

OESOPHAGUS



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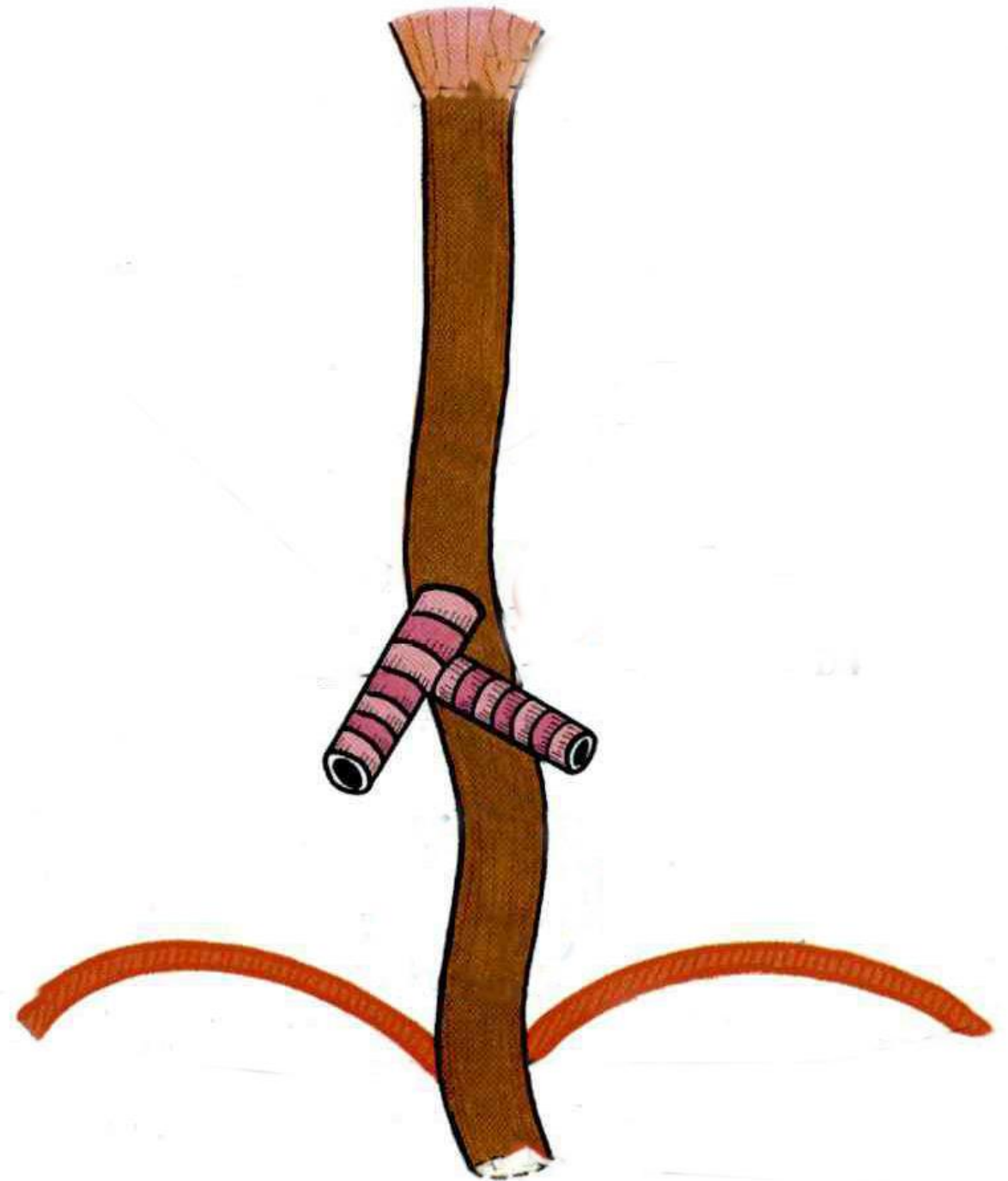
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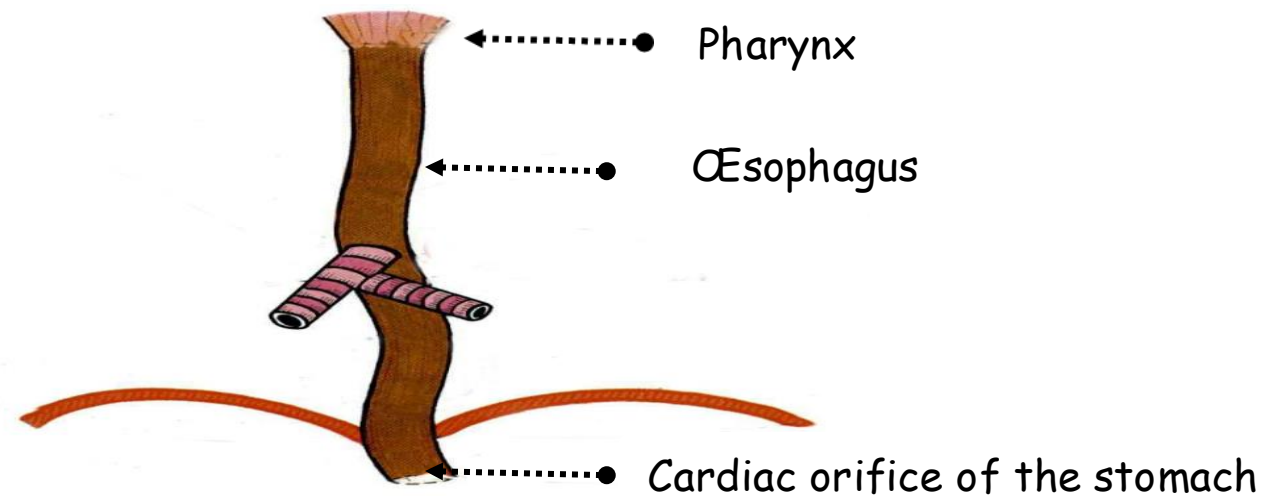
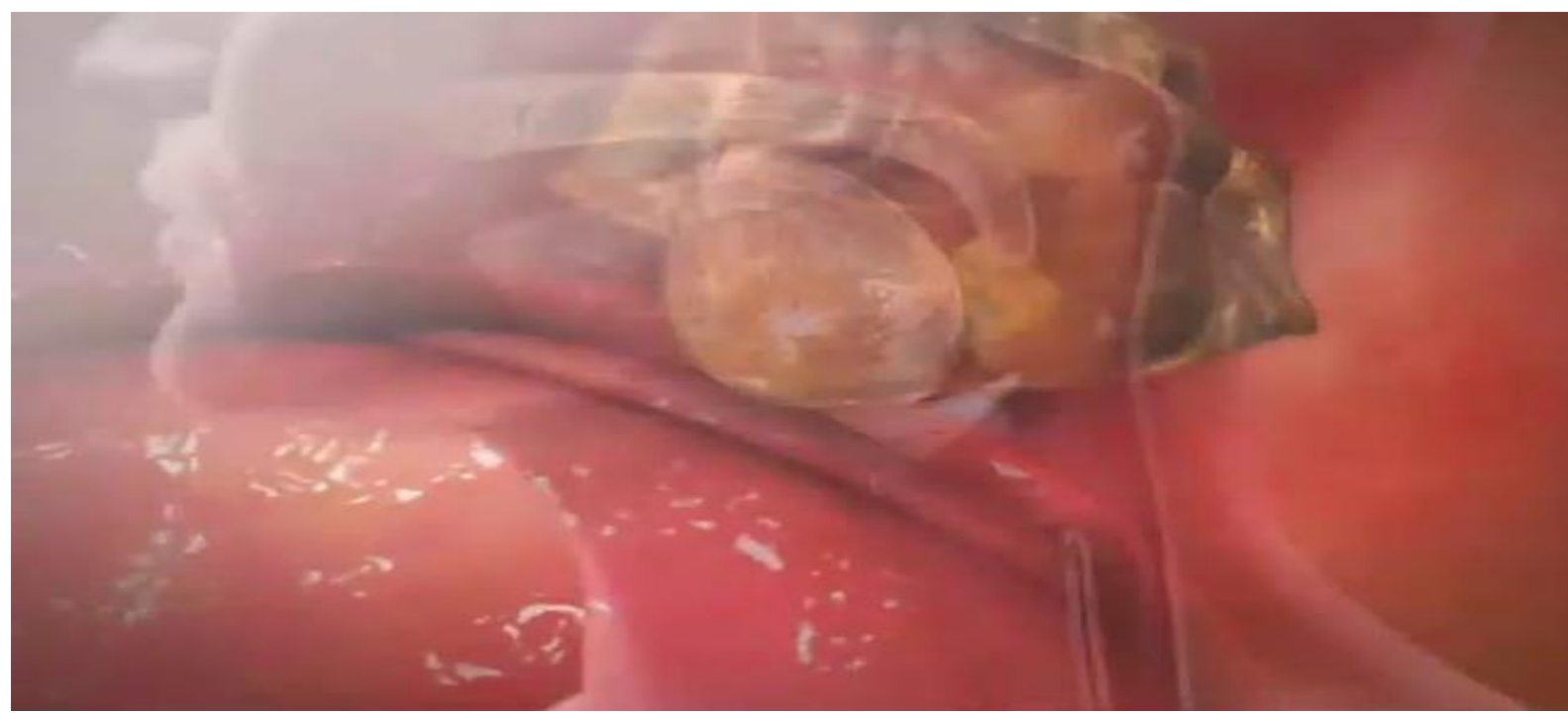
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I. INTRODUCTION

- Musculomembranous tube passing between the pharynx in the neck and the stomach in the abdomen
- Cervical, thoracic and abdominal
- Transports food bowl after deglutition

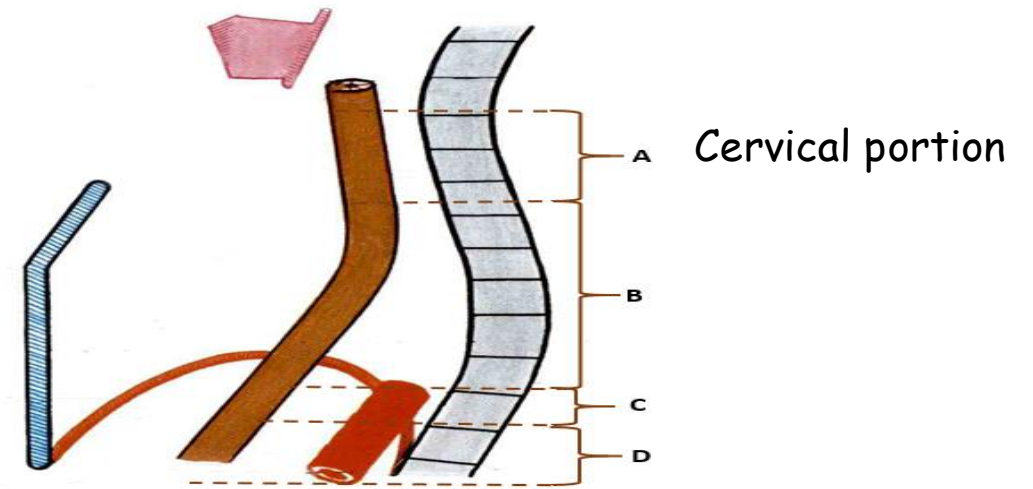
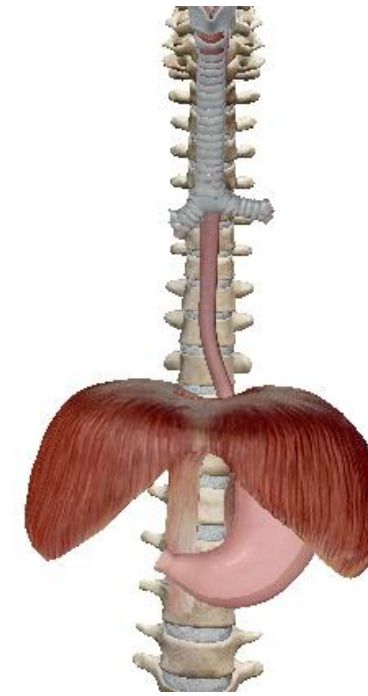


ANTERIOR VIEW OF THE OESOPHAGUS

II. DESCRIPTIVE ANATOMY

A. SITUATION

- Extends from the cricoid cartilage at the level of C6 vertebra to the cardiac orifice of the stomach at the level of T10 vertebra and the left seventh costal cartilage
- **Cervical portion:**
 - Commences in continuity with the cricopharyngeus muscle at the level of the lower border of the cricoid cartilage and C6 vertebra and lies in front of C6 and 7 vertebrae and the prevertebral fascia and behind the trachea



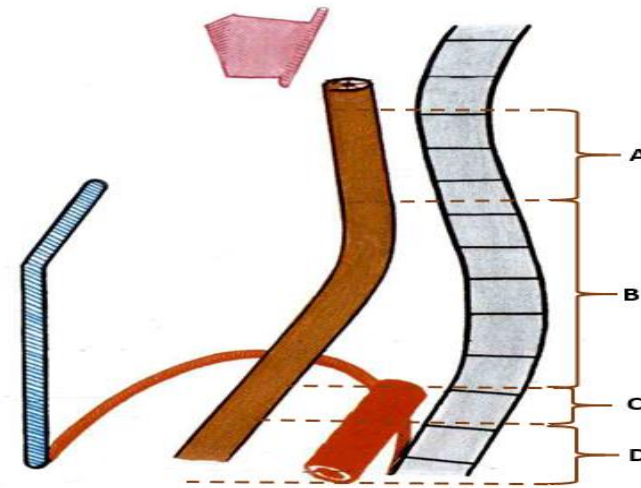
LATERAL VIEW OF THE OESOPHAGUS SHOWING ITS DIFFERENT PORTIONS

- **Thoracic portion:**

- Enters the thoracic inlet in the midline in front of the body of T1 vertebra and passes downwards through the superior and posterior mediastinum slightly to the left of the midline behind the left bronchus

- **Diaphragmatic portion:**

- Commences at the oesophageal opening opposite to T10 vertebra usually 2.5 cm to the left of the midline behind the seventh left costal cartilage and between the fibres of the left crus and a sling of fibres from the right crus

