

# Thoracic Wall & Thoracic cavity

Prepared & Delivered

By

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6<sup>th</sup> Jan 2015

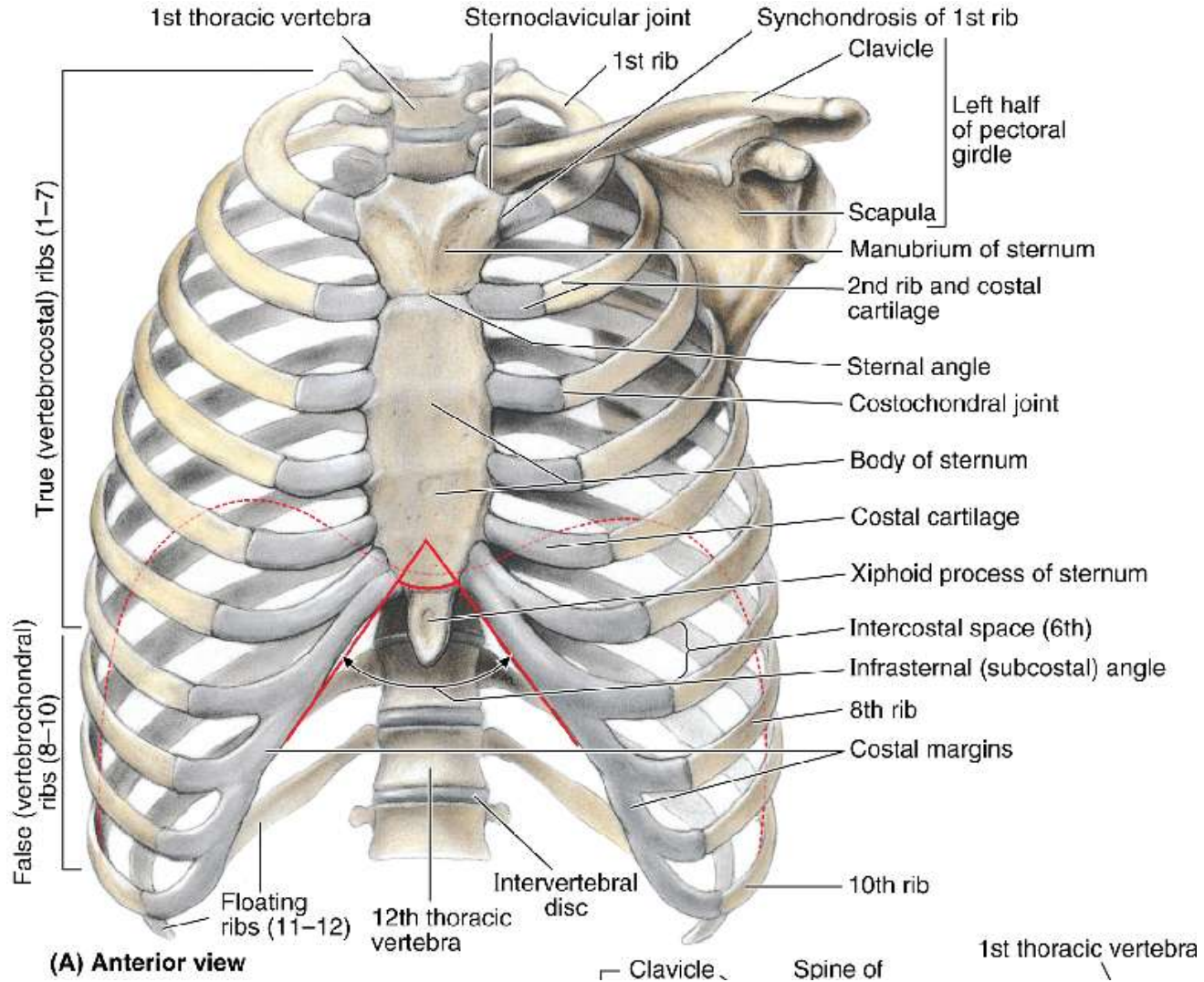
# Thorax

- Region of the trunk between neck and abdomen
- Skin
- Superficial fascia
- Deep Fascia
- Muscles
- Thoracic cage or wall
- Thoracic cavity

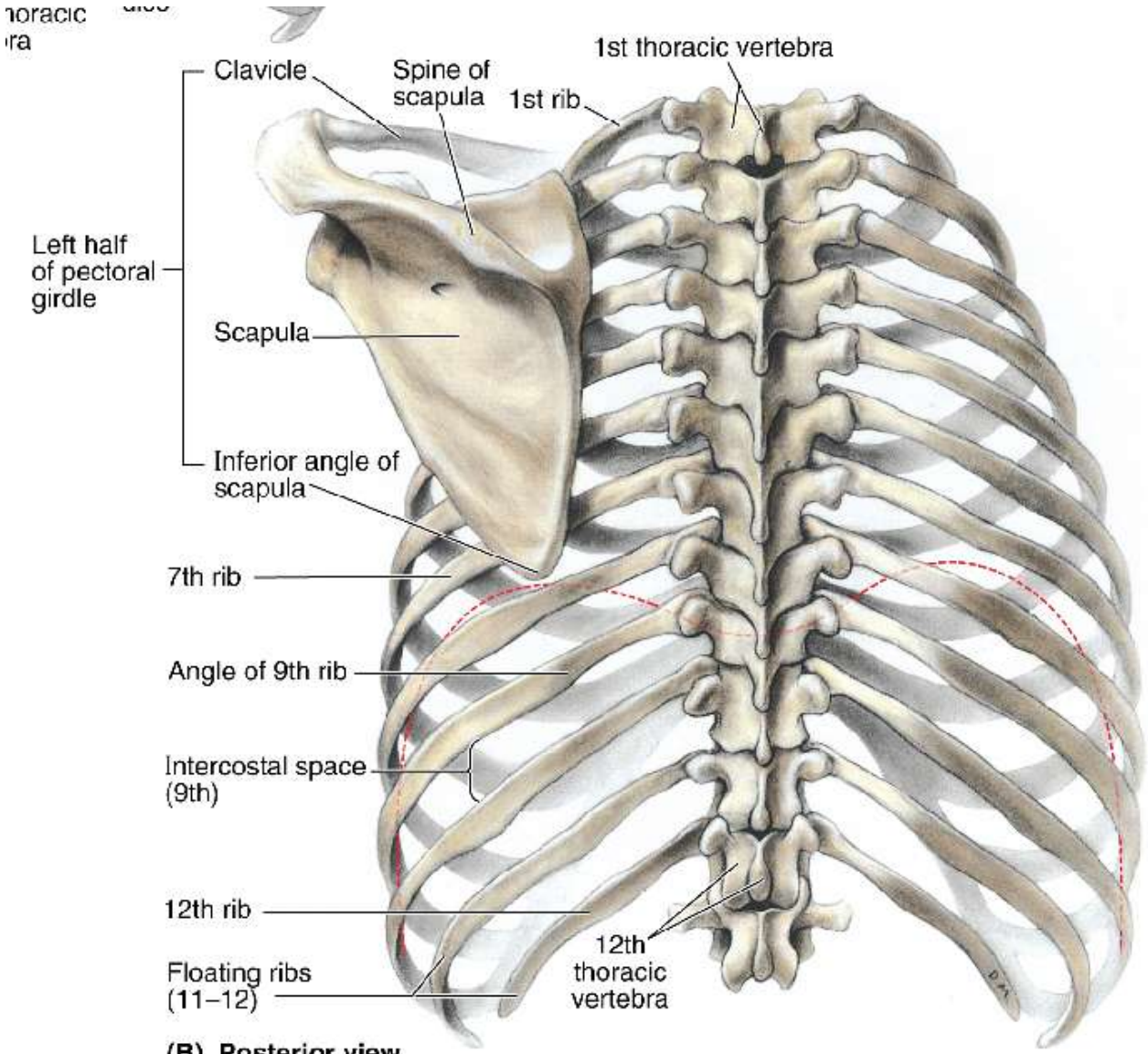
# Thoracic Cage

- Sternum:
  - Manubrium
  - Body
  - Xiphoid Process
- 12 pair of Ribs
  - 1-7 : vertebrosteral
  - 8-10 : vertebrochondral
  - 11-12 : vertebral ( floating )
- 12 Thoracic vertebrae

