

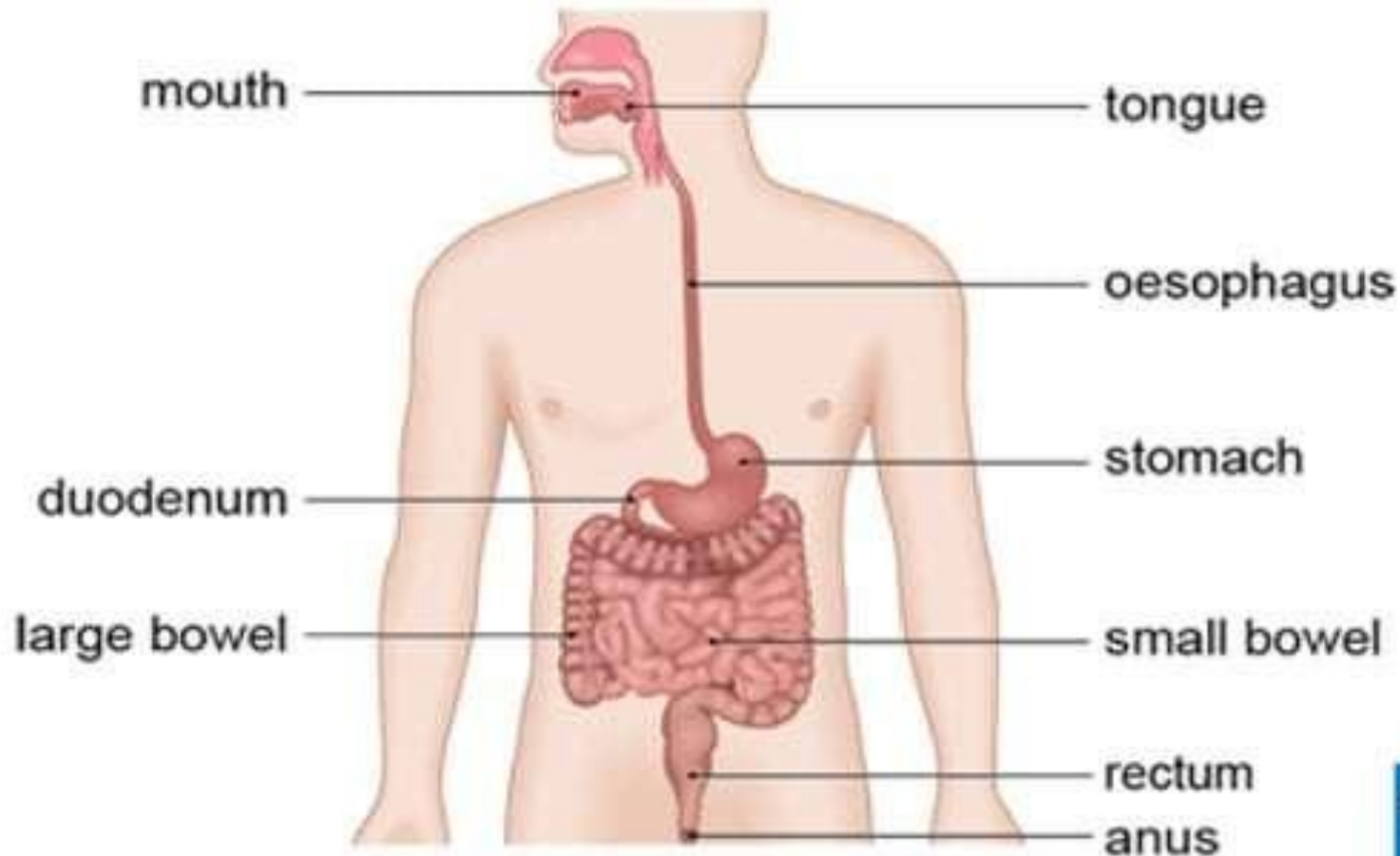


Welcome



BRISSO ARACKAL

# OESOPHAGUS



**The digestive system**



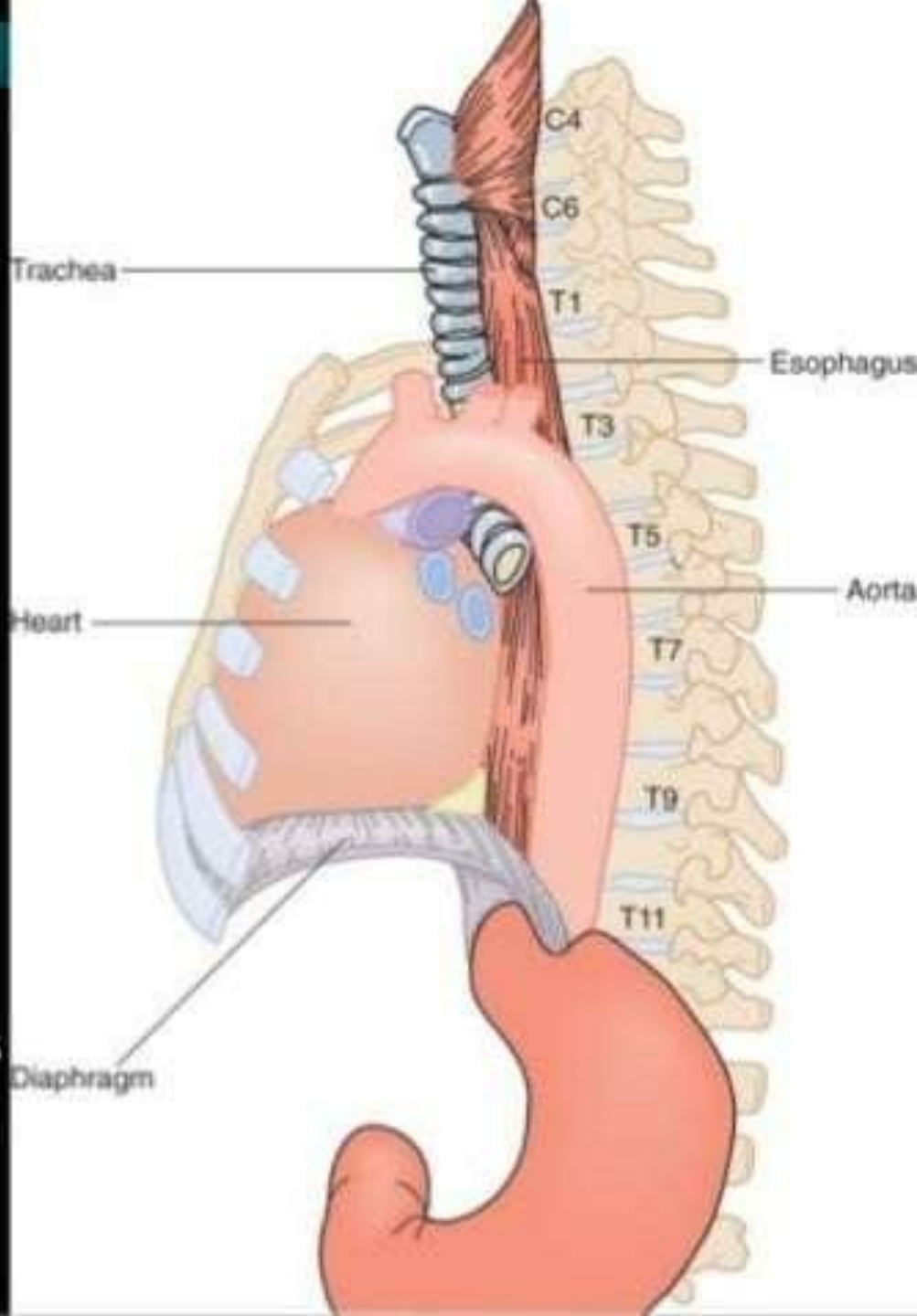


# OESOPHAGUS

- It is a tubular structure about **25 cm** long.
- It begins as the continuation of the **pharynx** at the level of the **6<sup>th</sup> cervical** vertebra.
- It pierces the diaphragm at the level of the **10<sup>th</sup> thoracic** vertebra to join the stomach.
- It commences in the midline, but as it descends through the neck, it inclines to the left side.

