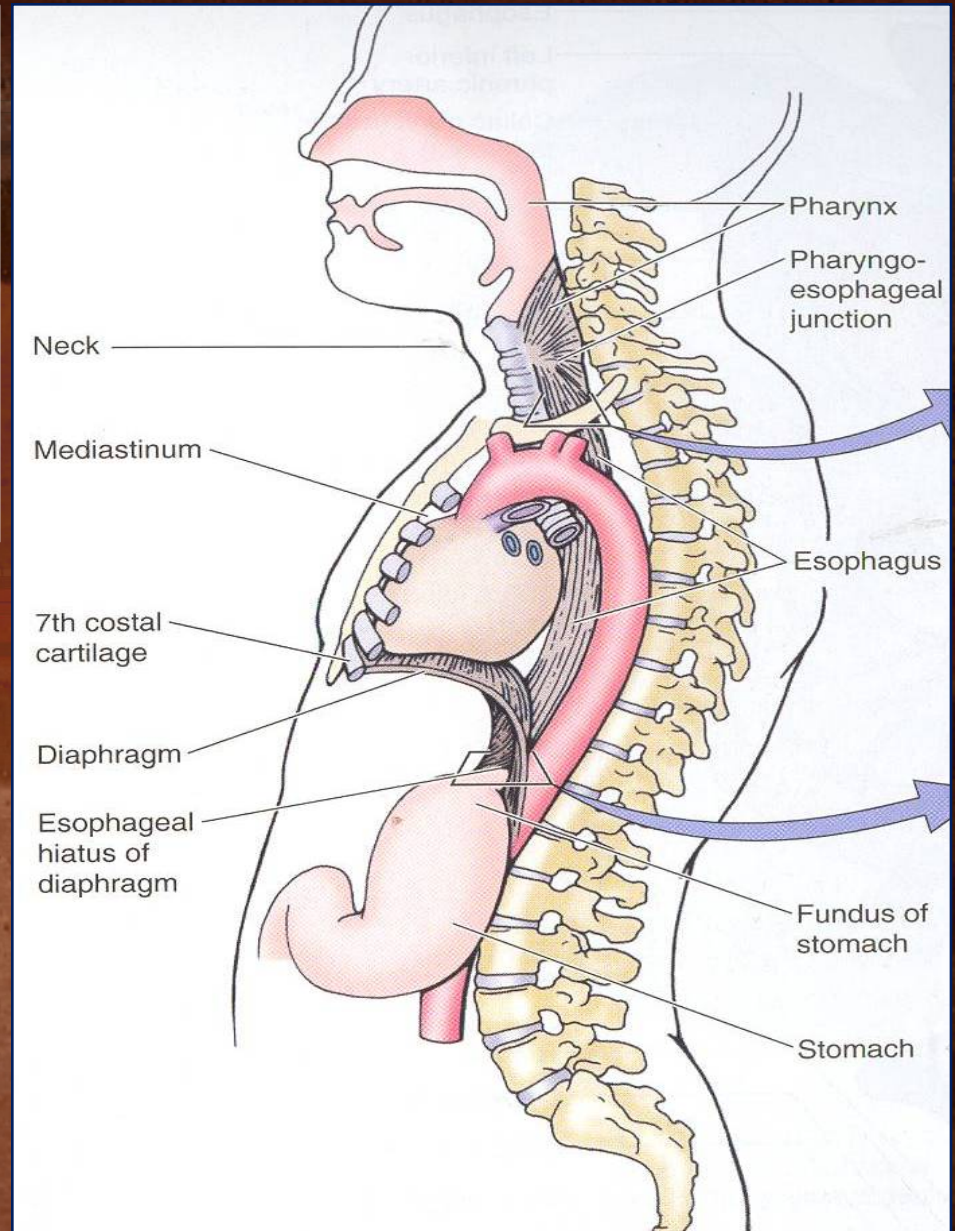


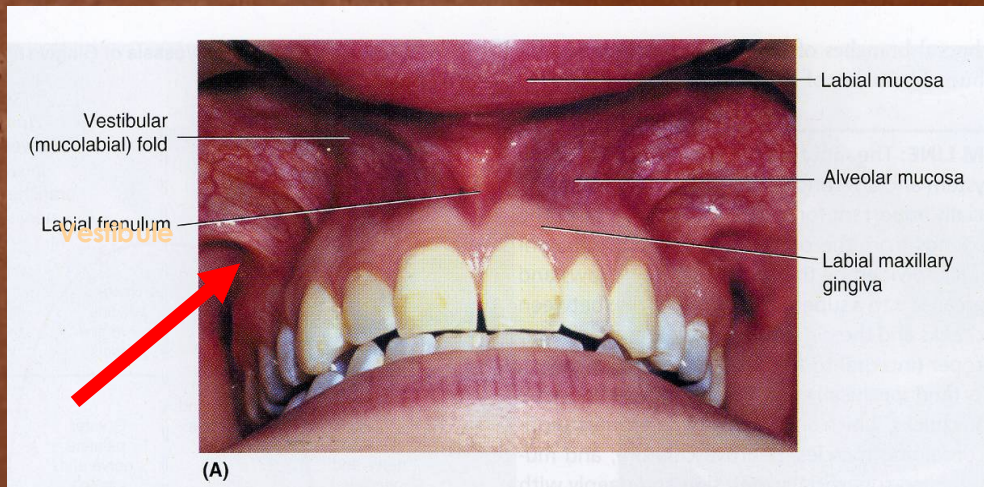
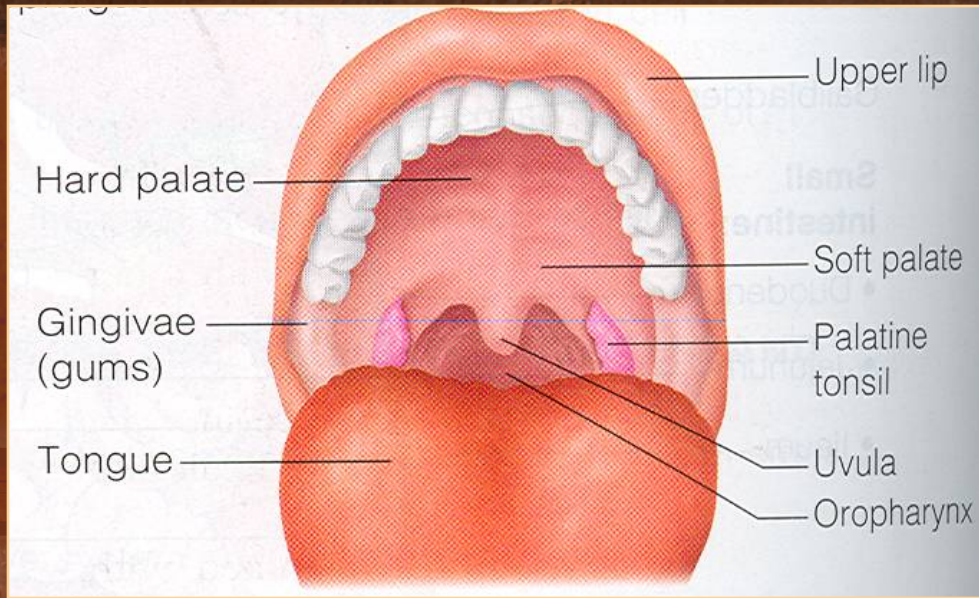
ORAL CAVITY, ESOPHAGUS AND STOMACH



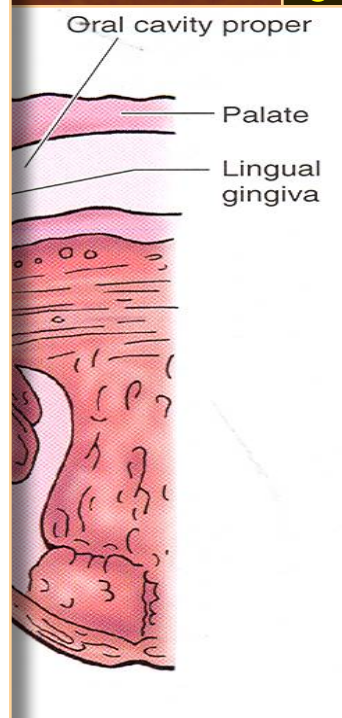
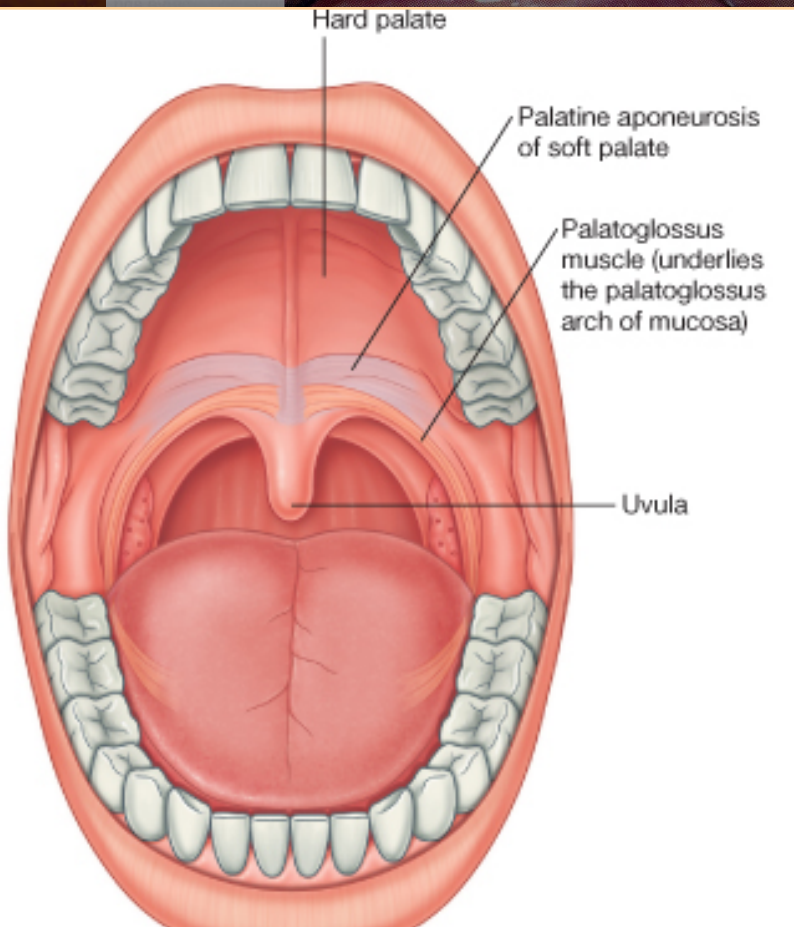
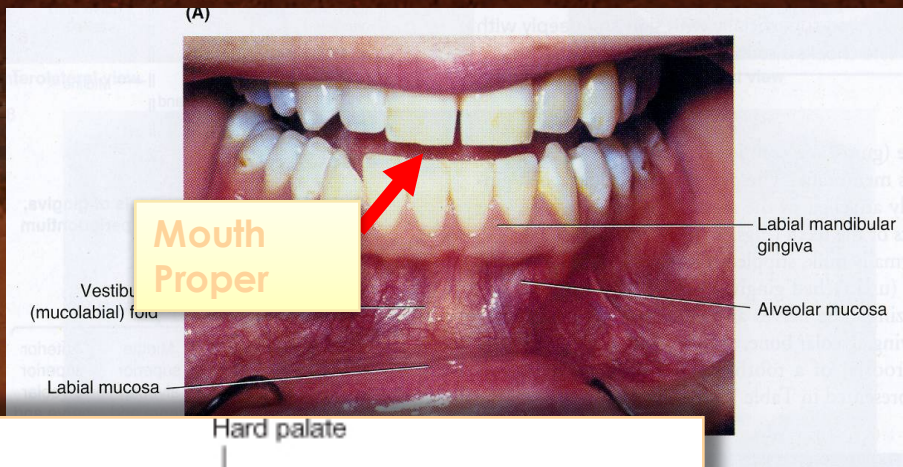
OBJECTIVES

- By the end of the lecture you should be able to:
- Describe the anatomy the oral cavity, (boundaries, parts, nerve supply).
- Describe the anatomy of the palate, (parts, muscles, nerve & blood supply).
- Describe the anatomy of the tongue, (structure, muscles, motor and sensory nerve supply, blood supply , lymph drainage).
- 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.

ORAL CAVITY



- The mouth extends from **lips** to **oropharyngeal isthmus** (the junction between mouth & the pharynx).
- It is divided into the 1- Vestibule:
- Which lies between **teeth & gums** internally and **lips & cheeks** externally.
- It receives the opening of **parotid duct** opposite the **upper 2nd molar tooth**.



- **2. Mouth cavity proper:**

- lies within the alveolar arches, gums, and teeth

- **It has:**

- **Roof:**

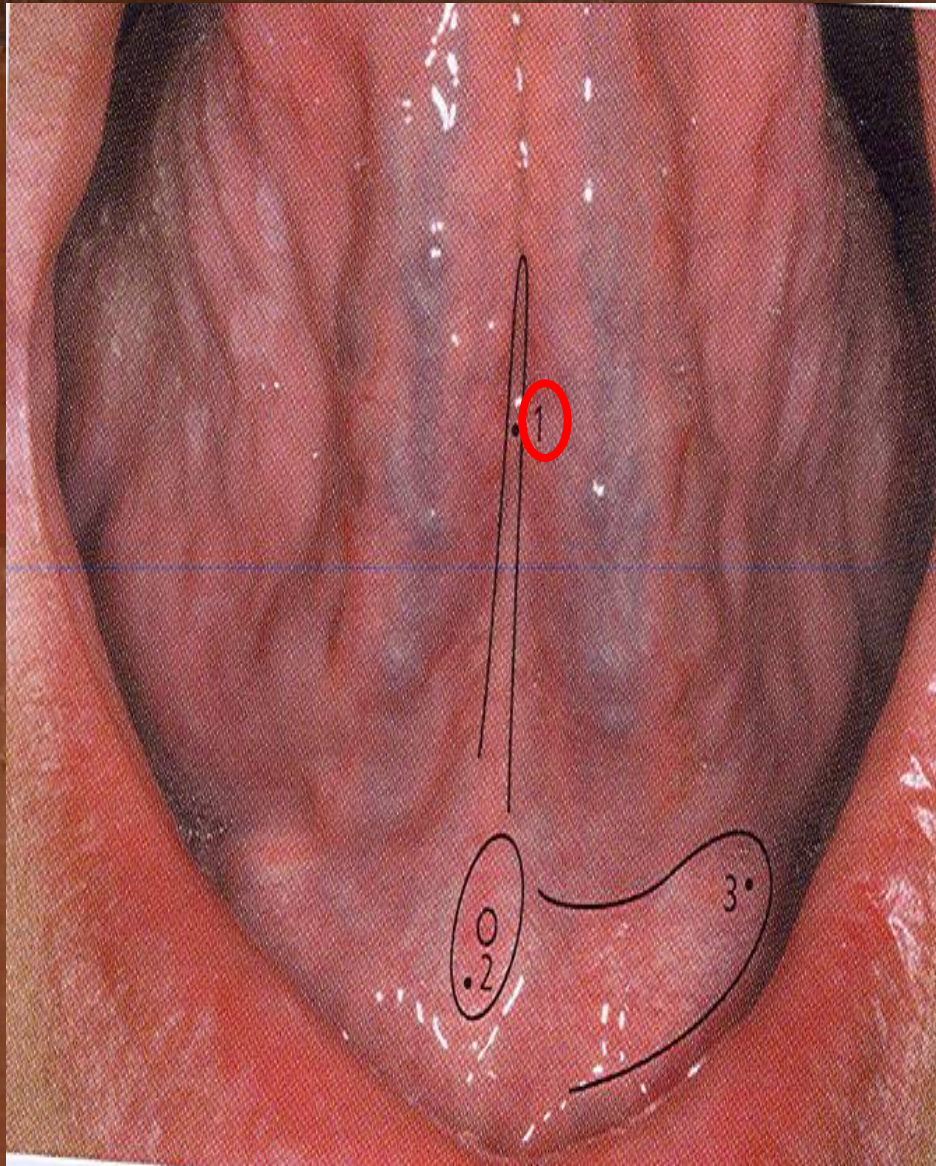
- Formed by the hard & soft palate.

- **Floor:**

- Formed by the anterior 2/3 of the tongue

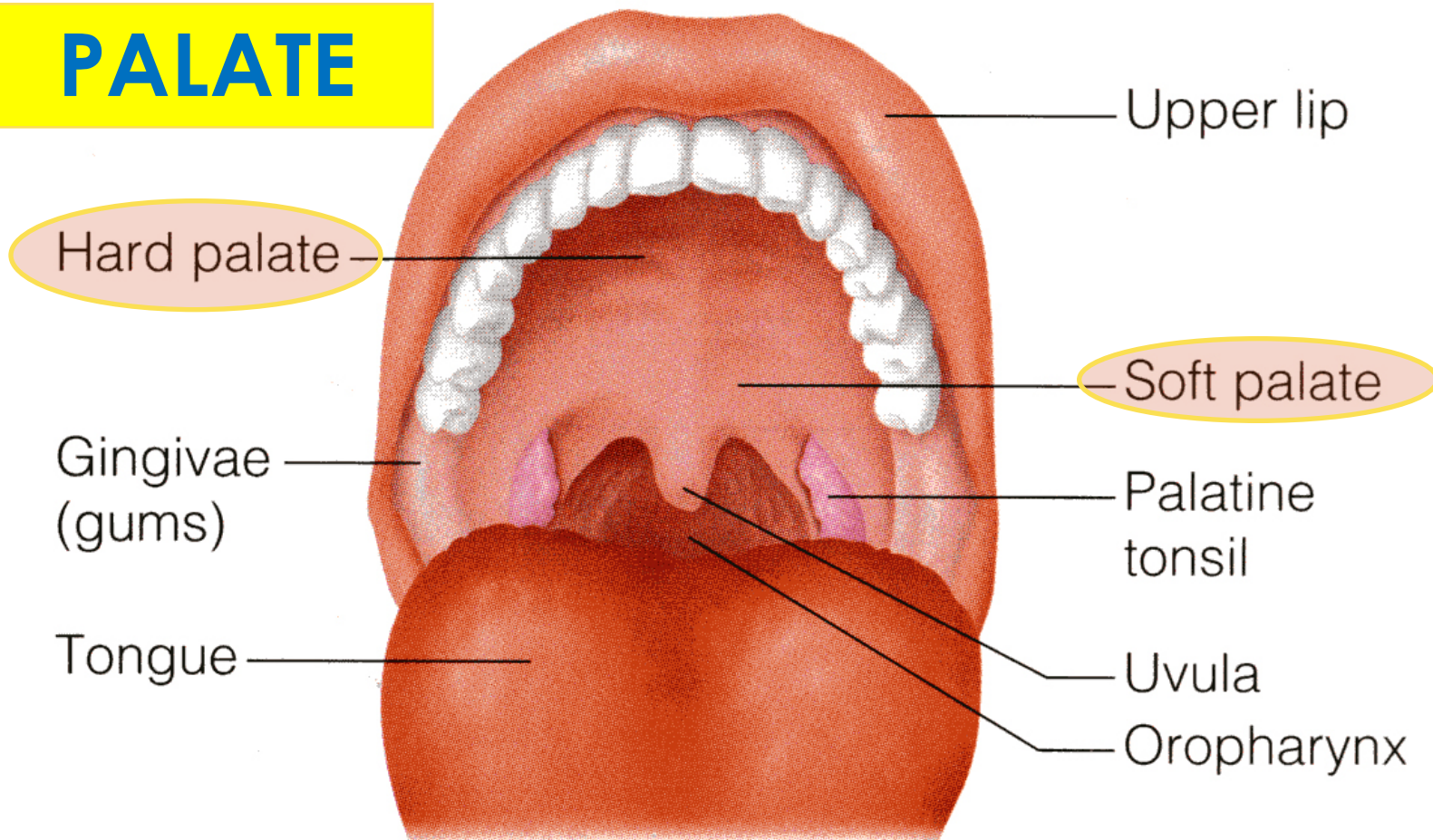
- It communicates with the vestibule behind the 3rd molar tooth.

