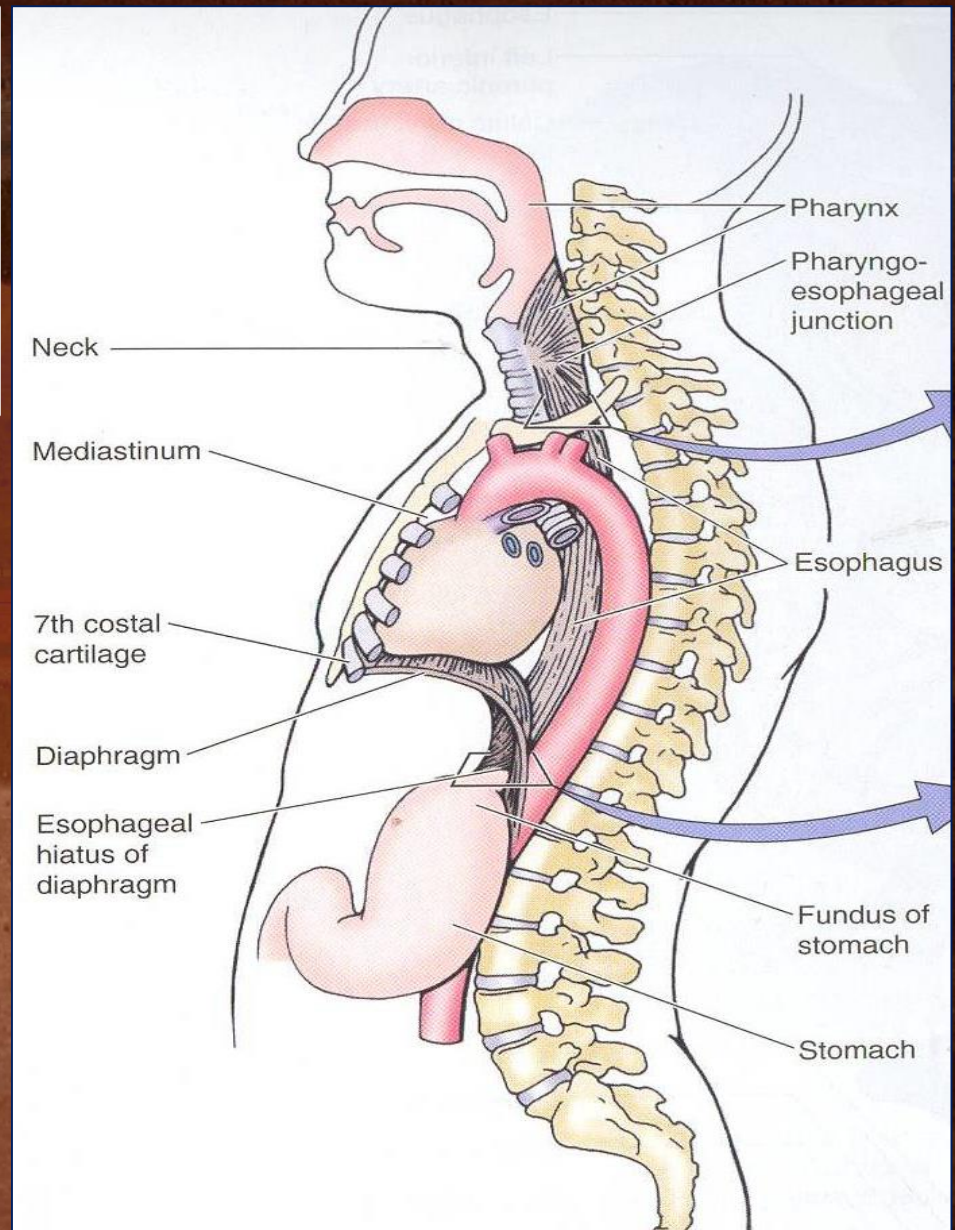


ESOPHAGUS AND STOMACH



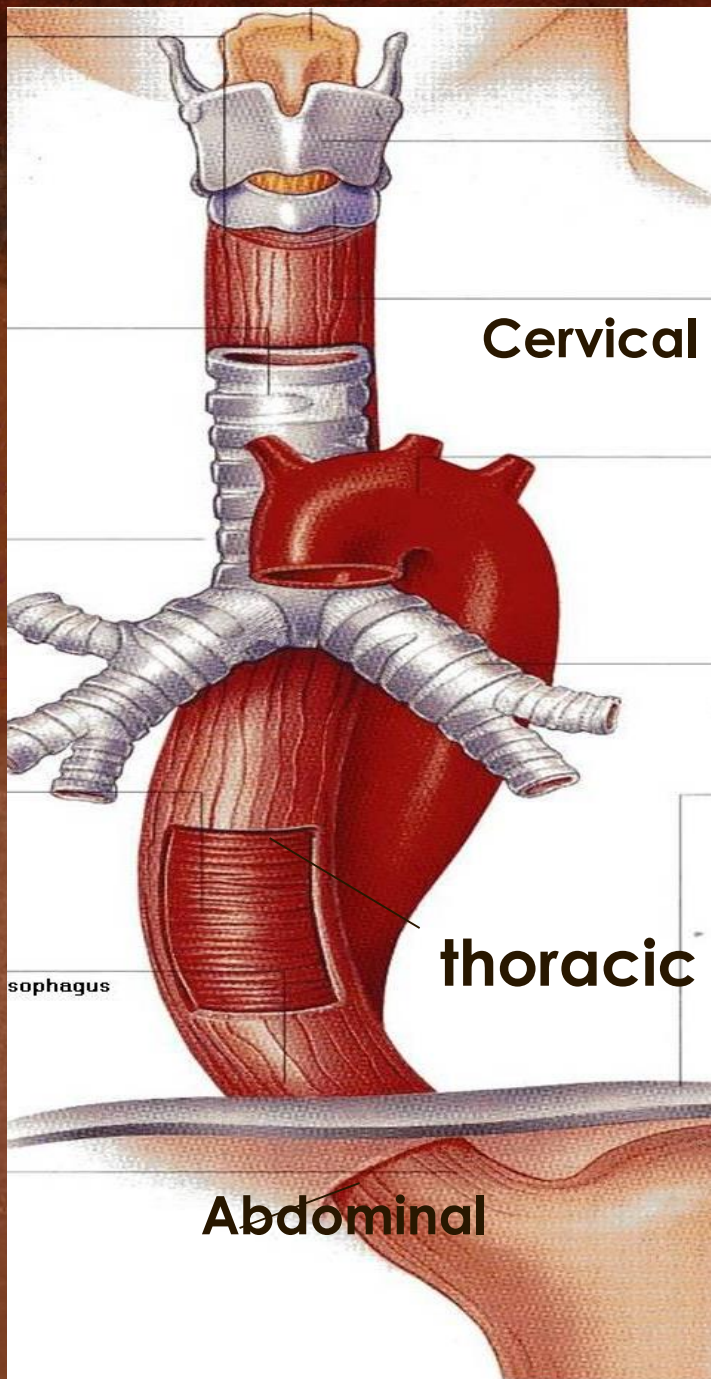
Prof. Saeed Abuel Makarem

OBJECTIVES

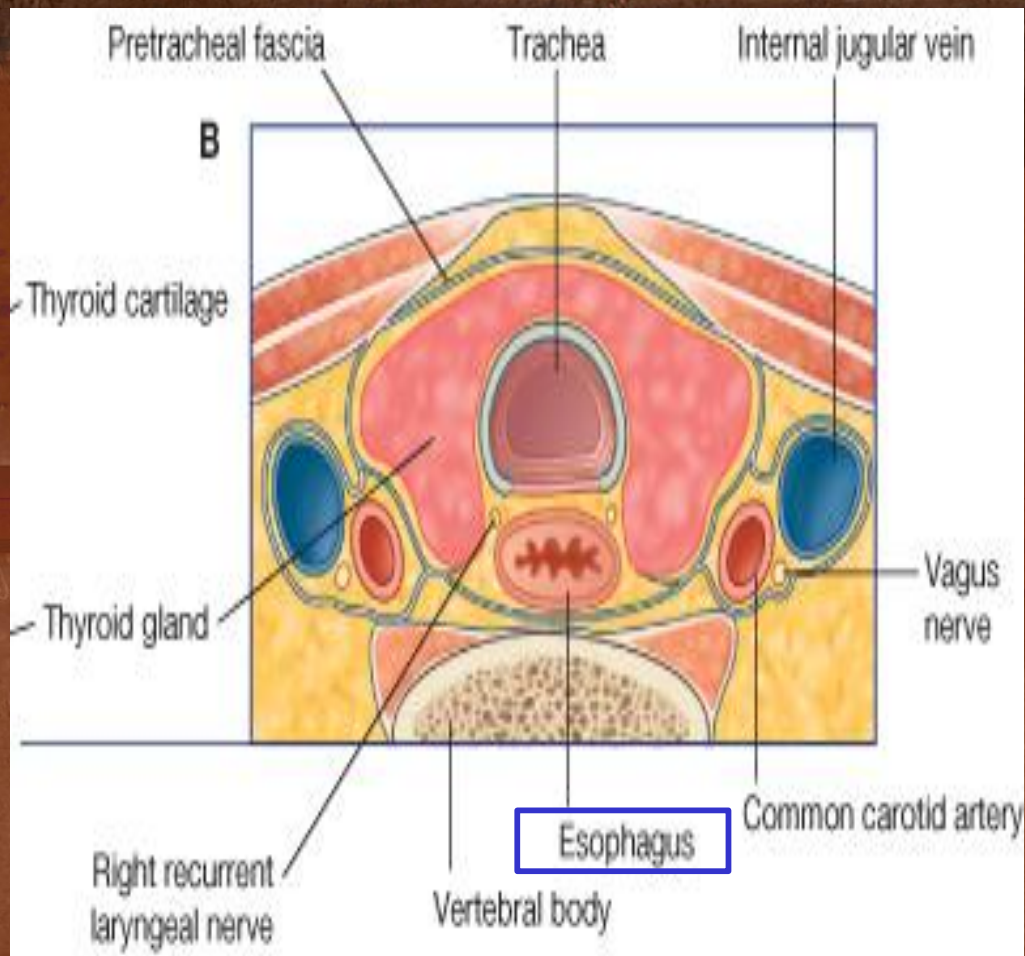
- By the end of the lecture you should be able to:
 - Describe the anatomy of the **esophagus**; extent, length, parts, strictures, relations, blood & nerve supply and lymphatic.
 - Describe the anatomy of the **stomach**; location, shape, parts, relations, blood & nerve supply and lymphatic.

ESOPHAGUS

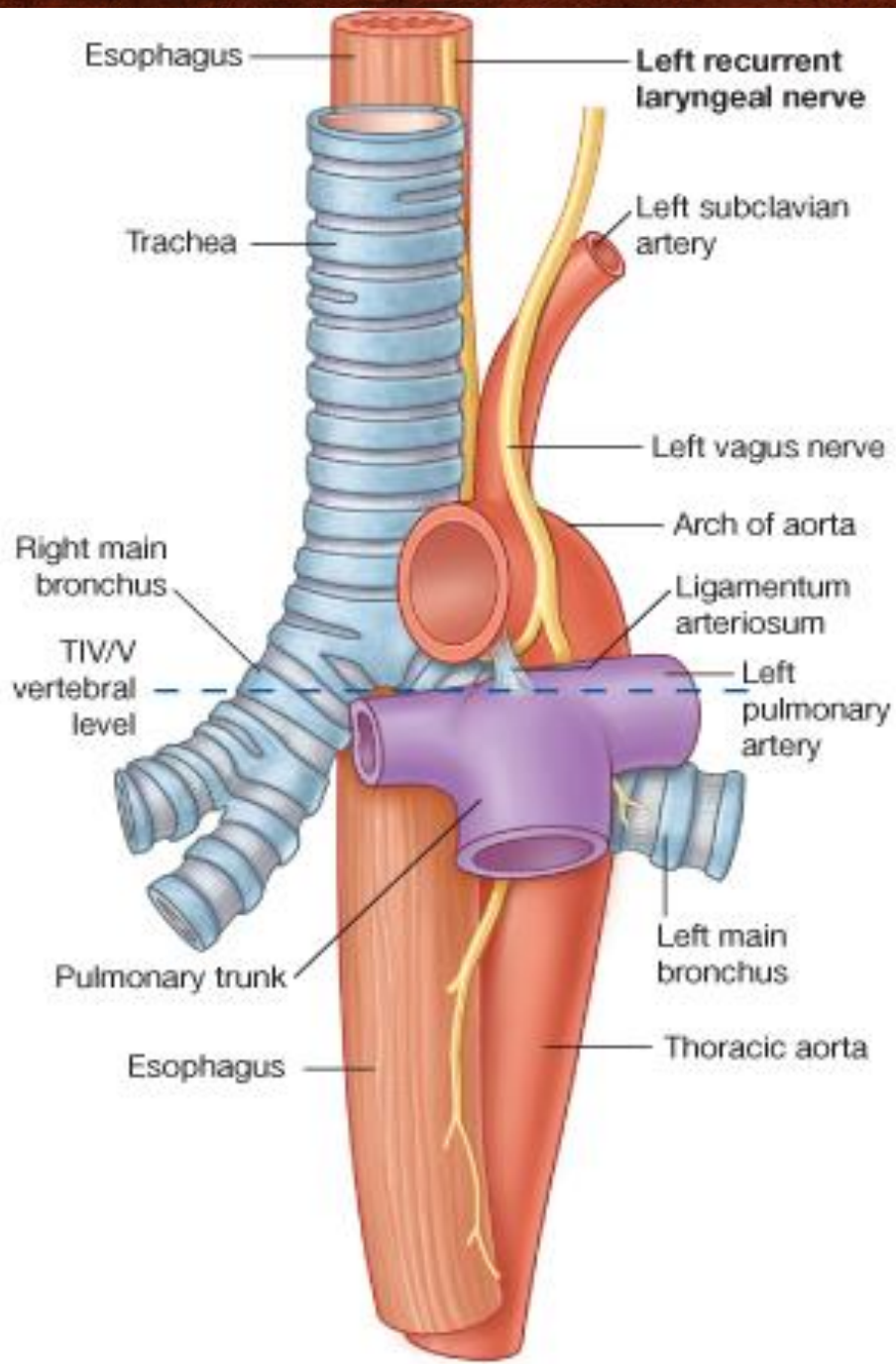
- It is a tubular structure about 25 cm long.
- It begins as the continuation of pharynx at the level of the 6th cervical vertebra.
- It pierces the diaphragm at the level of the 10th thoracic vertebra to join the stomach.
- It is formed of 3 parts:
- Cervical,
- Thoracic,
- Abdominal.



