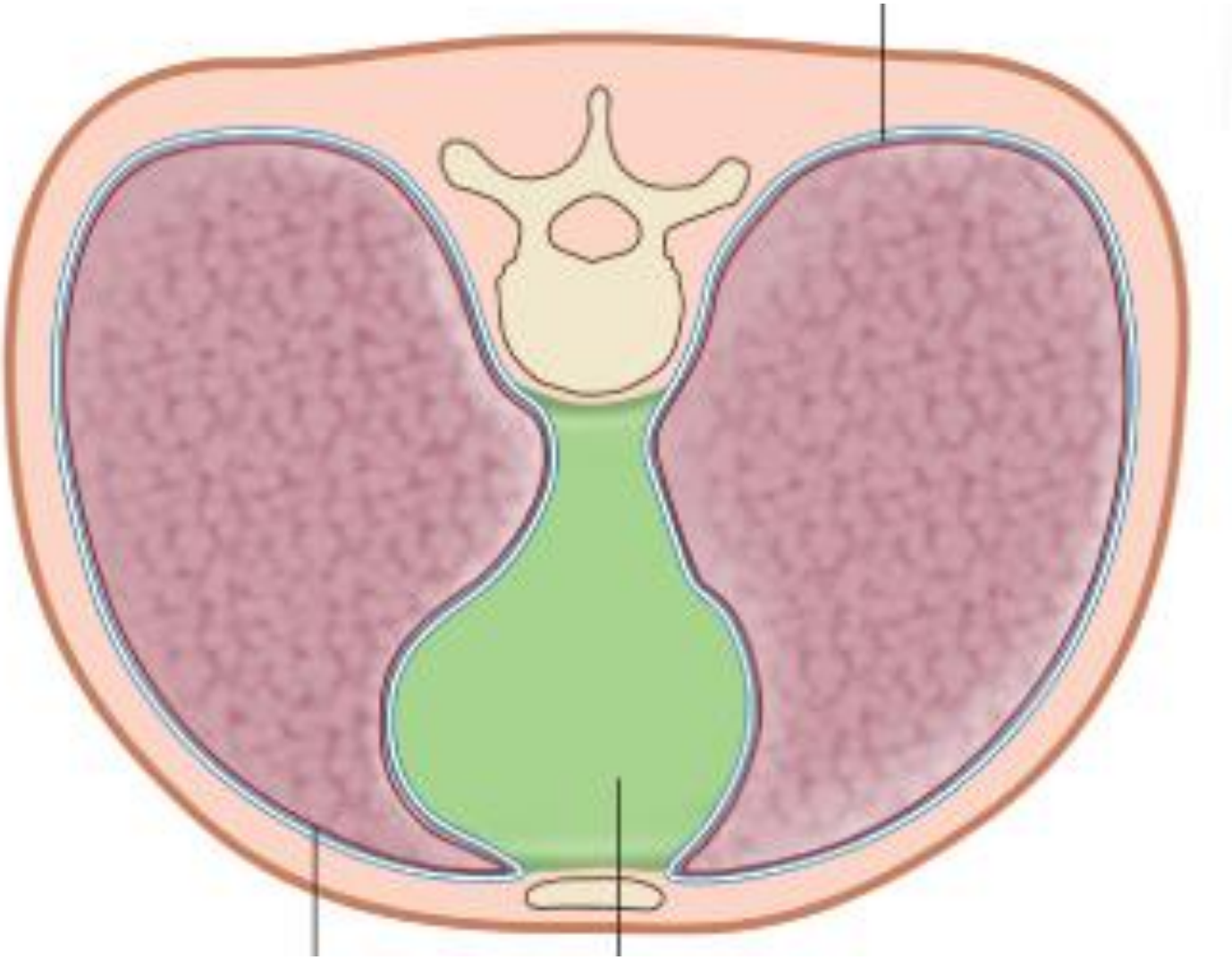
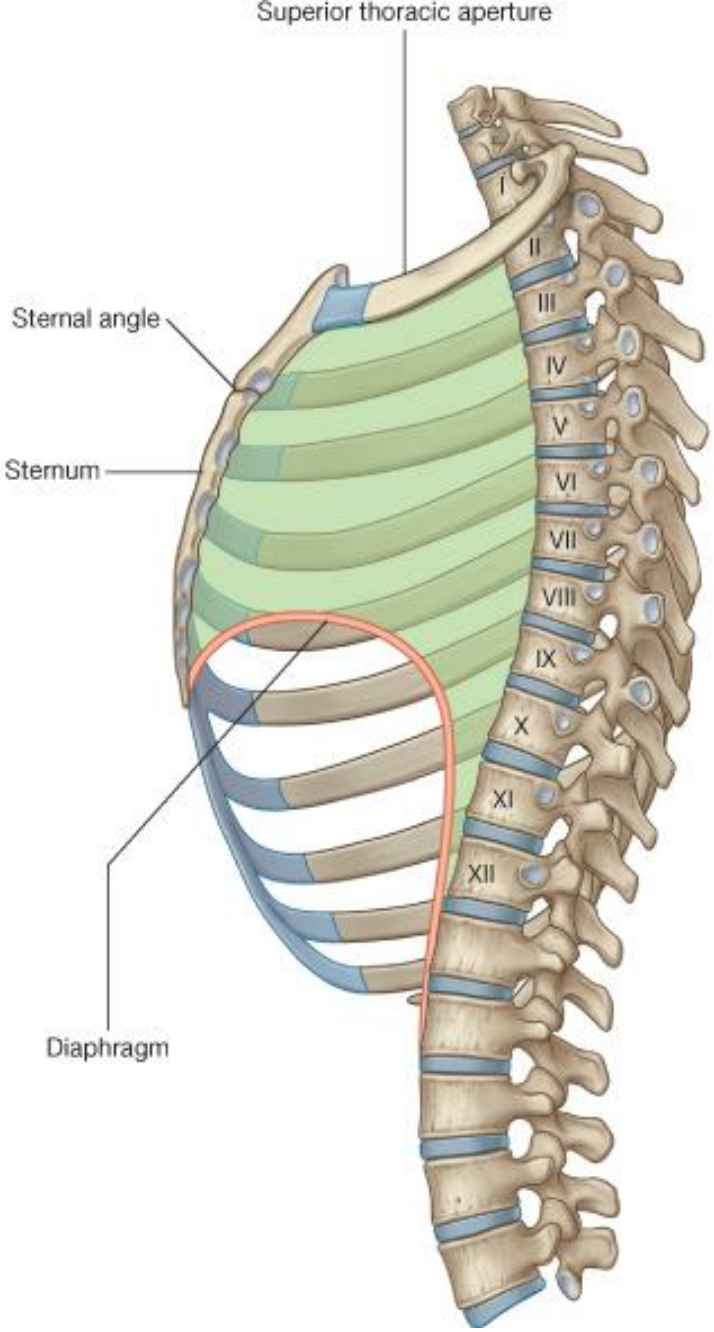
Mediastinum





Boundaries

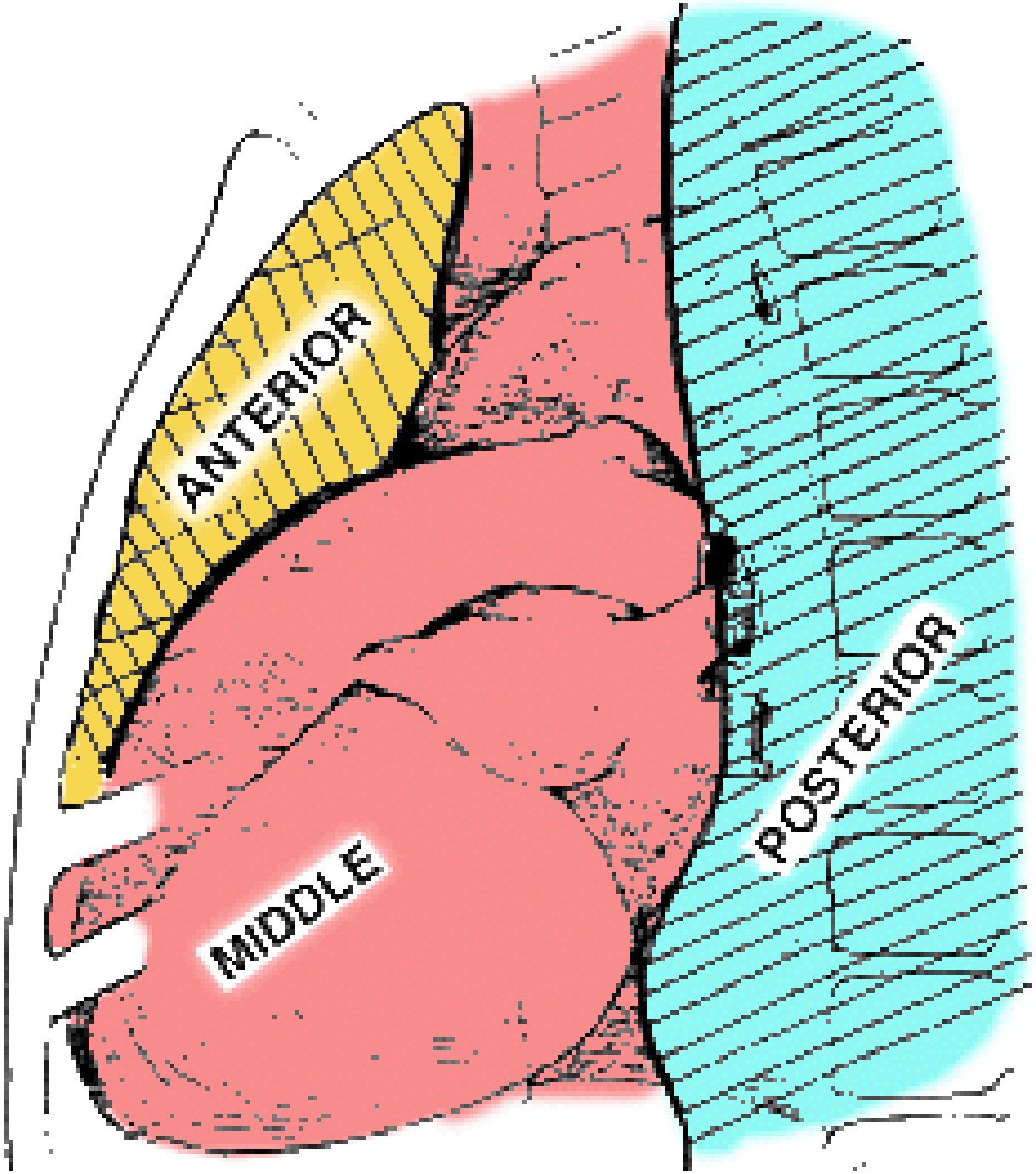
Anterior : Post. Surface of sternum

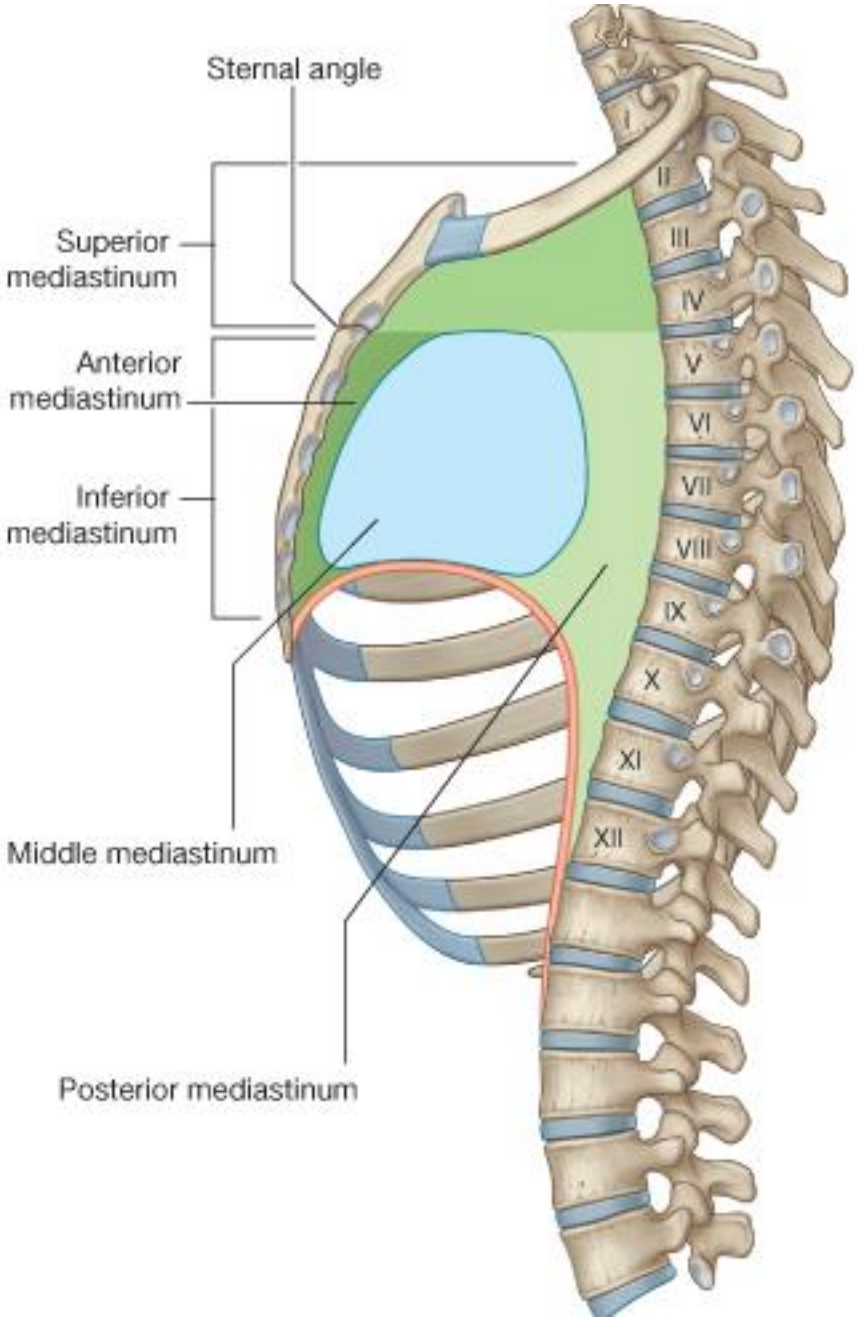
Posterior: Ant. surfaces of thoracic vertebrae