Under Surface Of The Tongue



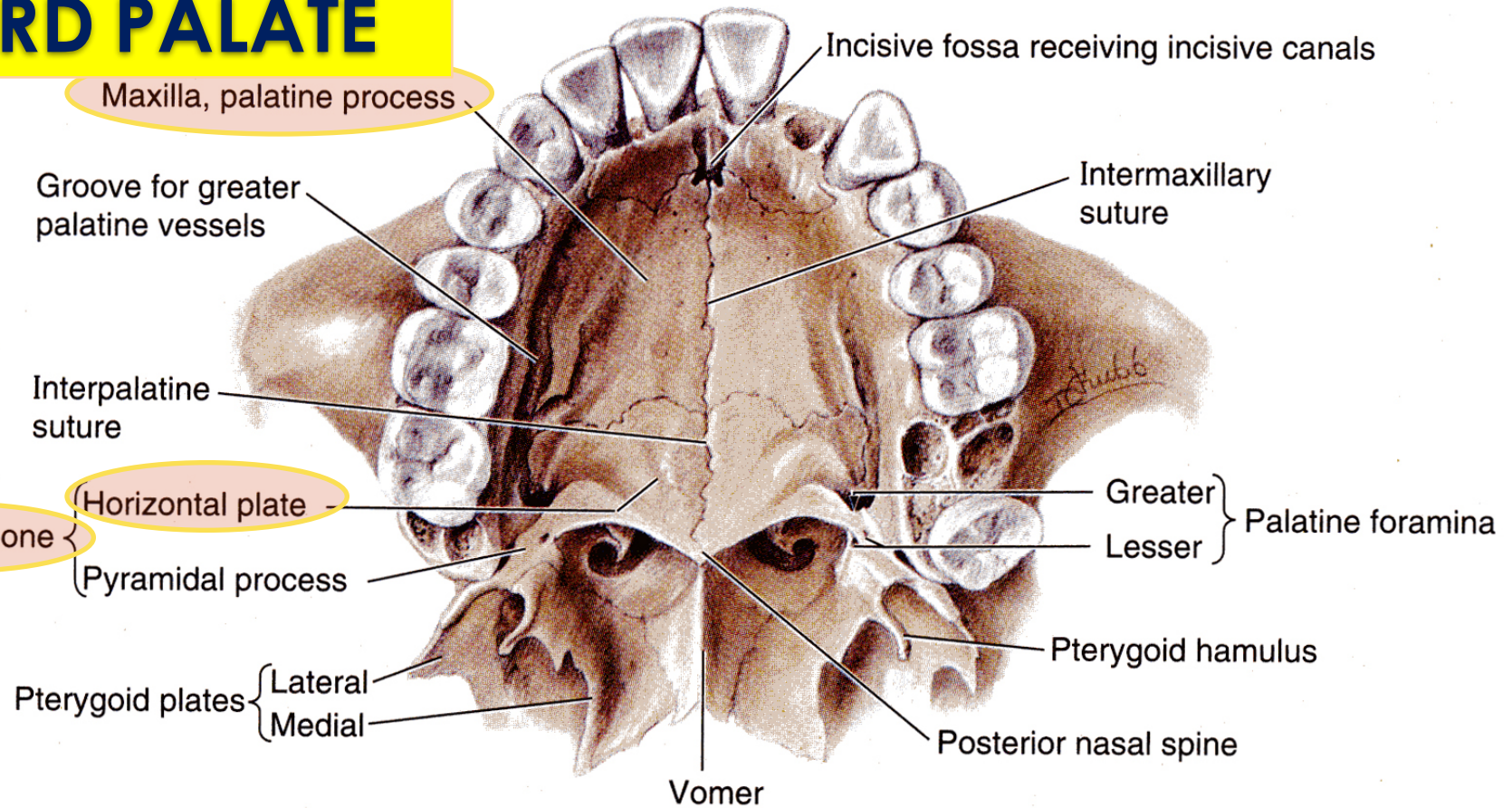
- **1. Frenulum lingulae** in the midline.
- It connects its under surface to the floor of the mouth.
- **2. Orifice of the Submandibular Duct** opens on each side of the frenulum.
- **3. Sublingual Fold** (formed by the underlying sublingual gland) is the most lateral.

PALATE



- The **Palate** forms the roof of the mouth.
- It is divided into two parts:
 - The **Hard (Bony) palate** in front.
 - The **Soft palate** behind.

HARD PALATE



- The **hard palate** is formed by (4 bones),
- Palatine processes of the maxillae and Horizontal plates of palatine bones.
- **It is Bounded Laterally** by the **alveolar arches**
- **Behind** it is continuous with the soft palate.
- It forms the **floor of the nasal cavities**.

SOFT PALATE

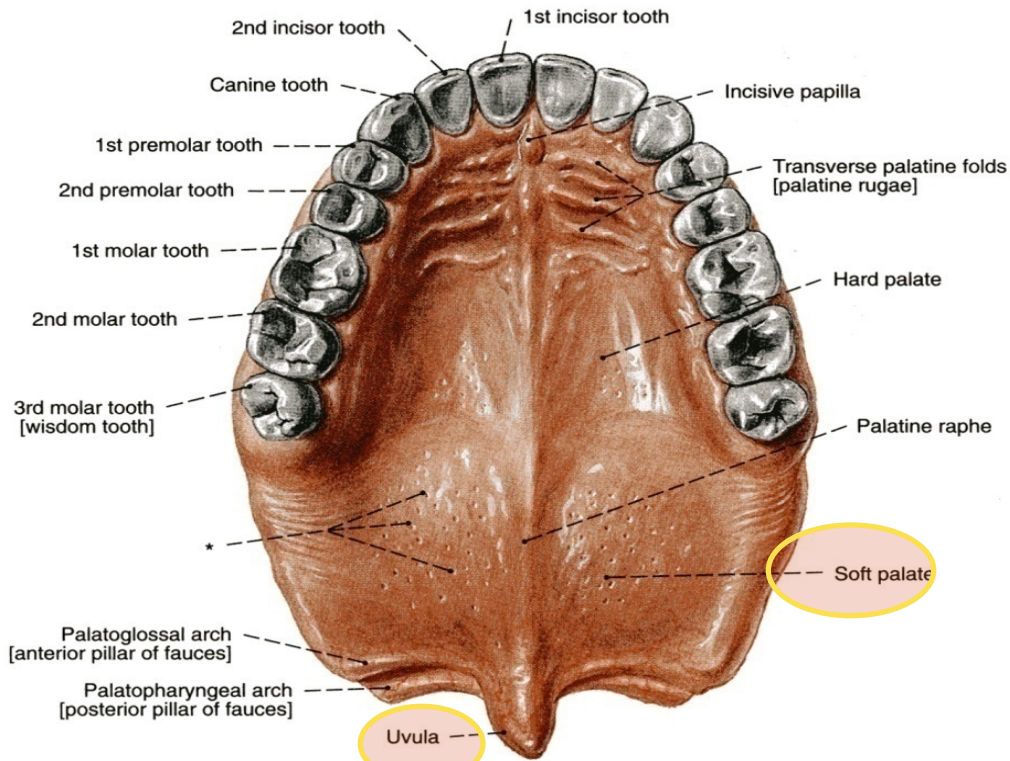
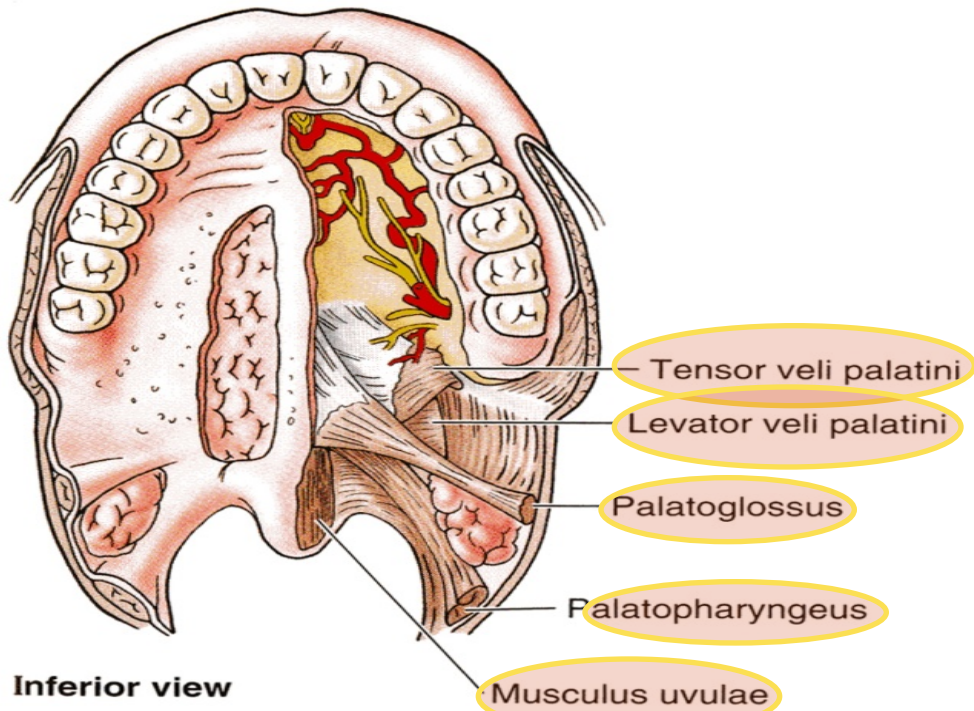


Fig. 191 Hard and soft palate; maxillary [upper] dental arcade; inferior aspect.
*Openings of palatine glands.

- It is a mobile fold formed of a bag of mucous membrane filled with striated muscles.

It is attached to the posterior border of the hard palate.
Its free posterior border is a conical projection called the uvula.

MUSCLES OF THE SOFT PALATE



5 pairs of muscles

- 1- Tensor veli palatini,
- 2- Levator veli palatini,
- 3- Palatoglossus,
- 4- Palatopharyngeus,
- 5- Musculus uvulae.

▪ Motor:

▪ All muscles of the palate are supplied by pharyngeal plexus of nerves EXCEPT Tensor Veli Palatini (By MANDIBULAR NERVE).

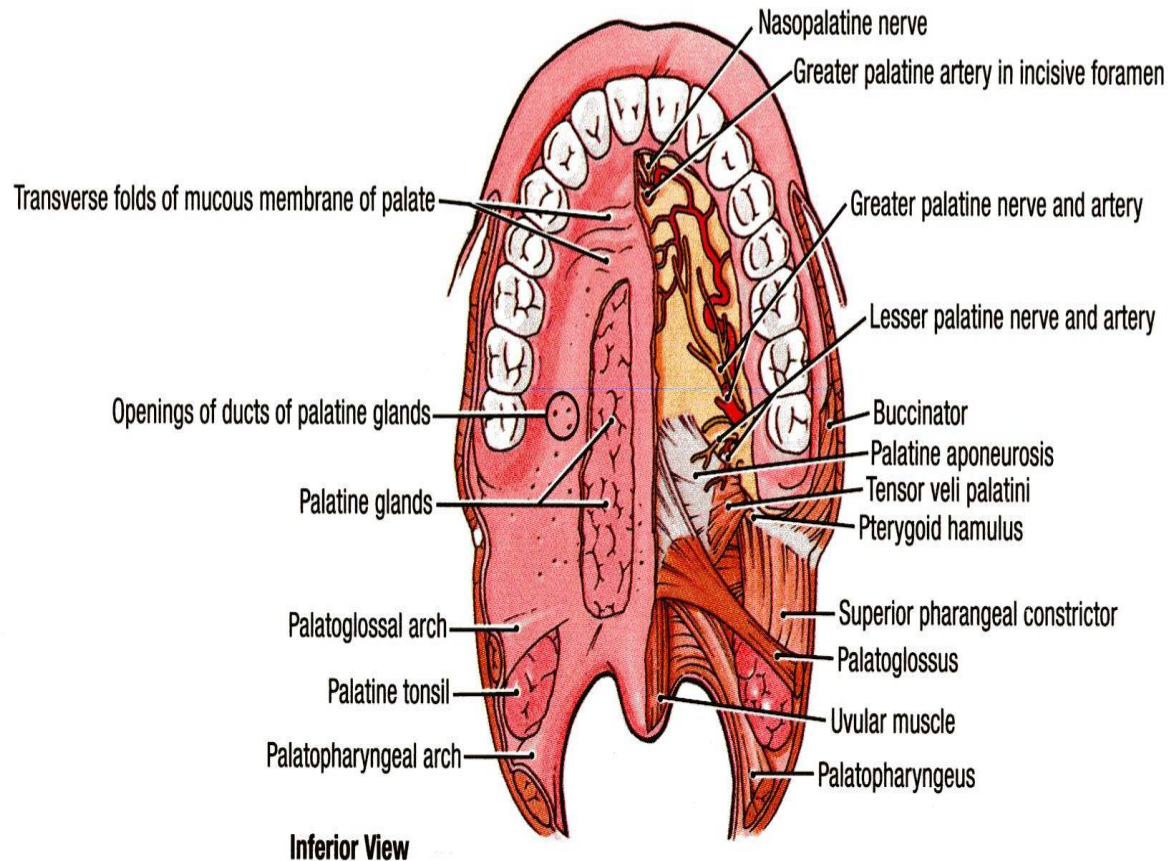
▪ Motor innervation of soft palate can be tested by saying 'Ah', normally soft palate rises upward and the uvula moves backward in the middle.

▪ Sensory:

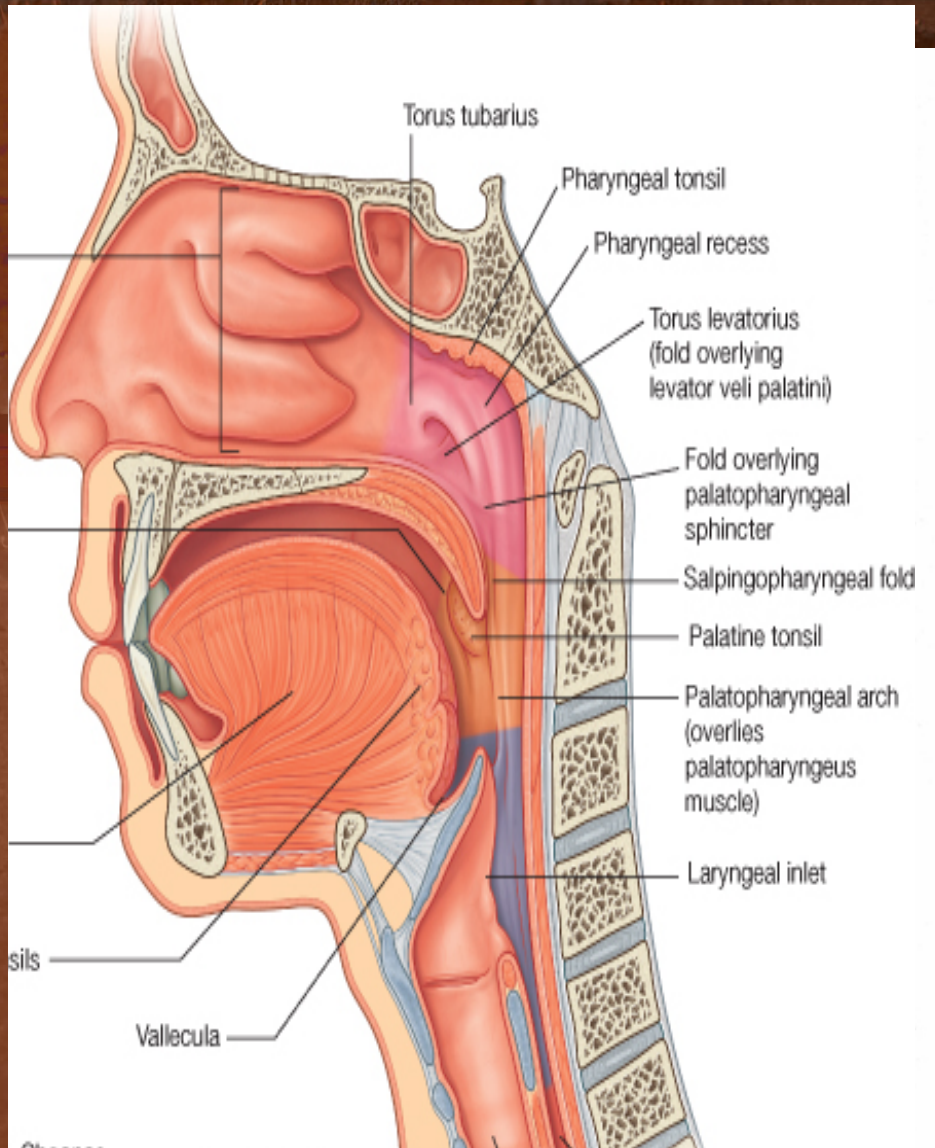
• Maxillary nerve through: Greater, Lesser palatine & Nasopalatine nerves.

• Glossopharyngeal nerve.