# Thoracic Cage

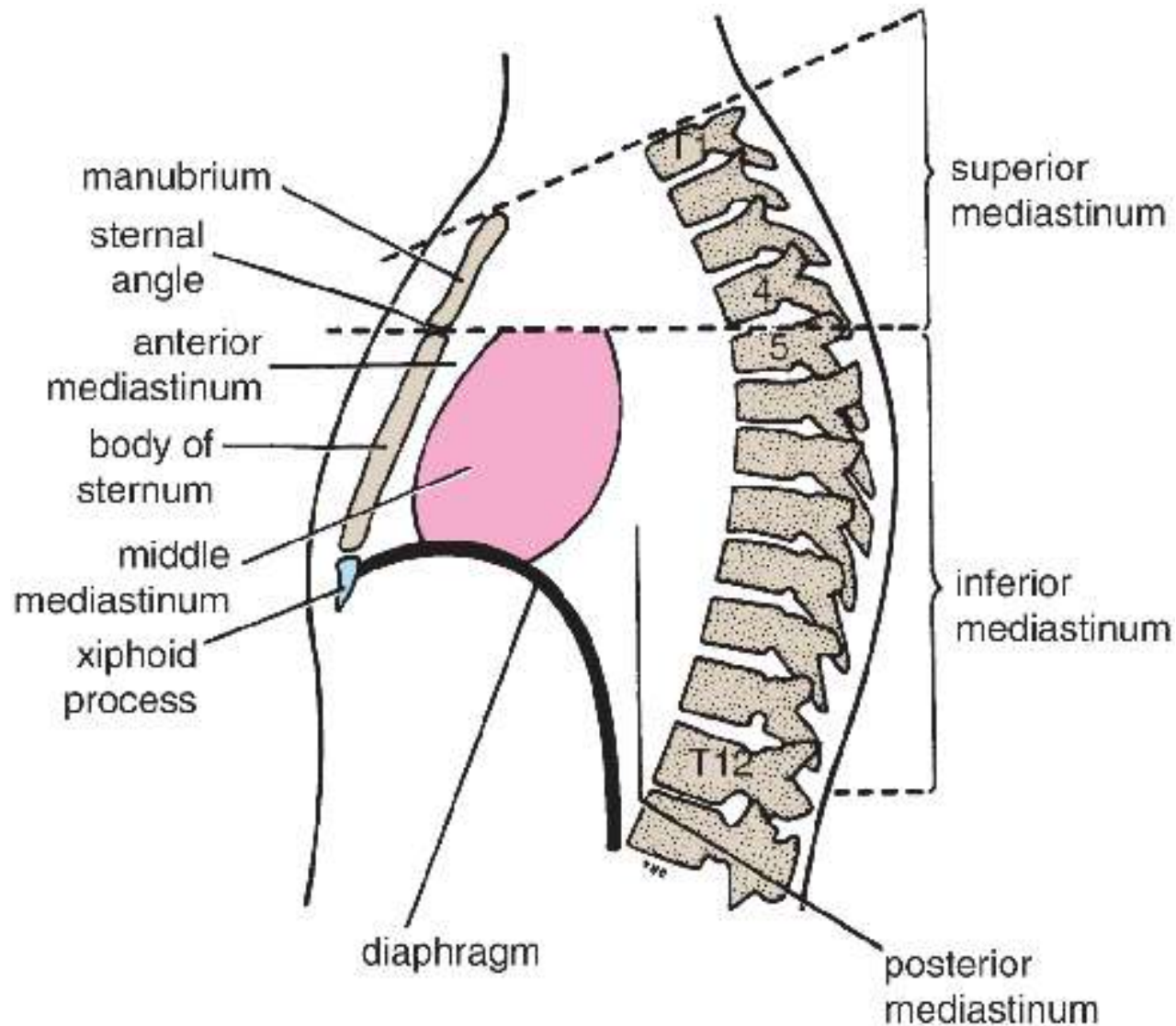


# Thoracic Cage



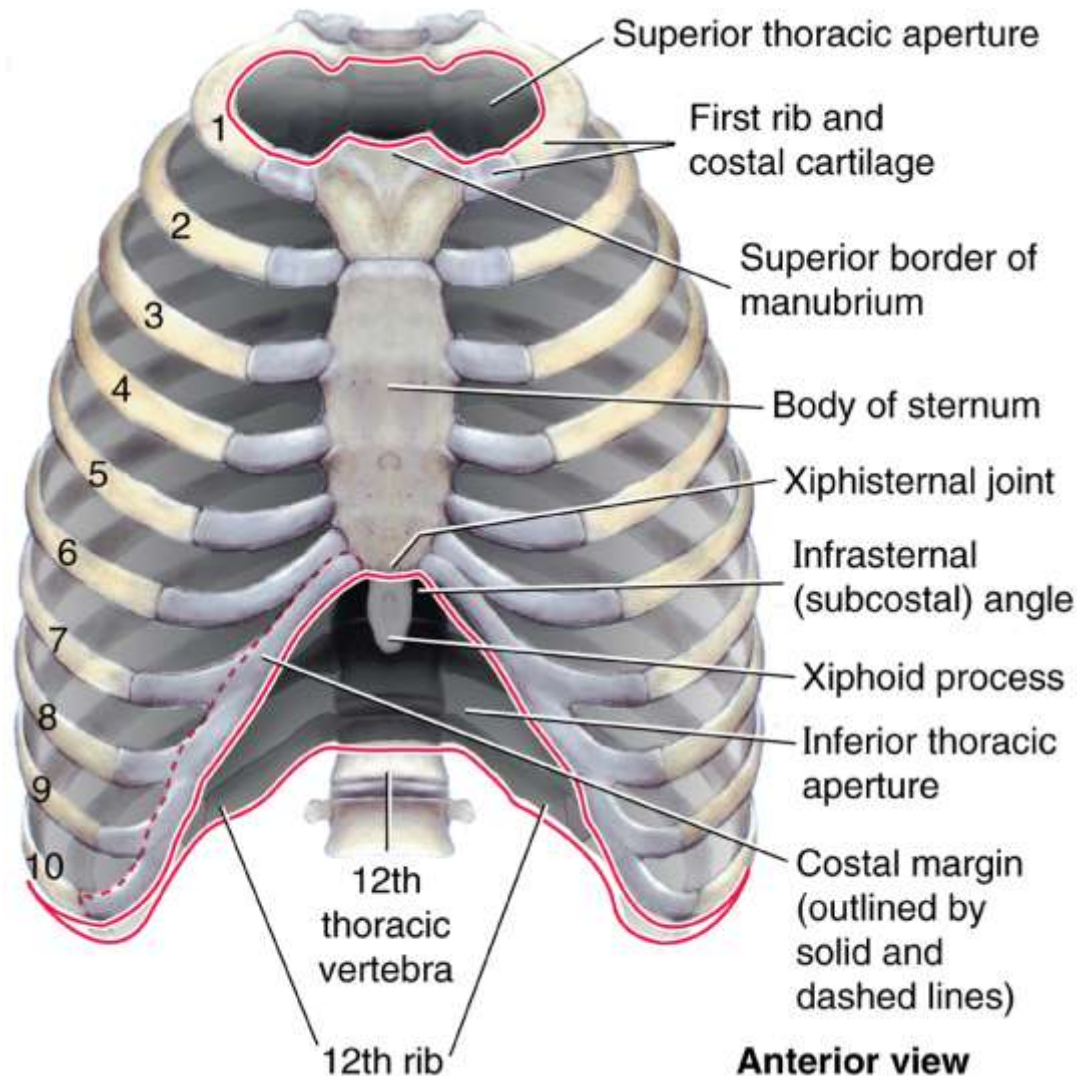
**(B) Posterior view**

# Extent of thorax

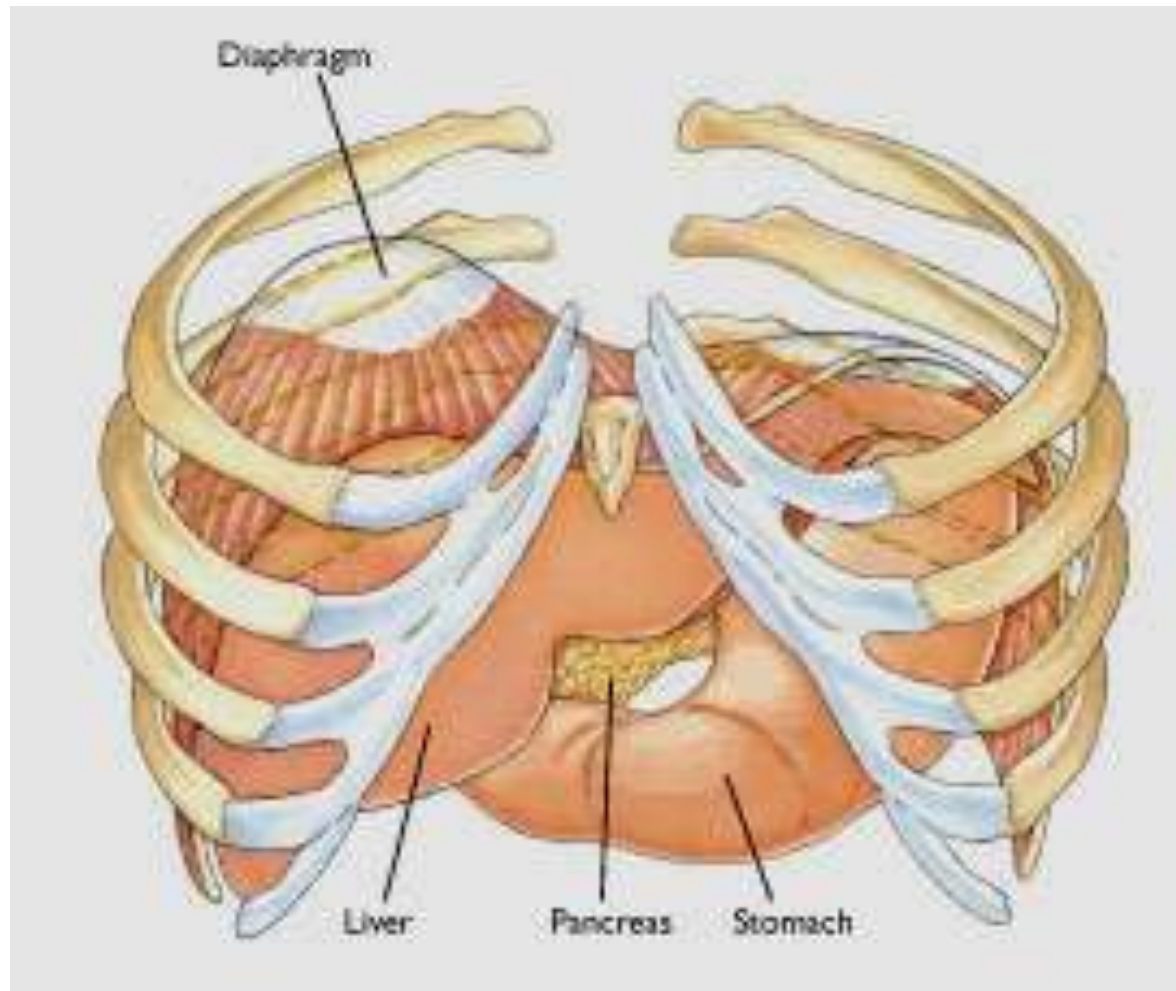




# Thoracic Inlet & Outlet



# Role of thoracic cage in protecting abdominal viscera





# Joints of thoracic cage

## 1. Joints between vertebrae and Ribs

- Body of vertebra & Head of Rib

### **Costovertebral Joint :**

synovial type

- Transverse process & tubercle of Rib

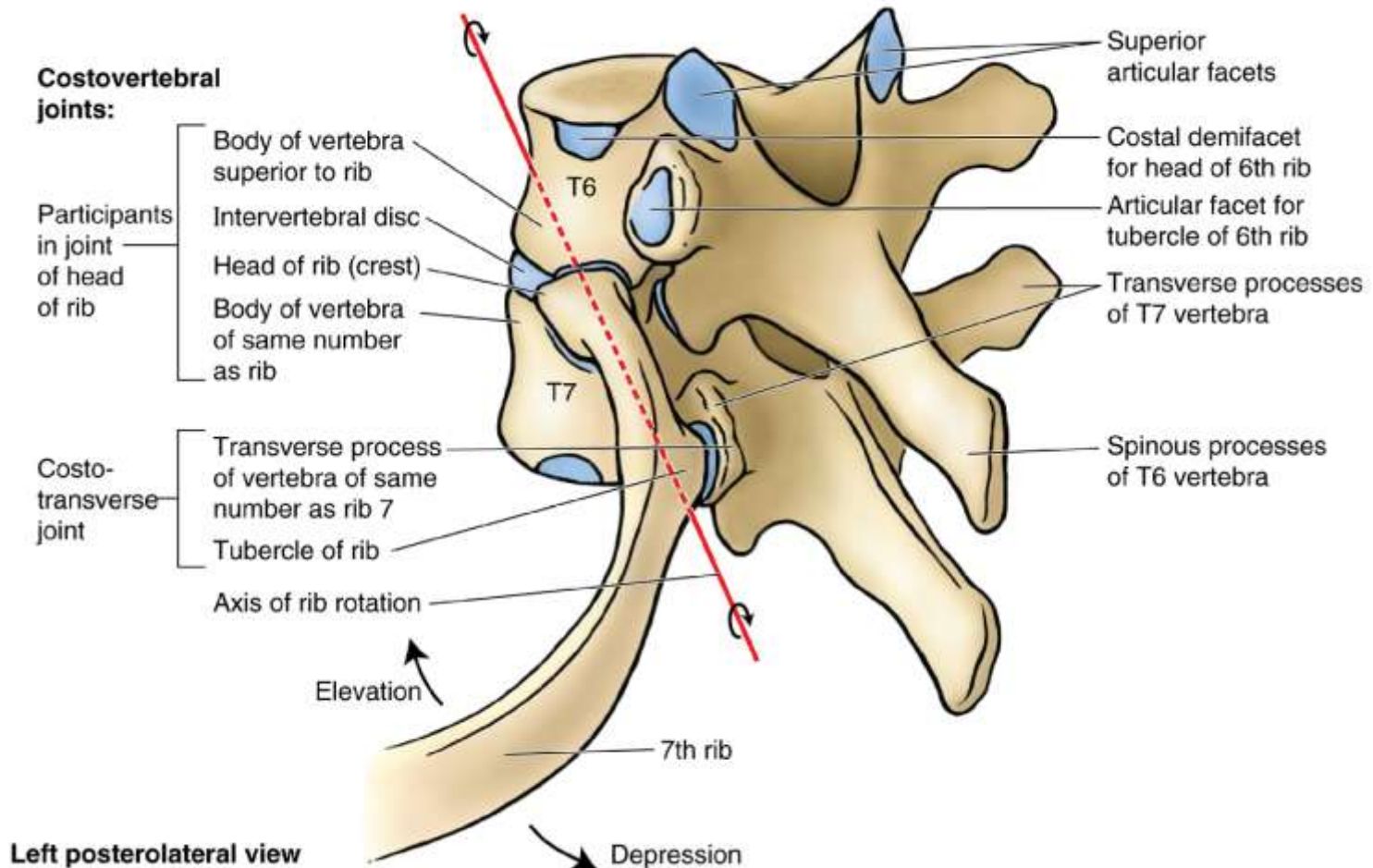
### **Costotransverse joint :**

synovial type

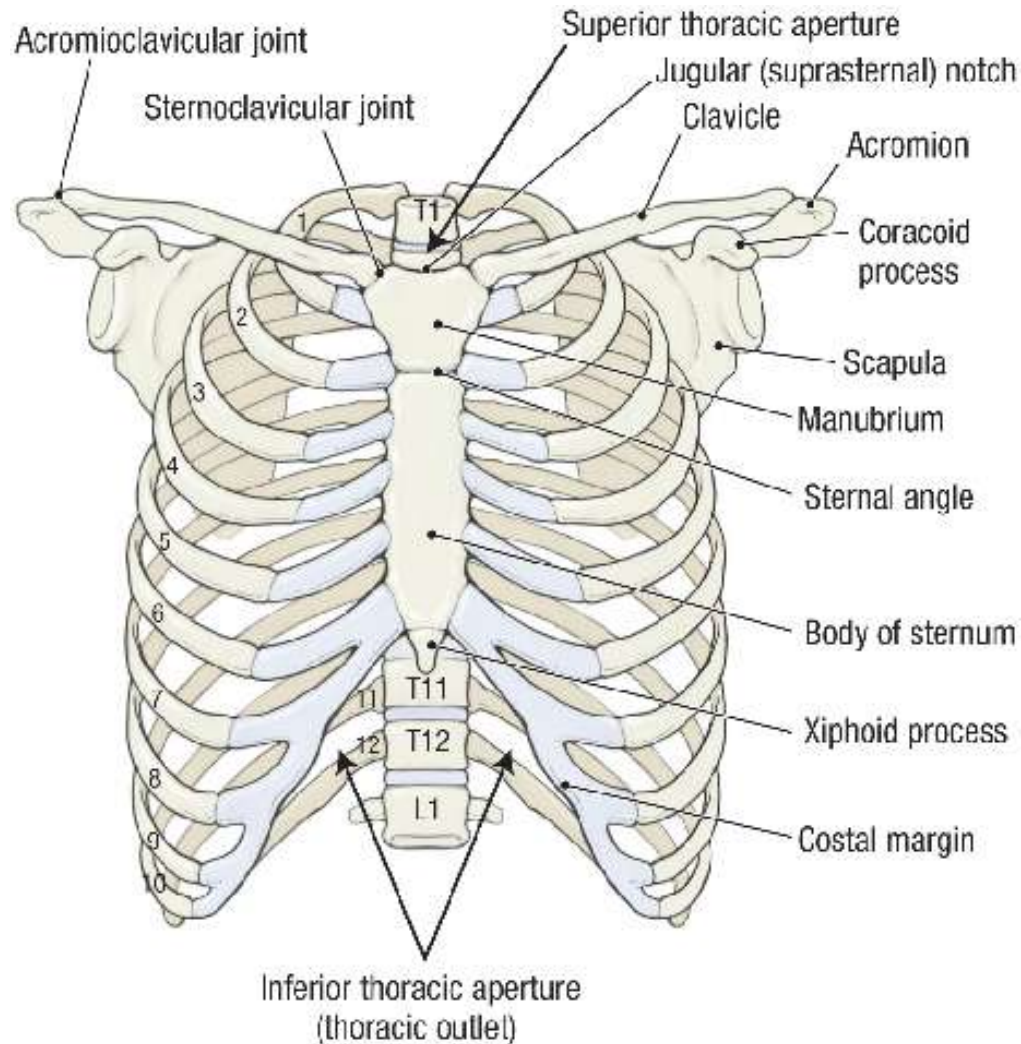
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**Movements:** Elevation & Depression of ribs

# Costovertebral & Costotransverse joints



# Identify the joints



# Joints of thoracic cage

## ❑ Joint between Rib & costal cartilage

- Costochondral joint :
- Primary cartilagenous

## ❑ Joints in between 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> & 10<sup>th</sup> costal cartilages

- Interchondral joint:
- Plane synovial

## ❑ Joints between costal cartilages & Sternum

- First : Synchondrosis
- Rest: 2<sup>nd</sup> -7<sup>th</sup> : plane synovial joint

# Joints of thoracic cage

## Joint between manubrium and body of sternum

Manubriosternal joint :

Secondary cartilagenous ( Symphysis)

[Synostosis in elderly]

## Joint in between body of sternum & xiphoid process

Xiphisternal joint :

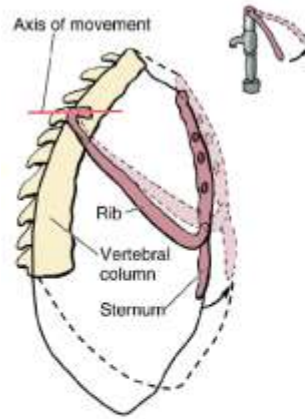
Primary cartilagenous (Synchondrosis)

## Intervertebral Joints

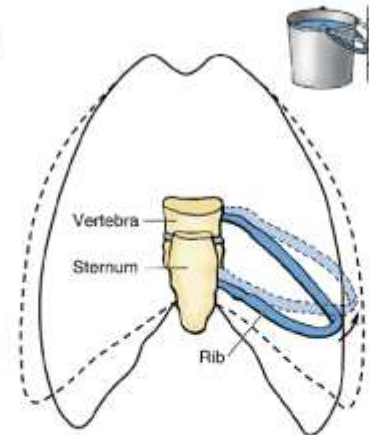
## Sternoclavicular Joint



# Movements



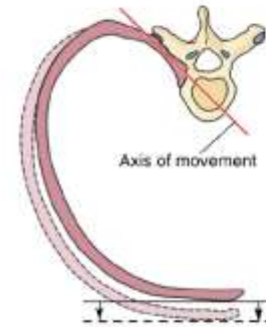
Right lateral view



Anterior view

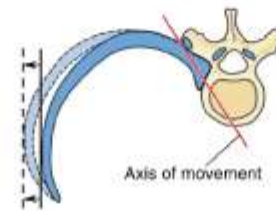


(C) Left anterior oblique view

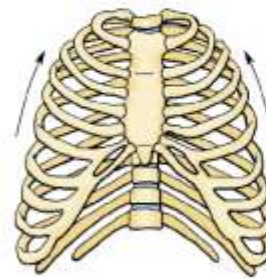


(A) Upper ribs

Superior view



(B) Lower ribs



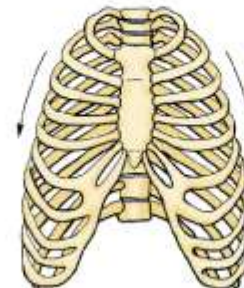
Forced inspiration

(D)

Anterior views

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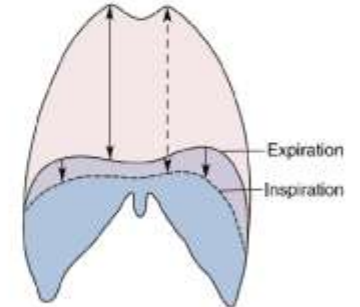
Superior view



Forced expiration

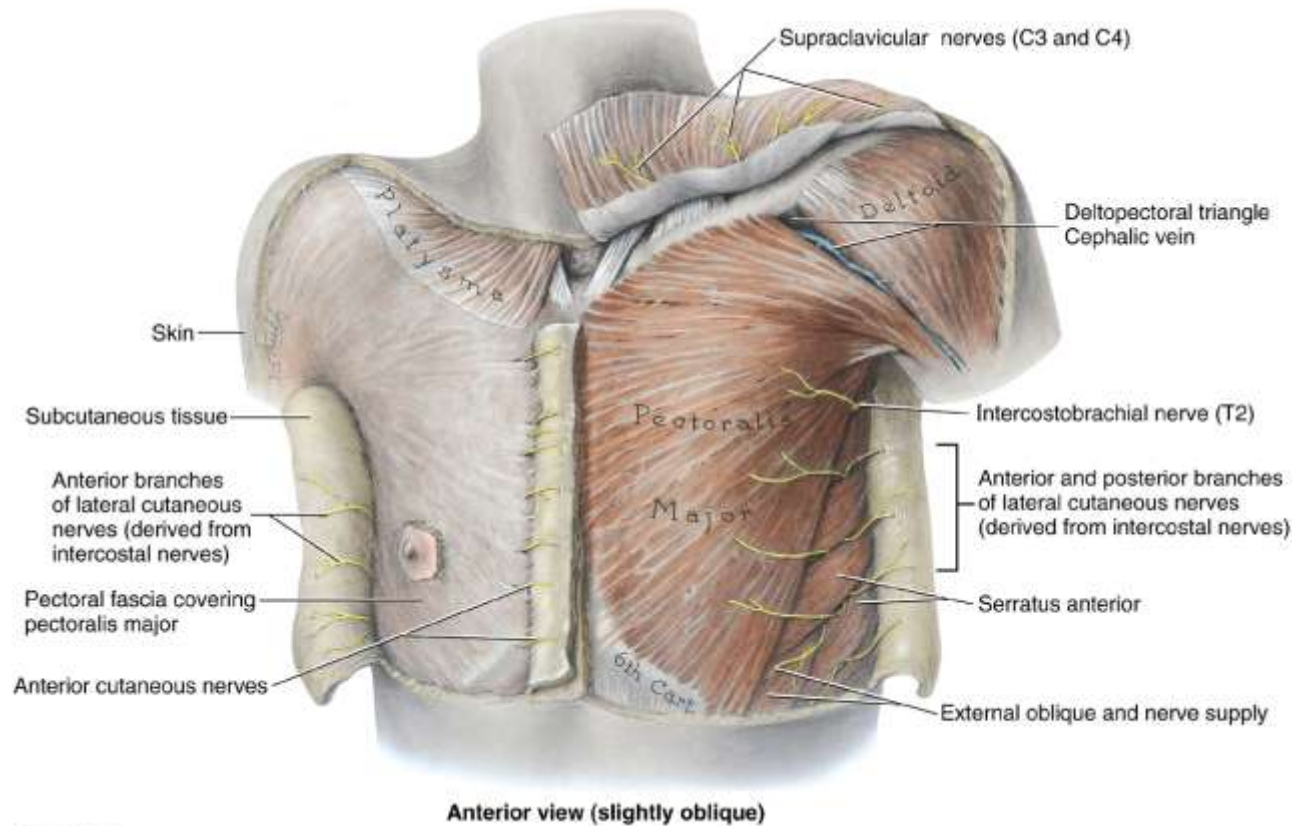
(E)

