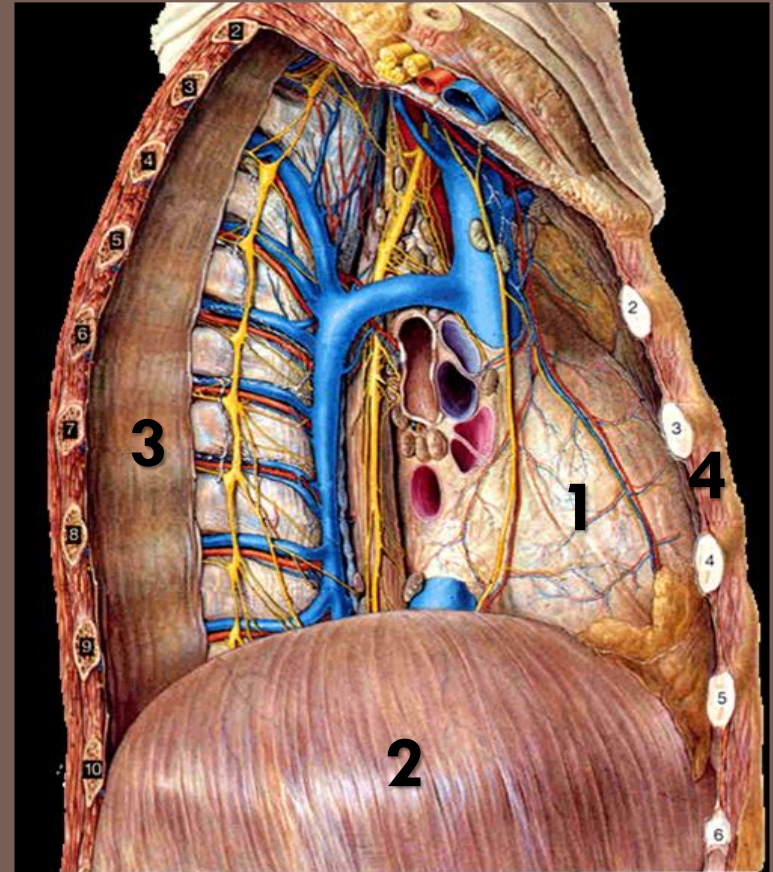


THE MEDIASTINUM

Identify:

- 1) Heart
- 2) Diaphragm
- 3) Thoracic vertebra
- 4) Sternum



Prof. Ahmed Fathalla Ibrahim

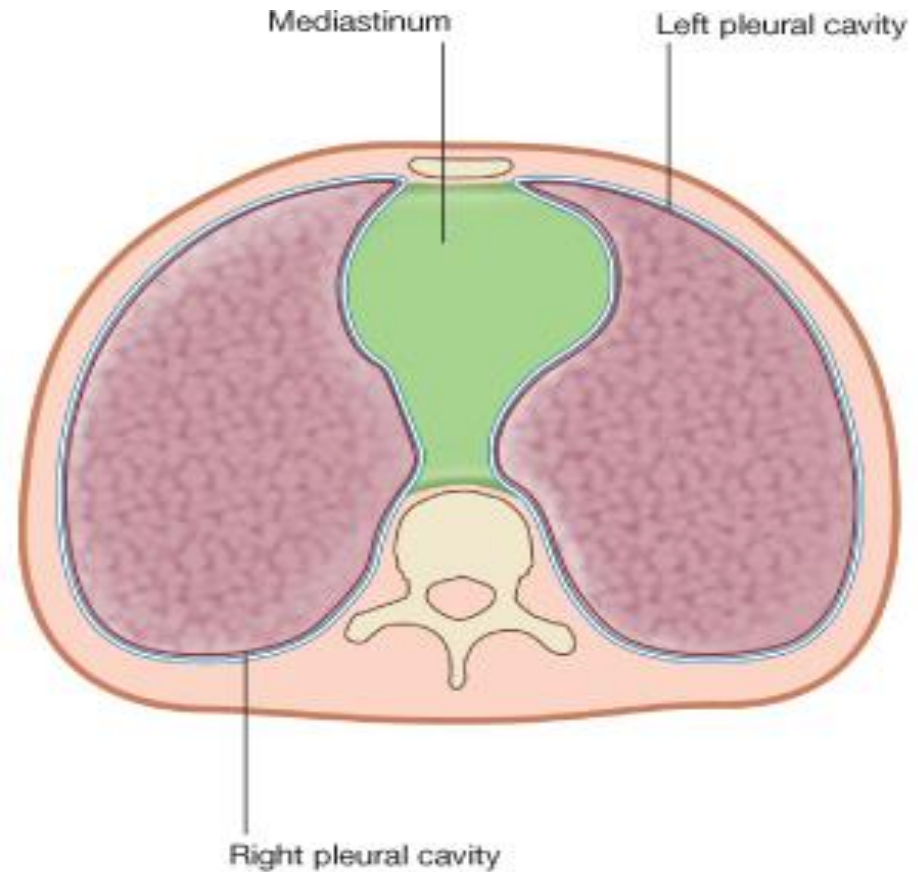
OBJECTIVES

At the end of the lecture, students should be able to:

- ❑ Define the “*Mediastinum*”.
- ❑ Differentiate between the divisions of the mediastinum.
- ❑ List the boundaries and contents of each division.
- ❑ Describe the relations between the important structures in each division.

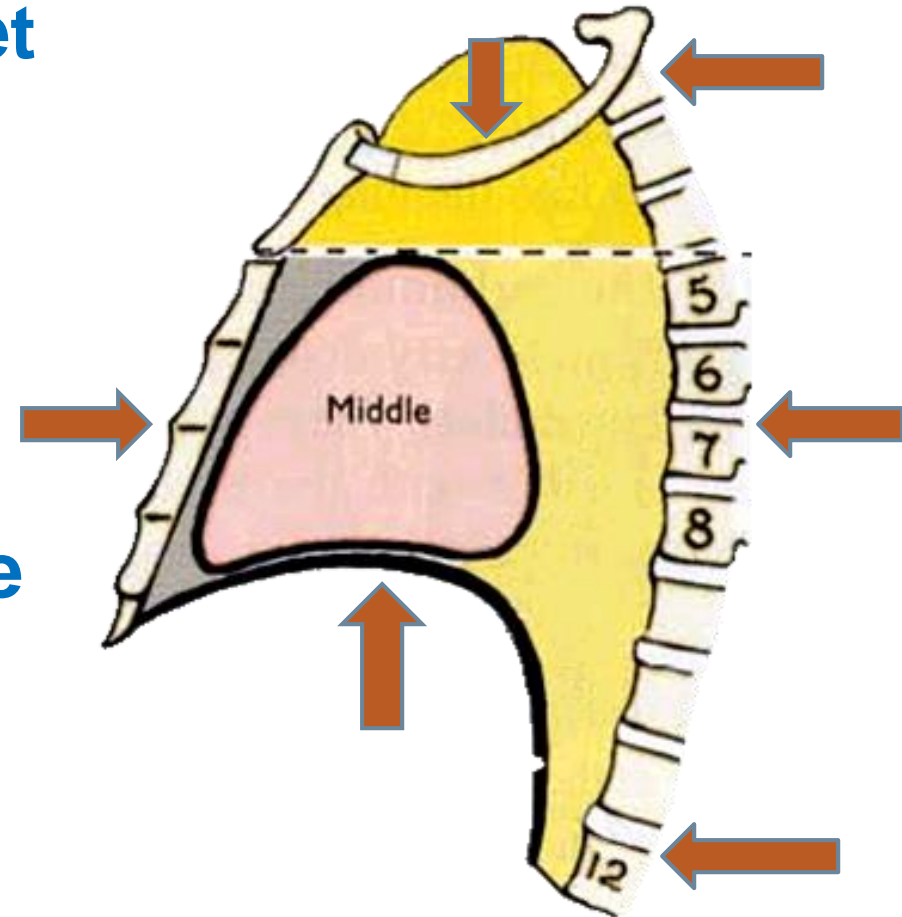
THE MEDIASTINUM

- ❑ **It is a partition between right & left pleural sacs & lungs.**
- ❑ **It includes all the structures which lie in the intermediate compartments of the thoracic cavity.**



BOUNDARIES OF MEDIASTINUM

- **Superior:** Thoracic outlet
- **Inferior:** Diaphragm
- **Anterior:** Sternum
- **Posterior:** Thoracic vertebrae
- **Lateral:** Lungs & pleurae



DIVISIONS OF THE MEDIASTINUM

It is divided by a horizontal plane extending from sternal angle to lower border of 4th thoracic vertebra into:

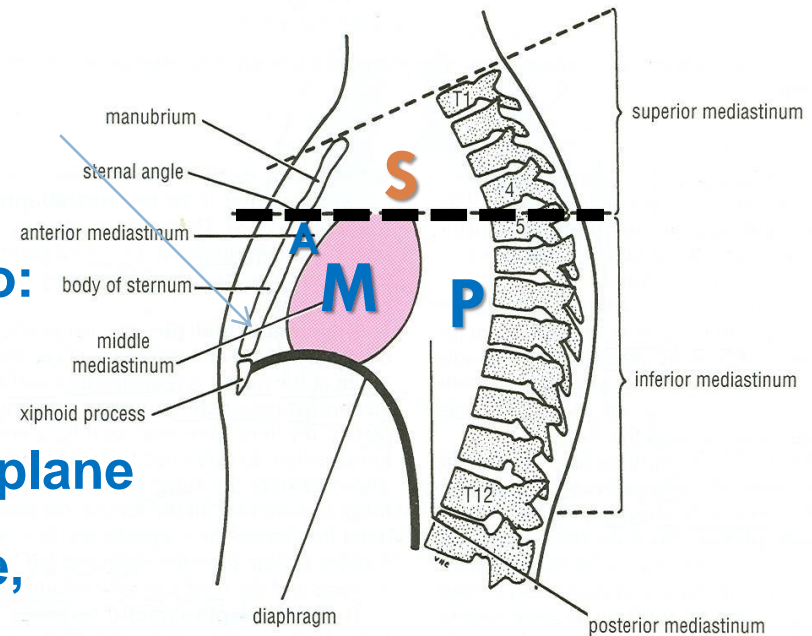
1. **Superior mediastinum (S):** above the plane
2. **Inferior mediastinum:** below the plane,

Inferior mediastinum is subdivided into:

Middle mediastinum (M): contains heart

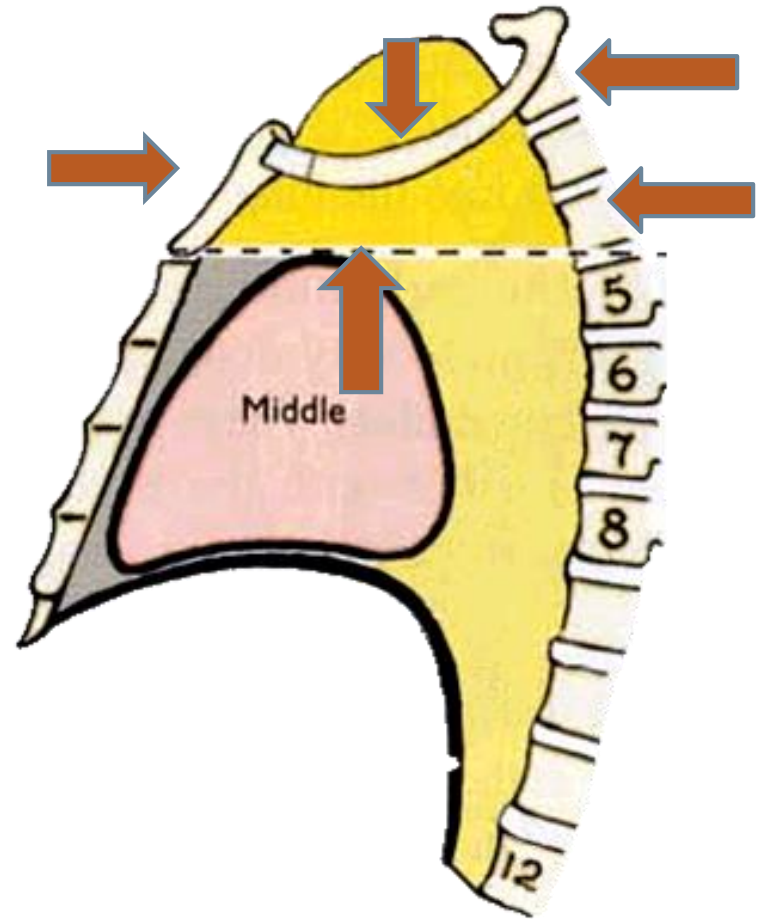
Anterior mediastinum (A): in front of heart

