



Respiratory system

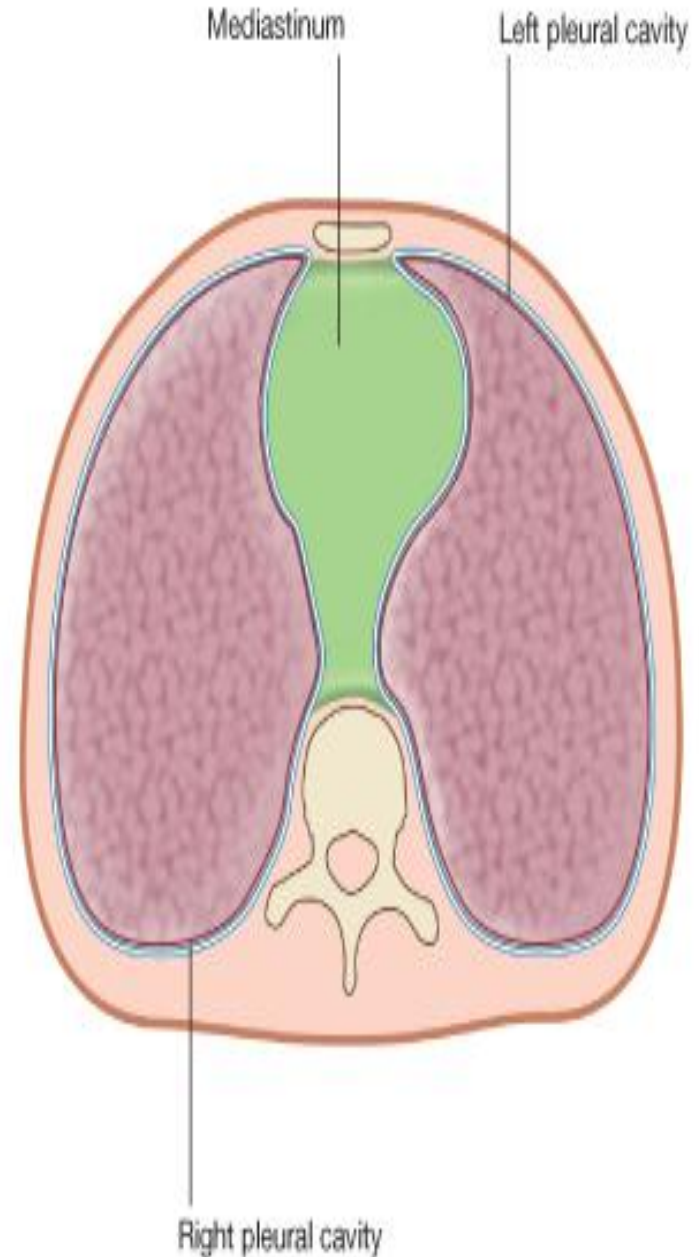
Mediastinum & Diaphragm

By

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Mediastinum

- is a broad central partition that separates the two laterally placed pleural cavities .
- It extends from the sternum to the bodies of the thoracic vertebrae and from the superior thoracic aperture to the diaphragm.

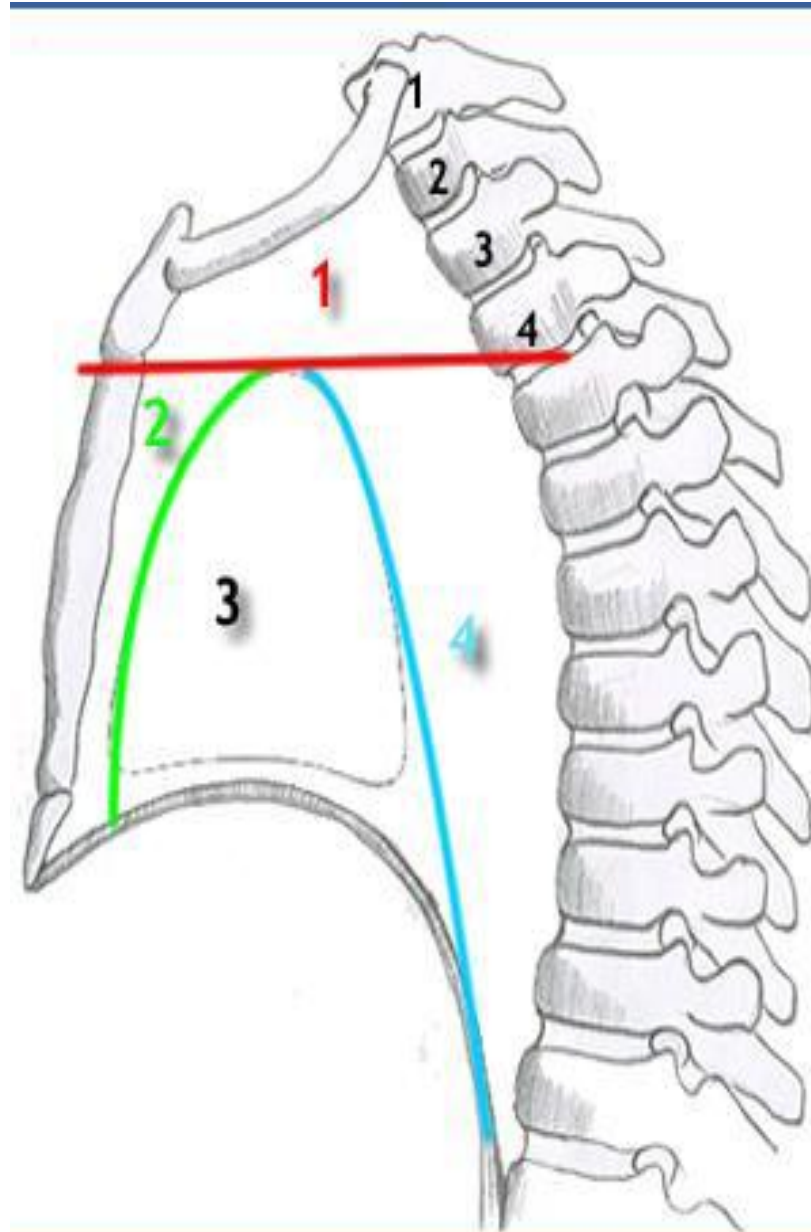


Subdivision of mediastinum

- 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 :

1-superior mediastinum.