CERVICAL PART “RELATIONS”



- Posteriorly:
- Vertebral column.
- Anteriorly:
- Trachea,
- Recurrent laryngeal nerves.
- Laterally:
- Lobes of thyroid gland.



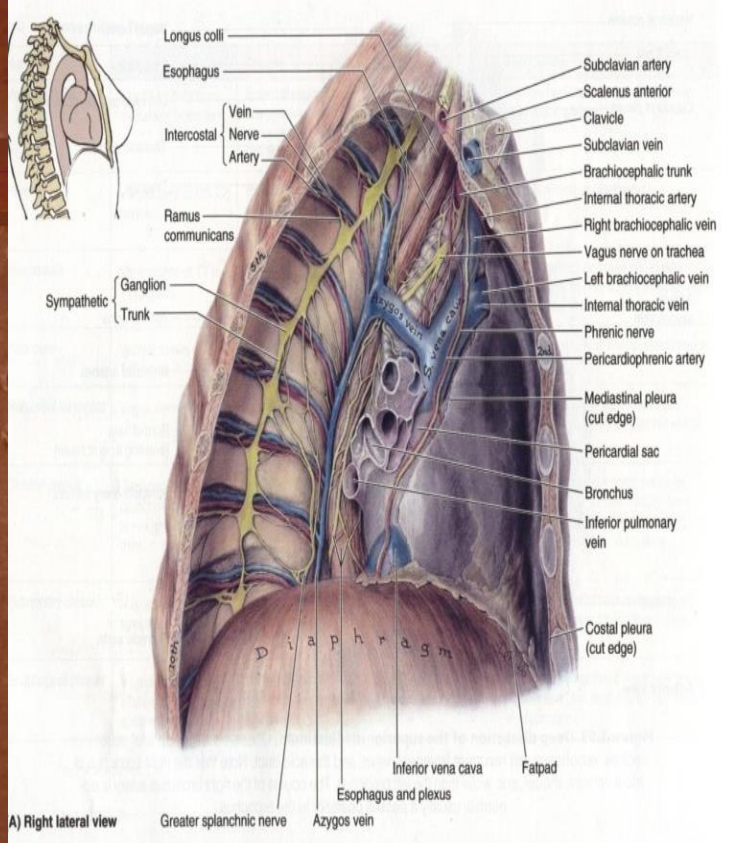
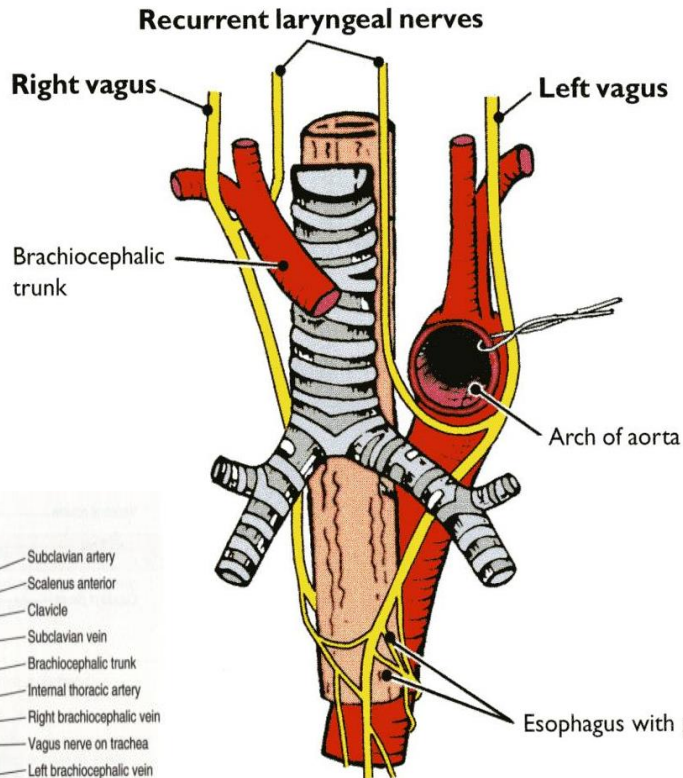
THORACIC PART

- In the thorax, it passes downward and slightly to the **left** through the superior and posterior mediastinum.
- At the level of the sternal angle, the **aortic arch and left main bronchus** push the esophagus again to **the midline**.

Thoracic part

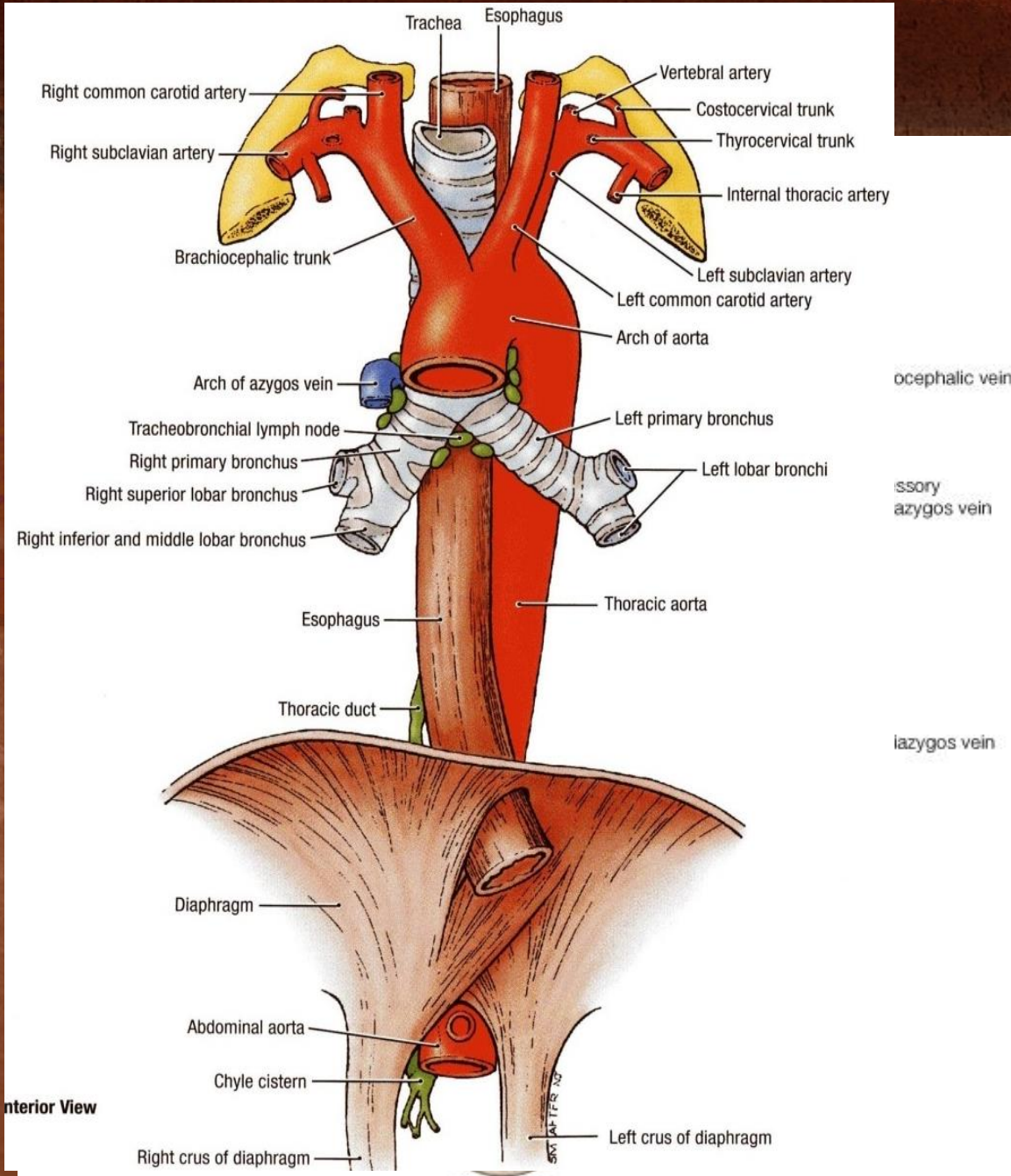
ANTERIOR RELATIONS

- Trachea.
- Left recurrent laryngeal nerve.
- Left principal bronchus.
- Pericardium
- **Left atrium !!!!!.**



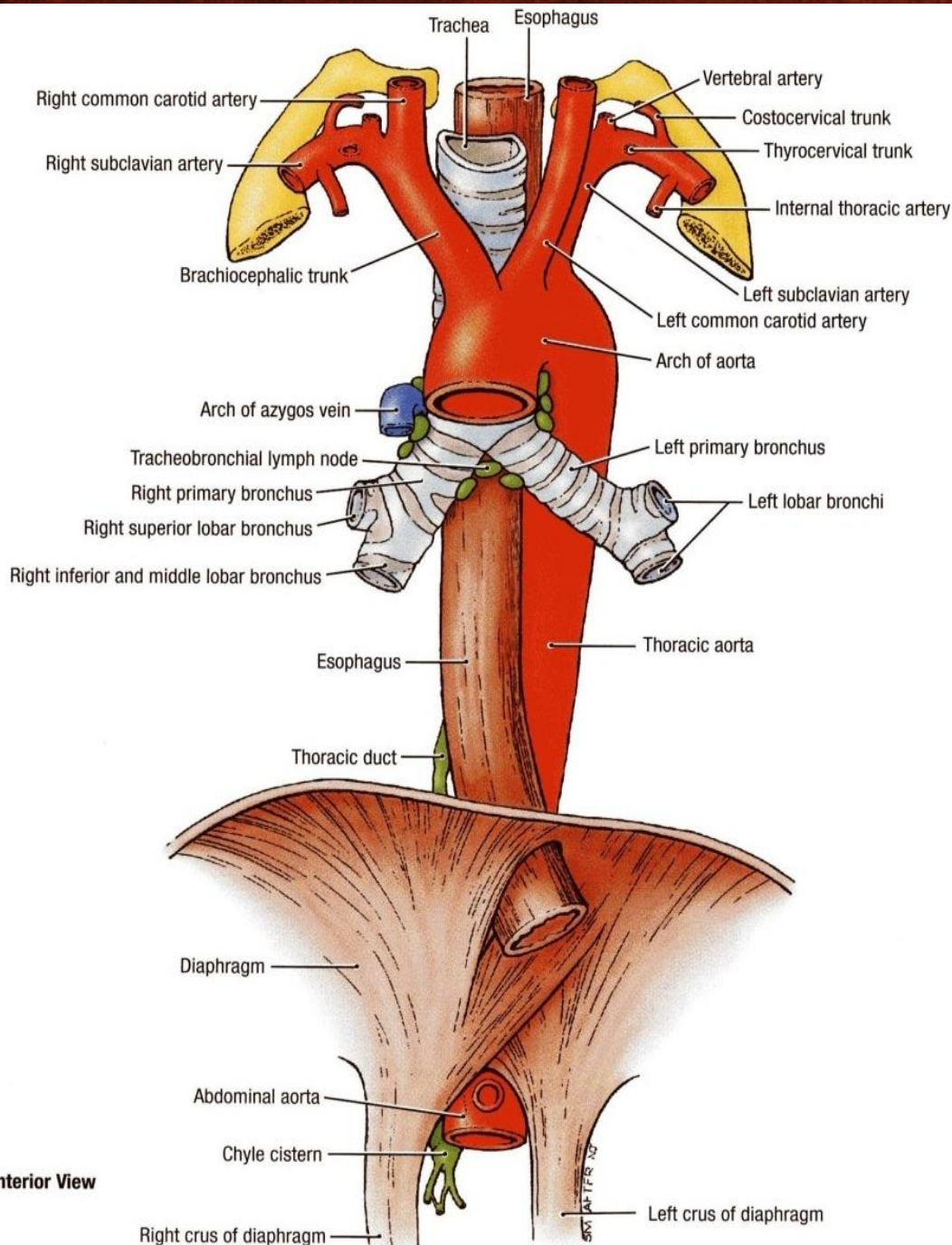
A) Right lateral view

POSTERIOR RELATIONS



1. Bodies of the thoracic vertebrae.
2. Thoracic duct.
3. Azygos vein.
4. Right posterior intercostal arteries.
5. Descending thoracic aorta (at the lower end).

LATERAL RELATIONS



On the Right side:

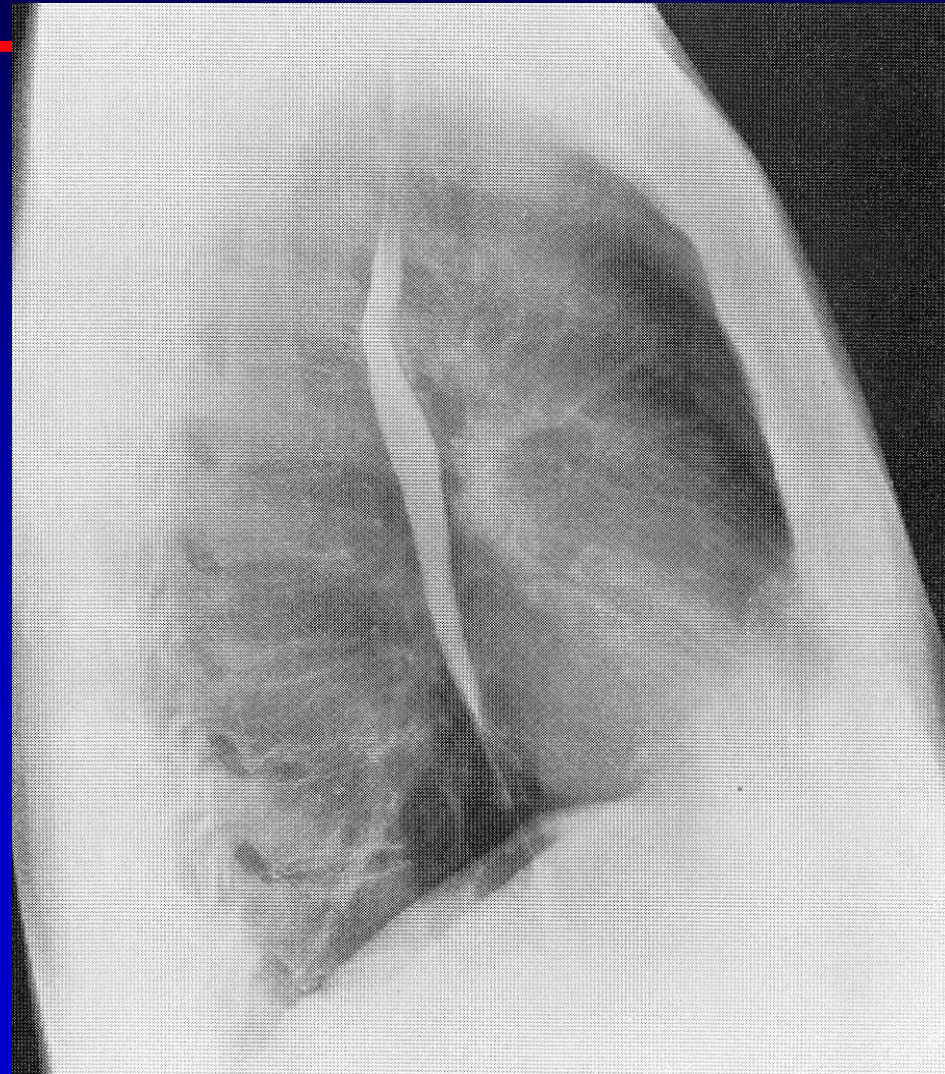
1. Right mediastinal pleura.
2. Terminal part of the azygos vein.