Superior : Thoracic inlet

Inferior: Diaphragm

Sides : Mediastinal pleura


ANTERIOR
MIDDLE
POSTERIOR



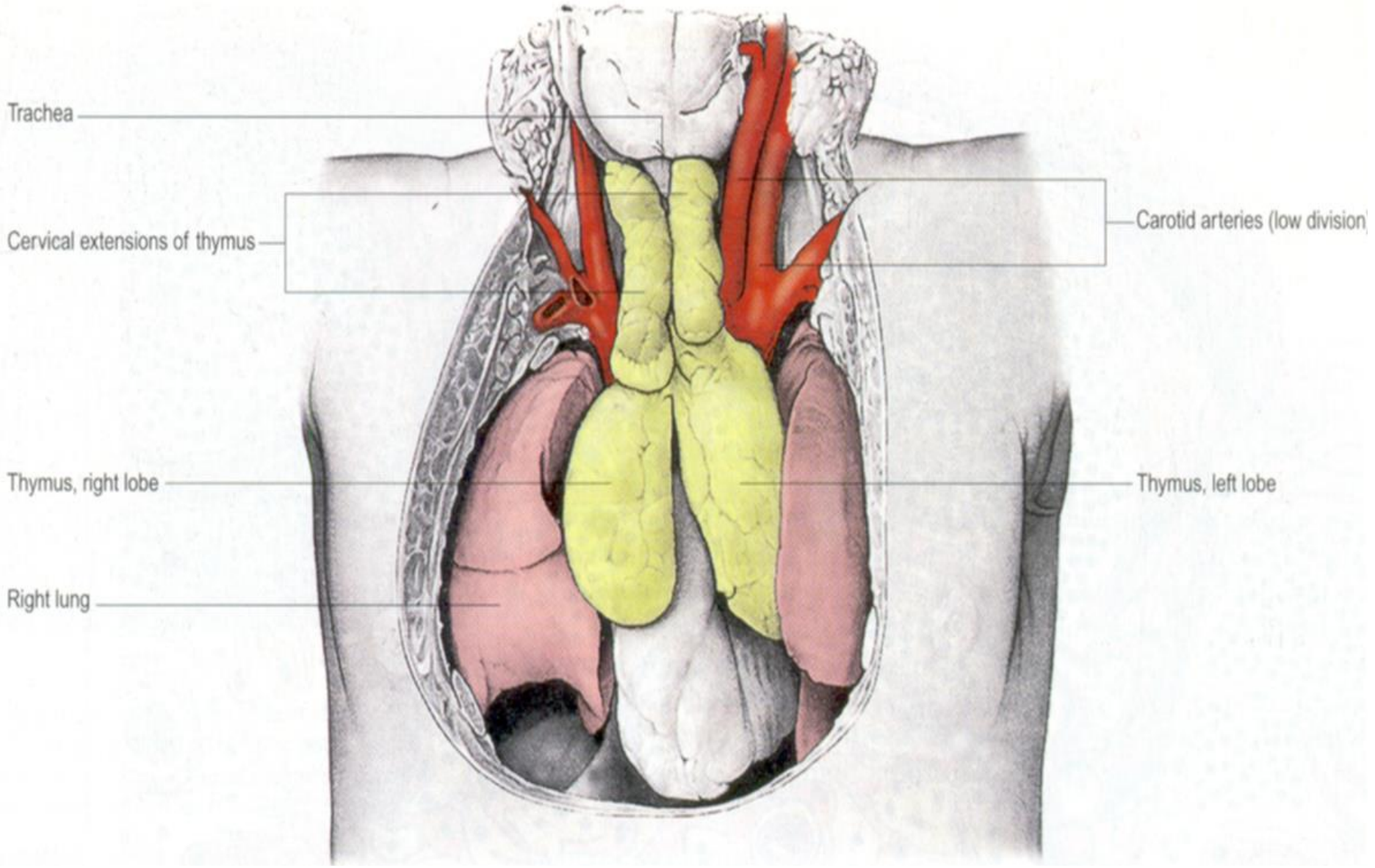
Divisions of mediastinum

1) Superior mediastinum
2) Inferior mediastinum

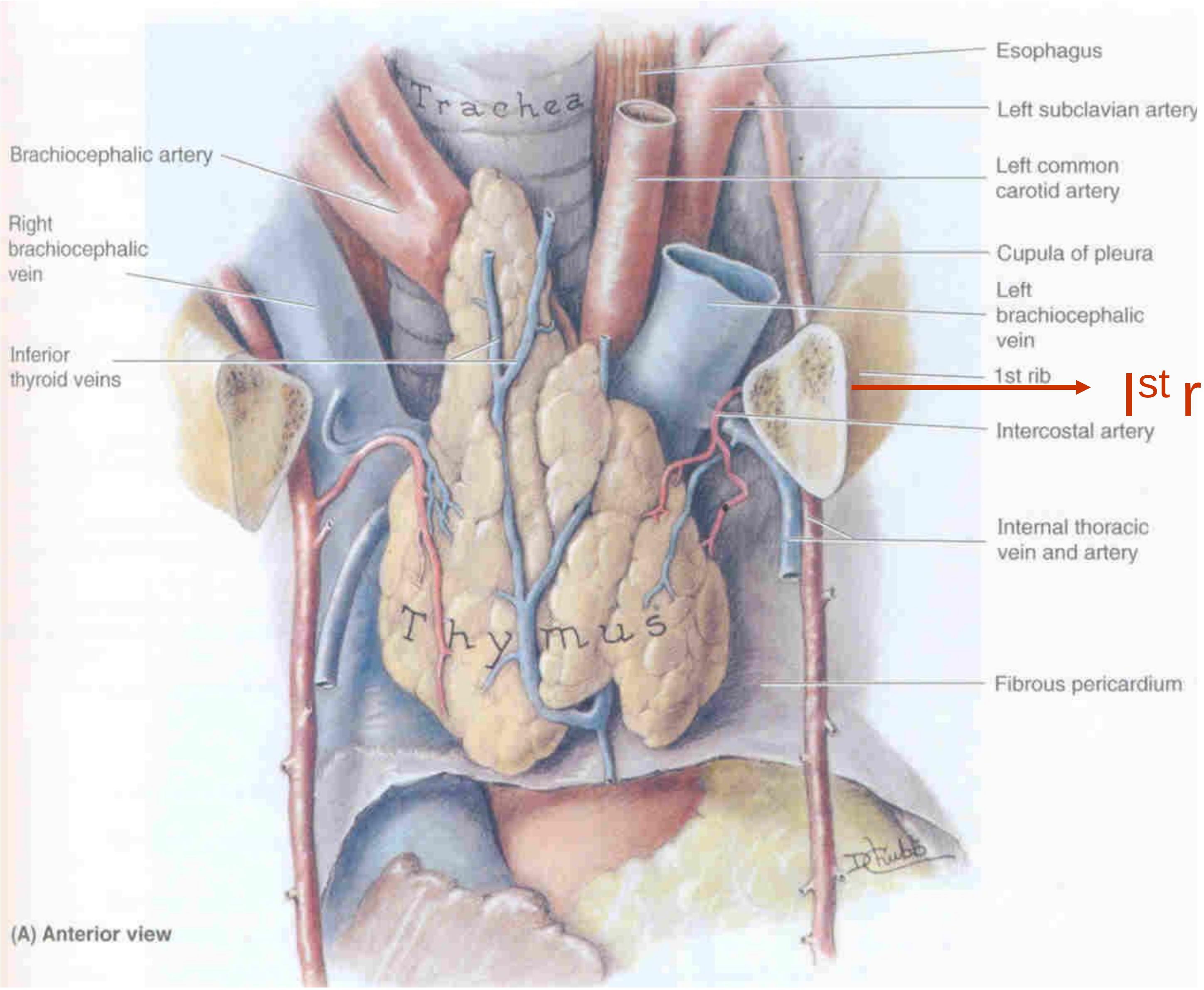
i - Anterior

ii - Middle

iii -Posterior


Trachea
Cervical extensions of thymus
Carotid arteries (low division)
Thymus, right lobe
Thymus, left lobe
Right lung

Superior mediastinum



Ist rib

Contents of superior mediastinum

Retro- sternal structures

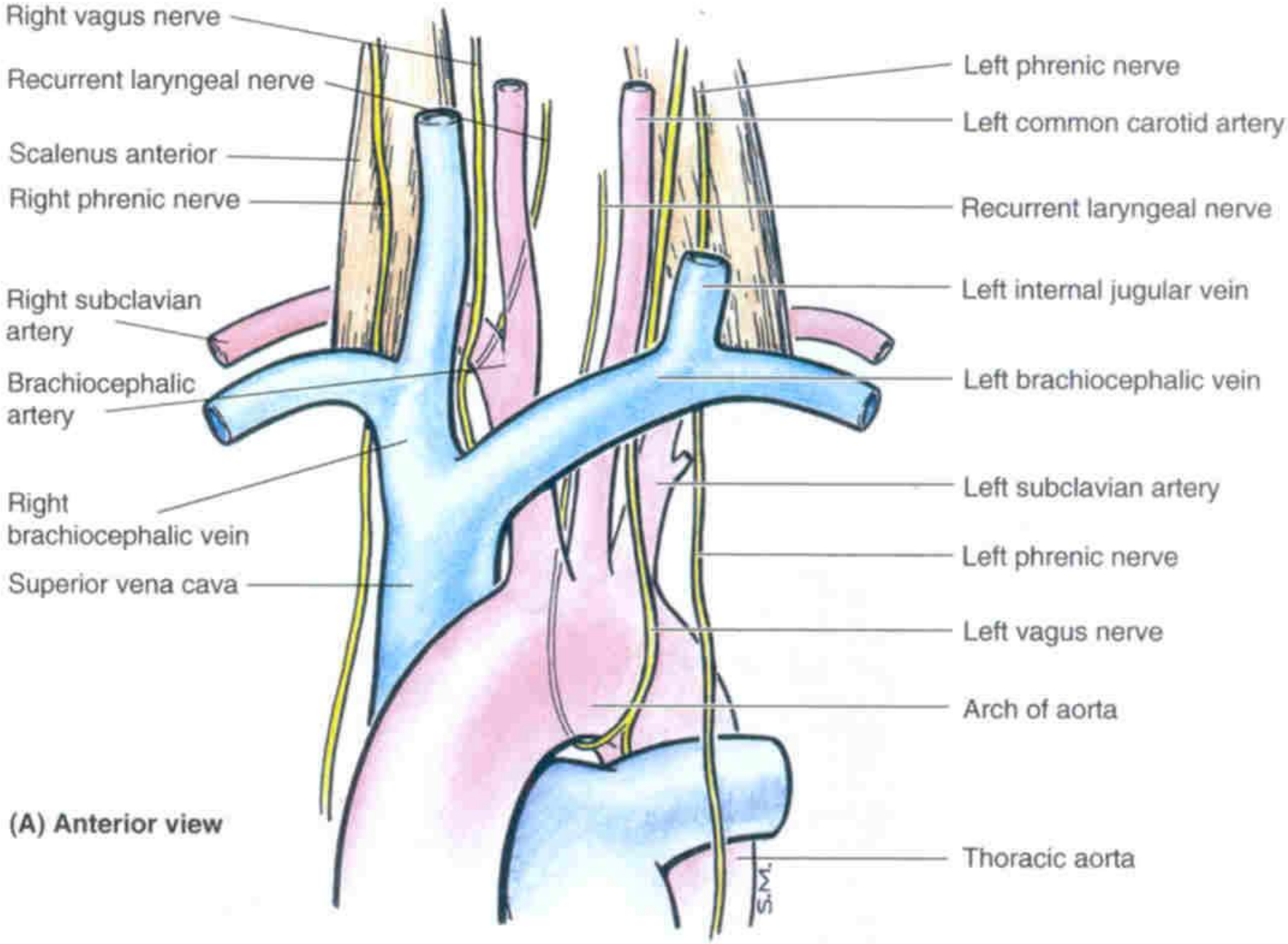
- Muscles
- Thymus gland
- Rt. & Lt.brachiocephalic veins & upper part superior vena cava

Intermediate structures

- Arch of Aorta
- Phrenic, vagus & cardic nerves

Prevertebral structures

- Trachea with para- tracheal & tracheo-bronchial nodes
- Lt. recurrent laryngeal nerve
- Oesophagus
- Thoracic duct
- Origins of longus coli muscles