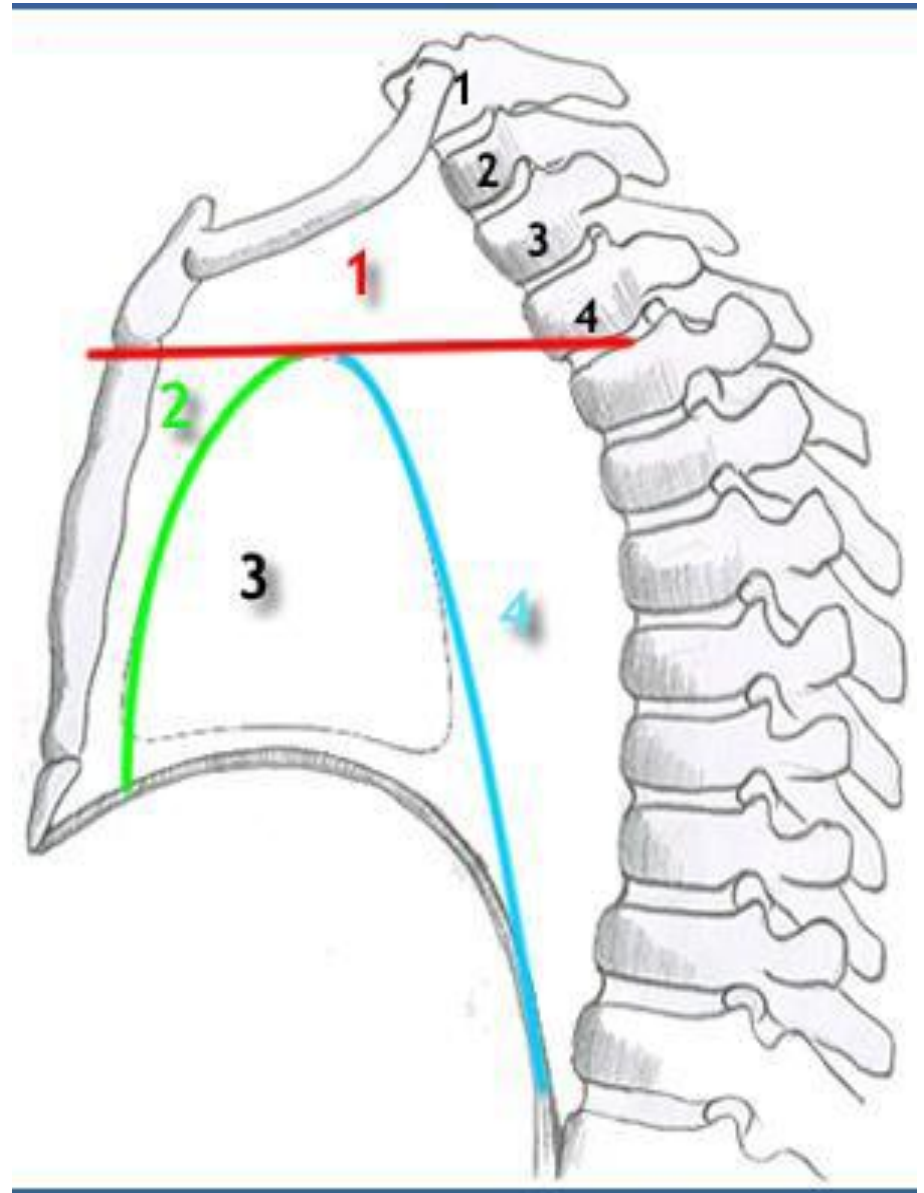
2-inferior mediastinum , which is further partitioned into the anterior(2), middle (3) ,and posterior mediastinum (4)by the heart and pericardium.



Superior mediastinum

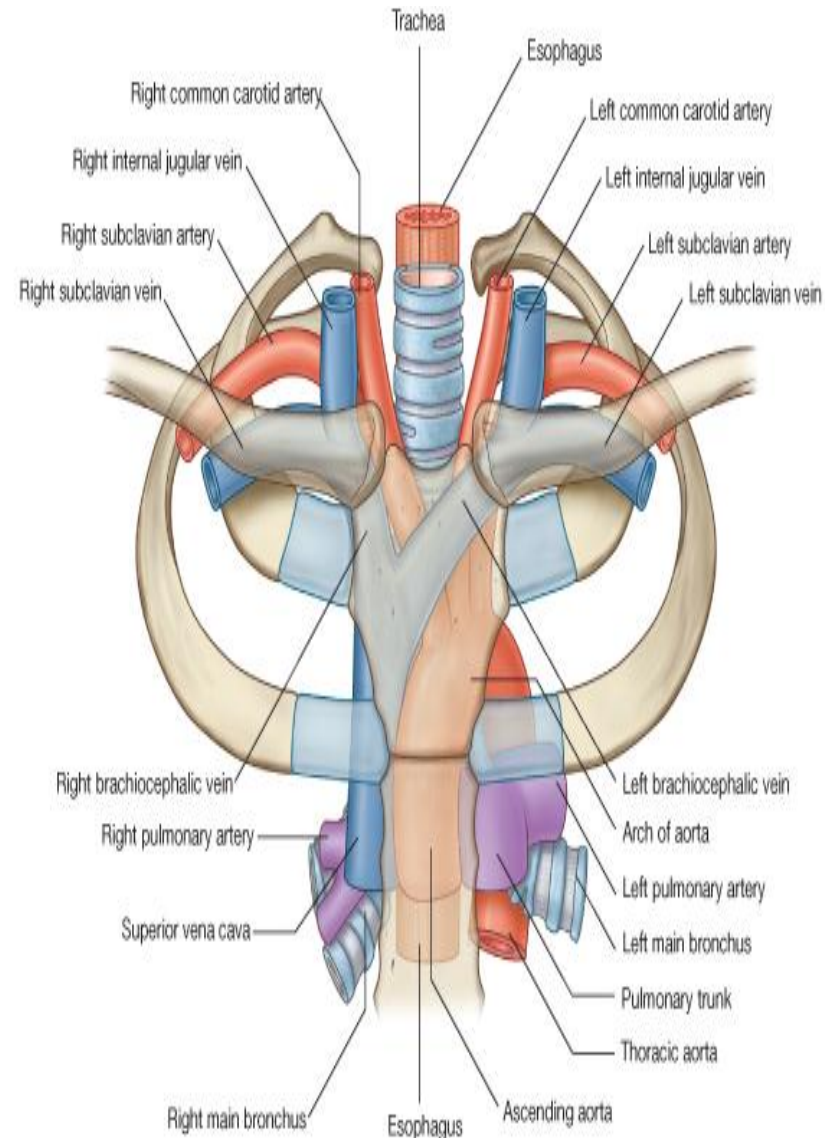
Boundries:

- *Anterior: manbrium sterni.
- *Posterior: upper 4 thoracic vertebri.
- *Superior: thoracic inlet.
- *Inferior: imaginary plane.
- *Sides: mediastinal pleura.



