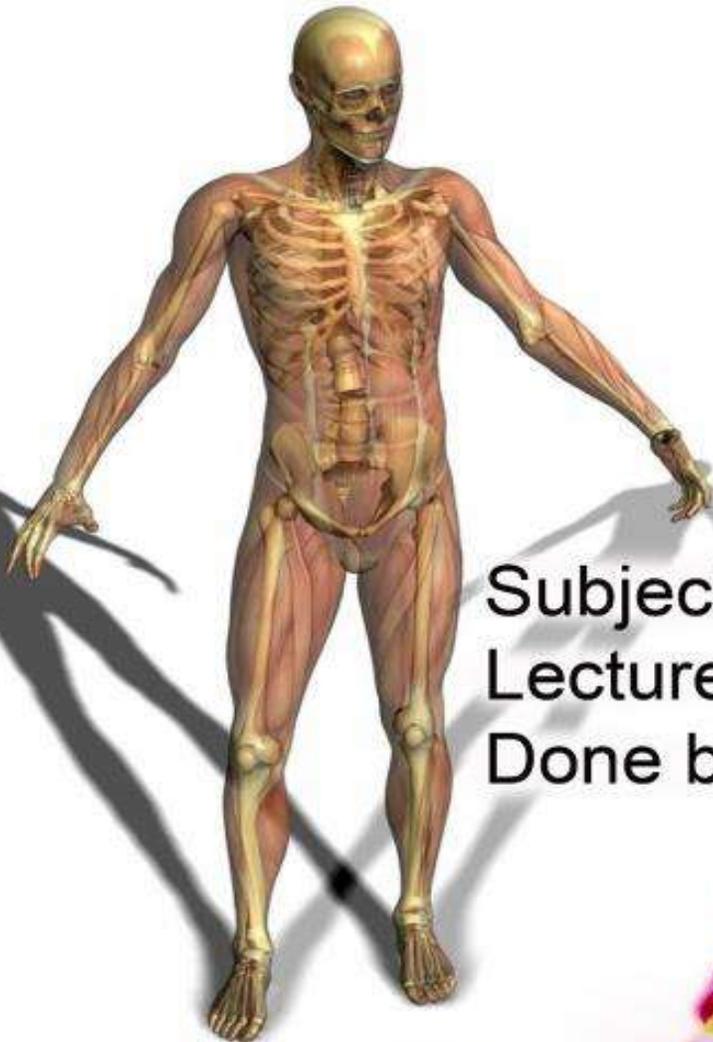




# ANATOMY

Sheet



**Subject** : *Introduction to Anatomy*

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lecture # : 29

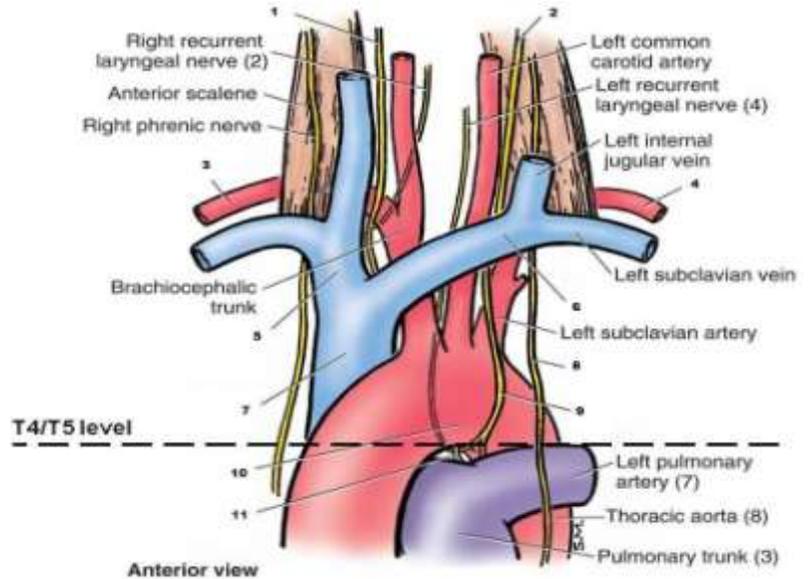
Date : April/14<sup>th</sup>/2013

## Superior & Posterior Mediastinum

\*\*\*Superior mediastinum

\* is bounded from:

- Anterior by manubrium sterni
- posterior by upper 4 thoracic vertebrae
- superior by thoracic inlet
- inferior by the imaginary line



Single structures	Paired structures(left.right)
Thymus gland	Brachiocephalic veins
Superior Vena cava	Vagus nerves
Trachea	Phrenic nerves
Esophagus	Sympathetic trunk
Aortic arch	
Thoracic duct	

**\*Contents : (from anterior to posterior):**

- 1.thymus gland
- 2.left and right brachiocephalic Veins
- 3.aortic arch ( ascending aorta:in middle mediastinum ,descending aorta(thoracic aorta) :in posterior mediastinum)
- 4.trachea
- 5.esophagus
6. vertebral column

“GVA”

7.vagus Nerves

8.Phrenic Nerves

9.Sympathetic trunk

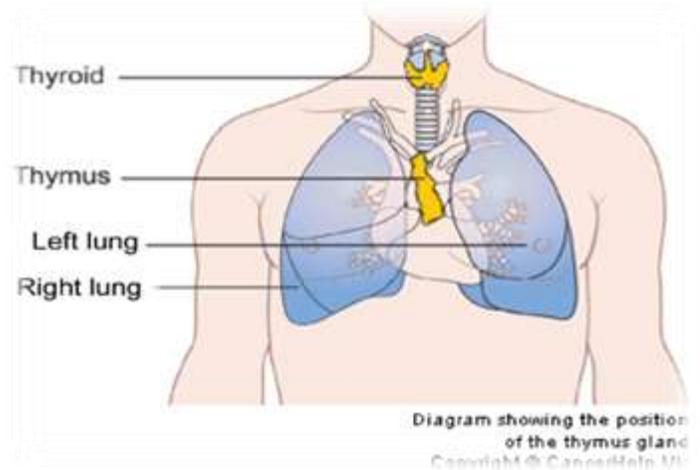
IN DETAILS:(CONTENTS)

## 1.Thymus gland:

Location: behind manubrium sterni

Function: important in immunity

Size: large in new born babies and children, starts to atrophy (shrink) at puberty , while in adults we found remnants

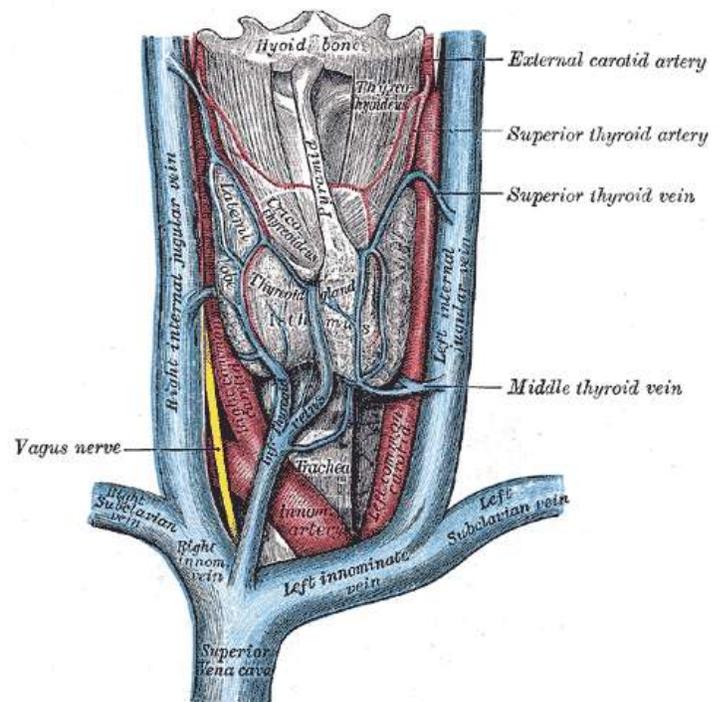


**2.Right and left brachiocephalic veins:** Both unite to give superior vena cava which ends into the right atrium of heart.

