

Anatomy of Back

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Surgery

outline

- Alignment of spine
- Anatomy of vertebrae column
- Anatomy of bone , muscles.
- Clinical applications

Learning outcome

- To Identify different parts of vertebra.
- To understand the importance of the anatomy of the spine.
- To understand the difference between different parts of the spine .
- To apply the basic knowledge to clinical practice

reference

Clinical anatomy for medical students

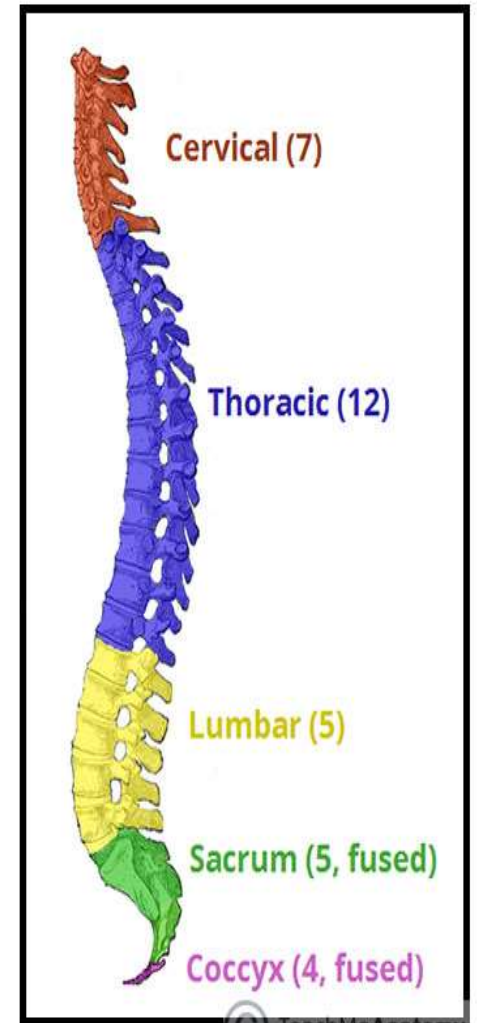
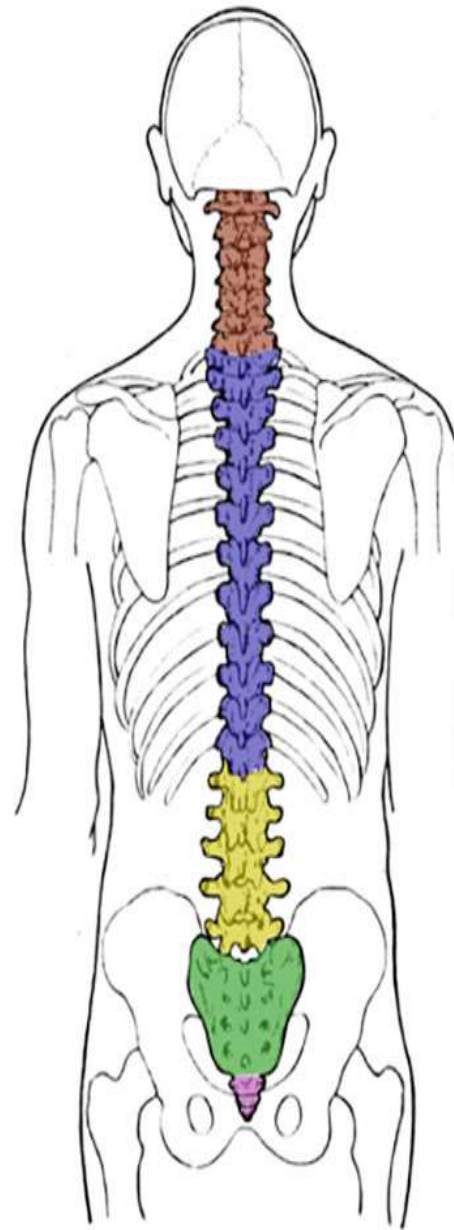
R.S. SNell

7 Cervical

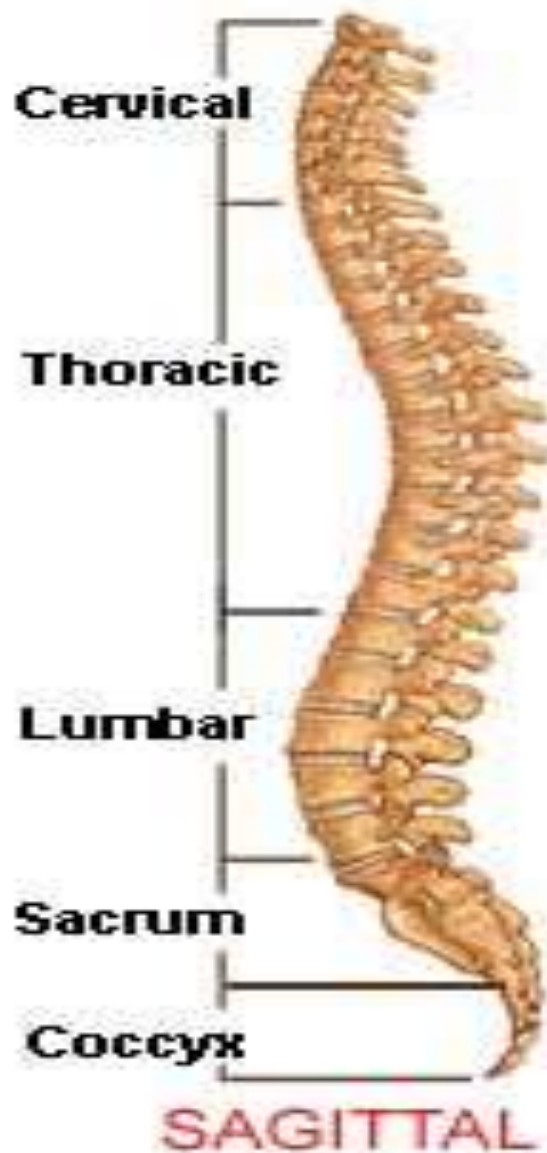
12 Thoracic

5 Lumbar

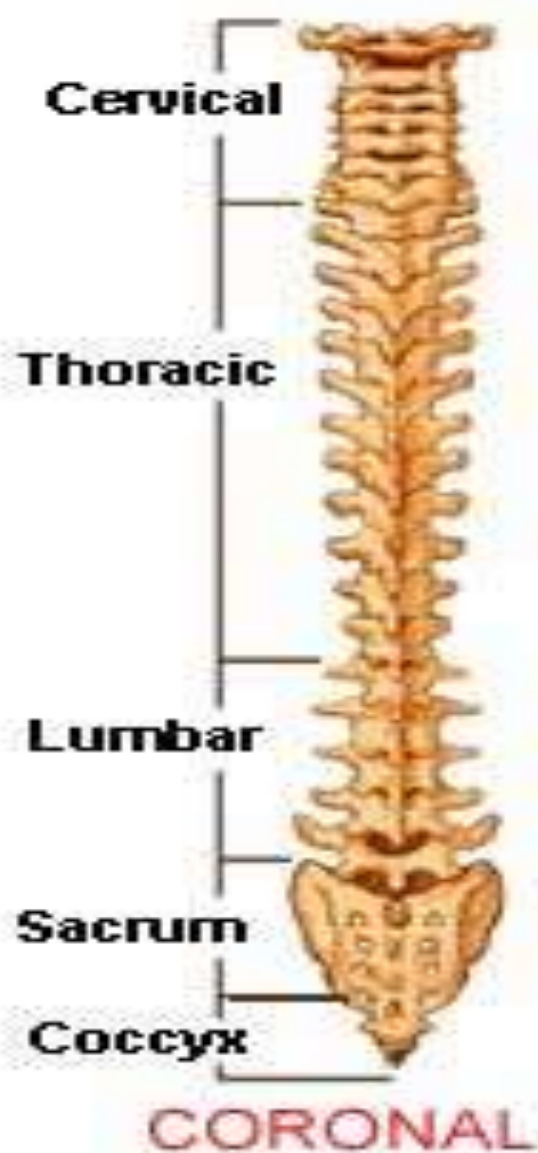
5 Sacrum



Lateral (Side) Spinal Column



Posterior (Back) Spinal Column





Intervertebral
Disc

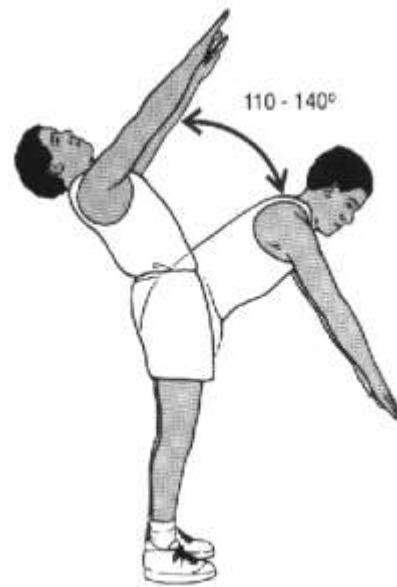
Spinal Cord

Vertebra

Nerve Root



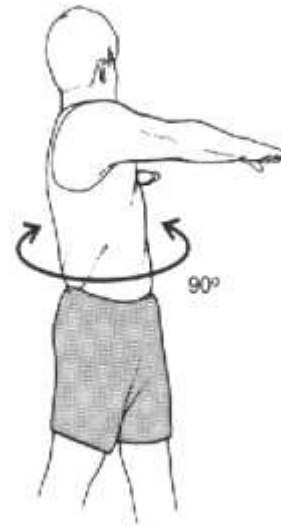
- collectively -- LARGE ROM
- flex/ ext
- L-R rotation
- L-R lateral flexion