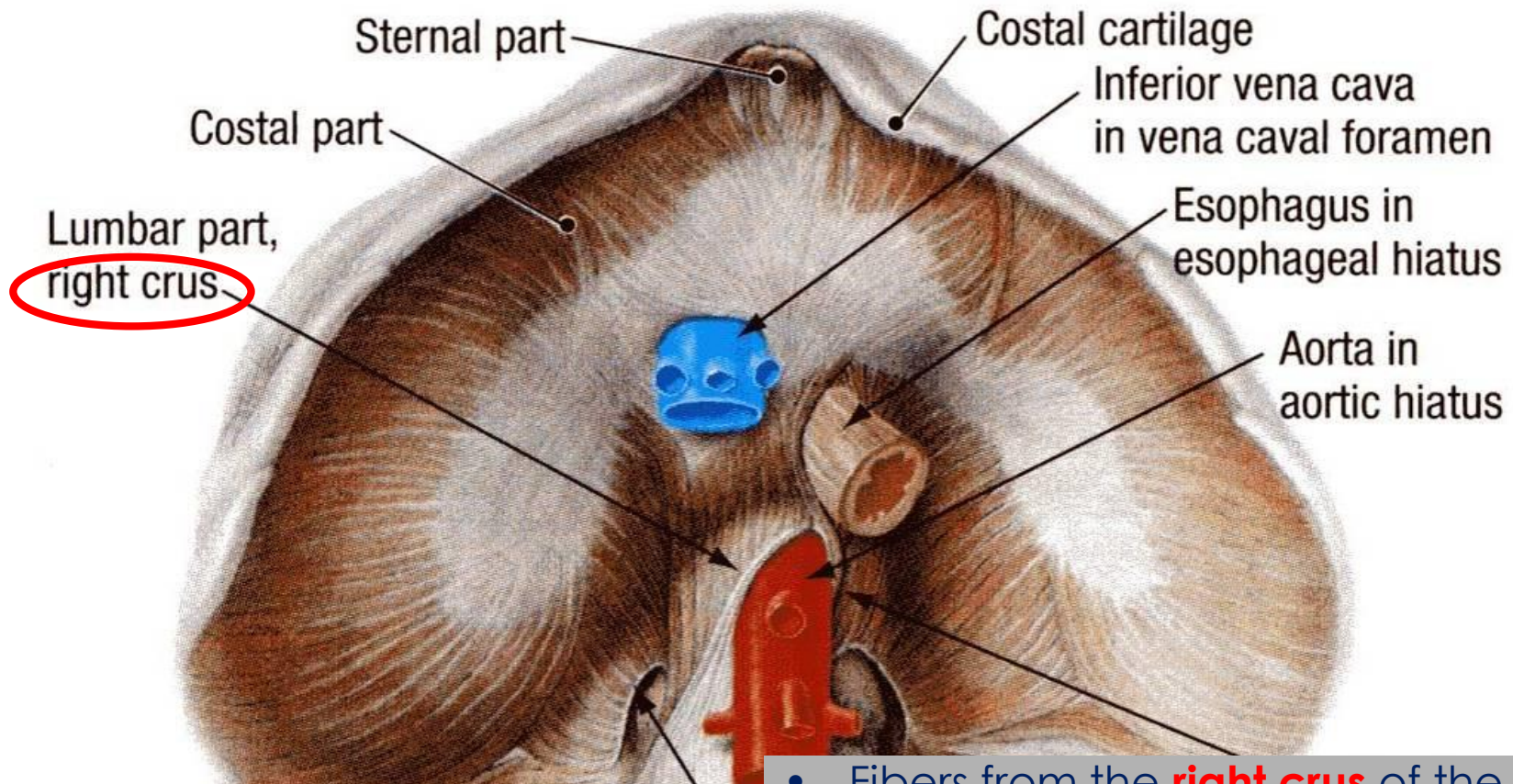
On the Left side:

1. Left mediastinal pleura.
2. Left subclavian artery.
3. Aortic arch.
4. Thoracic duct.

ESOPHAGUS AND LEFT ATRIUM

- There is a close relations between the left atrium of the heart and the esophagus.
- **What is the clinical application?**
- A barium swallow in the esophagus will help the physician to **assess the size of the left atrium (Dilation)** as in case of a heart failure, or long standing mitral stenosis.



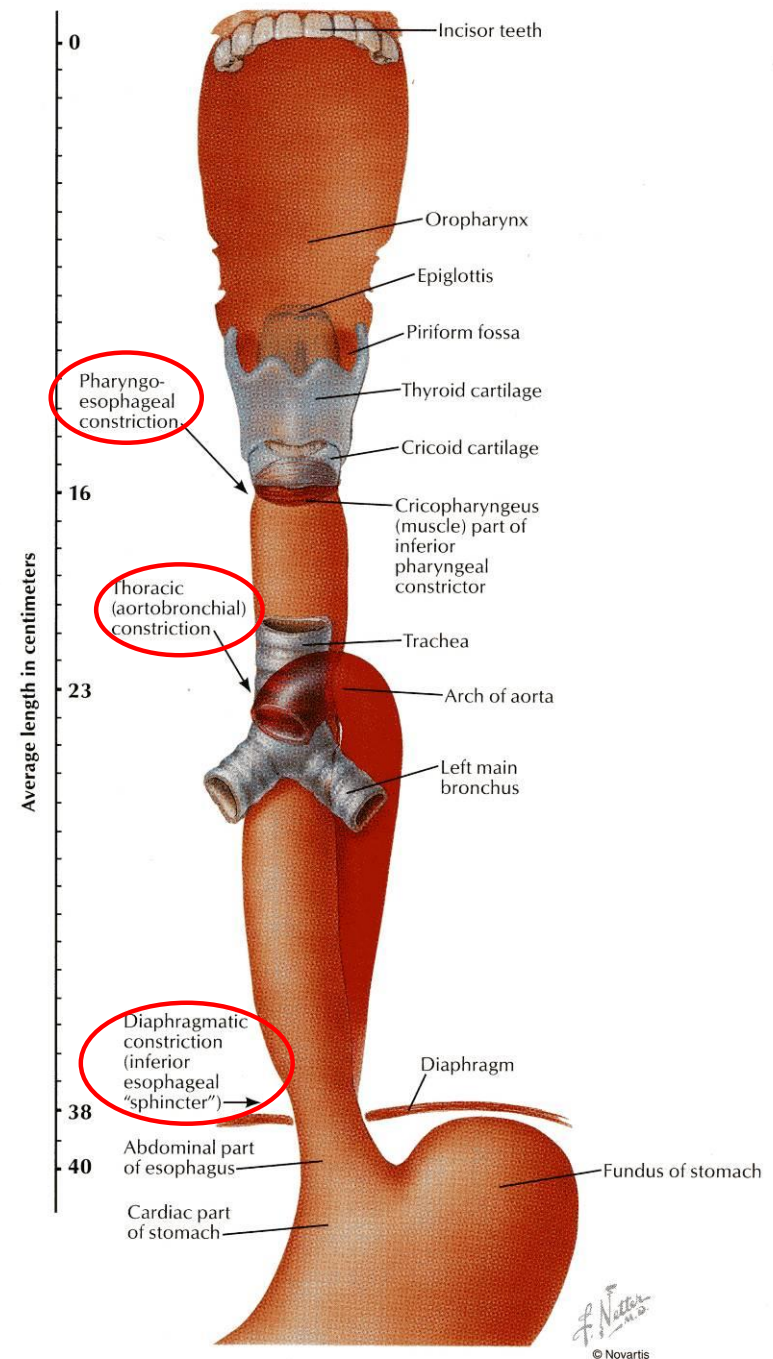


- In the abdomen, the esophagus descends only for 1.3 cm and joins the stomach.
- Anteriorly, it is related to the **left lobe** of the liver.
- Posteriorly, it is related to the **left crus** of the diaphragm.

- Fibers from the **right crus** of the diaphragm form a **sling** around the esophagus.
- At the opening of the diaphragm, the esophagus is accompanied by:
 - The two vagi
 - **Branches of the left gastric vessels**
 - Lymphatic vessels.

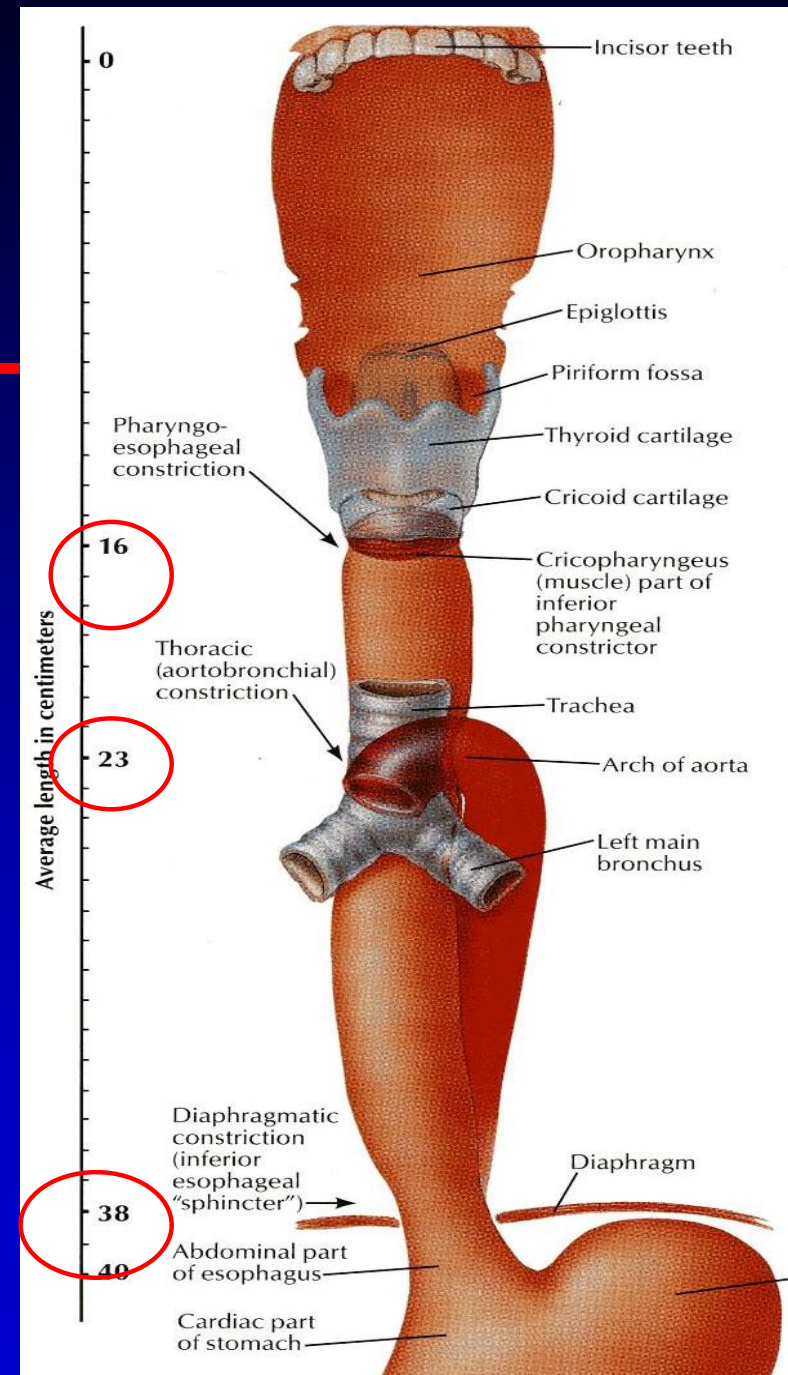
ESOPHAGEAL CONSTRICTIONS

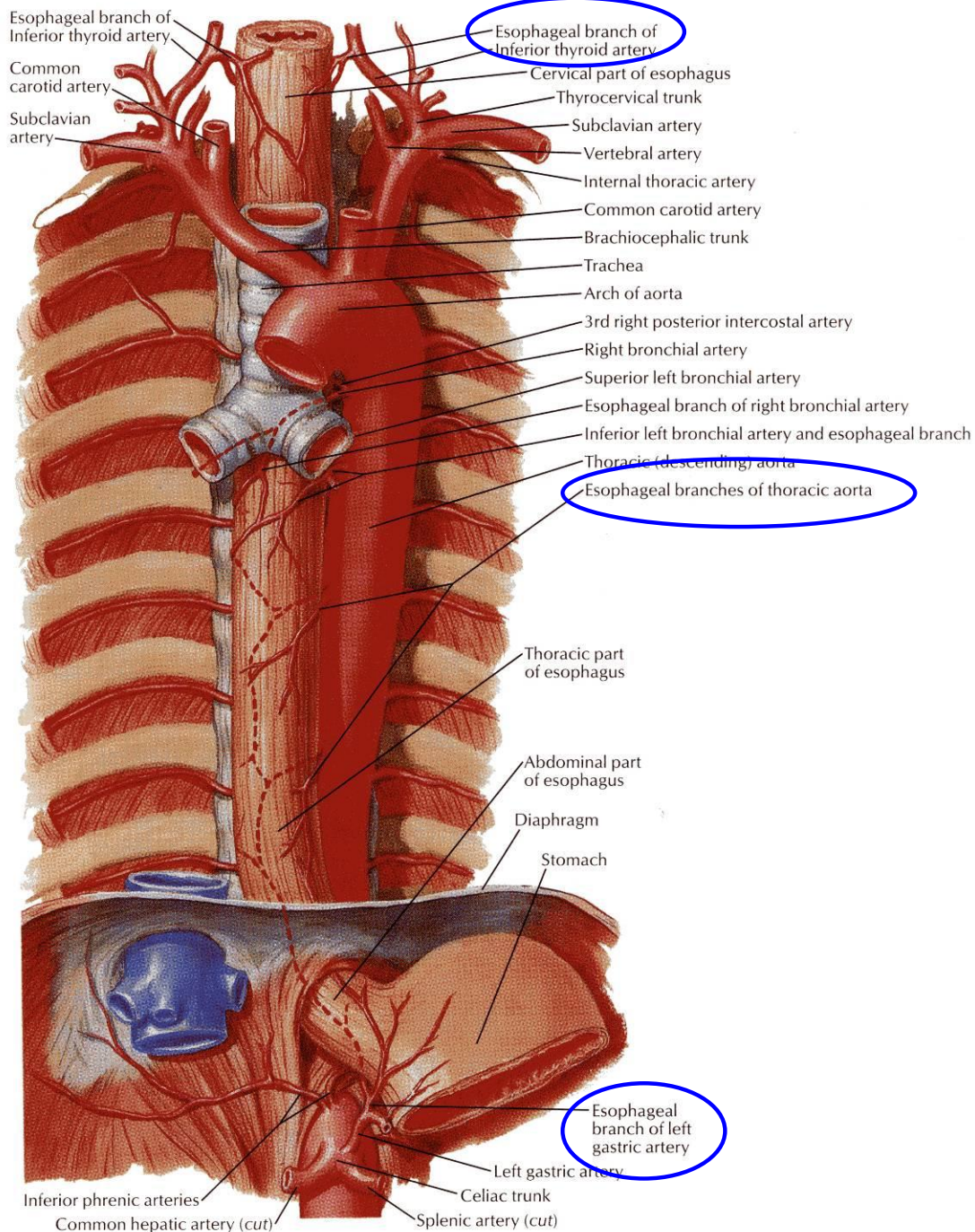
- The esophagus has 3 anatomic constrictions.
- The **first** is at the junction with the pharynx.
- The **second** is at the crossing with the aortic arch and the left main bronchus.
- The **third** is at the junction with the stomach.
- They have a considerable clinical importance.
- Why?