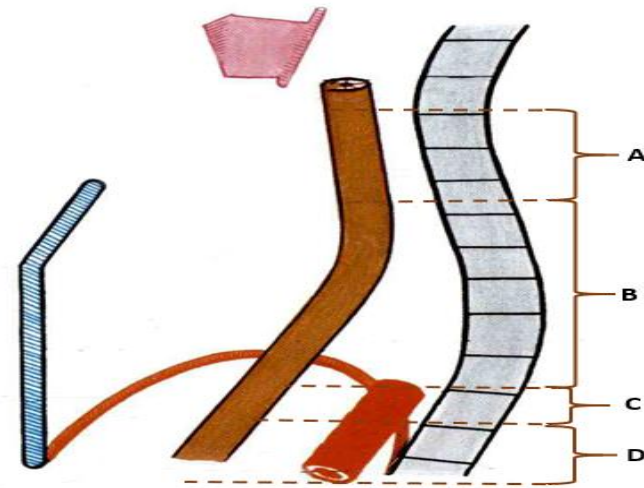


A Thoracic portion

B Diaphragmatic portion

LATERAL VIEW OF THE OESOPHAGUS SHOWING ITS DIFFERENT PORTIONS

- **Abdominal portion:**
 - Retroperitoneal and bound firmly to the margins of the diaphragmatic opening by the phreno-oesophageal ligament, turns forwards and to the left immediately below the opening to join the cardiac orifice of the stomach

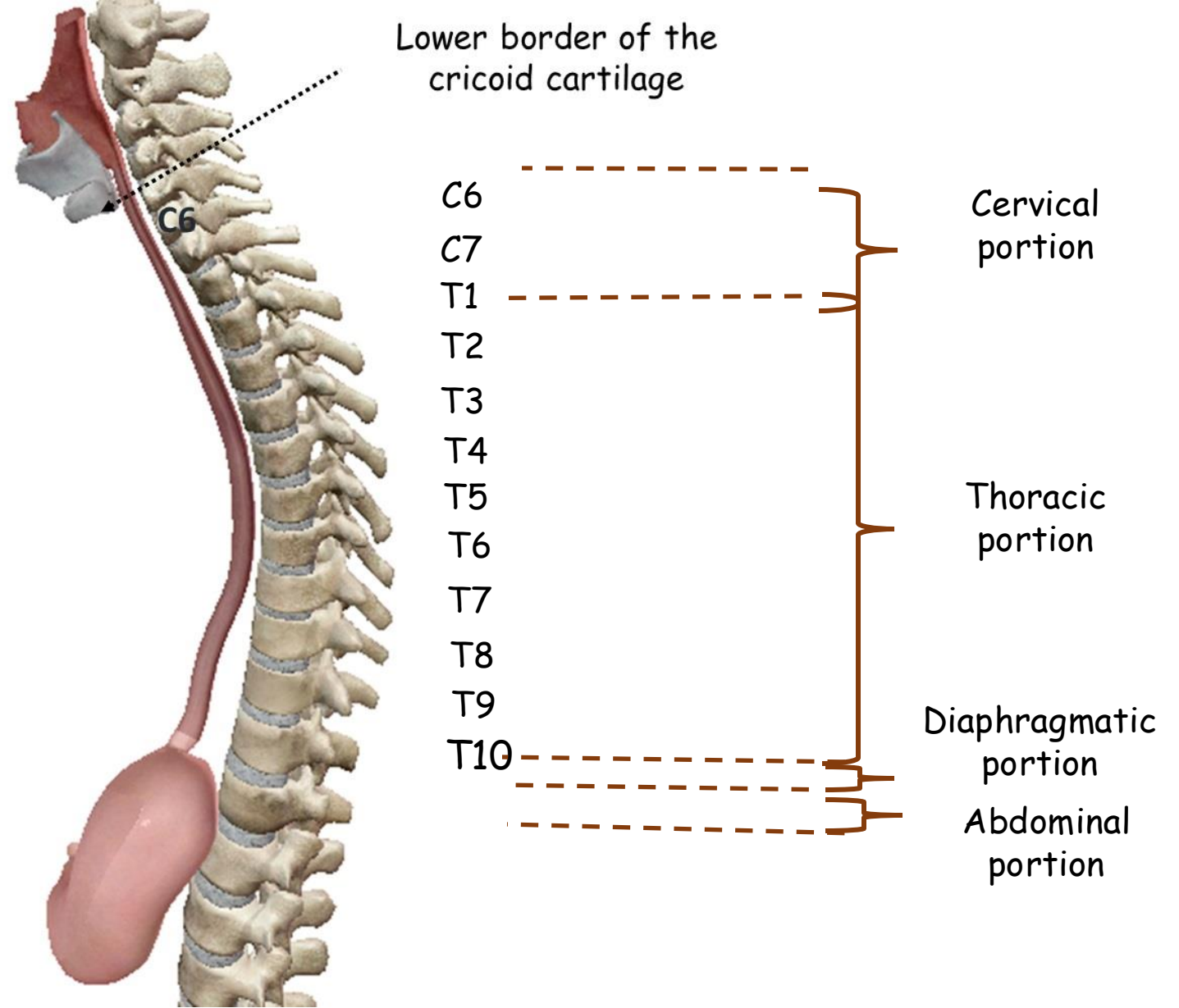


Abdominal portion

LATERAL VIEW OF THE OESOPHAGUS SHOWING ITS DIFFERENT PORTIONS

B. DIMENSIONS

- Total length: 25 cm
- Cervical portion: 5 cm
- Thoracic portion: 16 cm
- Diaphragmatic portion: 1cm
- Abdominal portion: 3 cm
- Internal diameter: 2.5 cm



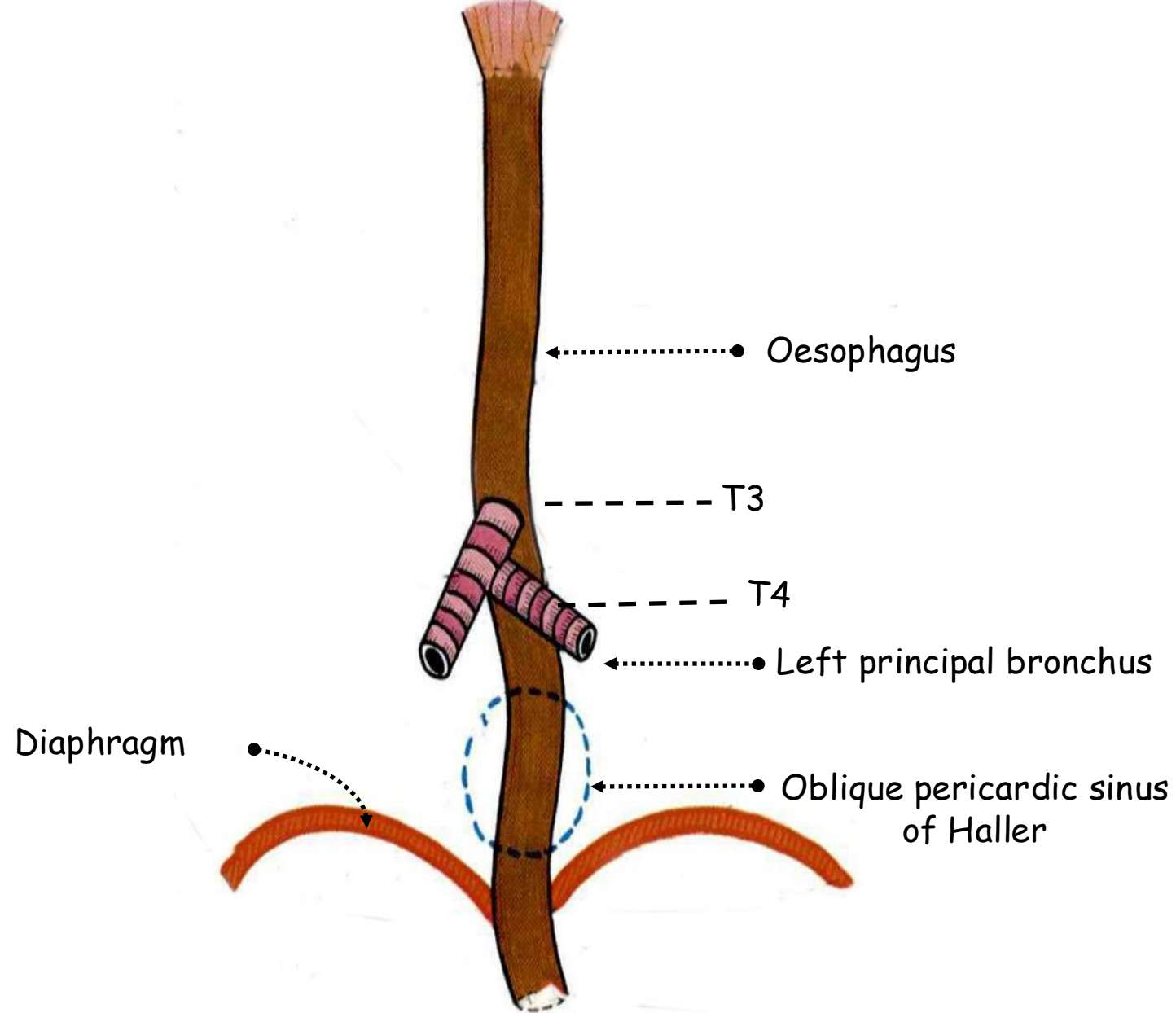
LATERAL VIEW OF THE OESOPHAGUS

- **Thoracic portion:**

- Slightly to the right of the midline at the level of T3

- Slightly to the left of the midline behind the left bronchus, which may indent it slightly at the level of T4

- Inclines forward with a concavity more marked than that of the vertebral column in front of the descending thoracic aorta and in contact with the pericardium

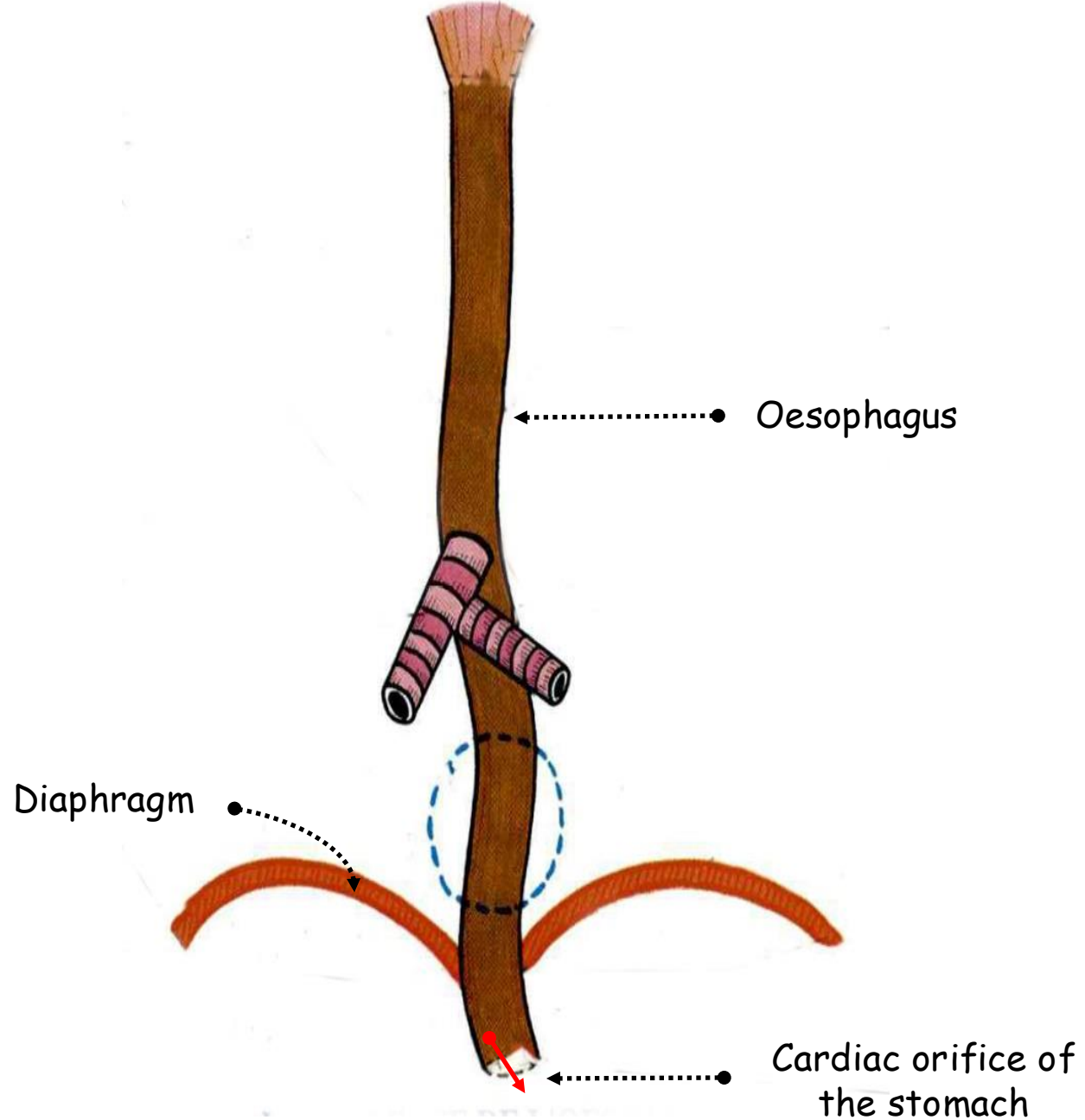
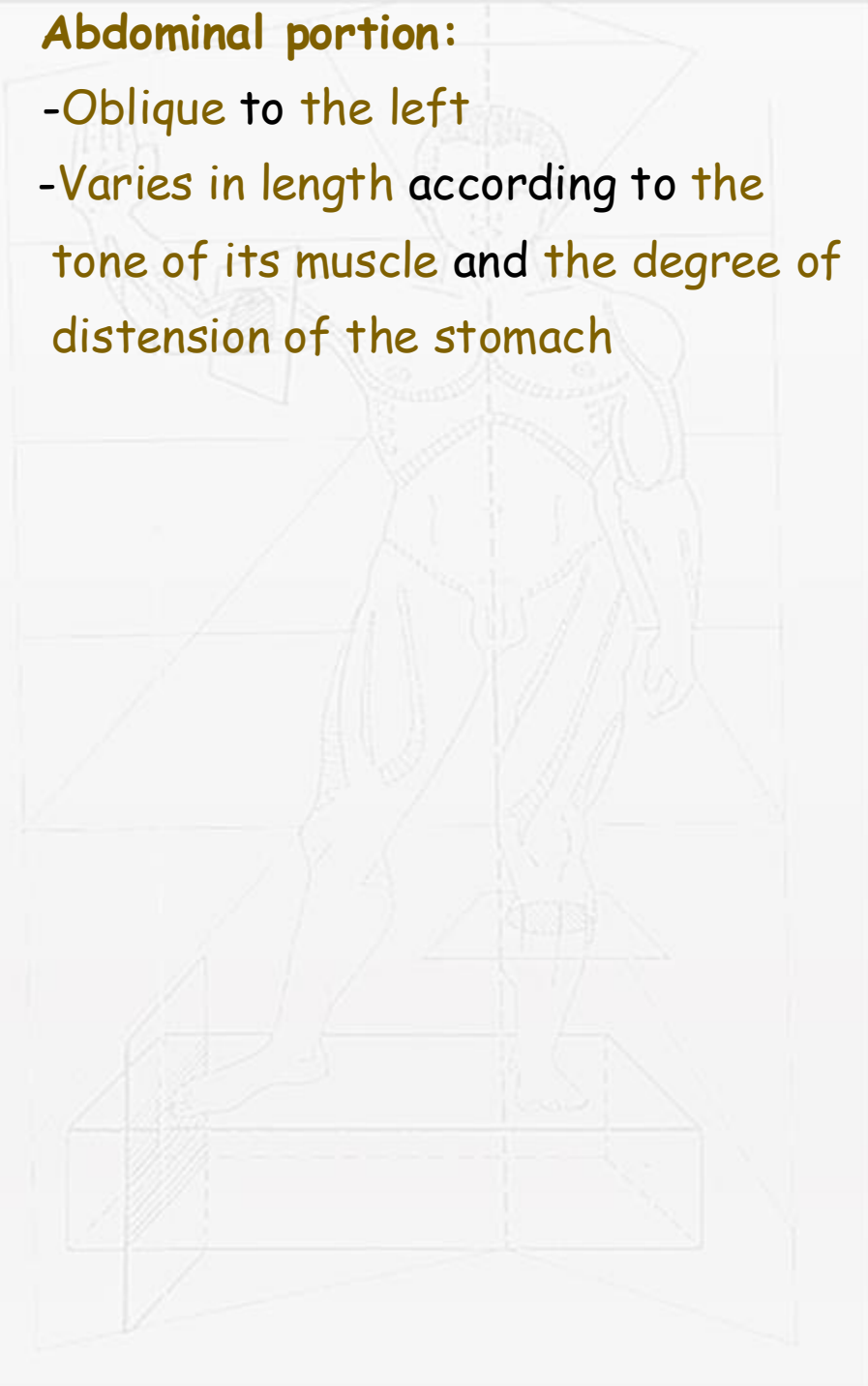