Flexion and Extension



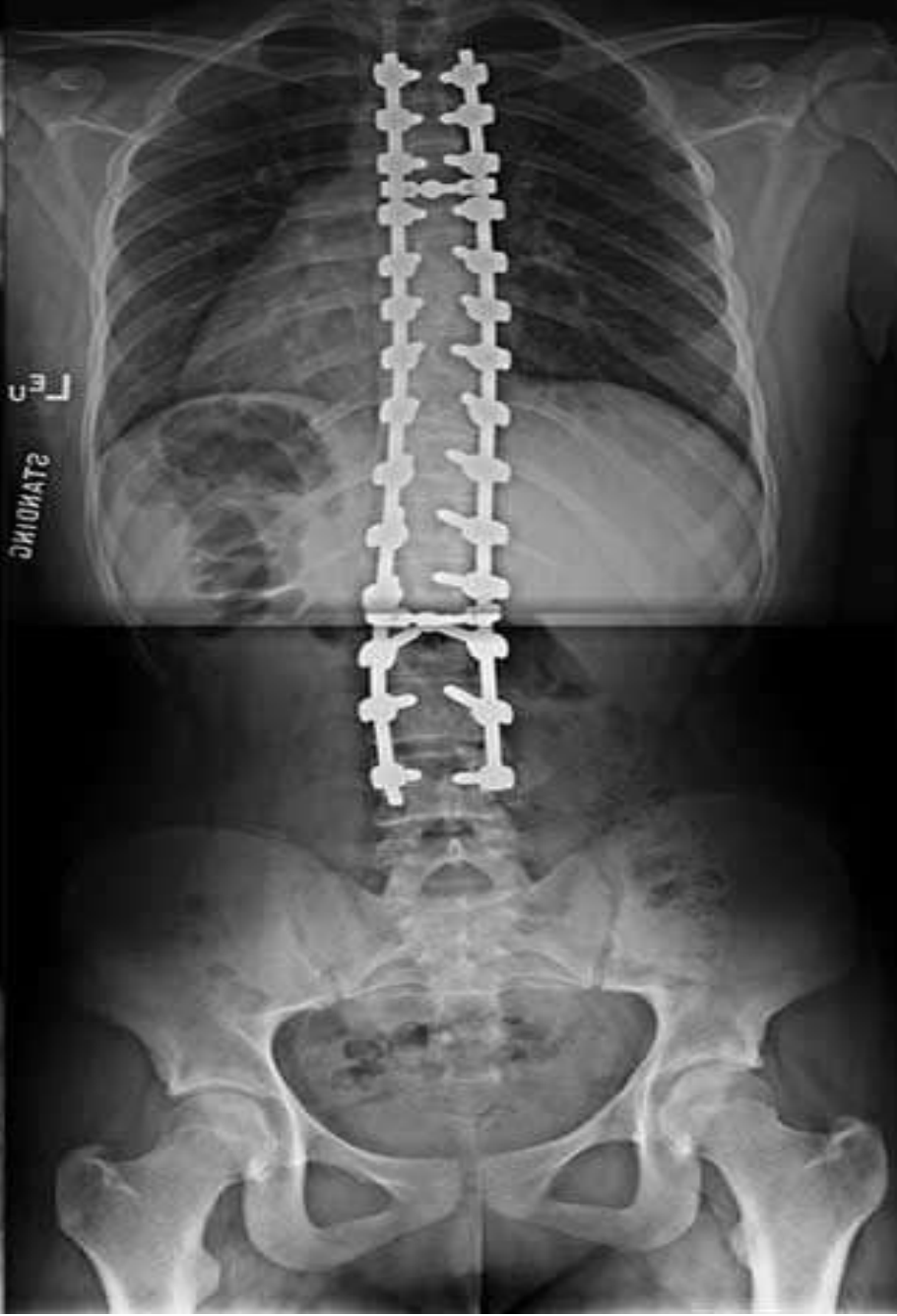
Lateral Flexion



Rotation



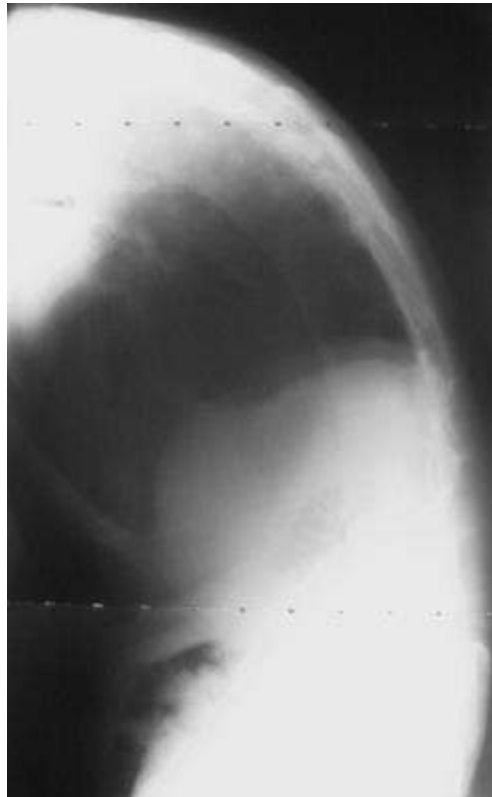




Ankylosing spondylitis

Clinical features

- Kyphotic posture







Types of vertebrae

- 1- typical

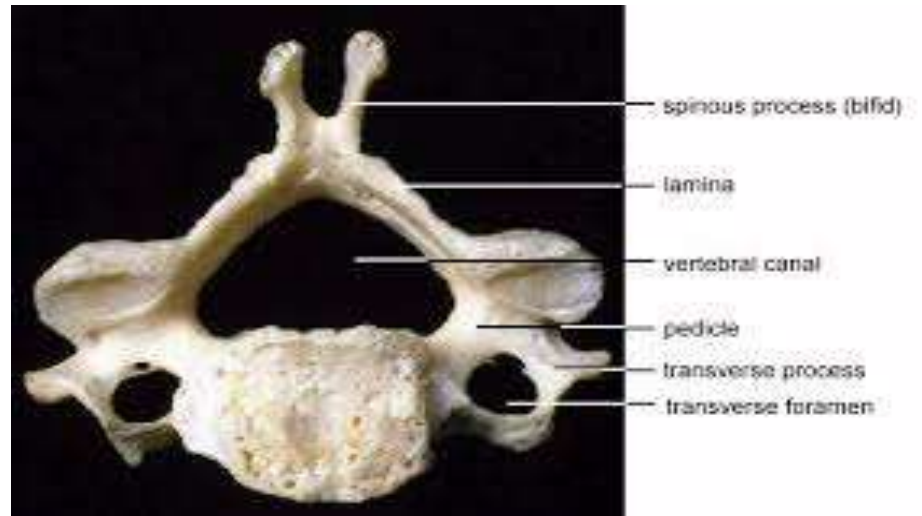
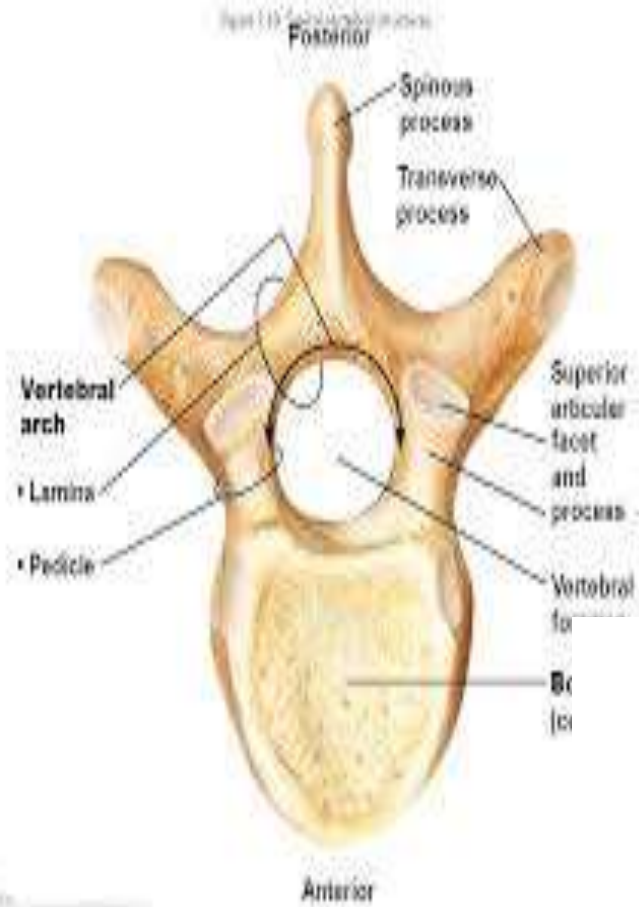
 - a-body

