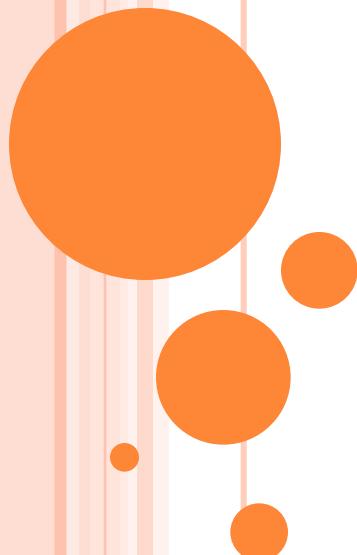
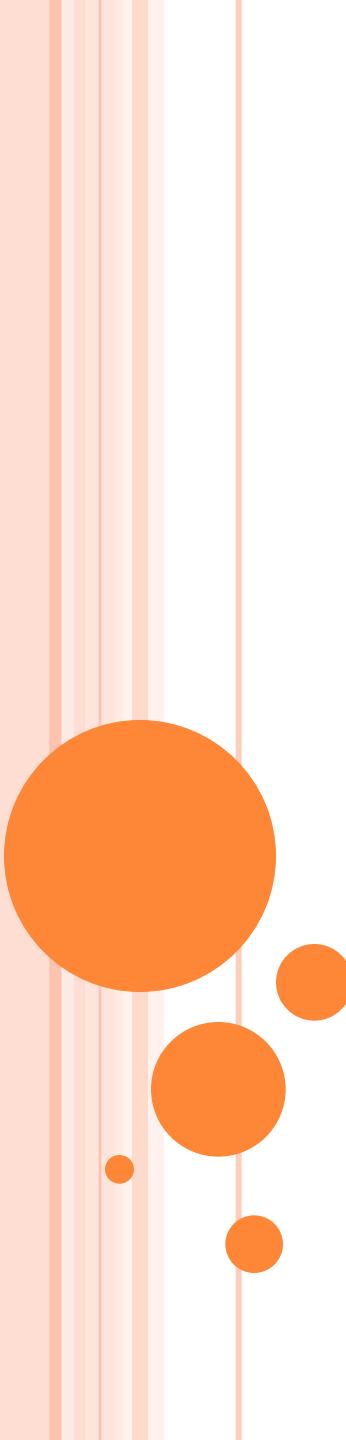


# IN THE NAME OF GOD

Musculoskeletal system  
For  
paramedicine student  
By  
Dr. Saeednia



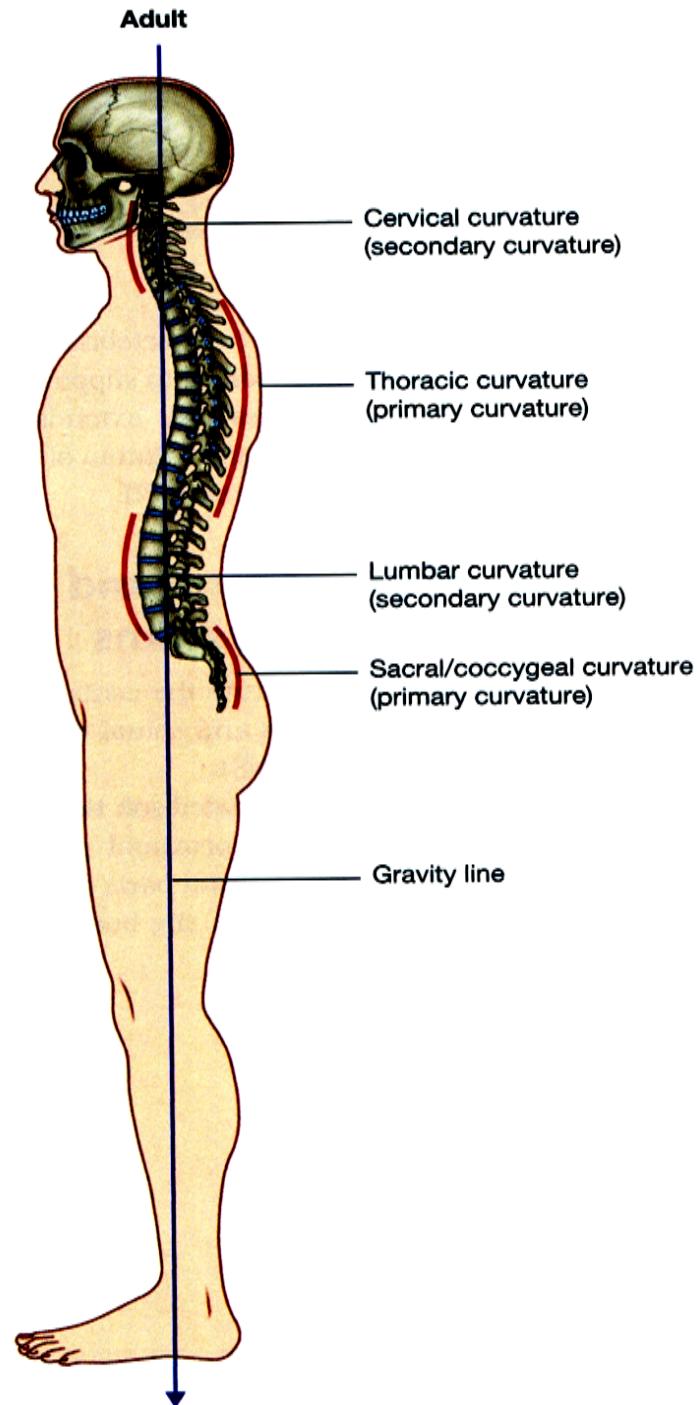
A vertical line on the left side of the slide features five orange circles of varying sizes, decreasing in size from bottom to top.

# ANATOMY OF SKELETAL SYSTEM

## Vertebral column:

- 33 (26) vertebrate/ 7 cervical + 12 thoracic + 5 lumbar + 5 sacral + 3-4 coccygeal
- Support of spinal cord/ transfer of body weight to inf. Limb  
Length: men 60 cm/ female 50 cm
- Primary arch: thoracic/ sacral
- Secondary arch: cervical (5-9 month years old)/ lumbar (12-18 month years old)
- Clinical note:

Scoliosis  
Lordosis  
Kiphosis



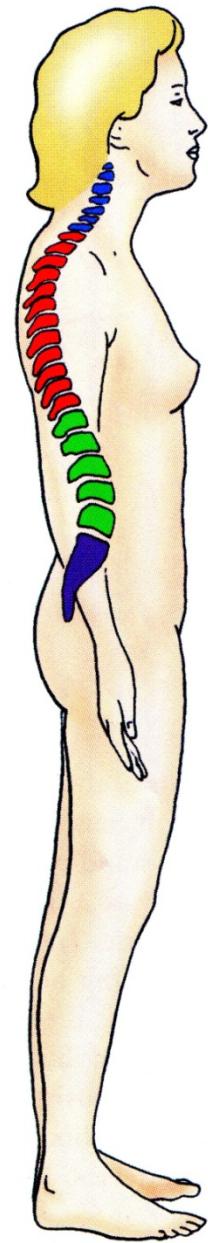
**Curvatures:**

Cervical ( $2^\circ$ )

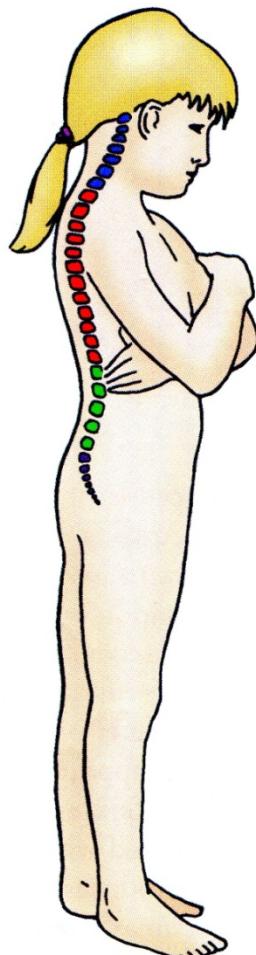
Thoracic ( $1^\circ$ )

Lumbar ( $2^\circ$ )

Sacral ( $1^\circ$ )



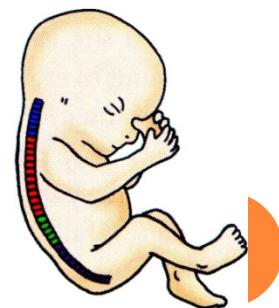
Adult



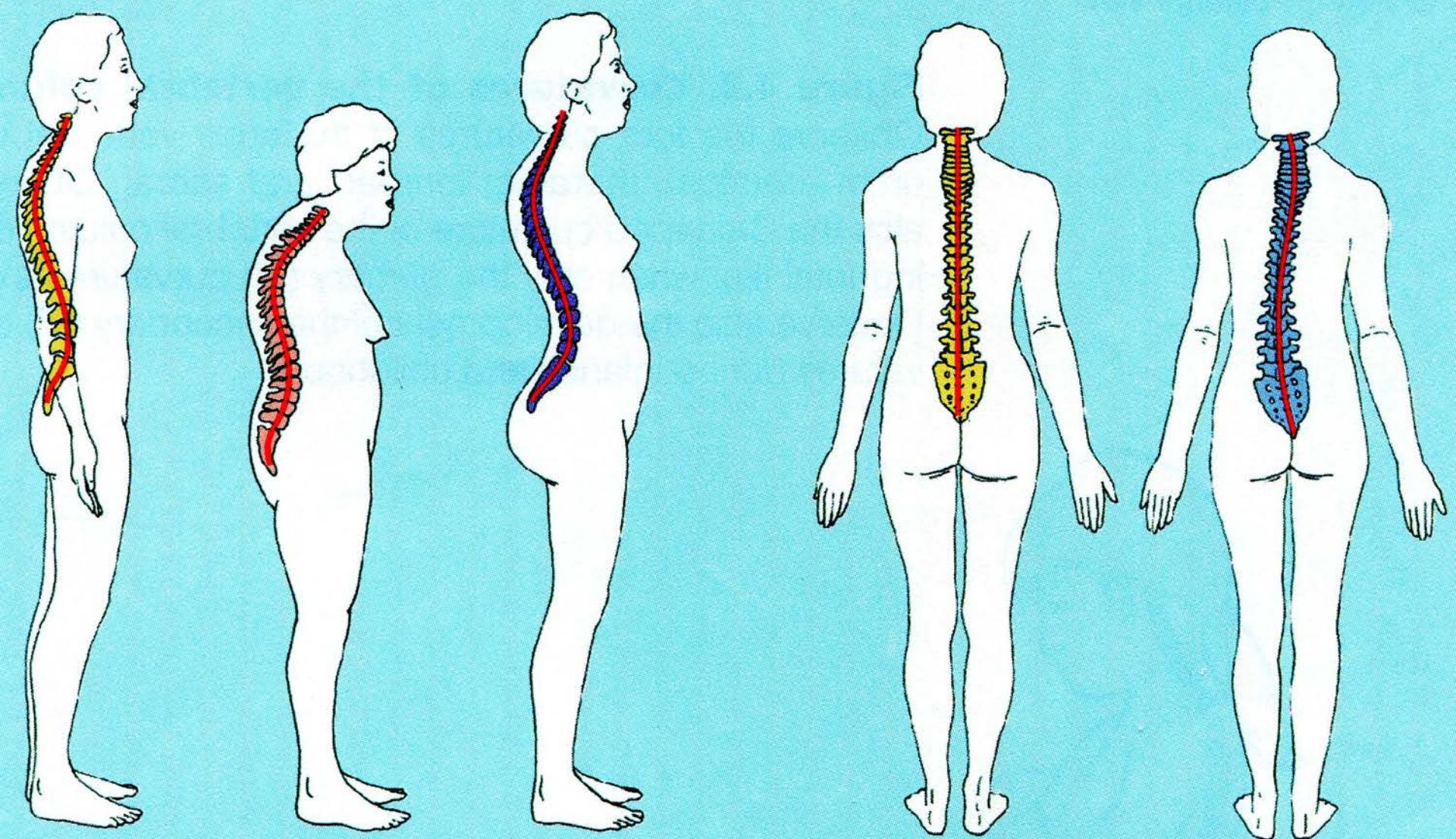
4 years



Newborn



Fetus (2 months)



