



ANATOMY TEAM

PRACTICAL

DONE BY

Male

Majed Al A sheikh

Saleh Al-rashed

Abdullah Alsabti

Ali alrawdhan

Sulaiman AL- ajlan

Fahad Al-shehan

Abdullah Al-saeed

Female

Jawaher Enani

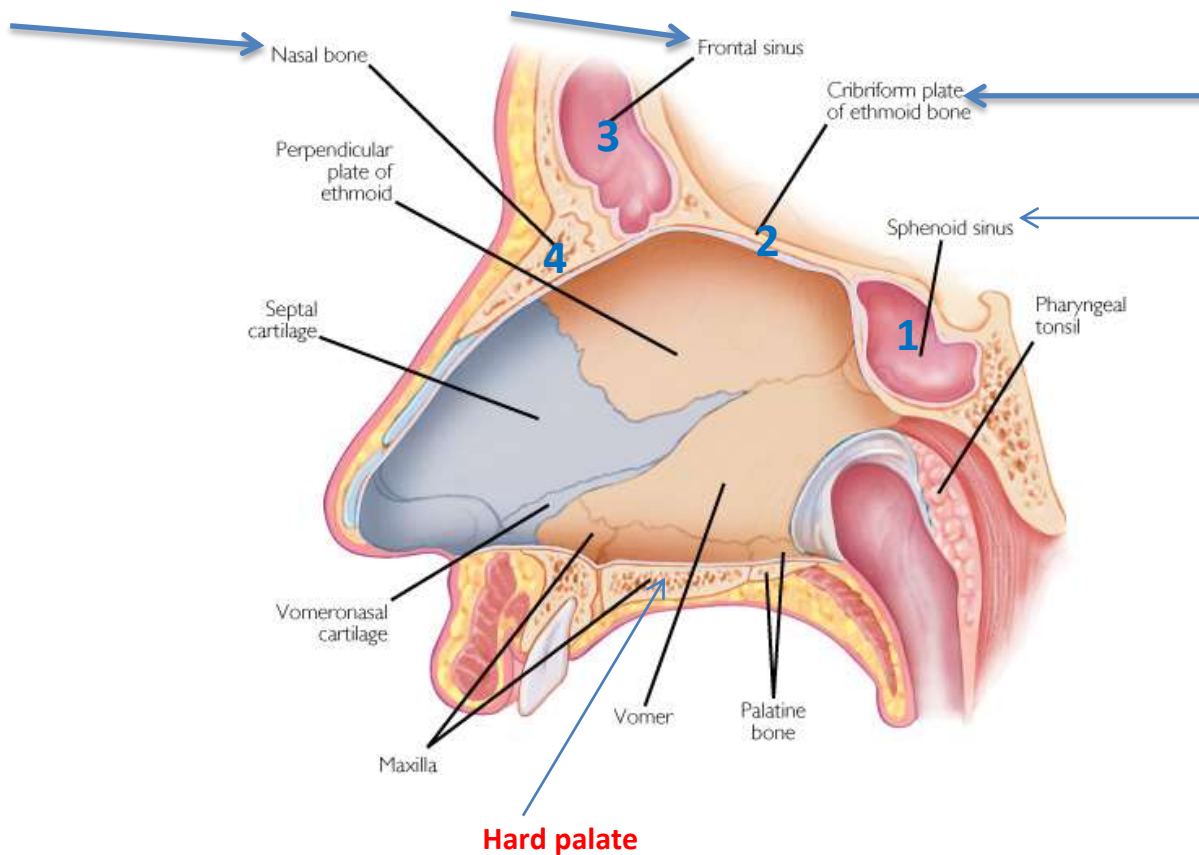
Njoud ALOtaibi

May AOraini

Noor AlZhrani

Alanoud Ahoqail

- Sagittal section showing:



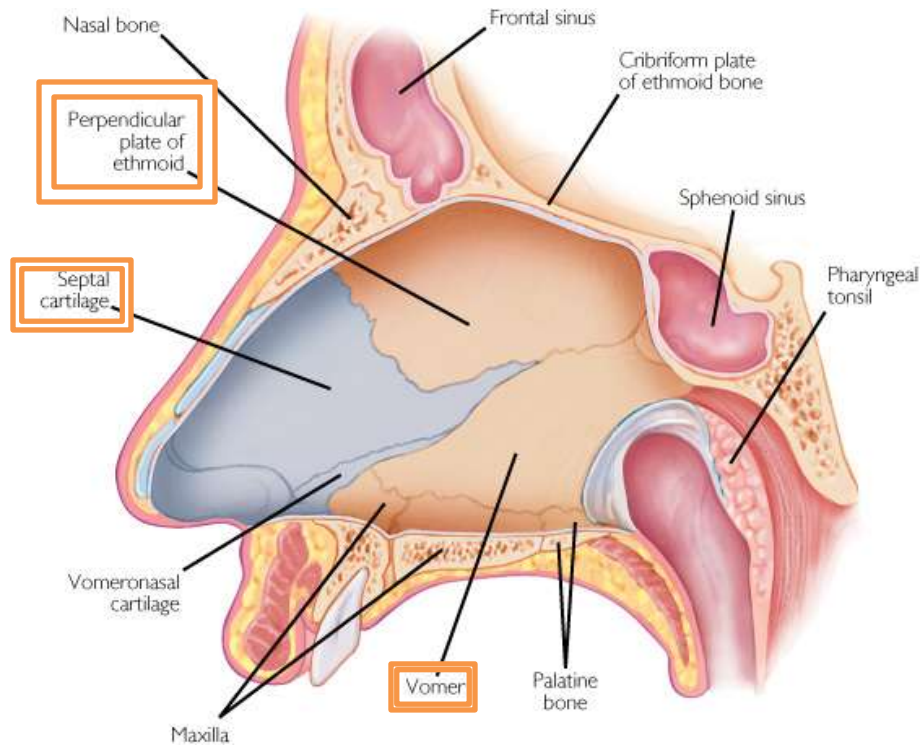
The roof is made out of:

1. Body of sphenoid.
2. Cribriform plate of ethmoid bone.
3. Frontal bone.
4. Nasal bone & cartilage

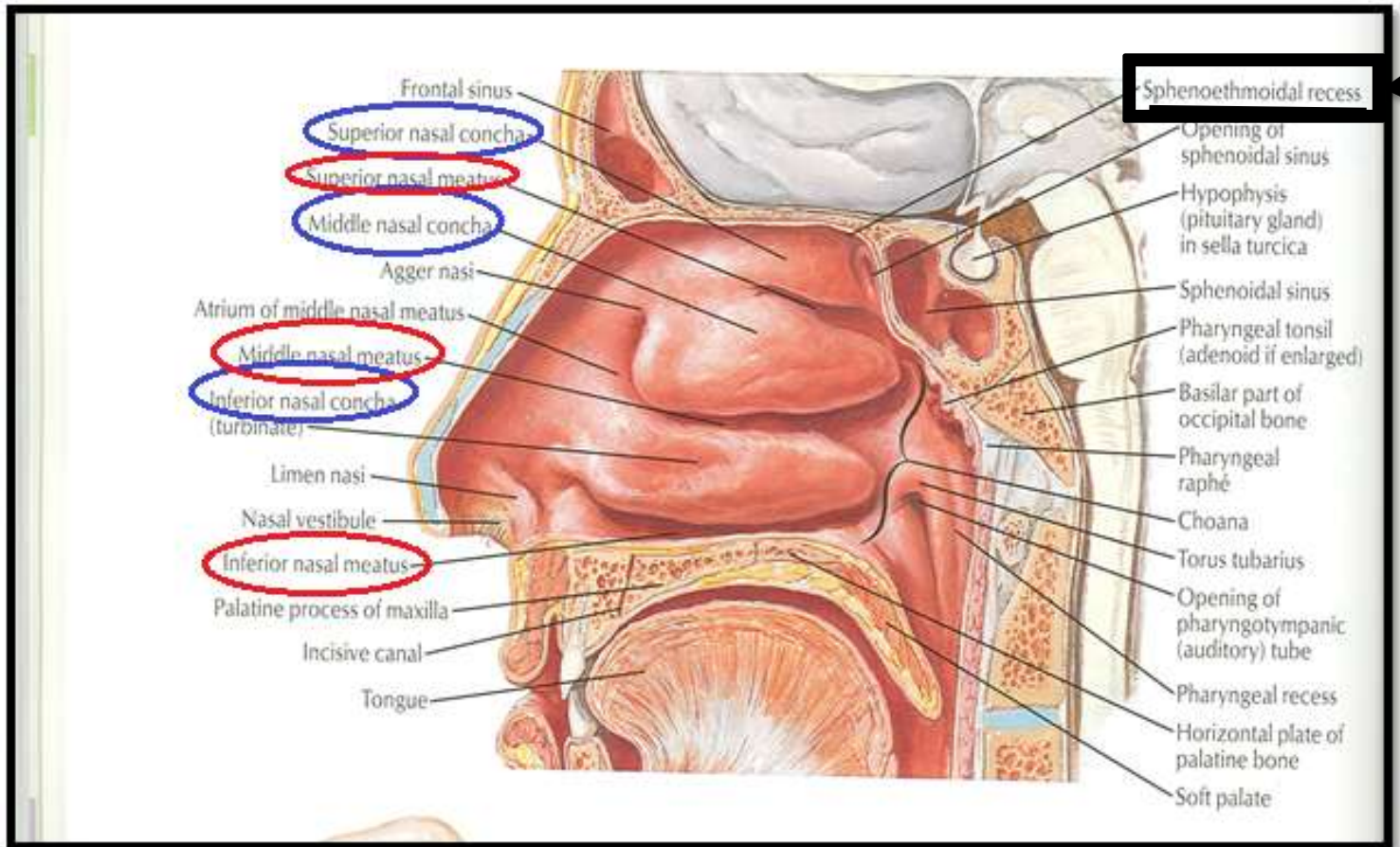
Floor:

- Separates it from the oral cavity.
- Formed by :hard (bony) palate.

- Medial Wall (Nasal Septum) :
- Osteocartilaginous partition.
- Formed by:



Perpendicular plate of ethmoid bone /2. Vomer /3. Septal cartilage



- Lateral Wall :

- Shows three horizontal bony projections:

1. Superior concha
2. Middle concha
3. Inferior concha

- The cavity below each concha is called a meatus and are named as:

1. Superior meatus
2. Middle meatus
3. Inferior meatus

The small space above the superior concha is the **sphenoethmoidal recess**.

Sphenoethmoidal recess	sphenoidal sinus
Superior meatus	posterior ethmoidal sinus
Middle meatus	middle ethmoidal, maxillary, frontal & the anterior ethmoidal sinuses
Inferior meatus	nasolacrimal duct.

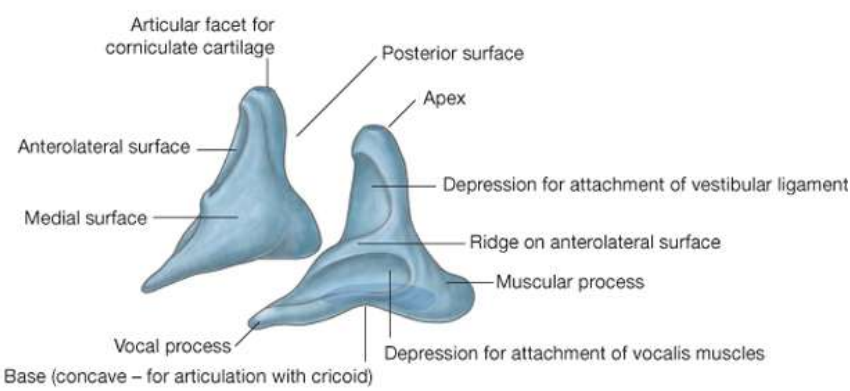
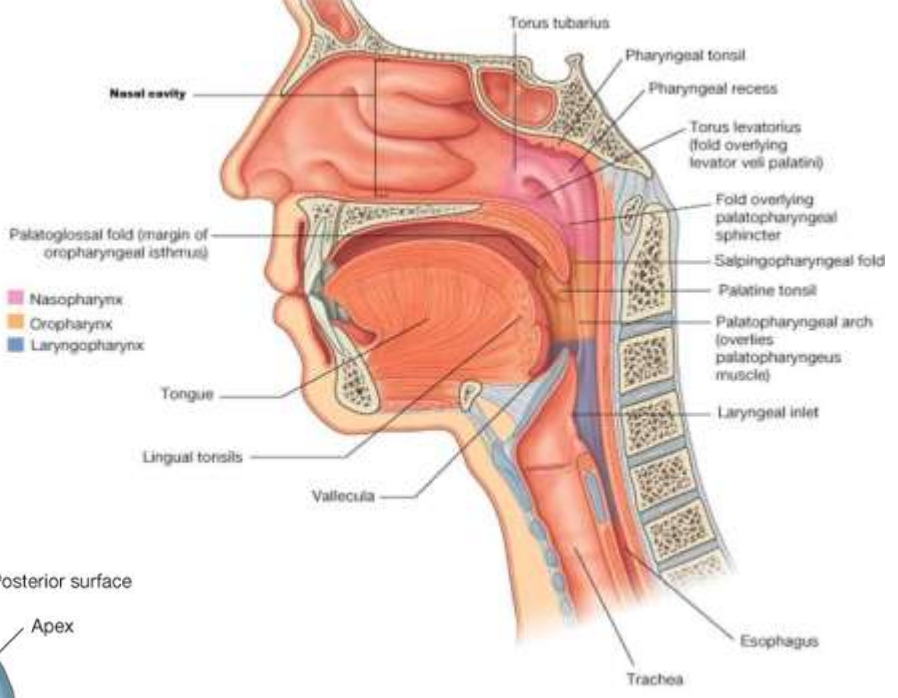
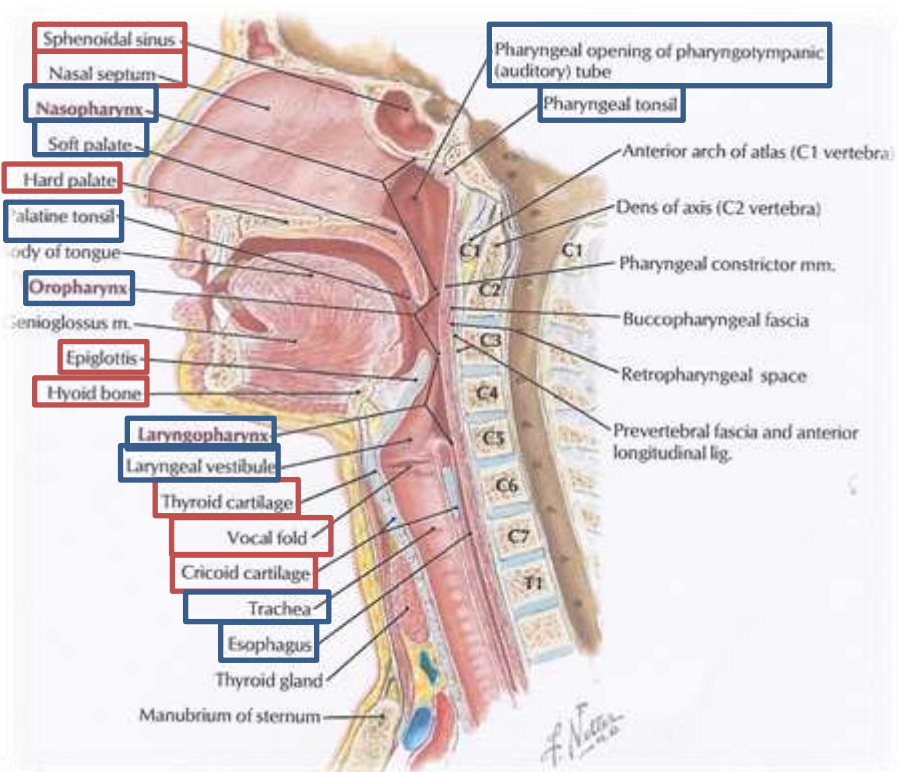
lateral wall:

- Superior, middle and inferior concha
- Superior, middle and inferior meatus (sinuses and nasolacrimal duct open at it)
- most important meatus is the middle one
- Sphenoethmoidal recess →→→→ sphenoidal sinus
- Superior meatus →→→→ posterior ethmoid sinus
- Middle meatus →→→→ frontal, maxilla anterior and middle ethmoid sinus
- Inferior meatus →→→→ nasolacrimal duct
- sinus where it drains or meatus and has the opening of ?

NASAL CAVITY, LARYNX, PHARYNX, TRACHEA

- Nasal Septum.
- Frontal and sphenoid bones.
- Frontal and sphenoidal sinus.
- Hard palate.
- Hyoid bone , Epiglottis and inlet of the larynx.
- Thyroid Cartilage (consist of two lamina fused together which form the thyroid angel), we can only find it in the anterior part of larynx.
- Cricoid cartilage it is ring shaped and we can see it in the anterior and posterior part of the larynx
- Vestibular fold.
- Vocal fold.