ANTERIOR VIEW OF THE OESOPHAGUS

- **Abdominal portion:**

- Oblique to the left

- Varies in length according to the tone of its muscle and the degree of distension of the stomach



ANTERIOR VIEW OF THE OESOPHAGUS

3. Constrictions:

- **Commencement:**

- Cricopharyngeal sphincter
- 15 cm from the incisor teeth
- Narrowest part of the oesophagus

- **Aortic:**

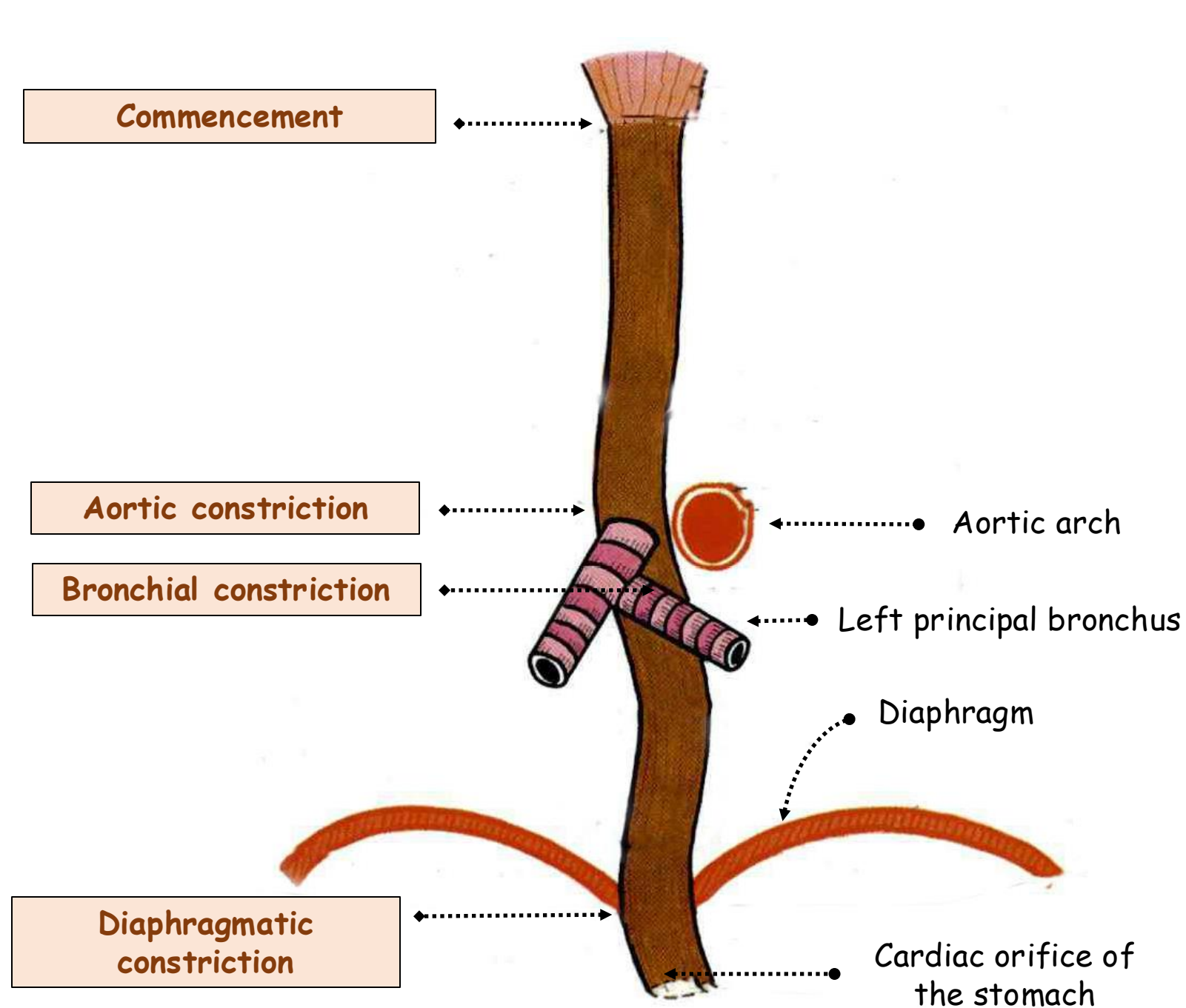
- Where it is crossed by the aortic arch
- 22 cm from the teeth

- **Bronchial:**

- Where it is crossed by the left principal bronchus
- 27 cm from the teeth

- **Diaphragmatic:**

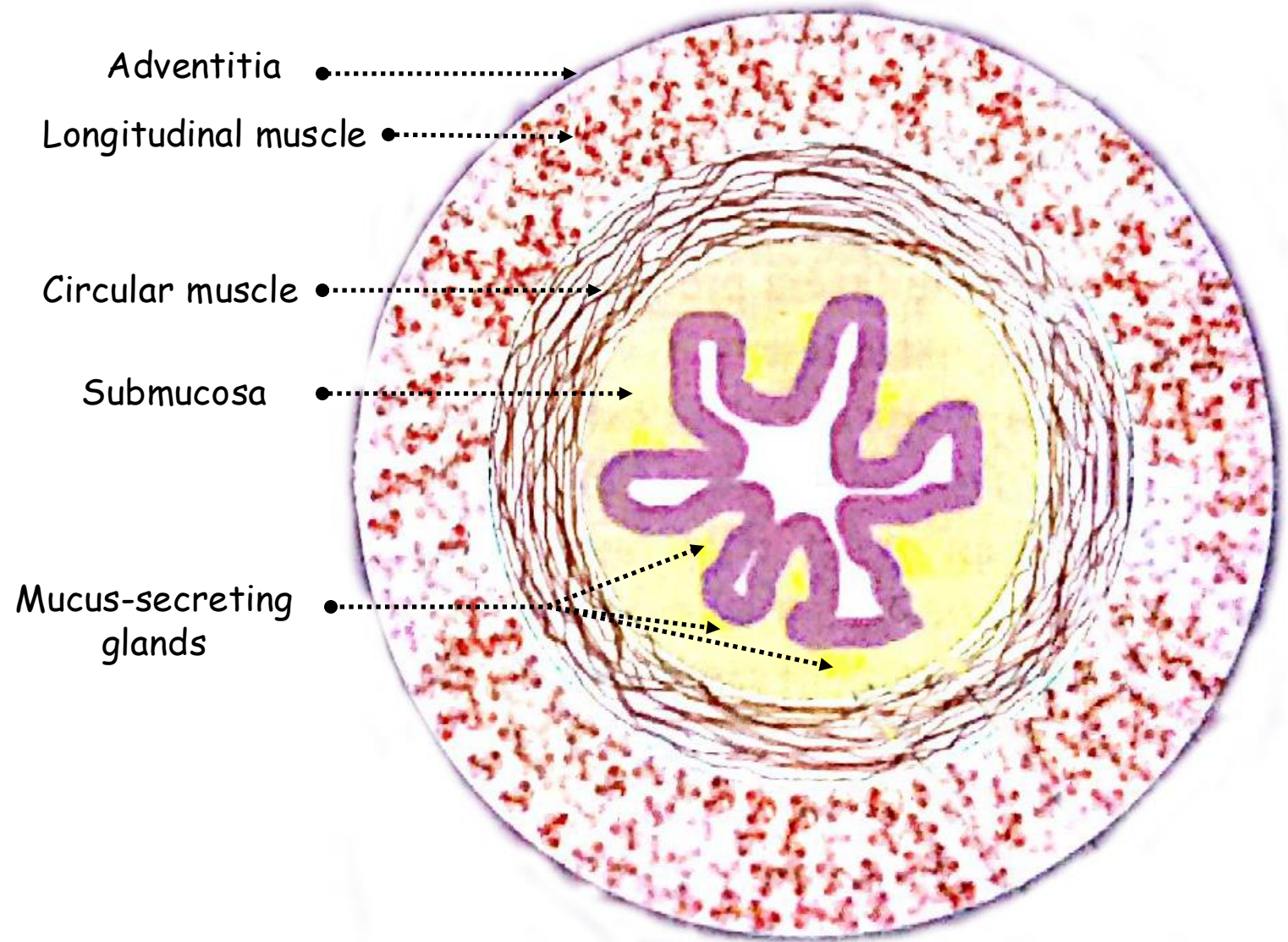
- Where it passes through the opening in the diaphragm
- 38cm from the teeth



ANTERIOR VIEW OF THE OESOPHAGUS

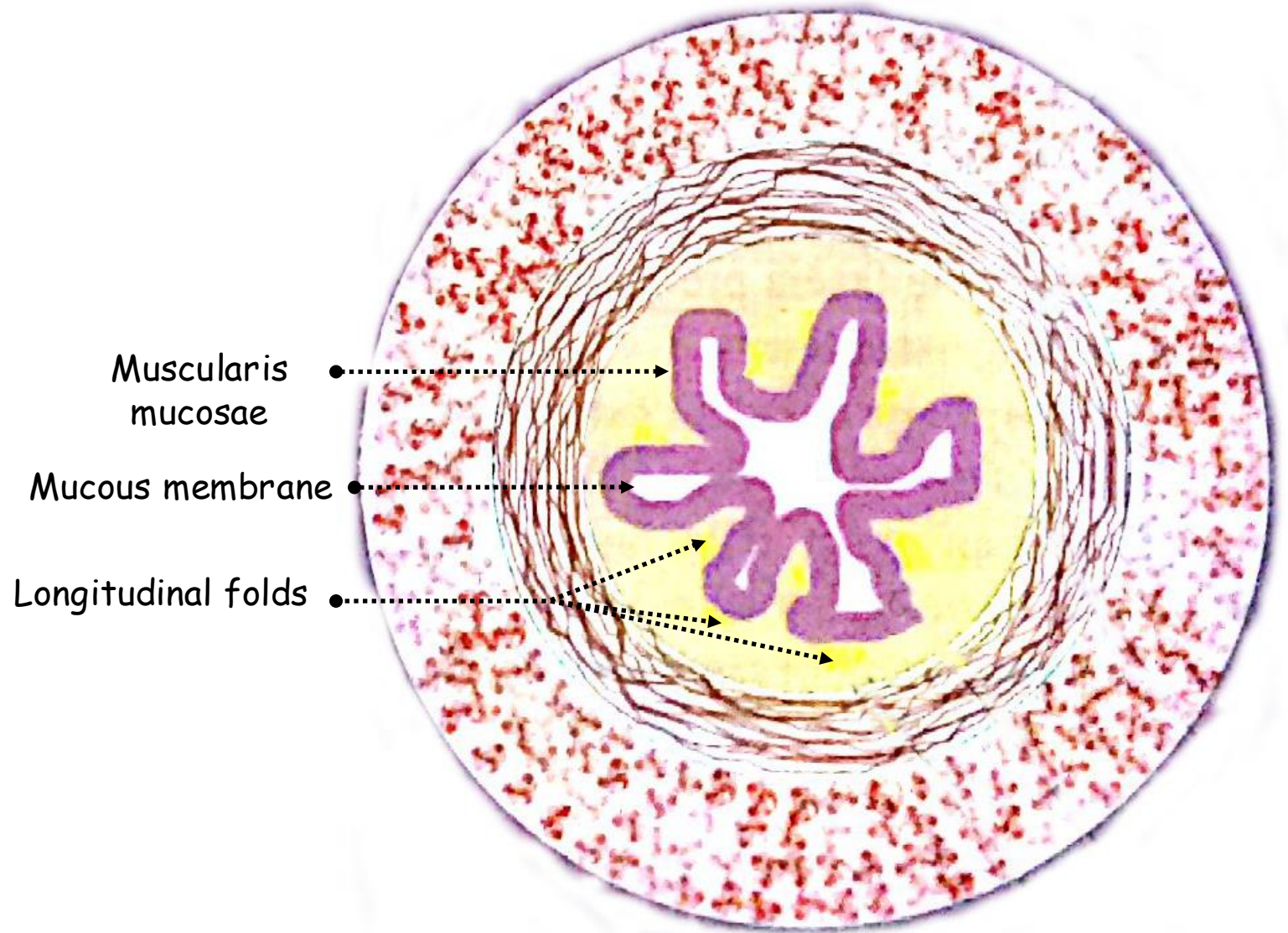
III. STRUCTURE

- **Adventitia:**
 - Thin adventitia
 - Continuous with the phreno-oesophageal ligament
 - Support
- **Muscular wall:**
 - Skeletal muscle in the upper third
 - Visceral muscle in the lower two thirds of the tube
 - Inner circular
 - Outer longitudinal
 - Support
- **Submucosa:**
 - Small groups of mucus-secreting glands may be present at the upper and lower ends