Posterior mediastinum (P): behind heart

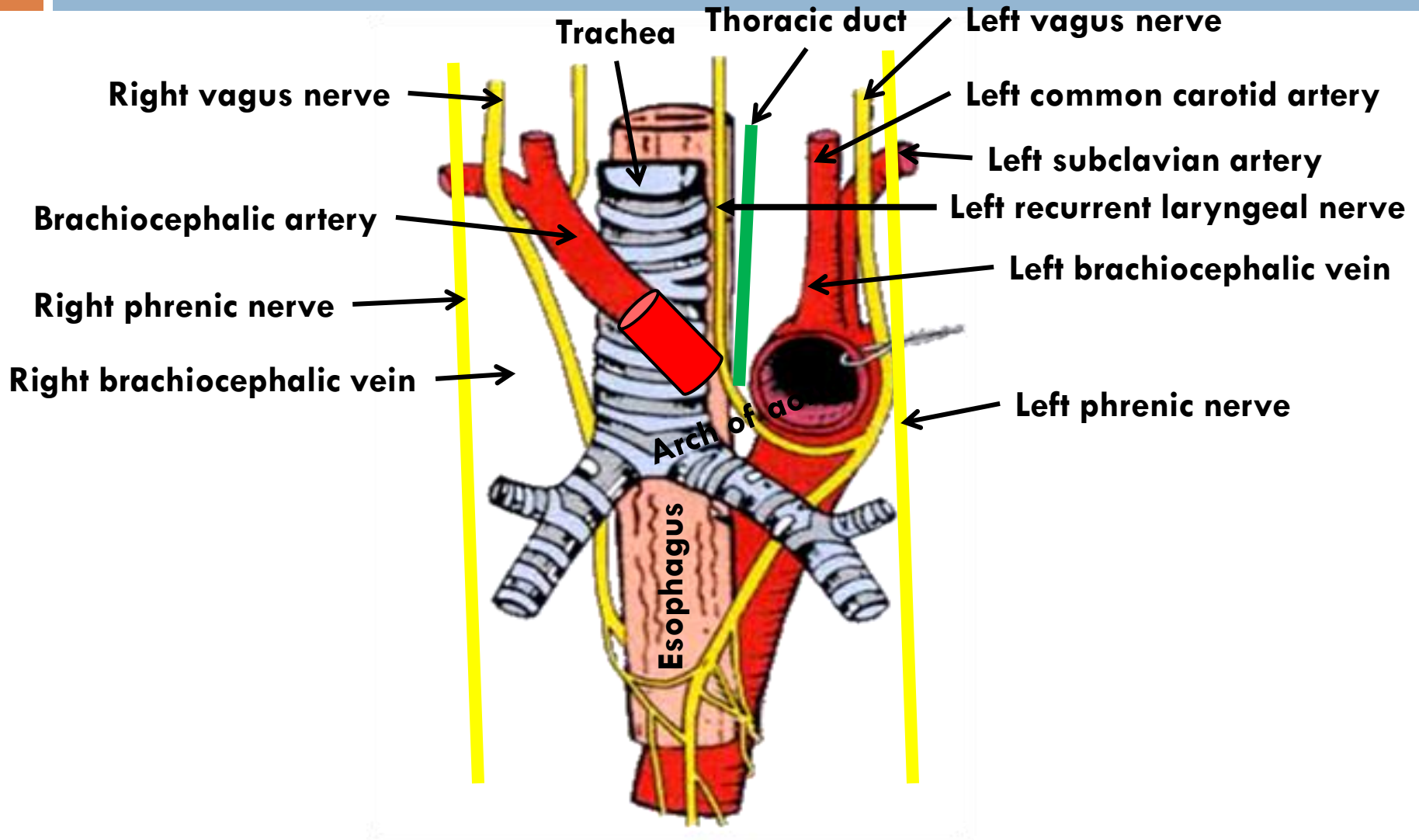


BOUNDARIES OF SUPERIOR MEDIASTINUM

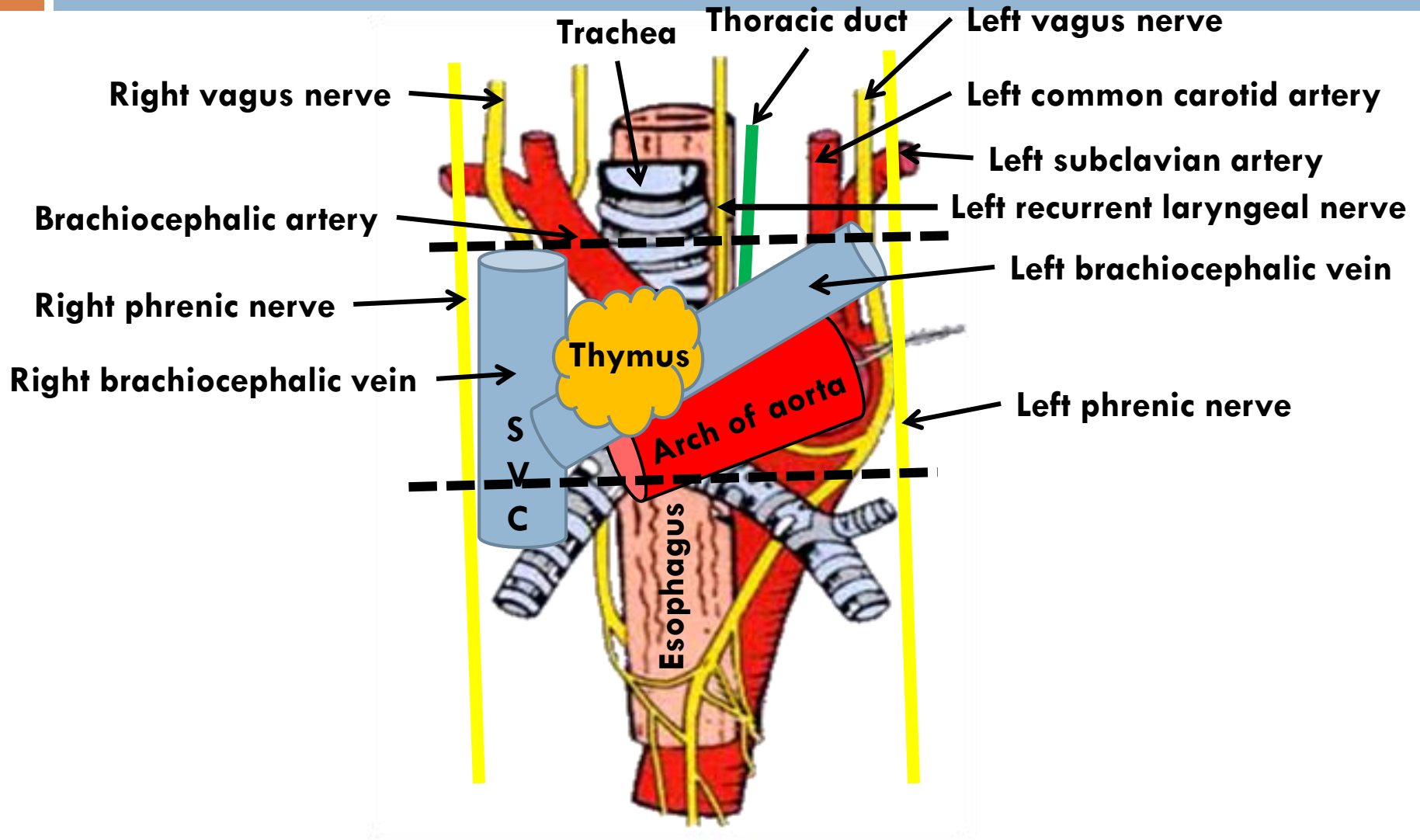
- **Superior:** Thoracic outlet
- **Inferior:** Horizontal plane
- **Anterior:** Manubrium of sternum
- **Posterior:** Upper 4 thoracic vertebrae
- **Lateral:** lungs & pleurae



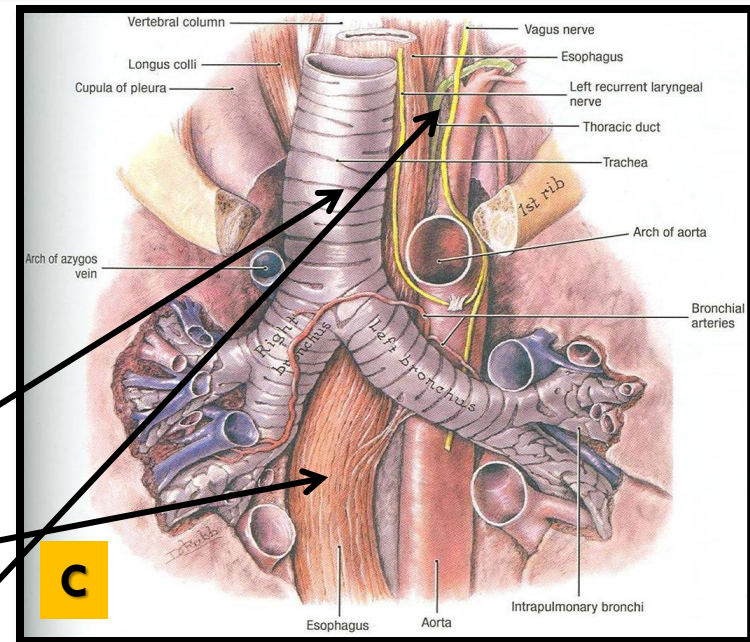
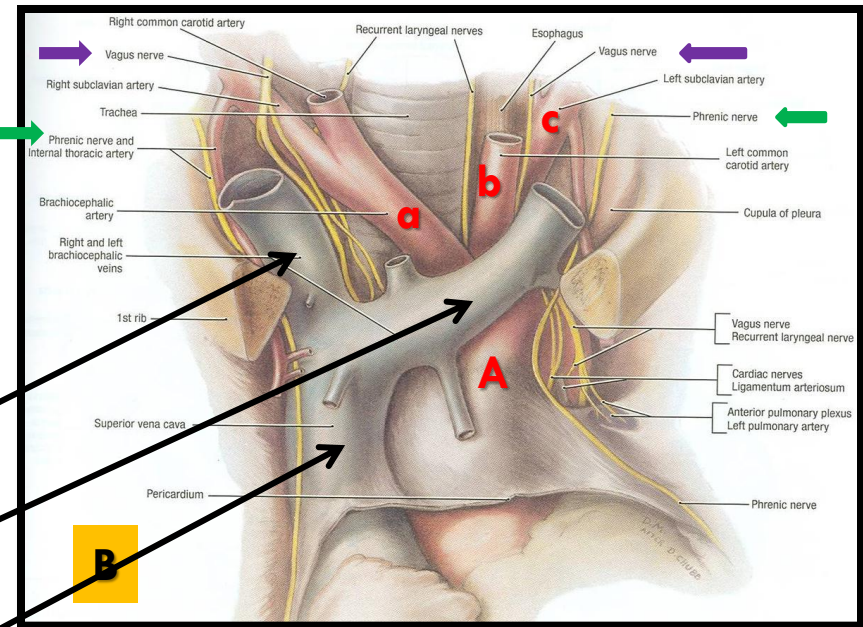
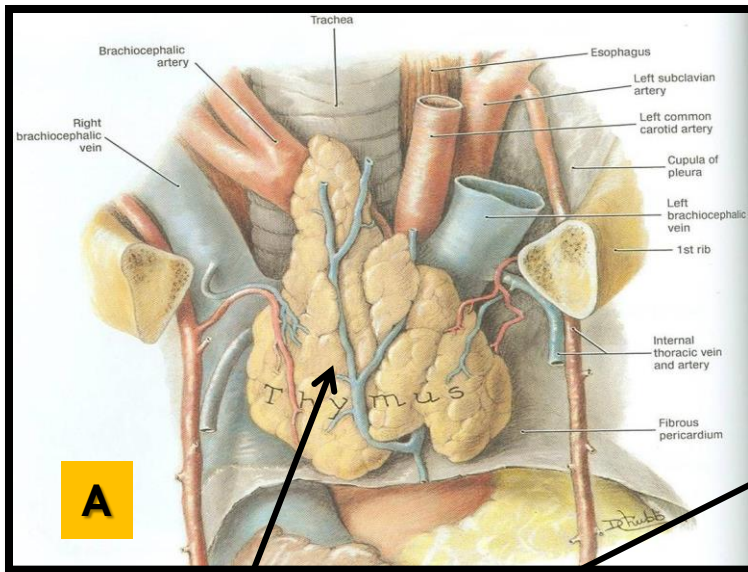
CONTENTS OF SUPERIOR MEDIASTINUM



CONTENTS OF SUPERIOR MEDIASTINUM



CONTENTS OF SUPERIOR MEDIASTINUM



FROM SUPERFICIAL TO DEEP:

1. Thymus gland

2. Veins:

- Right & left brachiocephalic
- Superior vena cava

3. Arteries:

- Arch of aorta (A) & its branches
- a-Brachiocephalic artery
- b-Left common carotid
- c-Left subclavian