# Introduction:

- The esophagus serves as a conduit between the pharynx and the stomach .
- It begins at the cricopharyngeus (C5-C6)
- passes through the diaphragm to join the cardia of stomach (D10)
- Length 23-37 cms correlates with individual's height and it is usually longer in men than in women.



# Location and Description

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## □ **Anteriorly**

- The trachea
- the recurrent laryngeal nerves ascend one on each side, in the groove between the trachea and the esophagus

## □ **Posteriorly**

- The prevertebral layer of deep cervical fascia
- the longus colli
- the vertebral column

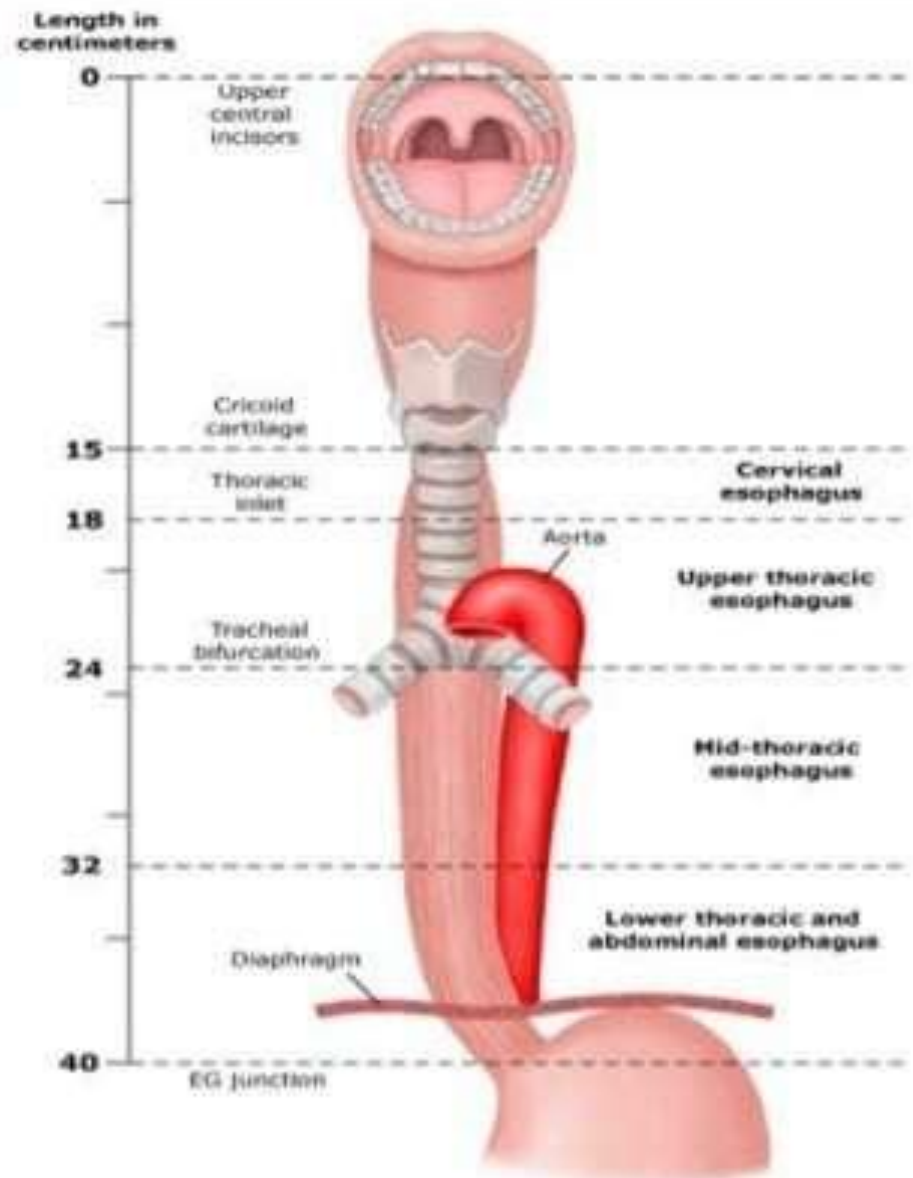
## □ **Laterally**

- On each side lie the lobe of the thyroid gland and the carotid sheath



# OESOPHAGUS

- Anatomically divided into three parts
  - Cervical (jn to notch)
  - 4-5cms
  - Thoracic (notch to hiatus)
  - abdominal
- Functionally divided into
  - upper esophageal sphincter
  - esophageal body
  - lower esophageal sphincter



# Anatomic Division

- **Cervical**

- Cervical begins at the lower end of pharynx (level of 6th vertebra or lower border of cricoid cartilage) and extends to the thoracic inlet (suprasternal notch); 18 cm from incisors.

- **Thoracic**

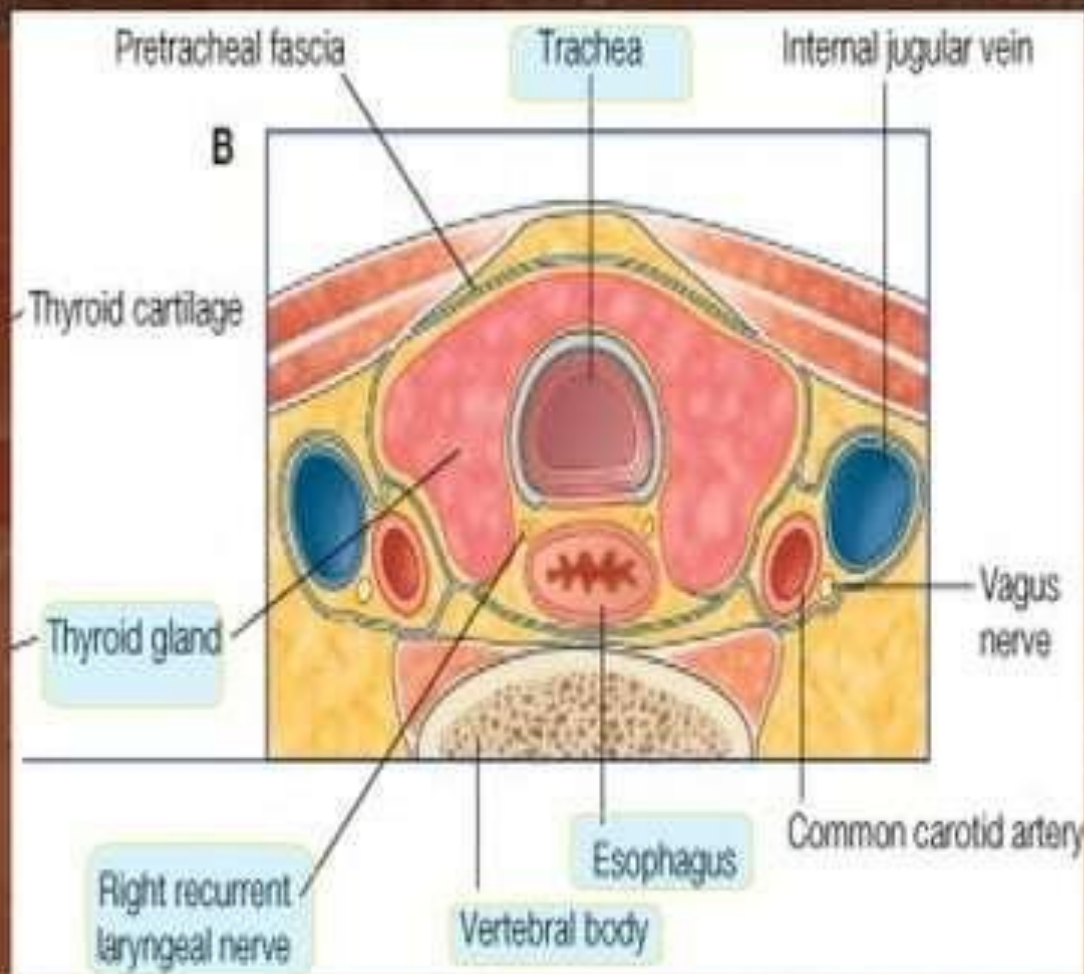
- Upper thoracic: from thoracic inlet to level of tracheal bifurcation; 18-23 cm.
- Mid thoracic: from tracheal bifurcation midway to gastroesophageal junction; 24-32 cm.
- Lower thoracic: from midway between tracheal bifurcation and gastroesophageal junction to GE junction, including abdominal esophagus; 32-40 cm.

