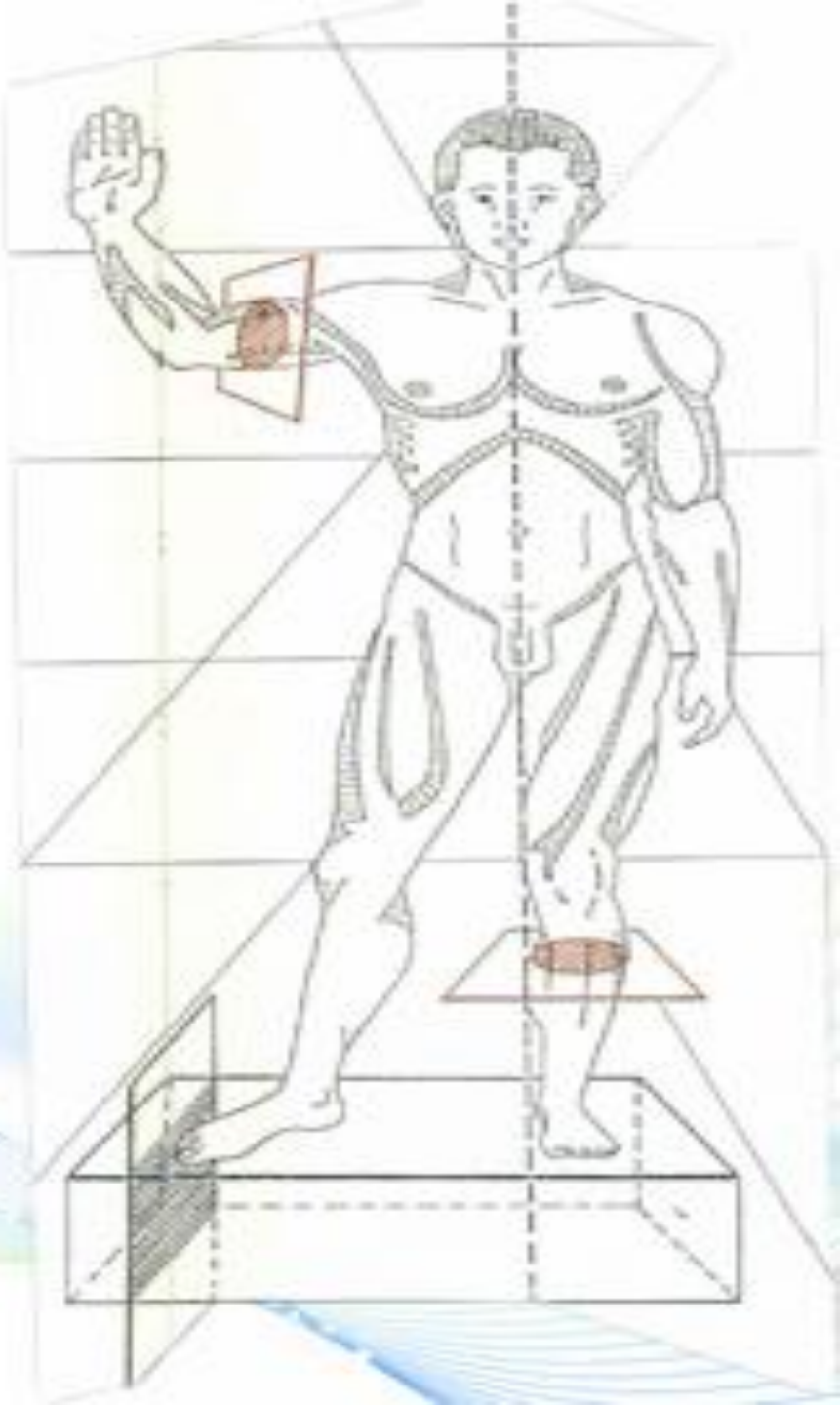
# STOMACH



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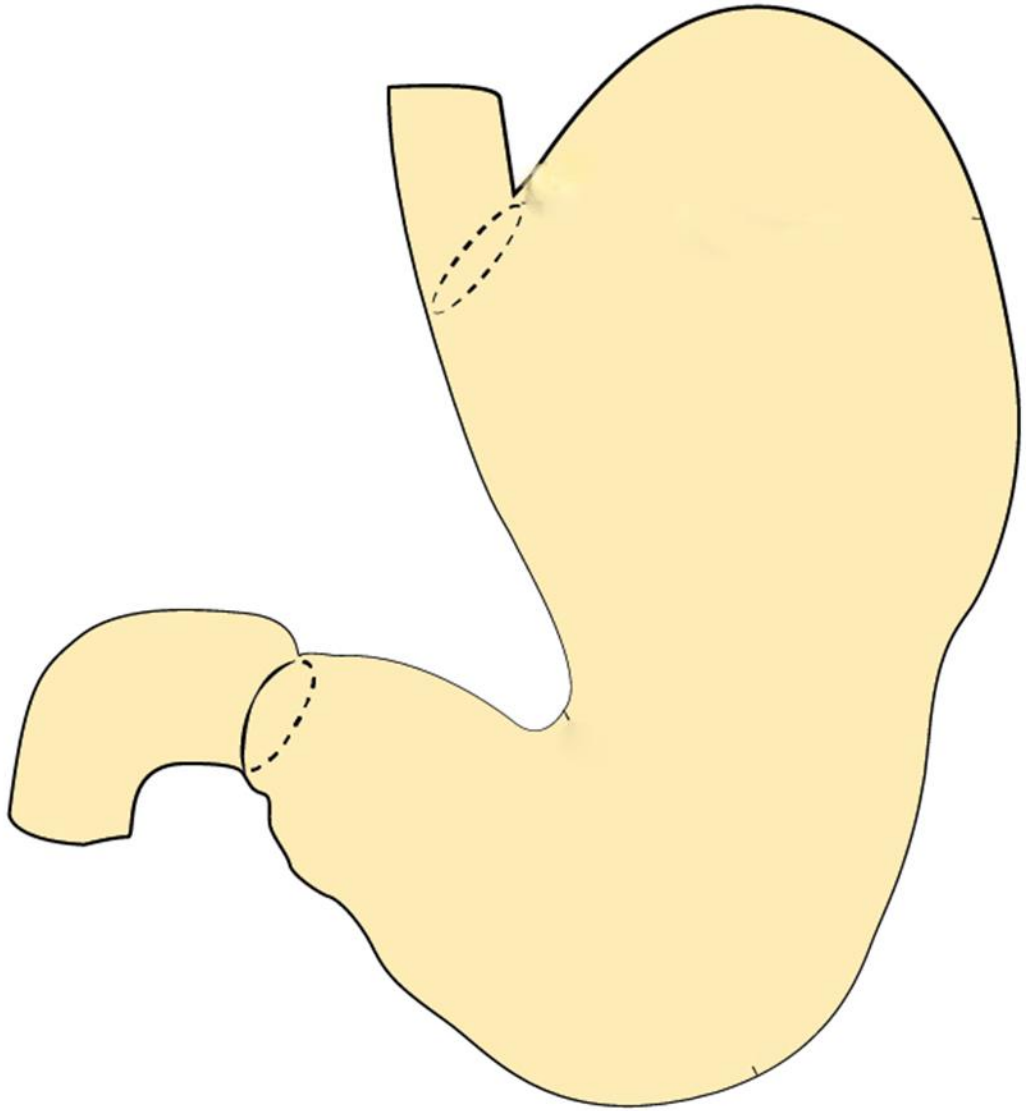
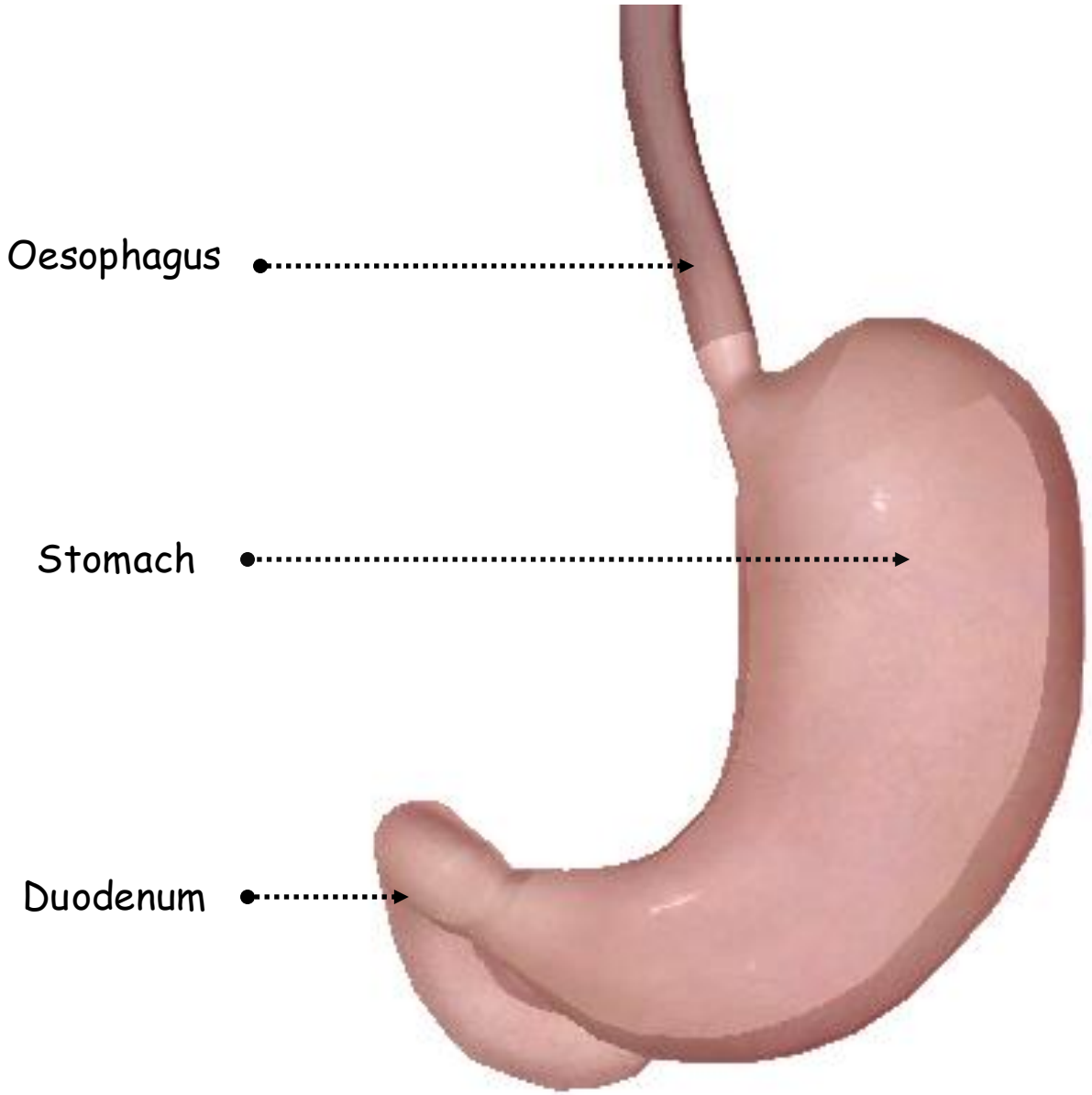


# I. INTRODUCTION

- Most dilated part of the alimentary tract
- Interposed between the oesophagus and duodenum
- Transforms the food bowl into chyme and progressively evacuate it into the small intestine

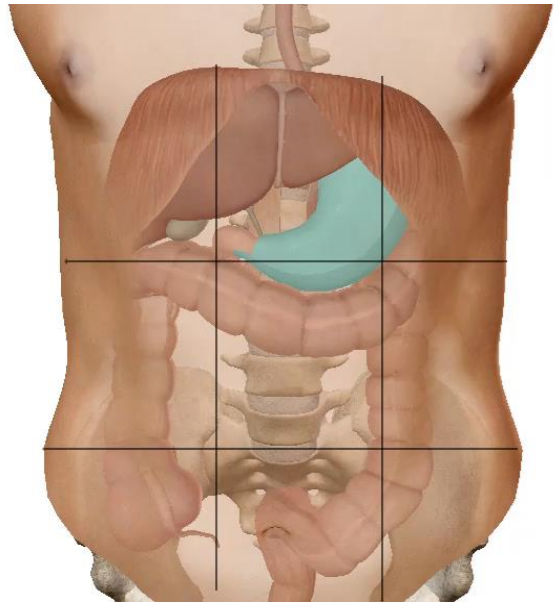


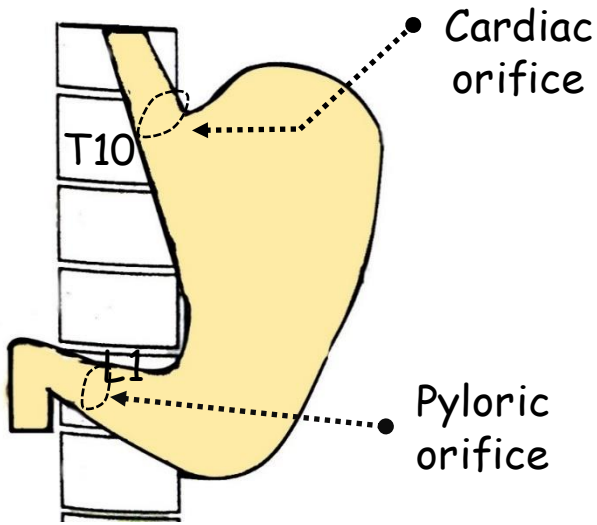

ANTERIOR VIEW OF STOMACH

## II. DESCRIPTIVE ANATOMY

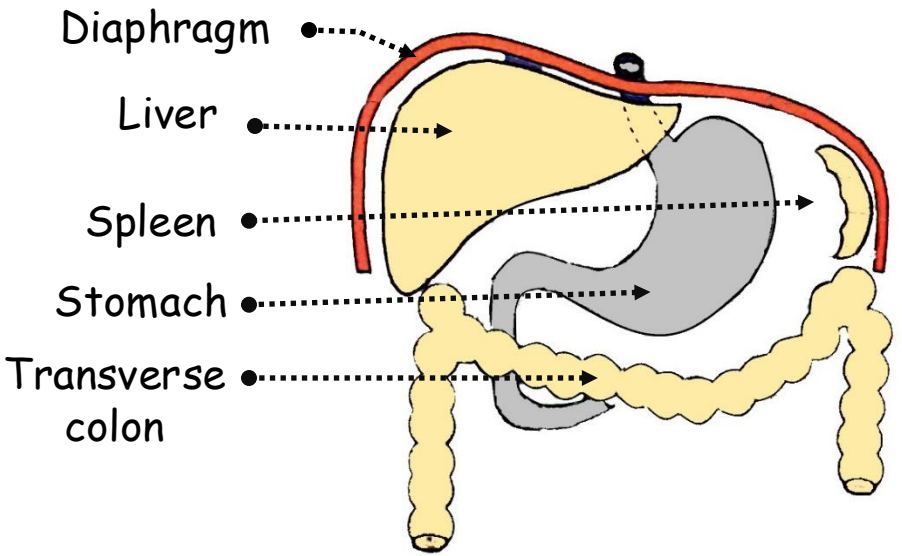
### A. SITUATION

- Situated in the supracolic compartment of the abdominal cavity
- Lying mainly in the left hypochondrial, epigastric and umbilical regions
- Much of it is under cover of the lower ribs and diaphragm
- Occupies a limited space between:
  - -On top: diaphragm
  - -At the bottom: transverse colon
  - -To the right: liver
  - -To the left: spleen
- Cardiac orifice projects towards the T10 vertebra
- Pyloric orifice projects towards the L1 vertebra