Normal

Kyphosis

Lordosis

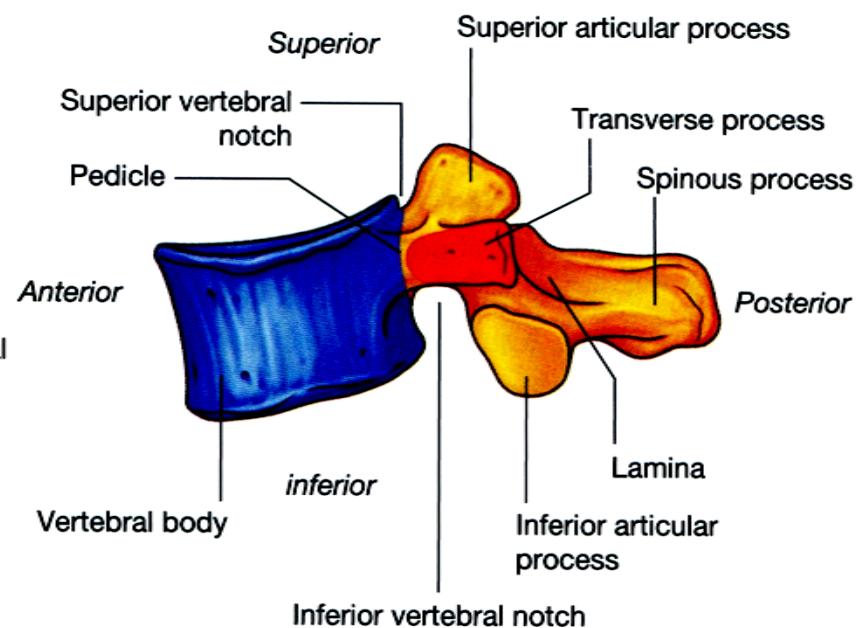
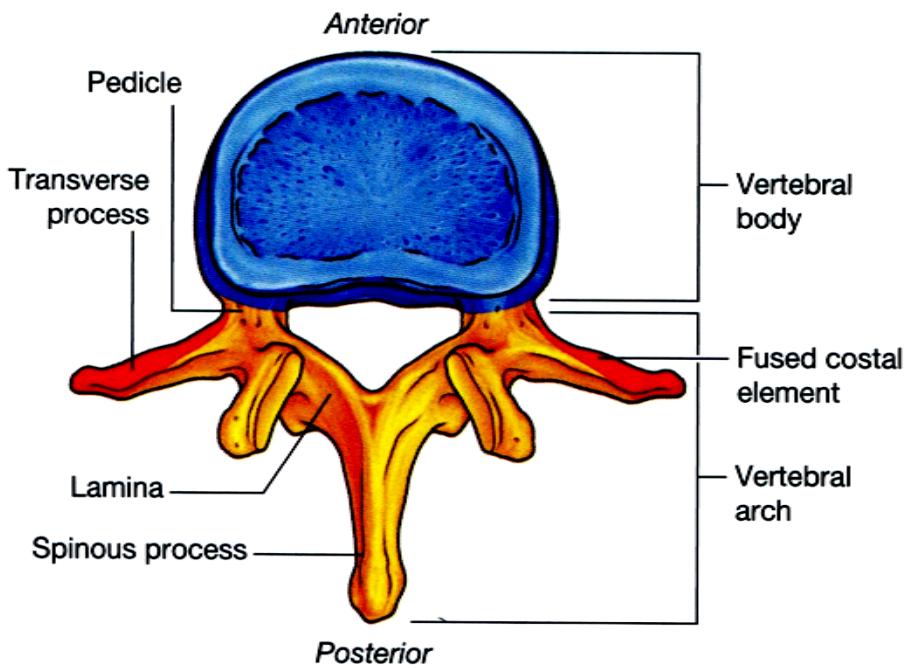
Normal

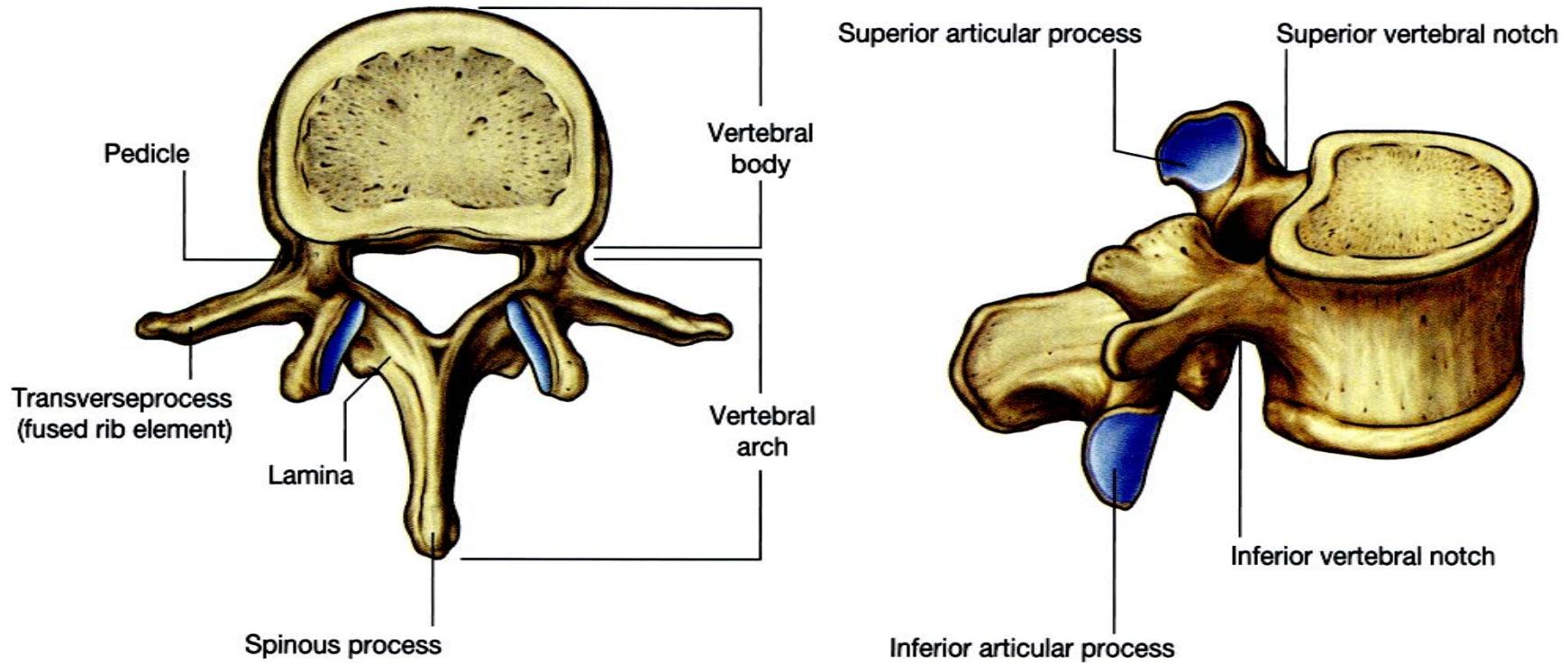
Scoliosis

# Typical body form:

Body  
Arch:

Pedicles/ lamina/ vertebral foramen/ transverse process/  
Sup. Articular process/ inf. Articular process/ spinous process





## Cervical vertebral:

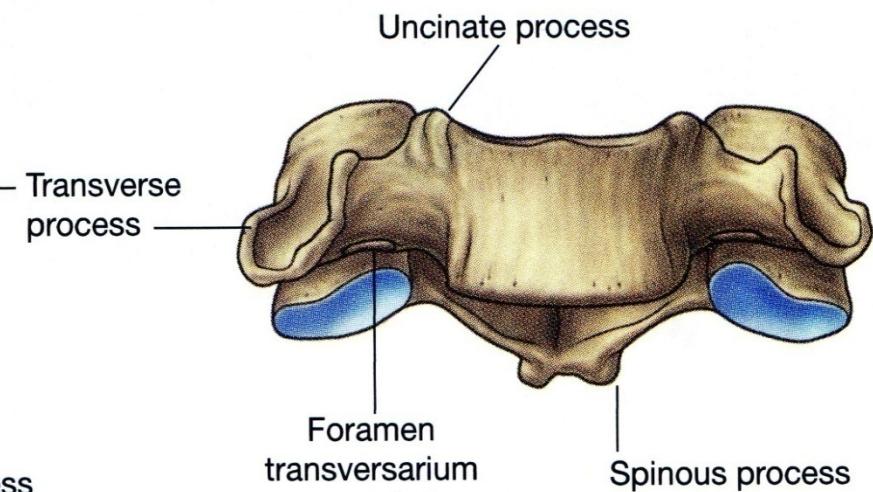
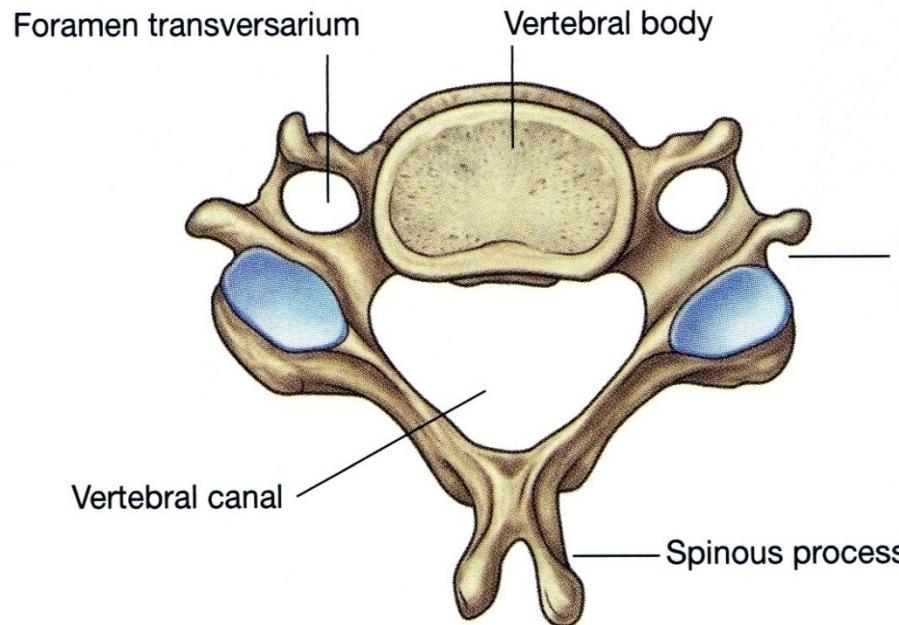
Typical: large & triangular vertebral foramen/  
transverse foramen/ 2 spinous process