(A) Anterior view

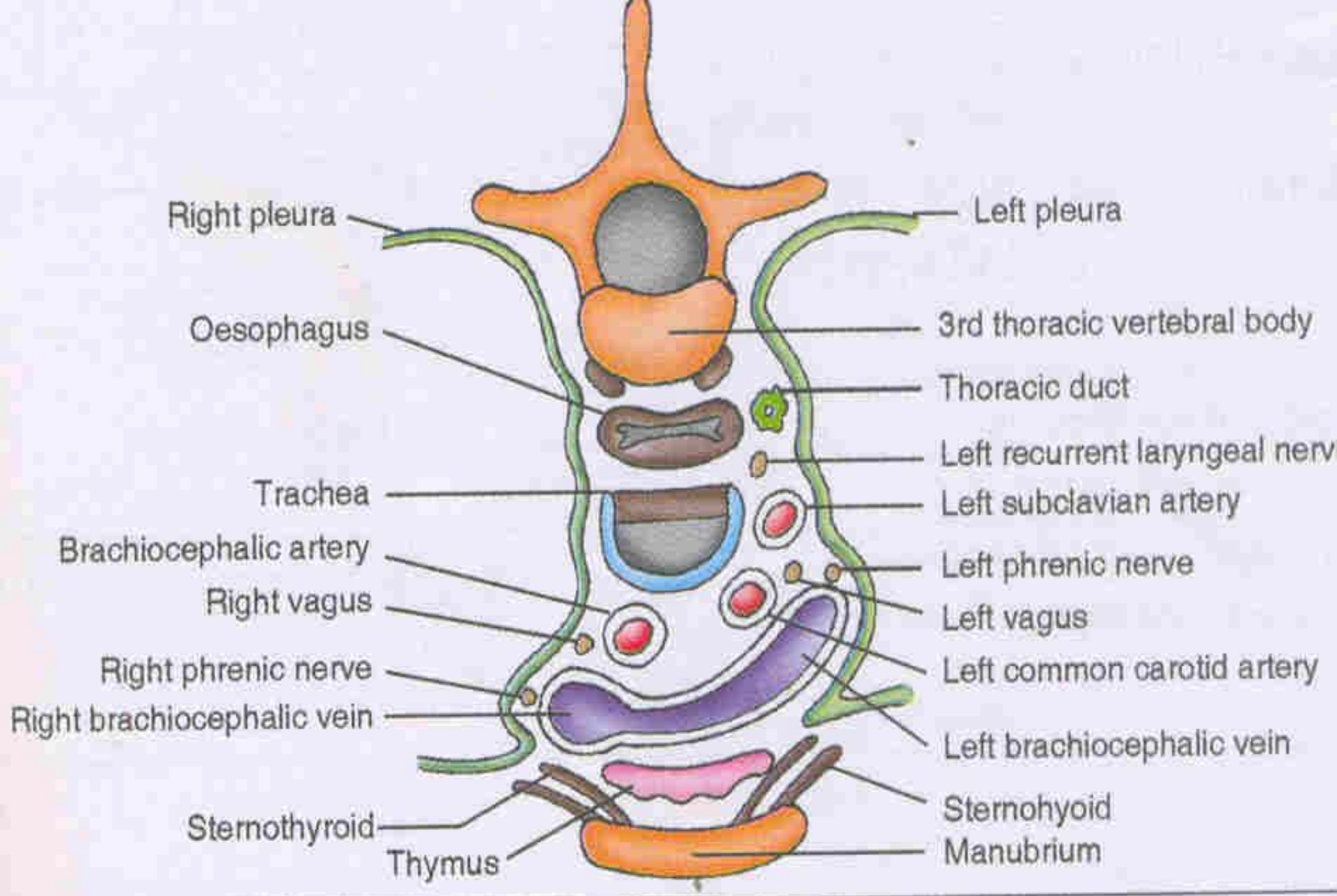


Fig. 15.3 TS through superior mediastinum – at T_3

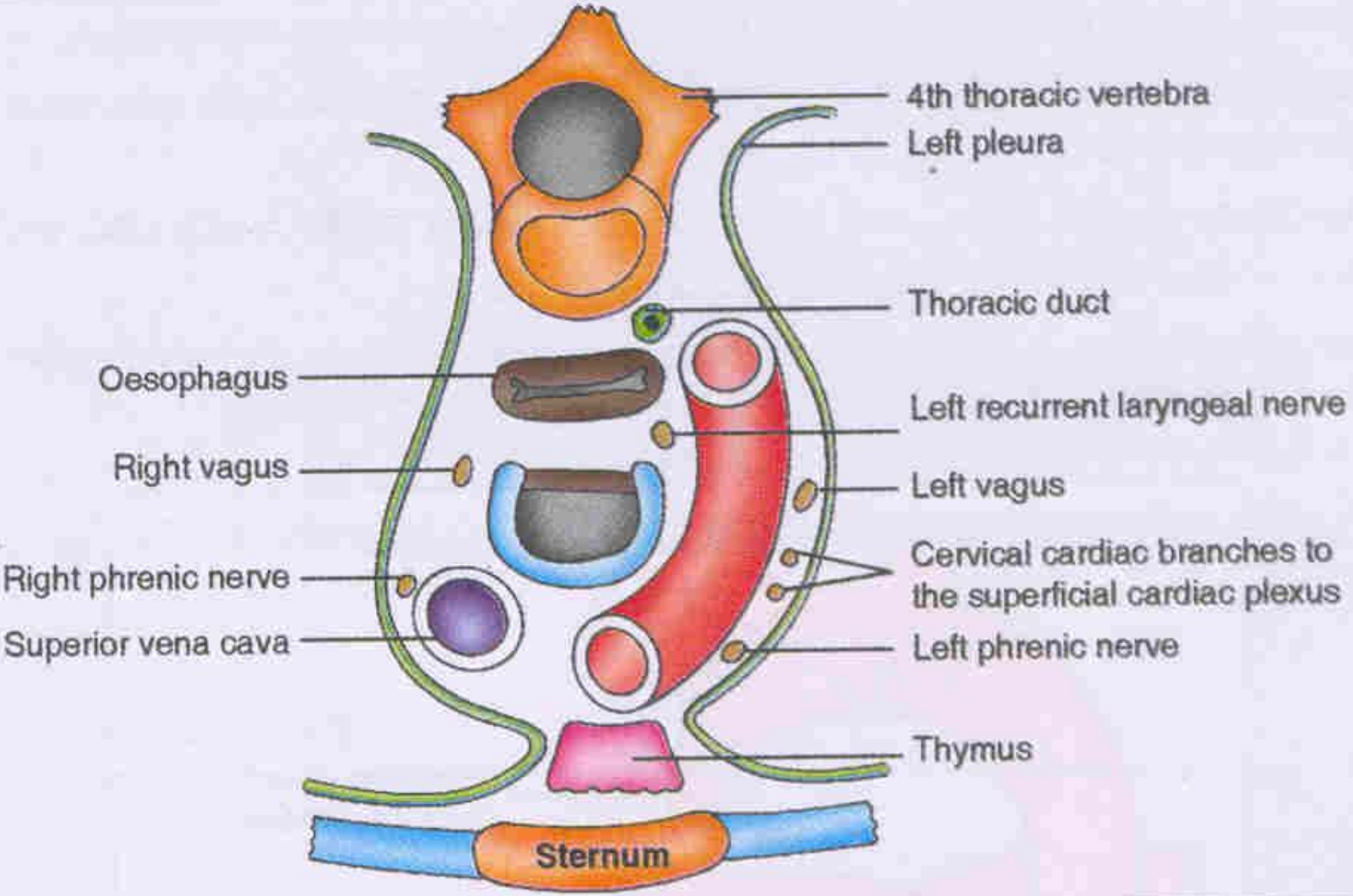
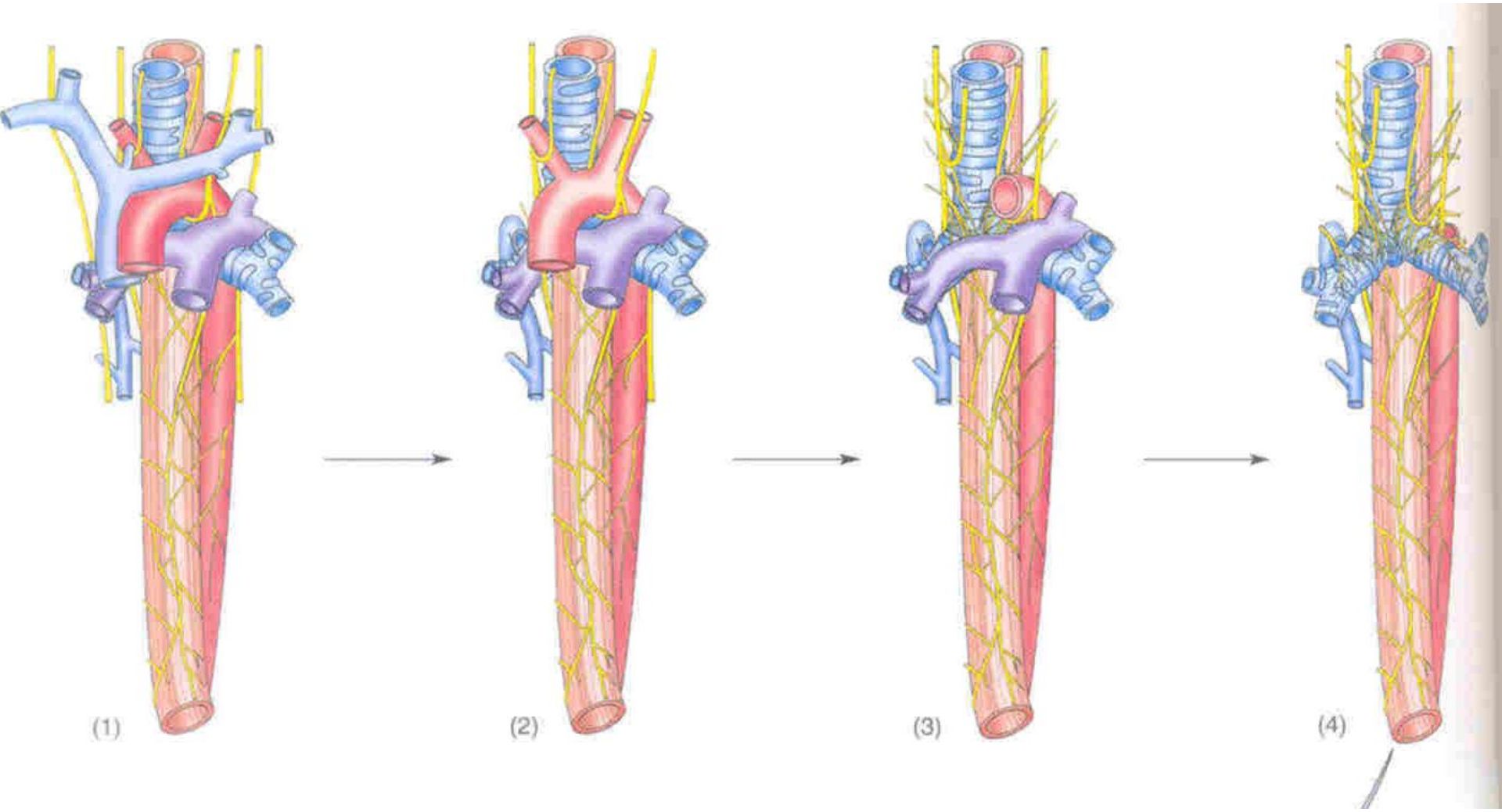
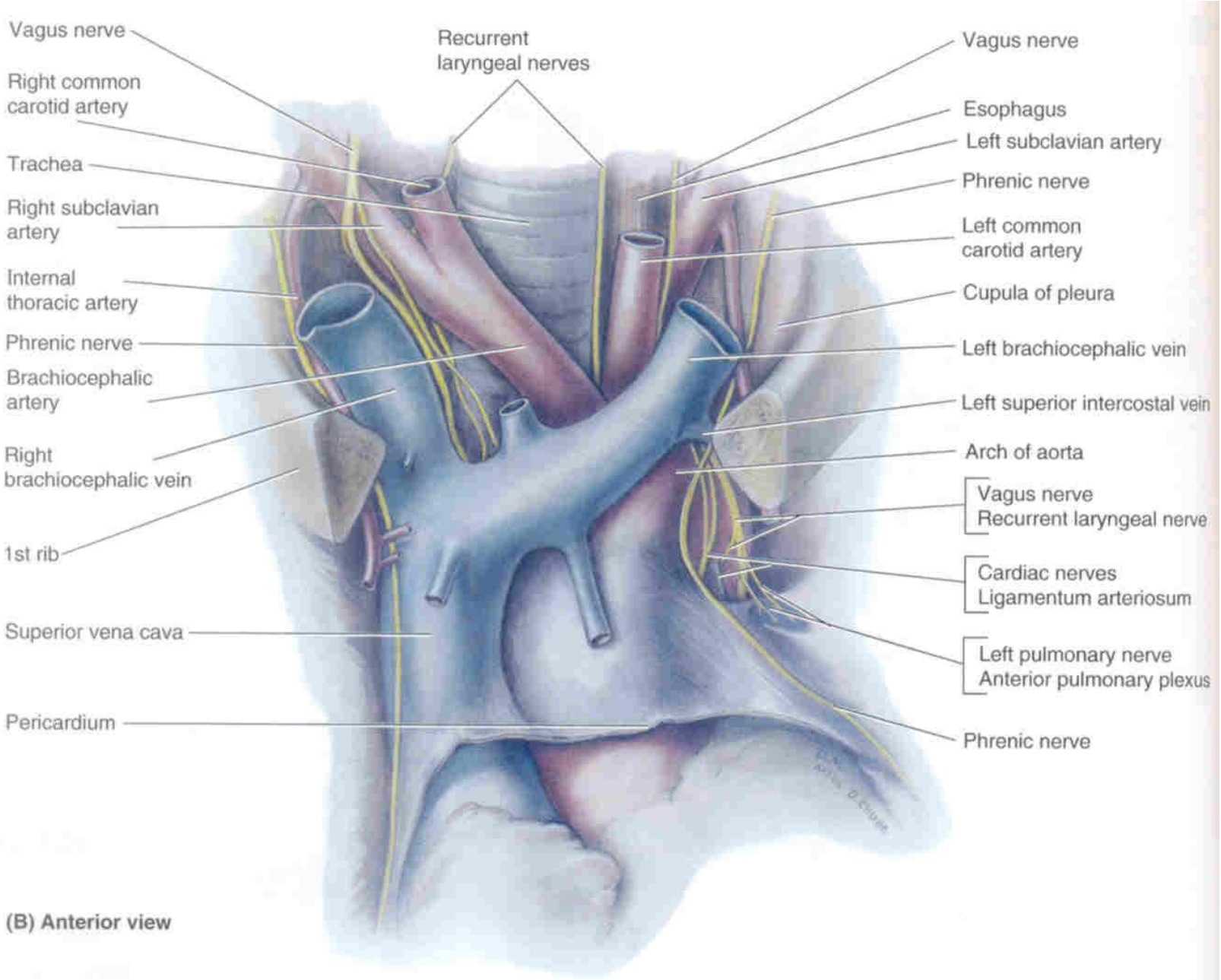
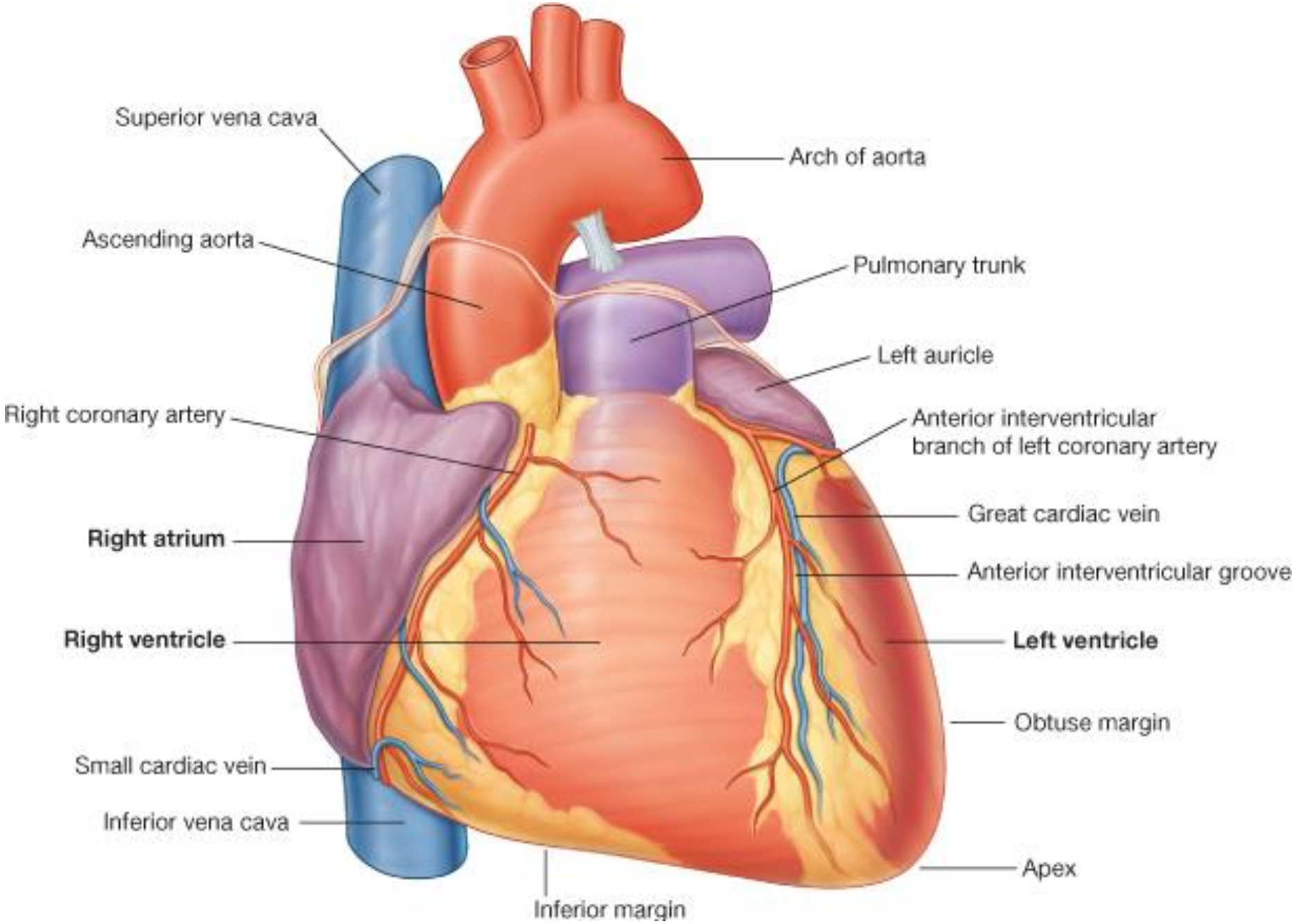


Fig. 15.7 Transverse section of thorax at T_4


(1)
(2)
(3)
(4)



(B) Anterior view


Superior vena cava
Arch of aorta
Ascending aorta
Pulmonary trunk
Left auricle
Right coronary artery
Anterior interventricular branch of left coronary artery
Great cardiac vein
Right atrium
Anterior interventricular groove
Right ventricle
Left ventricle
Obtuse margin
Small cardiac vein
Inferior vena cava
Apex
Inferior margin

Arch of the aorta

Commences at the level of sternal angle

Terminates at the level of sternal angle

Curvatures : In vertical plane- sup. Convex

- Inf. Concave

In horizontal plane – Right –concave

Left - convex

Relations

Superior : Three branches of arch

Left brachiocephalic vein

Inferior : Ligamentum arteriosum

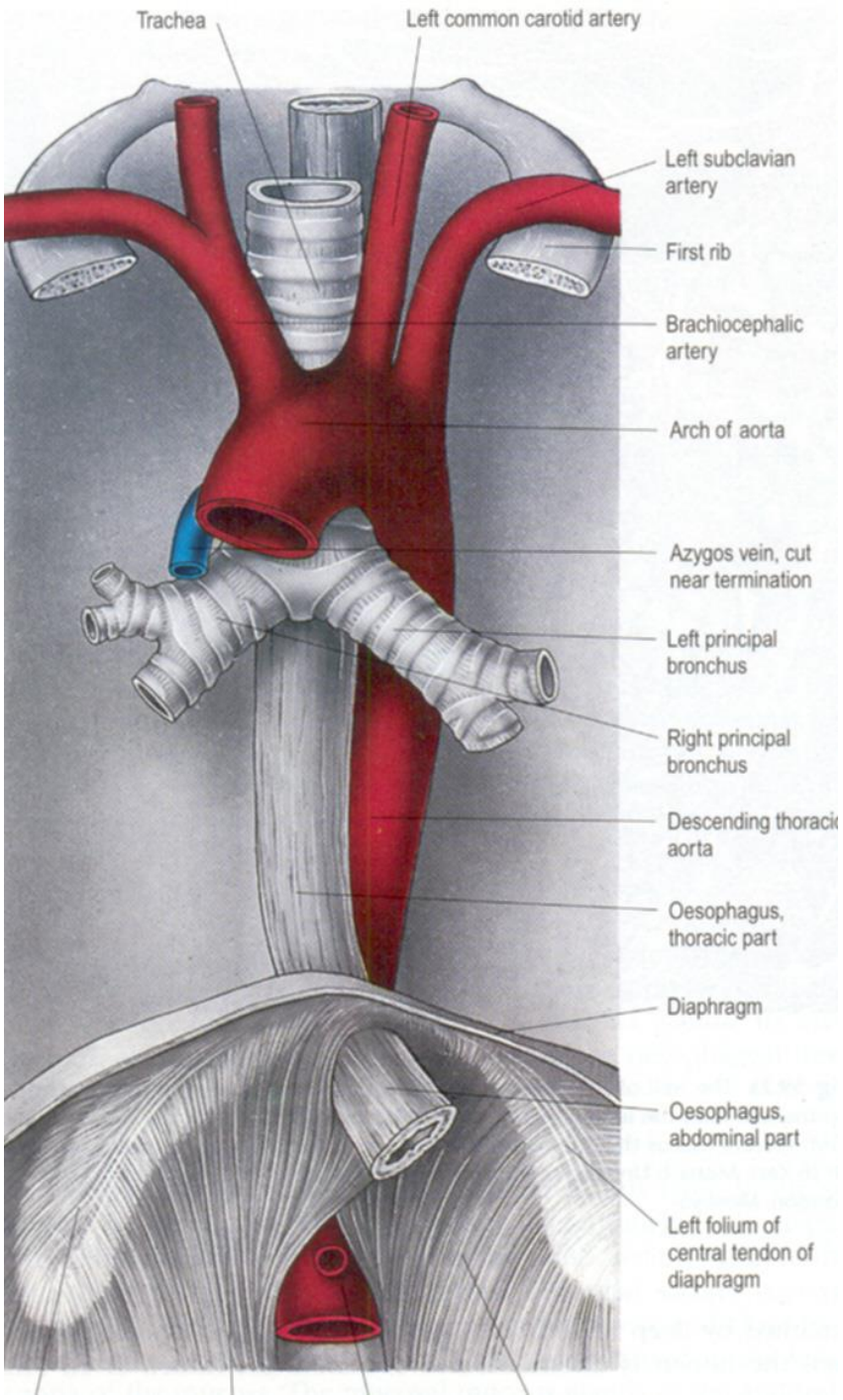
Bifurcation of pulmonary trunk

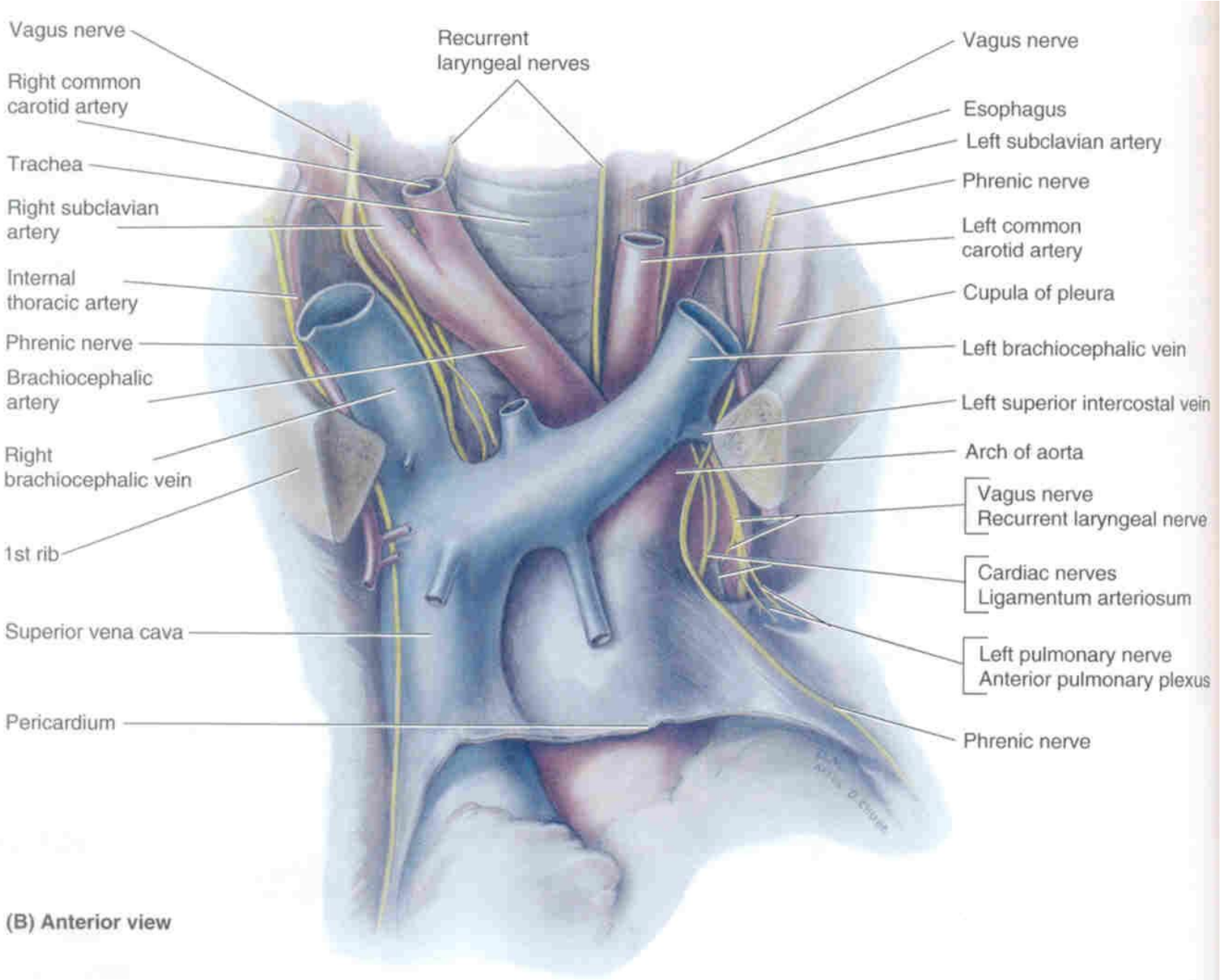
Left pulmonary artery

Left principal bronchus

Left recurrent laryngeal nerve

Superficial cardiac plexus


Trachea
Left common carotid artery
Left subclavian artery
First rib
Brachiocephalic artery
Arch of aorta
Azygos vein, cut near termination
Left principal bronchus
Right principal bronchus
Descending thoracic aorta
Oesophagus, thoracic part
Diaphragm
Oesophagus, abdominal part
Left folium of central tendon of diaphragm



(B) Anterior view

Relations cont……..