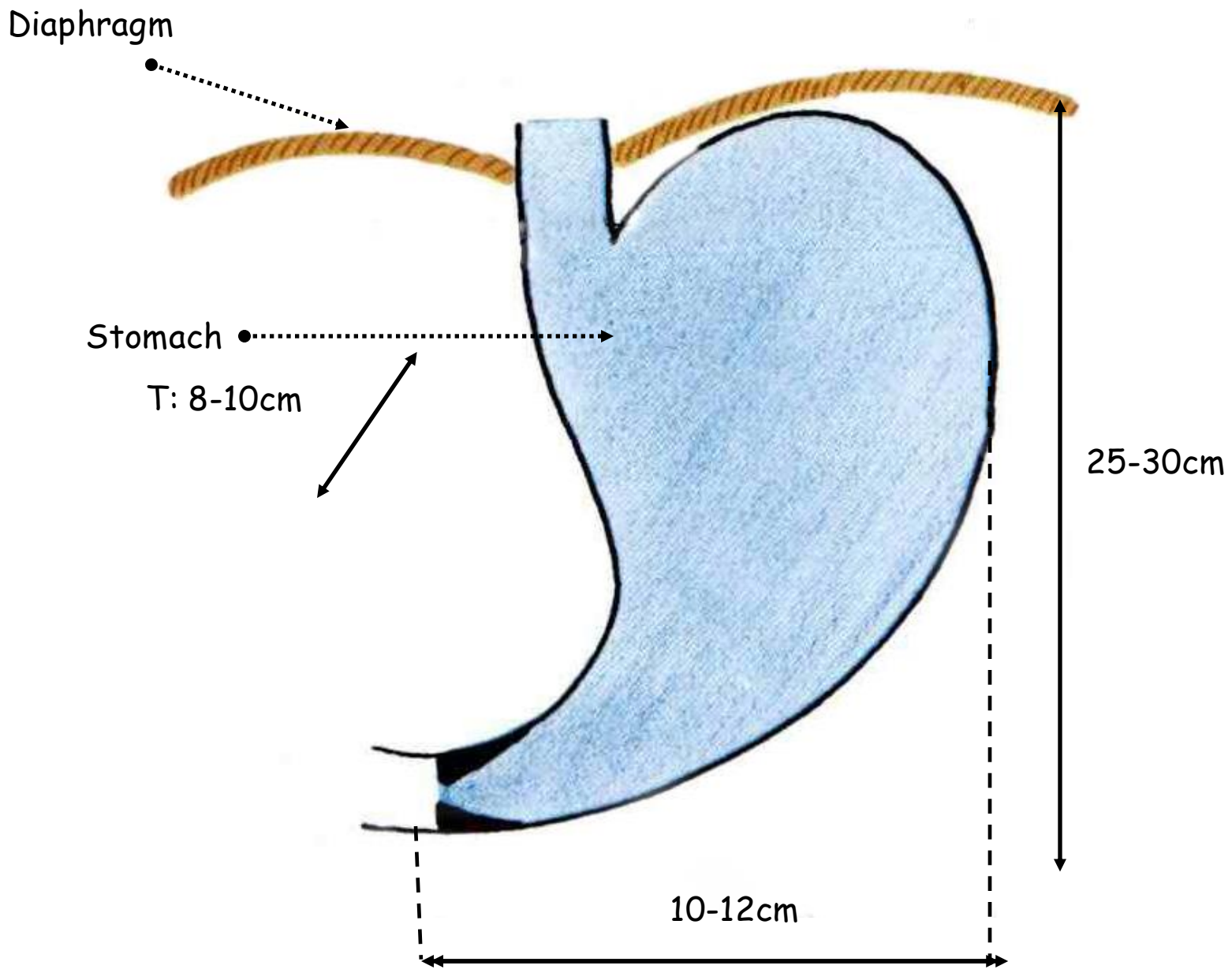

ANTERIOR VIEW OF THE STOMACH AND THE SPINE




ANTERIOR VIEW OF THE SUPRACOLIC COMPARTMENT

## B. DIMENSIONS

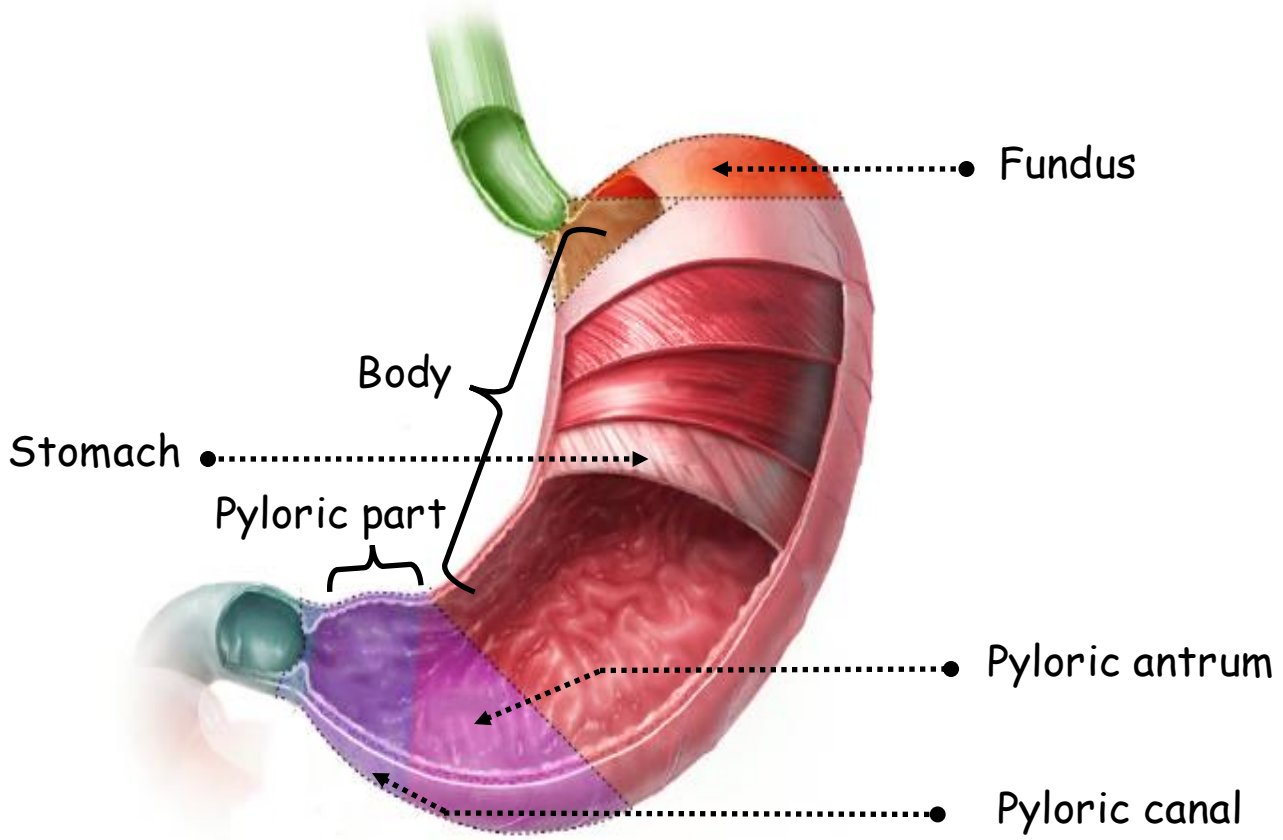
- Subject to great variations in size depending on the volume of its contents
- **In the newborn:**
  - -Size of a hen's egg
  - -Capacity: 30 ml
- In the adult: 1500 ml
- Length: 25 to 30 cm
- Width: 10 to 12 cm
- Thickness: 8 to 10 cm




ANTERIOR VIEW OF THE STOMACH OF LYING DOWN INDIVIDUAL

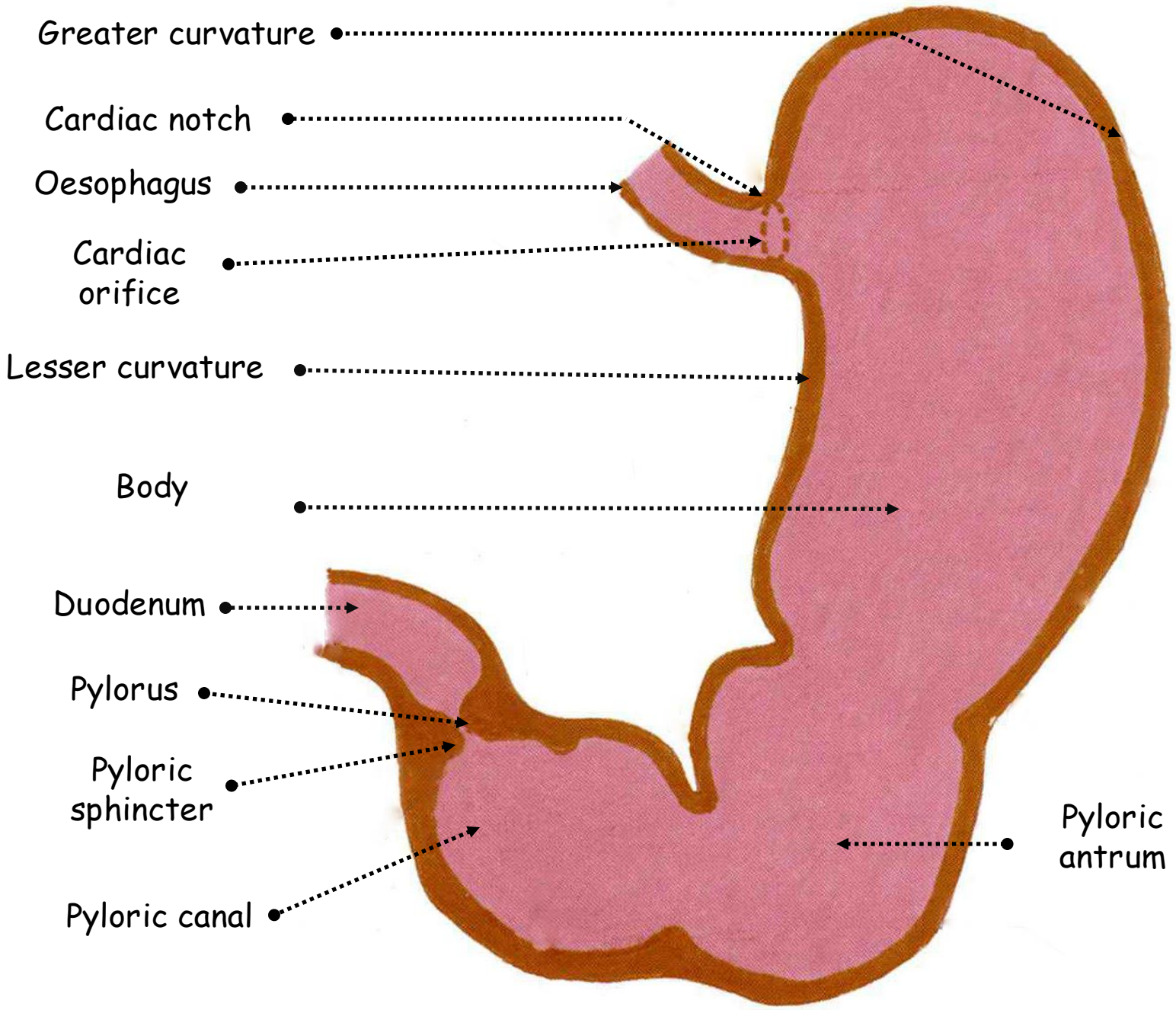
## C. SHAPE

- J-like shape
- Flattened anteroposteriorly when empty
- **4 distincts portions from the top to the bottom:**
  - -Fundus
  - -Body
  - -Pyloric antrum
  - -Pyloric canal