Contents of superior mediastinum

<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:

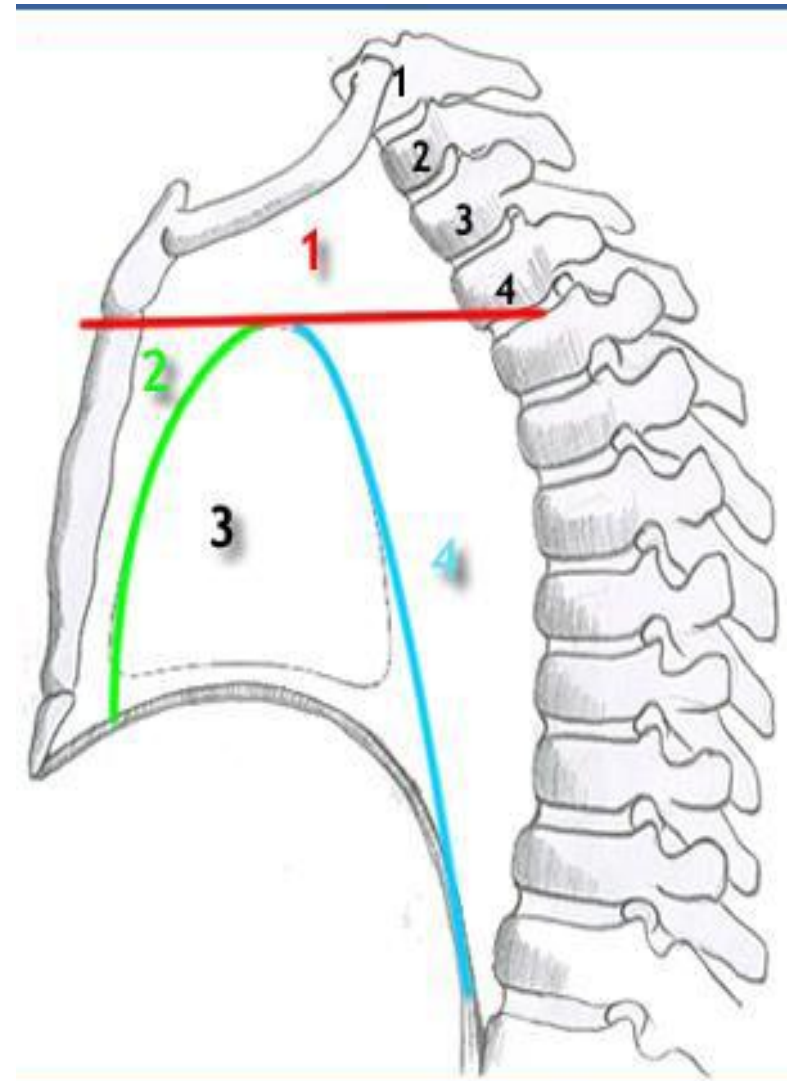
Anterior: body of the sternum.

Posterior: pericardium & heart.

Superior: imaginary plane.

Inferior: diaphragm.

Sides: mediastinal pleura.

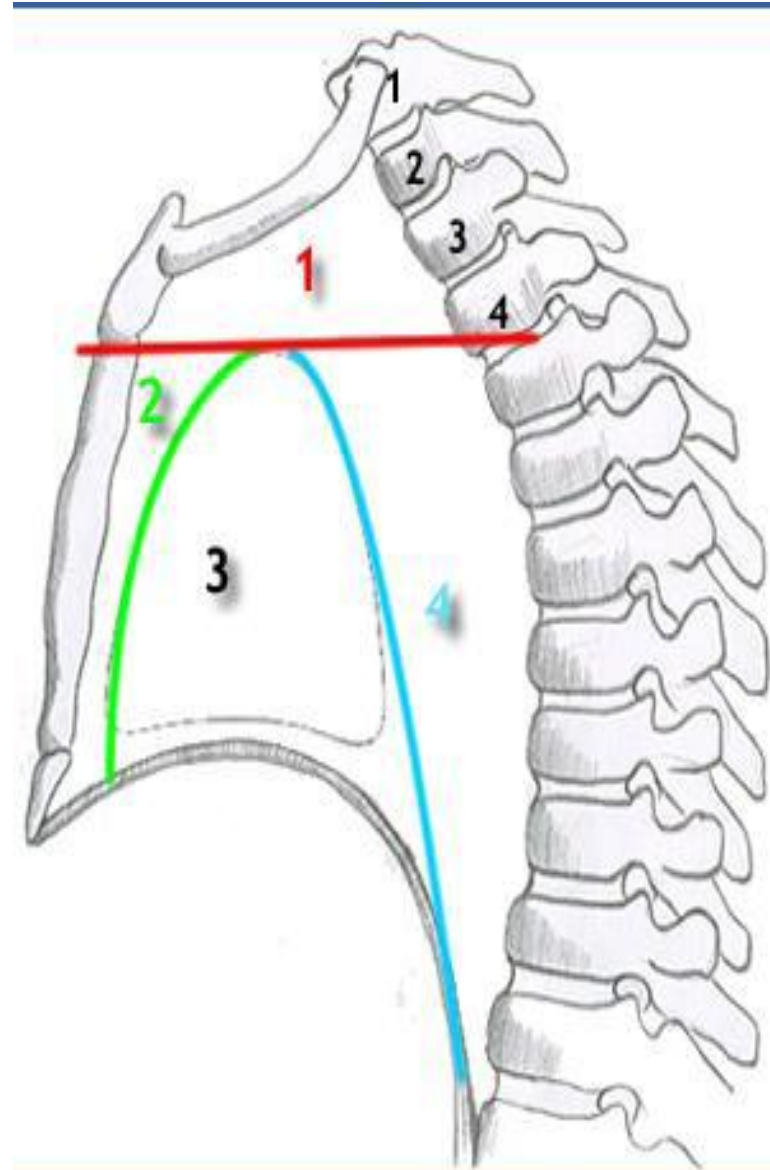


Contents of anterior mediastinum

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

Middle mediastinum

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



Posterior mediastinum

Boundries:

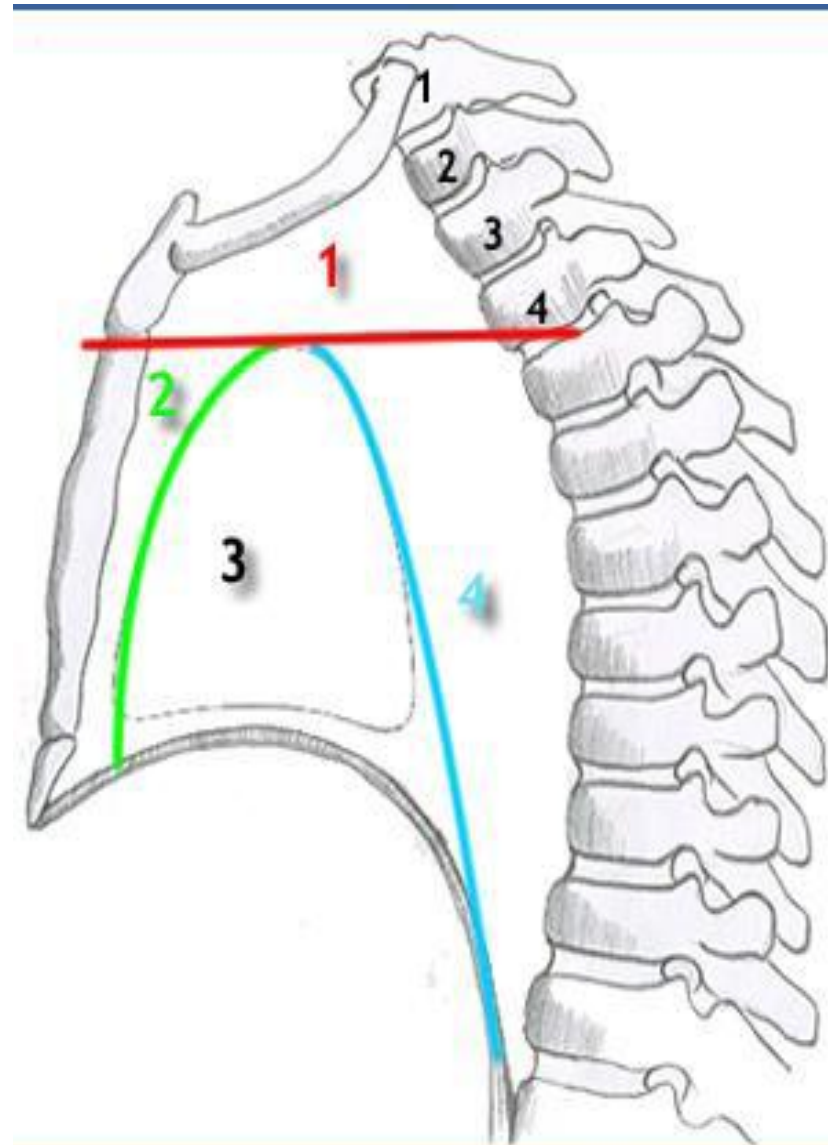
Anterior: pericardium & heart.

Posterior: lower 8 thoracic vertebrae.

Superior: imaginary plane.

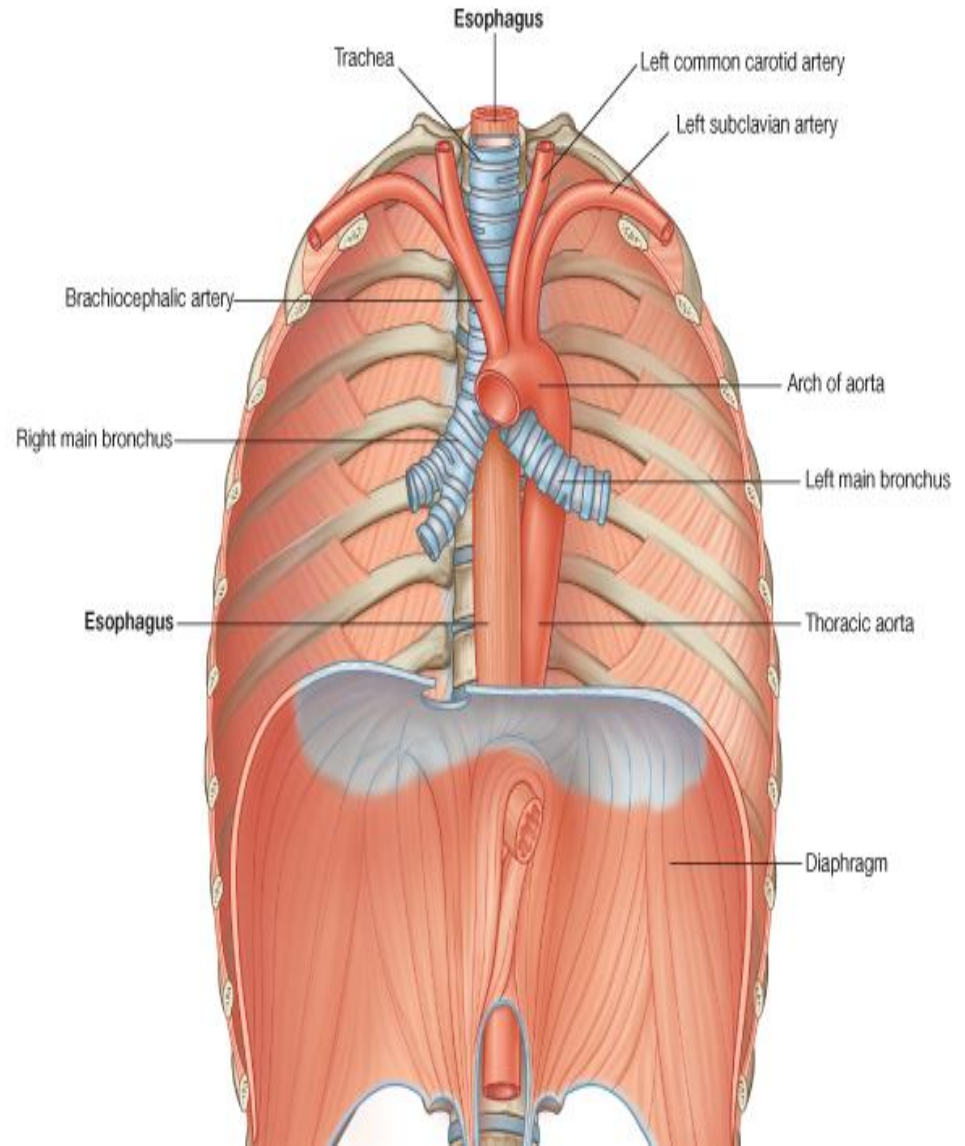
Inferior: diaphragm.

Sides: mediastinal pleura.