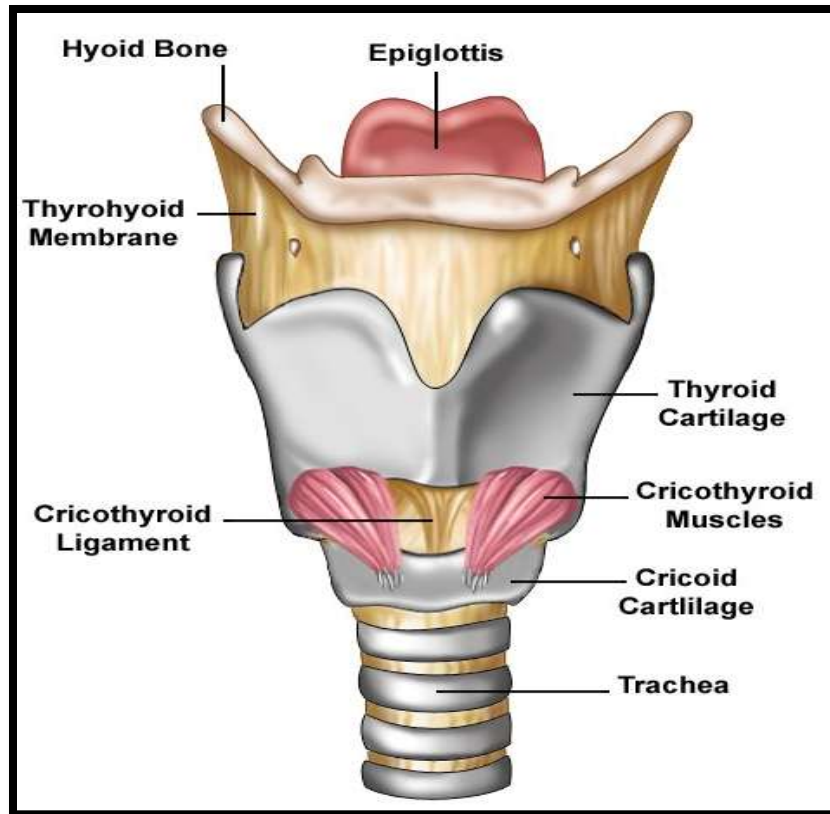
- Arytenoid Cartilage is above the cricoid cartilage, it is triangular in shape.
- It has three angels' anterior , lateral and upper (apex).
- The vocal fold is connected from anterior angel of arytenoid cartilage to the angel of thyroid.
- Whenever the angel of thyroid becomes narrower the vocal fold becomes longer.
- In males the thyroid angel is narrower than in females .
- The corniculate cartilage is attached to the apex of arytenoid cartilage.



You should to memorize all structure in the next three pictures

We have to read the question very carefully, because you might be asked to identify or to describe the function.

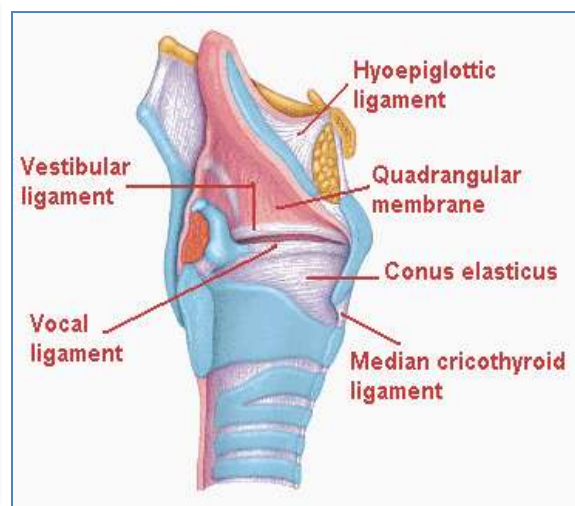
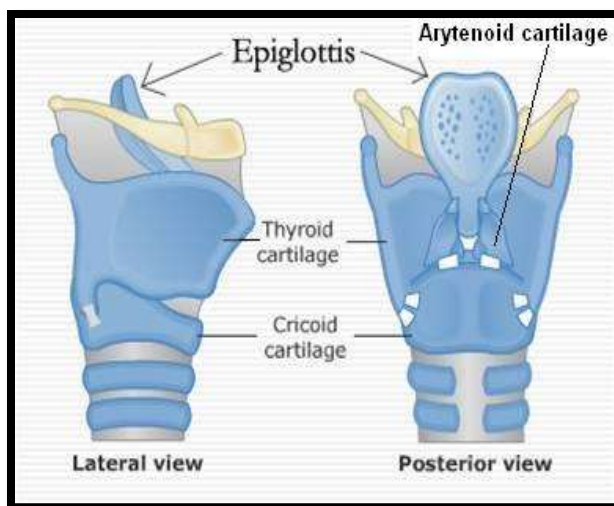
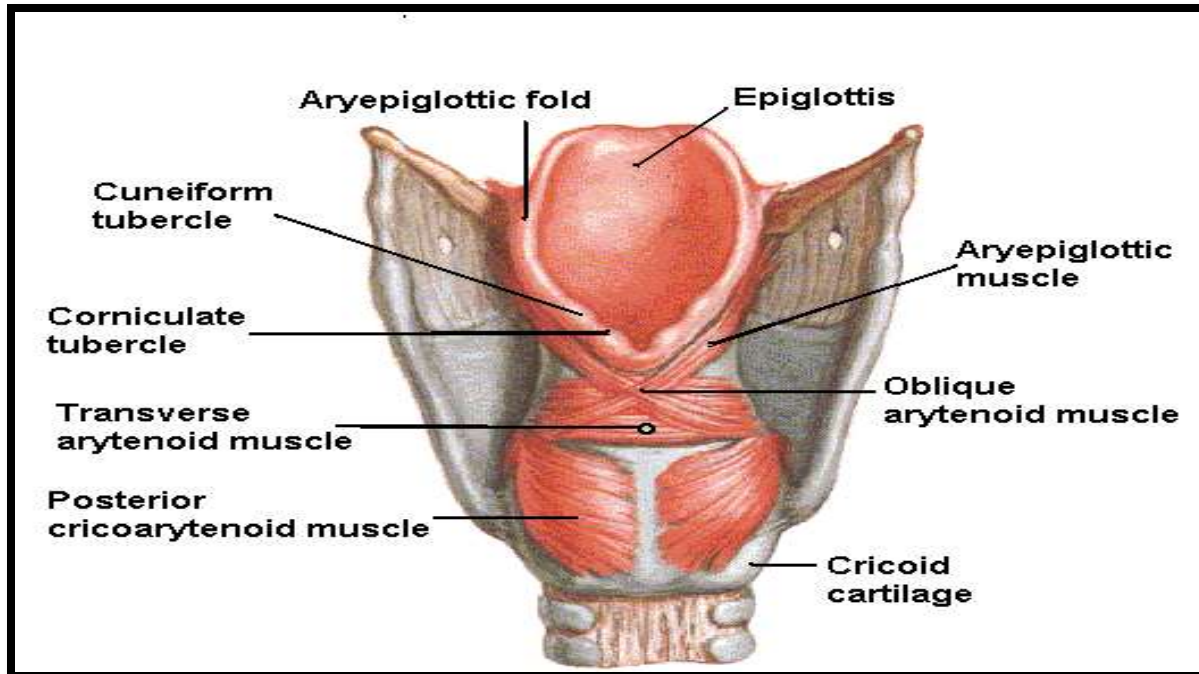
*For example, the function of epiglottis => during swallowing it prevents food from going into the air passage.



Most important functions of larynx are **breathing and phonation**

- The cartilaginous skeleton is comprised of :
 1. Thyroid
 2. Cricoid **Single**
 3. Epiglottis
 1. Arytenoid
 2. Corniculate **Paired**
 3. Cuneiform

All the cartilages, except the **epiglottis**, are of hyaline type.
Epiglottis is formed of **elastic** cartilage.



It's important to know the **intrinsic muscles** and their **nerve supply and functions** (extrinsic not important)

All **intrinsic muscles**, are supplied by the **recurrent laryngeal** nerve except the **cricothyroid** which supply by **external laryngeal** of superior laryngeal

The function of **cricothyroid** is increase the tension of vocal cord.

Sensory Above the vocal cords supply by **Internal laryngeal nerve** and below by **recurrent laryngeal nerve**

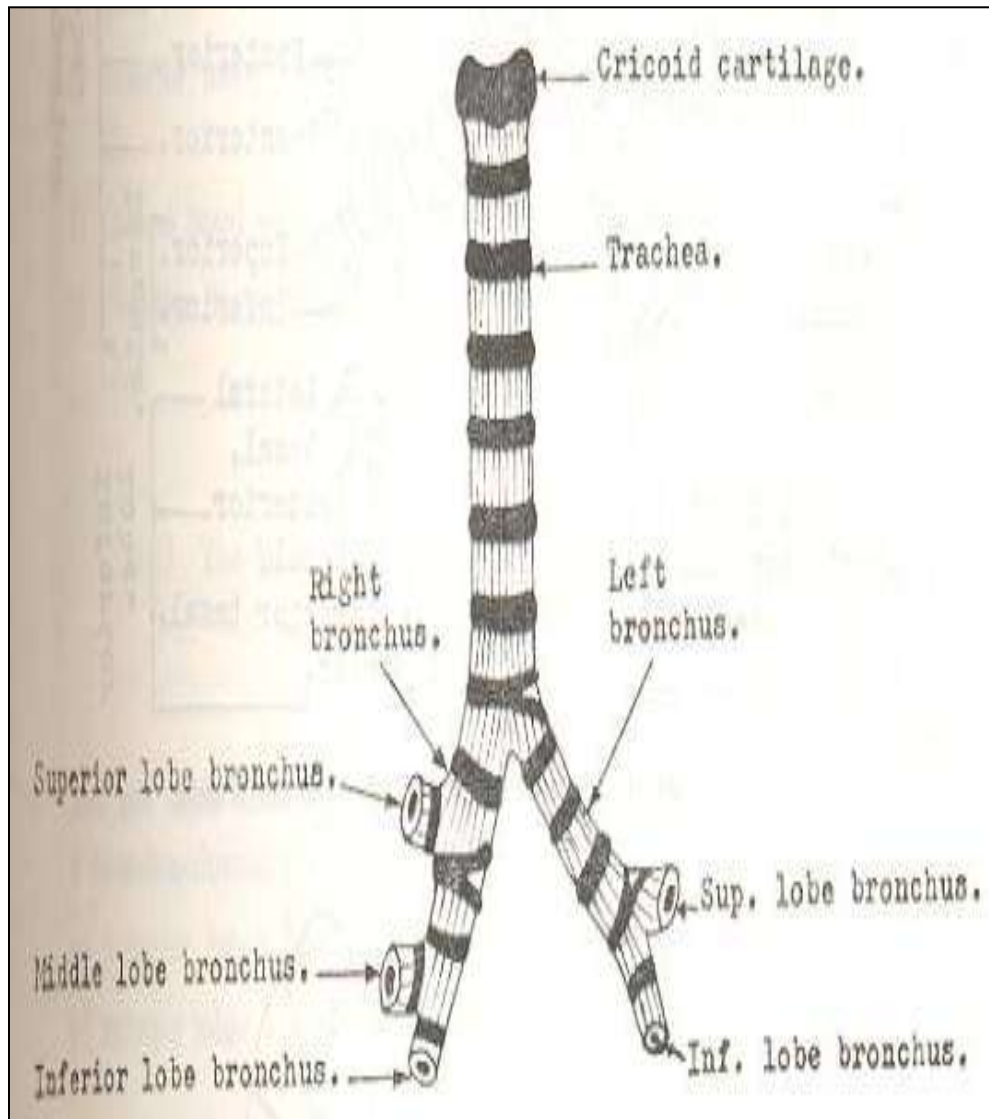
*Please go through the lecture and revise the functions of intrinsic muscles

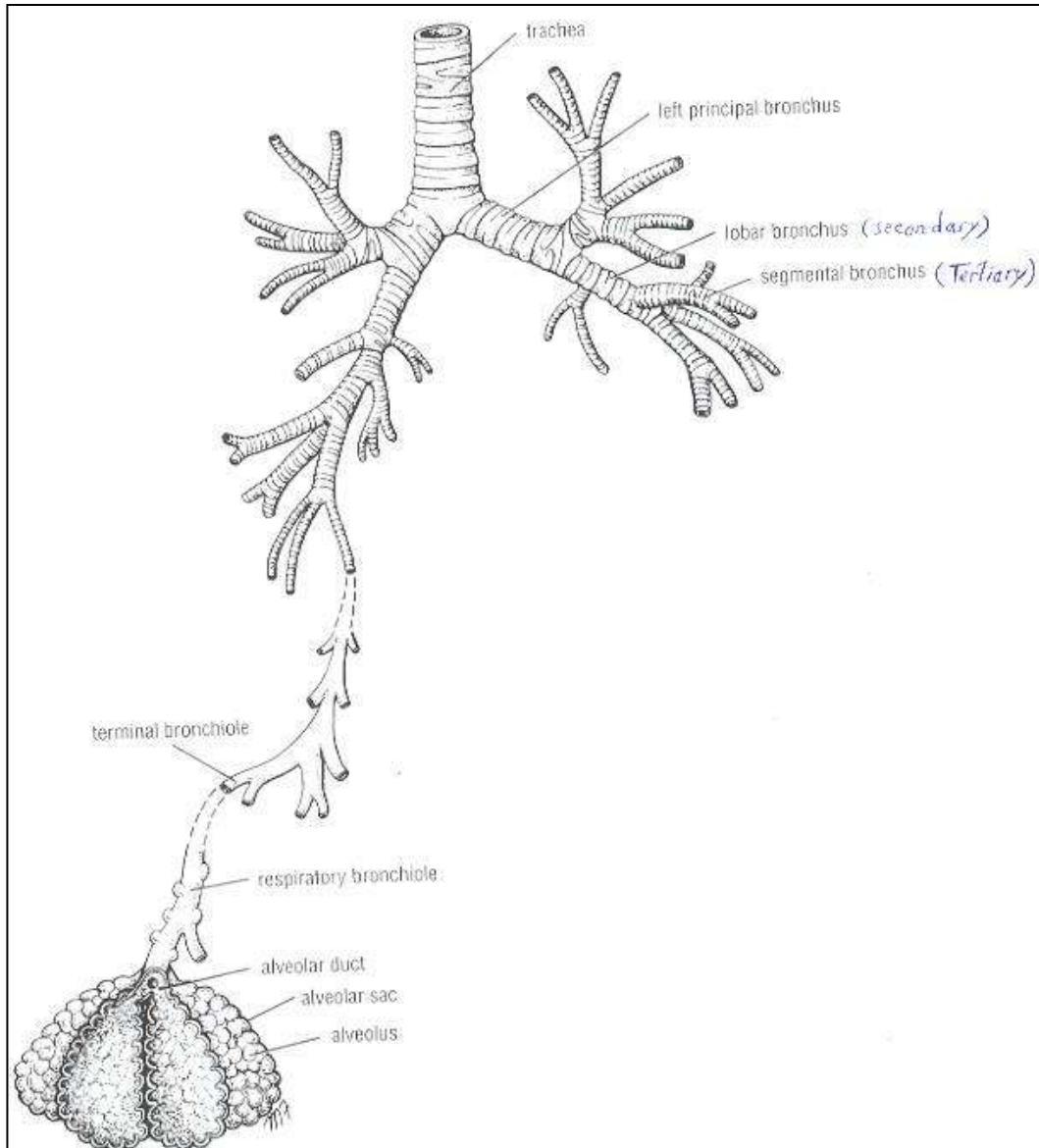
***Divisions of trachea into:**

1- Two main bronchus: one in each side

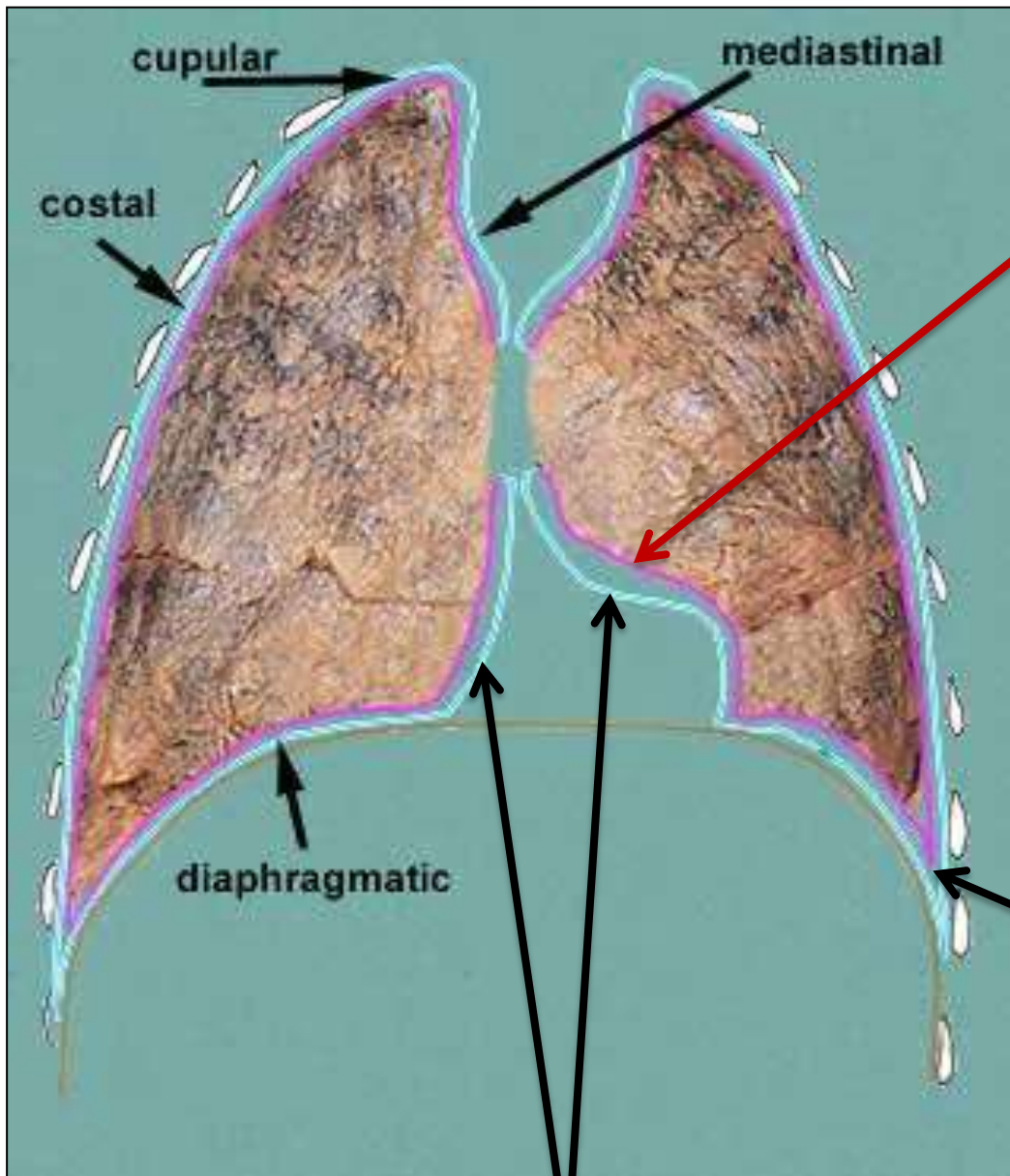
2-Lobar bronchus: three in the right and two in the left

