

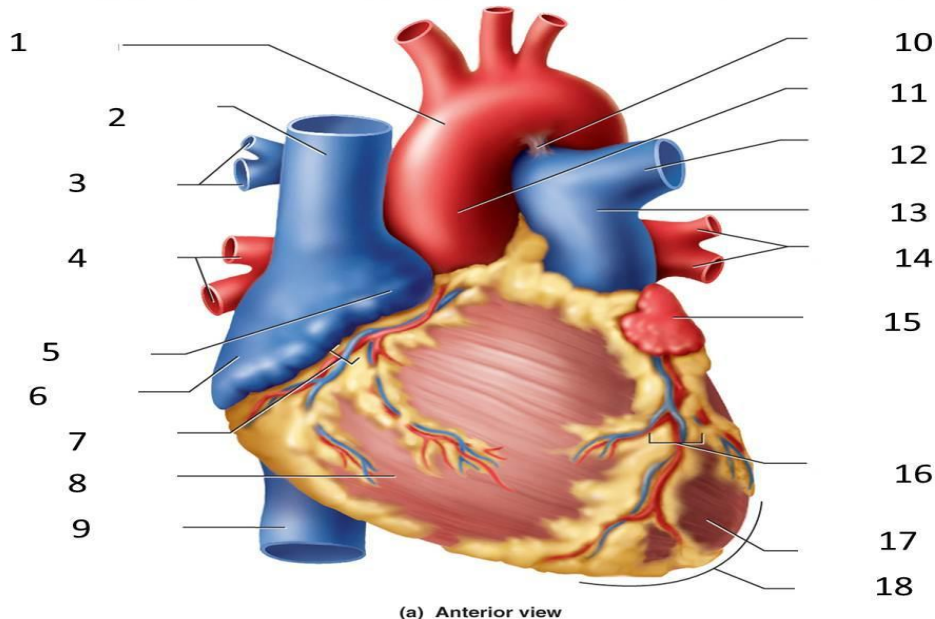
- The doctor started the lab with pointing on the **PERICARDIUM** mentioning that :
  - 1- it has two layers : a- fibrous ( the outer one ) b- parietal ( the inner one)
  - 2- both of those layers are pain sensitive ( example in cases of pericarditis the patient will suffer from a severe pain )
  - 3- the **nerve supply** for those pericardium layers comes from the **phrenic nerve**
- **Note** : phrenic nerve is a **spinal nerve** which means that it has sensory , motor, and sympathetic fibers .
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- **Note** : the parasympathetic innervation in the human is only found in s2 s3 s4 (sacral nerves), and some of the cranial nerves .

## - Structures that are found outside the pericardium

- 1- arch of aorta and it's branches ( in the superior mediastinum , posterior to the lower half of the manubrium )
- 2- descending aorta
- 3- pulmonary veins
- 4- the upper half of the superior

## vena cave

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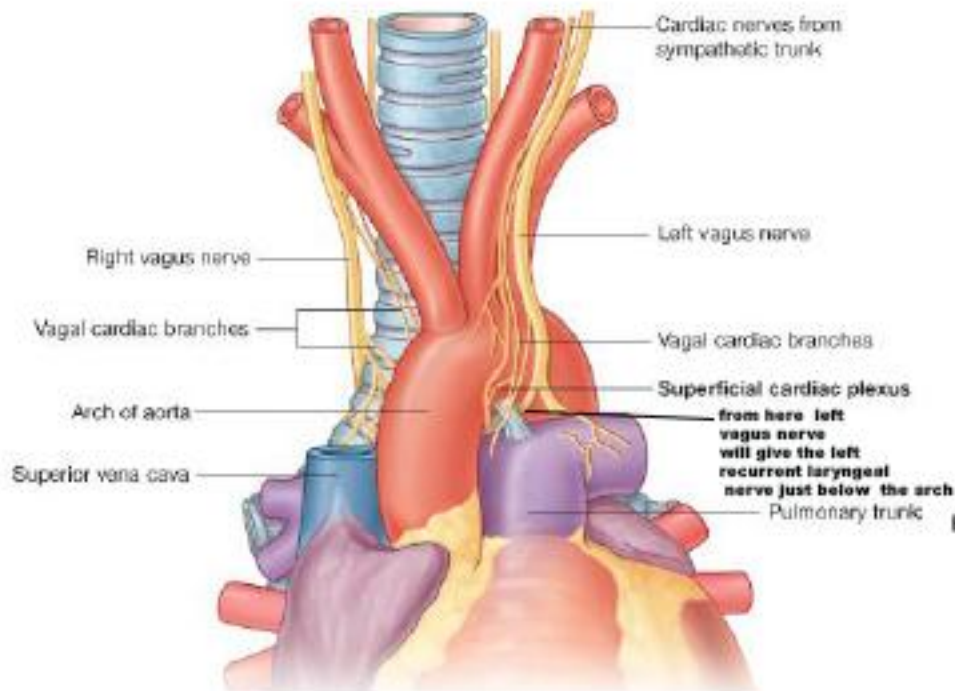