- **Abdominal**

- Considered part of lower thoracic esophagus; 32-40 cm.



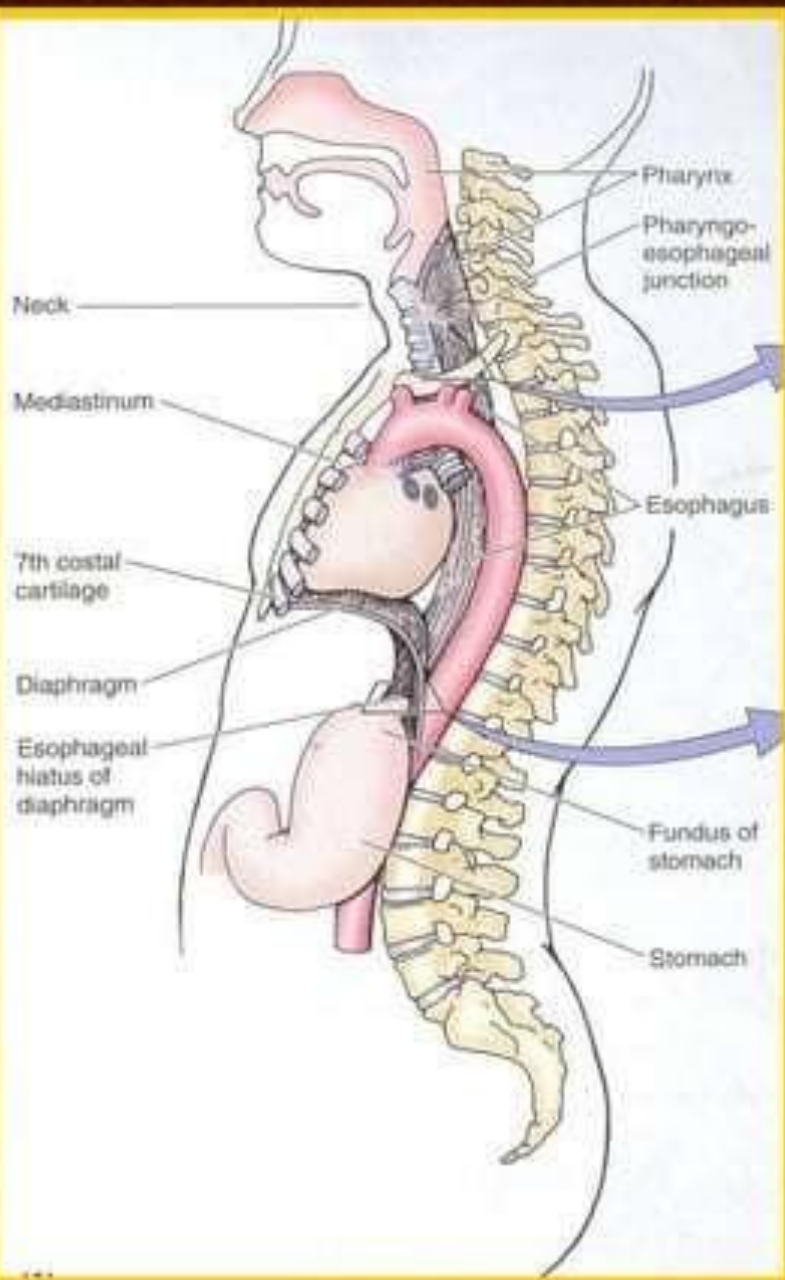
# RELATIONS



## CERVICAL PART

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

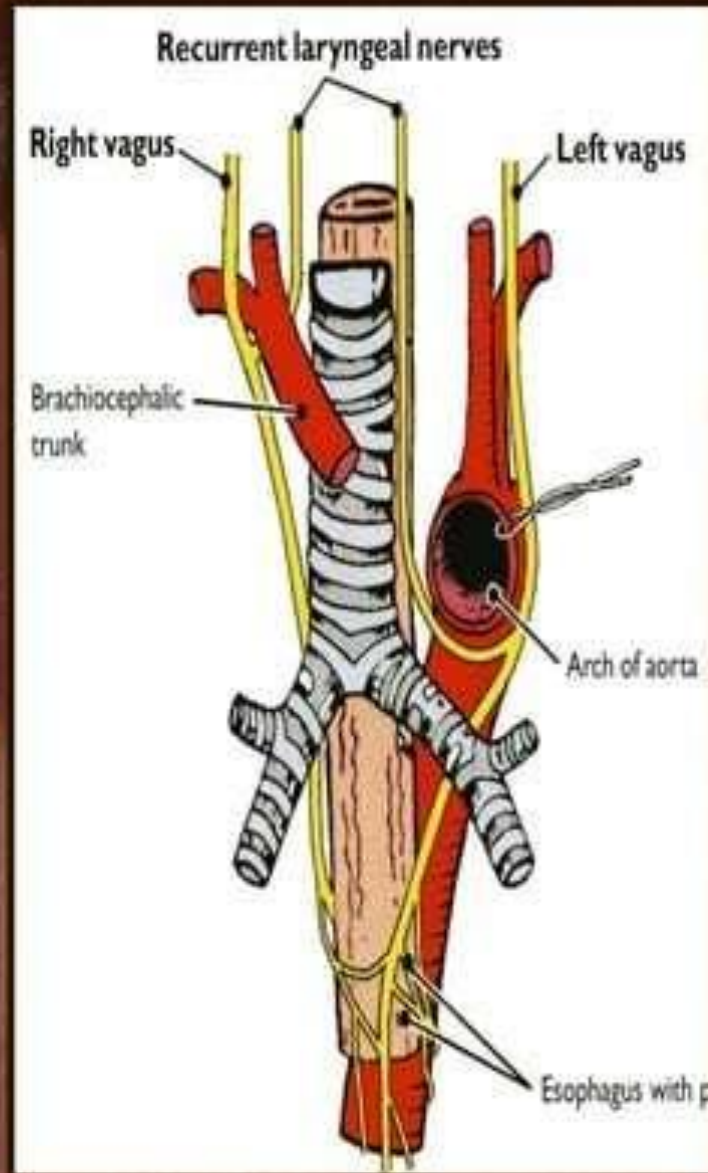
## THORACIC PART



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



## Thoracic part

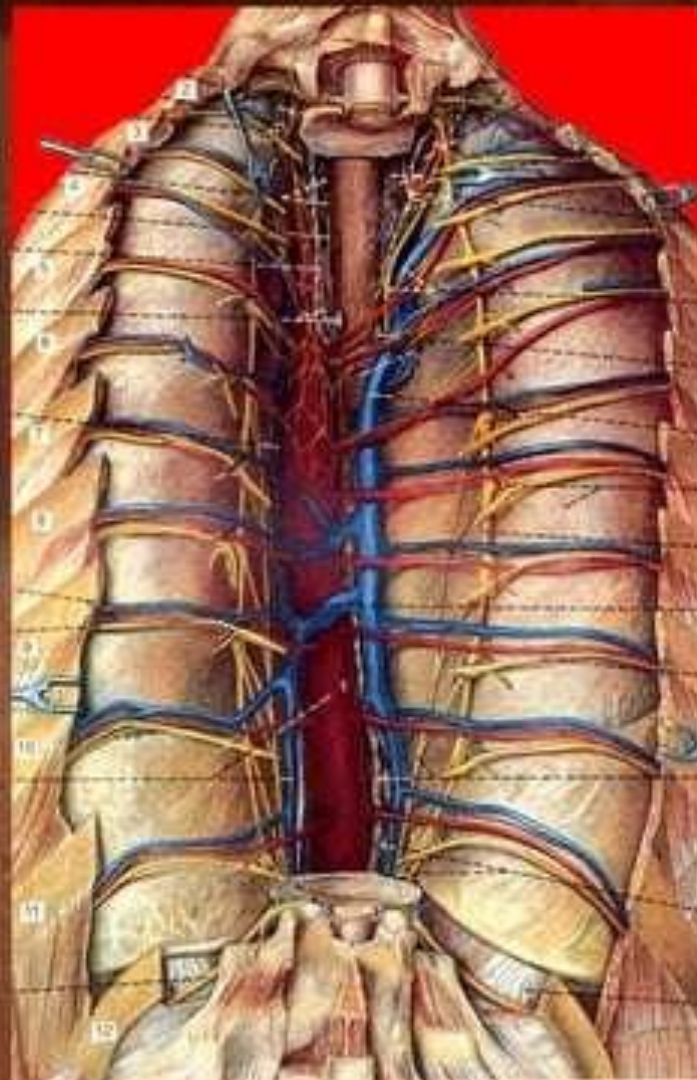
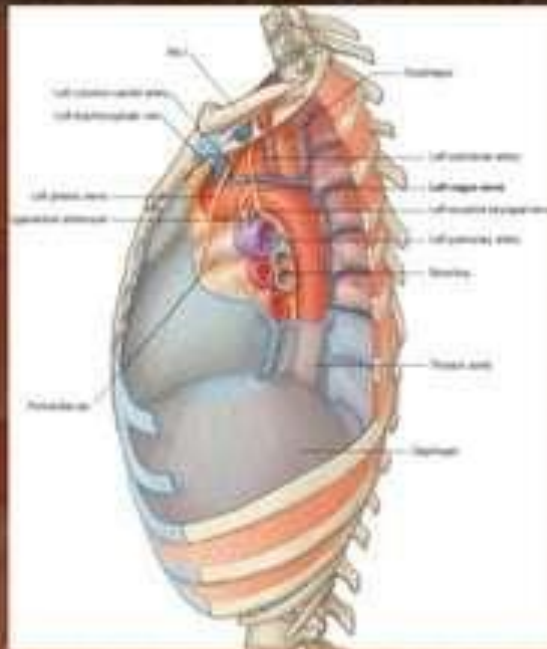


## ANTERIOR RELATIONS

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



