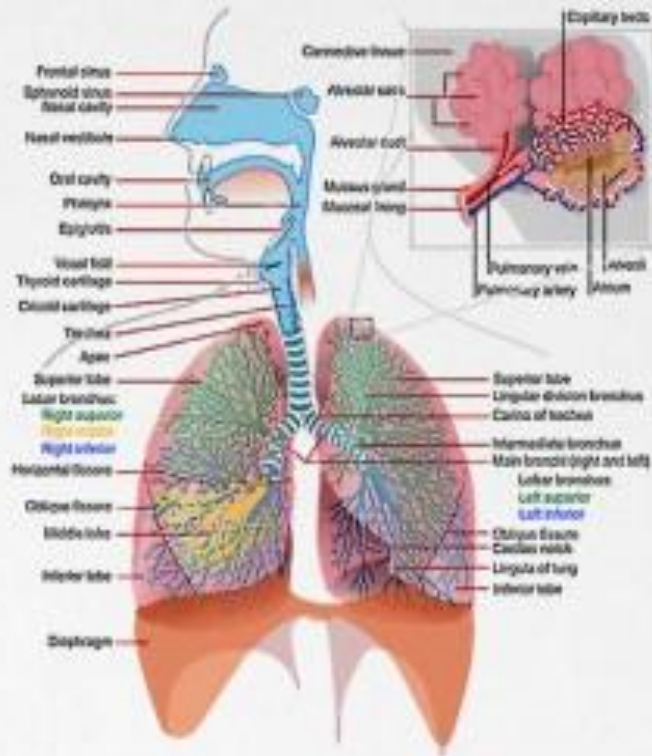


RESPIRATORY BLOCK

By Anatomy team
leader عبد العزيز المطير
عبدالرحمن الكثيري
عبد الملك ال مفرح
أحمد العقيلي



notes

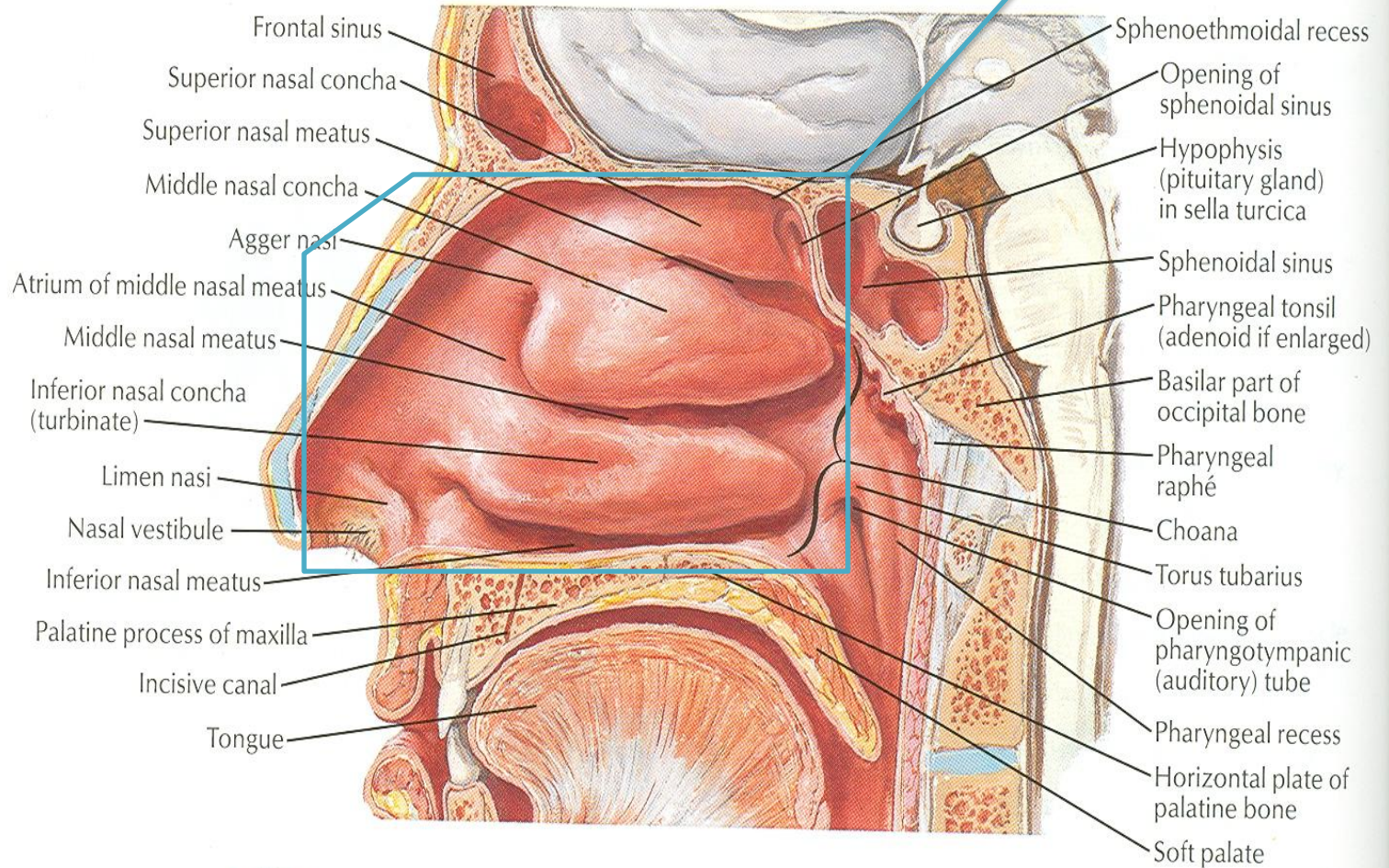
- العمل يشمل على اللي تكلم عنه الدكتور + اللي ركز عليه المواضيع اللي في النظري + زيادة بعض الصور للإيضاح

• لا تنسوننا من خالص دعائكم

Remember the conchae and sinuses and meati and the sphenothmoidal recess and its functions and openings..
See the next slide..

NASAL CAVITY

Lateral wall



This is important..!

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

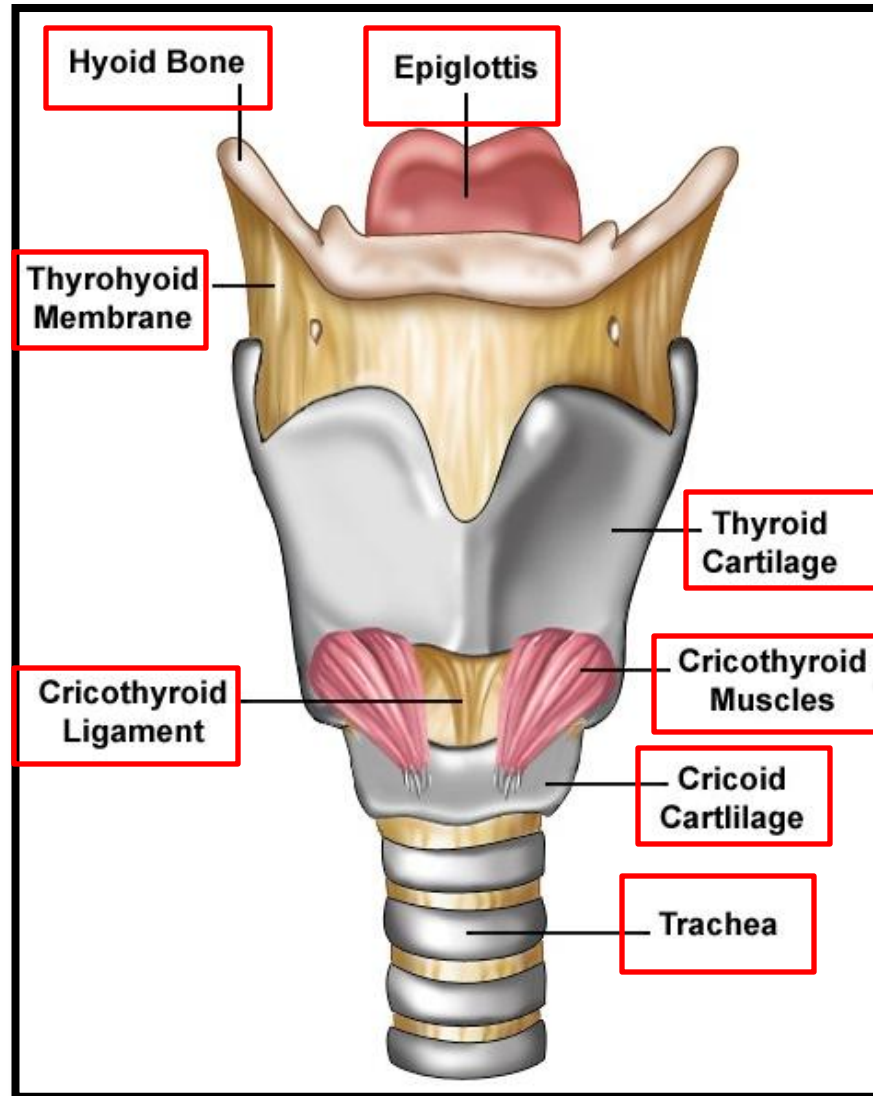
Function of the conchae: they are covered by respiratory epithelium and thus **increase** the surface area of the nasal cavity.

Functions of the sinuses:

- **Lighten the skull.**
- **Act as resonant chambers for speech.**
- **Air conditioning:** The respiratory mucosal lining helps in warming, cleaning and moistening the incoming air.

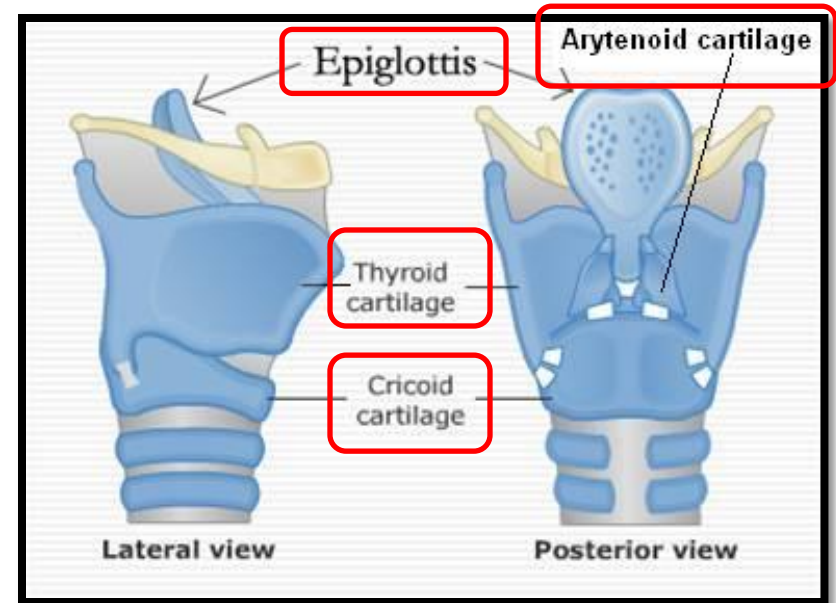
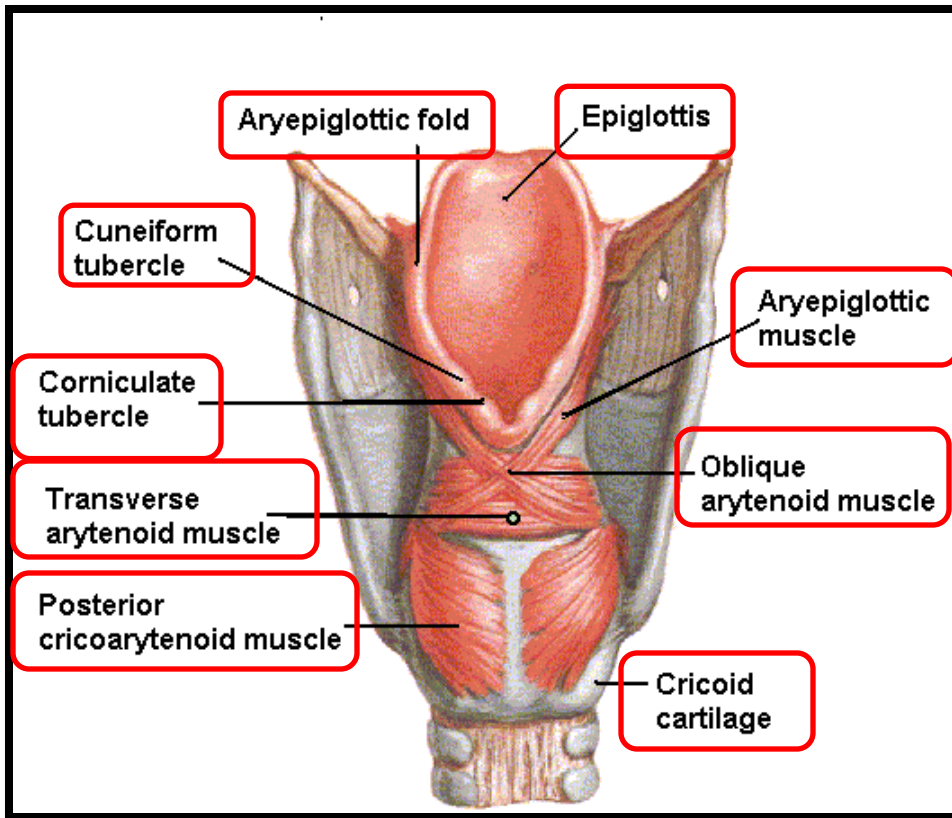
LARYNX, TRACHEA

- The cartilaginous skeleton is comprised of :
 1. Thyroid.
 2. Cricoid. Single
 3. Epiglottis.
 4. Arytenoid.
 5. Corniculate. Paired
 6. Cuneiform.
- All the cartilages are **hyaline** , except the epiglottis.
- Epiglottis is formed of **elastic** cartilage.
- **Function of epiglottis:** controls food and air passages(prevents the food from going to the air passage).



