

وَقُلْ رَبِّ زِدْنِي عِلْمًا



RESPIRATORY SYSTEM

HAYAT BATCH

SUBJECT : _____

LEC NO. : Lecture 7

DONE BY : Hedaya



Respiratory system

Mediastinum & Diaphragm

By

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Ass. Prof. OF Anatomy

The area between the two lungs and pleura
Or between the two mediastinal plura

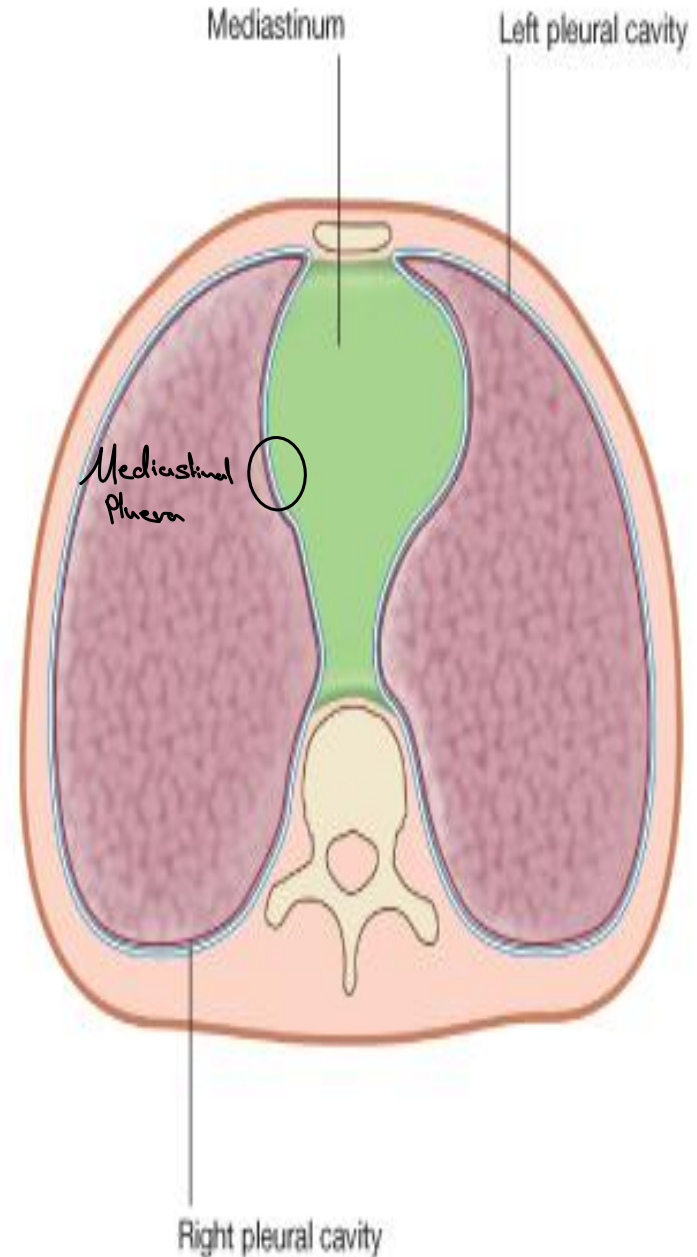
المتصف

Mediastinum

- is a broad central partition that separates the two laterally placed pleural cavities.

Posterior to sternum & anterior to thoracic vertebrae

- It extends from the sternum to the bodies of the thoracic vertebrae and from the superior thoracic aperture to the diaphragm.



Subdivision of mediastinum

- A transverse plane extending from the sternal angle (the junction between the manubrium and the body of the sternum) to the intervertebral disc between vertebrae TIV and TV separates the mediastinum into:

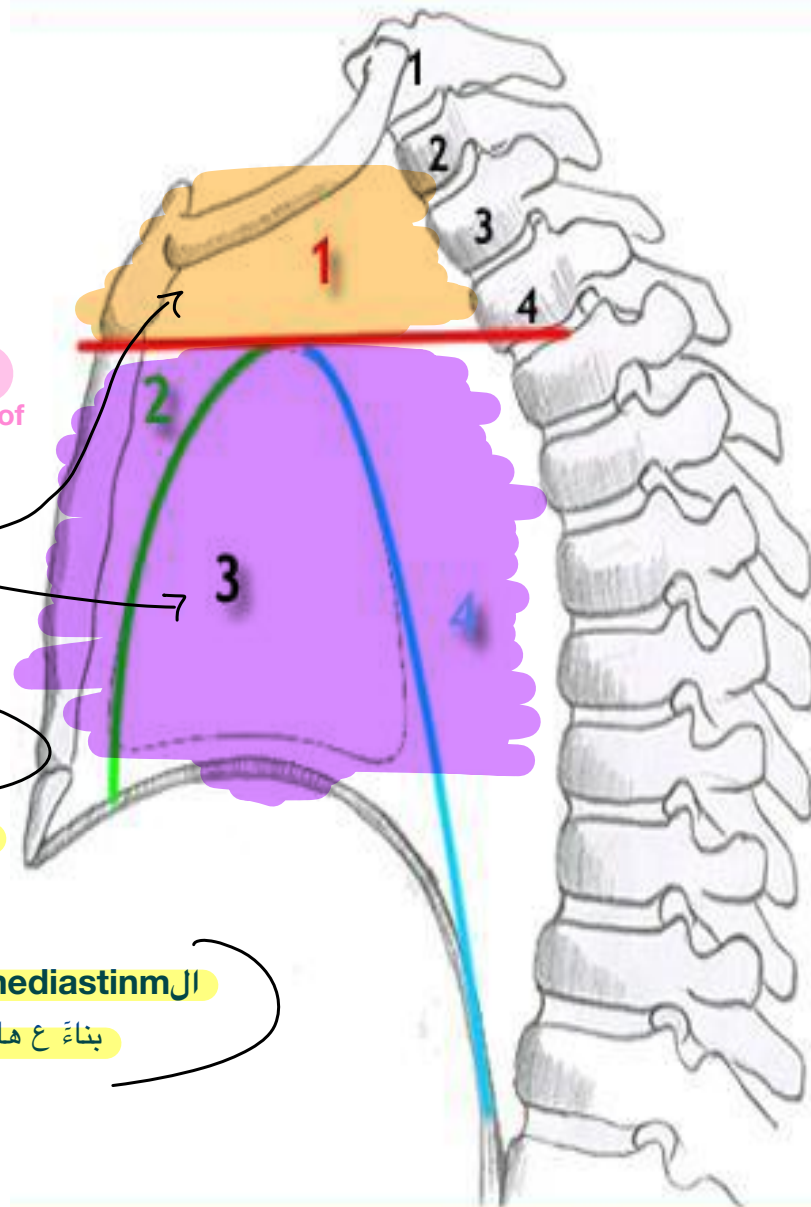
Imaginary line From lower border of manubrium to lower border of thoracic vertebrae 4

1-superior mediastinum.

2-inferior mediastinum, which is further partitioned into the **anterior (2)**, **middle (3)**, and **posterior mediastinum (4)** by the heart and pericardium.