#Comparison between the left and the right brachiocephalic veins:

A- THE left brachiocephalic vein:

\*is formed by the union of the Left internal jugular vein and the left subclavian vein.



\*it's double the length of the right brachiocephalic vein (2 inches) .

\*extending from left to right ( oblique direction ).

B- THE right brachiocephalic vein:

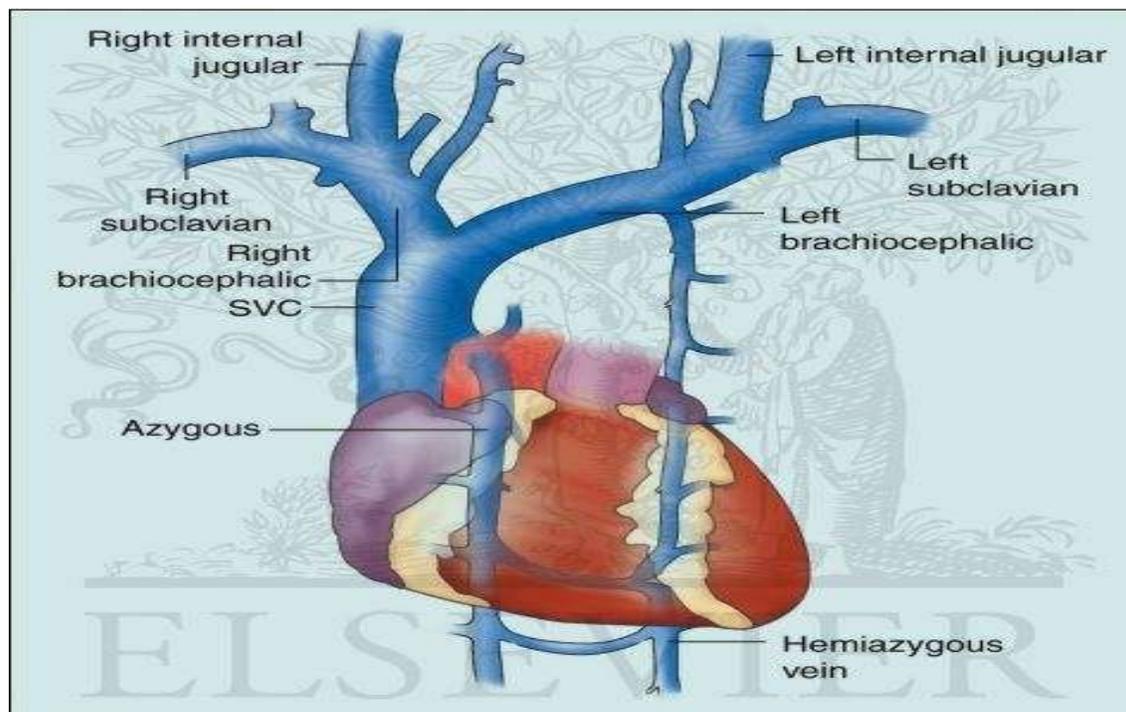
\*is formed by the union of the right internal jugular vein and the right subclavian vein to form right brachiocephalic vein

\*it's half the length of the left brachiocephalic vein (1 inch)

\*1 inch

\*note: the two internal jugular veins (الوريد الودجي الداخلي), drain internal structures of the skull. There are also external jugular veins.

## #“SUPERIOR VENA CAVA:(in the right side)”



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is formed by the union of two brachiocephalic veins and ends by draining into the right atrium (3 inches).

-it passes two regions: upper part (the major part) in the superior mediastinum and the terminal 2 cm in the middle mediastinum (vertical).

-drains most of structures above the level of diaphragm.