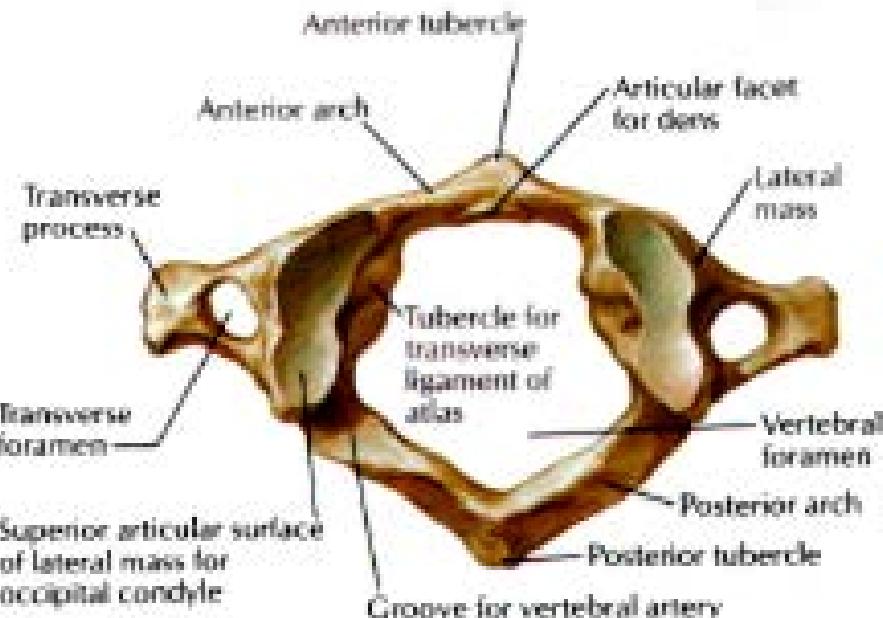
Atypic:

Atlas (C1)

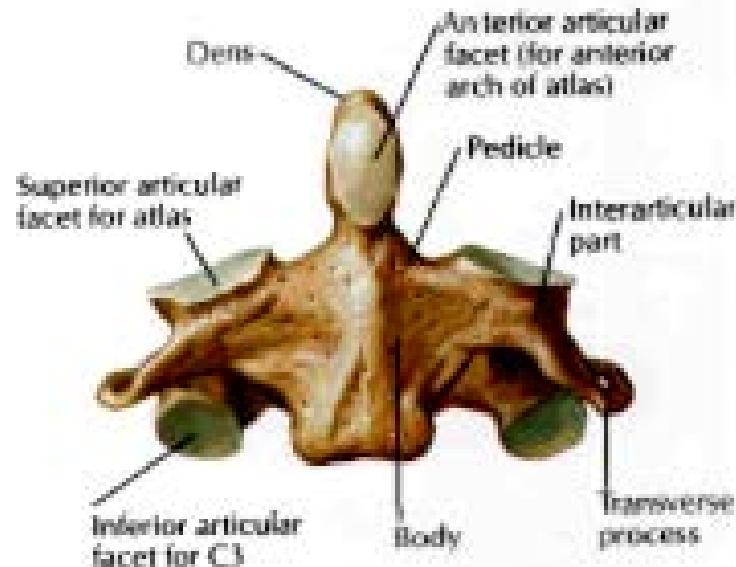
Axis (C2)

C7 (vertebral prominence)

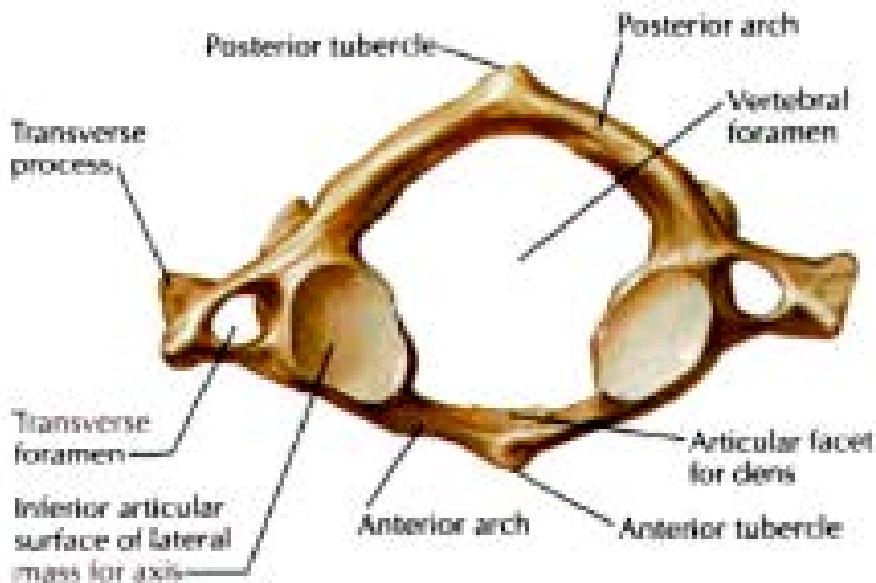




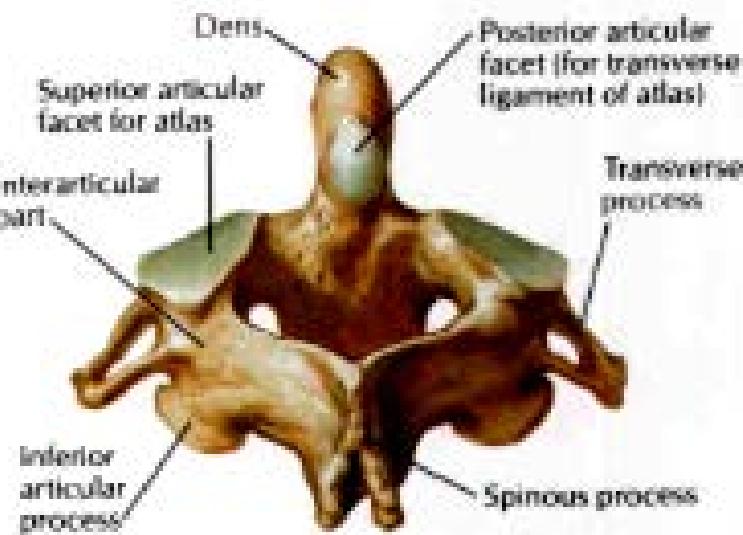
**Atlas (C1): superior view**



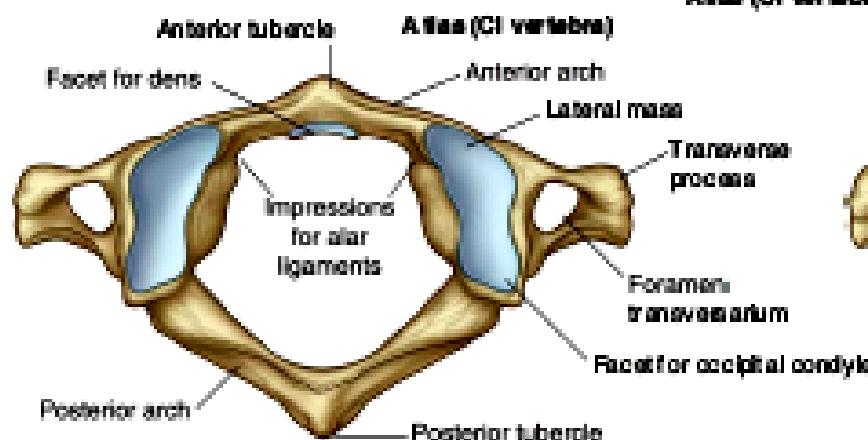
**Axis (C2): anterior view**



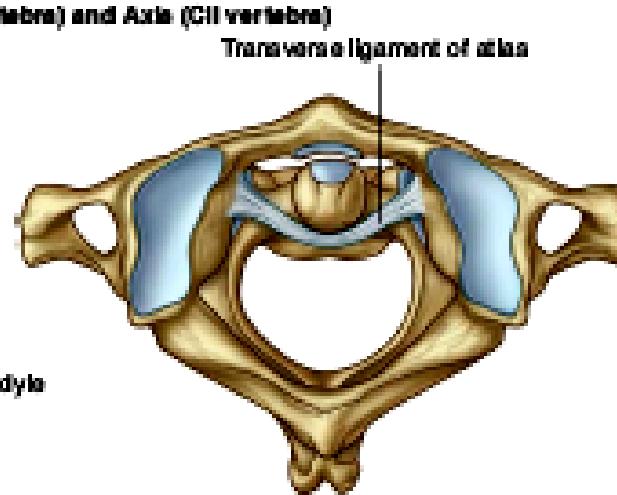
**Atlas (C1): inferior view**



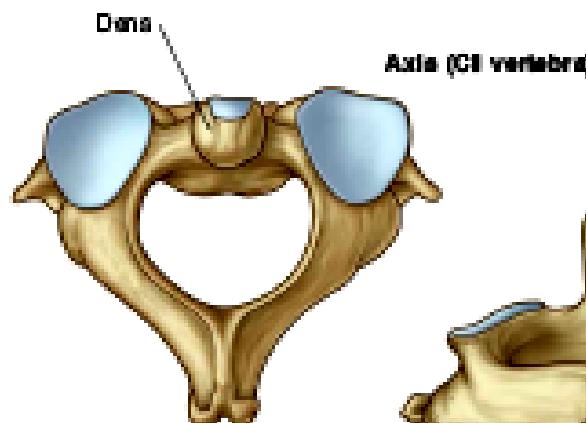
**Axis (C2): posterosuperior view**



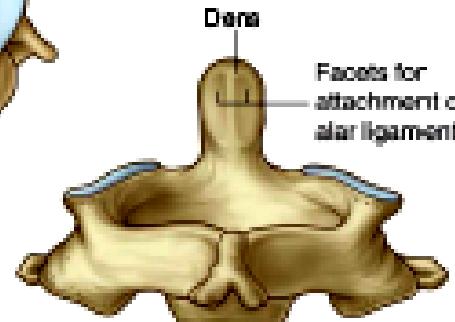
Superior view



Superior view



Superior view



Posterior view

Tectorial membrane (upper part of posterior longitudinal ligament)

