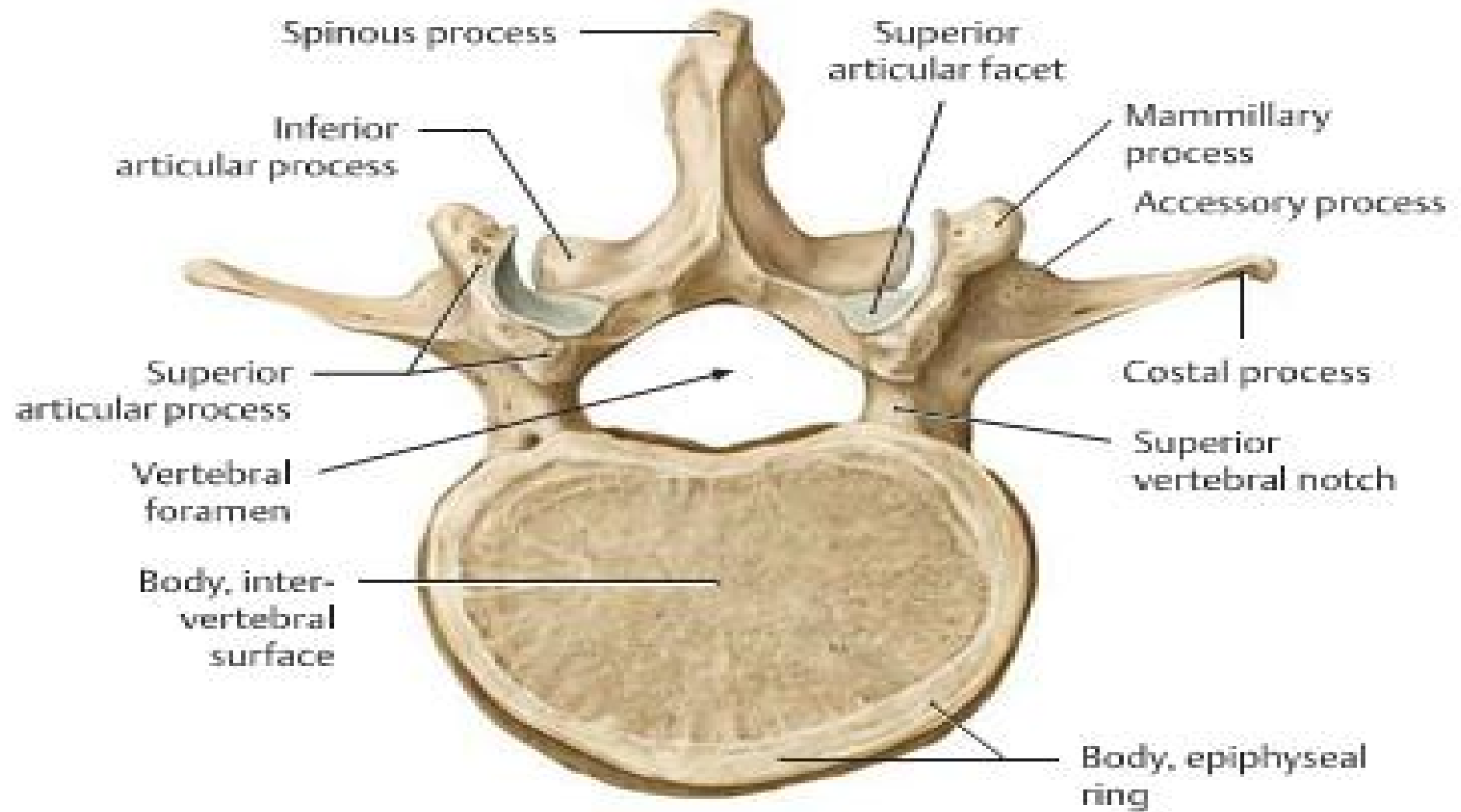


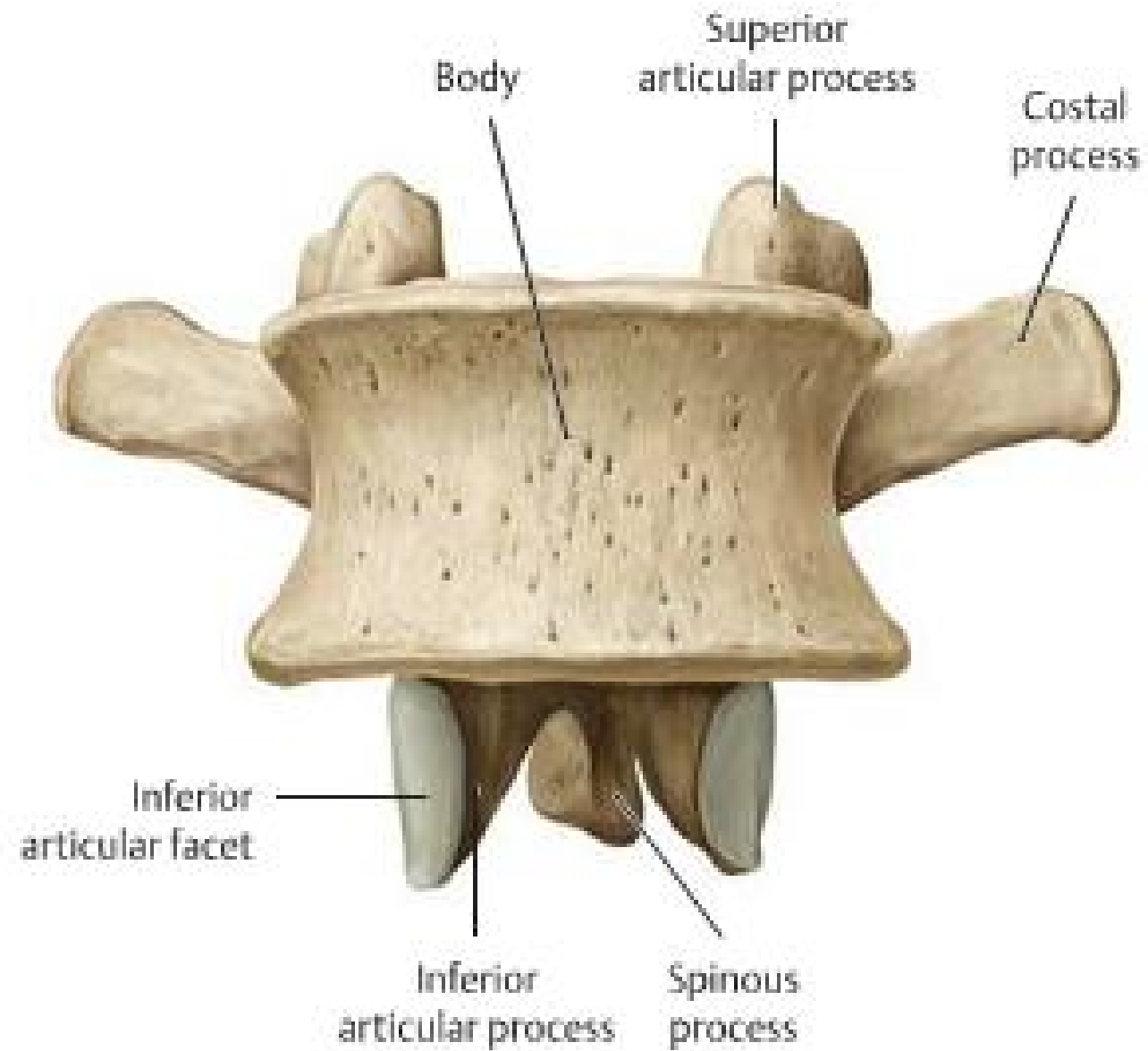


OBJECTIVES:

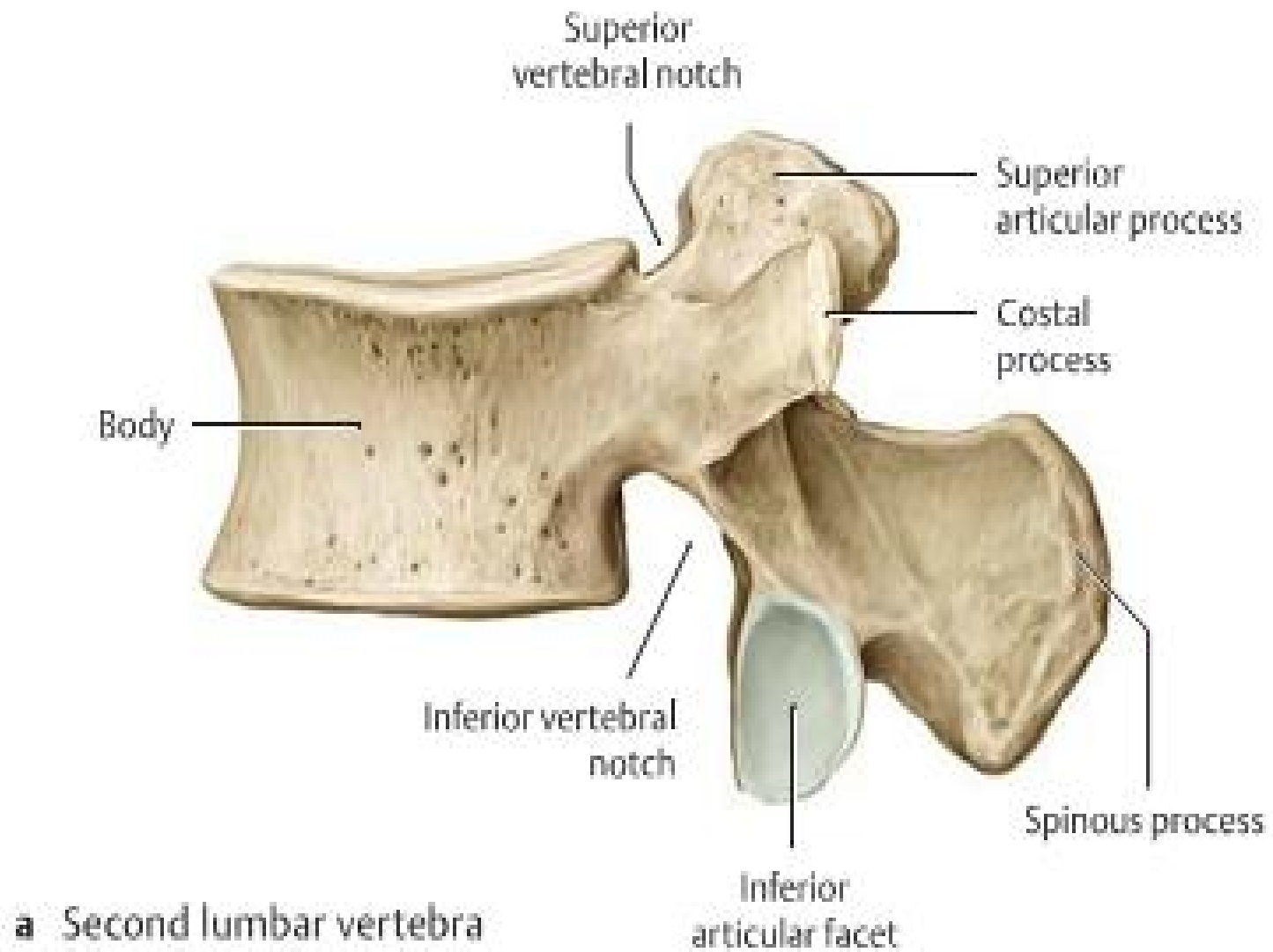
- General features
- Classification: Typical and atypical
- Ossification
- Applied anatomy