Combination of rib movements

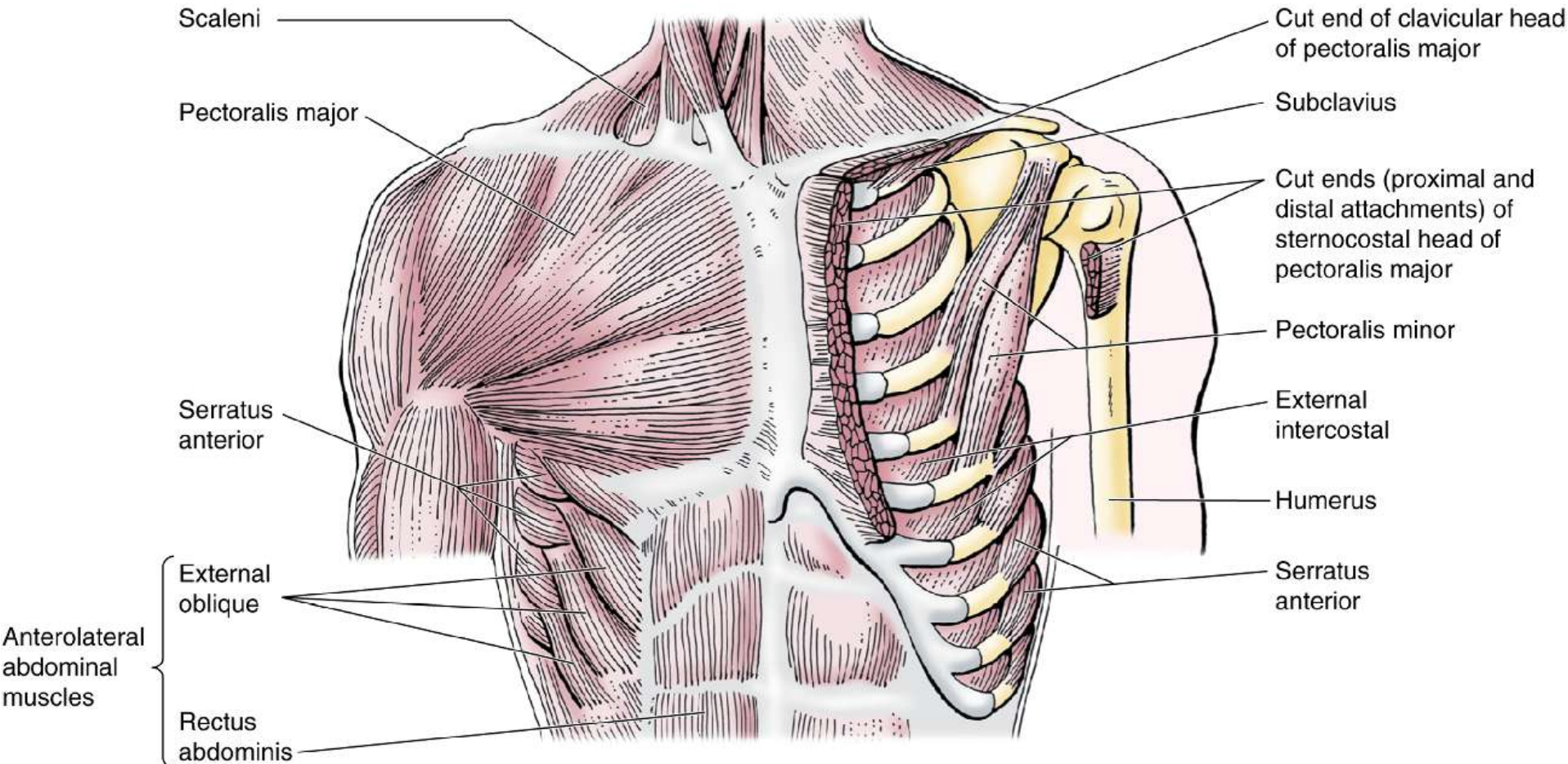


(F)

# Thoracic wall Extrinsic Muscles



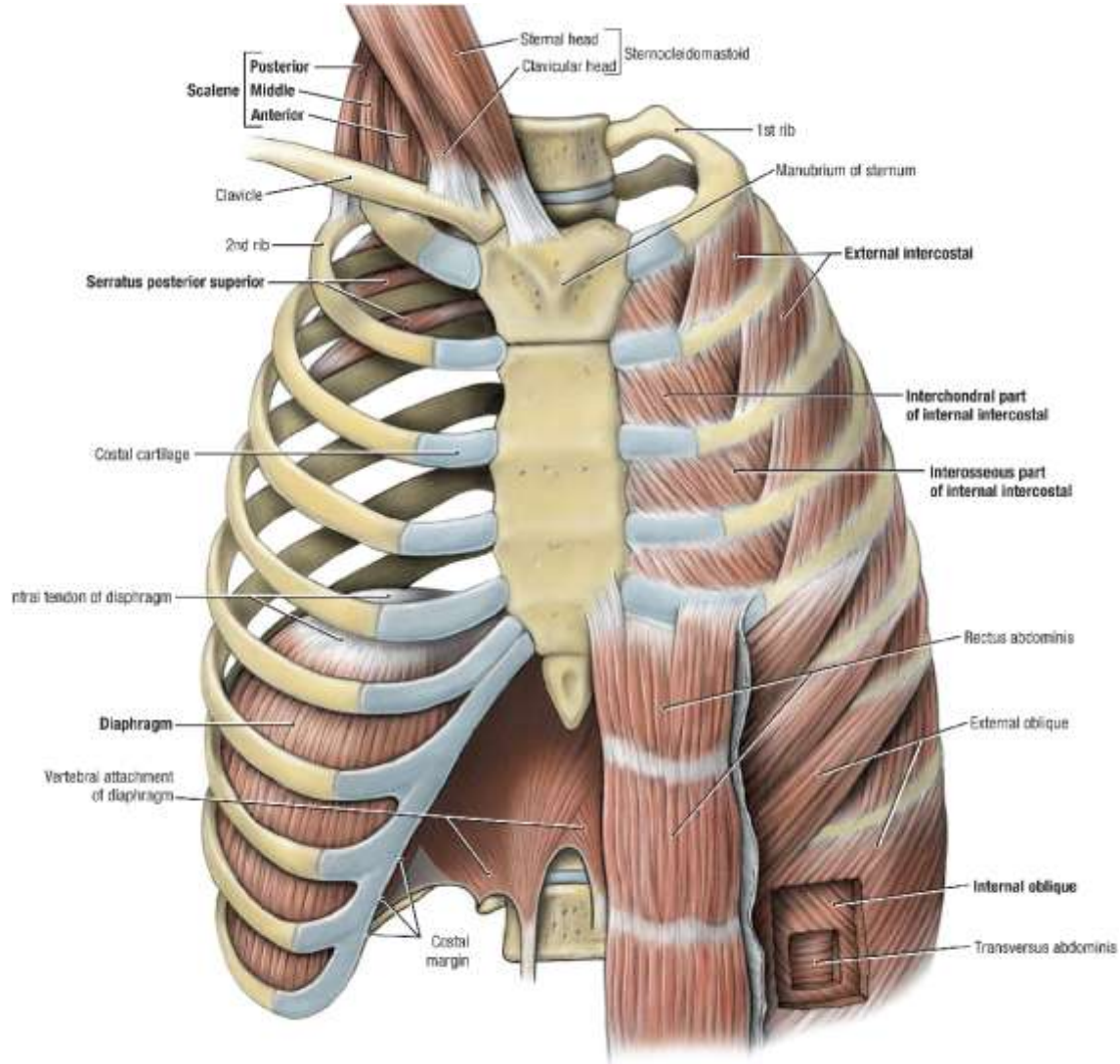
# Thoracic Wall Extrinsic Muscles



Anterior view



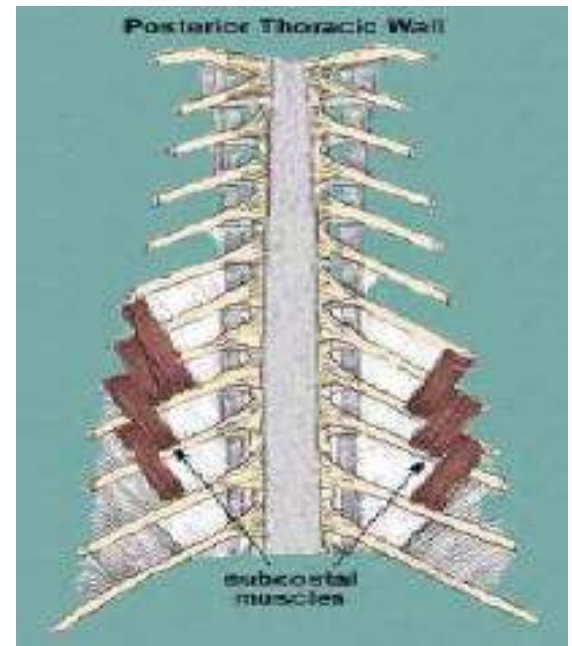
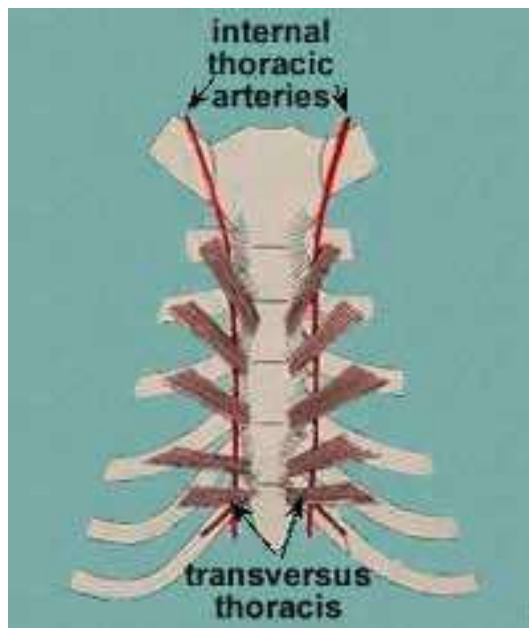
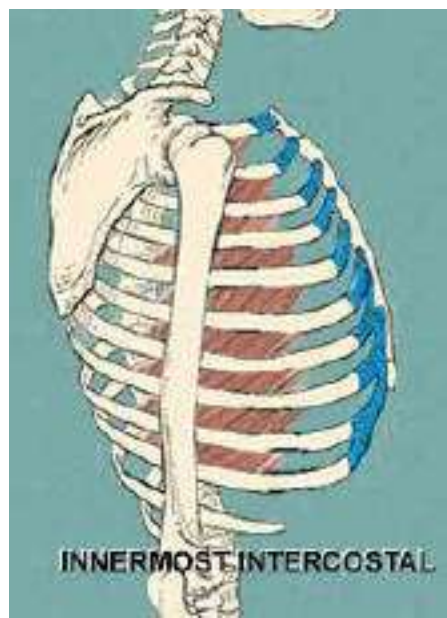
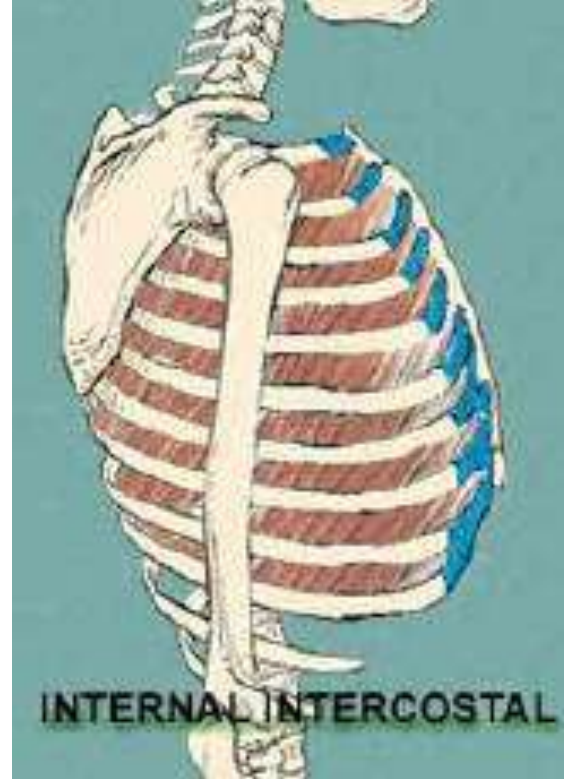
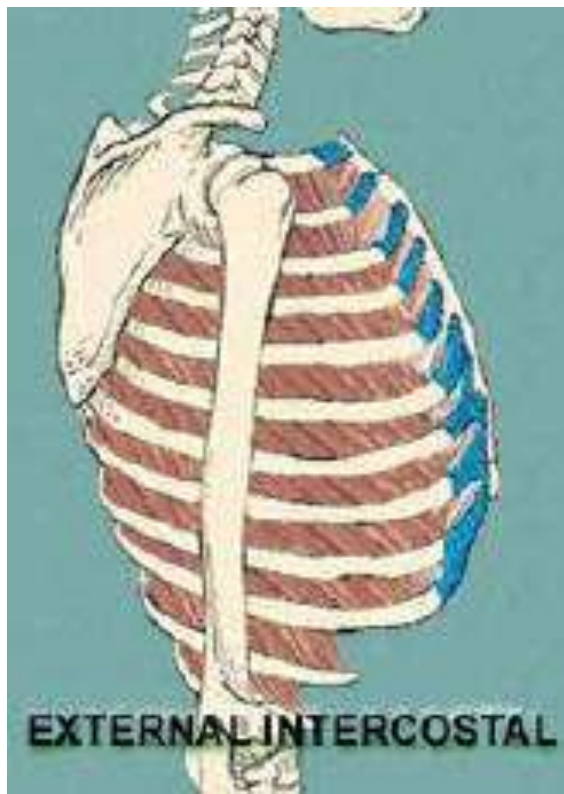
# Thoracic Wall Extrinsic Muscles



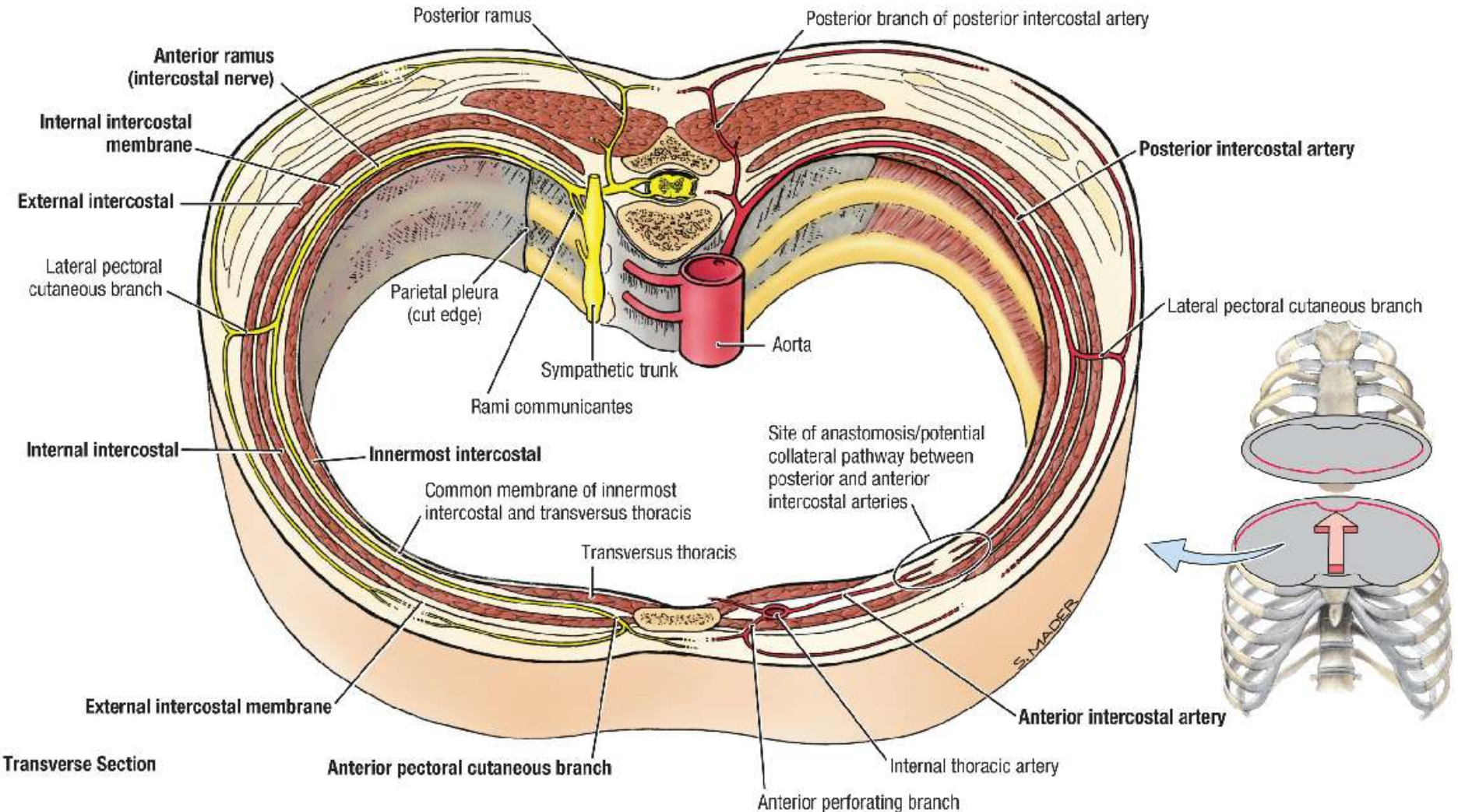
# Intercostal Muscles

- 3 Layers
  - External Intercostal
  - Internal intercostal
  - Transversus thoracic
    - **Intercostalis intimii**
    - **Sternocostalis**
    - **Subcostalis**