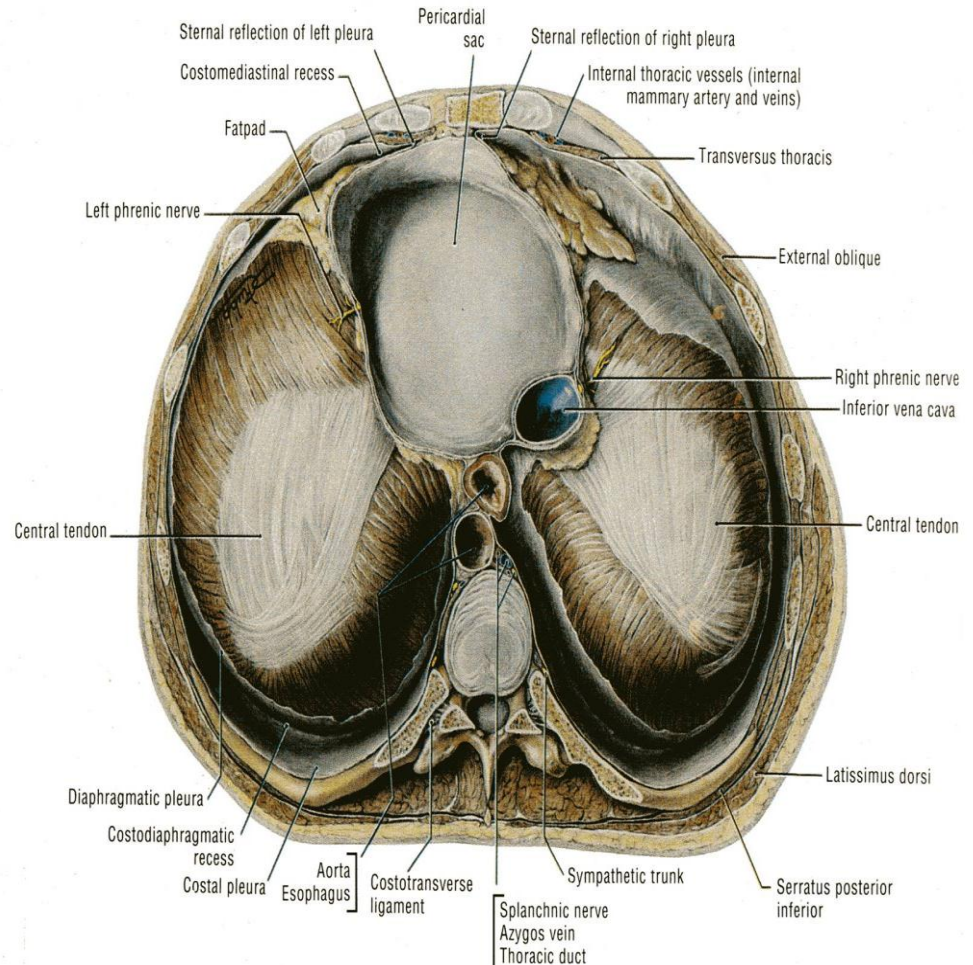
Contents of Posterior mediastinum

Tubes	Esophagus Thoracic duct
Arteries	Thoracic Aorta
Veins	Azygous vein
Nerves	*Thoracic sympathatic trunks *Thoracic splanchnic nerves



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**)



Origin:

Sternal origin:

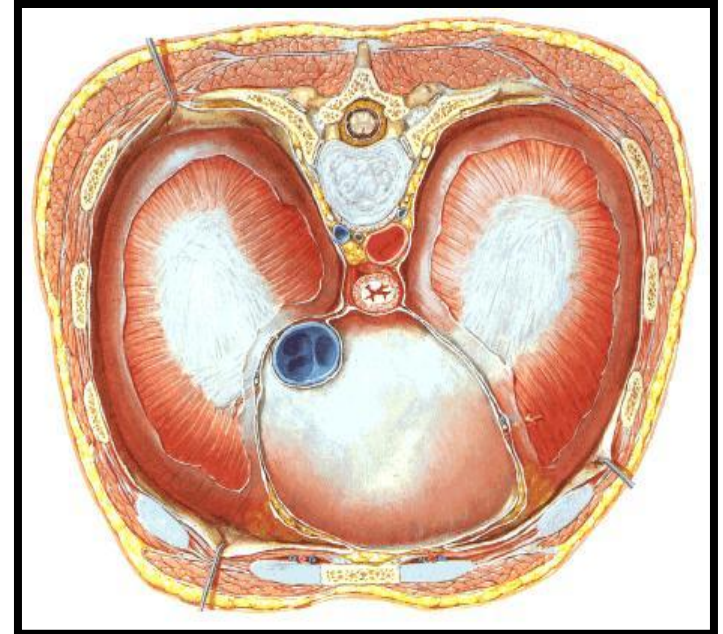
By 2 slips (right & left)
from the inner surface of
the xiphoid process

Costal origin:

From lower six ribs &
their costal cartilages

Vertebral origin:

By means of (crura)
& (ligaments)



Vertebral Origin

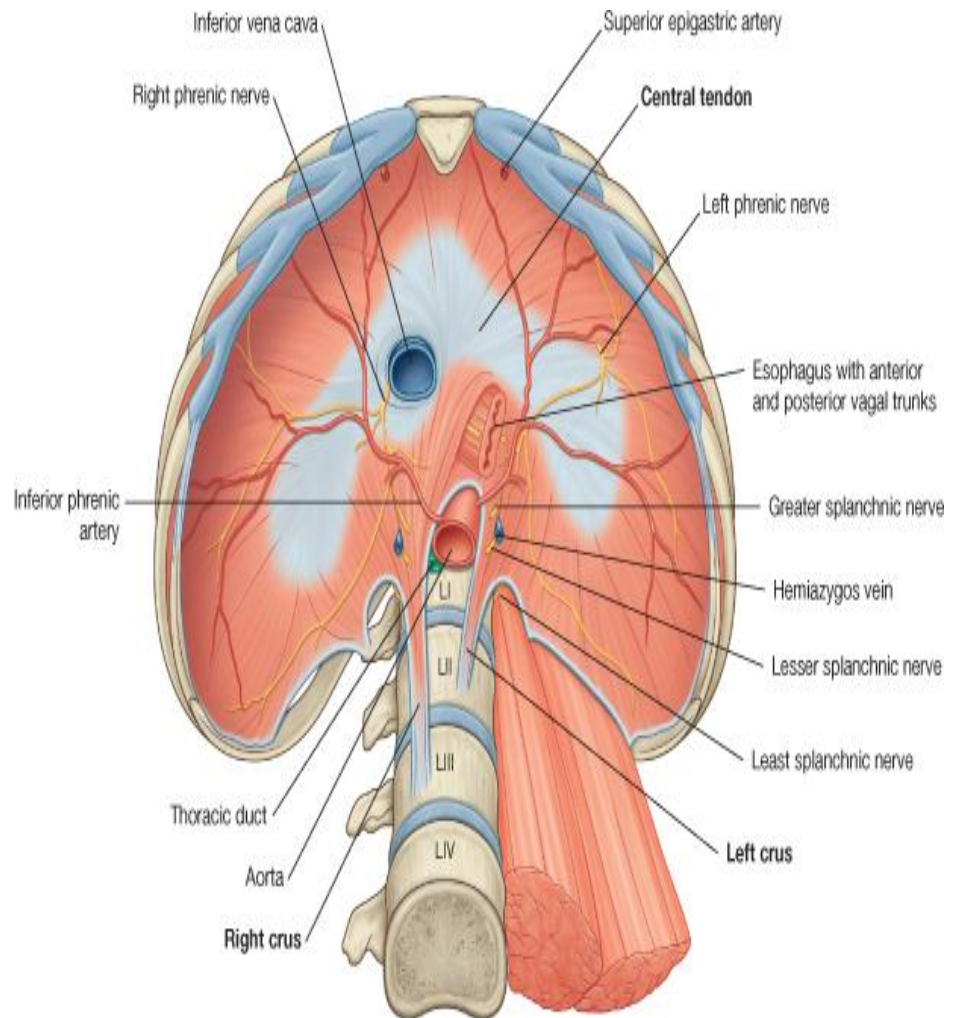
Crura:

Right crus:

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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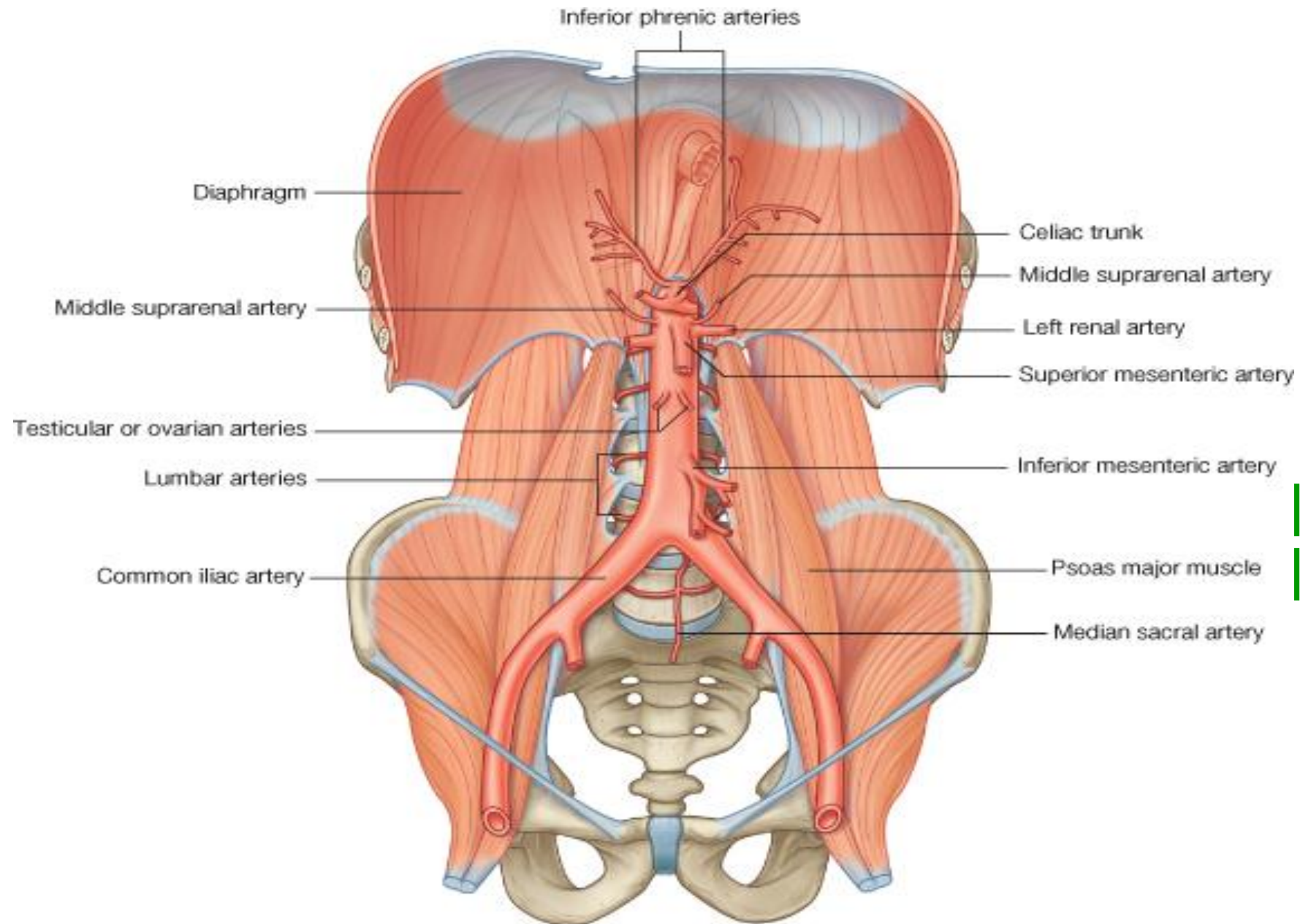
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Vertebral origin

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

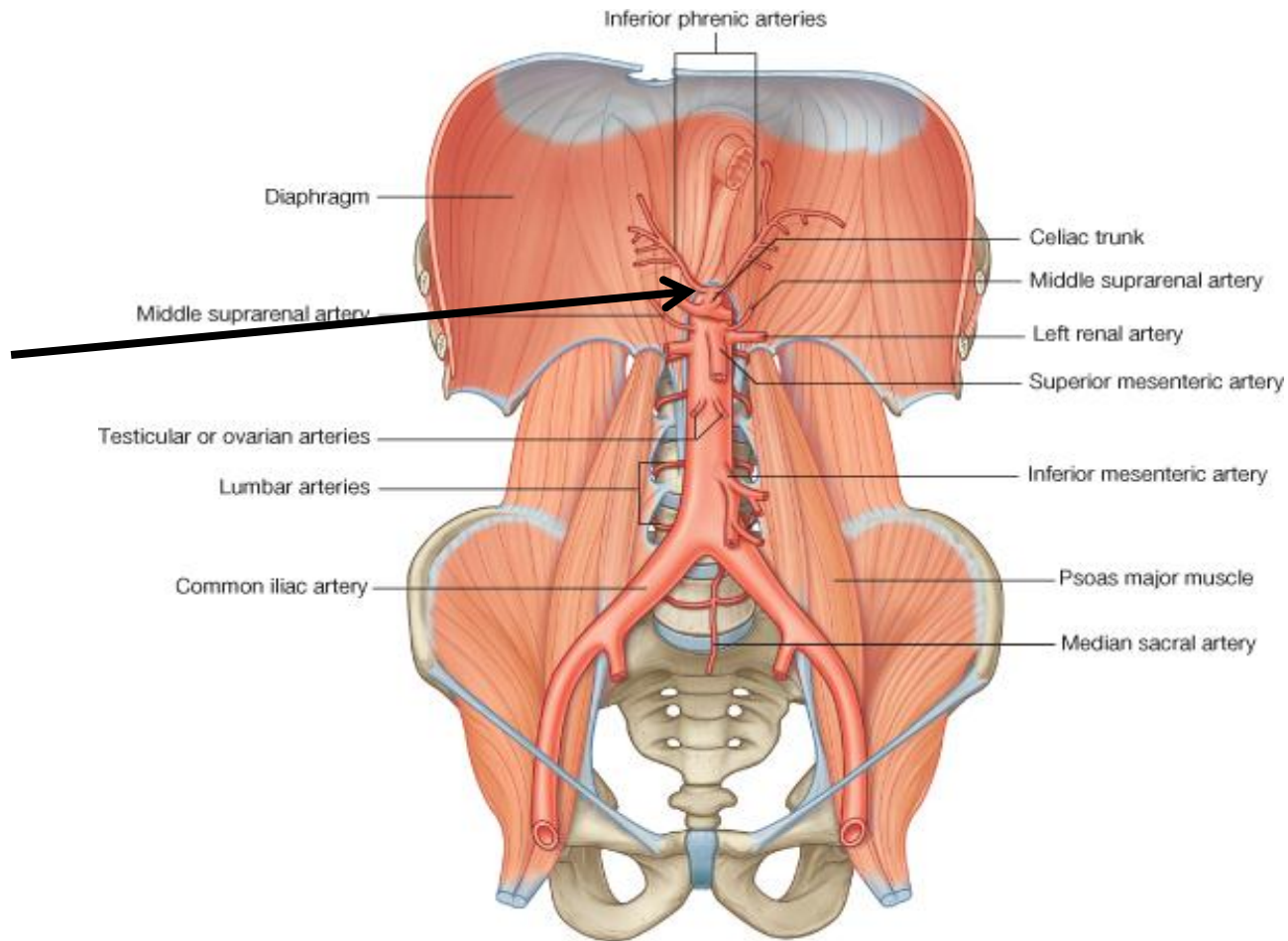
Medial arcuate
ligaments:
is the thickened upper
margin of the fascia
covering the anterior
surface of **psoas major**
muscle