3-Segmental bronchus: 10 in the right and 8 or 9 in the left





- Each segmental bronchus divides repeatedly into bronchioles, Bronchioles divide into terminal bronchioles, which show delicate outpunching's 'the respiratory bronchioles'. The respiratory bronchioles end by branching into alveolar ducts, which lead into alveolar sacs. The alveolar sacs consist of several alveoli.



Visceral Pleura

- 1- Surround the lungs.
- 2- sensitive to stretch.
- 3- The nerve supply is autonomic fibers

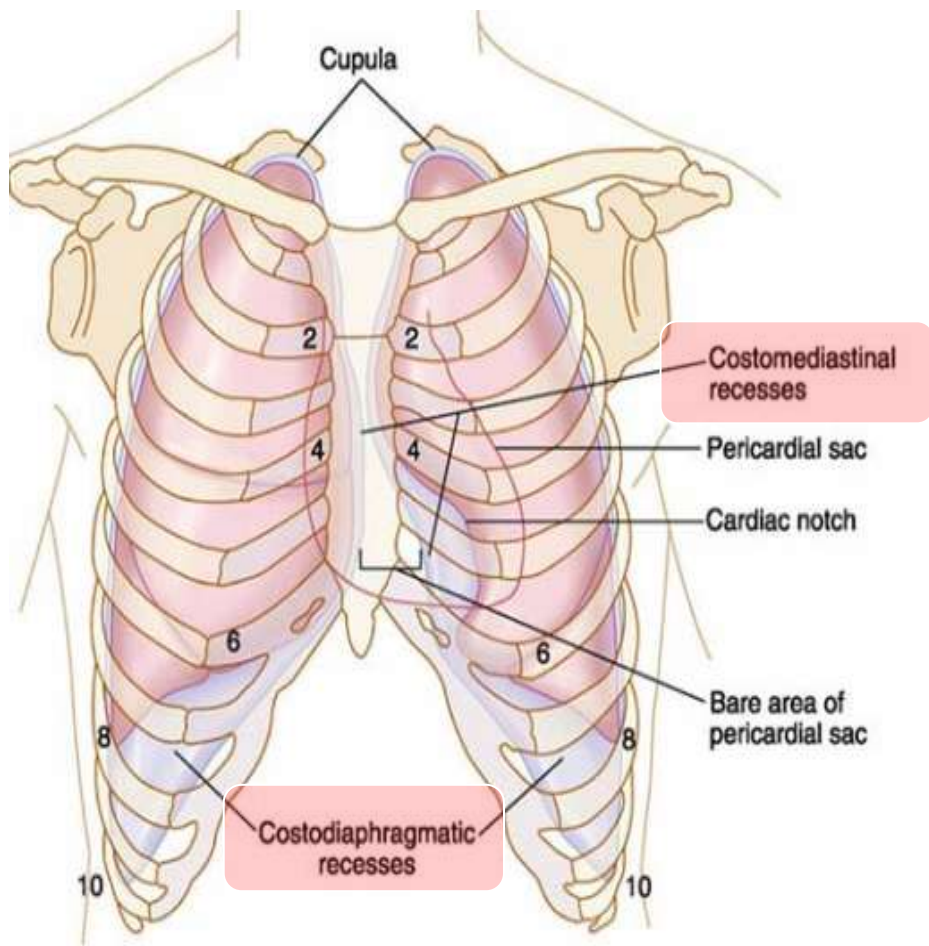
• Costodiaphragmatic Recesses.

- The lung will enter into the recesses in a deep inspiration

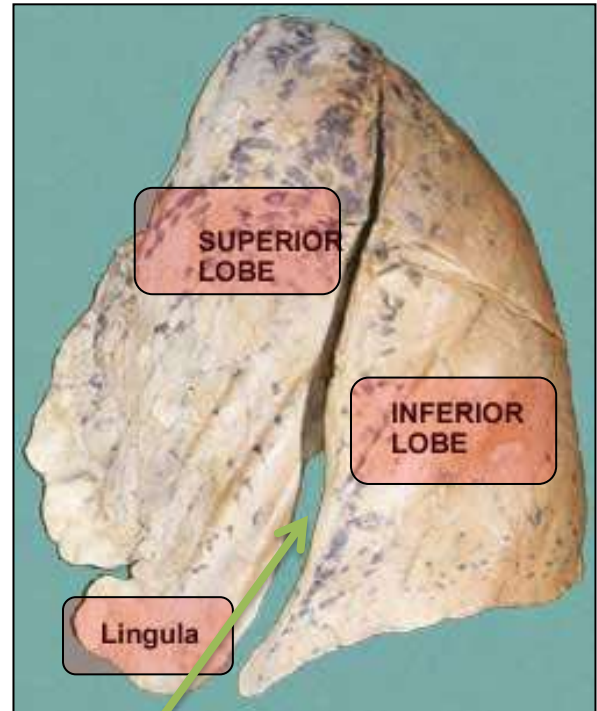
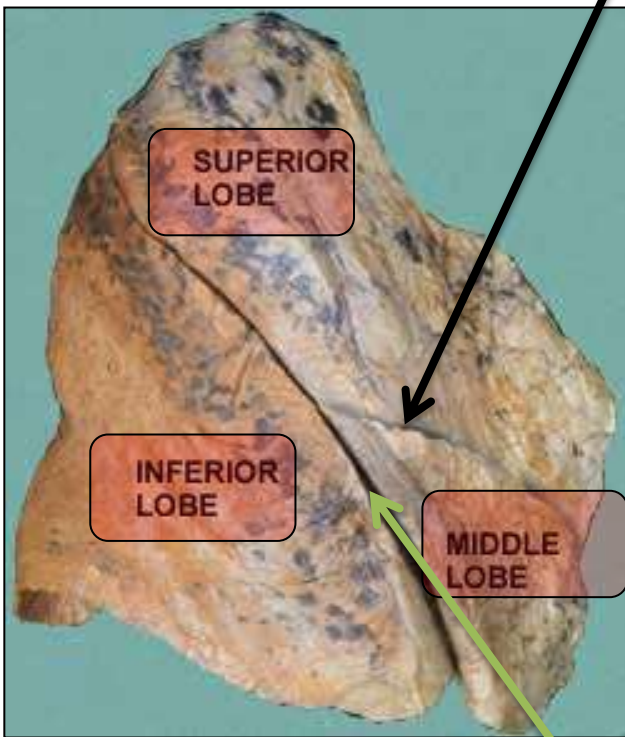
Parietal pleura:

- 1- It is sensitive to pain, pressure, temperature, and touch.
- 2- Divided into:
 - A- Cervical pleura, supplied by 1st intercostal nerve.
 - B- Costal pleura, segmentally supplied by the intercostal nerves.
 - C- Mediastinal pleura, supplied by phrenic nerves.
 - D- Diaphragmatic pleura, supplied by : 1- phrenic nerves over the domes. 2- lower 6 intercostal nerves around the periphery

Pleural Recesses



Transverse (horizontal) fissure



Right Lung

Oblique fissure

Left Lung

3- Larger & shorter than left lung.

4- Divided by

A- **2 fissures** (oblique & horizontal)

B- **3 lobes** (superior, middle and inferior lobes).

3- smaller & taller than right lung.

4- Divided by

A- **one oblique fissure.**

B- **2 lobes**, superior and inferior lobes .

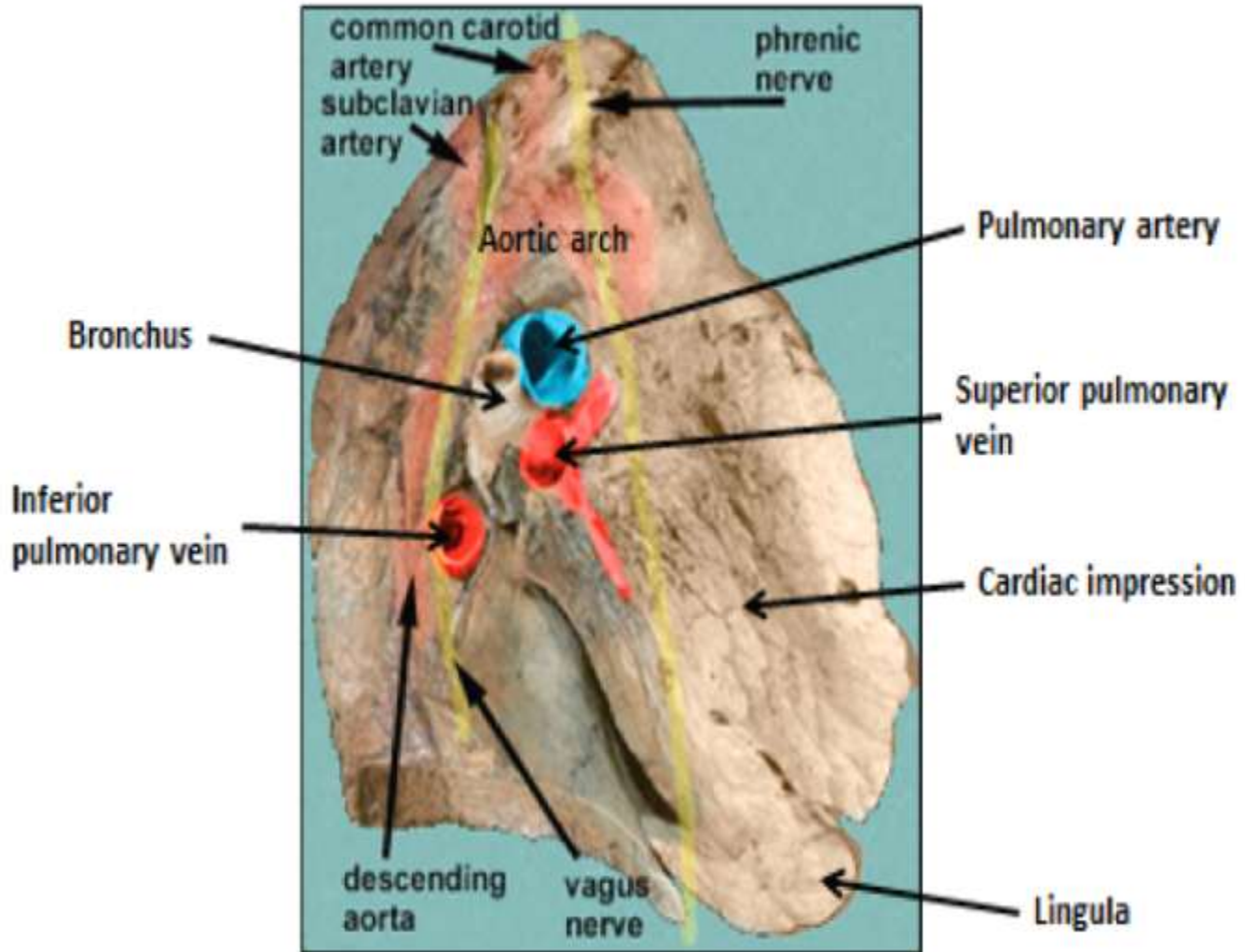
There is No horizontal fissure.

It has a **cardiac notch** at lower part of its anterior border.

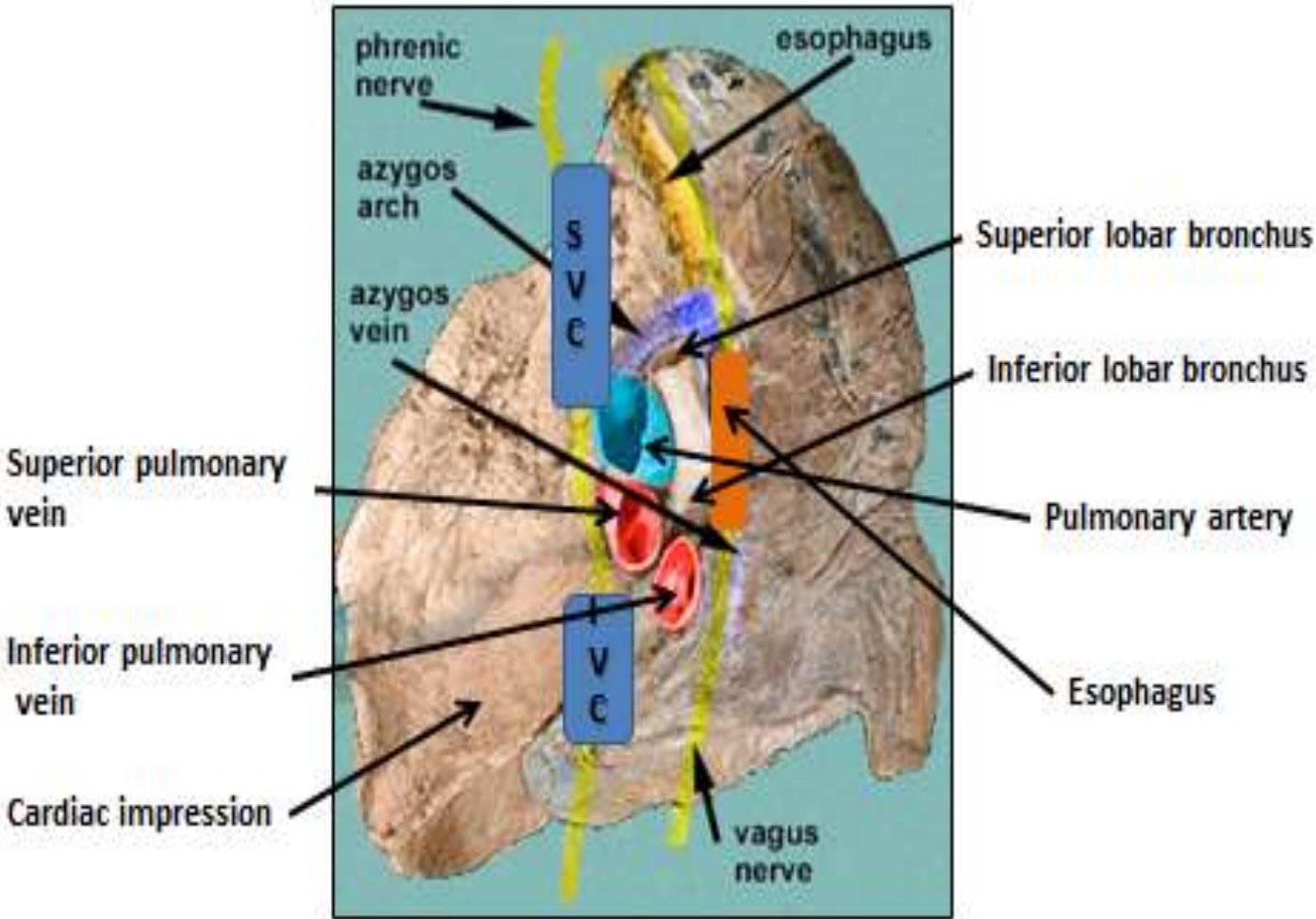
- ◆ The **blood** supply of lungs: **Bronchial arteries.**
- ◆ The **nerve** supply of lungs: **Pulmonary plexus which formed of autonomic N.S**