Transverse ligament of atlas

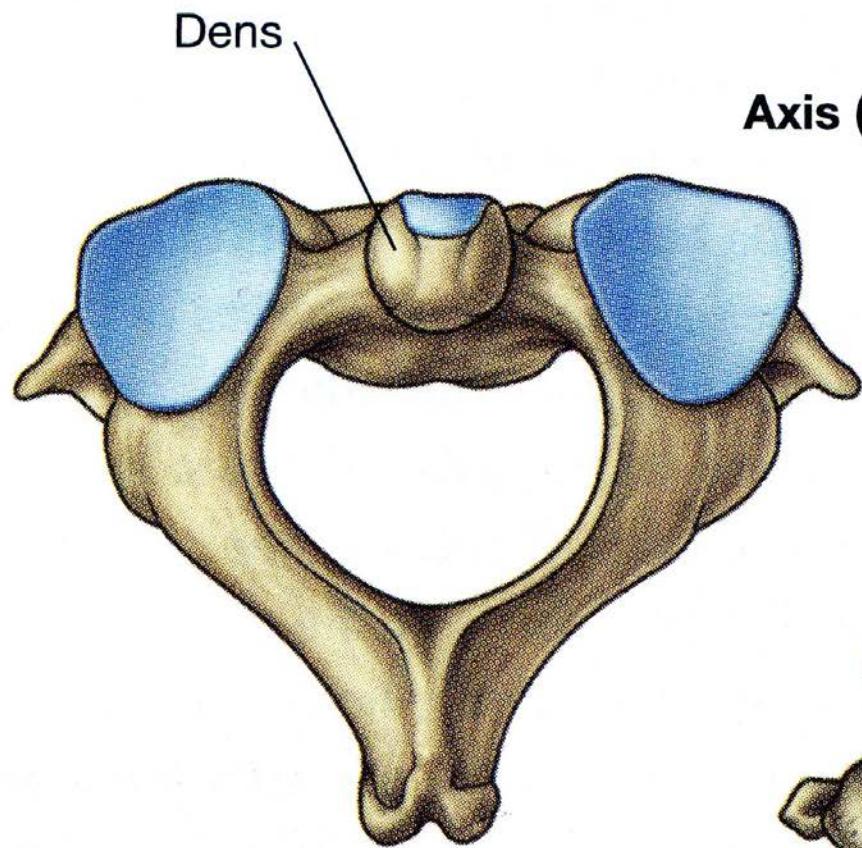
Inferior longitudinal band of cruciform ligament

Apical ligament of dens

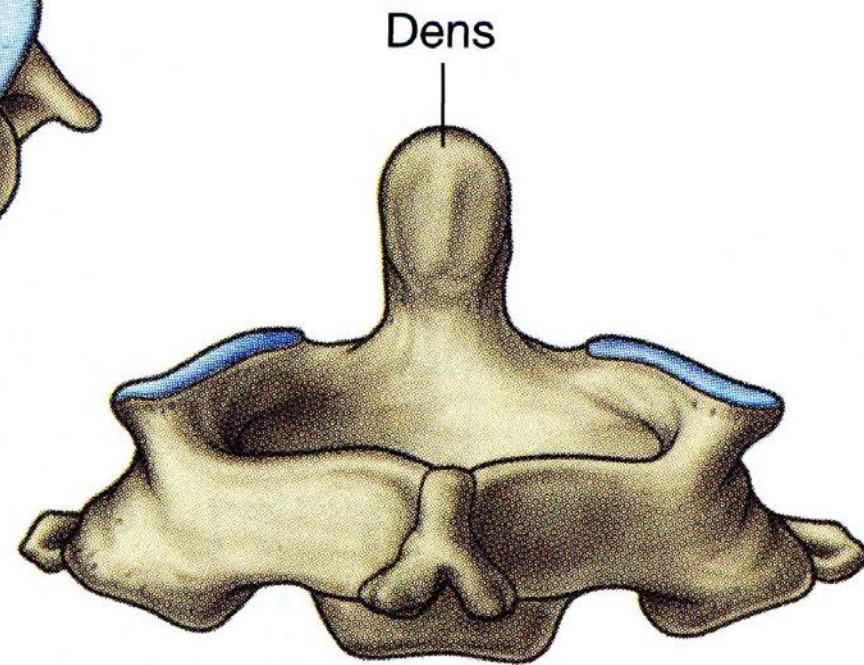
Atlas (C1 vertebra) and Axis (C2 vertebra) and base of skull

Alar ligaments  
Posterior longitudinal ligament

Posterosuperior view



**Axis (CII vertebra)**



Dens



# Thoracic vertebra:

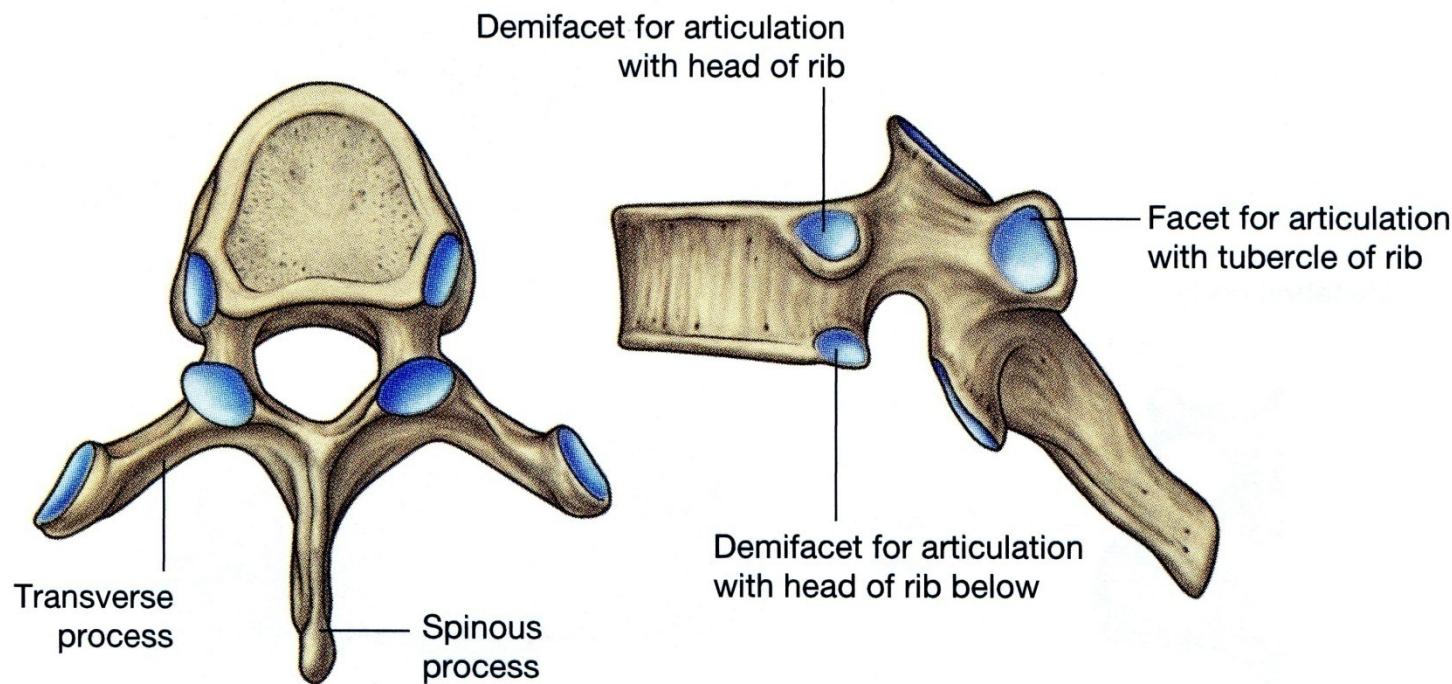
Typic:

Articular surface in body & transverse process

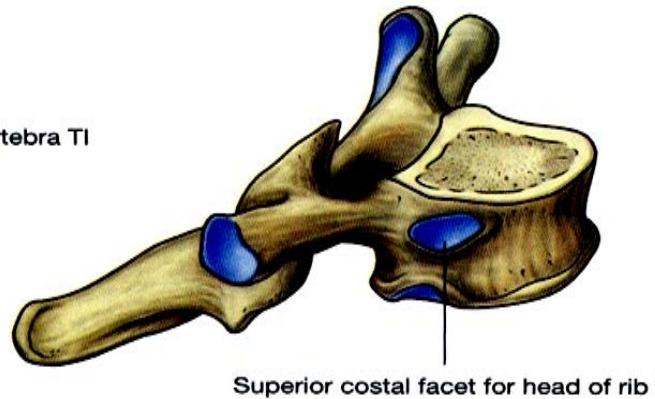
Spinous process: pos. & downward

Atypic:

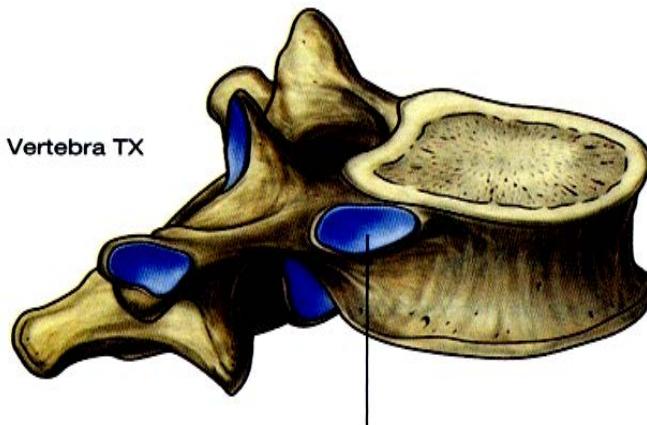
T1, T9, T10, T11, T12



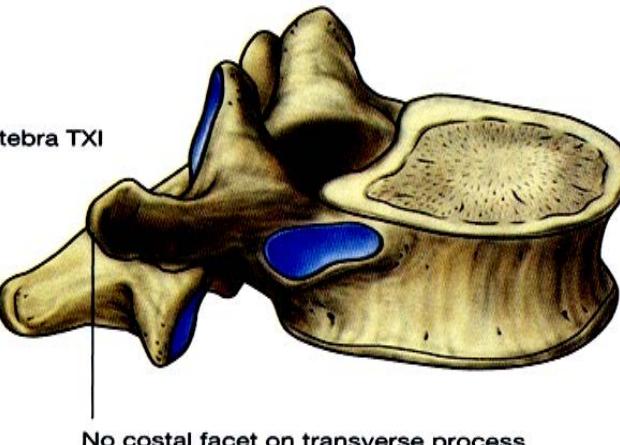
Vertebra TI



Vertebra TX



Vertebra TXI



## Lumbar vertebra:

Typic: L1-L4

Accessory process

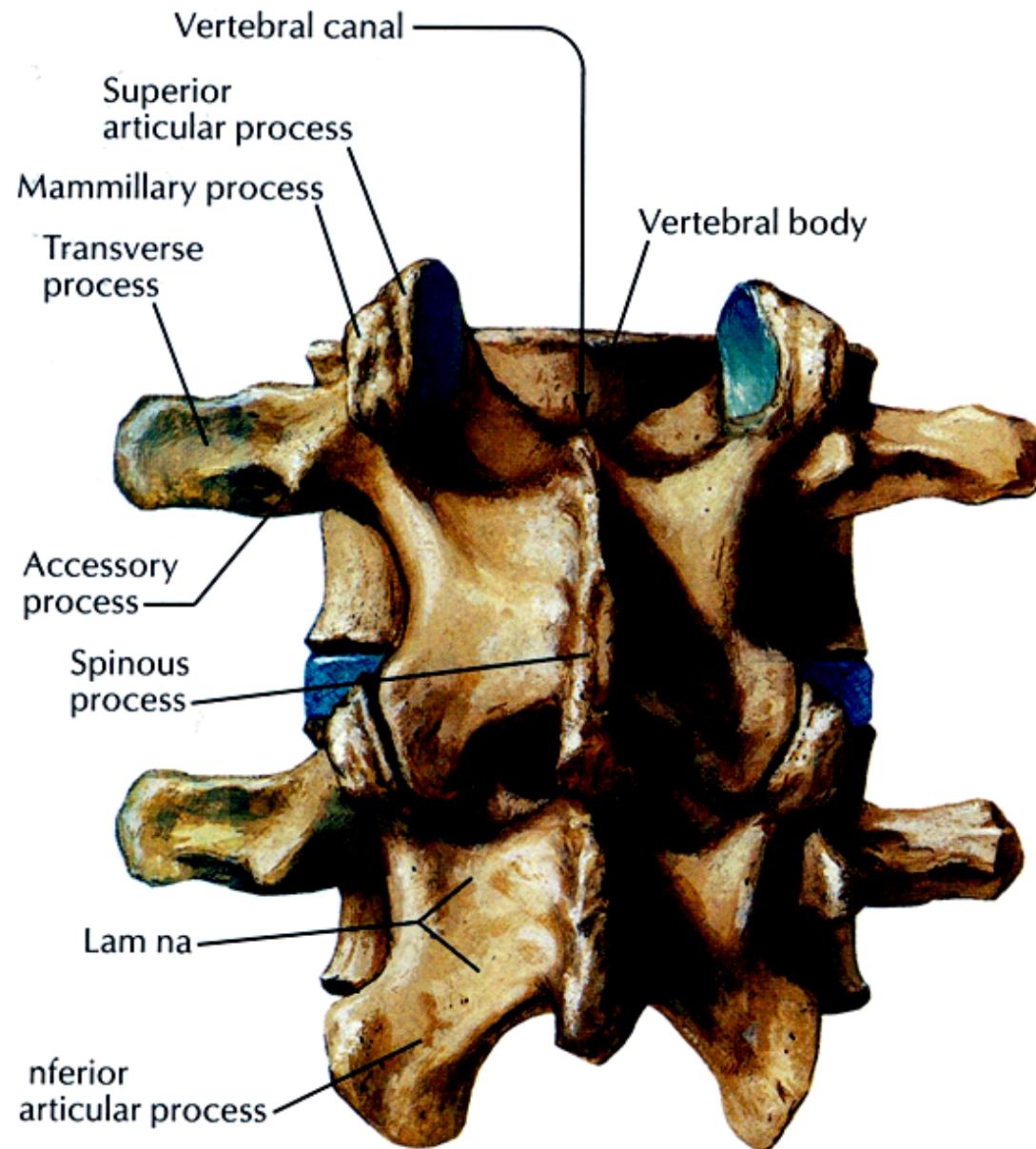
Mammillary process

Short spinous process

Triangular vertebral foramen

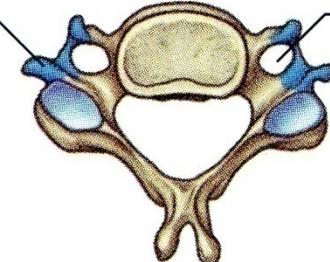
Atypic:

L5



L3 and L4 vertebrae:  
posterior view

Fused element

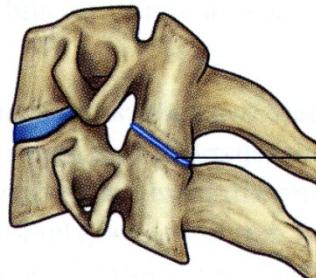


Foramen  
transversarium

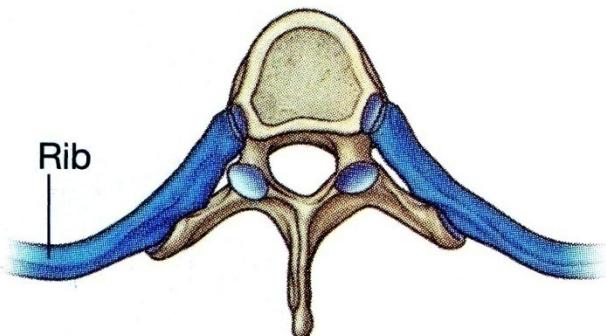
Cervical vertebra

Cervical

'Sloped from anterior  
to posterior'



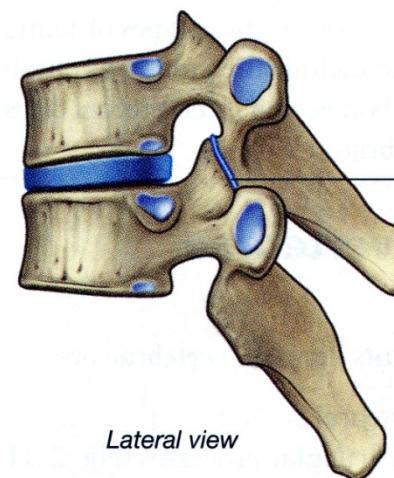
Lateral view



Thoracic vertebra

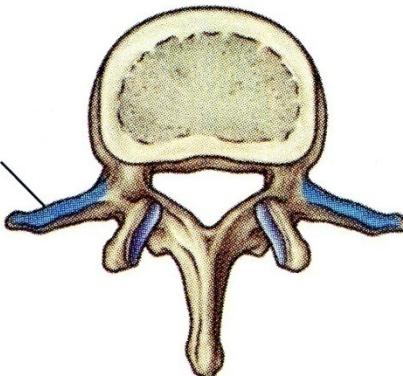
Thoracic

'Vertical'



Lateral view

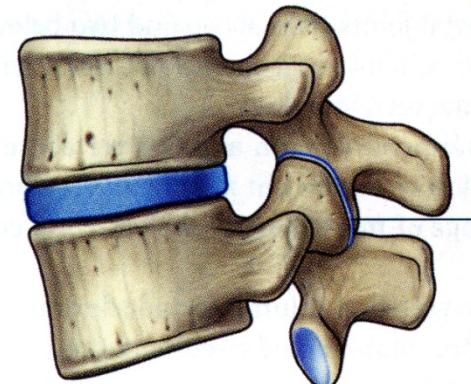
Fused element



Lumbar vertebra

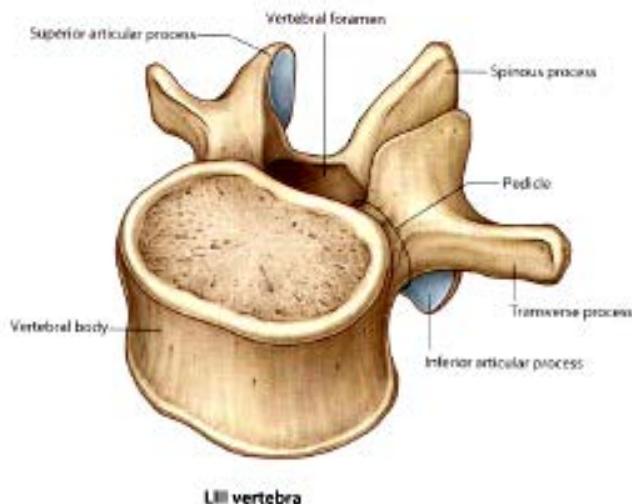
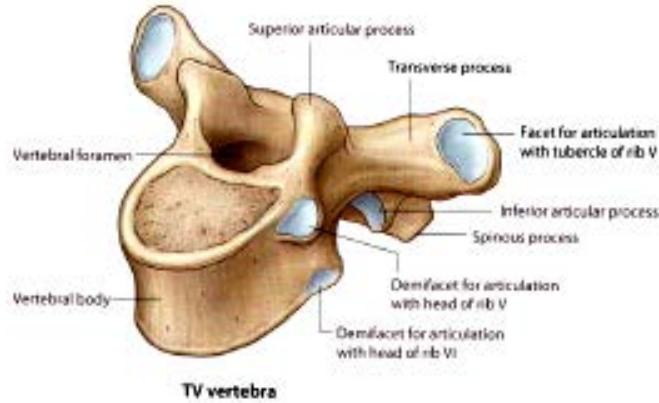
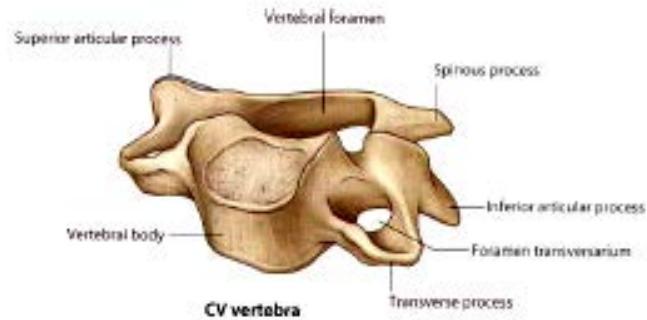
Lumbar

'Wrapped'