الinferior mediastinum موجود فيه القلب & pericardium

بناءً ع هاد الشئ: قسمنا الinferior mediastinum ل ثلاث مناطق



Superior mediastinum

Boundries:

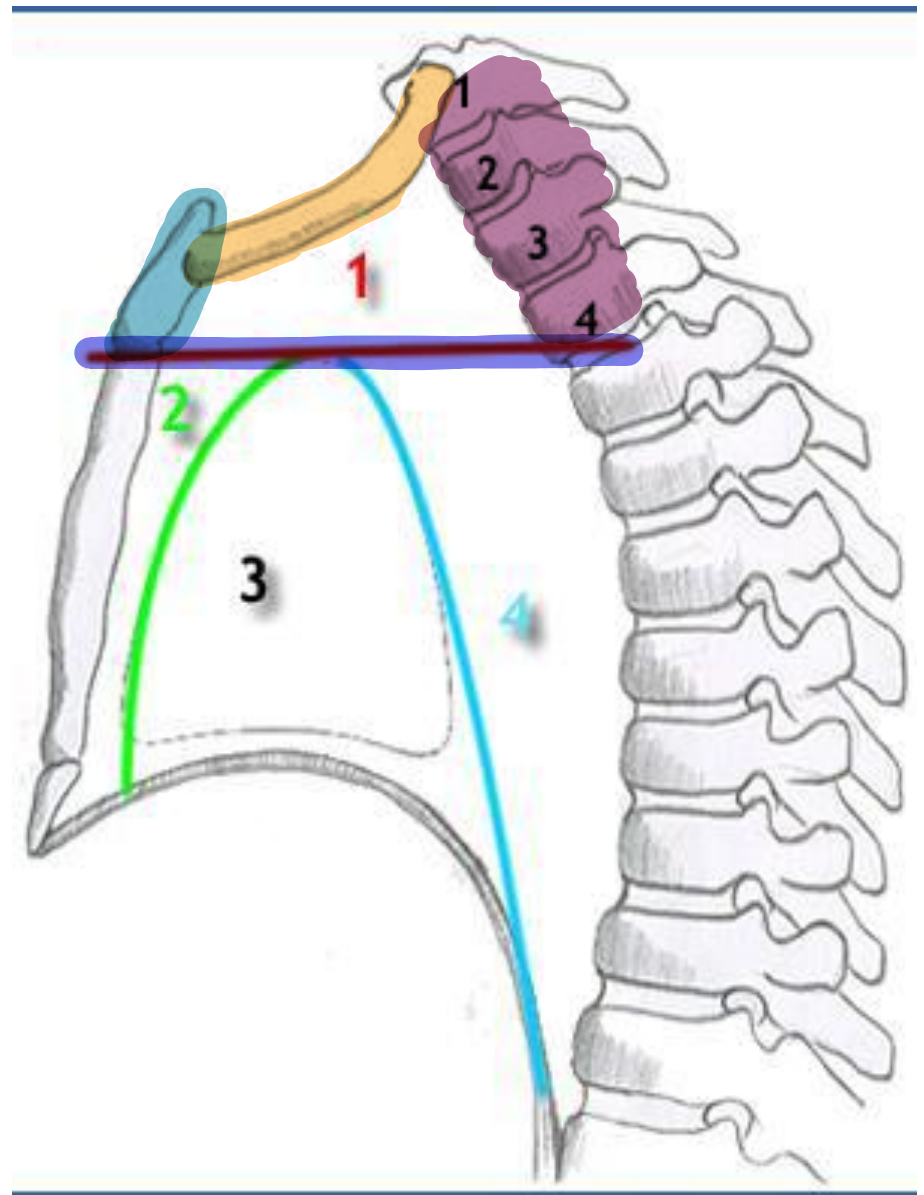
* Anterior: manbrium sterni.

* Posterior: upper 4 thoracic vertebri.

* Superior: thoracic inlet.

* Inferior: imaginary plane.

* Sides: mediastinal pleura.



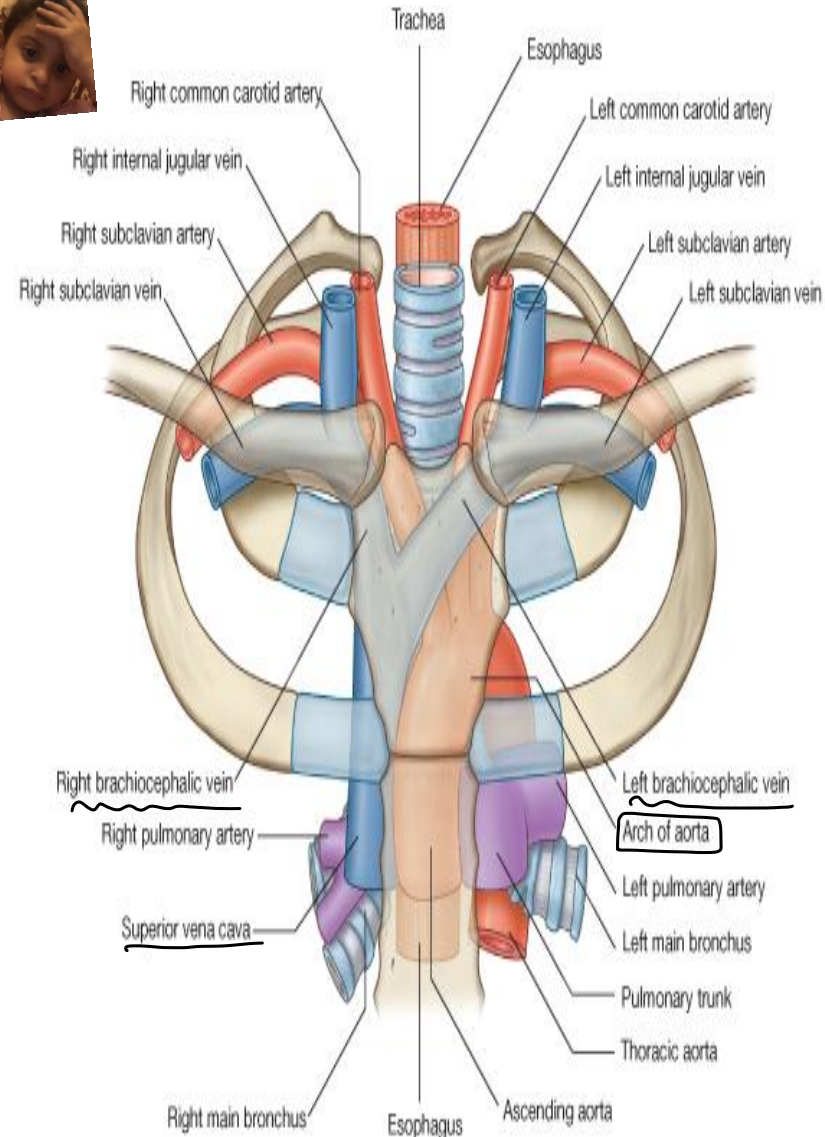
Contents of superior mediastinum

important

اعتبروه انه في هايلايتس
عليهم ابصمو الجدول كلو كلو



<p>*Veins</p>	<p>*Right and left brachiocephalic veins *Superior vena cava</p>
<p>*Arteries</p>	<p>*Arch of aorta and its branches (brachiocephalic a, left common carotid and left subclavian artery</p>
<p>*Tubes</p>	<p>*Trachea, esophagus and thoracic duct.</p>
<p>*Nerves</p>	<p>*Vagus n, phrenic n and left recurrent laryngeal n</p>
<p>*Others</p>	<p>*Thymus gland & lymphatics.</p>



Anterior mediastinum

Boundries:

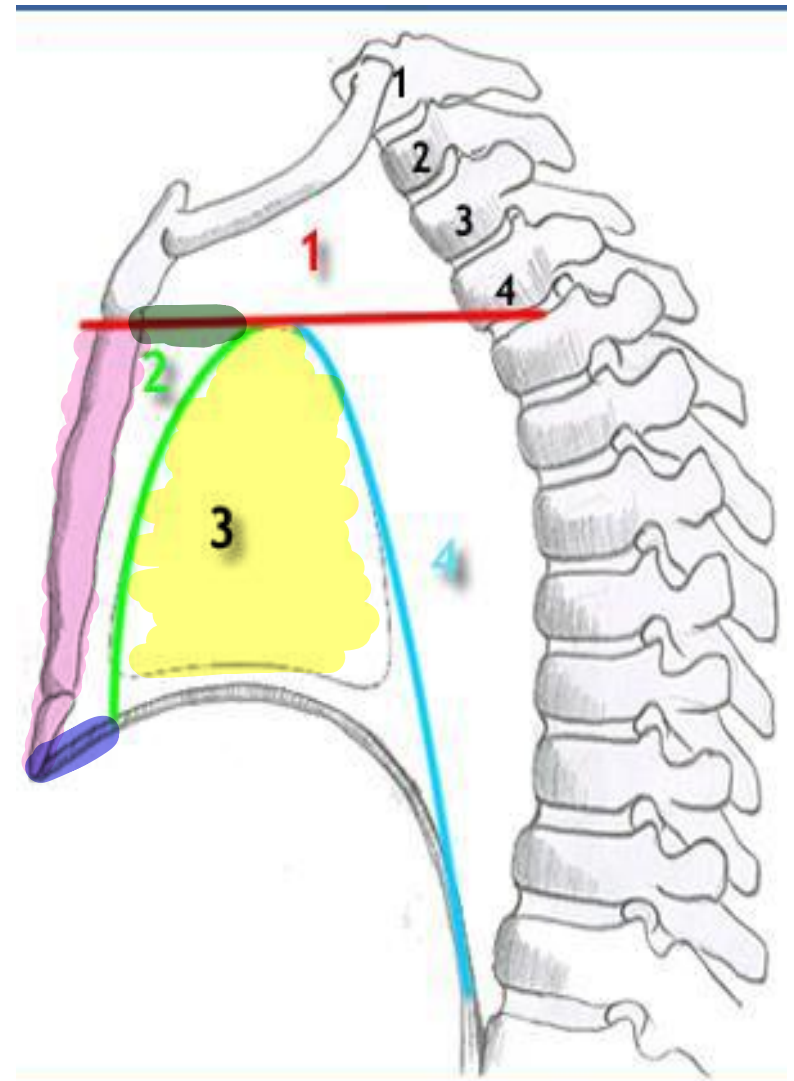
Anterior: body of the sternum.

Posterior: pericardium & heart.

Superior: imaginary plane.

Inferior: diaphragm.

Sides: mediastinal pleura.



Contents of anterior mediastinum

- Thymus.
- Fat, connective tissue, lymph nodes.
- Mediastinal branches of the internal thoracic vessels.

• **Sternopericardial ligaments.** the function is Fixing the Heart in place.

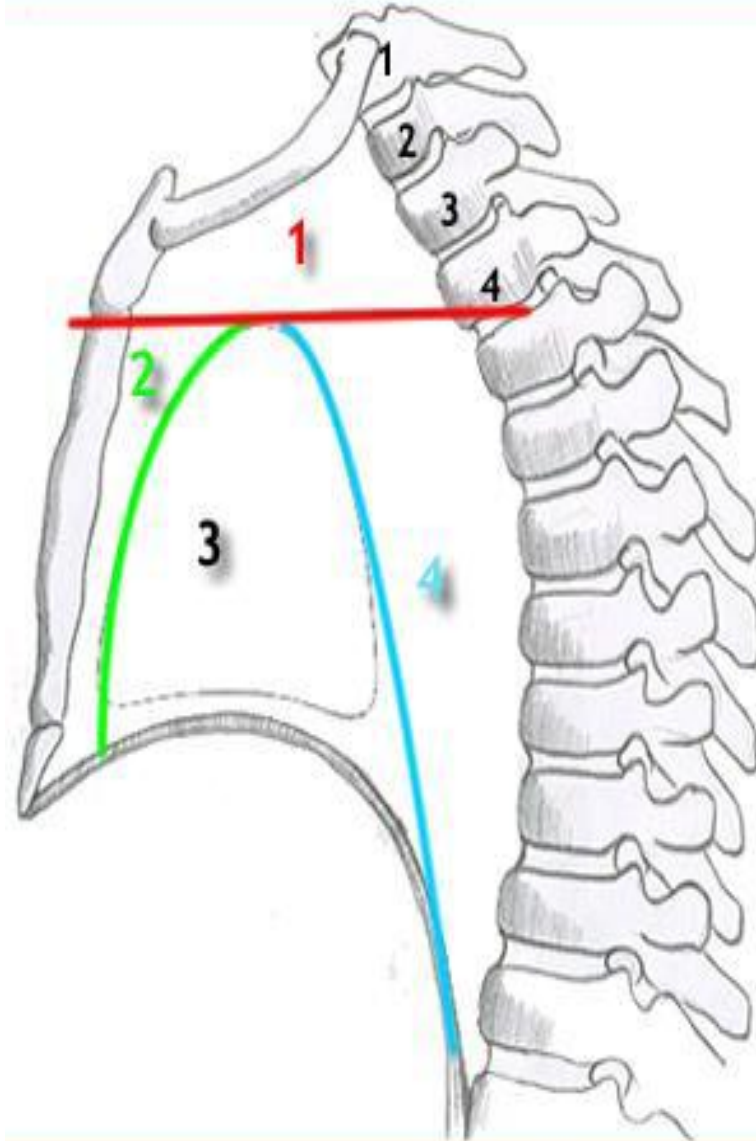
↳ The most important structure in anterior mediastinum

(تثبيت القلب في مكانه)

Middle mediastinum

- The middle mediastinum is centrally located in the thoracic cavity.
- It contains the pericardium, heart, origins of the great vessels.

– و أي طالع من القلب
(aorta&pulmonaru trunk) و أي
vein داخل للقلب
superior&inferior vena
(cava)



The boundaries:-

- Anterior:- anterior Mediastinum.
- Posterior:- posterior Mediastinum.
- Superior:- imaginary Line.
- inferior:- Diaphragm.

Posterior mediastinum

Boundries:

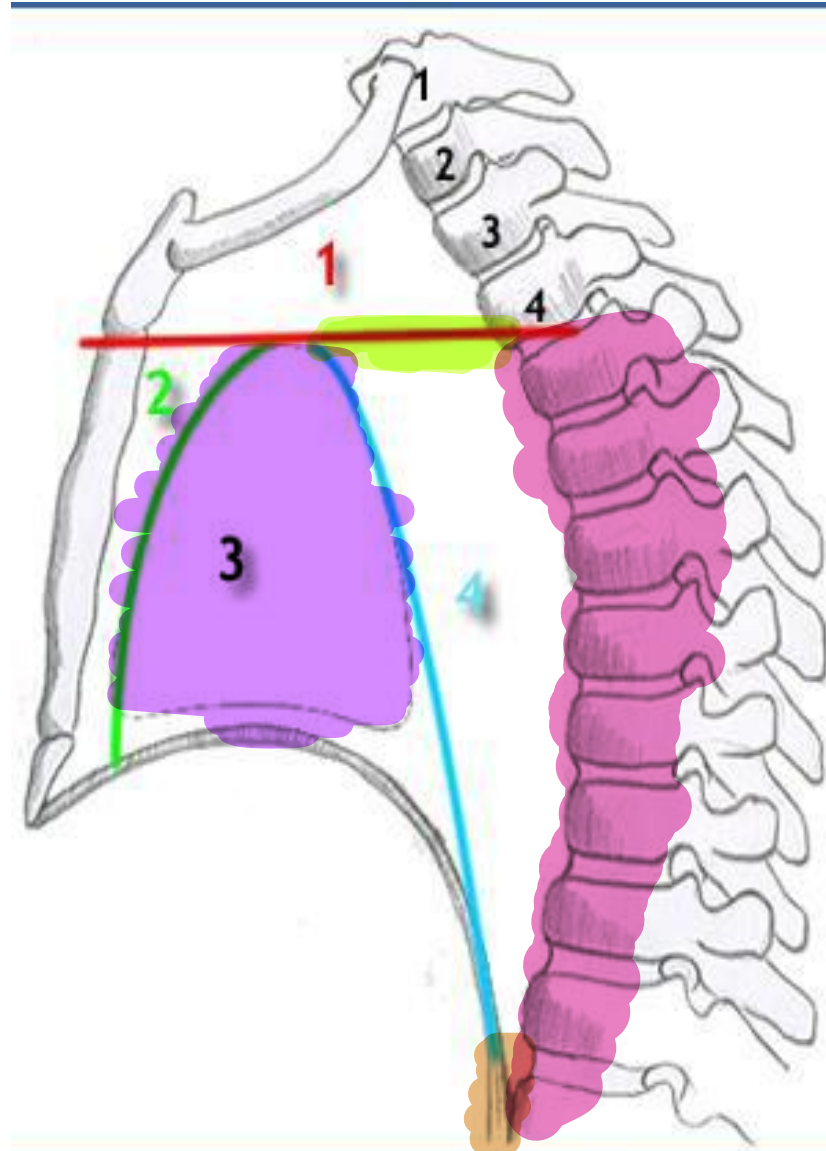
Anterior: pericardium & heart.

Posterior: lower 8 thoracic vertebrae.

Superior: imaginary plane.

Inferior: diaphragm.

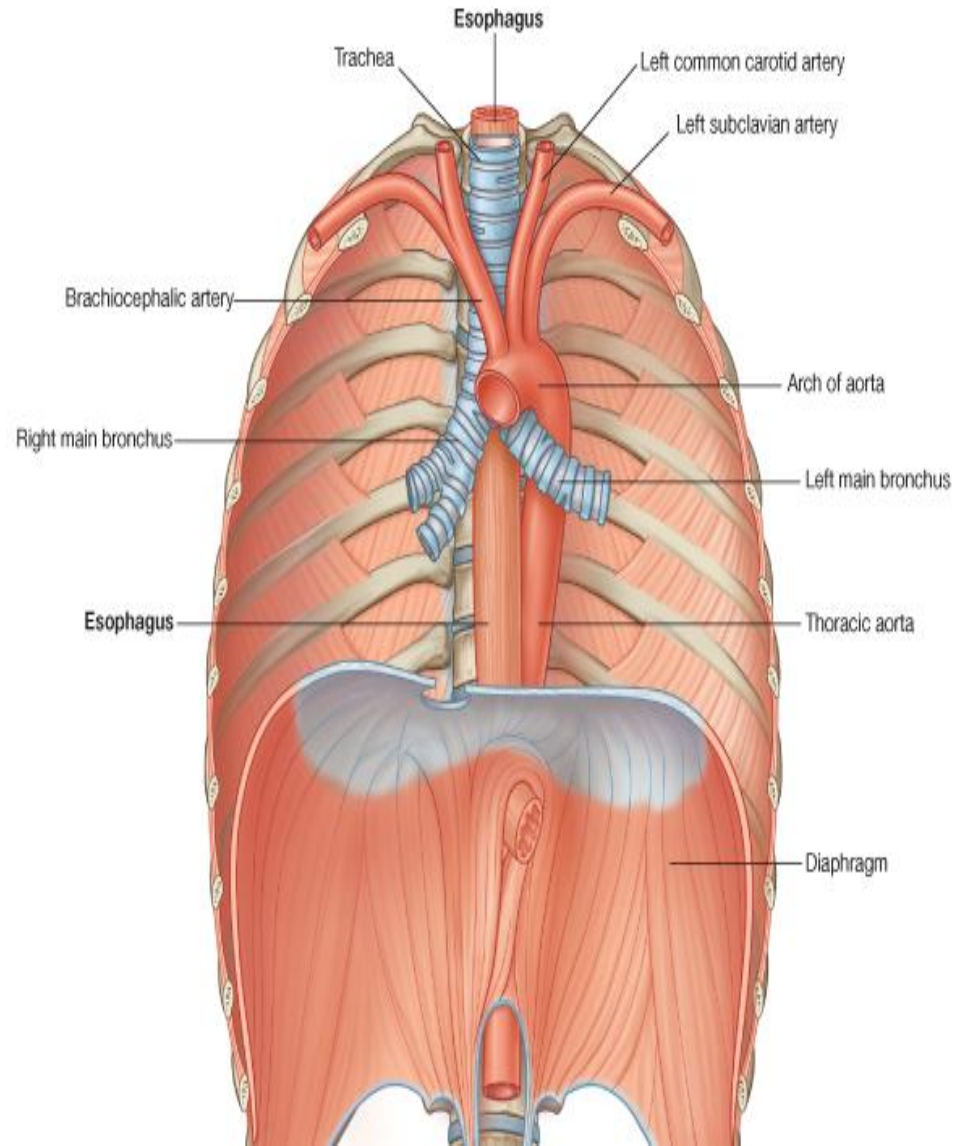
Sides: mediastinal pleura.



Contents of Posterior mediastinum

The two most important components: thoracic aorta & esophagus

Tubes	<ul style="list-style-type: none"> ✓ Esophagus ✓ Thoracic duct
Arteries	<ul style="list-style-type: none"> ✓ Thoracic Aorta
Veins	<ul style="list-style-type: none"> ✓ Azygous vein
Nerves	<ul style="list-style-type: none"> ✓ *Thoracic sympathetic trunks ✓ *Thoracic splanchnic nerves





Diaphragm. The diaphragm is the major muscle responsible for breathing. the chief muscle of respiration

Diaphragm



It is a double domed, musculotendinous partition separating the thoracic & abdominal cavities.