NERVE SUPPLY OF SOFT PALATE

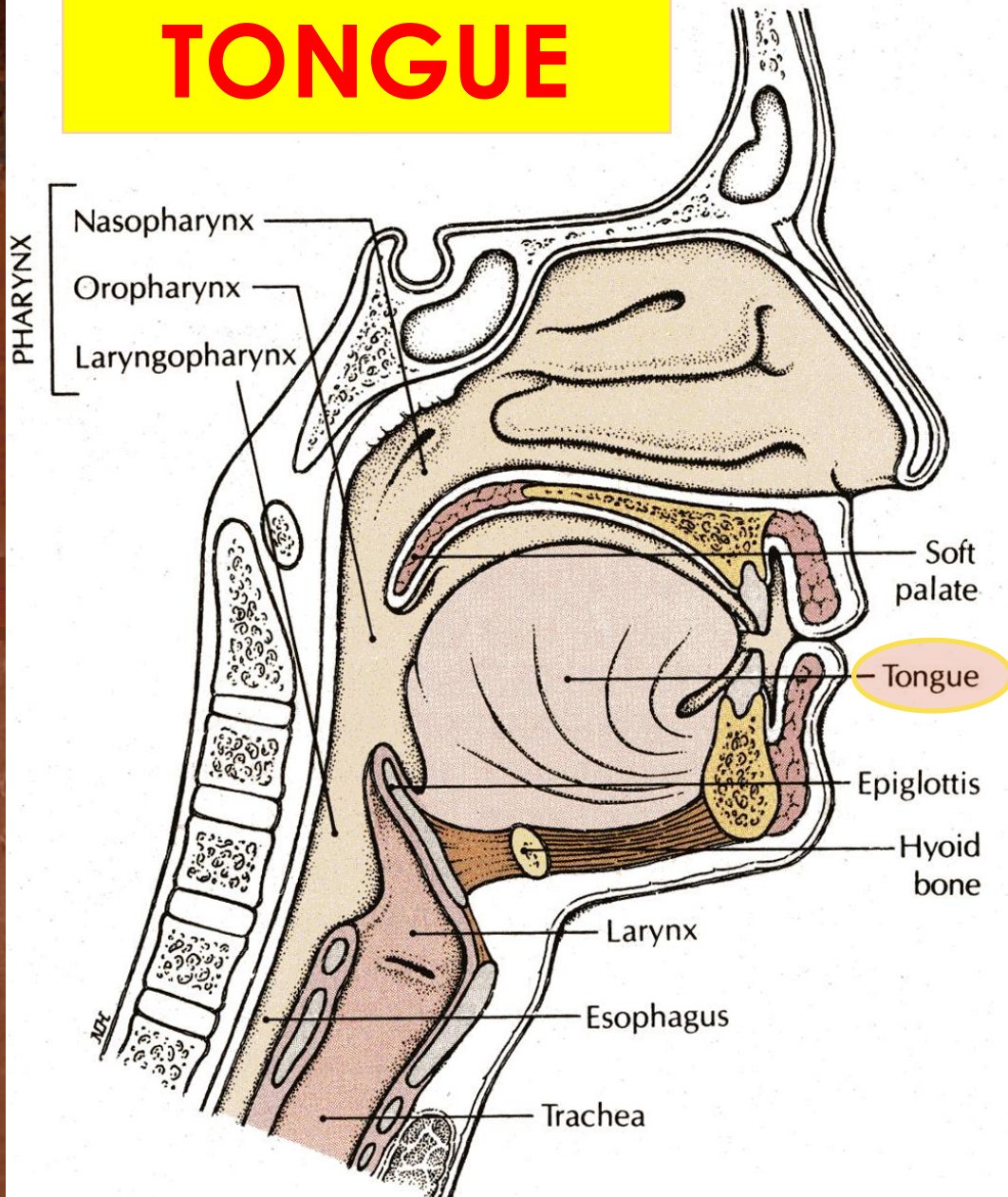


MOVEMENTS OF SOFT PALATE



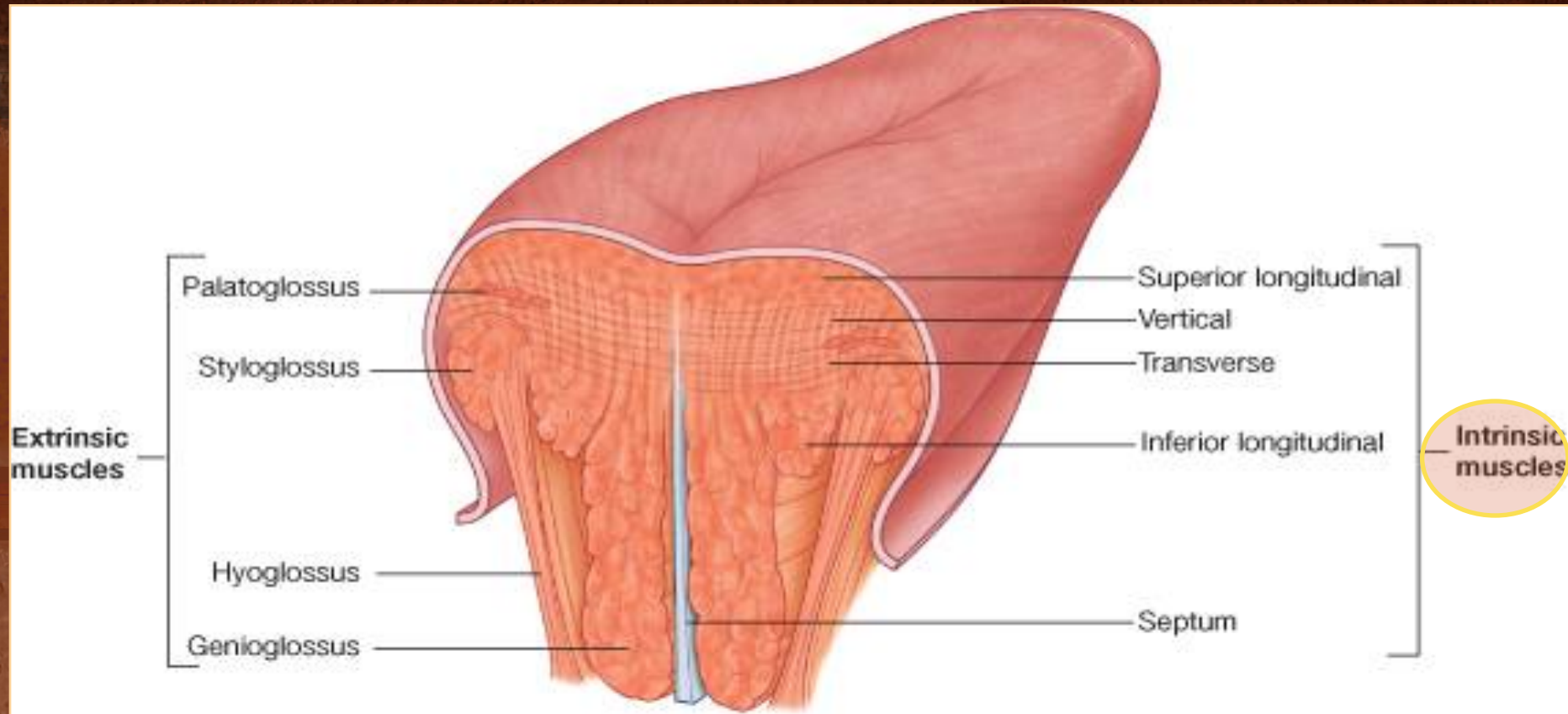
- **Pharyngeal isthmus:**
 - (It is the communication between nasal and oral parts of the pharynx)
 - It is the space between the two palatopharyngeal arches. It **is closed by raising the soft palate upward.**
 - **Closure occurs during the production of explosive consonants in speech and swallowing.**
 - Soft palate **is raised** by the contraction of the levator veli palatini and Palatopharyngeus.
 - At the same time, the superior wall of the pharynx is pulled forward.
 - The **palatopharyngeus muscles** on both sides also contract so that the palatopharyngeal arches are pulled medially, like side curtains.
 - *By this means the nasal part of the pharynx is closed off from its oral part.*

TONGUE



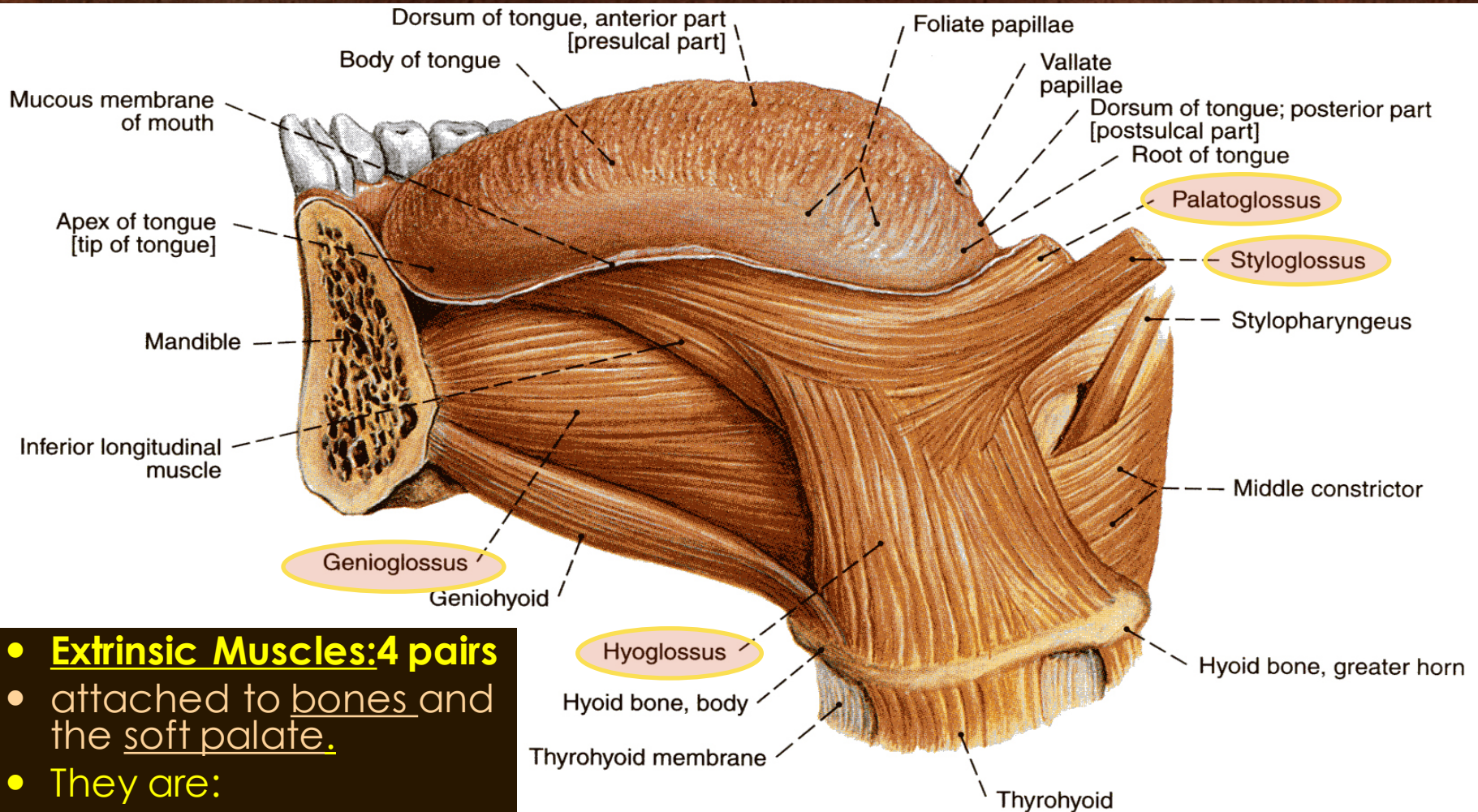
- **Tongue** is a mass of striated muscles covered with mucous membrane.
- Its anterior 2/3 lies in the **mouth**, and its posterior 1/3 lies in the **pharynx**.
- It is attached to the styloid process & soft palate **above** and to the mandible & the hyoid bone **below**.
- The tongue is essential for several **Important Functions**:
- Normal articulation of the jaw,
- Manipulation of food,
- Swallowing,
- Taste
- Production of normal speech.

MUSCLES OF THE TONGUE



- **Muscles** of the tongue are divided into two types:
- **Intrinsic** and **Extrinsic**.
- **The intrinsic muscles** are restricted to the tongue and are **not attached to bone**.
- They consist of **longitudinal, transverse, and vertical fibers**.
- **Action**: Alter the **shape** of the tongue while it lies in the mouth cavity.

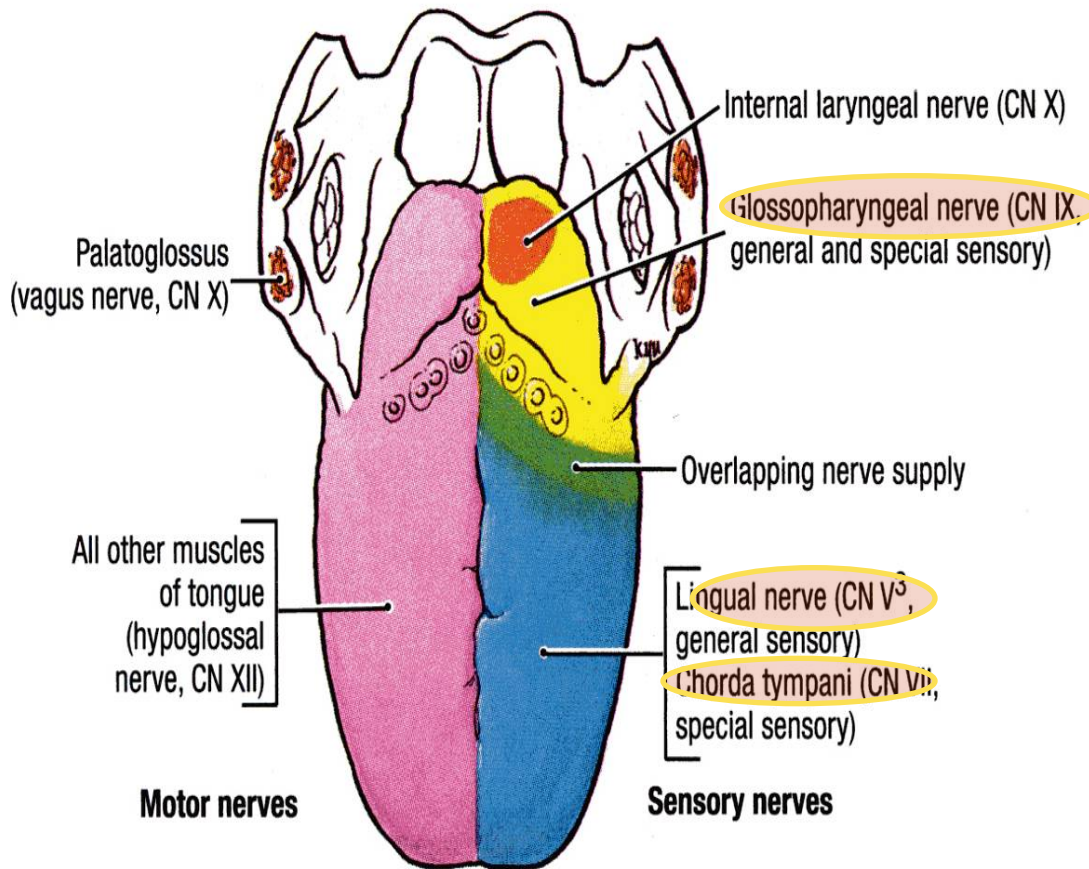
Extrinsic Muscles of the Tongue



- **Extrinsic Muscles: 4 pairs**
- attached to bones and the soft palate.
- They are:
 - Palatoglossus.
 - Styloglossus,
 - Genioglossus &
 - Hyoglossus.

All muscles of the tongue are supplied by the Hypoglossal nerve EXCEPT Palatoglossus which is supplied by the Pharyngeal plexus

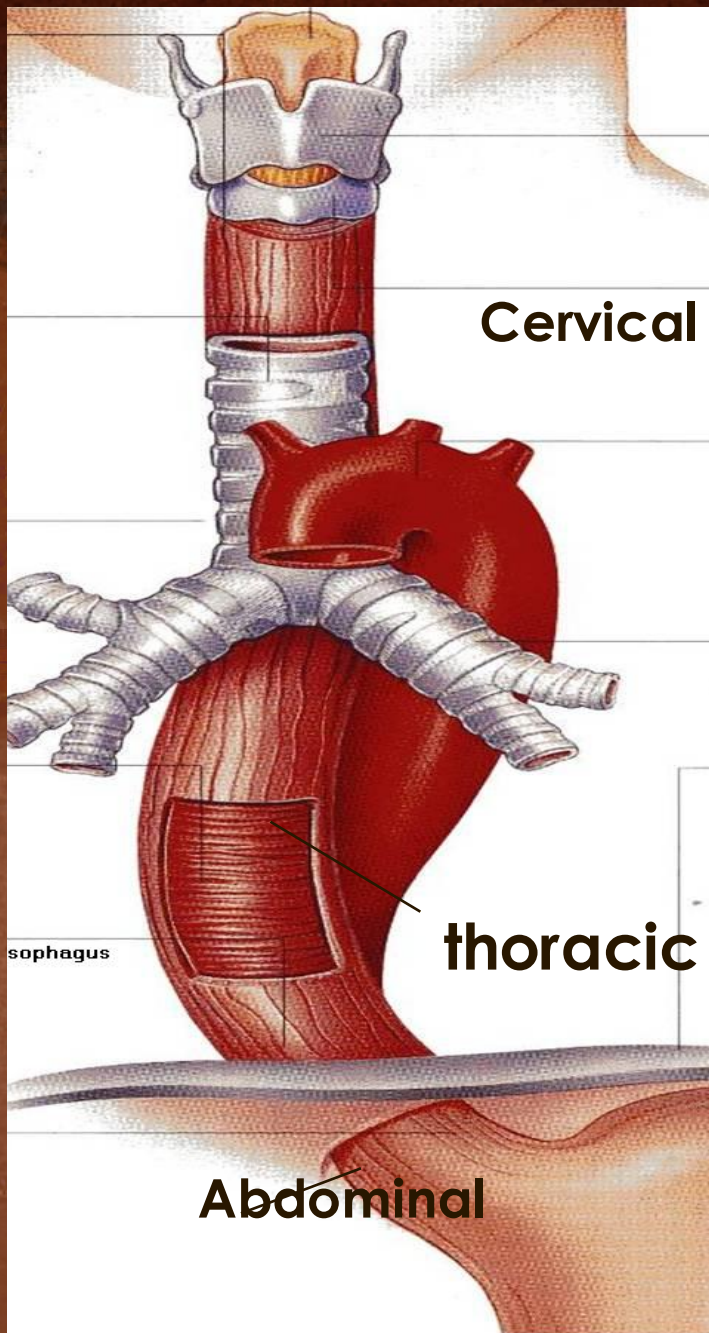
SENSORY INNERVATION



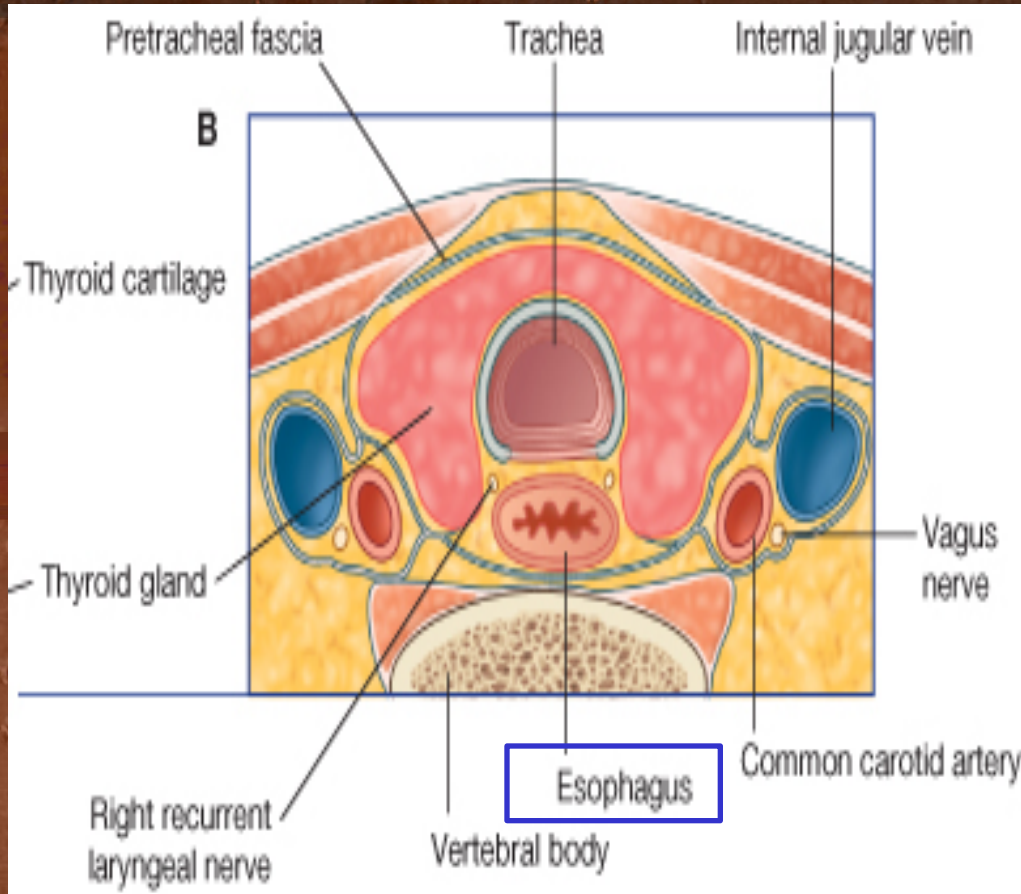
- Anterior 2/3:
- General sensations; (Lingual) nerve.
- Taste fibers excluding the vallate papillae, **Chorda Tympani** of the (Facial) nerve.
- Posterior 1/3: (including the vallate papillae):
- General & taste (Glossopharyngeal) nerve.
- Root of the tongue and Epiglottis:
- General & taste sensations are carried by the (Vagus nerve).