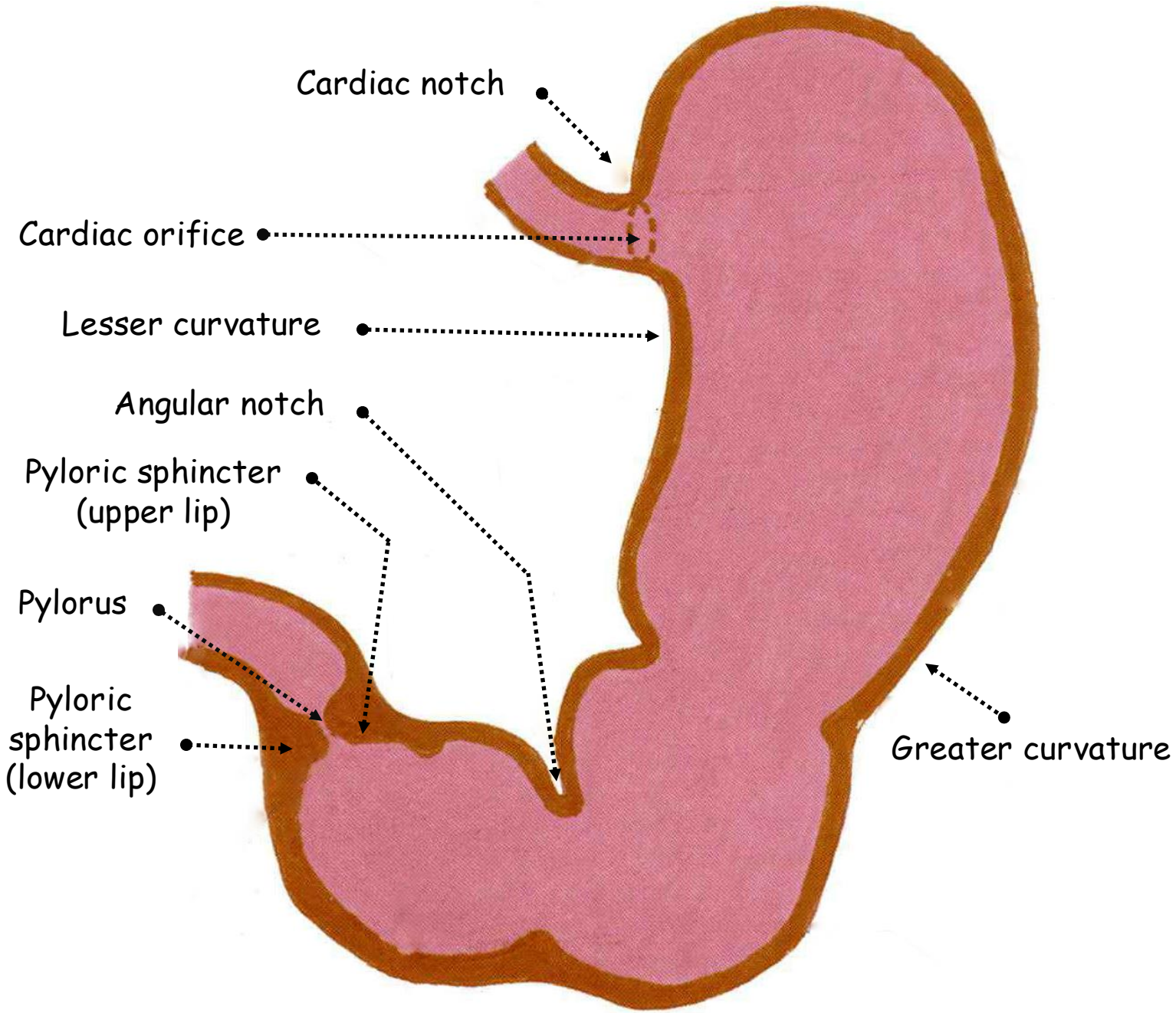

ANTERIOR VIEW OF THE STOMACH SHOWING ITS PORTIONS

- **2 orifices:** cardiac and pyloric
- **Cardiac orifice:**
  -Junction with the oesophagus
  -Most fixed part
  -Continuous with the lesser curvature at the right border of the stomach
  -Continuous with the greater curvature at the left border of the stomach
  -Forming the cardiac notch
- **Pyloric orifice:**
  -Junction with the duodenum
  -Preceded by a palpably thickened zone, the pyloric sphincter, whose position is indicated on the anterior surface by the prepyloric vein
  -Its narrow lumen is the pylorus




ANTERIOR VIEW OF STOMACH

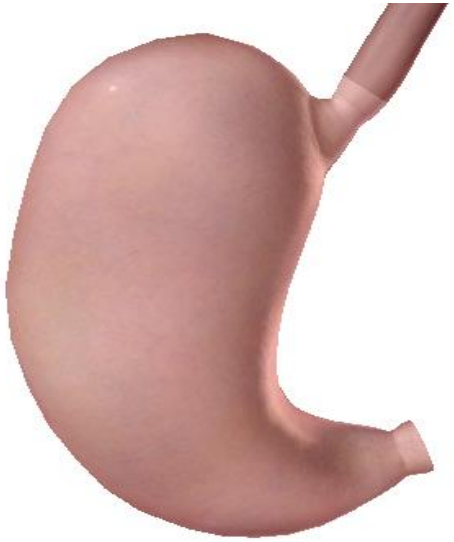
- **2 curvatures:** greater and lesser
- Join the anterior and posterior surfaces
- Extend from the cardiac orifice to the pyloric orifice
- **Lesser curvature:**
  -Upper right border
  -Angular notch between the body and the pyloric part
  -Ends at the upper lip of the pyloric sphincter
- **Greater curvature:**
  -Four times as long as the lesser
  -Lower left border
  -Upper portion: belongs to the fundus forming with the cardiac orifice the cardiac notch
  -Ends at the lower lip of the pyloric sphincter




***ANTERIOR VIEW OF STOMACH***

- **2 surfaces**: anterior and posterior
- Anterior surface: faces forwards and upwards
- Posterior surface: faces backwards and downwards

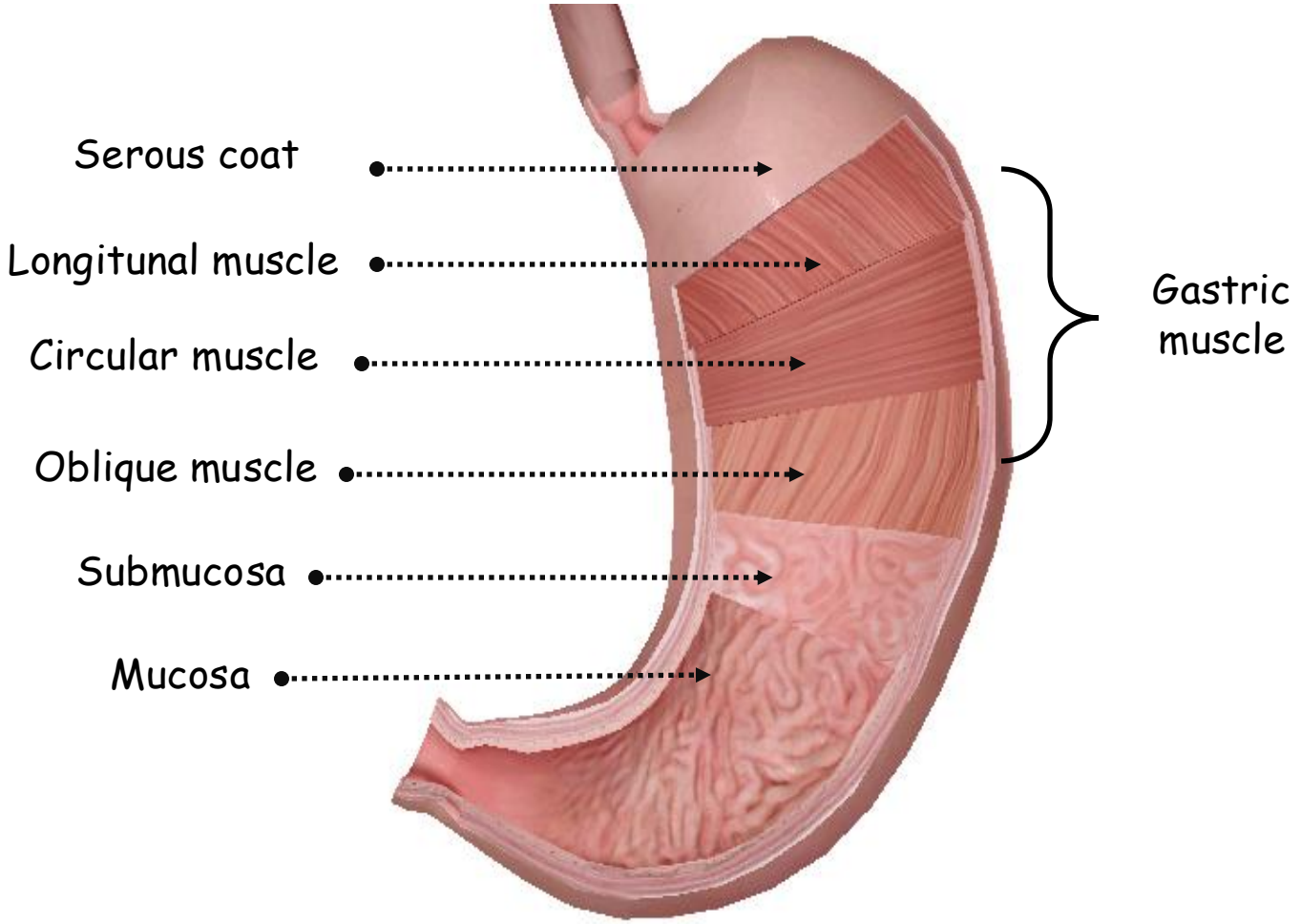
ANTERIOR VIEW OF THE STOMACH



POSTERIOR VIEW OF THE STOMACH

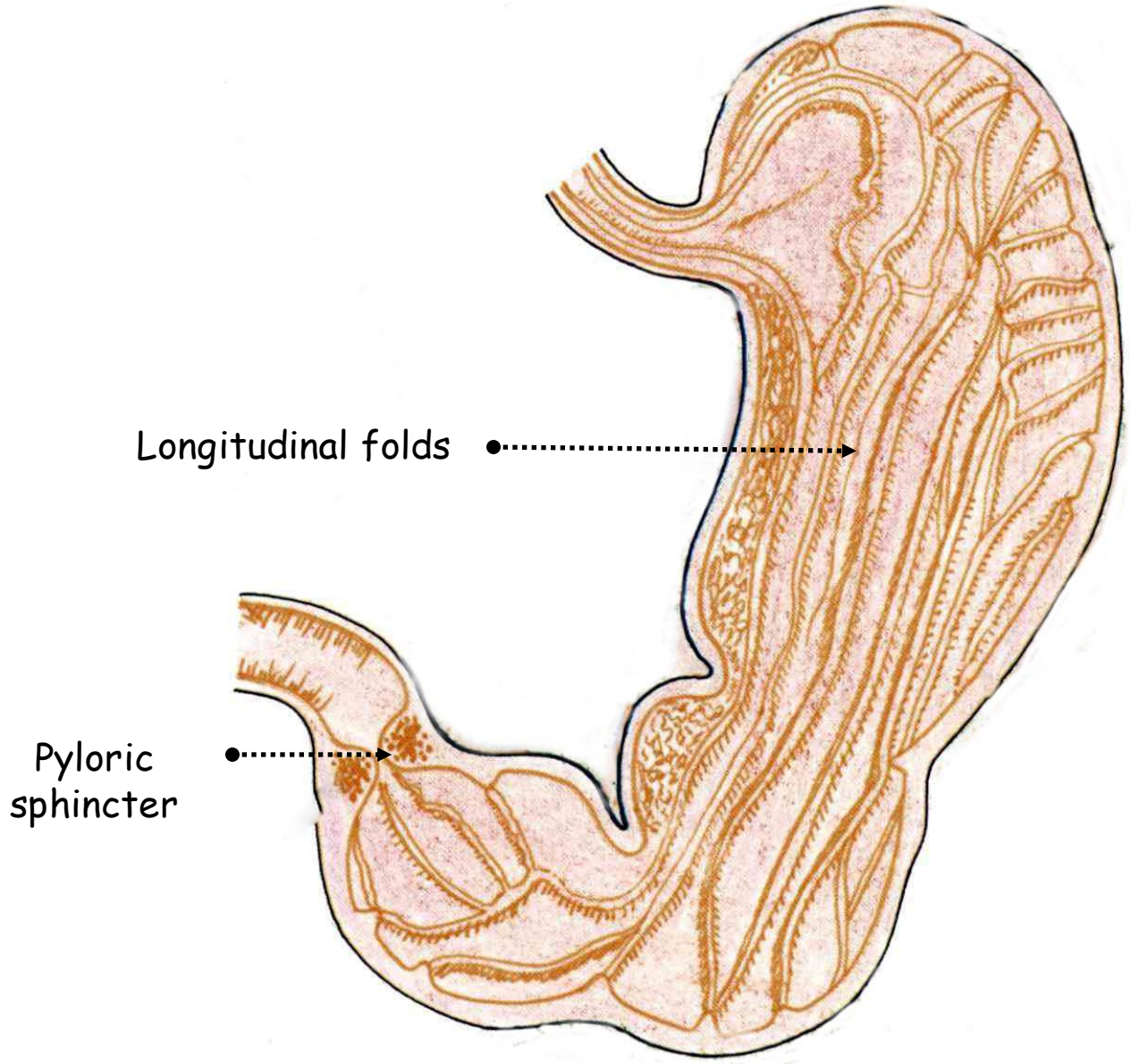
## III. STRUCTURE

- Muscular bag of four layers
- From the outer to the inner
- Serous coat: peritoneum
- Gastric muscle:
  - -Outer longitudinal and inner circular
  - -Incomplete innermost oblique layer thickest at the notch between oesophagus and stomach oblique to the long axis of the organ
- Submucosa: tubular glands




CORONAL SECTION OF THE STOMACH

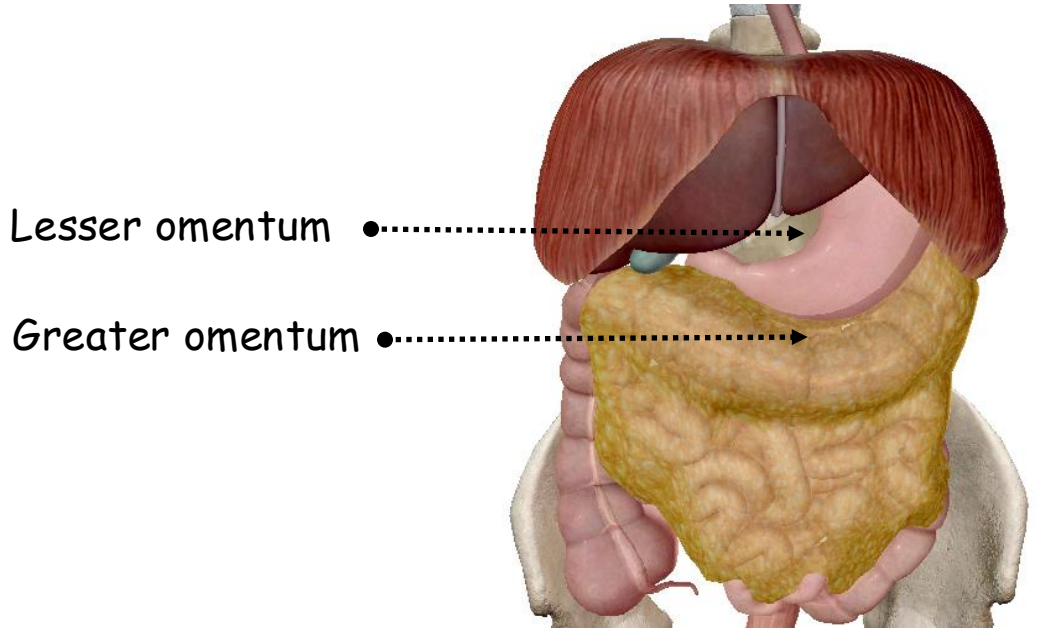
- Mucous membrane:
  - -Abrupt change from stratified to single-layered columnar epithelium at the cardio-oesophageal junction
  - -Body part: parietal cells secreting acid, intrinsic factor and pepsin
  - -Pyloric part: G cells producing gastrin
  - -There is no landmark on the external surface to signal the change
  - -Macroscopic aspect: longitudinal folds; mucous fold towards the cardiac notch, the cardio-oesophageal valve; annular fold at the end of the pyloric canal, the pyloric sphincter