It is a chief muscle of inspiration

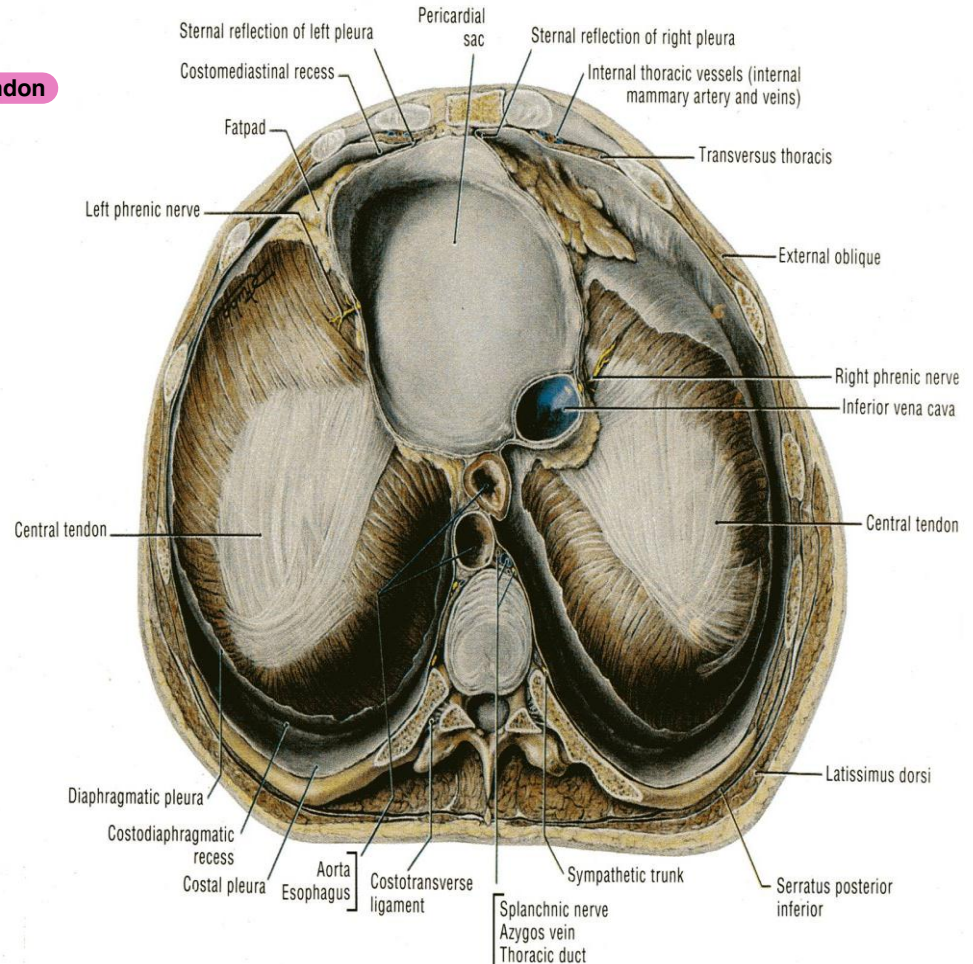
It is formed of a peripheral muscular part & centrally placed (**tendon**)

عضلة تنتهي ب وتر،

Origin: muscle

Insertion: central tendon

الحجاب الحاجز ما بين.....و.....



Origin:

Sternal origin:

By 2 slips (right & left)
from the inner surface of
the xiphoid process

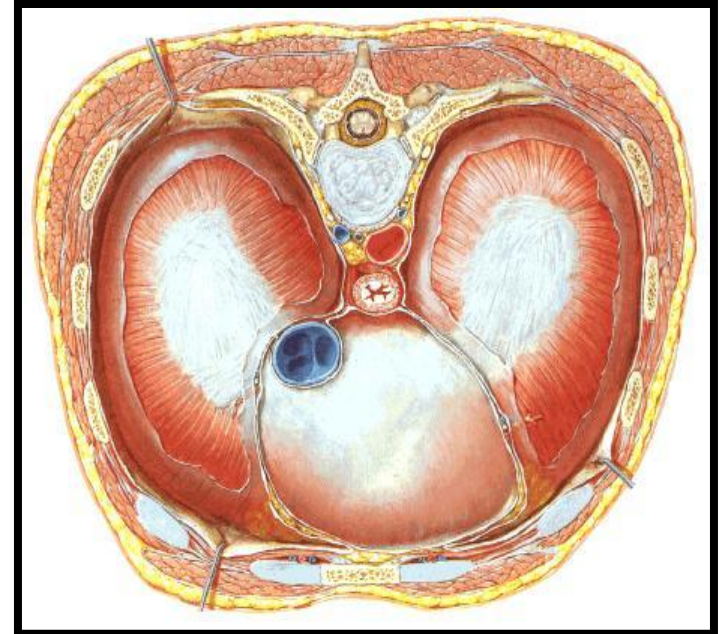


Costal origin:

From lower six ribs &
their costal cartilages

Vertebral origin:

By means of (crura)
& (ligaments)



Vertebral Origin

From 2 crura
From 5 ligaments

Crura:

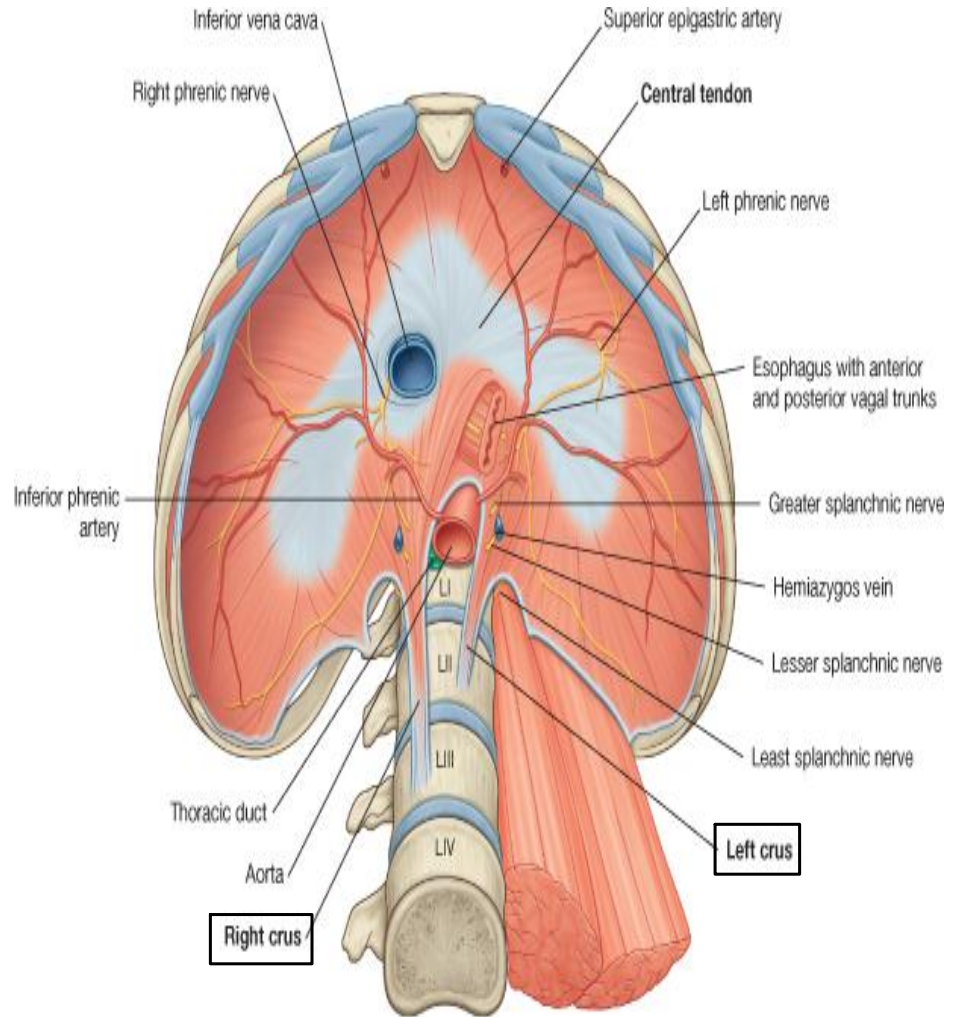
Right crus:

← Left crus أظرفان

From the bodies of upper 3 lumbar vertebrae (L1, L2 & L3) & their intervertebral discs.

Left crus:

From the bodies of the upper 2 lumbar vertebrae (L1 & L2) & their intervertebral discs.



