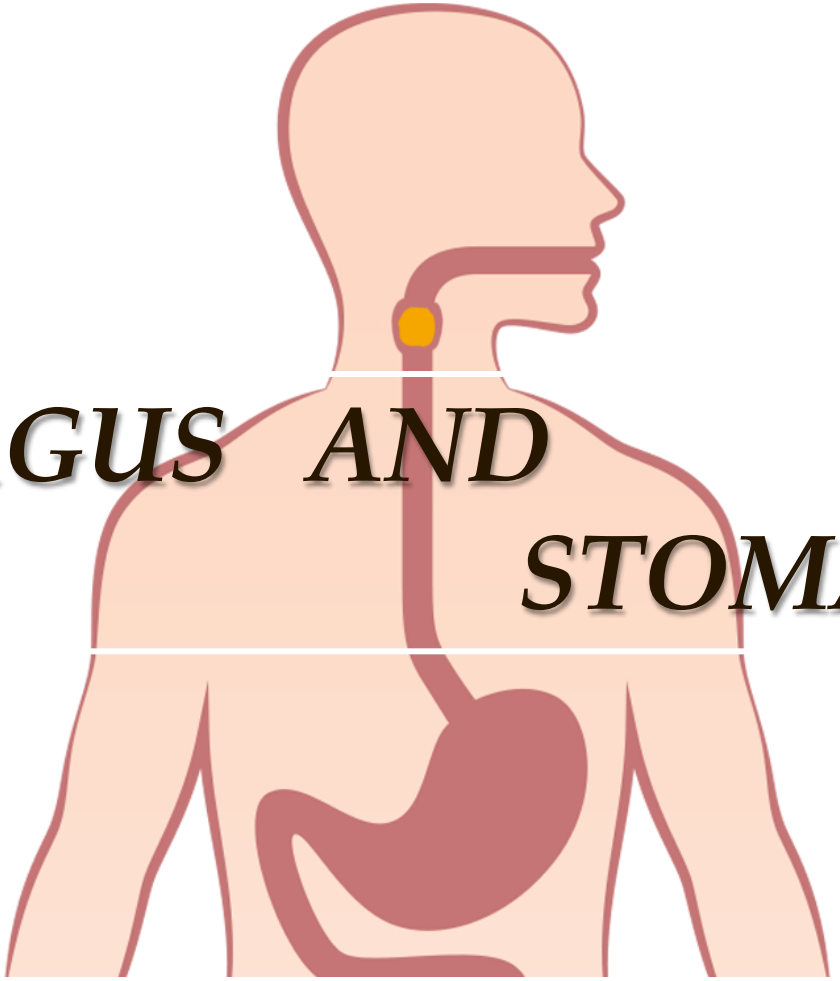
ESOPHAGUS AND STOMACH



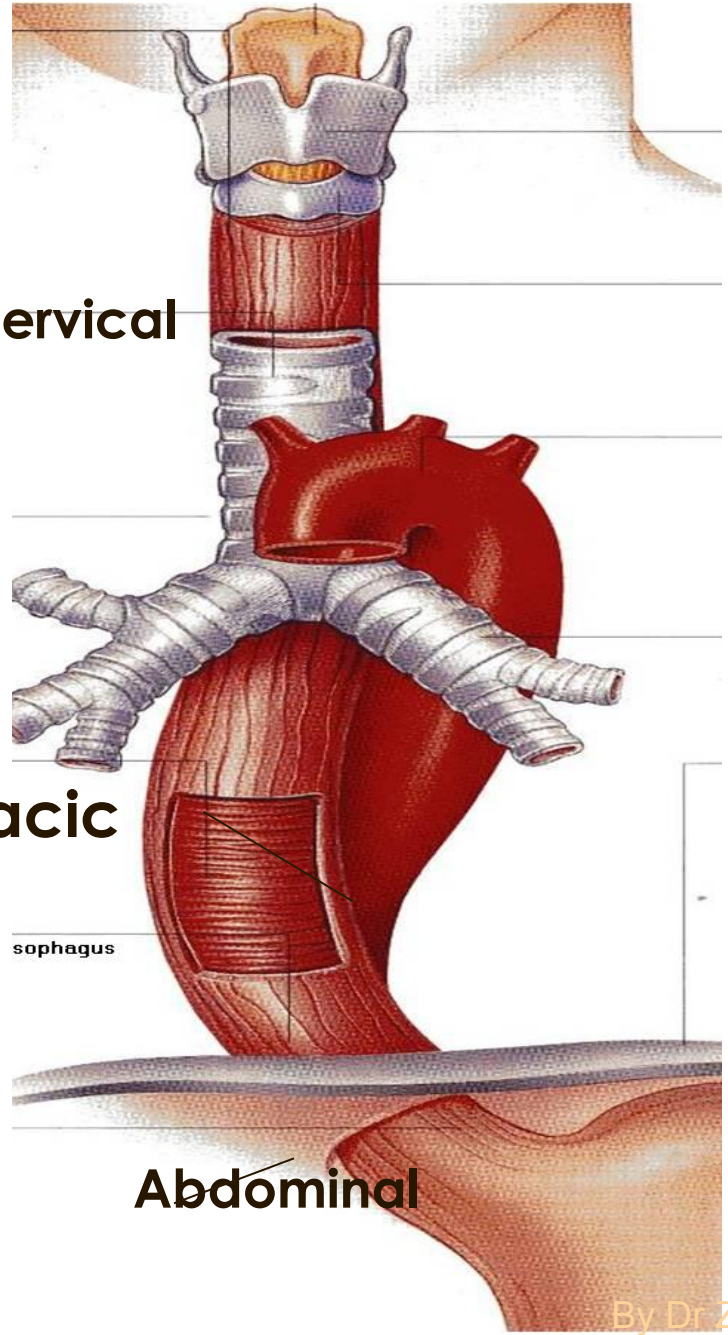
Dr. Zahid Kaimkhani

OBJECTIVES

By the end of the lecture you should be able to:

- **Describe the anatomical view of the esophagus; extent & length, parts, constrictions, relations, blood & nerve supply and lymphatic.**

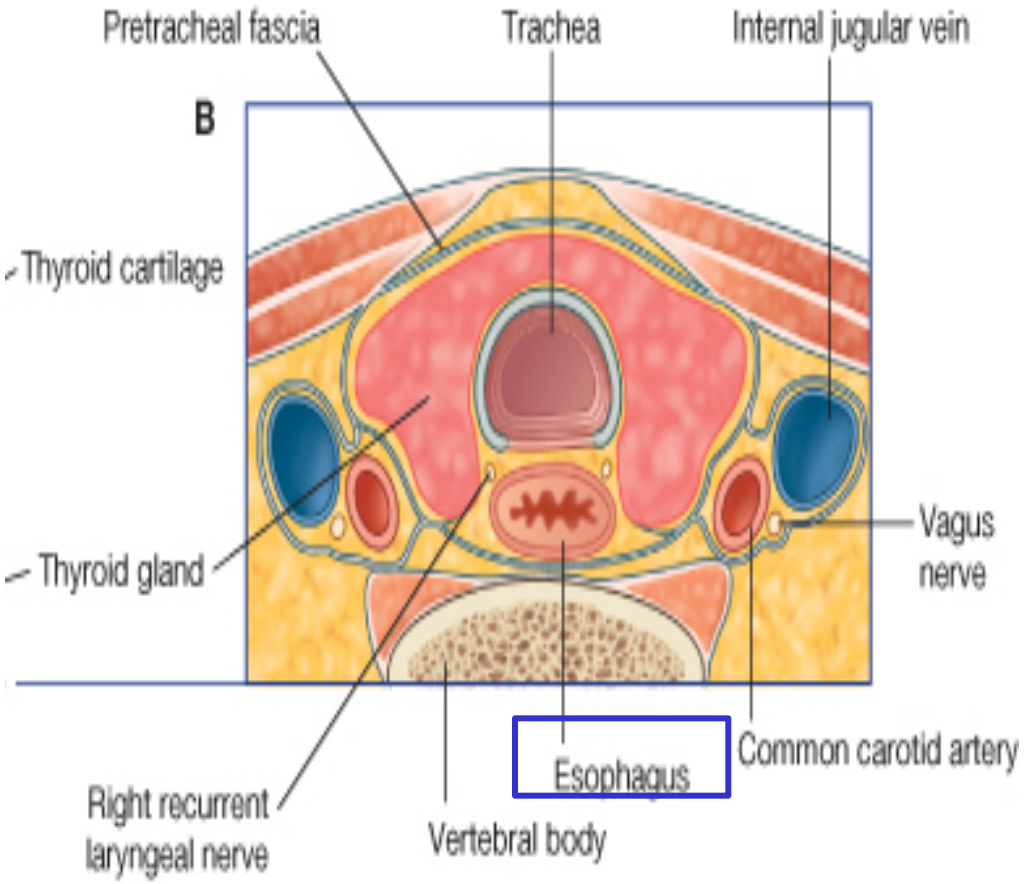
- **Describe the anatomical view of the stomach; location, shape, parts, relations, blood & nerve supply and lymphatic.**



ESOPHAGUS

- is a tubular structure about **25 cm long.**
- begins as the continuation of the pharynx at the level of the **6th cervical vertebra.**
- pierces the diaphragm at the level of the **10th thoracic vertebra** to join the stomach.
- It terminates at level of **11th thoracic vertebra**
- **divided of 3 parts:**
- Cervical
- Thoracic
- Abdominal

RELATIONS



CERVICAL PART

Posteriorly:

- Vertebral column.

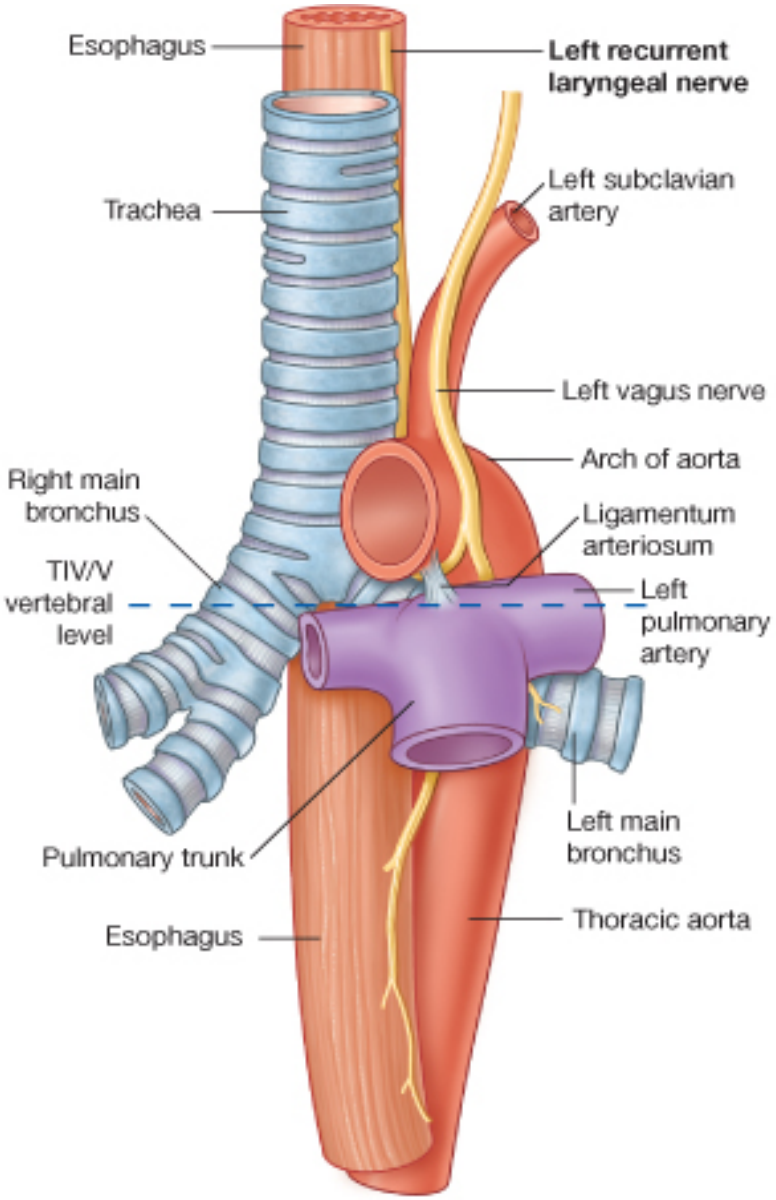
Laterally:

- lobes of the thyroid gland.

Anteriorly:

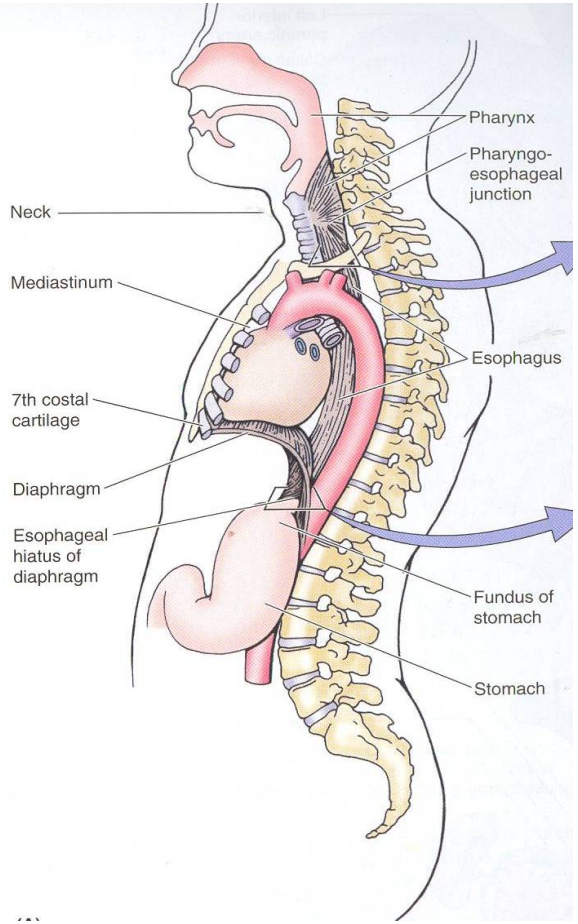
- Trachea and the recurrent laryngeal nerves.

