



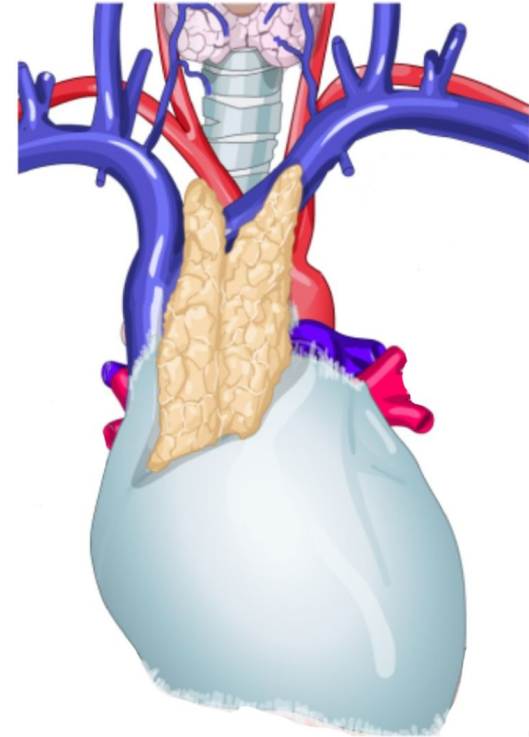
Anatomy team
med 438



Mediastinum

Respiratory block-Anatomy-Lecture 6

Editing file



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.

Color guide :

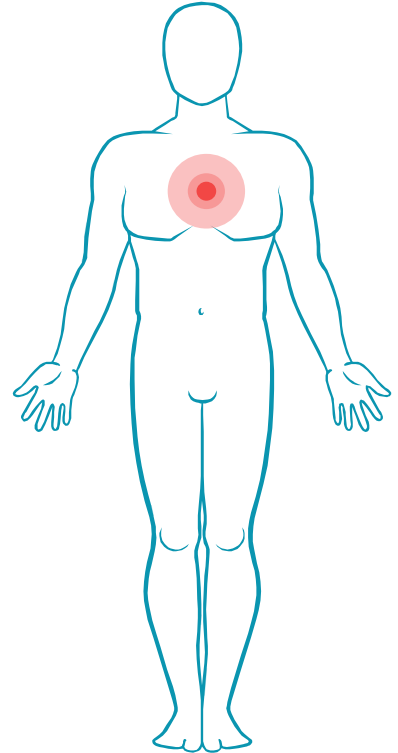
Only in boys slides in **Green**

Only in girls slides in **Purple**

important in **Red**

Doctor note in **Blue**

Extra information in **Grey**



The Mediastinum

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

◆ Boundaries :

- ❑ **Superior:** Thoracic outlet: (manubrium, 1st rib & T1)
- ❑ **Inferior:** Diaphragm
- ❑ **Anterior:** Sternum
- ❑ **Posterior:** 12 Thoracic vertebrae
- ❑ **Lateral:** Lungs & pleurae

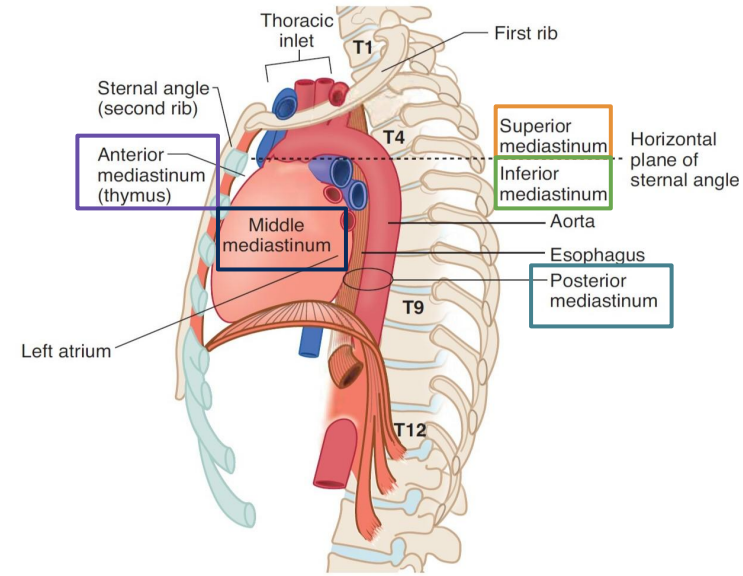
◆ Divisions

by a horizontal plane **from sternal angle to lower border of T4** into:

1. **Superior mediastinum** (1 part) : above the plane
2. **Inferior mediastinum** (3 parts) : below the plane

Subdivided into:

- **Posterior mediastinum** : behind the heart
- **Middle mediastinum** : contains the heart
- **Anterior mediastinum** : in front of the heart



Level of T4

- ◆ **It is the Level of:**
 1. Sternal angle
 2. Second costal cartilage
- ◆ **Why the Level of T4 is important:**
 1. Bifurcation of trachea
 2. Bifurcation of pulmonary trunk
 3. Beginning & termination of arch of aorta

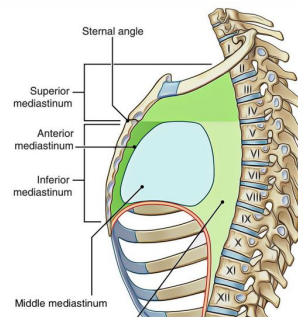


Superior Mediastinum

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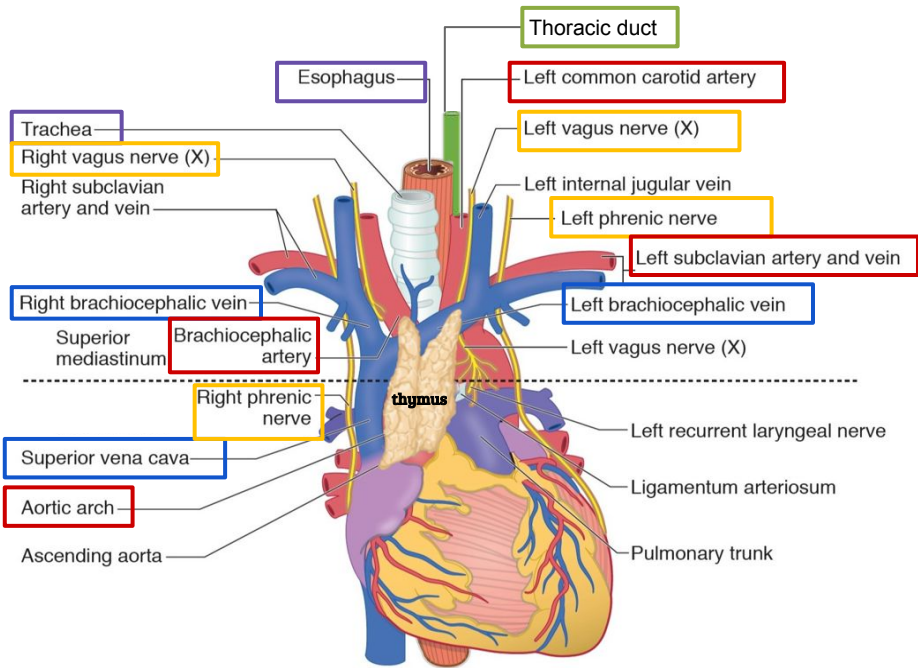
❖ Boundaries

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



❖ Contents :From superficial to deep:

- | | | |
|--------------|---|--|
| Superficial | } | <ul style="list-style-type: none"> ● (1) Gland :Thymus gland ● (3) Veins: <ul style="list-style-type: none"> ❑ right & left brachiocephalic superior vena cava |
| Intermediate | } | <ul style="list-style-type: none"> ● (4) Arteries: <ul style="list-style-type: none"> ❑ arch of aorta & its branches ❑ brachiocephalic artery ❑ left common carotid ❑ left subclavian ● (4) Nerves: <ul style="list-style-type: none"> ❑ right & left vagus ❑ right & left phrenic |
| Deep | } | <ul style="list-style-type: none"> ● (2) Tubes: <ul style="list-style-type: none"> ❑ Trachea ❑ Esophagus (most posterior) ● (1) Duct: thoracic duct (beside the esophagus) ● Lymph nodes |



Inferior mediastinum:

First part: Posterior Mediastinum



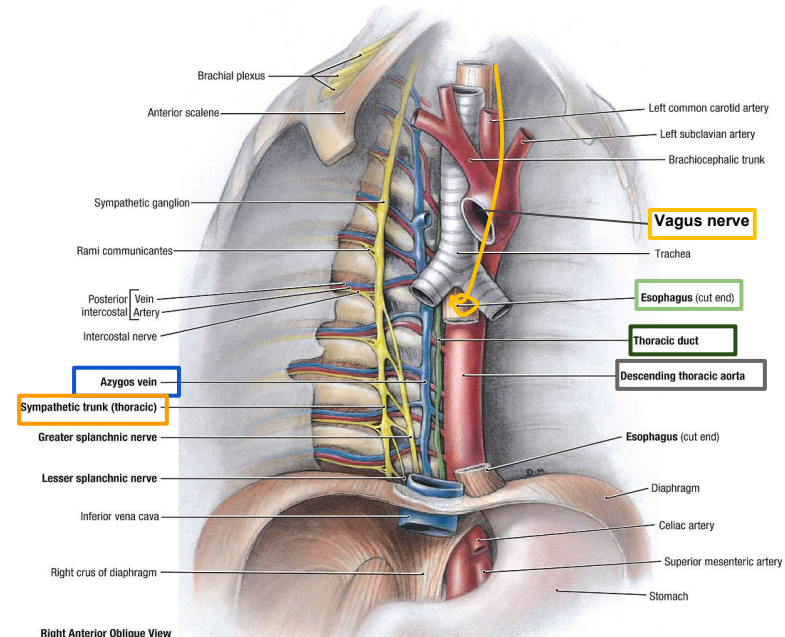
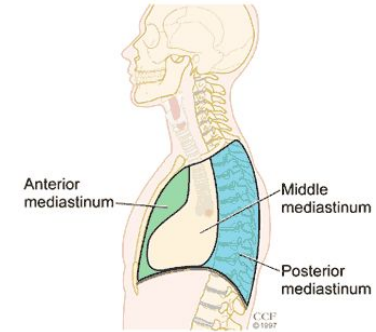
❖ Boundaries:

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

❖ Contents:

- **Esophagus** (most anterior)
- **Right & left Vagus nerves:** around esophagus
- **Thoracic duct:** posterior to esophagus
- **Azygos vein:** posterior & to the **right** of esophagus
- **Descending aorta:** posterior & to the **left** of esophagus
- **Right & left sympathetic trunks**
- **Lymph nodes**

Helpful Note : it contains one from each (artery, vein, nerve, duct, tube, trunk)



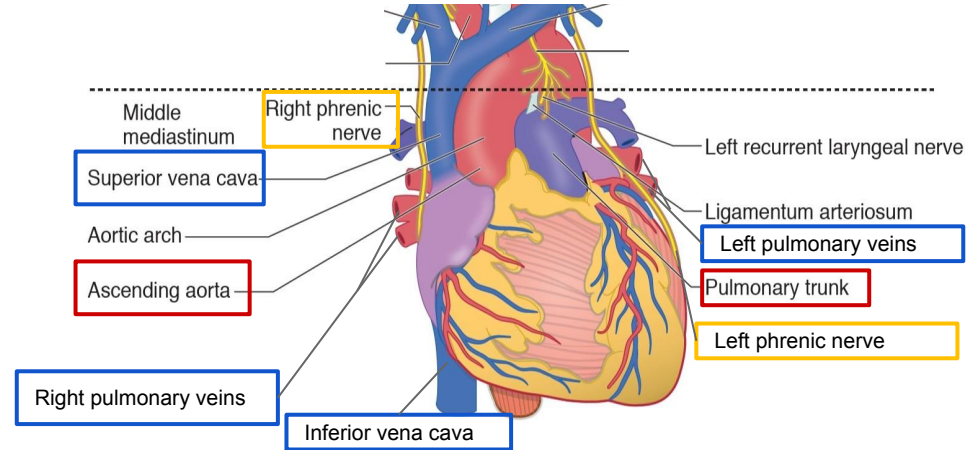
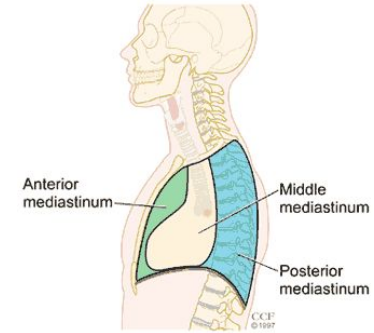
Inferior mediastinum:

Second part: 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**



Inferior mediastinum:

Third part: Anterior Mediastinum

❖ Boundaries:

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

❖ Contents:

- **Thymus gland**
- **Lymph nodes**

Note : lymph nodes present in all mediastinum region

IMPORTANT NOTE: There are **six** structure present in more than one region in mediastinum

Three in superior and posterior mediastinum:

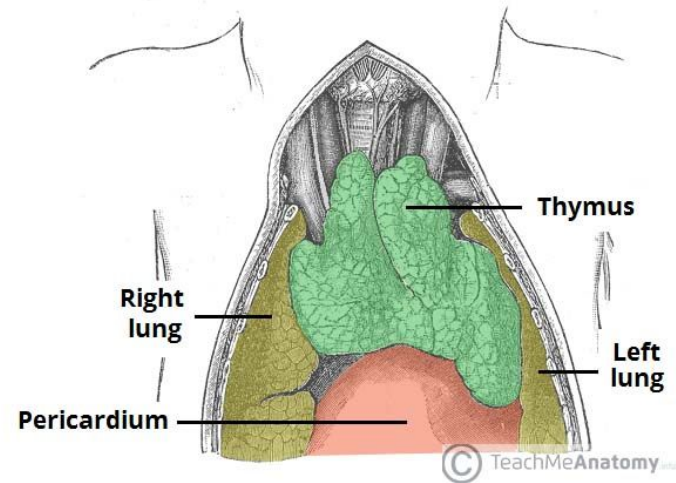
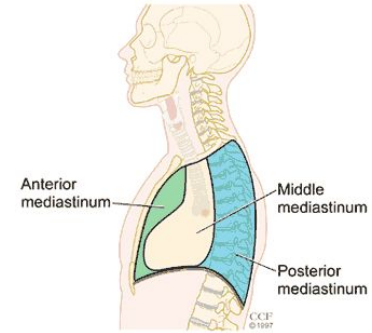
→ Thoracic duct, Esophagus, vagus nerves

Two in superior and middle mediastinum:

→ phrenic nerves, superior vena cava

One in superior and anterior mediastinum:

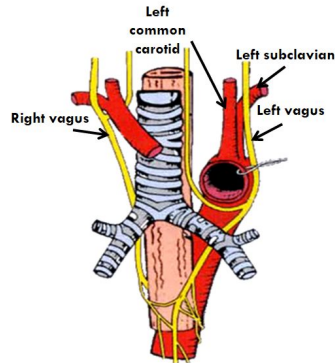
→ Thymus gland



Important structures in Mediastinum

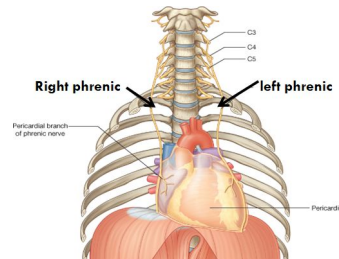
Vagus nerve

- ❖ 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.



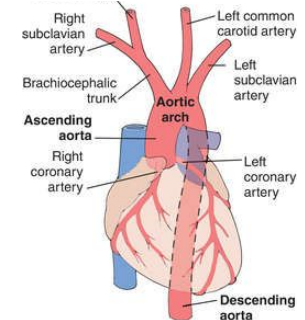
Phrenic nerve

- ❖ **Root value: C3,4,5**
- ❖ **Course in thorax:** They pass through the Superior & Middle mediastinum
 - **The right phrenic** descends on the right side of SVC (superior vena cava) & 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 & pericardium**



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



Lymphatic vessels in thorax

- Lymph from the right side of the head, neck, thorax, & upper limb drains into the **Right lymphatic duct** and ends in the **right brachiocephalic vein**
- Lymph from the lower half of the body drains into the **Cysterna chyli** then to the **Thoracic duct**
- Lymph from the left side of the head, neck, thorax, & upper limb drains directly into the **Thoracic duct**

Thoracic duct

Beginning:

It is the continuation of **Cysterna chyli** at the level of L1

Course:

It passes through the aortic opening of diaphragm.

It ascends in the posterior mediastinum (posterior to esophagus).