### **3.Aortic arch:**

-Is located completely into the superior mediastinum

-starts and ends at the same level (starts at the sternal angle anterior and ends posteriorly at level of T4-T5 intervertebral discs)

-continues as thoracic aorta

-has convex border (margin) and concave border, the convex border gives 3 major arteries :

A. Right brachiocephalic artery "BRACHIO- : BRACHIAL,

-CEPHALIC : HEAD" which will divide to right common carotid artery and right subclavian artery.

B. Left common carotid artery: to the head

C. Left subclavian artery

**4. Trachea:(we talked about it previously )** Is divided into right bronchus and left bronchus

## 5. Phrenic nerves:

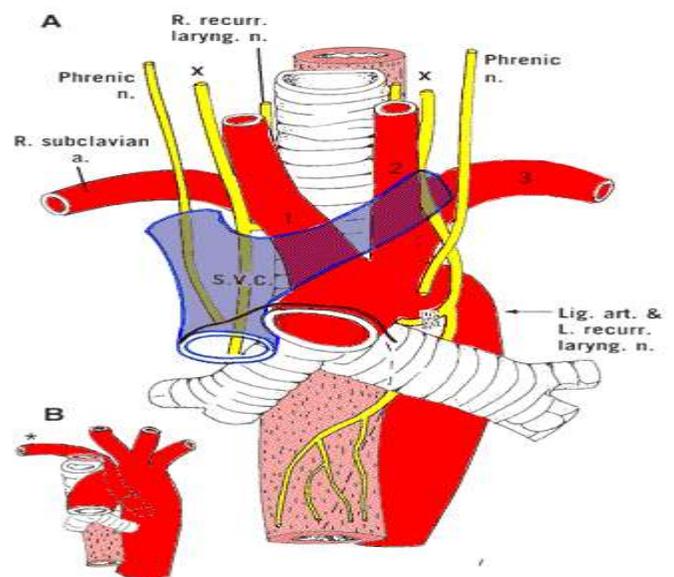
- are close to the pericardium
  - paired (left and right)
  - are motor innervation to the muscles of the diaphragm
- \*\*note: if the phrenic nerve is cut in the neck; so diaphragm is paralyzed which causes problems in respiration

## 6. vagus nerves: (wondering nerve, 10<sup>th</sup> cranial nerve)

-we called it the wondering nerve ; because it supplies a lot of organs in head,neck,thorax,abdomen and pelvis." So we wonder what it doesn't supply!

-paired (left and right)

\*both vagus and phrenic nerves are on both sides of the midline structures exactly the tubes (trachea and esophagus)



## 7. esophagus:( passes superior and posterior mediastinum)

- hallow muscular tube, about ten inches(25 cm) in length
- extending from distal end of the pharynx at level of C6 ,passing through the diaphragm at the level of T10, It ends into the stomach

-it passes 3 regions so it has 3 parts:

A. cervical part in neck

B. thoracic part in thorax

C. abdominal part in abdomen

-its wall has 2 layers: \*longitudinal (outer) is important in peristaltic movement to push bolous of food inside and \*circular (inner) to form sphincter

Some female teenagers and children eat food then they vomit it, it's caused by a problem of sphincters

New born babies drink milk which causes to them gases by the reaction of lactic acid and hydrochloric acid of stomach causing interruption of the peristaltic movement by pushing nerve endings

q. How can we see the peristaltic movement of the esophagus?!

Ans. We let the patient drinks barium meal (ex. yogurt) and watch him by a camera taking shots while the x-ray is directed to his esophagus

\*note: All organs of the digestive system is double layer except the stomach which has a wall of 3 layers (as jeans :P) (longitudinal , circular and oblique).

