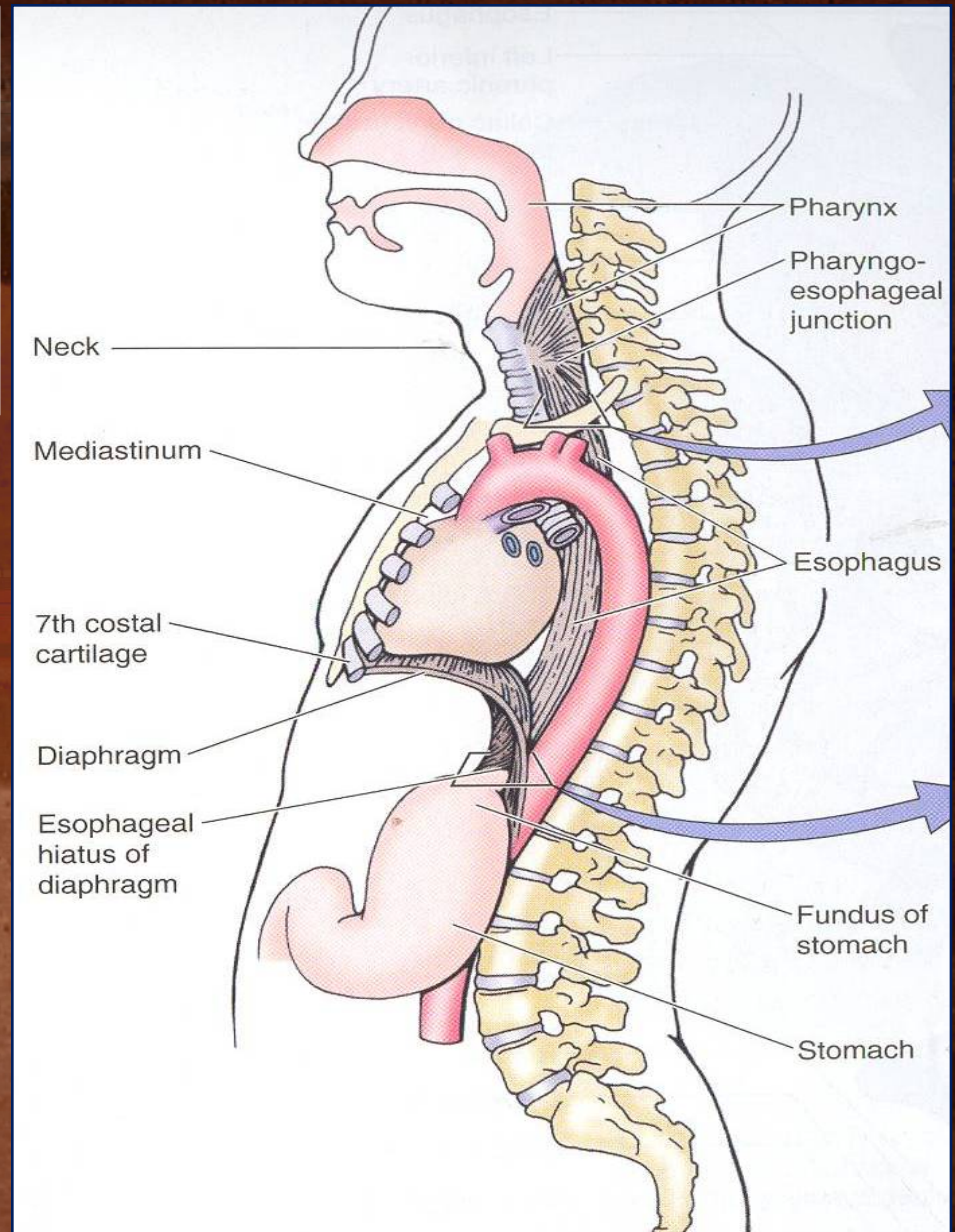


ESOPHAGUS AND STOMACH

DR JAMILA ELMEDANY

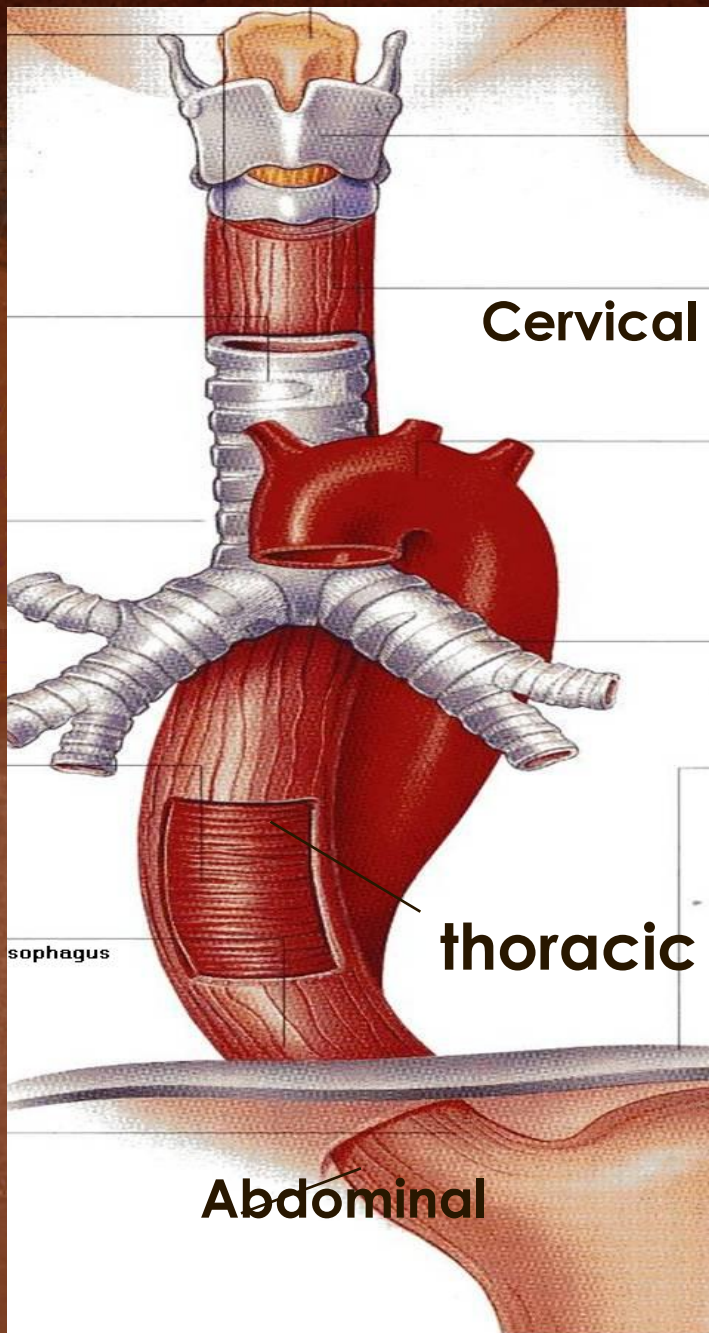


OBJECTIVES

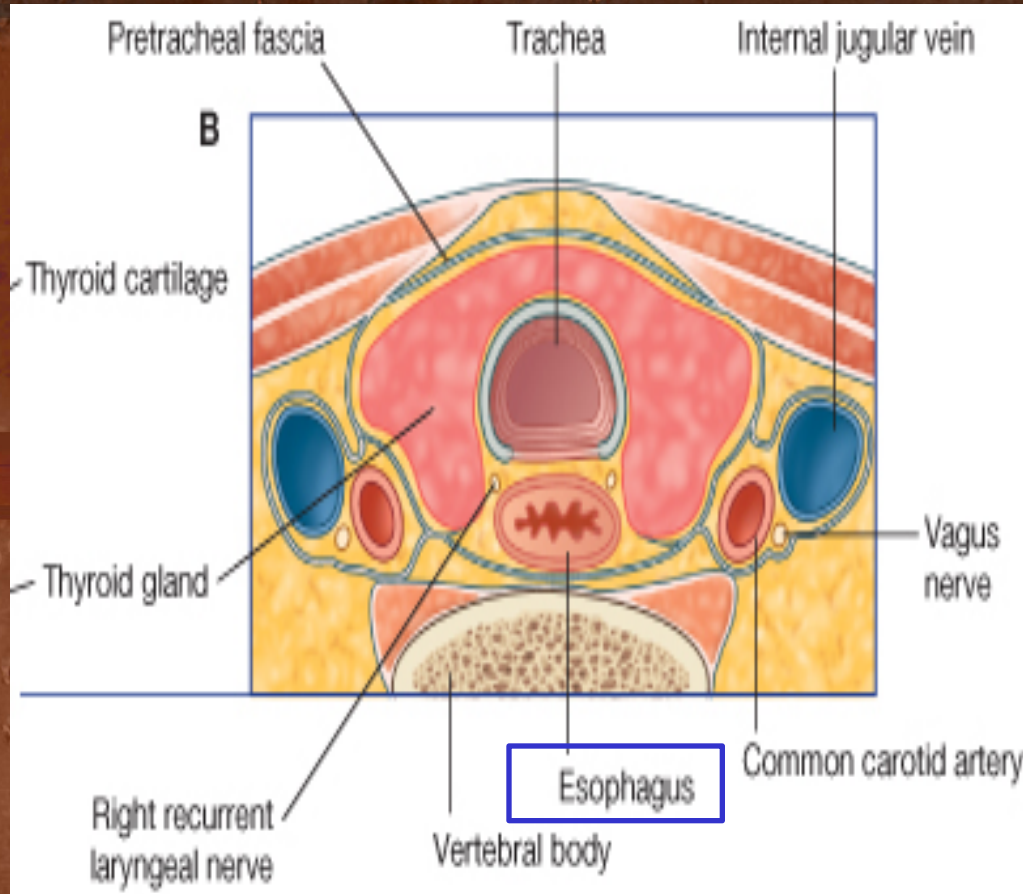
- By the end of the lecture you should be able to:
- Describe the anatomical view of the **esophagus**; extent, length, parts, strictures, relations, blood & nerve supply and lymphatic.
- Describe the anatomical view of the **stomach**; location, shape, parts, relations, blood & nerve supply and lymphatic.

ESOPHAGUS

- It is a tubular structure about 25 cm long.
- It begins as the continuation of the 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 terminates at level of 11th thoracic vertebra
- It is formed of 3 parts:
- Cervical
- Thoracic
- Abdominal

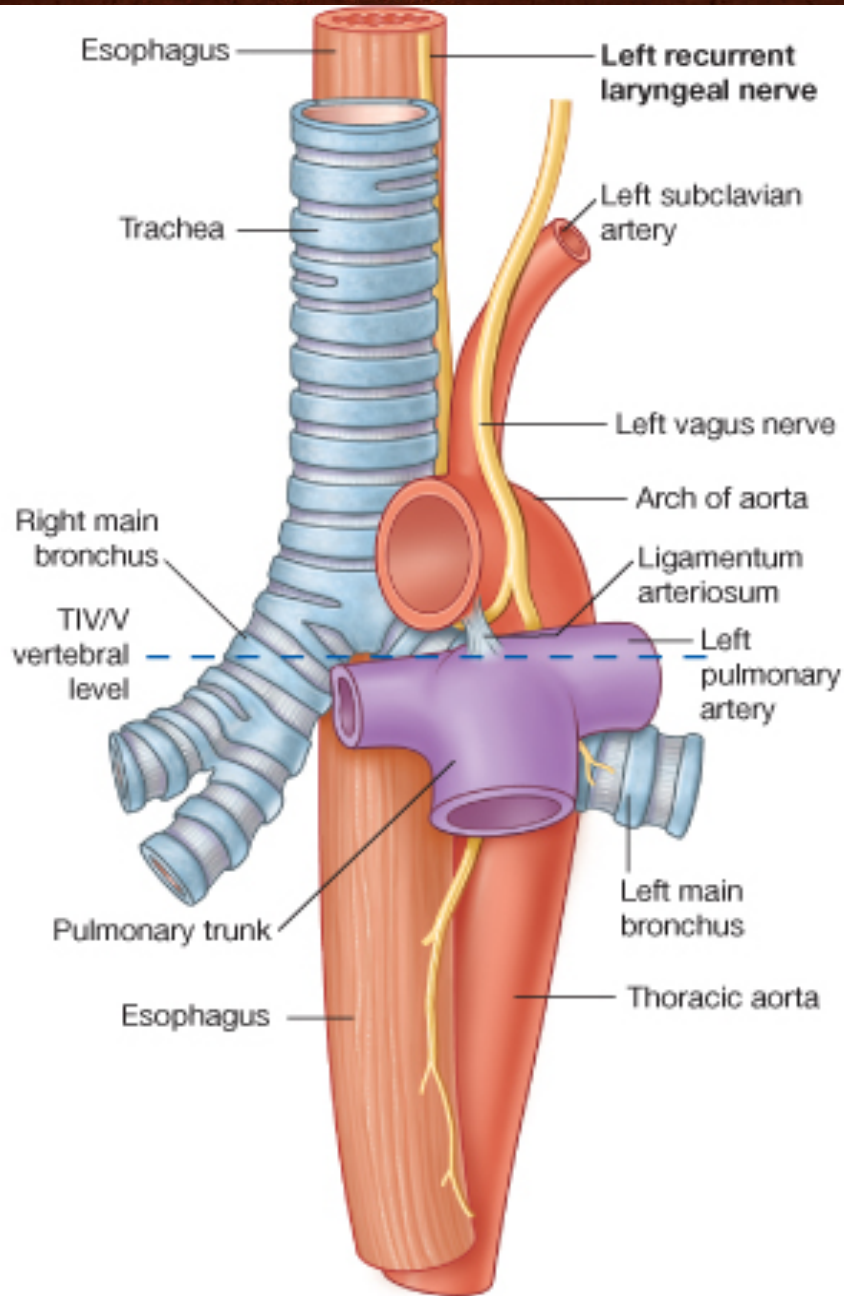


CERVICAL PART “RELATIONS”



- Posteriorly:
- **Vertebral column.**
- Laterally:
- **lobes of the thyroid gland.**
- Anteriorly:
- **Trachea and the recurrent laryngeal nerves.**