ESOPHAGEAL STRICTURES

1. They may cause difficulties in passing an *esophagoscope or gastroscope*.
2. In case of swallowing of caustic liquids (mostly in children), this is where the burning is the worst and **strictures** develop.
3. The esophageal strictures are a common place of development of **esophageal carcinoma**.
4. *In this picture what is the importance of the scale?*

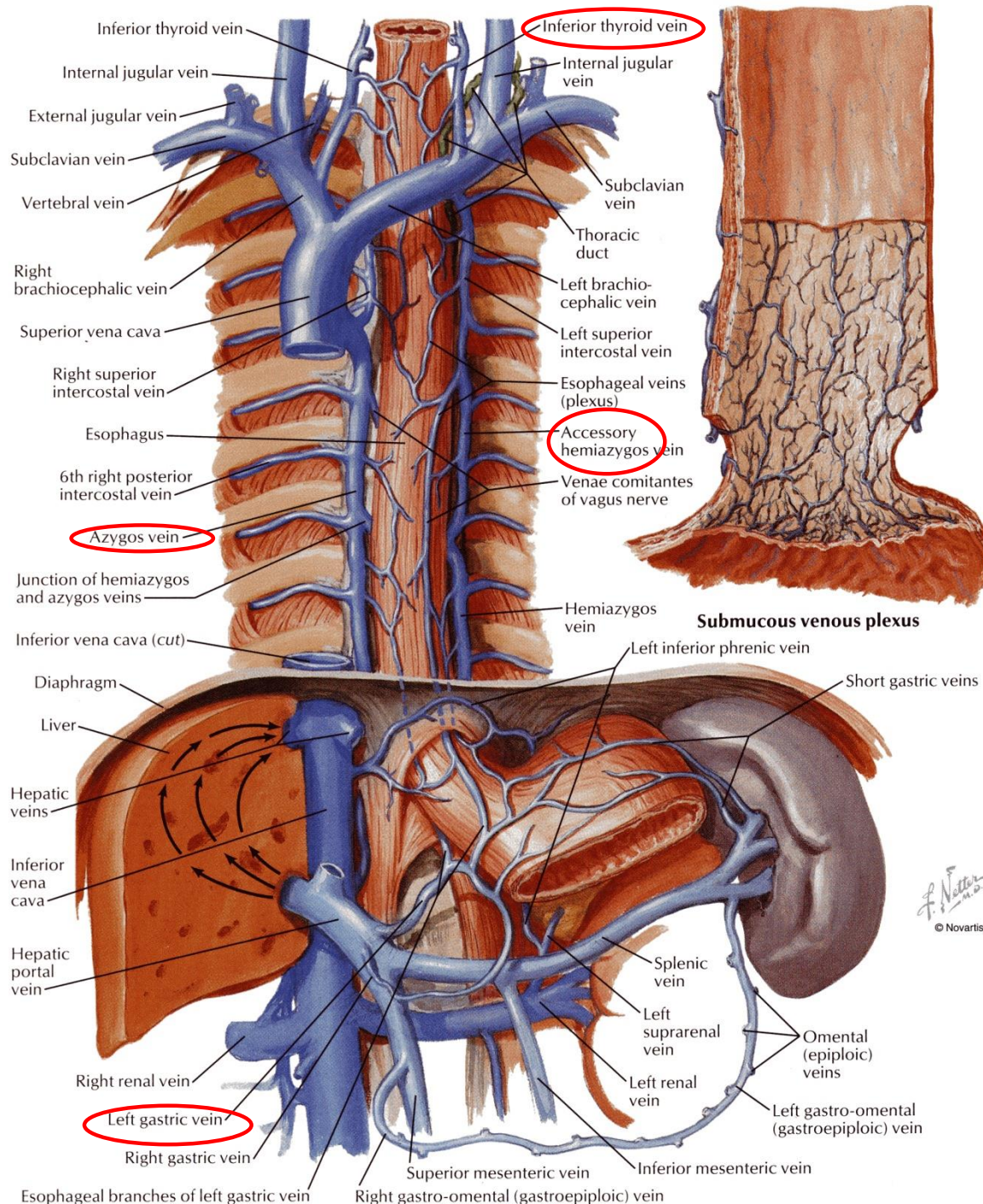




ARTERIAL SUPPLY

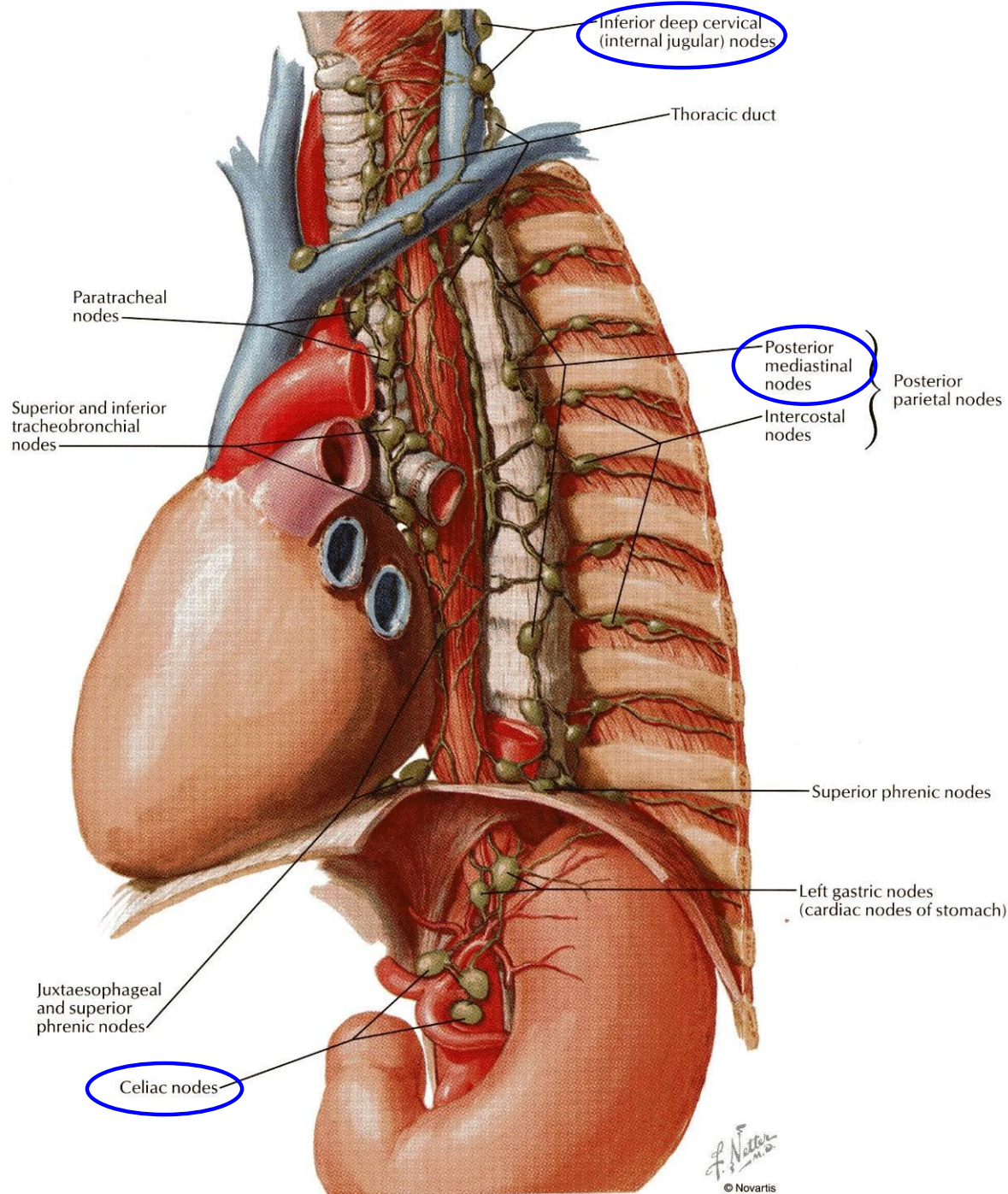
- Upper third is supplied by the **inferior thyroid artery**.
- The middle third by the **thoracic aorta**.
- The lower third by the **left gastric artery**.

VENOUS DRAINAGE

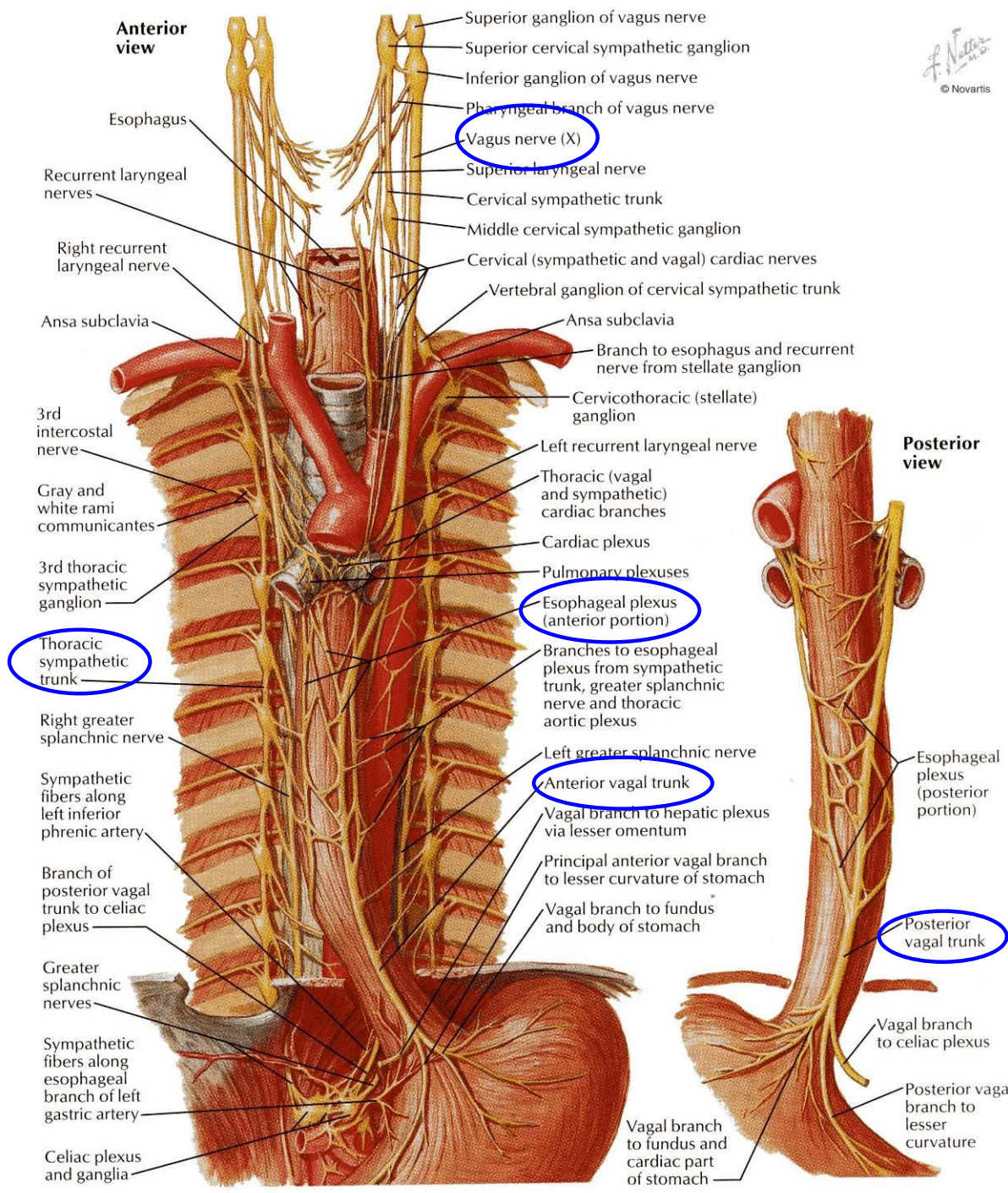


- The upper third drains in into the **inferior thyroid veins**.
- The middle third into the **azygos veins**.
- The lower third into the **left gastric vein**, which is a tributary of the **portal vein**.