HORIZONTAL SECTION OF THE OESOPHAGUS SHOWING ITS STRUCTURE

- **Muscularis mucosa:**
 - Characteristically **thicker** in the **oesophagus** than in any other part of the alimentary tract
- **Mucous membrane:**
 - Stratified squamous non-keratinizing epithelium
 - Underlying **connective tissue** layer or **lamina propria**
 - Scattered **lymphoid follicles**
 - Macroscopic aspect: **longitudinal folds**

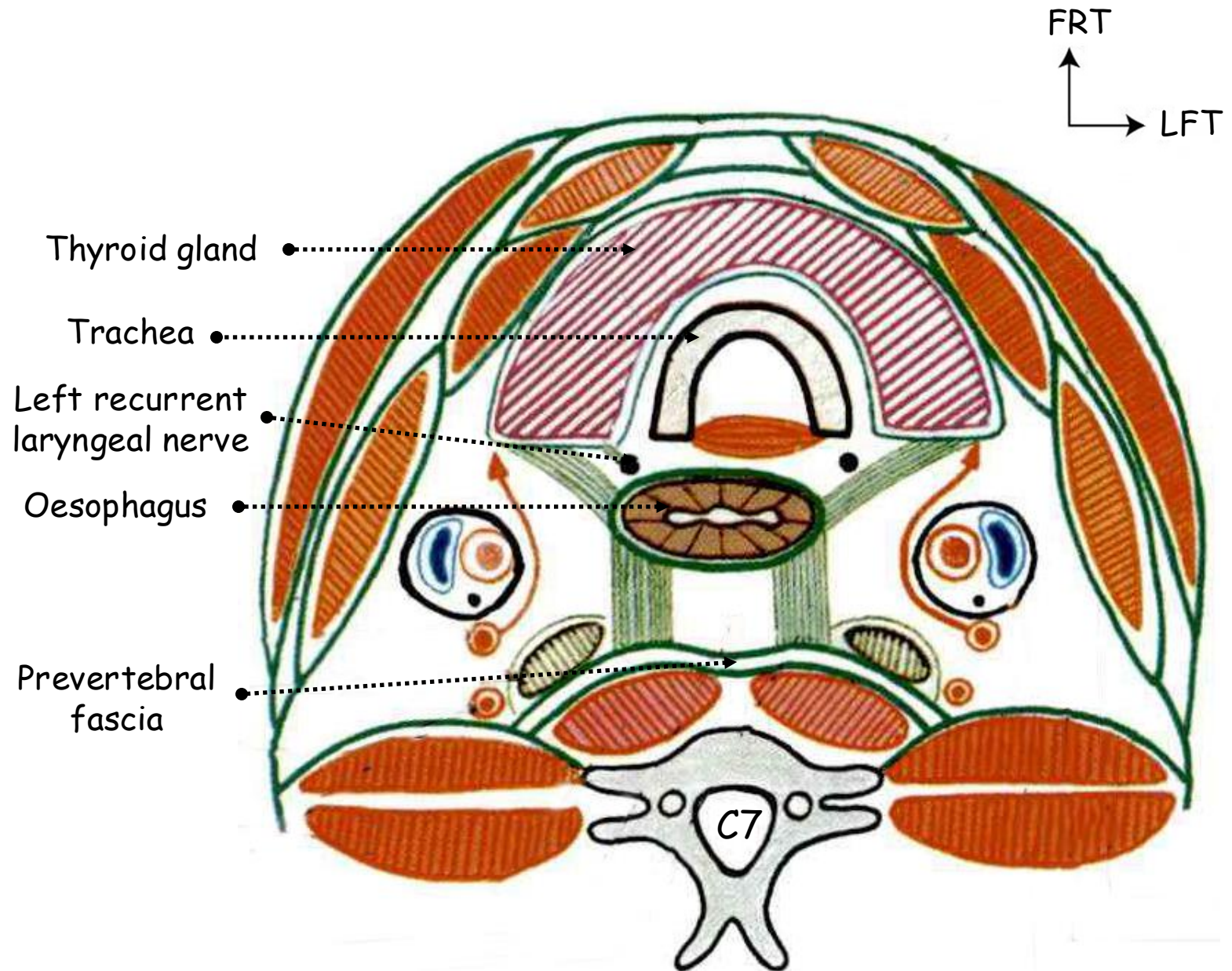


HORIZONTAL SECTION OF THE OESOPHAGUS SHOWING ITS STRUCTURE

IV. ANATOMICAL RELATIONS

A. CERVICAL PORTION

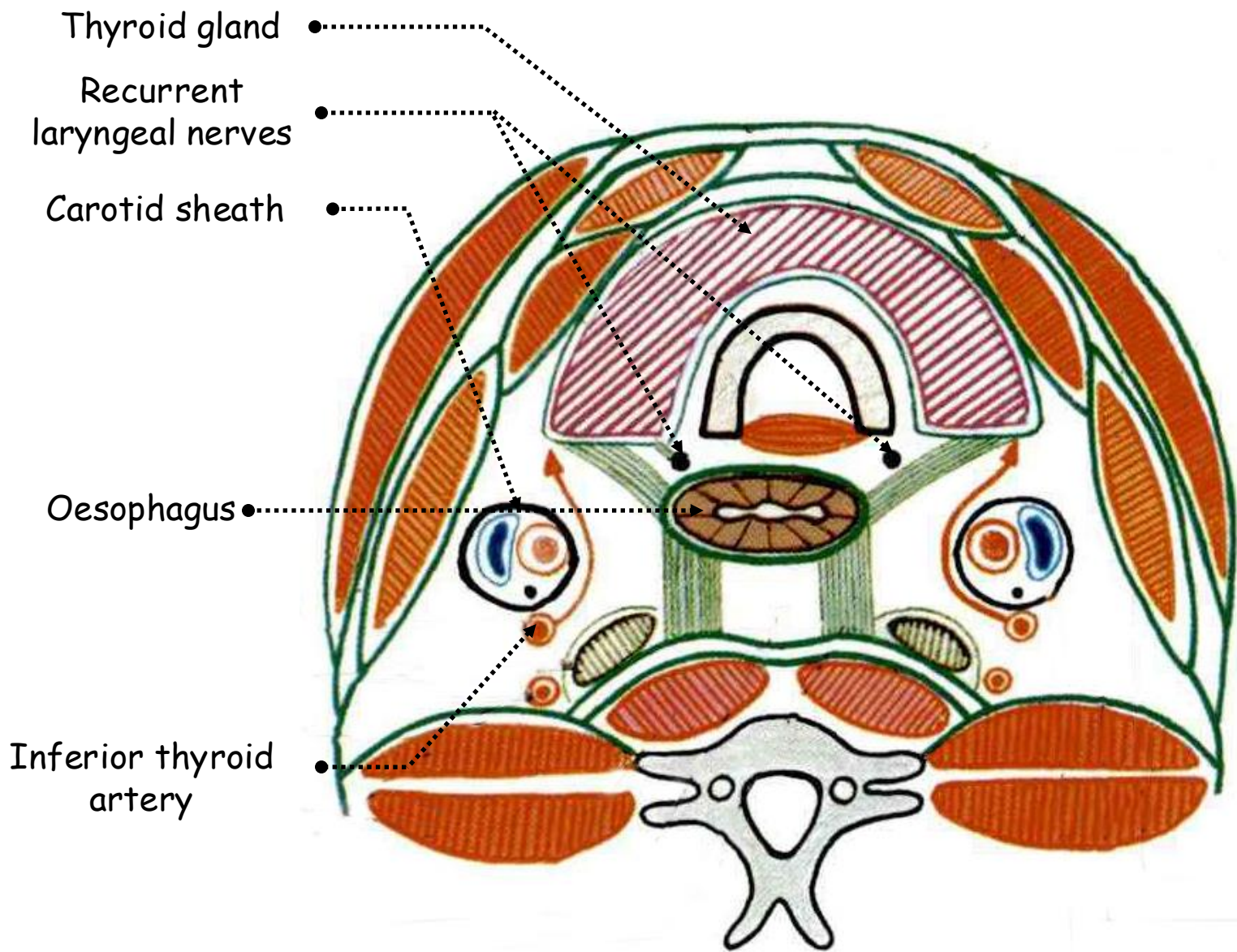
- **Front:**
 - Trachea
 - Lower poles of the thyroid gland
 - Thoracic duct
 - Recurrent laryngeal nerves
- **Back:**
 - C6 and C7 vertebrae
 - Prevertebral fascia



HORIZONTAL SECTION OF THE NECK AT THE LEVEL OF C7 VERTEBRA

• **Laterally:**

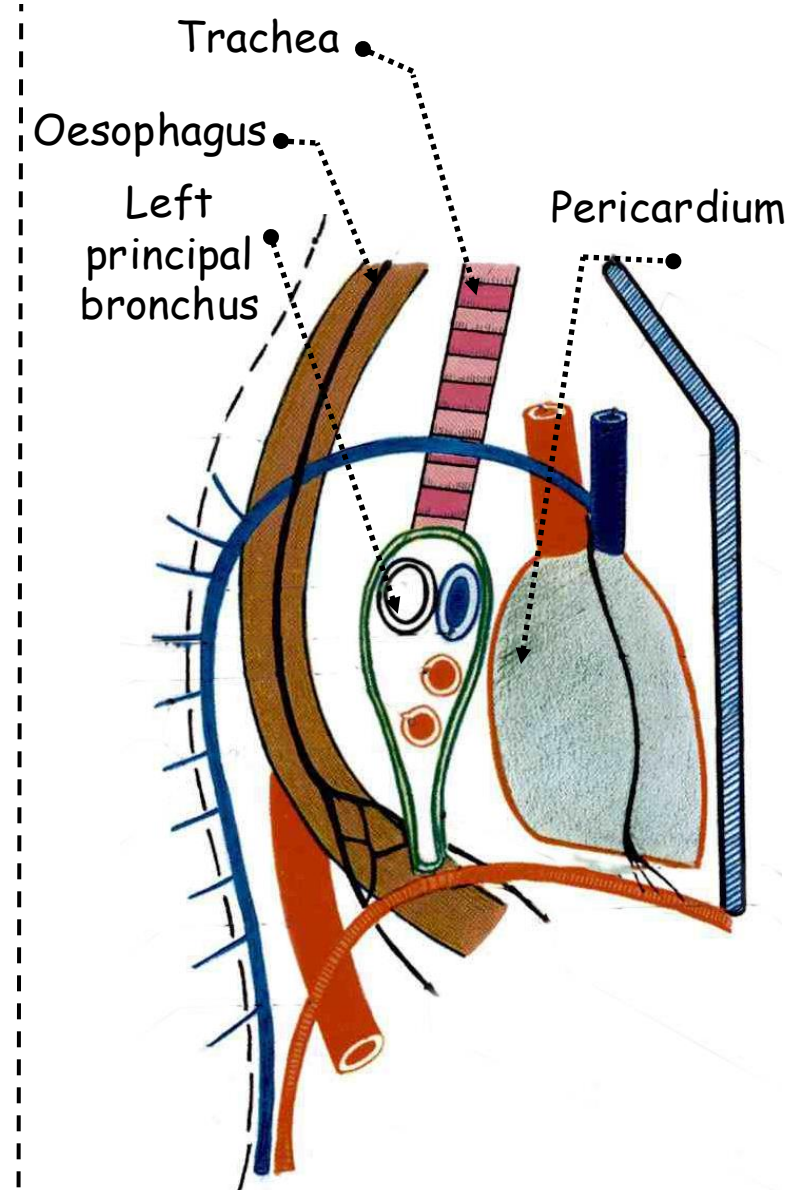
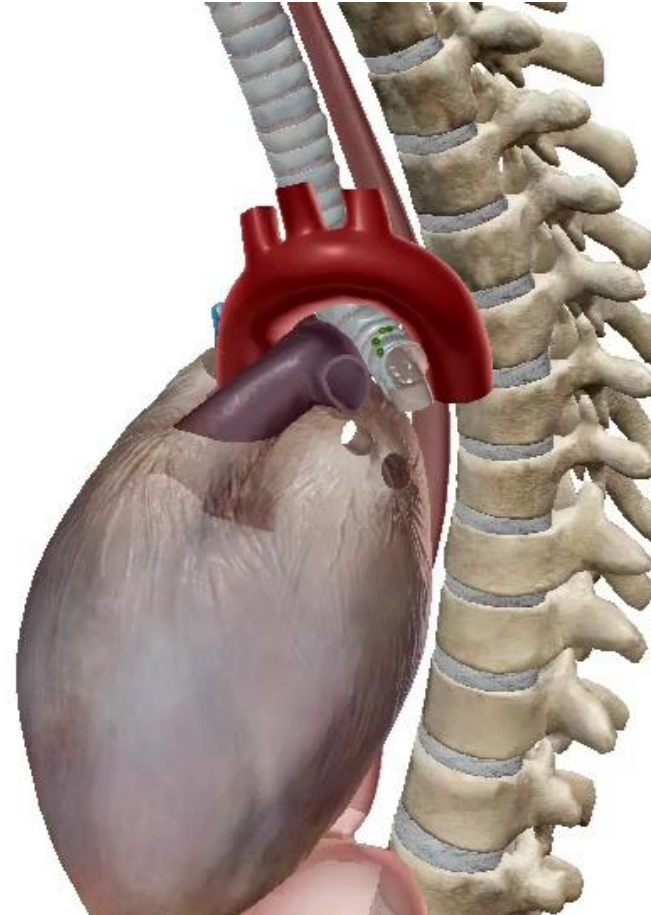
- Lateral lobes of the thyroid gland
- Recurrent laryngeal nerves
- Carotid sheath: common carotid artery, internal jugular vein, vagus nerve and ansa cervicalis
- Inferior thyroid artery



HORIZONTAL SECTION OF THE NECK AT THE LEVEL OF C7 VERTEBRA

B. THORACIC PORTION

- **Front:**
- From the top to the bottom
- Trachea
- Bifurcation of the trachea
- Left principal bronchus
- Right pulmonary artery
- Oblique pericardic sinus of Haller