Anterior and to the left:

- Left vagus
- Left phrenic
- Left superior intercostal vein
- Branches superficial cardiac plexus

Posterior and to the right;

- Trachea
- Oesophagus
- Thoracic duct
- Left recurrent laryngeal nerve

Applied

1 Left brachiocephalic vein is located in the lowe neck in children (tracheostomy)

2 Anomalies of the branches of the aorta

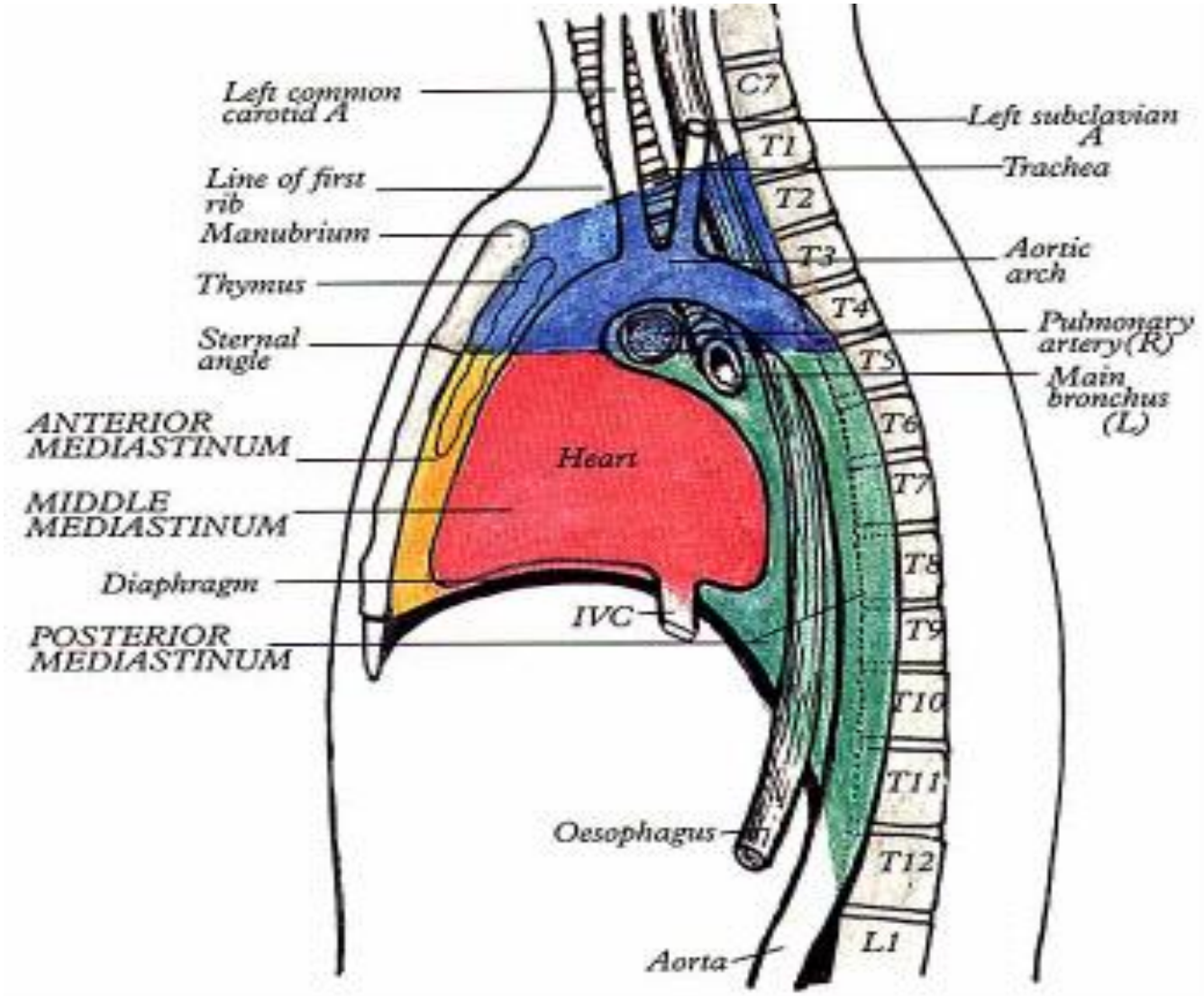
3 Coarctation of the aorta –abnormal narrowing or stenosis

4 Patent ductus arteriosus (left pulm. & aorta)

5 Aortic aneurysm

6 Double aortic arch

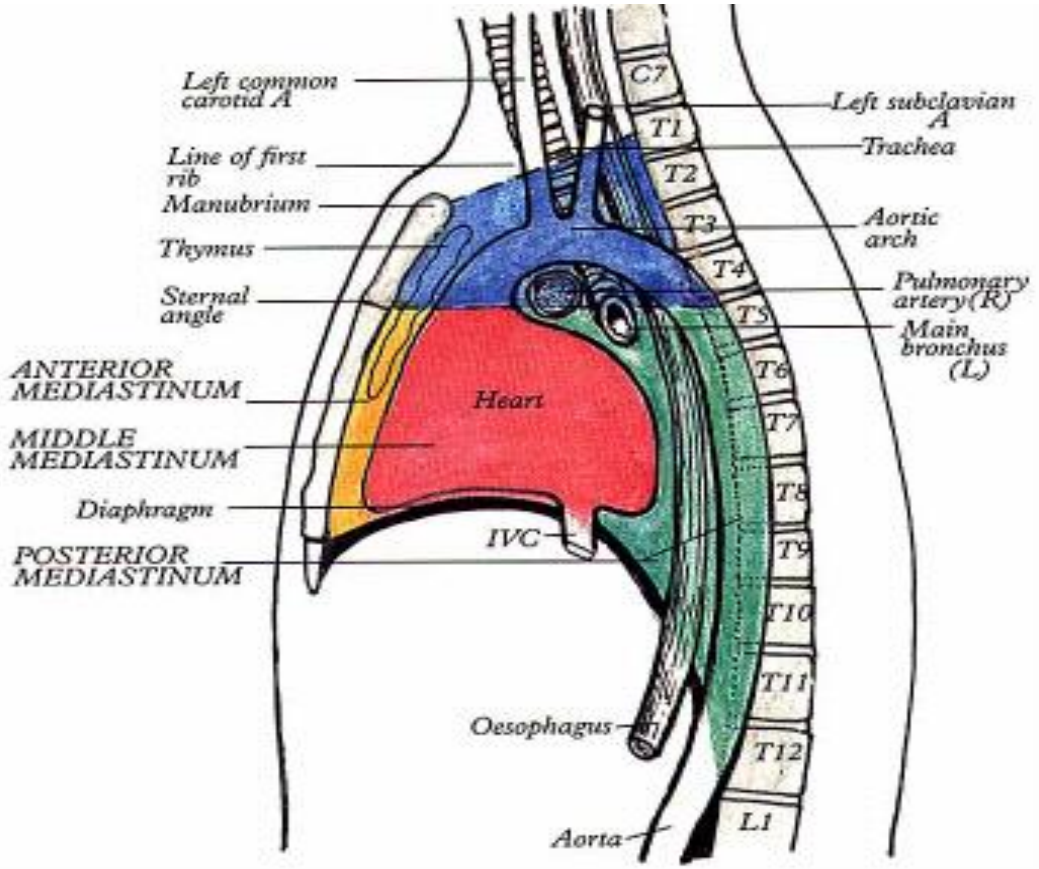
Inferior mediastinum & its subdivisions



Anterior mediastinum

Contents

- **Superior & inferior sterno-pericardial ligaments**
- **Some loose areolar tissue**
- **A few mediastinal branches of thoracic artery**



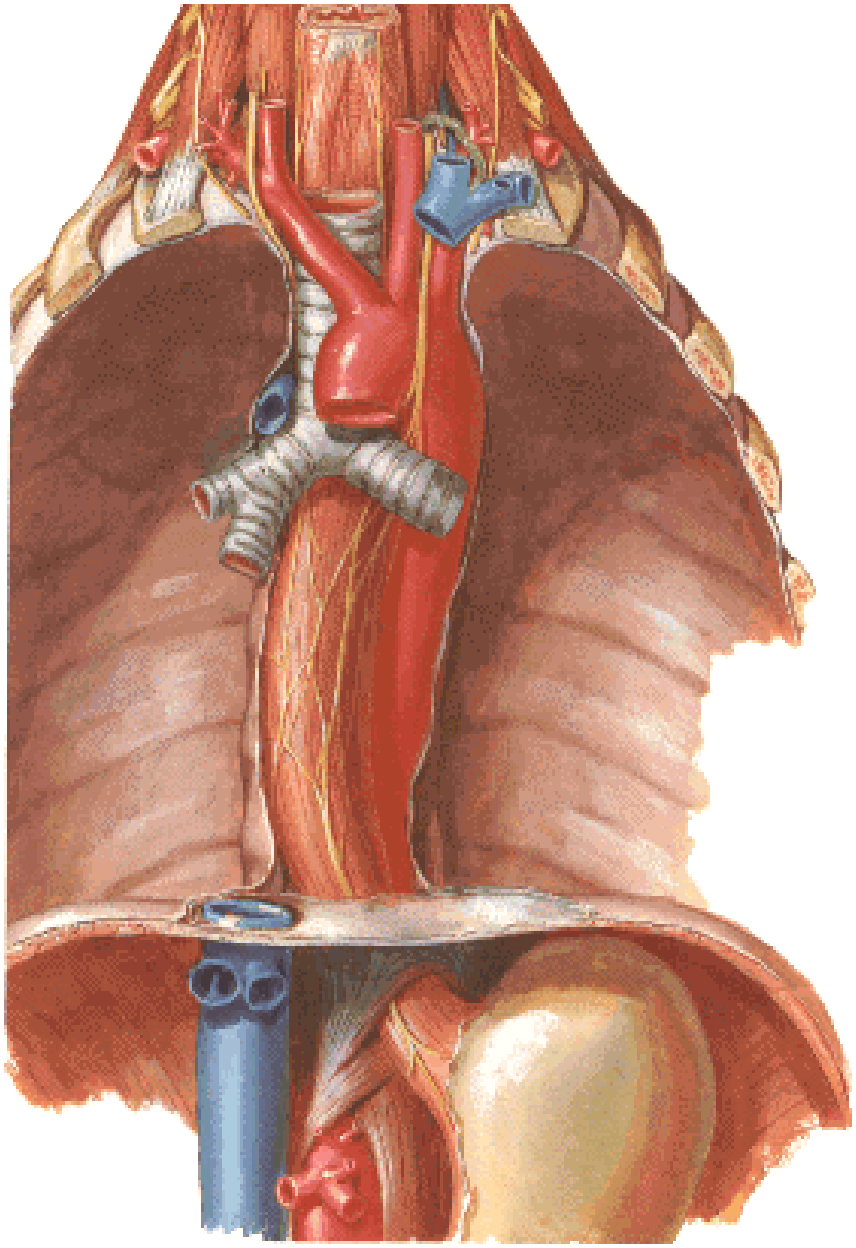
Posterior mediastinum

- **Boundaries**
- **Contents**
- **Applied Anatomy**

Contents

- Oesophagus-Thoracic part
- Descending Thoracic Aorta & branches
- Azygous/ Hemiazygous system of Veins & tributaries
- Thoracic Duct & tributaries
- Posterior mediastinal Lymph nodes
- Vagus Nerves & Oesophageal plexus
- Sympathetic Trunks
- Splanchnic nerves

Posterior mediastinum



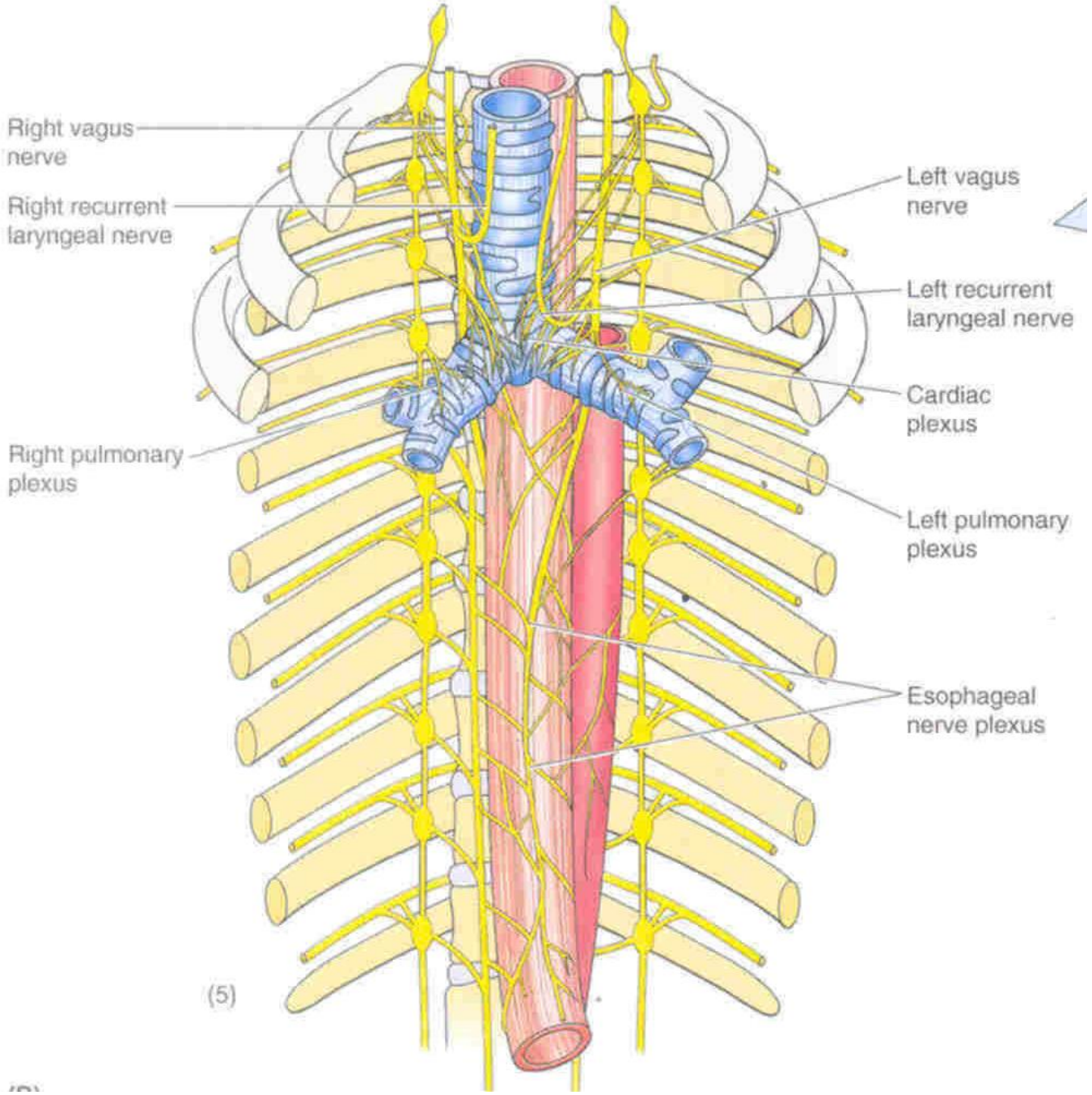
Contents

Longitudinal structures

- **Oesophagus**
- **Descending aorta**
- **Azygos & hemiazygos veins**
- **Thoracic duct**
- **Vagus nerve**
- **Splanchic nerves**
- **Post. Mediastinal lymph nodes**

Transverse structures

- **Sup. & Inf. Hemiazygos veins**
- **Deviation thoracic duct**
- **Posterior intercostal vessels**


Right vagus nerve
Right recurrent laryngeal nerve
Right pulmonary plexus
Left vagus nerve
Left recurrent laryngeal nerve
Cardiac plexus
Left pulmonary plexus
Esophageal nerve plexus
(5)