## Thoracic part



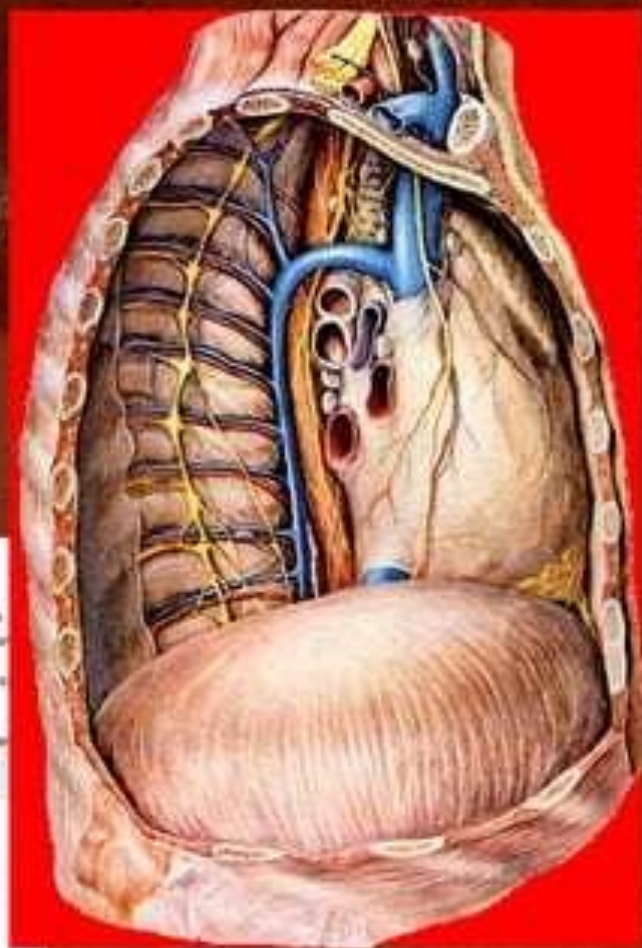
## POSTERIOR RELATIONS

- **B**odies of the thoracic vertebrae
- **T**horacic duct
- **A**zygos vein
- **R**ight posterior intercostal arteries
- **D**escending thoracic aorta (at the lower end)



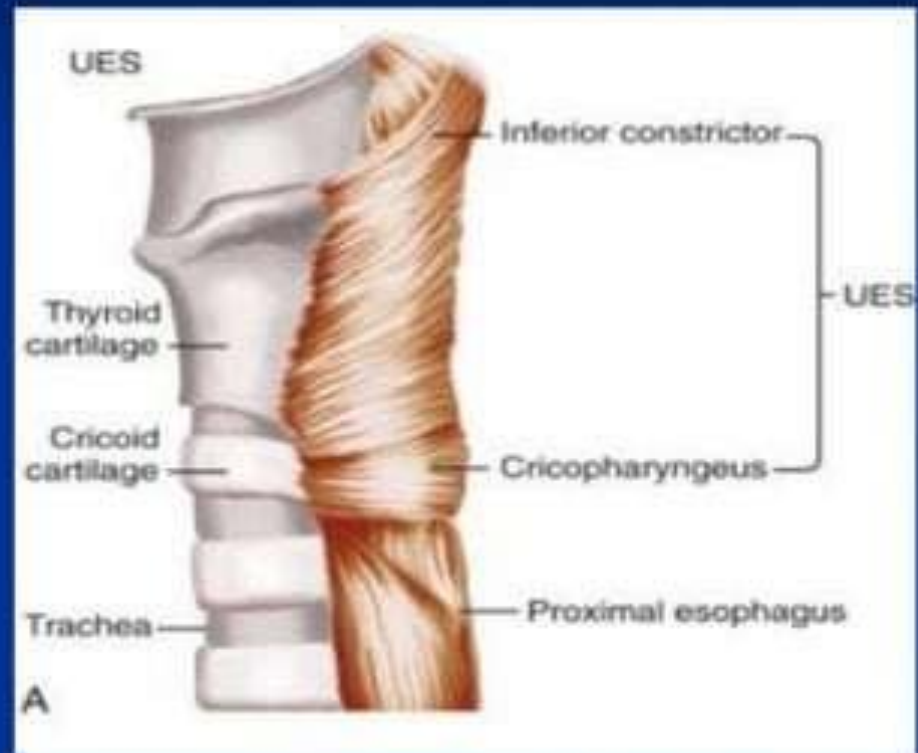
## LATERAL RELATION

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



# Upper Esophageal Sphincter

- Separates the pharynx from esophagus
- 3 cm in length
- Three skeletal muscle groups
  - Inferior constrictor
  - Cricopharyngeus
  - Proximal esophagus