THORACIC PART



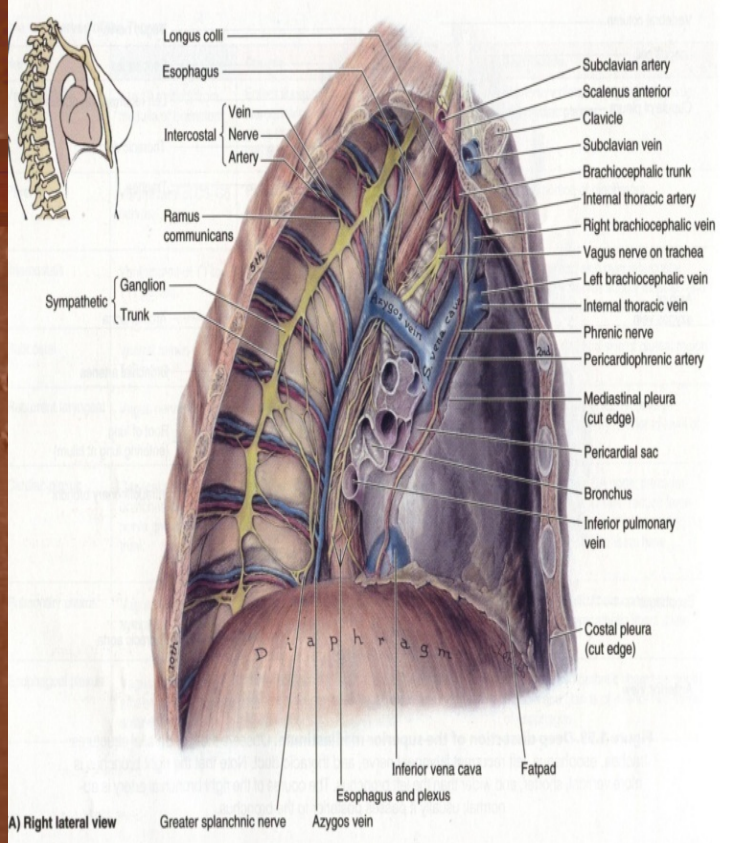
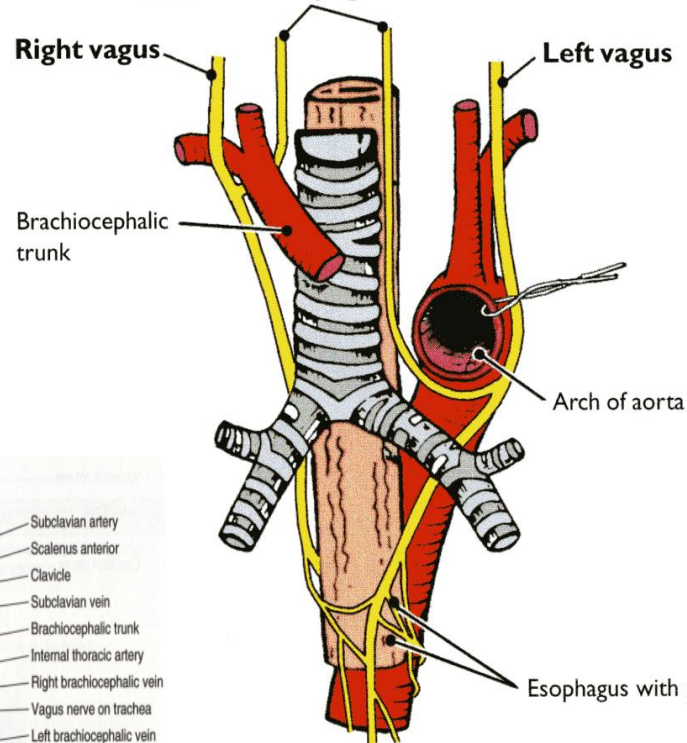
- In the thorax, it passes downward and to the **left** through superior & posterior mediastinum
- At the level of the **sternal angle**, the **aortic arch** pushes the esophagus again to **the midline**.

Thoracic part

ANTERIOR RELATIONS

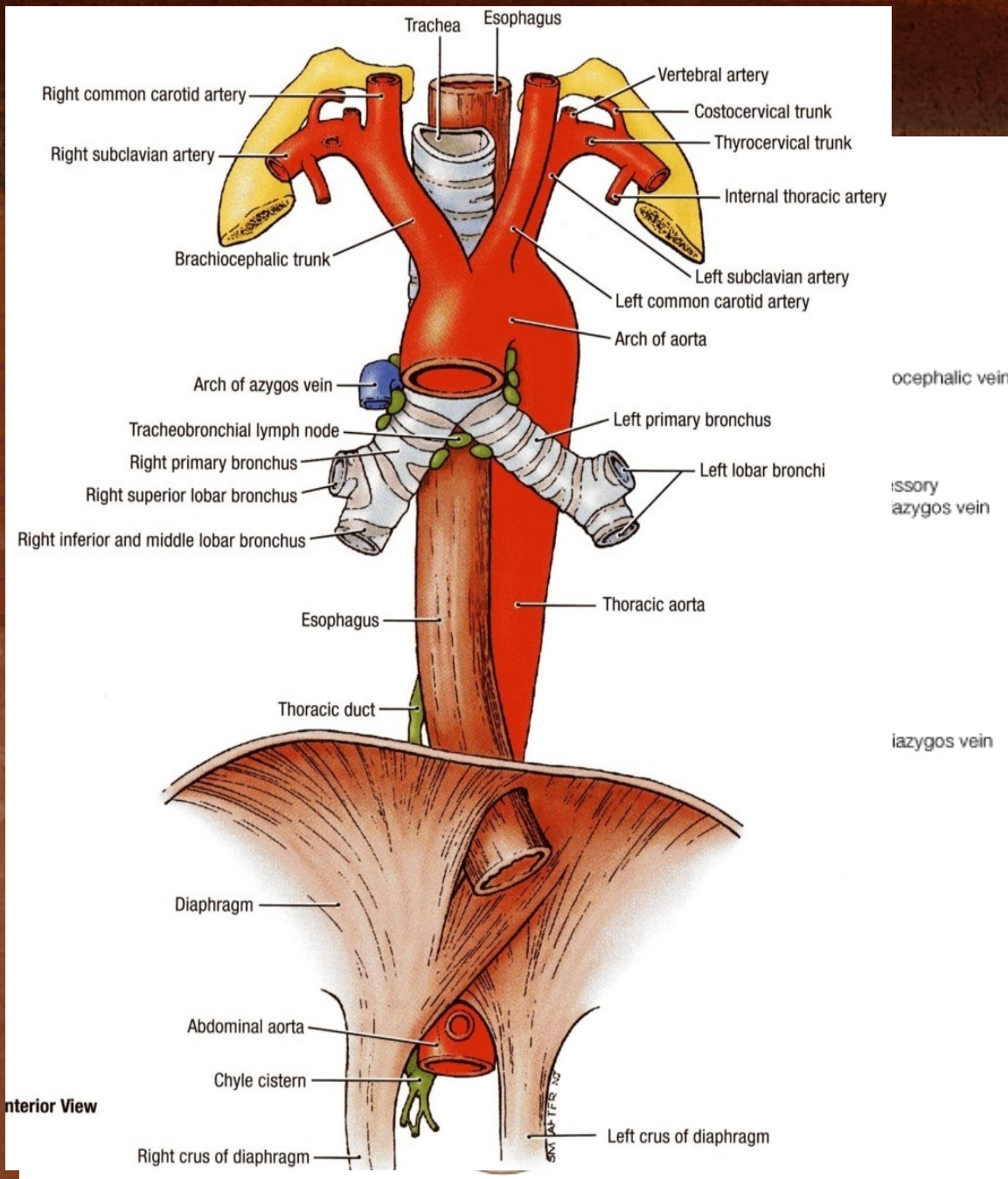
- Trachea
- **Left** recurrent laryngeal nerve
- **Left** principal bronchus
- Pericardium
- **Left** atrium

Recurrent laryngeal nerves



A) Right lateral view

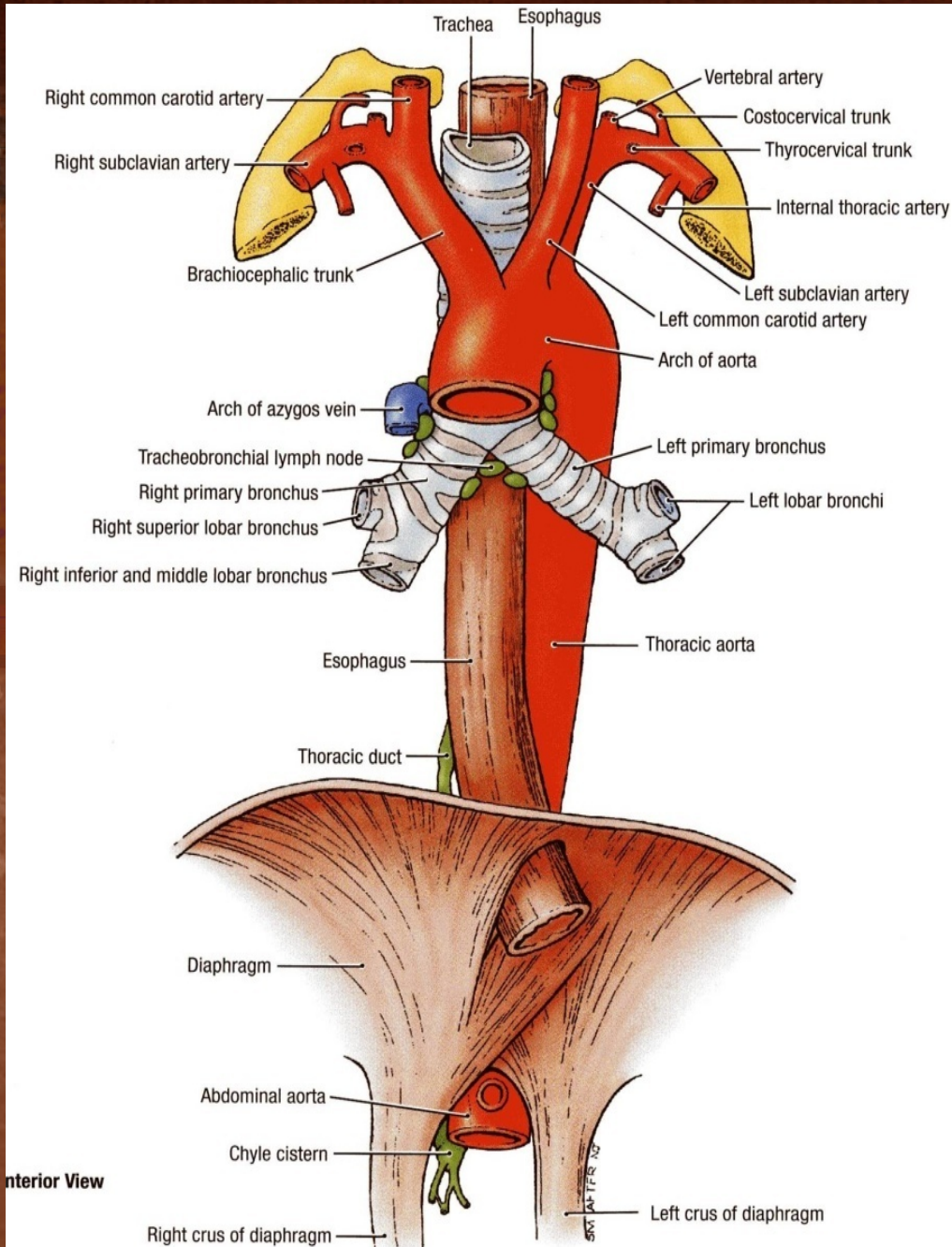
POSTERIOR RELATIONS



- Bodies of the thoracic vertebrae
- Thoracic duct
- Azygos vein
- Right posterior intercostal arteries
- Descending thoracic aorta (at the lower end)