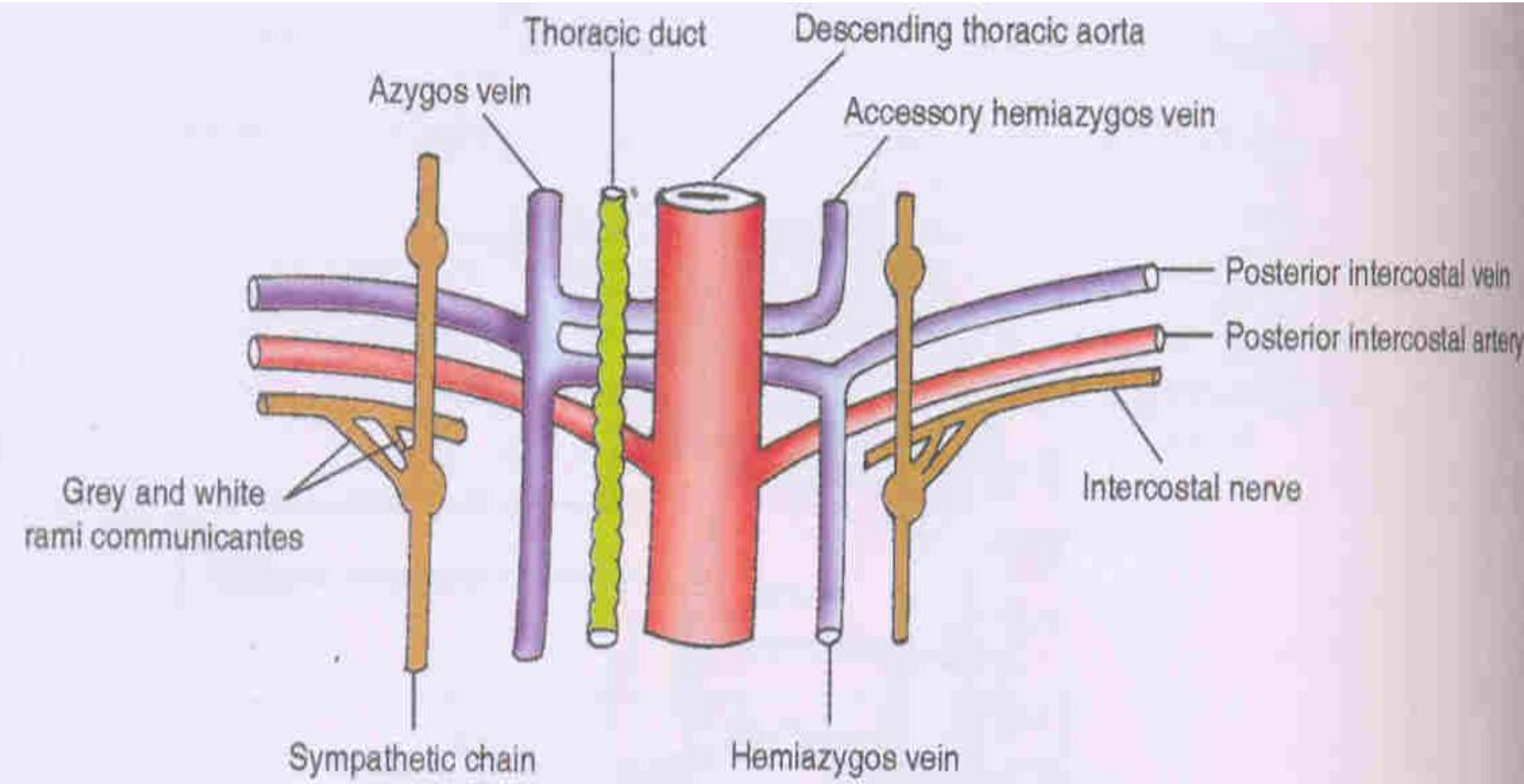
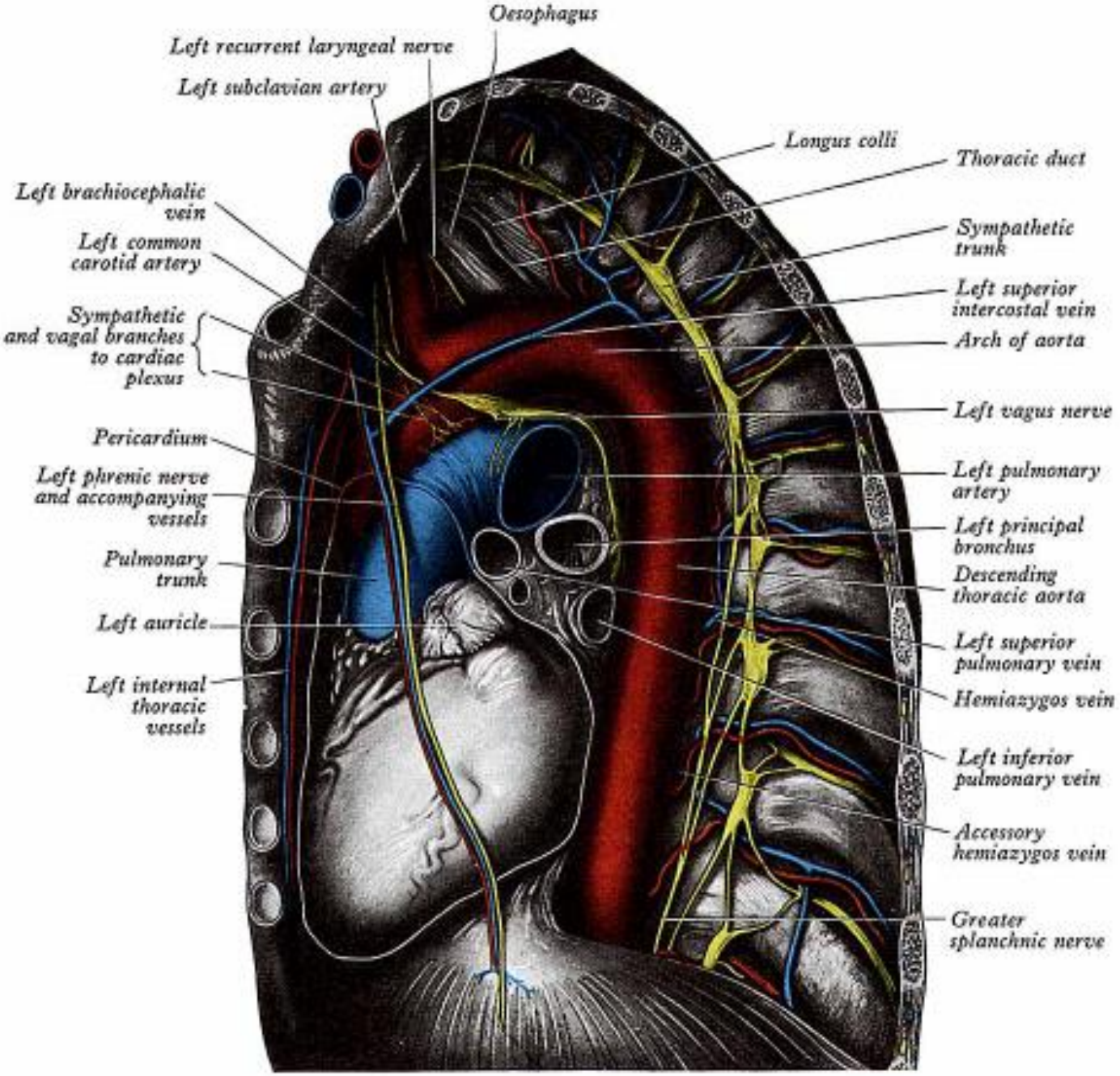
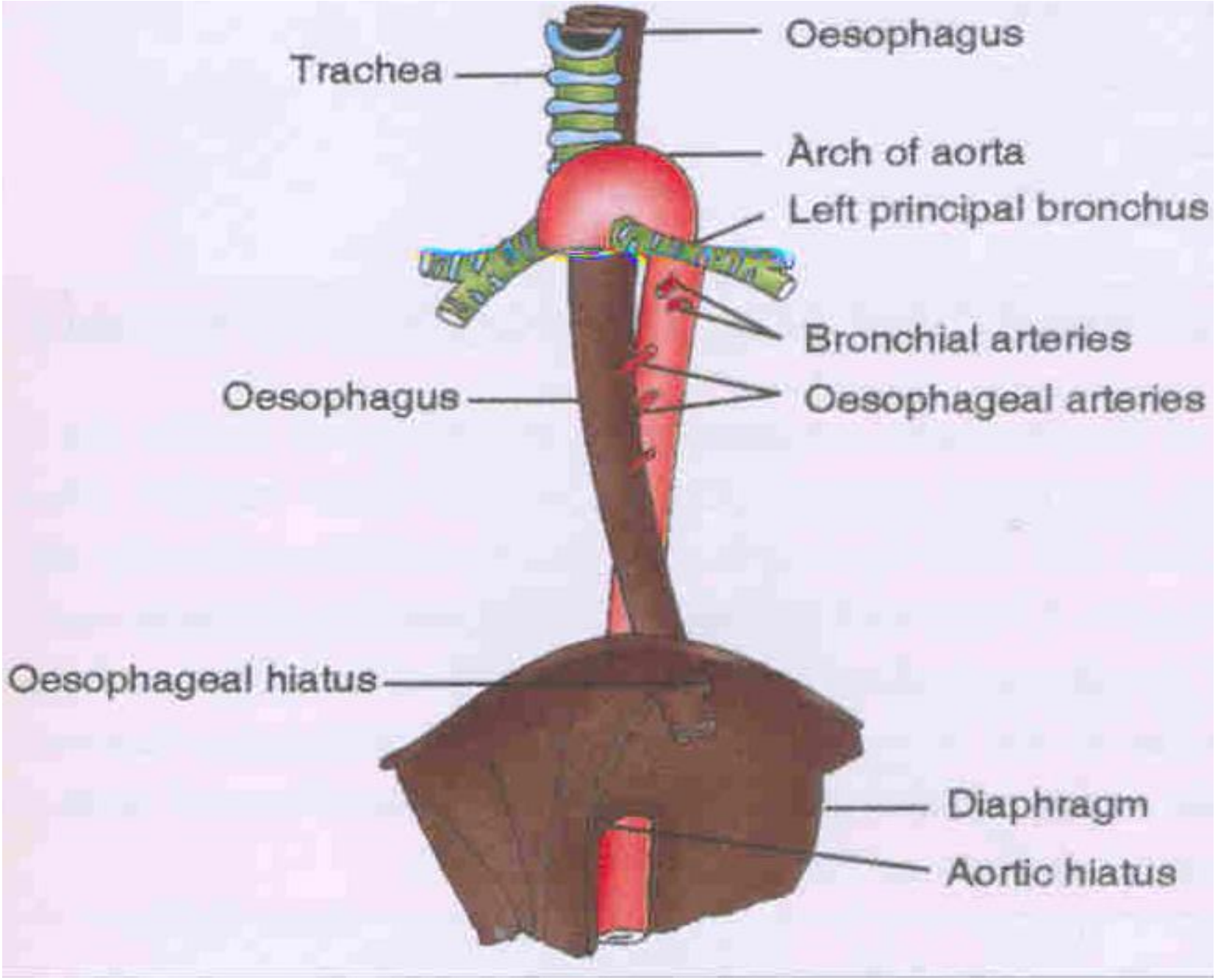


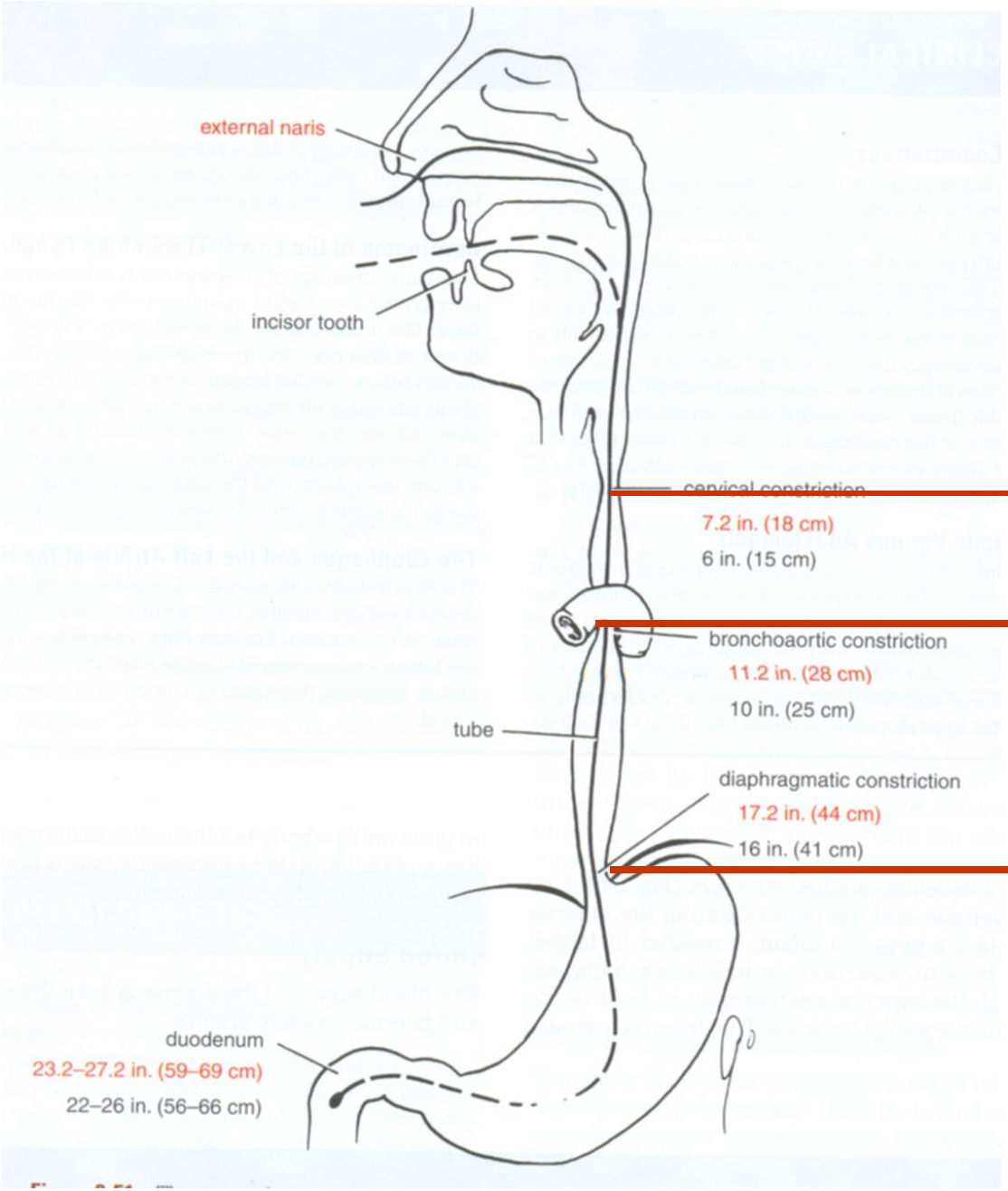
Fig. 16.2 Inter-relationship between the contents of the posterior mediastinum


Oesophagus
Left recurrent laryngeal nerve
Left subclavian artery
Longus colli
Thoracic duct
Left brachiocephalic vein
Left common carotid artery
Sympathetic and vagal branches to cardiac plexus
Sympathetic trunk
Left superior intercostal vein
Arch of aorta
Left vagus nerve
Pericardium
Left phrenic nerve and accompanying vessels
Left pulmonary artery
Left principal bronchus
Pulmonary trunk
Descending thoracic aorta
Left auricle
Left superior pulmonary vein
Left internal thoracic vessels
Hemiazygos vein
Left inferior pulmonary vein
Accessory hemiazygos vein
Greater splanchnic nerve

Oesophagus

- Parts
- Course
- Curvatures & Constrictions
- Relations
- Blood supply
- Lymphatic drainage
- Nerve supply
- Development
- Applied anatomy

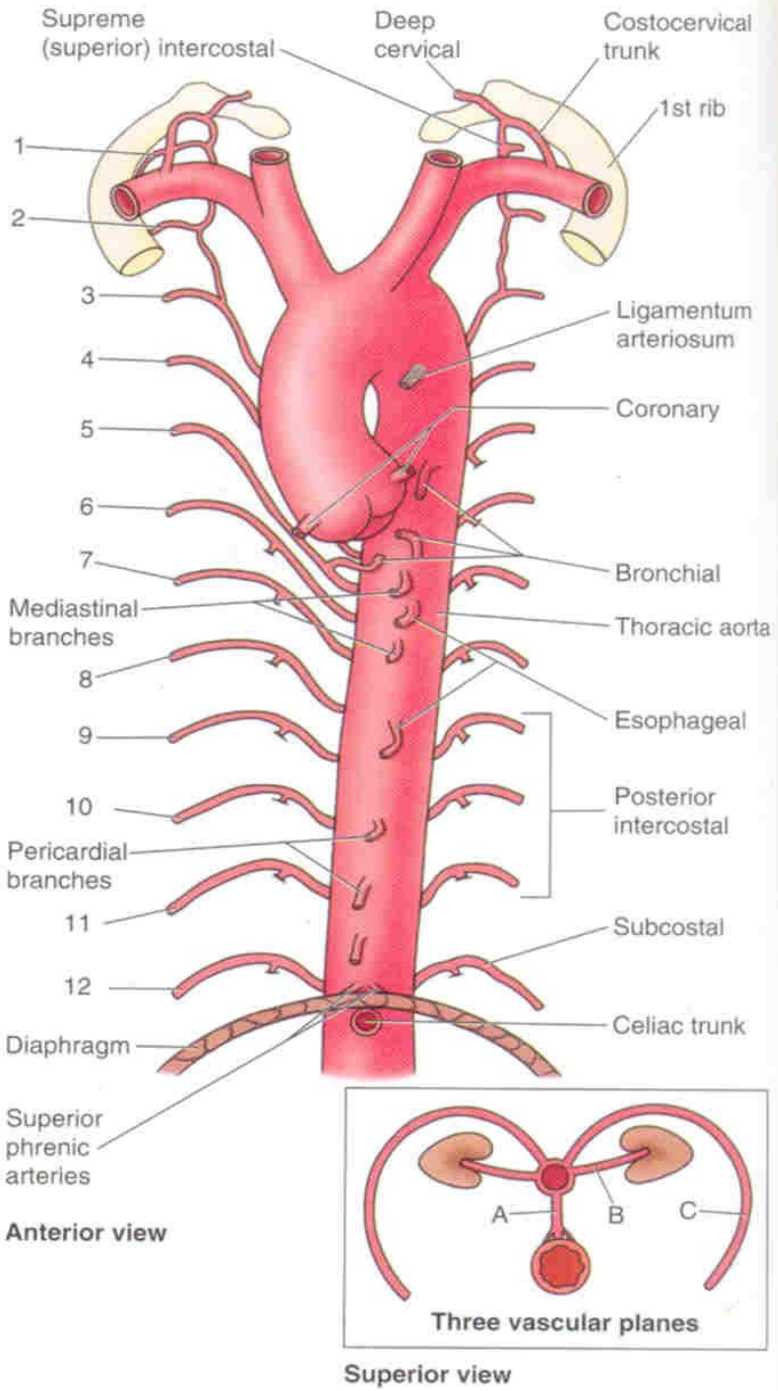

Oesophagus
Trachea
Arch of aorta
Left principal bronchus
Bronchial arteries
Oesophagus
Oesophageal arteries
Oesophageal hiatus
Diaphragm
Aortic hiatus