4. Nerves:

- ➡ - Right & left phrenic
- ➡ - Right & left vagus

5. Trachea

6. Esophagus

7. Thoracic duct

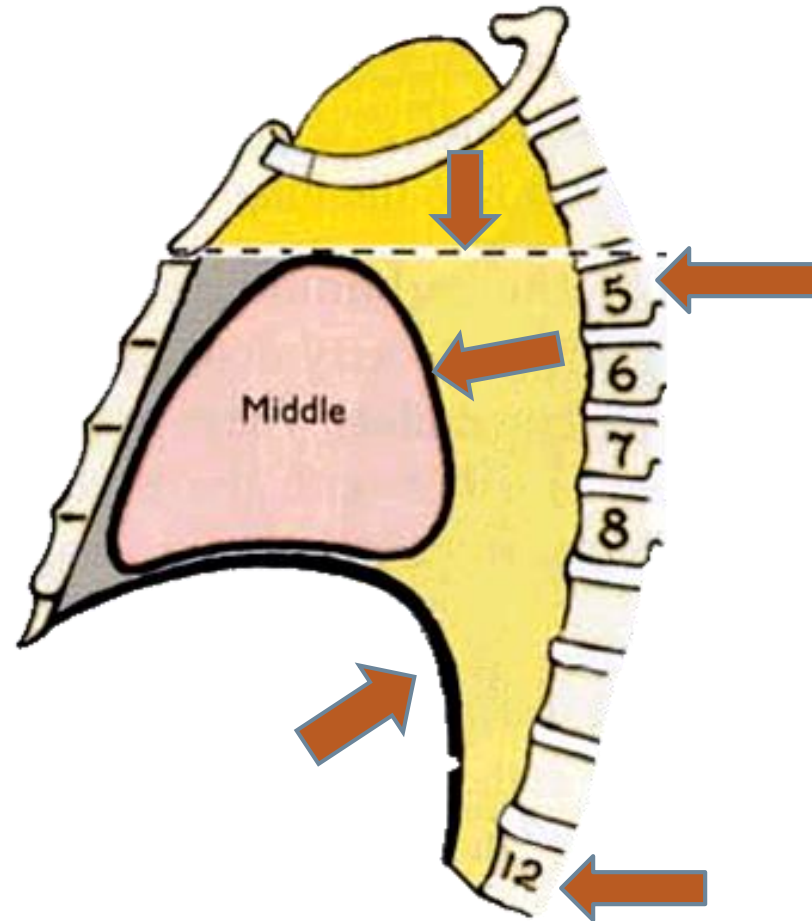
8. Lymph nodes

CONTENTS OF SUPERIOR MEDIASTINUM

- **4 ARTERIES:** arch of aorta, brachiocephalic, left common carotid, left subclavian
- **4 NERVES:** right & left vagus, right & left phrenic
- **3 VEINS:** right & left brachiocephalic, SVC
- **2 TUBES:** trachea & esophagus
- **1 GLAND:** thymus
- **1 DUCT:** thoracic duct

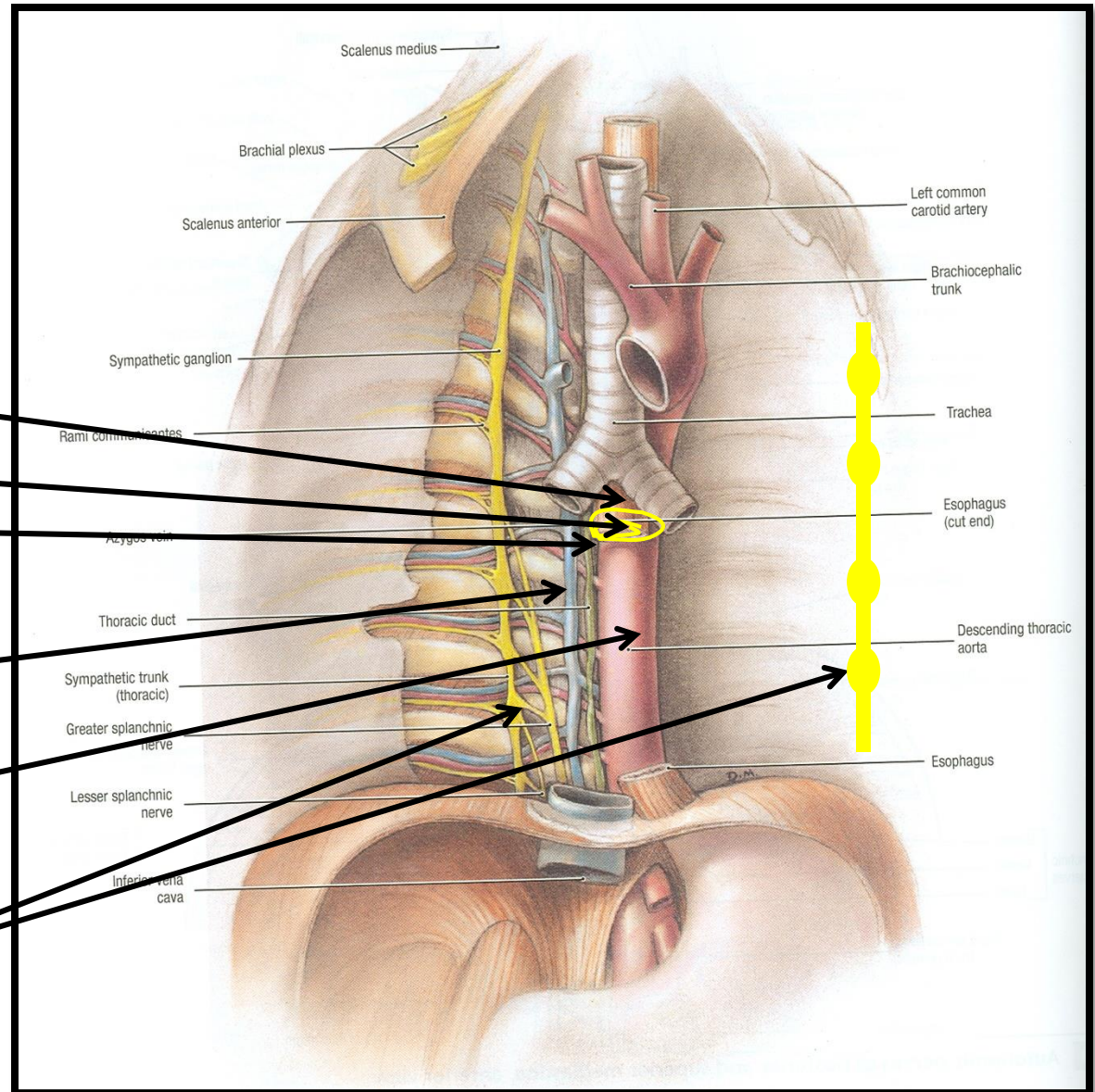
BOUNDARIES OF POSTERIOR MEDIASTINUM

- **Superior:** Horizontal plane
- **Inferior:** Diaphragm
- **Anterior:** Heart
- **Posterior:** Thoracic vertebrae from T5 to T12
- **Lateral:** Lungs & pleurae

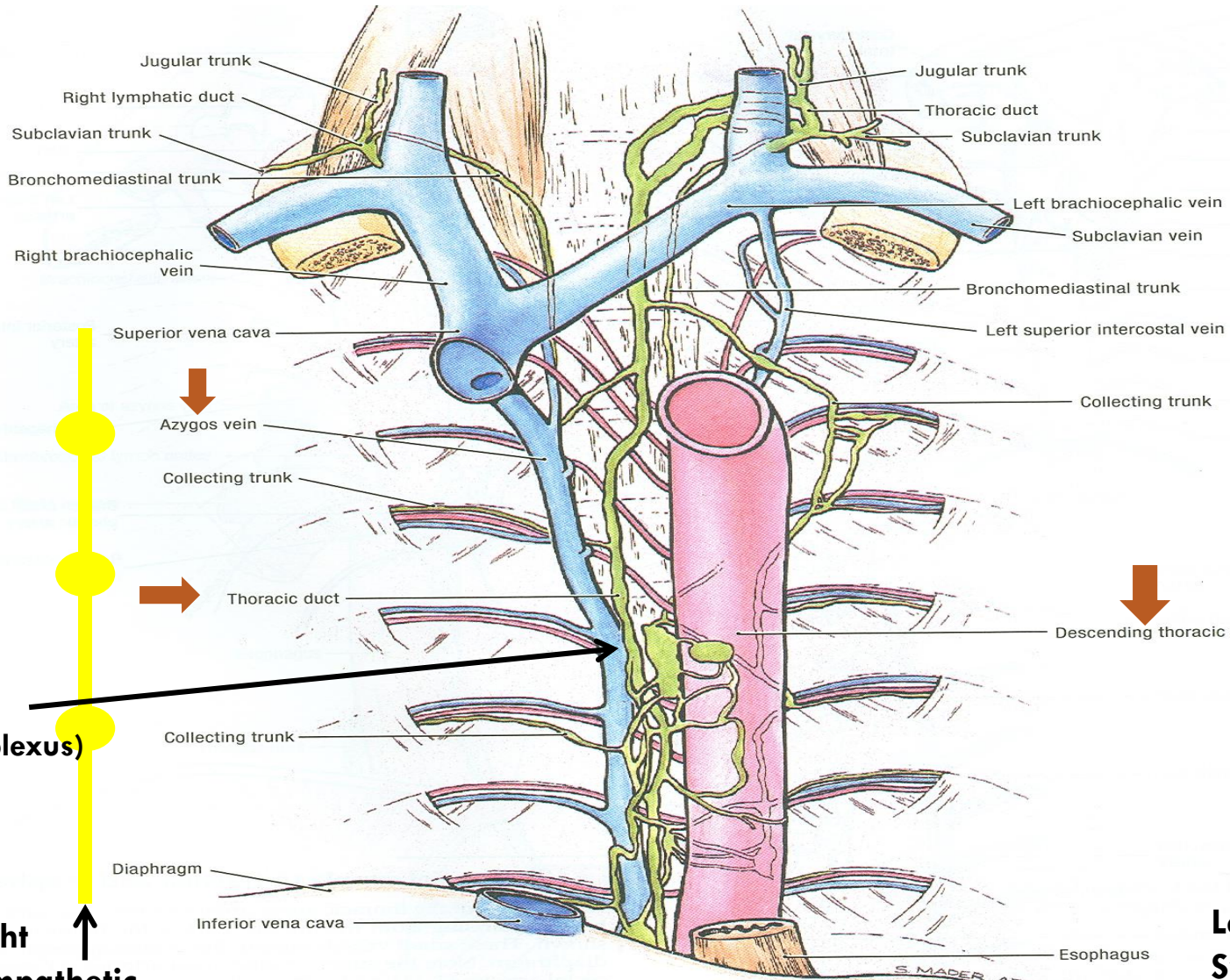


CONTENTS OF POSTERIOR MEDIASTINUM

1. Esophagus
2. Vagus nerves: around esophagus
3. Thoracic duct: posterior to esophagus
4. Azygos vein: posterior & to the right of esophagus
5. Descending aorta: posterior & to the left of esophagus
6. Right & left sympathetic trunks
7. Lymph nodes