ESOPHAGUS

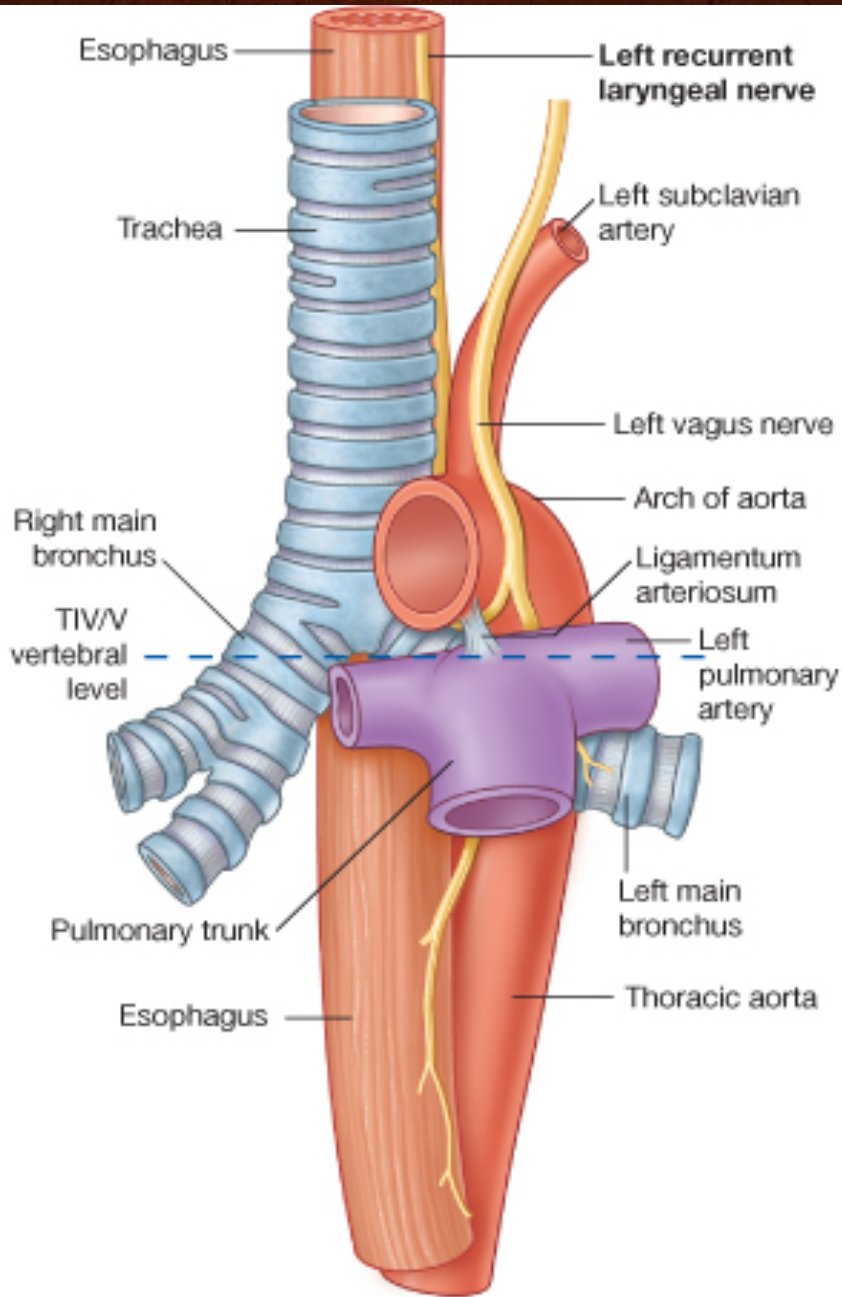
- It is a tubular structure about 25 cm long.
- It begins as the continuation of the pharynx at the level of the 6th cervical vertebra.
- It pierces the diaphragm at the level of the 10th thoracic vertebra to join the stomach.
- It terminates at level of 11th thoracic vertebra
- It is formed of 3 parts: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



CERVICAL PART “RELATIONS”



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



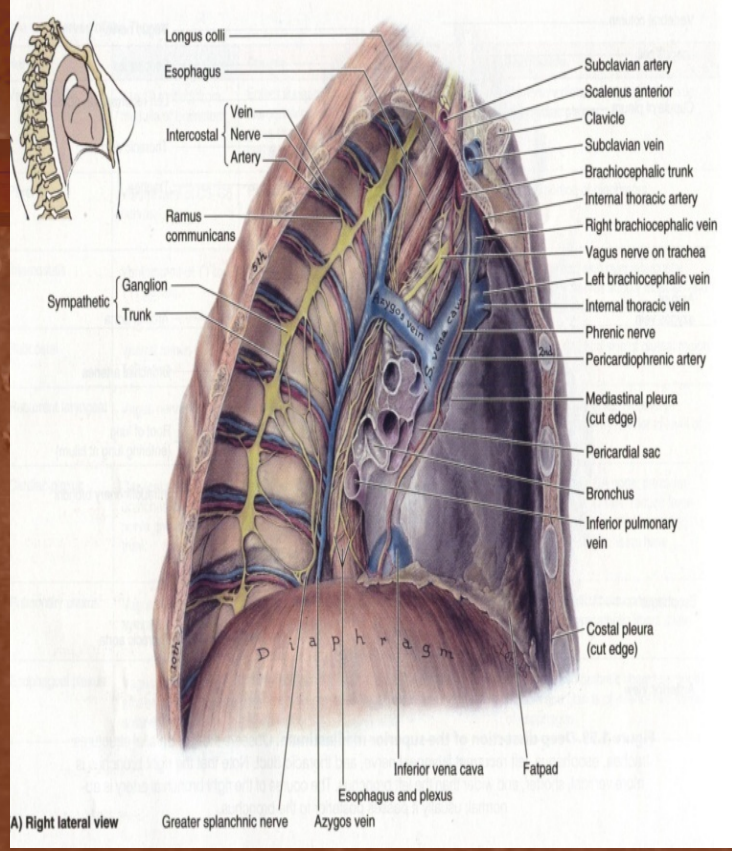
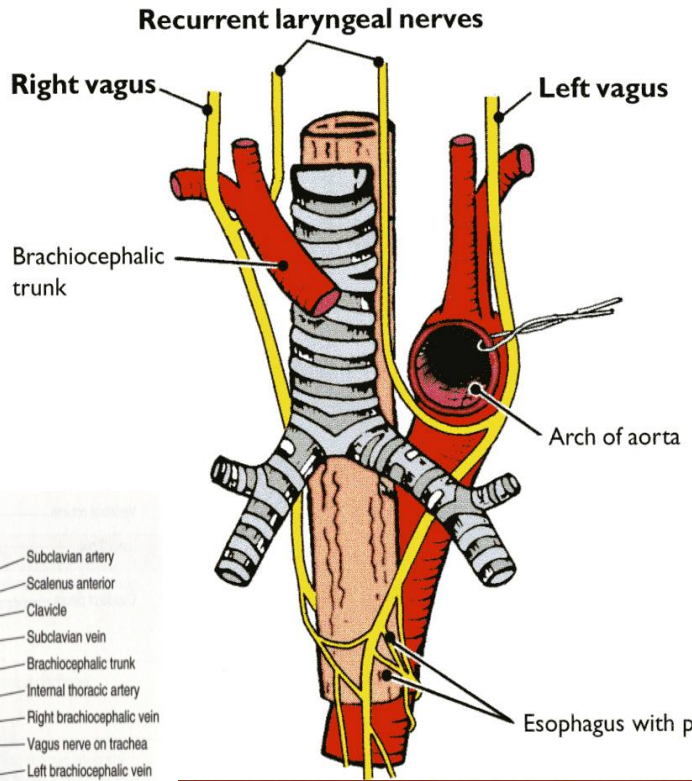
THORACIC PART

- 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**.

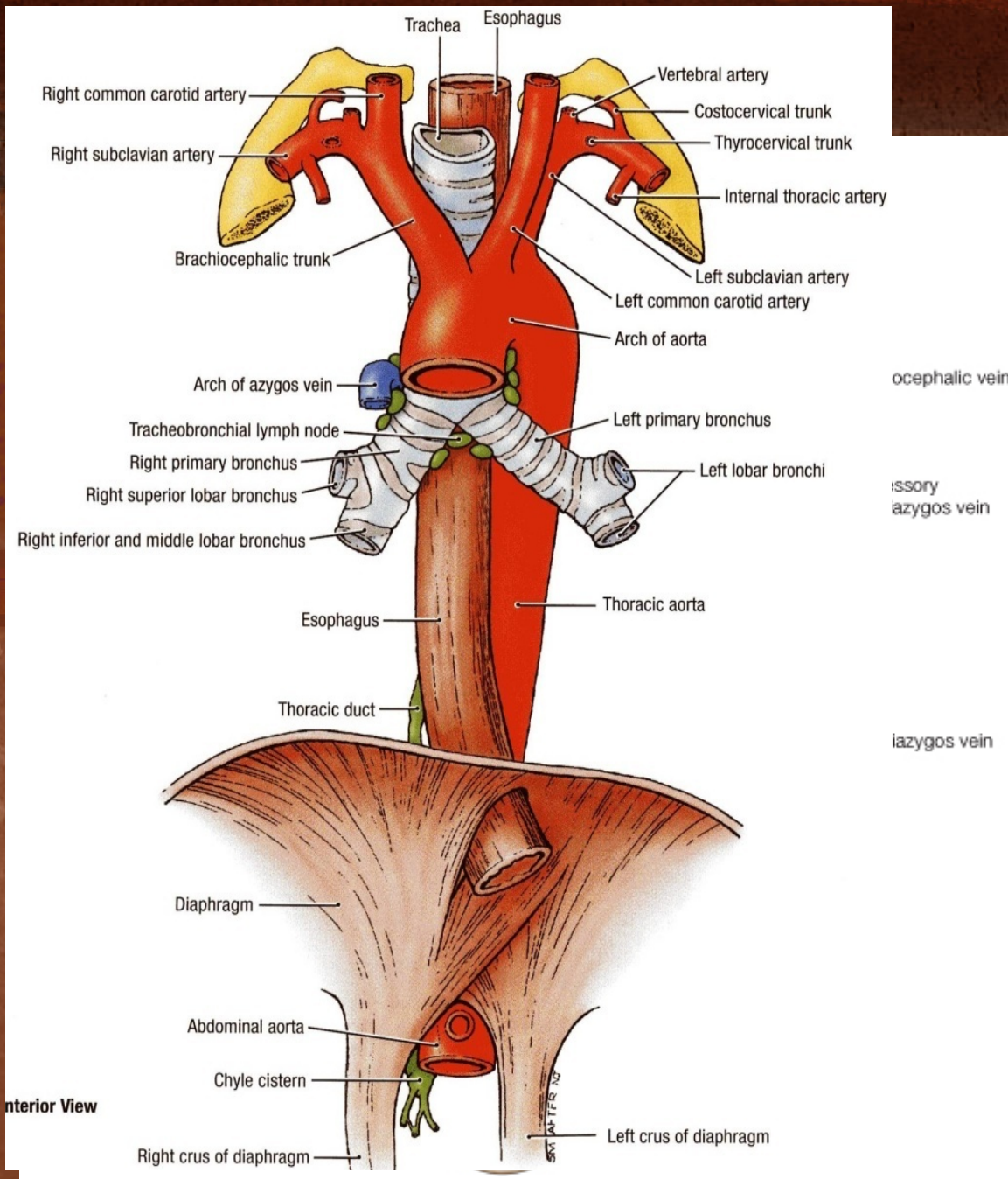
Thoracic part

ANTERIOR RELATIONS

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

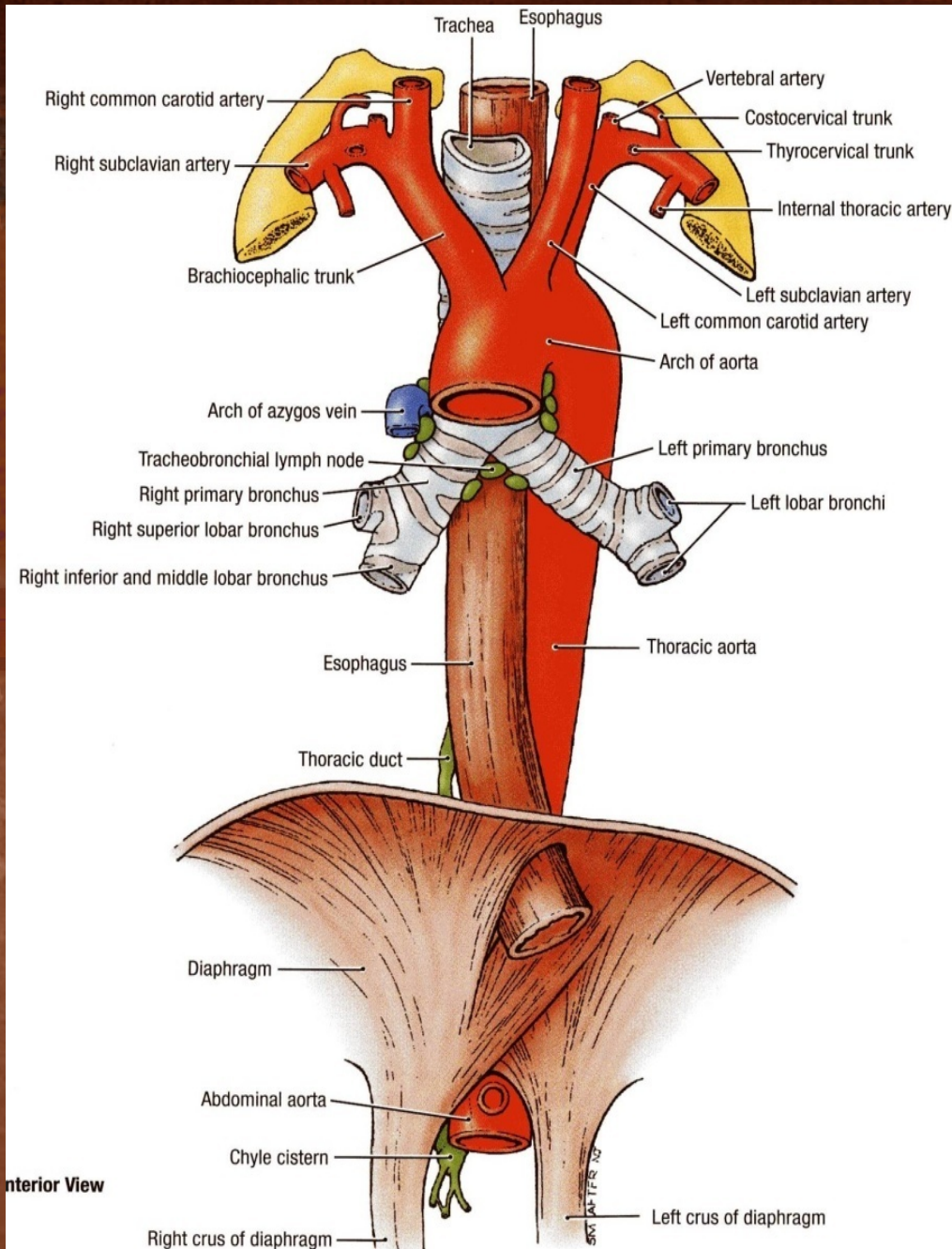


POSTERIOR RELATIONS



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

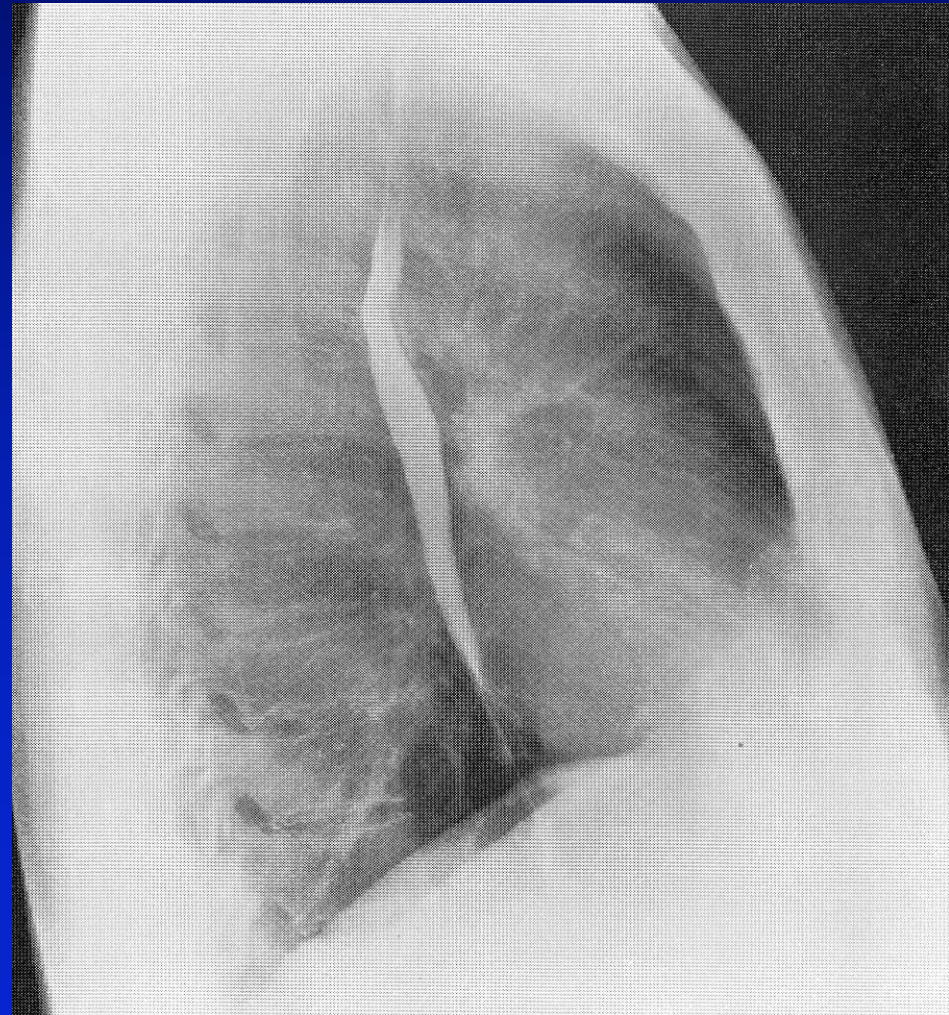
LATERAL RELATIONS

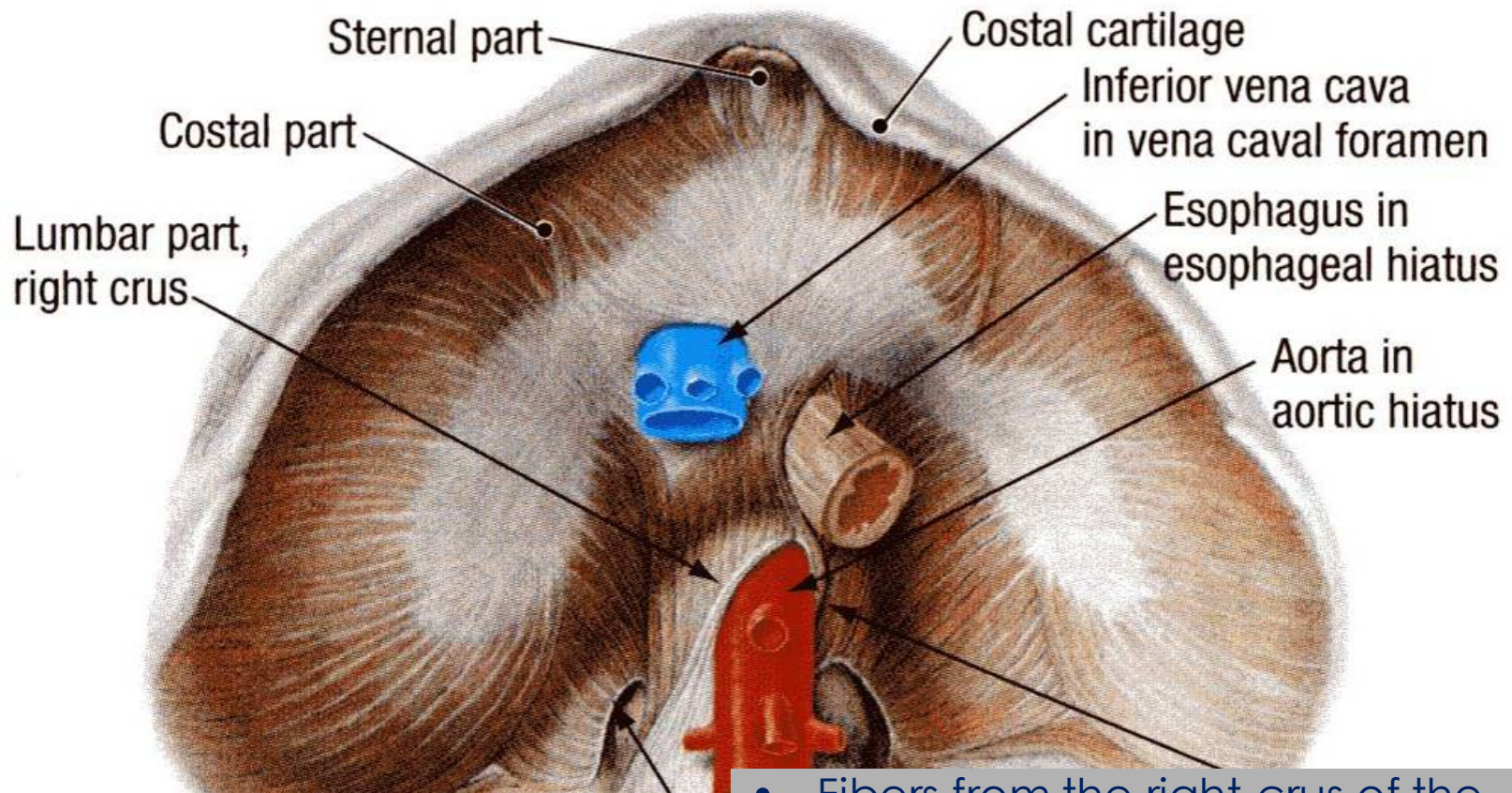


- On the Right side:
- Mediastinal pleura
- Terminal part of the azygos vein.
- On the Left side:
- Mediastinal pleura.
- Left subclavian artery.
- Aortic arch.
- Thoracic duct.