RELATIONS



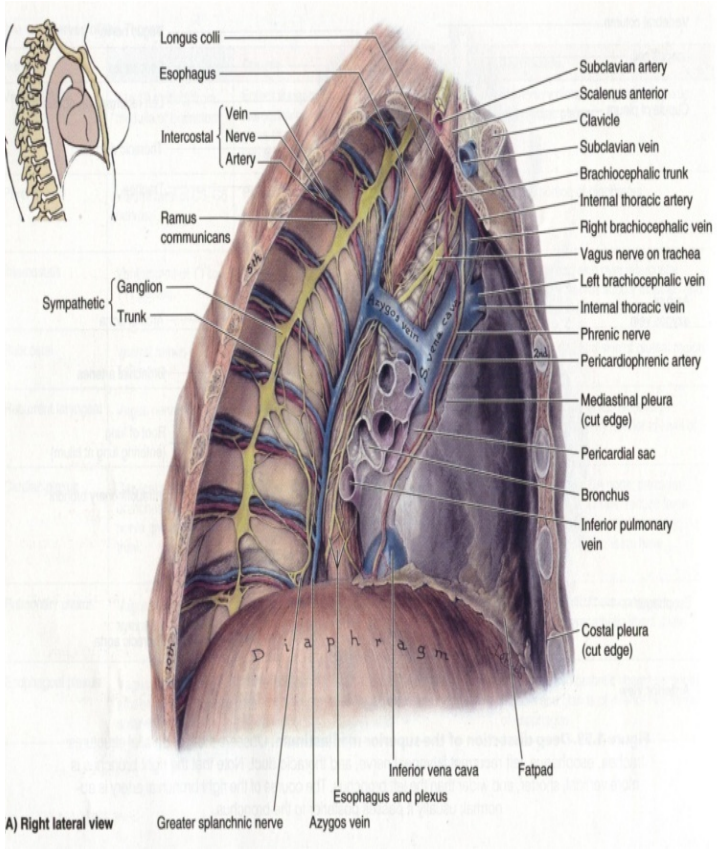
THORACIC PART

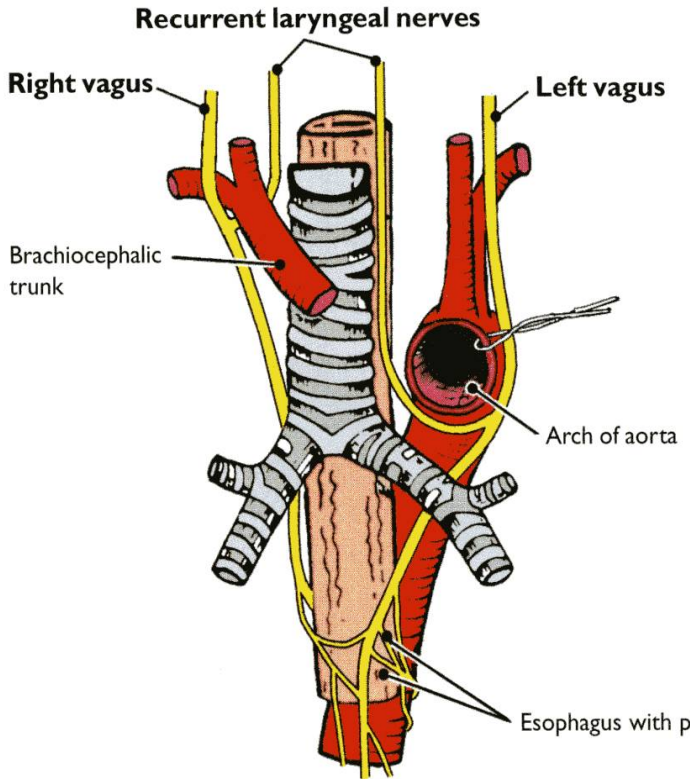
- In the thorax, it passes downward and to the **left** through superior & posterior mediastinum
- At the level of the **sternal angle**, the **aortic arch** pushes the esophagus again to **the midline**.