It is supplied by the **external laryngeal** of superior laryngeal of vagus. All other muscles of the larynx are supplied by the **recurrent laryngeal**.

LARYNX, TRACHEA



Remember the **nerve supply** for each muscle (**previous slide**), and he may ask you about **the functions** of each muscle (**next three slides, not really important**)..

Elevators of the Larynx

- The Suprahyoid Muscles:

1. Digastric.
2. Stylohyoid.
3. Mylohyoid.
4. Geniohyoid.

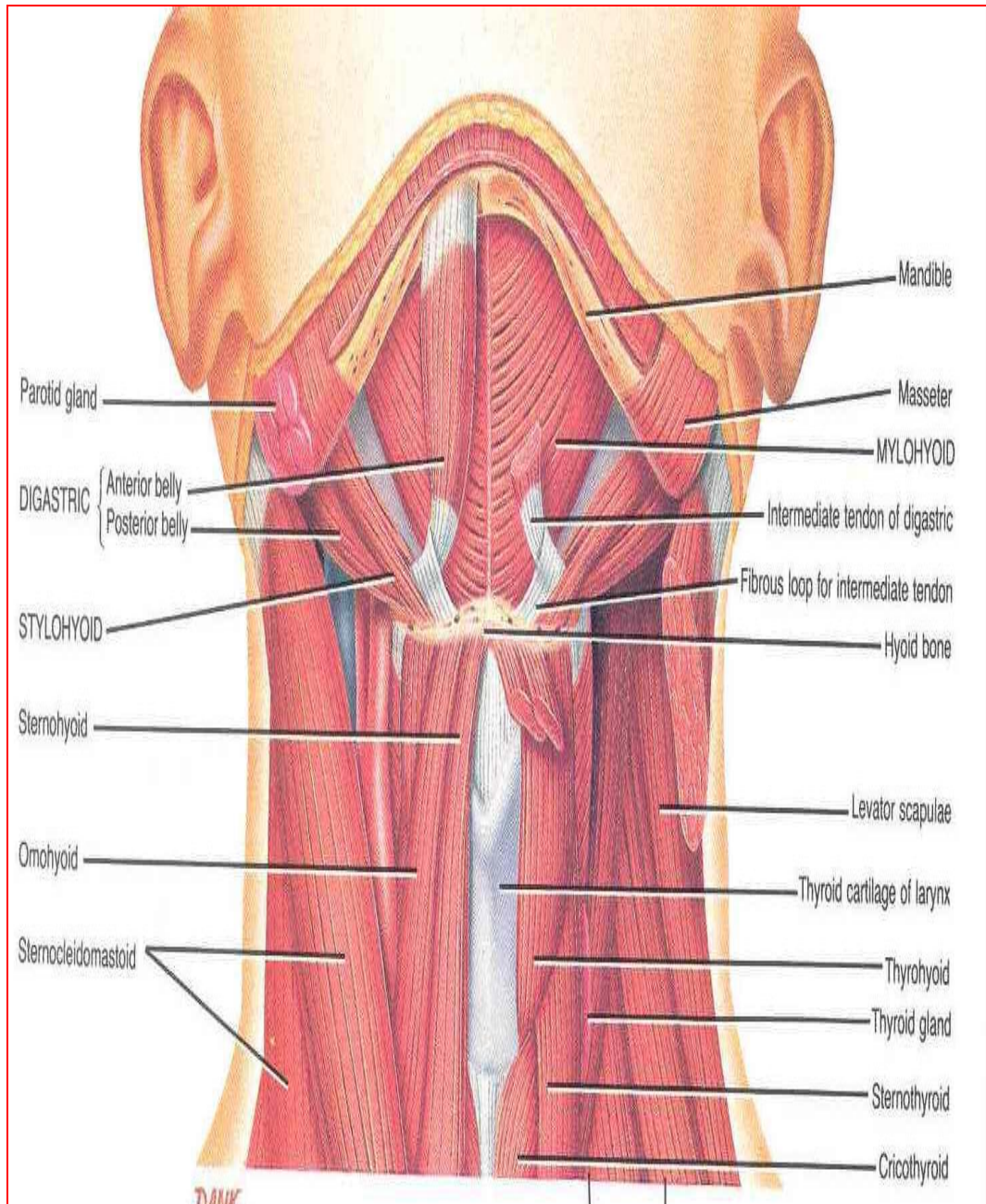
- The Longitudinal Muscles of the Pharynx:

1. Stylopharyngeus.
2. Salpingo-pharyngeus.
3. Palatopharyngeus.

Depressors of Larynx

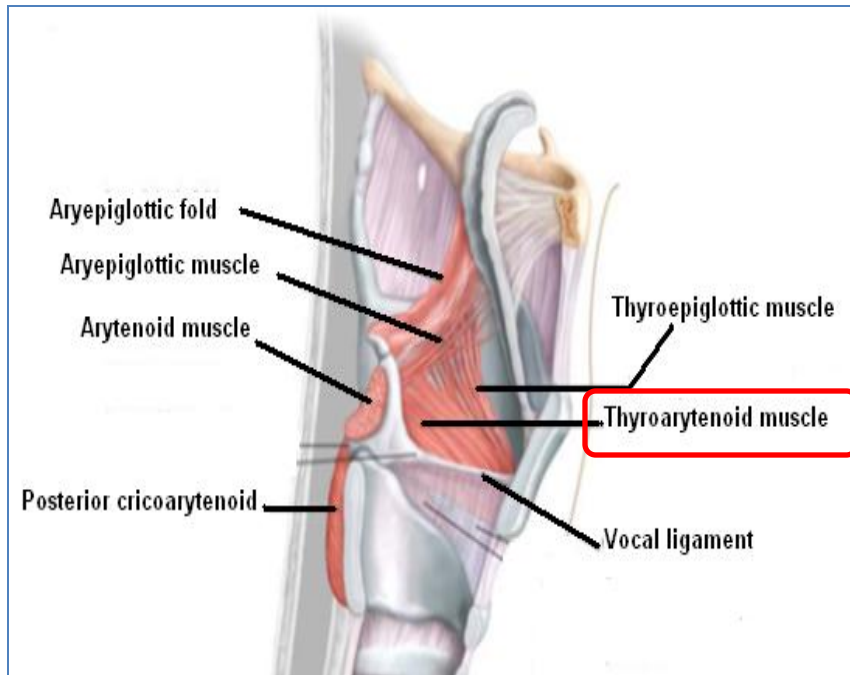
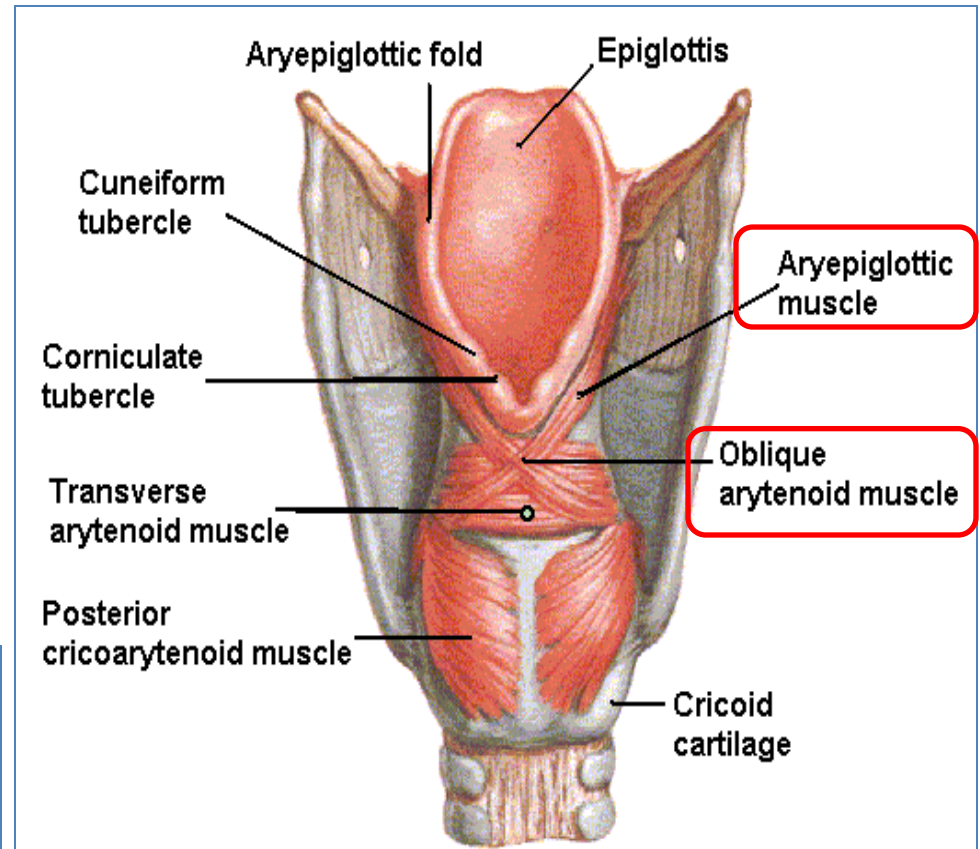
- **The Infrahyoid Muscles:**

1. Sternohyoid.
2. Sternothyroid.
3. Omohyoid.



Muscles Controlling the Laryngeal Inlet

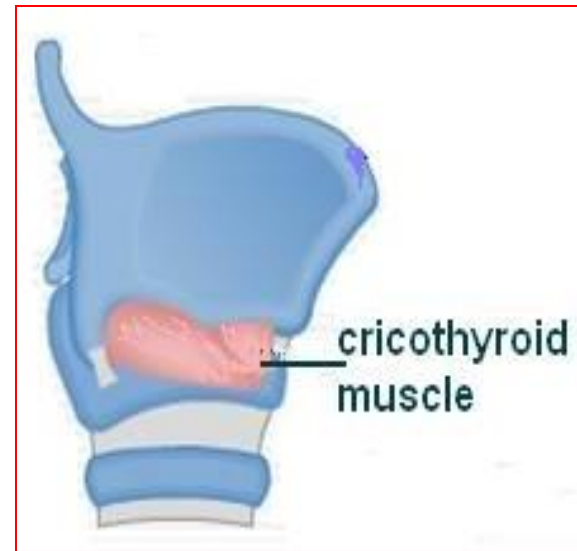
- Oblique arytenoid
- Aryepiglottic muscle



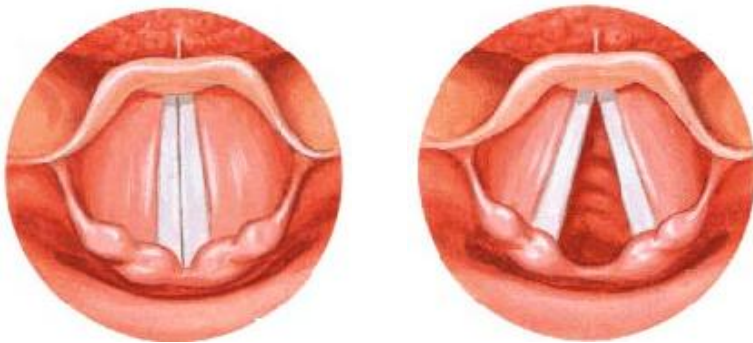
- **Muscle decreasing the Length & Tension of Vocal Cords**
 - Thyroarytenoid (vocalis)

- **Muscle increasing the Length & Tension of Vocal Cords**

- **Cricothyroid:** It is the only intrinsic muscle that present in the outer surface of the larynx.