 - b-arch

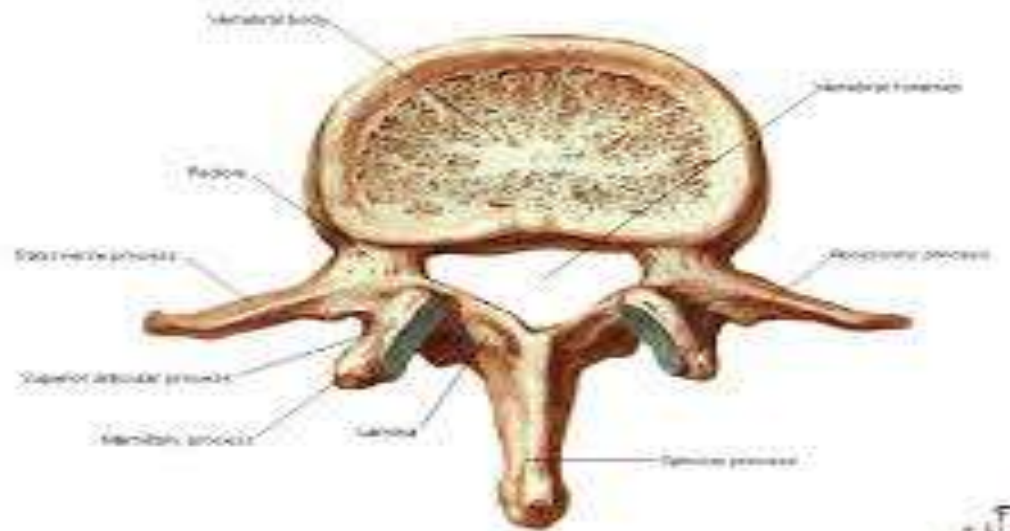
- 2- atypical

 - additional structures

 - fused



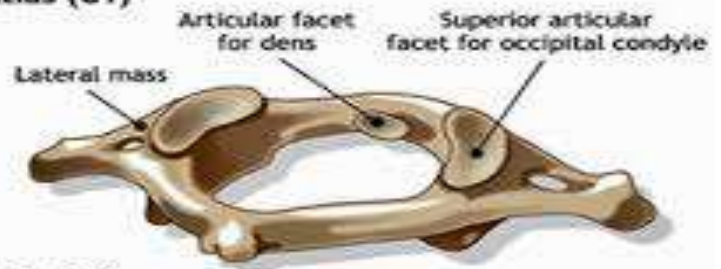
Lumbar Vertebrae [L2]
Superior View



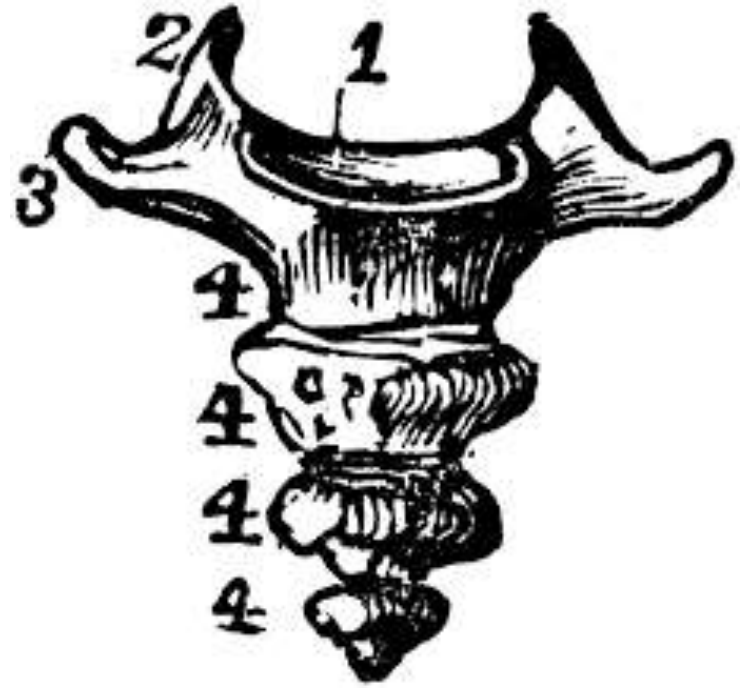
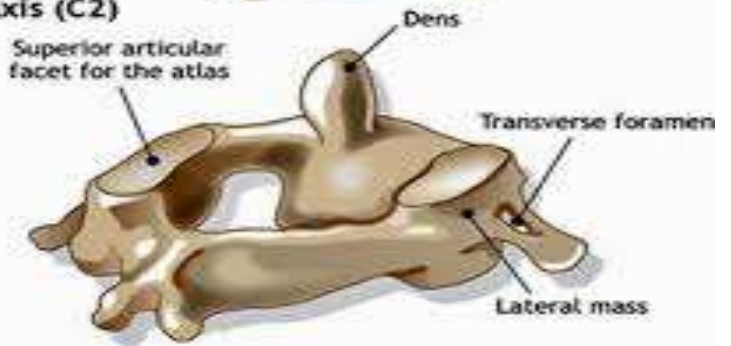
Dr. Ross Parviz MD, PhD, FRCGS, FRCR

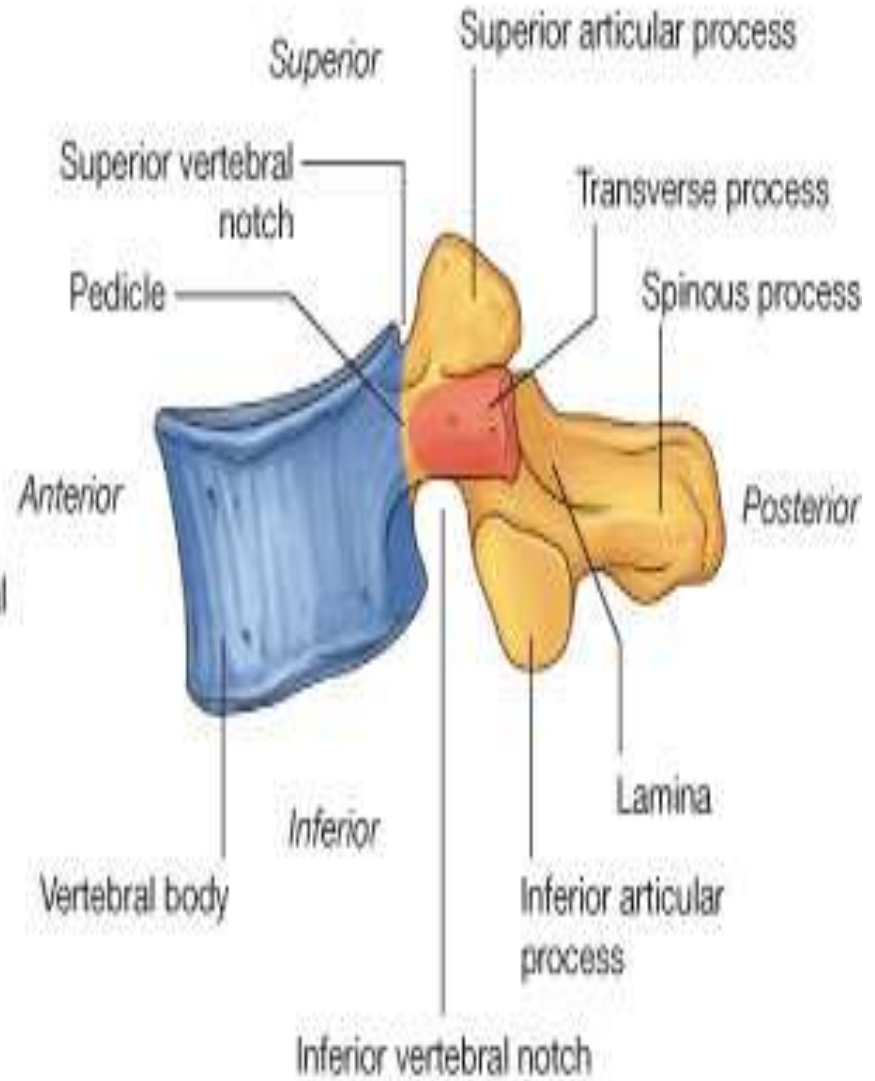
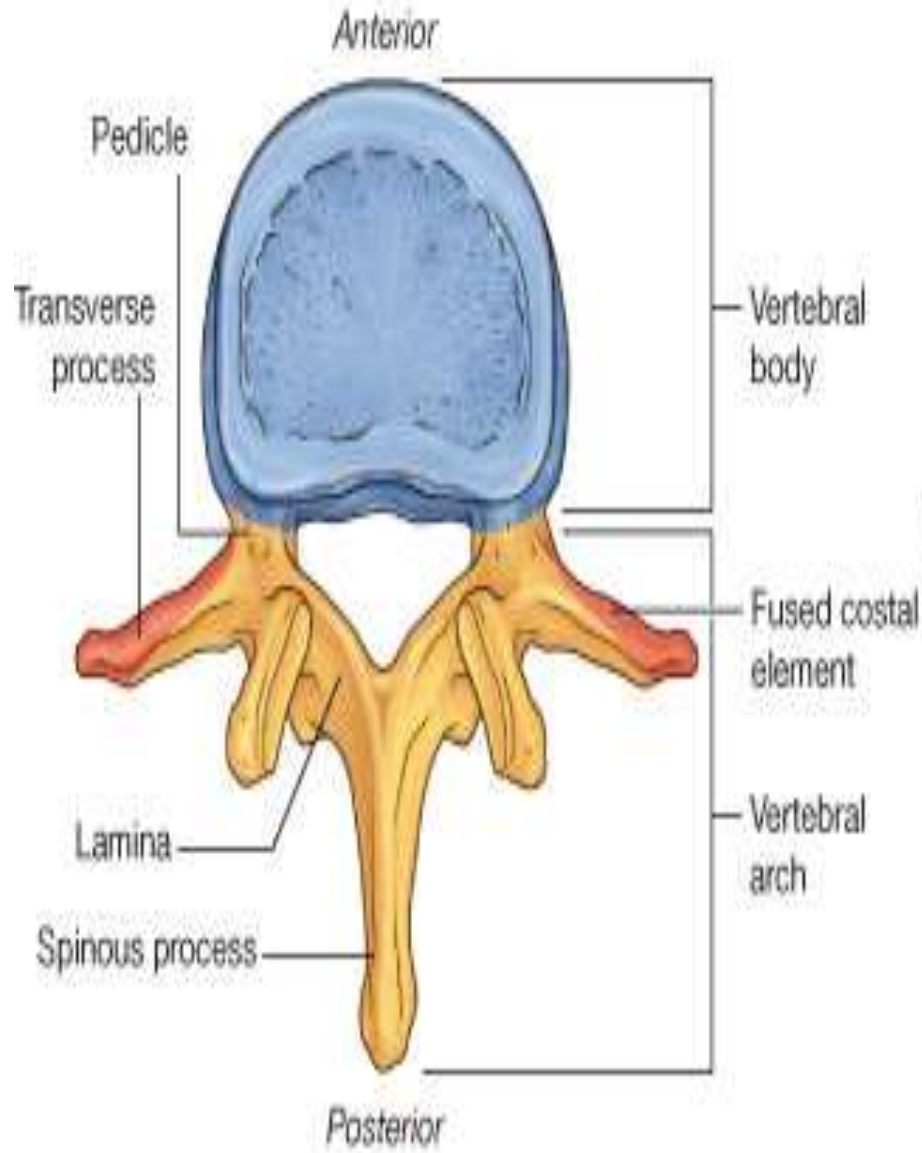