One of the next two pictures will be in the exam (إن شاء الله)

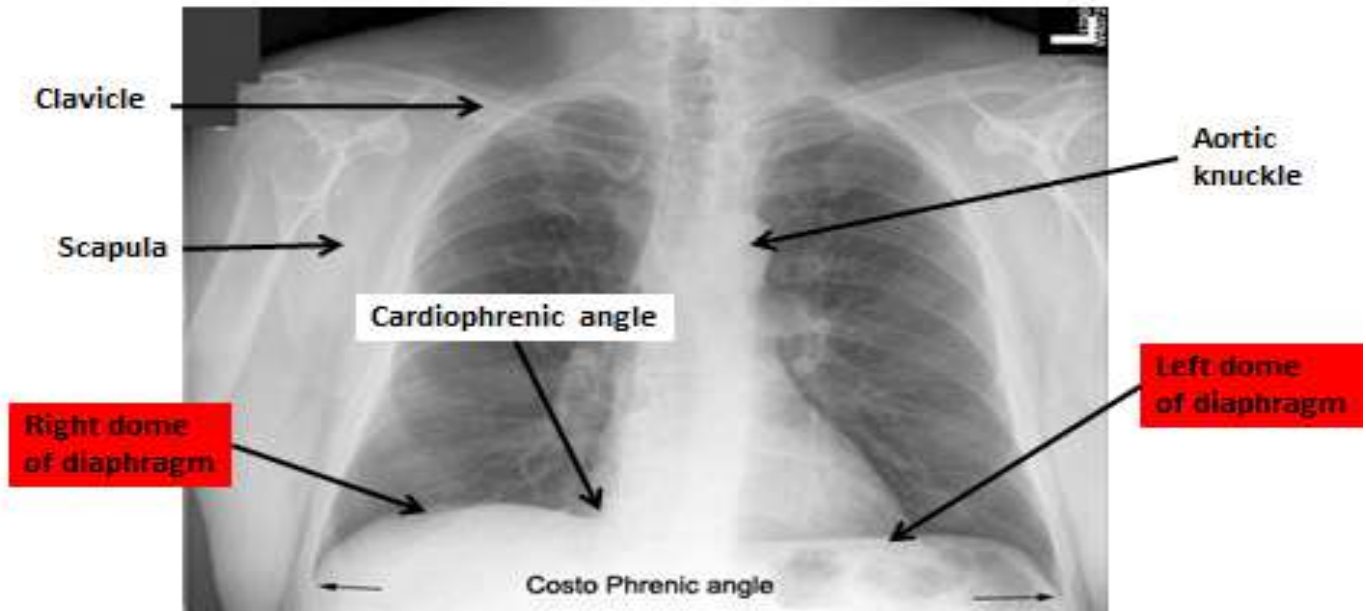
LEFT LUNG



RIGHT LUNG



RADIOLOGY



Notes :

Here, he maybe will ask you (what is the name of this film?)

The answer is: Plain X-ray

You have to know the left and right borders.

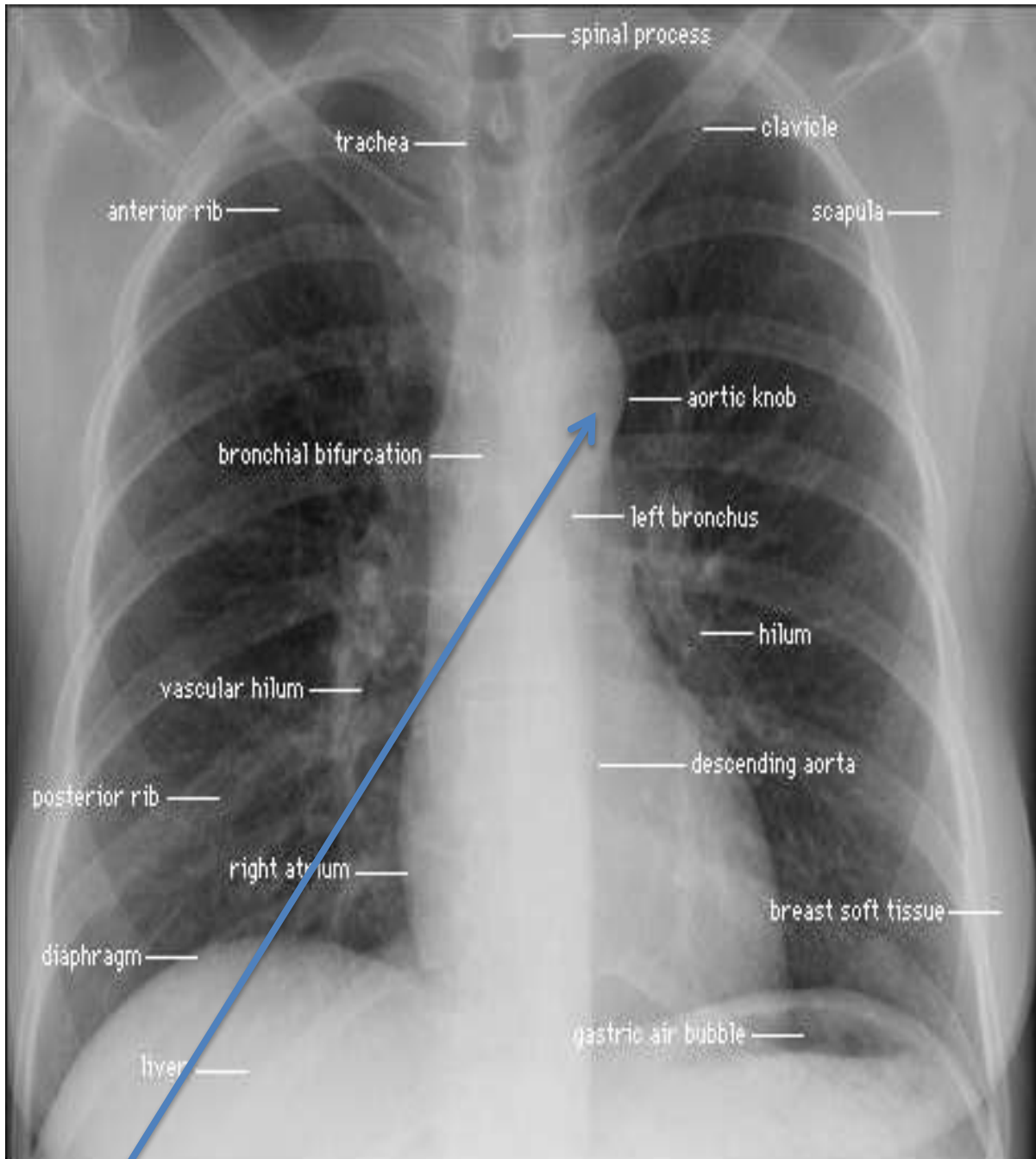
Right border: Right brachiocephalic vein, Superior vena cava, Right atrium and Inferior vena cava

Left border: Aortic knuckle or knob (aortic arch), pulmonary trunk, Left auricle and Left ventricle

Right dome of diaphragm is higher than the Left one

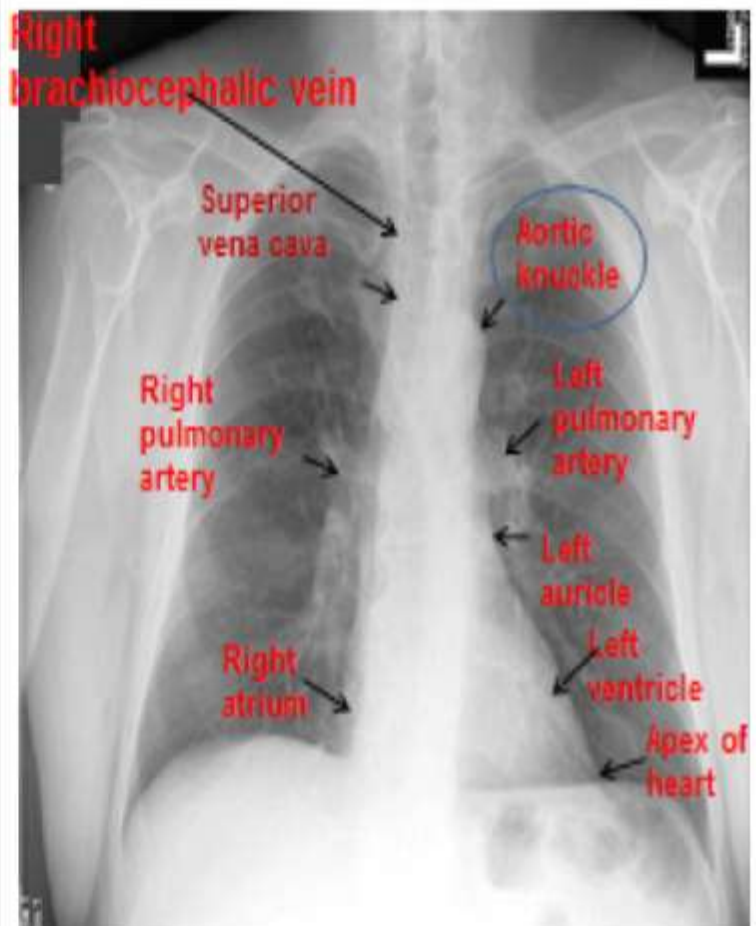
The most important part in left border is Aortic knuckle

Beneath the left dome a gas bubble mostly seen in the funds of the stomach



What aortic knob (knuckle) represent? **Aortic arch**

- The **Right Border** from above downward consists of:
 - **Right brachiocephalic vein, Superior vena cava, Right atrium**, and sometimes the **Inferior vena cava**.
- The **Left Border** consists of:
 - A prominence, the **Aortic knuckle**, caused by the **aortic arch**;
 - Left margin of the **Pulmonary Trunk, the Left Auricle, and the Left Ventricle**.



RADIOLOGY



Notes :

T= Trachea

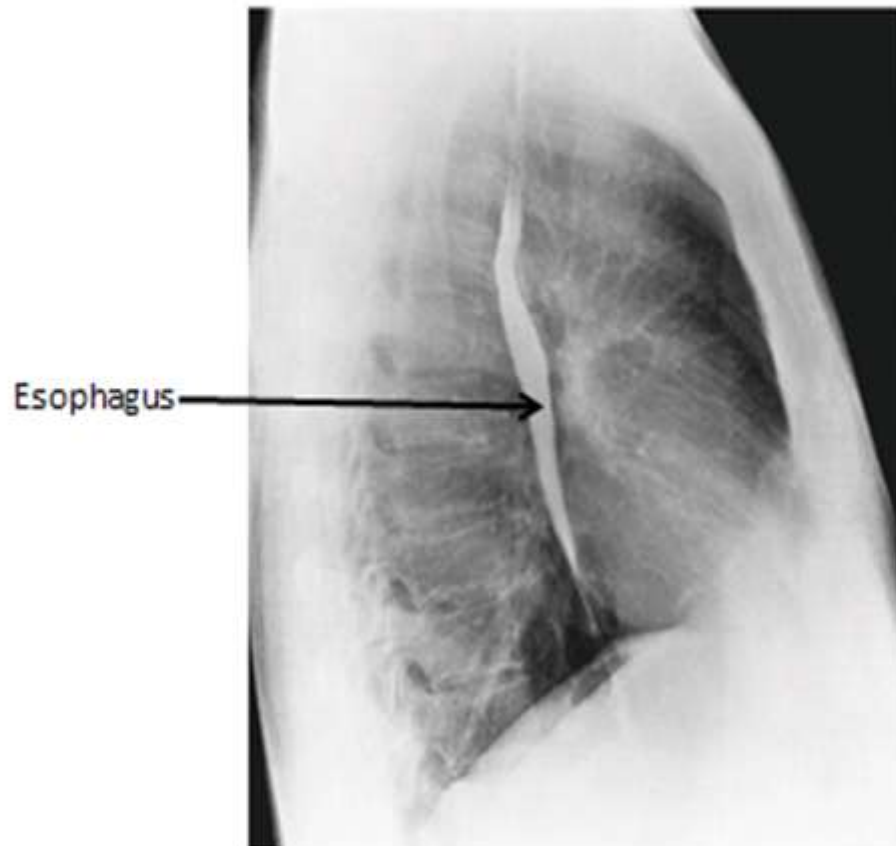
B= bronchi

Here, he maybe will ask you (what is the name of this film ?)

The answer is : Bronchography

Bronchography used for Identification of the bronchi tree

RADIOLOGY



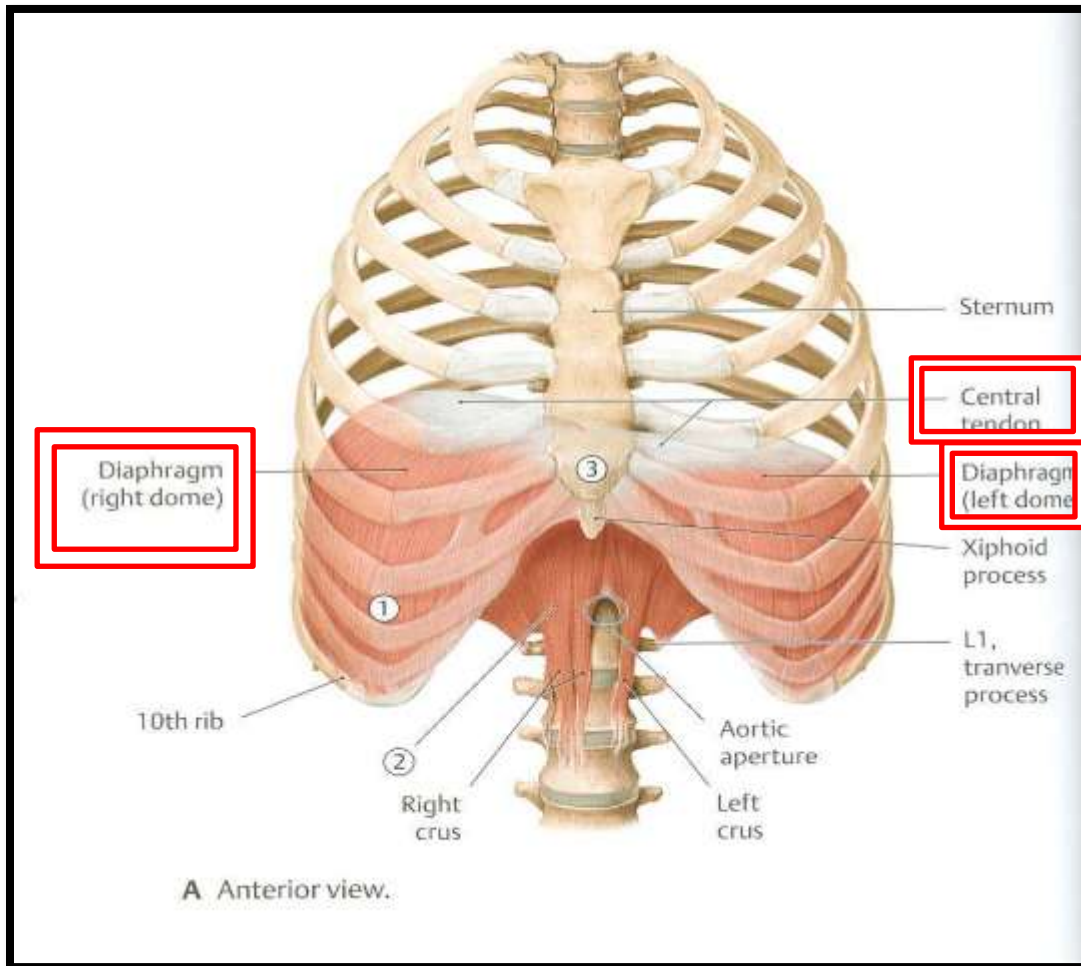
Notes :

Here, he maybe will ask you (what is the name of this film ?)