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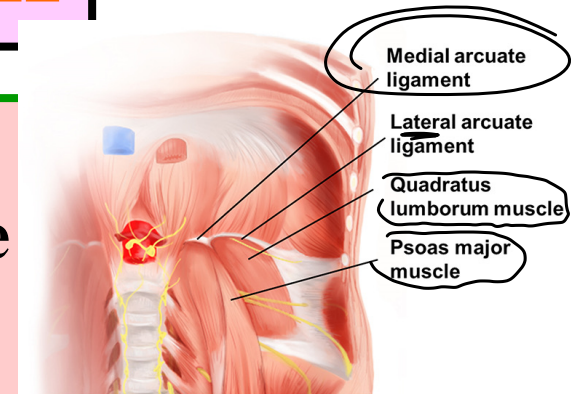
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Vertebral origin

Lateral to crura the diaphragm arises from the **medial & lateral arcuate**

ligaments

واحد على كل جنب

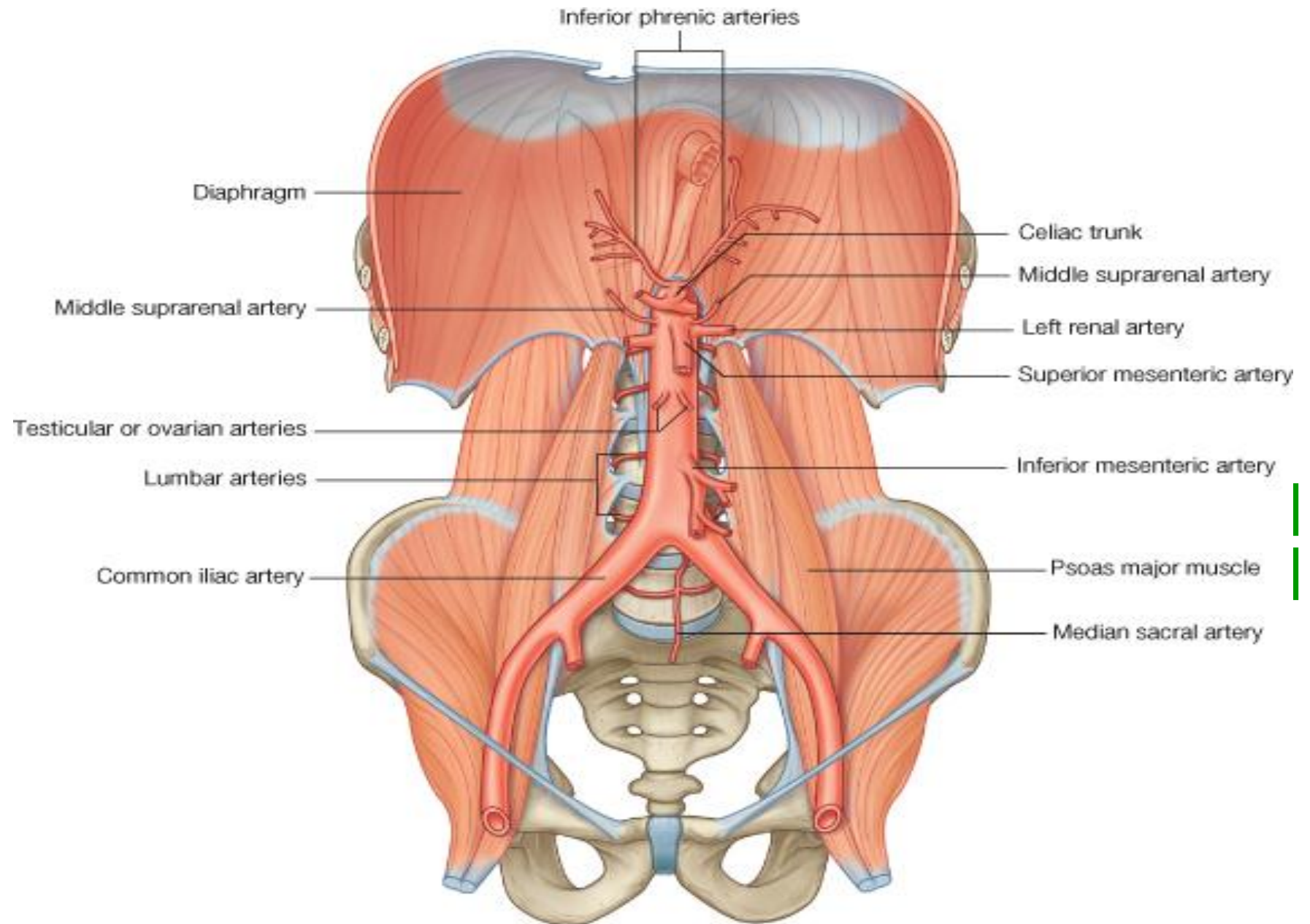


Medial arcuate ligaments:

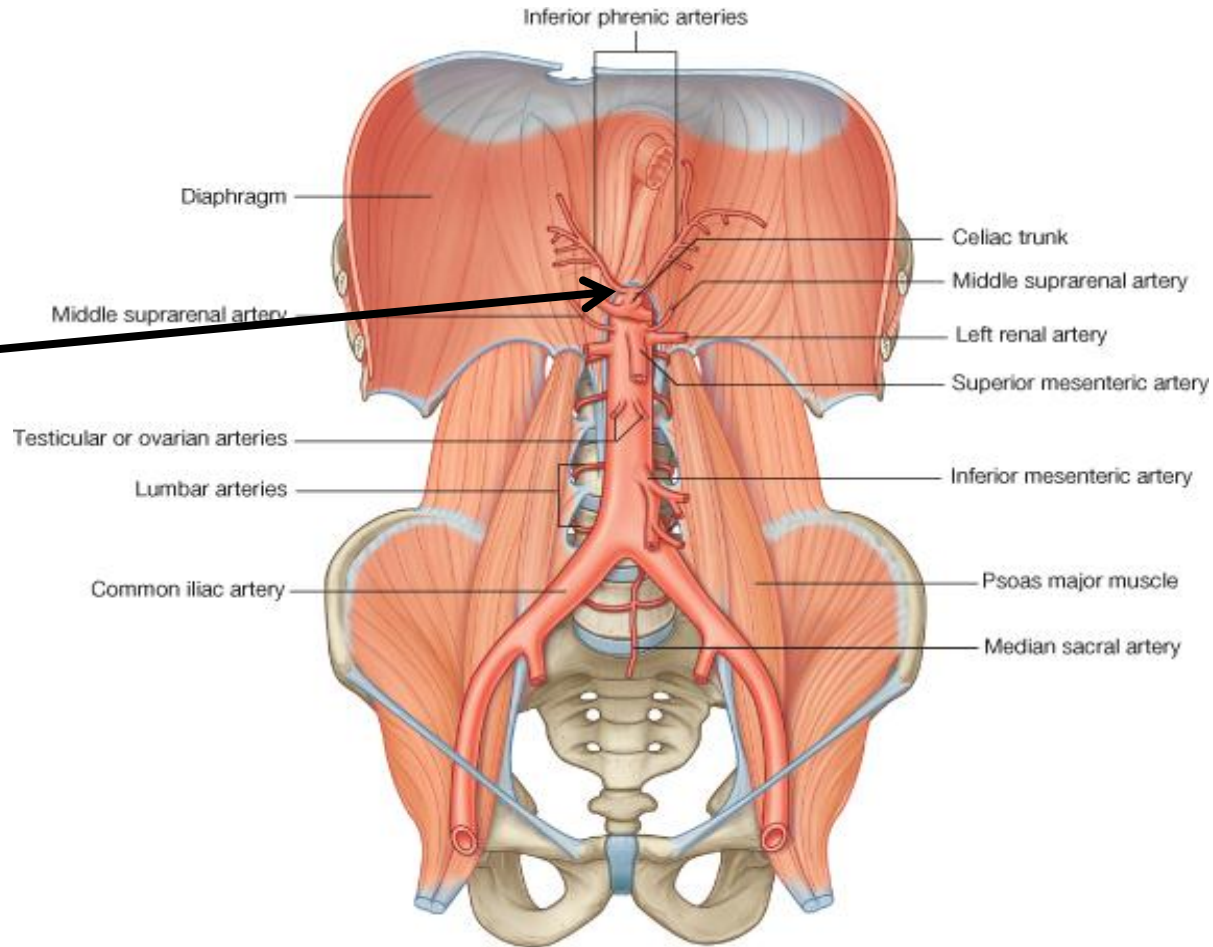
is the thickened upper margin of the fascia covering the anterior surface of **psoas major** muscle ✓