Lateral arcuate ligaments:
is the thickened upper
margin of the fascia
covering the anterior
surface of **quadratus**
lumborum muscle



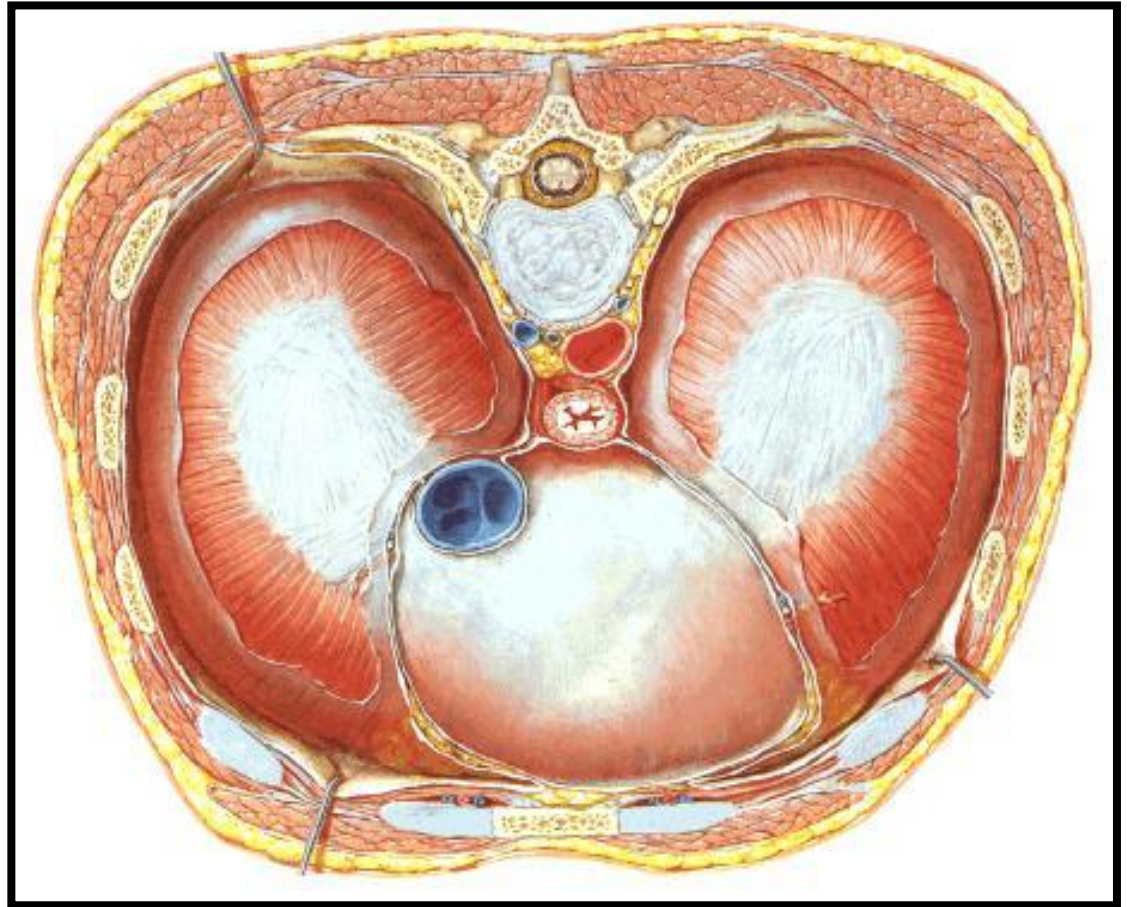
Medial borders of the two crura connected by a **median arcuate ligaments** which crosses over the anterior surface of the aorta (T12)