Anterior View

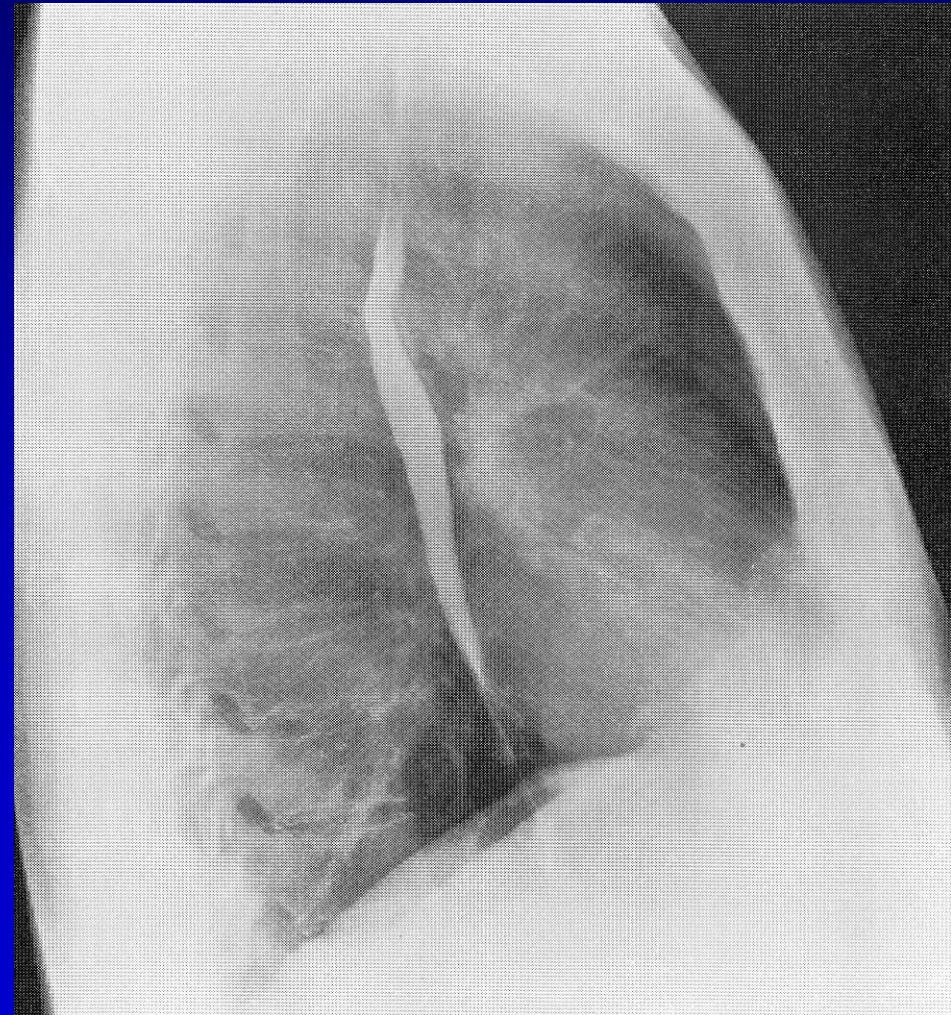
LATERAL RELATIONS

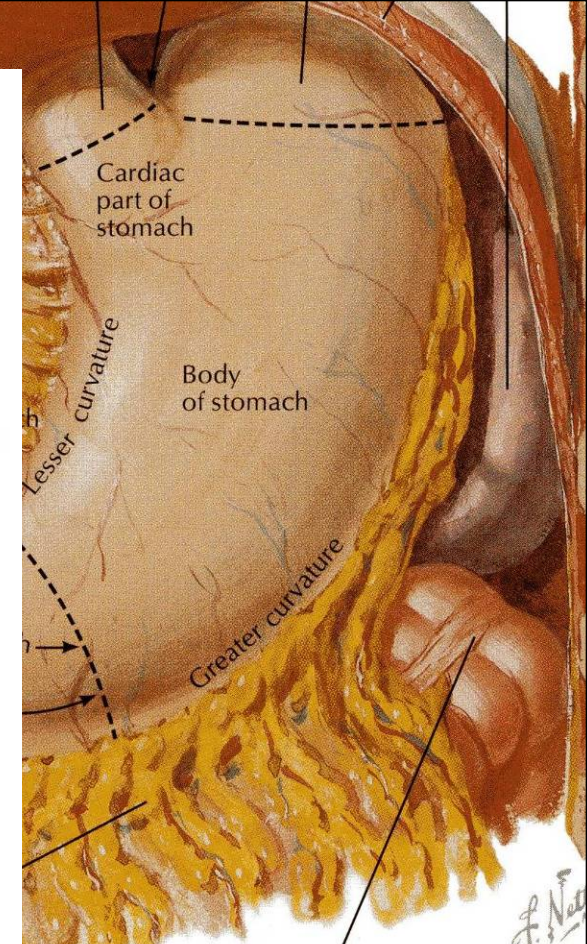
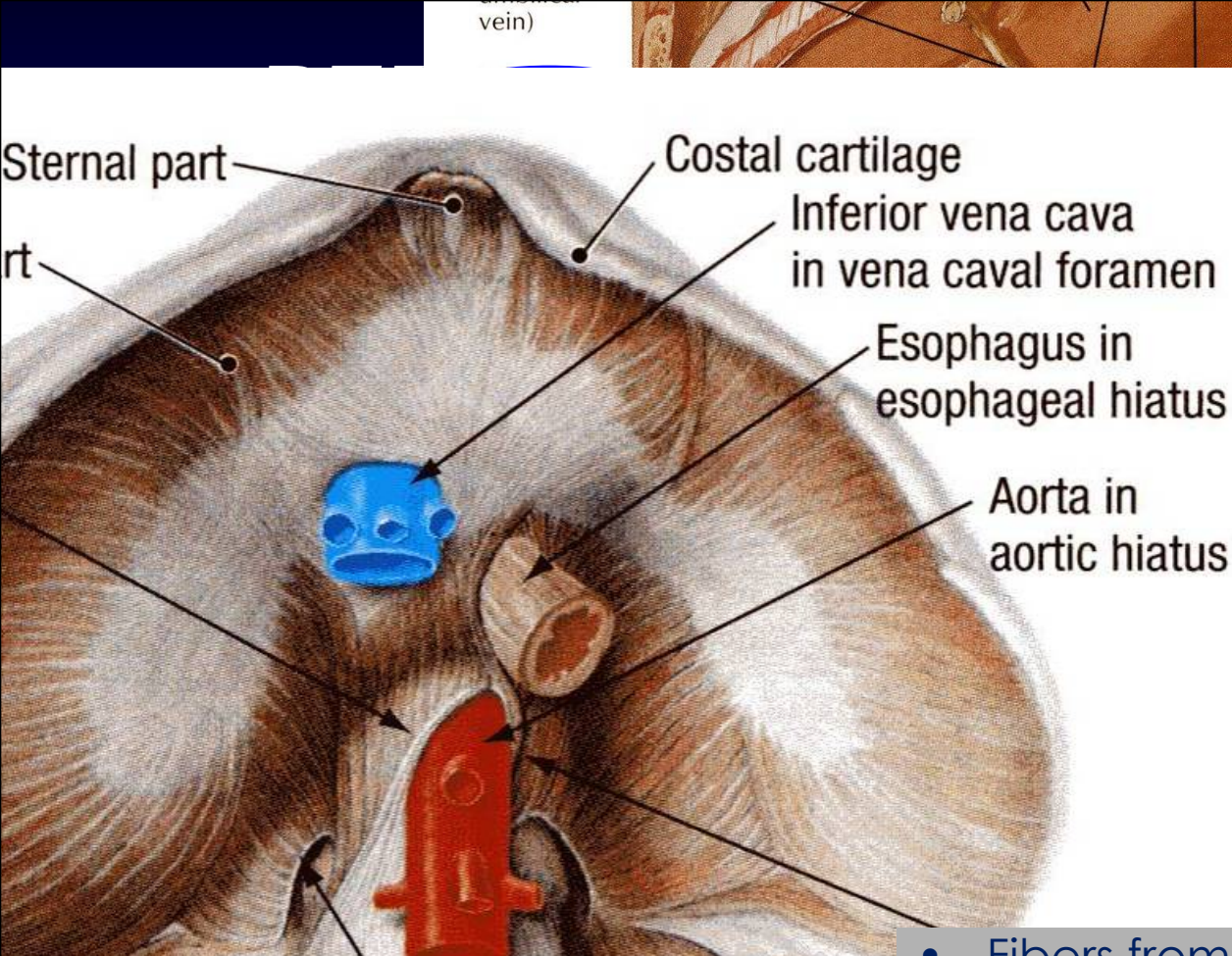


- On the Right side:
- Mediastinal pleura
- Terminal part of the azygos vein.
- On the Left side:
- Mediastinal pleura.
- Left subclavian artery.
- Aortic arch.
- Thoracic duct.

ESOPHAGUS AND **LEFT ATRIUM** OF THE HEART

- There is a close relationship 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.



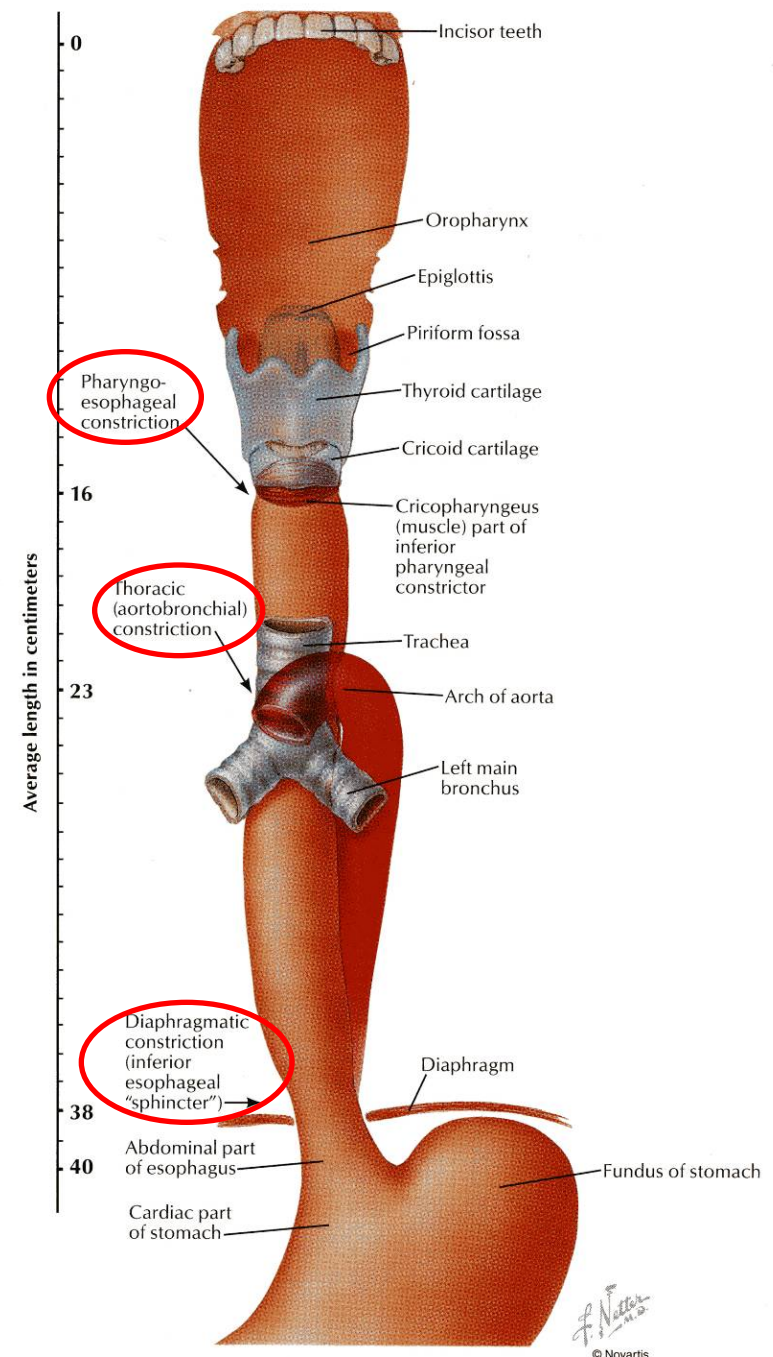


- In the abdomen, the esophagus descends for 1.3 cm and joins the stomach.
- Anteriorly, it is related to the **left lobe** of the liver.
- Posteriorly, it is related to the **left crus** of the diaphragm.

- 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.