The answer is : contrast visualization of the esophagus (barium swallow)

Diaphragm (imp)

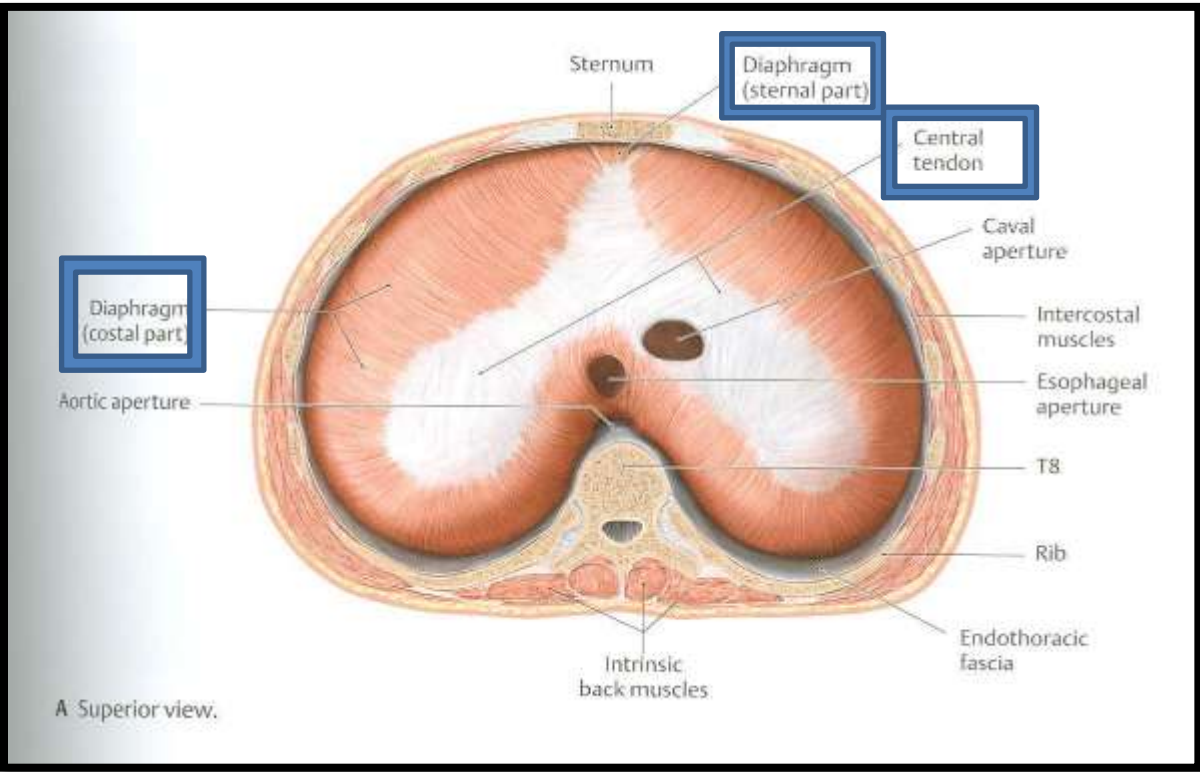
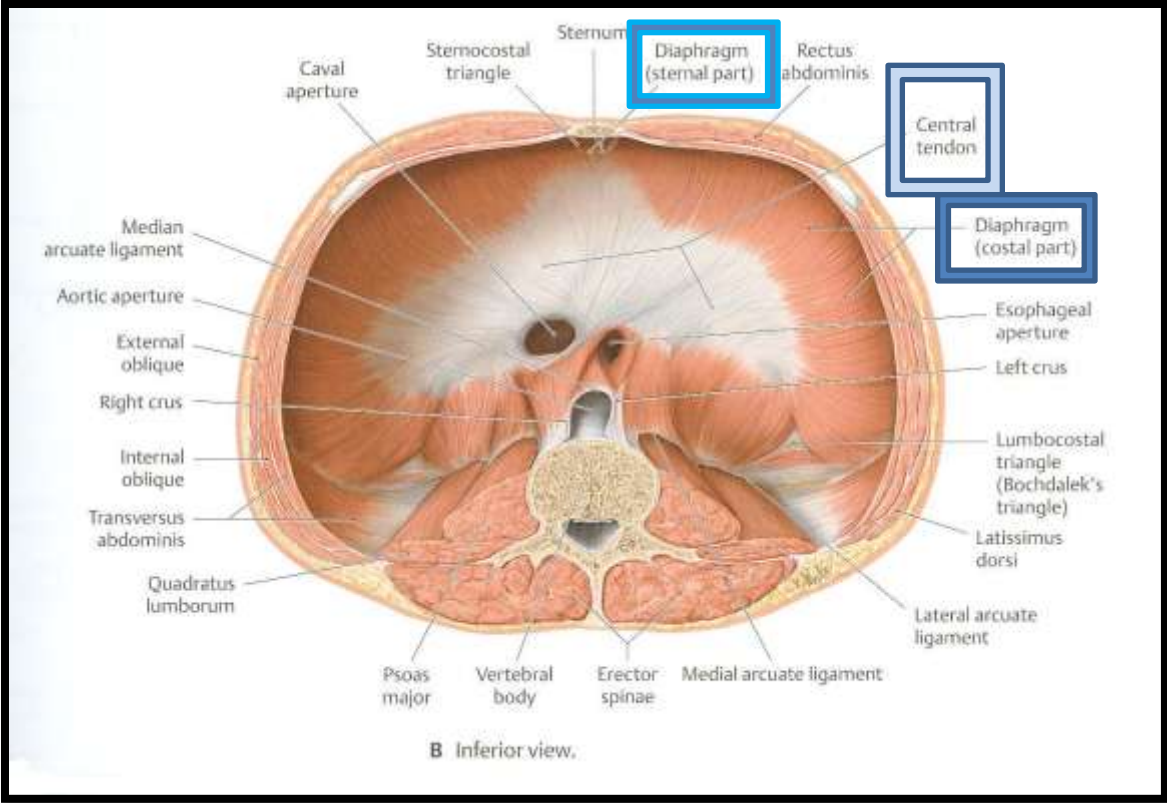
You have to know the **action, nerve supply and vertebra origin (crus and arcuate)**



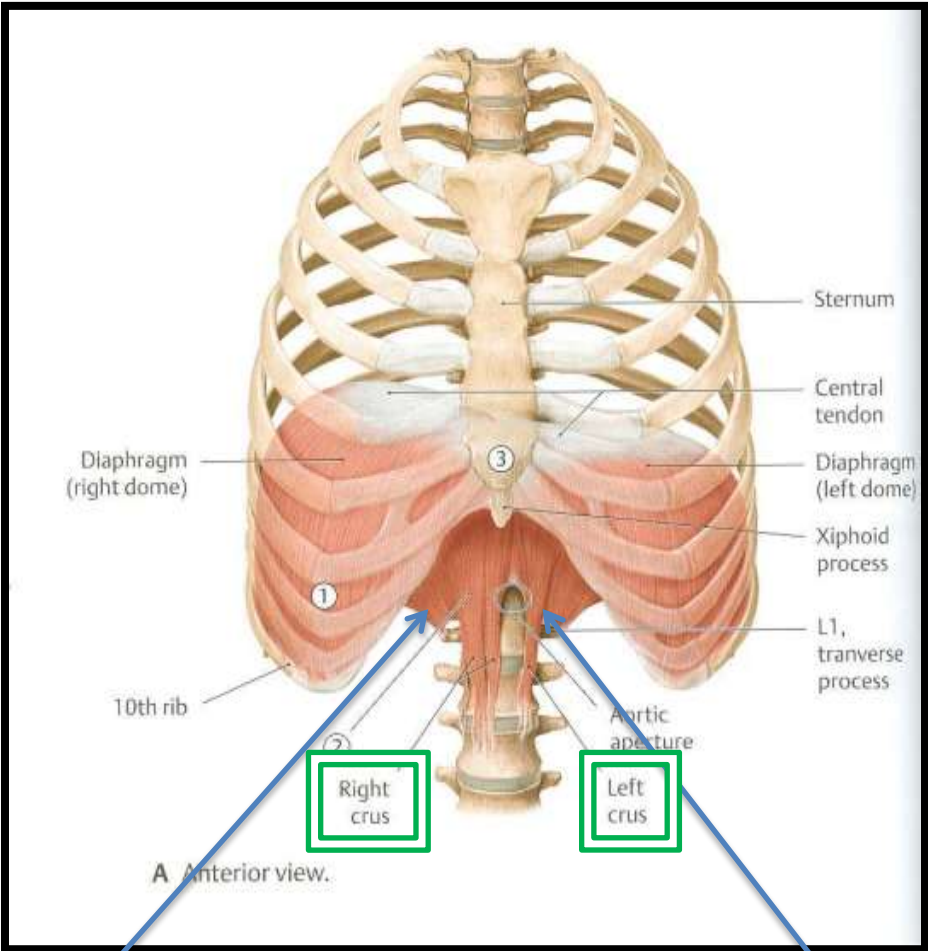
Action: is the primary respiratory muscle of the body. On contraction, increases the vertical diameter of the chest cavity

Nerve supply: Phrenic nerve (C3, 4, 5)

Right & left crus, medial, median & lateral ligament لازم تتعرف عليها في الصور القادمة كلها



The **right crus** arises from the bodies of **first three lumbar** vertebrae and their intervertebral discs. The **left crus** arises from the bodies of **first two lumbar** vertebrae

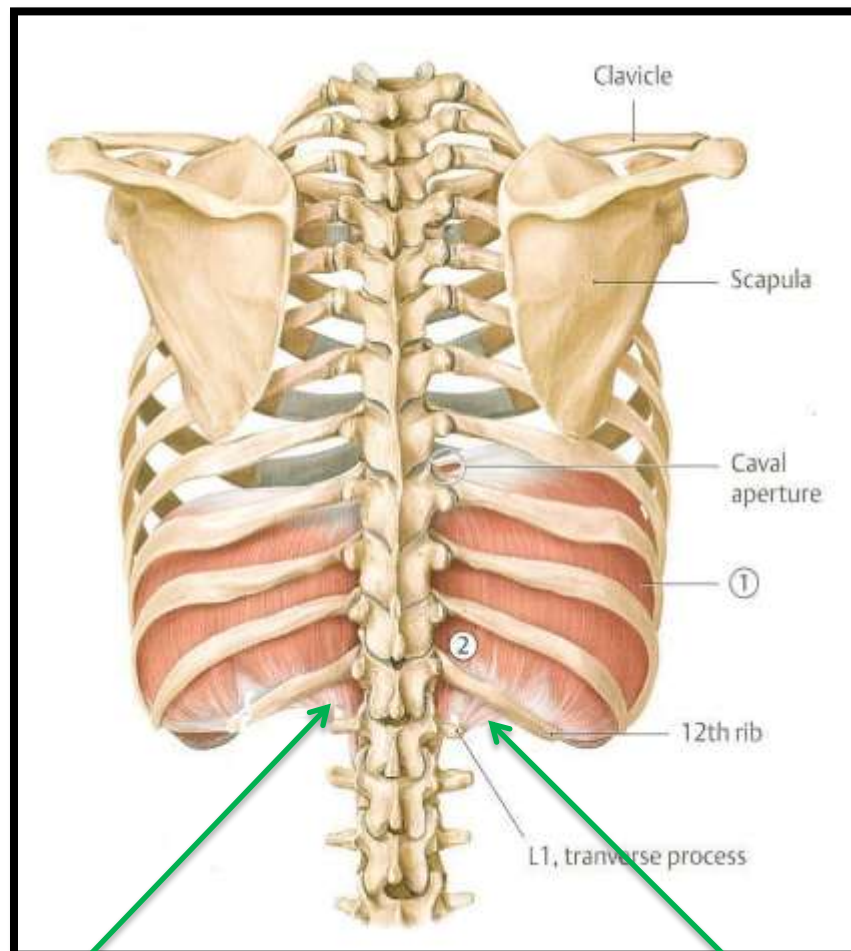


Lateral arcuate ligament

Medial arcuate ligament

The **medial arcuate ligament** is extended from the side of the body of first lumbar vertebra to the tip of the transverse process of second lumbar vertebra. **The lateral arcuate ligament**, extends from the tip of the transverse process of first lumbar vertebra and is inserted into the lower border of the 12th rib.

Median: between two cruses



Medial arcuate ligament

lateral arcuate ligament

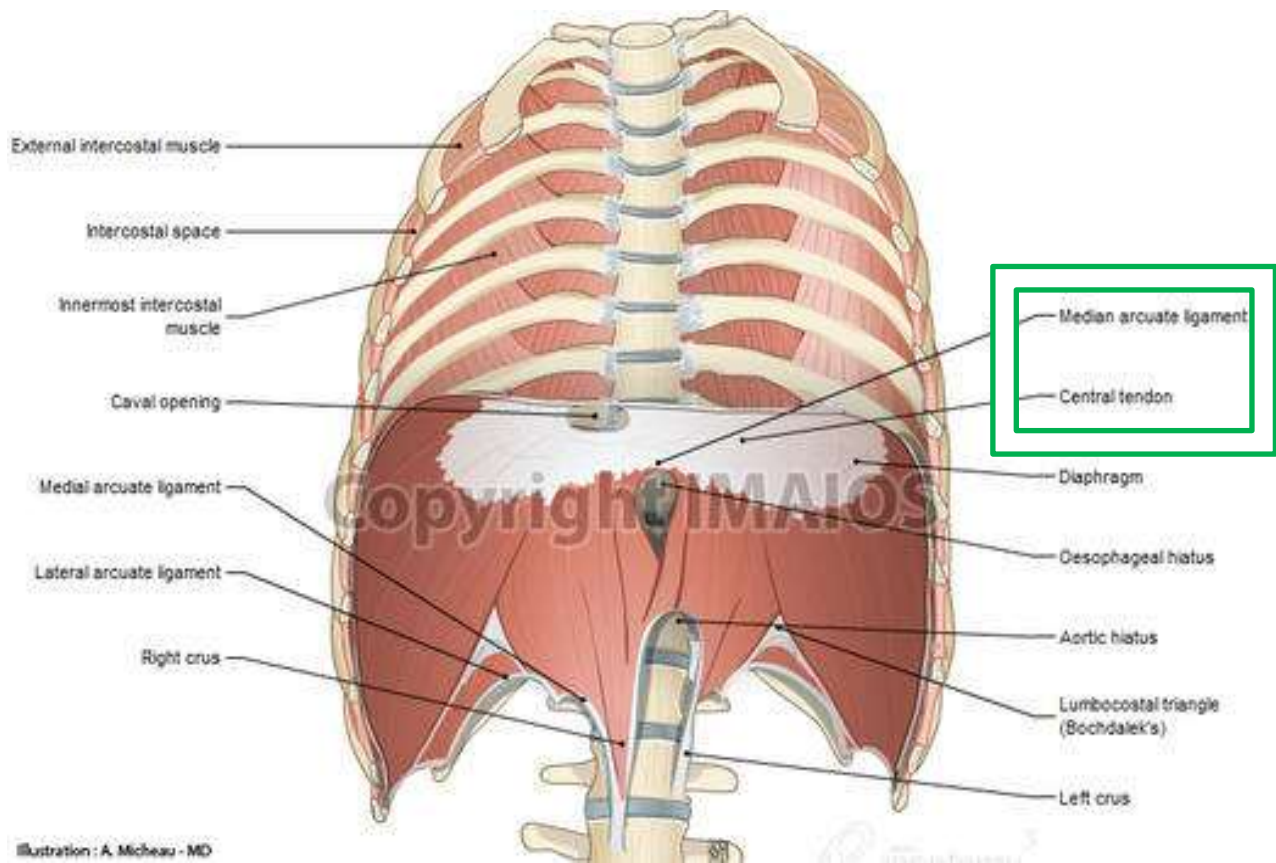
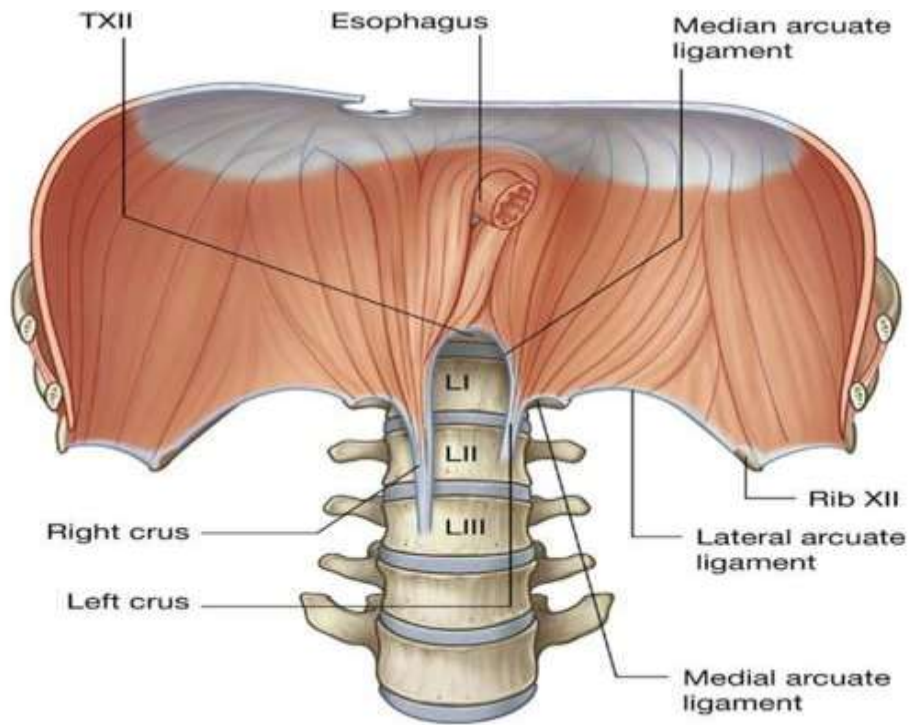
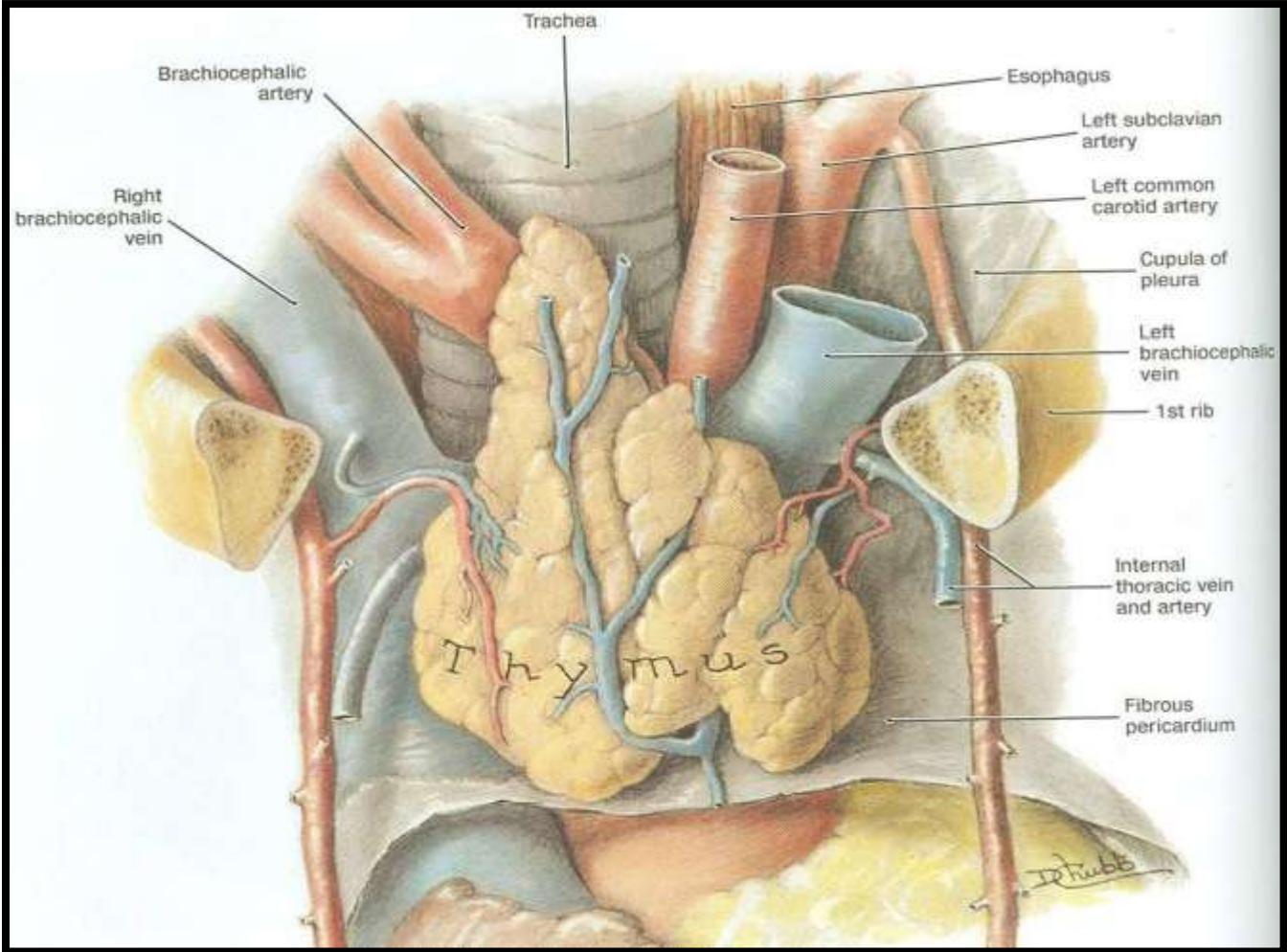