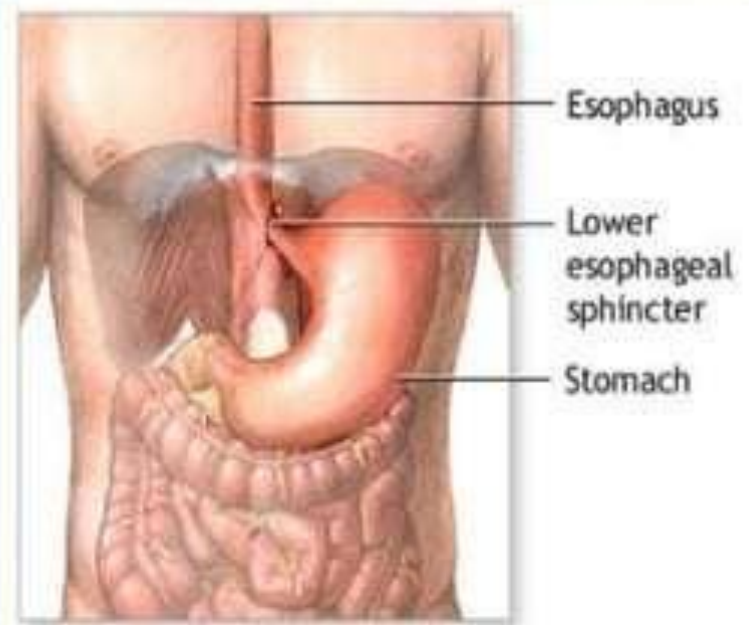
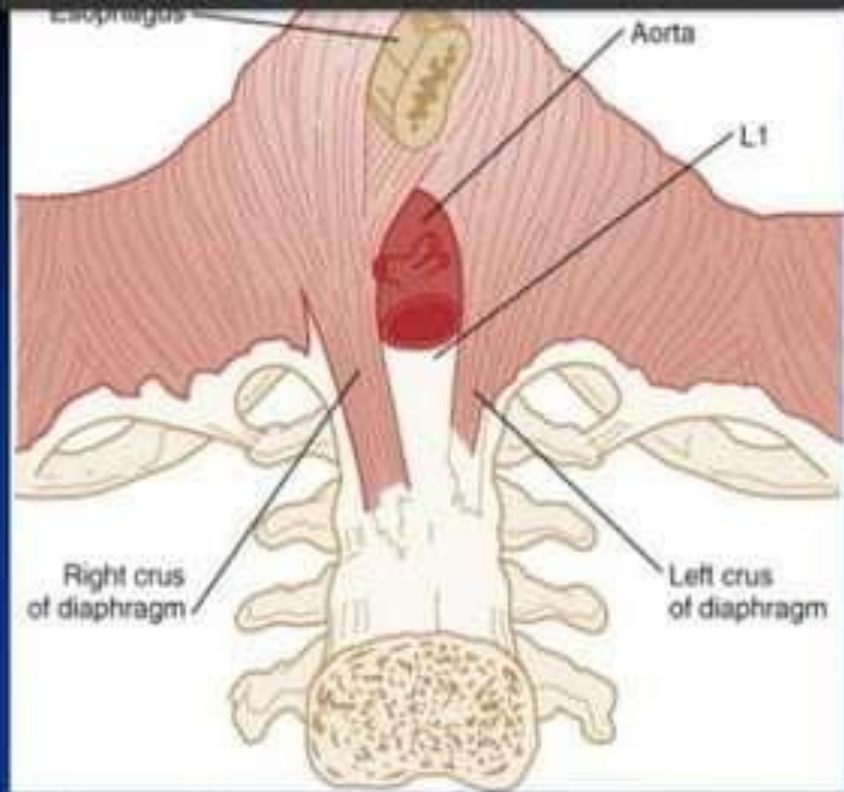


- The upper *cricopharyngeal* or *upper oesophageal sphincter* prevents air passing into the oesophagus during inspiration and the aspiration of oesophageal contents.



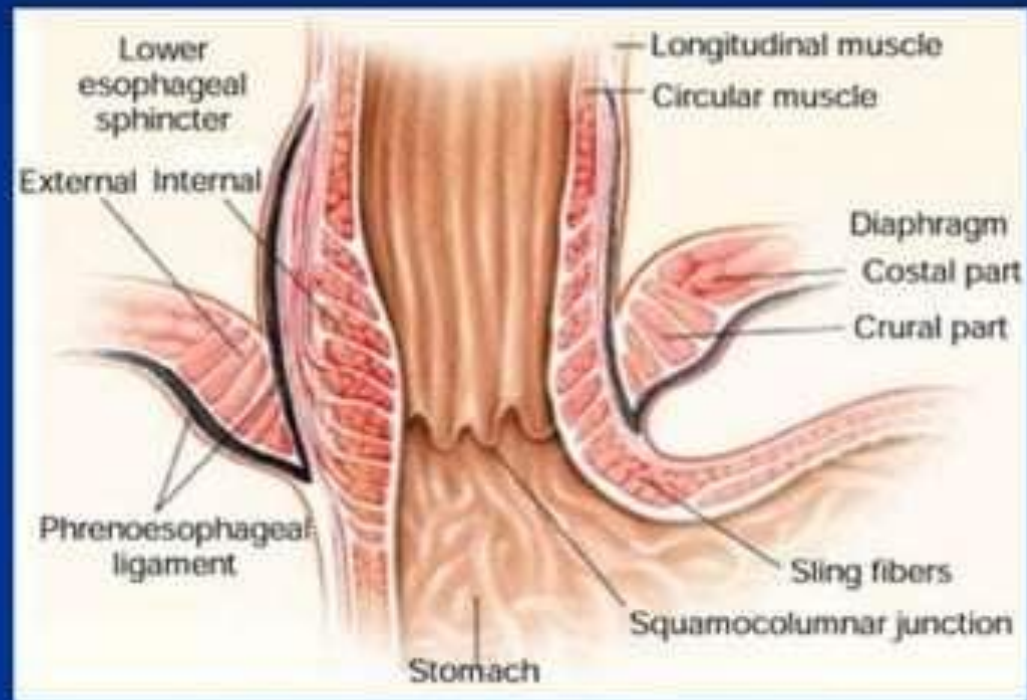
# Diaphragmatic Hiatus

- The esophagus passes from chest into abdomen through the diaphragmatic hiatus
  - Opening in right crus of the diaphragm
  
- Approximately 2cm of the distal esophagus normally lie within the abdomen



# Lower Esophageal Sphincter

- 3cm in length
- External
  - Skeletal muscle of crural diaphragm
- Internal
  - Smooth muscle of distal esophagus