Cervical constriction

Broncho-aortic constriction

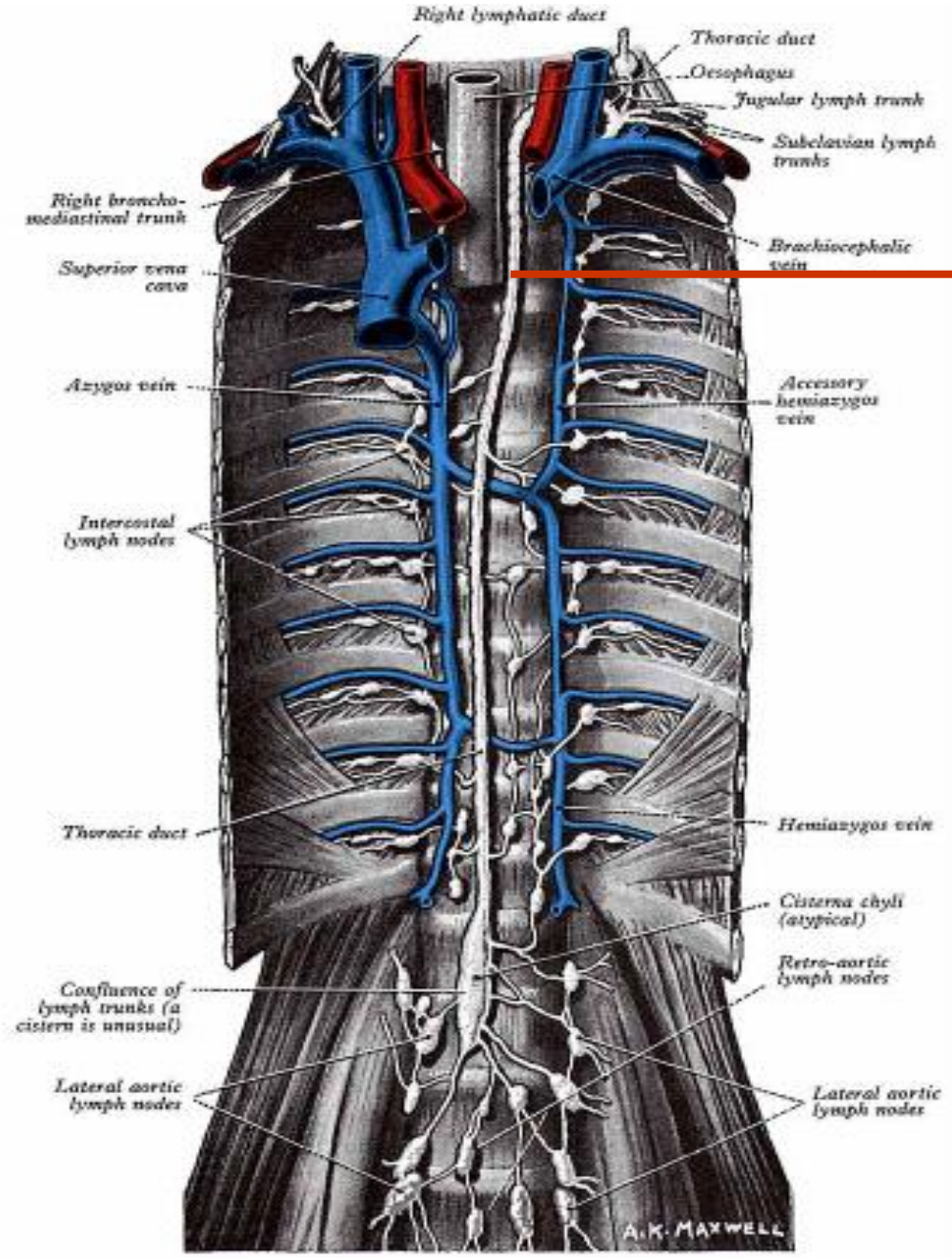
Diaphragmatic constriction



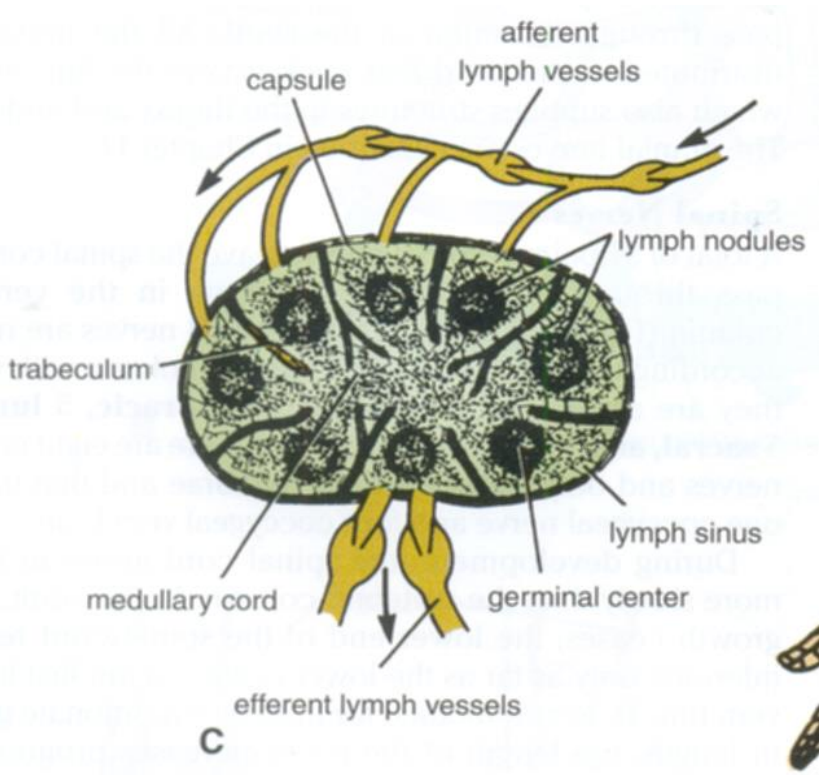
Thoracic Aorta

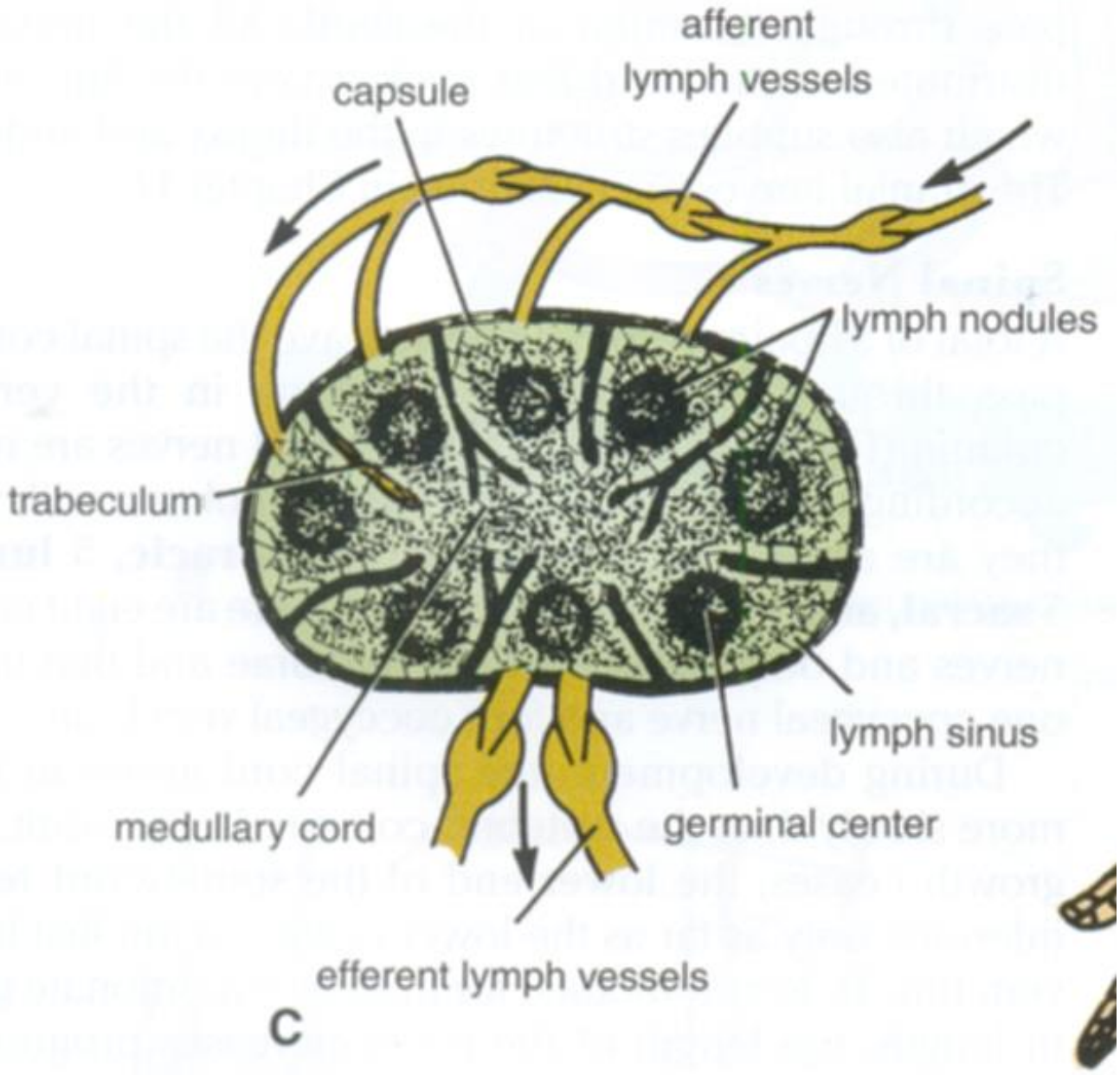
Pattern of branches-
Three vascular Planes-

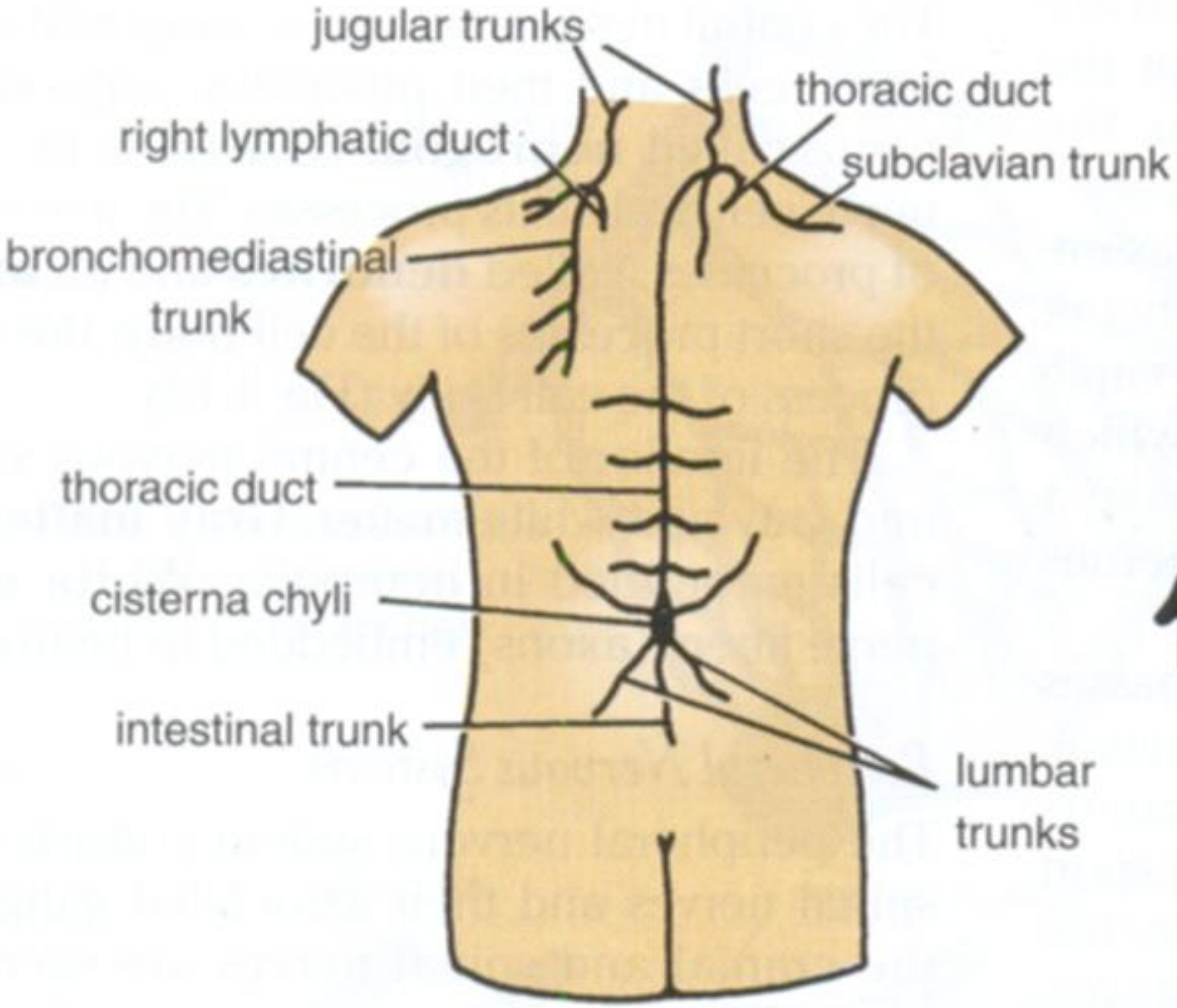
- **A-Unpaired visceral- Oesophageal, pericardial**
- **B-Paired lateral visceral- Bronchial**
- **C-Paired segmental parietal- Posterior intercostal, subcostal**