- **Movements of the Vocal Cords**



Adduction

Abduction

Adductors

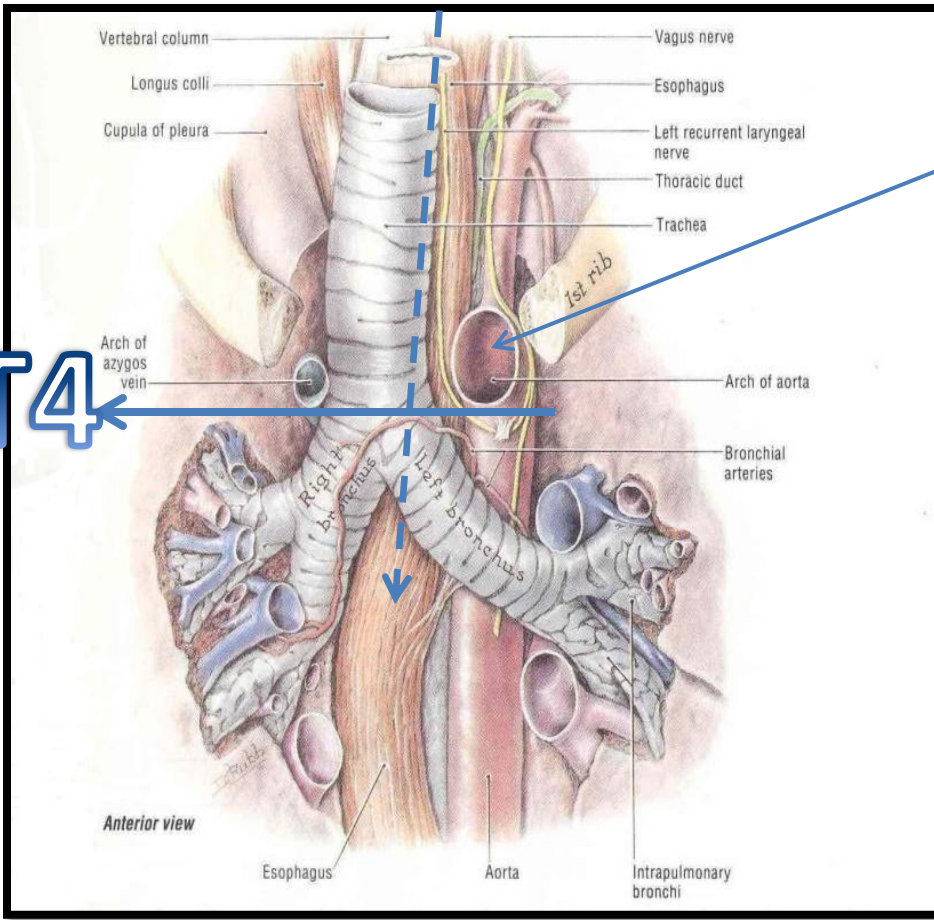
- Lateral cricoarytenoid
- Transverse arytenoid

Abductor

- Posterior cricoarytenoid

TRACHEA & BRONCHI

By the way guys where is the esophagus?
Located in the posterior **Mediastinum**



Identify this structure?
Whether ascending,
descending aorta or arch of
aorta

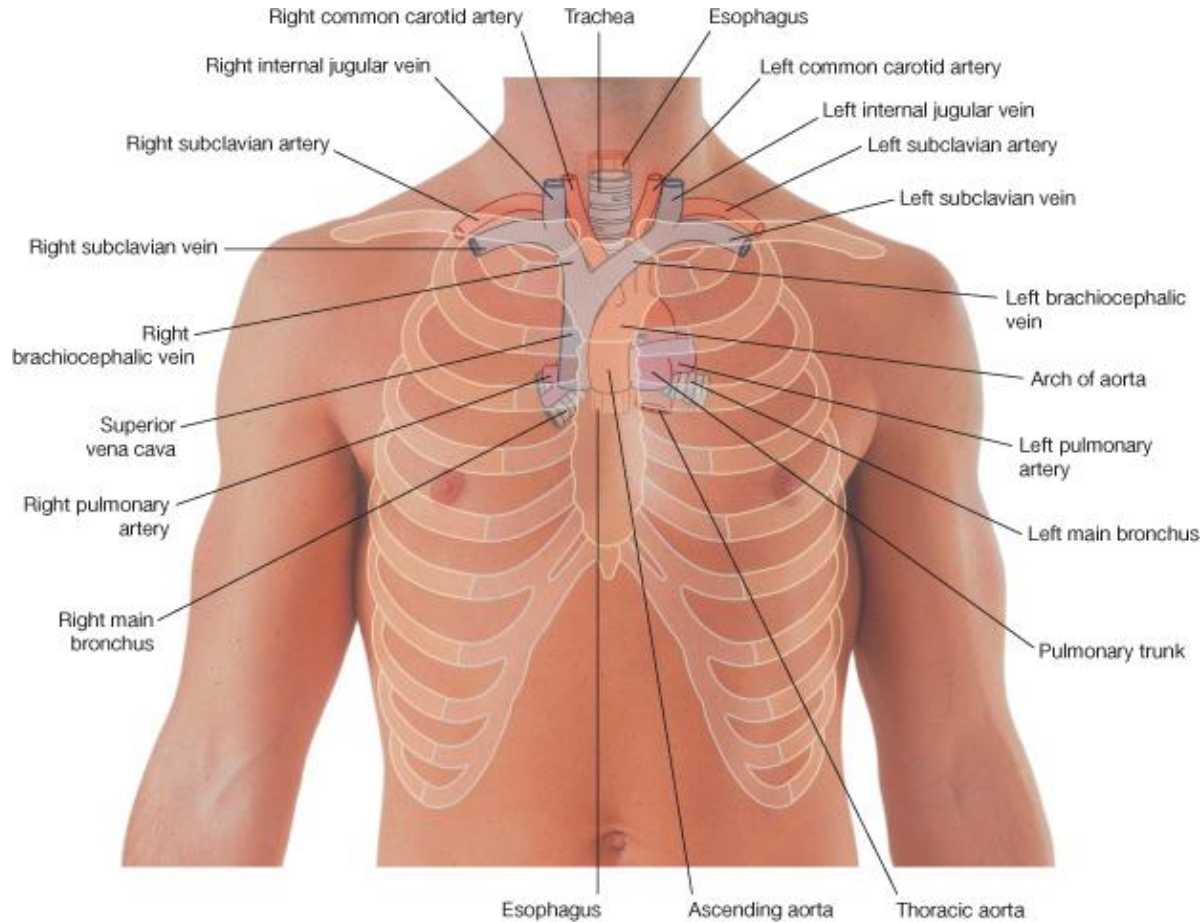
Very important:

Begins: In the neck below the **cricoid cartilage** of the larynx (at the level of C6).

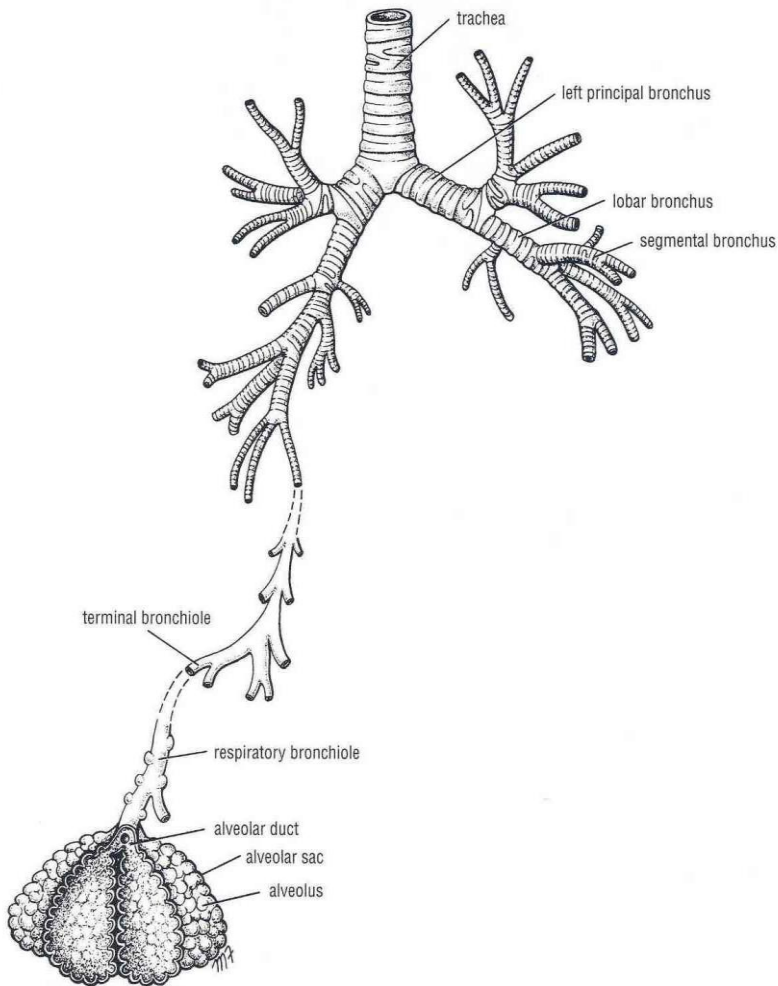
Ends: below in the thorax at the **level of sternal angle** (lower border of T4), by dividing into **right and left principal (main, primary) bronchi**.

This picture shows posterior
Mediastinum

For higher imagination



TRACHEA & BRONCHI



It's important to know the parts of bronchi from the stem (primary) bronchus to the alveoli.