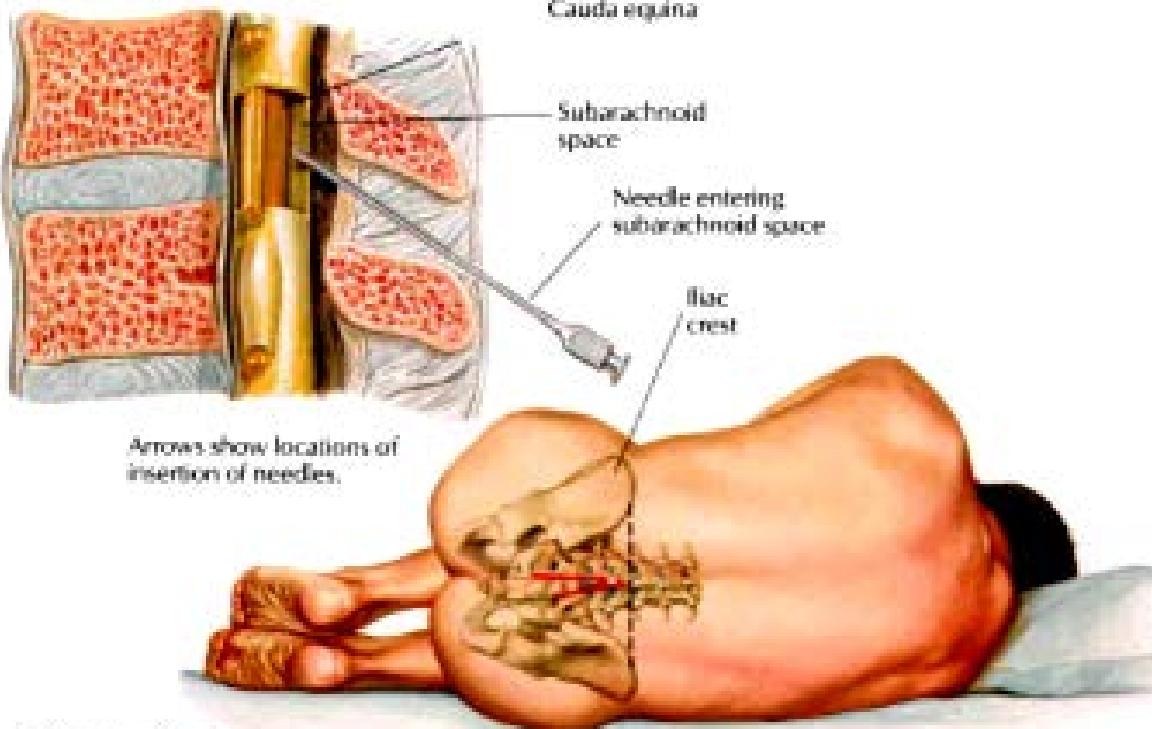


Lateral view

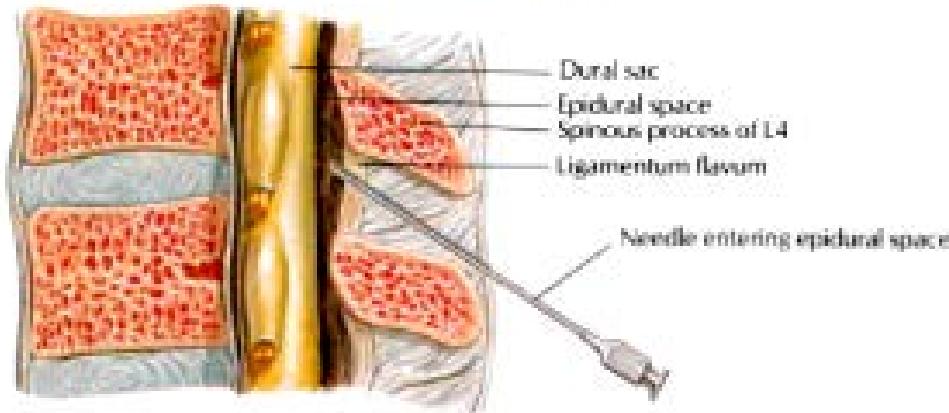
Zygapophysial joint



### Lumbar puncture



### Epidural anesthesia



## Sacrum:

Base

Apex

Surfaces:

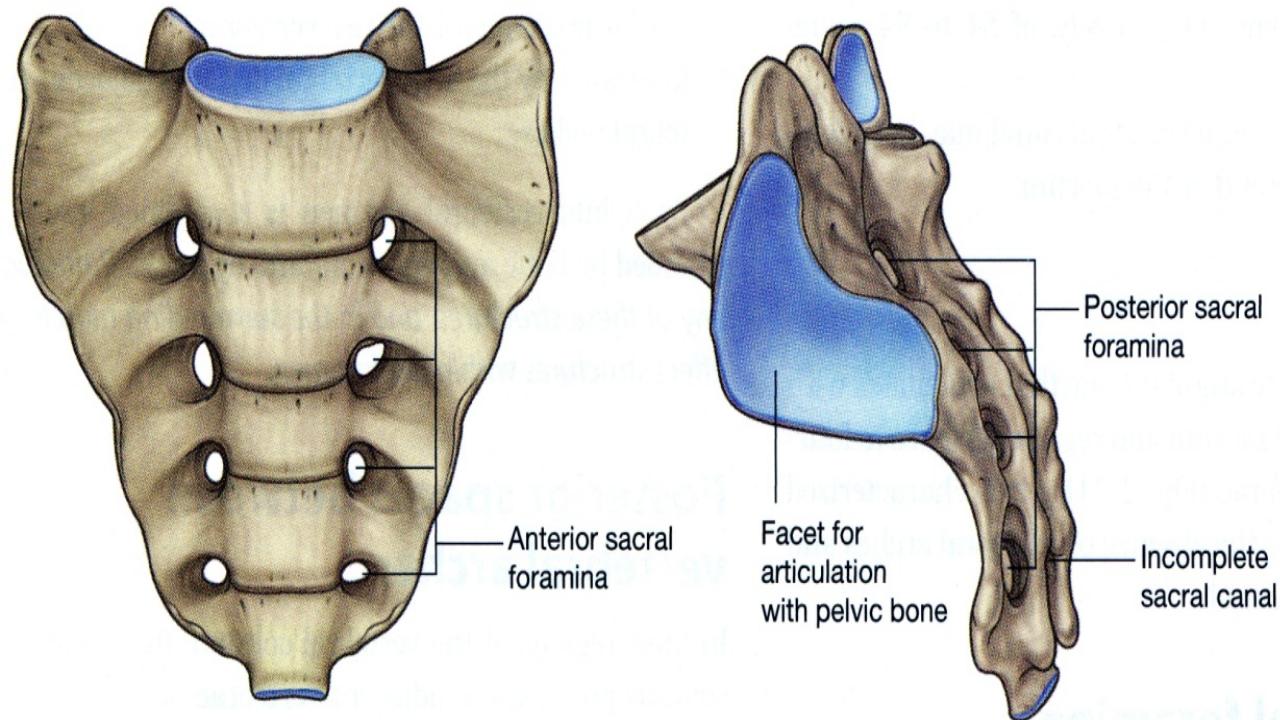
Ant. (pelvic)

Pos.

Lat.