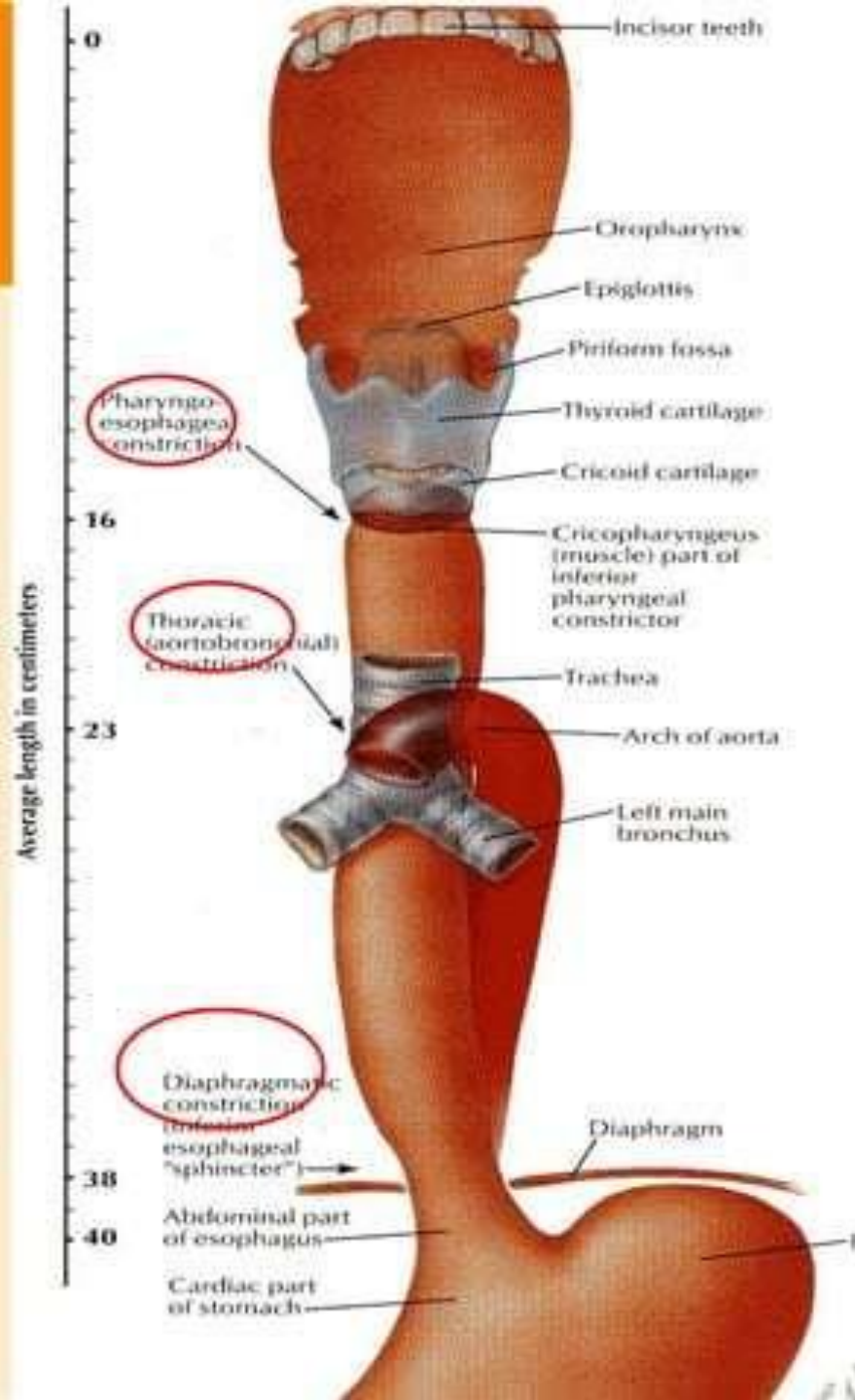


- The *cardiac* or *lower oesophageal sphincter* prevents the reflux of acid gastric contents into the oesophagus.



# ESOPHAGEAL CONSTRICTIONS

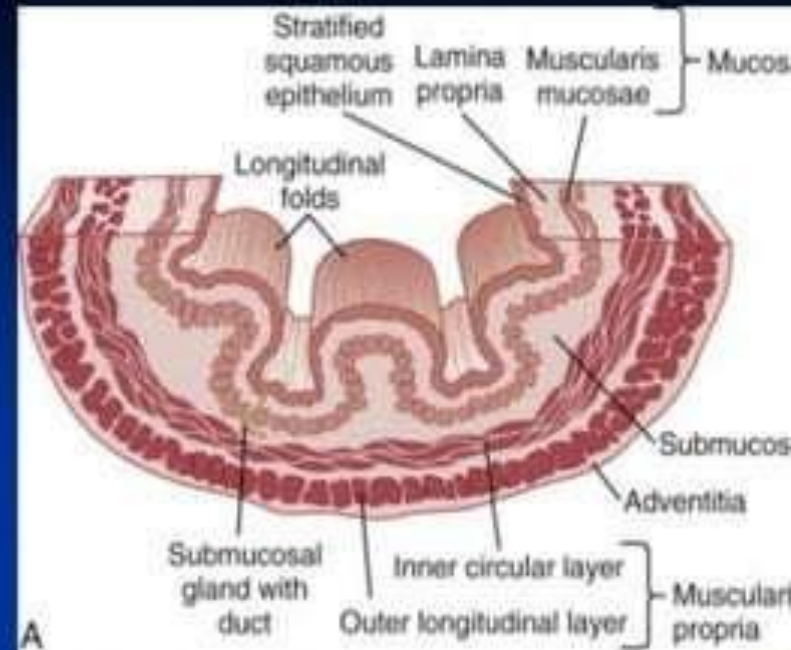
- The esophagus has 3 anatomic constrictions.
- **Pharyngoesophageal constriction** :The first is at the junction with the pharynx (pharyngoesophageal junction)
- **Thoracic(aortobronchial) constriction**: The second is at the crossing with the aortic arch and the left main bronchus.
- **Diaphragmatic constriction**: The third is at the junction with the stomach.