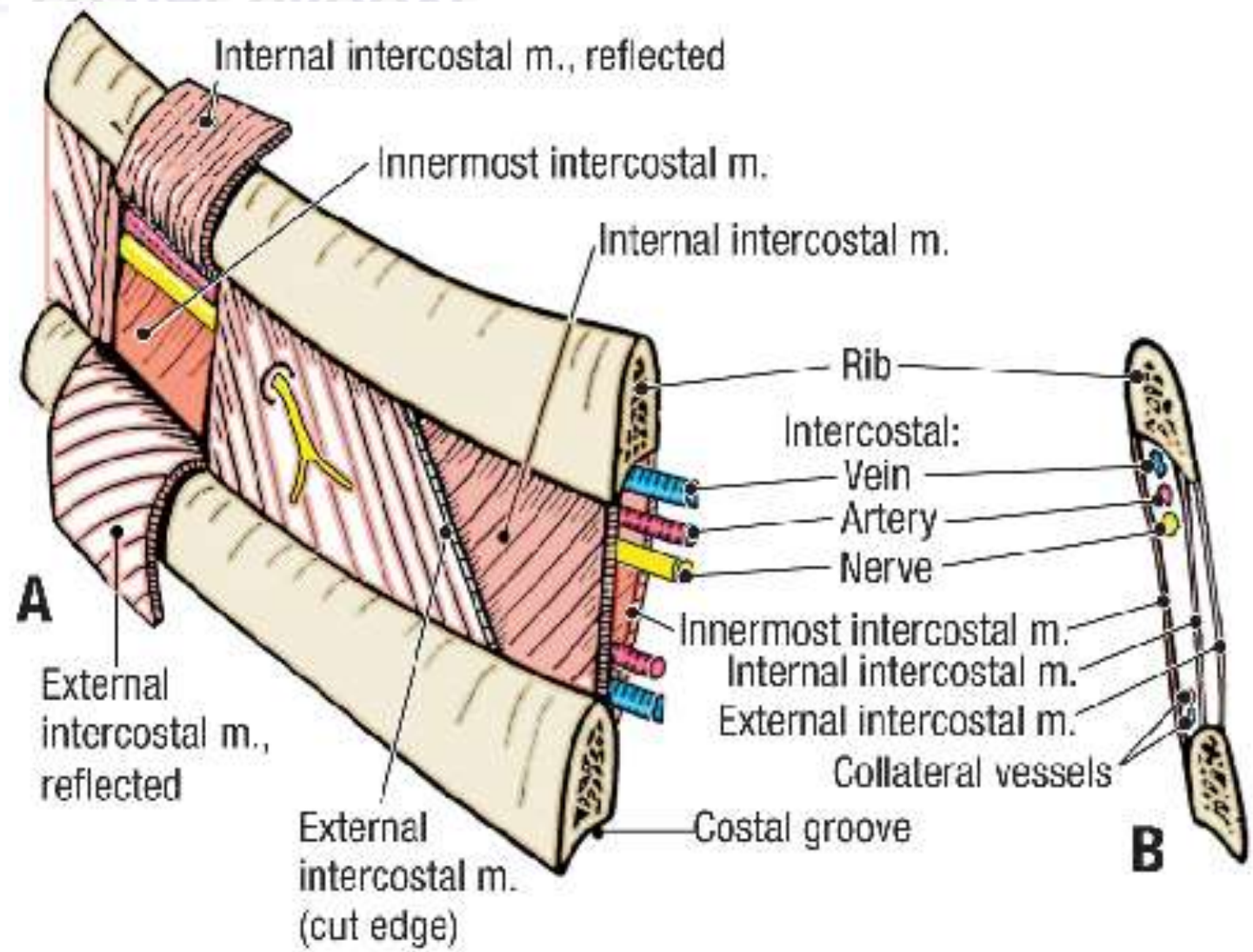
# Intercostal space Neurovascular plane ( between internal intercostal and transversus thoracic)





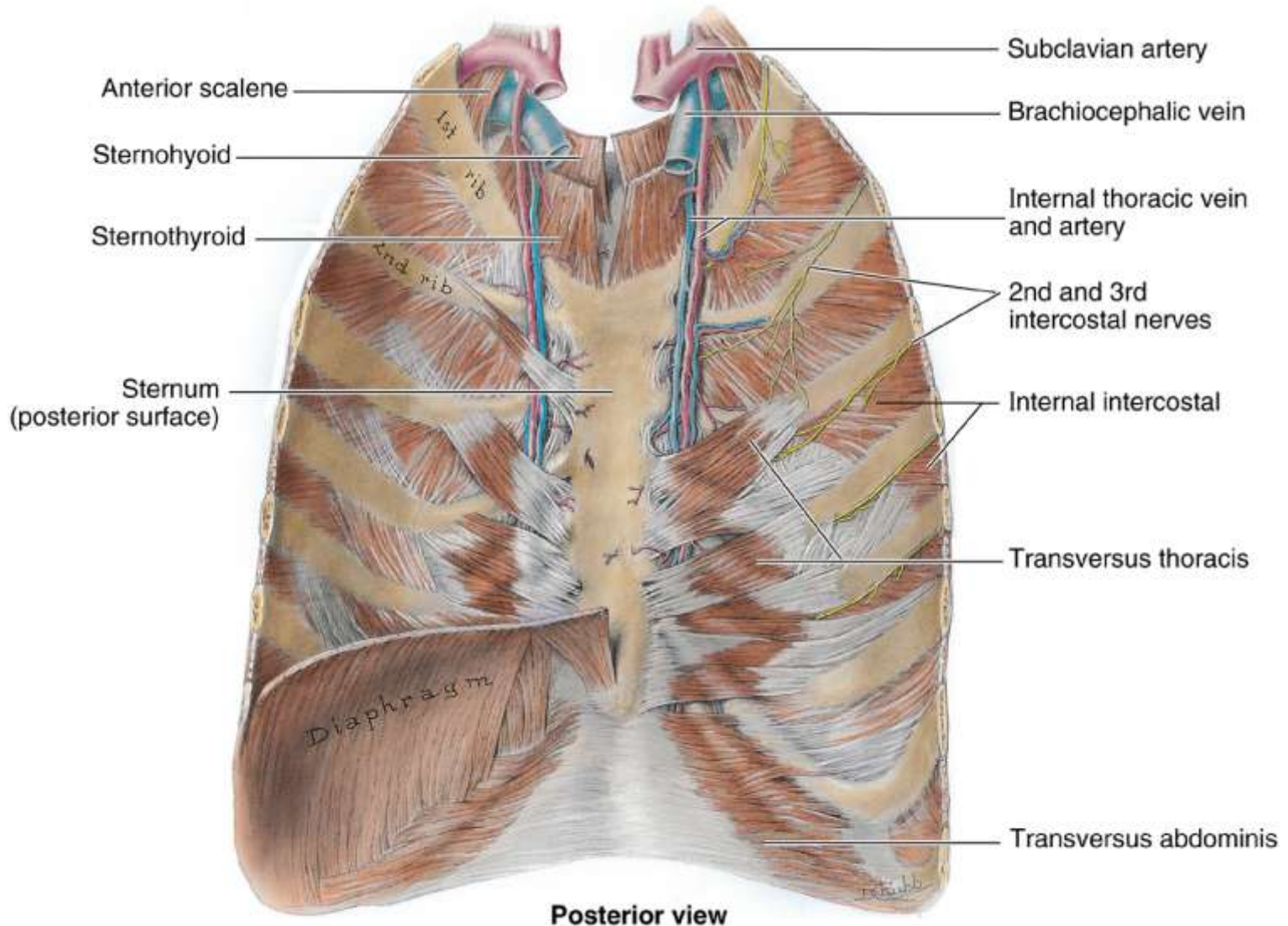
# NEUROVASCULAR ARRANGEMENT IN AN INTERCOSTAL SPACE

## VAN OF COSTAL GROOVE



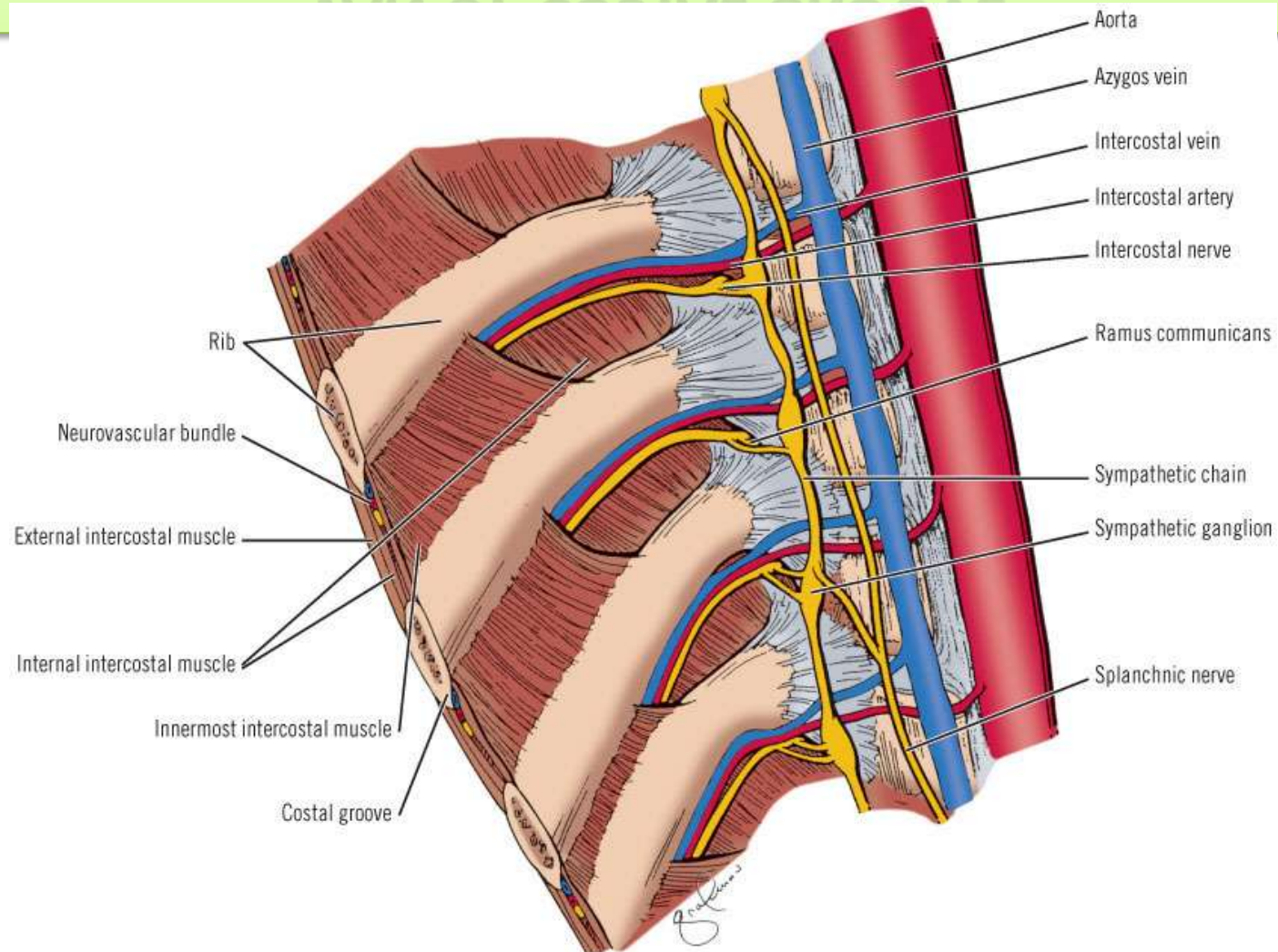
# Anterior thoracic wall

(seen from behind)



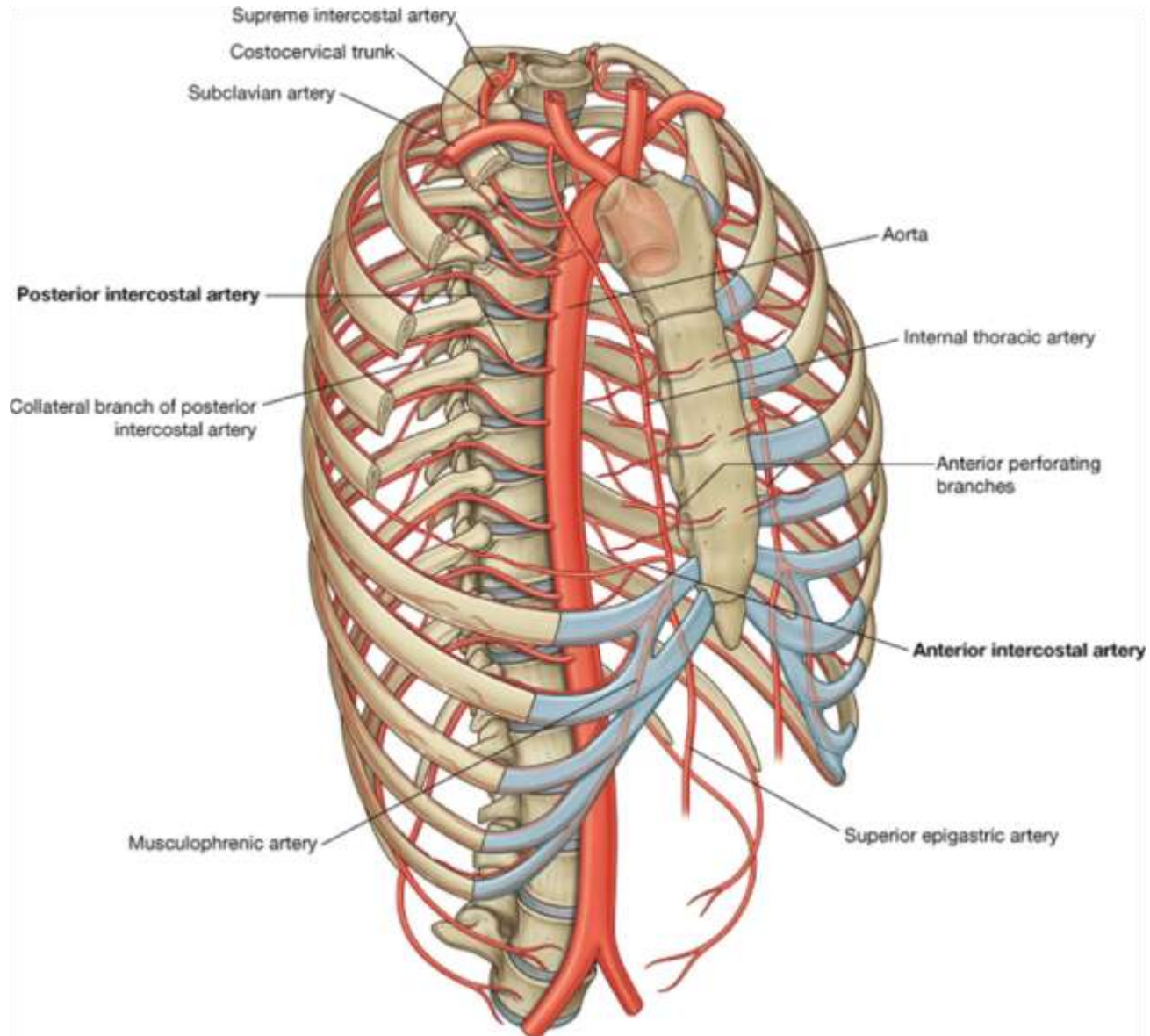
# NEUROVASCULAR ARRANGEMENT IN AN INTERCOSTAL SPACE