LYMPH DRAINAGE



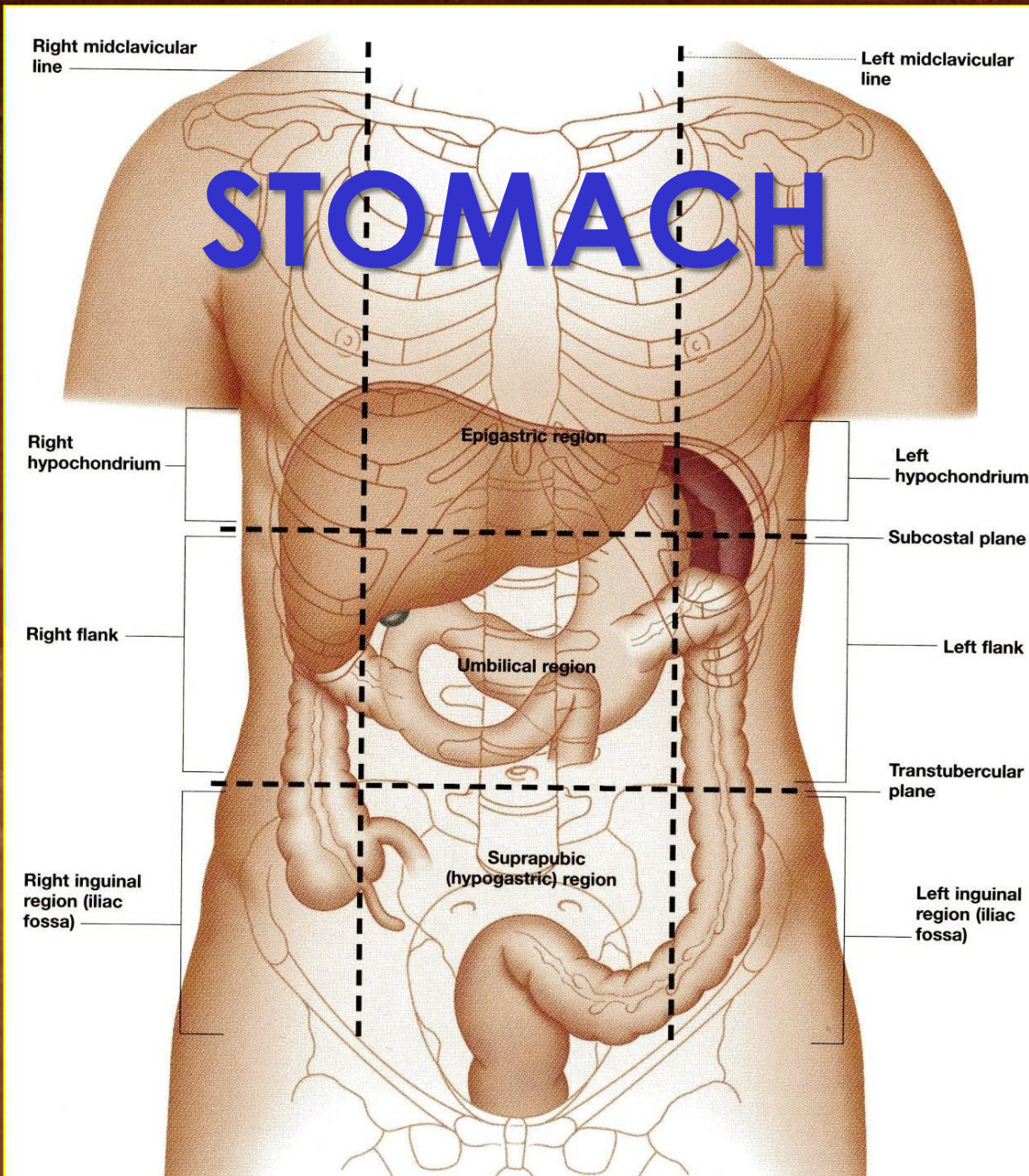
- The upper third is drained in the **deep cervical nodes**.
- The middle third is drained into the **superior and inferior mediastinal nodes**.
- The lower third is drained in the **celiac** lymph nodes in the abdomen.



NERVE SUPPLY

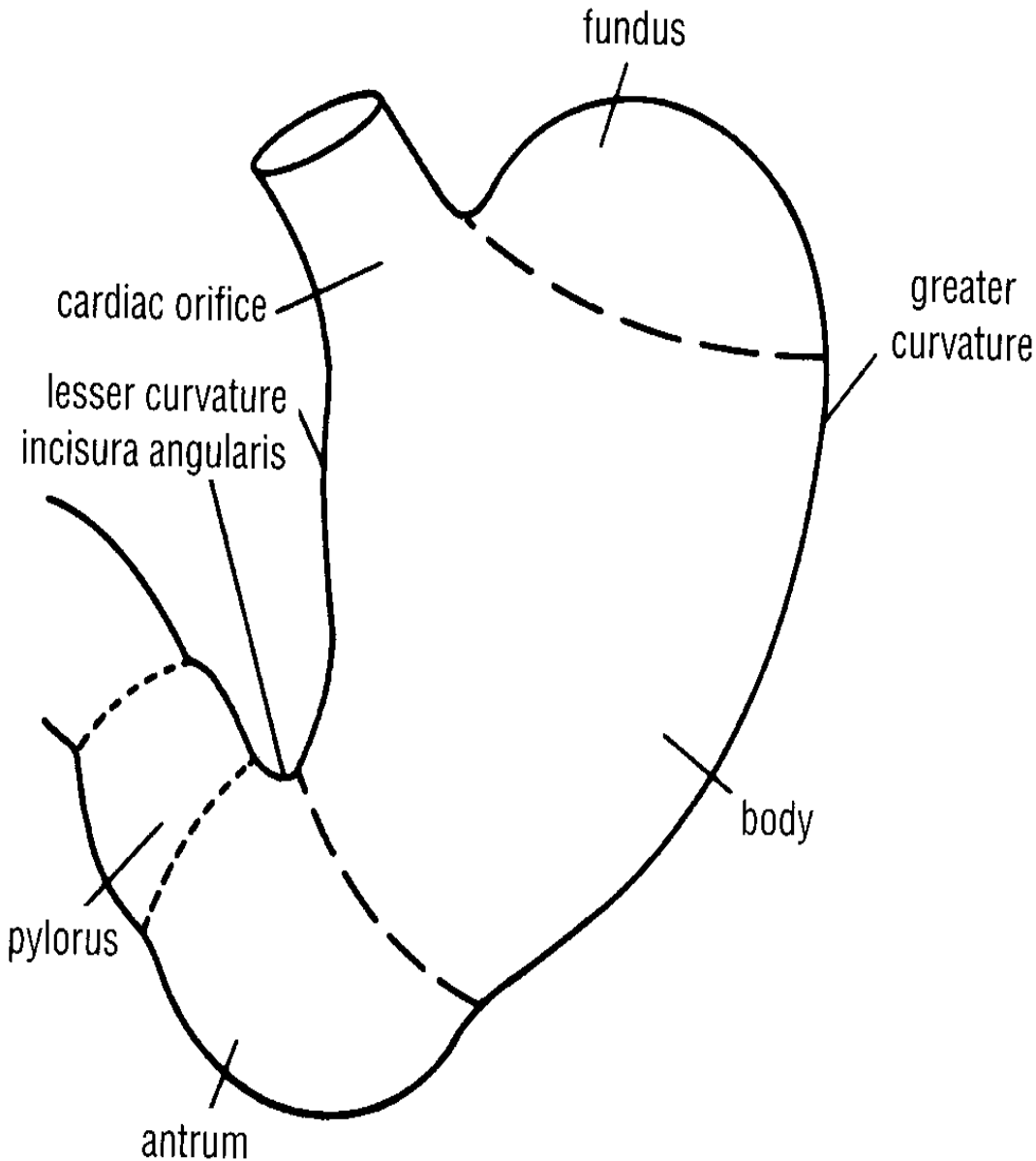
- It is supplied by sympathetic fibers from the **sympathetic trunks**.
- The parasympathetic supply comes from the **vagus nerves**.
- Inferior to the roots of the lungs, the vagus nerves join the sympathetic nerves to form the **esophageal plexus**.
- The **left** vagus lies **anterior** to the esophagus.
- The **right** vagus lies **posterior** to the esophagus.

LOCATION



- It is the most dilated part of the alimentary canal.
- It is located in the upper part of the abdomen.
- It extends from beneath the left costal region into the epigastric and umbilical regions.
- Much of the stomach is protected by the lower ribs.
- Roughly It is J-shaped.

PARTS



2 Orifices:

- Cardiac orifice.
- Pyloric orifice.

2 Borders:

- Greater curvature.
- Lesser curvature.

2 Surfaces:

- Anterior surface.
- Posterior surface.

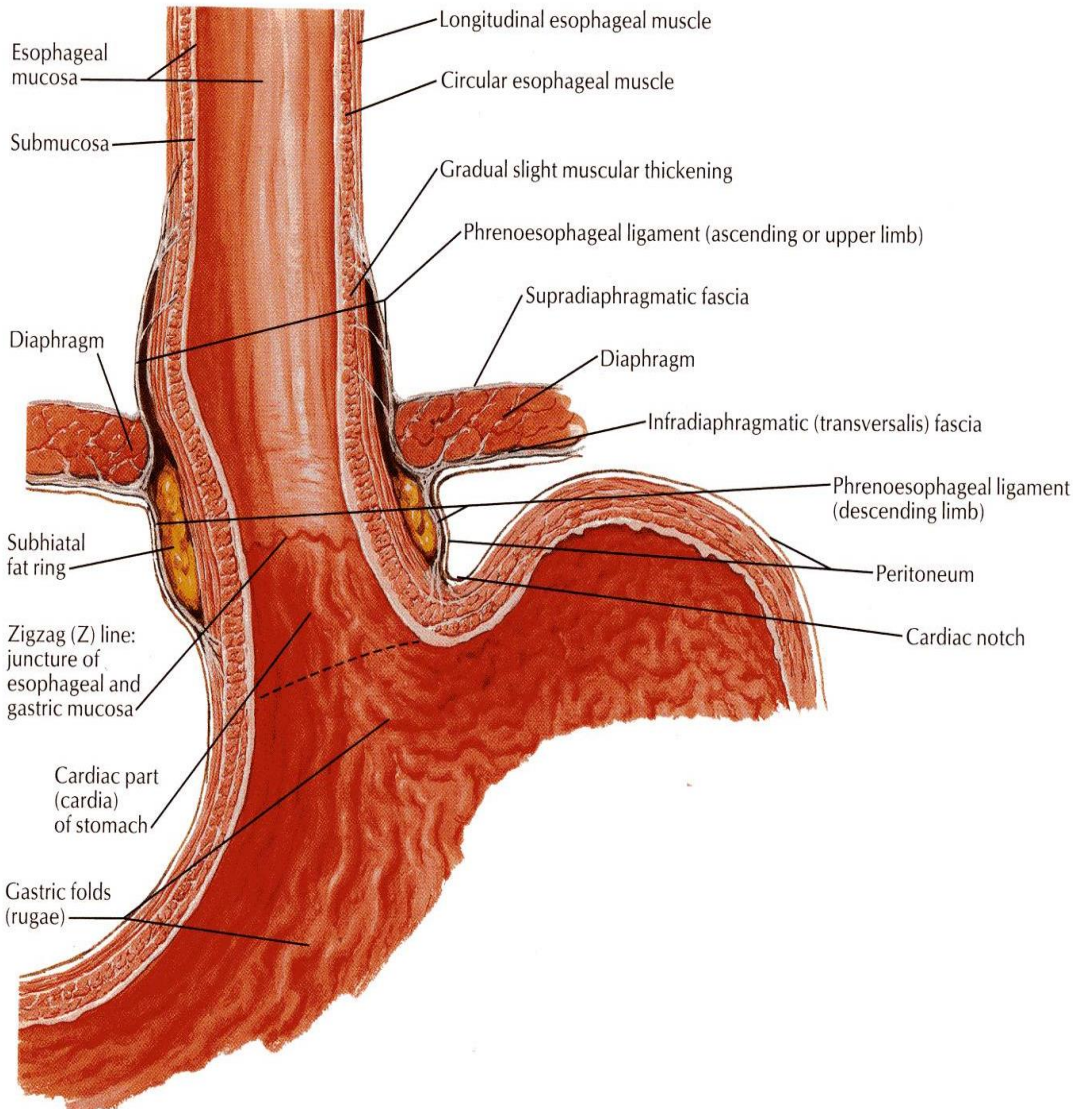
3 Parts:

- Fundus.
- Body.
- Pylorus.