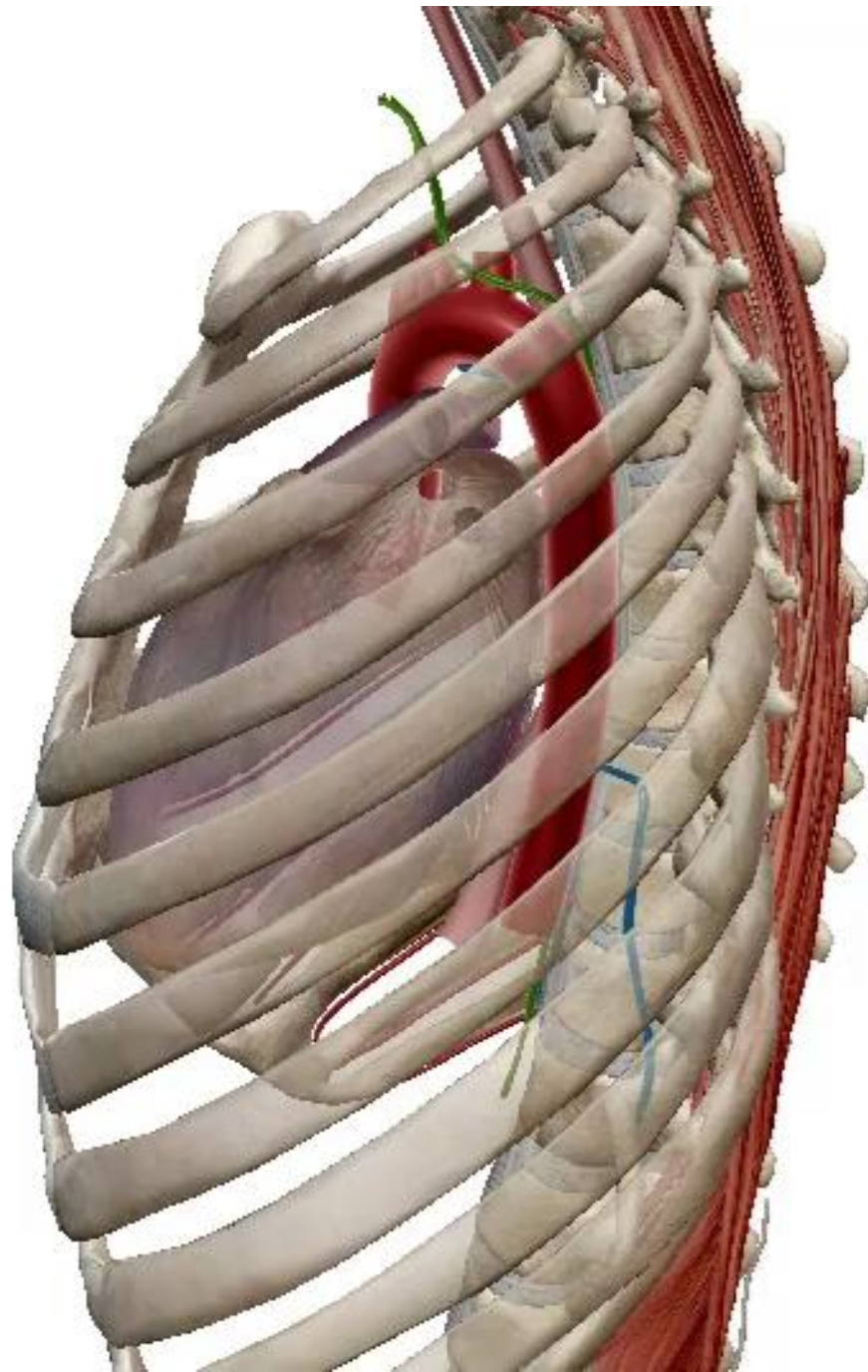


SAGITTAL SECTION OF THE
MEDIASTINUM

- **Back:**

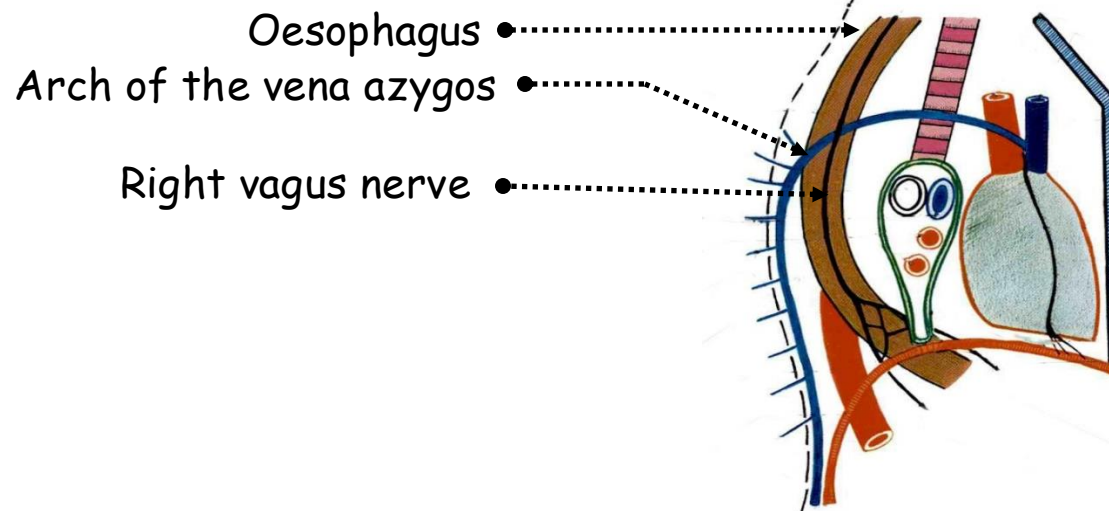
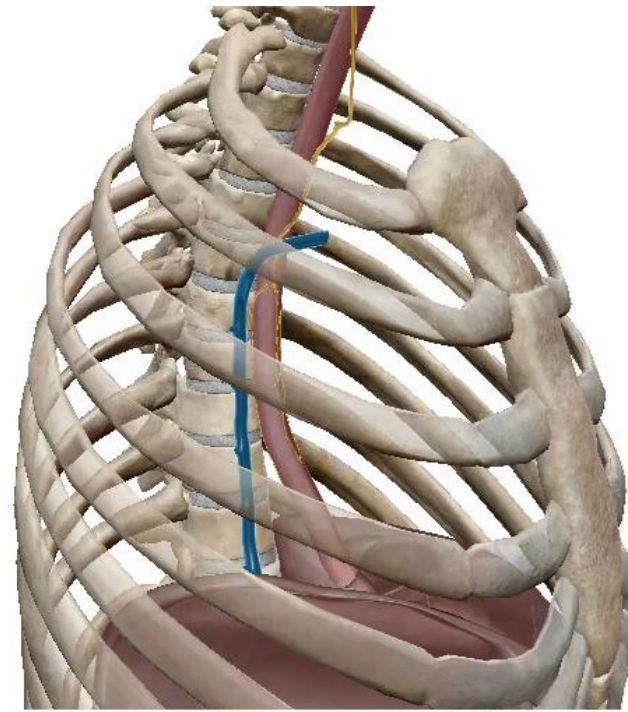
- T1 to T4 vertebrae

- From T4: **thoracic duct** and **descending thoracic aorta**



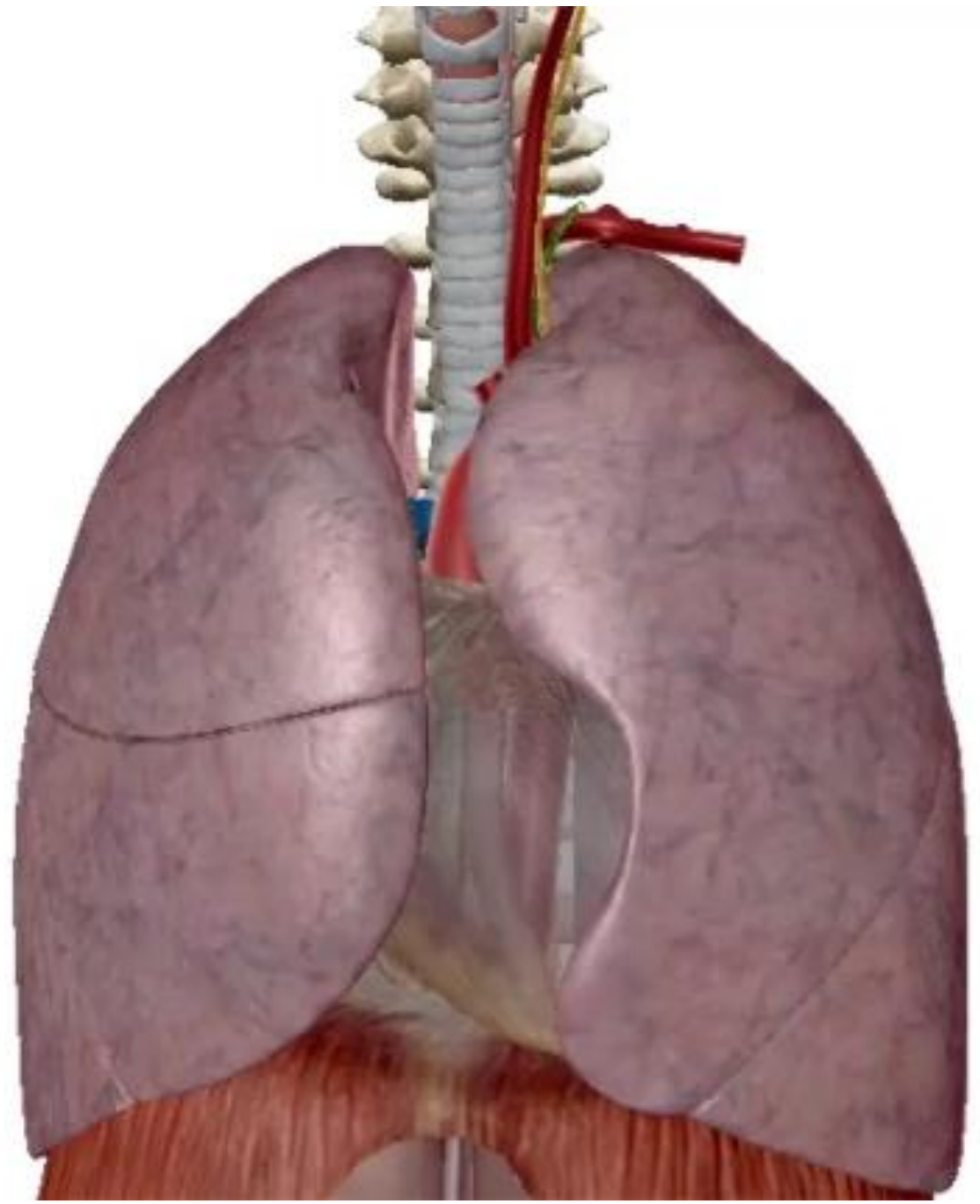
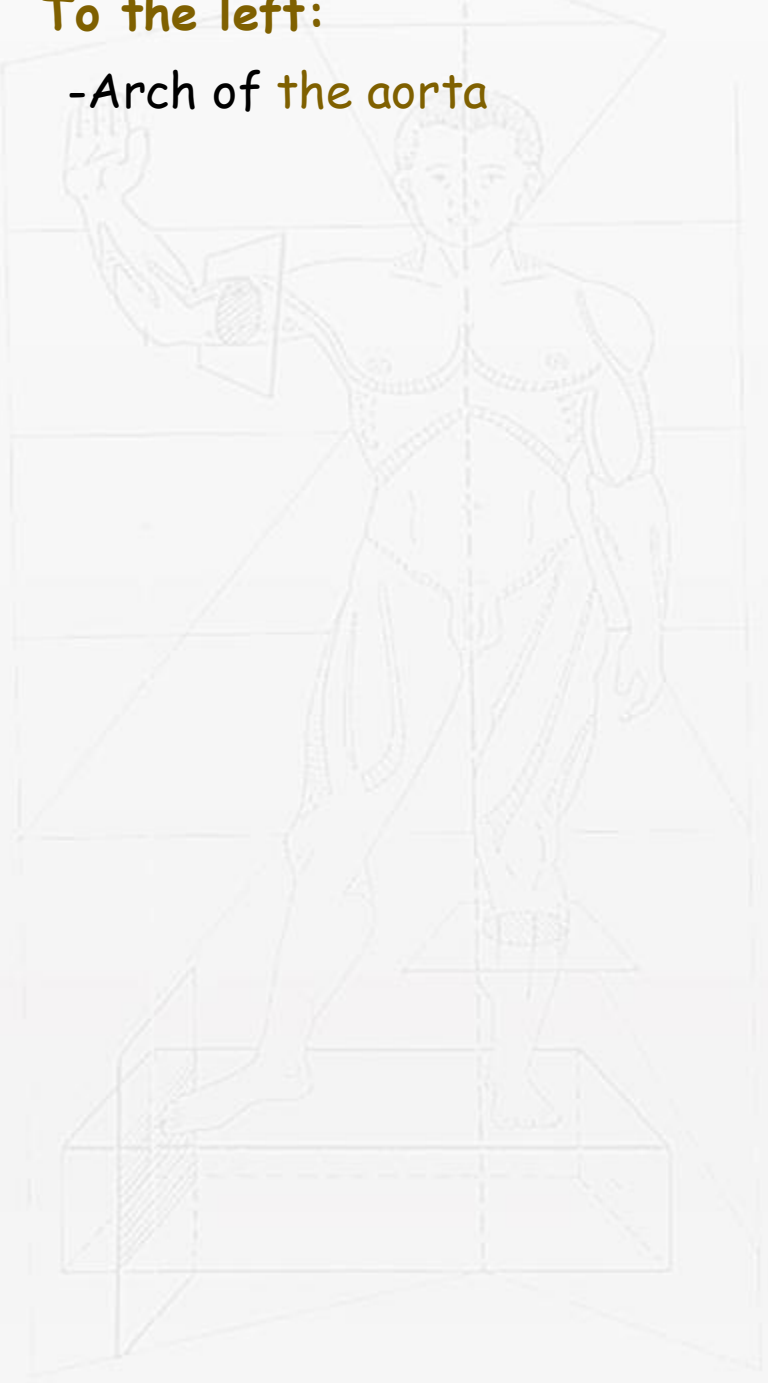
• **To the right:**

- Arch of the vena azygos
- Right vagus nerve
- Mediastinal pleura



SAGITTAL SECTION OF THE MEDISTINUM

- **To the left:**
 - Arch of the aorta



C. DIAPHRAGMATIC PORTION

- T10 vertebra
- Oesophageal opening in the diaphragm
- **Front:** Left vagus nerve
- **Back:** Right vagus nerve