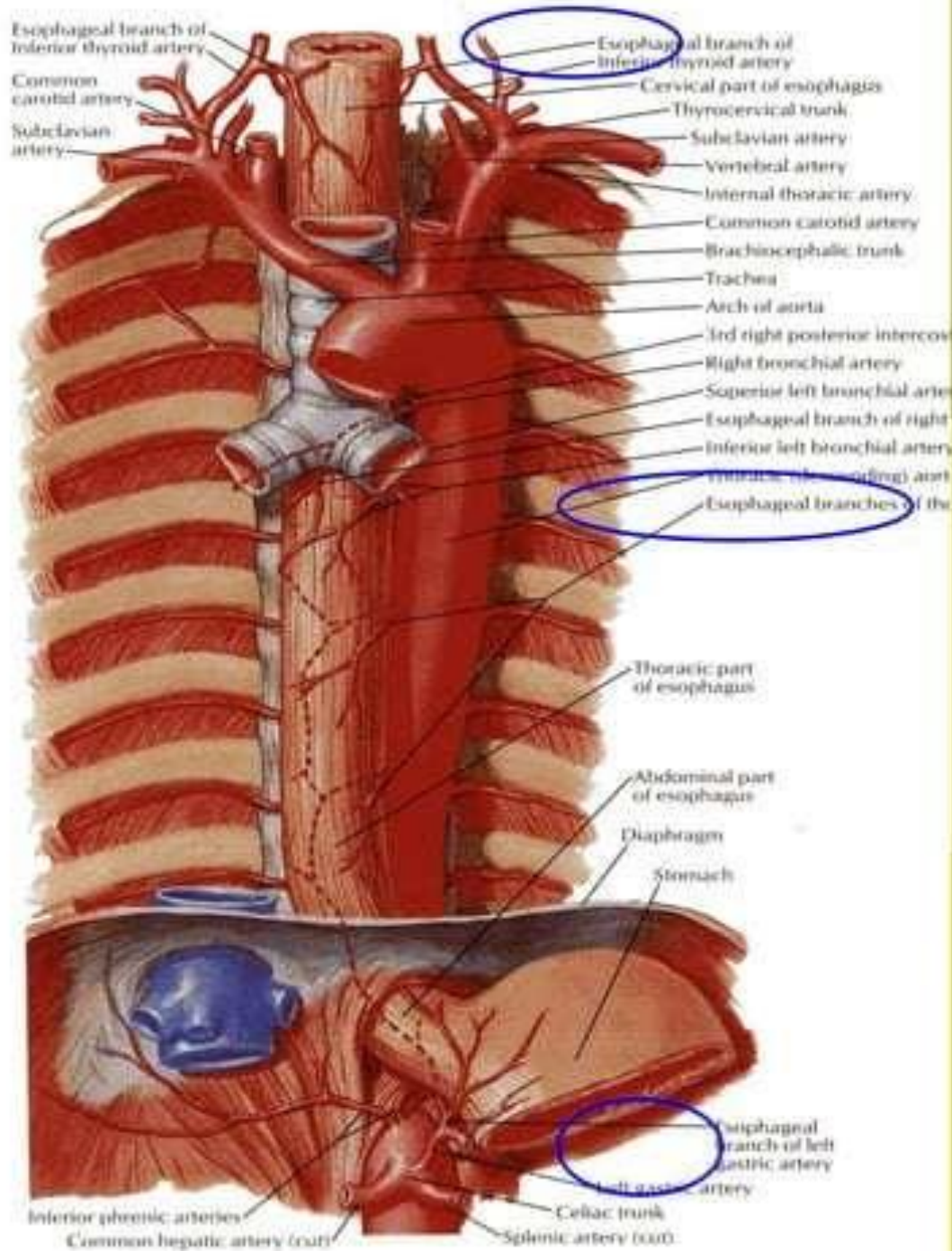




# Anatomic Layers of Esophageal Wall

- Innermost mucosa (hyperechoic)
- Muscularis mucosa (hypoechoic)
- Submucosa (hyperechoic)
- Muscularis propria (hypoechoic)
- Adventitia (hyperechoic)





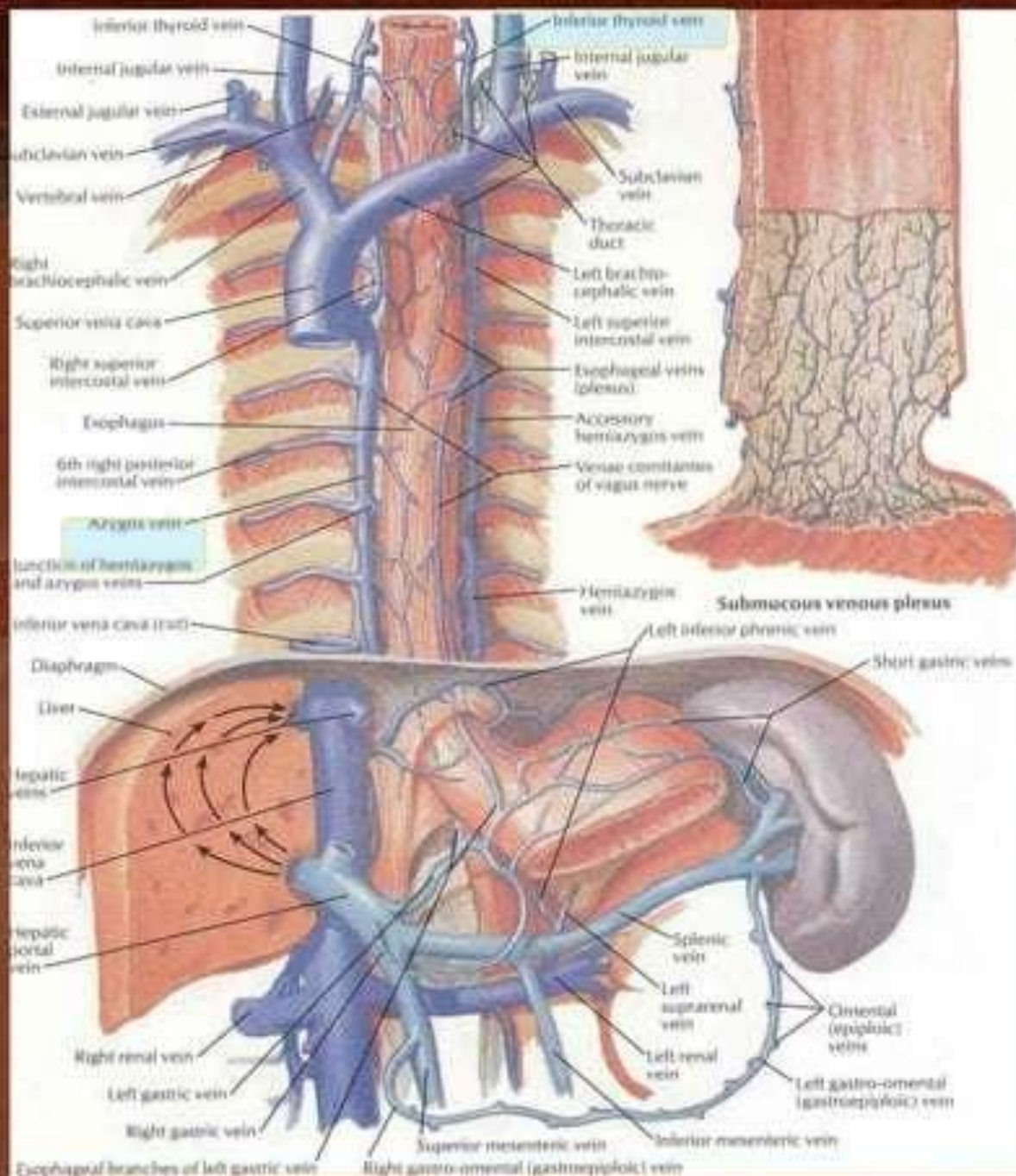
# Blood Supply

## Arterial Supply

- upper third of the esophagus is supplied by the inferior thyroid artery
- middle third by branches from the descending thoracic aorta
- lower third by branches from the left gastric artery