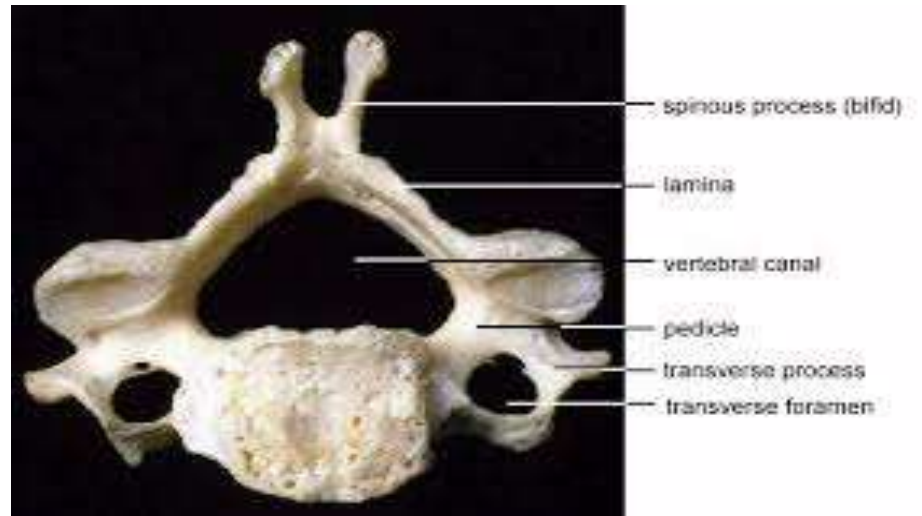
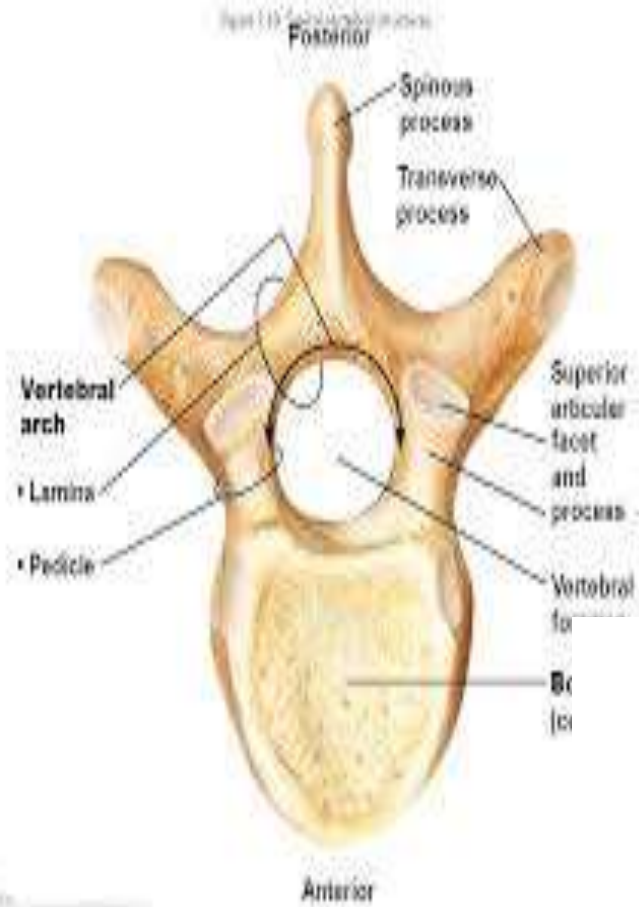
Atlas (C1)



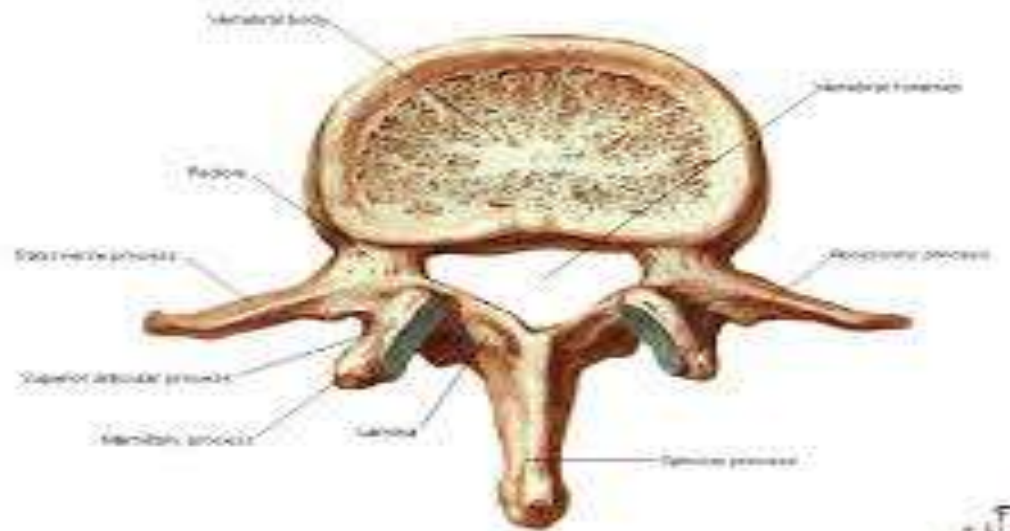
Axis (C2)

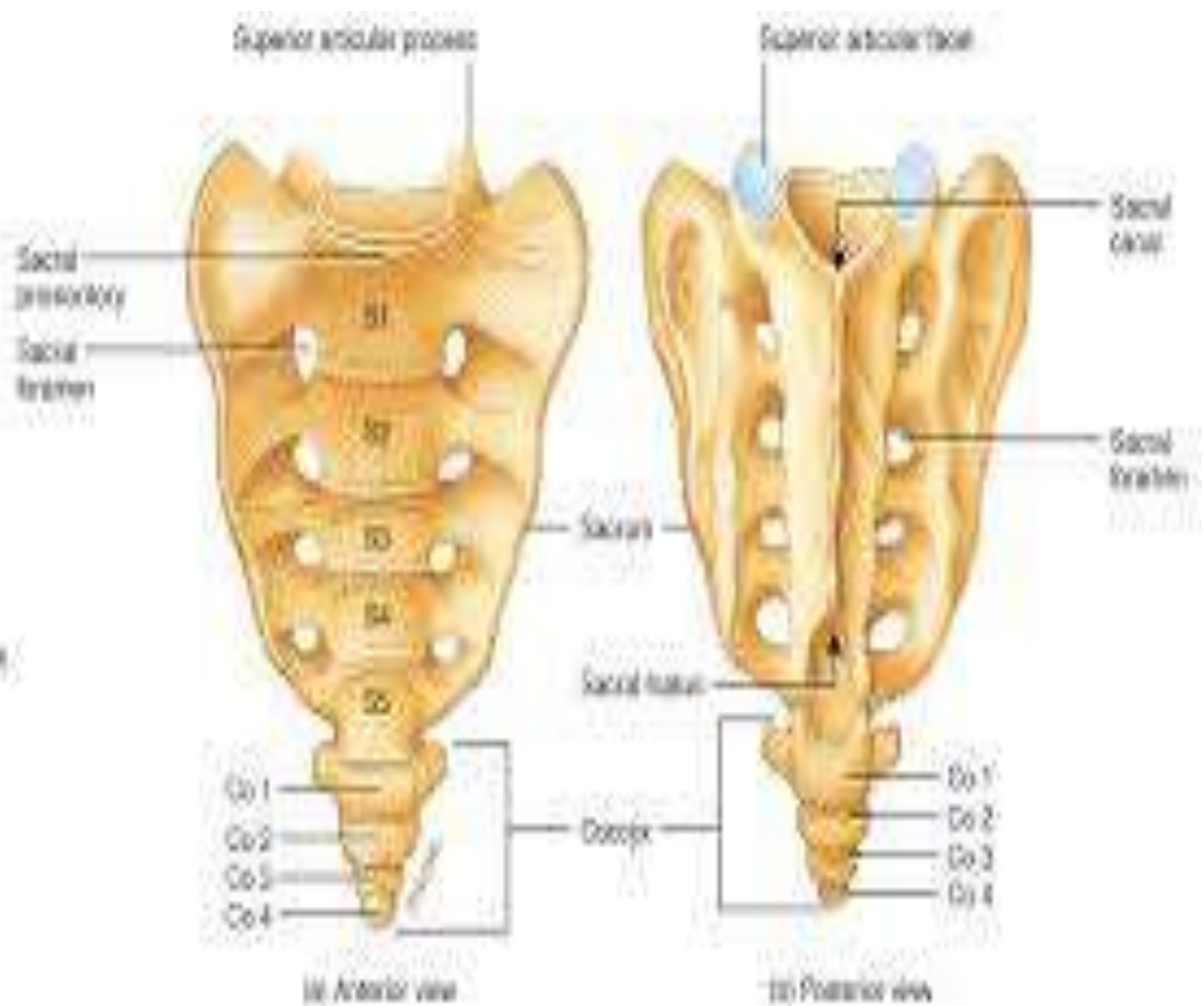
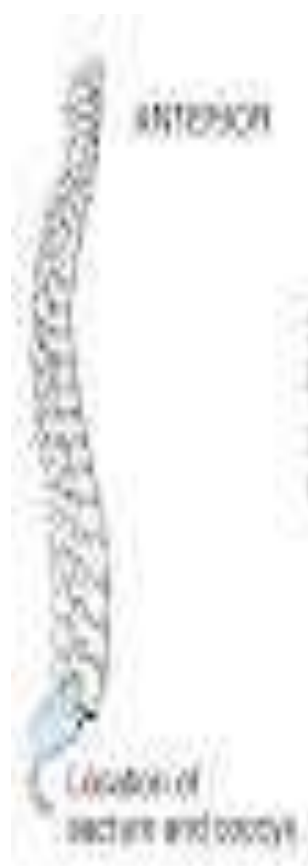