## VAN OF COSTAL GROOVE

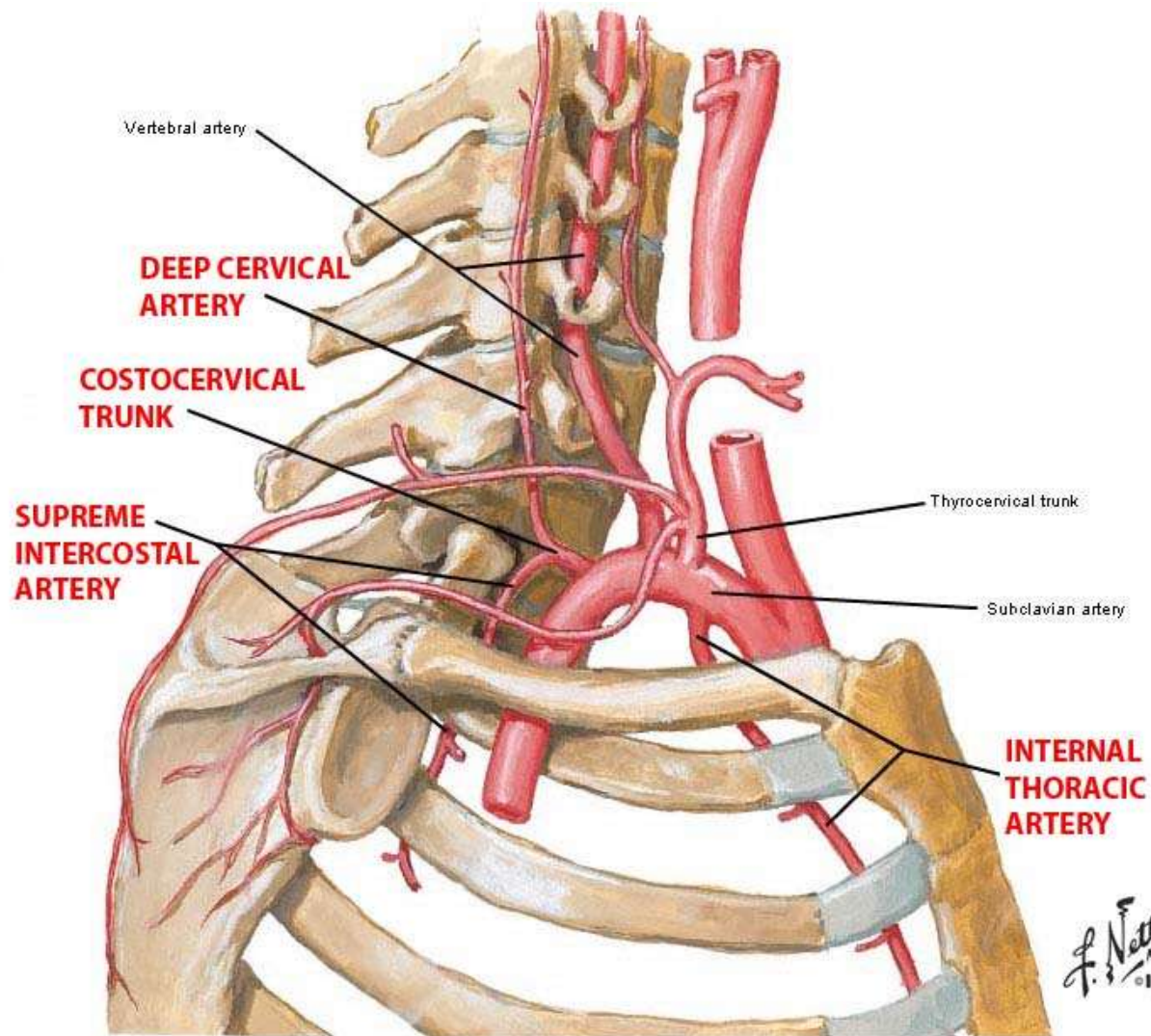




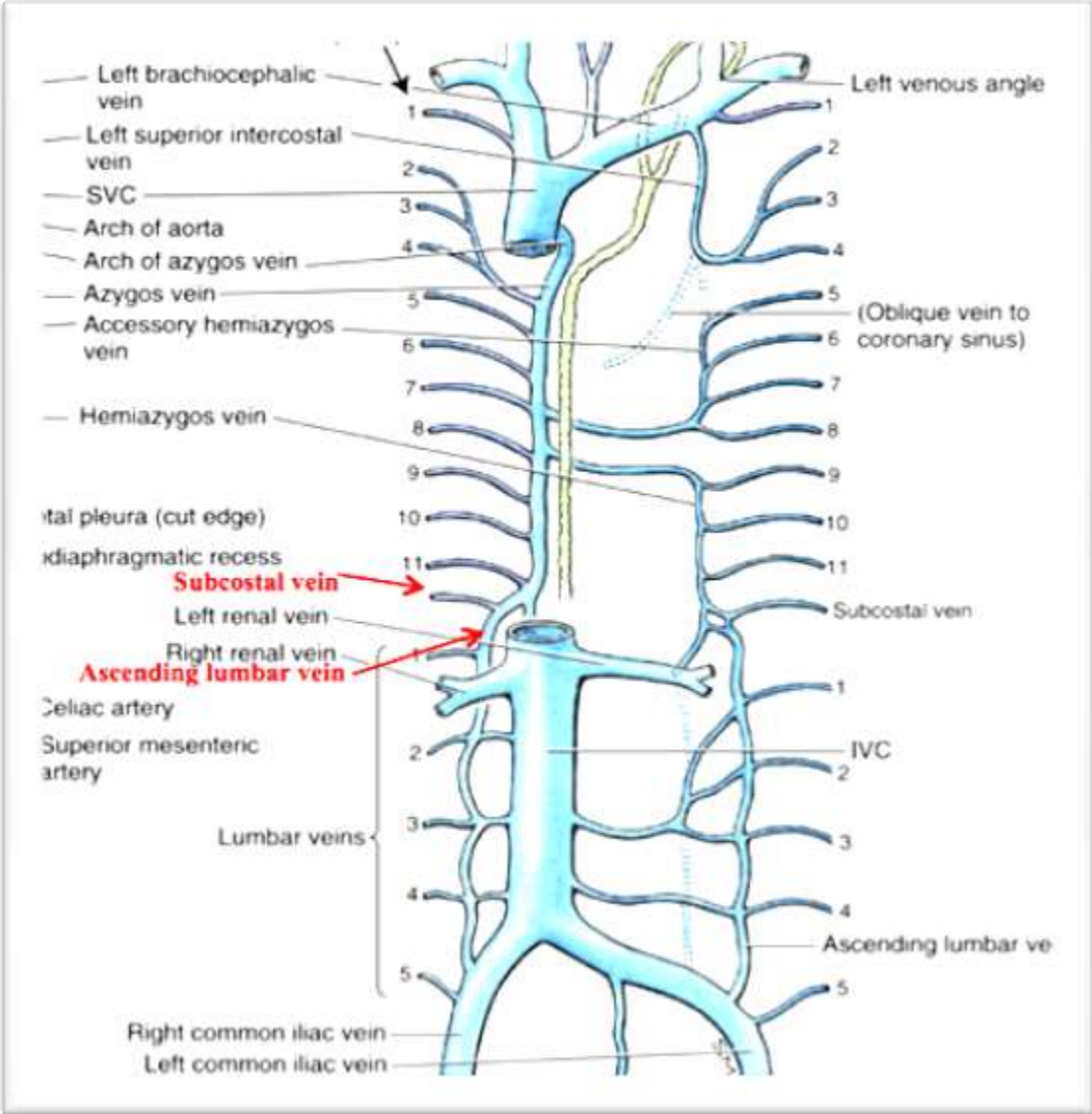
# Arterial supply of thoracic wall



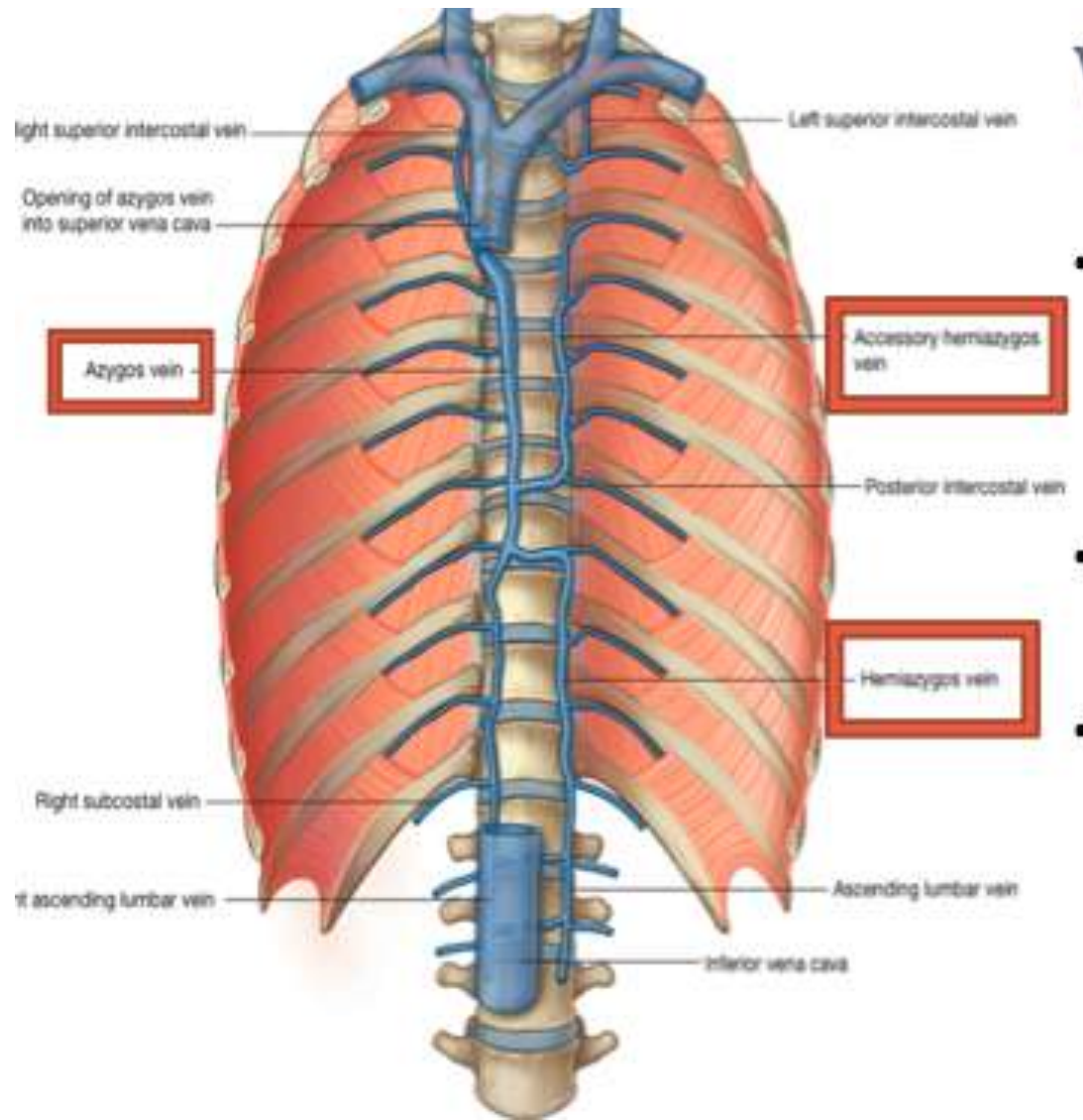
# Arterial supply of thoracic wall



# Venous drainage of thoracic wall

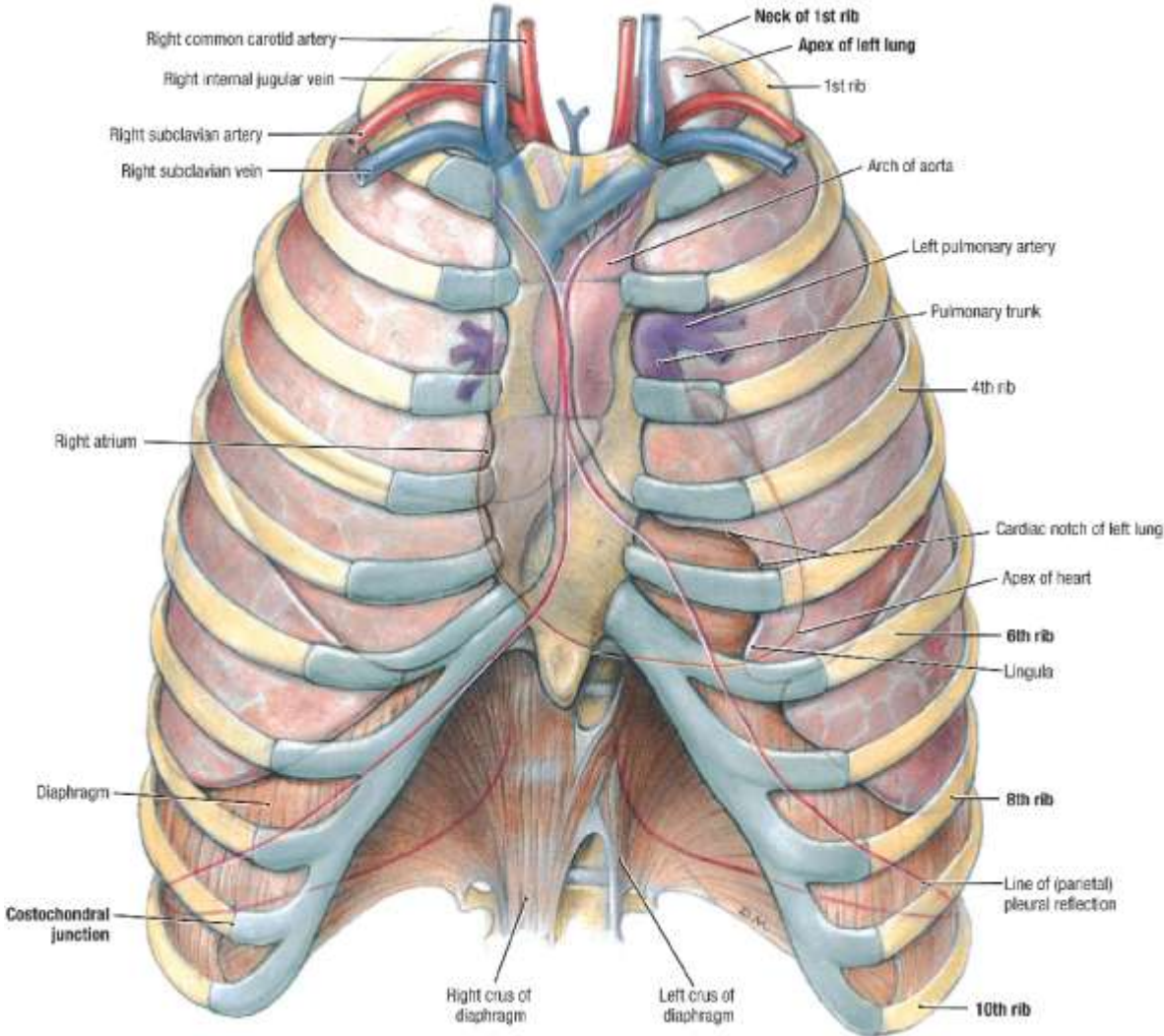


# Venous drainage of thoracic wall





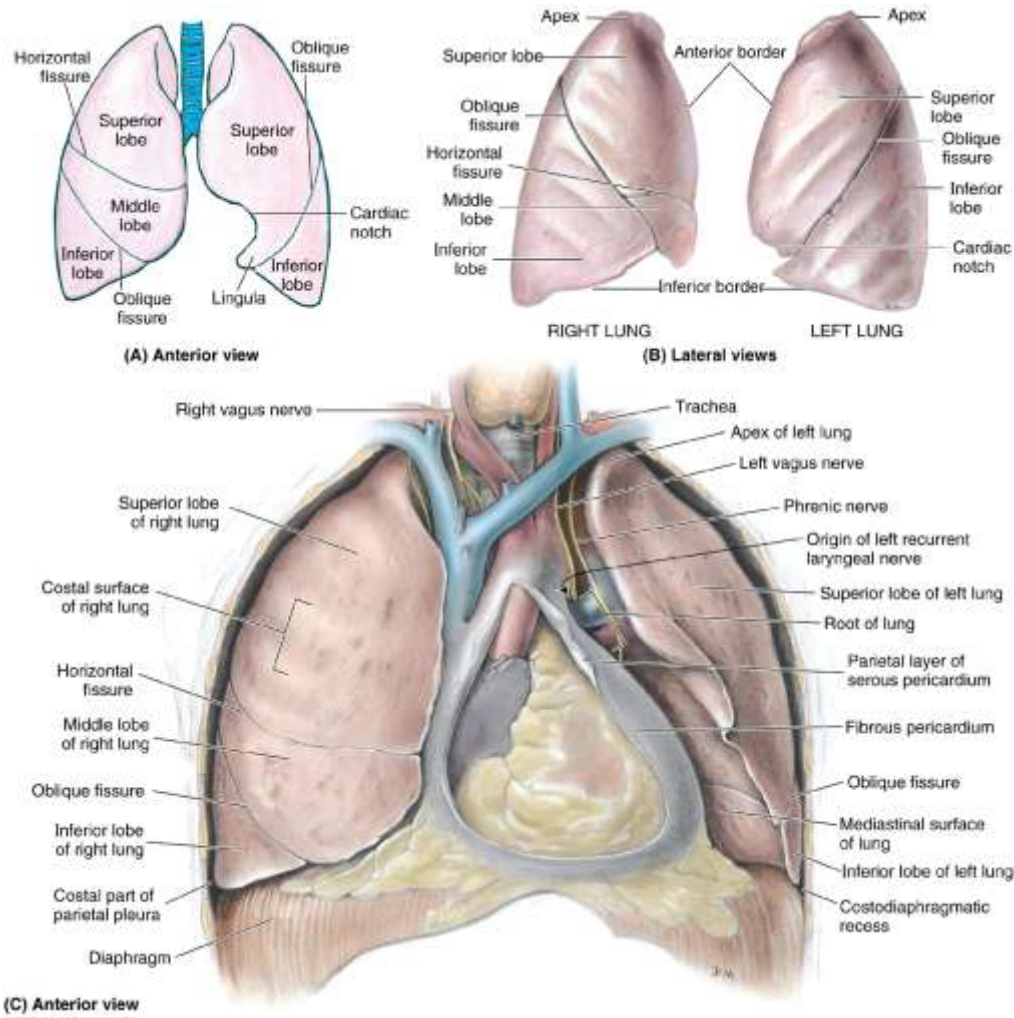
# Thoracic cavity



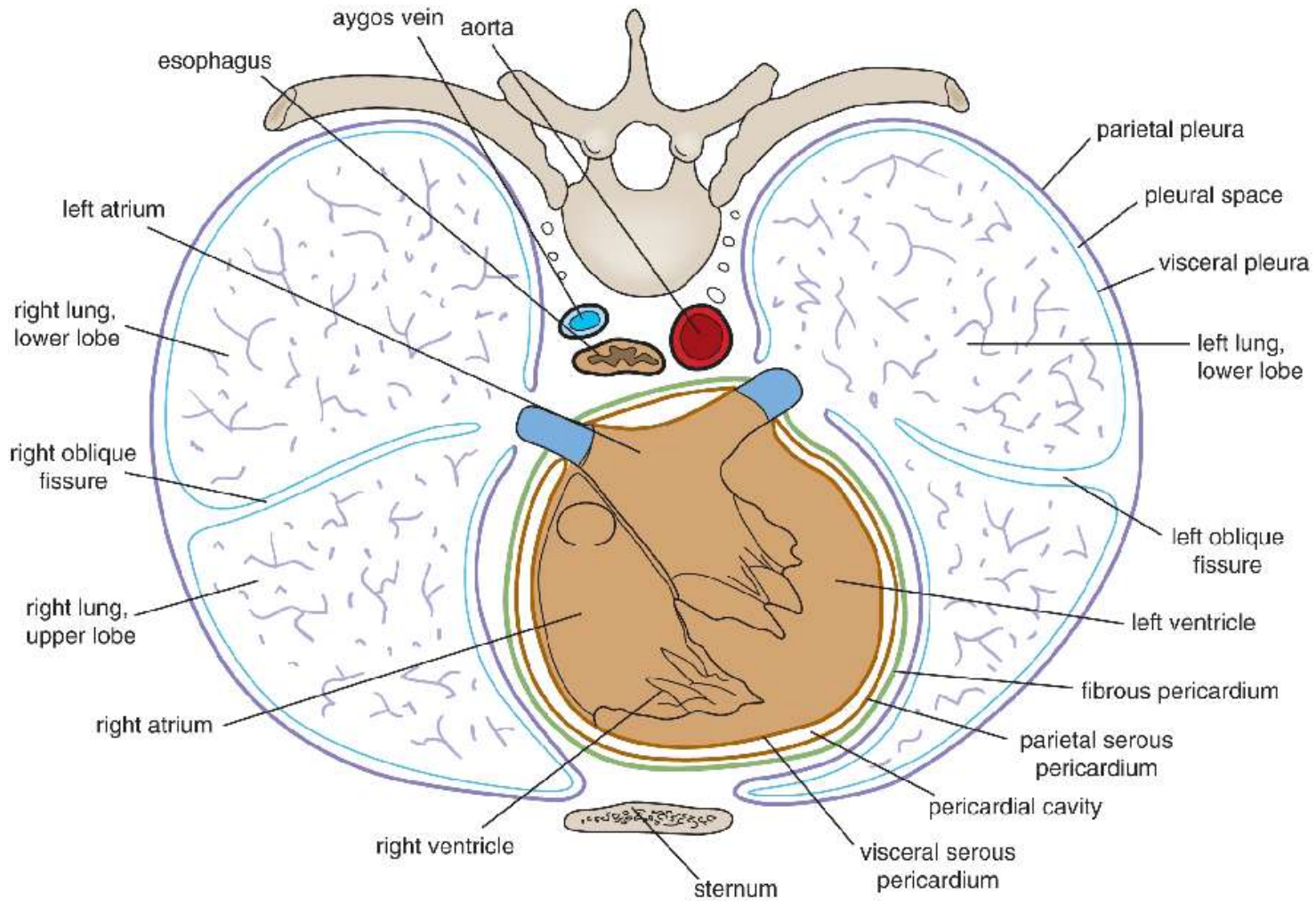


# Thoracic cavity

## after removing anterior thoracic wall

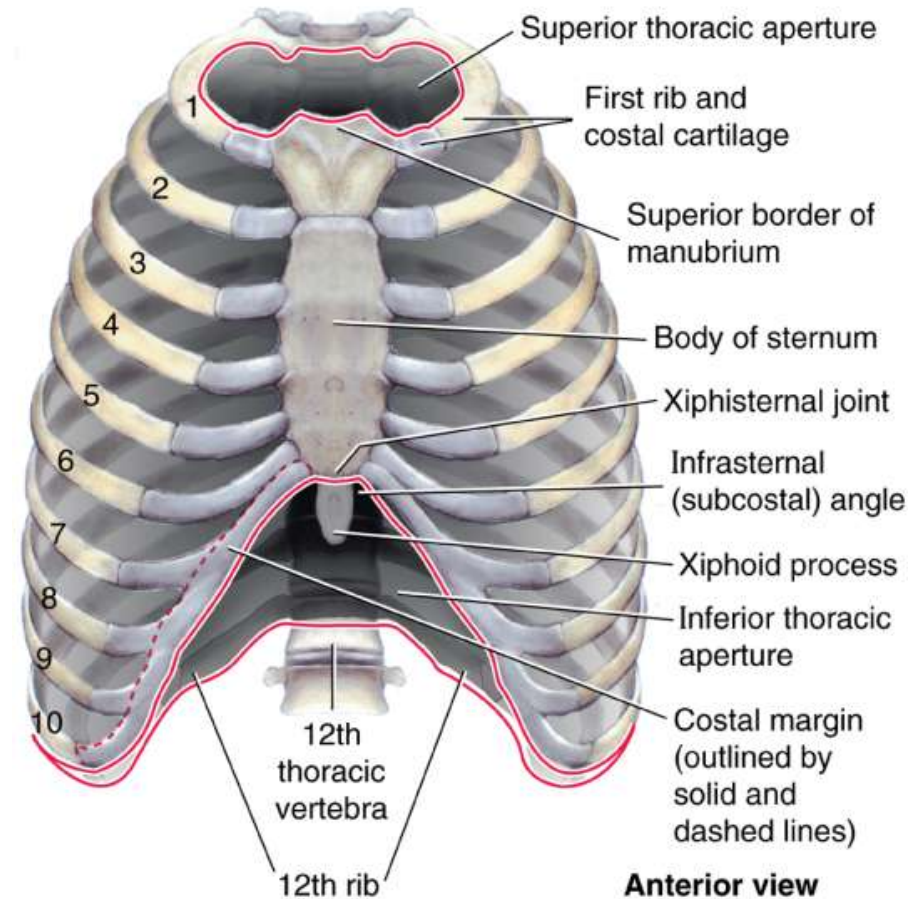


# Thoracic cavity cross section



# Thoracic inlet

- Upper end of the thorax which is continuous with the neck
- **Anterior:** upper border of manubrium sternum
- **Posterior:** superior surface of body of first thoracic vertebra
- **Lateral:** first ribs



# Suprapleural membrane

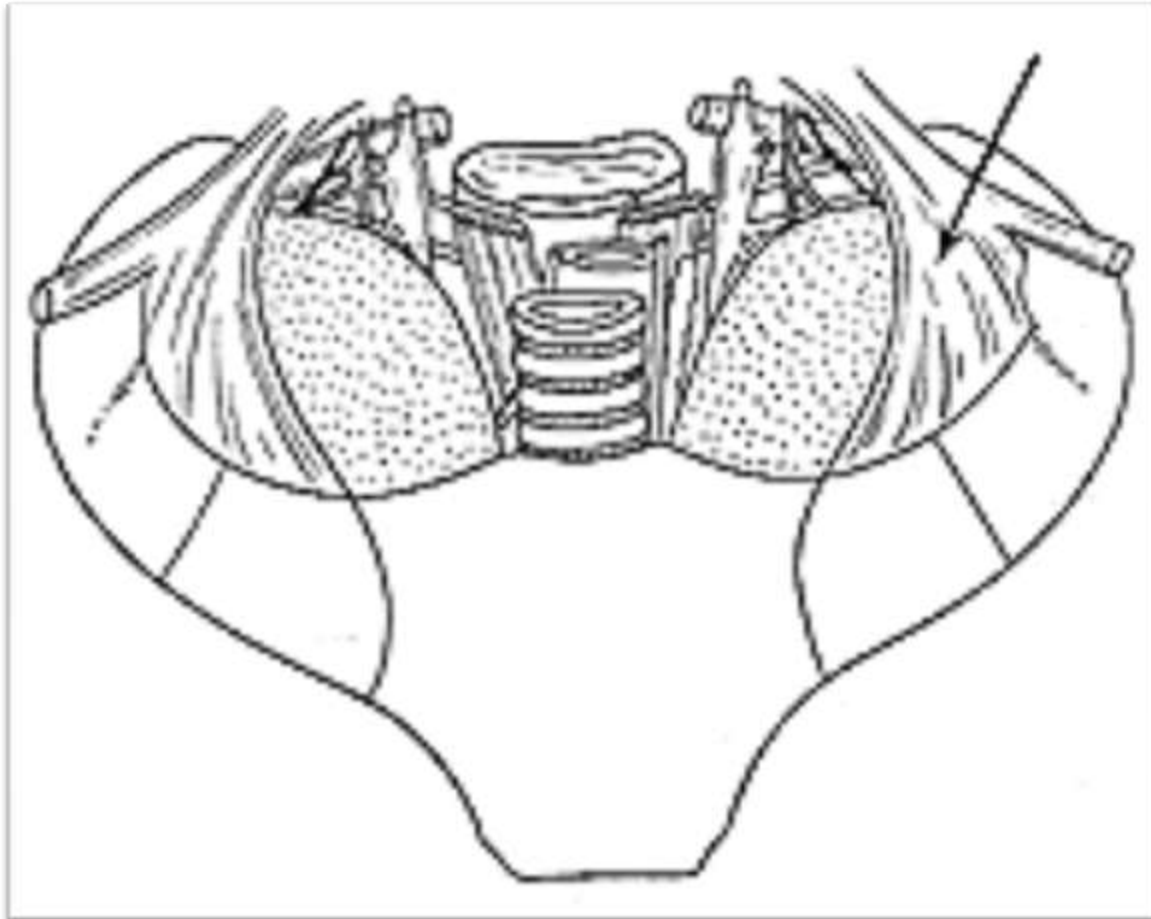