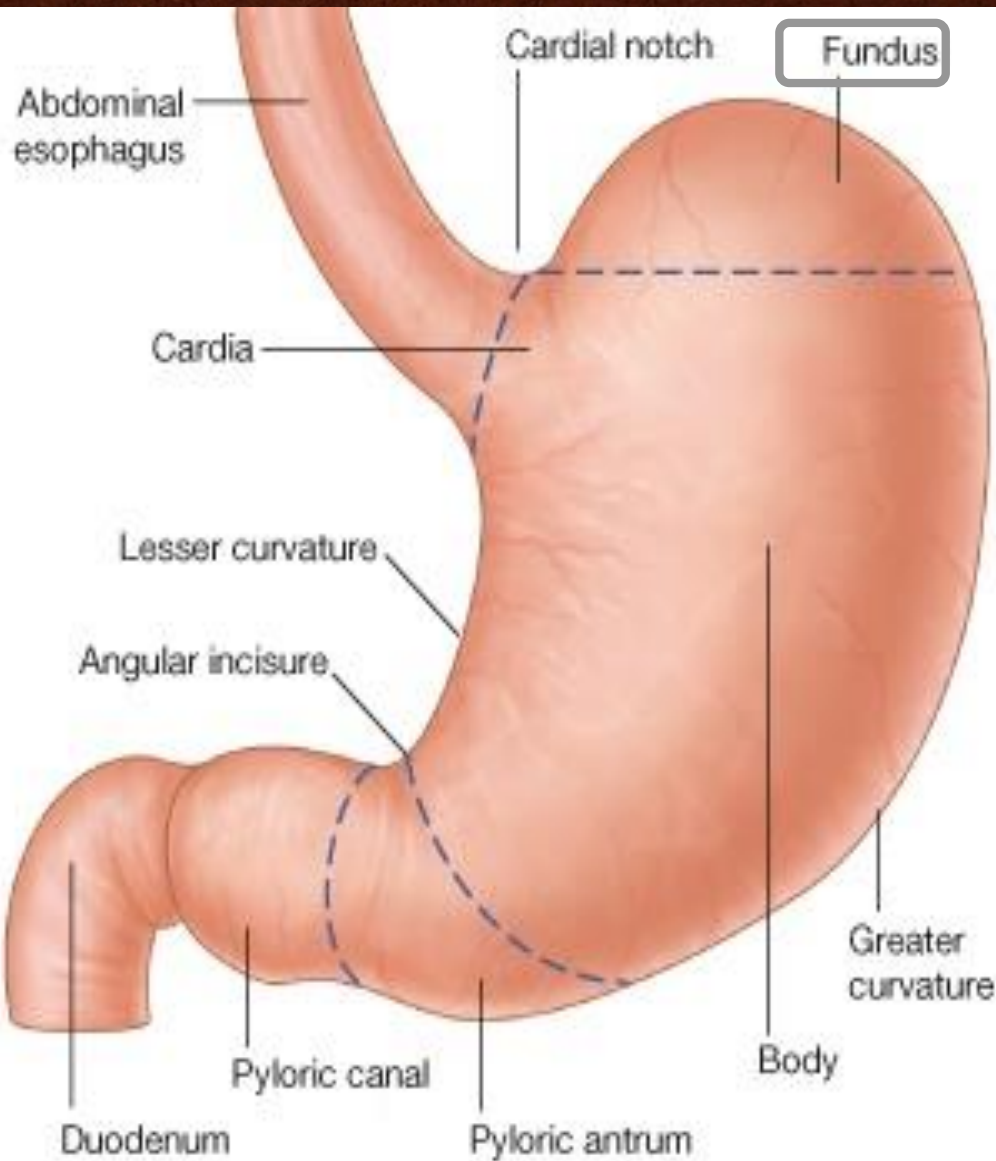
The pylorus is formed of 3 parts

- Pyloric antrum.
- Pyloric canal.
- Pyloric sphincter.¹⁸

CARDIAC ORIFICE



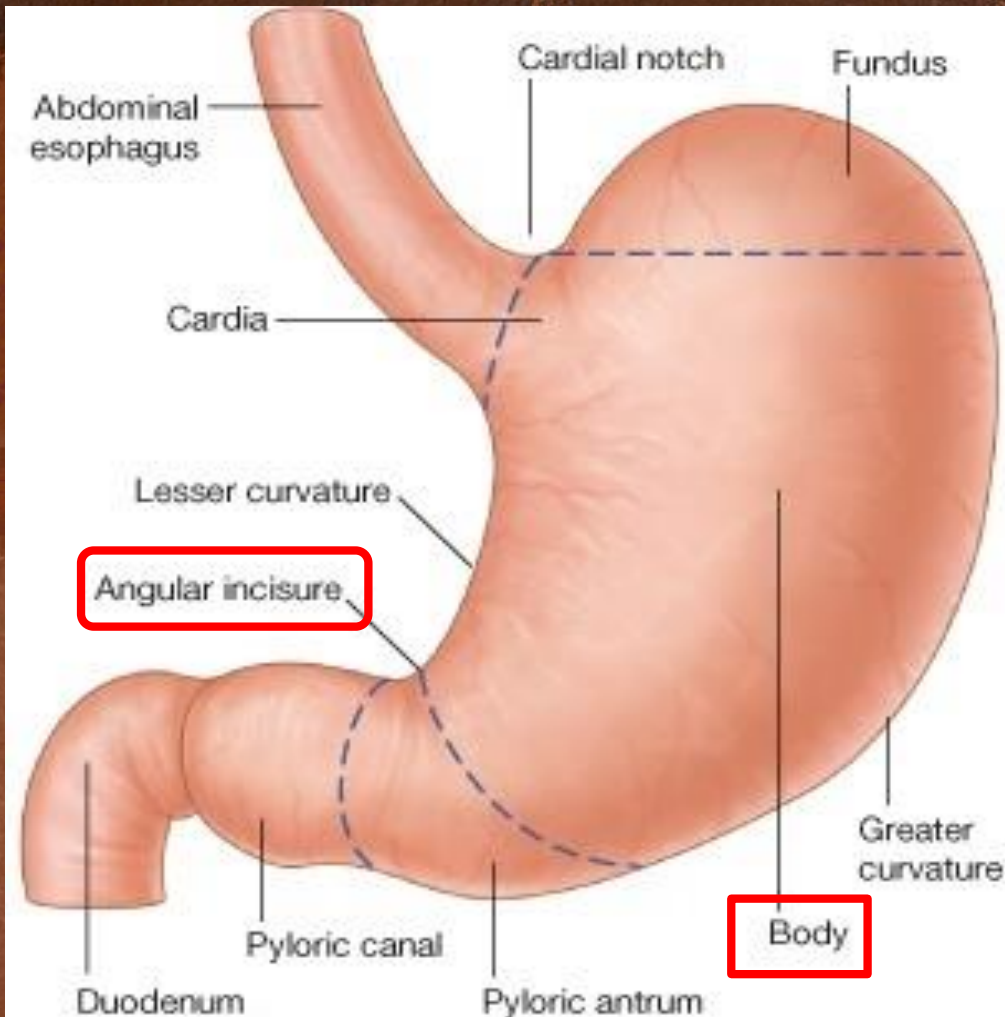
- It is the site of the **gastro- esophageal sphincter**.
- It is a physiological sphincter rather than an anatomical, sphincter.
- Consists of **circular layer** of smooth muscle (under vagal and hormonal control).
- **Function:**
- Prevents esophageal reflux (regurgitation).



FUNDUS

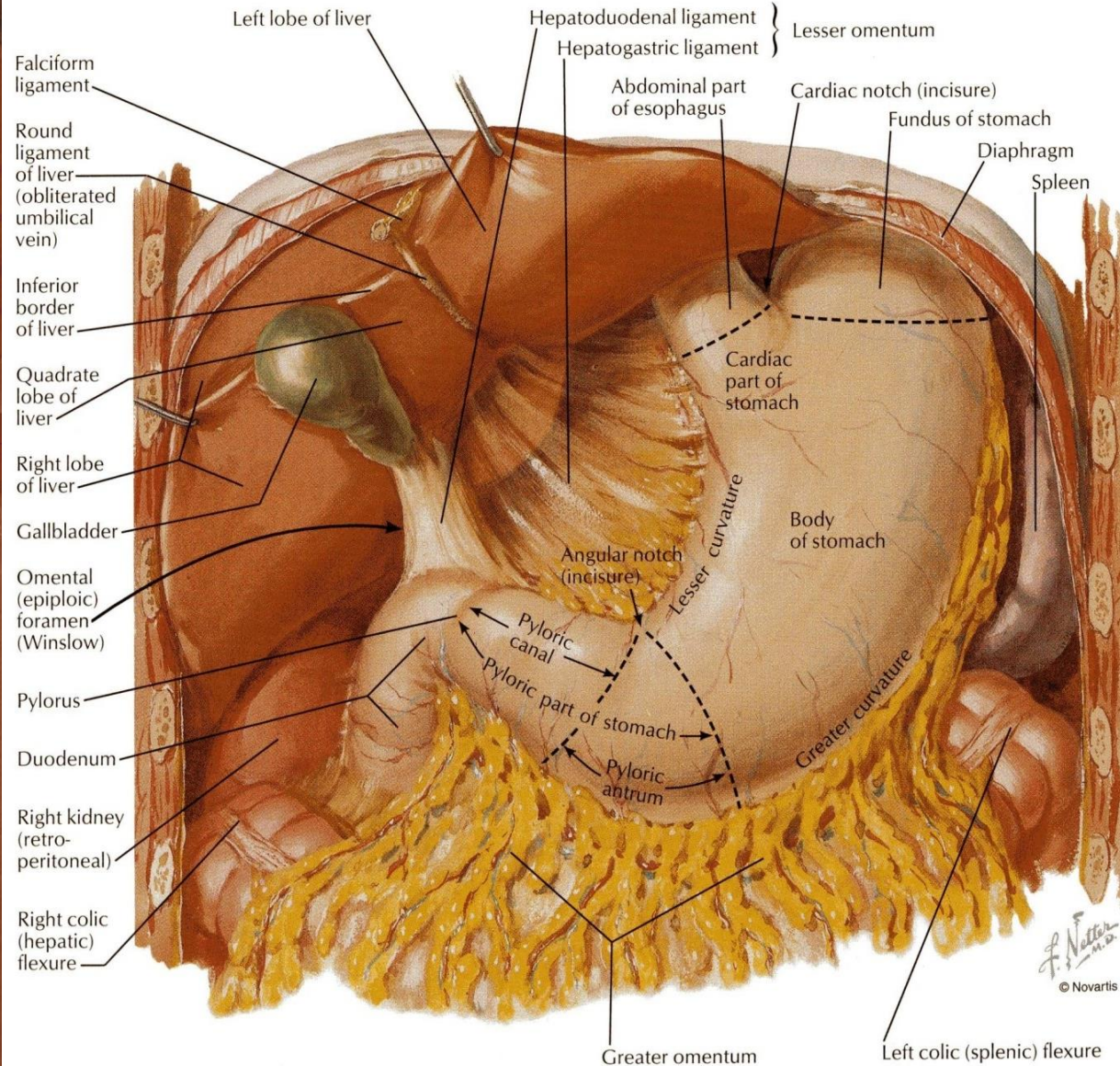
- Dome-shaped.
- Located to the left of the cardiac orifice.
- Usually full of gases.
- **It reaches to the left 5th intercostal space a little below the apex of the heart, !!!!!.**

BODY



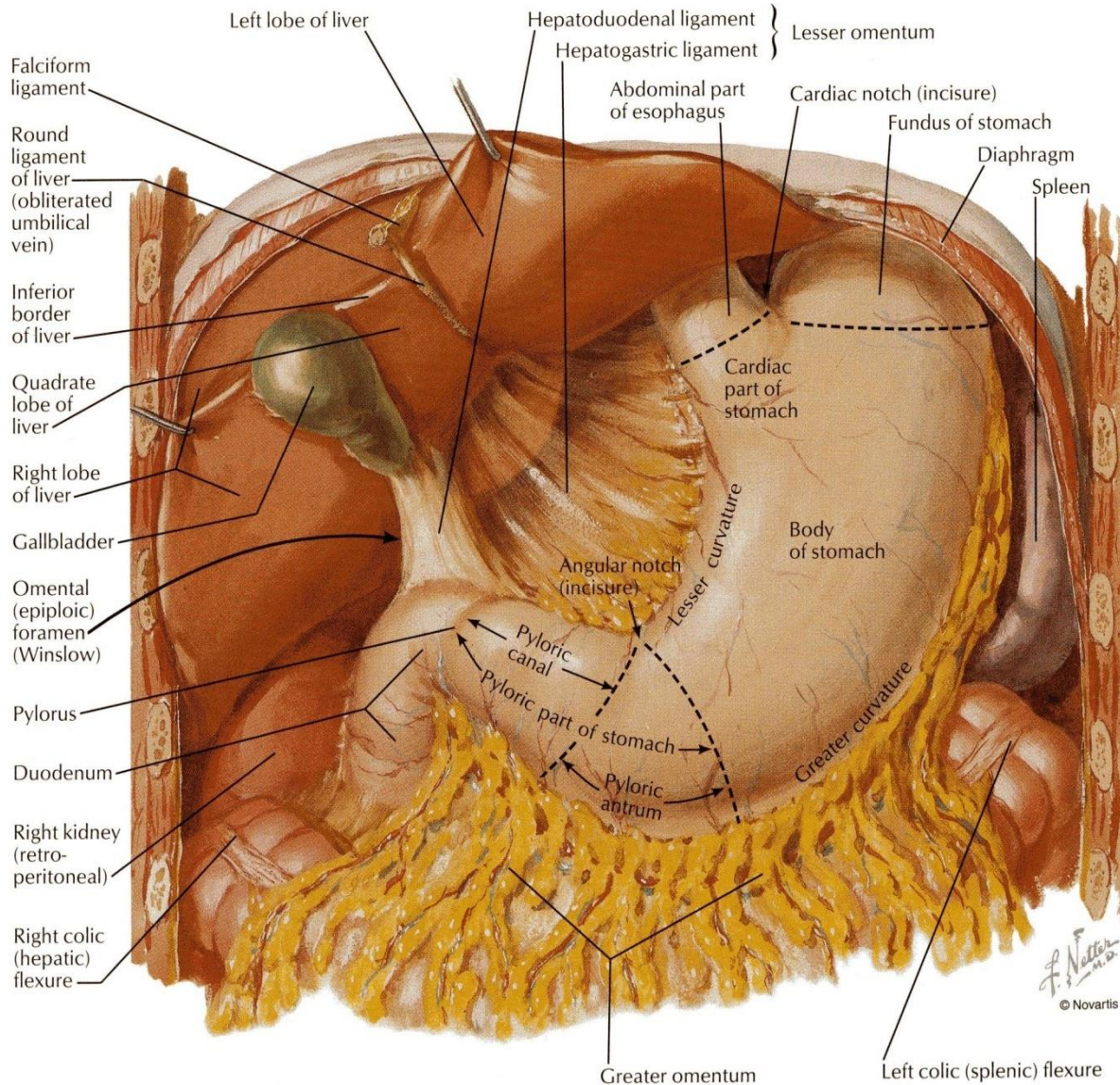
- Extends from:
 - The level of the fundus, to
 - The level of Incisura angularis.
- **What is Incisura angularis?**
- It is a constant notch on the lesser curvature, (in its lower part).

LESSER CURVATURE



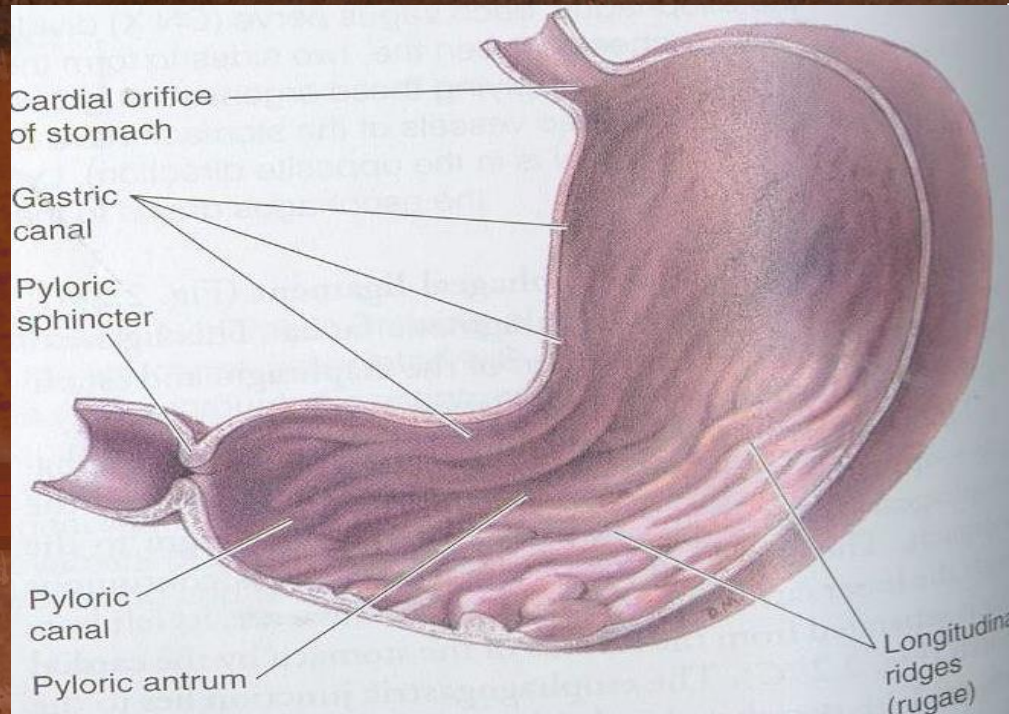
- It is the right border of the stomach.
- Extends from the cardiac orifice to the pylorus.
- Attached to the liver by the **lesser omentum**, (gastrohepatic ligament).