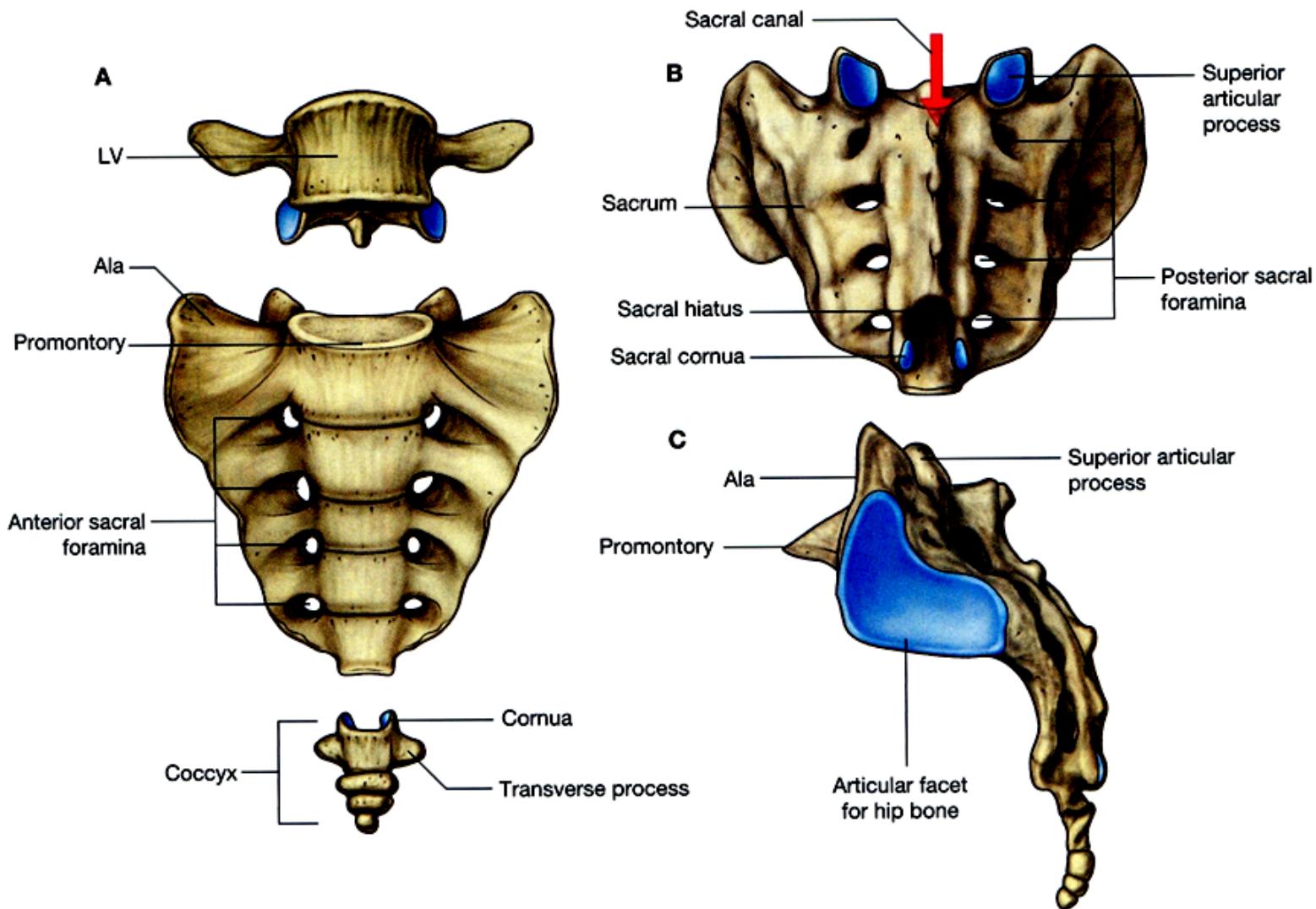
Sacral canal

Clinical note



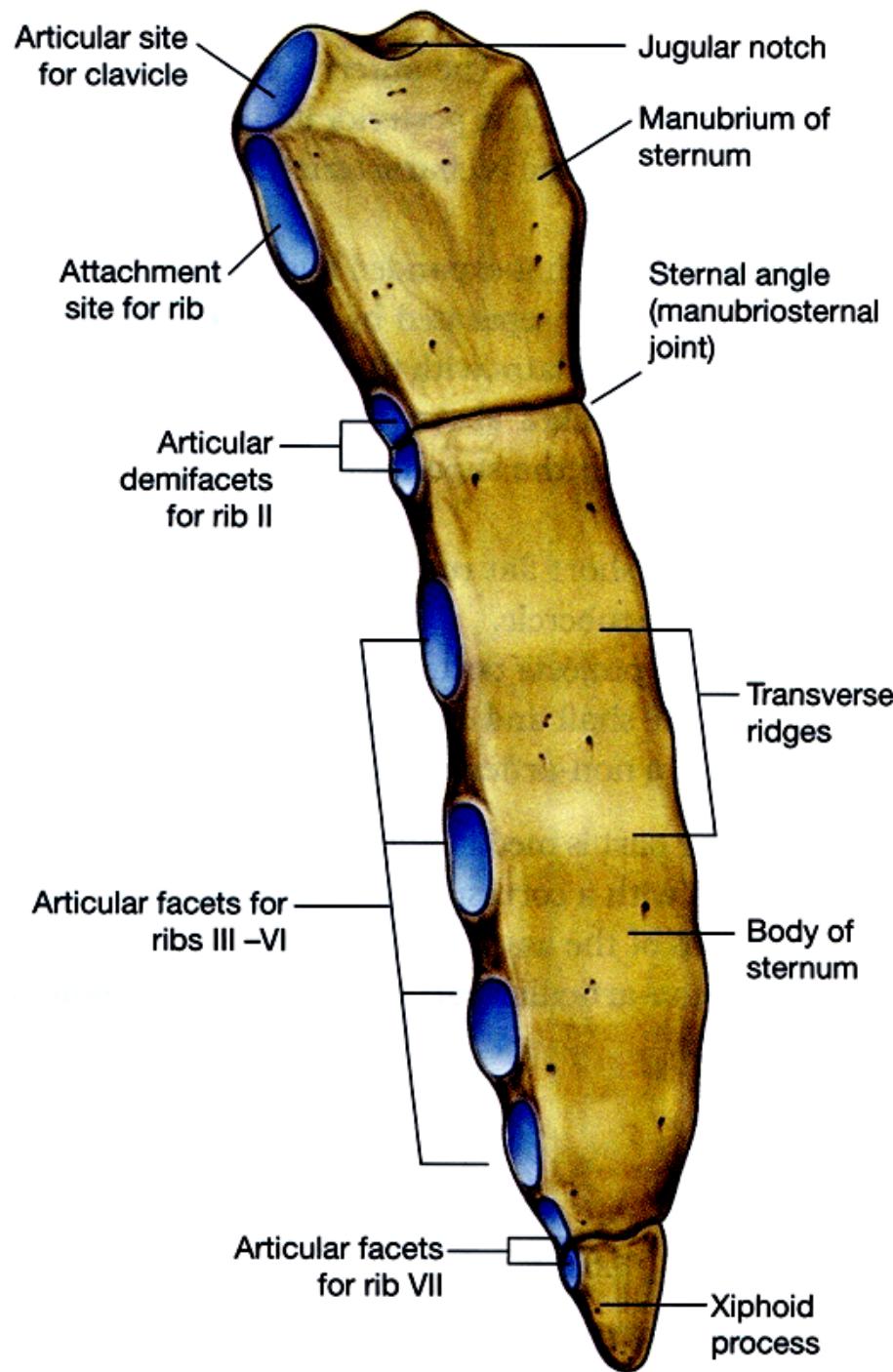
# Coccyx:

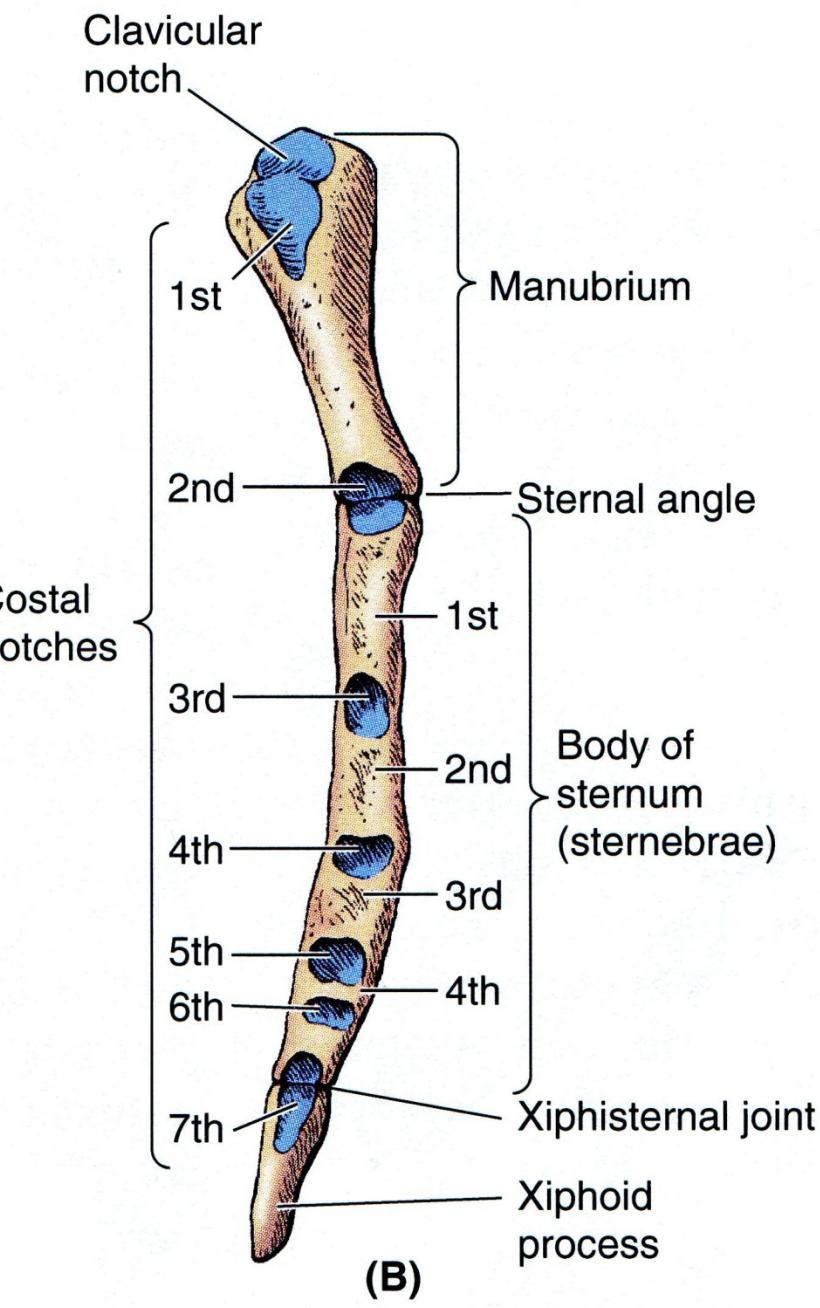
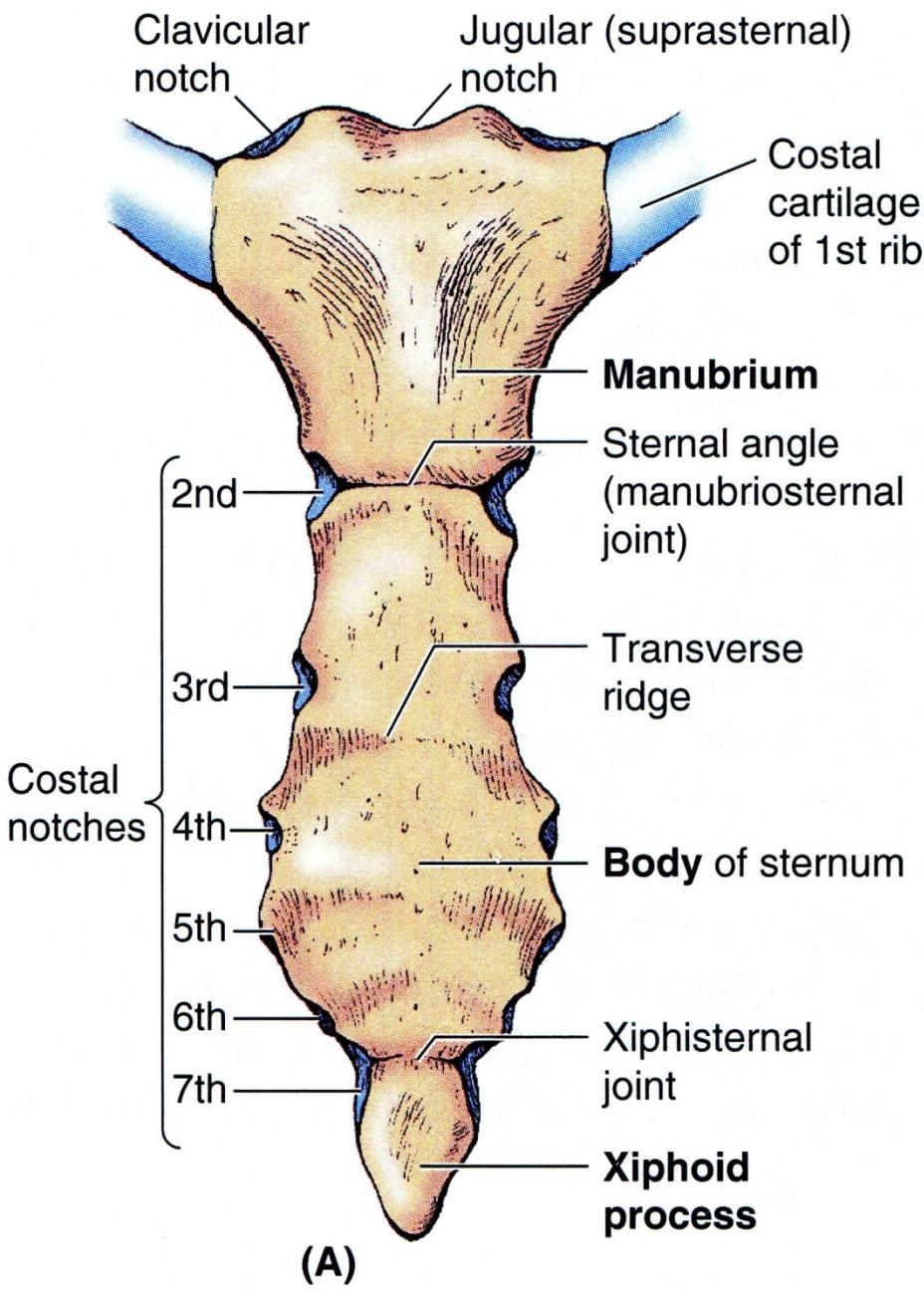
- Base
- Tip
- horn