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.



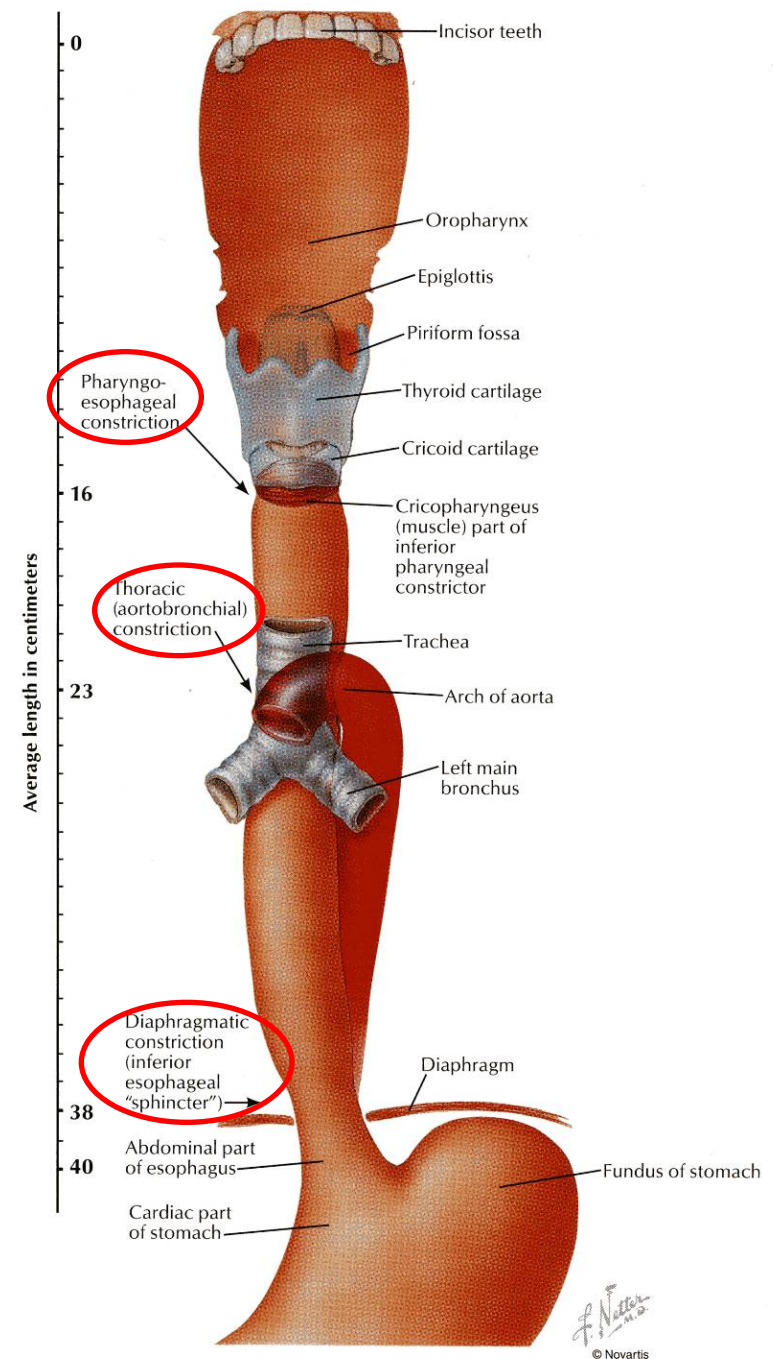


- In the abdomen, the esophagus descends for 1.3 cm and joins the stomach.
- Anteriorly, it is related to the **left lobe** of the liver.
- Posteriorly, it is related to the **left crus** of the diaphragm.

- Fibers from the right crus of the diaphragm form a **slings** 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.

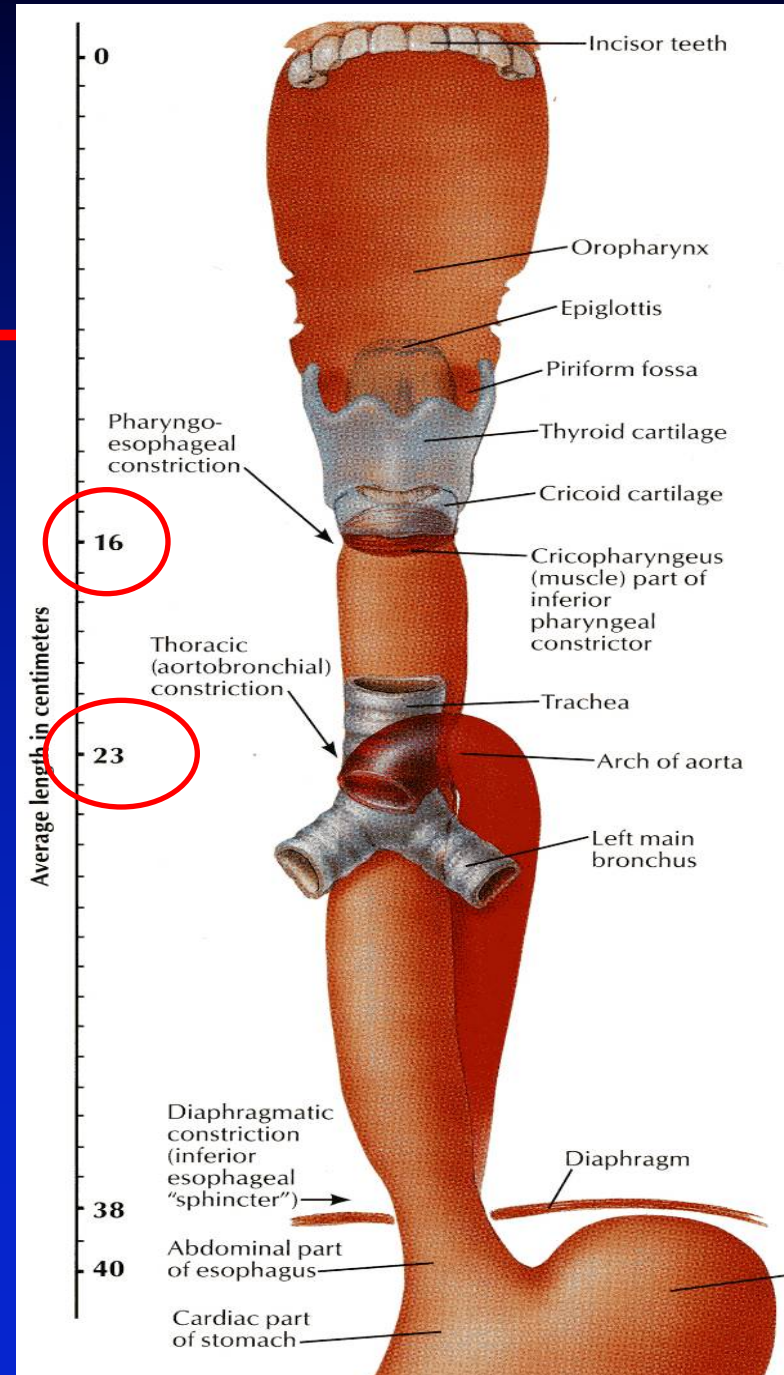
ESOPHAGEAL CONSTRICTIONS

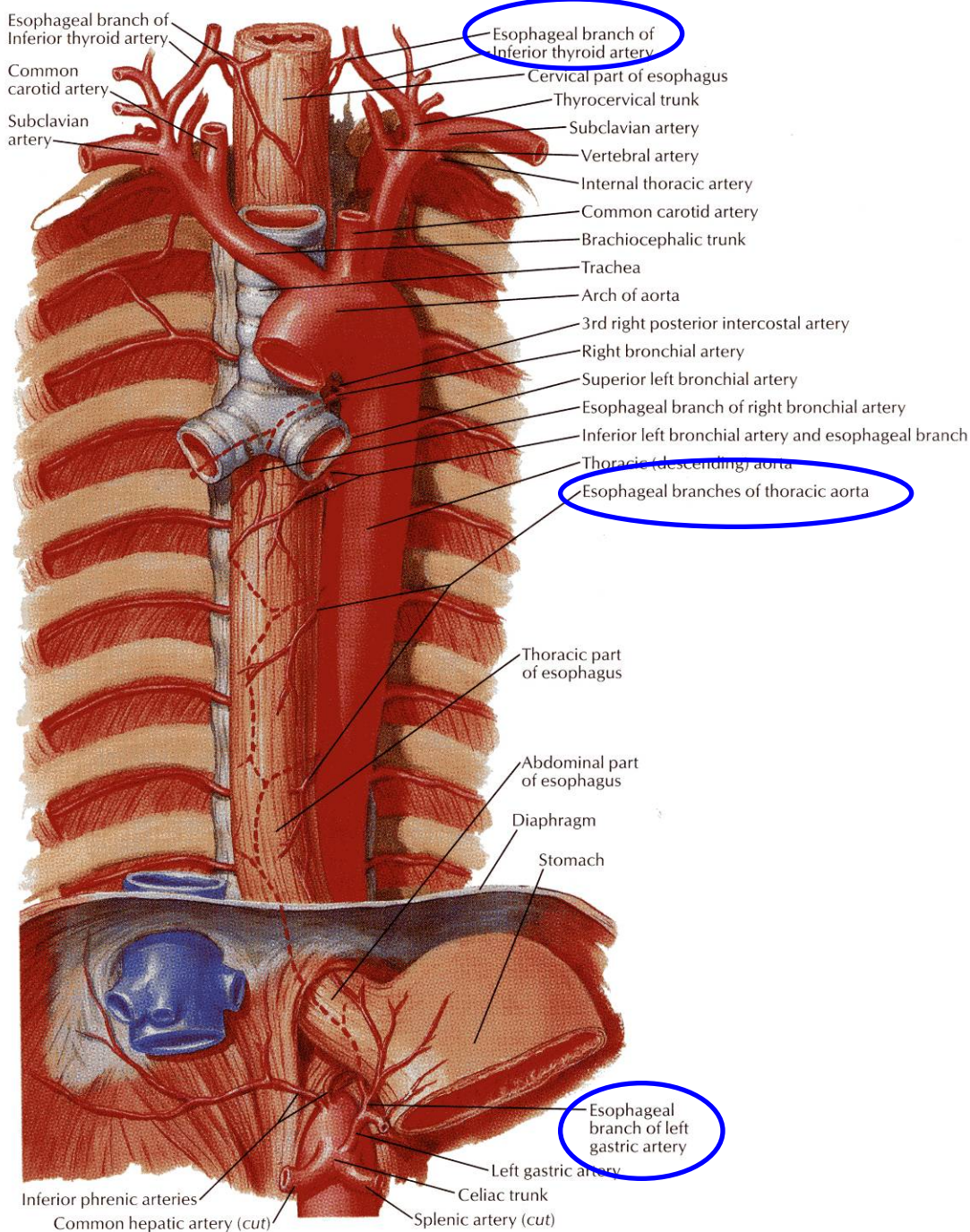
- The esophagus has 3 anatomic constrictions.
- The **first** is at the junction with the pharynx.
- The **second** is at the crossing with the aortic arch and the left main bronchus.
- The **third** is at the junction with the stomach.
- They have a considerable clinical importance.
- Why?



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?*

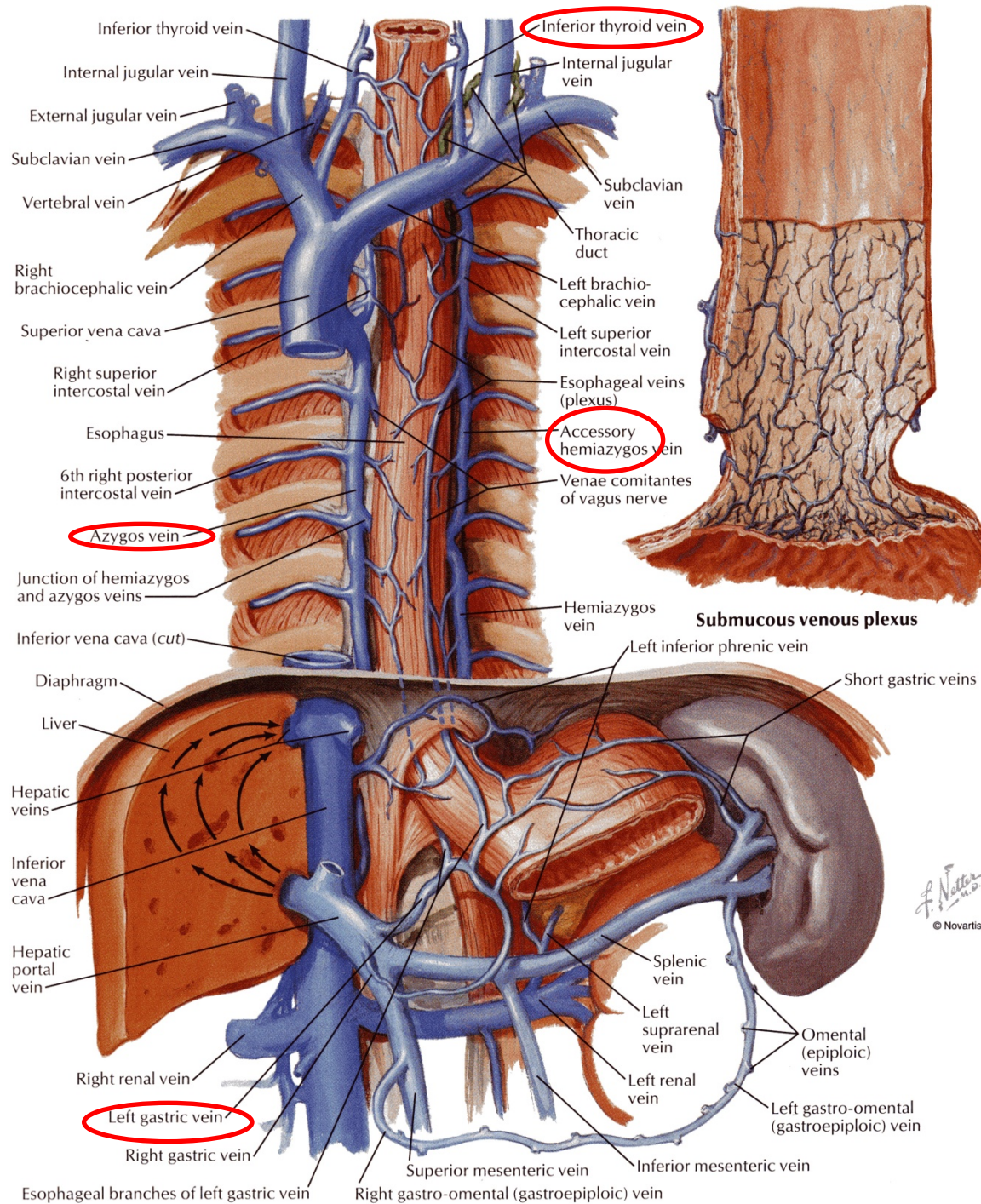




ARTERIAL SUPPLY

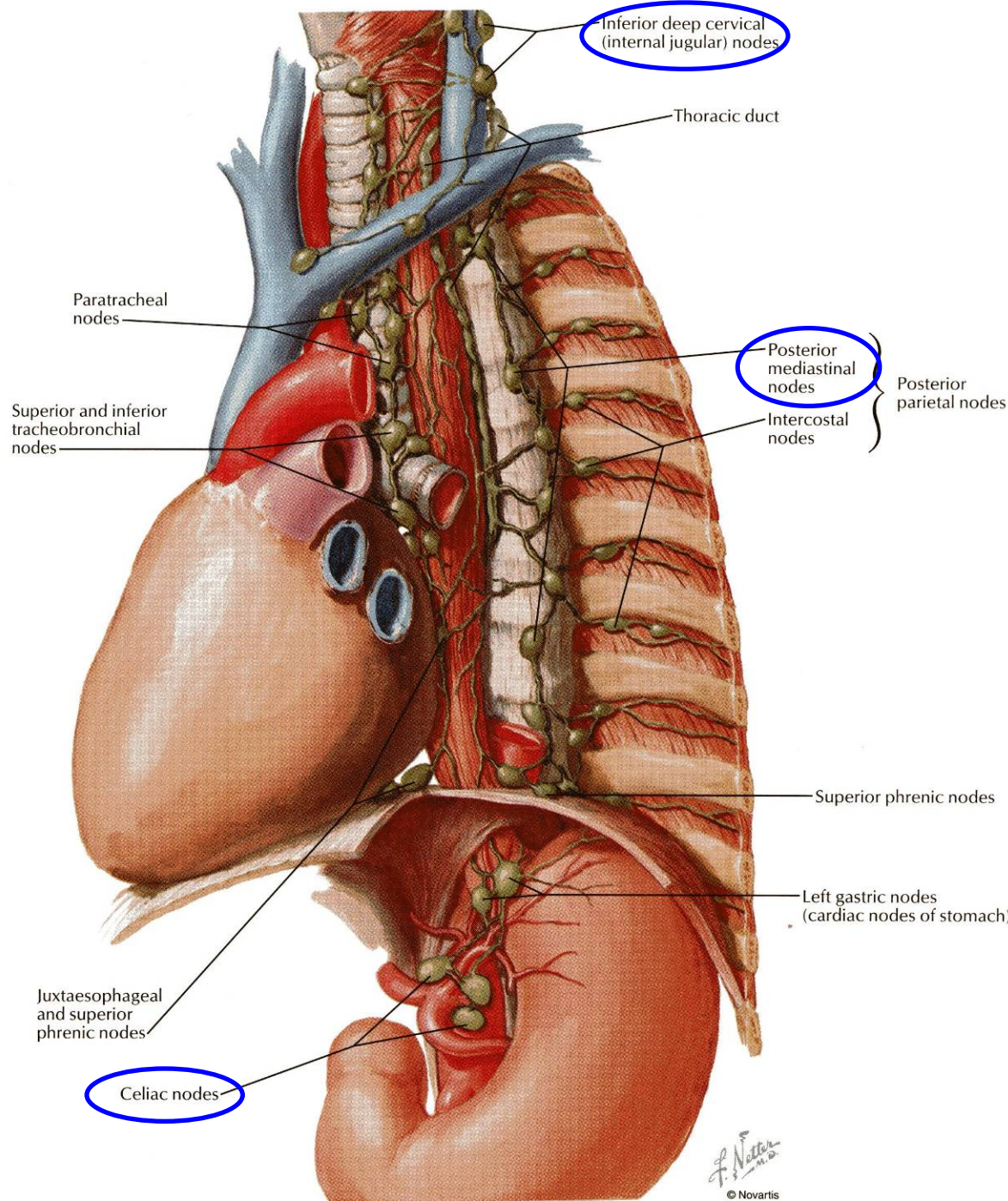
- Upper third is supplied by the **inferior thyroid artery**.
- The middle third by the **thoracic aorta**.
- The lower third by the **left gastric artery**.