GREATER CURVATURE

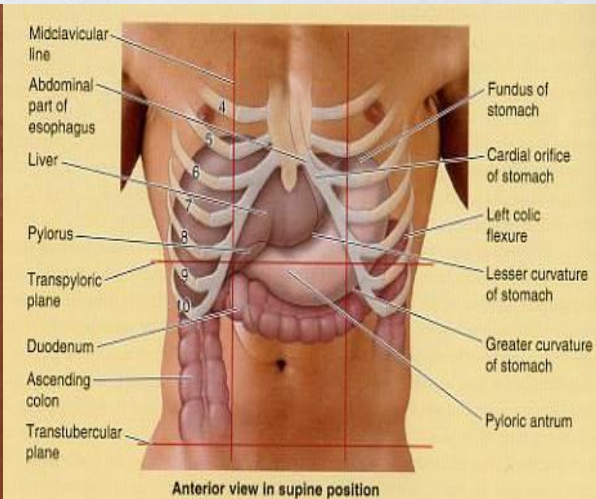


- It is the left border of the stomach.
- Extends from the cardiac orifice to the pylorus.
- Its upper part is attached to the spleen by **gastrosplenic ligament**
- Its lower part is attached to the transverse colon by the **greater omentum**.

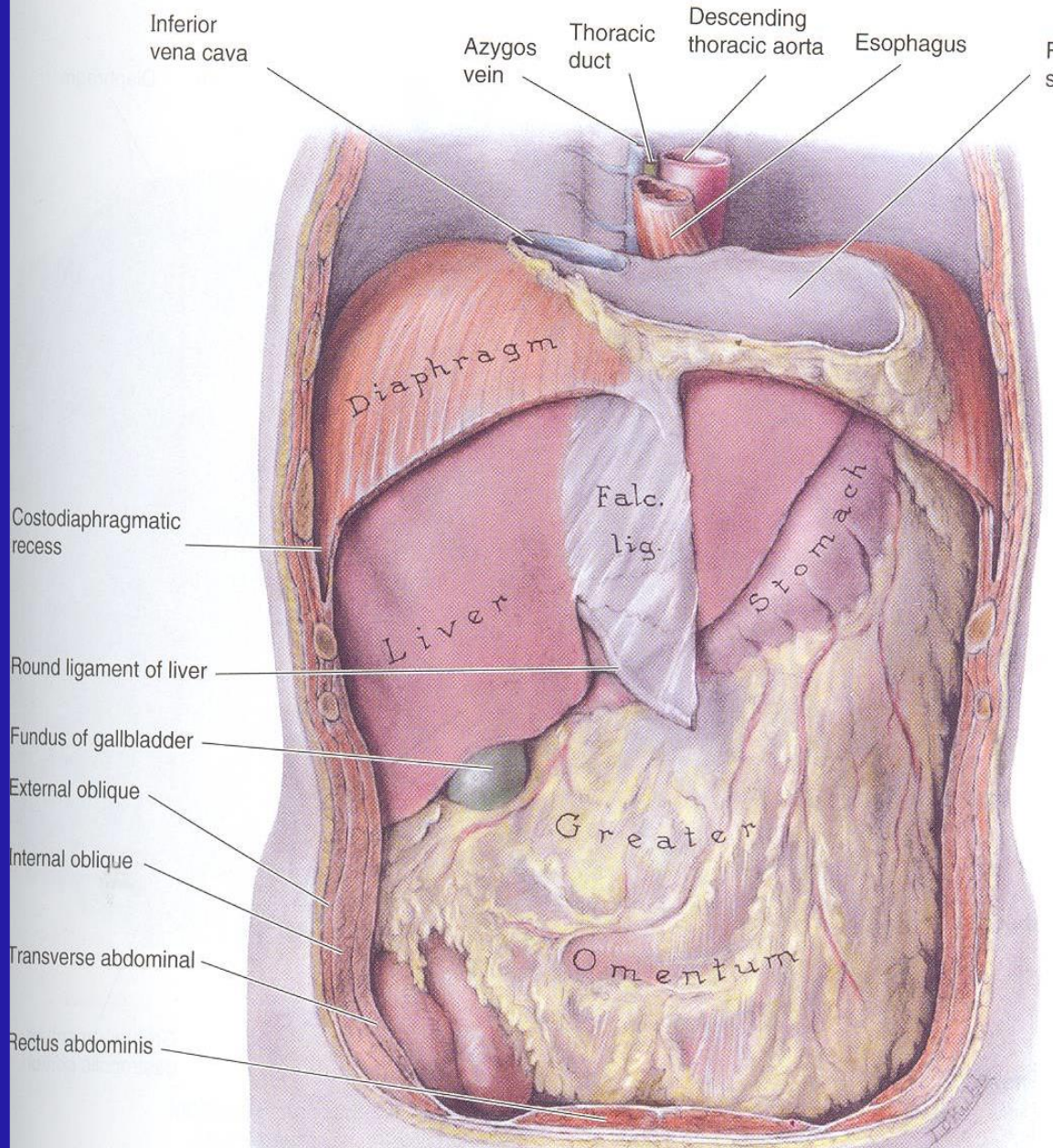
PYLORIC ANTRUM AND PYLORUS



- The **pyloric antrum** extends from Incisura angularis to the pylorus.
- The **pylorus** is a tubular part of the stomach.
- It lies in the **transpyloric plane (L1) 1 cm. to the right of the middle line.**
- It has a thick muscular end called **pyloric sphincter.**
- The cavity of the pylorus is the called the **pyloric canal.**

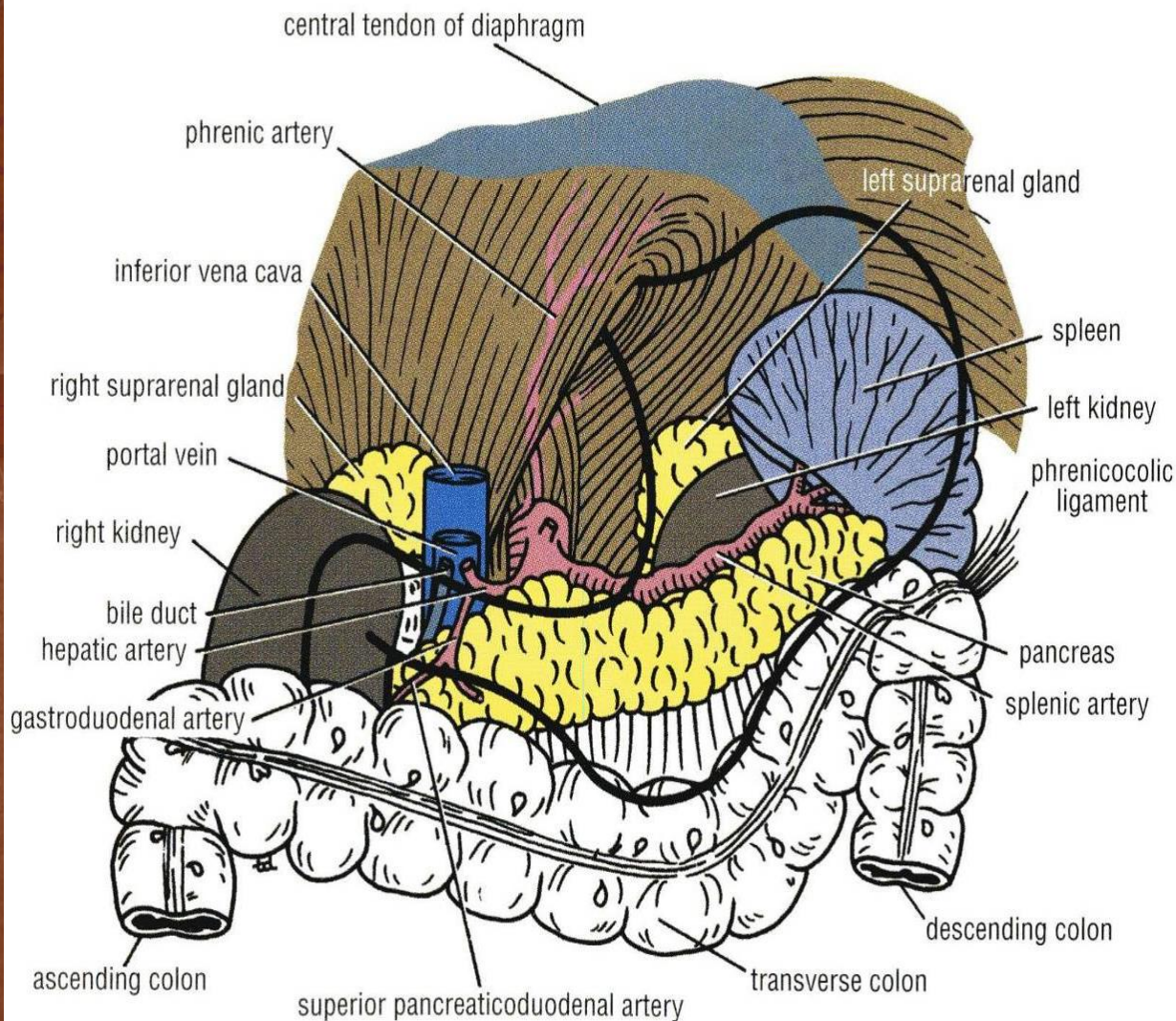


ANTERIOR RELATIONS



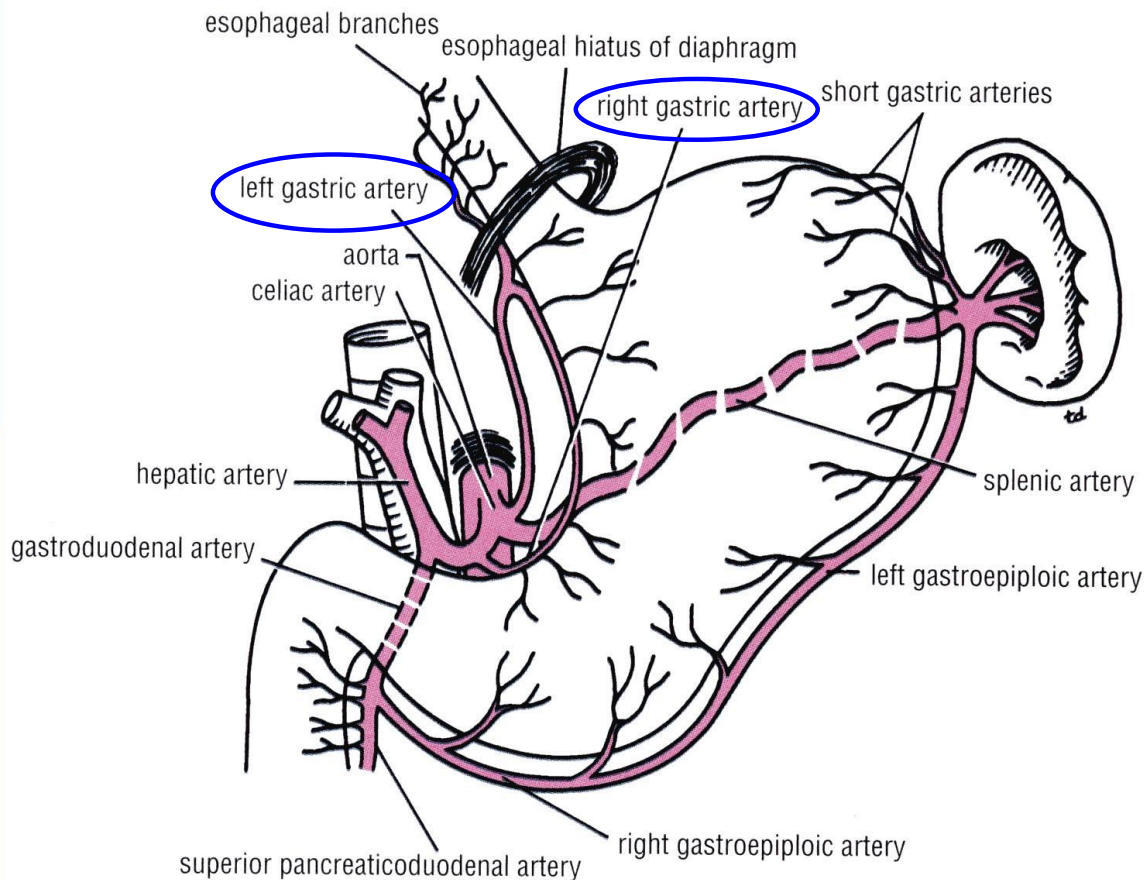
1. Anterior abdominal wall.
2. Left costal margin.
3. Base of the left pleura.
4. Base of left lung.
5. Diaphragm.
6. Left lobe of the liver.

POSTERIOR RELATIONS (Stomach bed)



- Left crus of diaphragm.
- Left suprarenal gland.
- Part of left kidney
- Spleen.
- Splenic artery.
- Pancreas.
- Transverse mesocolon.
- Transverse colon.
- Lesser sac.
- All these structures form **the stomach bed**.
- All are separated from the stomach by peritoneum of lesser sac except the **spleen by greater sac**.