Lumbar Vertebrae [L2]
Superior View



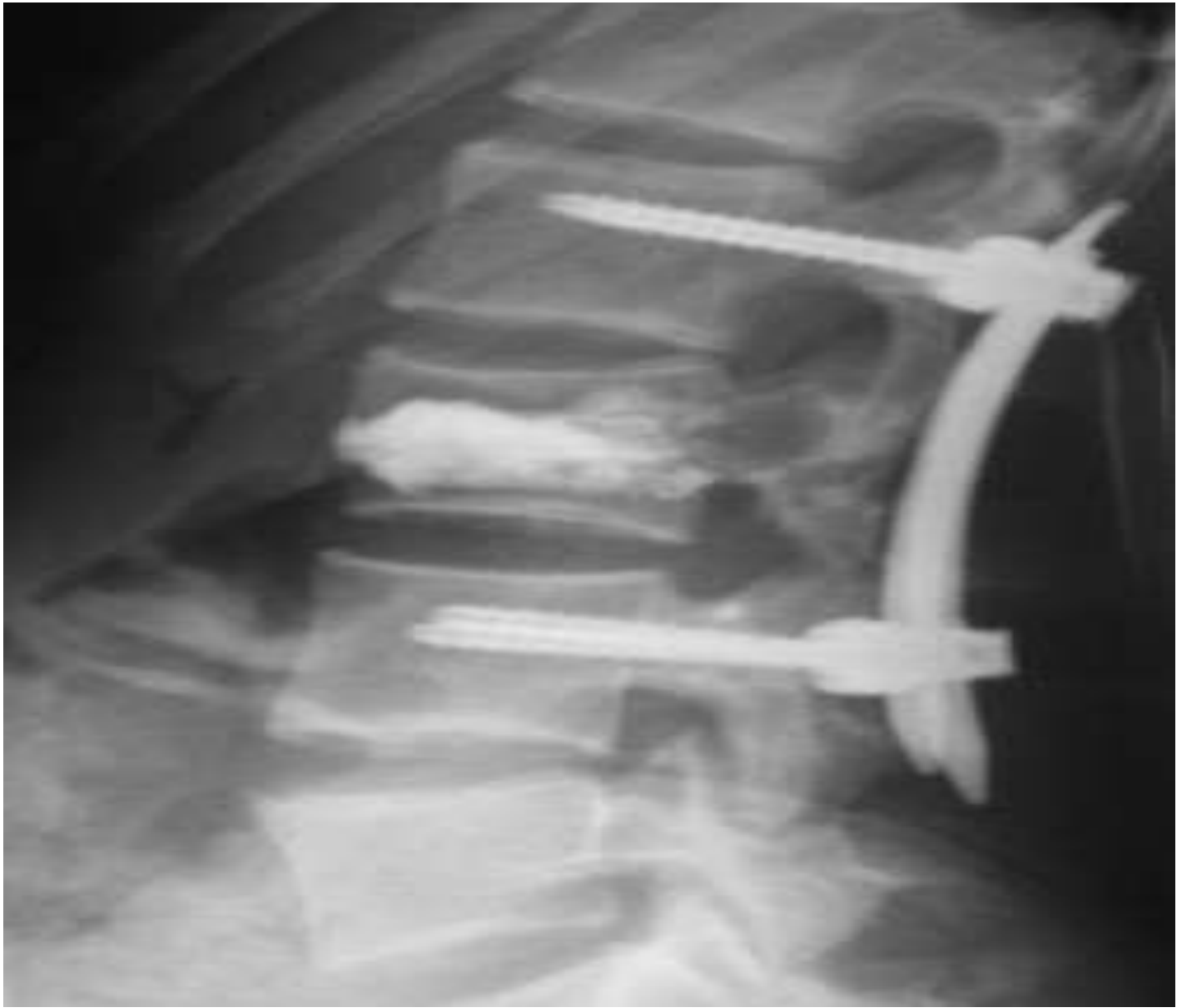




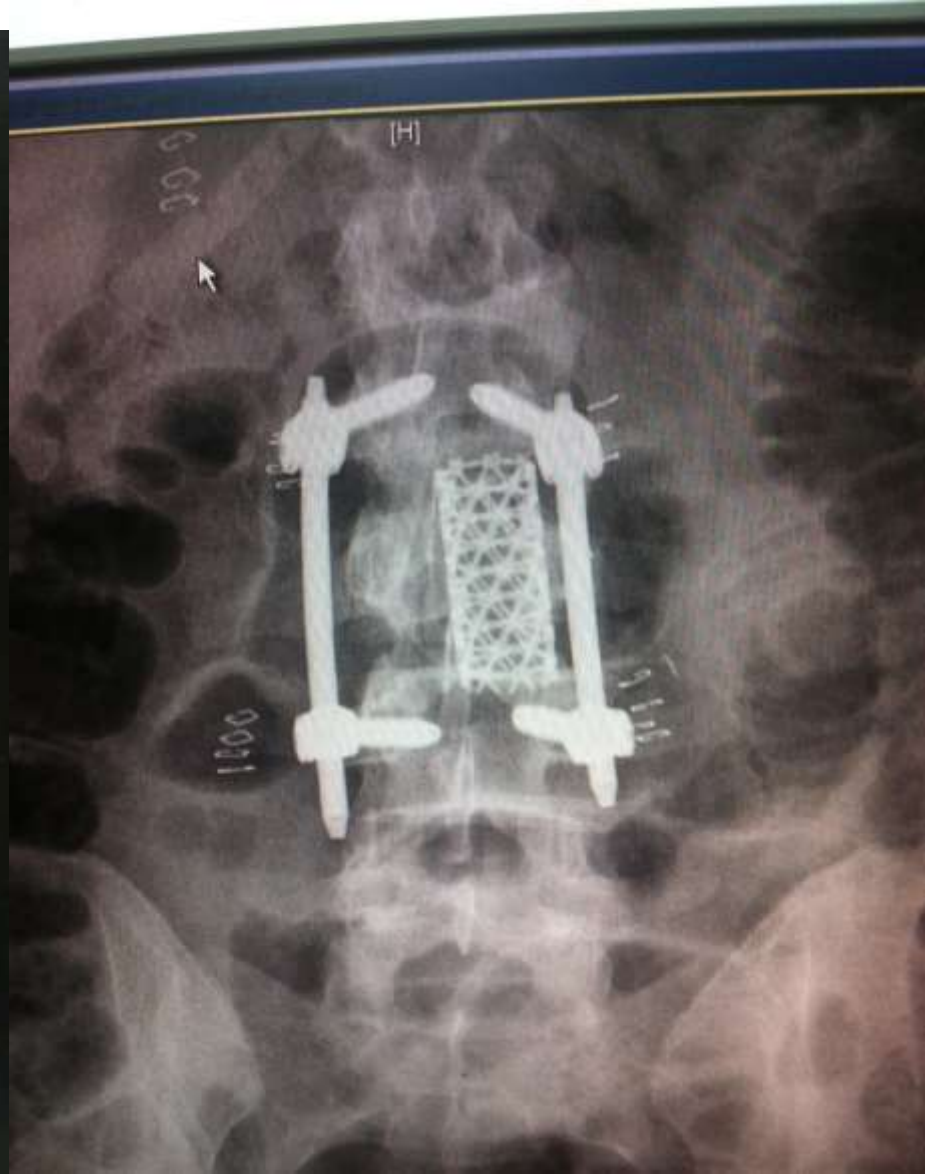






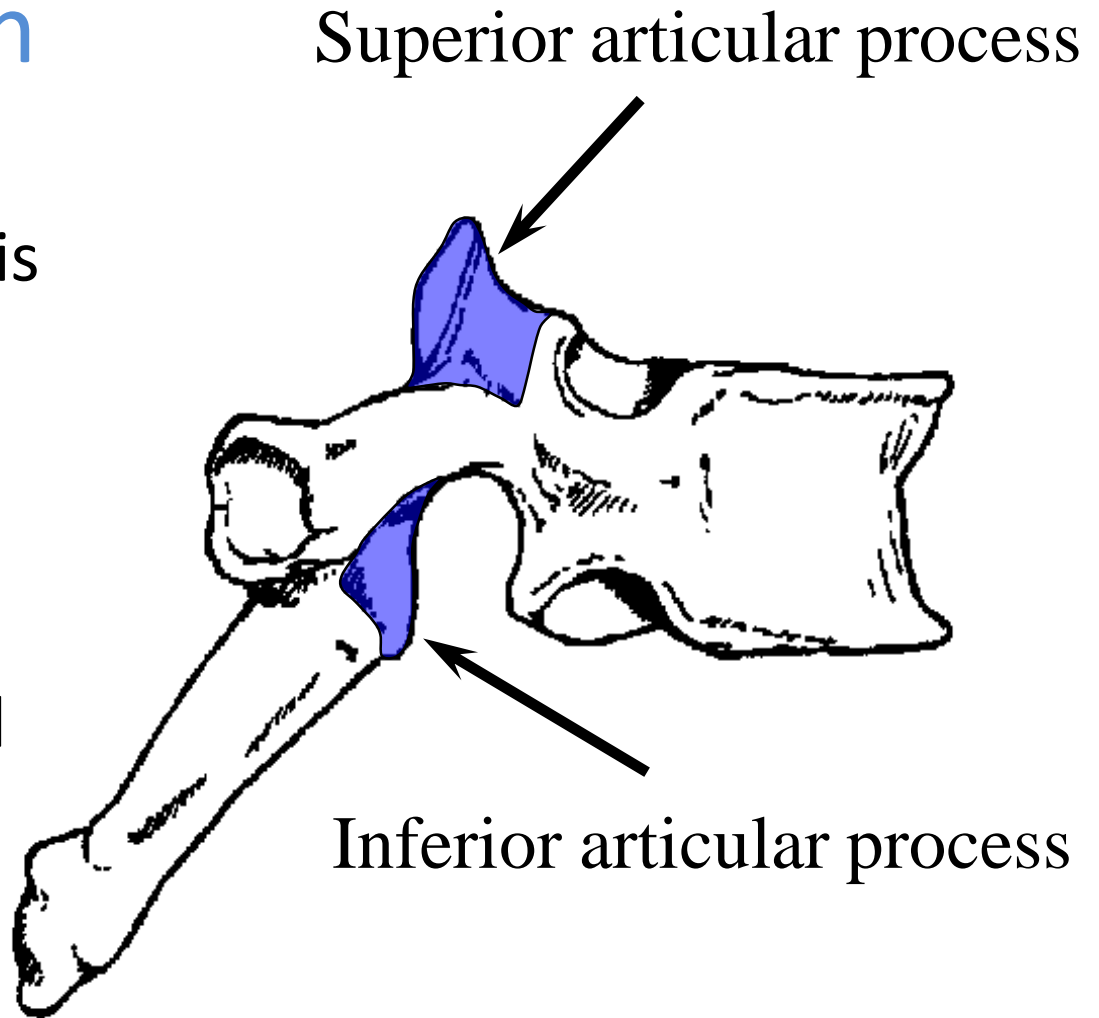




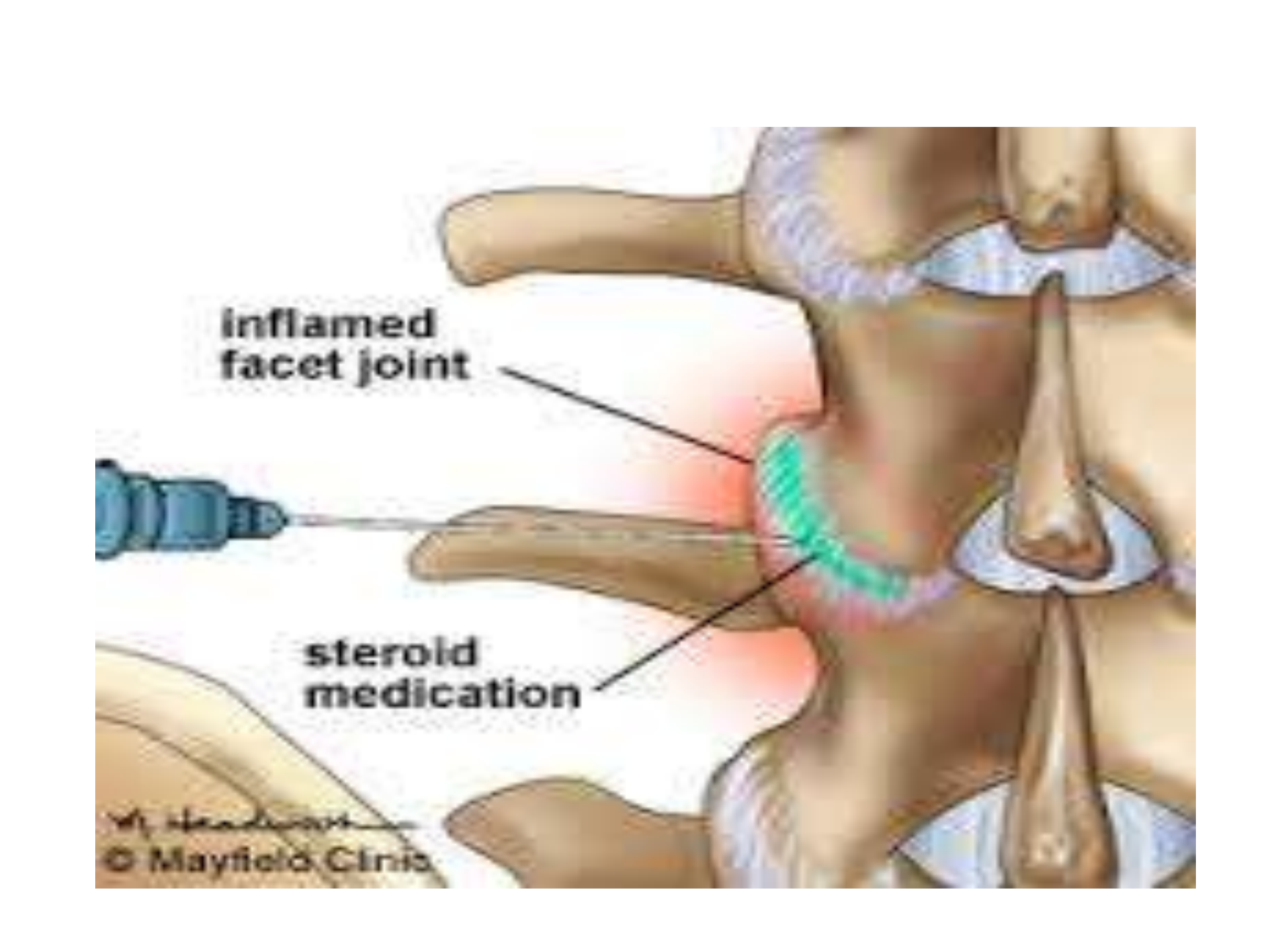


Vertebral Articulation

- each articulation is a fully encapsulated synovial joint
- these are often called apophyseal joints



Note: the processes are bony outcroppings.

An anatomical illustration of a single vertebra and its associated structures. The vertebra is shown in a sagittal view, with the vertebral body on the left and the spinous process on the right. The intervertebral discs are shown between the vertebral bodies. The facet joints are shown between the vertebral bodies. A blue syringe is shown on the left, with a needle inserted into the space between the two vertebral bodies, specifically targeting the facet joint. The facet joint is highlighted with a green, textured area. A red, glowing area surrounds the facet joint, indicating inflammation. Two labels with leader lines point to the facet joint: "inflamed facet joint" and "steroid medication".