Illustration : A. Micheau - MD



The mediastinum in the thoracic cavity divides into:

- 1- Superior
- 2- Inferior (Anterior, Middle and Posterior)

The line between superior and inferior at level of:


- 1- T4
- 2- Second costal cartilage
- 3- Bifurcation of trachea
- 4- Bifurcation of pulmonary trunk

Everything pass through thoracic outlet (Upper opening) **must be included in superior mediastinum**

Why esophageal plexus called Anterior-posterior not right-left?

Because in the beginning of fetus life the stomach had right-left **surface** and anterior-posterior **border**, later it rotates 90 degree So right vagus nerve called posterior esophageal and left vagus nerve called anterior esophageal

Six things found superiorly and inferiorly of mediastinum:

Superior-Posterior  Thoracic duct + esophagus + Vagus nerve (easier way to save it – Tom Eat Vegetables -)

Superior-Middle  Phrenic nerve + superior vena cava

Superior-Anterior  Thymus gland

Level of T4 :

1. Bifurcation of trachea
2. Bifurcation of Pulmonary trunk
3. Beginning & termination of
4. arch of aorta

Esophagus in the superior then posterior Mediastina because it needs to reach the abdomen

Vagus Nerve: descends through the superior & posterior mediastina “WHY POSTERIOR???”

Because it surrounded the esophagus and then form the esophageal plexus then continuo as Gastric nerve

(Stomach during Embryonic life has “right and left SURFACES” and “anterior and posterior BORDER” BUT now it has “right and left BORDER” and “anterior and posterior SURFACE” then rotation happened)

That’s why the vagus nerves are called “RIGHT and LEFT not ANTERIOR and POSTERIOR”

Right vagus=posterior esophageal , Left vagus=anterior esophageal

Phrenic Nerve: pass through the superior & middle mediastina

Thoracic Duct:

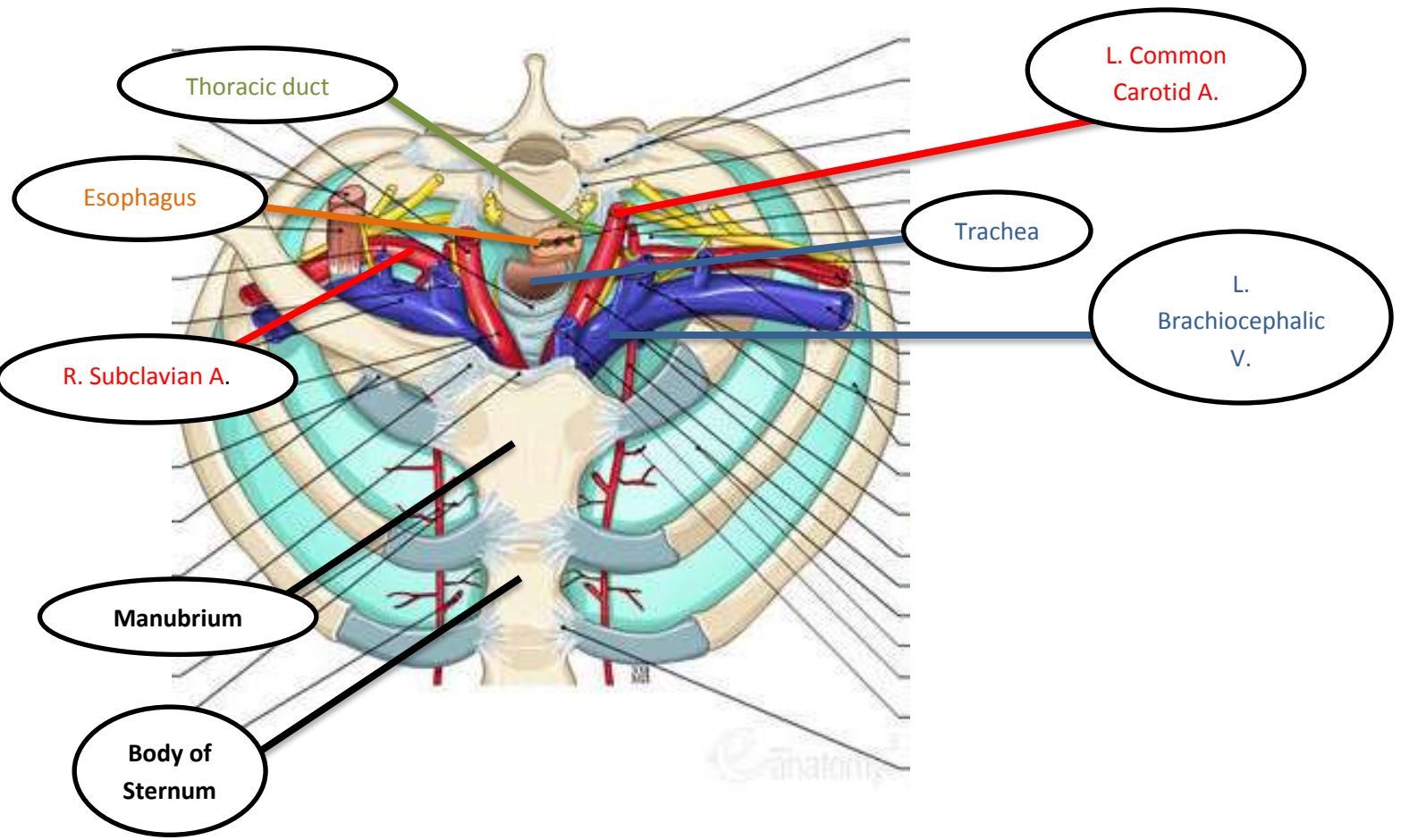
Superior mediastinum:: To the left side of Esophagus

Posterior mediastinum::Behind Esophagus directly

❖ **Superior & Posterior: “3”**
Vagus Nerve, Thoracic Duct ,Esophagus

❖ **Superior & Middle: “2”**
Phrenic Nerve, Superior Vena Cava

❖ **Superior & Anterior: “1”**
Thymus Gland



Thoracic duct

Esophagus

R. Subclavian A.

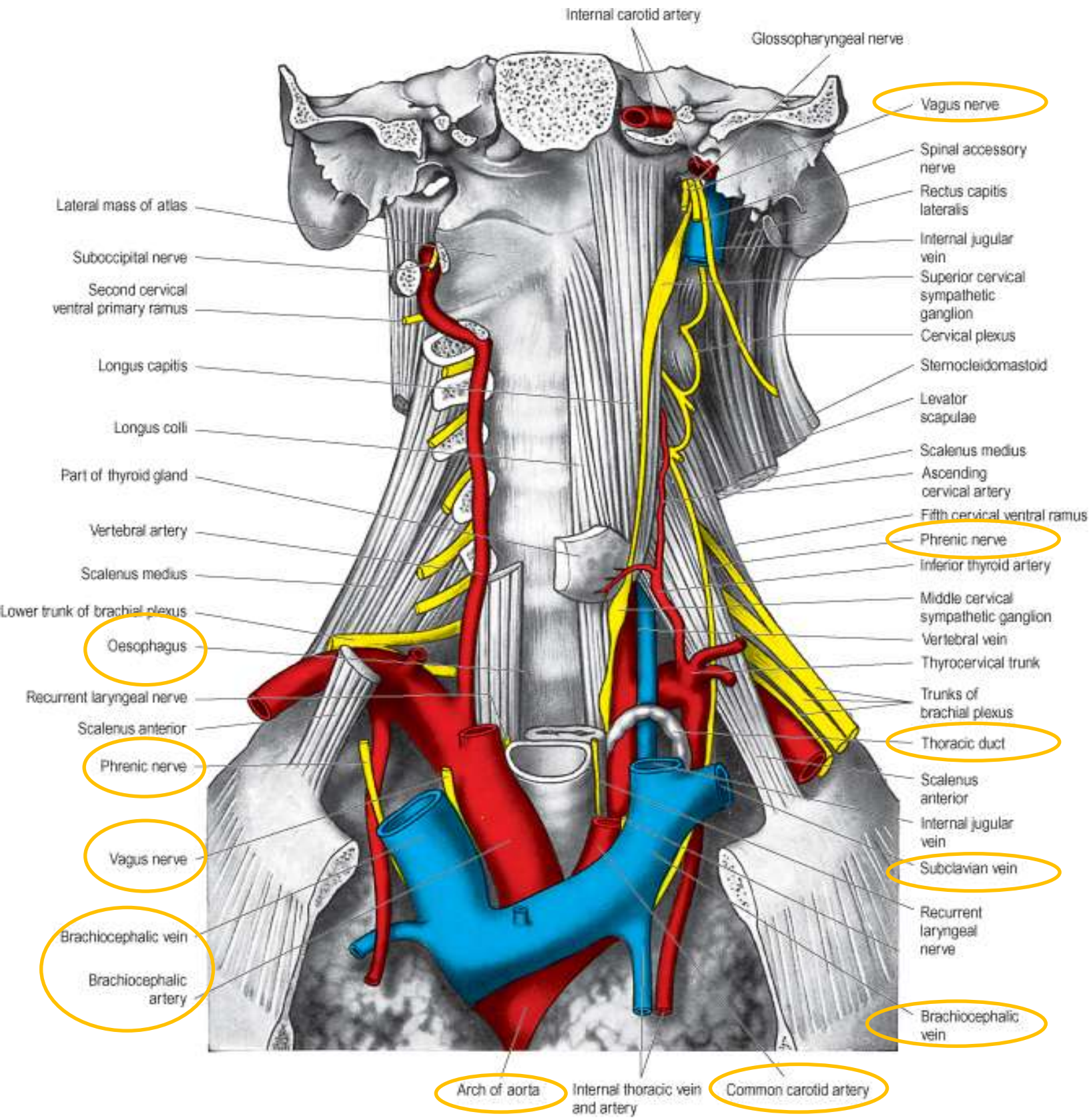
L. Common Carotid A.

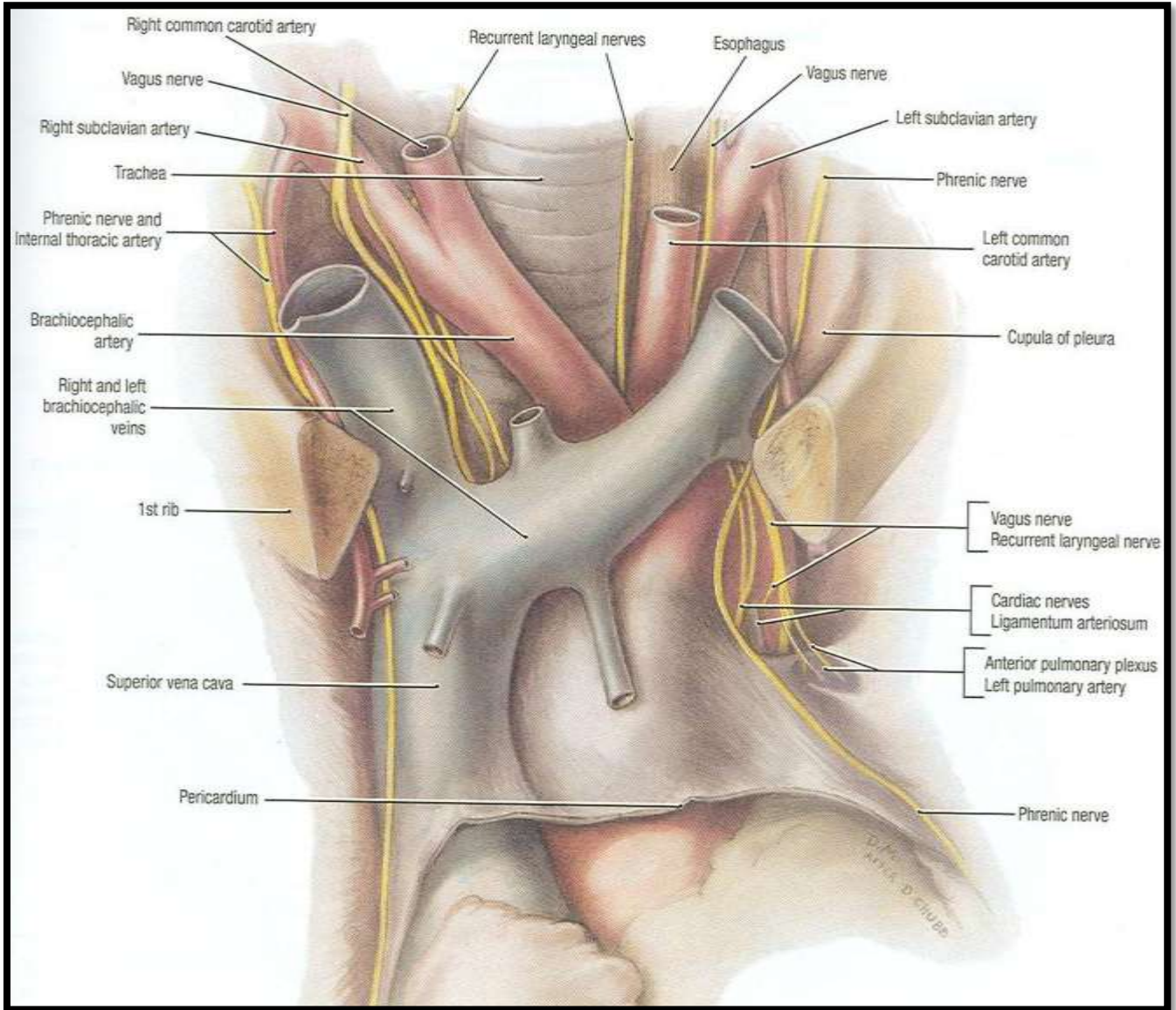
Trachea

L. Brachiocephalic V.

Manubrium

Body of Sternum





Superior mediastinum: Slide 17

I would highly recommend reviewing the PPT of the mediastinum lecture.