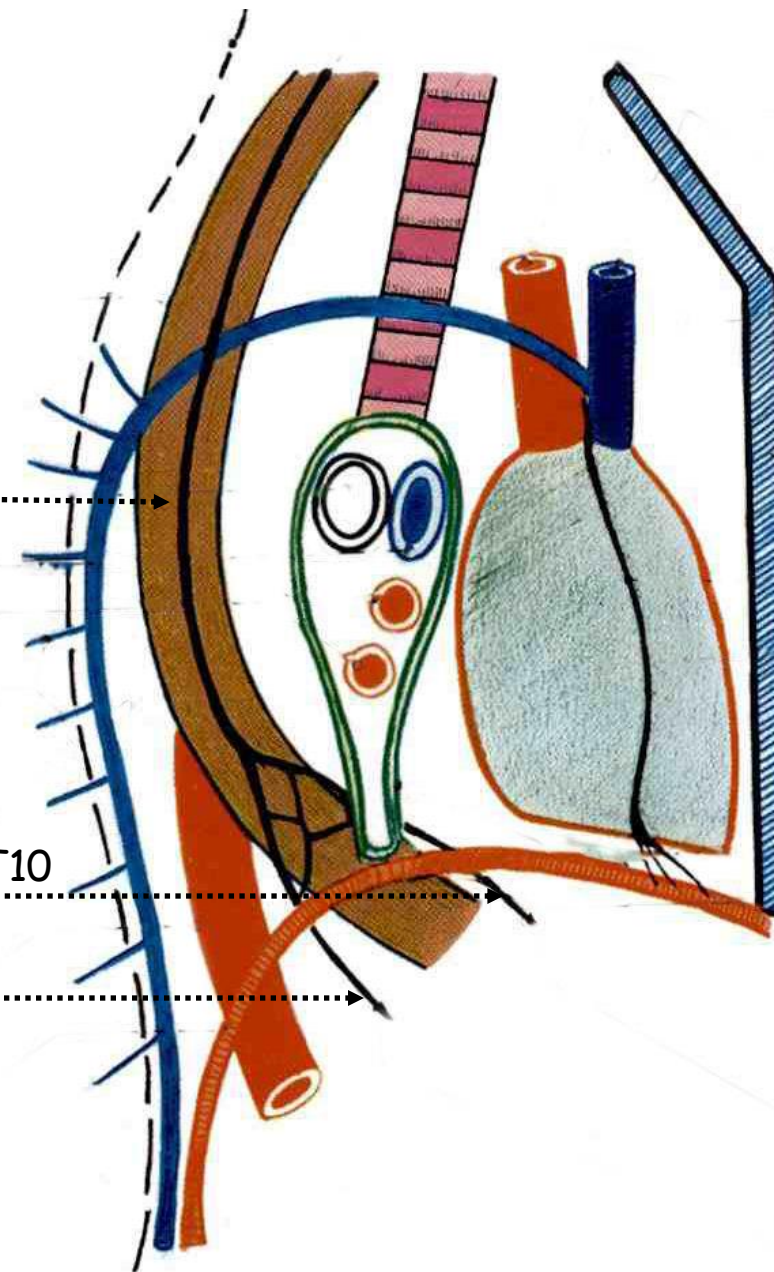


Oesophagus

Left vagus nerve

Right vagus nerve

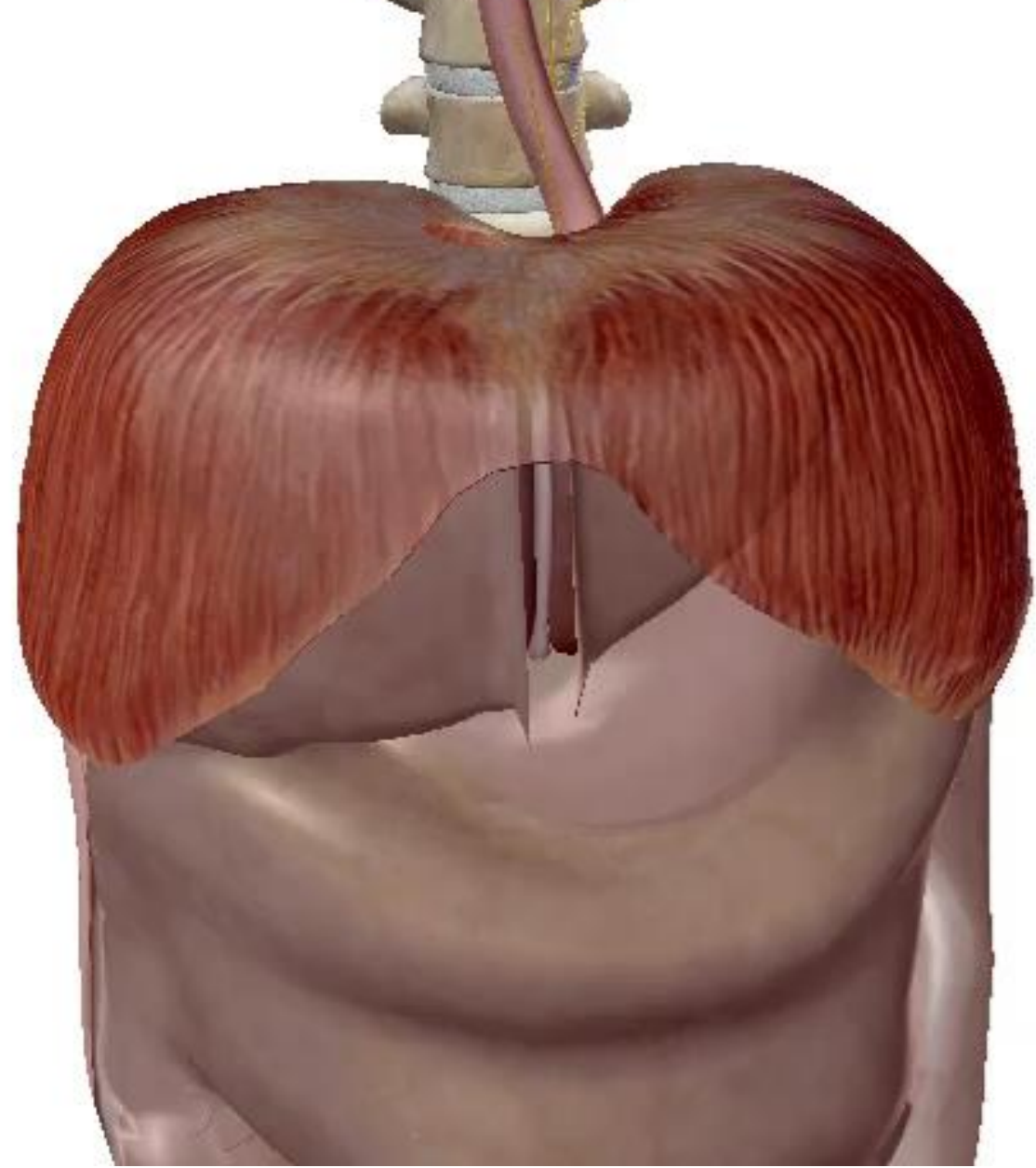
T10



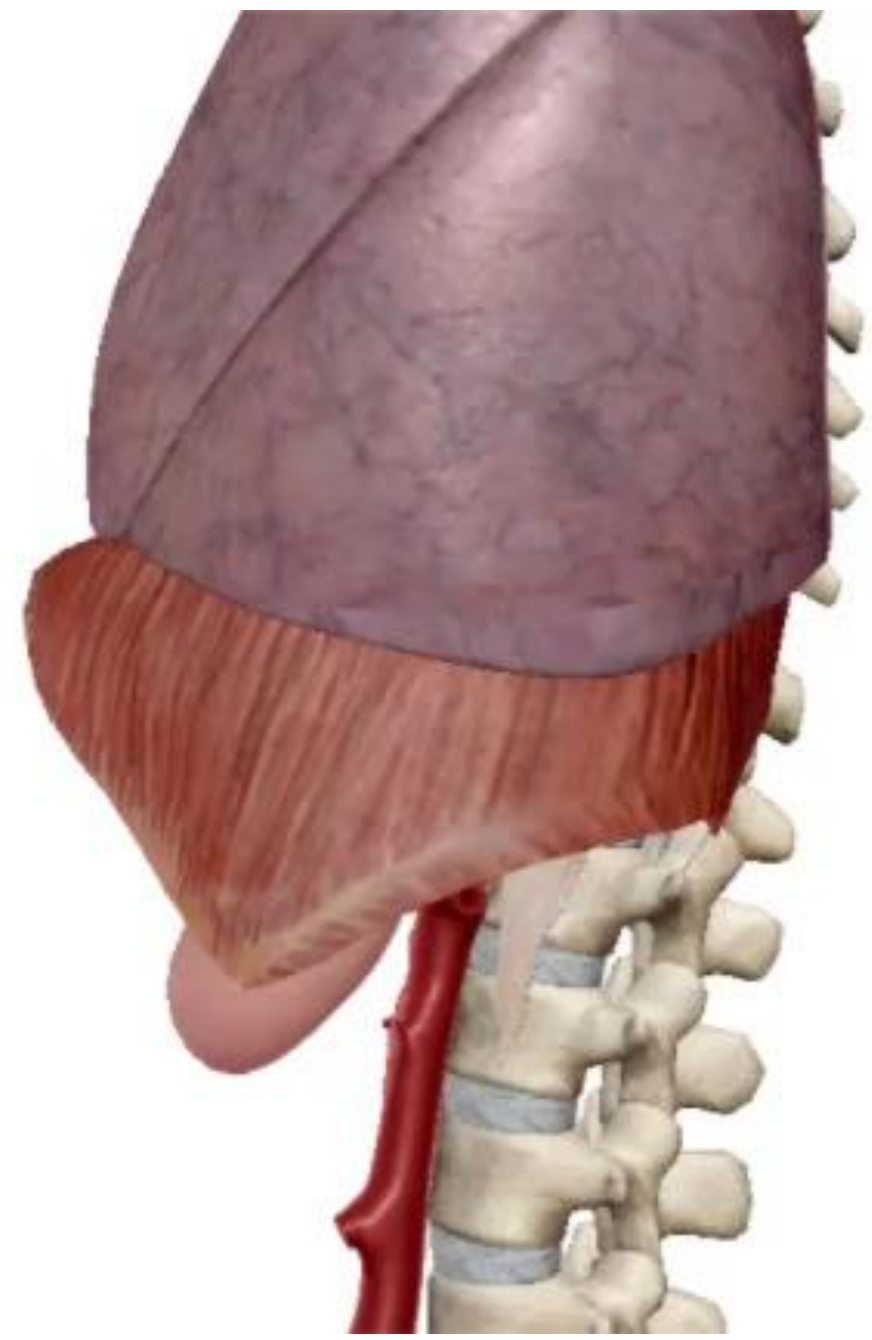
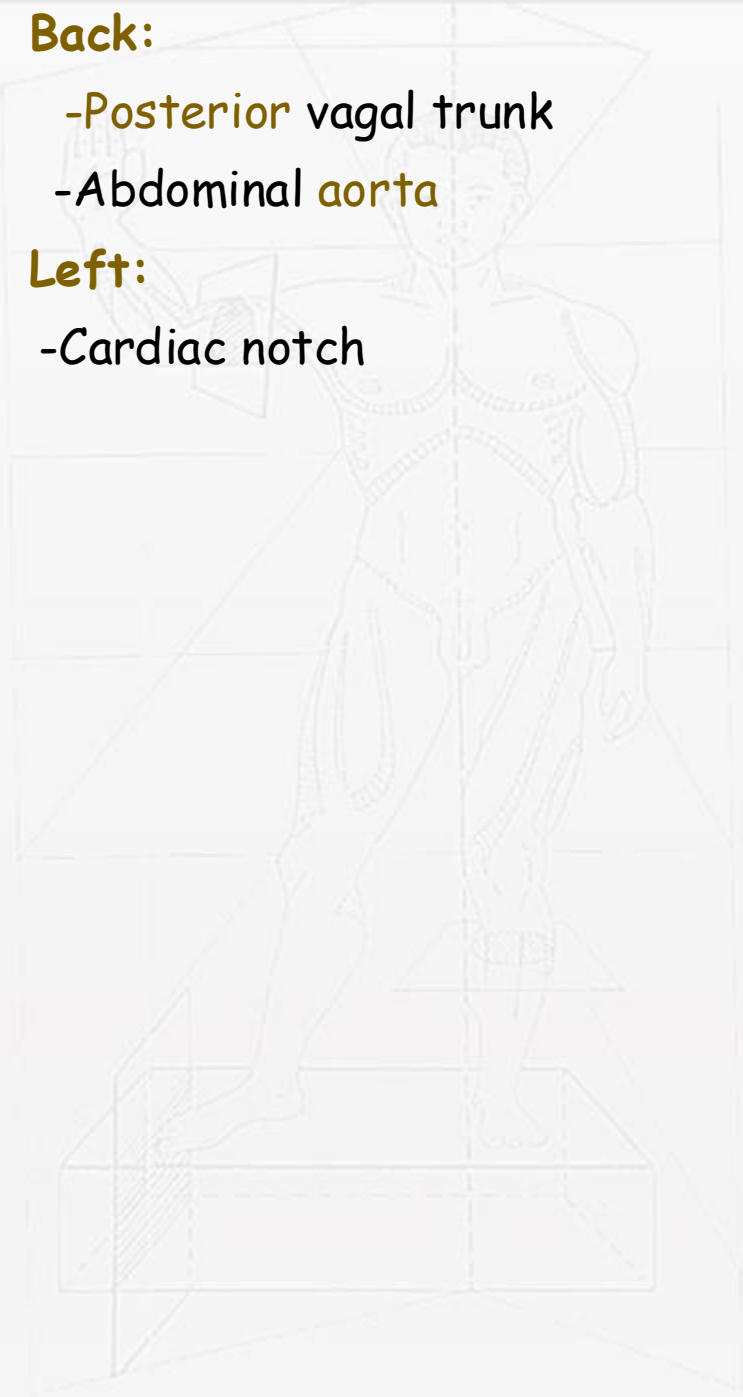
SAGITTAL SECTION OF THE MEDISTINUM

D. ABDOMINAL PORTION

- Phreno-oesophageal ligament
- **Front:**
 - Lesser omentum to the right
 - Greater omentum to the left
 - Anterior vagal trunk



- **Back:**
 - Posterior vagal trunk
 - Abdominal aorta
- **Left:**
 - Cardiac notch