Lateral arcuate ligaments:

is the thickened upper margin of the fascia covering the anterior surface of **quadratus lumborum** muscle ✓



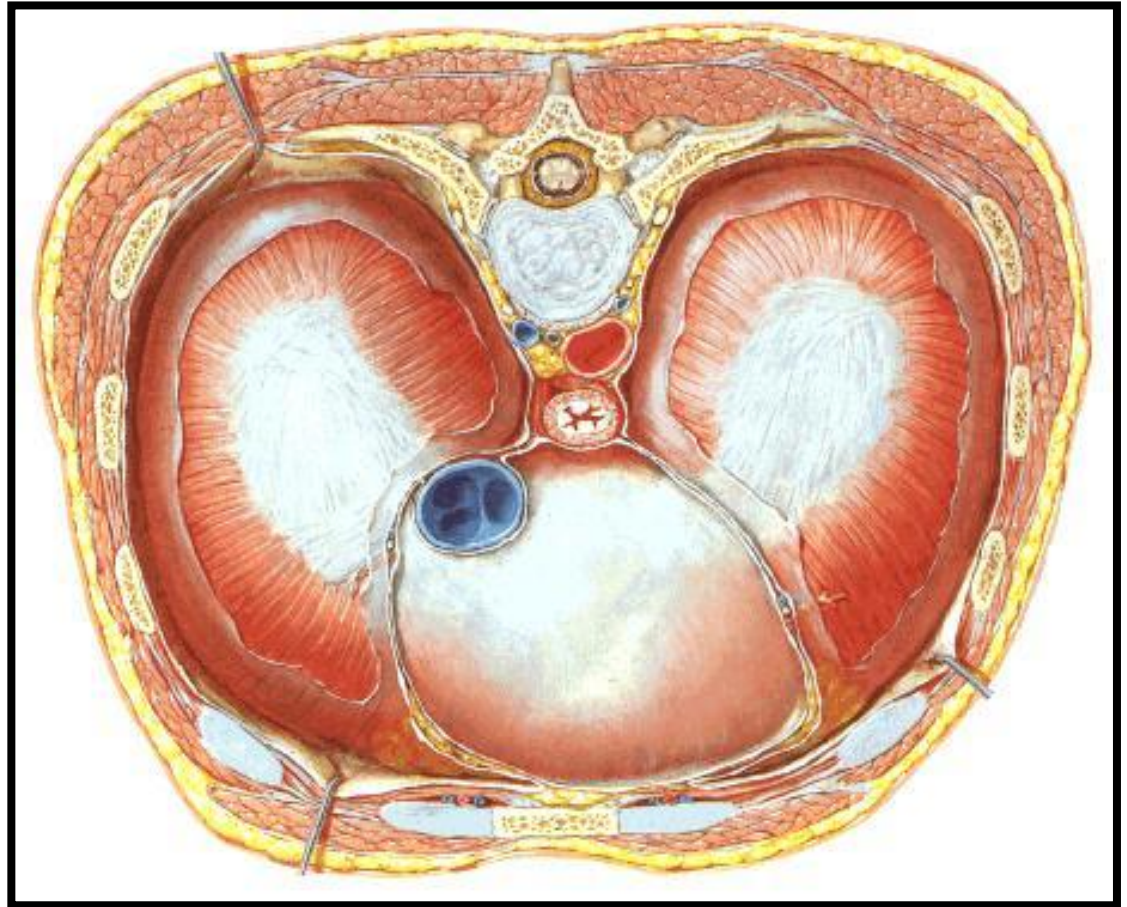
Medial borders of the two crura connected by a **median arcuate ligaments** which crosses over the anterior surface of the aorta (T12)



Median arcuate ligament

INSERTION

It is inserted into a
central tendon
which is shaped
like 3 leaves
(Trifle)