VENOUS DRAINAGE

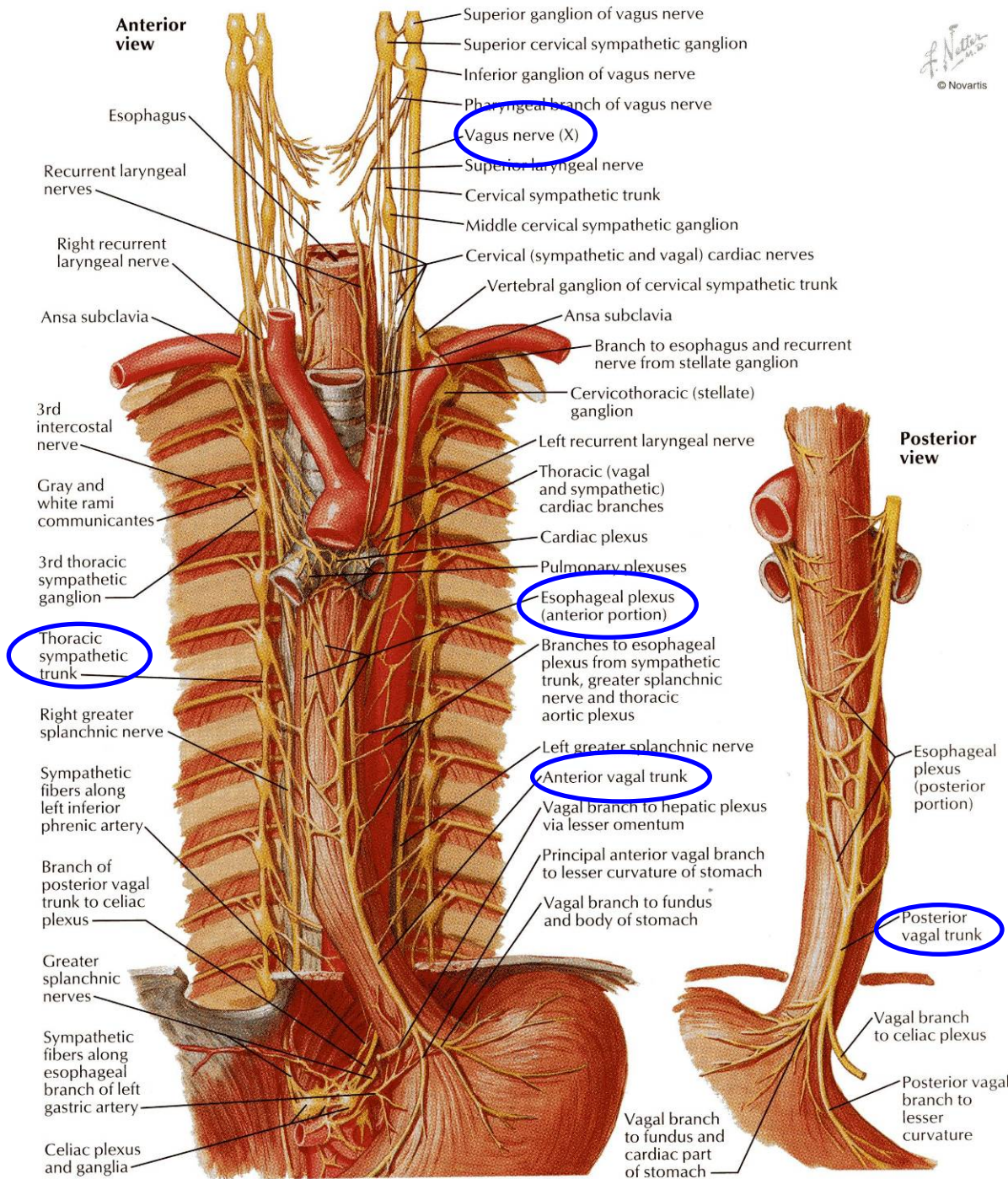


- The upper third drains in into the **inferior thyroid veins**.
- The middle third into the **azygos veins**.
- The lower third into the **left gastric vein**, which is a tributary of the **portal vein**.

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.

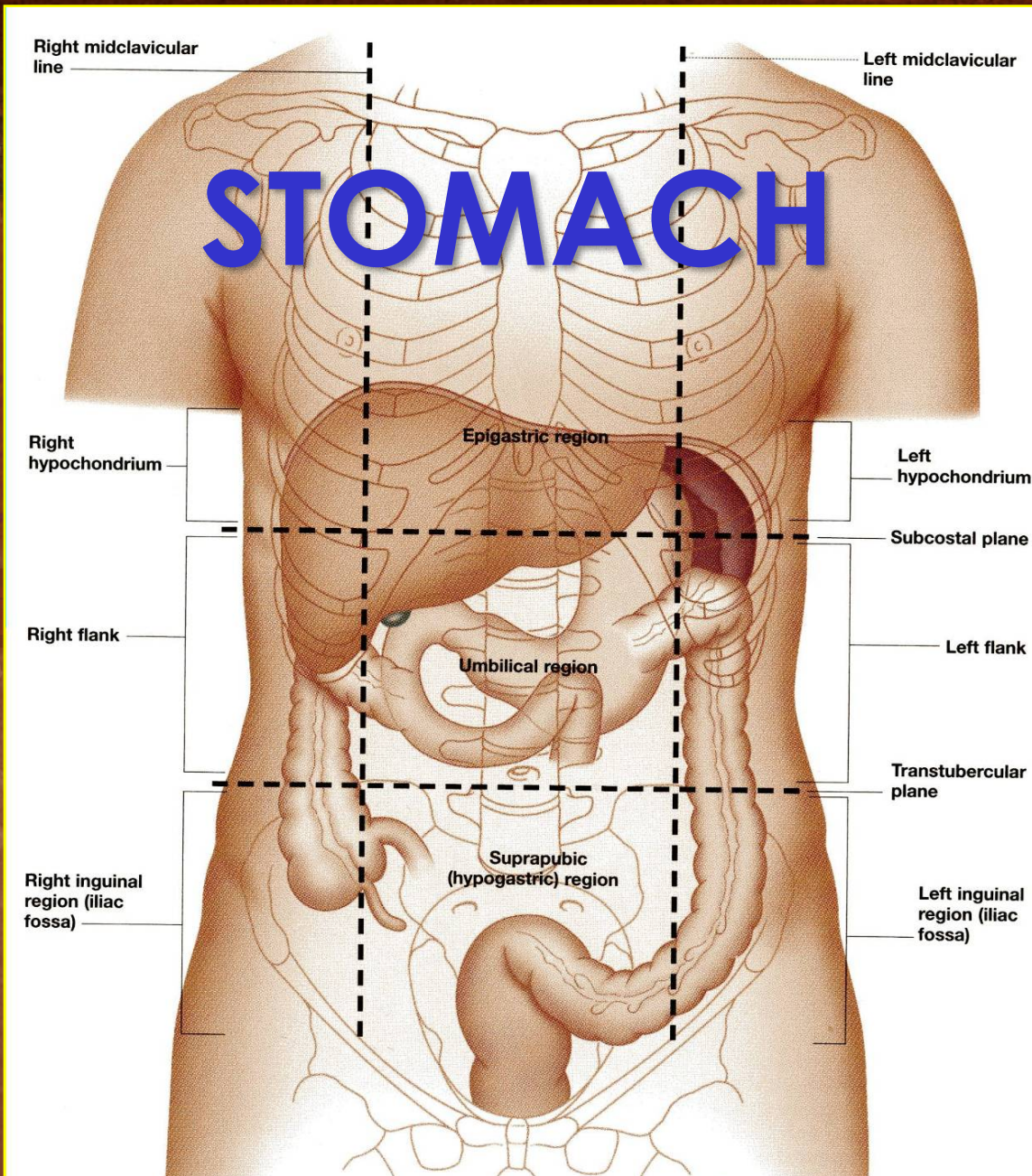


F. Netter M.D.
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NERVE SUPPLY

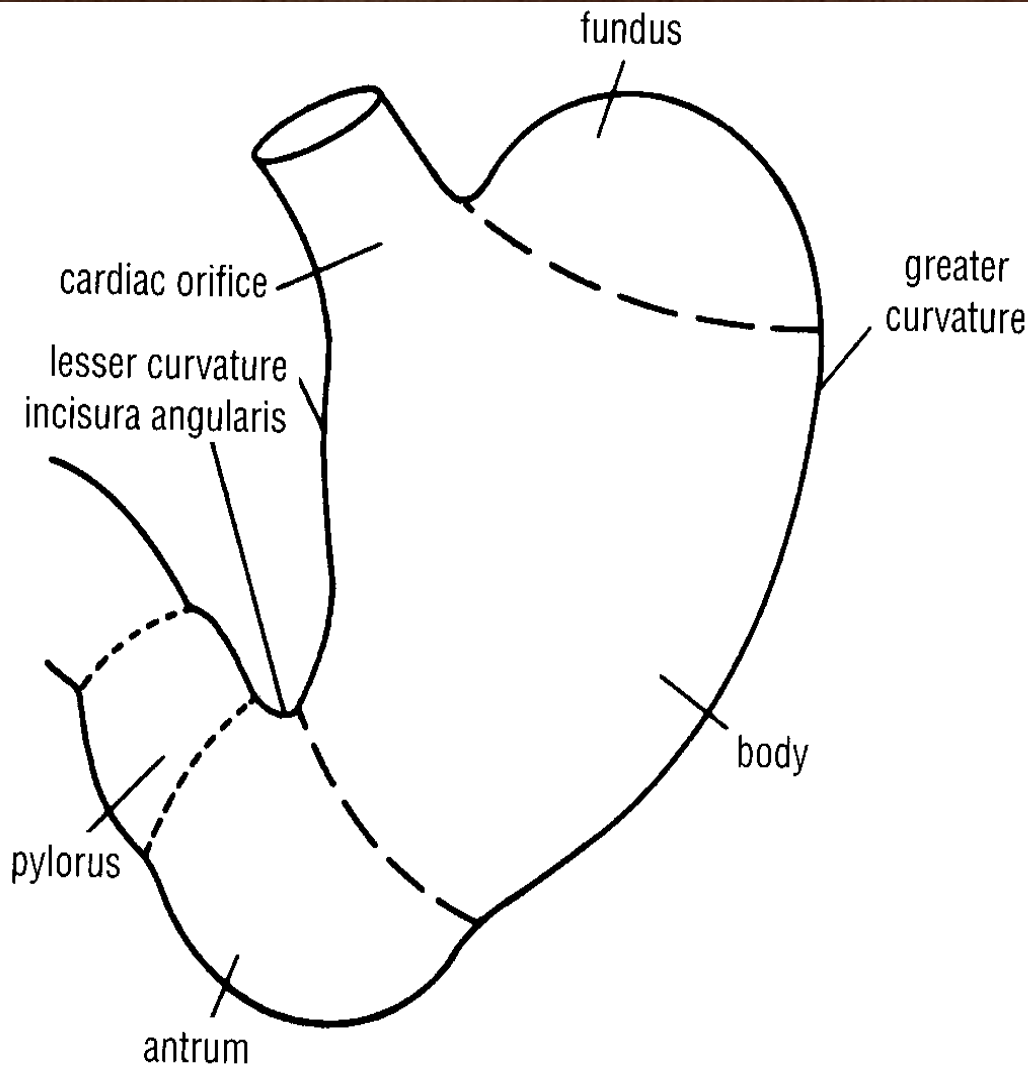
- It is supplied by sympathetic fibers from the **sympathetic trunks**.
- The parasympathetic supply comes from the **vagus nerves**.
- Inferior to the roots of the lungs, the vagus nerves join the sympathetic nerves to form the **esophageal plexus**.
- The **left** vagus lies **anterior** to the esophagus.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

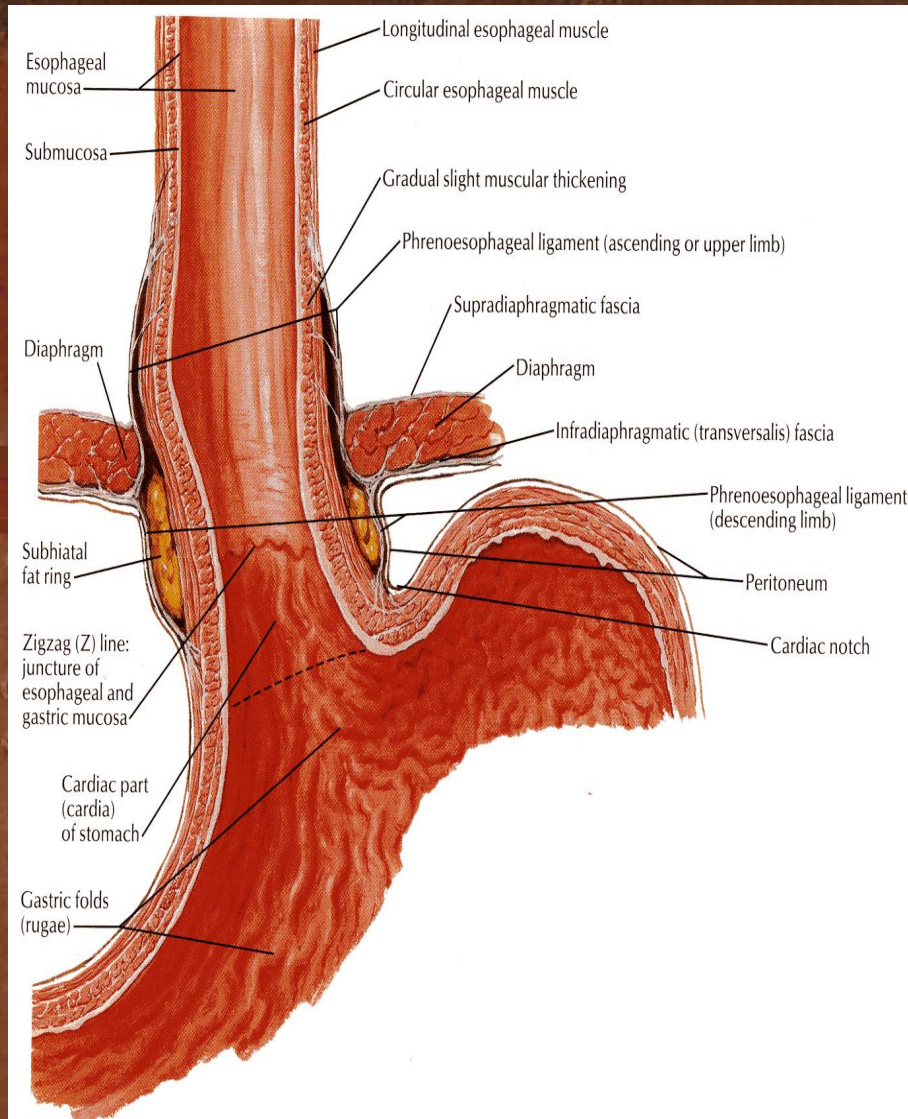
3 Parts:

- Fundus
- Body
- Pylorus:

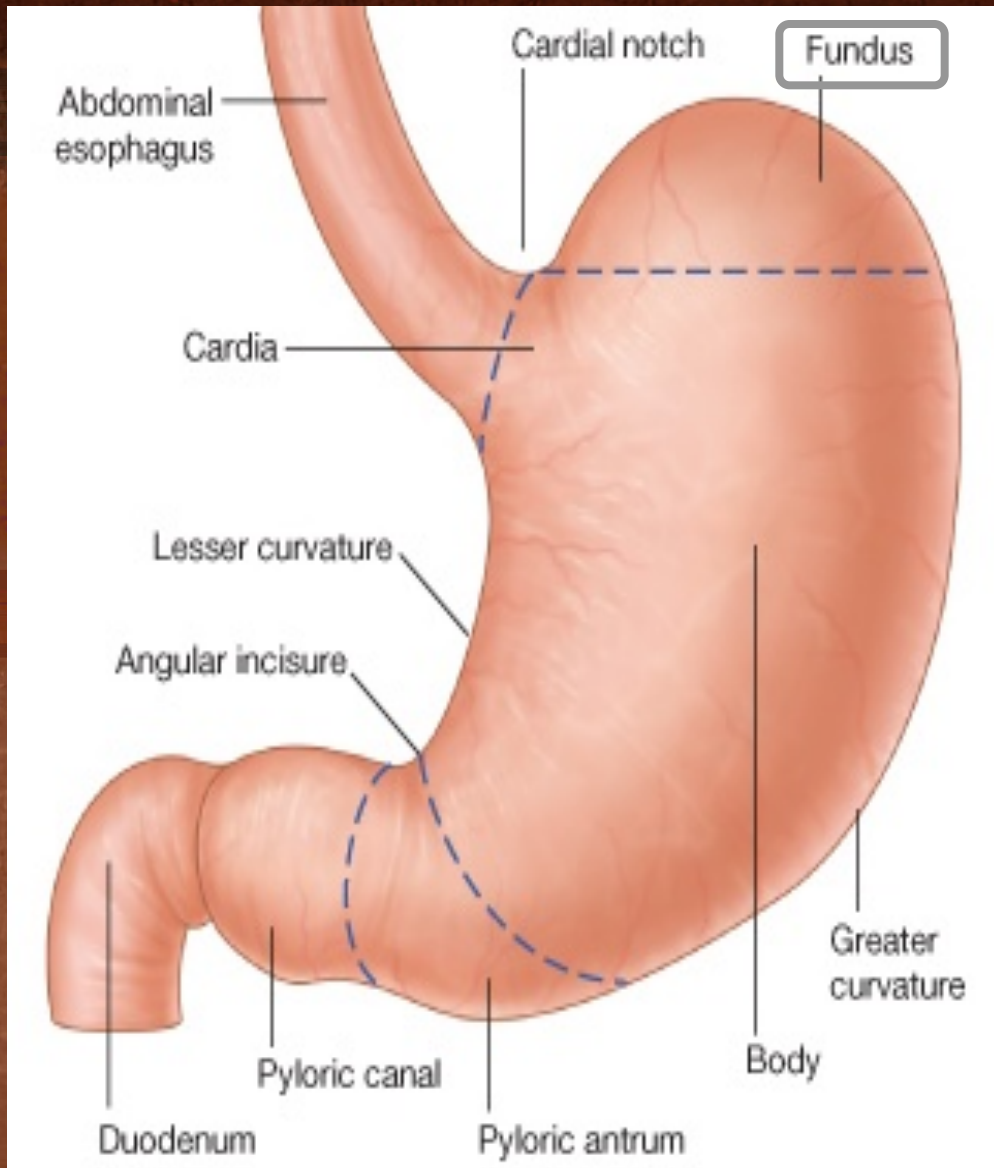
The pylorus is formed of 3 parts

- Pyloric antrum
- Pyloric canal
- Pyloric sphincter ³¹

CARDIAC ORIFICE



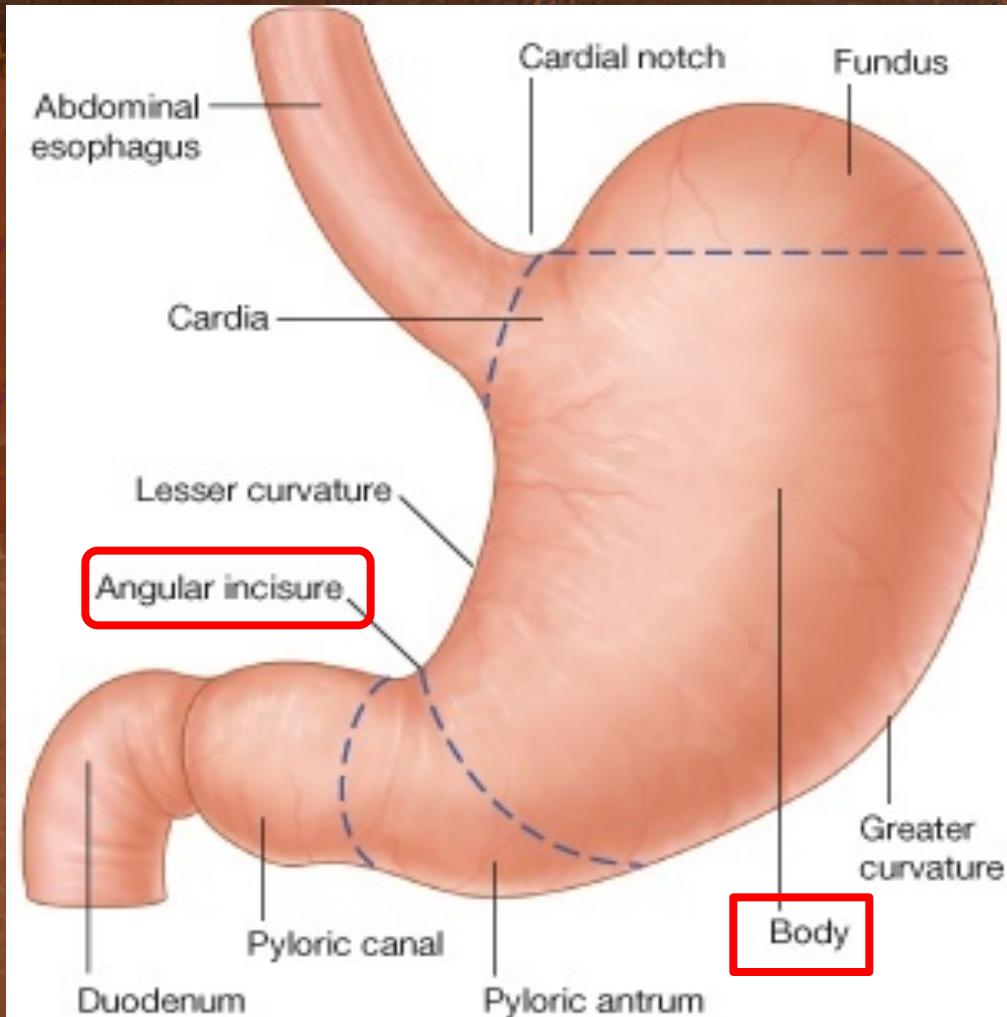
- It is the site of the **gastro- esophageal sphincter**.
- It is a physiological sphincter rather than an anatomical, sphincter.
- Consists of **circular layer** of smooth muscle (under vagal and hormonal control).
- lies opposite the **left seventh costal cartilage 2.5 cm**. from the sternum **(T10)**.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



FUNDUS

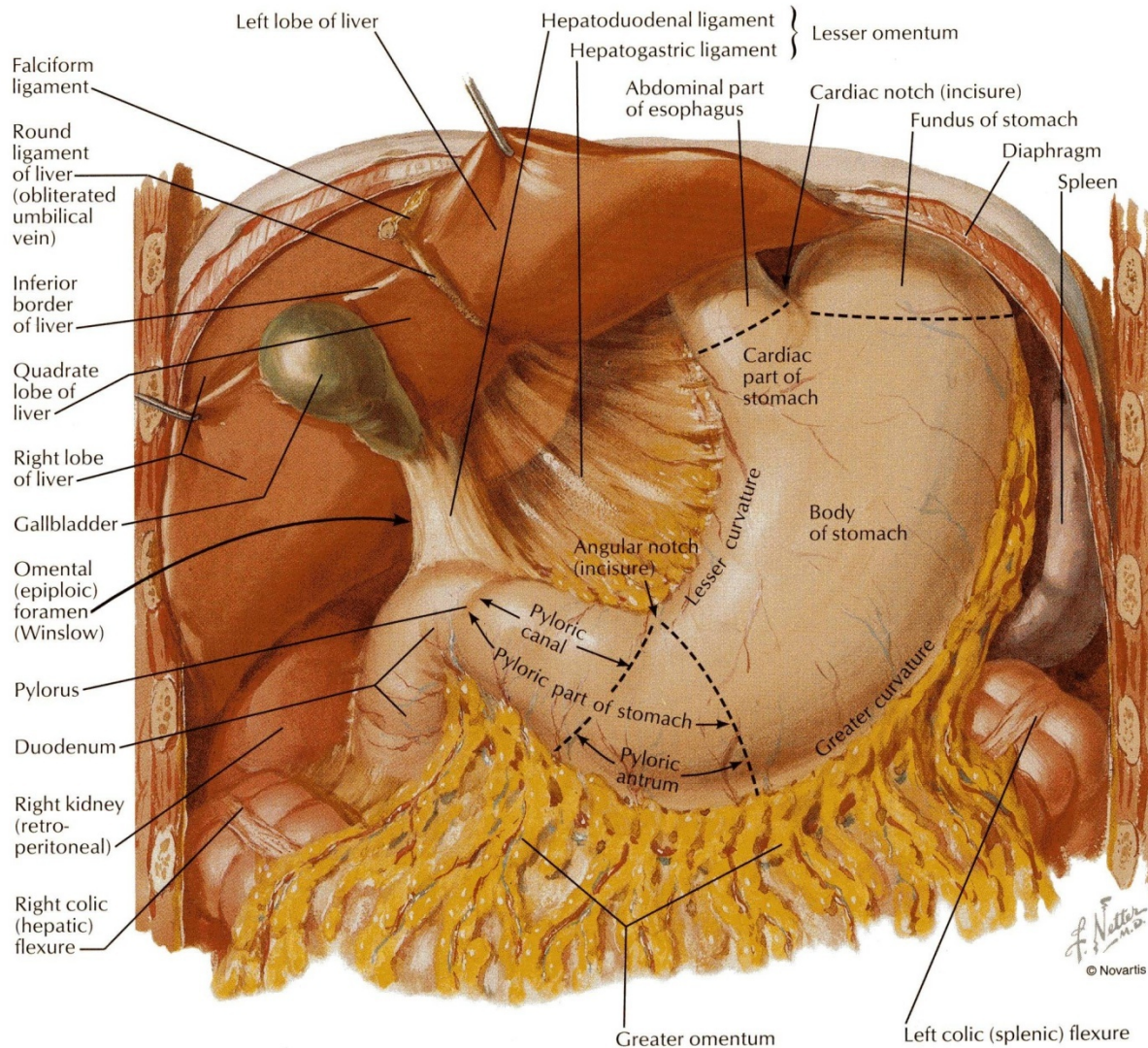
- Dome-shaped.
- Located to the left of the cardiac orifice.
- Usually full of gases.
- **It reaches to the left fifth intercostal space a little below the apex of the heart.**

BODY



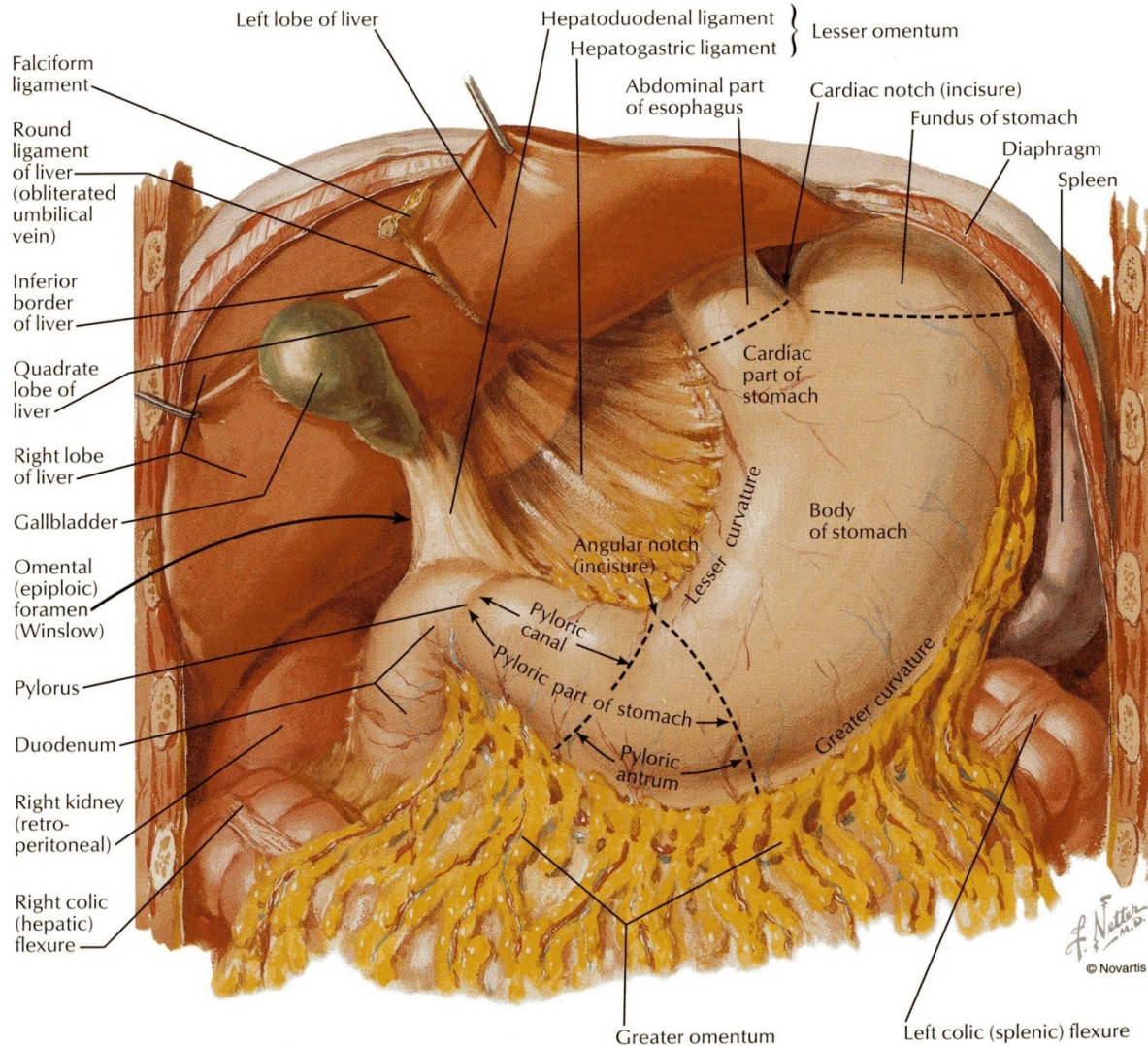
- Extends from:
 - The level of the fundus, to
 - The level of Incisura angularis.
- **Incisura angularis:**
- is a constant notch on the lesser curvature

LESSER CURVATURE



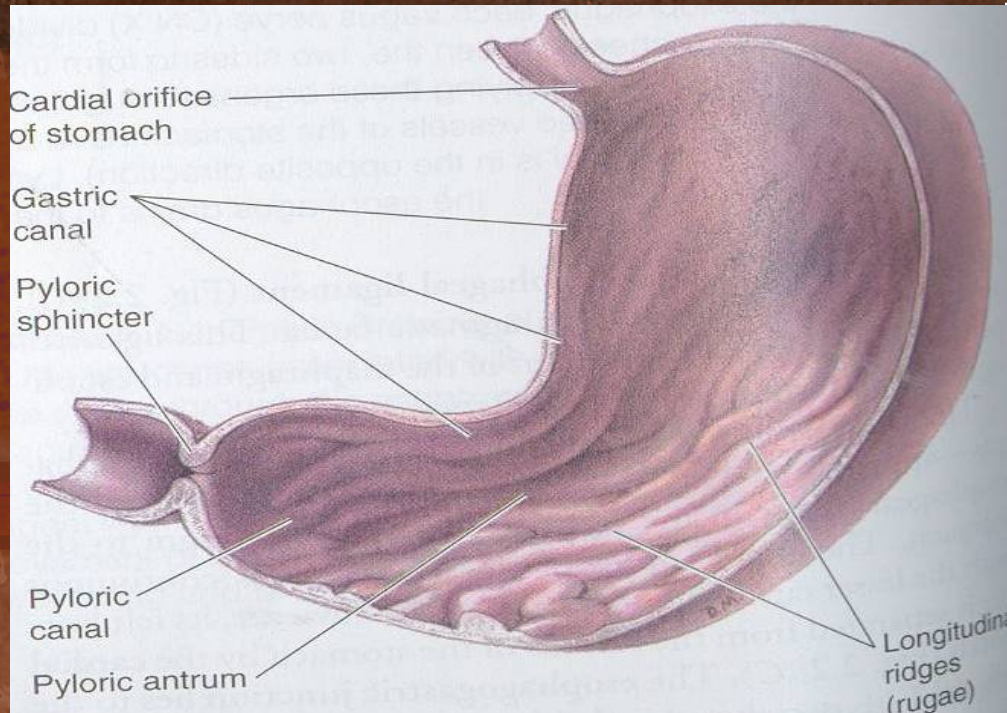
- Forms the right border of the stomach.
- Extends from the cardiac orifice to the pylorus.
- Attached to the liver by the **lesser omentum**, (gastrohepatic ligament).

GREATER CURVATURE

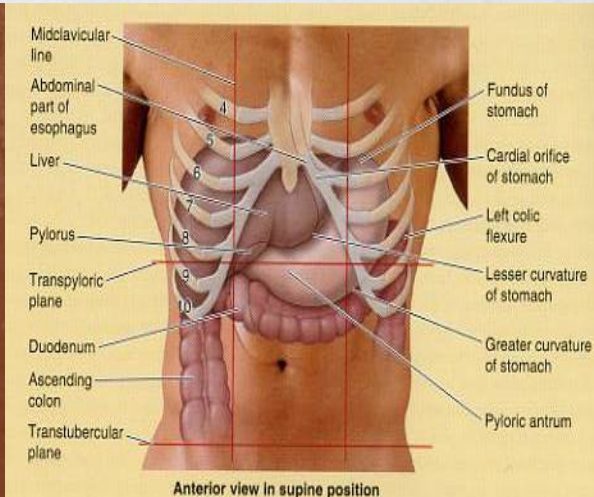


- Forms the left border of the stomach.
- Extends from the cardiac orifice to the pylorus.
- Its upper part is attached to the spleen by **gastrosplenic ligament**
- Its lower part is attached to the transverse colon by the **greater omentum**.