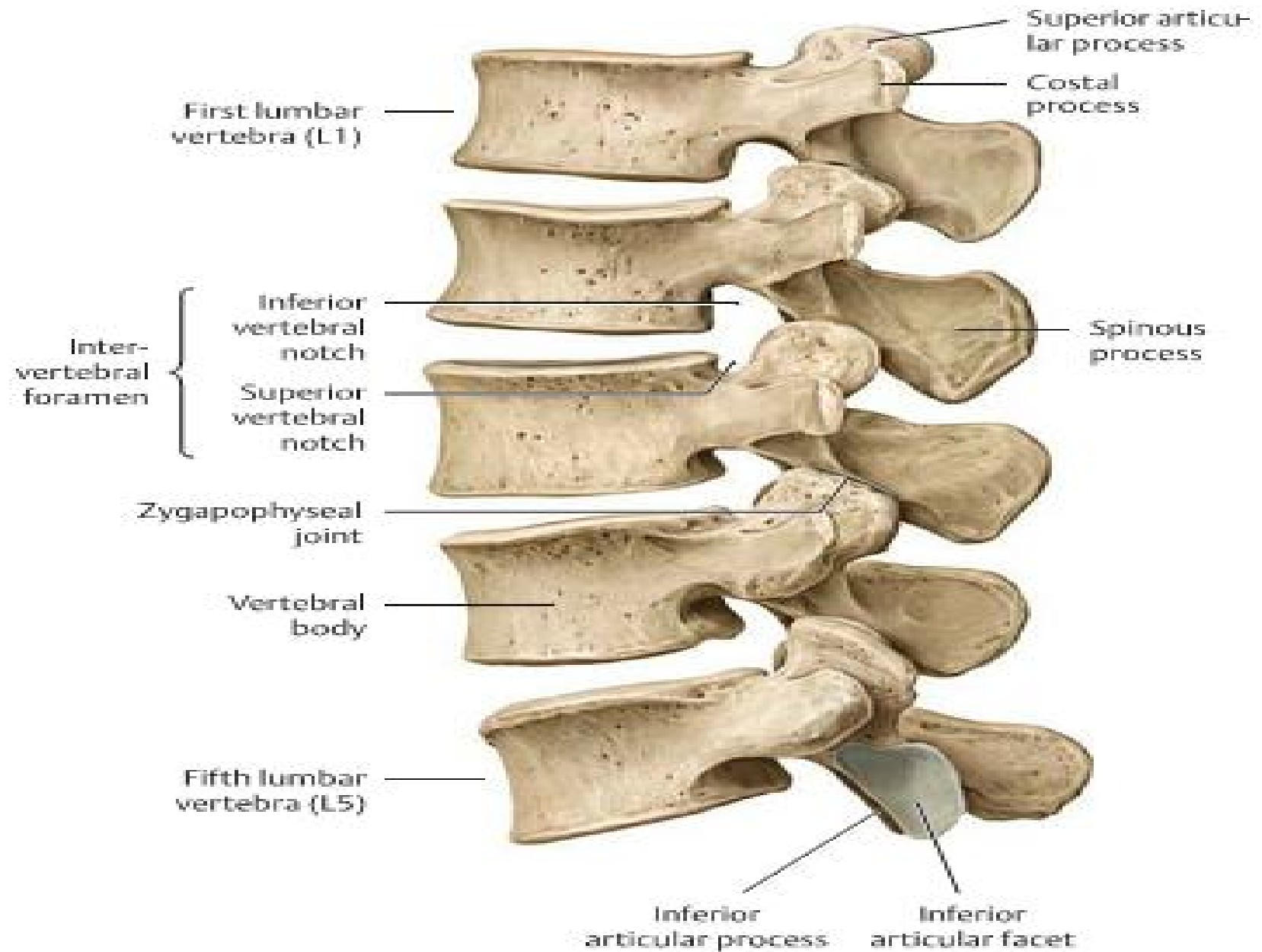


a Second lumbar vertebra



a Second lumbar vertebra





A. Lumbar spine, left lateral view



General features:

- Lumbar vertebrae have massive body.
- Vertebral foramen is triangular.
- Spine is quadrangular.
- Superior articular facet is concave.
- Inferior articular facet is convex.
- Posteroinferior part of root of transverse process has a rough elevation called accessory process.