Also the number of branches of lobar and segmental bronchi per each lung

The lobar bronchi, 3 in right and 2 in left

The **segmental bronchi**, 10 in right lung and 8 or 9 in the left lung

Bronchial Divisions

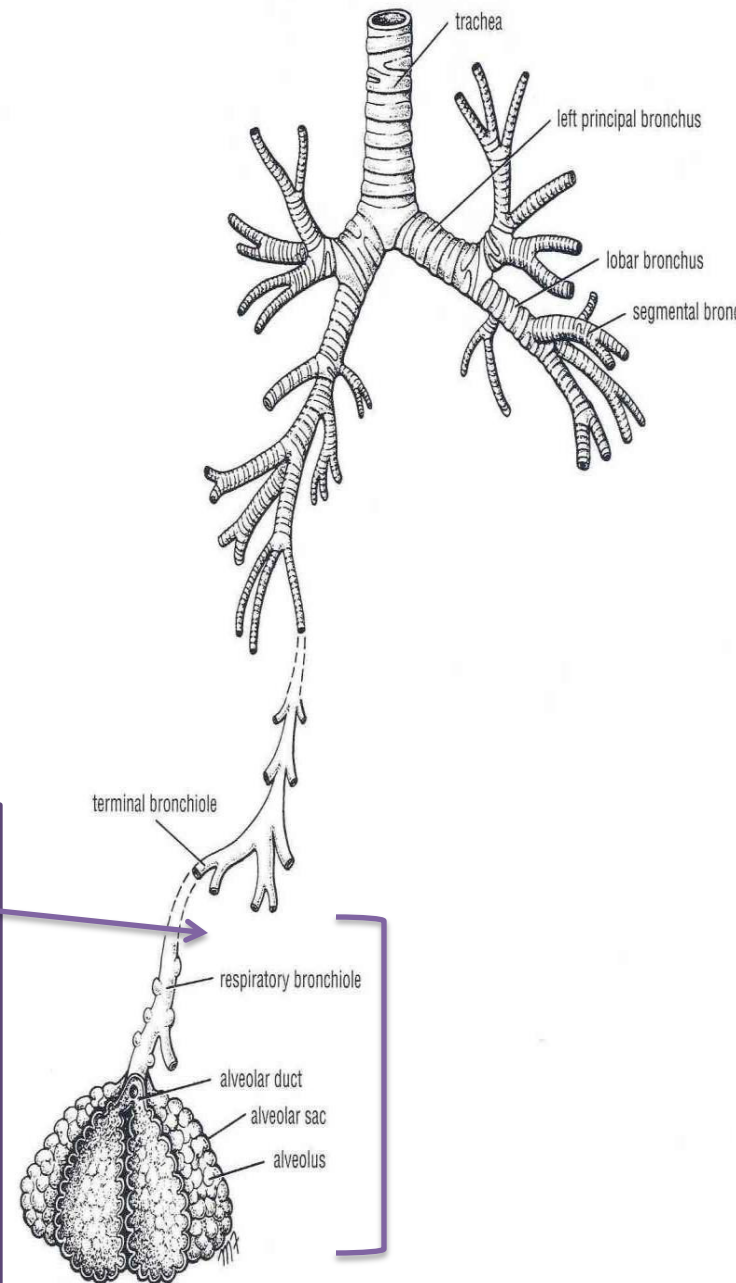
- Within the lung each bronchus divides into number of branches that can be divided into two groups:

Conduction zone branches

- Primary (main) bronchi
- Secondary (lobar) bronchi
- Tertiary (segmental) bronchi (supply the bronchopulmonary segment)
- Smaller bronchi
- Bronchioles
- Terminal bronchioles

Respiratory zone branches

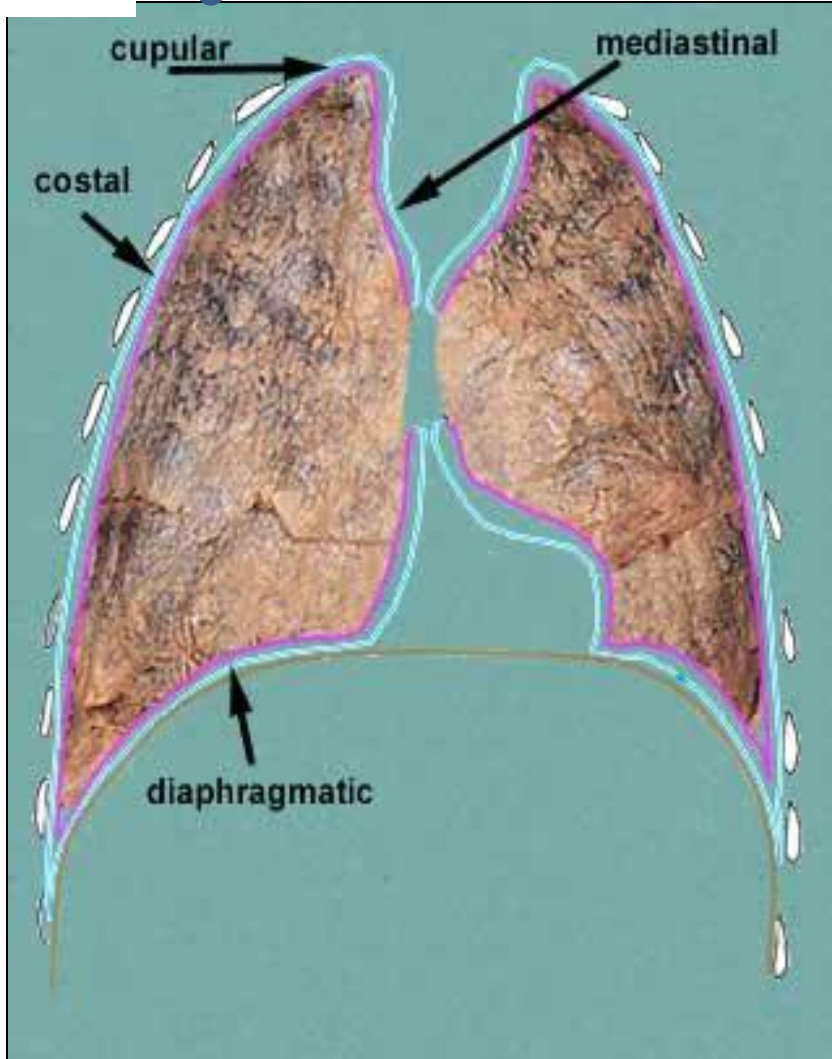
- Respiratory bronchioles
- Alveolar ducts
- Alveolar sacs
- Alveoli



LUNG & PLEURA

Mainly for pleura

Cervical



- What are the parts of parietal pleura ?
- 1- **Cervical pleura:**
It is part of parietal pleura which protrudes up into the root of the neck.
- 2- **Costal pleura:**
It lines inner surface of ribs, costal cartilages, intercostal muscles and back of the sternum.
- 3- **Diaphragmatic pleura:**
It covers upper surface of the diaphragm.
- 4- **Mediastinal pleura:**
It covers mediastinal surface of the lung.

- **Nerve supply**

- **Parietal pleura**
- **Costal P.P....** by intercostal nerves.
- **Mediastinal P.P....** by phrenic nerve.
- **Diaphragmatic P.P.:**
 - 1-Medially by phrenic nerve.
 - 2-Peripheral part.. by lower 6 intercostal nerves.
- **Visceral pleura...** sympathetic N.S. from pulmonary plexus.

- **Blood supply :**

Parietal pleura... by intercostal, internal thoracic & musculophrenic vessels.

Visceral pleuraby bronchial vessels.

What are the Pleural Recesses and it's function?

➤ **Costodiaphragmatic recess :**

➤ lies between costal & diaphragmatic parietal pleura along the inferior border.

➤ **Costomediastinal recess :**

➤ lies between costal & mediastinal parietal pleura along the anterior border

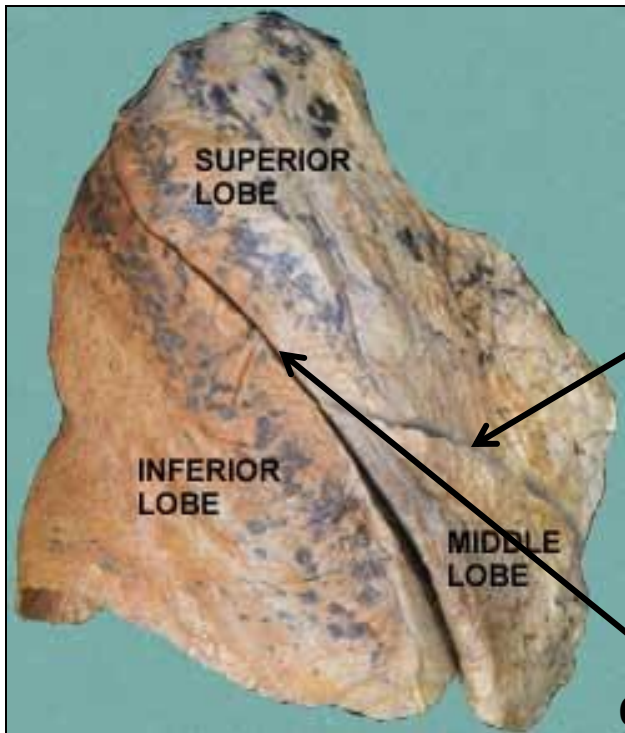
➤ **Function :**

➤ The lung reaches these recesses only in deep inspiration.

LUNG & PLEURA

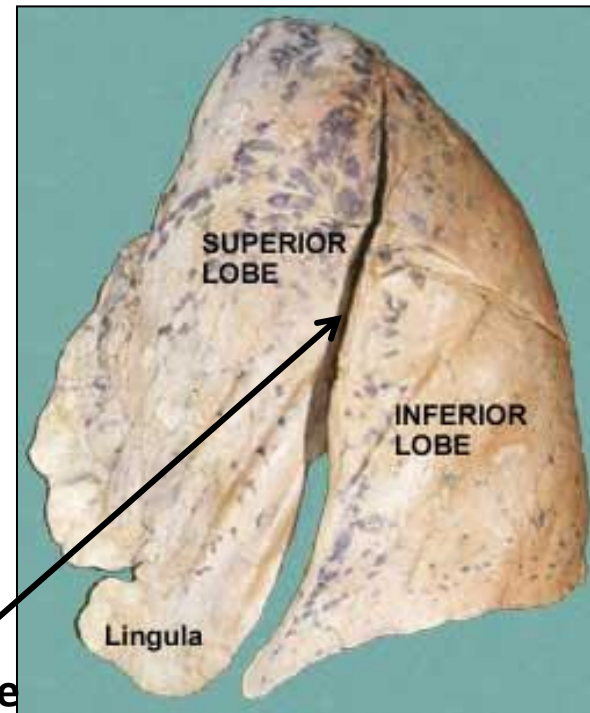
Right lung

Larger & shorter than left lung. Divided by 2 fissures (oblique & horizontal) into 3 lobes (upper, middle and lower lobes).



Left Lung

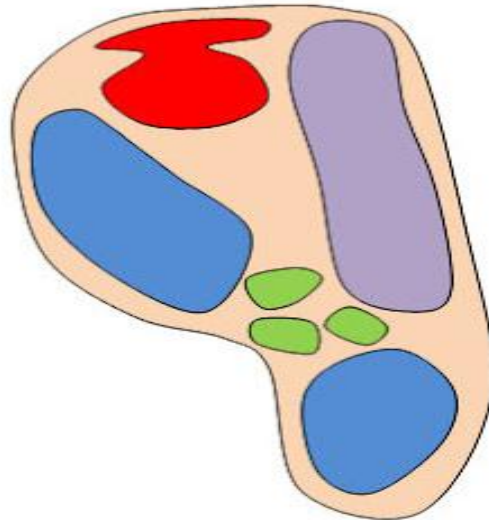
Divided by one oblique fissure into -2 lobes, Upper and lower. There is No horizontal fissure. It has a cardiac notch at lower part of its anterior border.



Right Lung

The hilum of the right lung and its boundaries .

The most POSTERIOR of the hilum is the bronchus and the most ANTERIOR is the superior pulmonary vein , the most INFERIOR is the inferior pulmonary vein and the last opening of the hilum will be the pulmonary artery .
We also have two openings of the bronchus in the right lung Superior lobar and Inferior lobar



RIGHT HILUM

Pulmonary Veins

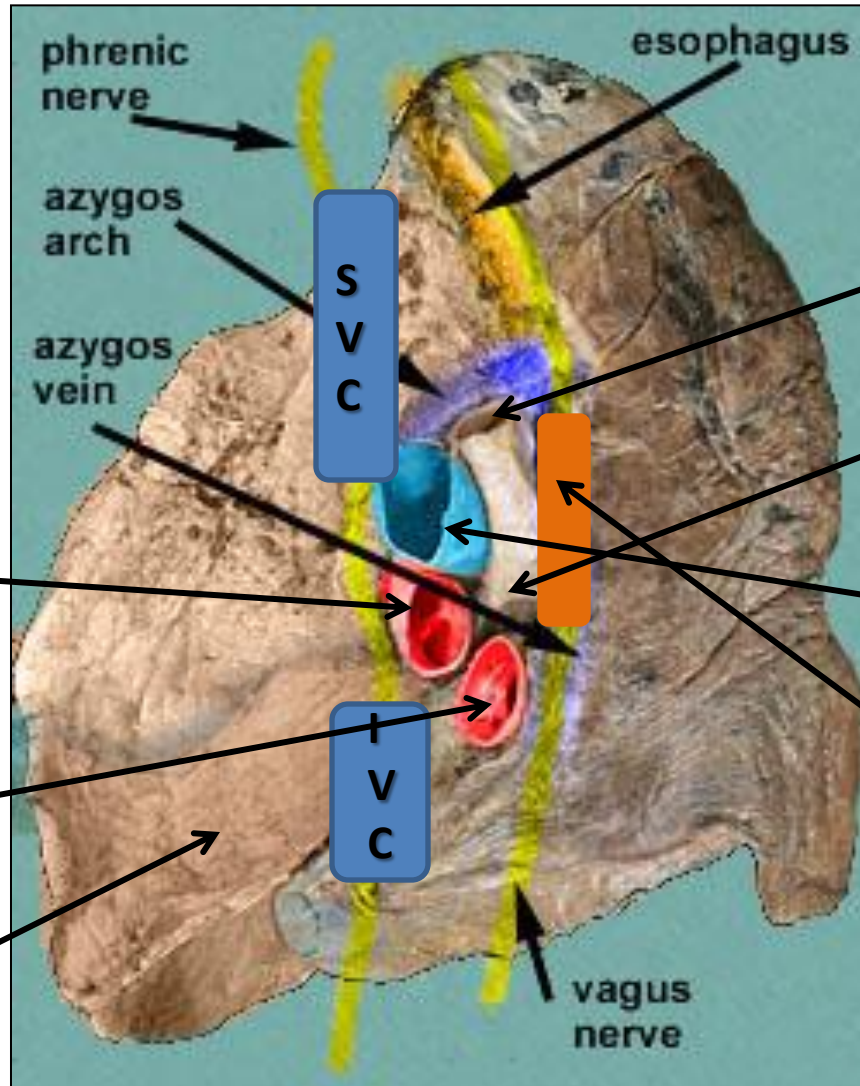
Pulmonary Arteries

Bronchi

Lymph Nodes

We also have the trachea anterior to the esophagus in upper part before the bifurcation, and it lies posterior to the SVC "Trachea"