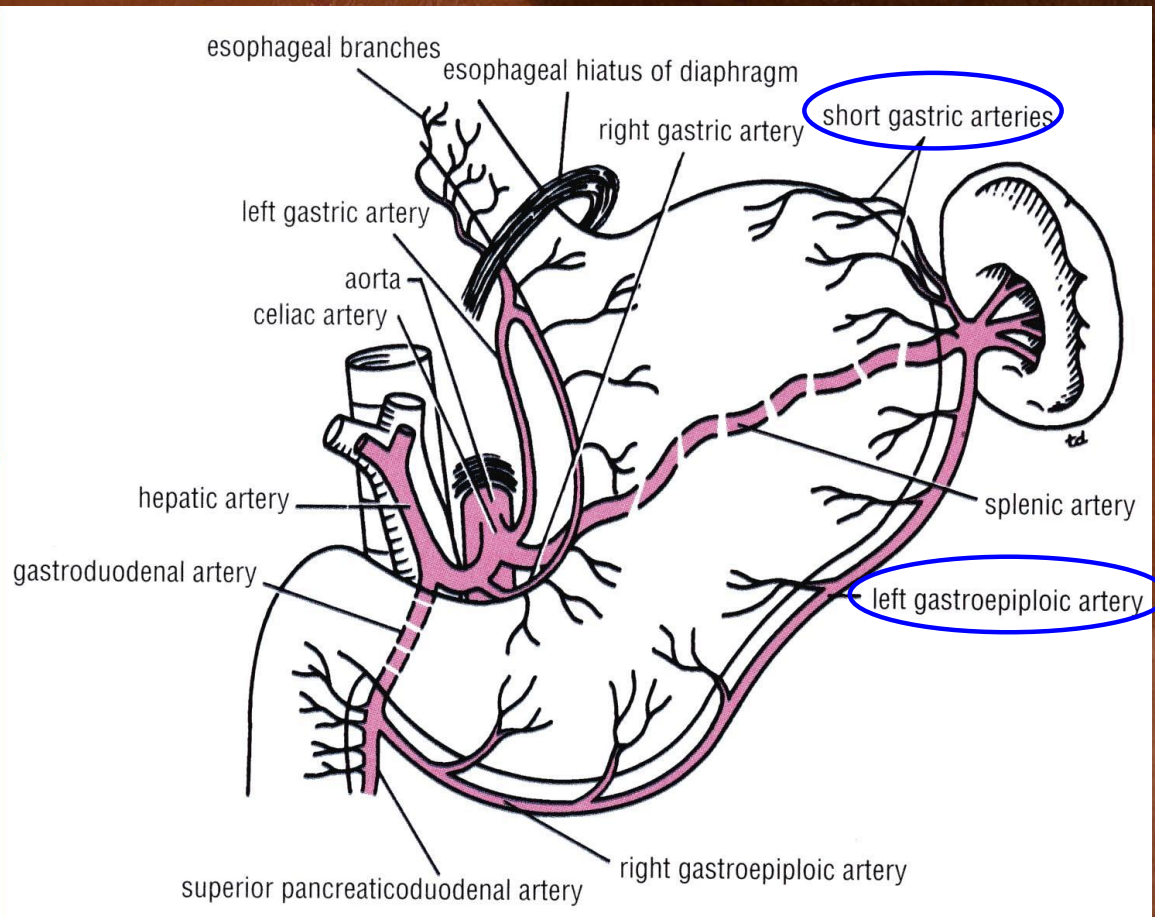
ARTERIES



- 5 arteries:

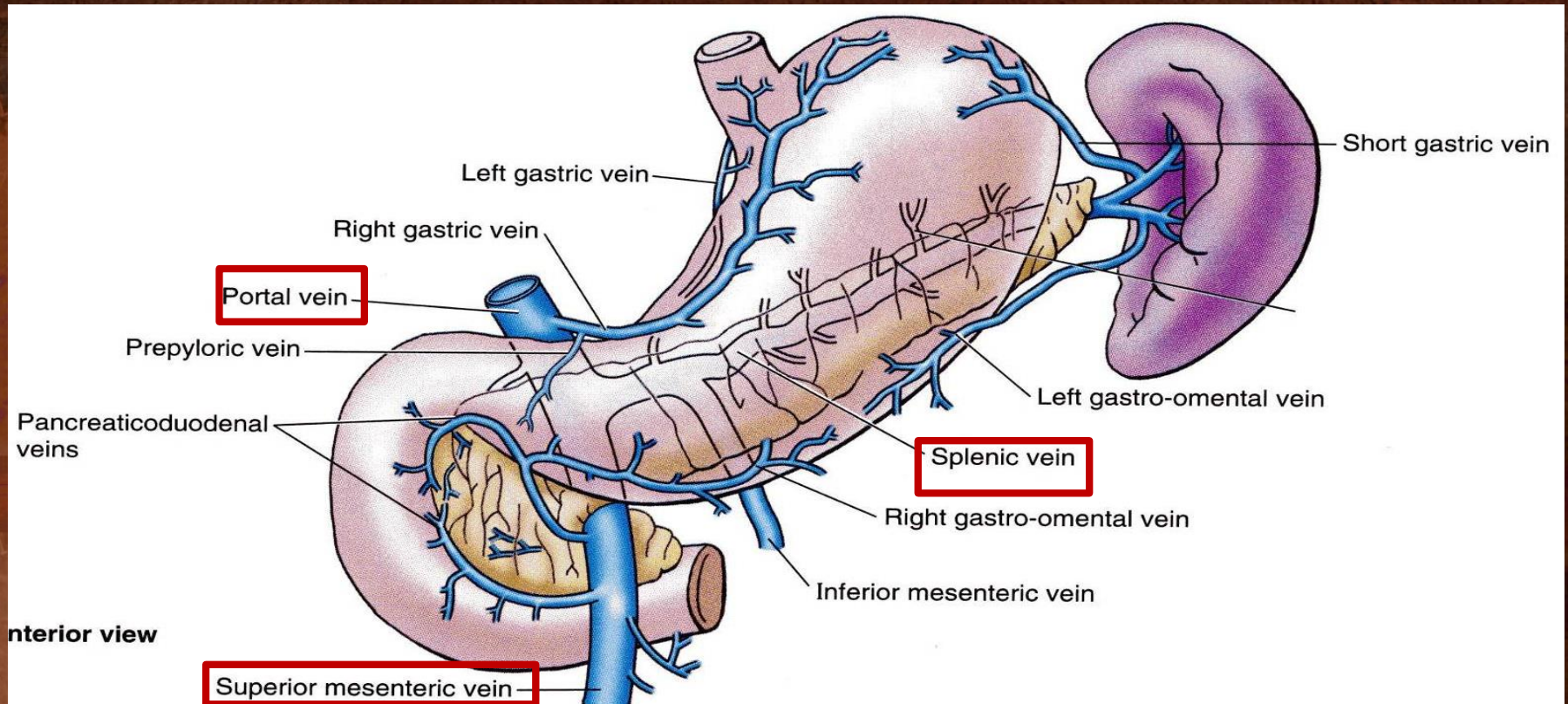
- 1- Left gastric artery:
 - It is a branch of celiac artery.
 - Runs along the lesser curvature.
- 2- Right gastric artery:
 - From the hepatic artery of celiac.
 - Runs to the left along the lesser curvature.

ARTERIES



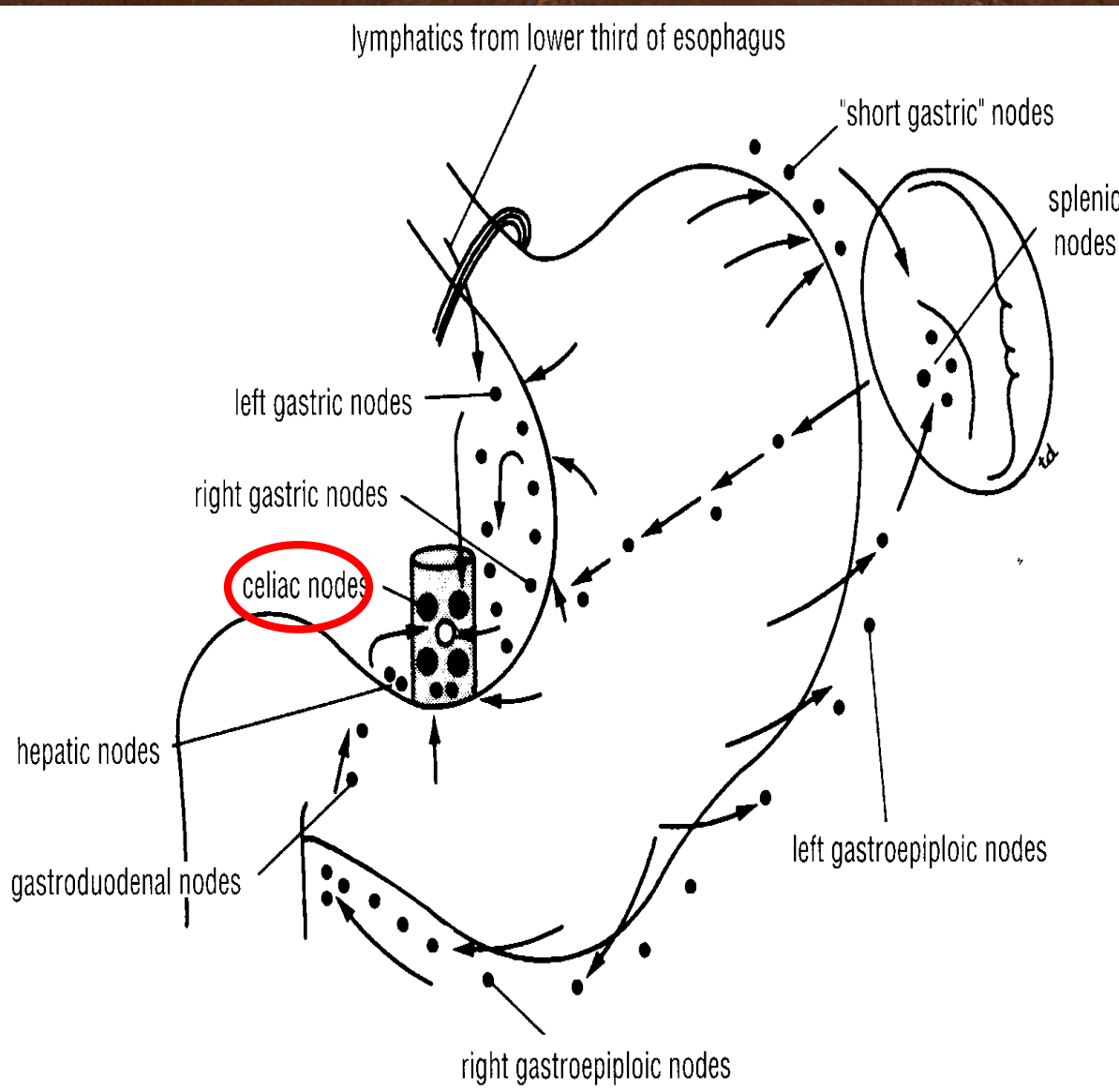
- 3- Short gastric arteries – arise from the splenic artery.
 - Pass in the **gastrosplenic ligament**.
- 4- Left gastroepiploic artery:
 - from splenic artery
 - Pass in the **gastrosplenic ligament**.
- 5- Right gastroepiploic artery:
 - from gastrooduodenal artery of hepatic .
 - Passes to the left along the greater curvature.

VEINS

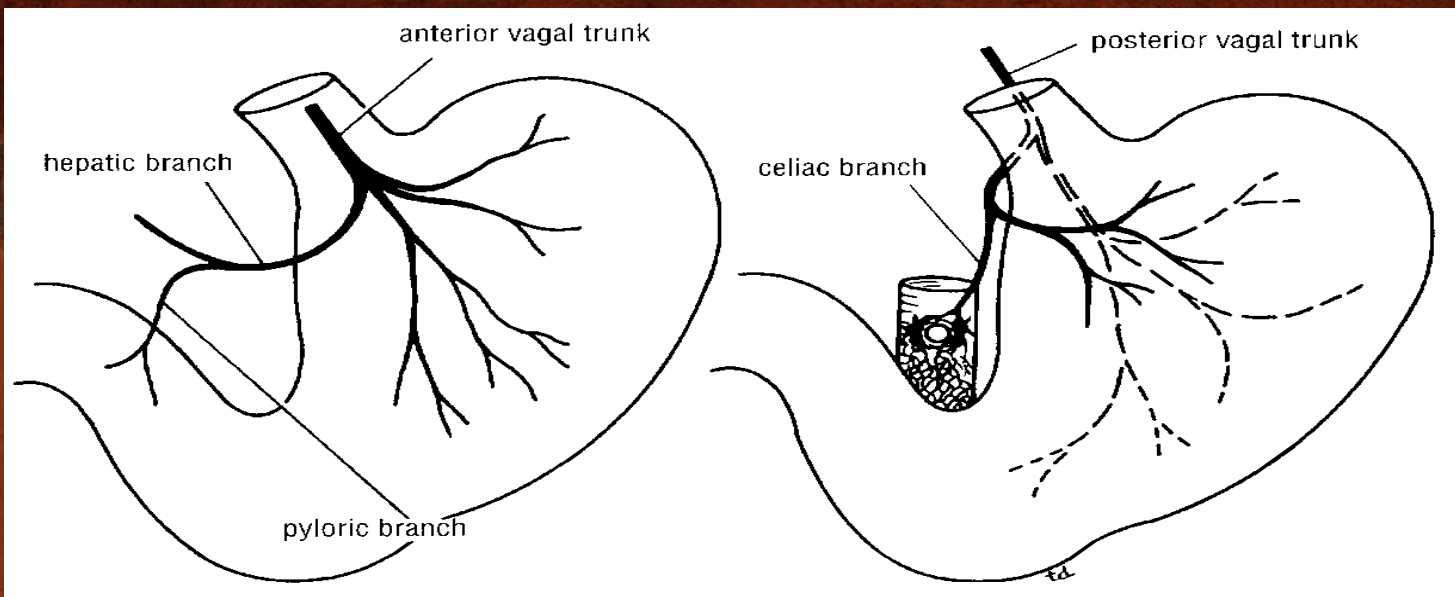


- Veins are corresponding to the arteries.
- All of them drain into the portal circulation.
- The **right** and **left gastric veins** drain directly in the **portal vein**.
- The **short gastric veins** and the **left gastroepiploic vein** join the splenic vein.
- The **right gastroepiploic vein** drain in the superior mesenteric vein.

LYMPH DRAINAGE



- The lymph vessels follow the arteries.
- They first drain to the:
 - Left and right gastric nodes.
 - Left and right gastroepiploic nodes and the
 - Short gastric nodes.
- Ultimately, all the lymph from the stomach is collected at the **celiac nodes**.



NERVE SUPPLY

- **Sympathetic fibers** are derived from the **celiac plexus**.
- **Parasympathetic fibers** from **both vagi**.
- **Anterior vagal trunk:**
 - Formed from the **left** vagus.
 - Supply the **anterior** surface of the stomach.
 - Gives off a **hepatic branch** and from it - a **branch to the pylorus**.
- **Posterior vagal trunk:**
 - Formed from the **right** vagus.
 - Supply the **posterior** surface of the stomach.
 - Gives off a large branch to the celiac and the superior mesenteric plexuses.



GOOD LUCK