CLASSIFICATION:

Total no of lumbar vertebrae: 5

Typical: First to fourth.

Atypical: Fifth.

TYPICAL LUMBAR VERTEBRAE (L1-L4)

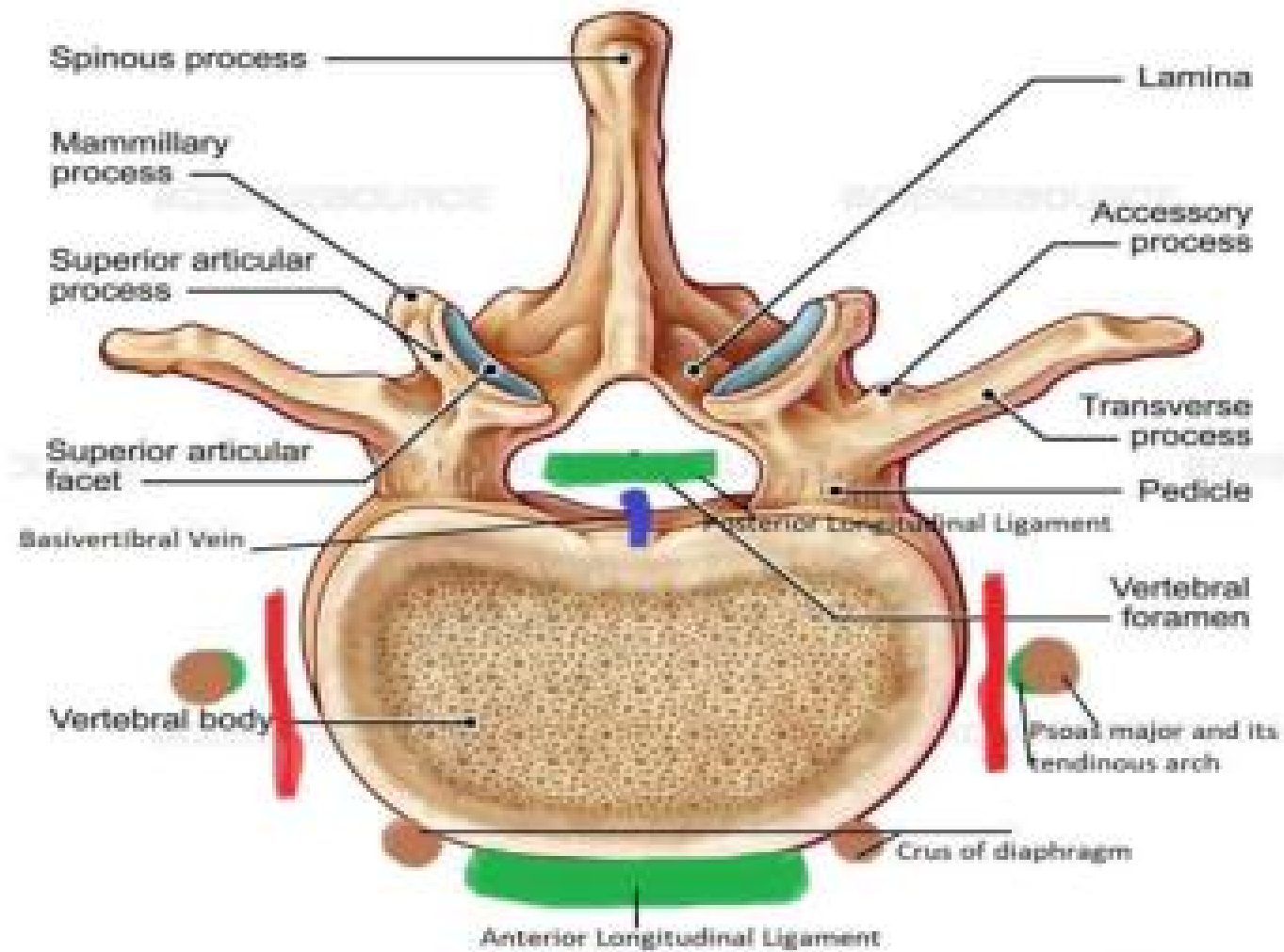
BODY:

- Large.
- Transverse diameter > anteroposterior diameter.
- Attachments:
 1. To upper and lower borders:
 - a) Anterior longitudinal ligament (ALL): in front.
 - b) Posterior longitudinal ligament (PLL): behind.
 2. Crura of diaphragm: Either side of ALL.