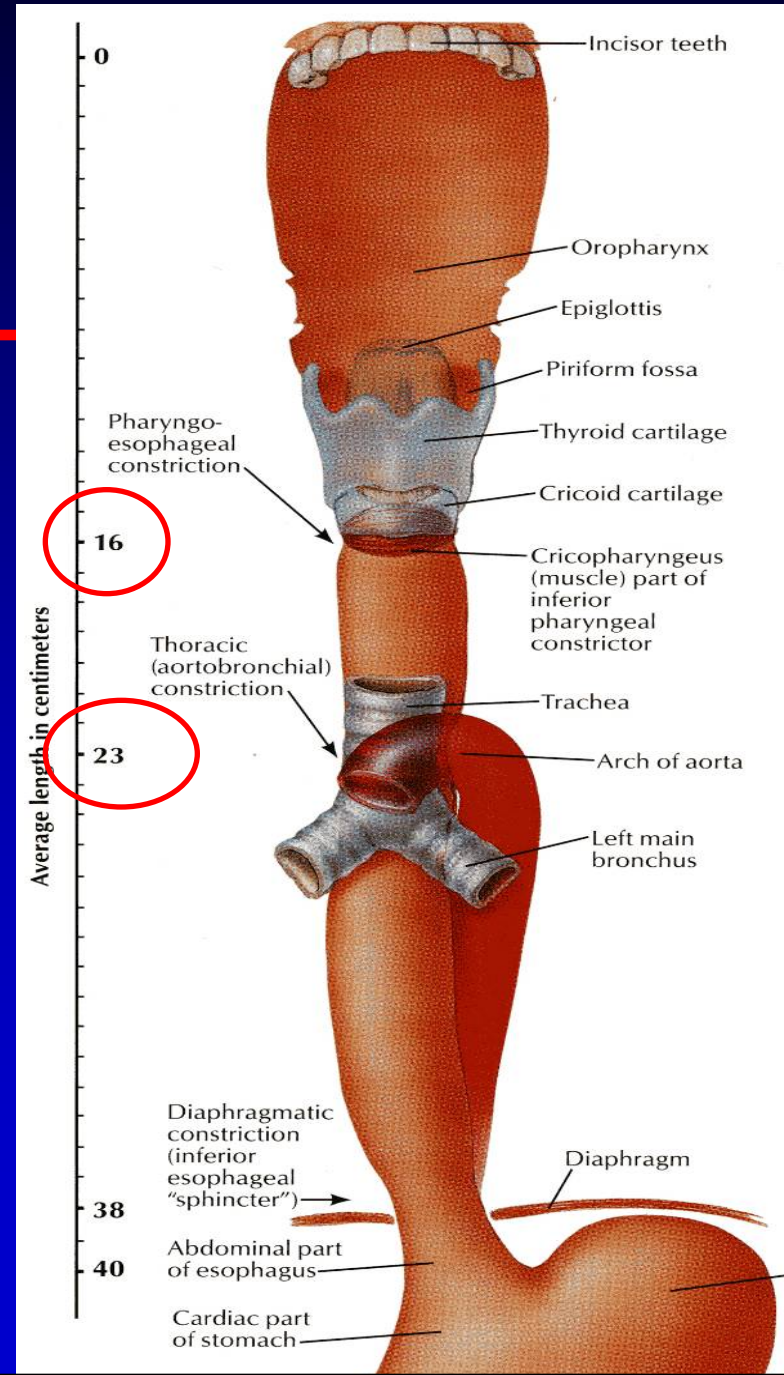
ESOPHAGEAL CONSTRICTIONS

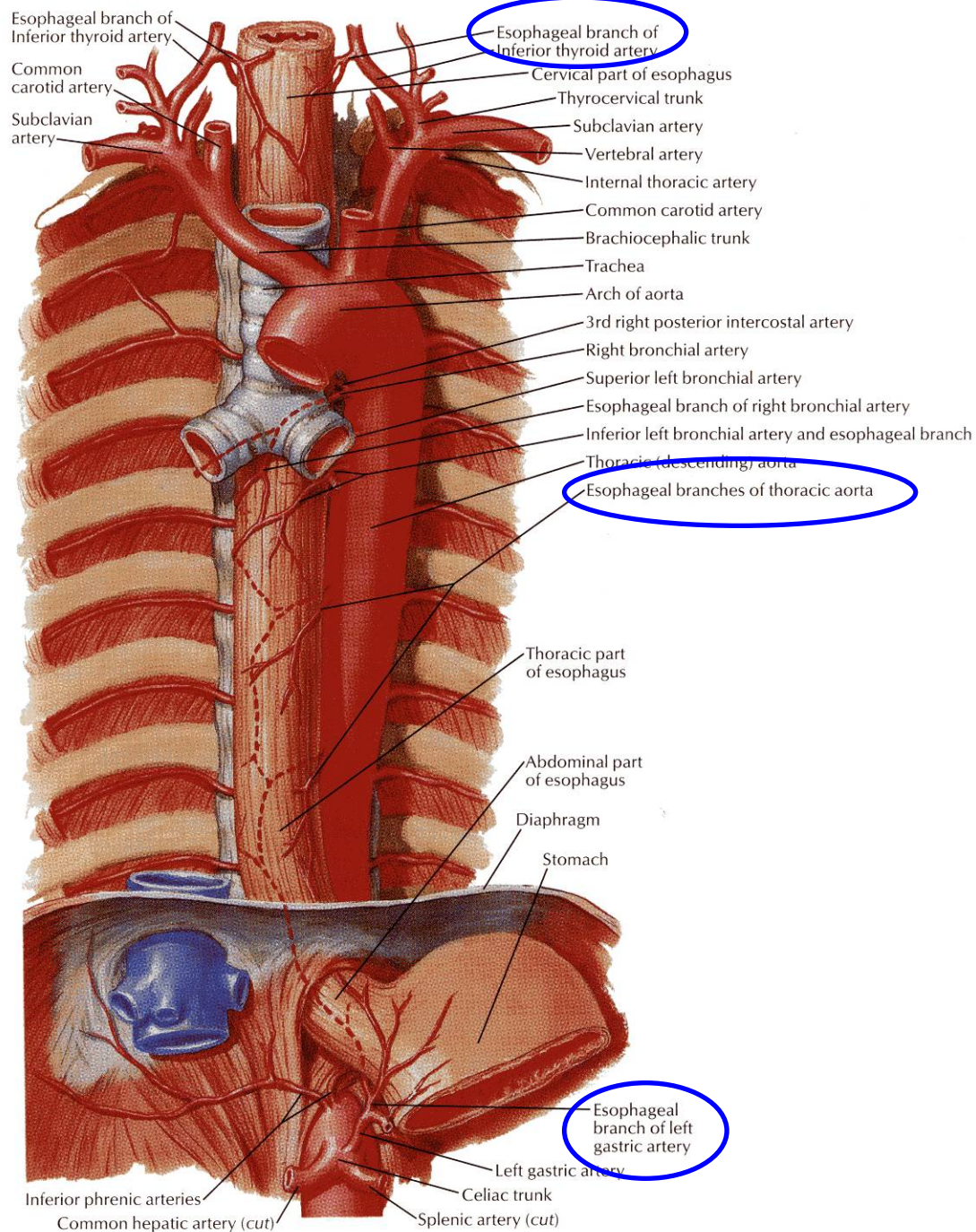
- The esophagus has 3 anatomic constrictions.
- The **first** is at the junction with the pharynx.
- The **second** is at the crossing with the aortic arch and the left main bronchus.
- The **third** is at the junction with the stomach.
- They have a considerable clinical importance.
- Why?



ESOPHAGEAL STRICTURES

1. They may cause difficulties in passing an *esophagoscope*.
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 the development of **esophageal carcinoma**.
4. *In this picture what is the importance of the scale?*

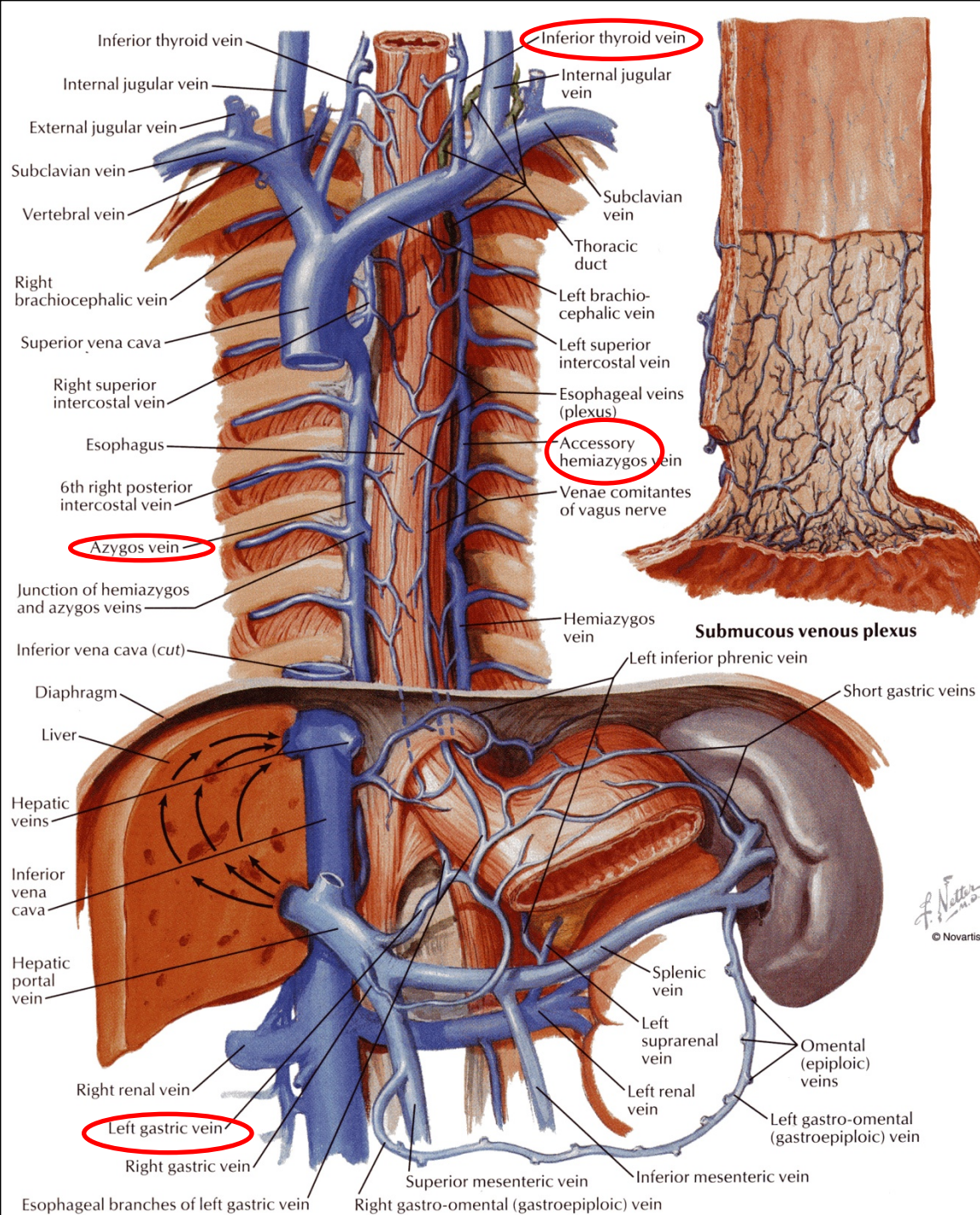




ARTERIAL SUPPLY

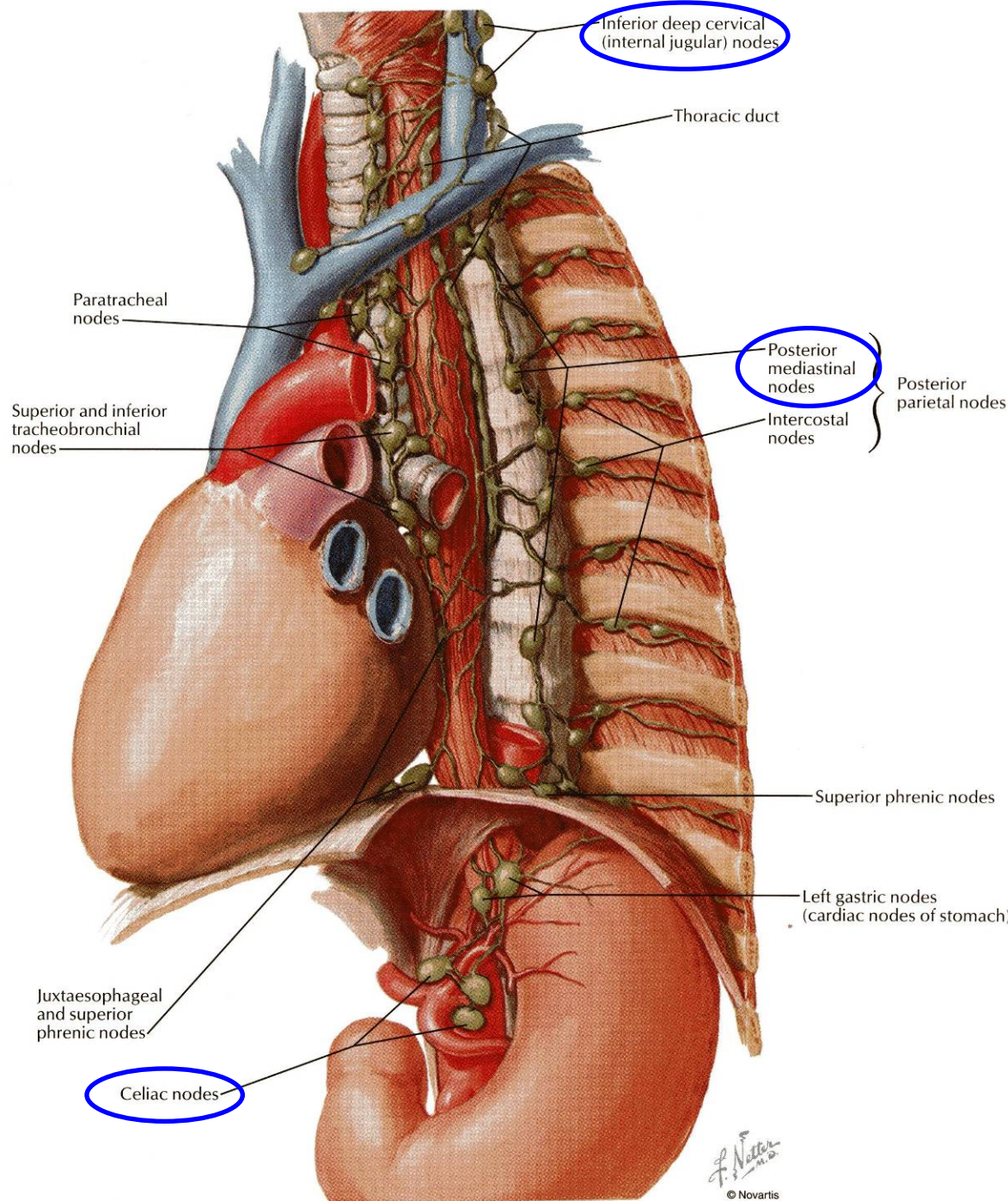
- Upper third is supplied by the **inferior thyroid artery**.
- The middle third by the **thoracic aorta**.
- The lower third by the **left gastric artery**.

VENOUS DRAINAGE

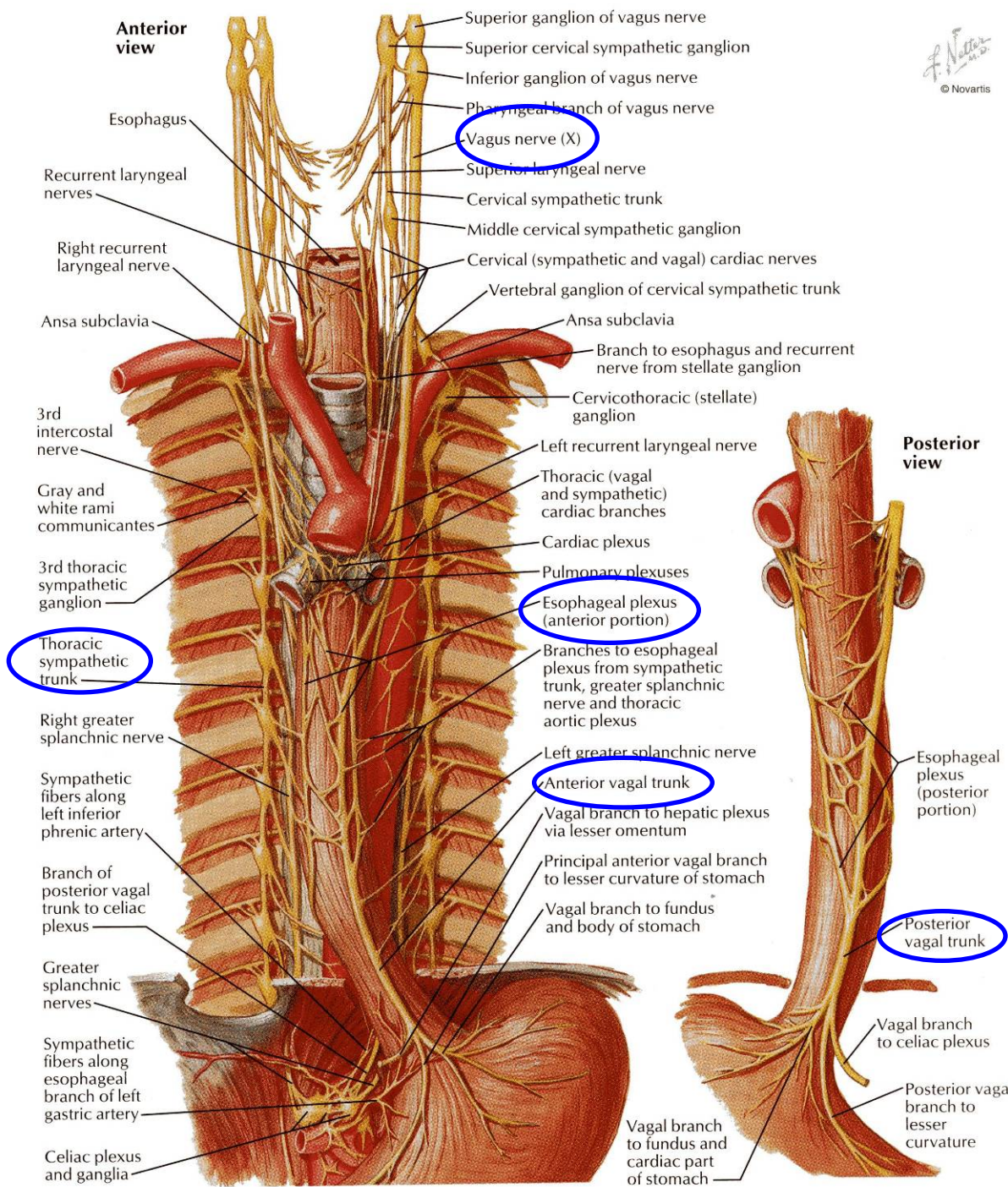


- The upper third drains into the **inferior thyroid veins**.
- The middle third into the **azygos veins**.
- The lower third into the **left gastric vein**, which is a tributary of the **portal vein**.