CONTENTS OF POSTERIOR MEDIASTINUM



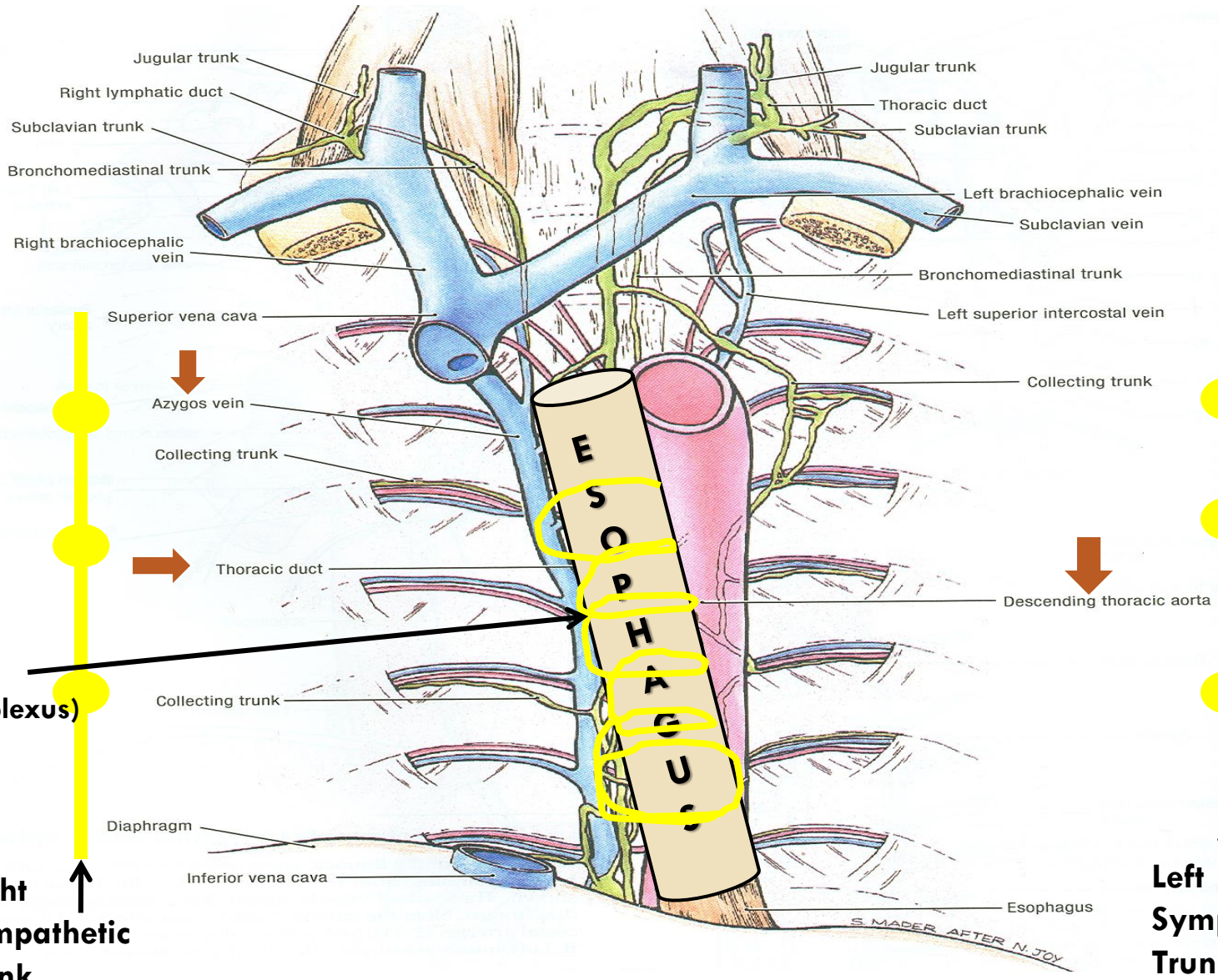
Right & left Vagus nerves (esophageal plexus)

Right Sympathetic Trunk

Left Sympathetic Trunk

S. MADER AFTER N. JOY

CONTENTS OF POSTERIOR MEDIASTINUM



**Right & left
Vagus nerves
(esophageal plexus)**

**Right
Sympathetic
Trunk**

**Left
Sympathetic
Trunk**

S. MADER, AFTER N. JOY

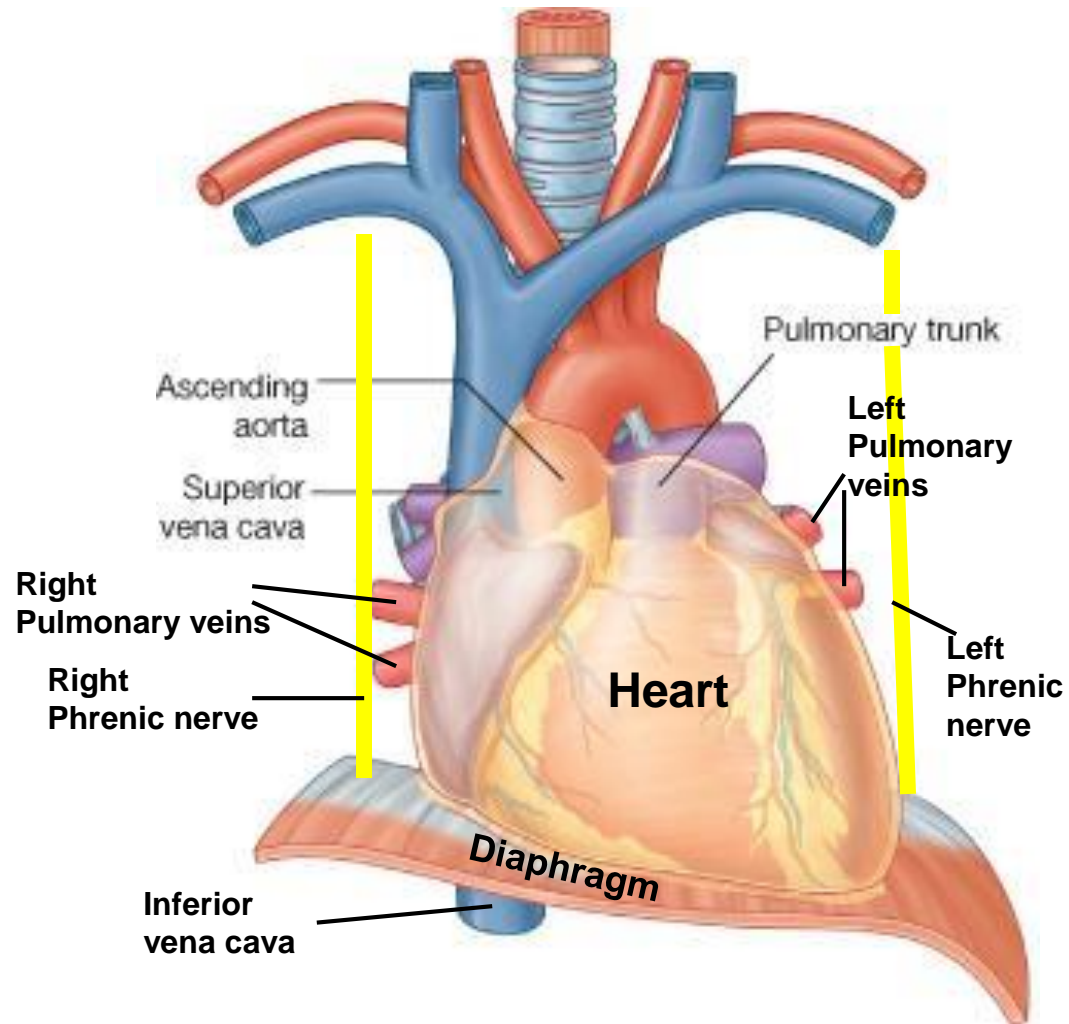
MIDDLE MEDIASTINUM

SITE:

- Between anterior & posterior mediastinum

CONTENTS:

- Heart & pericardium
- Ascending Aorta
- Pulmonary trunk
- Superior & inferior vena cava
- Right & left pulmonary veins
- Right & left phrenic nerves
- Lymph nodes