Done by: May H. Alorainy

Notes form Dr. Ahmad Fathallah's OSPE revision:

- **Superior mediastinum** stops at the level of T4 = second costal cartilage = manubriosternal junction (sterna angle):
 - 1- Bifurcation of trachea. → Branches into two bronchi which enter the lung. (lung is not included in the mediastinum)
 - 2- Bifurcation of pulmonary trunk.
 - 3- Beginning and termination of arch of aorta.
- Any structure descending through the neck **MUST** pass in the **superior mediastinum** but not all structure passing in the **superior mediastinum** will also pass in **posterior mediastinum**.
- Esophagus will pass in **superior mediastinum** (close to the vertebral column) and continue to **posterior mediastinum**.
- Vagus nerve will also pass in **superior mediastinum** and continue to the **posterior mediastinum**.
- Phrenic nerve passes in the **superior mediastinum** and continues to the **middle mediastinum** to supply the heart.
- Thoracic duct ascends from the lower half of the body and follows esophagus in the **posterior mediastinum** to the **superior mediastinum**.
- Thoracic duct's relation to the esophagus:
 - **In posterior mediastinum** → Thoracic duct is posterior to esophagus
 - **In Superior mediastinum** → Thoracic duct is on the left side of esophagus.
- We have six structures passing in two mediastinums:

Superior and **posterior** mediastinum:

- 1- Esophagus
- 2- vagus nerve
- 3- thoracic duct

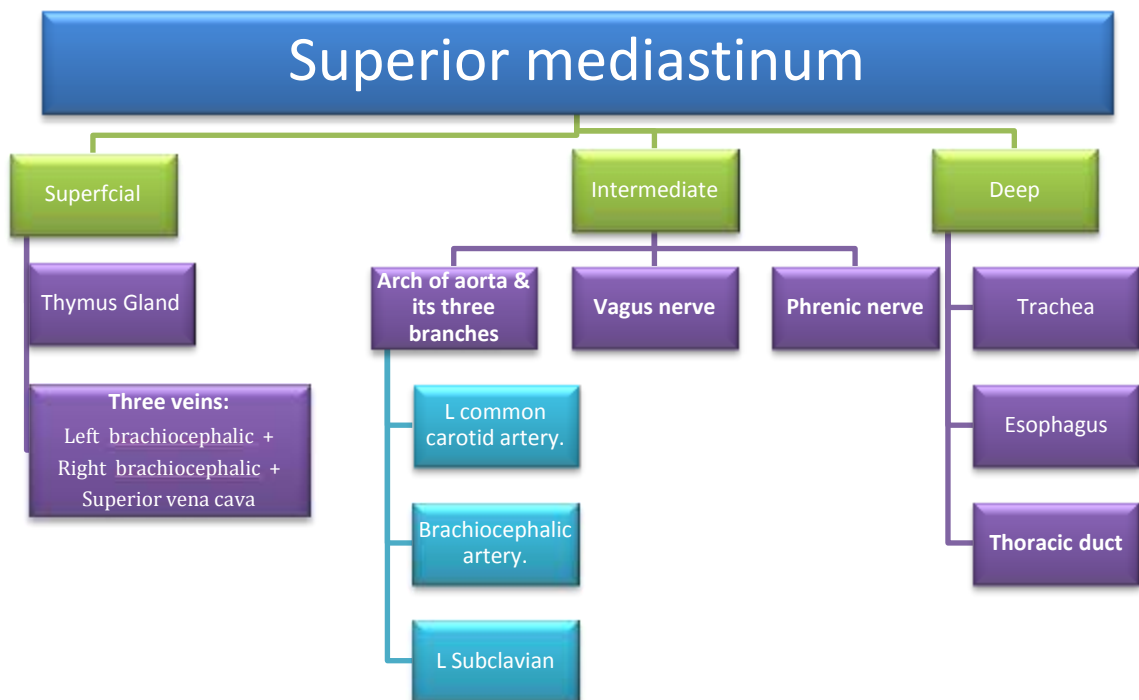
Superior and **middle** mediastinums:

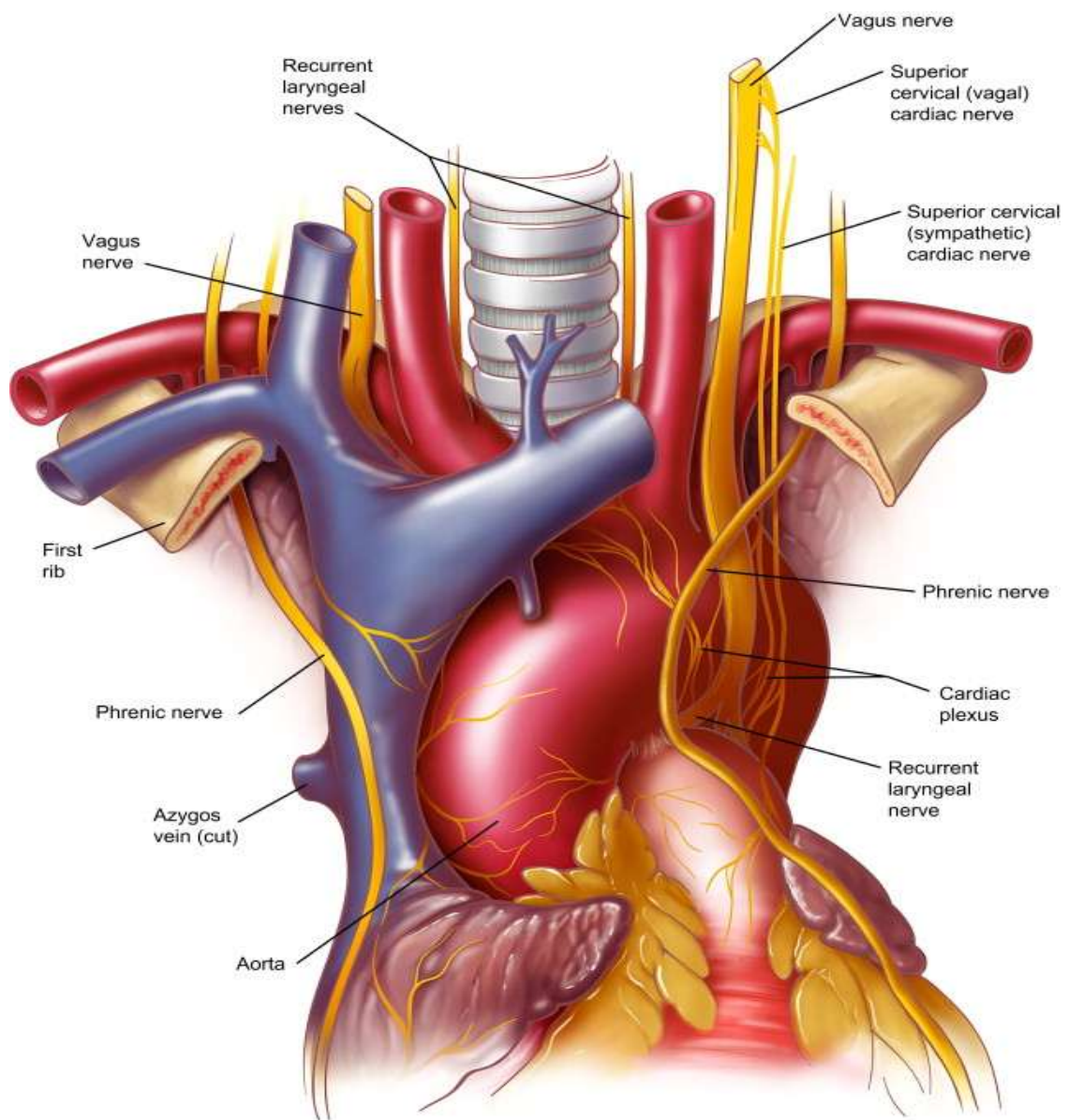
- 1- Phrenic nerve
- 2- superior vena cava (Two brachiocephalic veins unite to form superior vena cava)

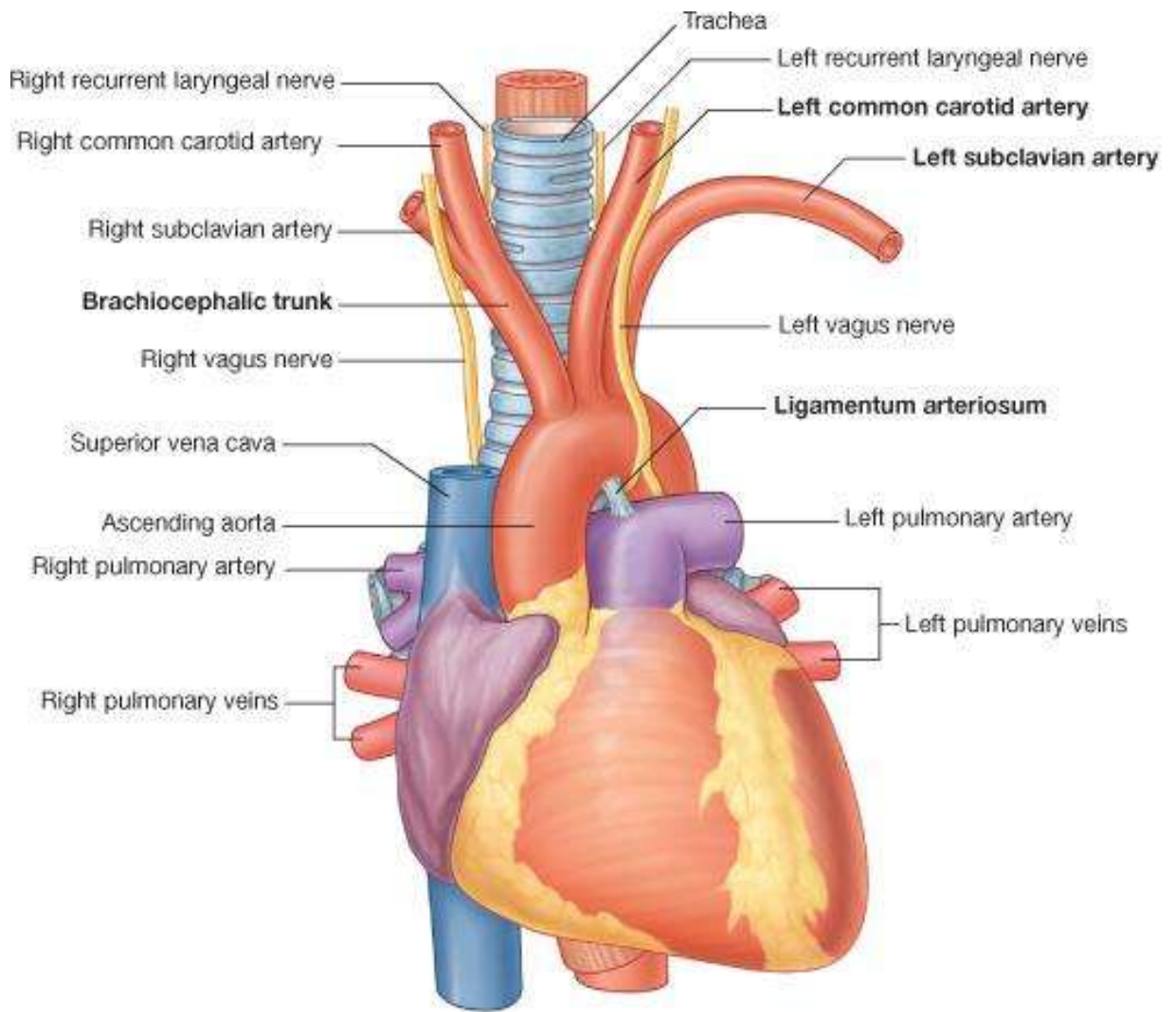
Superior and anterior (part of inferior mediastinum):

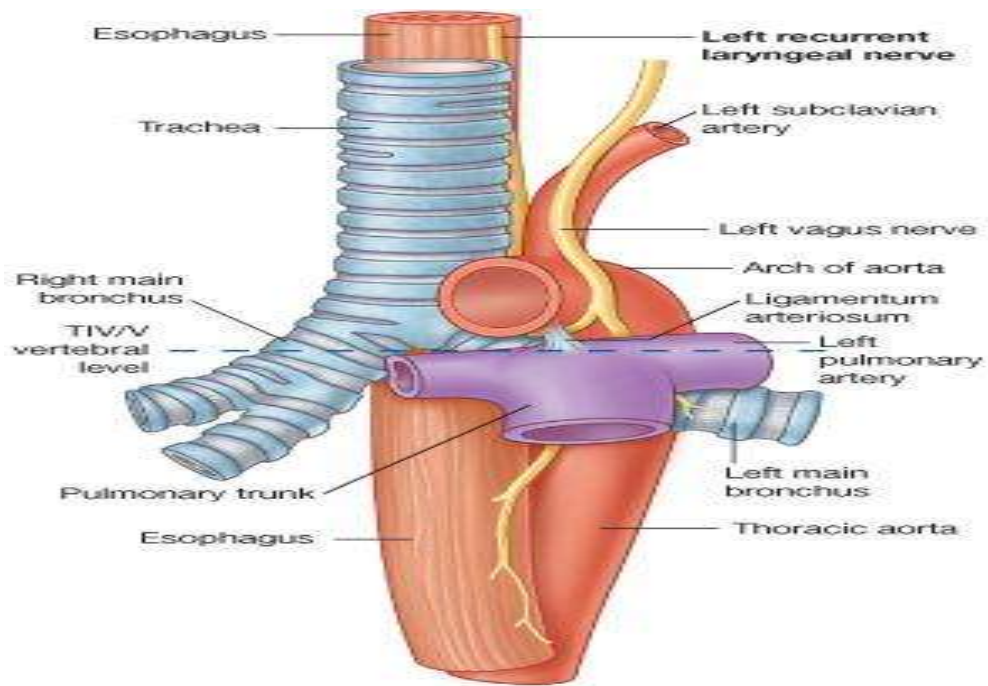
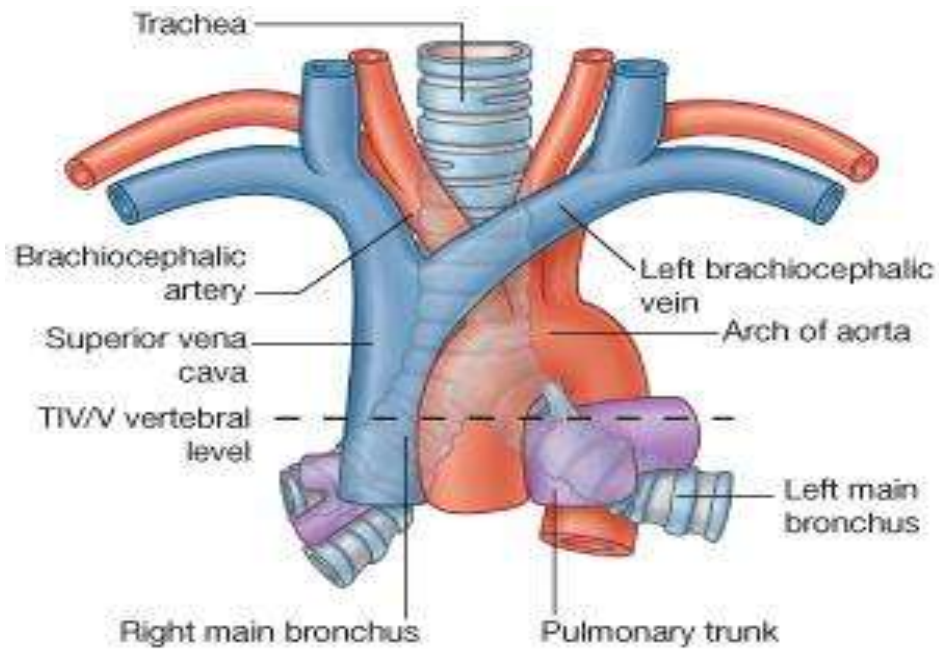
Thymus gland.

- Remember that the middle mediastinum: ALWAYS contains heart and all the vessels and structures passing out of it.









MEDIASTINUM

Dr. Ahmad said:
Same picture as before..

