ANATOMY OF THORAX

Important notes

Important area consist of Ribs,Cardiovascular system and lungs .

Irrequlary shaped cylinder with a narrow opening superiorly allowing continuity with the neck and large opining inferiorly closed by the diaphragm

thoracic wall consist of skeletal elements and muscles :

Posterior :- it's made up of 12 **thoracic vertebrae** and their intervertebral discs .

Laterally :- formed by **ribs** (12 on each side) with intercostal spaces between adjacent ribs and three layers of flat muscle

Anteriorly :- made up of the **sternum** , which consist of manubrium + body + xiphoid process

STERNUM

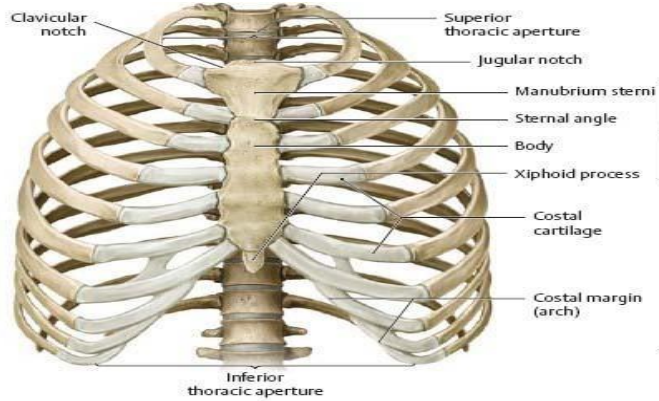
- **Manubrium** of the sternum forms part of bony framework of the neck and thorax.

Superior surface is expanded laterally and bears a distinct and palpable notch in the midline, the jugular notch (suprasternal) . On each side of this notch is a large oval fossa for articulation with clavical. Immediately inferior to this fossa on each lateral side there is facet for attachment of 1st costal cartilage.

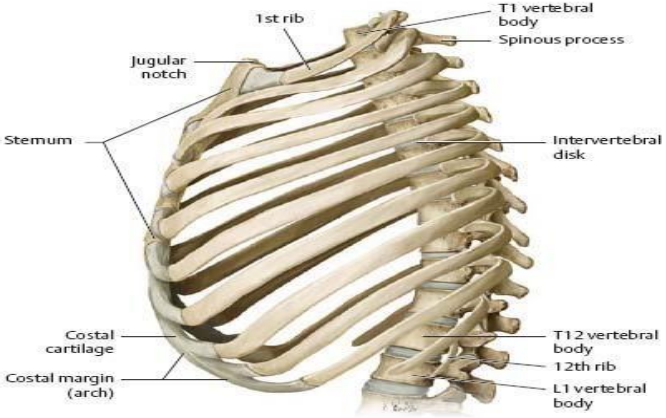
Angle of louis :- important surface landmark between manubrium and body of sternum

- Lies with level T4 and T5
- Give attachment for 2nd costal cartilage

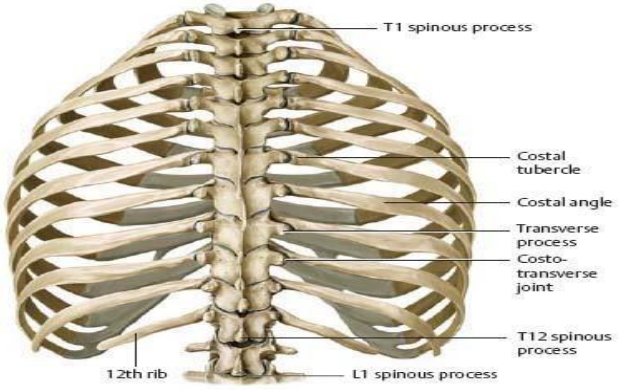
- **The body** is flat and often marked by ridges represent lines of fusion , from this part the sternum arises embryologically . مهم
- **Xiphoid process** is the smallest part of the sternum.



A Anterior view.