RIGHT LUNG



Superior lobar bronchus

Inferior lobar bronchus

Pulmonary artery

Esophagus

phrenic nerve

esophagus

azygos arch

S
V
C

azygos vein

I
V
C

vagus nerve

Superior pulmonary vein

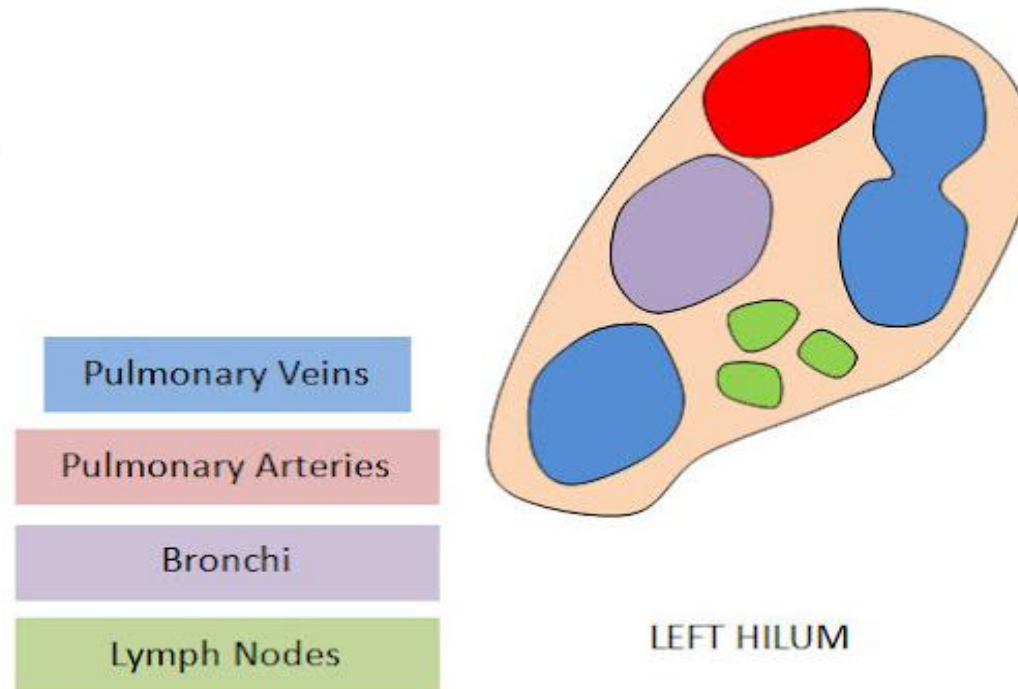
Inferior pulmonary vein

Cardiac impression

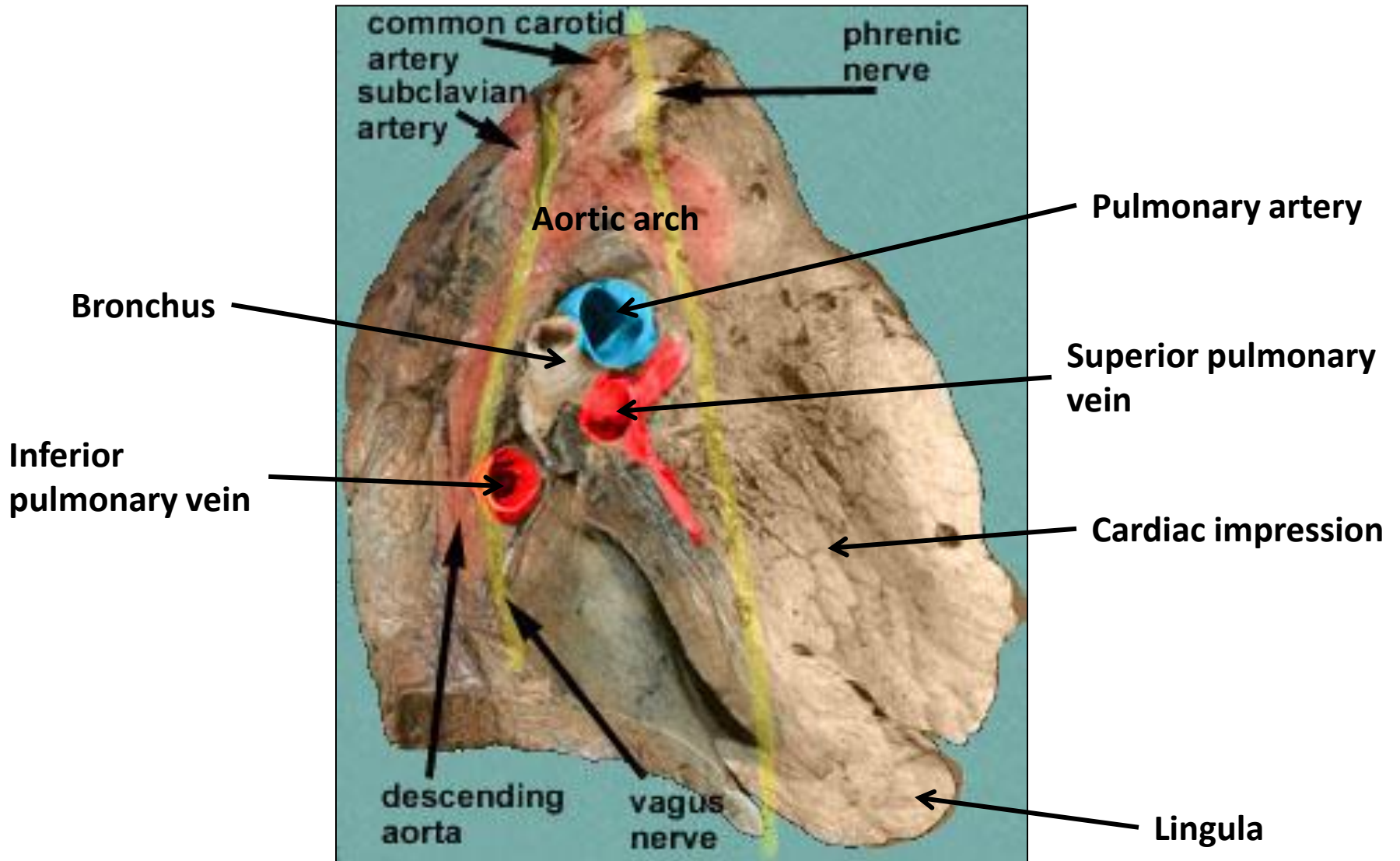
Left Lung

The hilum of the left lung and its boundaries .

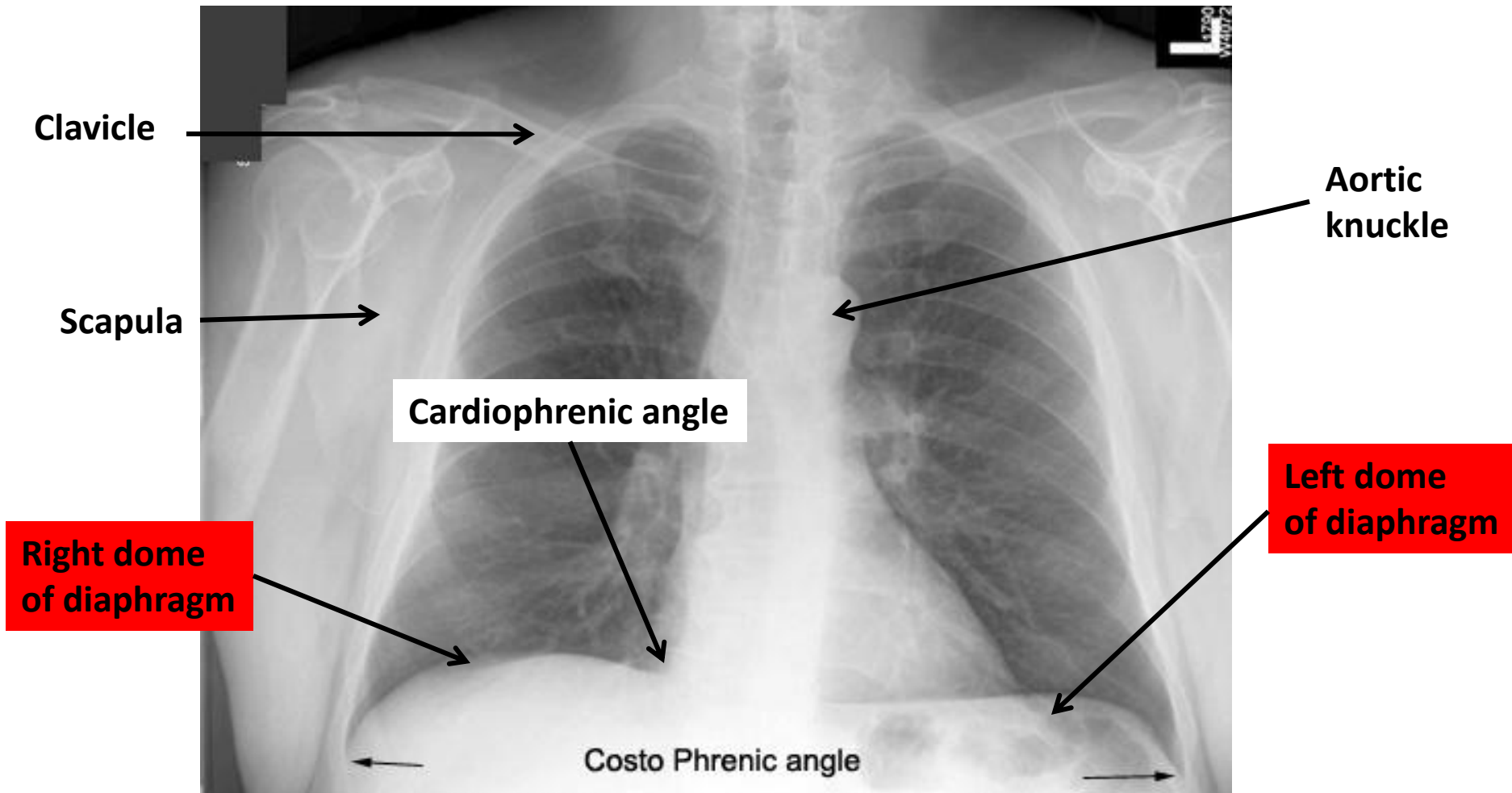
The root of the left lung differs from the right root that it has only one bronchus .
but the other contents are almost the same 2 Pulmonary vein "superior and inferior"
, and 1 Pulmonary artery