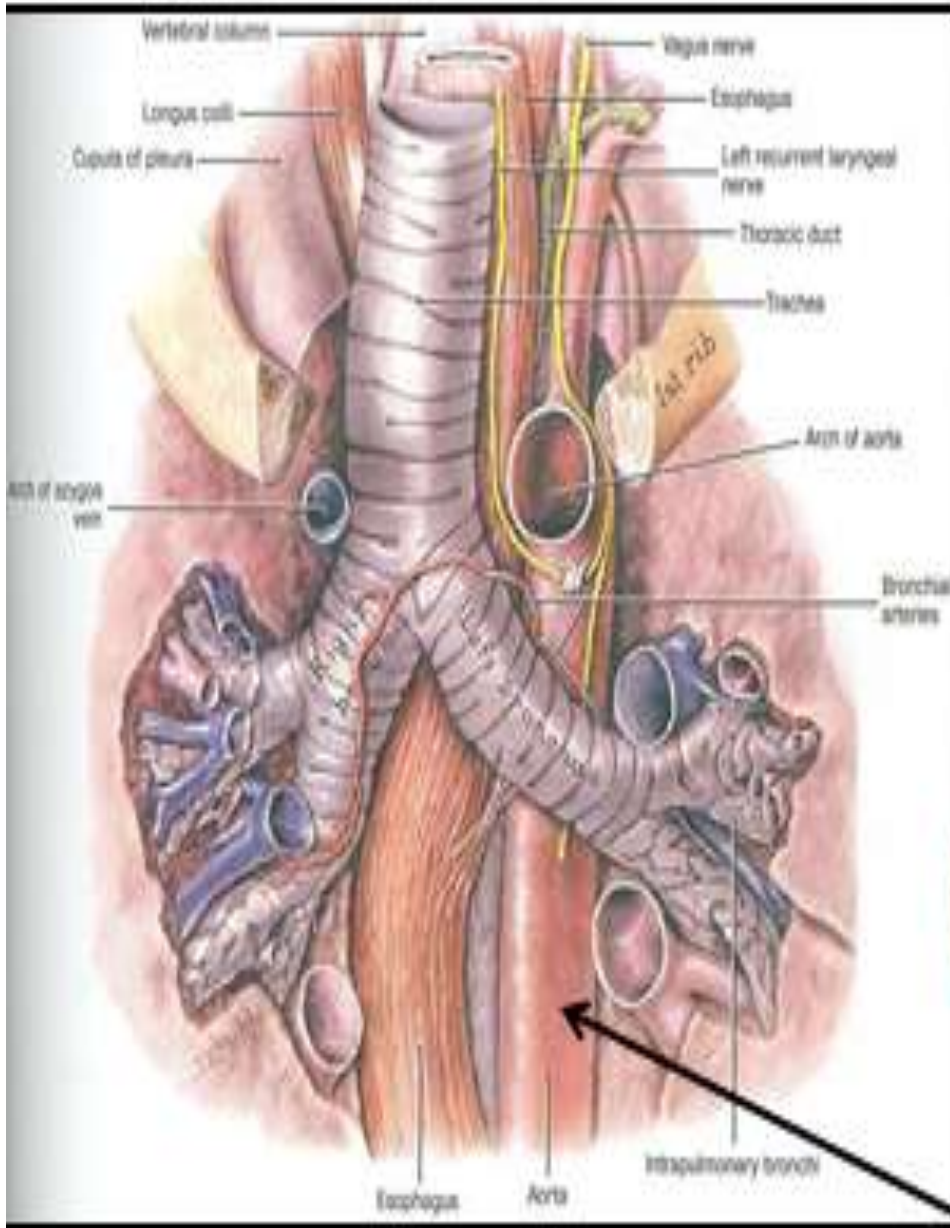
Identify

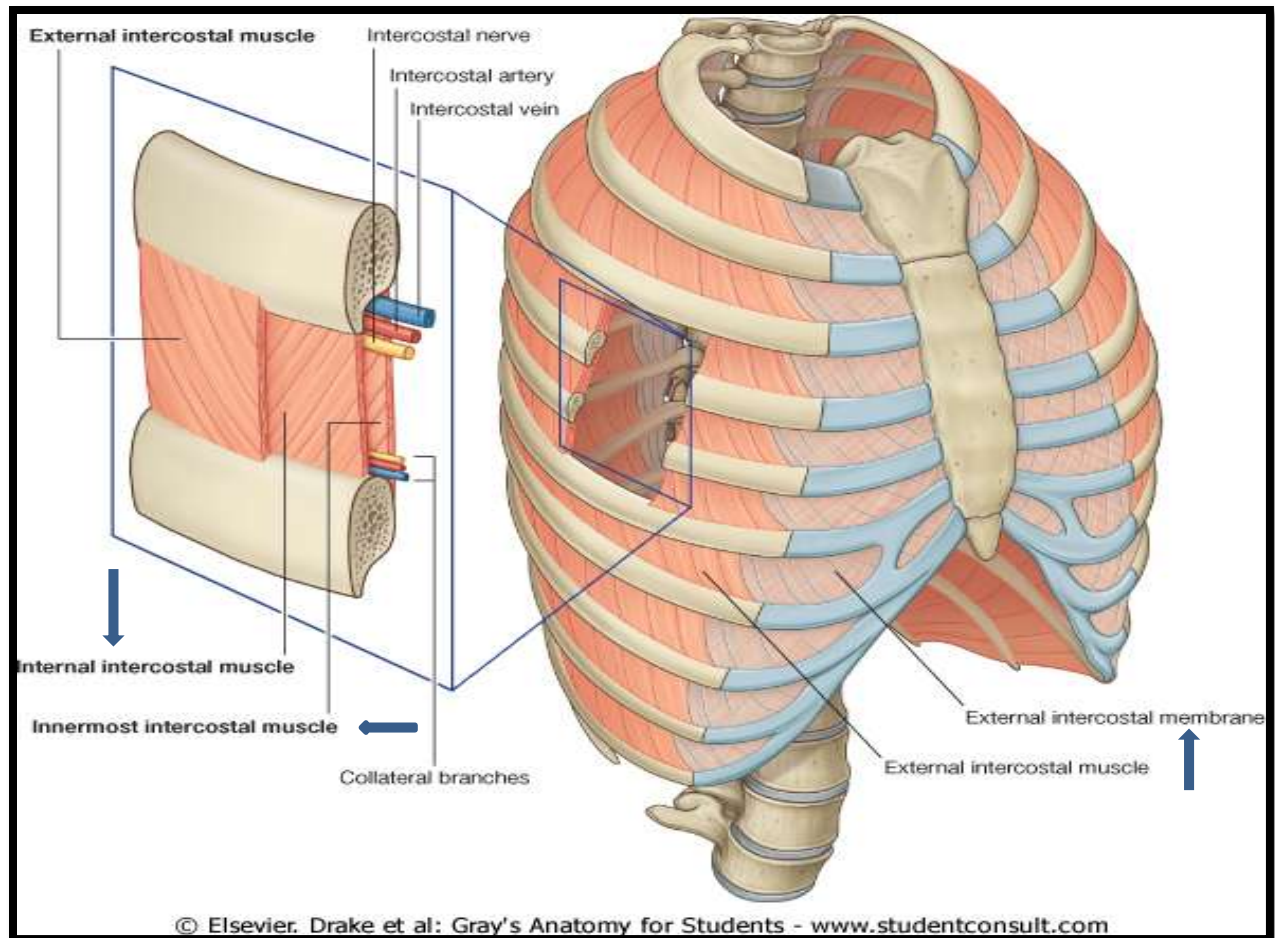
- 1# Trachea
- 2# Right & left bronchus
- 3# Esophagus
- 4# Esophageal plexus
- 5# Thoracic duct (واضحة هنا)

EXTRA info:

esophageal plexus a plexus surrounding the esophagus, formed by branches of the left and right vagi (vagus) and sympathetic trunks and containing also visceral afferent fibers from the esophagus.

Descending aorta





ALL INTERCOSTAL MUSCLES ARE RIB DEPRESSORS EXCEPT **EXTERNAL INTERCOSTAL** WHICH IS RIB **ELEVATOR**

- **Rib depressors:**

Act only during forced expiration

Internal intercostal, innermost intercostal, Subcostals and Transversus thoracis

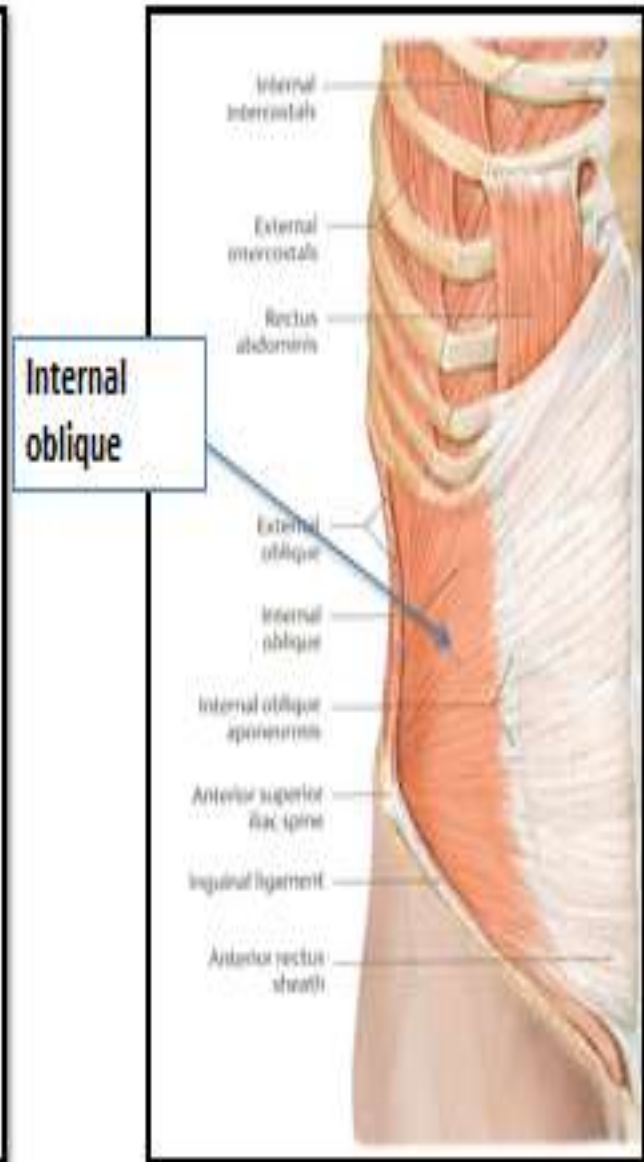
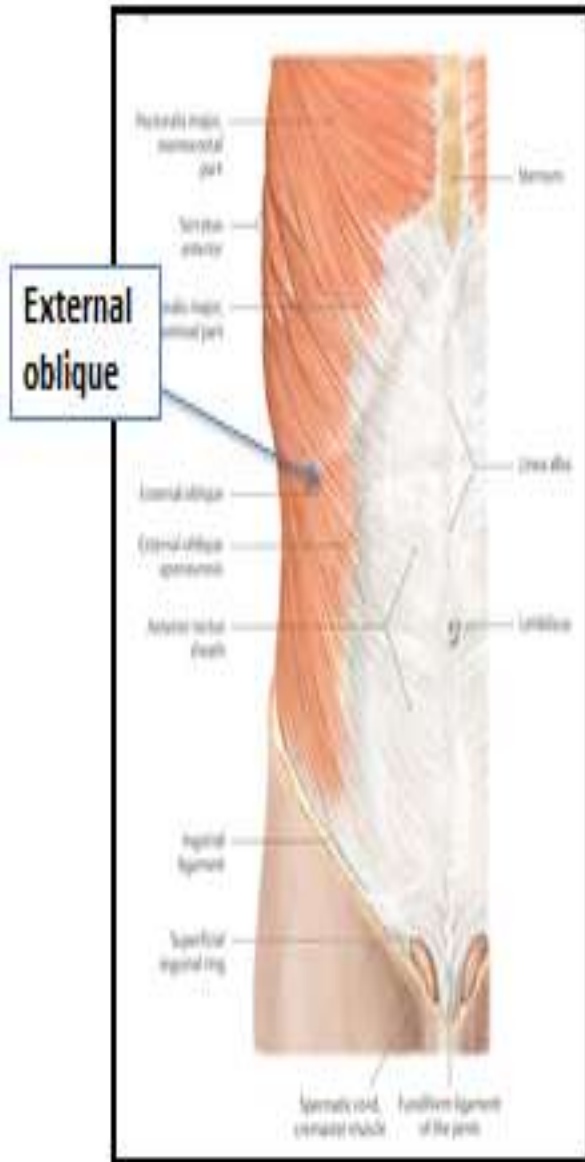
Abdominal muscles

- They are four muscles:
 - 1- External oblique
 - 2- Internal oblique
 - 3- Transversus abdominis
 - 4- Rectus Abdominis
- **Action** (**during forced expiration**): Compression of abdominal viscera to help in ascent of diaphragm
- **Nerve supply**: lower intercostal nerves (T7 – T11), subcostal nerve (T12) and first lumbar nerve.

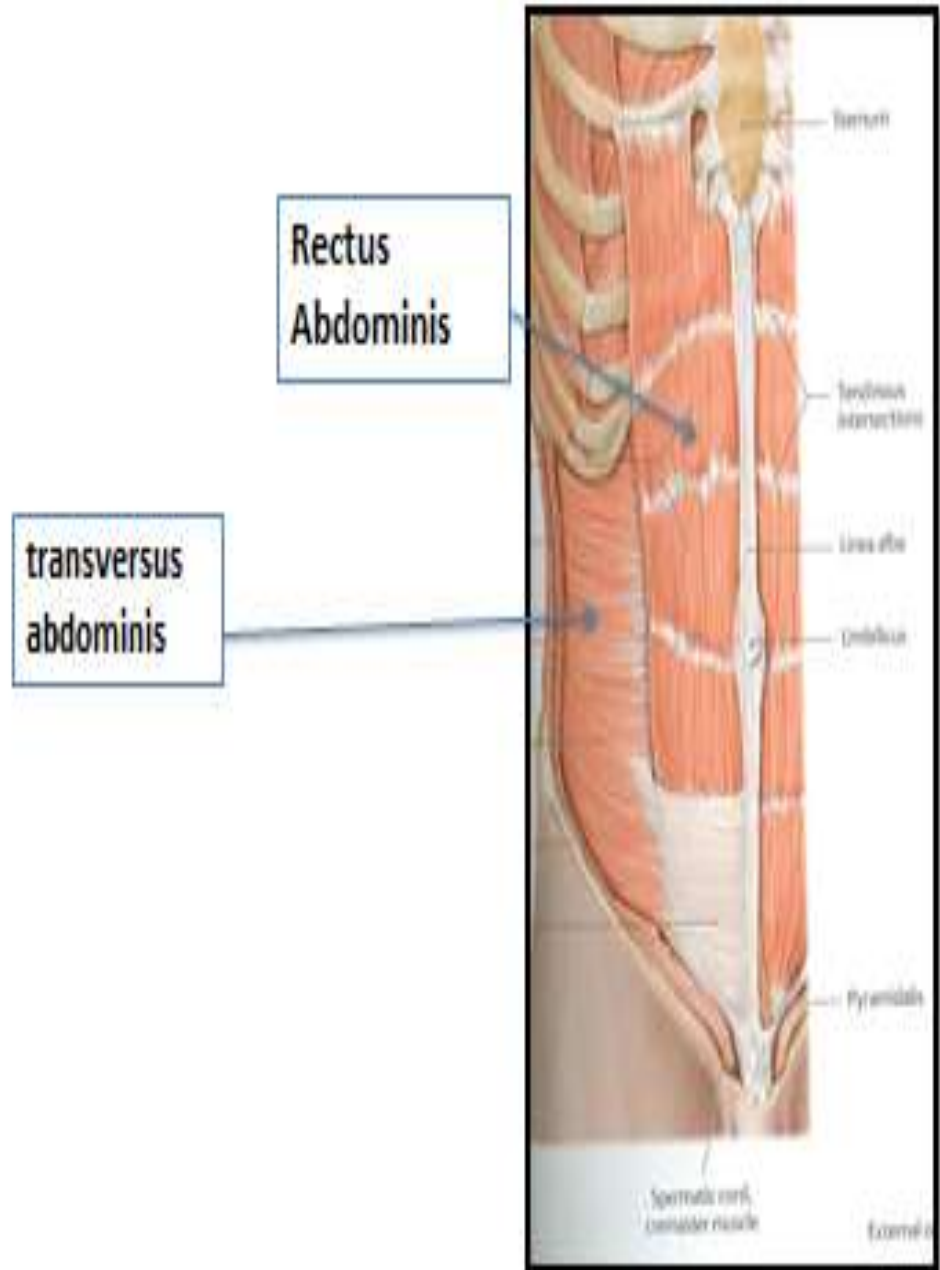
The aponeurosis of the 3 muscles on both sides fuse in the midline to form **linea alba**

من اتجاه الفايبرز تعرف وش العضله (ميديل ، داوونورد) هذي اكستيرنال ، والانتيرنال (ميديل ، اب وورد)

MUSCLES INVOLVED IN RESPIRATION



MUSCLES INVOLVED IN RESPIRATION



GOOD LUCK

لا تنسوننا من دعائكم

ANATOMY TEAM