Thoracic duct

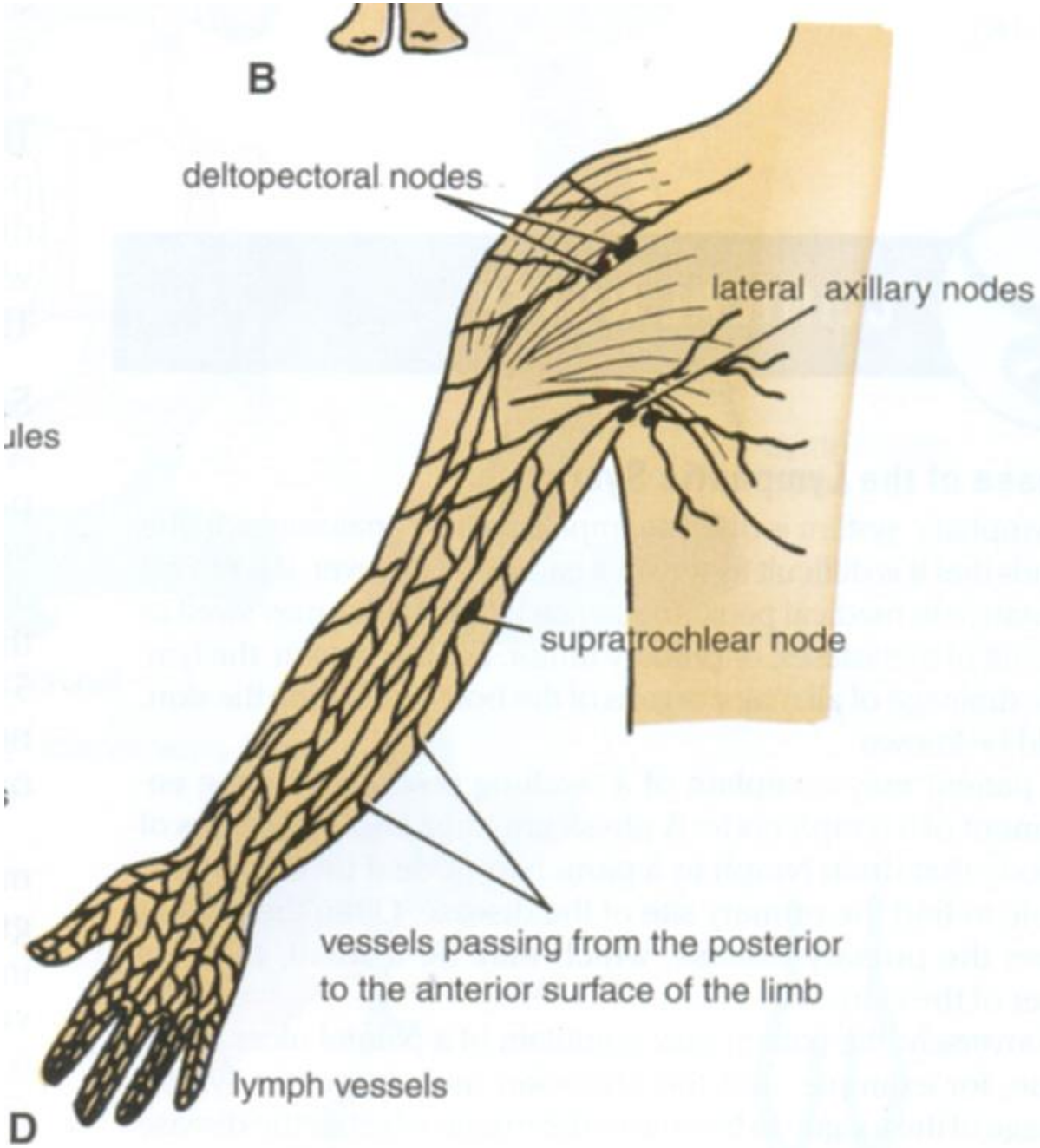


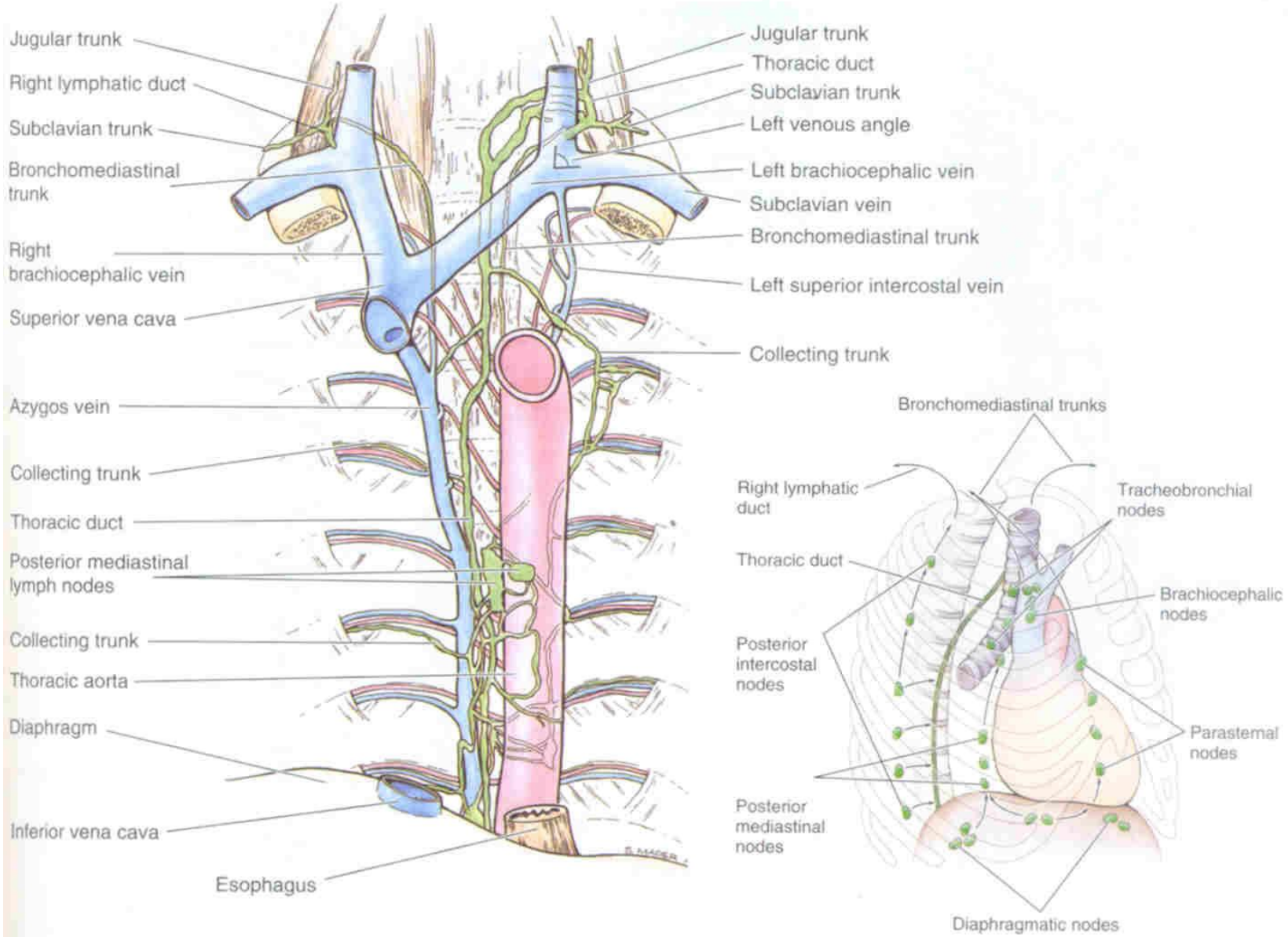

afferent
lymph vessels
capsule
lymph nodules
trabeculum
lymph sinus
medullary cord
germinal center
efferent lymph vessels
C


jugular trunks
thoracic duct
right lymphatic duct
subclavian trunk
bronchomediastinal trunk
thoracic duct
cisterna chyli
intestinal trunk
lumbar trunks

A

Area of drainage

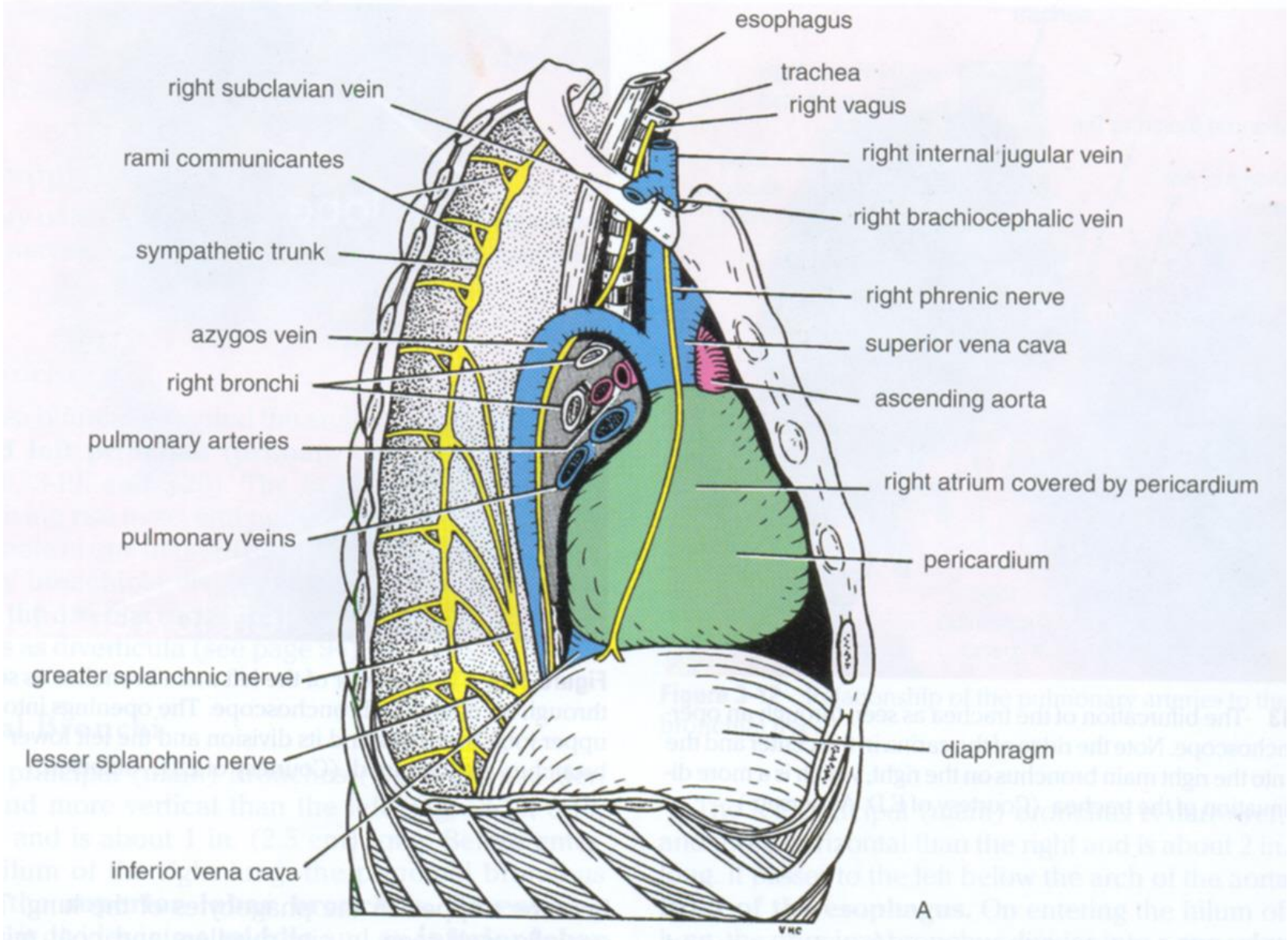

B
deltopectoral nodes
lateral axillary nodes
ules
supratrochlear node
vessels passing from the posterior
to the anterior surface of the limb
lymph vessels
D