LEFT LUNG



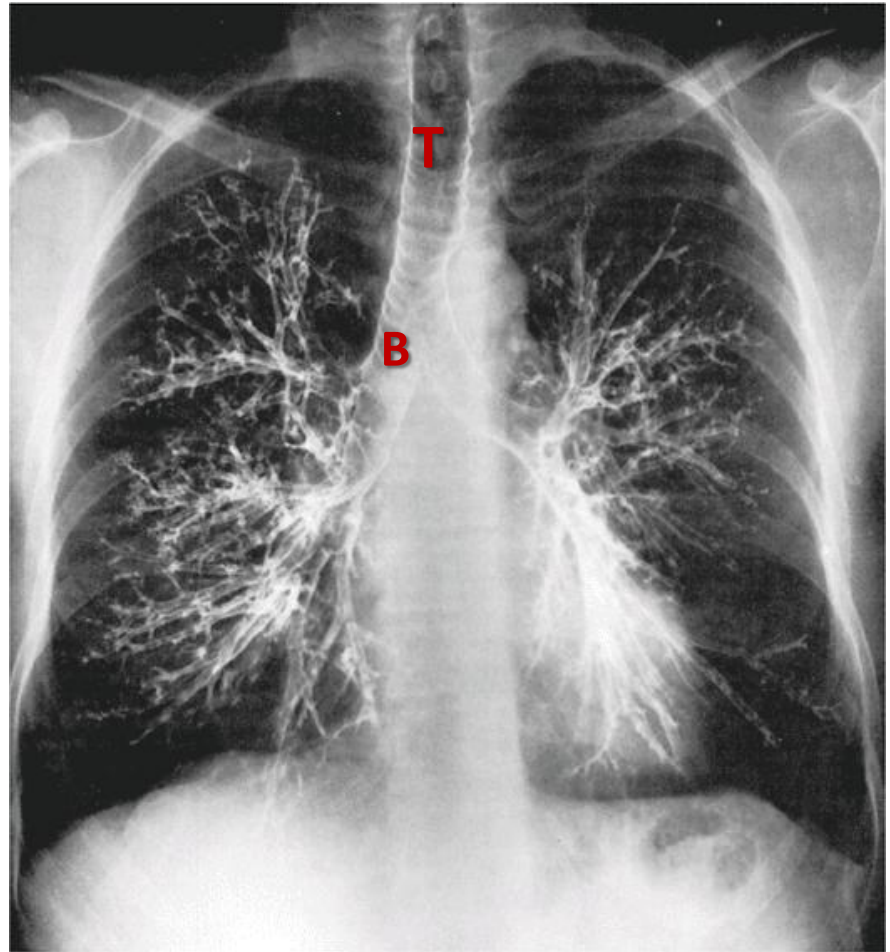
RADIOLOGY



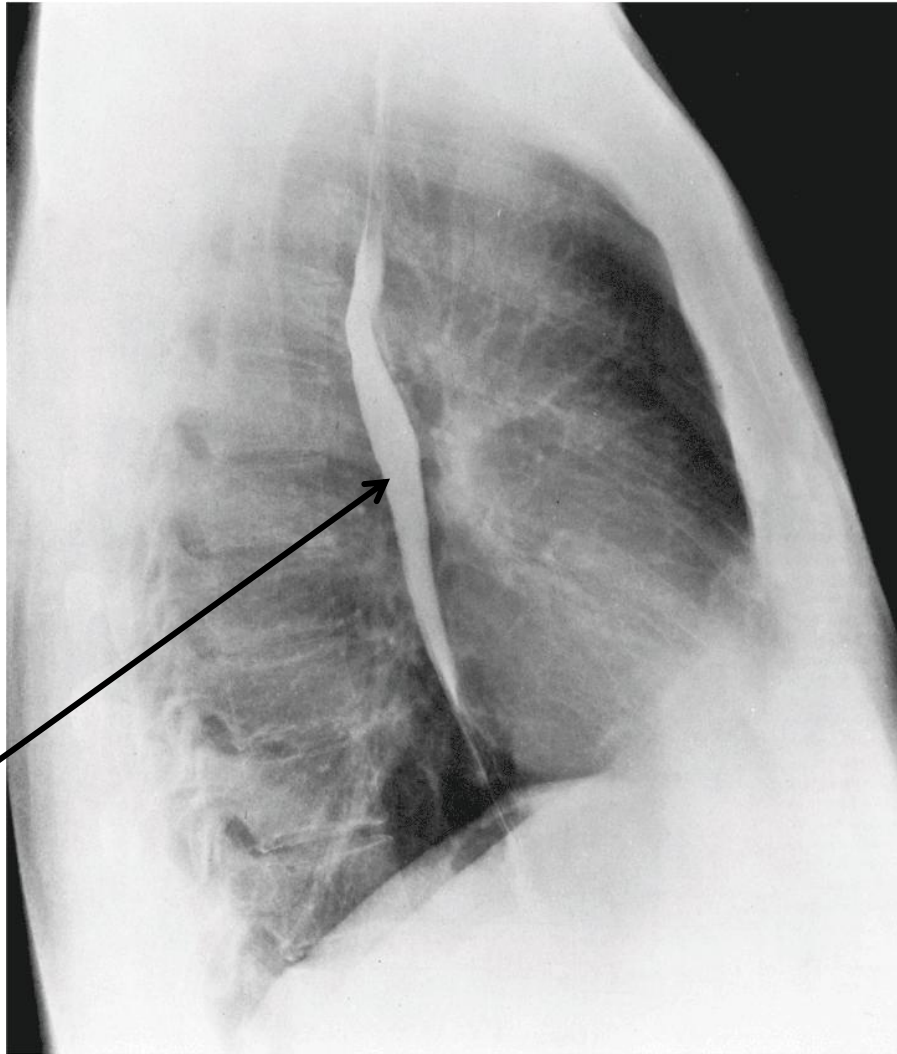
RADIOLOGY

Bronchography is a special study of the bronchial tree by means of introduction of a contrast medium into a particular bronchus usually under fluoroscopic control . It also shows other contents of the chest X-Ray

Dr. Ahmed said that you only need to know the basics or the keys of the radiography of the chest , and they are : [Aortic knuckle , left and right domes of the diaphragm , cardiophrenic Angle , scapula and clavicle]



RADIOLOGY



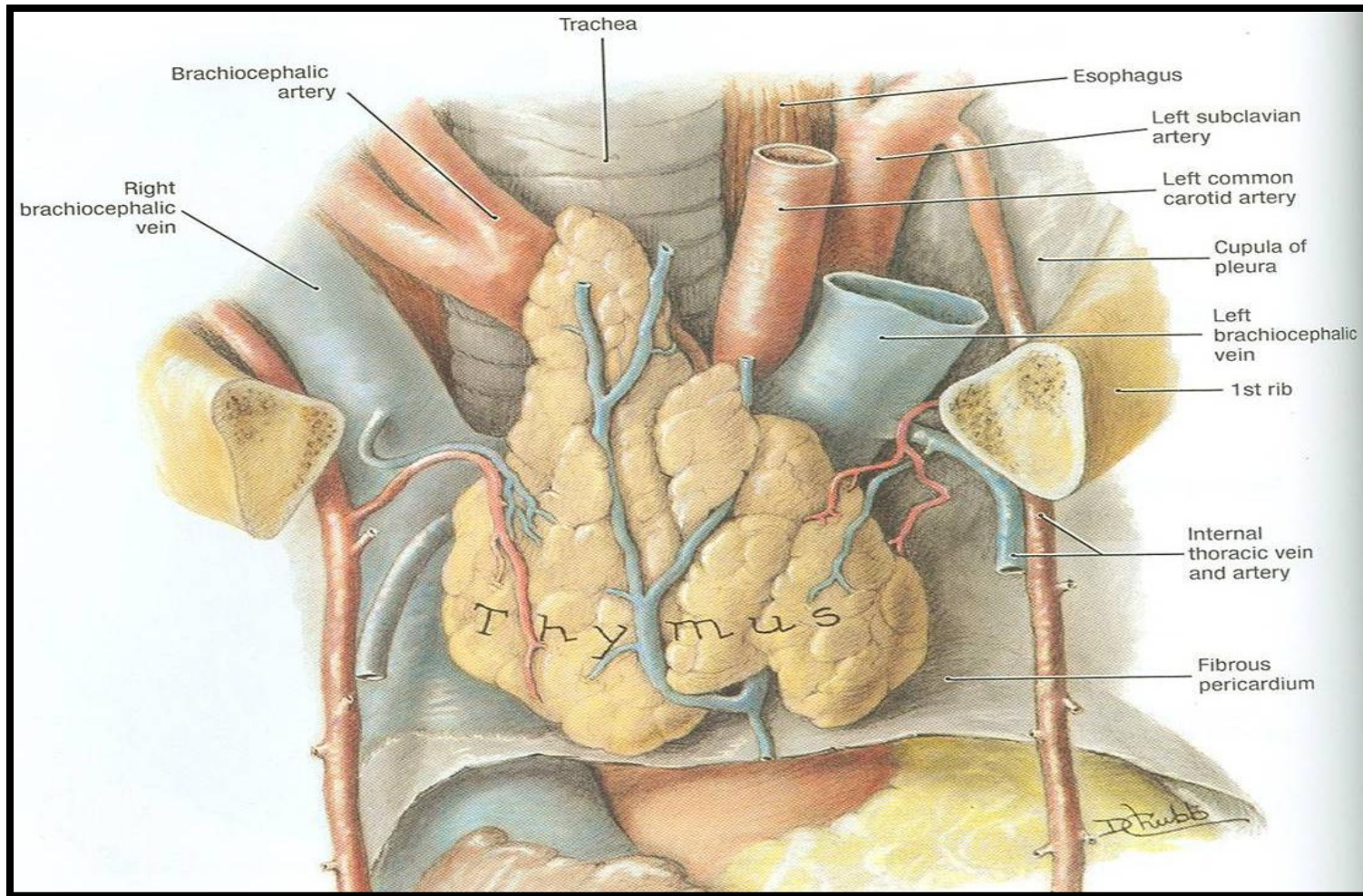
Esophagus

You have to know:

Contrast Visualization of the **Esophagus** which is called **Barium swallow**

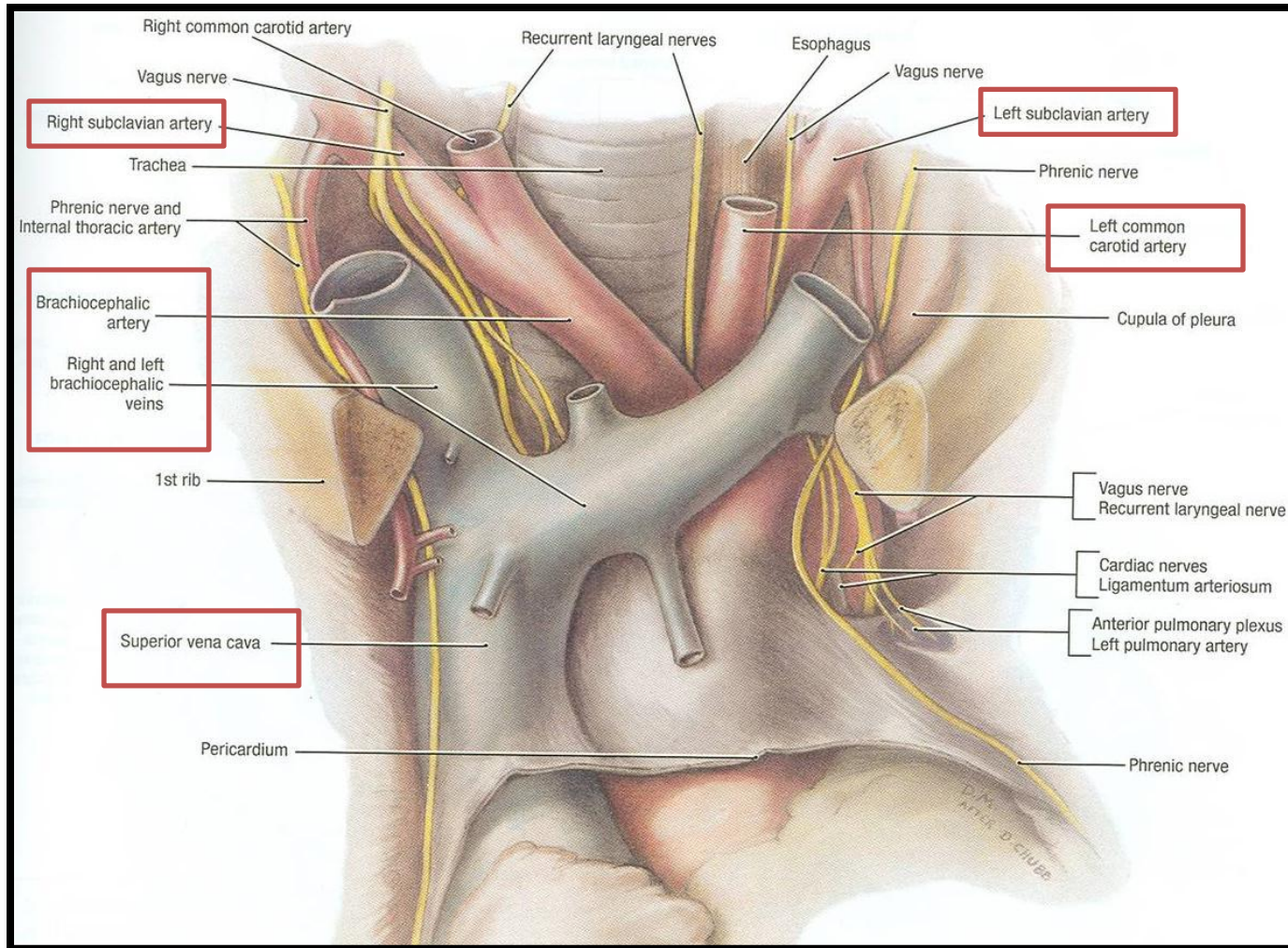
MEDIASTINUM

You have to memorize this picture 😊
*Question Expected here:
- Identify.