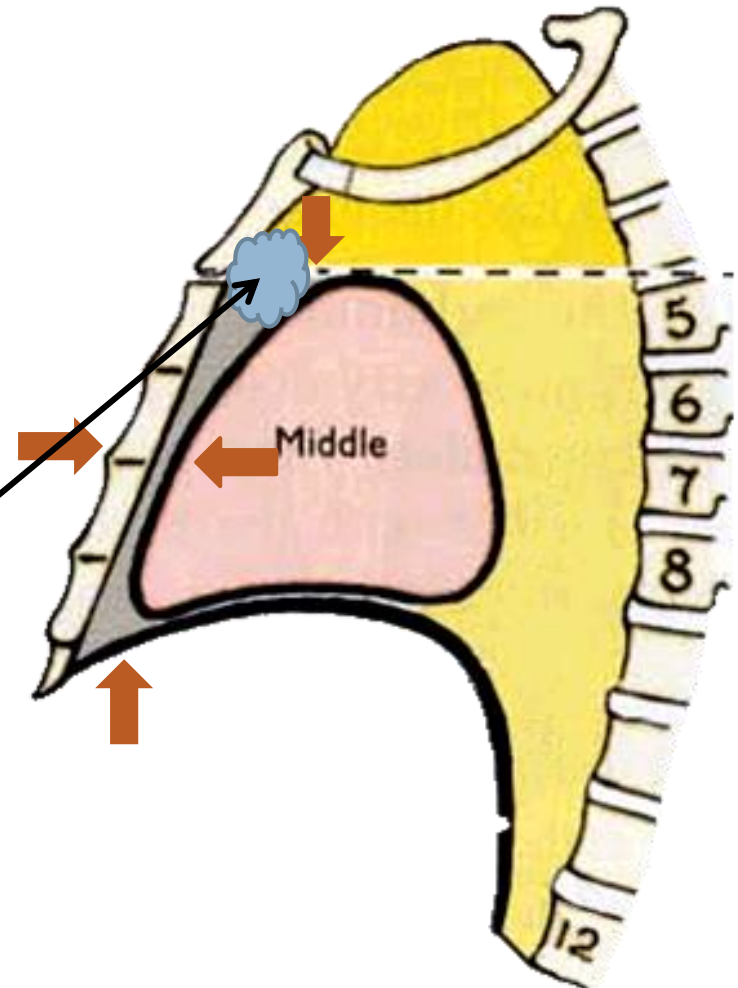
ANTERIOR MEDIASTINUM

BOUNDARIES:

- ❑ **Superior:** Horizontal plane
- ❑ **Inferior:** Diaphragm
- ❑ **Anterior:** Body & xiphoid process of sternum
- ❑ **Posterior:** Heart
- ❑ **Lateral:** Lungs & pleurae

CONTENTS:

- ❑ Thymus gland
- ❑ Lymph nodes

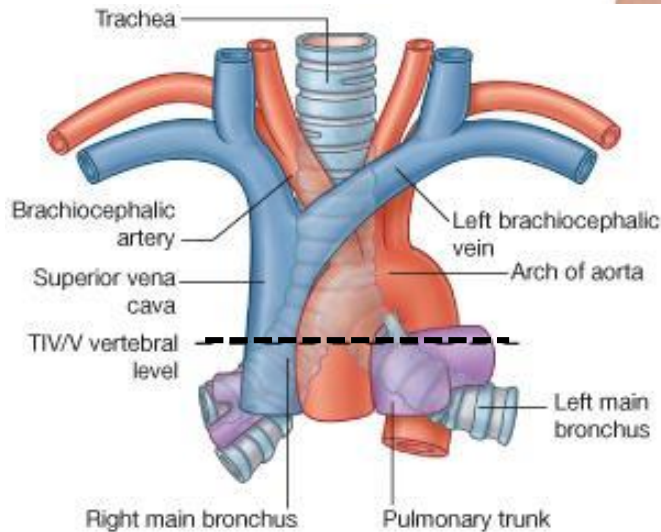
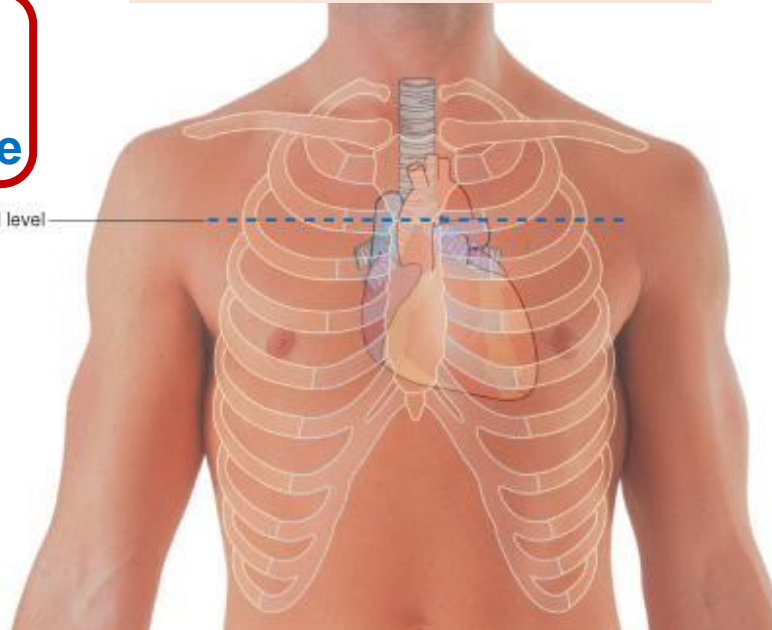


LEVEL OF T4

Level of:

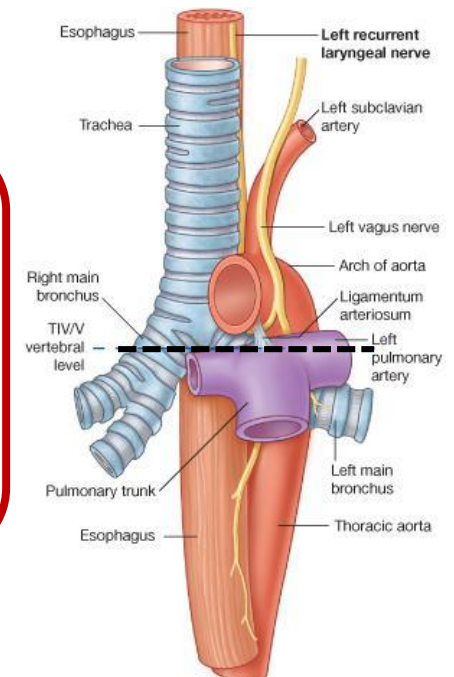
- ❑ Sternal angle
- ❑ Second costal cartilage

T10/V11 vertebral level



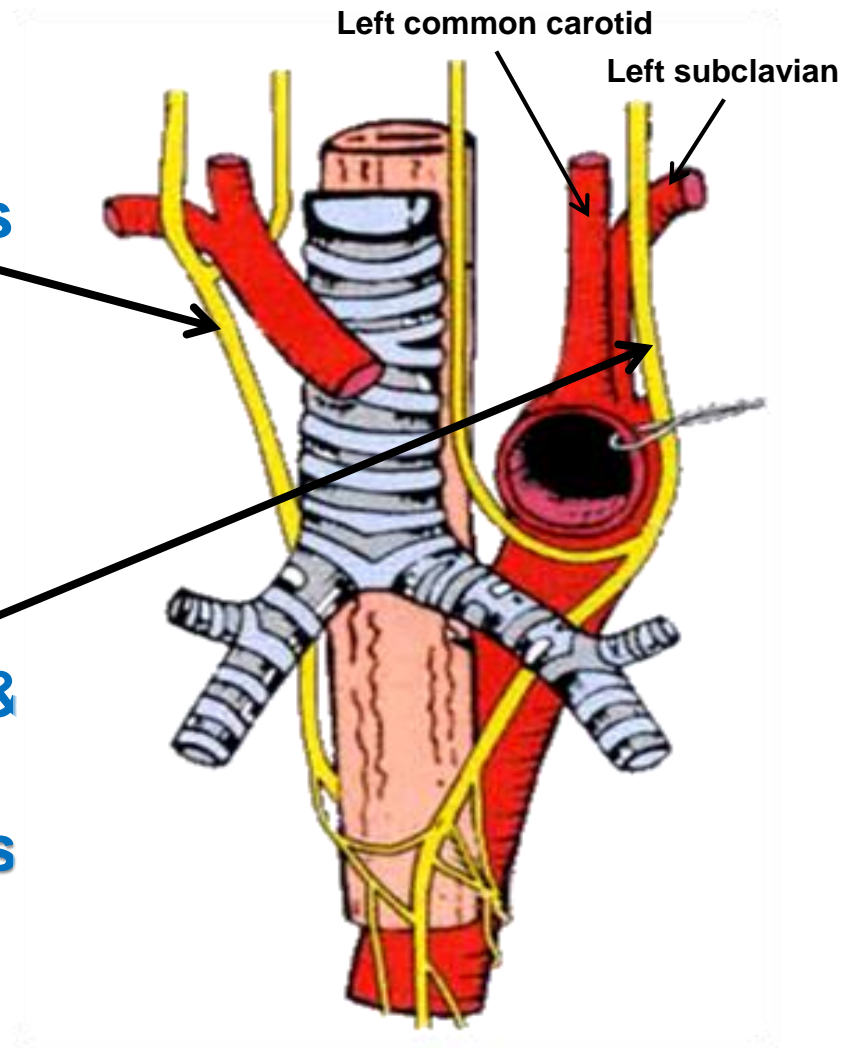
Level of:

- ❑ Bifurcation of trachea
- ❑ Bifurcation of pulmonary trunk
- ❑ Beginning & termination of arch of aorta



VAGUS NERVE

- It is the 10th cranial nerve.
- The right vagus descends to the right side of trachea, forms the posterior esophageal plexus & continues in abdomen as posterior gastric nerve.
- The left vagus descends between left common carotid & left subclavian arteries, forms the anterior esophageal plexus & continues in abdomen as anterior gastric nerve.