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.

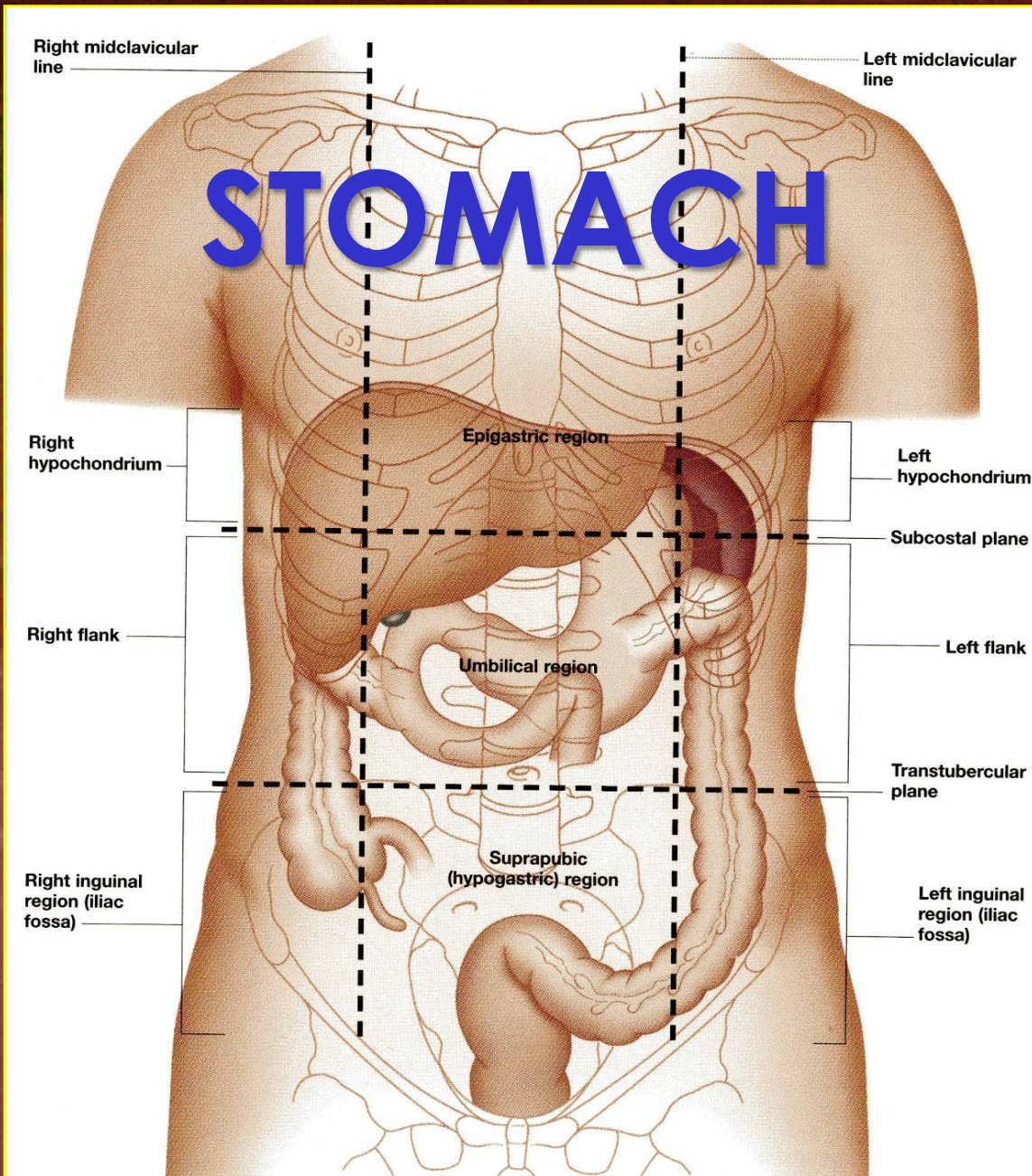


F. Netter M.D.
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NERVE SUPPLY

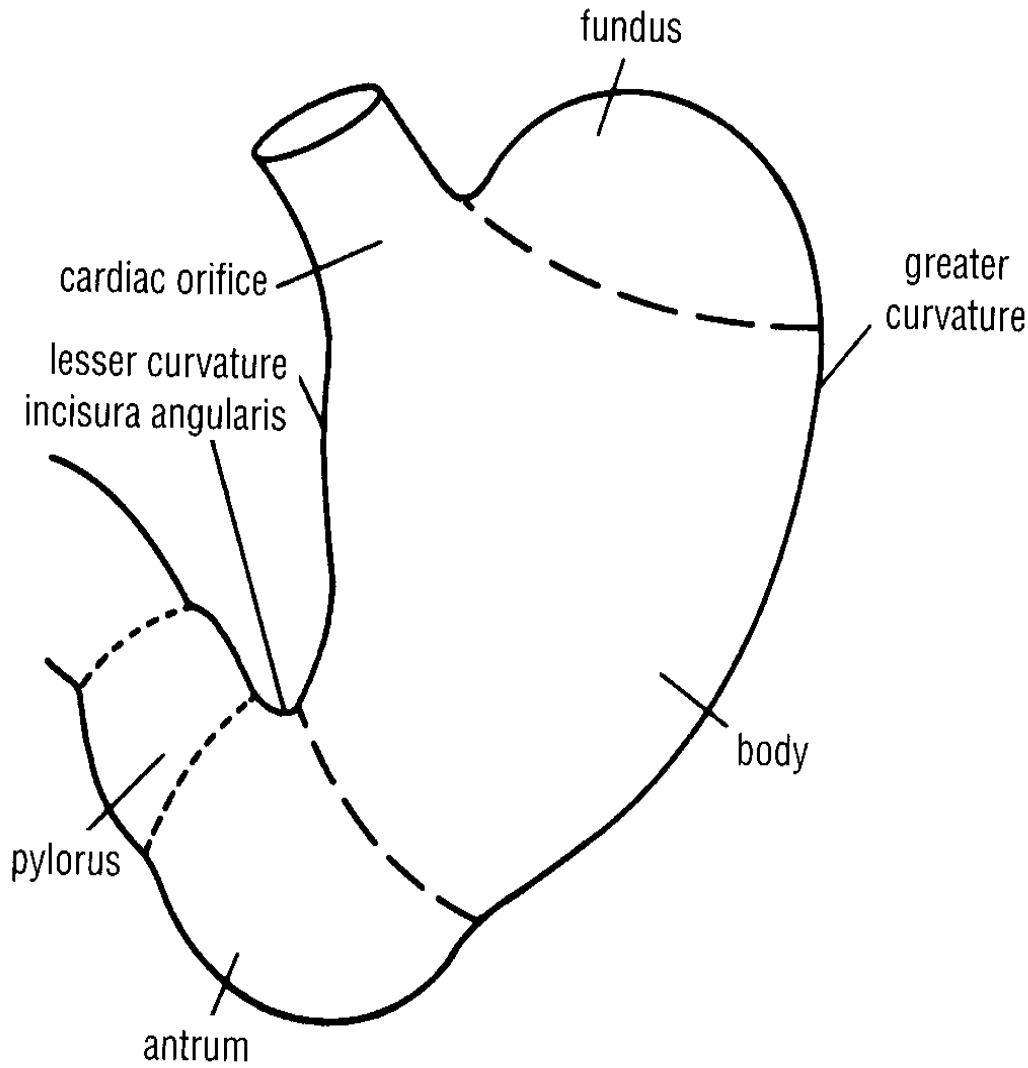
- It is supplied by sympathetic fibers from the **sympathetic trunks**.
- The parasympathetic supply comes from the **vagus nerves**.
- Inferior to the roots of the lungs, the vagus nerves join the sympathetic nerves to form the **esophageal plexus**.
- The **left** vagus lies **anterior** to the esophagus.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

LOCATION



- The stomach 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.
- It is roughly **J**-shaped.

PARTS



2 Orifices:

- Cardiac orifice
- Pyloric orifice

2 Borders:

- Greater curvature
- Lesser curvature

2 Surfaces:

- Anterior surface
- Posterior surface

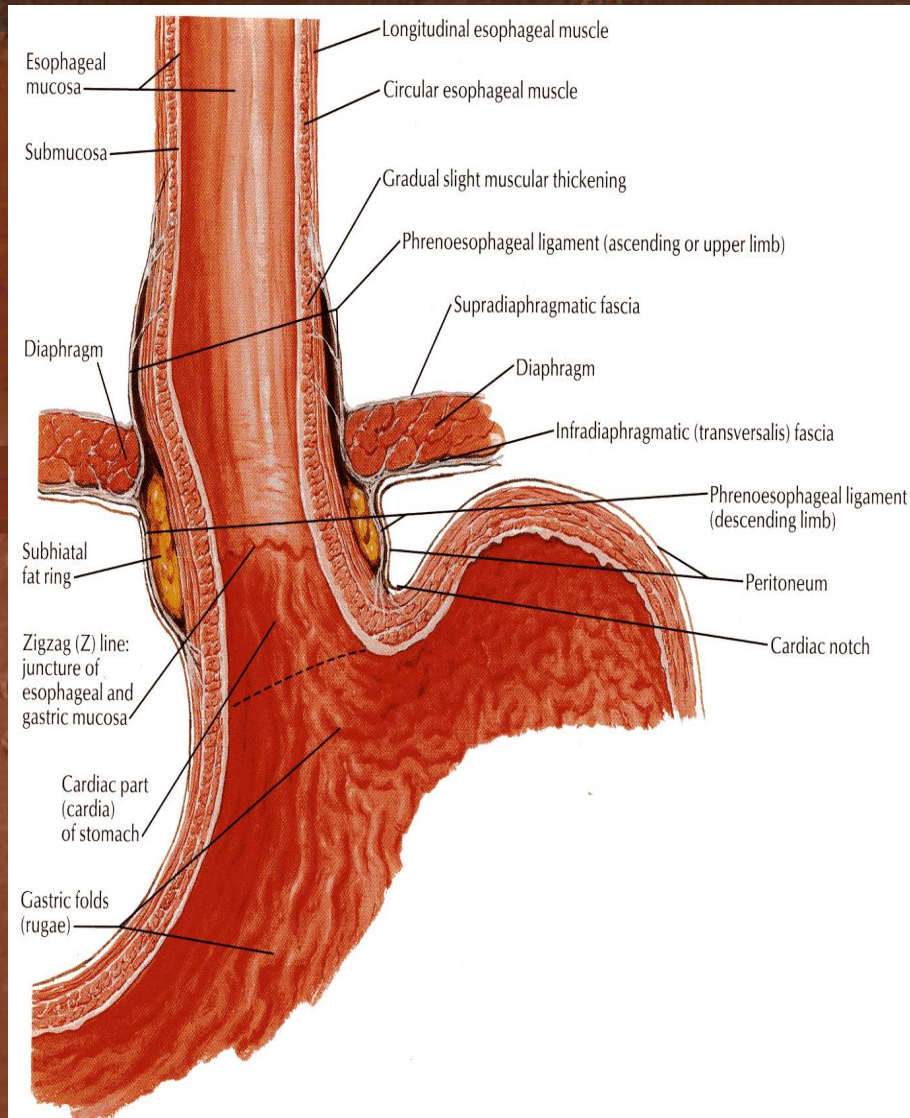
3 Parts:

- Fundus
- Body
- Pylorus:

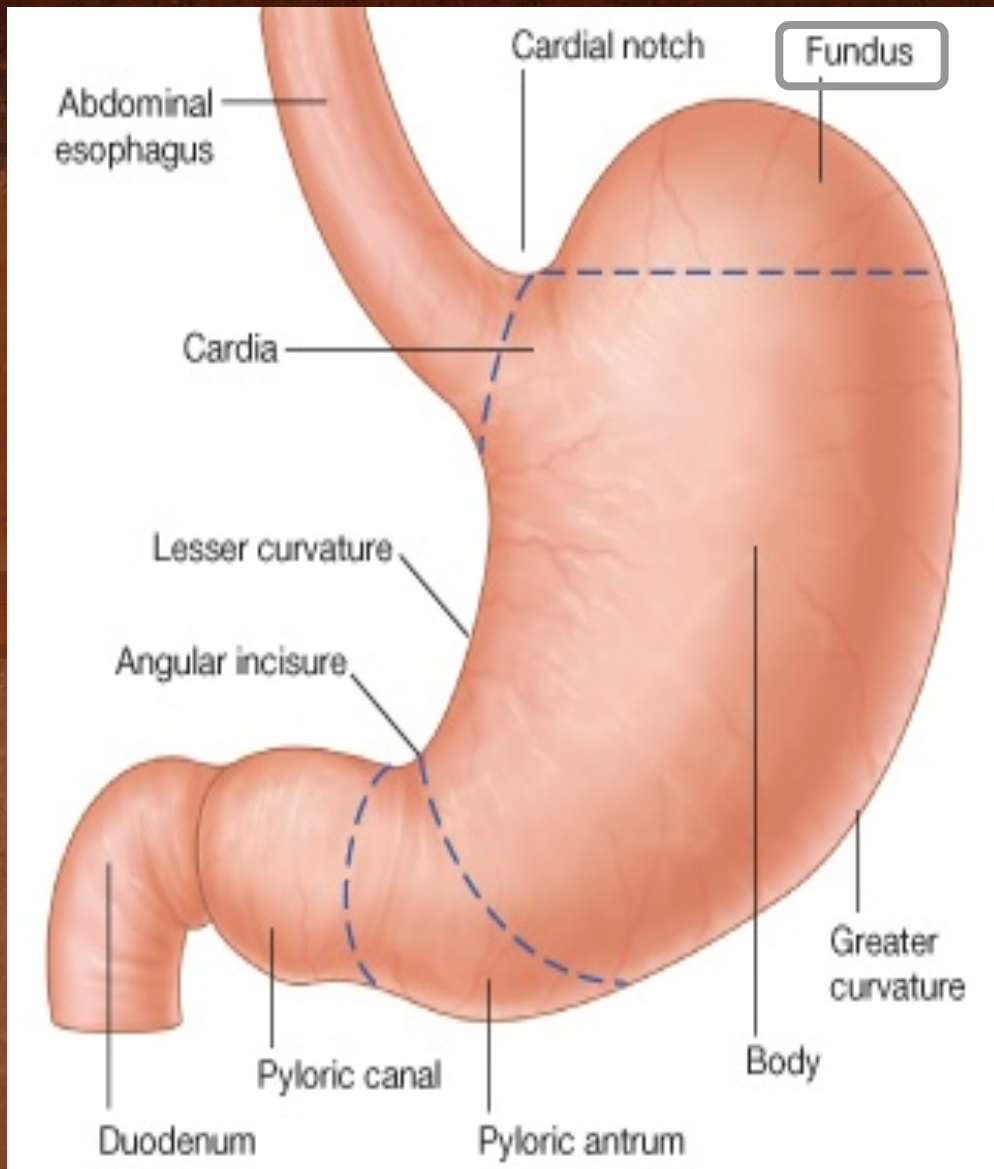
The pylorus is formed of 3 parts

- Pyloric antrum
- Pyloric canal
- Pyloric sphincter 18

CARDIAC ORIFICE



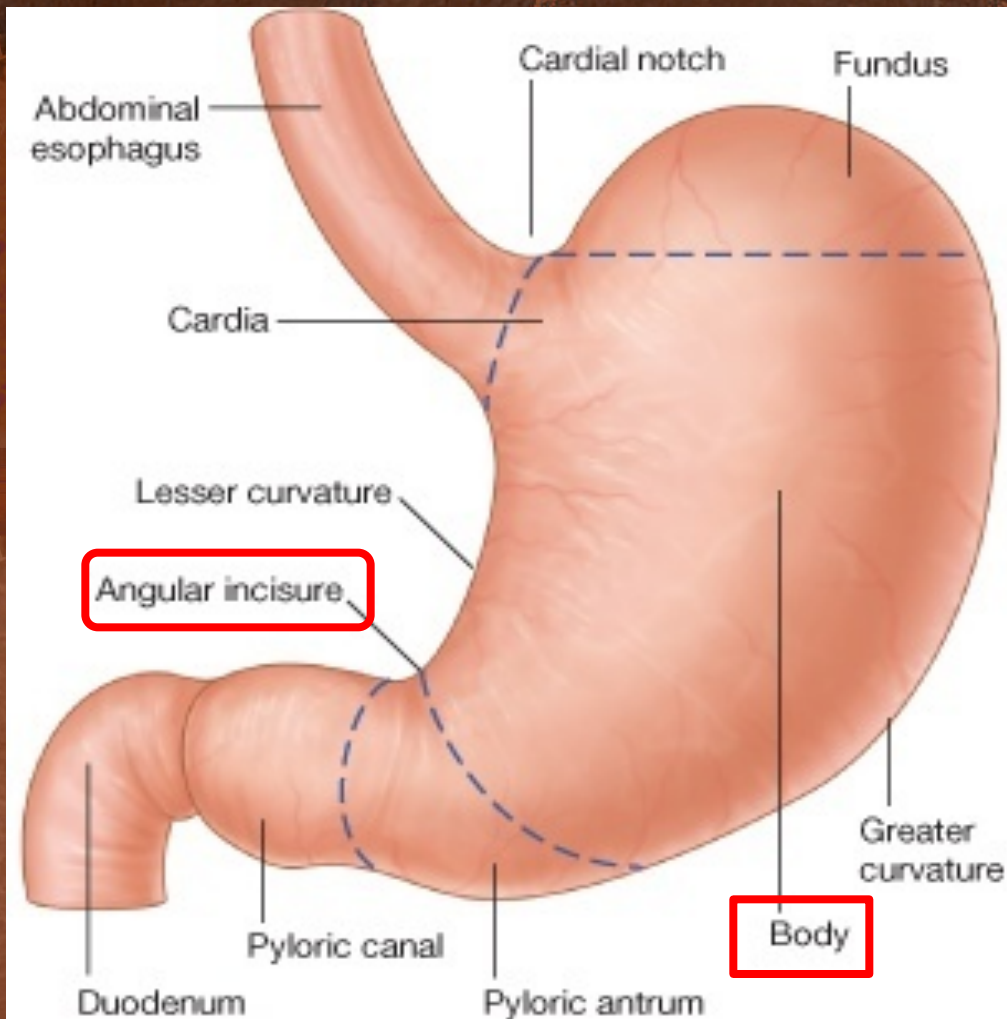
- It is the site of the **gastro- esophageal sphincter**.
- It is a physiological sphincter rather than an anatomical, sphincter.
- Consists of **circular layer** of smooth muscle (under vagal and hormonal control).
- lies opposite the **left seventh costal cartilage 2.5 cm** from the sternum **(T10)**.
- **Function:**
- Prevents esophageal regurgitation (reflux)



FUNDUS

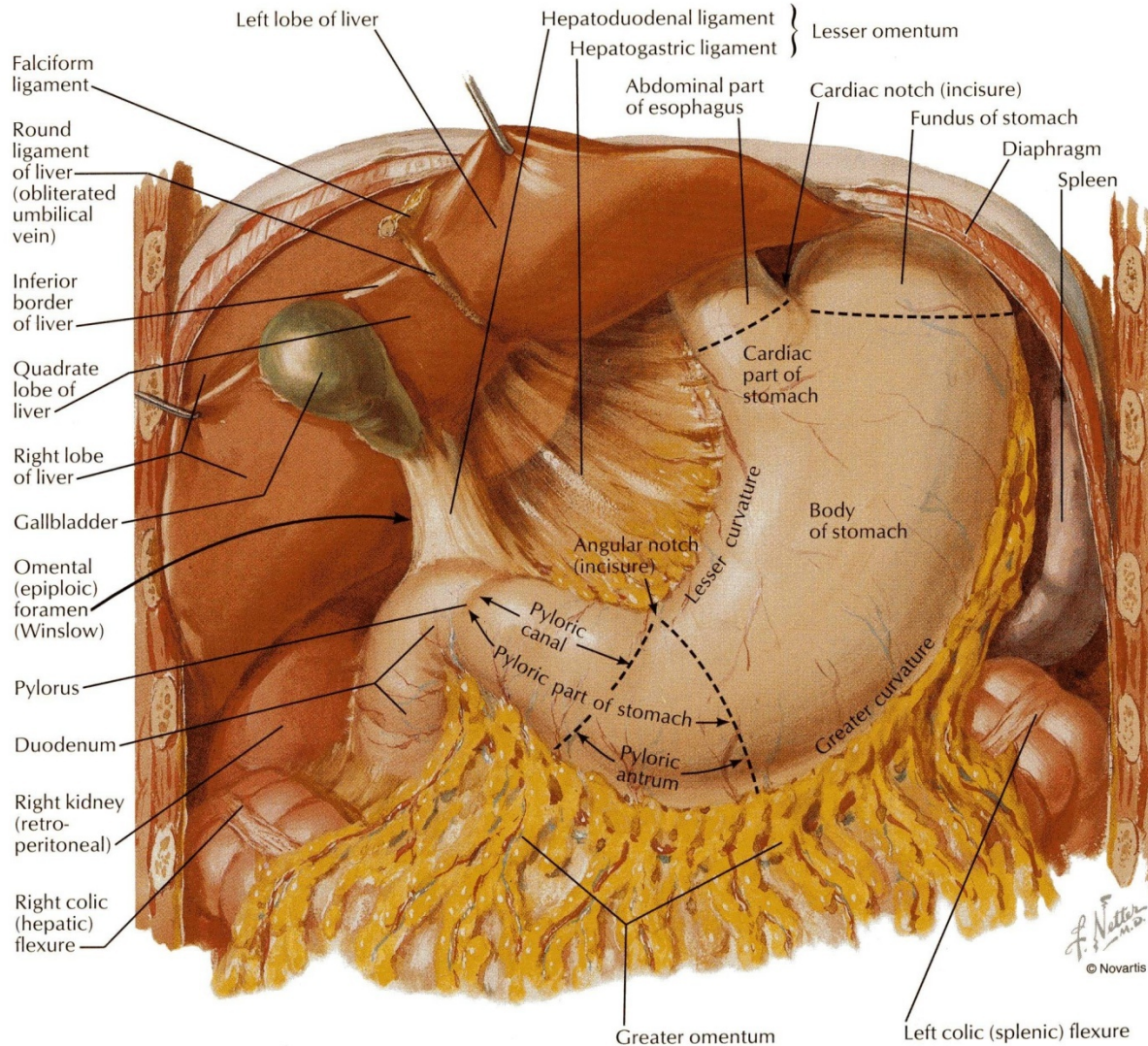
- Dome-shaped.
- Located to the left of the cardiac orifice.
- Usually full of gases.
- **It reaches to the left fifth intercostal space a little below the apex of the heart.**

BODY



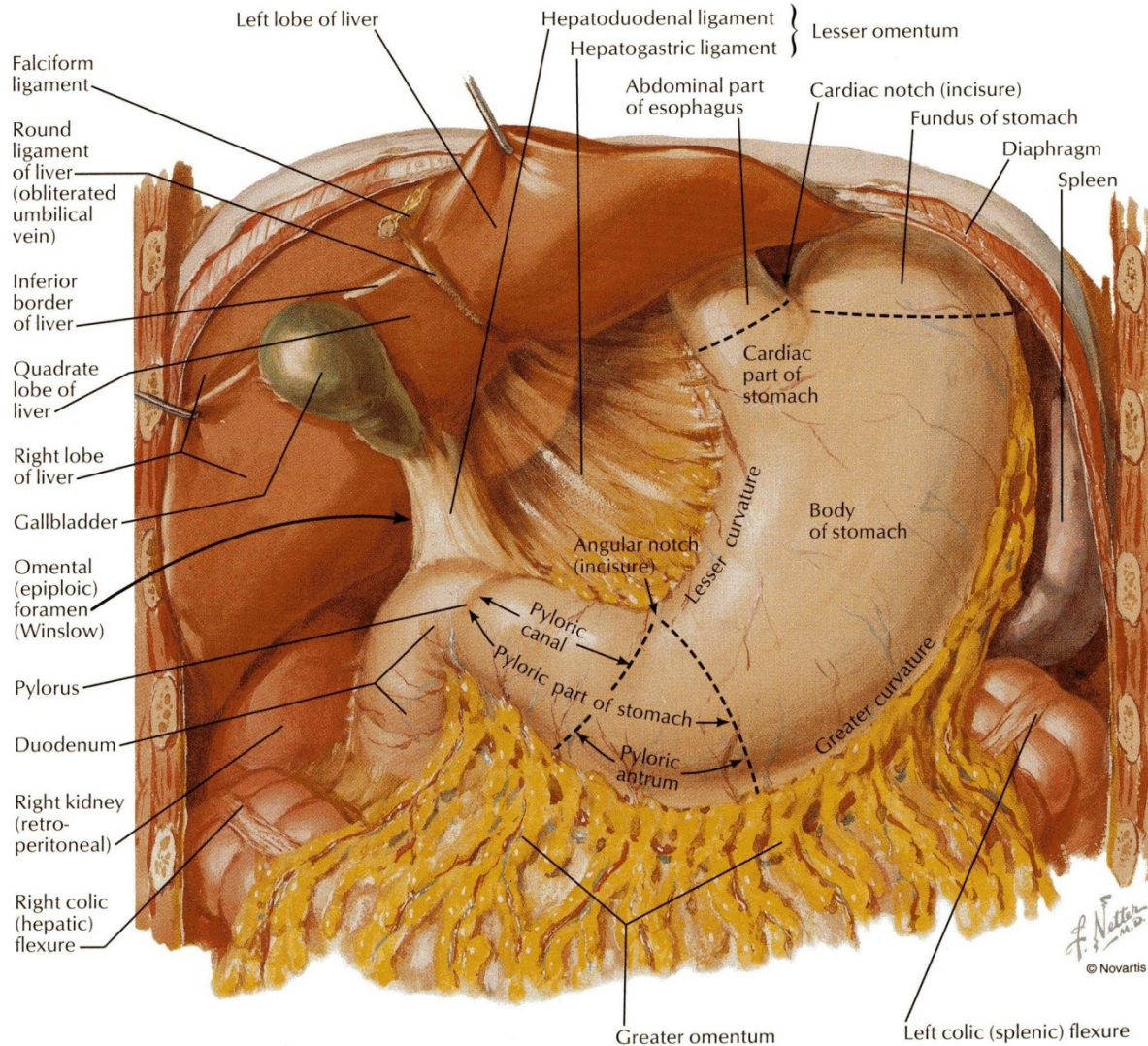
- Extends from:
 - The level of the fundus, to
 - The level of Incisura angularis.
- **Incisura angularis:**
- is a constant notch on the lesser curvature

LESSER CURVATURE



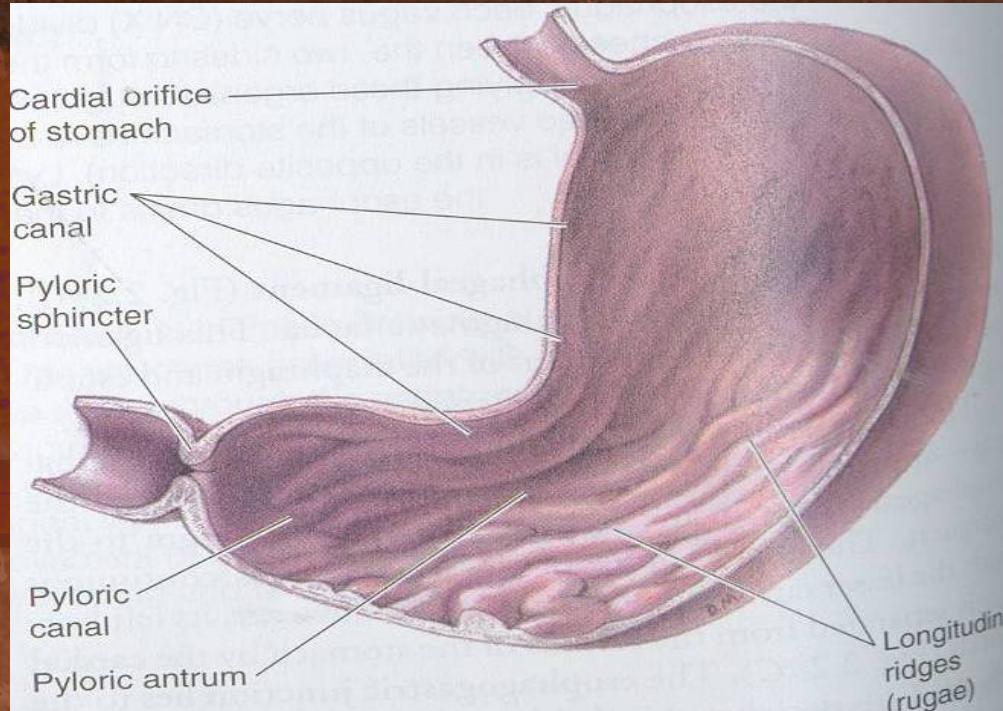
- Forms the right border of the stomach.
- Extends from the cardiac orifice to the pylorus.
- Attached to the liver by the **lesser omentum**, (gastrohepatic ligament).