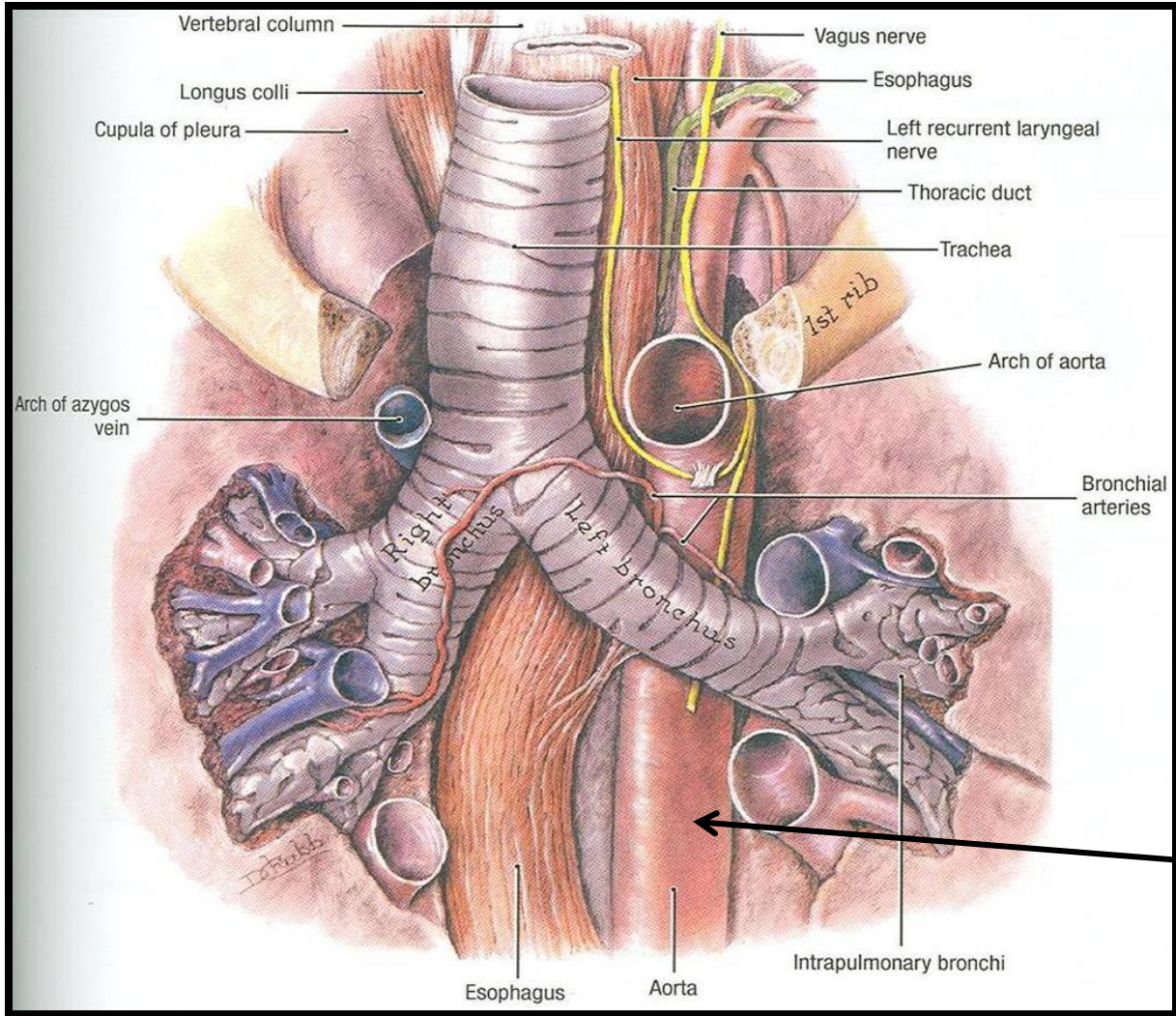


MEDIASTINUM

You have to memorize this picture 😊



MEDIASTINUM



***Question Expected here:**

- **Identify.**
- **Termination & Beginning of aorta.**
- **May ask about:**
“What are the branches of aorta?”

**A: 1-Arch of aorta.
2-Descending aorta.
3-Ascending aorta.**

To make the memorizing easy 😊:

Superior Mediastinum

4 Arteries

- Arch of aorta.
- Brachiocephalic.
- * Left common carotid
- * Left subclavian

4 Nerves

- L & R Vagus
- L & R phrenic

3 Veins

- Superior vena cava (SVC).
- R & L Brachiocephalic.

2 Tubes

- Esophagus.
- Trachea.

1 Gland

- Thymus.

1 Duct

- Thoracic duct.

Inferior Mediastinum

Posterior Mediastinum

- Esophagus
- Vagus nerve (Around Esophagus)
- Thoracic duct (Posterior to Esophagus)
- Azygos vein (Right to Esophagus)
- Descending aorta (Left to Esophagus)
- R & L Sympathetic trunk
- Lymph nodes

Middle Mediastinum

- Heart & Pericardium
- Ascending aorta
- Pulmonary trunk
- Superior vena cava & Inferior vena cava
- R & L Pulmonary veins
- R & L Phrenic nerves
- Lymph nodes

Anterior Mediastinum

- Thymus gland
- Lymph nodes

ممکن یسألك عن (مثال) :

Q: Where the Azygos vein lies to Esophagus?

A: To the Right. 😊

Aorta

Ascending aorta

- Begins at aortic orifice of left ventricle.
- In Middle Mediastinum.
- Continuous as arch of aorta

Arch of aorta

- In Superior Mediastinum.
- Continuous as Descending aorta.

Descending aorta

- In Posterior Mediastinum.
- Continuous as Abdominal aorta.

May ask about it, so it has to be in your mind 😊

Muscles involved in respiration

Possible questions :

1- Identify

2- Action

3- Nerve Supply

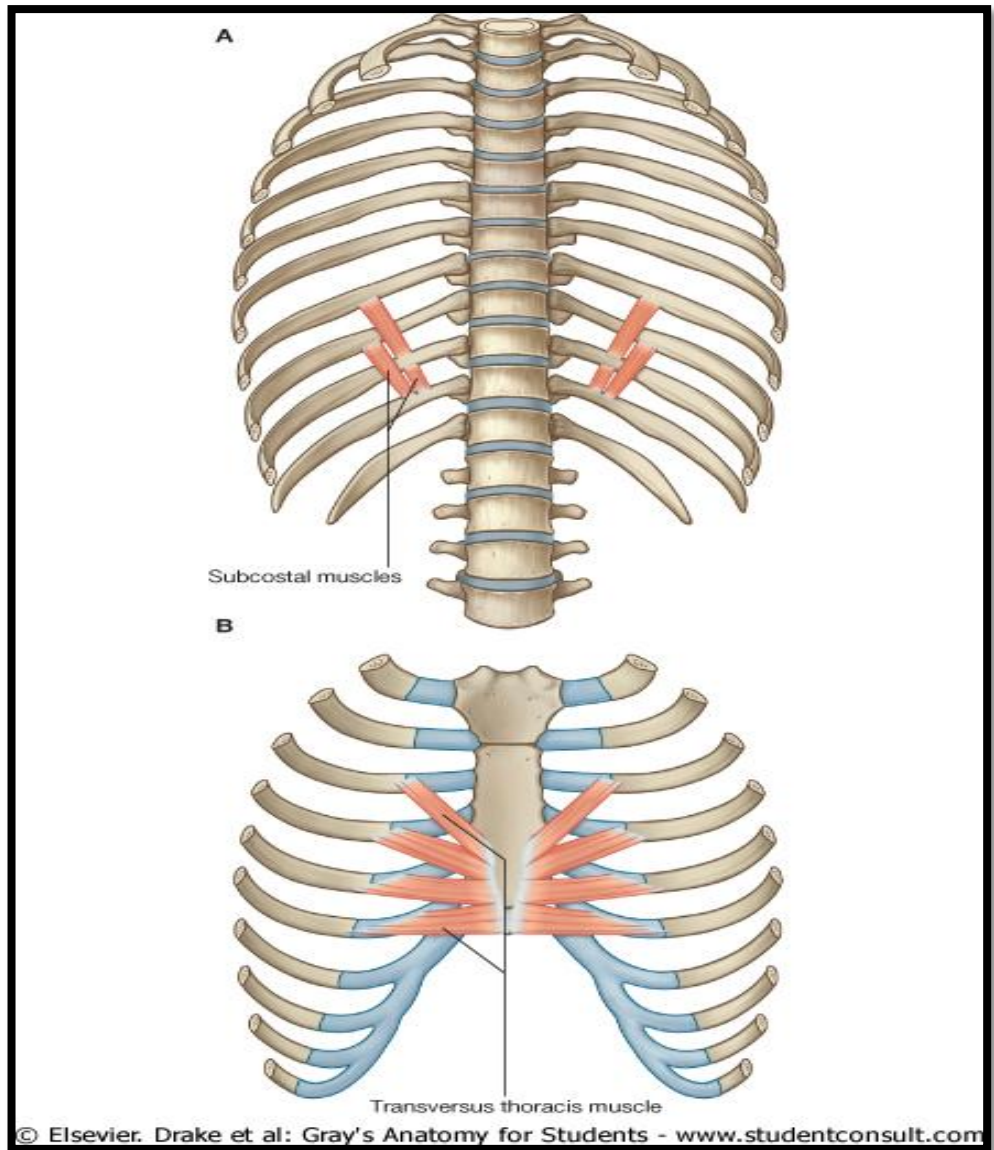
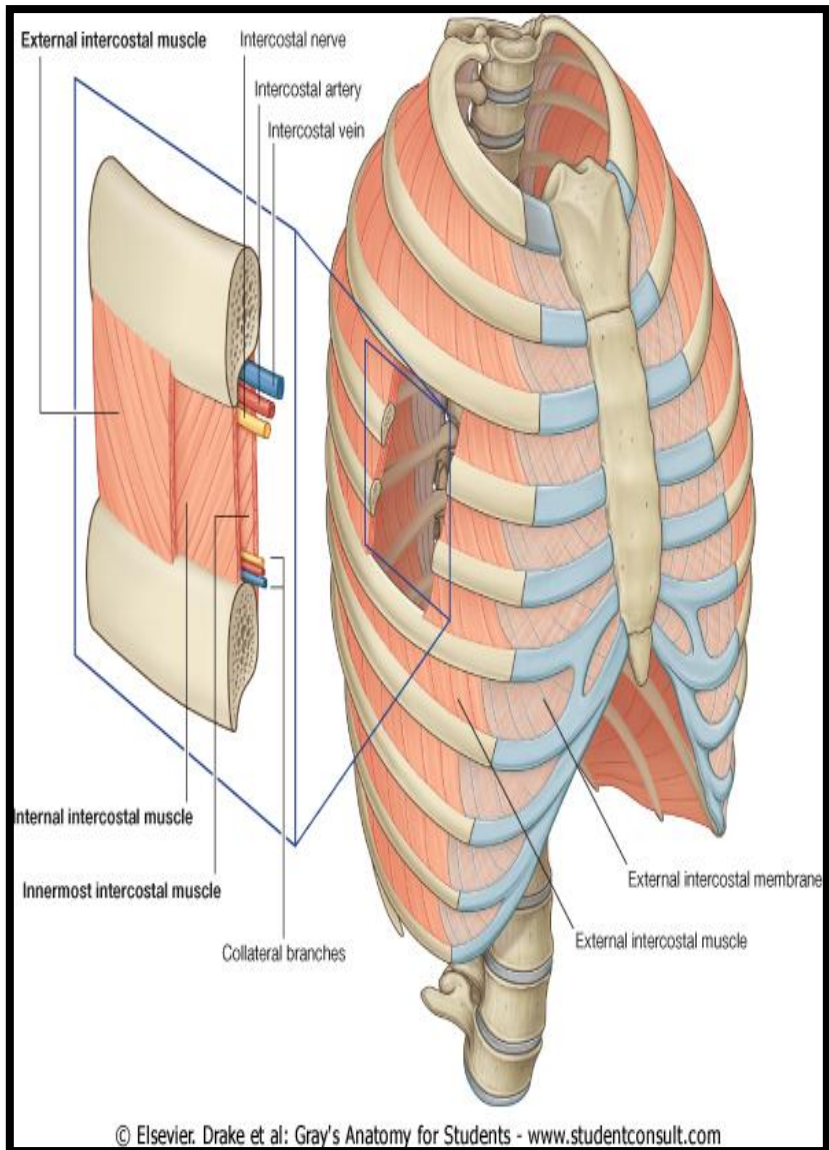
External Intercostal