- Structures that are found **INSIDE** the pericardium ( **\*\*\*the arrangement below were repeated many times during the lab , so it seems to be really important to remember )**

\_ **Ascending aorta** is found inside the pericardium , **left** to it you can find **the pulmonary trunk** , **right** to **the ascending aorta** you can find **the lower half of the superior vena cava**

- **upper to the aortic arch there are it's branches**
- those branches are arranged from right forward to left backward as this : the most anterior branch is the brachiocephalic artery , next the left common carotid

- artery , then the left subclavian artery which is the most posterior branch
- - , **anterior** to those branches there is **the left brachiocephalic vein** which will join **the right brachiocephalic vein** to form the superior vena cava ( remember : the upper half of the superior vena cava is found outside the pericardium whereas the lower half is found inside the pericardium )
  - 
  - **the most anterior** to the aforementioned structures is the **thymus**
  - **Structures that are found superficial to the aortic arch (refer to figure below) :**
    - 1- **left** phrenic nerve
    - 2- **left** vagus nerve ( it runs **anterior** to the arch then it gives recurrent left laryngeal nerve that runs **below** the arch **backward** to reach the **larynx** )
    - 3- between the two aforementioned there is
    - 4:40 ma sme3to w ma 3refto
    - 4- there are two small nerves sympathetic and parasympathetic they come below the arch to form the superficial cardiac plexus
    - 5- the left lung



## Structures that are found below (inferior to) the aortic arch:

1- **left** bronchus 2- **left** pulmonary artery which is **anterior** to the **left bronchus**

3- bifurcation of the pulmonary trunk that will divide to left (short) and right (long) pulmonary arteries

note : **right pulmonary** trunk runs **posterior** to the **ascending aorta** and **posterior** to **superior vena cava** so you can't see it

**note : during inspiration the diaphragm will go down pulling the lung and the pulmonary arteries to it , and during expiration the will go upward**

- Here are certain structures running between **the left pulmonary artery and the aortic arch** (they are inferior to the aortic arch):
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- **1: ligamentum arteriosum** ( very short structure , between the beginning of the **left pulmonary artery** and the end of the **aortic arch** )
- remember : in embryo the **ligamentum arteriosum** was the **ductus arteriosum** conveying poorly oxygenated blood from the **pulmonary artery** to the **aorta**
- **2- posterior to ligamentum arteriosum to the left** there is the **left recurrent laryngeal nerve**
- **3- anterior to ligamentum arteriosum** there are two nerves ; sympathetic and parasympathetic making sort of plexus hardly seen which called : **superficial cardiac plexus**

## - Structures that are found deep (posterior) to the arch :

- Note: to view them properly you have to pull the aortic arch downward so you can recognize :
- 1- trachea 2- esophagus posterior to the trachea 3- left recurrent pharyngeal between the trachea and esophagus 4- thoracic duct left to the esophagus 5- vertebral column

## **NOW inside the pericardium**

- if you put your index finger **behind** the **ascending aorta** and **the pulmonary trunk** and in the **front** of the **superior vena cava** , then you finger will be in the

**transverse sinus** of pericardium (it's also between the arterial end and Venus end of the primitive heart tube )

- if you put your index finger between the **left atrium** and the **pericardium** , then your finger will be in the **oblique sinus**
- **note** : **anterior** to the **oblique sinus** is the **left atrium** , **posterior** to it **pericardium** , and **posterior** and **out side** to the **pericardium** there is **esophagus** and **descending aorta** which are located in the **posterior mediastinum**
- the structure between the aforementioned fingers ( between the transverse and oblique sinuses) is **the left atrium**
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**the nearest** structure to the **left atrium** is the **esophagus**

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## CT SCAN

If we make a cross section in the **arch of aorta** , we will find anterior end and posterior end of the arch

If we make a cross section **below** the arch of **aorta** , we will find the **ascending aorta** and **descending aorta** , between them we will find the **pulmonary trunk** and **pulmonary veins**

If we make a cross section above the arch you will find three ring which are : **brachiocephalic artery** , **left common**

**carotid artery, left subclavian artery , and in front of them  
the left brachiocephalic vein**

**Sometimes you win , sometimes you learn , you will never  
lose**

**Done by : Tareq Sanabra**