PHRENIC NERVE

ROOT VALUE:

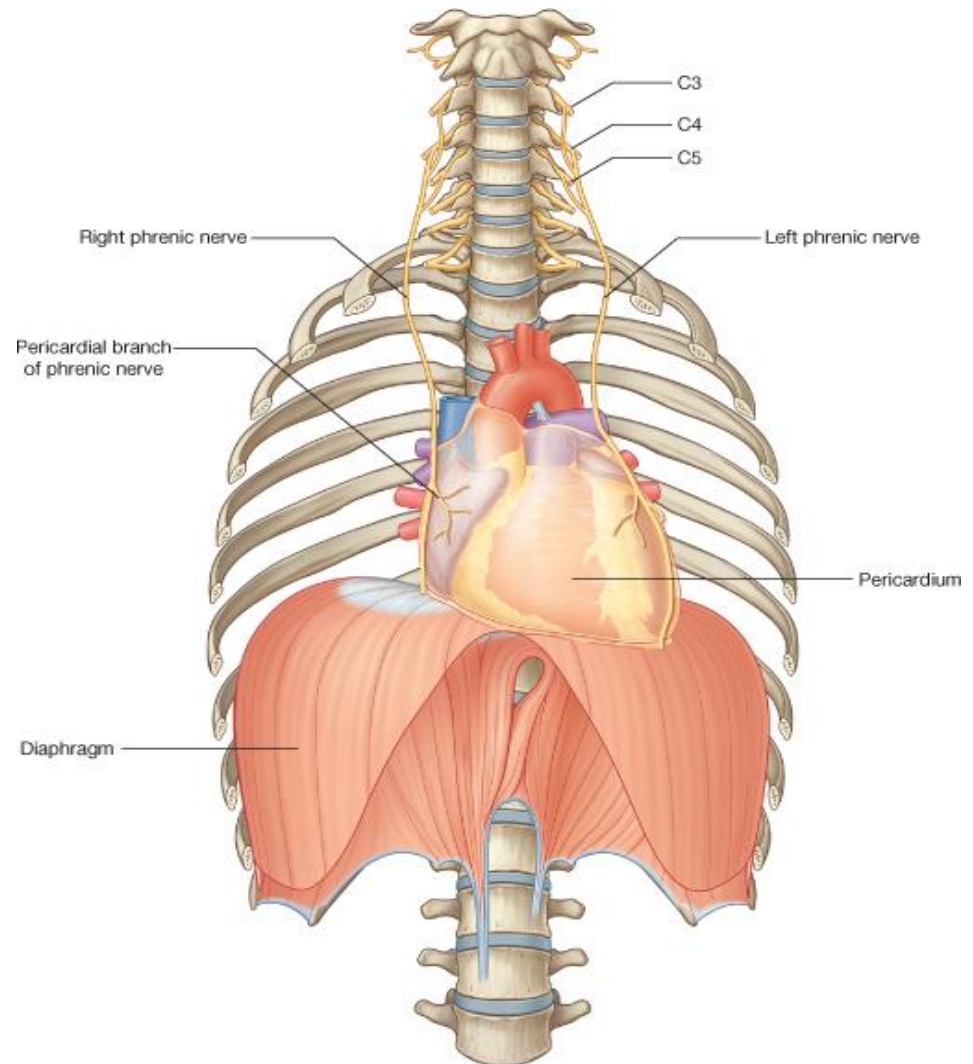
- C_{3,4,5}

COURSE IN THORAX:

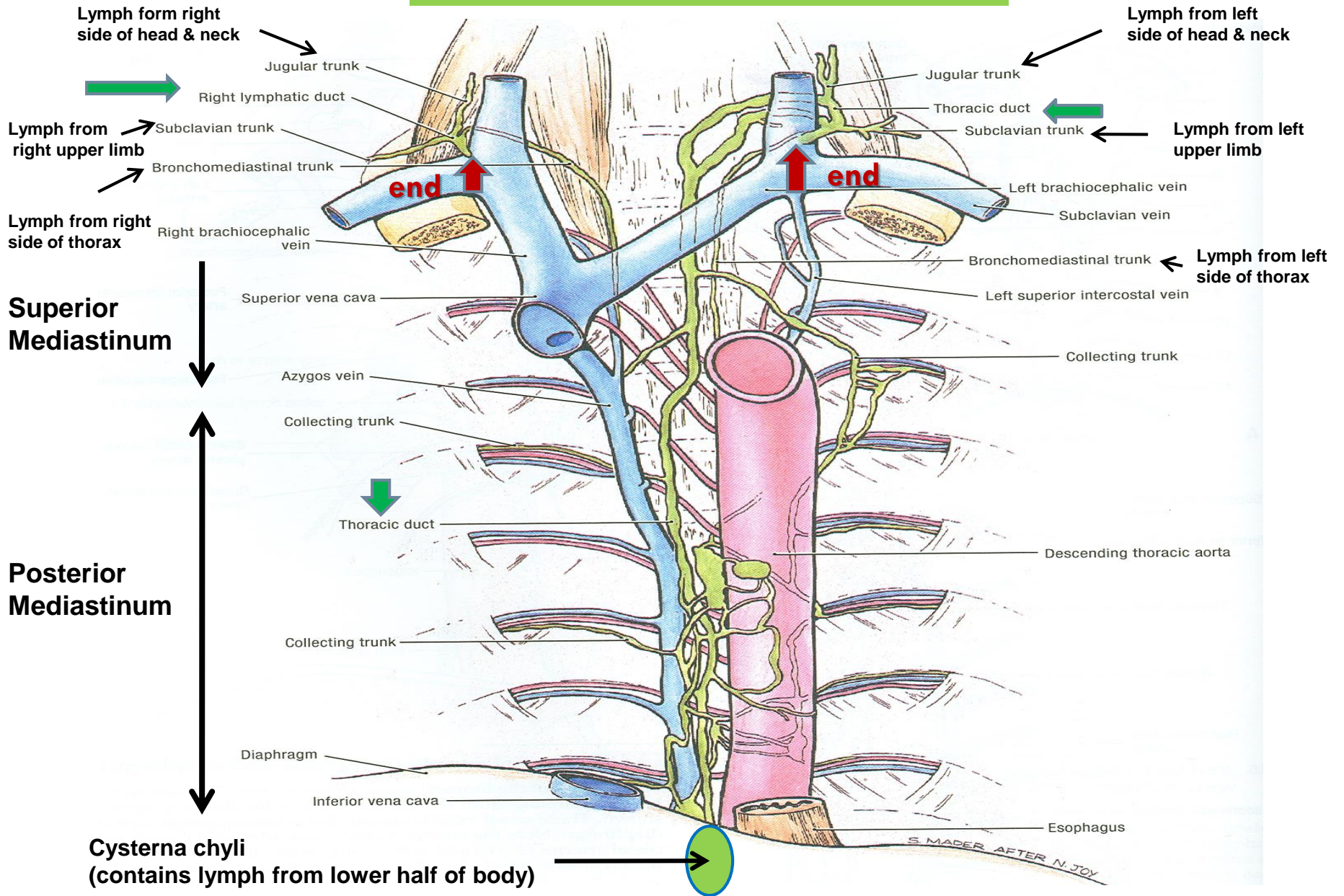
- The right phrenic descends on the right side of SVC & heart.
- The left phrenic descends on the left side of heart.
- Both nerves terminate in the diaphragm.

SUPPLY:

- 1) Motor & sensory fibers to diaphragm.
- 2) Sensory fibers to pleurae (mediastinal and central part of diaphragmatic pleura) & pericardium (fibrous and parietal layer of serous pericardium).