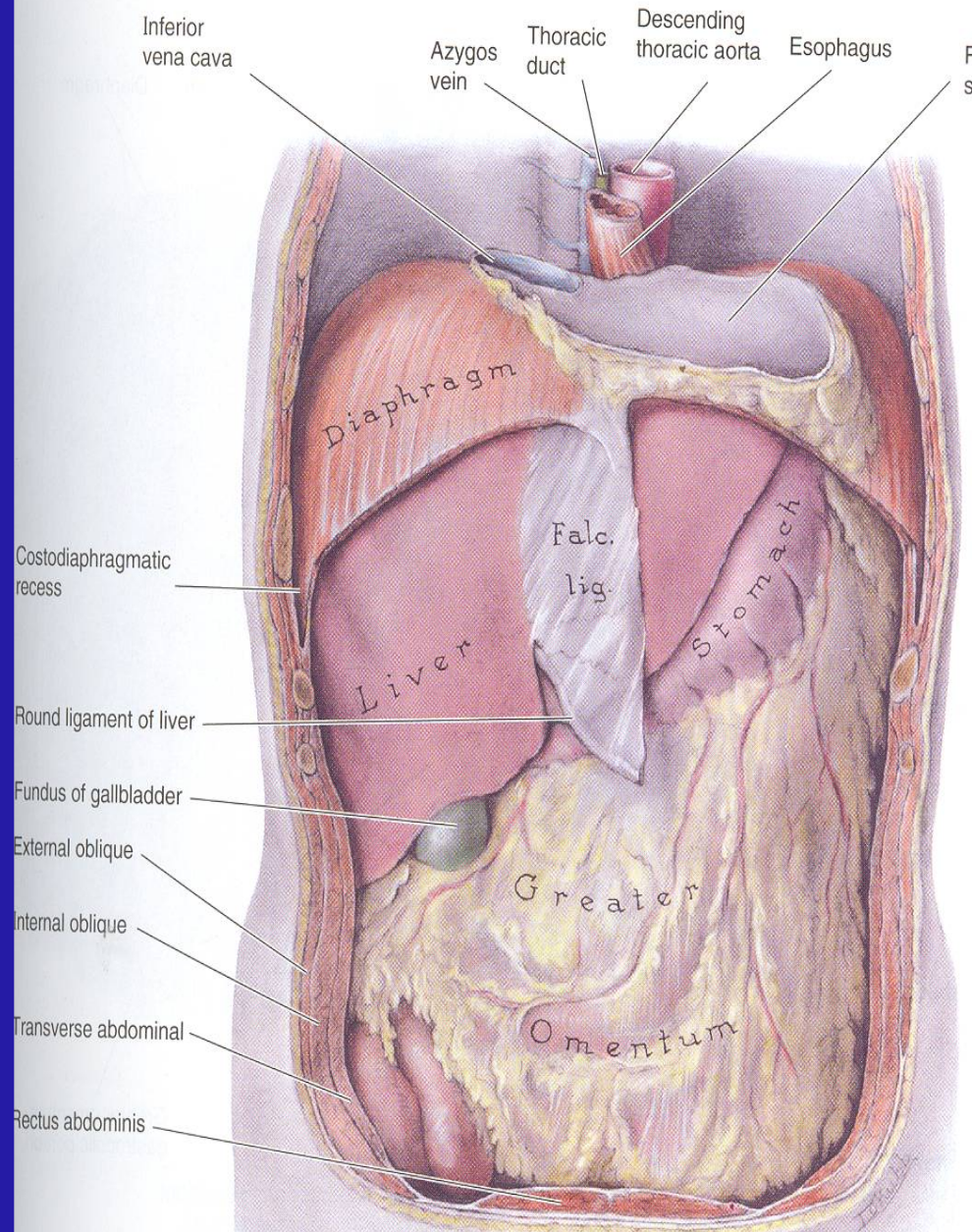
PYLORIC ANTRUM AND PYLORUS



- 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.**

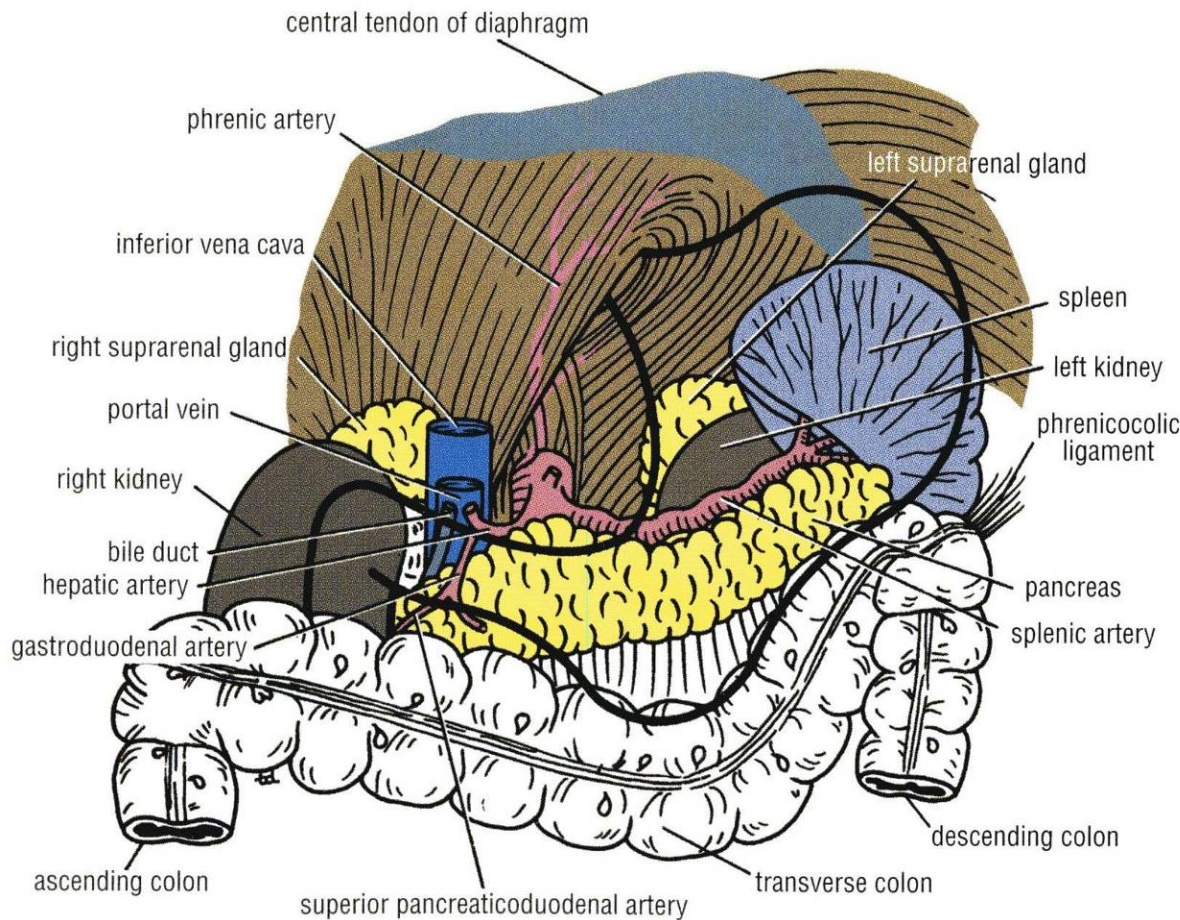


ANTERIOR RELATIONS



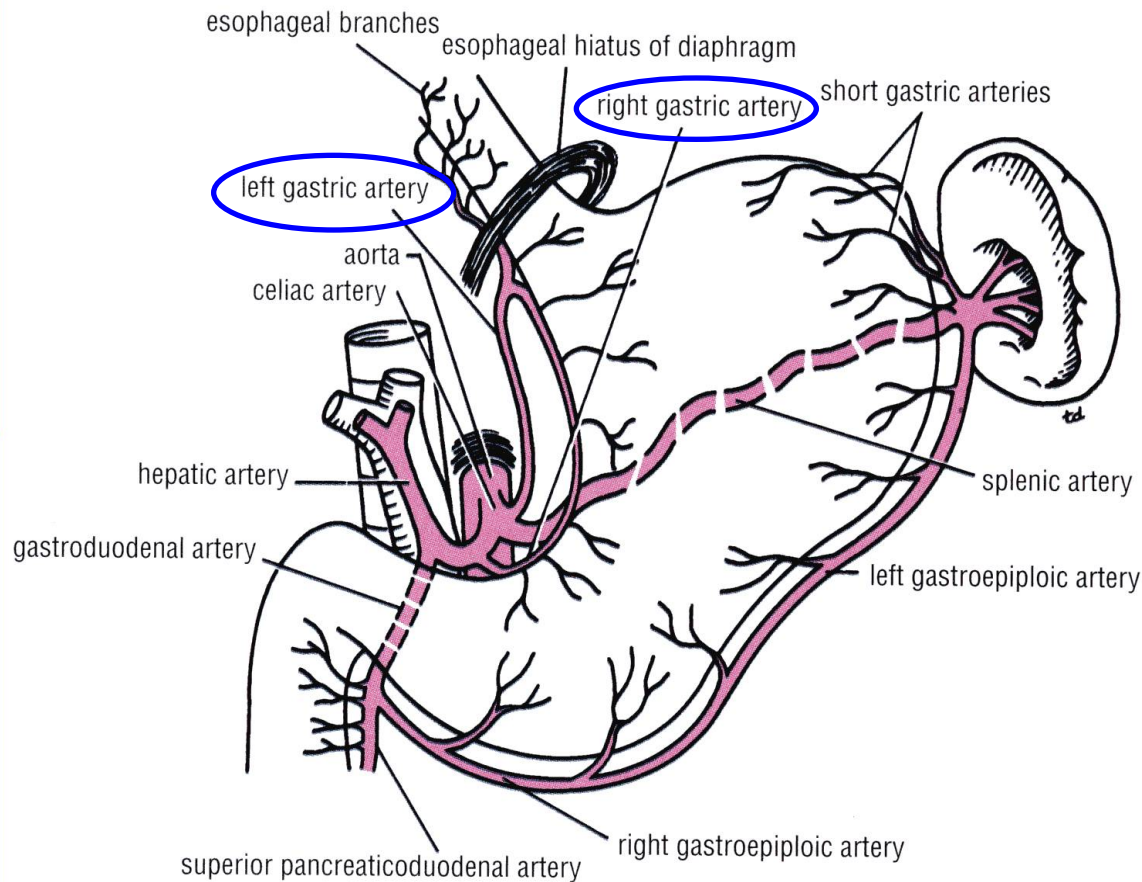
- Anterior abdominal wall.
- Left costal margin.
- Left pleura & lung.
- Diaphragm.
- Left lobe of the liver.

POSTERIOR RELATIONS



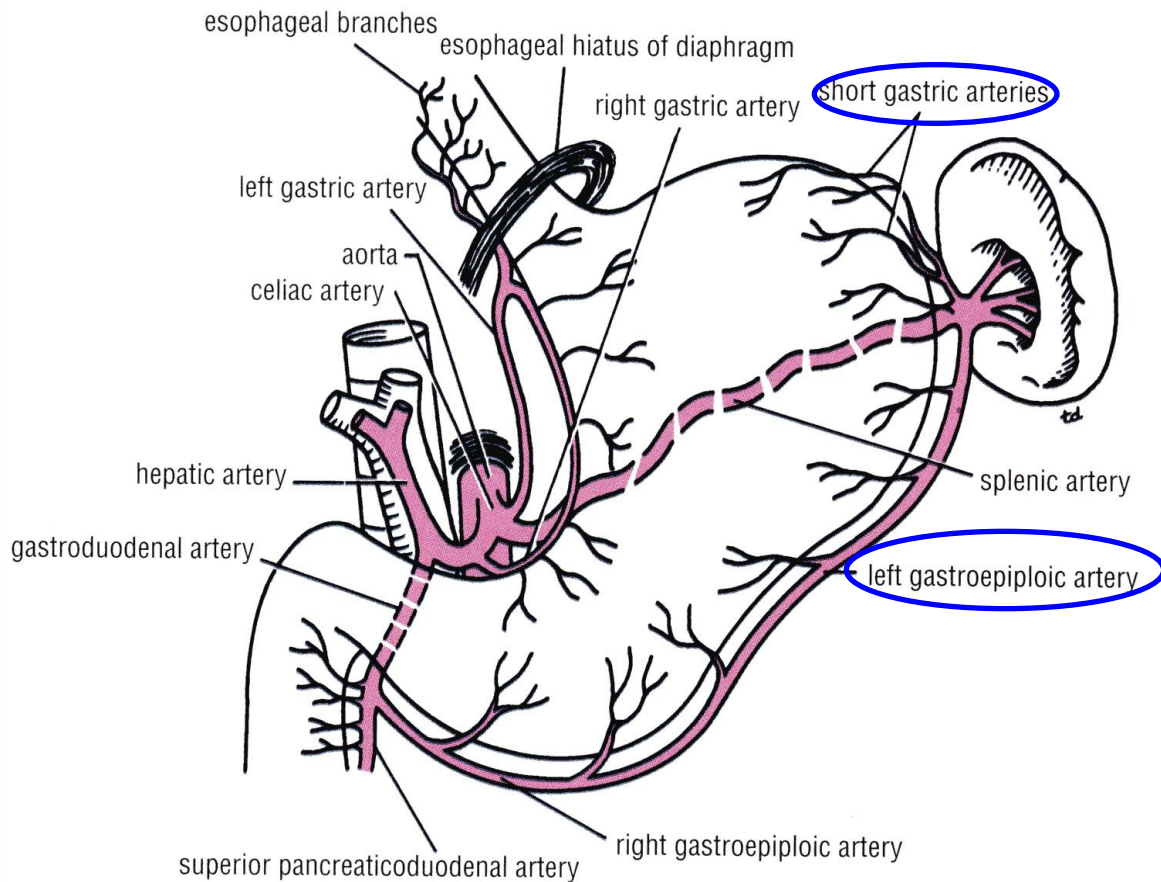
- Left crus of diaphragm.
- Left suprarenal gland.
- Part of left kidney
- Spleen.
- Splenic artery.
- Pancreas.
- Transverse mesocolon.
- Transverse colon.
- Lesser sac.
- All these structures form **the stomach bed**.
- All are separated from the stomach by peritoneum of lesser sac except the spleen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

ARTERIES



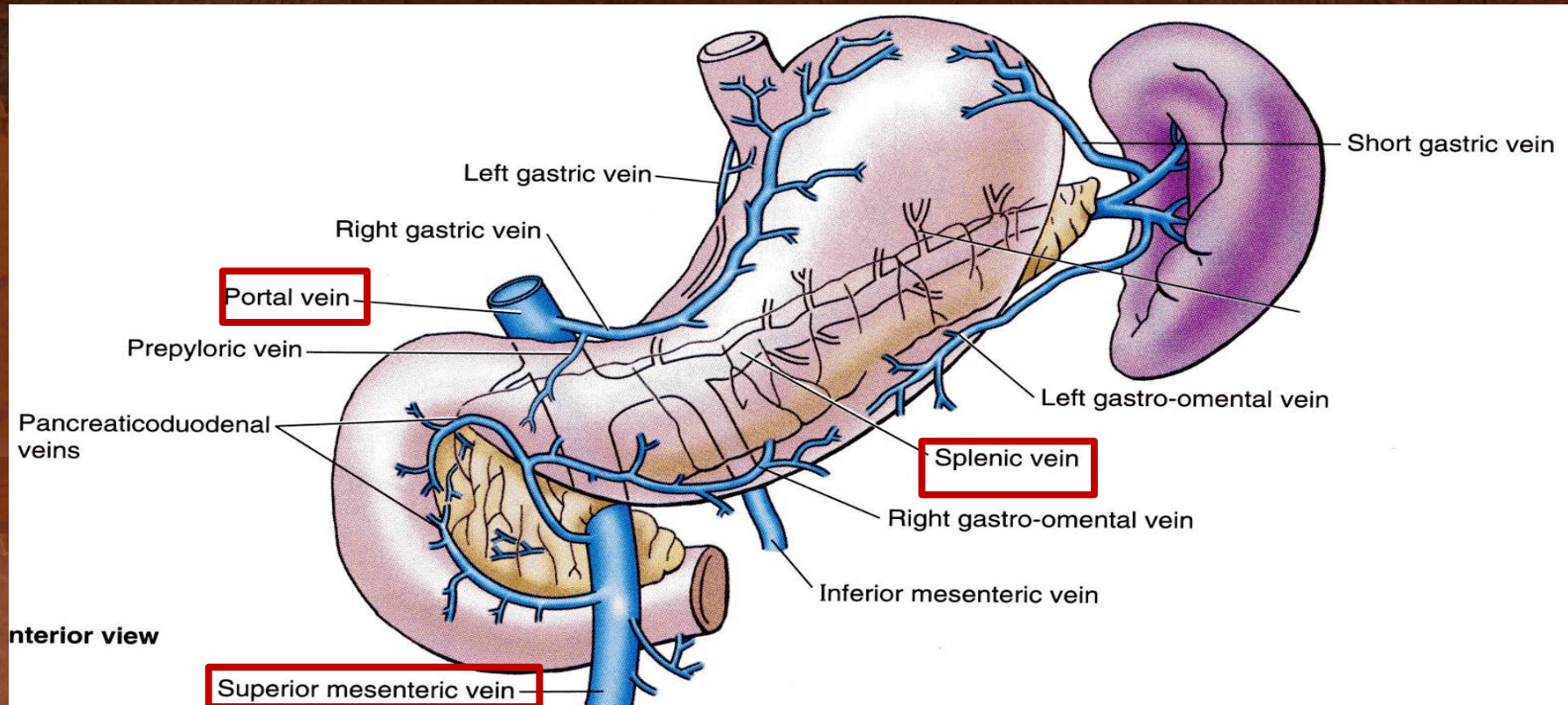
- 5 arteries:
 - 1- Left gastric artery:
 - **It is a** branch of celiac artery.
 - Ascends along the lesser curvature.
 - 2- Right gastric artery:
- From the **hepatic** artery of celiac.
- Runs to the left along the lesser curvature.

ARTERIES



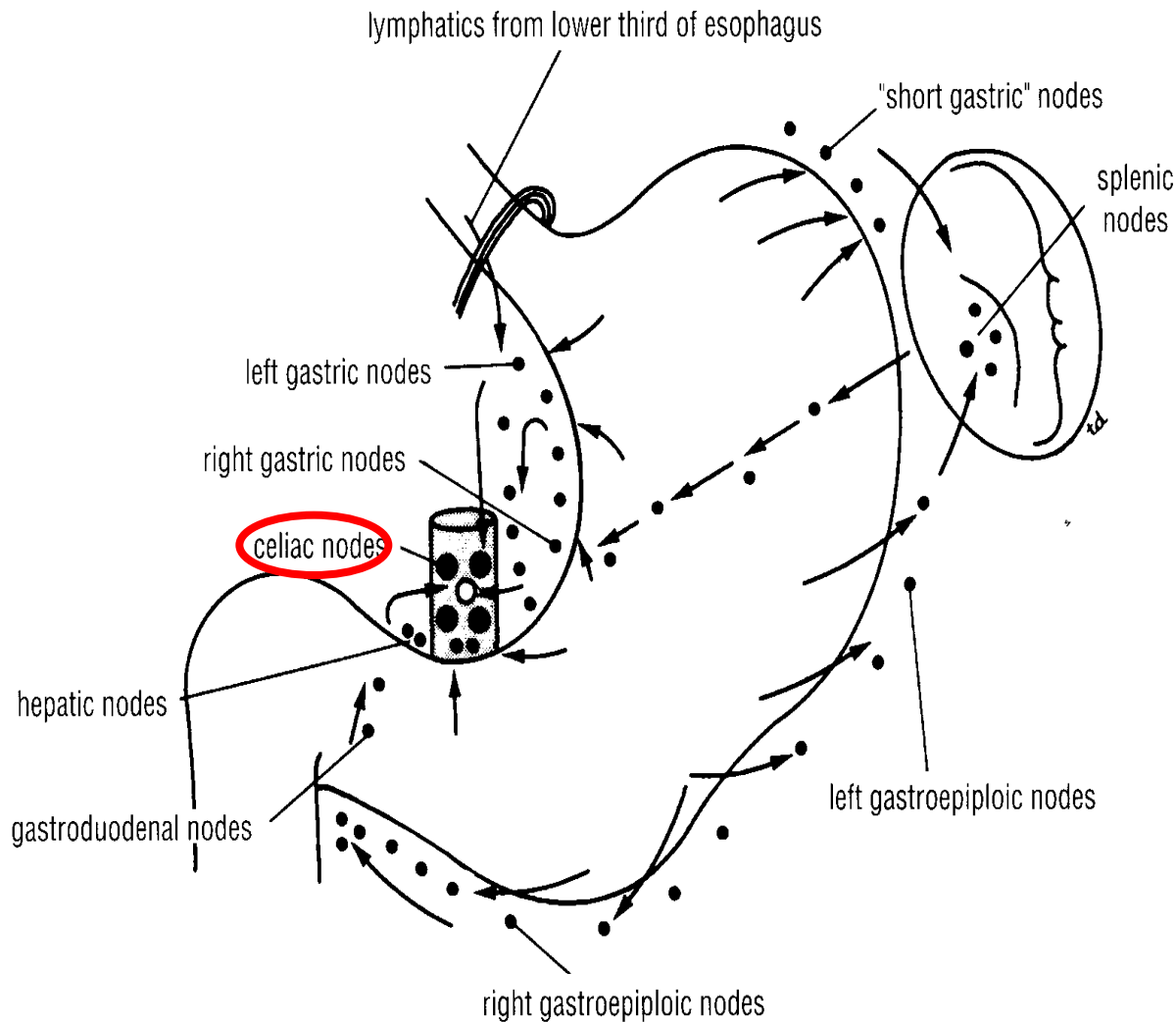
- 3- Short gastric arteries – arise from the splenic artery.
 - Pass in the **gastrosplenic ligament**.
- 4- Left gastroepiploic artery:
 - from splenic artery
 - Pass in the **gastrosplenic ligament**.
- 5- Right gastroepiploic artery:
 - from the gastroduodenal artery of hepatic.
 - Passes to the left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

VEINS

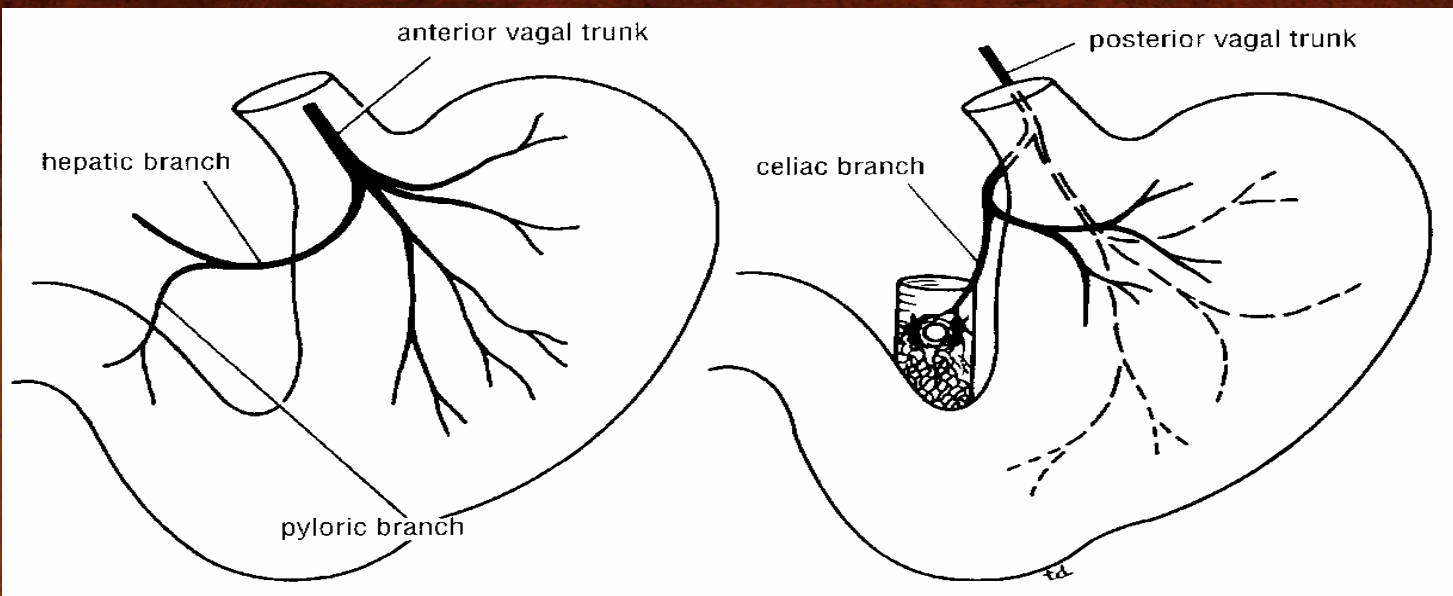


- All of them drain into the **portal circulation**.
- The **right** and **left gastric veins** drain directly in the **portal vein**.
- The **short gastric veins** and the **left gastroepiploic vein** join the splenic vein.
- The **right gastroepiploic vein** drain in the superior mesenteric vein.

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.