V. BLOOD SUPPLY; LYMPH DRAINAGE AND NERVE SUPPLY

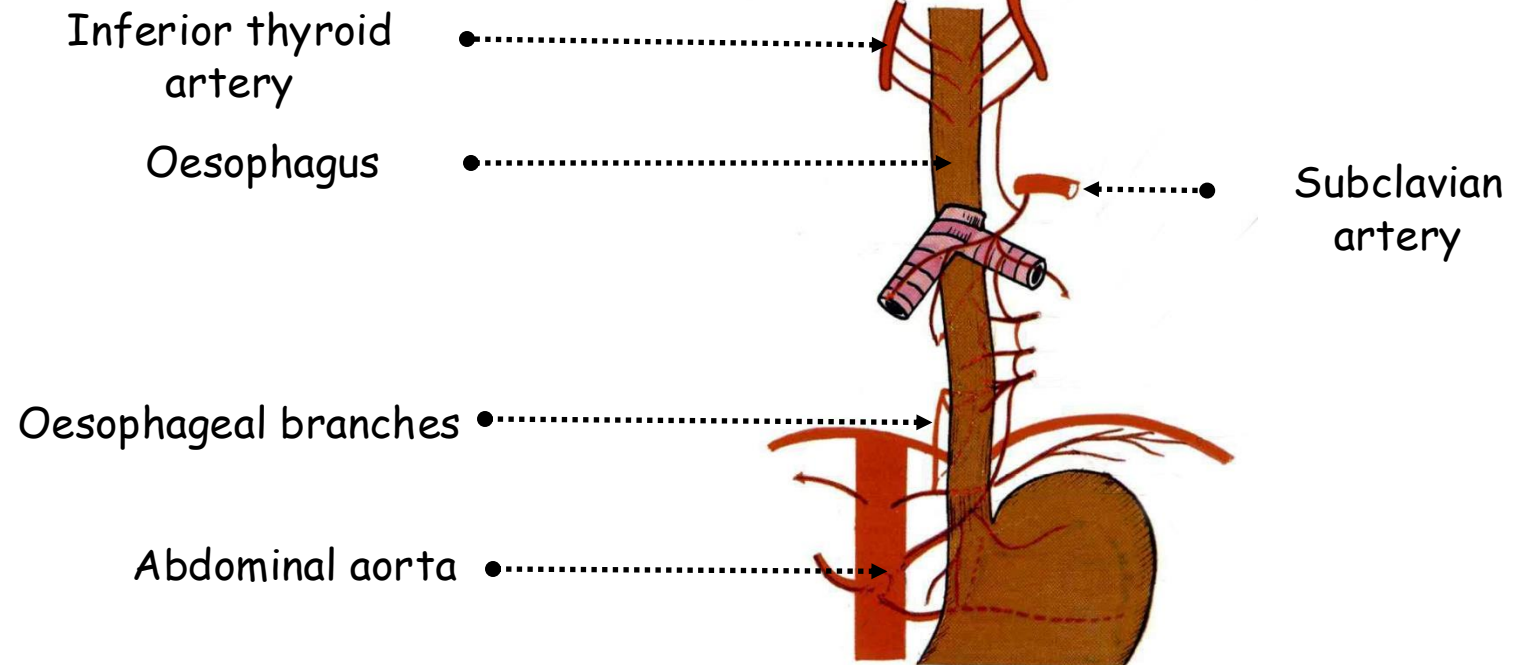
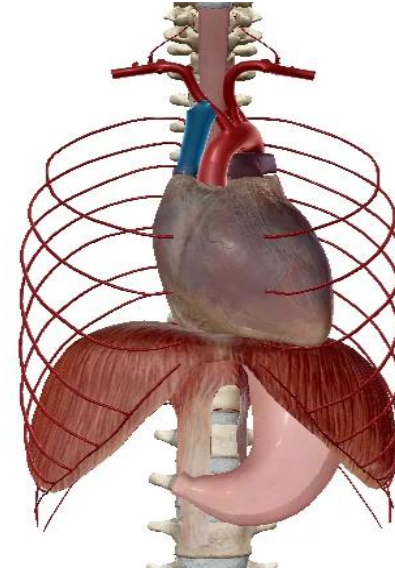
A. ARTERIES

1. Inferior thyroid artery:

- From the cricoid cartilage down to the level of the arch of the aorta

2. Oesophageal branches:

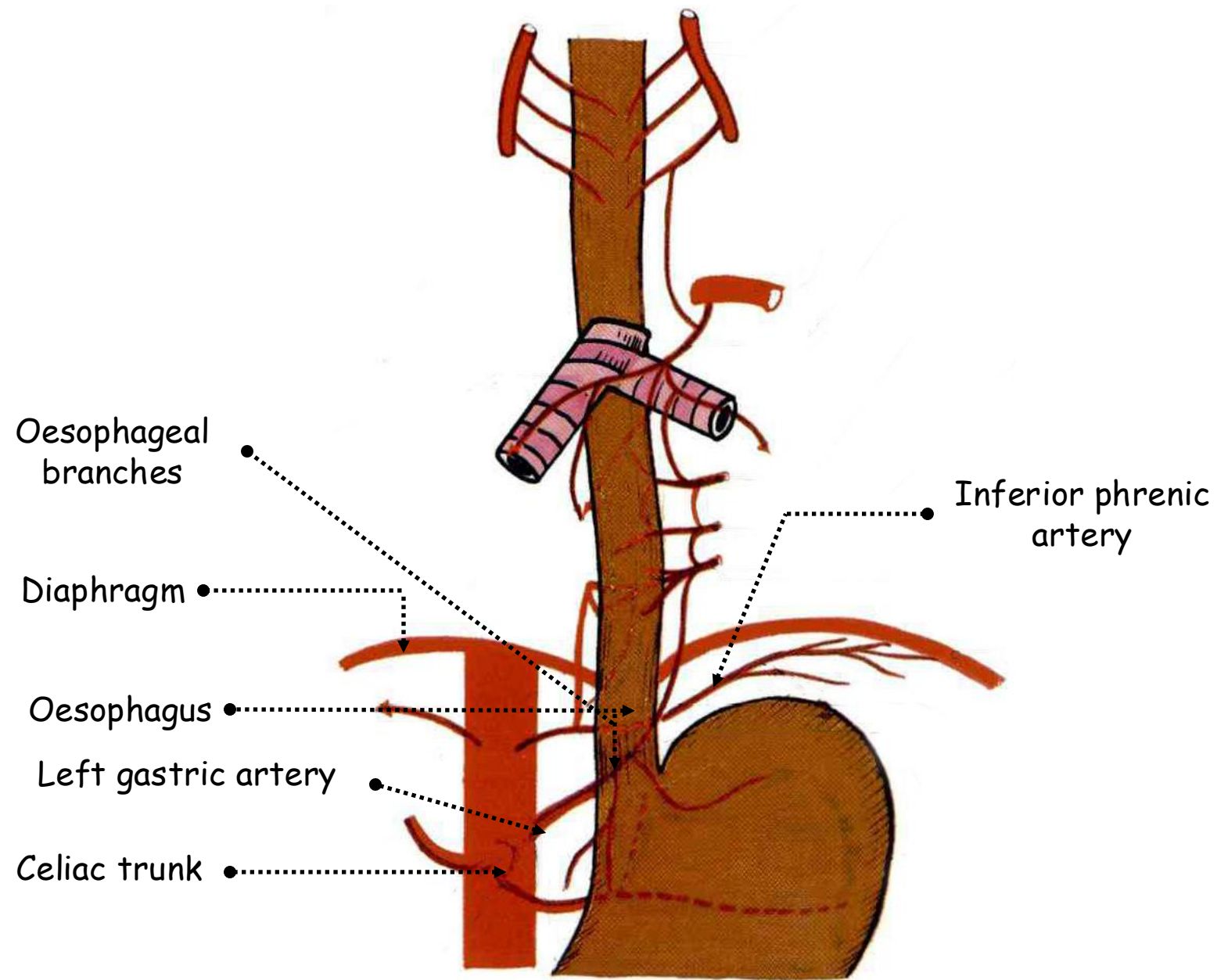
- From the arch of the aorta to the oesophageal opening in the diaphragm
- Arise directly from the aorta



ANTERIOR VIEW OF THE OESOPHAGUS SHOWING ITS ARTERIES

2. Oesophageal branches of the left gastric and left phrenic arteries:

- Abdominal portion



ANTERIOR VIEW OF THE OESOPHAGUS SHOWING ITS ARTERIES

B. VEINS

1. Brachiocephalic veins:

- From the cricoid cartilage down to the level of the arch of the aorta

2. Azygos veins:

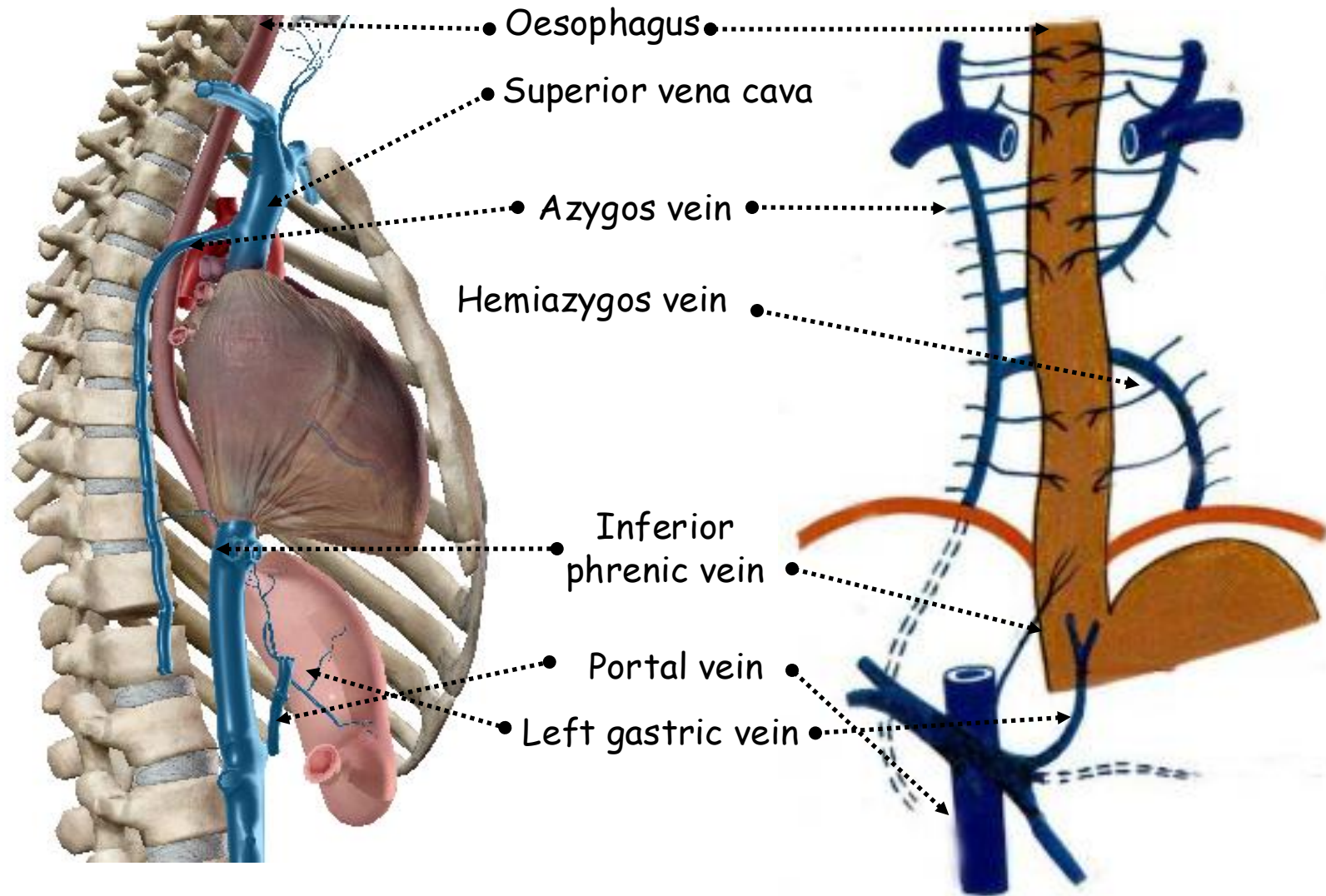
- From the arch of the aorta to the oesophageal opening in the diaphragm

3. Oesophageal tributaries of the left gastric vein:

- Abdominal portion
- Empty into the portal vein

4. Oesophageal tributaries of the hemiazygos vein:

- Abdominal portion
- Empty into the superior vena cava
- Anastomosis between portal and systemic venous systems above the oesophageal hiatus



LATERAL VIEW OF THE OESOPHAGUS SHOWING ITS VEINS

ANTERIOR VIEW OF THE OESOPHAGUS SHOWING ITS VEINS

B. VEINS

1. Brachiocephalic veins:

- From the cricoid cartilage down to the level of the arch of the aorta

2. Azygos veins:

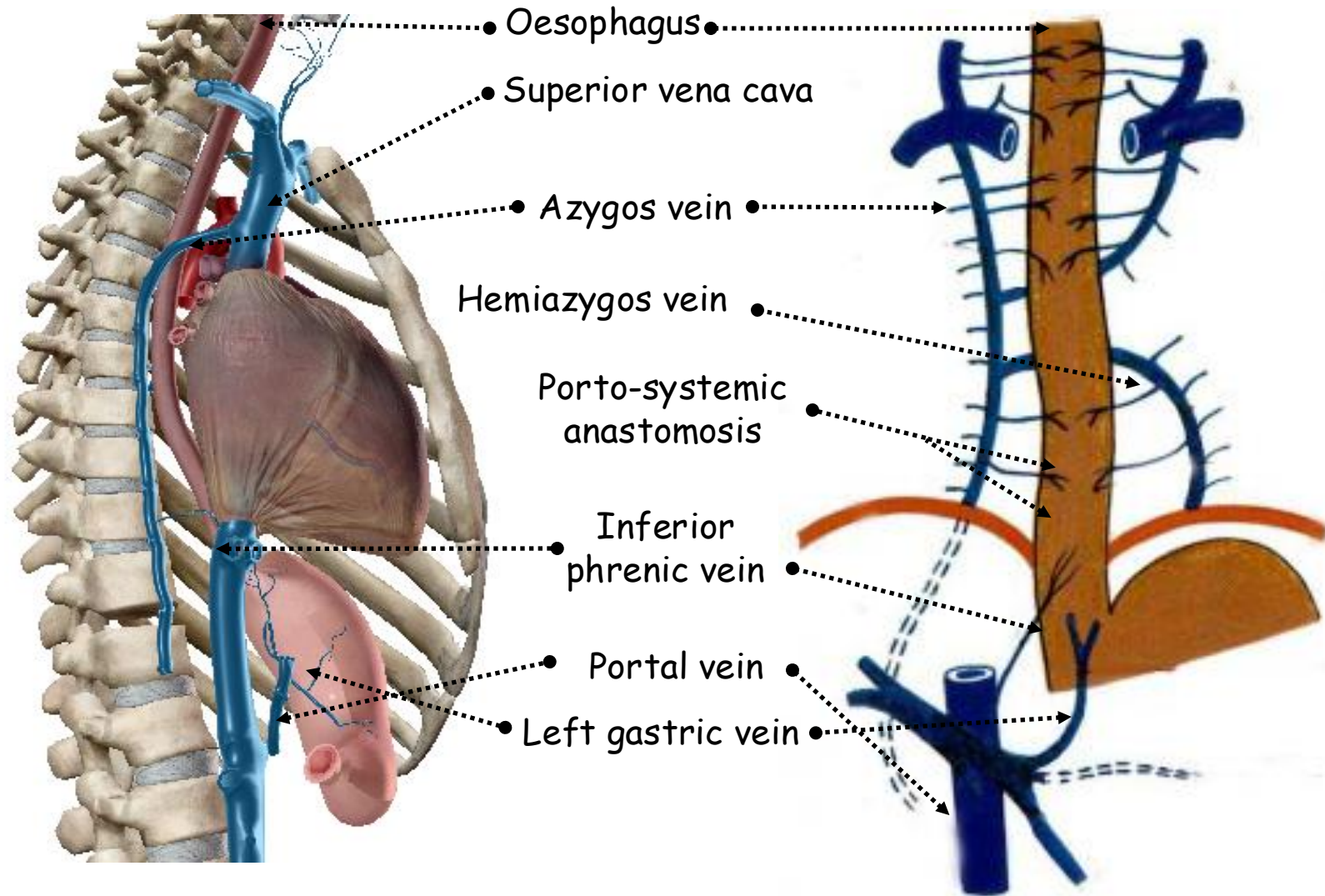
- From the arch of the aorta to the oesophageal opening in the diaphragm