**inflamed
facet joint**

**steroid
medication**





Muscles of back

1- superficial muscles

- * **ass with shoulder girdle**

- * Trapezius, latissimus dorsi, levator scapulae

2- intermediate muscles

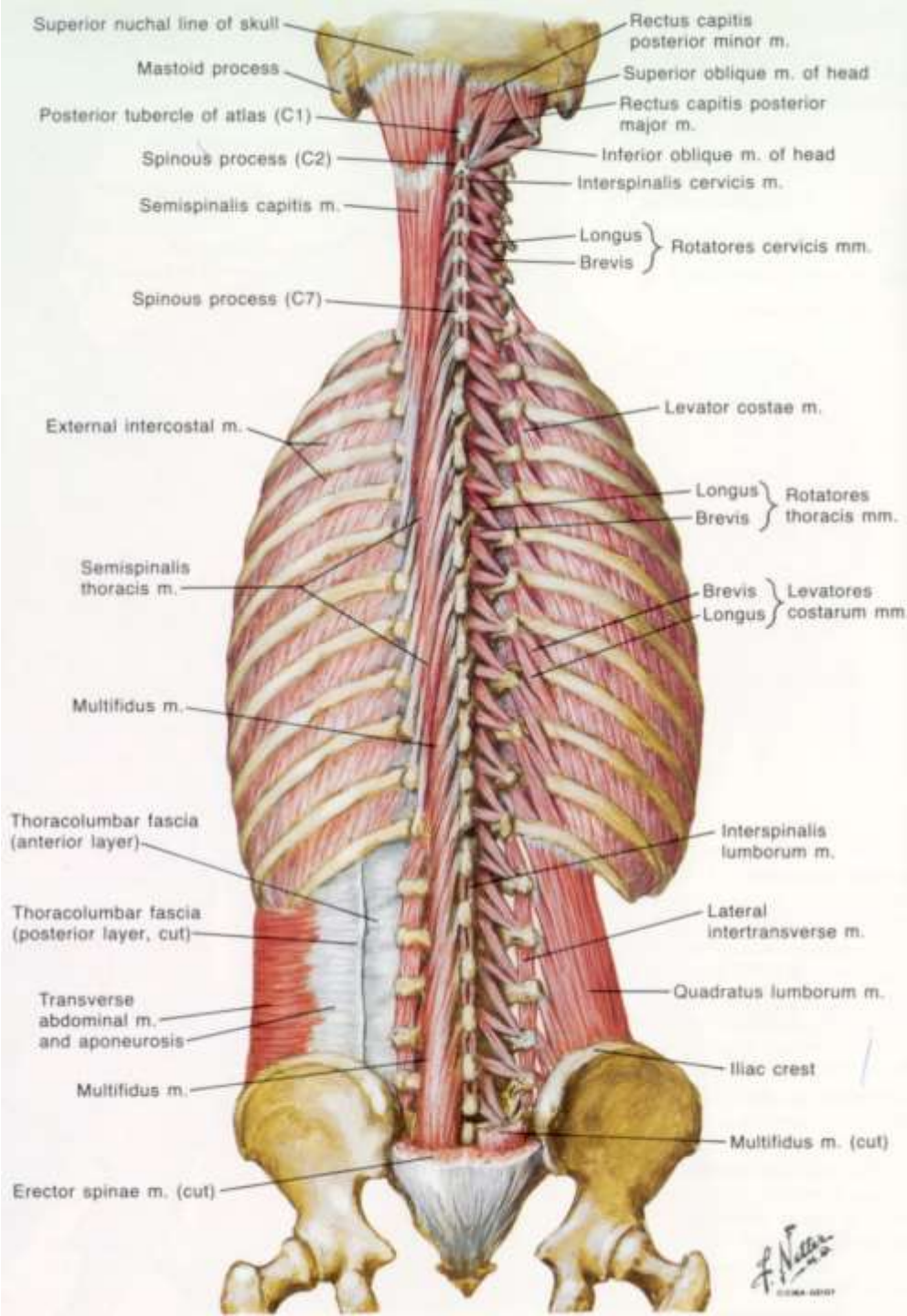
- * **ass with respiration**

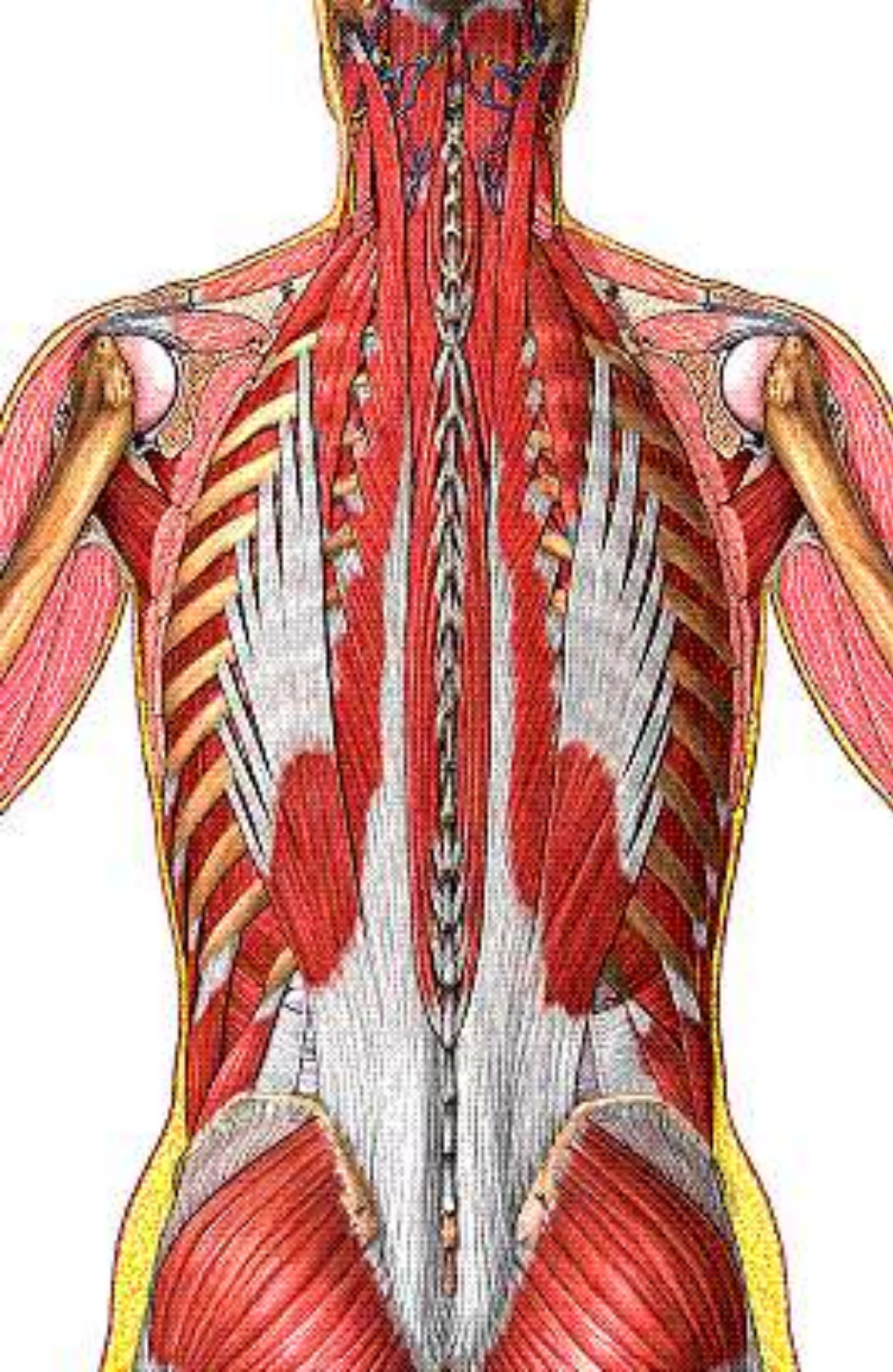
- * serratus post sup , serratus post inf

3- Deep muscles- Posterior Muscular Support

primarily produce extension and
medial/lateral flexion

- Superficial to deep
 - erector spinae
 - semispinalis
 - deep posterior

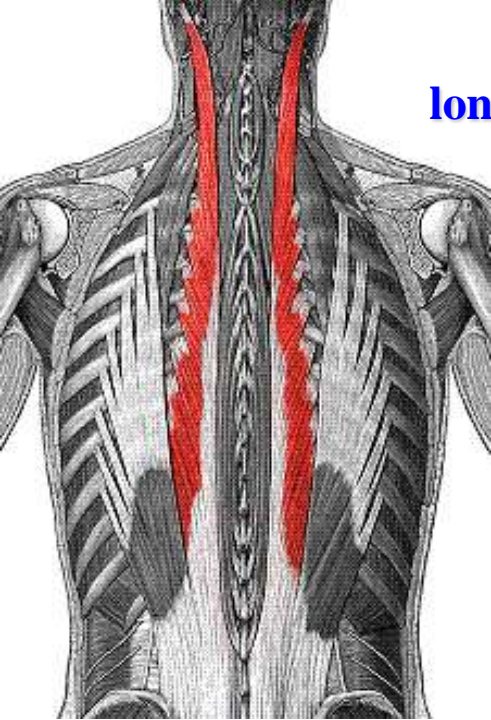




Spine -

Posterior Muscular Support
primarily produce extension and
medial/lateral flexion

- Posteriorly
 - **erector spinae**
 - iliocostalis**
 - longissimus thoracis**
 - spinalis**

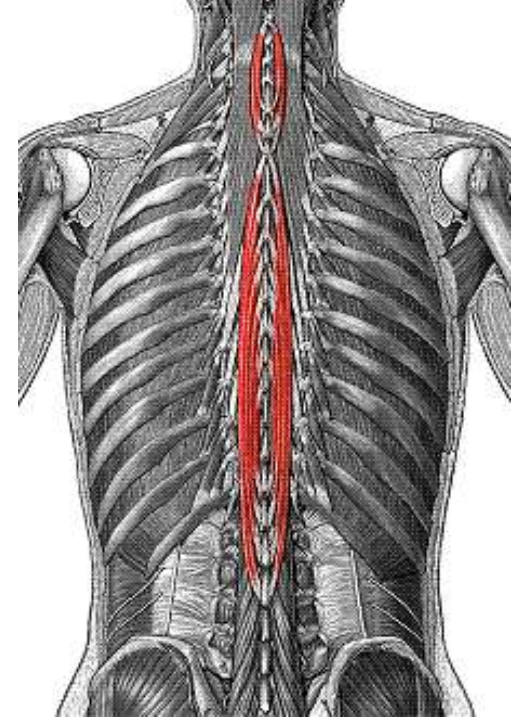


longissimus

spinalis

Erector spinae

Versatile muscles that can generate rapid force
yet are **fatigue resistant**

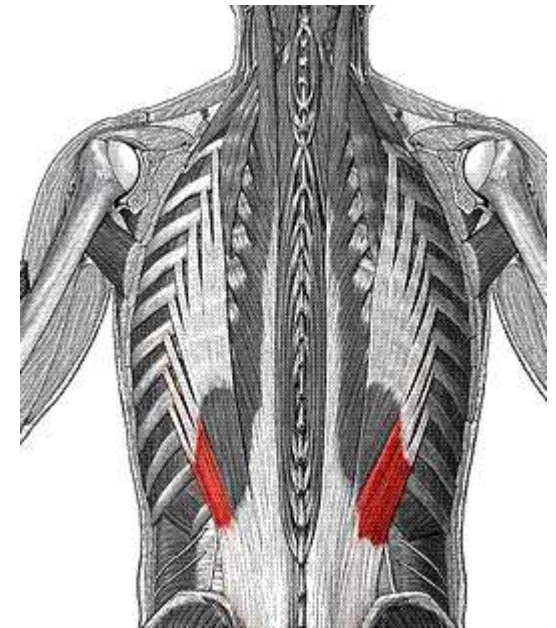
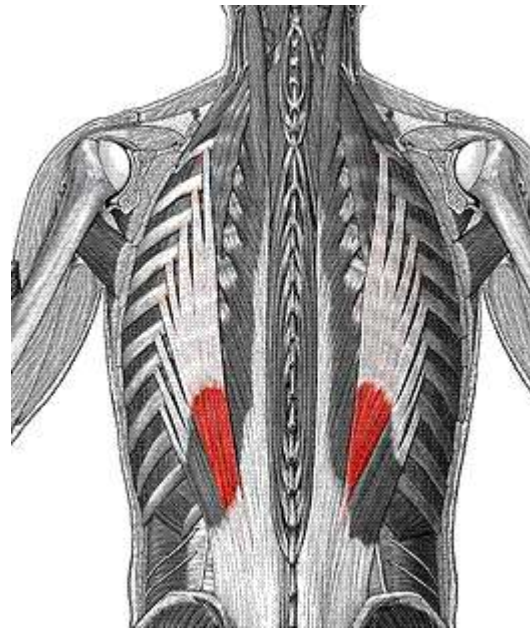
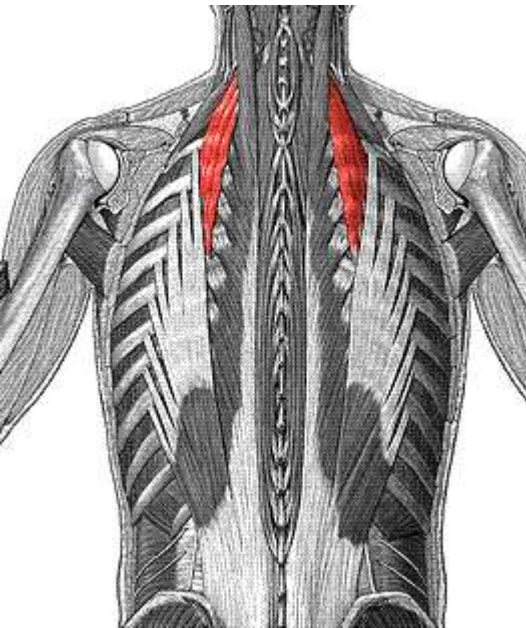