-Esophagus is devided to 3 parts according to the arterial supply, venus drainage, lymphatic drainage and nerve supply of the muscles (which is the important):

A. upper 3<sup>rd</sup>: muscles here are voluntary ; so we can bring out the food

B.middle 3<sup>rd</sup>: mixed (we may can bring out food or we may not)

C.Lower 3<sup>rd</sup>:muscles here are involuntary (we can't vomit food here )

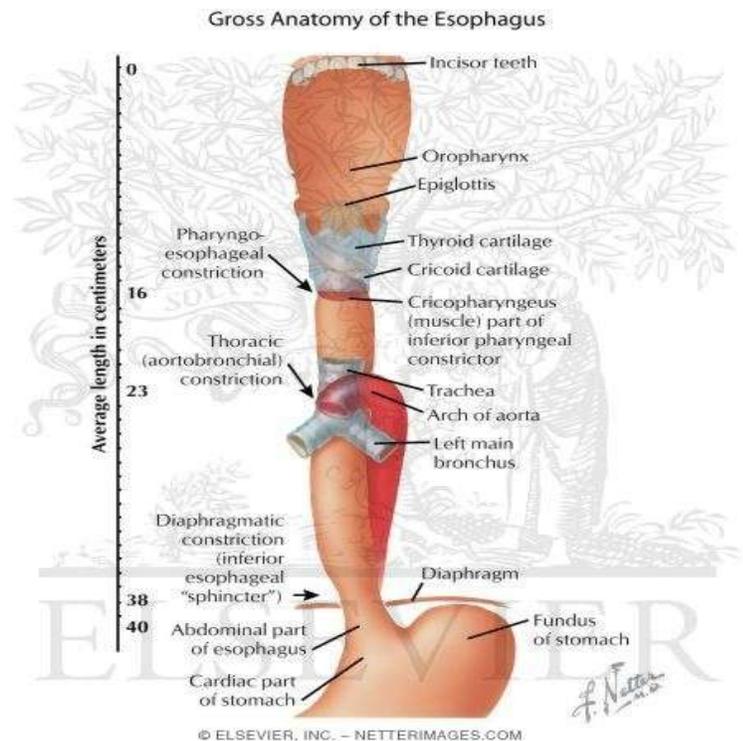
**\*\*Esophageal Constrictions:**  
(functional constrictions)

-the sites of delay in the pathway of food

-Physiologic 'not anatomic' constrictions, occur only while the esophagus is in action.

-they are the common sites of cancer (mostly is Asia where they eat spicy food).

-they are located at esophagus beginning, at its end and behind the aortic arch , left bronchus and left atrium.



Cancer leads the cell to lose its code and its program, then it grows and produces golgi and lysosomes...etc more than normal.

### **\*\*\*Posterior mediastinum:**

- 1.thoracic aorta
- 2.esophagus
- 3.thoracic duct
- 4.vagus nerves
- 5.sympathetic trunks
- 6.azygos veins

#### IN DETAILS:

#### 1.Thoracic aorta:(descending aorta)

- is the direct continuation of aortic arch

-starts at level of T4-T5 then passing to the left side of vertebral column then will be anterior to the vertebral column to pass through(aortic opening within the diaphragm at T12) to continue as abdominal aorta.

-Branches of thoracic aorta:

#### a.visceral branches(for the organs inside) :

-bronchial arteries( to lungs)

-esophageal arteries(to esophagus)

-pericardial arteries (to pericardium)

#### b.parietal branches(for the wall) :

-lower ten intercostals arteries(lower 9 and subcostal artery)

- superior phrenic arteries(phrenic means for diaphragm)

\*note:intercostal means between ribs, subcostal at the lower border of the 12<sup>th</sup> rib.

## 2.THORACIC DUCT (THE SECOND CONTENT OF THE POSTERIOR MEDIASTINUM):

-the main lymphatic channel of the body

-begins in the abdomen close to liver (the largest filter in the body) as cisterna chyli (كيس ليمفاوي) lymphatic sac “cist=كيس chyli=ليمف” anterior to L1 within the abdomen then pass through diaphragm to be in posterior mediastinum in thorax then to the superior mediastinum and ends between left internal jugular and left subclavian veins .

-drains about  $\frac{3}{4}$  of the body lymph.

**Believe in yourself..**

**Say to the world that you are the BEST.... ‘even if u r not 😊’**