## Sibsons Fascia

### Cervicothoracic diaphragm

- It is a dense fascial layer
- Tent-shaped fibrous sheet
- Attached laterally to the medial border of the first rib and costal cartilage.
- At its apex to the tip of the transverse process of the seventh cervical vertebra.
- Medially to the fascia investing the structures passing from the thorax into the neck. It
- Protects the underlying cervical pleura and resists the changes in intrathoracic pressure occurring during respiratory movements.



# Suprapleural membrane





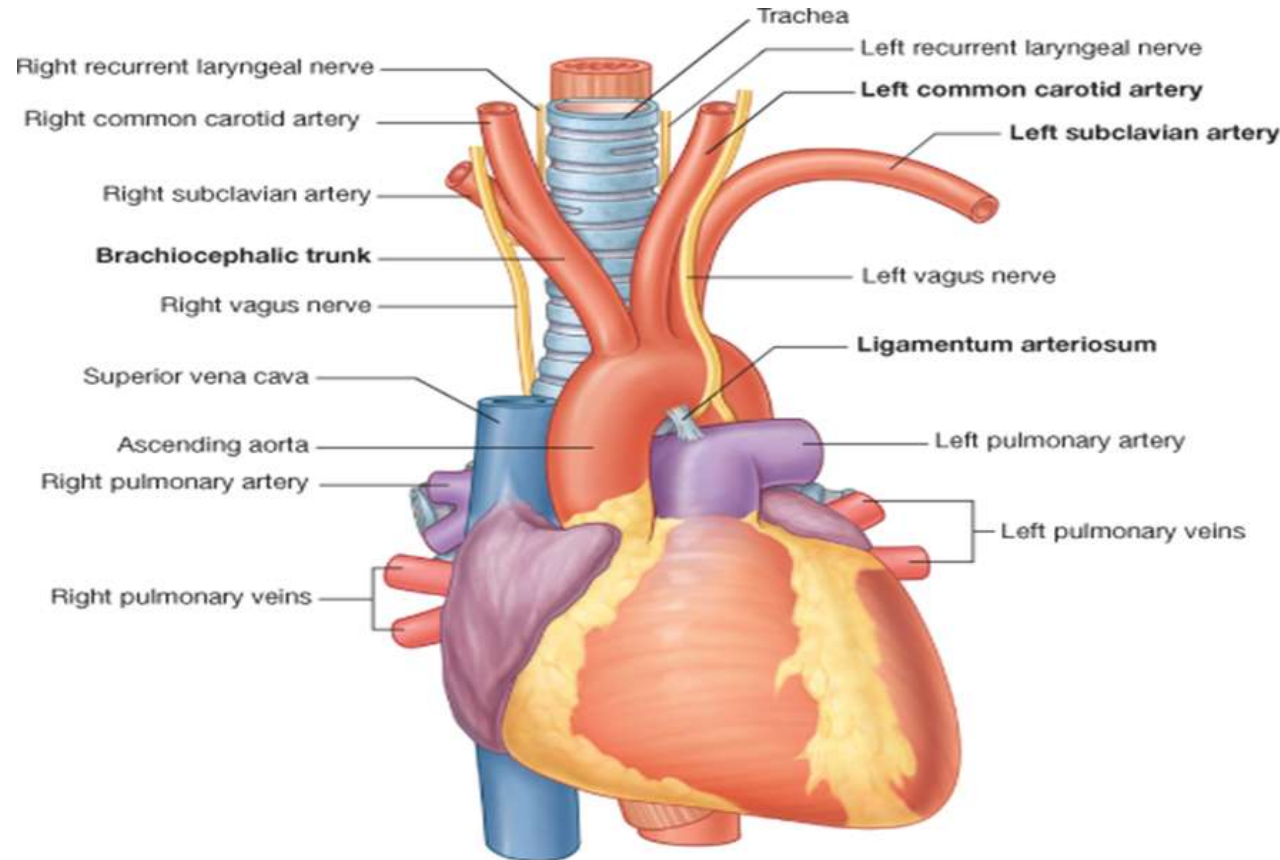
# Structures passing through Inlet

**Large artery:**

**Brachiocephalic**

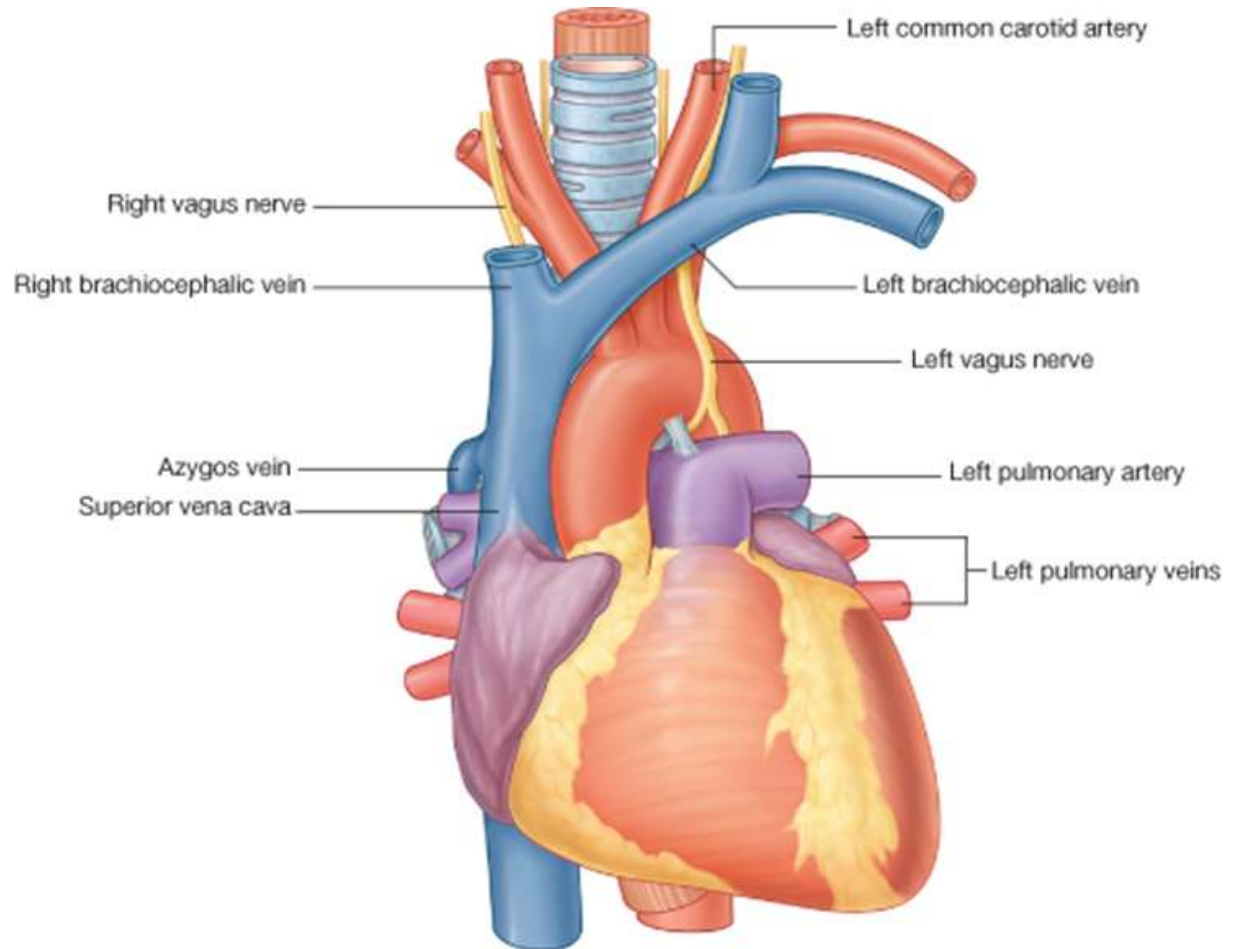
**Left common  
carotid**

**Left subclavian**



# Structures passing through Inlet

Veins:  
Right and left  
brachiocephalic  
veins



# Structure passing through Inlet

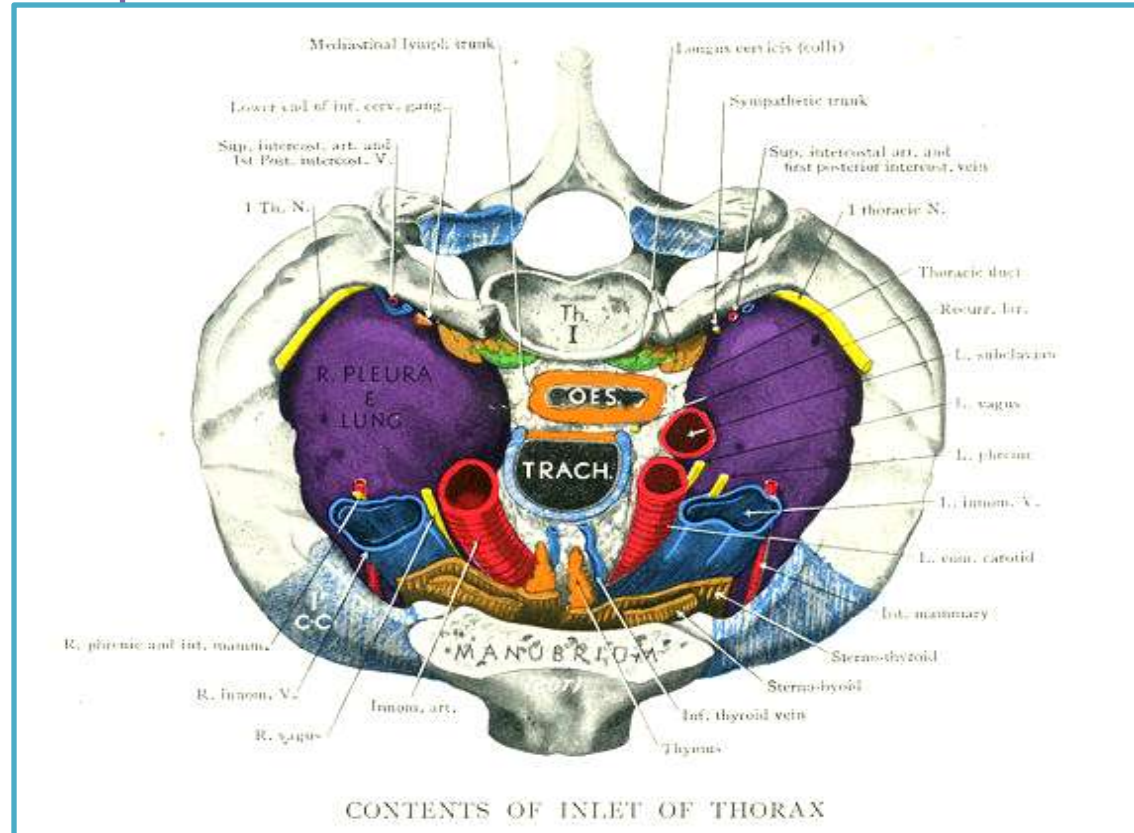
## Viscera:

Trachea

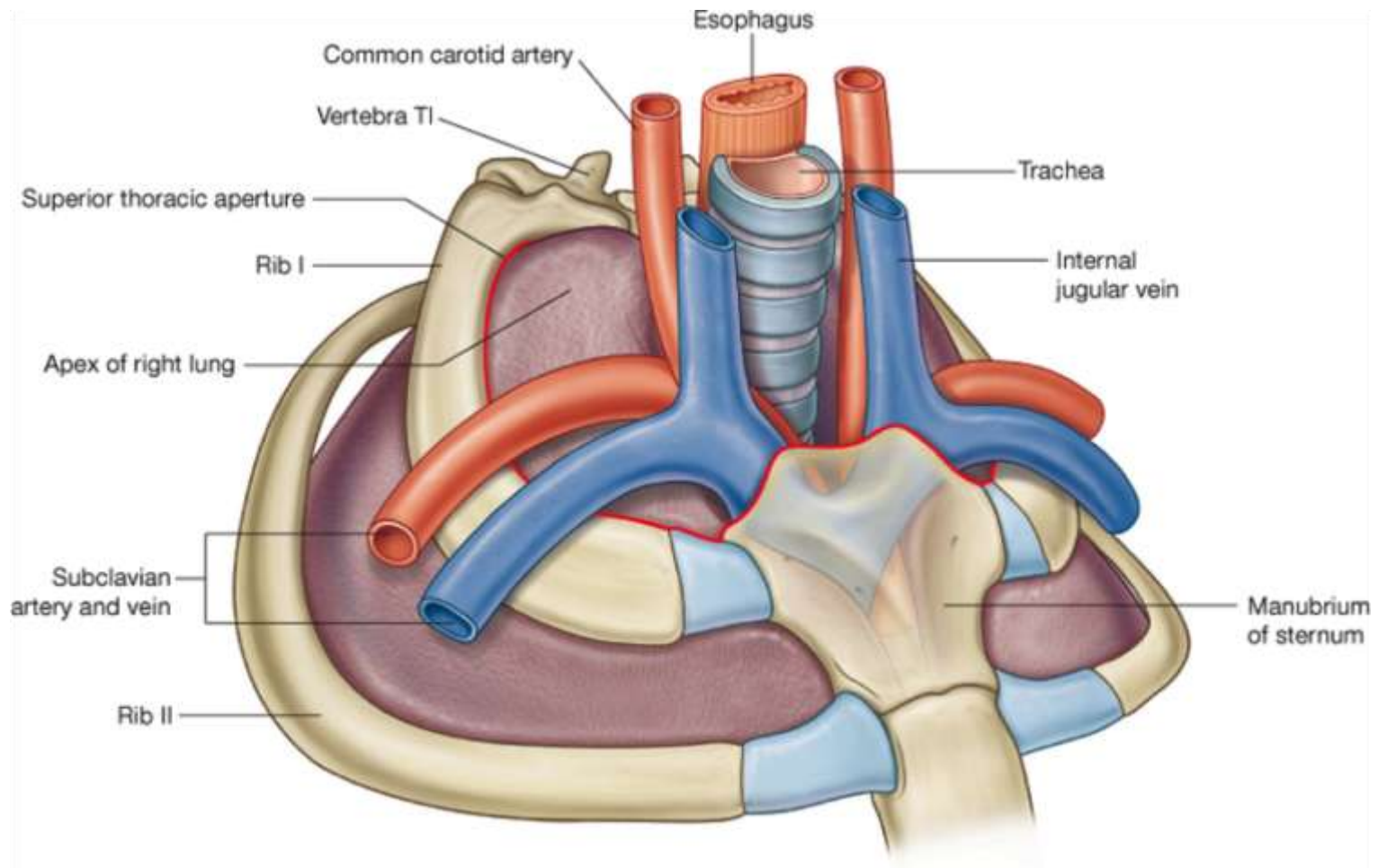
Oesophagus

Apices of lungs & pleura

Remains of the thymus



# Thoracic Inlet Contents





# Structure passing through Inlet

## Nerves:

Phrenic

vagus

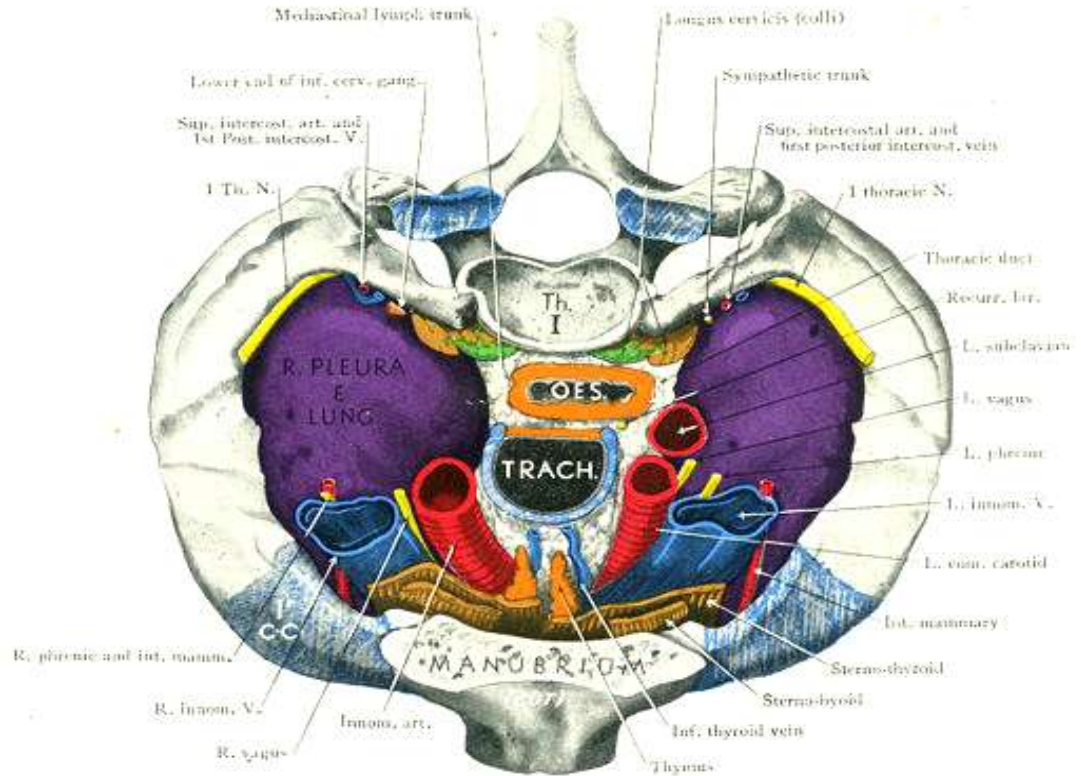
Sympathetic

trunk

First Intercostal

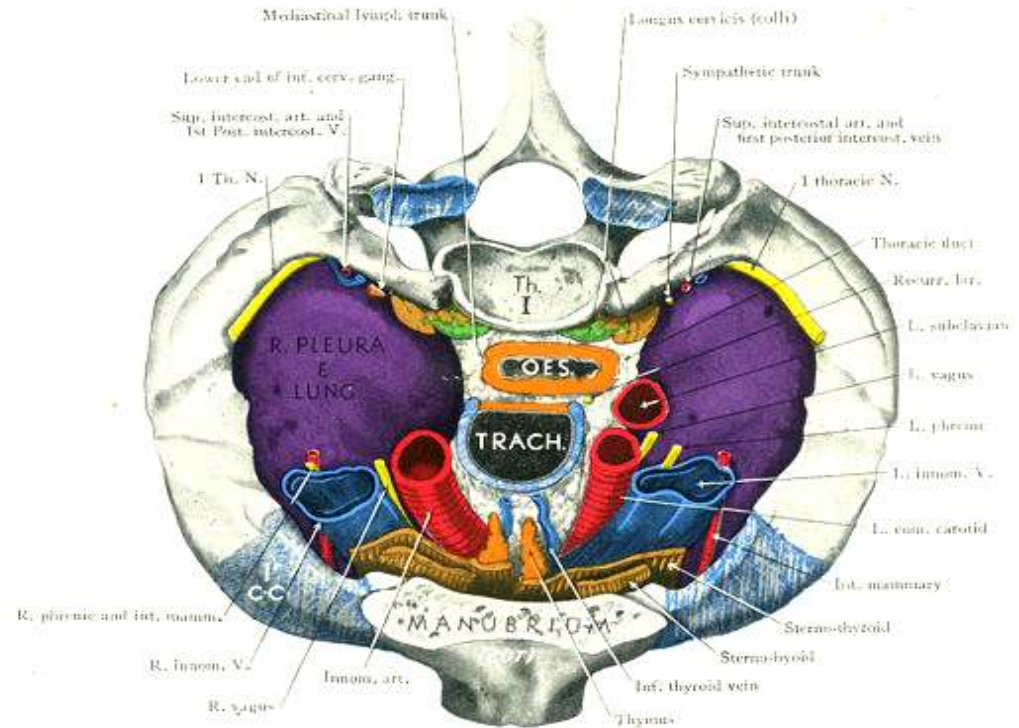
Left Recurrent

Laryngeal



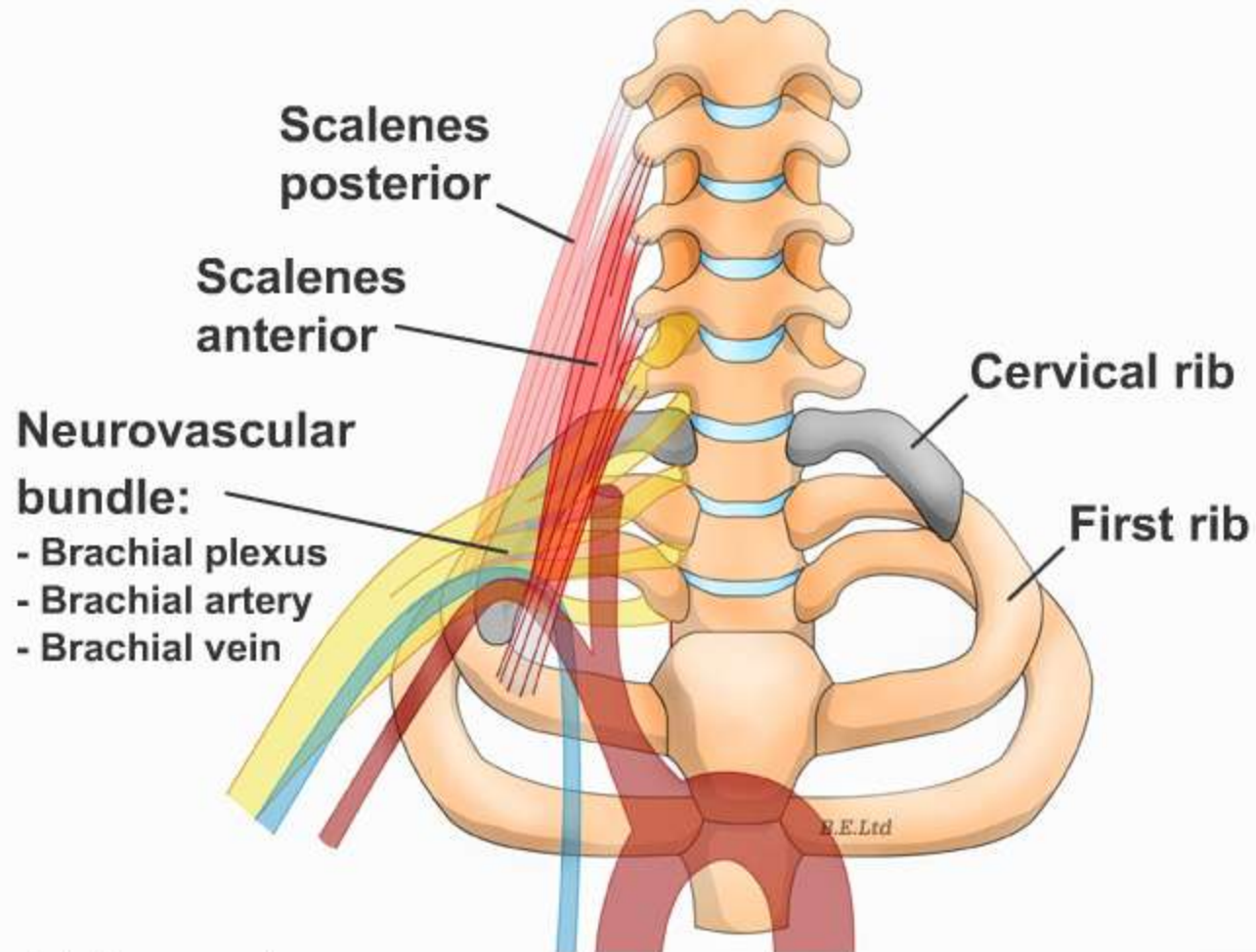
CONTENTS OF INLET OF THORAX

**Structure passing through Inlet Muscles:**  
Sternohyoid  
Sternothyroid  
Longus colli

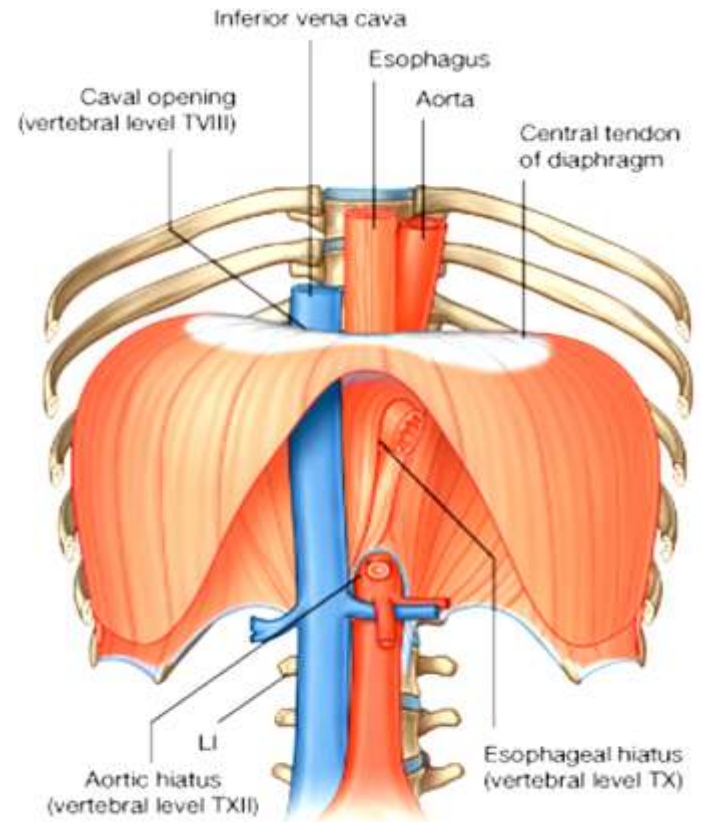
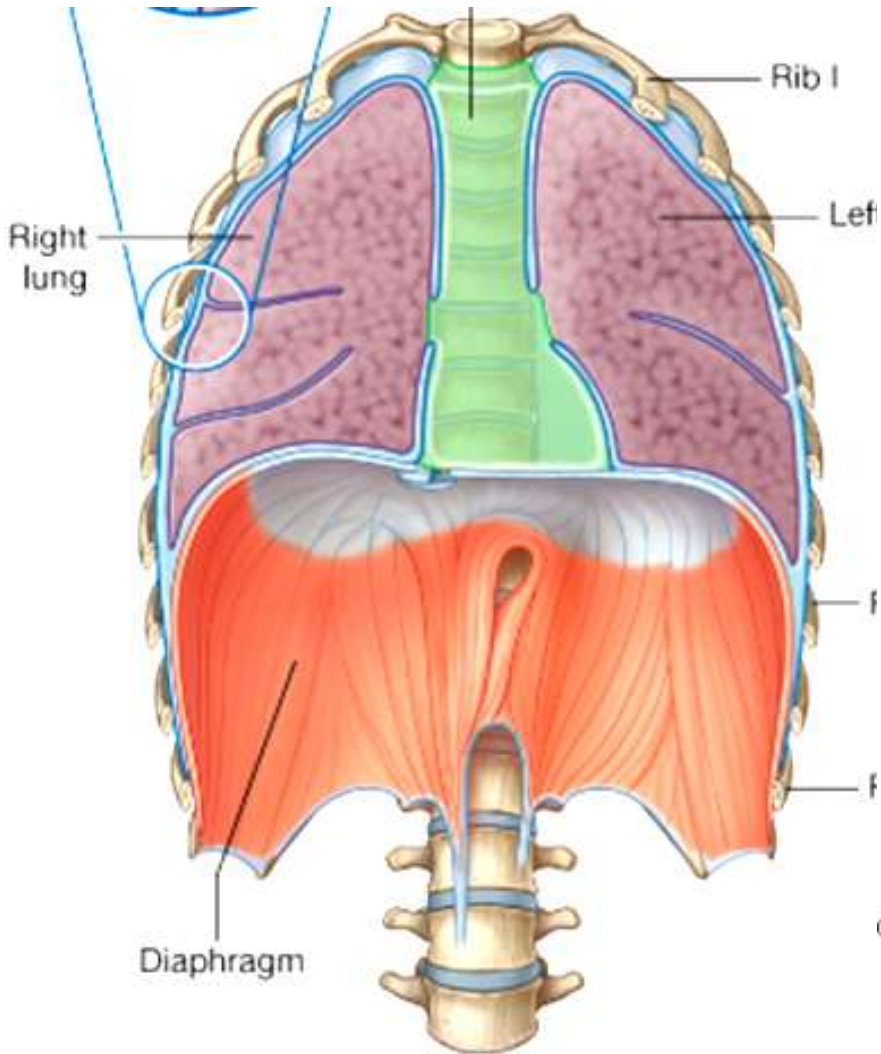