Right crus: upper 3 lumbar vertebrae

Left crus: upper 2 lumbar vertebrae
 3. Behind the crura of diaphragm: Psoas major muscle arises from all 5 lumbar vertebrae.

Body

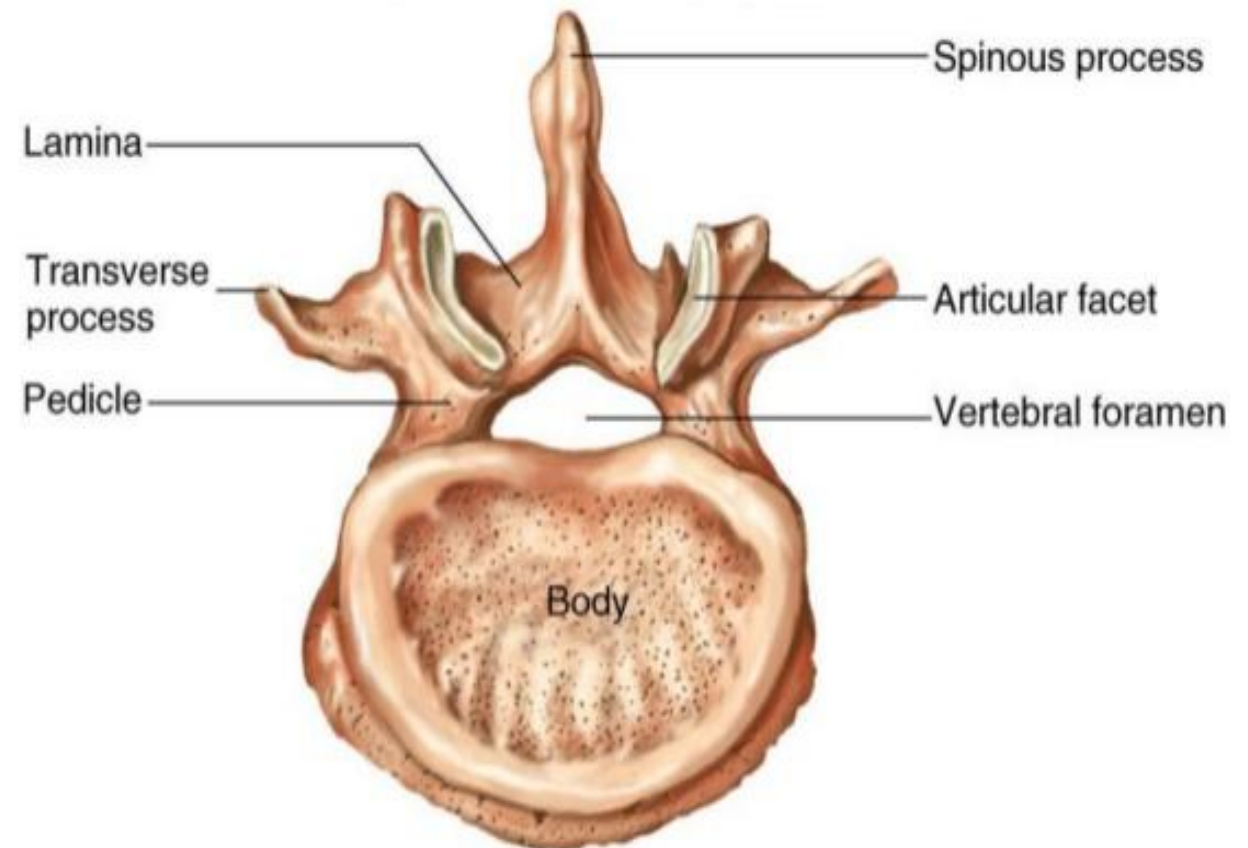


Dr. M. S. D.