It is an inspiratory muscle OR rib elevator “both are correct as an action”
N.S. from intercostal nerves

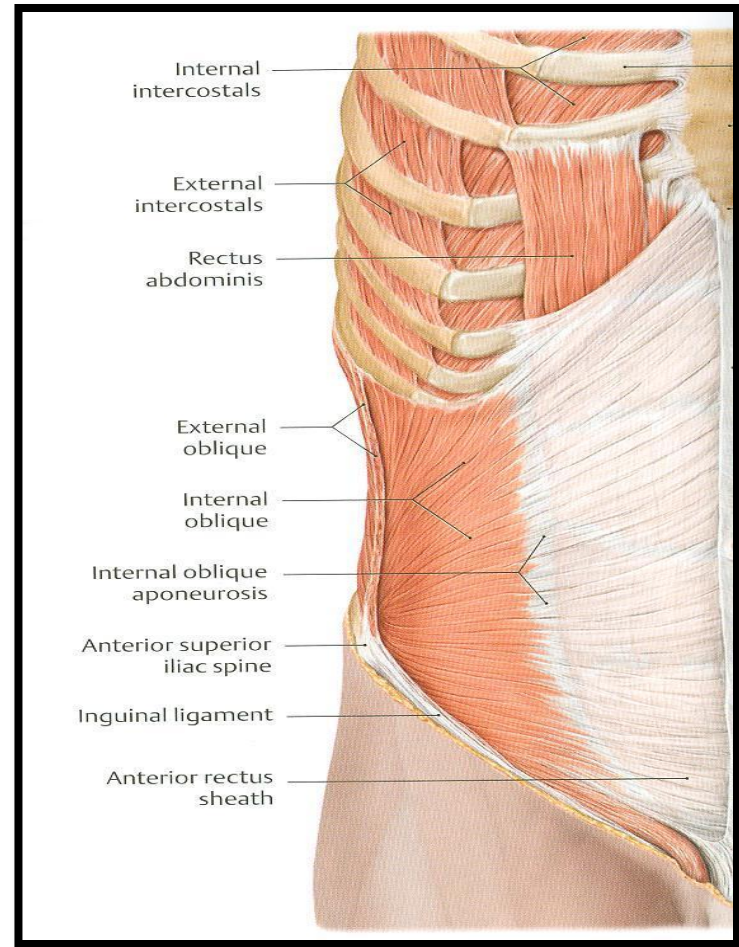
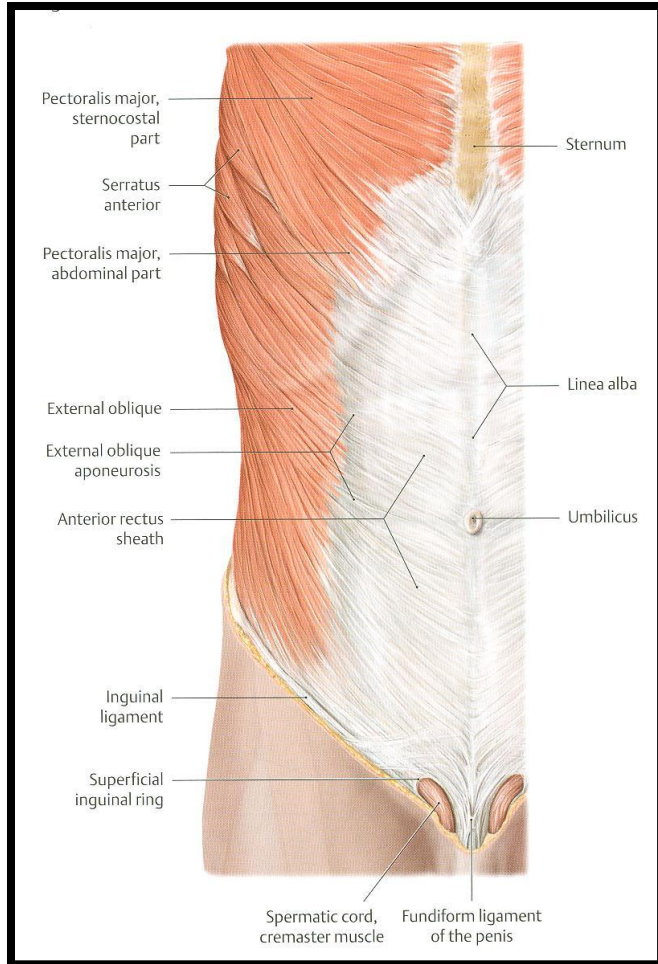
Internal , Innermost intercostal , subcostals , transversus thoracic

rib depressors
“Expiratory muscles”
N.S. from intercostal nerves

N.S. = nerve supply
identification in the next slide



MUSCLES INVOLVED IN RESPIRATION



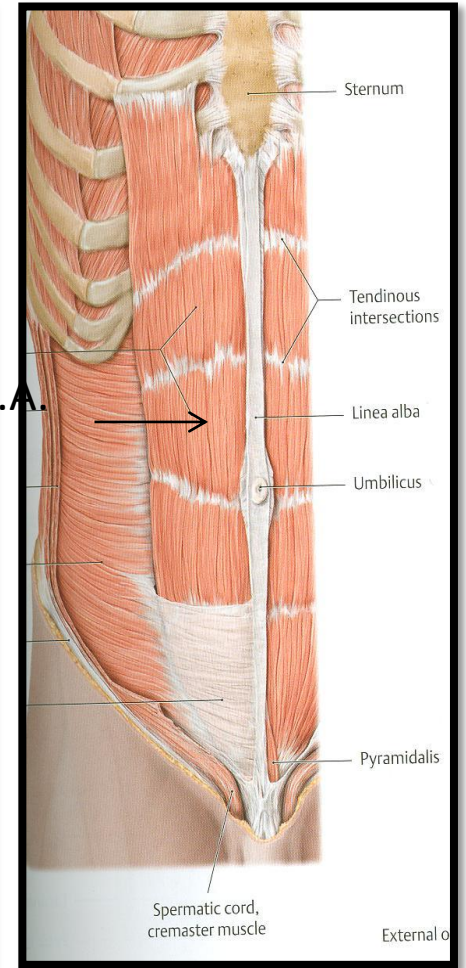
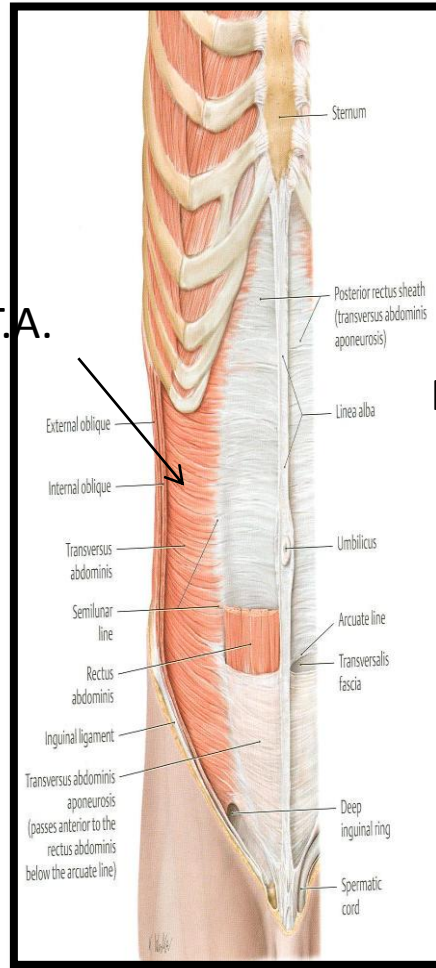
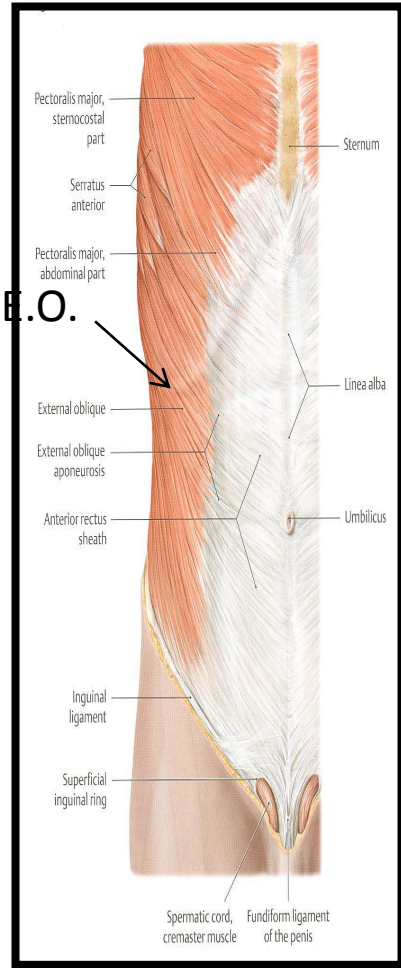
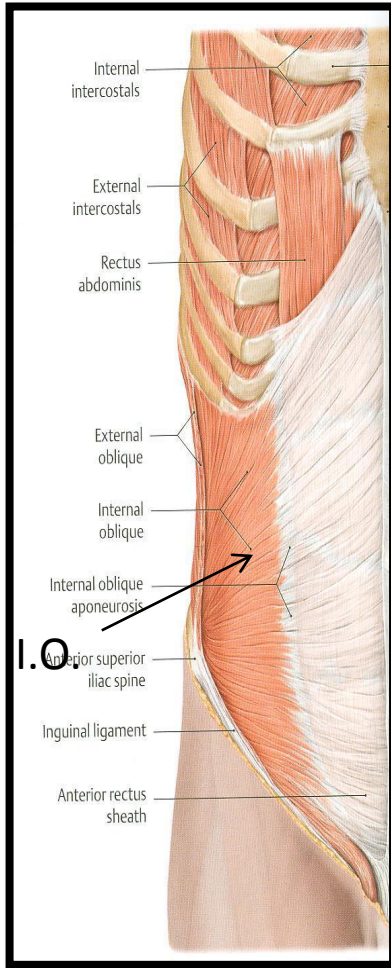
Abdominal muscles

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 (during forced expiration)

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**

T.A. = transversus abdominis

E.O. = **External oblique**

I.O. = **Internal oblique**

R.A. = **Rectus Abdominis**