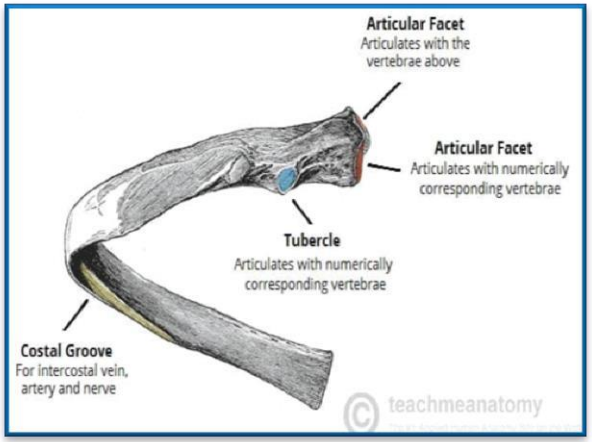


B Left lateral view.



C Posterior view.

RIBS STRUCTURE



- 12 on each side
- 1-7 are **true** ribs their CC with sternum
- 8-10 are **false** ribs their CC with CC of 7th rib
- 11-12 are **floating** ribs has no anterior articulation
- There are 2 kind of ribs :

1. **Typical ribs (2-10)**

The head consist of 2 facet separated by a crest for artculation with vertebra .

The neck has tubercle with a non-articular and articular parts,

Two facet the medial with transverse process of vertbra and lateral facet for costo-transverse ligament .

The shaft is the main part and has a costal groove in the inner aspect , we find the VAN intercostal in this groove .

2. A typical rib (1-11-12)

First rib

Short curved has superior&inferior surfaces , the superior surface is rough and characterized by scalene tubercle which separates the subclavin grooves.

No costal groove .