cervicis

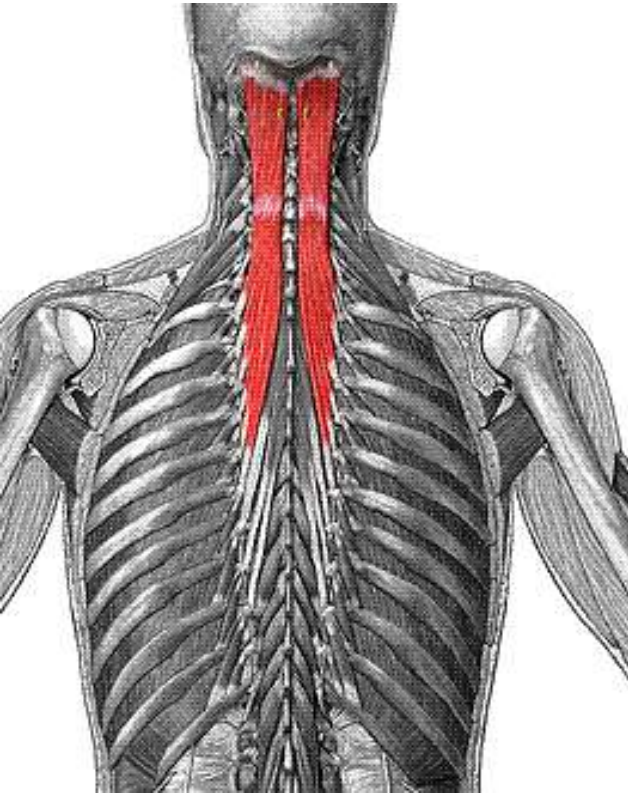
iliocostalis

thoracis

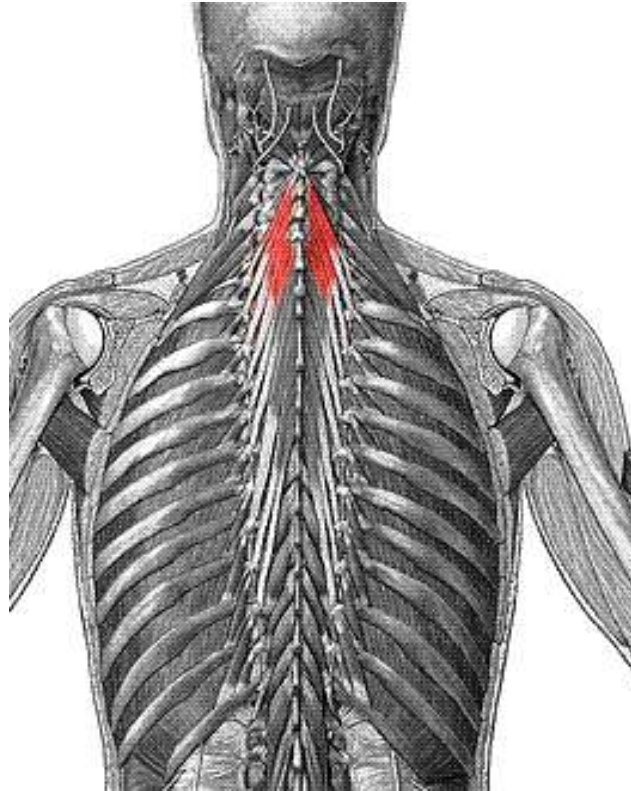
lumborum



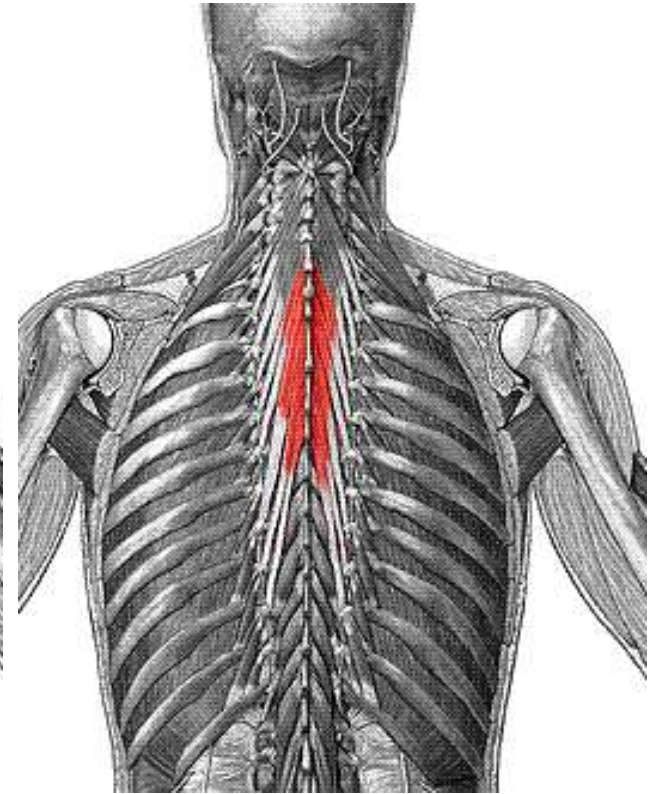
Semispinalis



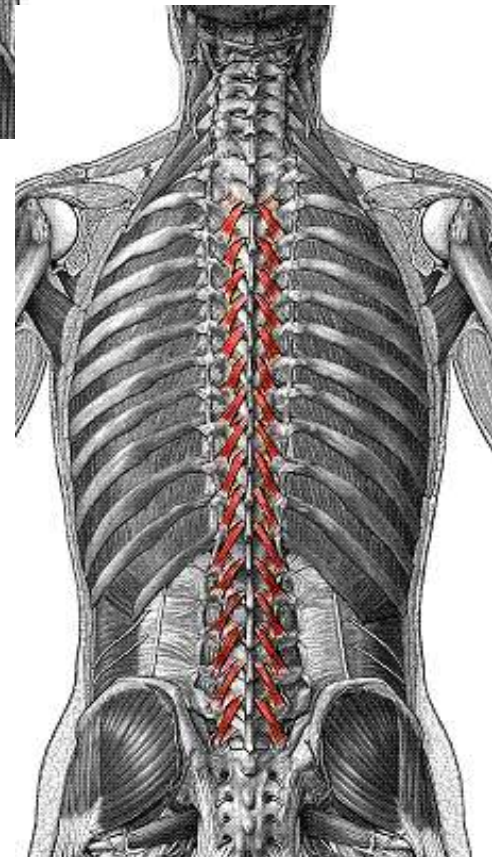
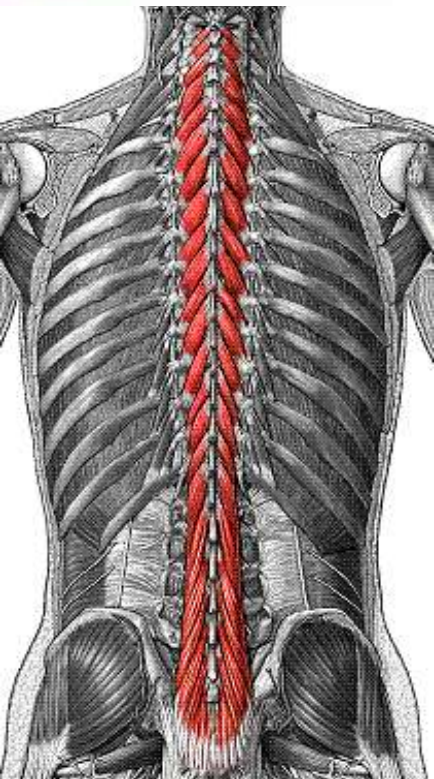
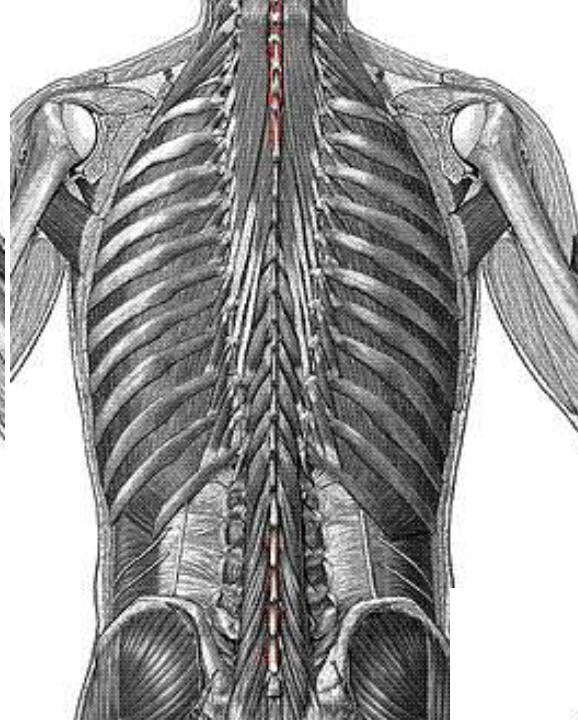
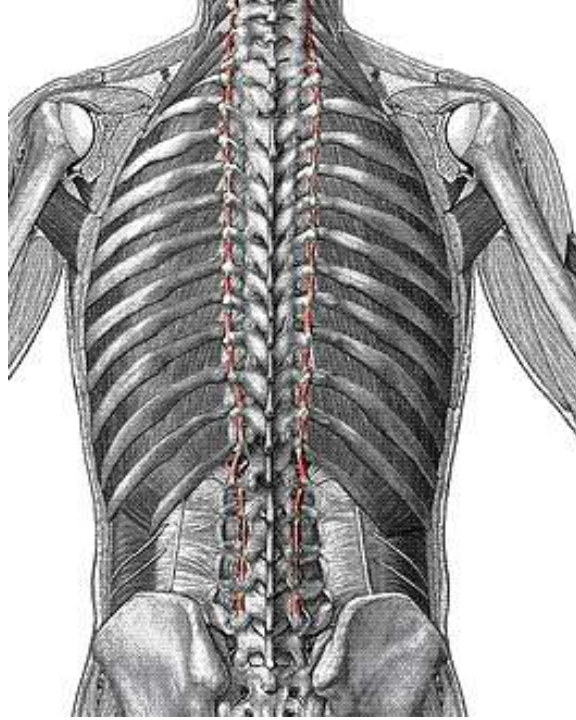
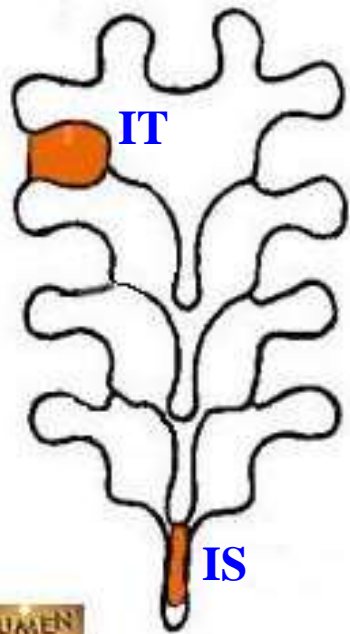
capitis



cervicis



thoracis



Deep posterior

Thank you