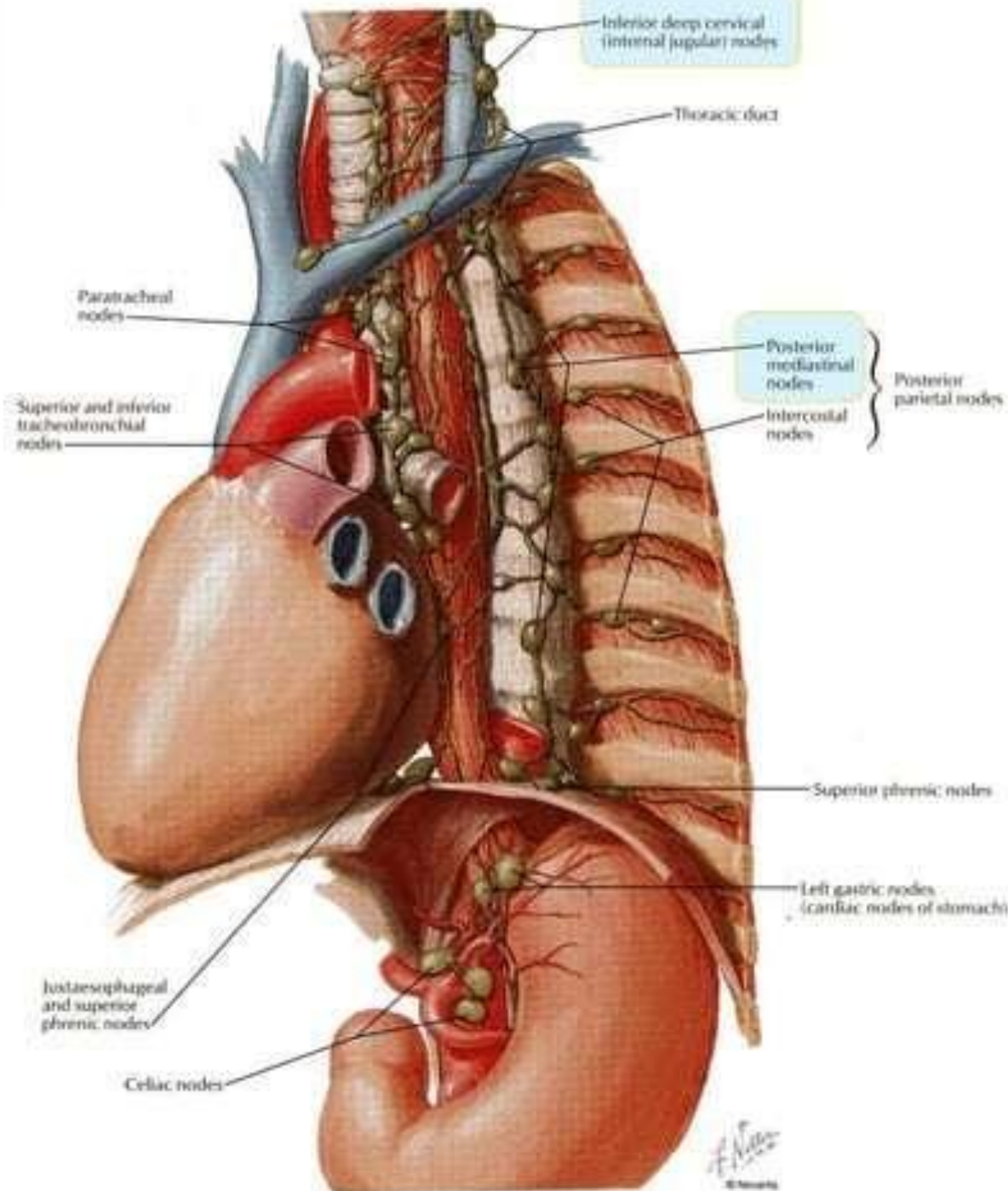
# VENOUS DRAINAGE



- 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**.
- NB. Esophageal varices.

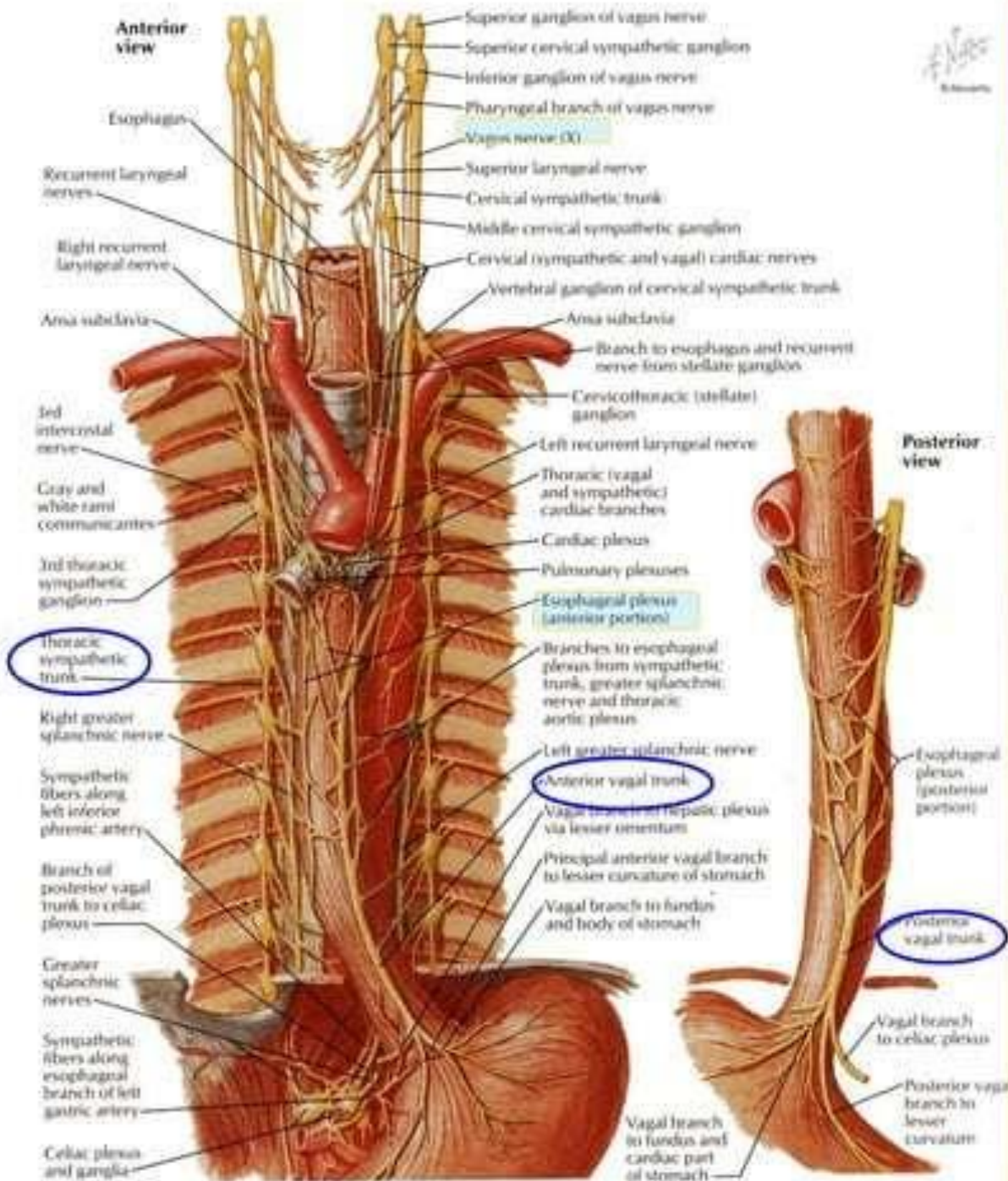


# LYMPH DRAINAGE



- The upper third is drained into 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 it.



# Esophageal physiology

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## 1. swallow (Esophageal Transport by Gravity)

- The oropharyngeal phase : Swallowing begins when a food bolus is propelled into the pharynx from the mouth. It is **voluntary**.
- The esophageal phase. It is **involuntary**.
  - It takes approximately 8 to 10 seconds from initiation of the swallow to entry into the stomach .
  - In rapid sequence and with precise coordination, the larynx is elevated and the epiglottis seals the airway.





## Esophageal physiology

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2. Secretion (submucosal mucous glands)
3. Protection : Gastroesophageal reflux (mechanic , secretion )



## Gastroesophageal reflux (GER)

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- The gastric content (acid, pepsin, bile salts, and pancreatic enzymes) refluxed into the esophagus.
- It can damage the mucosa through the presence of hydrochloric.