3. Oesophageal tributaries of the left gastric vein:

- Abdominal portion
- Empty into the portal vein

4. Oesophageal tributaries of the hemiazygos vein:

- Abdominal portion
- Empty into the superior vena cava
- Anastomosis between portal and systemic venous systems above the oesophageal hiatus



LATERAL VIEW OF THE OESOPHAGUS SHOWING ITS VEINS

ANTERIOR VIEW OF THE OESOPHAGUS SHOWING ITS VEINS

C. LYMPH DRAINAGE

- Follows the arteries
- Within the oesophageal walls there are lymphatic channels which enable lymph to pass for long distances within the viscus

1. Cervical portion:

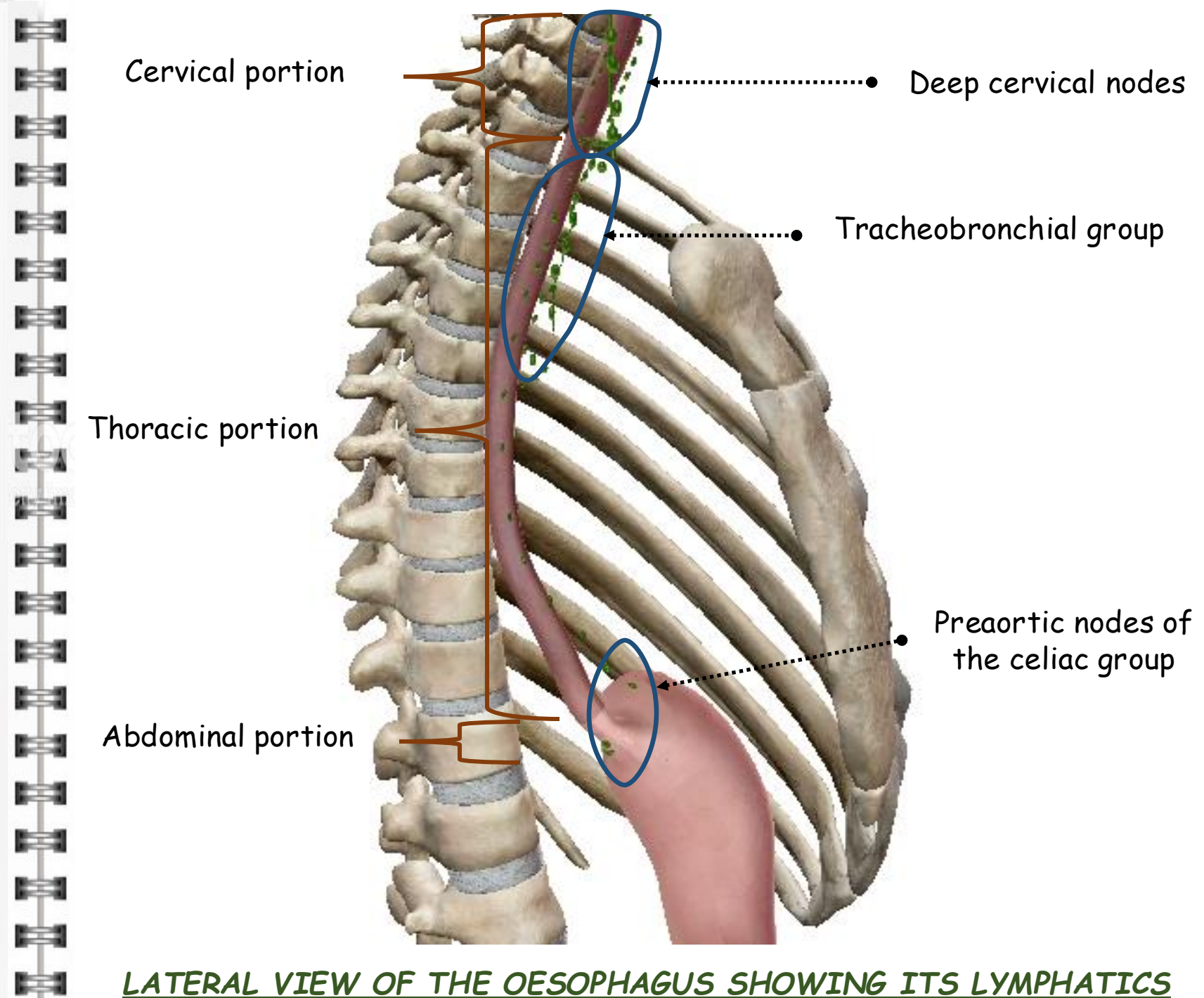
- Deep cervical nodes near the origin of the inferior thyroid artery

2. Thoracic portion:

- Tracheobronchial group

3. Diaphragmatic and abdominal portions:

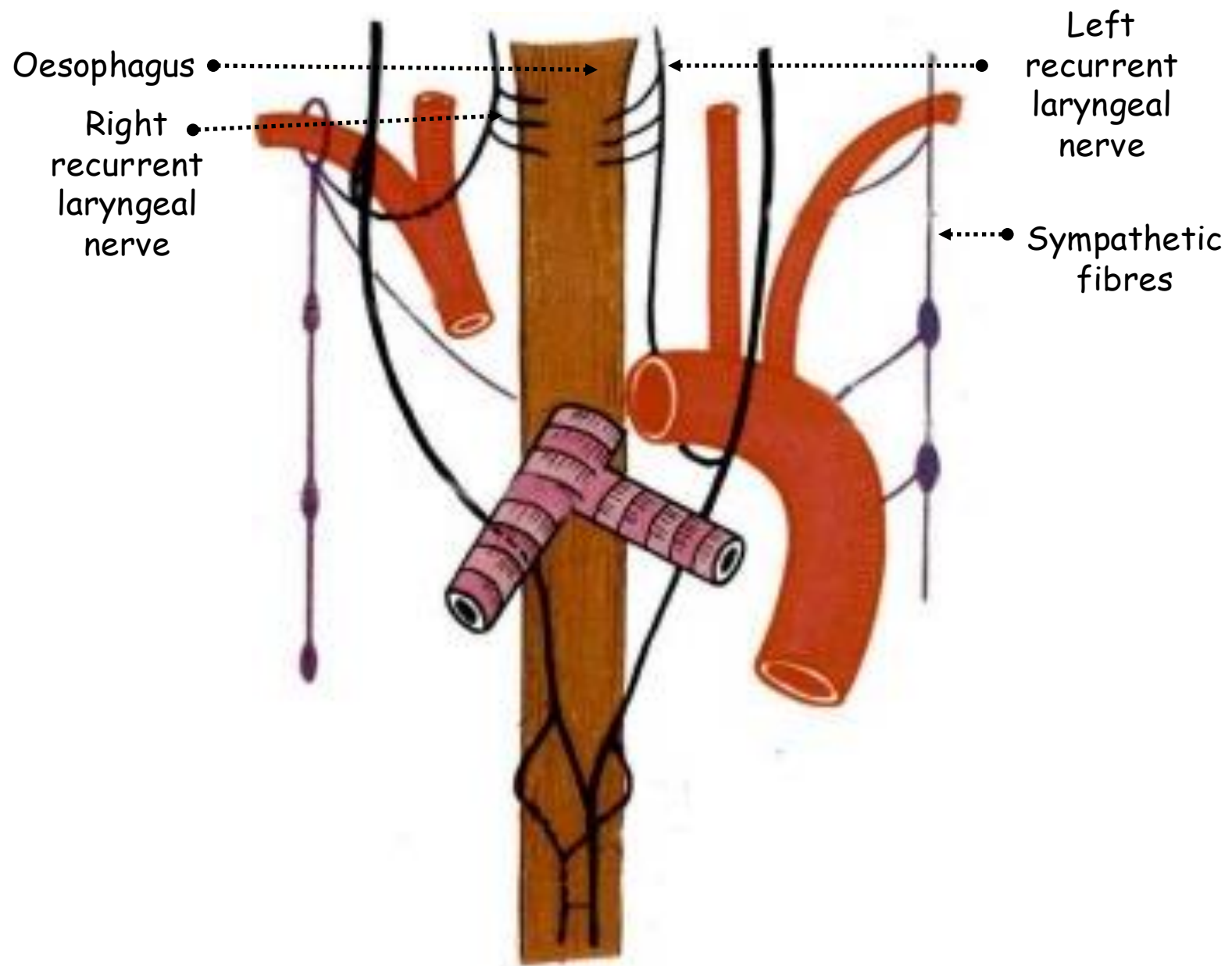
- Preaortic nodes of the celiac group



D. NERVES

1. Cervical portion:

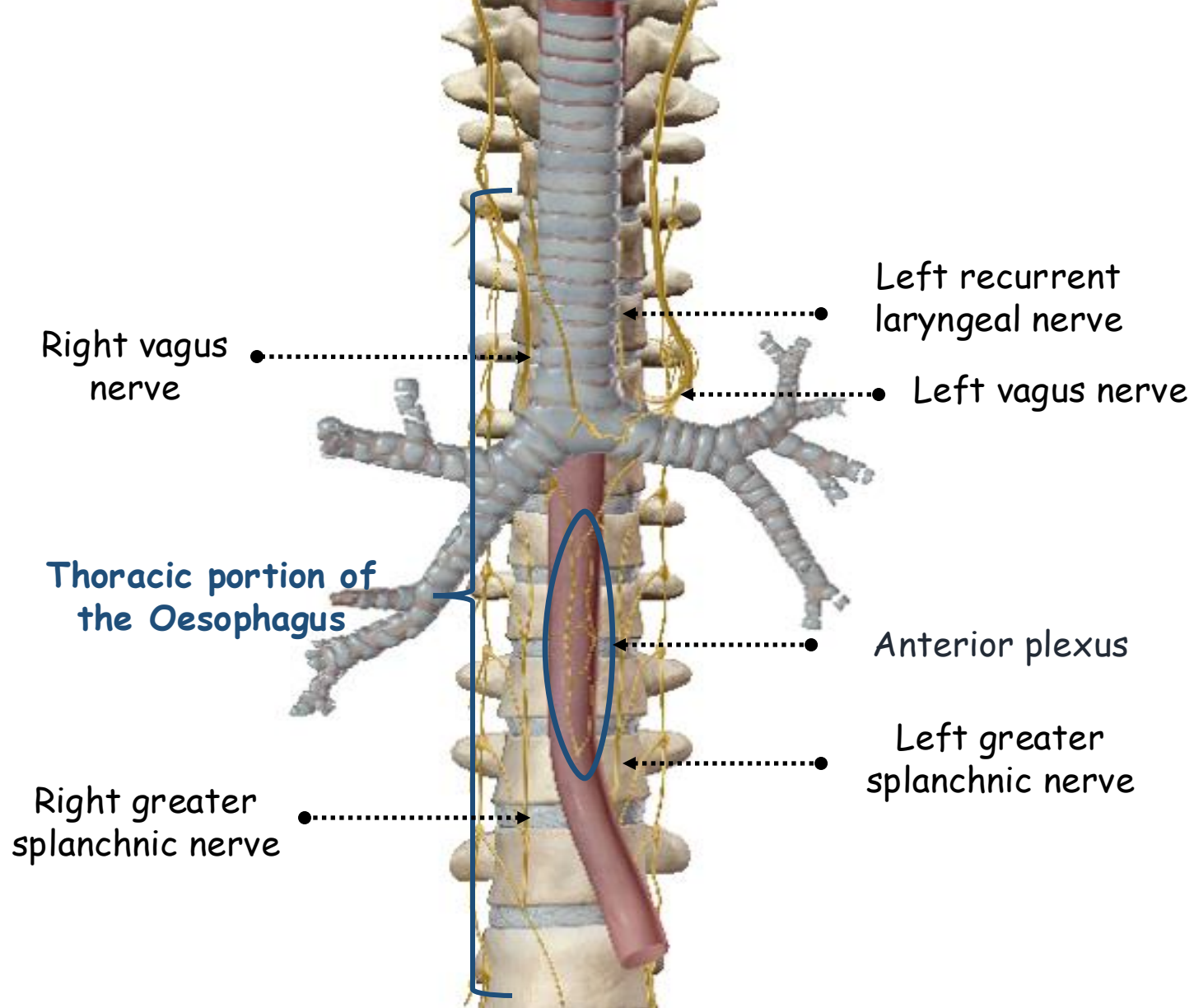
- Recurrent laryngeal nerve
- Sympathetic fibres from cell bodies in the middle cervical ganglion



ANTERIOR VIEW OF THE OESOPHAGUS SHOWING ITS NERVES

2. Thoracic and abdominal portions

- The **vagus nerves** which form **anterior and posterior oesophageal plexuses** on the respective surfaces below the lung roots
- **Anterior plexus** contains predominantly **left vagal fibres** and the **posterior** mainly **right fibres**, but both trunks have fibres from both vagi
- **Motor, secretomotor and pain fibres**
- Fibres from the **sympathetic trunks** and **greater splanchnic nerves**
- **Pain fibres**



ANTERIOR VIEW OF THE OESOPHAGUS SHOWING ITS NERVES

VI. SURGICAL APPROACH

- **Cervical portion:**
 - In the neck
 - Opening up the interval between the trachea and the carotid sheath
- **Thoracic portion:**
 - Readily accessible on the right side
 - Danger: posterior intercostal vessels and thoracic duct
- **Abdominal portion:**
 - Left side above the diaphragm



VII. CONCLUSION

- Hollow muscular organ
- Occupies the superior mediastinum, the posterior mediastinum and the retroperitoneum
- Major role in digestion
- Several cervical, thoracic retroperitoneal relations
- Diverse blood supply, lymph drainage and nerve supply
- Portosystemic anastomosis
- Motricity





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