Median arcuate ligament



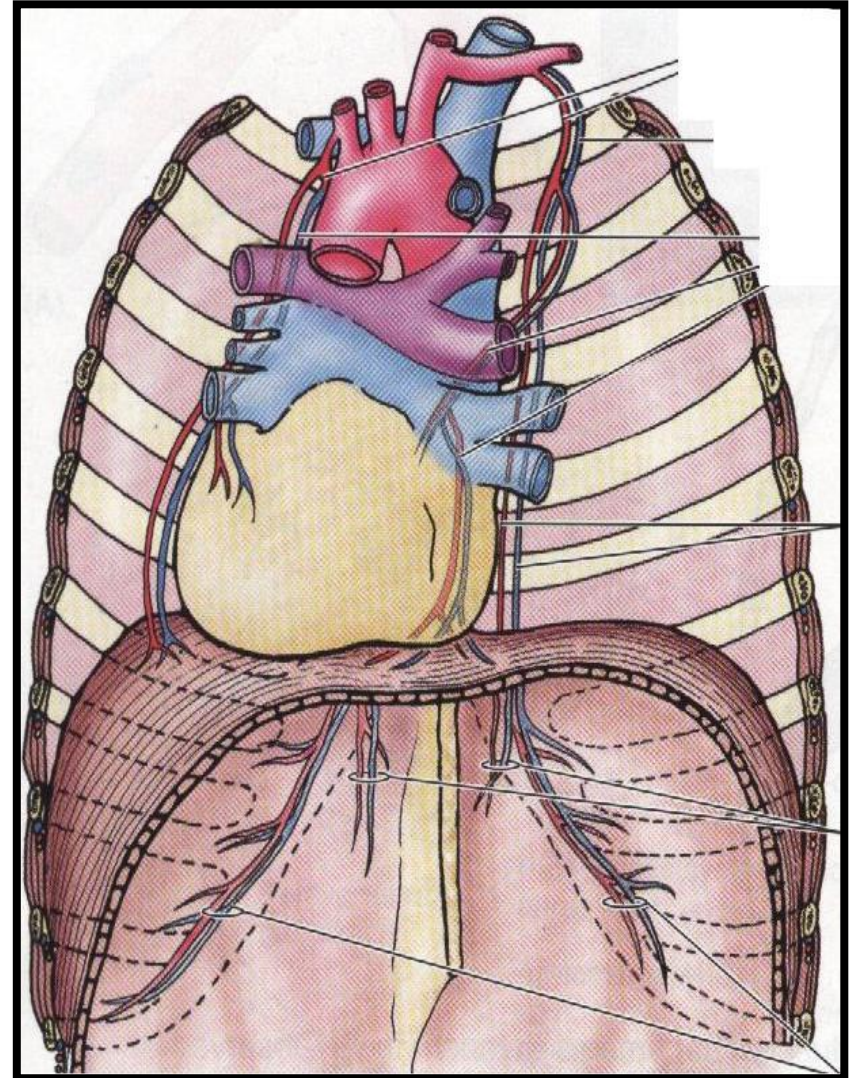
INSERTION

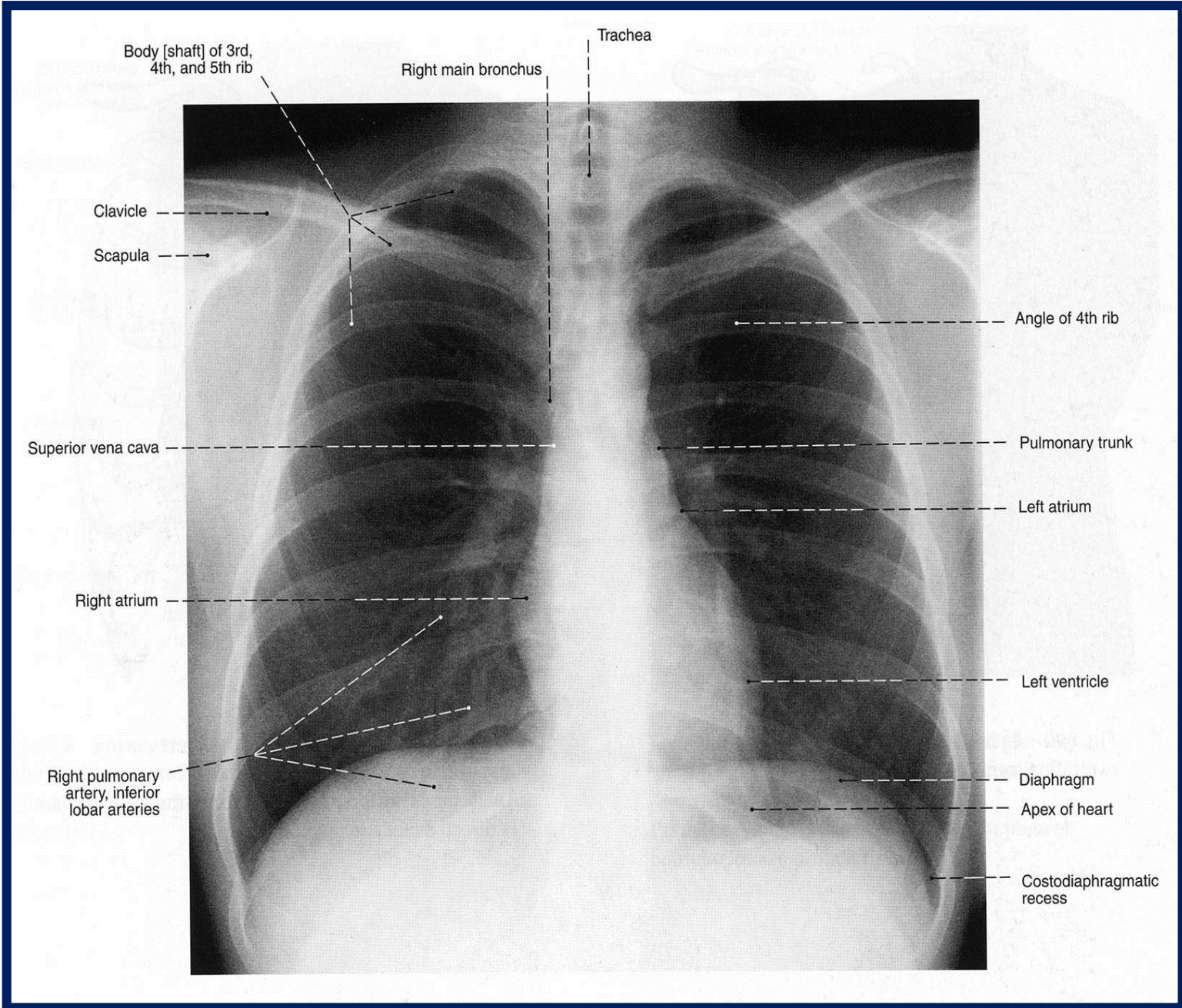
It is inserted into a **central tendon** which is shaped like 3 leaves (Trifoliate)



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

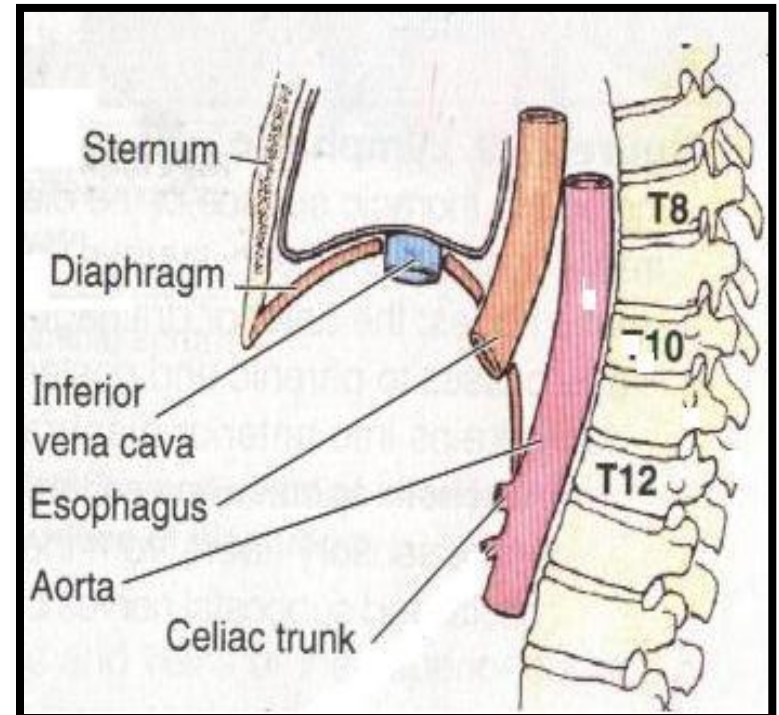
Transmits:
Esophagus,
Vagi,
Esophageal branches of left
gastric vessels &
Lymph vessels

Aortic opening – T12

Transmits:
Aorta,
Thoracic duct &
Azygous vein

Caval opening – T8

Transmits:
IVC,
right phrenic nerve



Other openings

Splanchnic nerves, superior epigastric vessels, left phrenic nerve,

Blood Supply of the diaphragm :

Superior surface:

Pericardiophrenic & Musculophrenic arteries (internal thoracic)

Inferior surface:

Inferior phrenic arteries (abdominal aorta)

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