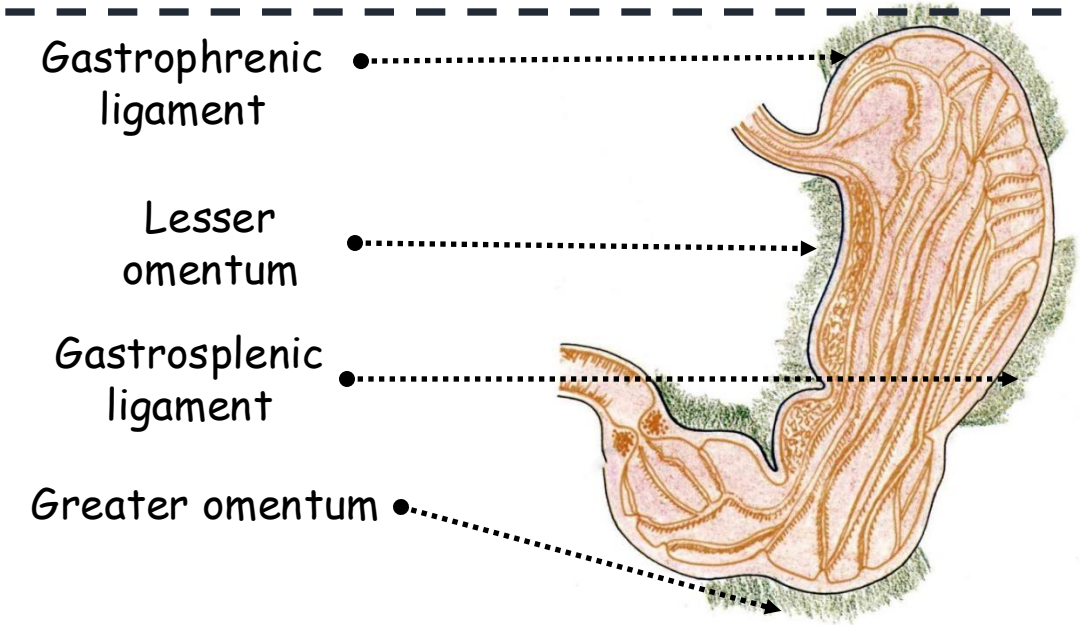

CORONAL SECTION OF THE STOMACH

## IV. SUPPORTS

- Relatively fixed at both ends
- Gastro-oesophageal junction: most fixed part
- Completely invested by peritoneum
- Lesser omentum: double layer from the lesser curvature to the liver
- Greater omentum: double layer hanging down from the fundus and greater curvature fuses with transverse colon and mesocolon
- Gastrophrenic ligament: from the fundus to the left dome of diaphragm
- Gastrosplenic ligament: portion of the greater omentum between the greater curvature of stomach and the spleen




ANTERIOR VIEW OF THE STOMACH




CORONAL SECTION OF THE STOMACH

## V. ANATOMICAL RELATIONS

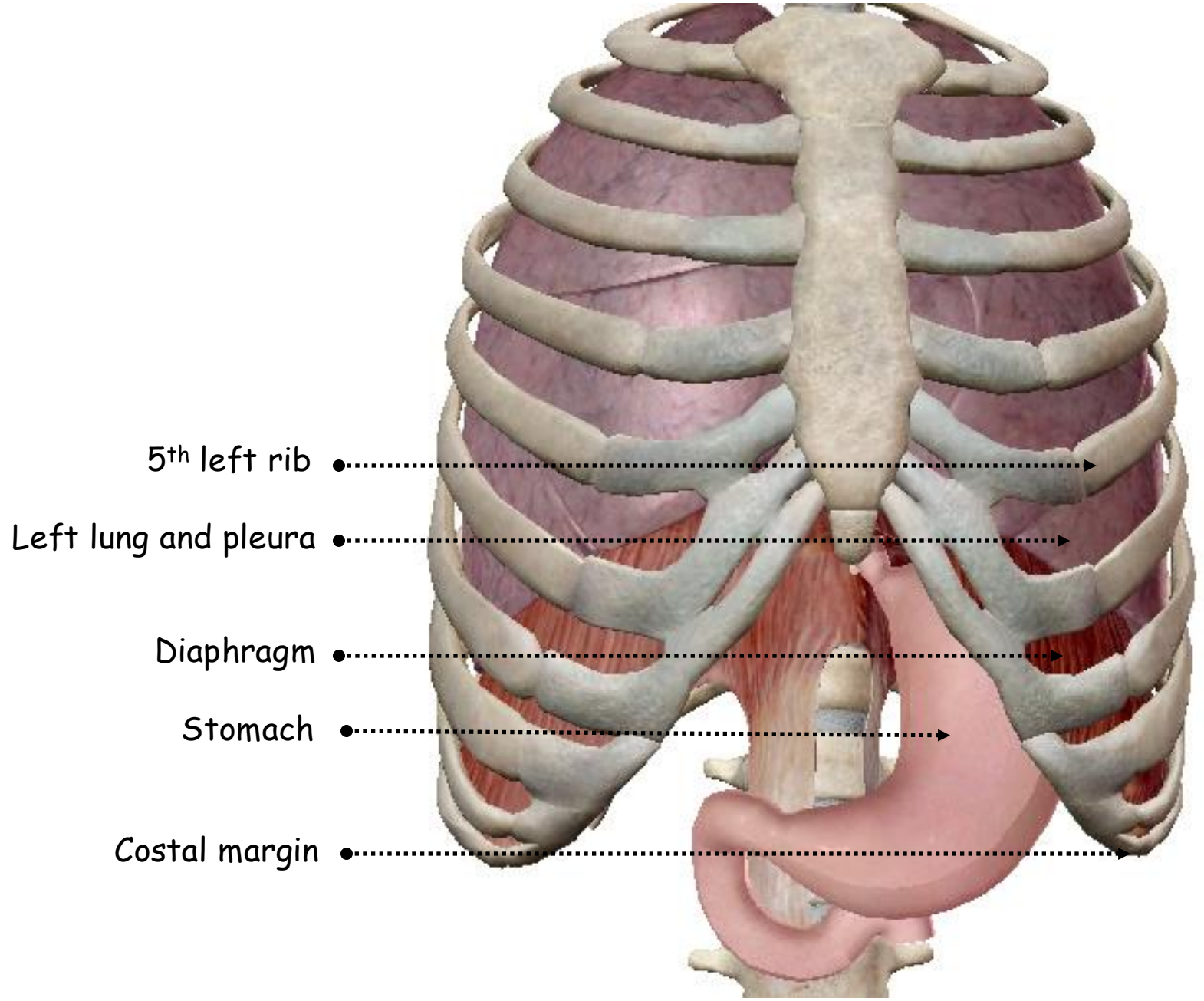
### A. ANTERIOR SURFACE

- **Fundus:**

  -Diaphragm

  -Through the diaphragm: left costodiaphragmatic recess of pleura and left lung

  -Thoracic wall



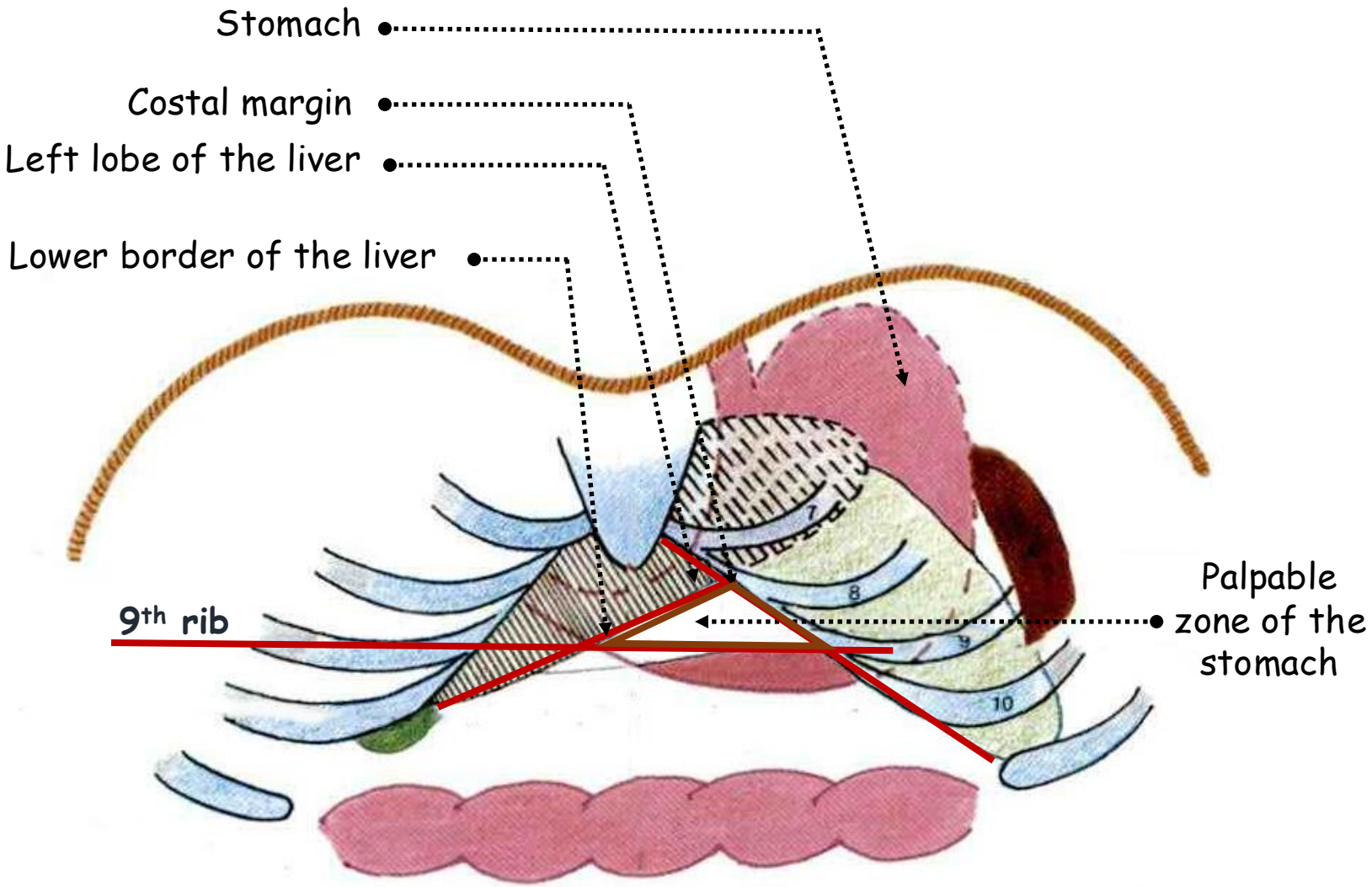

ANTERIOR LATERAL VIEW OF THE TRUNK

- **Body and pyloric part:**

  -Left lobe of the liver

  -Anterior abdominal wall:

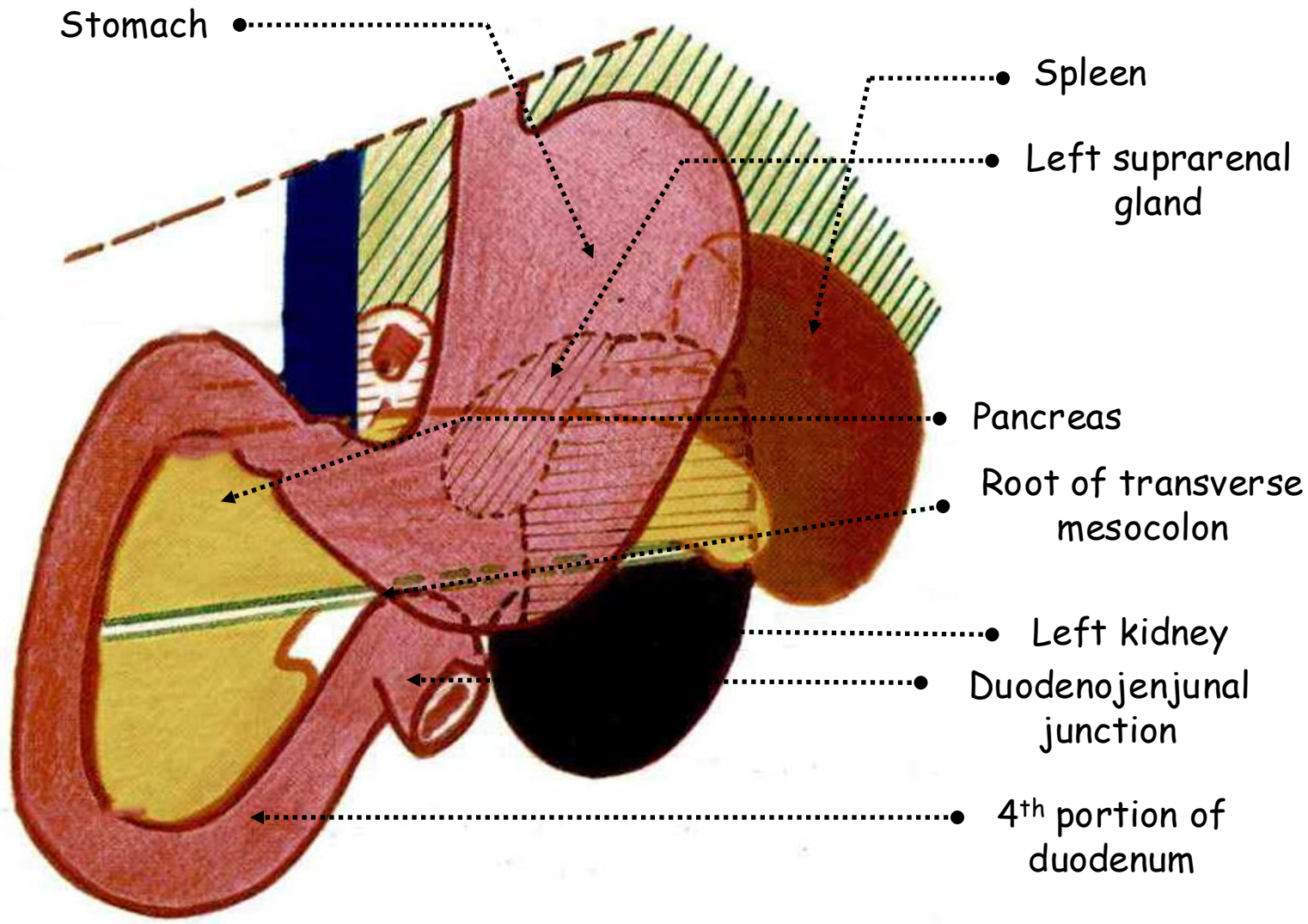
  palpable zone of the stomach between the costal margin to the left, the inferior border of the liver to the right and the horizontal line passing by the 9th costal cartilage downwards