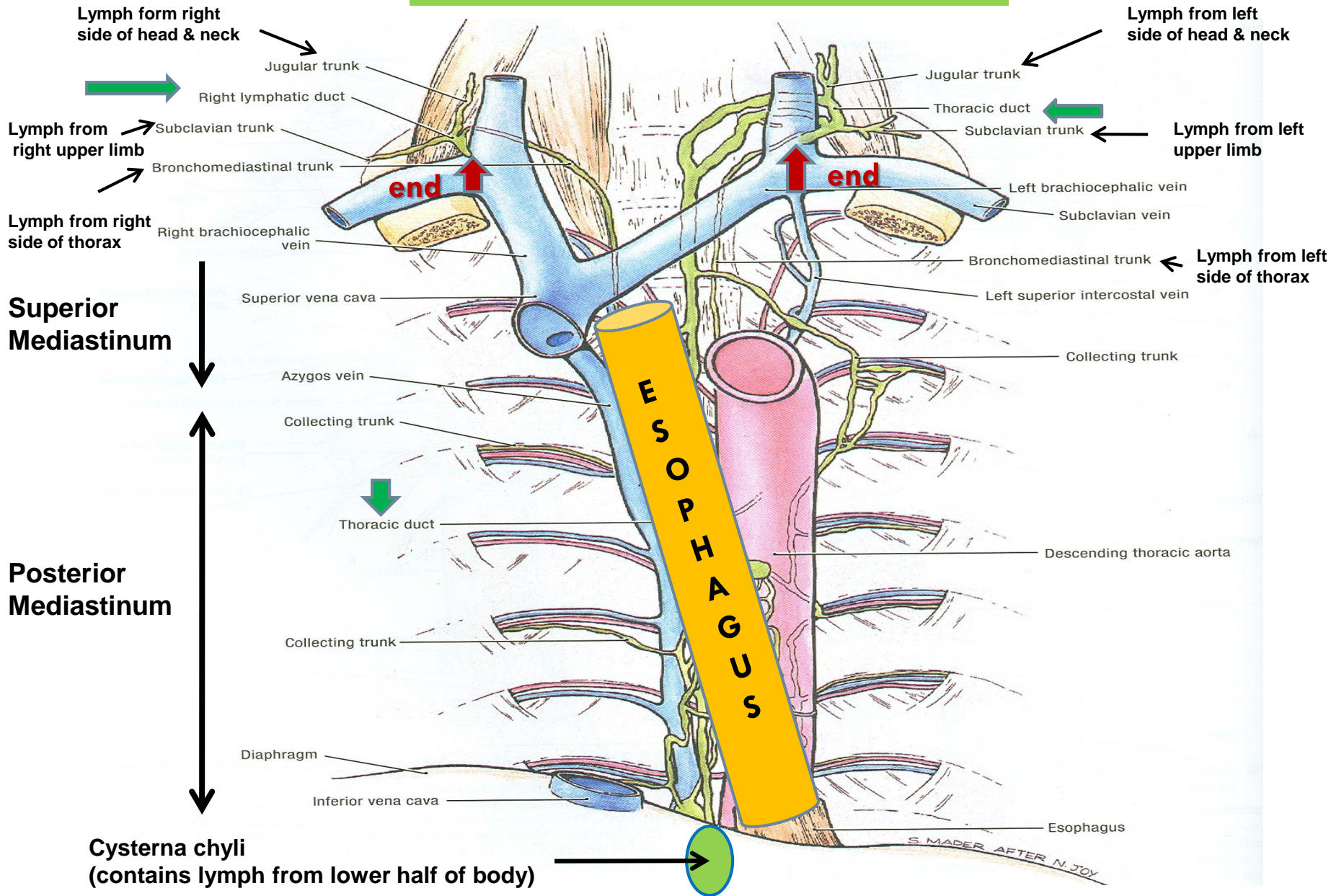


LYMPHATIC VESSELS IN THORAX



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LYMPHATIC VESSELS IN THORAX



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THORACIC DUCT

BEGINNING:

- It is the continuation of cisterna chyli.

COURSE:

- It passes through aortic opening of diaphragm.
- It ascends in posterior mediastinum (posterior to esophagus).
- It ascends in superior mediastinum (to the left of esophagus).

TRIBUTARIES: It receives:

- Lymphatics from all body **EXCEPT**: right side of thorax, right upper limb and right side of head & neck.

END:

- It ends in the left brachiocephalic vein.

N.B.: The right lymphatic duct receives lymphatic from right side of thorax, right upper limb and right side of head & neck. It ends in the right brachiocephalic vein.

AORTA

ASCENDING AORTA:

□ **Beginning:** at aortic orifice of left ventricle.

□ **Course:** in middle mediastinum

□ **End:** continues as arch of aorta (at level of T4)

ARCH OF AORTA:

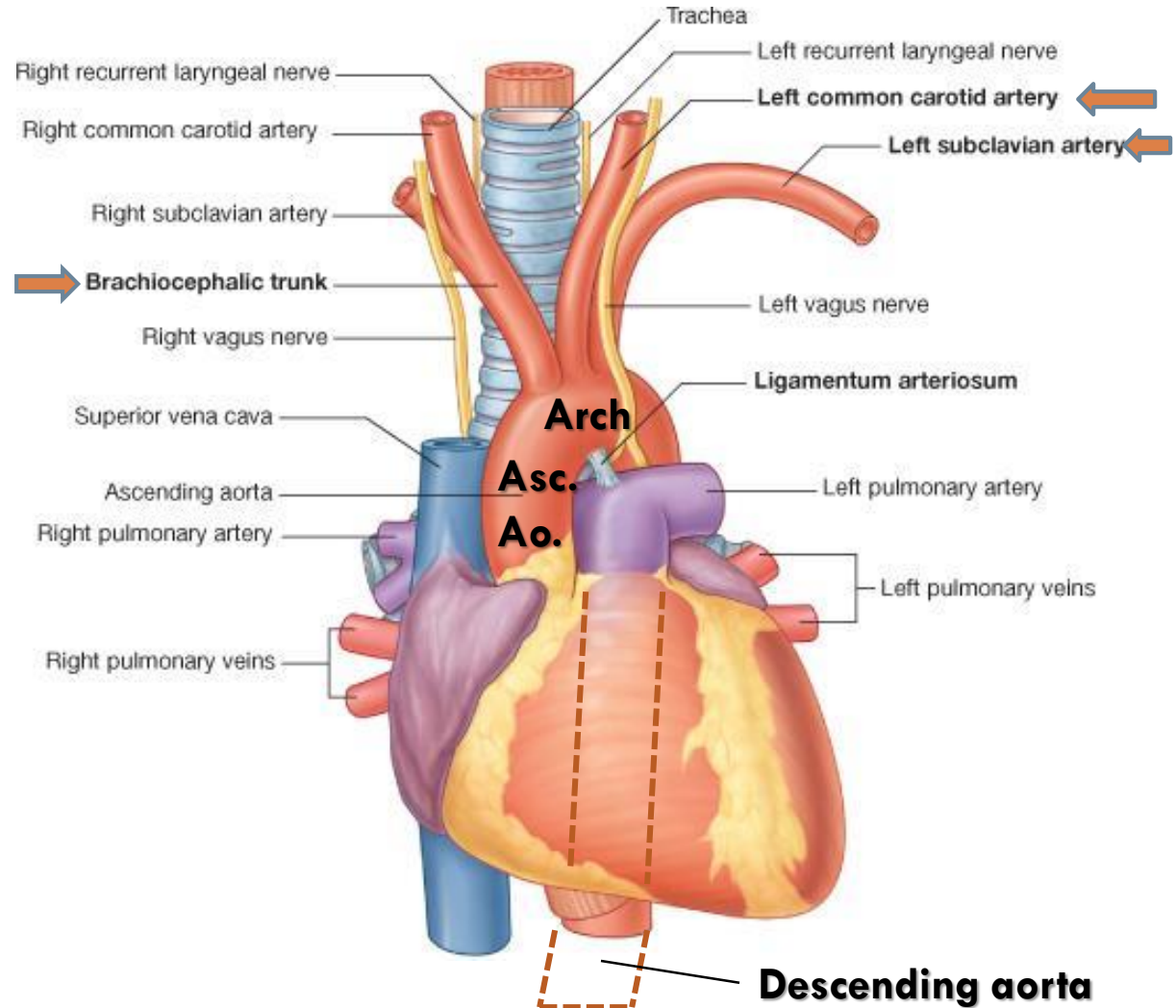
□ **Course:** in superior mediastinum

□ **End:** continues as descending thoracic aorta (at level of T4)

DESCENDING AORTA:

□ **Course:** in posterior mediastinum


□ **End:** continues as abdominal aorta through diaphragm




QUESTIONS




QUESTION 1

- Which one of the following structures is present in the superior mediastinum?
 - 1) Ascending aorta
 - 2) Arch of aorta 
 - 3) Descending aorta
 - 4) Pulmonary trunk

QUESTION 2

- Which one of the following structures is present in both superior & posterior mediastinum?
 - 1) Superior vena cava
 - 2) Pulmonary trunk
 - 3) Trachea
 - 4) Esophagus 

QUESTION 3

- Which one of the following structures lies on the left side of esophagus in the posterior mediastinum?
 - 1) Superior vena cava
 - 2) Descending aorta 
 - 3) Azygos vein
 - 4) Pulmonary trunk



THANK YOU