RELATIONS

THORACIC PART



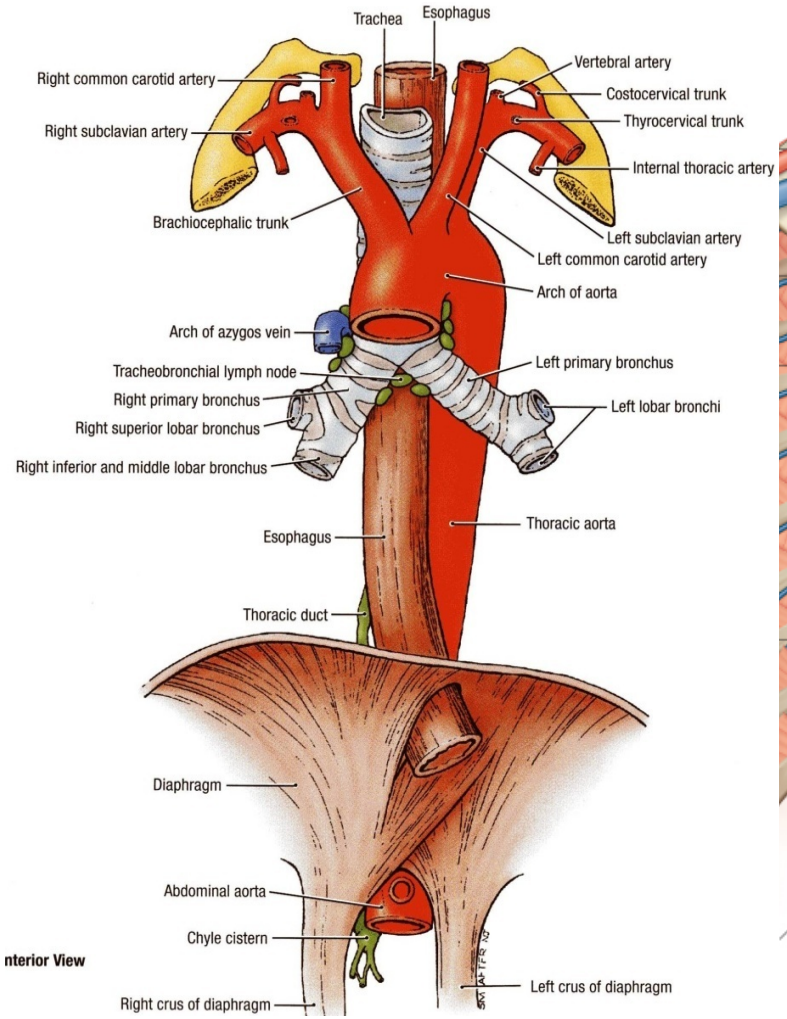


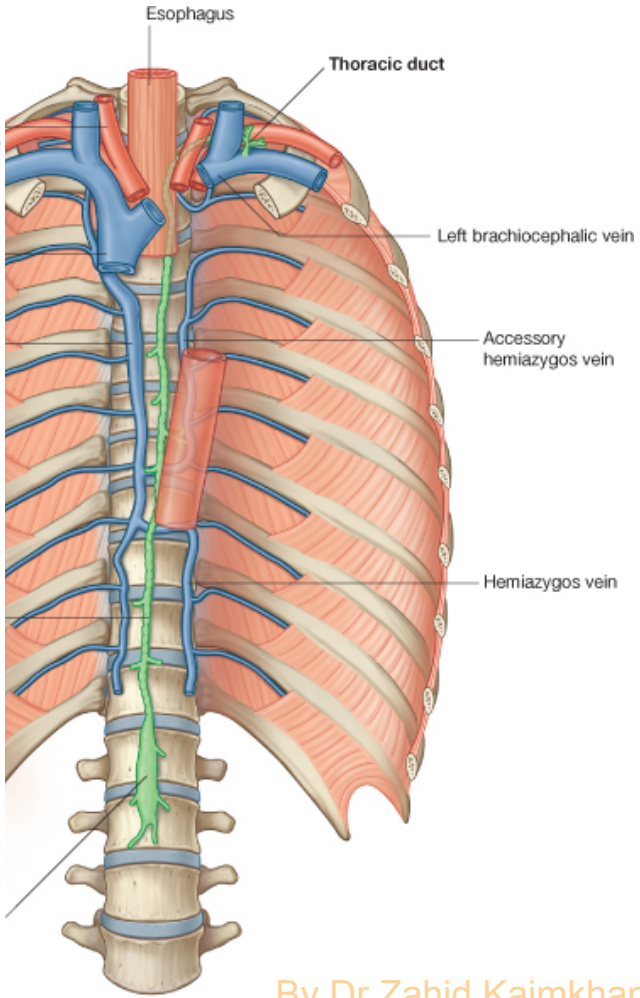
Anterior Relations

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

RELATIONS

THORACIC PART



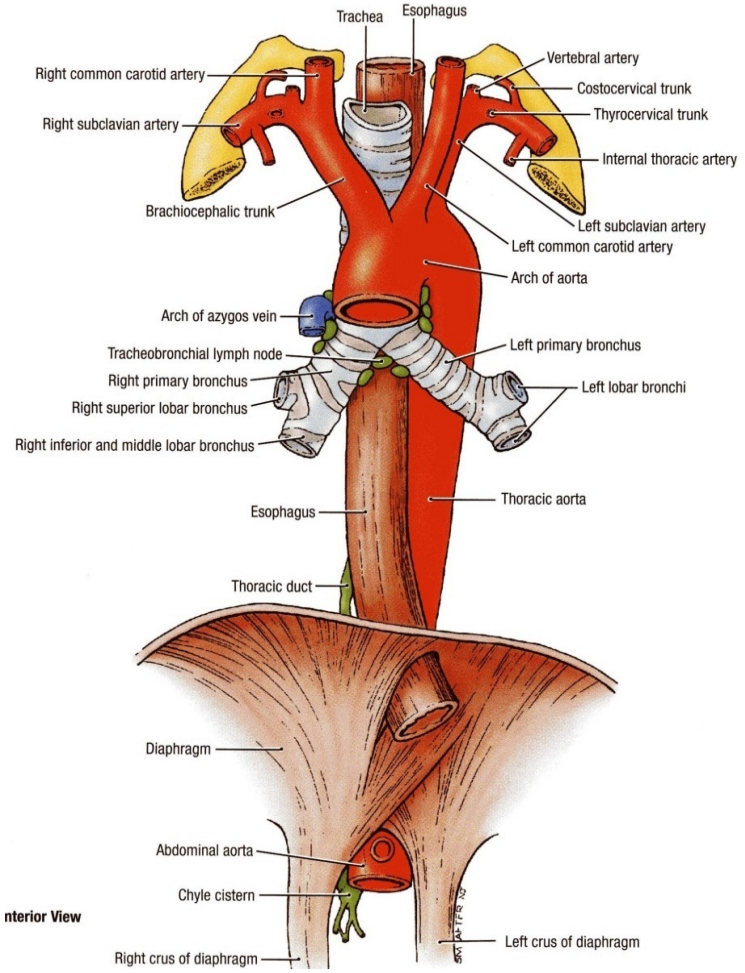


Posterior Relations

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

RELATIONS

THORACIC PART

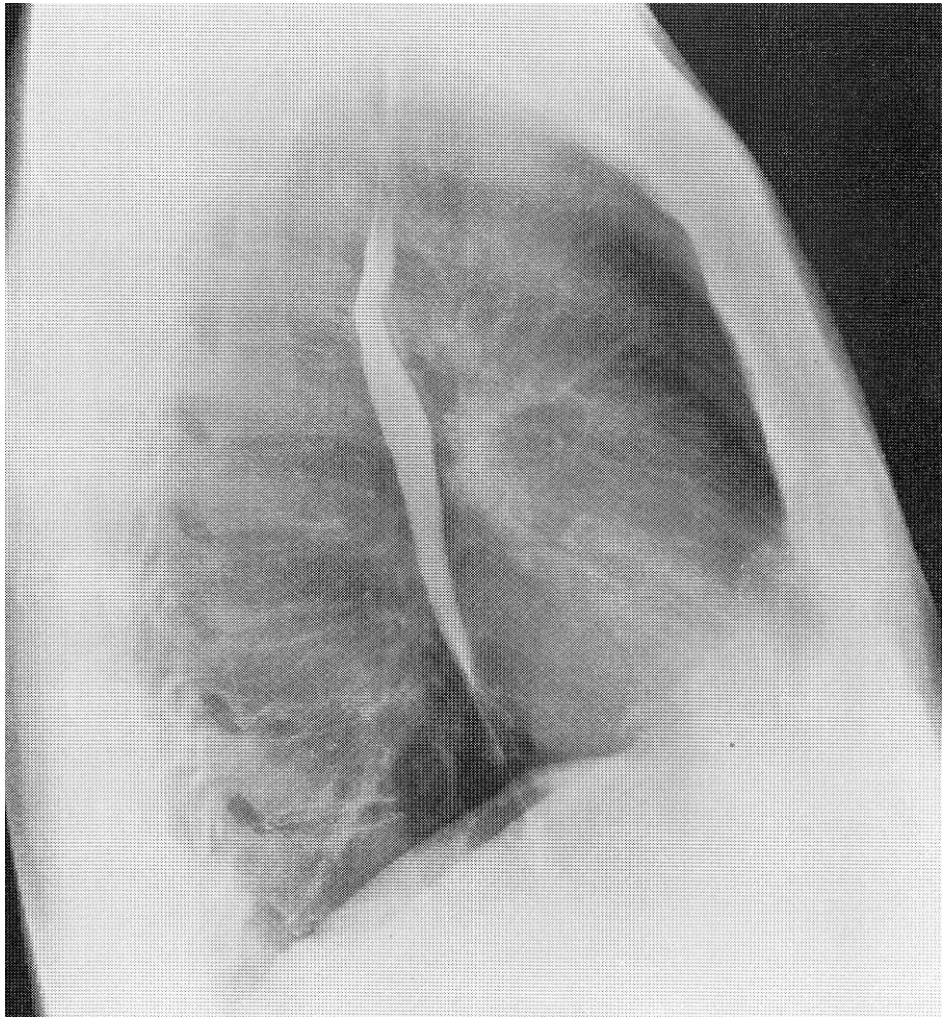


Lateral Relations

- 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

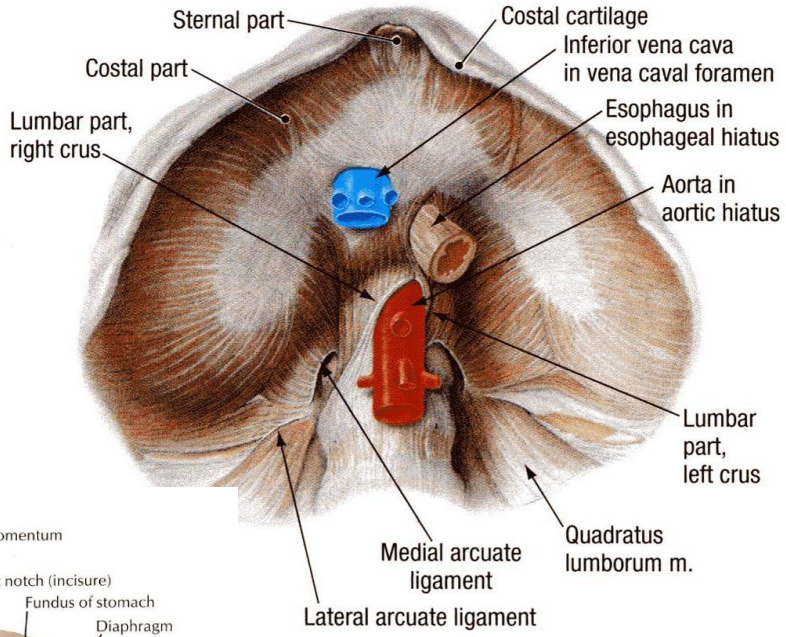
- There is a close relationship between the left atrium of the heart and the esophagus.
- **What is the clinical application?**
- A *barium swallow* in the esophagus will help the physician to **assess the size of the left atrium (Dilation)** *as in case of a heart failure*.

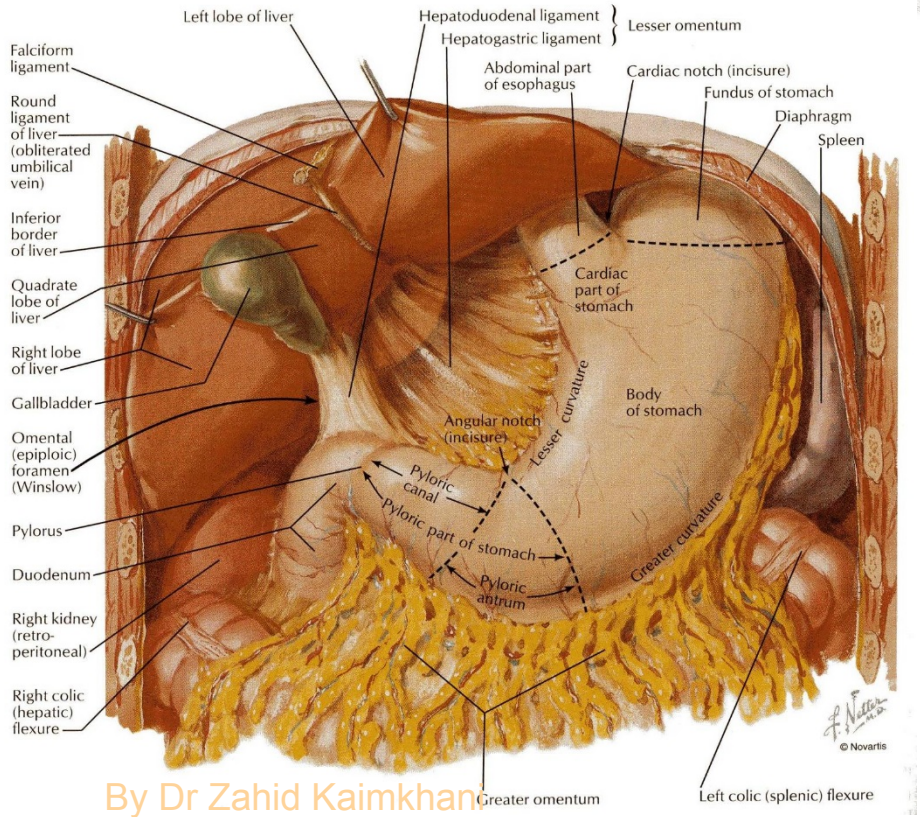


RELATIONS IN THE ABDOMEN

- 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.

- 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.

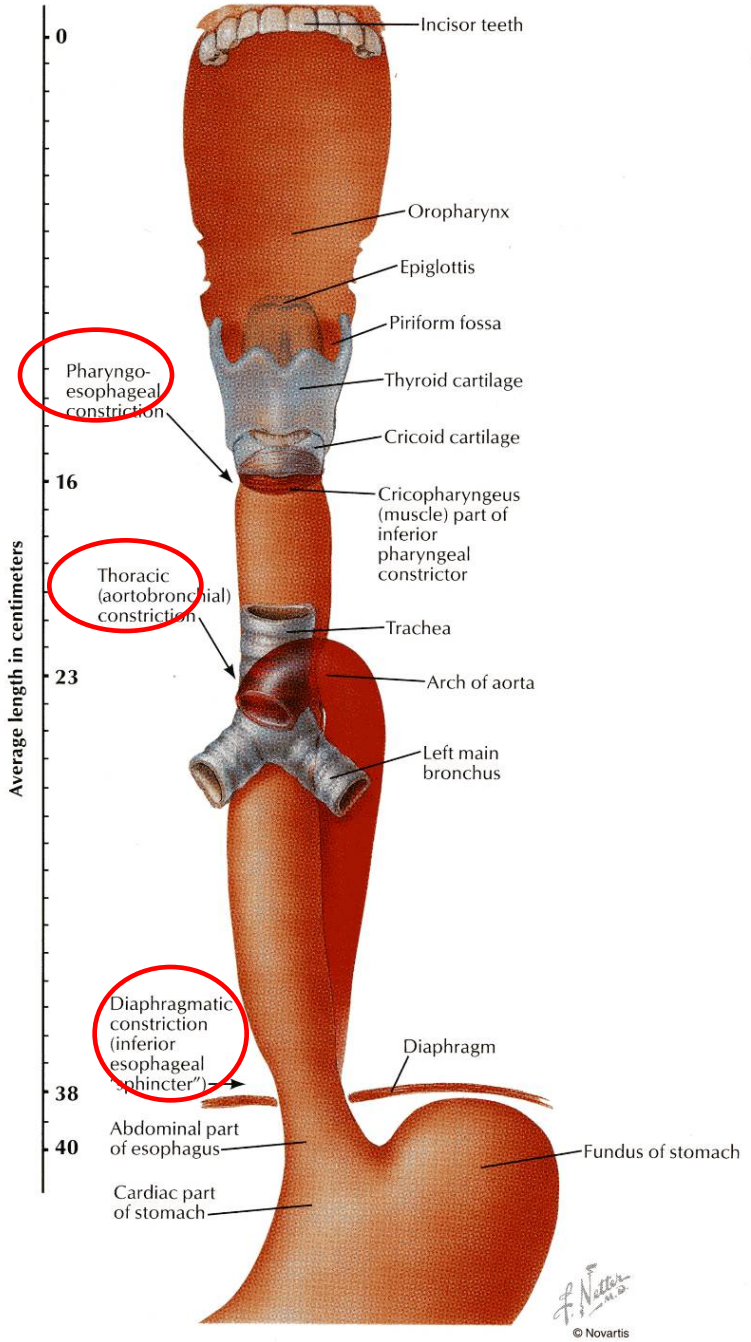




ESOPHAGEAL CONSTRICTIONS

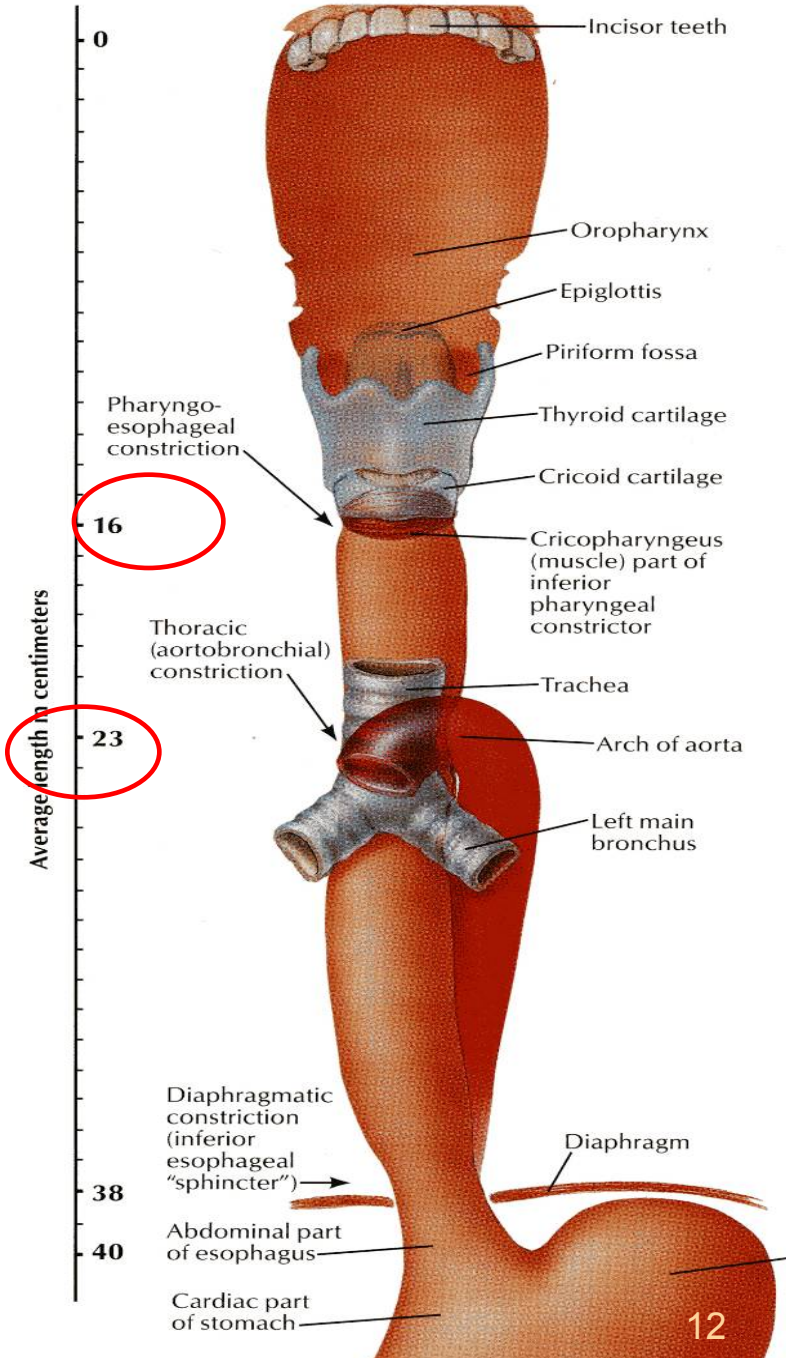
- **3** anatomic constrictions.
- The **first** (**narrowest**)is at the junction with the **pharynx** (15 cm from incisor teeth).
- The **second** is at the crossing with the aortic arch and the **left main bronchus. (27 cm)**
- The **third** is at the junction with the **stomach**. (**38 cm)**
- They have a considerable clinical importance. **Why?**