ANTERIOR VIEW OF THE EPIGASTRIC REGION SHOWING THE ANATOMICAL RELATIONS OF THE ANTERIOR SURFACE OF STOMACH

## B. POSTERIOR SURFACE

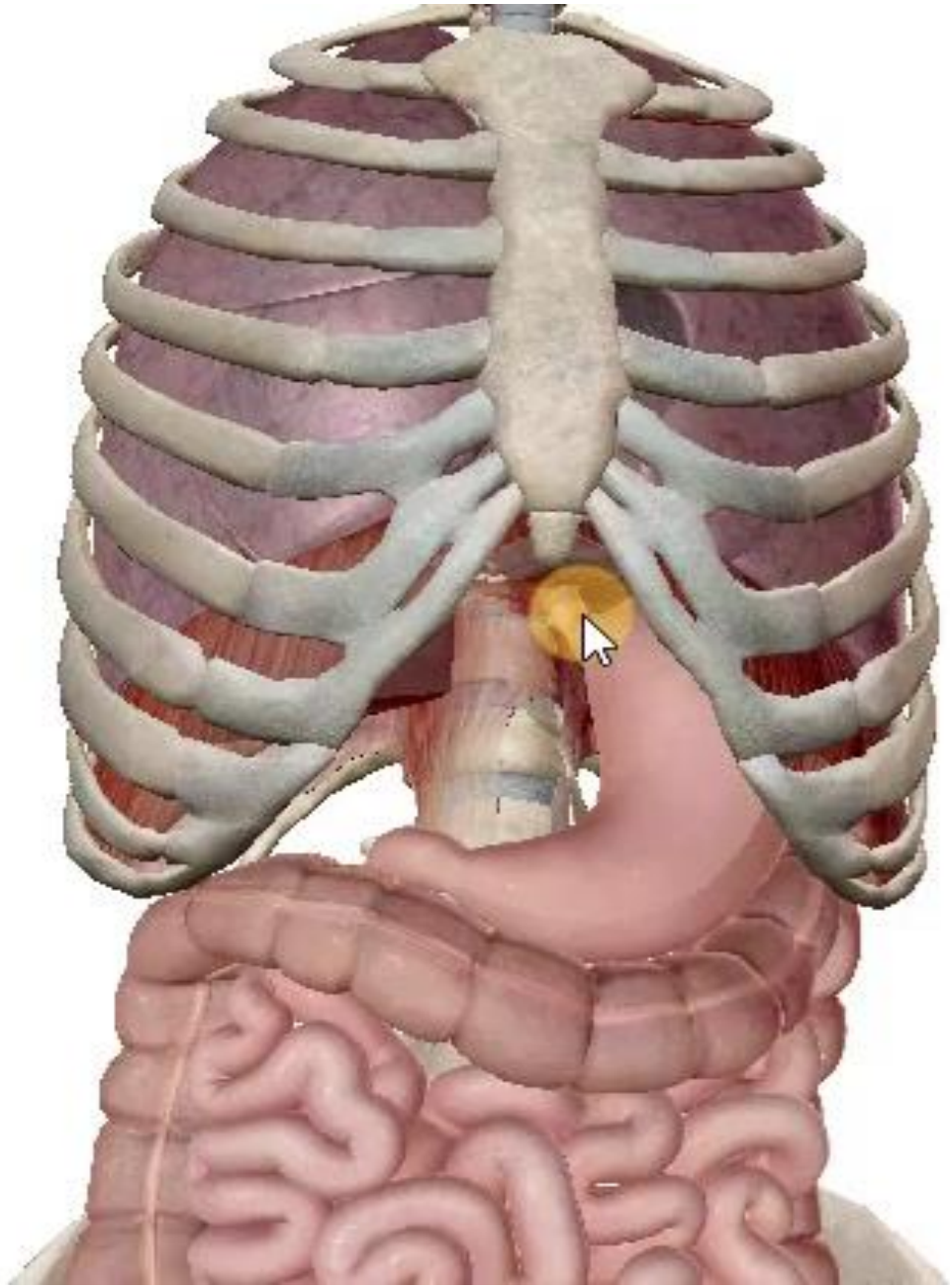
- Through the lesser sac
- **Fundus:**
  - -Spleen
  - -Left suprarenal gland
  - -Left kidney
- **Body:**
  - -Transverse mesocolon
  - -Pancreas
- **Pyloric part:**
  - 4th portion of duodenum
  - Duodenojejunal junction
  - Intestinal coils




ANTERIOR VIEW OF THE STOMACH SHOWING THE ANATOMICAL RELATIONS OF ITS POSTERIOR SURFACE

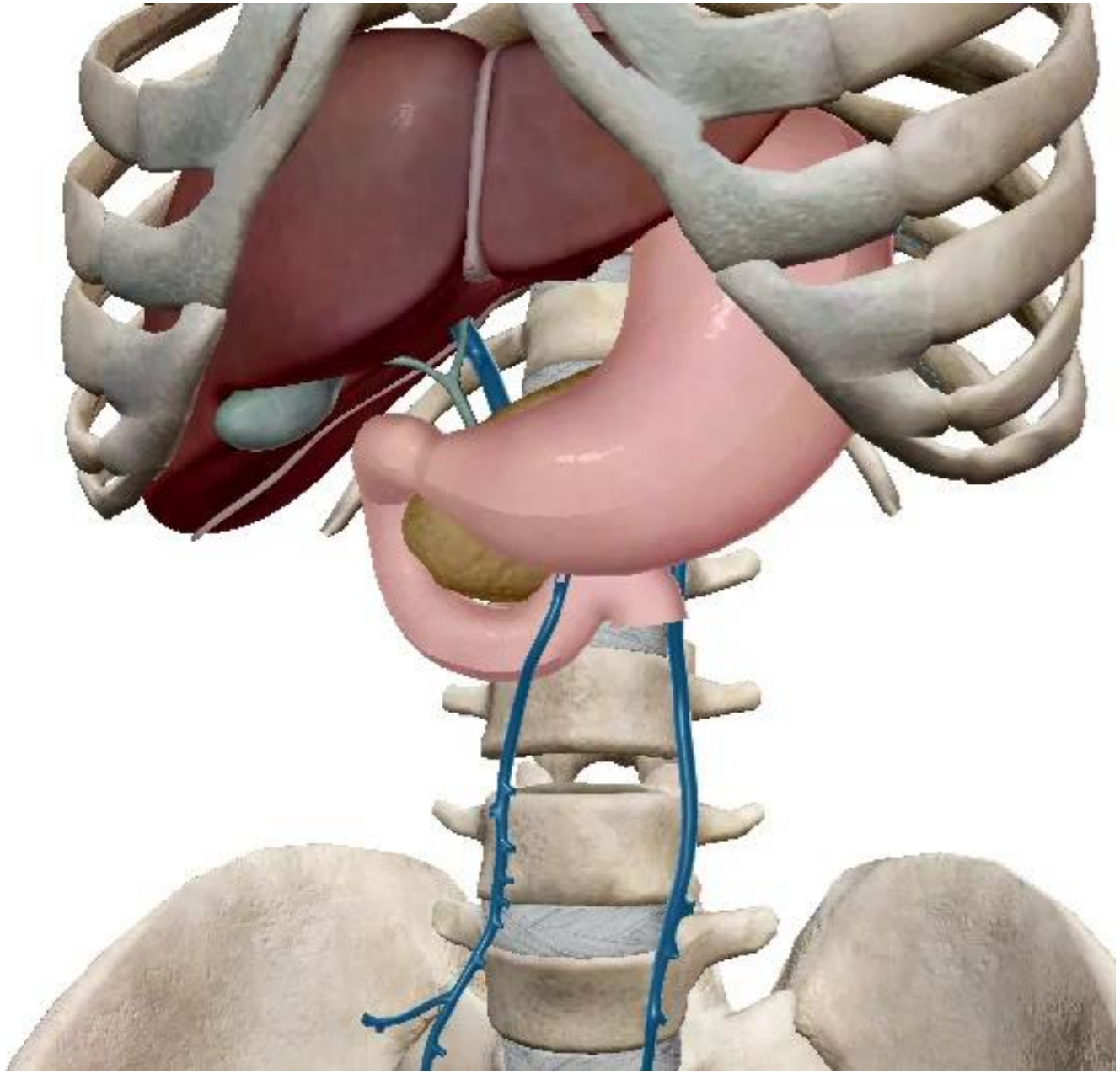
## C. UPPER END

- **Cardiac orifice:**
  - -T10 vertebra
  - -Medial end of the 7th costal cartilage
- **Fundus:**
  - -Diaphragm
  - -Through the diaphragm: left costodiaphragmatic recess of pleura and left lung
  - -Pericardium
  - -Heart



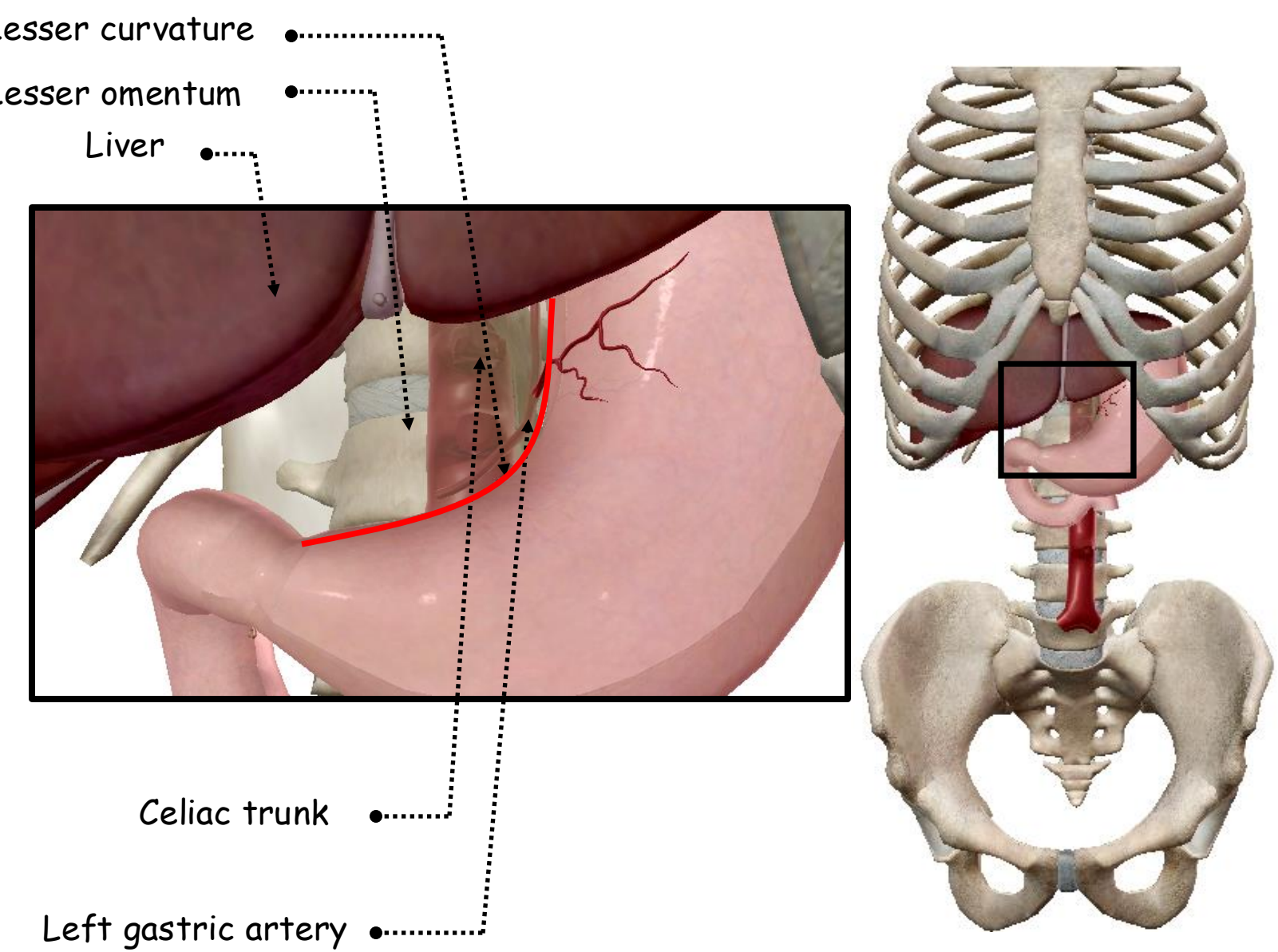
## D. LOWER END

- **Pyloric orifice:**
  - -Umbilicus
  - -L1 vertebra
  - -Forwards and upwards: liver
  - -Downwards: head of pancreas
  - -Backwards: pancreas and portal vein