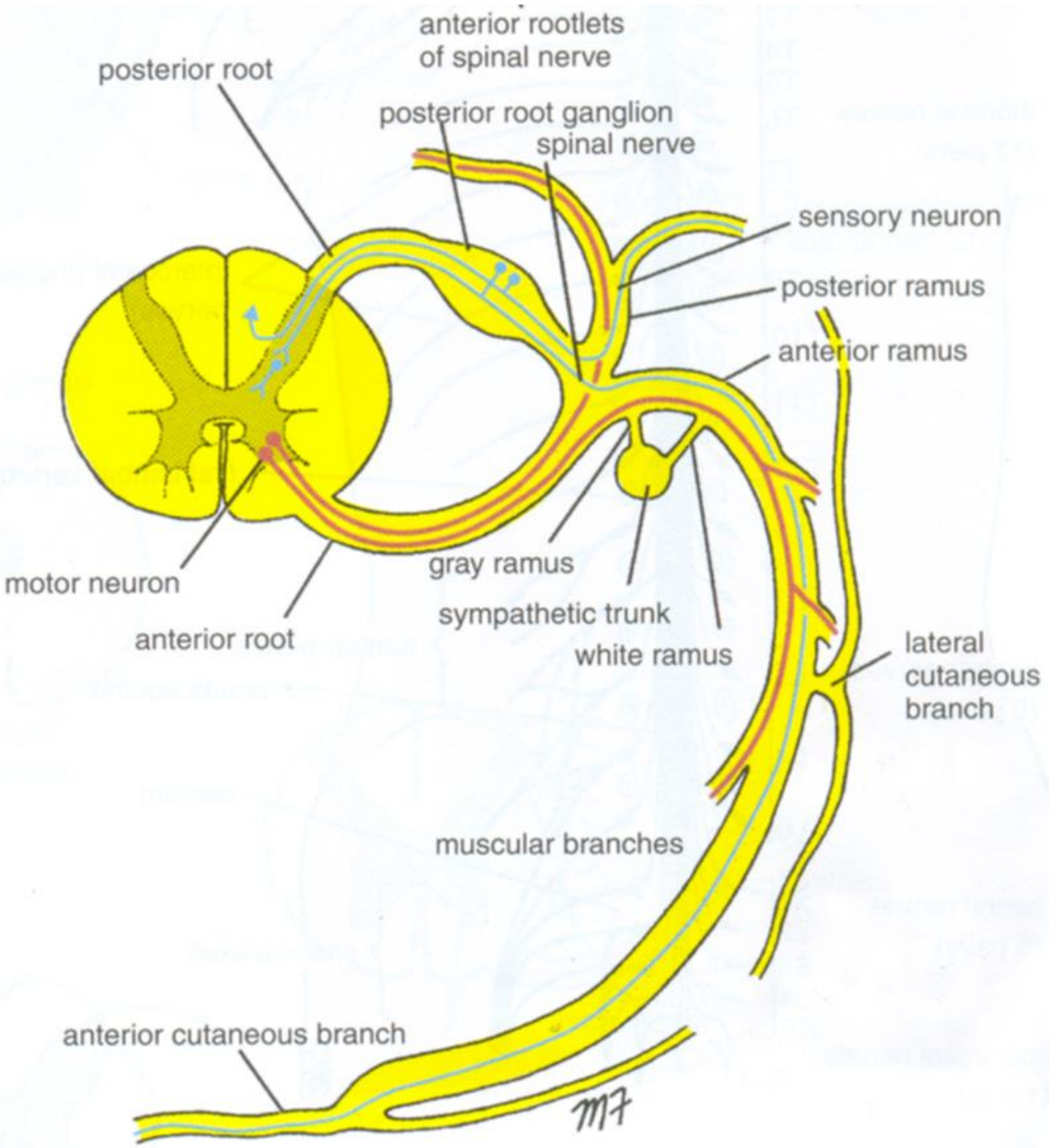
(A) Anterior view

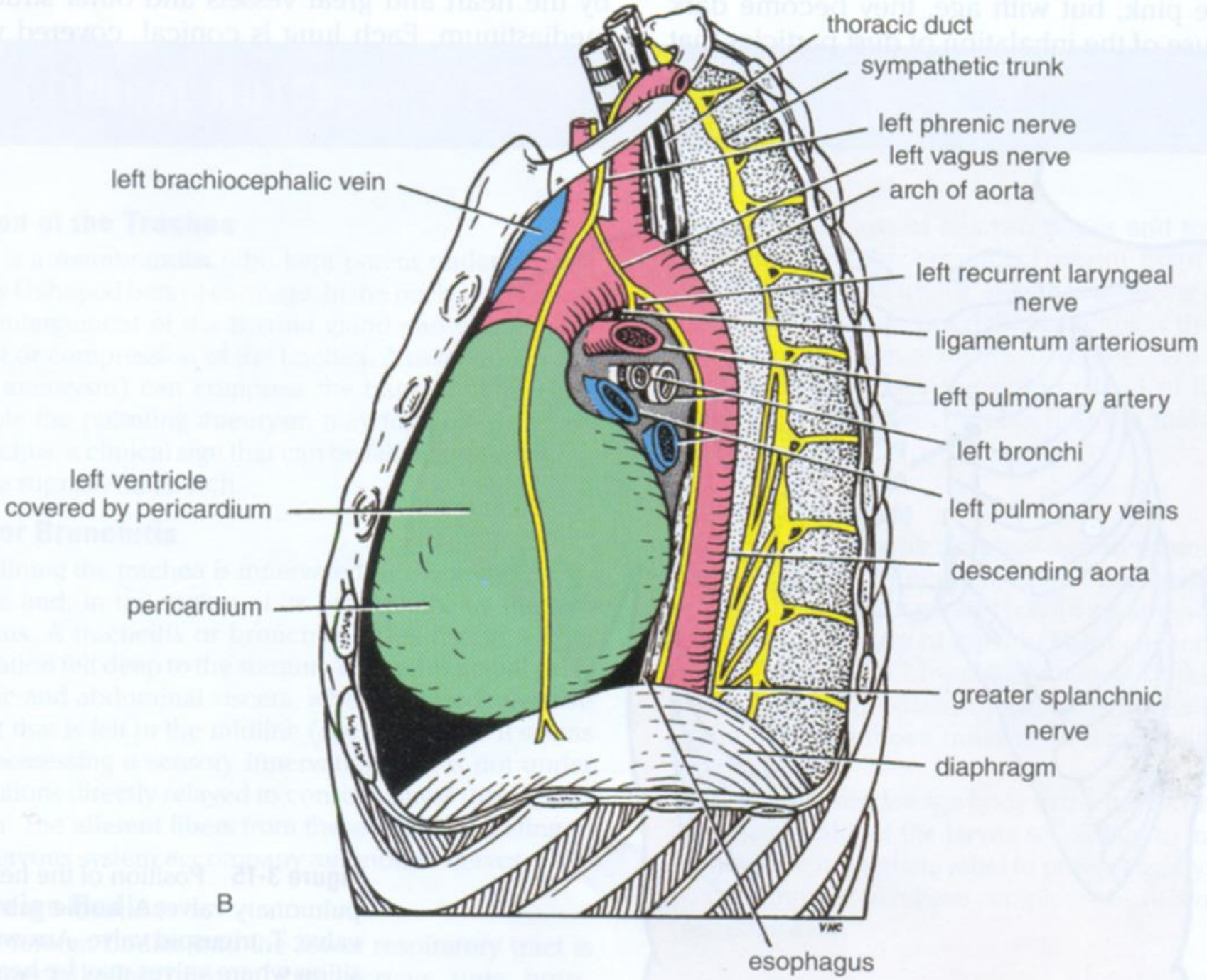
(B) Right anterolateral view

Thoracic sympathetic chain

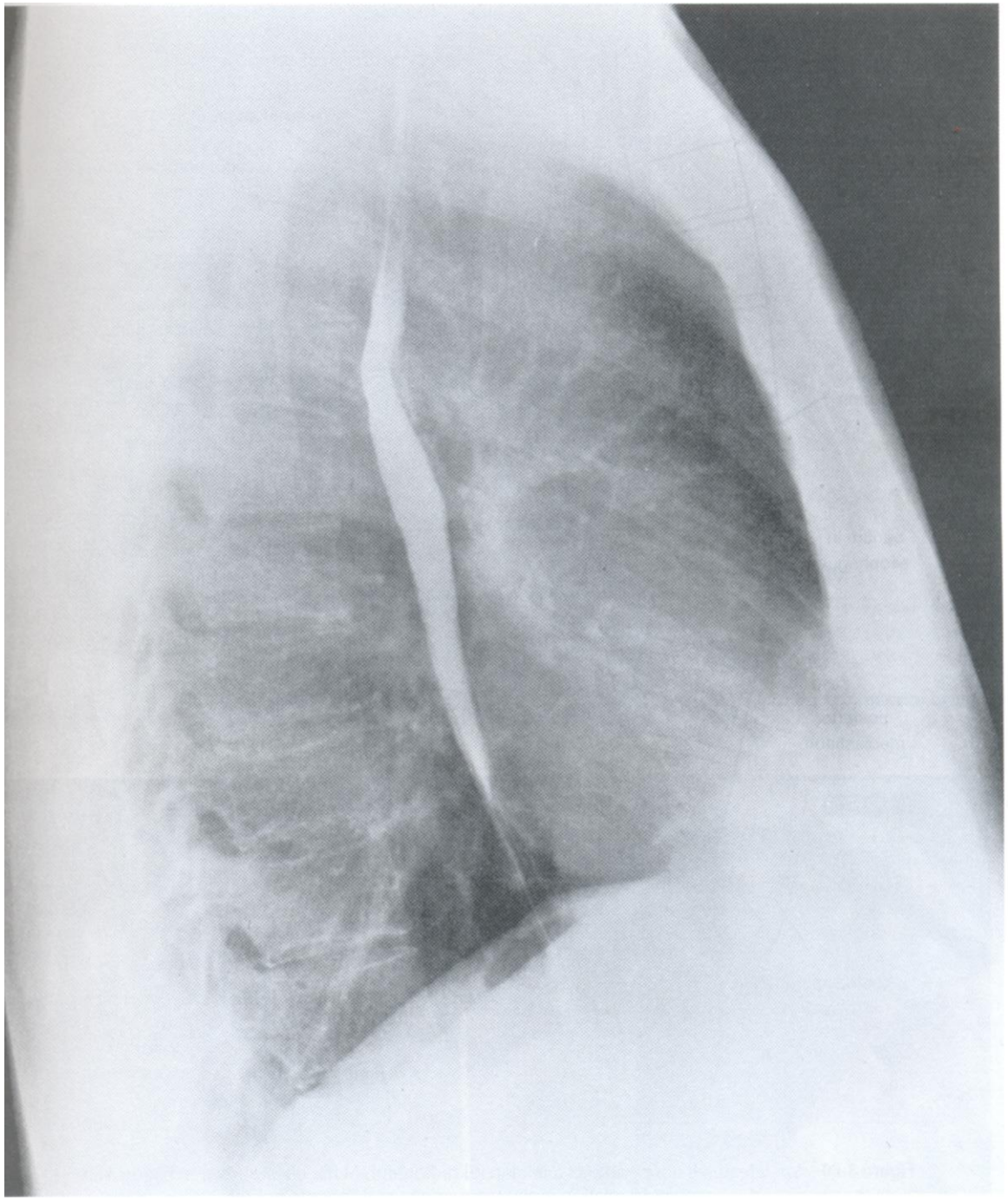


Thoracic sympathetic chain




thoracic duct
sympathetic trunk
left phrenic nerve
left vagus nerve
left brachiocephalic vein
arch of aorta
left recurrent laryngeal nerve
ligamentum arteriosum
left pulmonary artery
left bronchi
left ventricle covered by pericardium
left pulmonary veins
descending aorta
pericardium
greater splanchnic nerve
diaphragm
esophagus

B



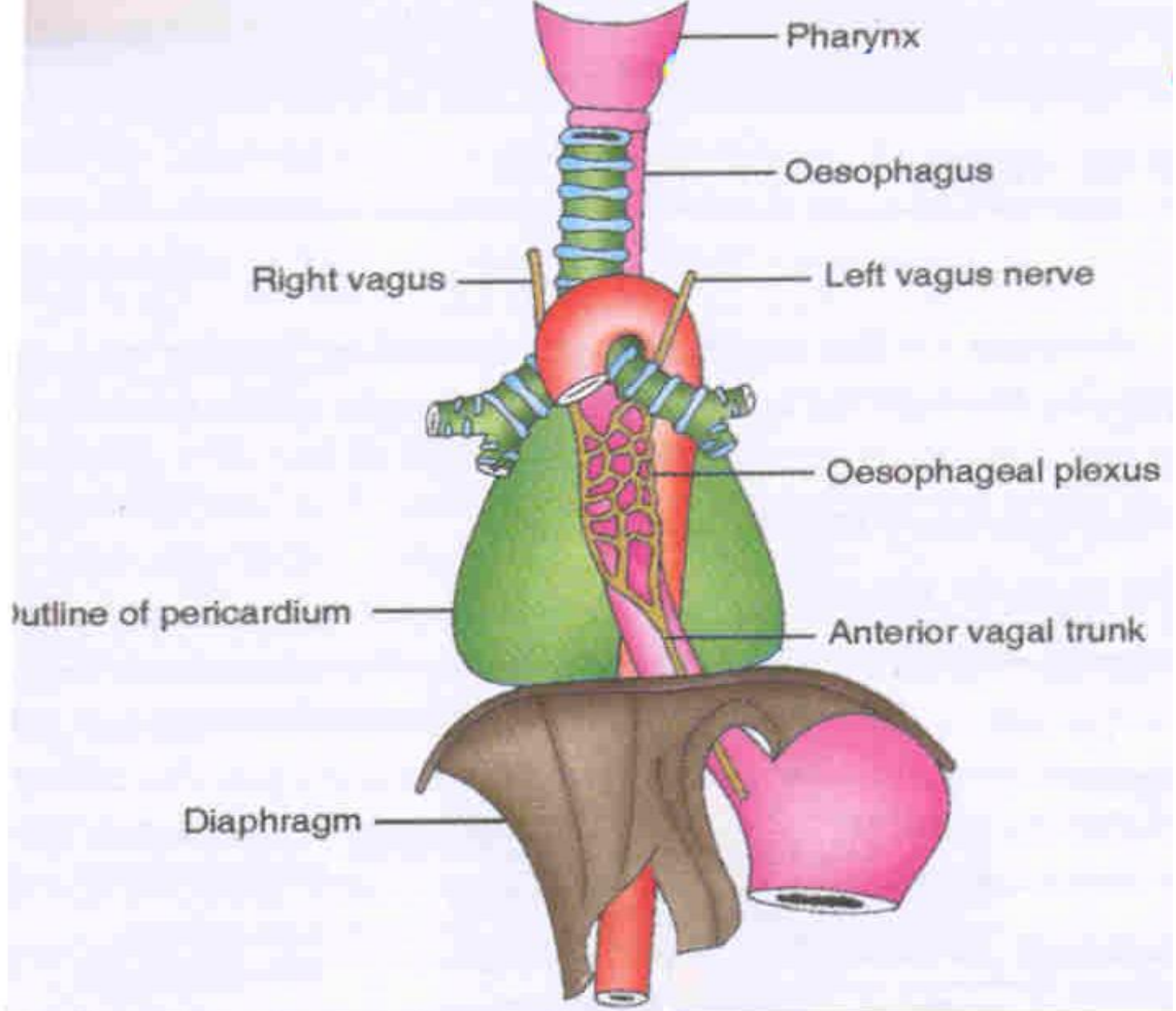
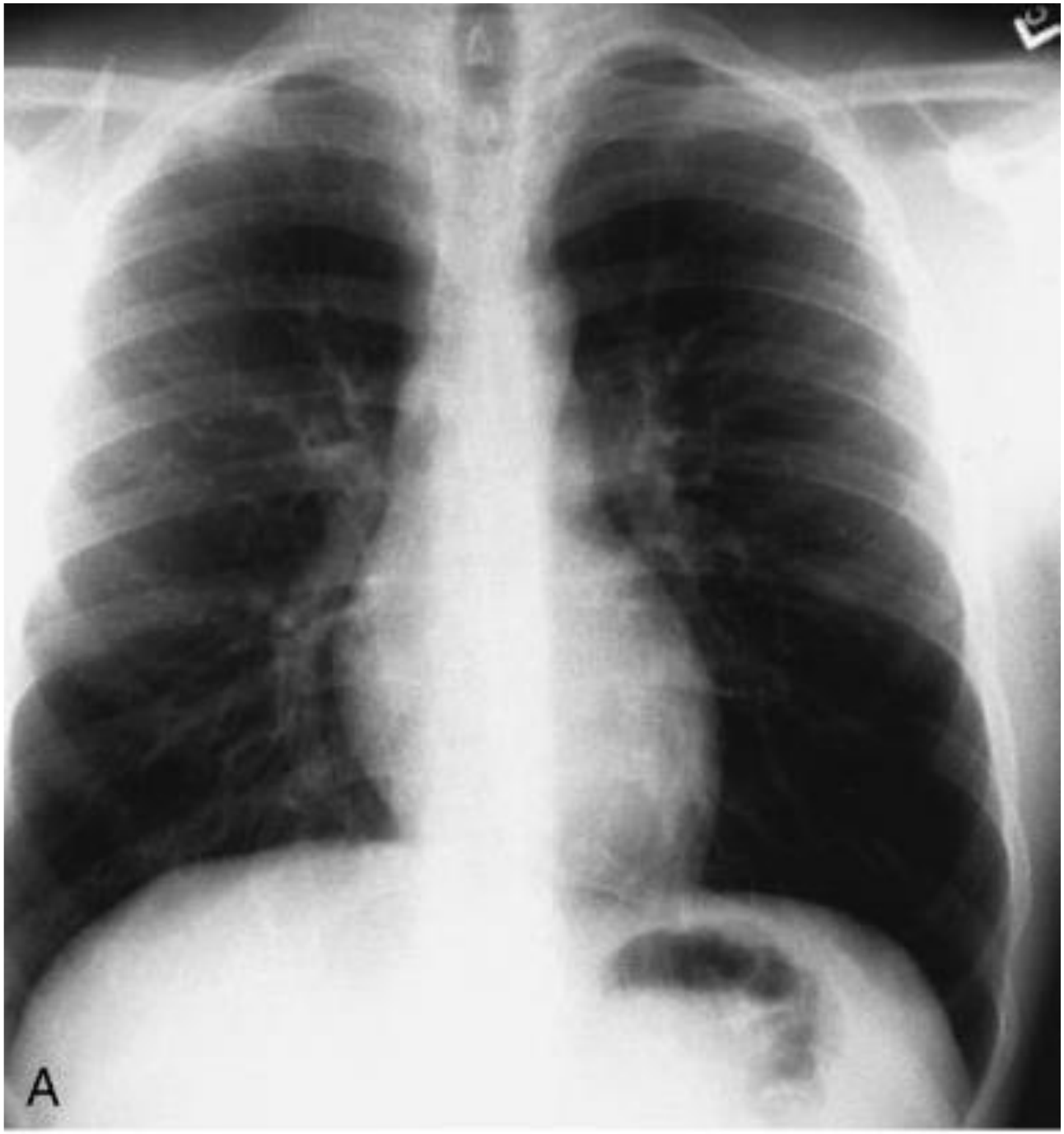


Fig. 16.4 Oesophagus

Clinical Anatomy

- Spread of Infection from Neck → Superior mediastinum → Posterior mediastinum
- Oesophagus-carcinoma, congenital atresia, achalasia (cardio-spasm)
- Variations/Laceration of thoracic duct-chylothorax


A

MCQs

- **1. Middle mediastinum contains**

- A. Vagus nerve
- B. Phrenic nerve
- C. Azygos vein
- D. Descending aorta

- **2. Arteries in superior mediastinum include the following EXCEPT**

- a. Arch of aorta
- b. Internal mammary artery
- c. Left subclavian artery
- d. Left common carotid artery

- **3. All of the following structures are contents of the superior mediastinum except**

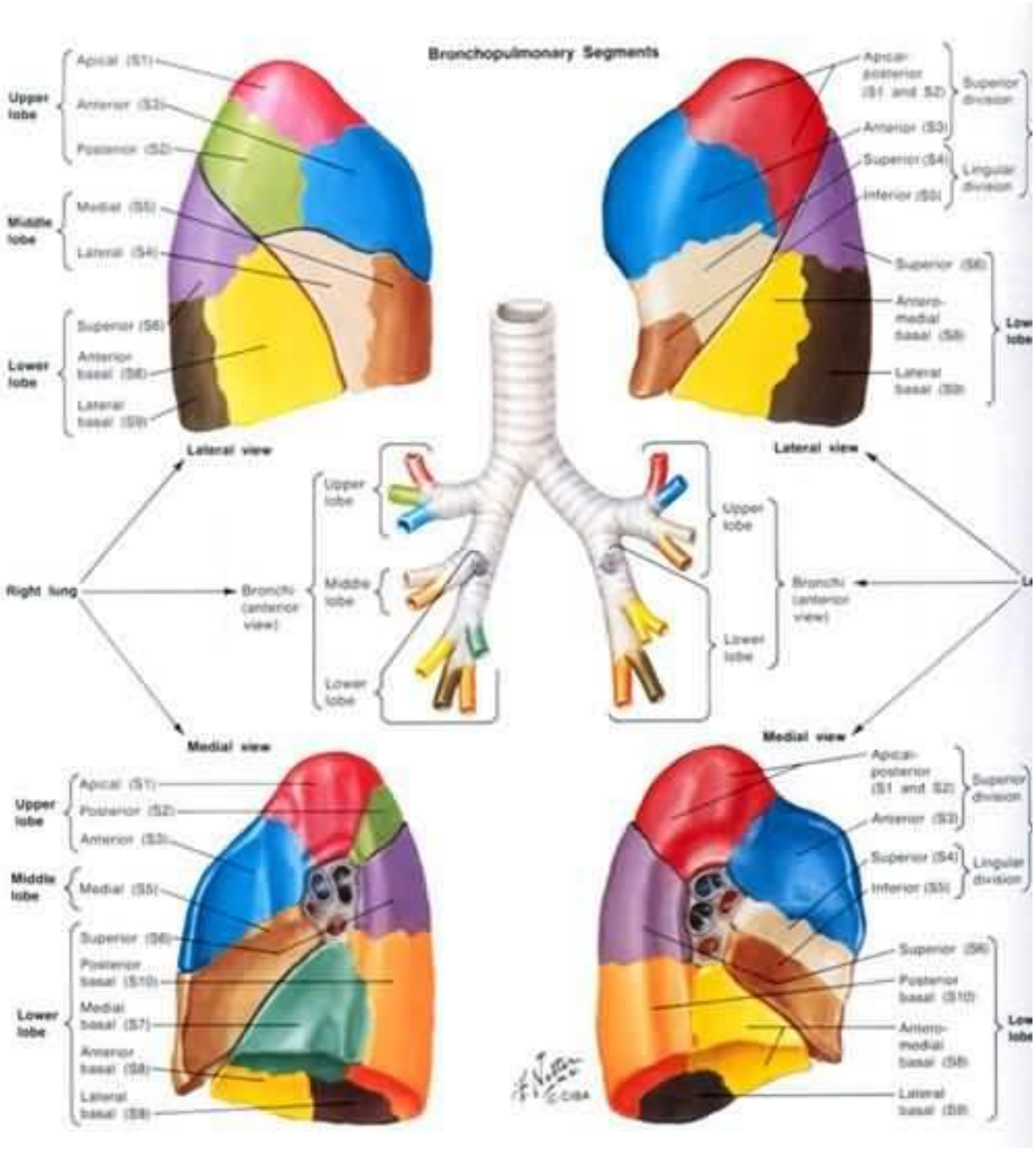
- a) Arch of aorta
- b) Rt. recurrent laryngeal nerve
- c) Trachea
- d) Thymus

- **4. All of the following are contents of the posterior mediastinum except**

- a) Oesophagus
- b) Trachea
- c) Hemiazygos vein
- d) Thoracic duct

- **5. Regarding the trachea, the following statement is false**
- a) It lies posterior to the oesophagus in the superior mediastinum
- b) The left principal bronchus is more oblique than the right one
- c) In deep inspiration the carina may descend as low as the sixth thoracic

  vertebra
- d) It lies posterior and to the right of arch of the aorta


Bronchopulmonary Segments
Upper lobe
Apical (S1)
Anterior (S3)
Posterior (S2)
Middle lobe
Medial (S5)
Lateral (S4)
Lower lobe
Superior (S6)
Anterior basal (S8)
Lateral basal (S9)
Lateral view
Apical-posterior (S1 and S2)
Anterior (S3)
Superior (S4)
Inferior (S5)
Superior division
Lingular division
Superior (S6)
Antero-medial basal (S8)
Lateral basal (S9)
Lateral view
Right lung
Bronchi (anterior view)
Upper lobe
Middle lobe
Lower lobe
Medial view
Medial view
Upper lobe
Apical (S1)
Posterior (S2)
Anterior (S3)
Middle lobe
Medial (S5)
Lower lobe
Superior (S6)
Posterior basal (S10)
Medial basal (S7)
Anterior basal (S8)
Lateral basal (S9)
Apical-posterior (S1 and S2)
Anterior (S3)
Superior (S4)
Inferior (S5)
Superior division
Lingular division
Superior (S6)
Posterior basal (S10)
Antero-medial basal (S8)
Lateral basal (S9)
CIBA