- ***Also when crossed by arch of aorta 22 cm***

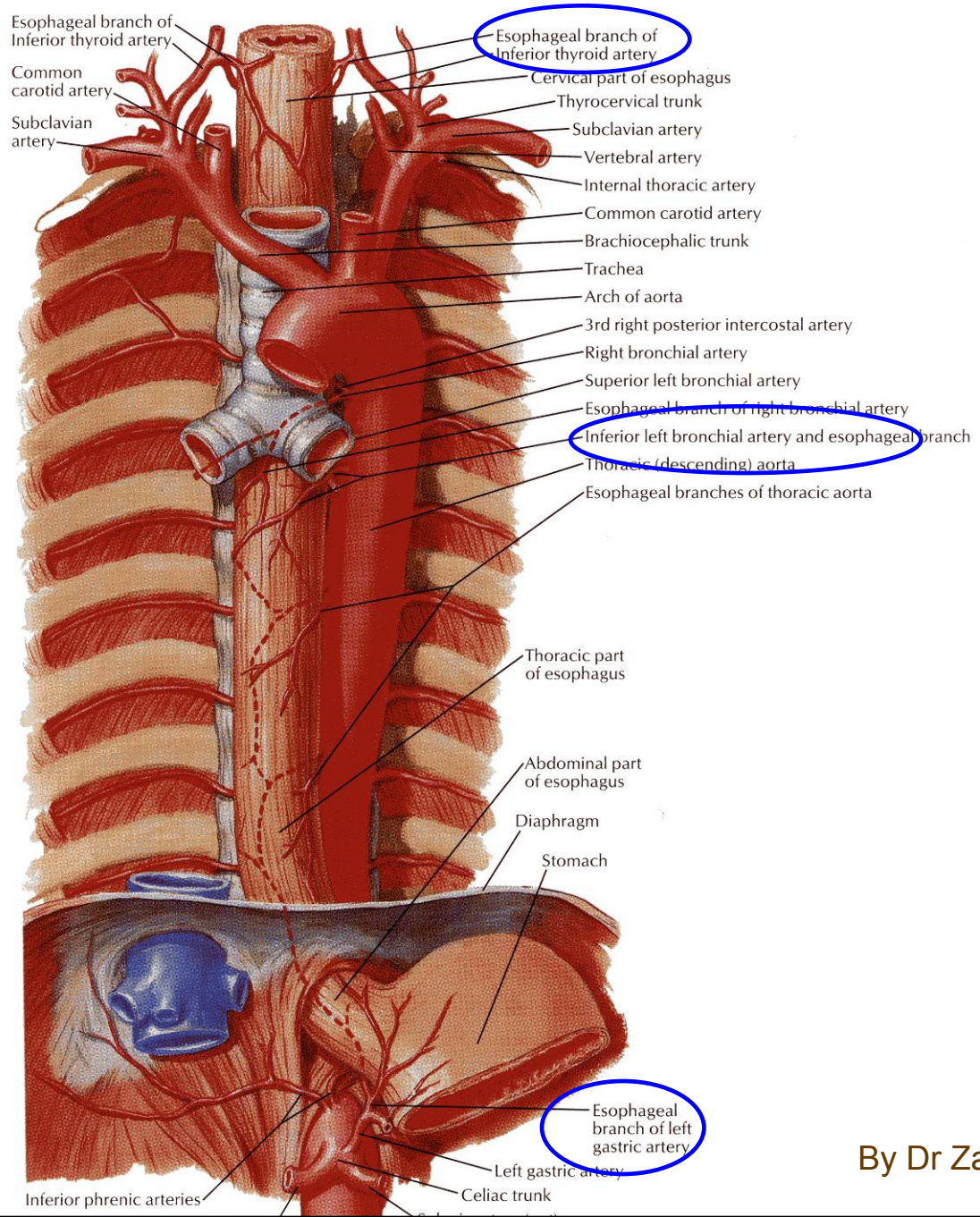


ESOPHAGEAL STRICTURES

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

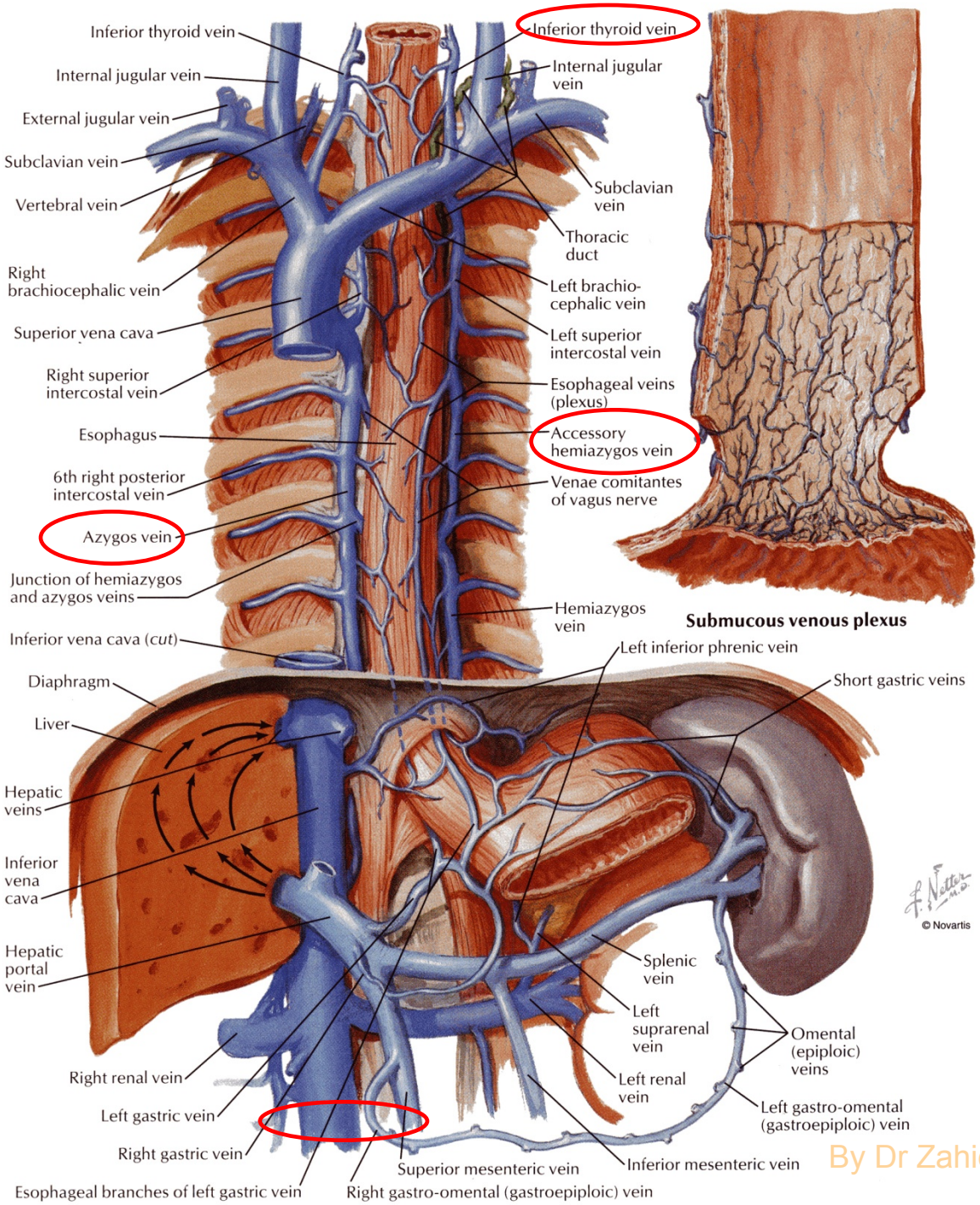


ESOPHAGUS



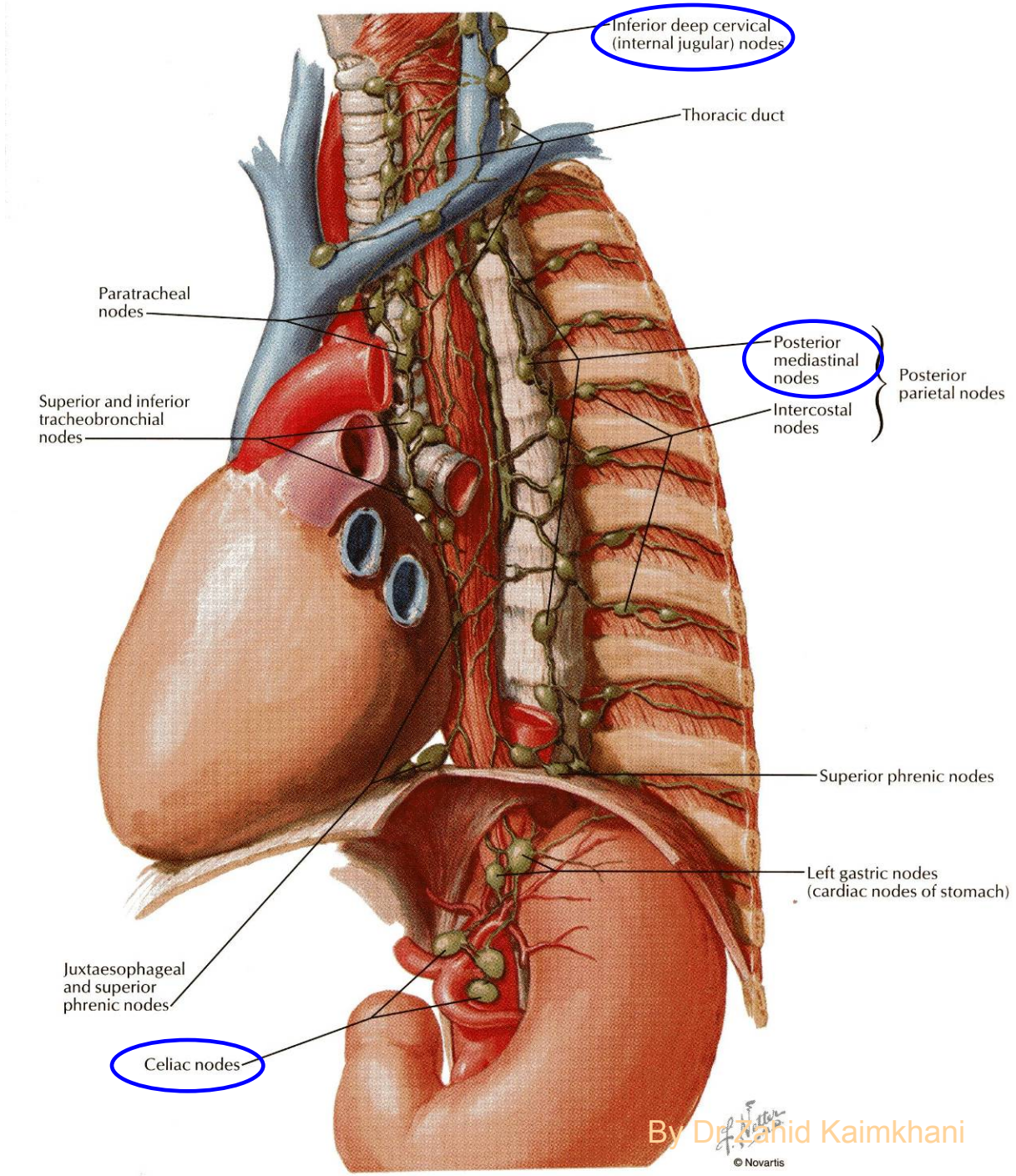
ARTERIAL SUPPLY

- 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

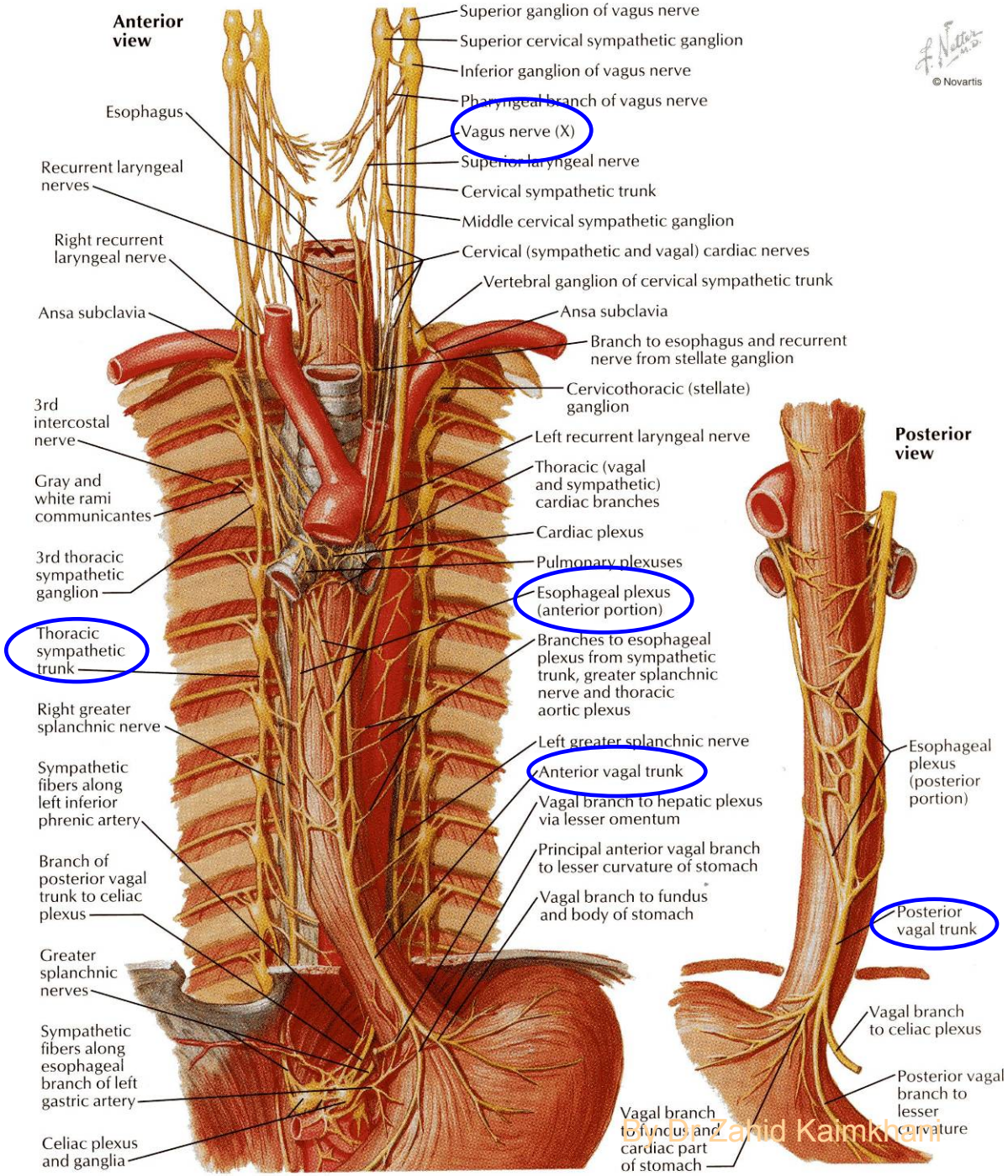
- The upper third drains in into the **inferior thyroid veins**.
- The middle third into the **azygos veins**.
- The lower third into the **left gastric vein**, which is a tributary of the portal vein.