## E. LESSER CURVATURE

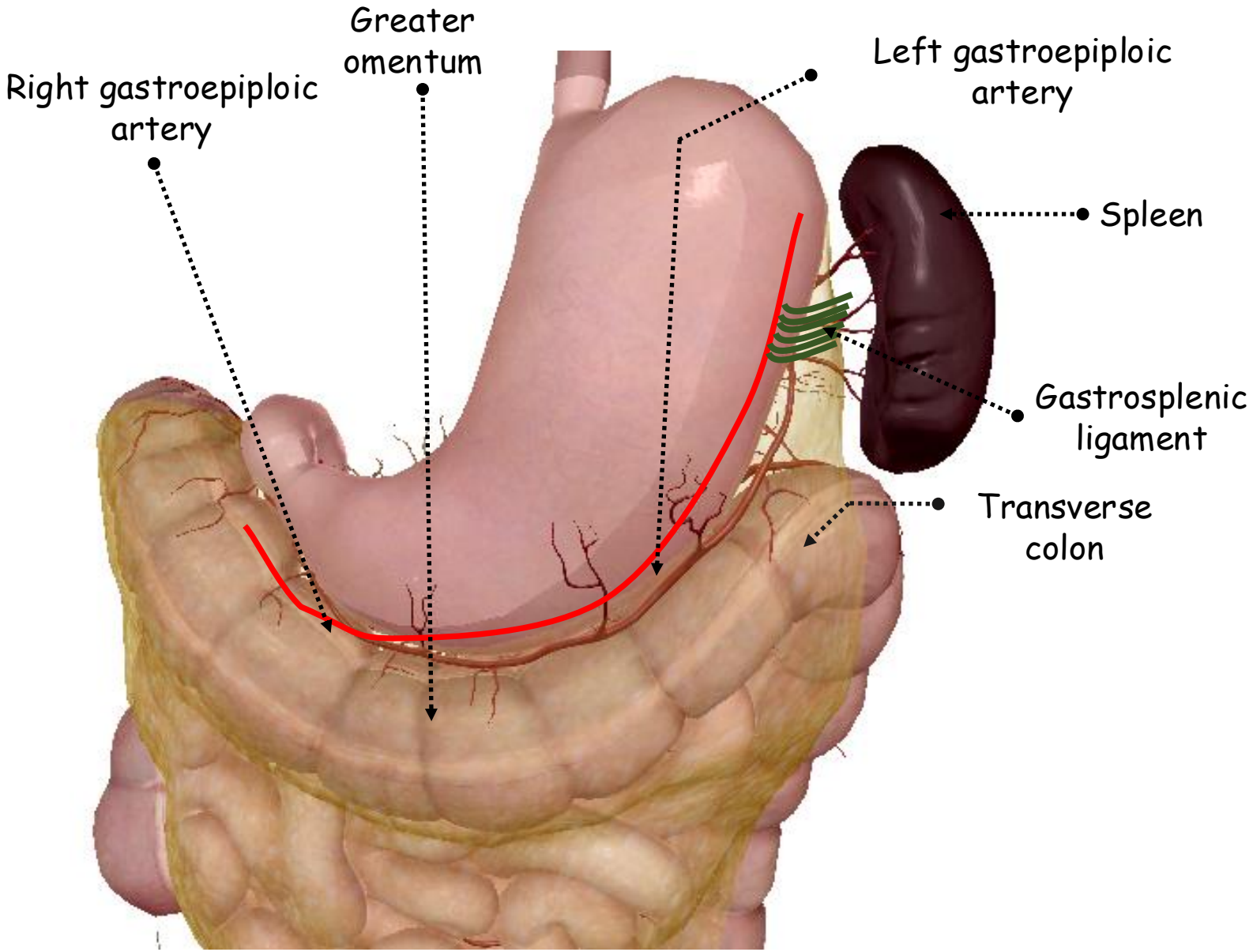
- Gastric arteries in the lesser omentum




ANTERIOR VIEW OF THE TRUNK

## F. GREATER CURVATURE

- Gastroepiploic arteries in the greater omentum
- Transverse colon
- Short gastric arteries in the gastrosplenic ligament




ANTERIOR LATERAL VIEW OF THE ABDOMEN

# VI. BLOOD SUPPLY; LYMPH DRAINAGE AND NERVE SUPPLY

## A. ARTERIES

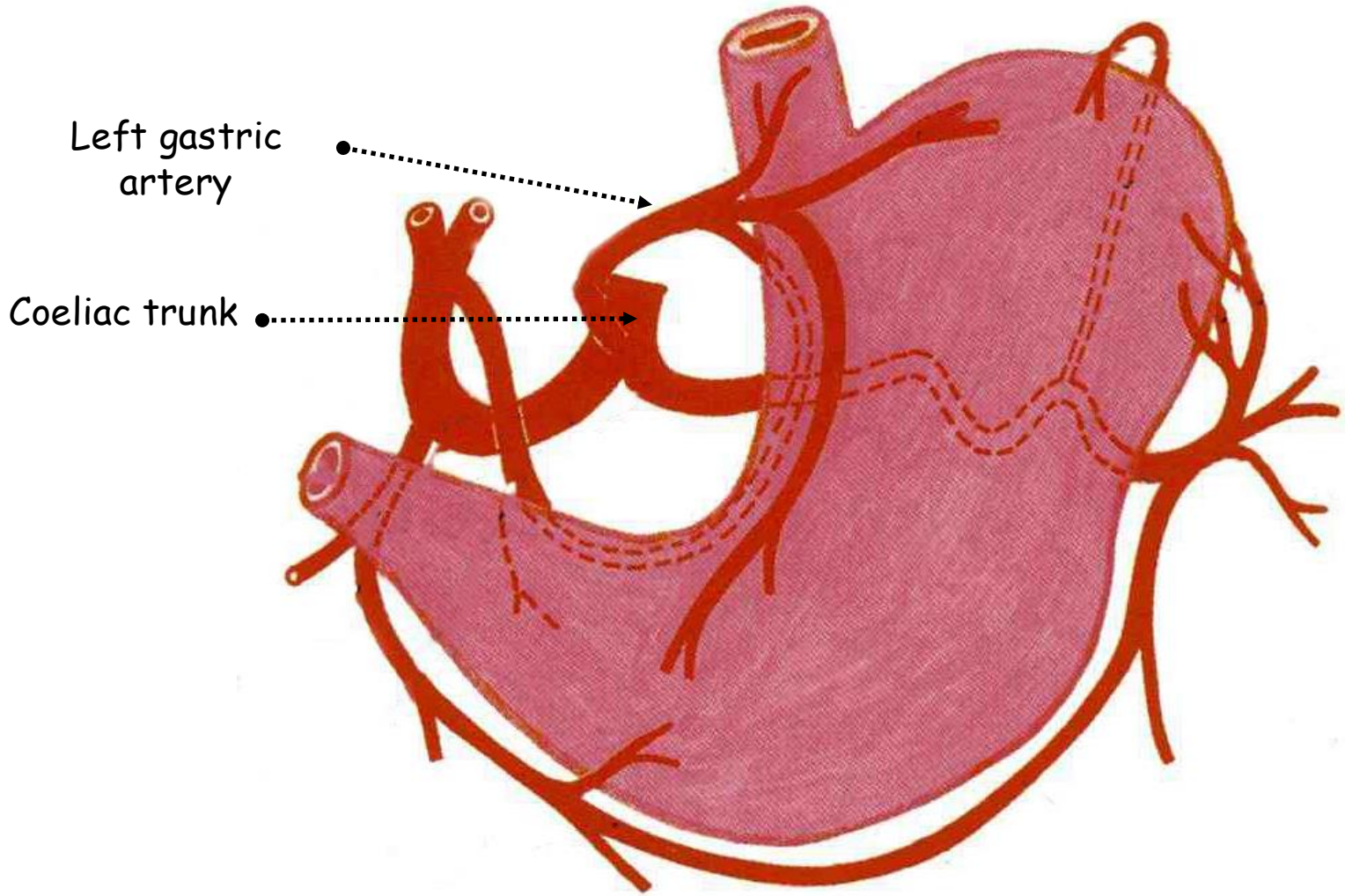
- Supplied by branches from the coeliac trunk

### 1. Coeliac trunk

- Arises from the front of the abdominal aorta at the level of T12 vertebra
- Enters the abdomen between the crura of the diaphragm, behind and below the median arcuate ligament
- Short wide trunk
- Divides into its three branches behind the peritoneum of the posterior wall of the lesser sac at the upper border of pancreas

### 2. Left gastric artery

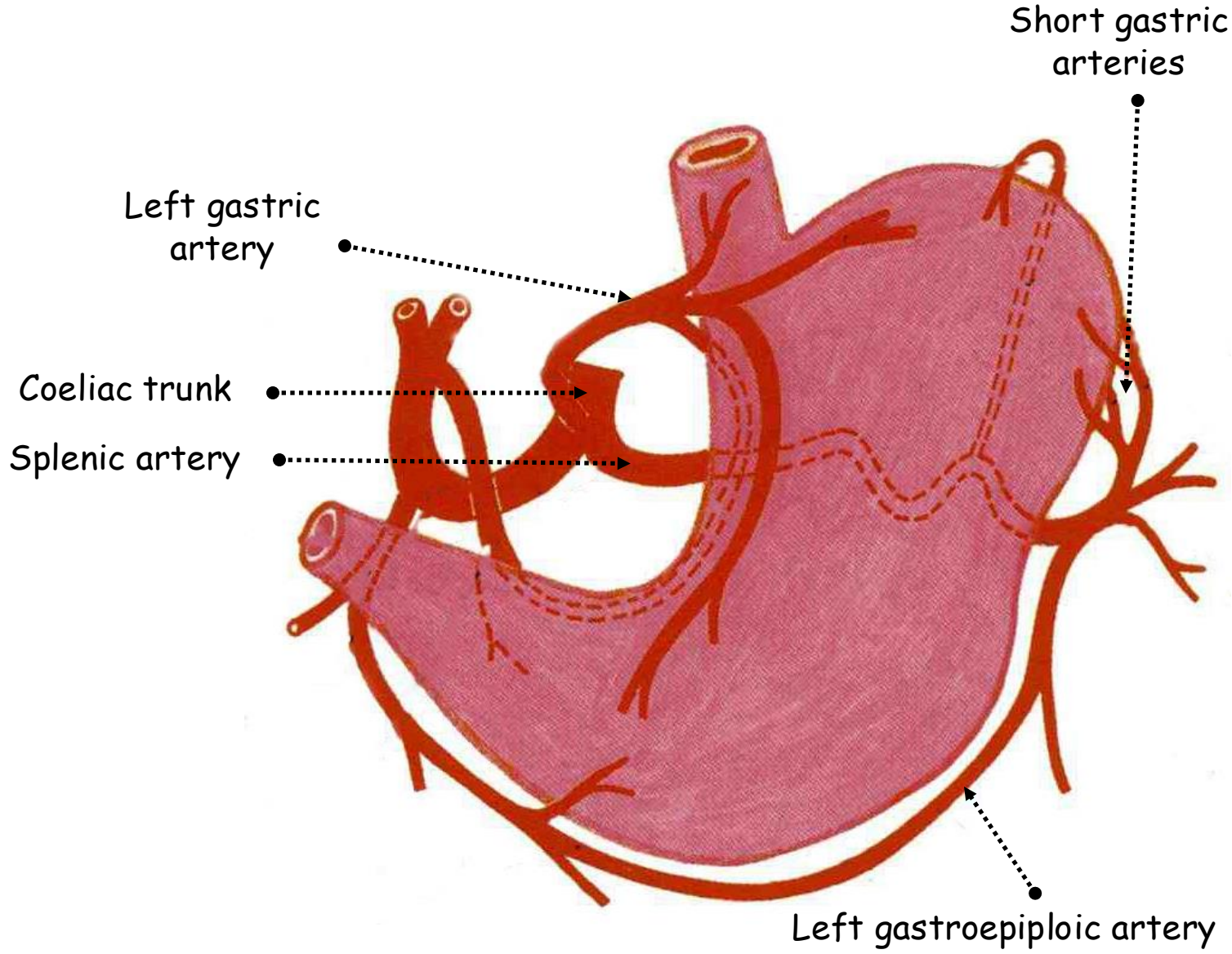
- Runs upwards across the left crus towards the oesophageal opening in the diaphragm
- Enters the lesser omentum to run to the right along the lesser curvature of the stomach




ANTERIOR VIEW OF THE STOMACH SHOWING ITS ARTERIES

## 3. Splenic artery:

- Passes to the left
- Very tortuous with crests and troughs
- Runs across the left crus and left psoas to the hilum of the left kidney
- Turns forward in the lienorenal ligament to the hilum of the spleen
- Before breaking up into its terminal splenic branches it gives off the short gastric arteries which run in the gastrosplenic ligament, and the left gastroepiploic artery which runs in the greater omentum