GREATER CURVATURE

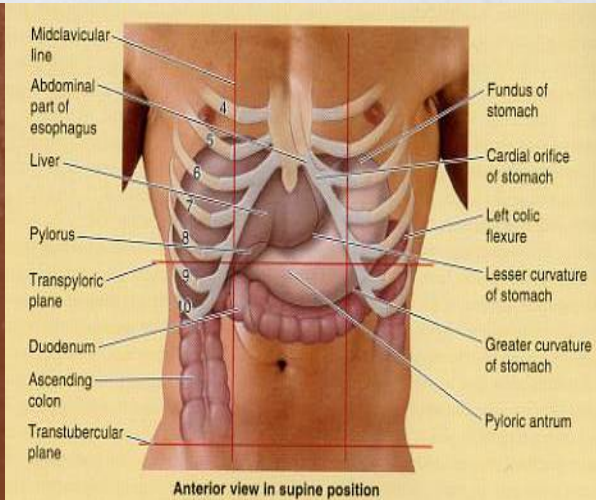


- Forms the left border of the stomach.
- Extends from the cardiac orifice to the pylorus.
- Its upper part is attached to the spleen by **gastrosplenic ligament**
- Its lower part is attached to the transverse colon by the **greater omentum**.

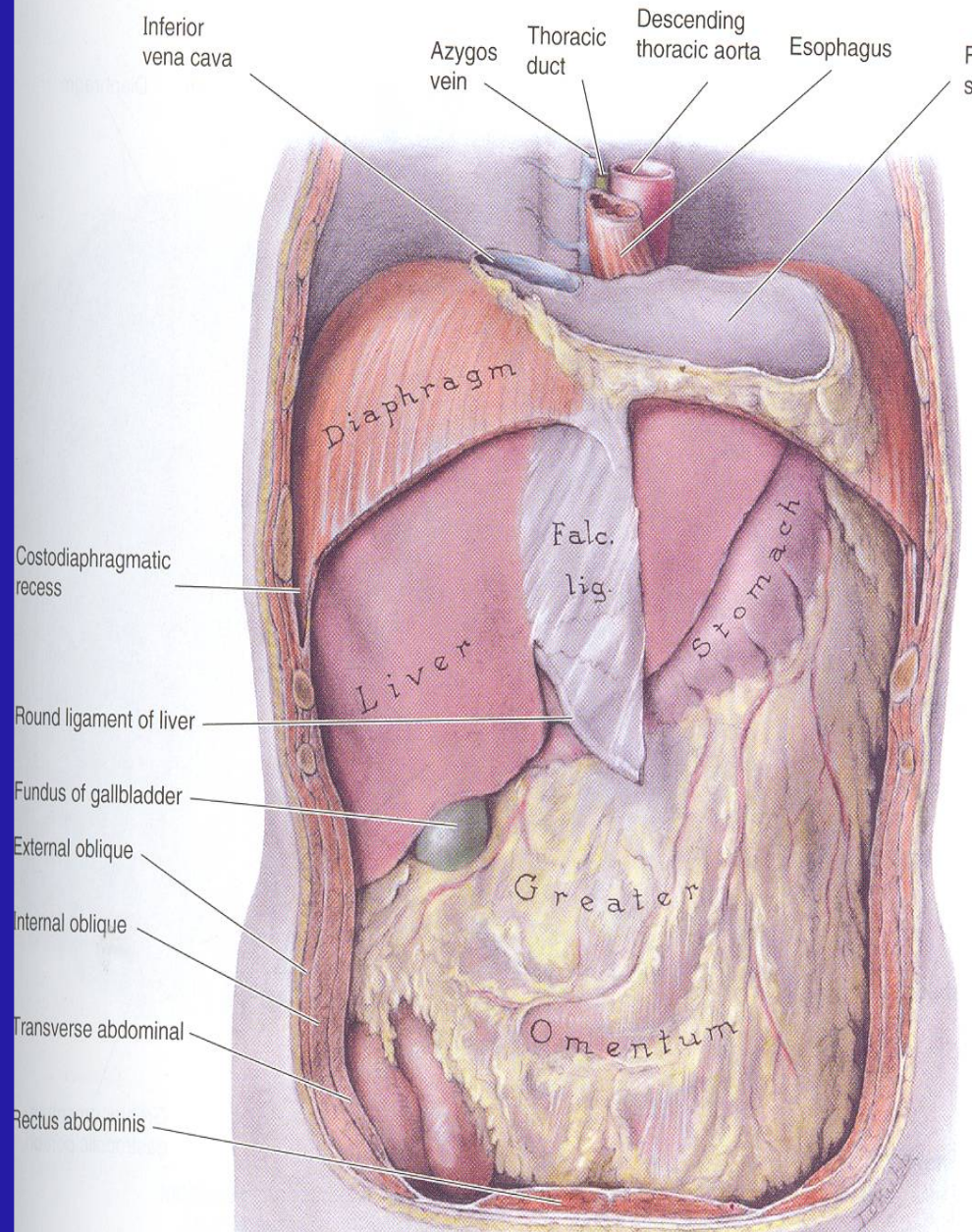
PYLORIC ANTRUM AND PYLORUS



- 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 **pyloric canal.**

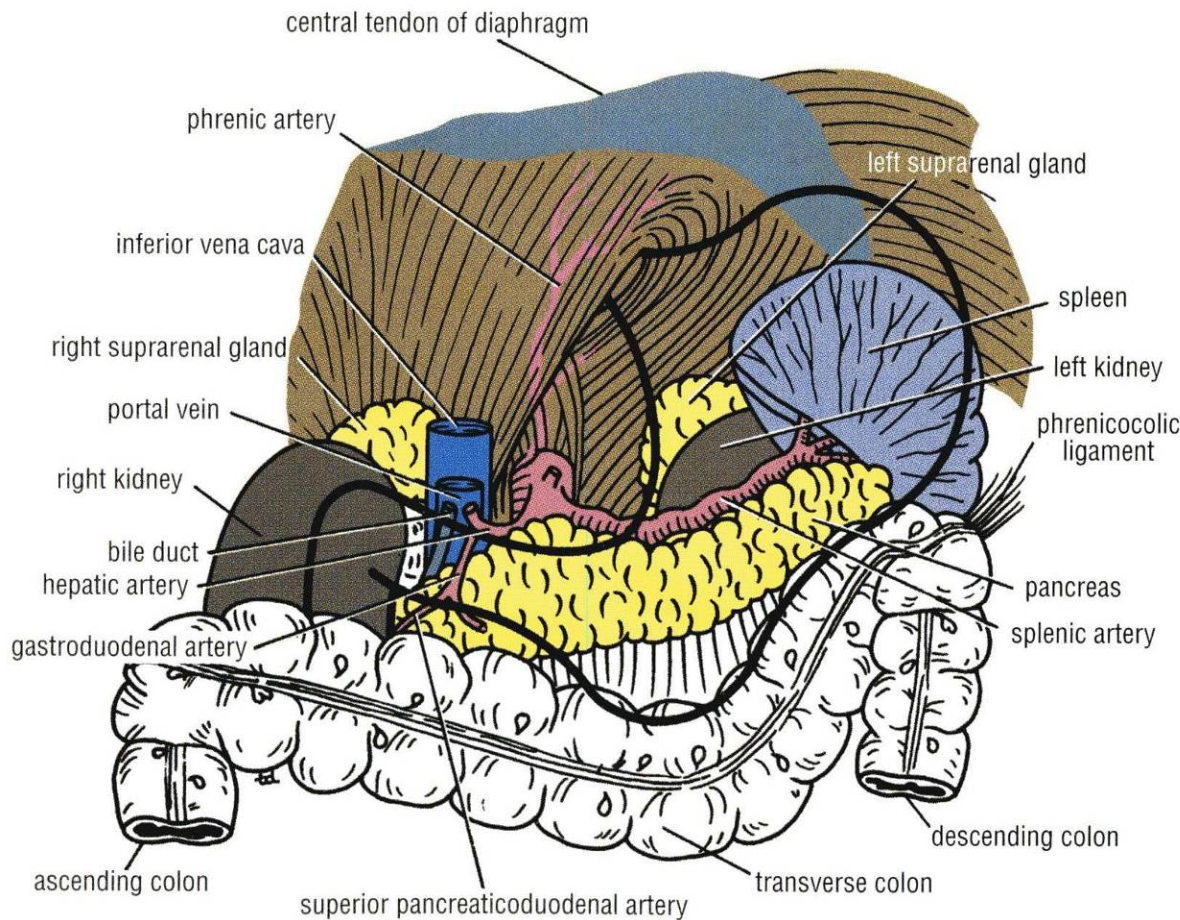


ANTERIOR RELATIONS



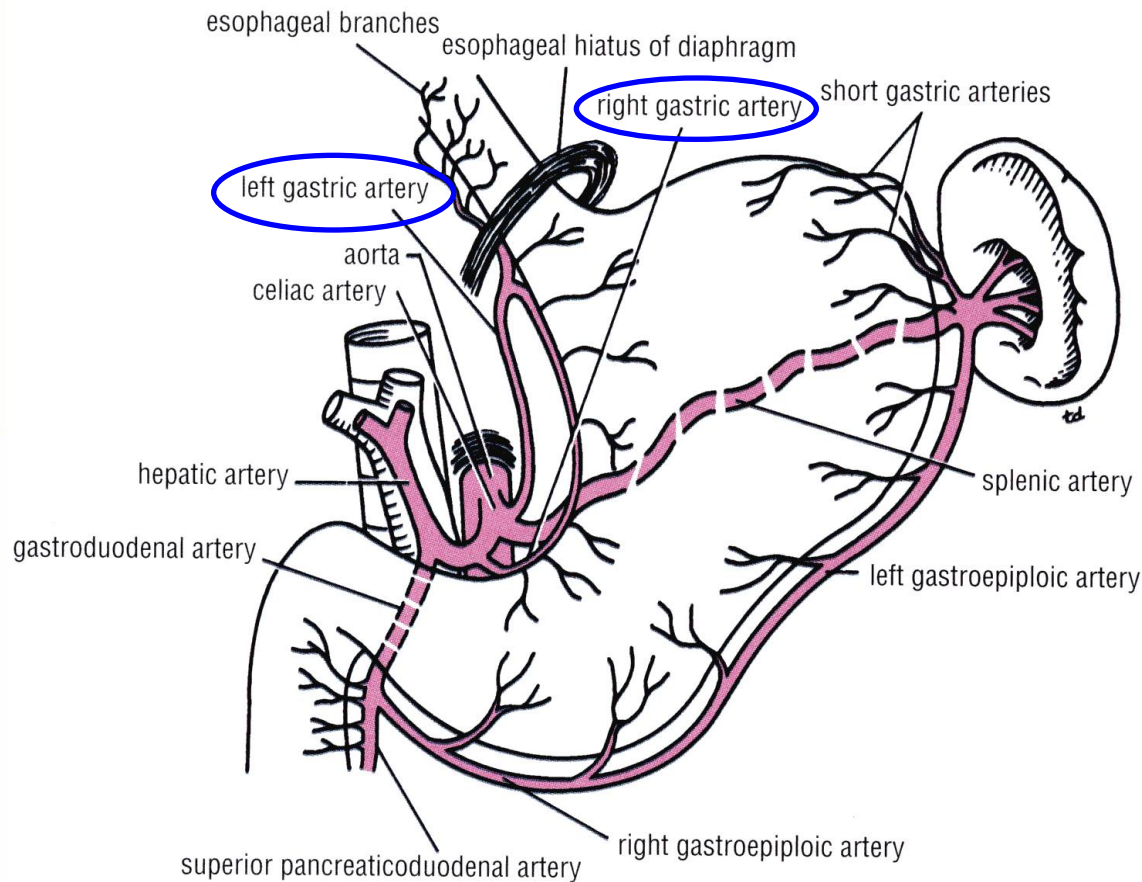
- Anterior abdominal wall.
- Left costal margin.
- Left pleura & lung.
- Diaphragm.
- Left lobe of the liver.