LYMPH DRAINAGE

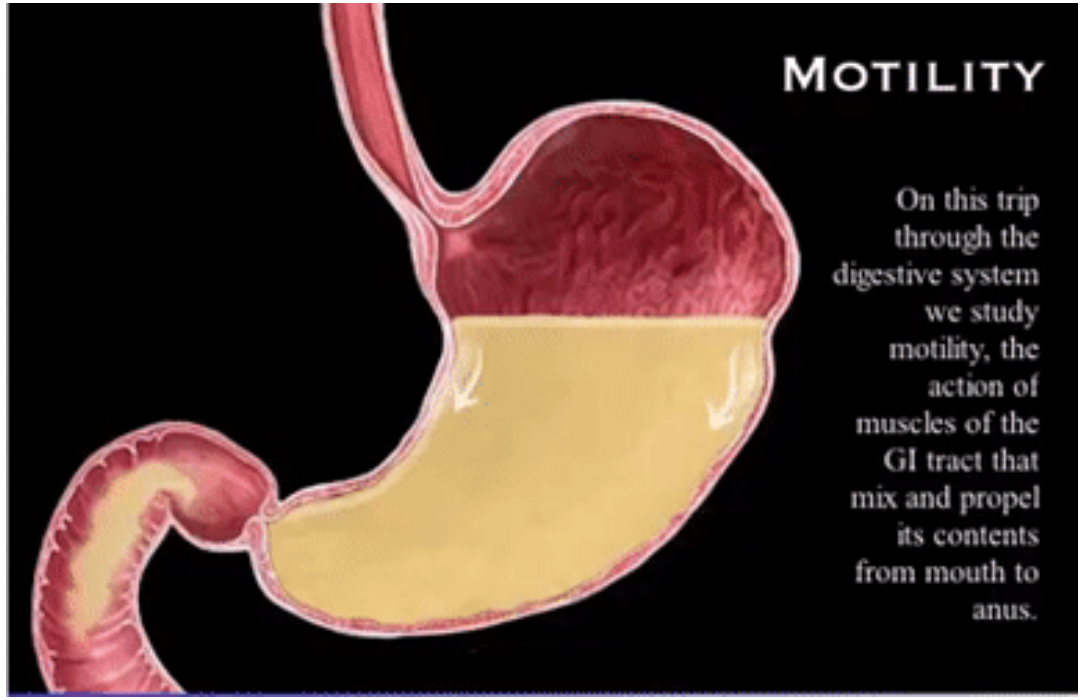
- The upper third is drained in the **deep cervical nodes**.
- The middle third is drained into the **superior** and **inferior mediastinal nodes.**
- The lower third is drained in the **celiac lymph nodes** in the abdomen.

NERVE SUPPLY

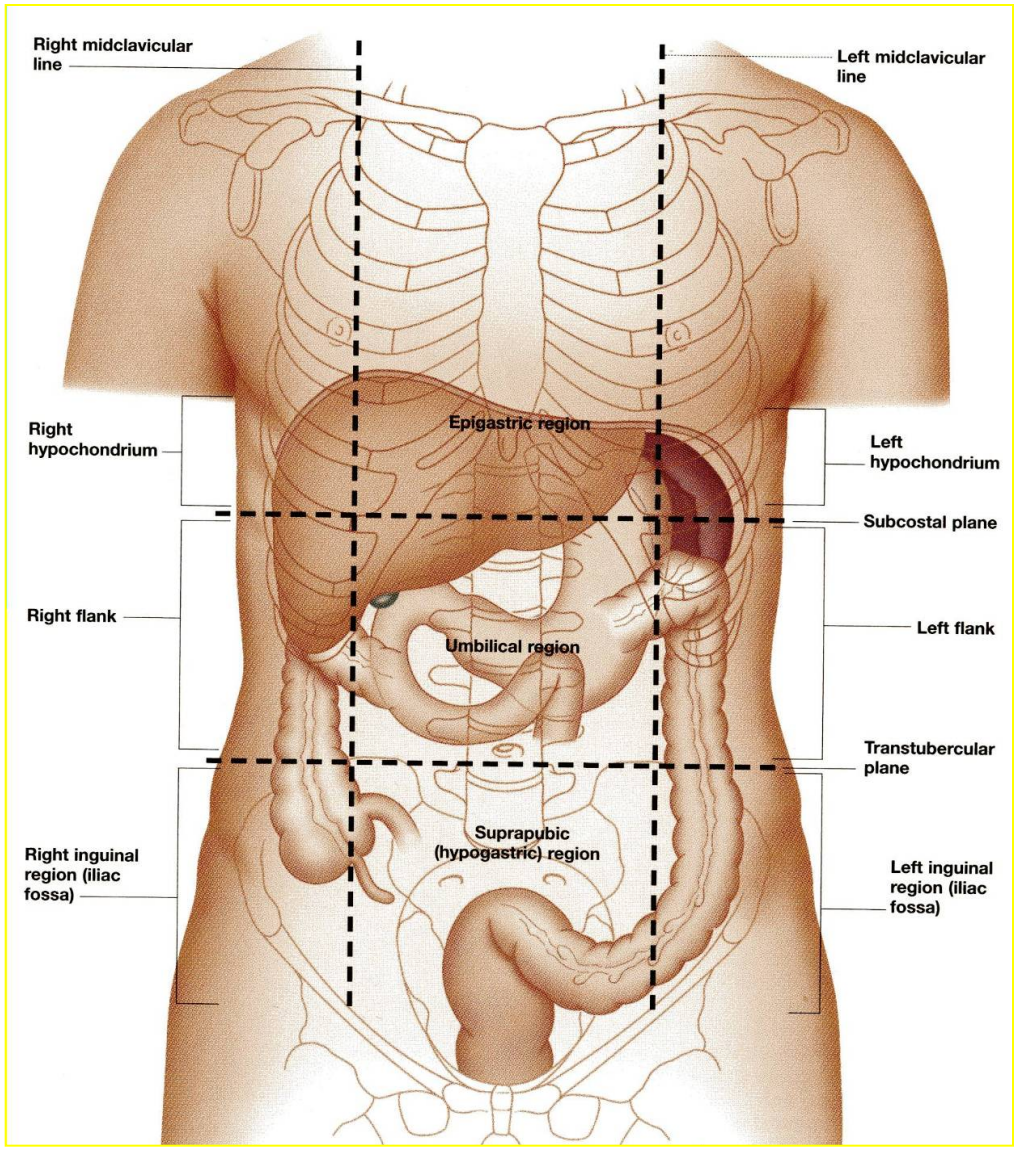


- It is supplied by sympathetic fibers from the **sympathetic trunks**.
- The parasympathetic supply comes form the **vagus nerves**.
- Inferior to the roots of the lungs, the vagus nerves join the sympathetic nerves to form the **esophageal plexus**.
- The ***left*** vagus lies **anterior** to the esophagus.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

STOMACH


MOTILITY
On this trip through the digestive system we study motility, the action of muscles of the GI tract that mix and propel its contents from mouth to anus.

STOMACH

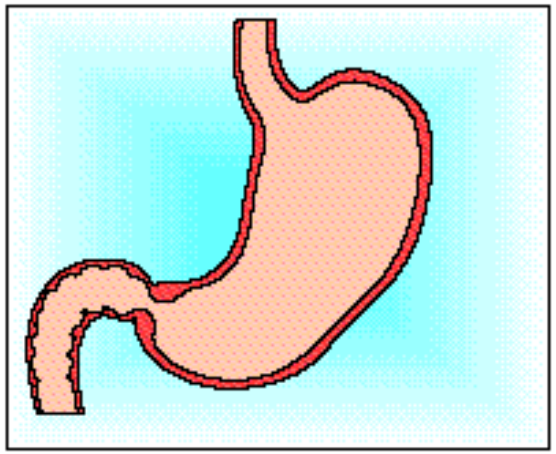


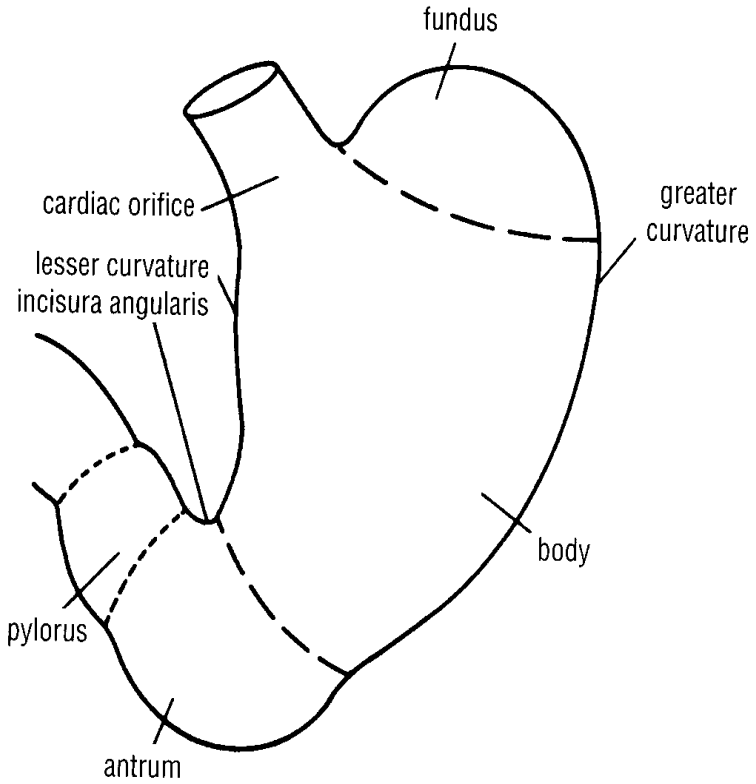
LOCATION

- 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.

STOMACH

PARTS





2 Orifices:

- **Cardiac orifice**
- **Pyloric orifice**

2 Borders:

- **Greater curvature**
- **Lesser curvature**

2 Surfaces:

- **Anterior surface**
- **Posterior surface**

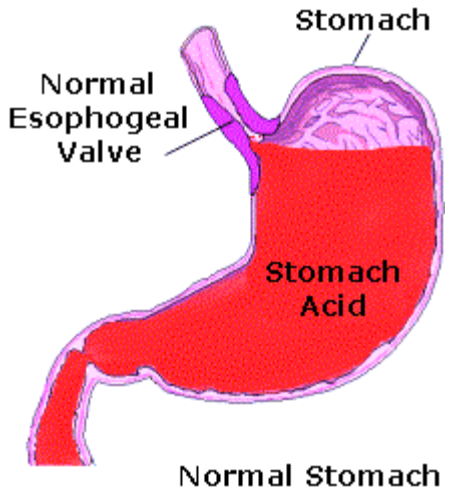
3 Parts:

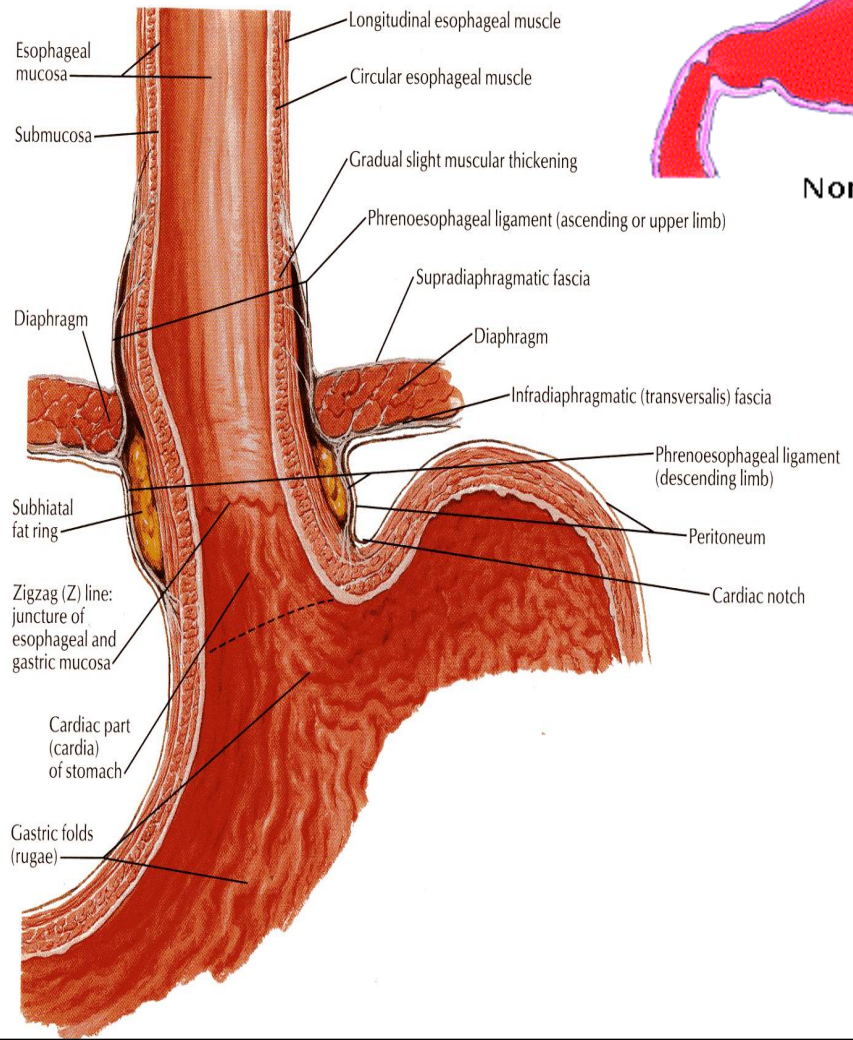
- **Fundus**
- **Body**
- **Pylorus:**

The pylorus is formed of 3 parts

- **Pyloric antrum**
- **Pyloric canal**
- **Pyloric sphincter**

STOMACH

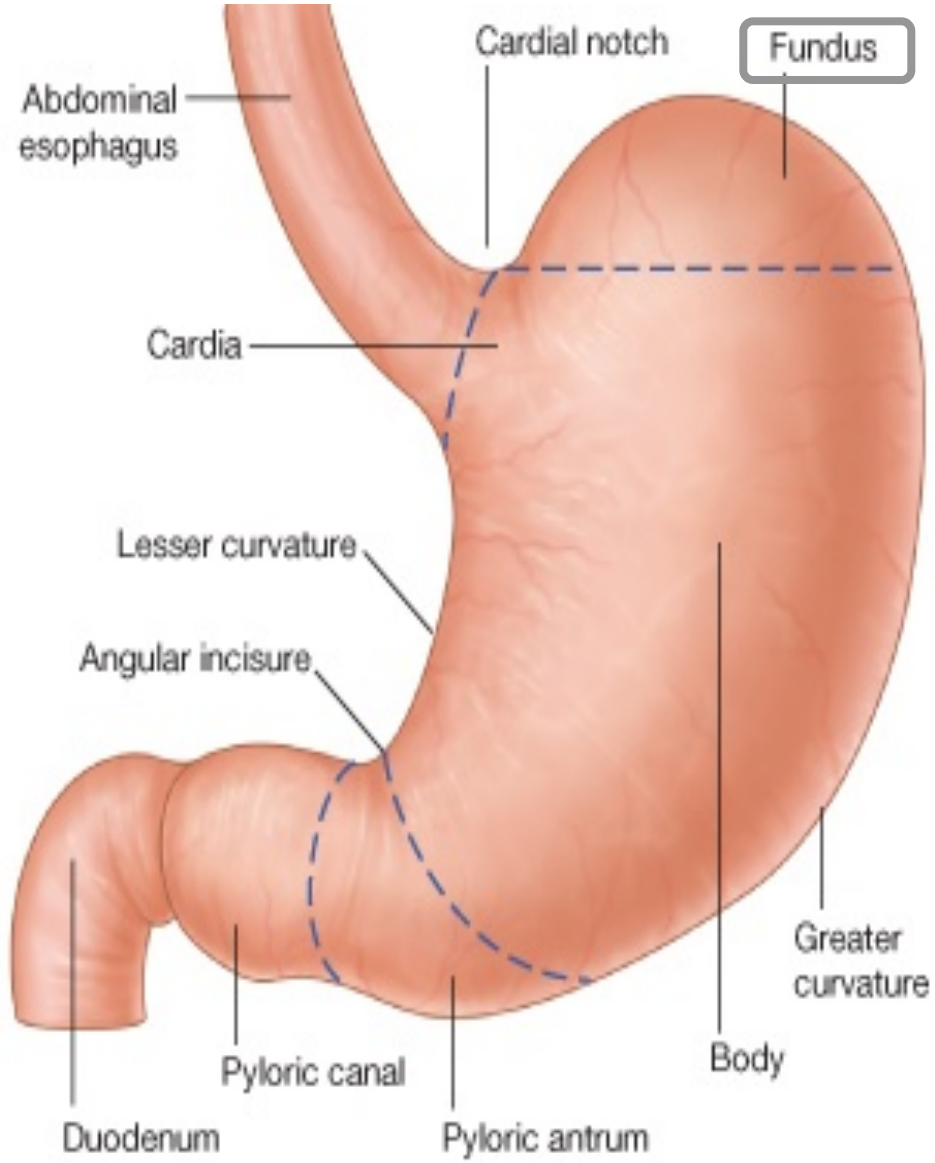




CARDIAC ORIFICE

- 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)

STOMACH

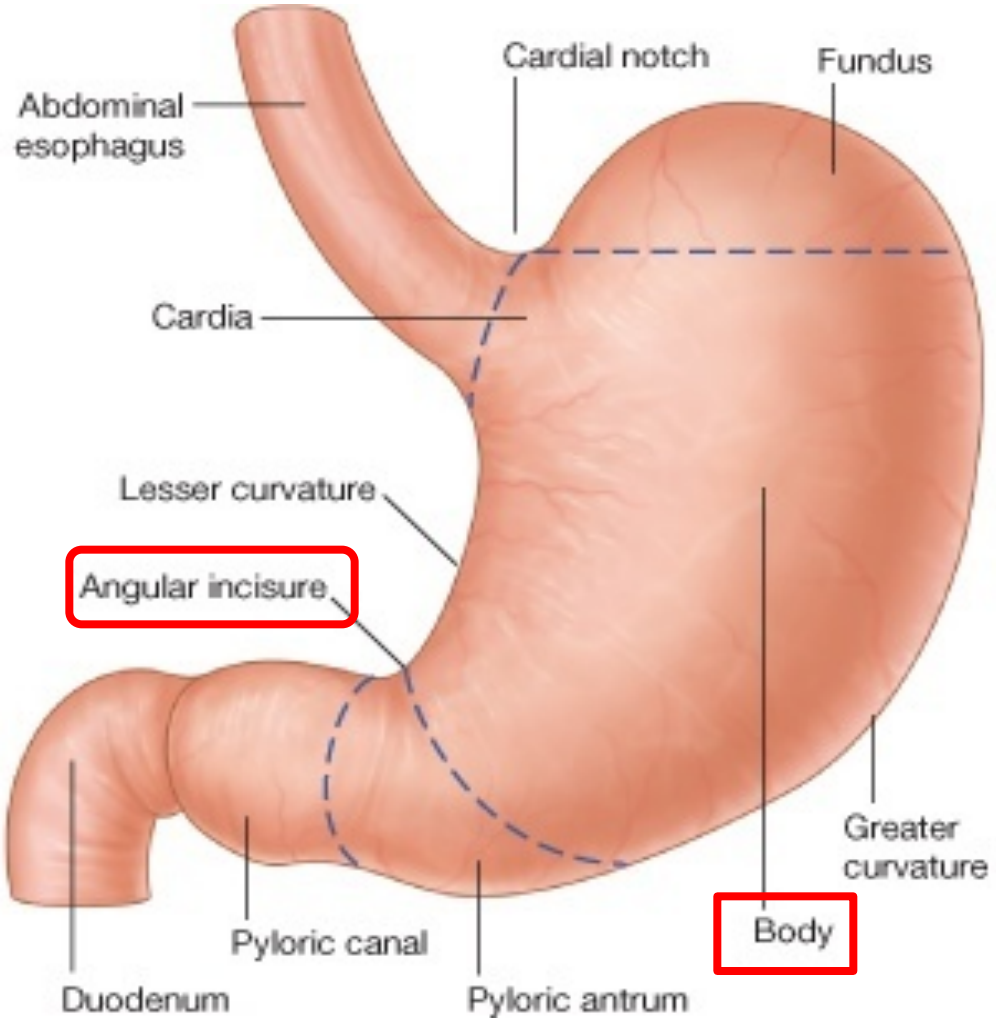


FUNDUS

- **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.**

STOMACH

BODY

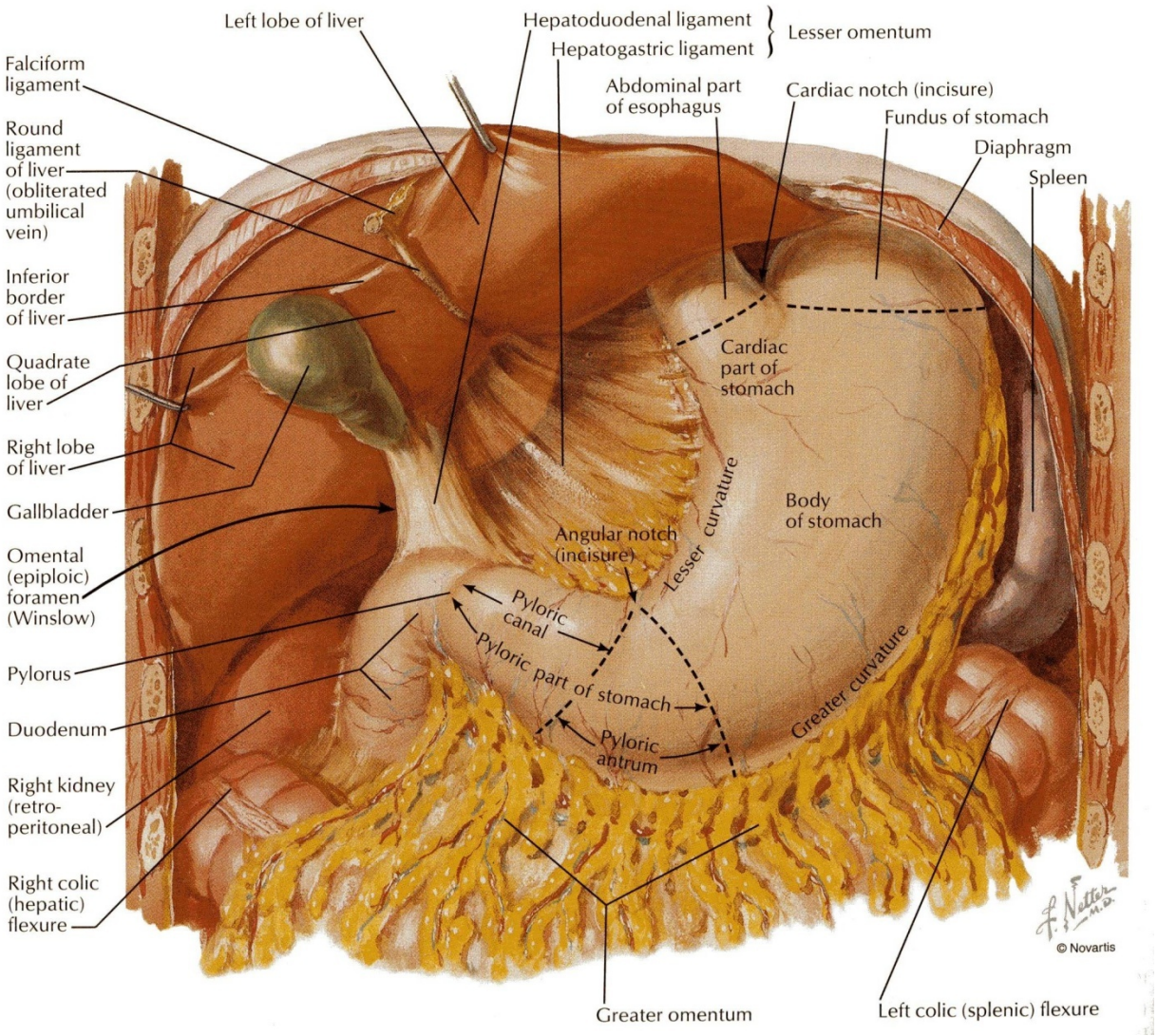


Extends from:

- **The level of the fundus, to**
- **The level of Incisura angularis.**

Incisura angularis: is a constant notch on the lesser curvature

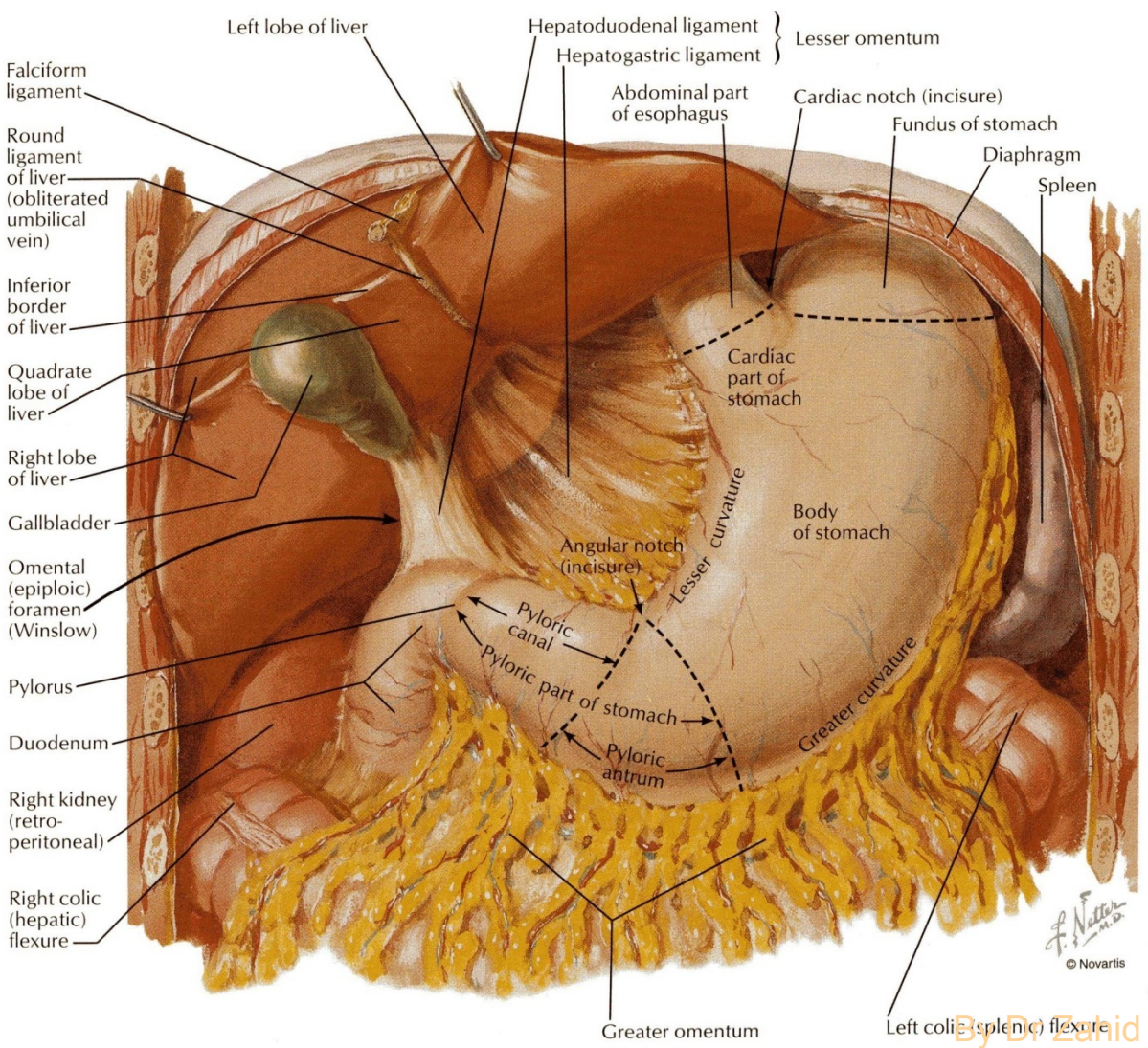
STOMACH



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, (gasrtohepatic ligament).**

STOMACH

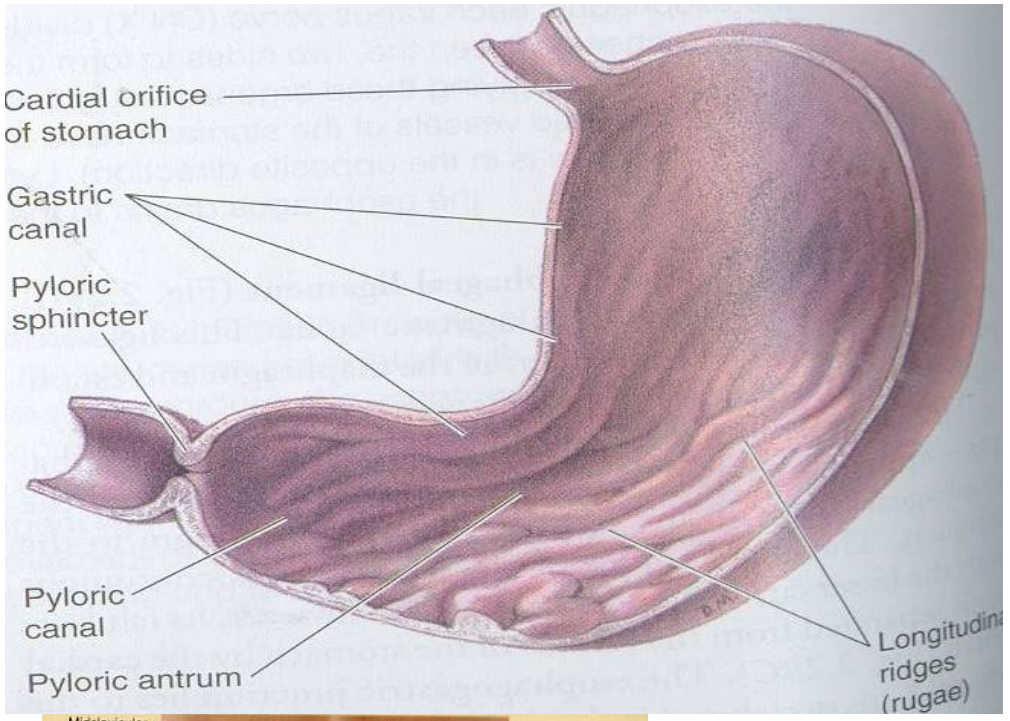


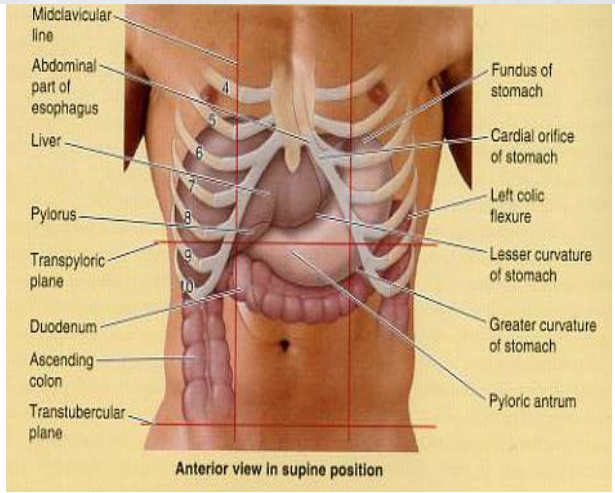
GREATER CURVATURE

- **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.**

STOMACH

PYLORIC ANTRUM AND PYLORUS

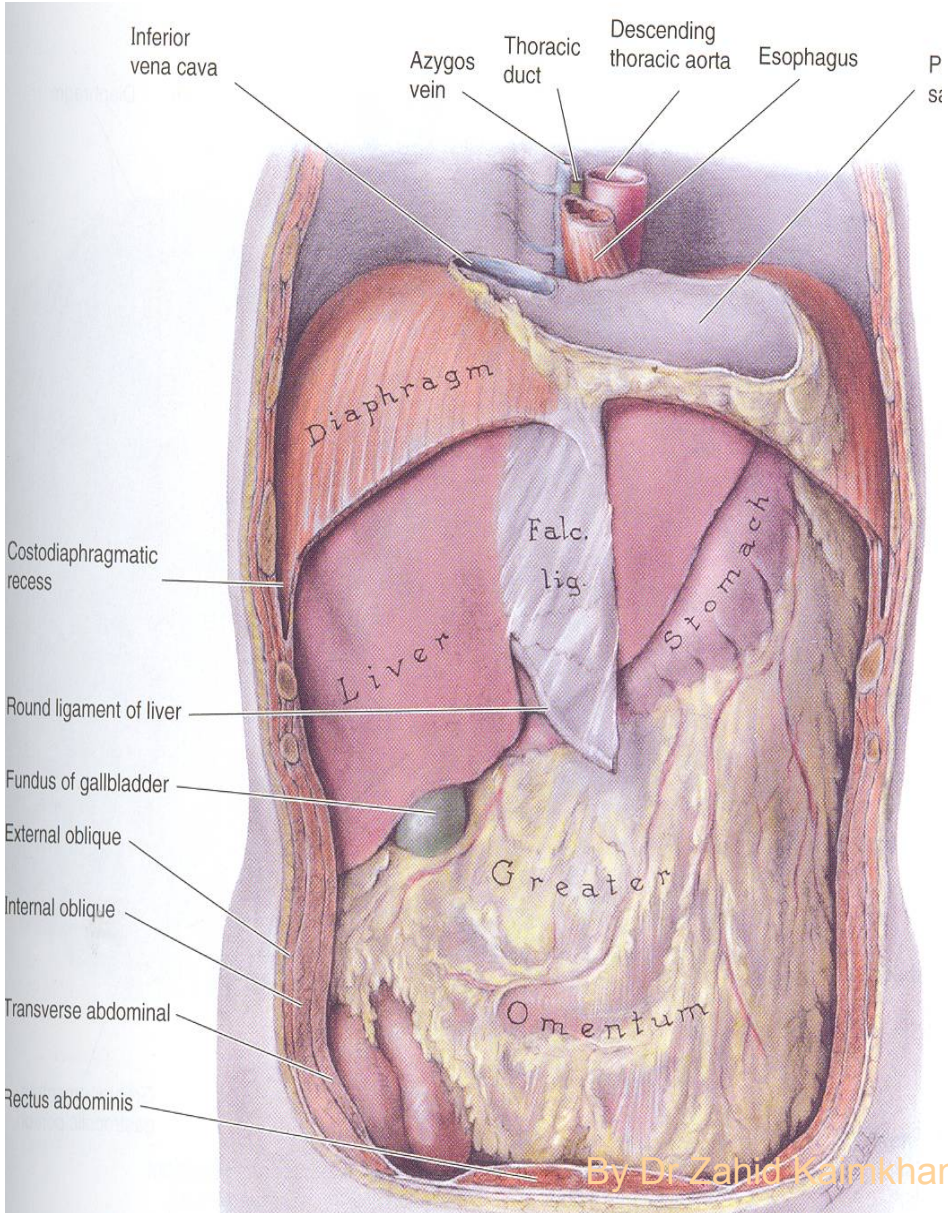




- The **pyloric antrum** extends from Incisura angularis to the pylorus.
- The **pylorus** is a tubular part of the stomach.
- It lies in the **transpyloric plane** (L1) 1 cm. to the **right of the middle line**,
- It has a thick muscular end called **pyloric sphincter**.
- The cavity of the pylorus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