***ANTERIOR VIEW OF THE STOMACH SHOWING ITS ARTERIES***

## 4. Common hepatic artery:

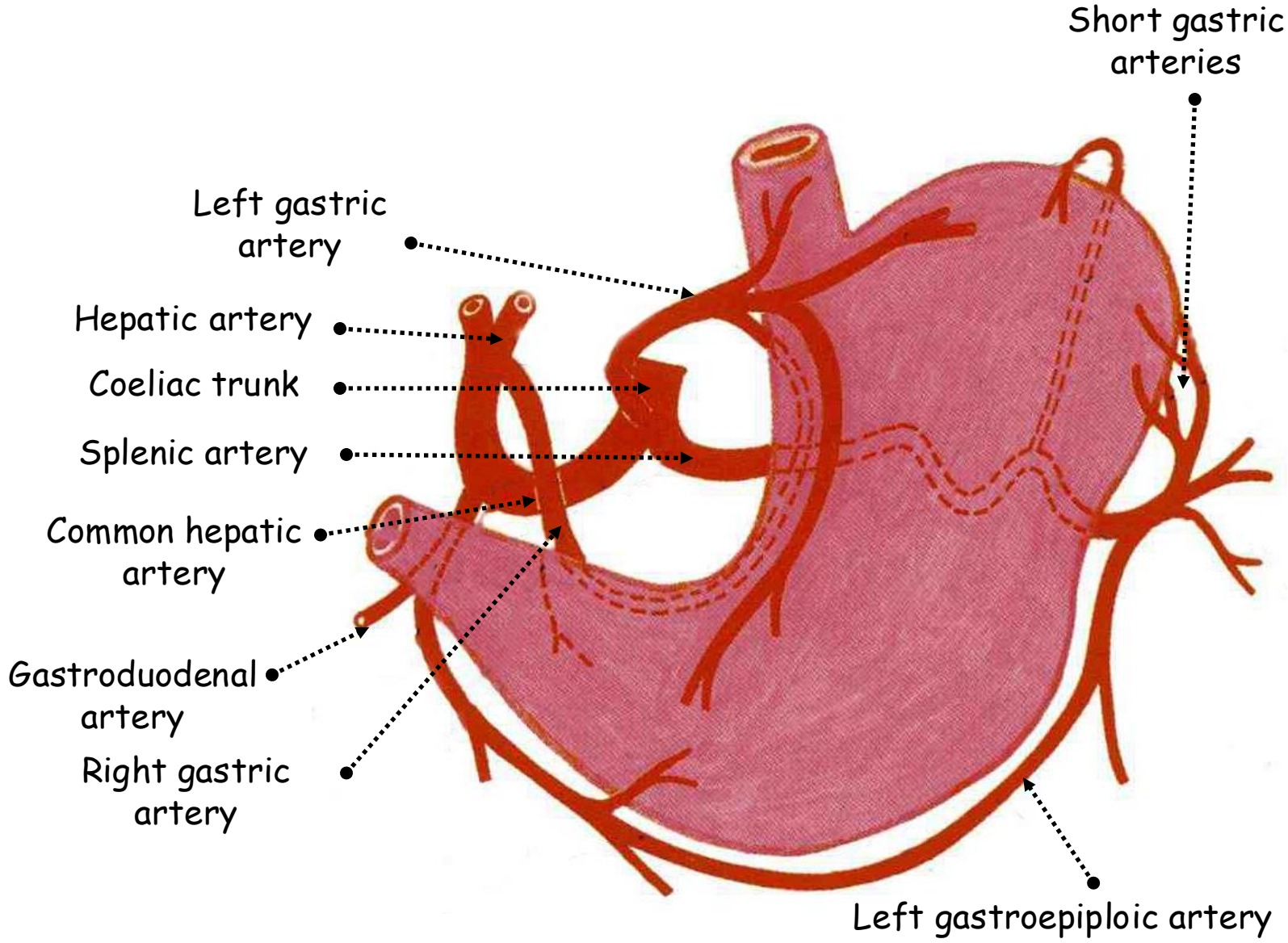
- Passes over the upper border of the pancreas downwards and to the right behind the peritoneum of the posterior abdominal wall as far as the first part of the duodenum
- Turns forward at the epiploic foramen and curves upwards inside the lesser omentum to become the hepatic artery
- Usually gives off the right gastric and gastroduodenal arteries

## 5. Right gastric artery:

- Turns into the lesser omentum to reach the stomach

## 6. Gastroduodenal artery:

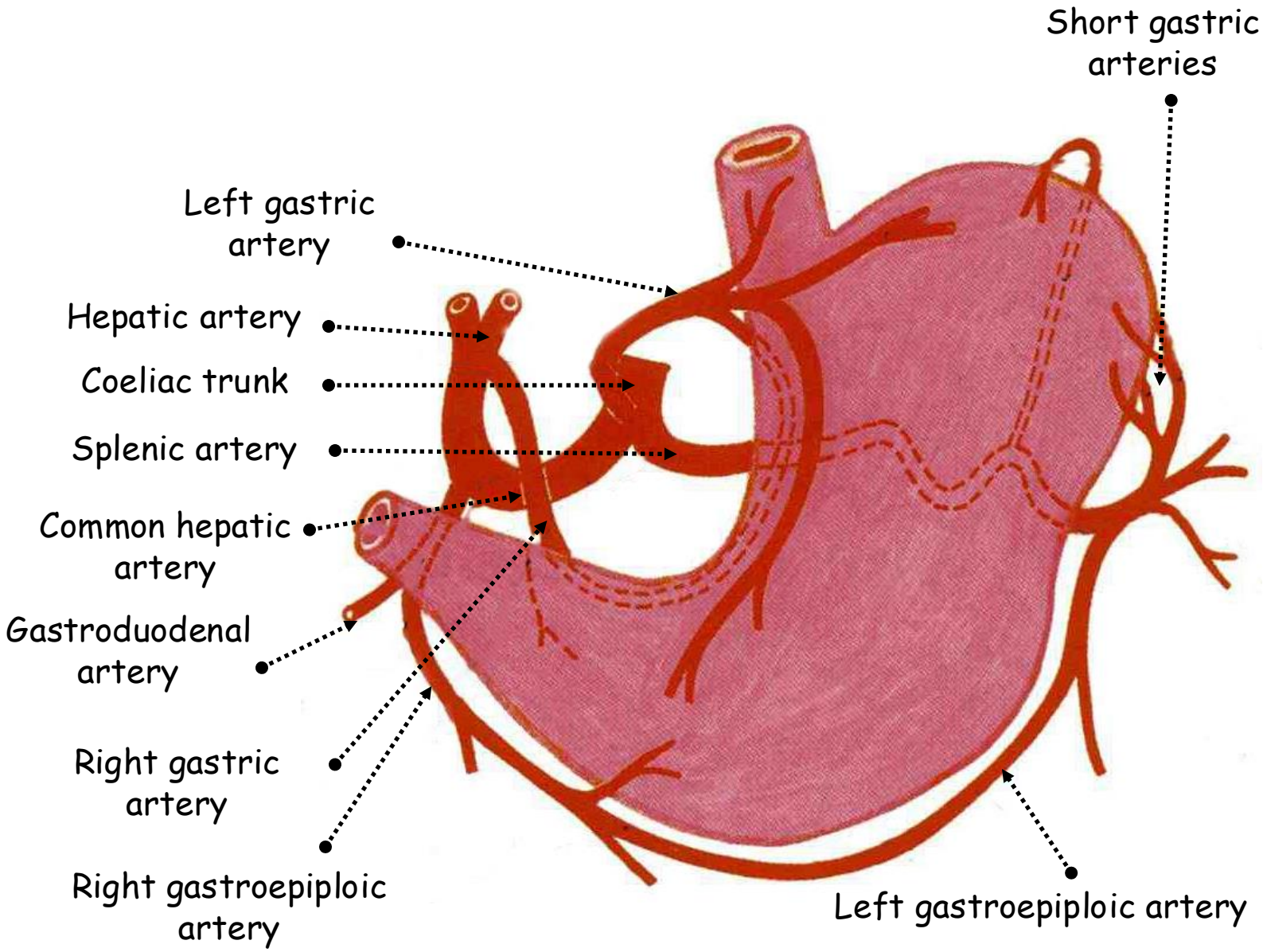
- Passes down behind the first part of the duodenum, to the left of the portal vein, and divides into two




***ANTERIOR VIEW OF THE STOMACH SHOWING ITS ARTERIES***

## 7. Right gastroepiploic artery:

- Passes forward between the first part of the duodenum and the pancreas
- Turns to the left inside the greater omentum




***ANTERIOR VIEW OF THE STOMACH SHOWING ITS ARTERIES***

## 8. Arterial circle of the lesser curvature:

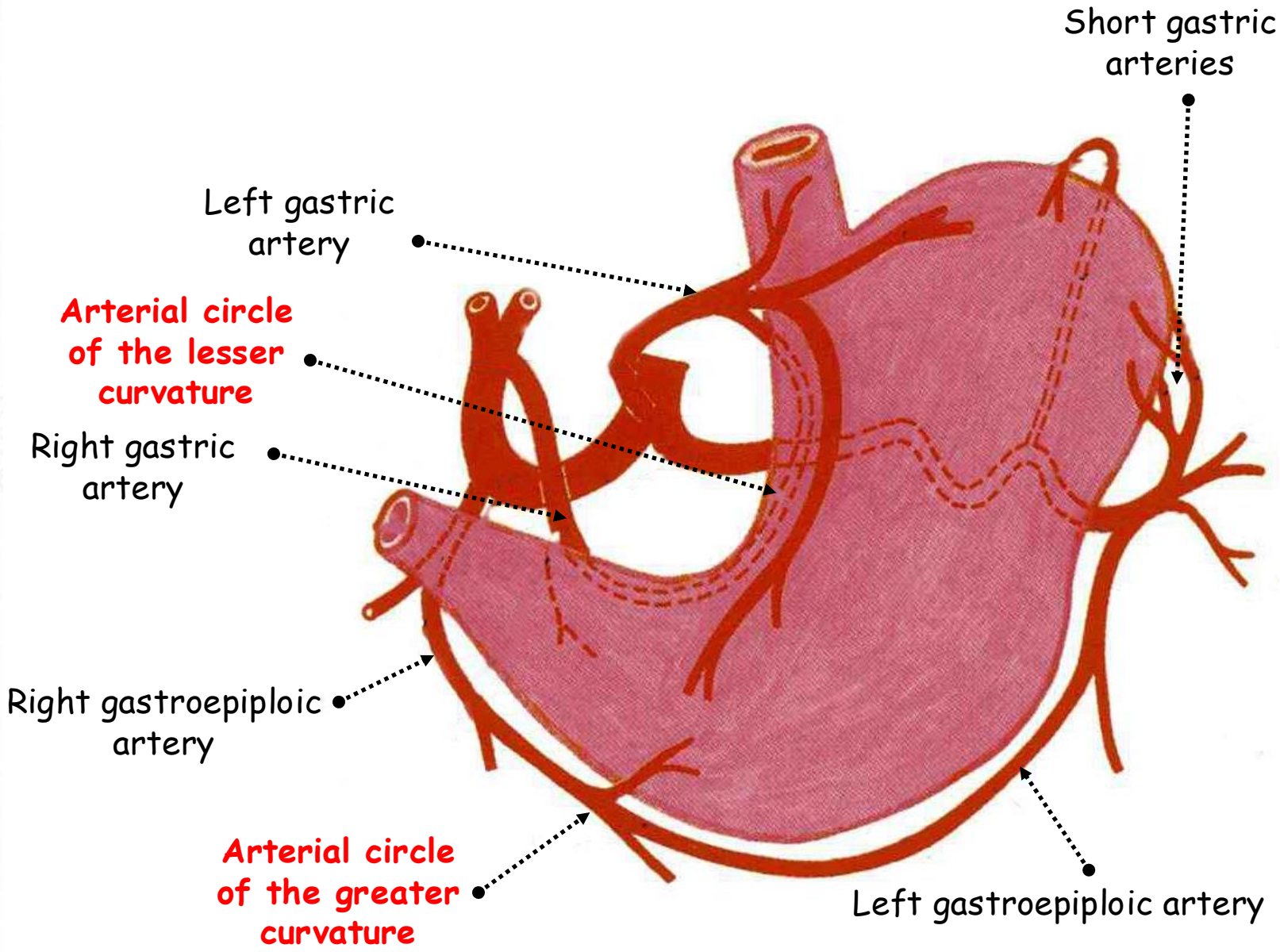
- End-on anastomosis between the left gastric and the right gastric arteries
- Along the lesser curvature between the two layers of the lesser omentum
- May be double

## 9. Arterial circle of the greater curvature:

- End-on anastomosis between the left gastroepiploic and the right gastroepiploic arteries
- Along the greater curvature between the two layers of the lesser omentum
- Rarely double

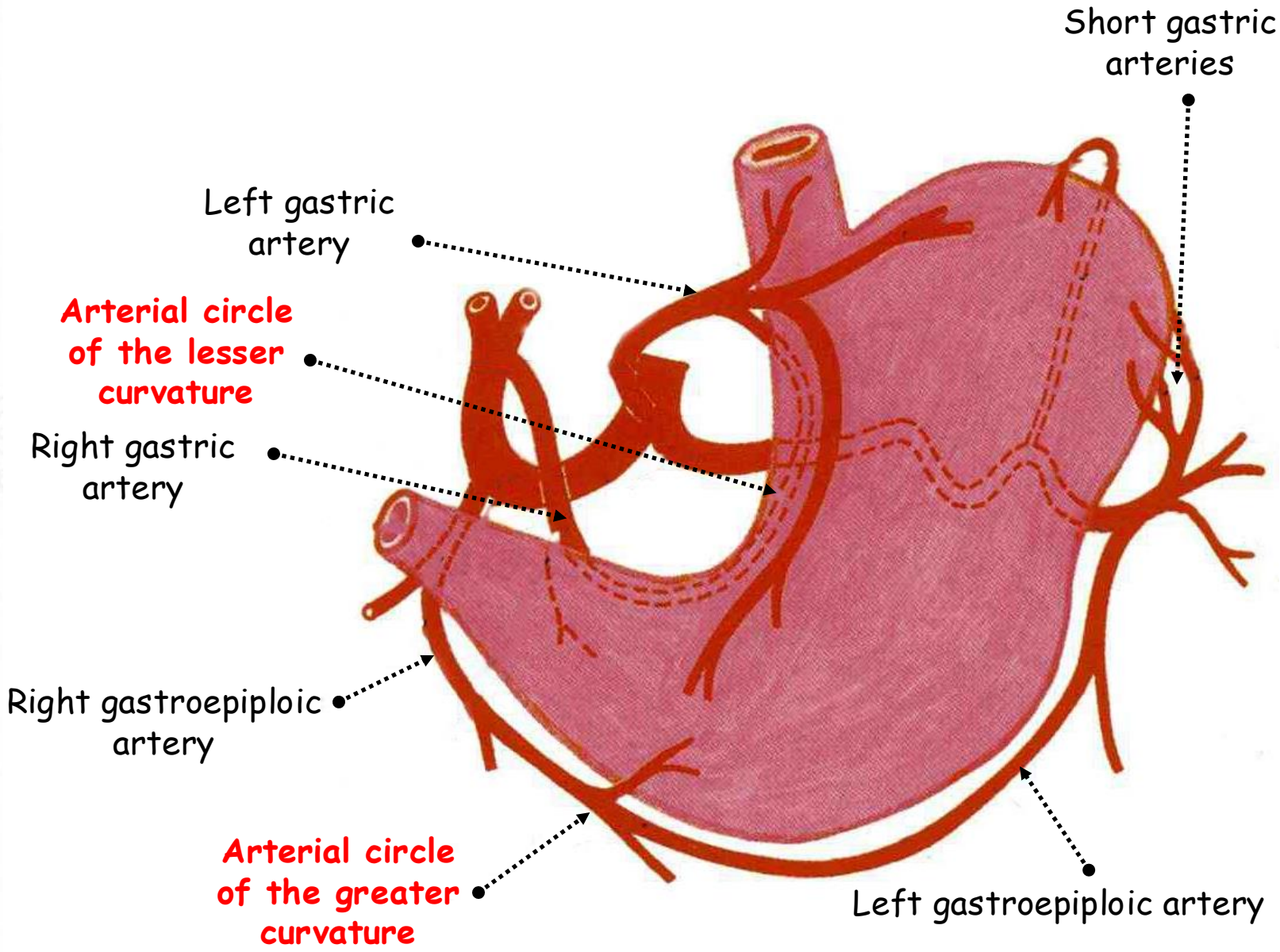
## 10. Short gastric arteries:

- Five or six vessels which run from the splenic artery in the gastrosplenic ligament




***ANTERIOR VIEW OF THE STOMACH SHOWING ITS ARTERIES***

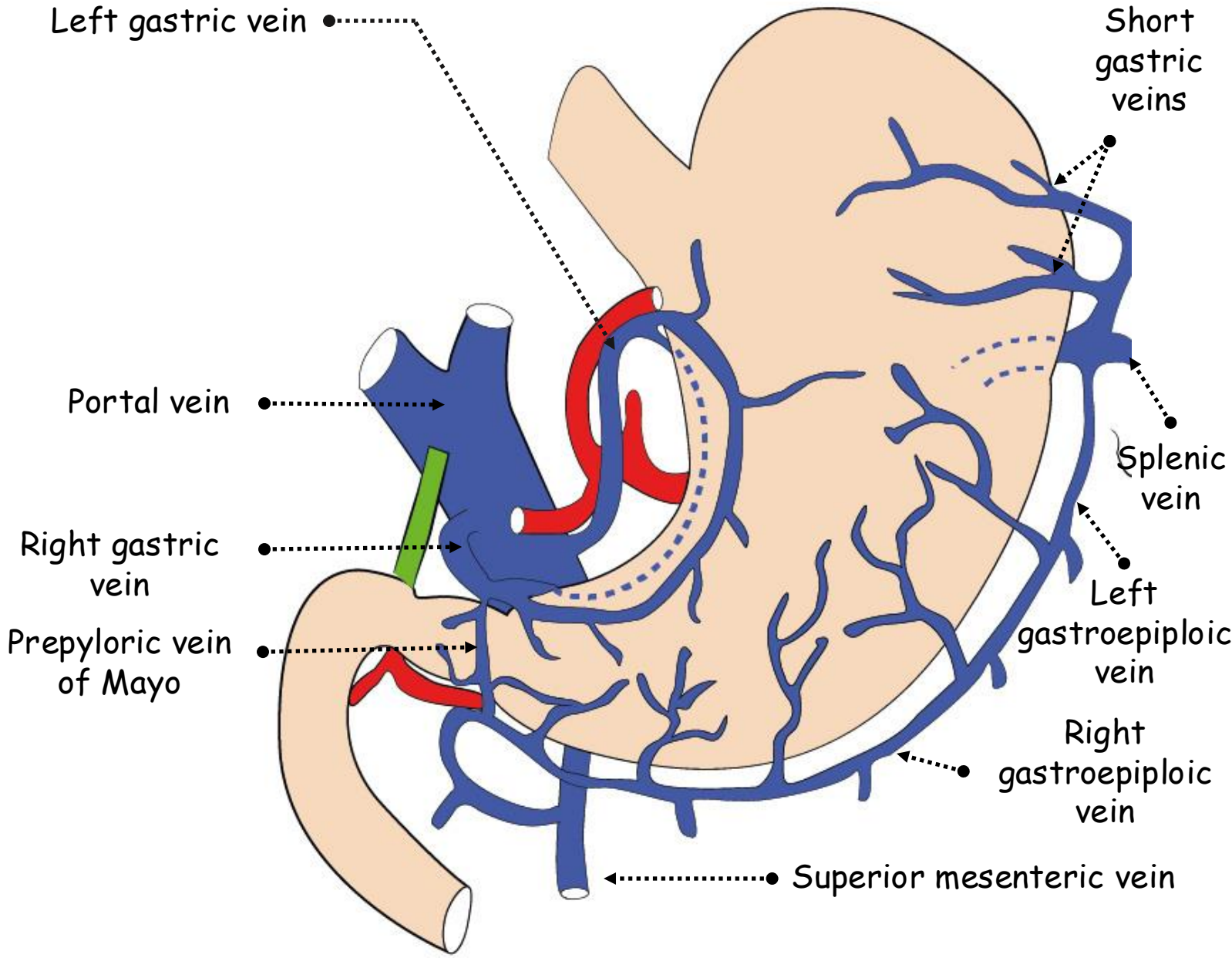
- All these vessels give off their gastric branches at right angles in contrast to branches from the vagal nerve trunks which come off obliquely
- Enter the anterior and posterior walls of the stomach
- Epiploic branches of the gastroepiploics pass downwards between the leaves of the greater omentum and constitute the largest supply of peritoneum
- The short gastric vessels supply the fundus and upper left part of the greater curvature




ANTERIOR VIEW OF THE STOMACH SHOWING ITS ARTERIES

## B. VEINS

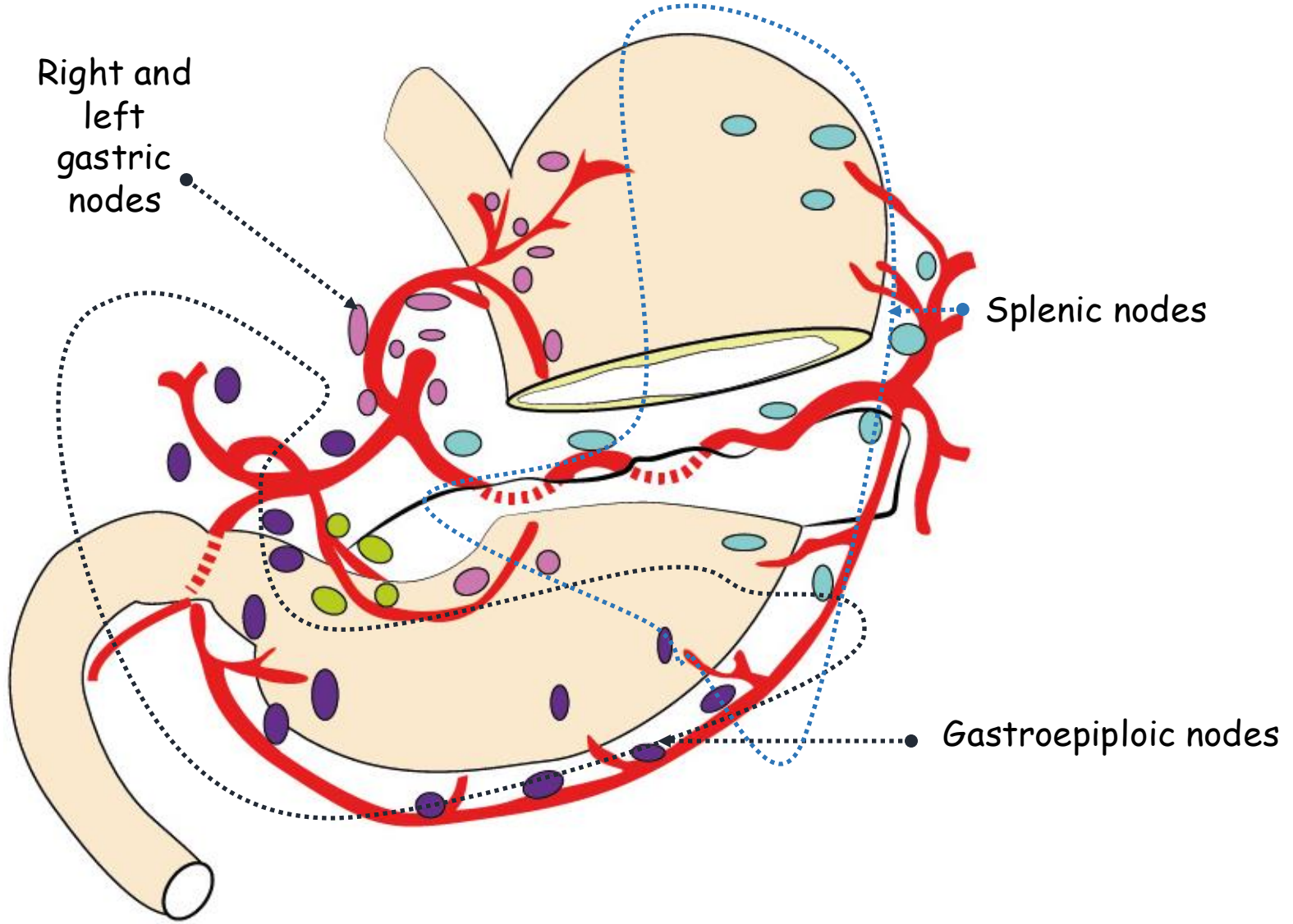
- Correspond to the arteries
- The gastric veins flow into the portal vein
- The short gastric and left gastroepiploic veins drain into the splenic vein
- The right gastroepiploic vein drains into the superior mesenteric vein
- The prepyloric vein of Mayo drains into the right gastric vein
- There is no gastroduodenal vein




ANTERIOR VIEW OF THE STOMACH SHOWING ITS VEINS

## C. LYMPH DRAINAGE

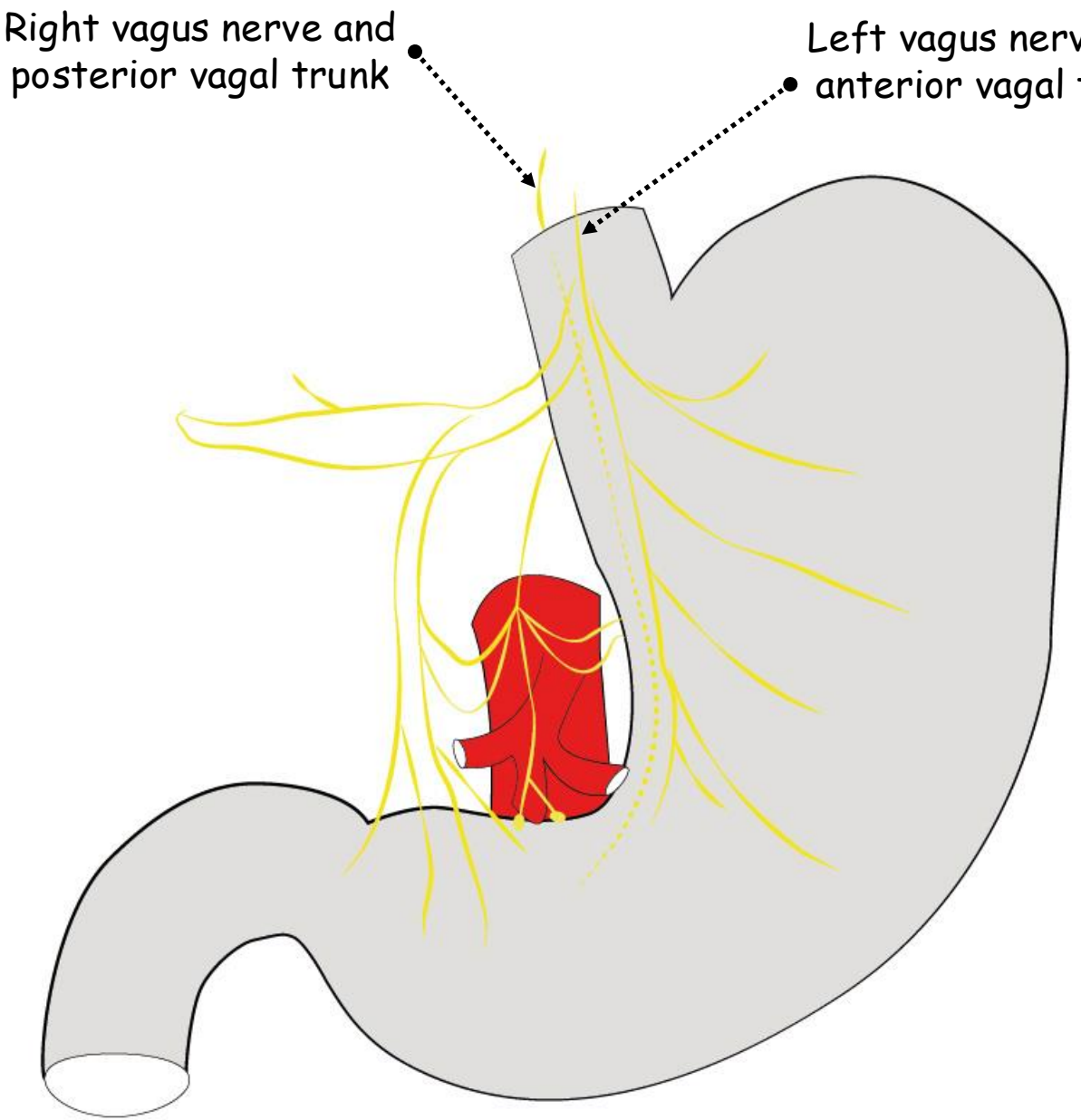
- All lymph eventually reaches coeliac nodes after passing through various outlying groups
- There are valves in the vessels that direct lymph in such a way that a line drawn parallel to the greater curvature and two-thirds of the way down the anterior surface indicates a watershed
- From the largest zone above and to the right of this line, lymph passes to left and right gastric nodes along the lesser curvature adjacent to the blood vessel
- From the upper left quadrant, the lymph flows to splenic nodes at the hilum which flow into pancreatic nodes
- From the rest of the stomach lymph reaches nodes along the gastroepiploic vessels of the greater curvature and in the pyloric region above, below and behind the pylorus
- Left supraclavicular nodes through the posterior mediastinum




ANTERIOR VIEW OF THE STOMACH SHOWING ITS LYMPH DRAINAGE

## D. NERVES

- **Sympathetic:**
  - -Vasomotor and pain fibres run with the various arterial branches to the stomach
- **Parasympathetic:**
  - -Much more important
  - - From the vagi
  - - Control motility, secretion and reflex activities
  - -Anterior vagal trunk
  - -Posterior vagal trunk




ANTERIOR VIEW OF THE STOMACH SHOWING ITS NERVES

## VII. SURGICAL APPROACH

- **Vagotomy:**
  - -Truncal
  - -Selective
  - -Highly selective
- **Gastrectomy:**
  - -Partial
  - -Gastroenterostomy

## VIII. CONCLUSION

- Most dilated part of the alimentary tube
- Highly peritonised and mobile
- Secretes different digestive substances
- Several retroperitoneal and intraperitoneal relations
- Rich blood supply
- Nerves mainly provided from the vagi
- Lymph drainage is ensured by the celiac nodes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