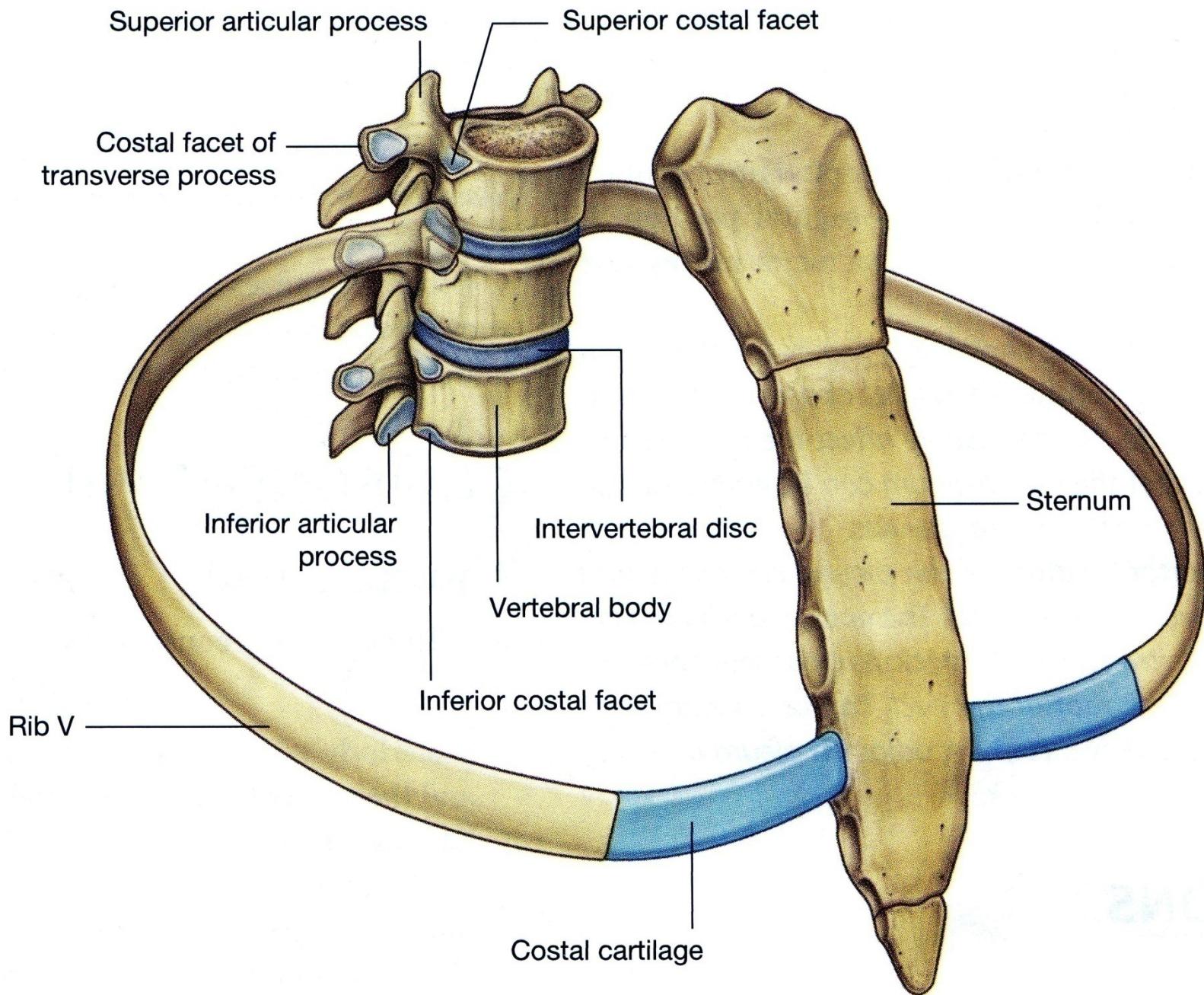


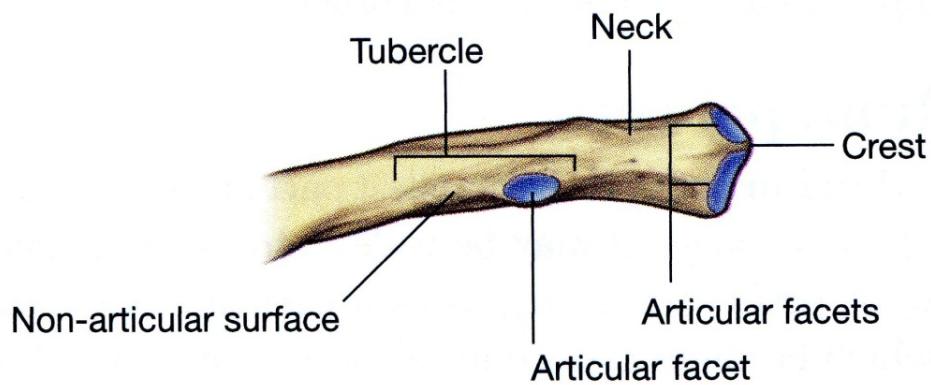
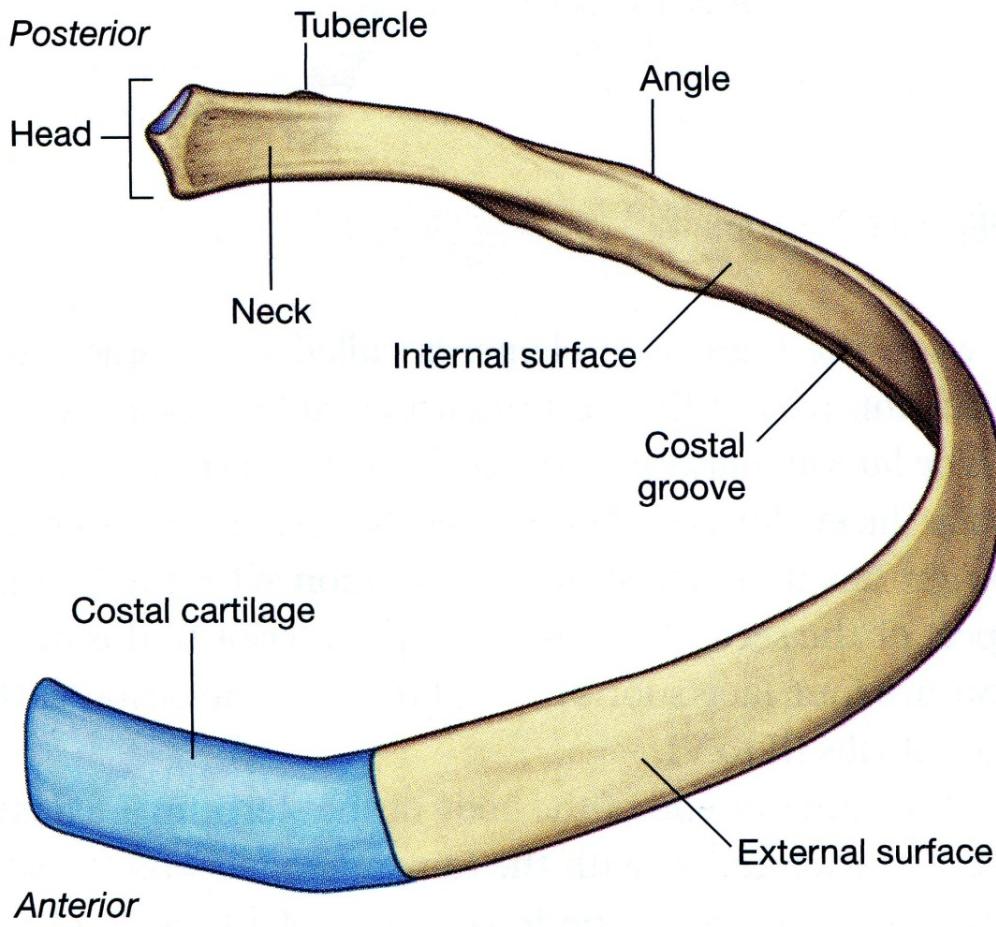
# Sternum:

- ❖ Manubrium
- ❖ Body
- ❖ Xiphoid process









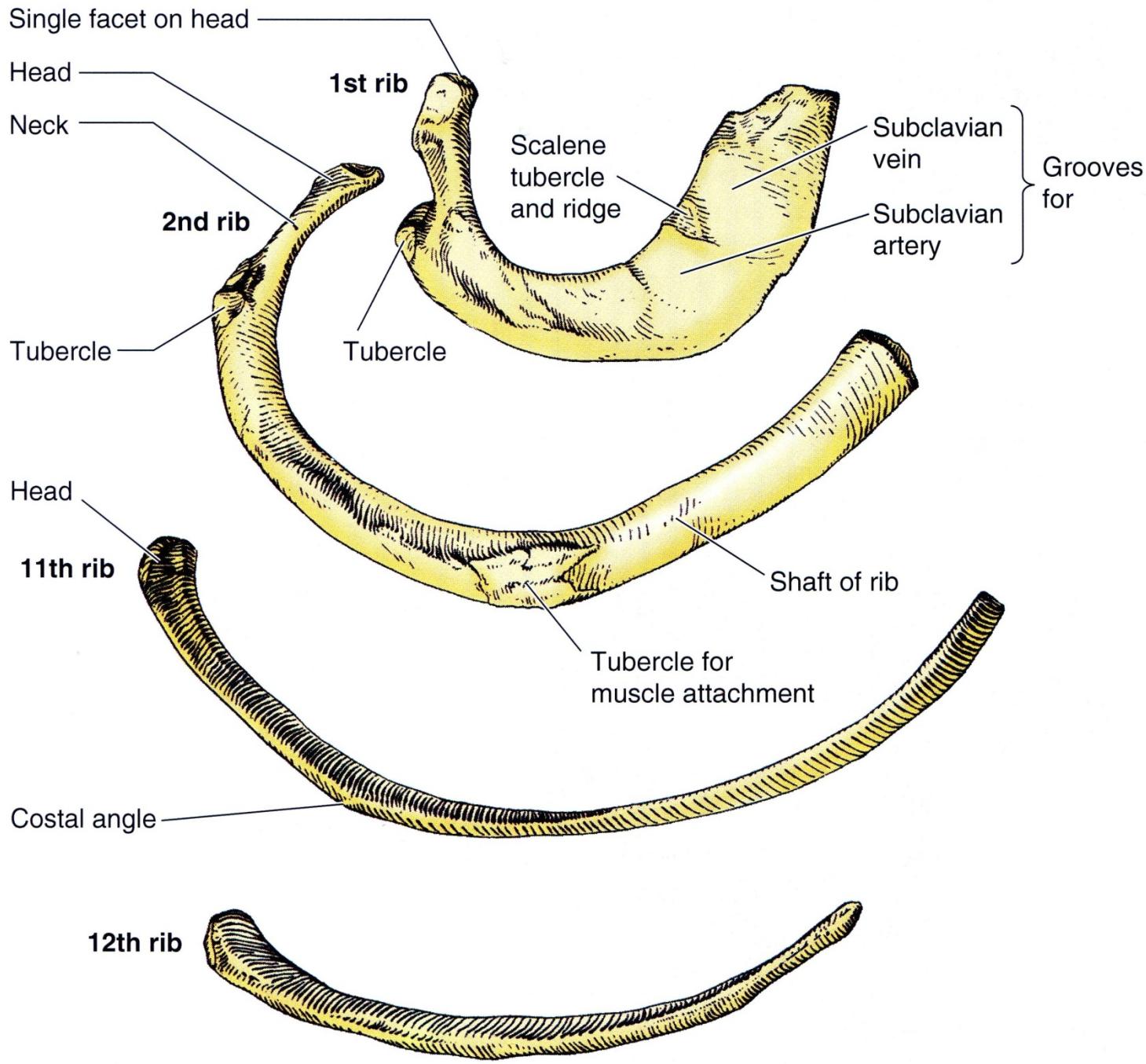
## Ribs:

Typic: R3 – R9

Pos. end: head/  
neck/ tubercle  
Body: med. Lat.  
Surface/ sup. Inf.  
Border/ costal  
groove/ ant. end

Atypic: R1 – R2 –  
R10 – R11 – R12

R1-7: true ribs  
R8-12: false ribs  
➤R8-10: vertebro  
chondrial ribs  
➤R11-12: free ribs



R1