CONTENTS OF INLET OF THORAX

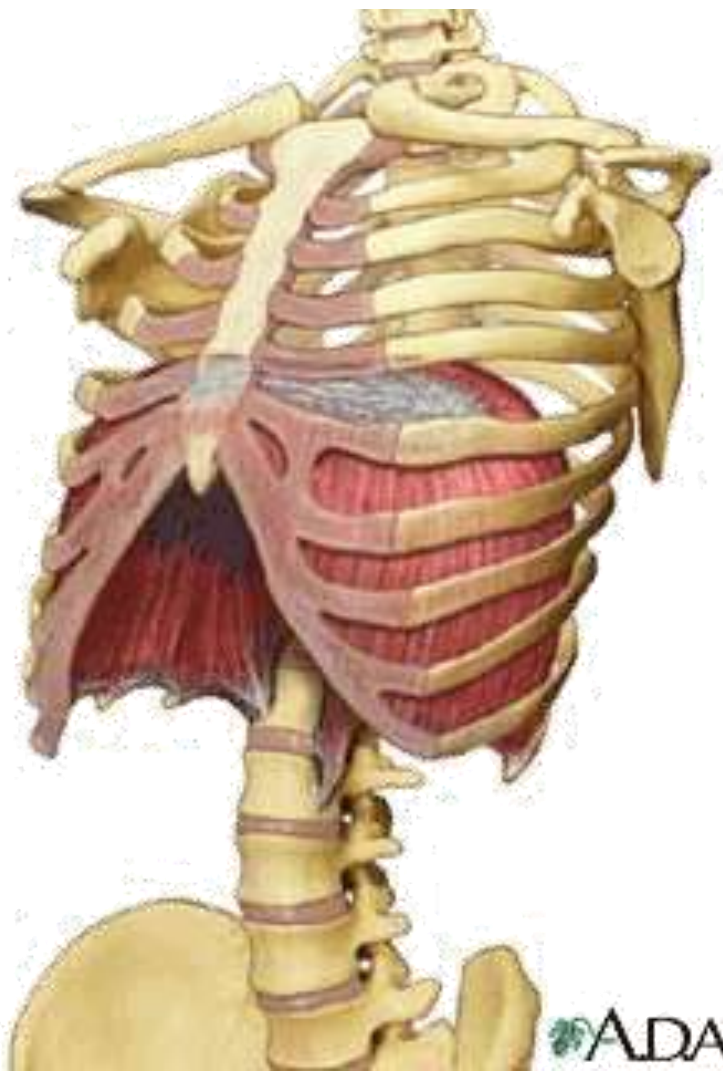
## Thoracic inlet / outlet lesions



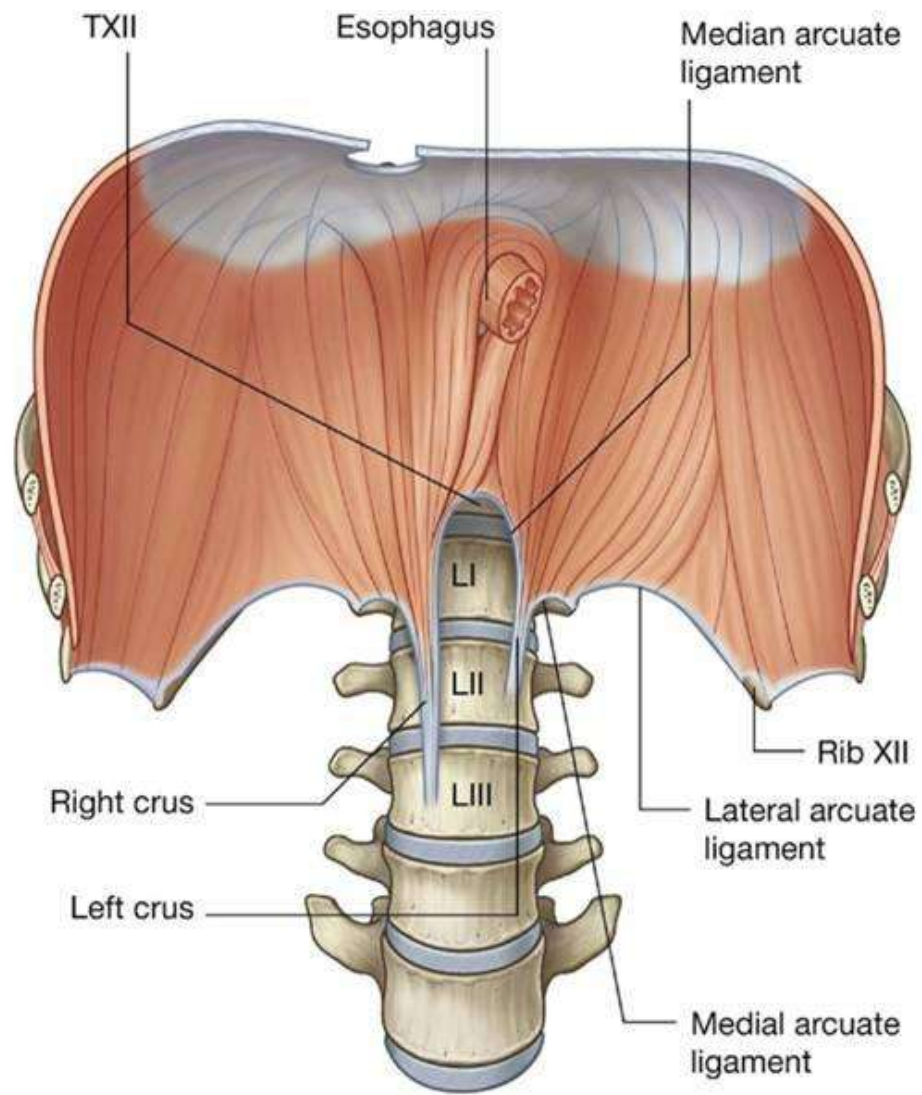
# Thoracic Outlet

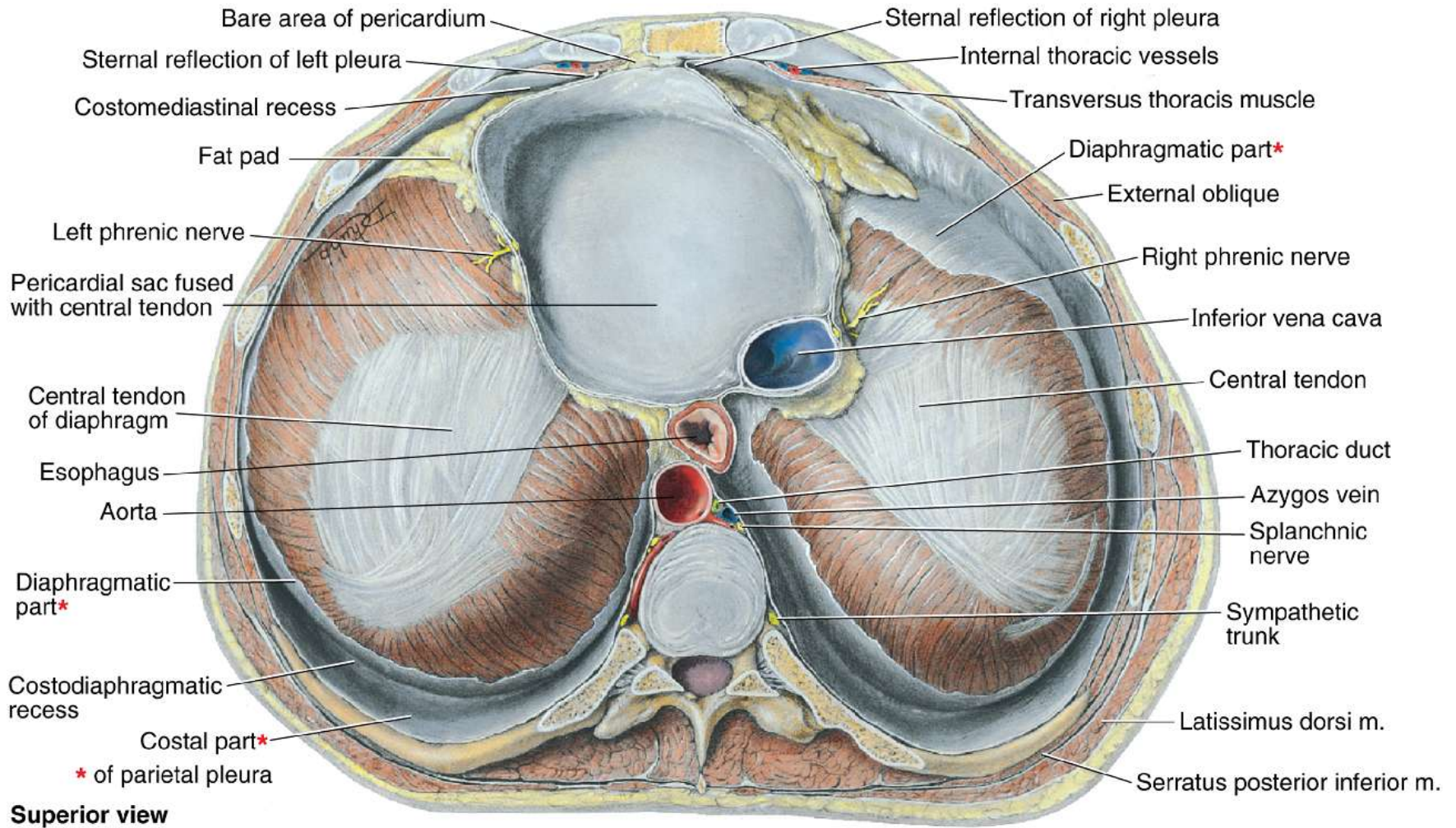






ADAM.

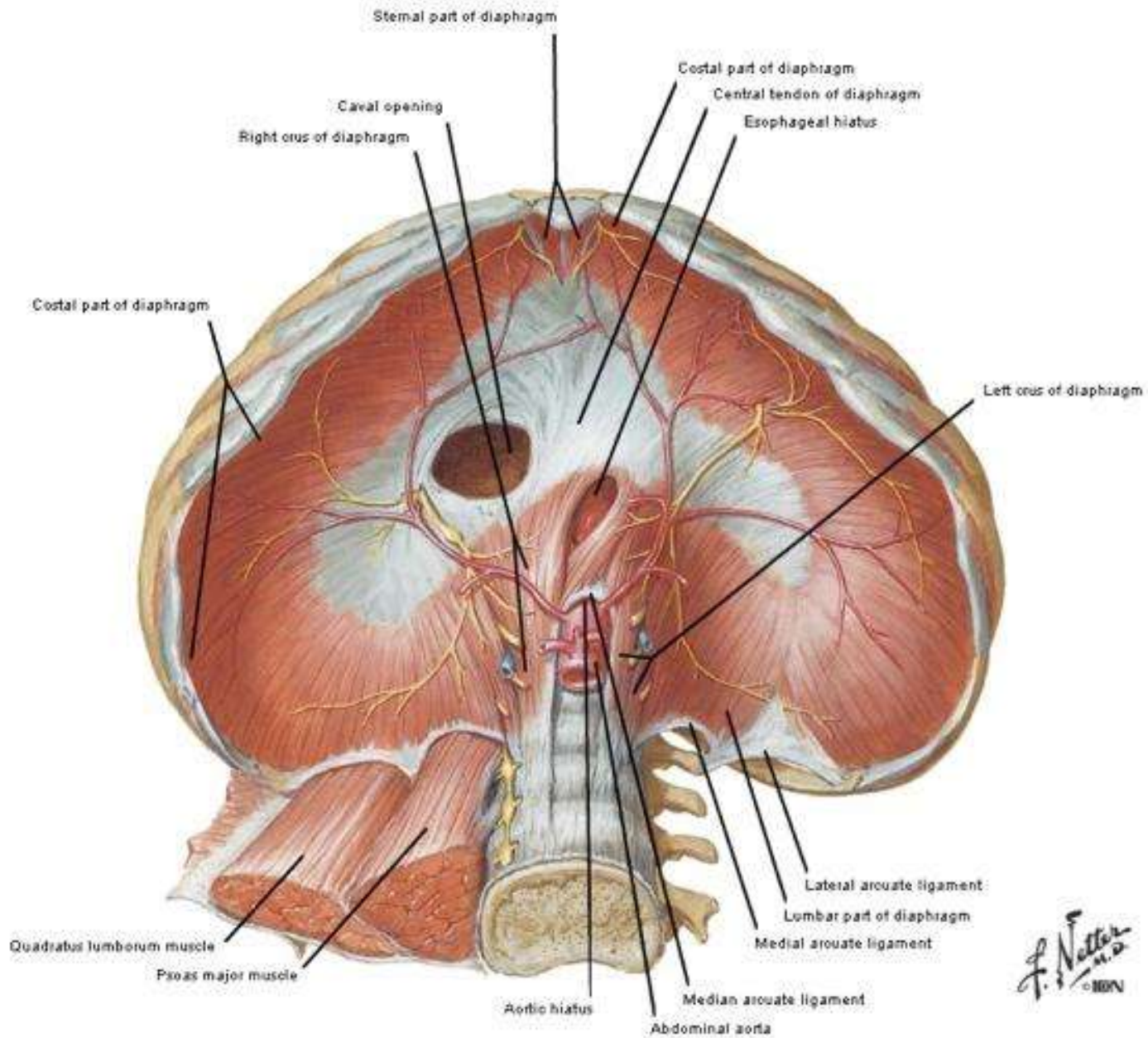






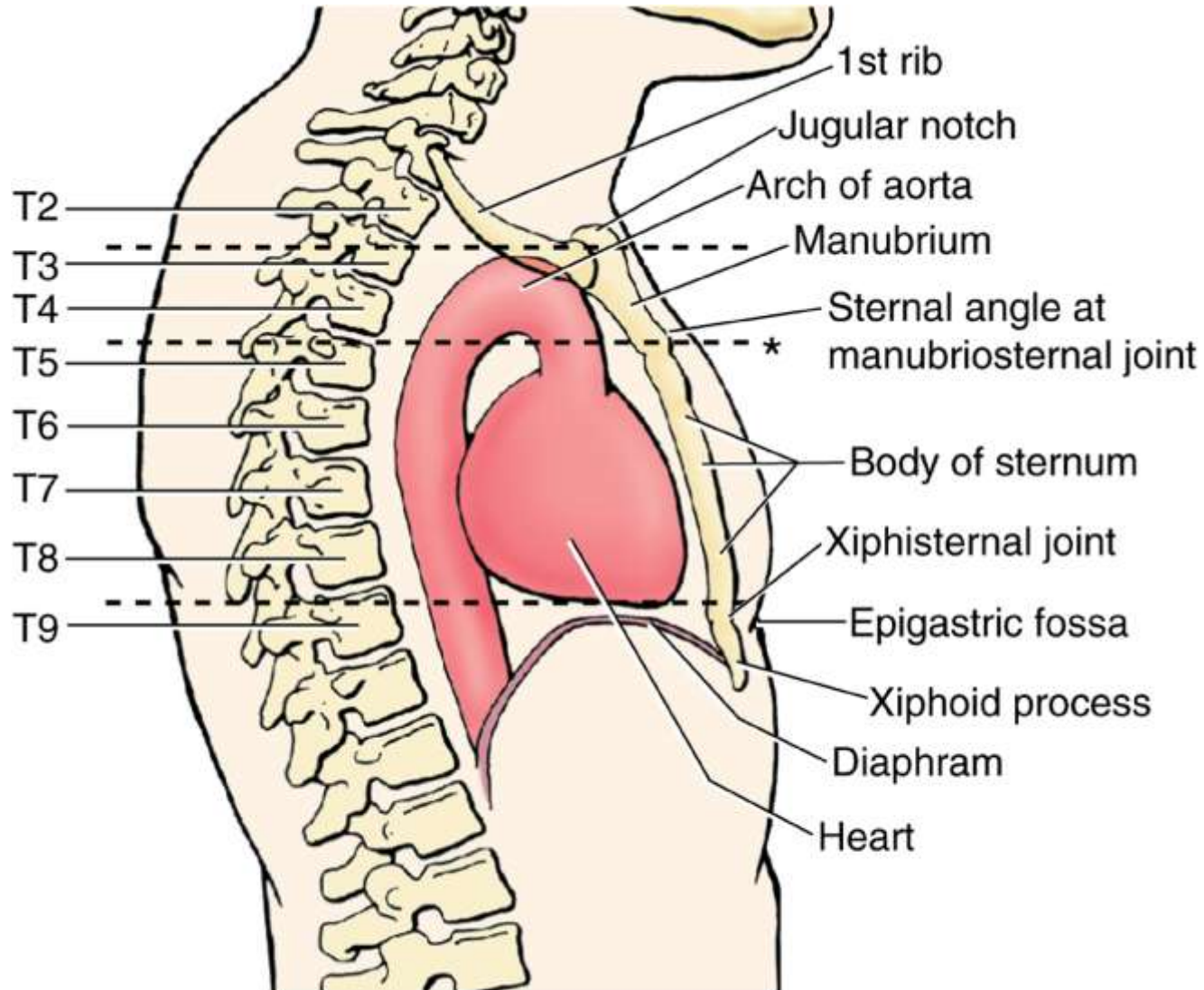
# Diaphragm

## Abdominal Surface



*F. Netter M.D.*  
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# Vertebral Levels



\* Transverse thoracic plane