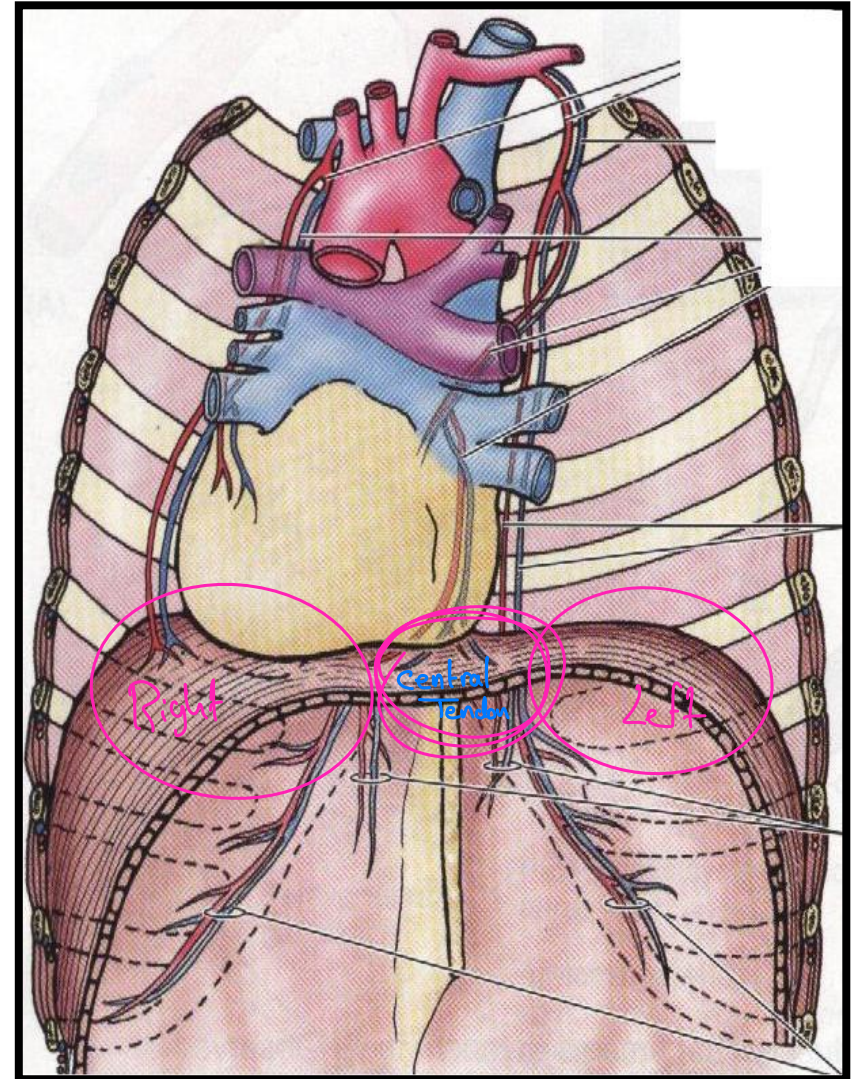


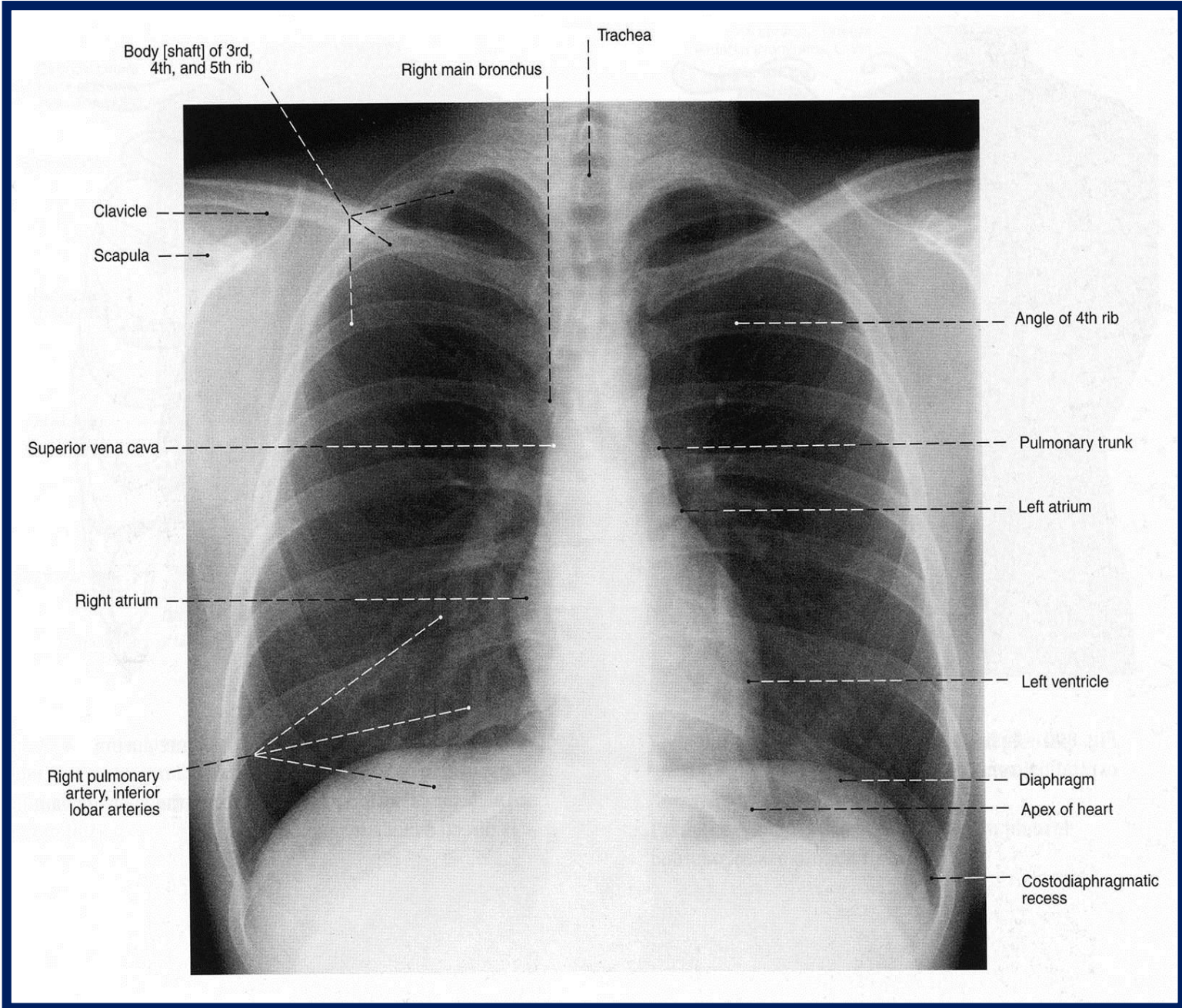
Shape of the diaphragm

The diaphragm has right & left domes. **The right dome:** reaches as the **upper border of 5th rib,**

The left dome: may reach the **lower border of 5th rib,**

NB: The central tendon lies at the xiphsternal junction,





MAJOR OPENINGS

It has 3 main openings (Voice Of Arabs)

Esophageal opening **T10**

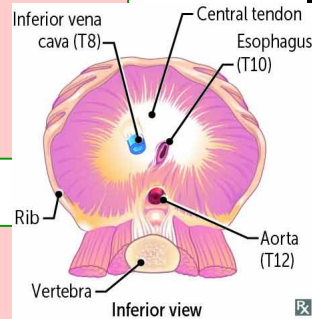
Transmits:

- ✓ Esophagus,
- ✓ Vagi,
- ✓ Esophageal branches of left gastric vessels &
- ✓ Lymph vessels

Aortic opening **T12**

Transmits:

- ✓ Aorta,
- ✓ Thoracic duct &
- ✓ Azygous vein

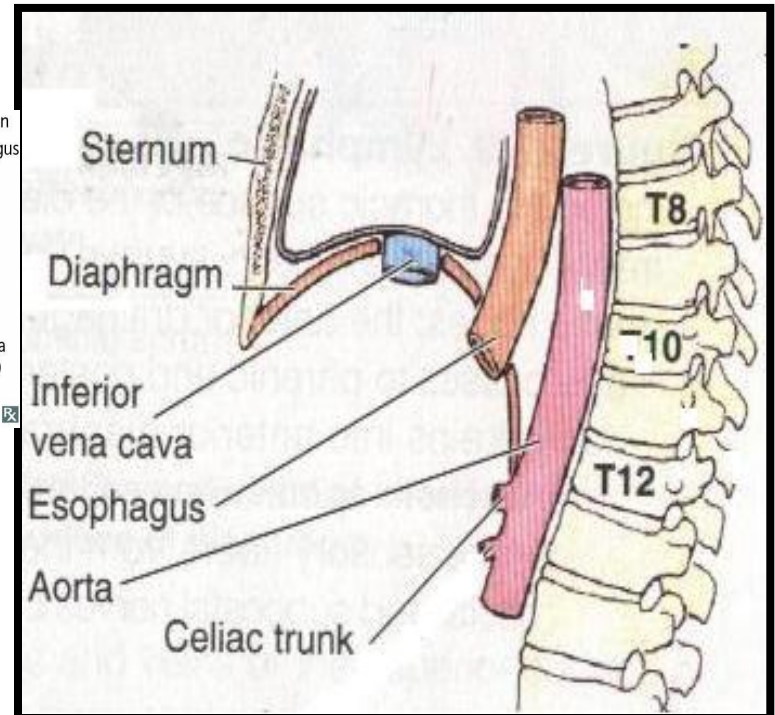


Caval opening **T8**

Thoracic vertebrae 8, i.e.

Transmits:

- ✓ IVC,
- ✓ right phrenic nerve



مجرد اطلاع، اهم شي يلي فوق
او كيه؟ 😊

Other openings

Splanchnic nerves, superior epigastric vessels, left phrenic nerve,

Blood Supply of the diaphragm :

Phrenic = Diaphragm

Superior surface: جاي من عند ال thorax

Pericardiophrenic & Musculophrenic arteries (internal thoracic)

Branches from internal thoracic Artery.

Inferior surface: جاي من عند ال abdomen

Inferior phrenic arteries (abdominal aorta)

Branches from -

Motor & Sensory → Phrenic Nerve

Nerve Supply of the diaphragm

Motor through phrenic nerve (C3, 4 & 5)

Sensory supply to the central tendon (phrenic nerve)

But the periphery is from the lower five intercostal nerves & subcostal nerve.

Function

Muscle of Inspiration

It is the chief muscle of respiration:

In order to draw air into the lungs, the diaphragm contracts, thus enlarging the thoracic cavity and reducing intra-thoracic pressure.

When the diaphragm relaxes, air is exhaled by elastic recoil of the lung.

Muscle of abdominal straining

Micturation, defecation, parturition

Weight-lifting muscle

Thoracoabdominal pump

Caval lymphatic force increase by increase in intra-abdominal pressure

THANK YOU