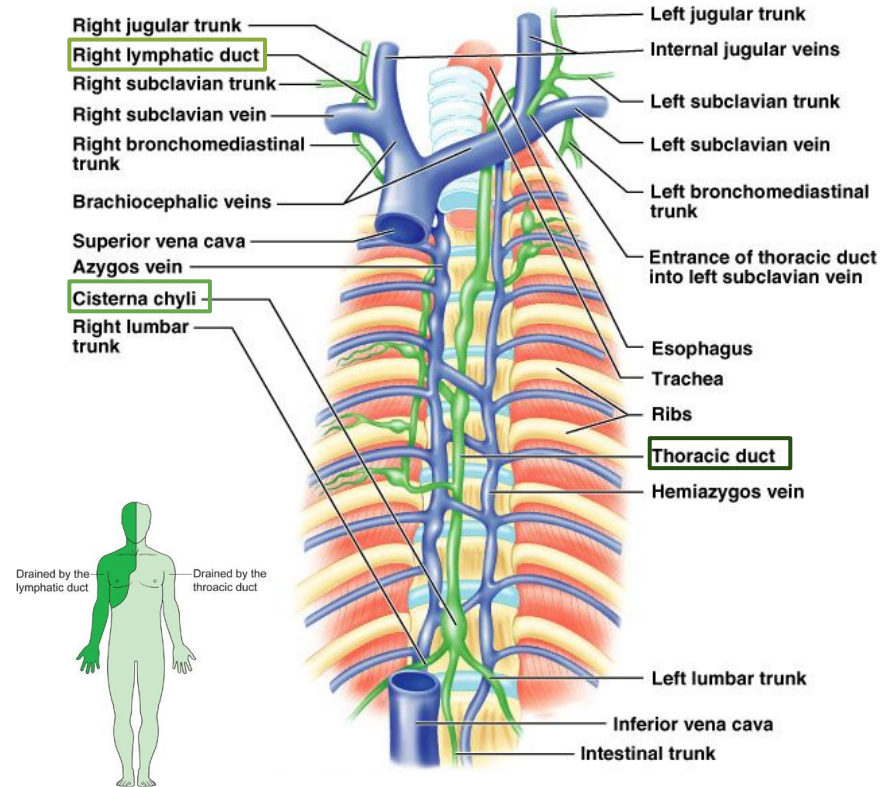
It ascends in the superior mediastinum (to the left of esophagus).

Tributaries:

It receives Lymphatics from all body **EXCEPT** right side of (head & neck, thorax, upper limb) as we mentioned before

End:

in the **left brachiocephalic vein**.



MCQs

Question 1: Which structure lies on the left side of the esophagus in the posterior mediastinum?

- A. Superior vena cava
- B. Descending aorta
- C. Azygos vein
- D. Pulmonary trunk

Question 2: Which is correct about the horizontal plane :

- A. Divides the inferior mediastinum into 3 parts
- B. it is at the same level as the Second costal cartilage
- C. Divides the mediastinum into 4 parts
- D. Divides the mediastinum into anterior and inferior parts

Question 3: Which is correct about the Right vagus nerve :

- A. continues in the abdomen as the anterior gastric nerve.
- B. descends on the right side of SVC
- C. forms the posterior esophageal plexus
- D. descends in front of the trachea

Question 4: Pulmonary trunk is present in :

- A. superior & middle mediastinum
- B. middle mediastinum
- C. superior mediastinum
- D. posterior mediastinum

Question 5: a structures present in both superior & posterior mediastinum

- A. Superior vena cava
- B. Pulmonary trunk
- C. Trachea
- D. Esophagus

Question 6: Azygos vein lies :

- A. posterior & to the right of esophagus
- B. anterior & to the right of esophagus
- C. posterior & to the left of esophagus
- D. anterior & to the left of esophagus

Question 7: which one of the following is not a boundary of the Superior Mediastinum?

- A. Thoracic outlet
- B. xiphoid of sternum
- C. lungs & pleurae
- D. 2nd thoracic vertebrae

Question 8: Thoracic duct ends in

- A. left brachiocephalic vein
- B. superior vena cava
- C. Cysterna chyli
- D. It just never ends...

Best wishes



**Don't forget to leave
your feedback:**



Team members

Boys team:

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- Faisal Alqifari
- Salman Alagla
- Ziyad Al-jofan
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- Ali Aldawood
- Khalid Nagshabandi
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- Alhanouf Al-haluli
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- Rawan Al Zayed
- Renad Al Haqbani
- Nouf Al Humaidhi
- Jude Al Khalifah
- Nouf Al Hussaini
- Alwateen Al Balawi
- Rahaf Al Shabri
- Danah Al Halees
- Rema Al Mutawa
- Amirah Al Dakhilallah
- Maha Al Nahdi
- Ghaida Al Braithen