The head has single facet for T1

b. The 11th rib

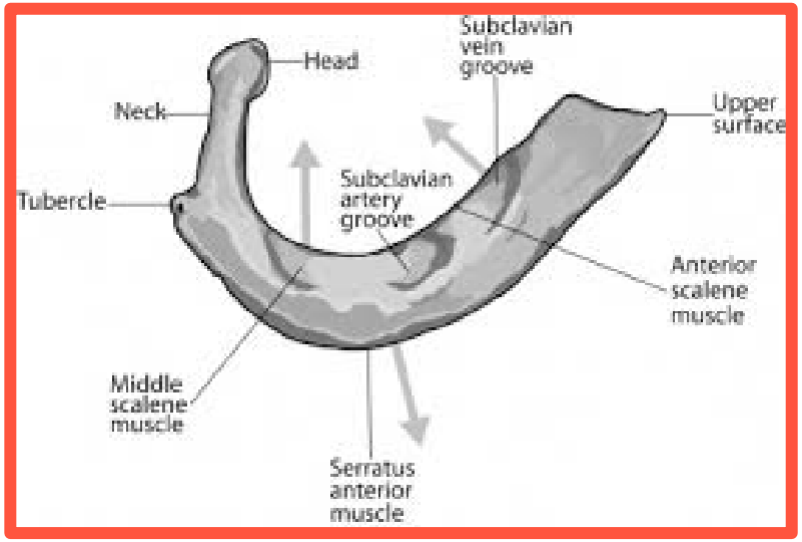
No tubercle facet

Poorly defined angle

c. The 12th rib

Small & thin

Lack most of the costal features

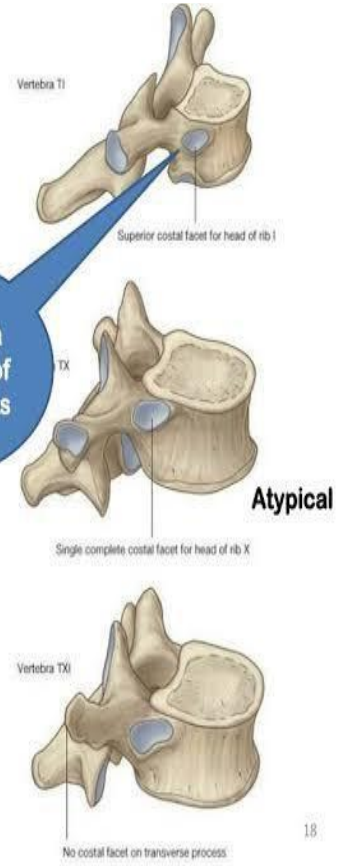


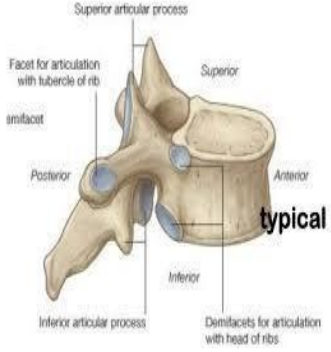
VERTEBRAE

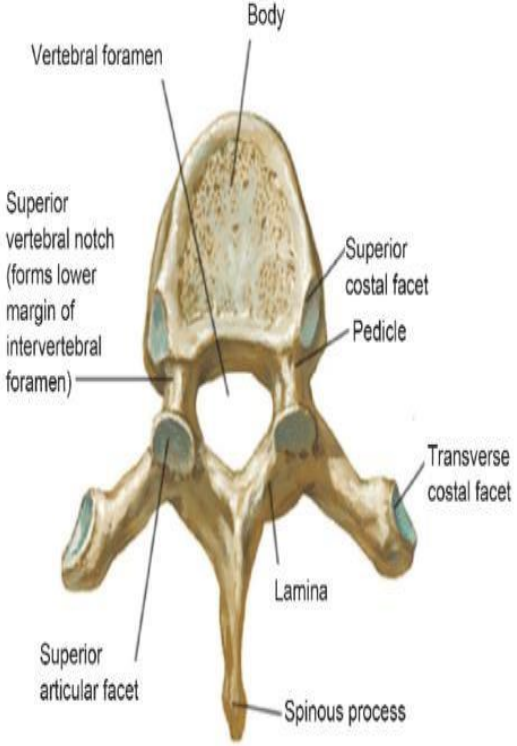
- The are 33 vertebrae in fetus , with normal number there is **5 sacrum** fuse together and **3** fuse to form **coccyx** .
  After birth 26 vertebae 7 cervical 12 thoracic 5 lumber 1 sacrum and 1 coccyx.
- **Typical thoracic** vertebae has a heart shape with long spinous process and flat superior articular processes (articulates post.) and inferior articular processes project from laminae (articulates ant,)
- **Atypical vertebrae :-**

1. **T1** more horizontal SP and one complete articular facet and one half articular facet
2. **T11,T12** just have one articular facet and there is not facet on transverse process
3. **T9,T10** just joint with same rib number

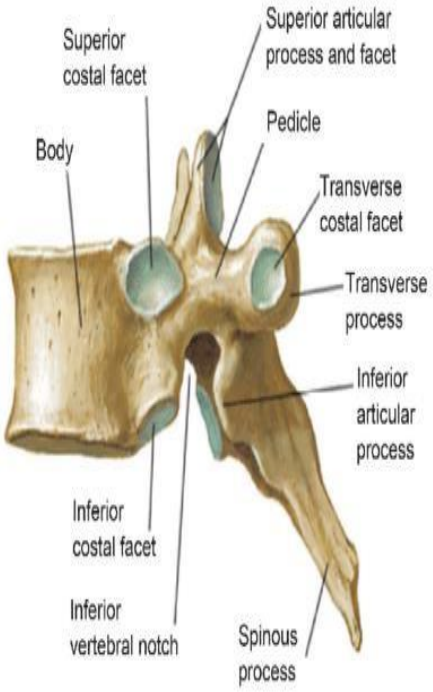
Atypical thoracic vertebra:
First, Nine to Twelve







T6 vertebra: superior view



T6 vertebra: lateral view

ARTICULATIONS OF THE THORAX

A. Sternoclavicular Joint
- Is a saddle-type synovial joint with two separate synovial cavities and provides the only bony attachment between the appendicular and axial skeletons.

B. Sternocostal (Sternochondral) Joints
- Are the articulation of the sternum with the first seven cartilages. The sternum (manubrium) forms synchondrosis with the first costal cartilage, whereas the second to seventh costal cartilages form synovial plane joints with the sternum.

C. Costochondral Joints
- Are synchondroses in which the ribs articulate with their respective costal cartilages.

D. Manubriosternal Joint
- Is symphysis (secondary cartilaginous joint) between manubrium and body of the sternum.

E. Xiphisternal Joint
- Is synchondrosis articulation between xiphoid process and body of the sternum.

F. Costovertebral Joints
- Are synovial plane joints of heads of ribs with corresponding and supraadjacent vertebral bodies.

G. Costotransverse Joint
- Is synovial plane joint of tubercle of rib with transverse process of corresponding vertebra.

H. Interchondral Joints
- Are synovial plane joints between 6th and 10th costal cartilages of ribs.

Thank you