STOMACH

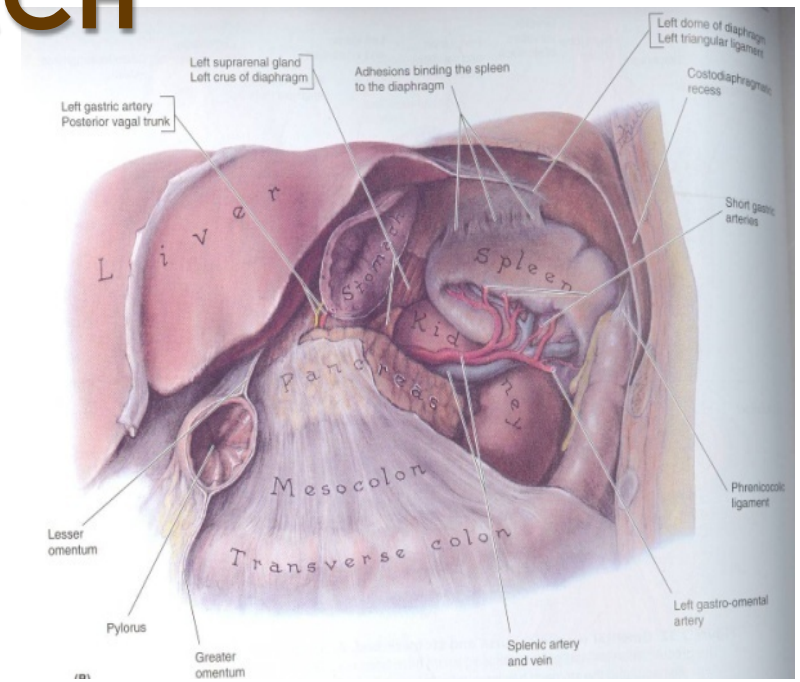
RELATIONS

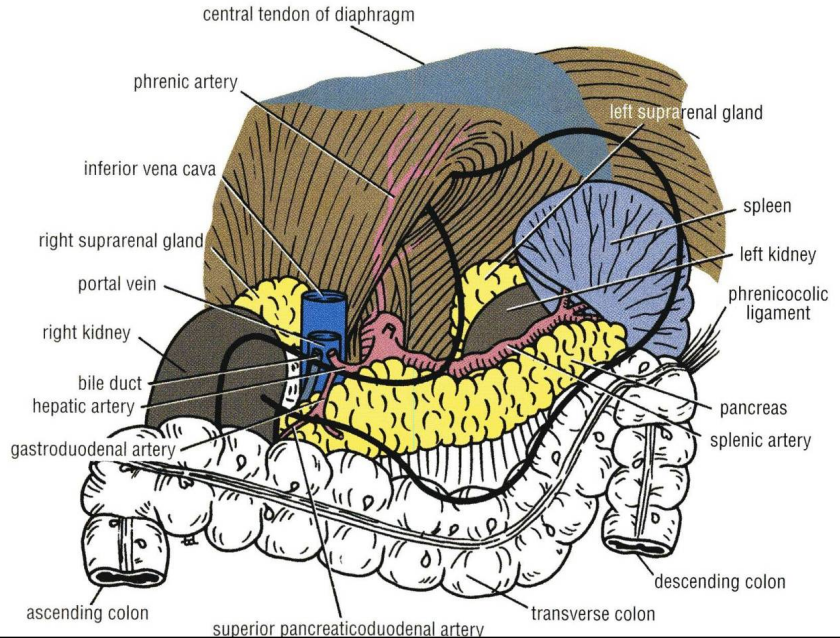


ANTERIOR RELATIONS

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

STOMACH

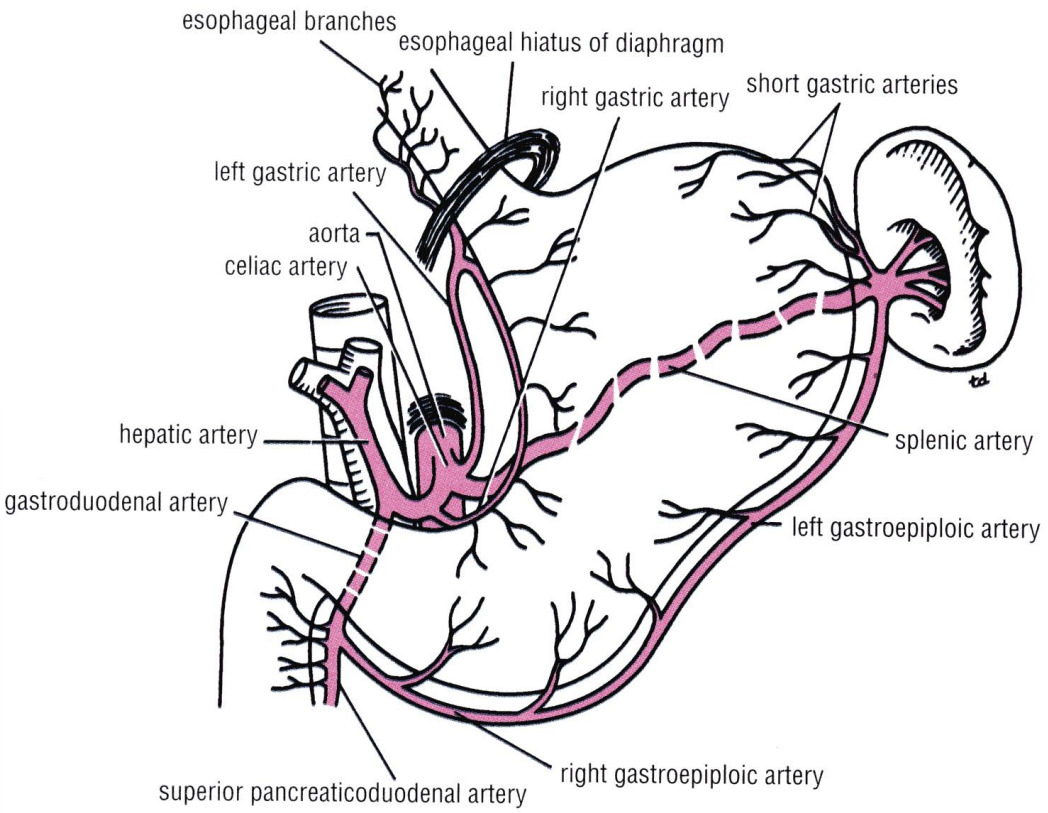




POSTERIOR RELATIONS (STOMACH BED)

- 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.

STOMACH



ARTERIAL SUPPLY

5 arteries:

- **Left gastric artery:**
- **It is a branch of celiac artery.**
  - **Ascends along the lesser curvature.**
- **Right gastric artery:**

From the hepatic artery of celiac.

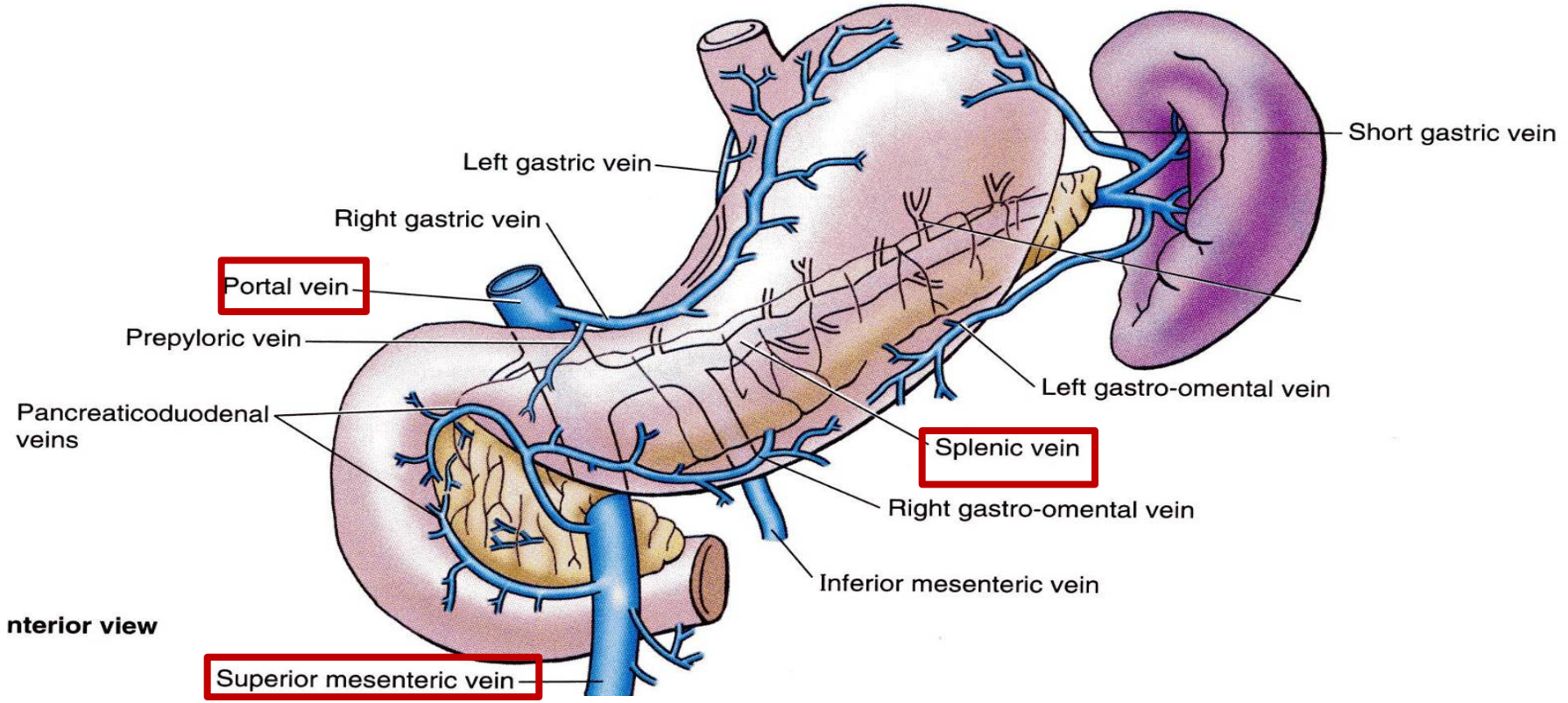
  - **Runs to the left along the lesser curvature.**
- **Short gastric arteries – arise from the splenic artery.**
  - **Pass in the gastrosplenic ligament.**
- **Left gastroepiploic artery:**

from splenic artery

  - **Pass in the gastrosplenic ligament.**
- **Right gastroepiploic artery: from the gastroduodenal artery of hepatic .**
  - **Passes to the left along the greater curvature.**

STOMACH

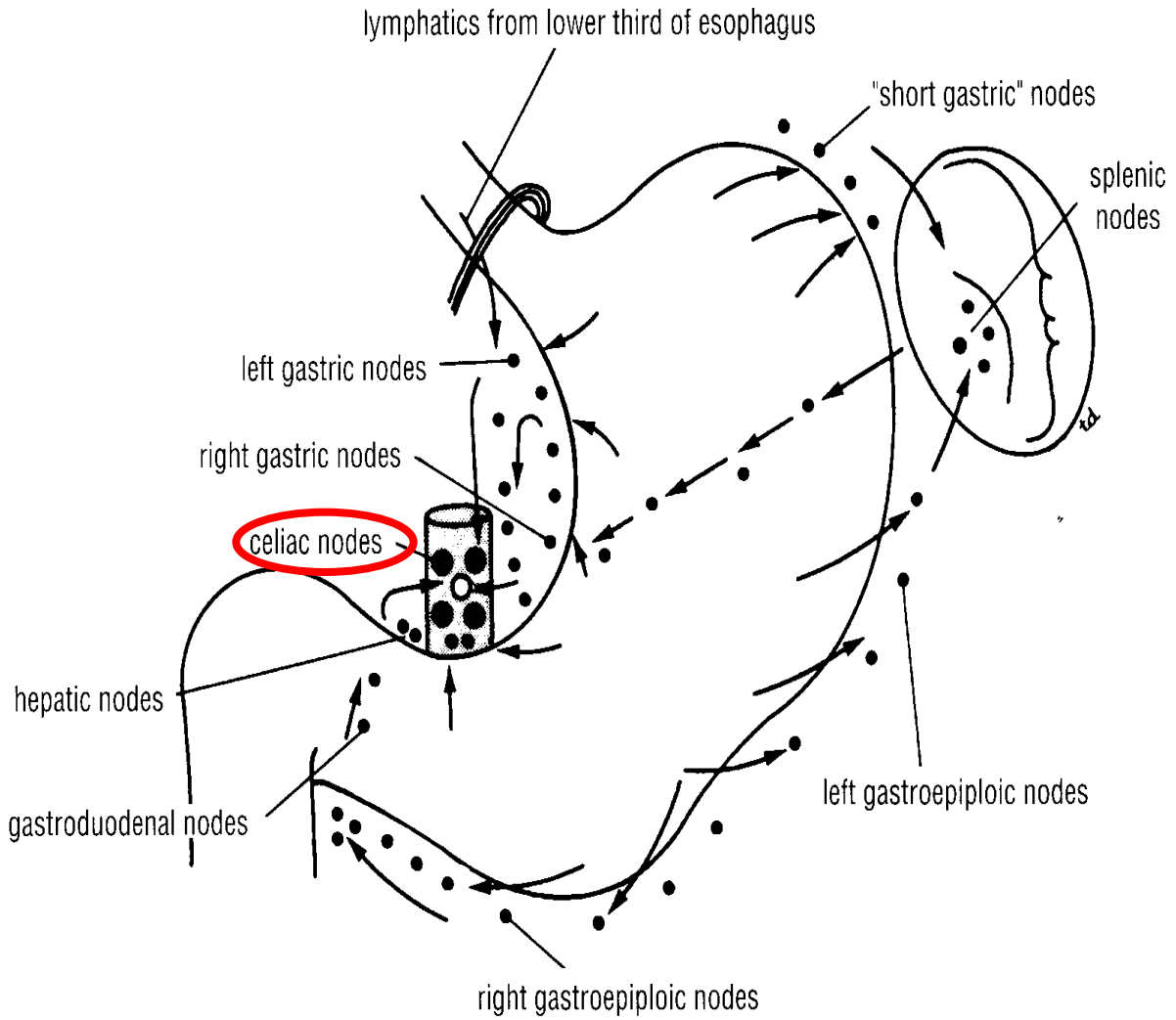
VENOUS DRAINAGE



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.**

STOMACH

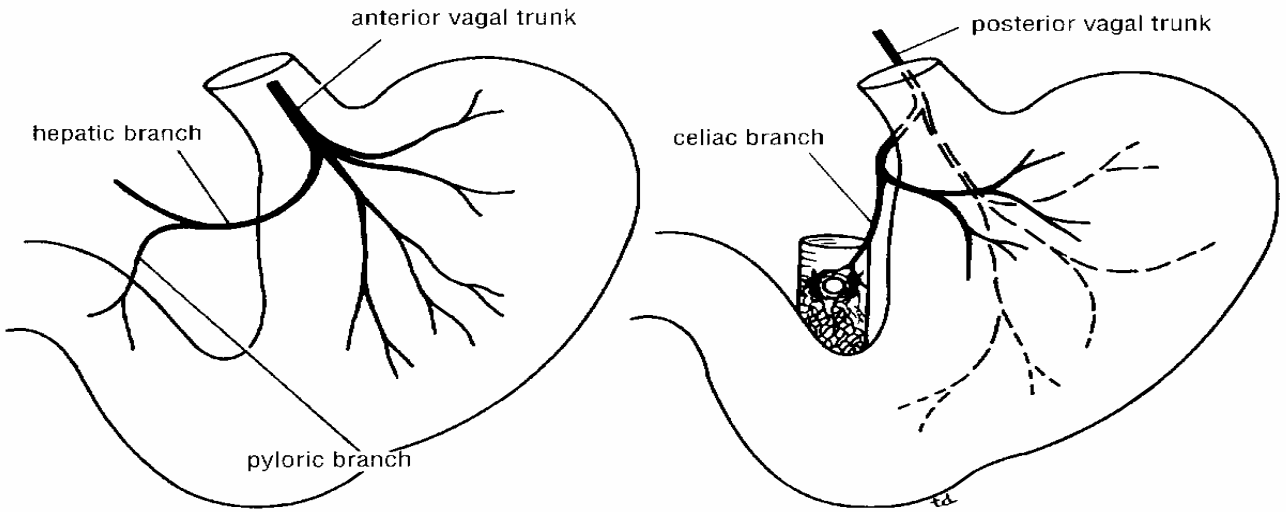


LYMPHATIC DRAINAGE

- **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.**

STOMACH

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.

Thank You