POSTERIOR RELATIONS



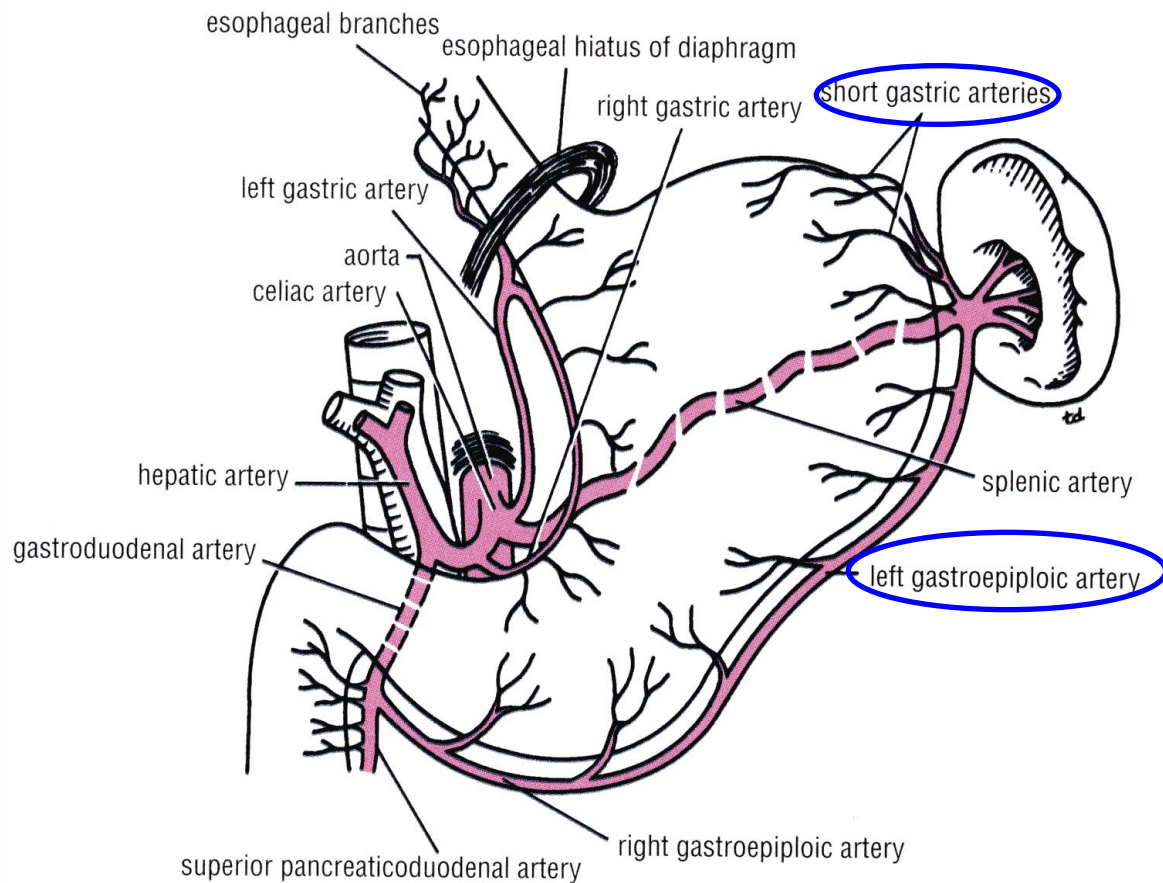
- Left crus of diaphragm.
- Left suprarenal gland.
- Part of left kidney
- Spleen.
- Splenic artery.
- Pancreas.
- Transverse mesocolon.
- Transverse colon.
- Lesser sac.
- All these structures form **the stomach bed**.
- All are separated from the stomach by peritoneum of lesser sac except the spleen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

ARTERIES



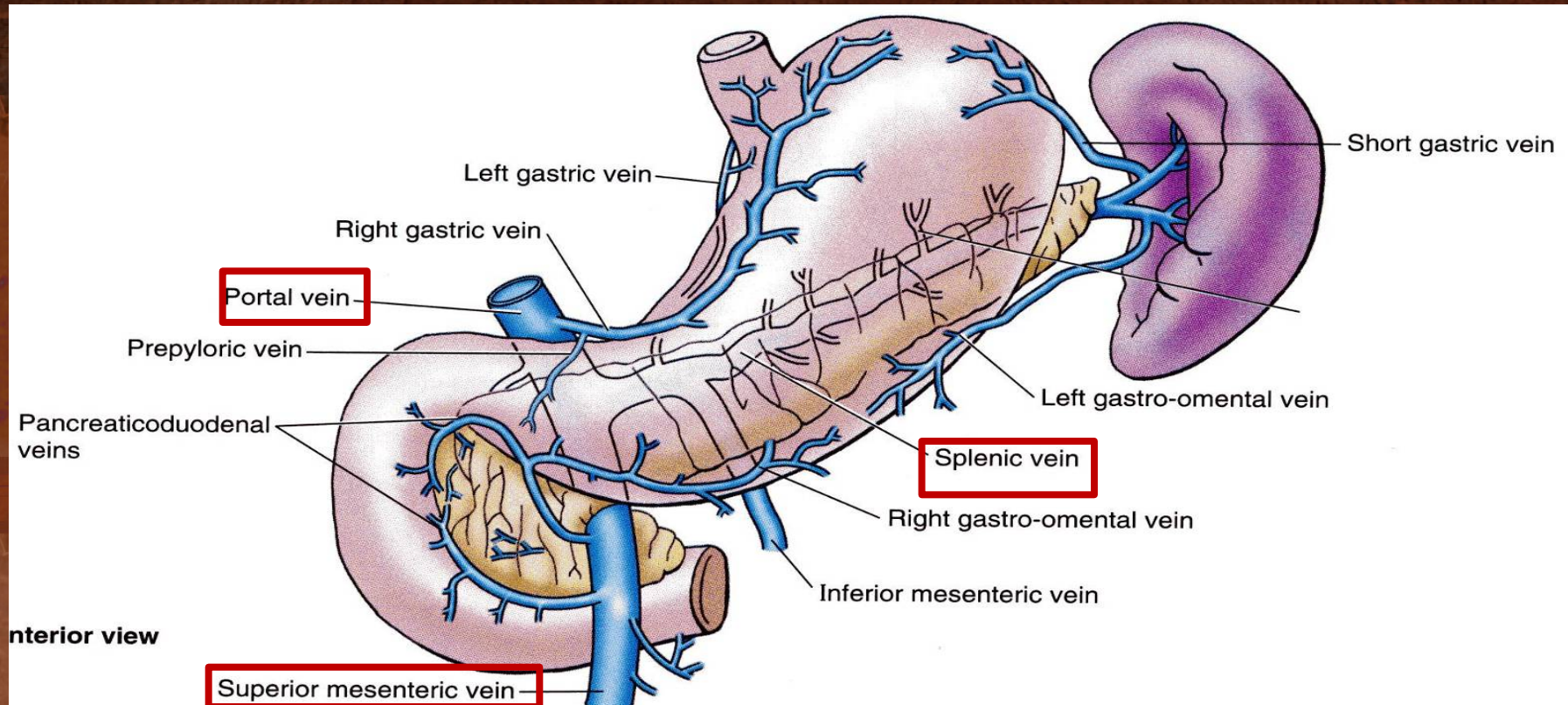
- 5 arteries:
 - 1- Left gastric artery:
 - **It is a** branch of celiac artery.
 - Ascends along the lesser curvature.
 - 2- Right gastric artery:
- From the **hepatic** artery of celiac.
- Runs to the left along the lesser curvature.

ARTERIES



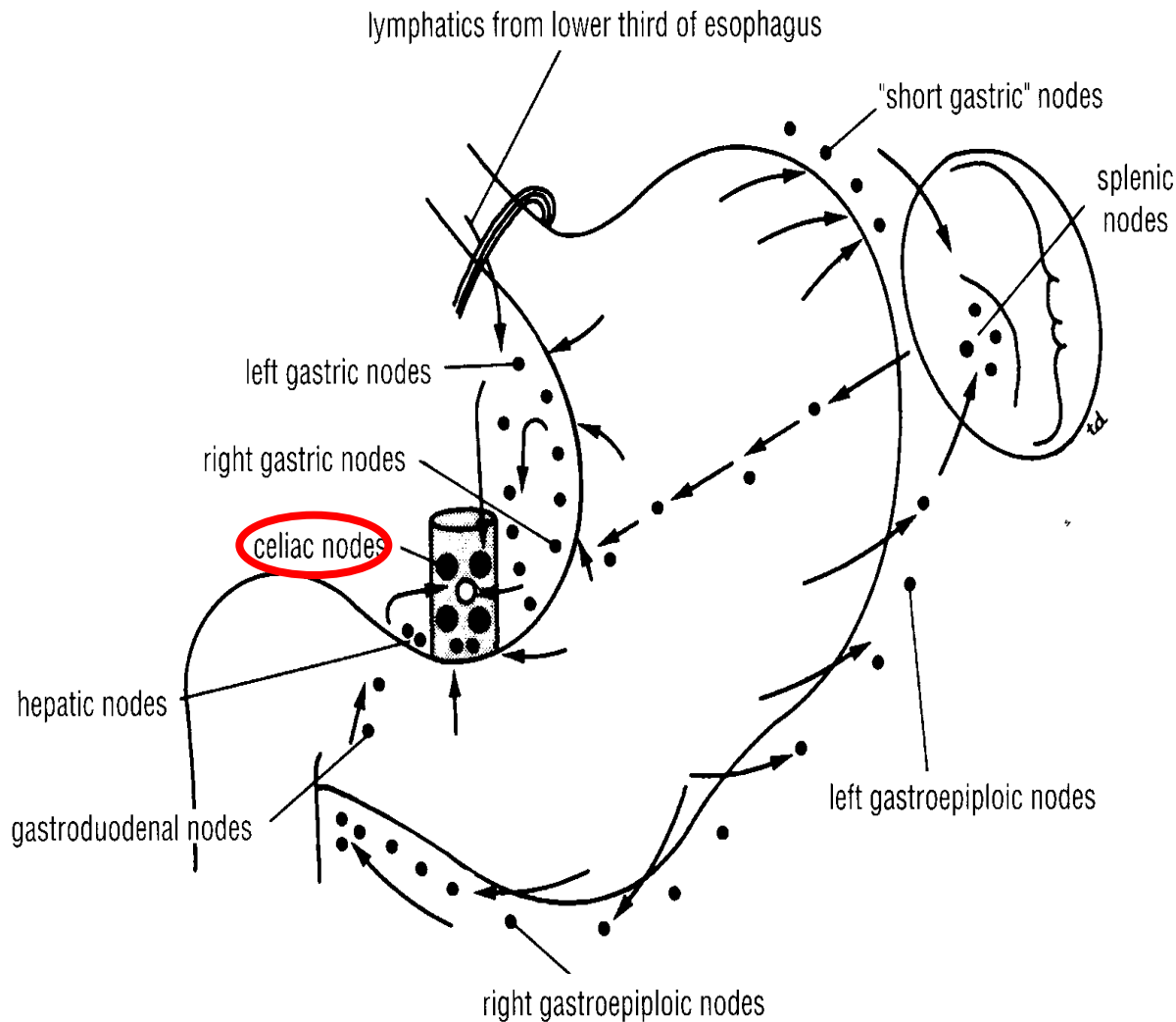
- 3- Short gastric arteries – arise from the splenic artery.
 - Pass in the **gastrosplenic ligament**.
- 4-Left gastroepiploic artery:
 - from splenic artery
 - Pass in the **gastrosplenic ligament**.
- 5- Right gastroepiploic artery:
 - from the gastroduodenal artery of hepatic .
 - Passes to the left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

VEINS

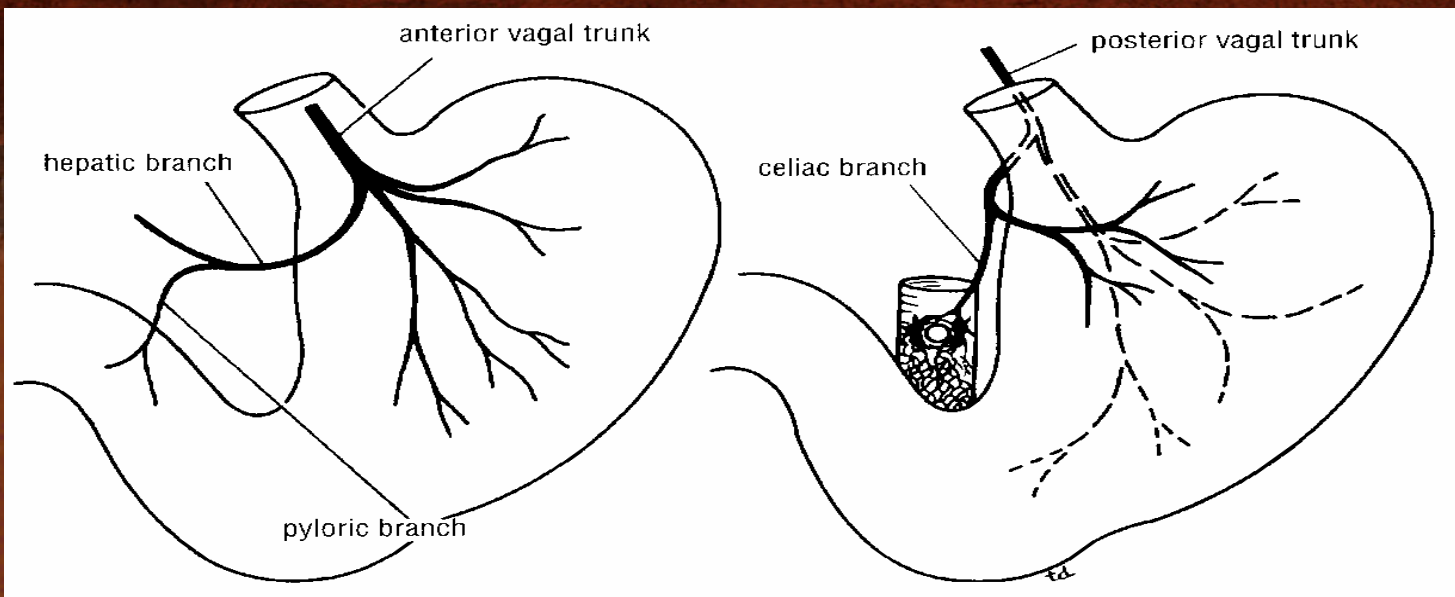


- All of them drain into the **portal circulation**.
- The **right** and **left gastric veins** drain directly in the **portal vein**.
- The **short gastric veins** and the **left gastroepiploic vein** join the splenic vein.
- The **right gastroepiploic vein** drain in the superior mesenteric vein.

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.