VERTEBRAL FORAMEN:

- **Triangular** in cross section.
- Larger than those in thoracic vertebrae but smaller than in cervical vertebrae.
- Lower part of spinal cord (**Conus medullaris**): L1
- Dura mater and arachnoid mater: L1-L5
- **Cauda equine**: L2-L5

Lumbar Vertebrae

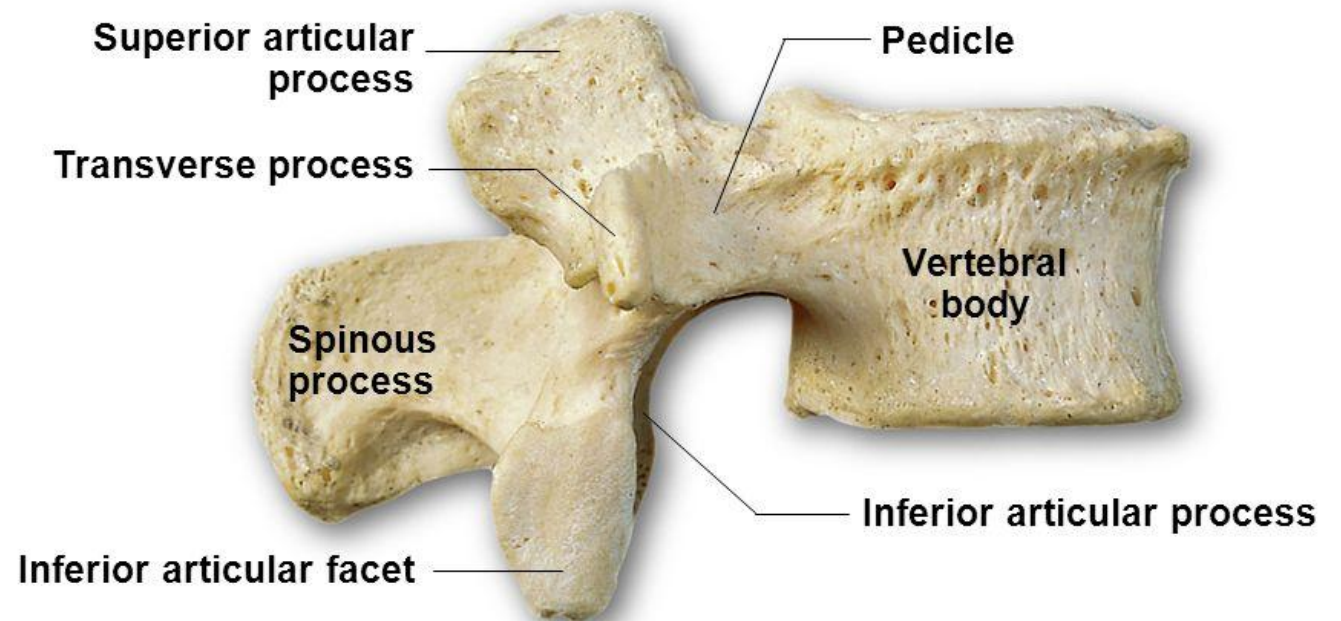


VERTEBRAL ARCH:

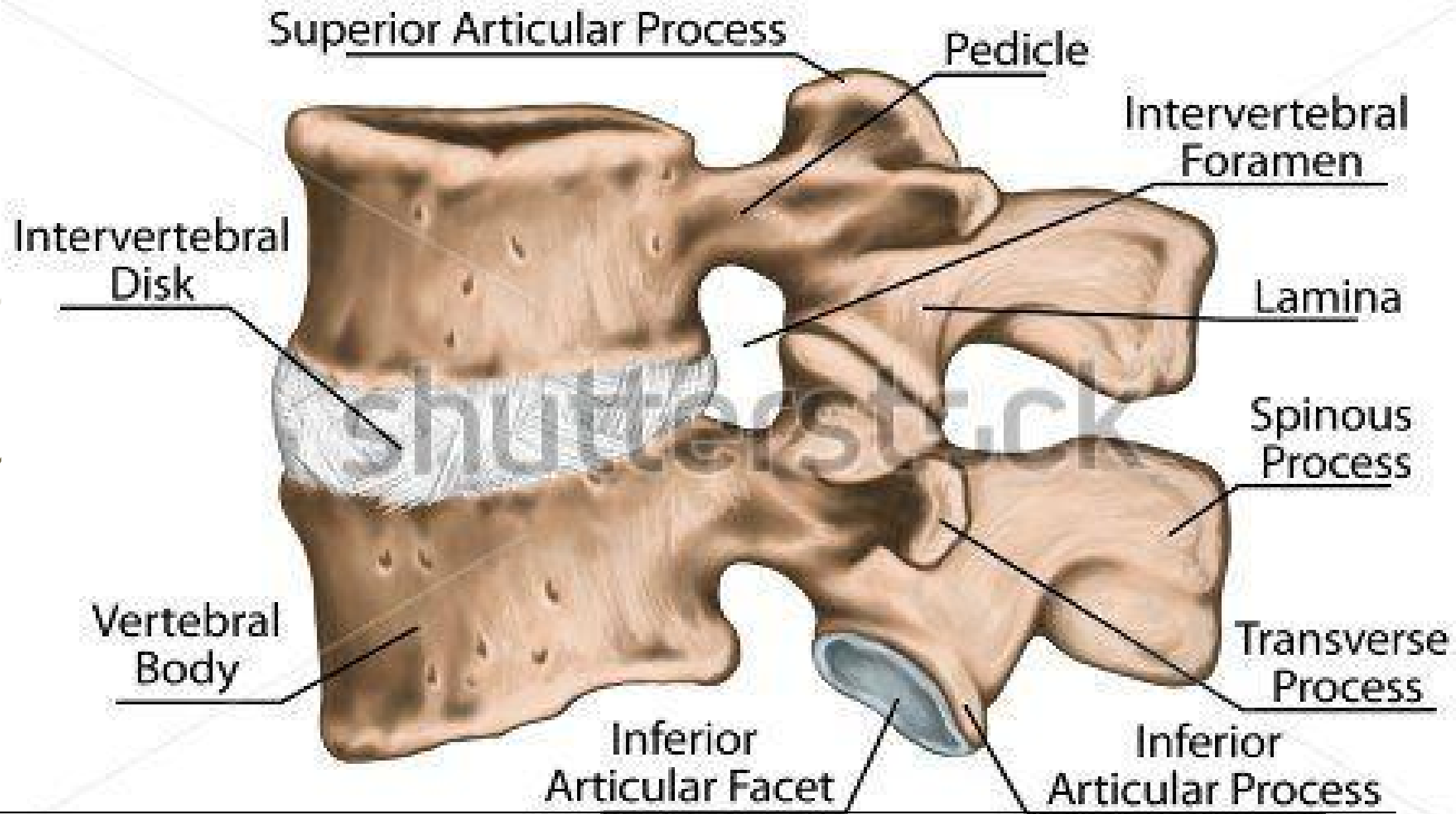
➤ PEDICLES:

- Short and strong.
- Inferior vertebral notches are deeper than the superior.
- Formation of intervertebral foramen.
- Traversed by spinal nerves and radicular vessels.

Figure 7-21b The Lumbar Vertebrae



b A lateral view of a typical lumbar vertebra

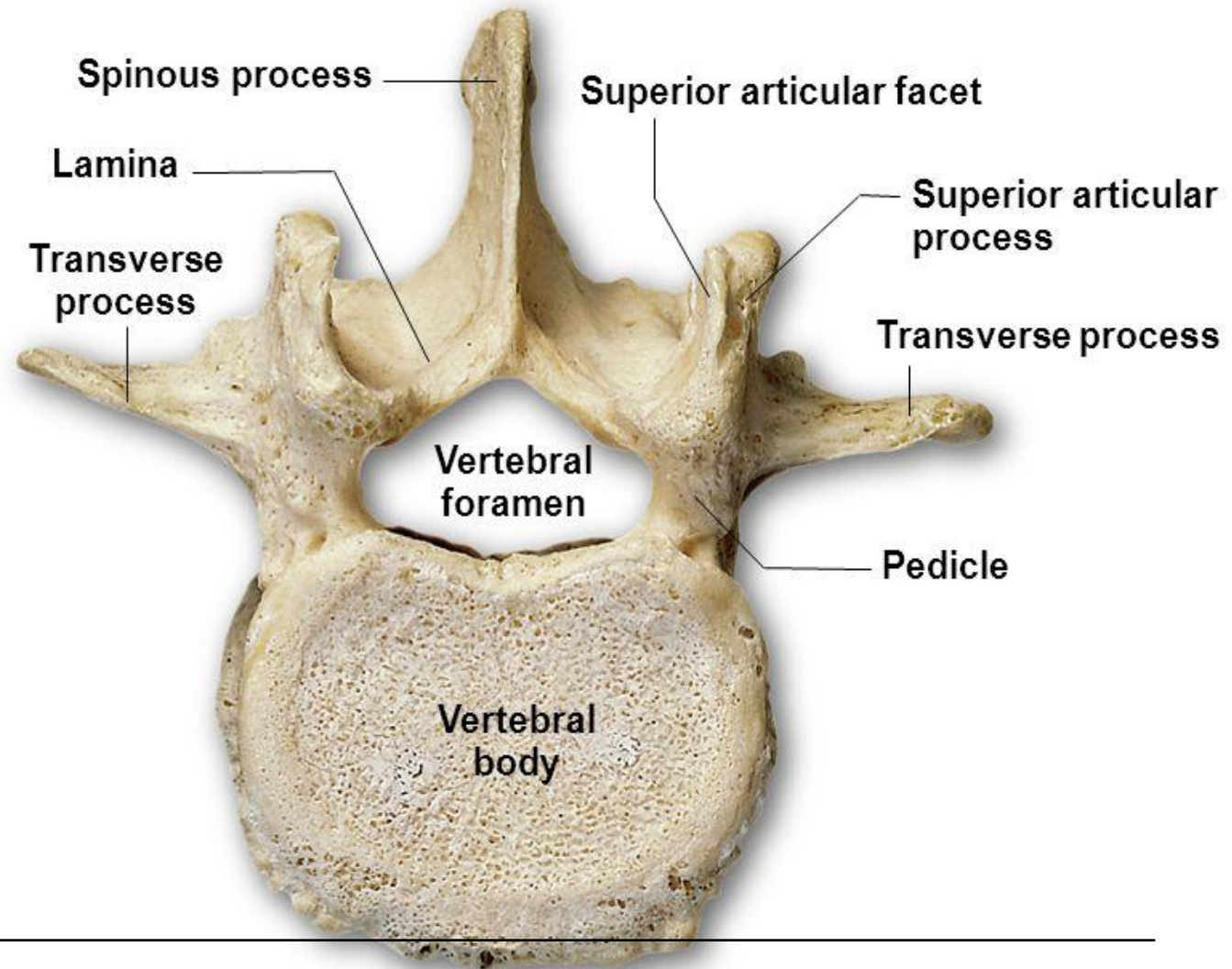


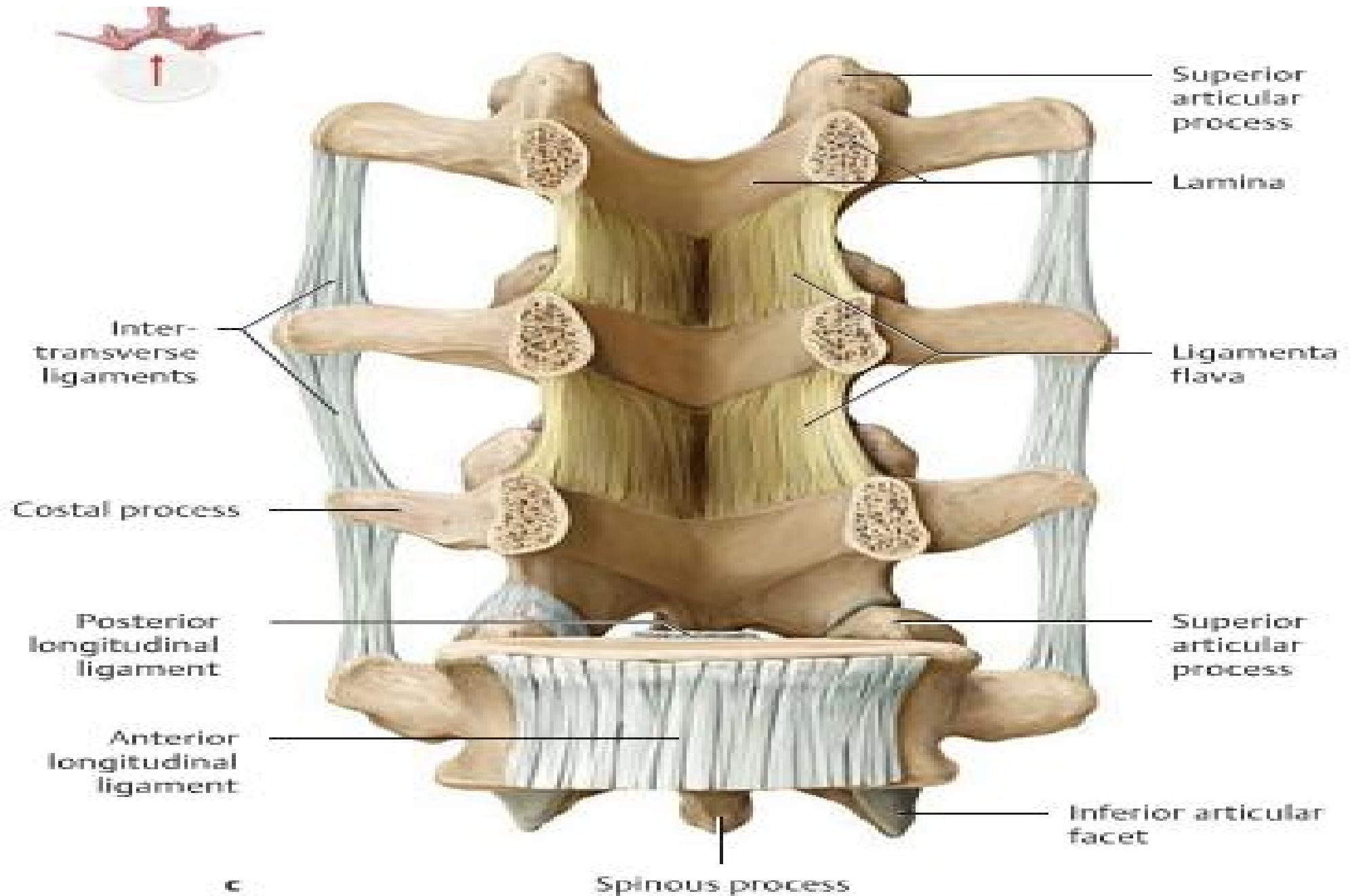
VERTEBRAL ARCH:

► LAMINAE:

- Short, strong and broad.
- Directed posteromedially.
- Gives attachment to ligamentum flavum.

Figure 7-21c The Lumbar Vertebrae

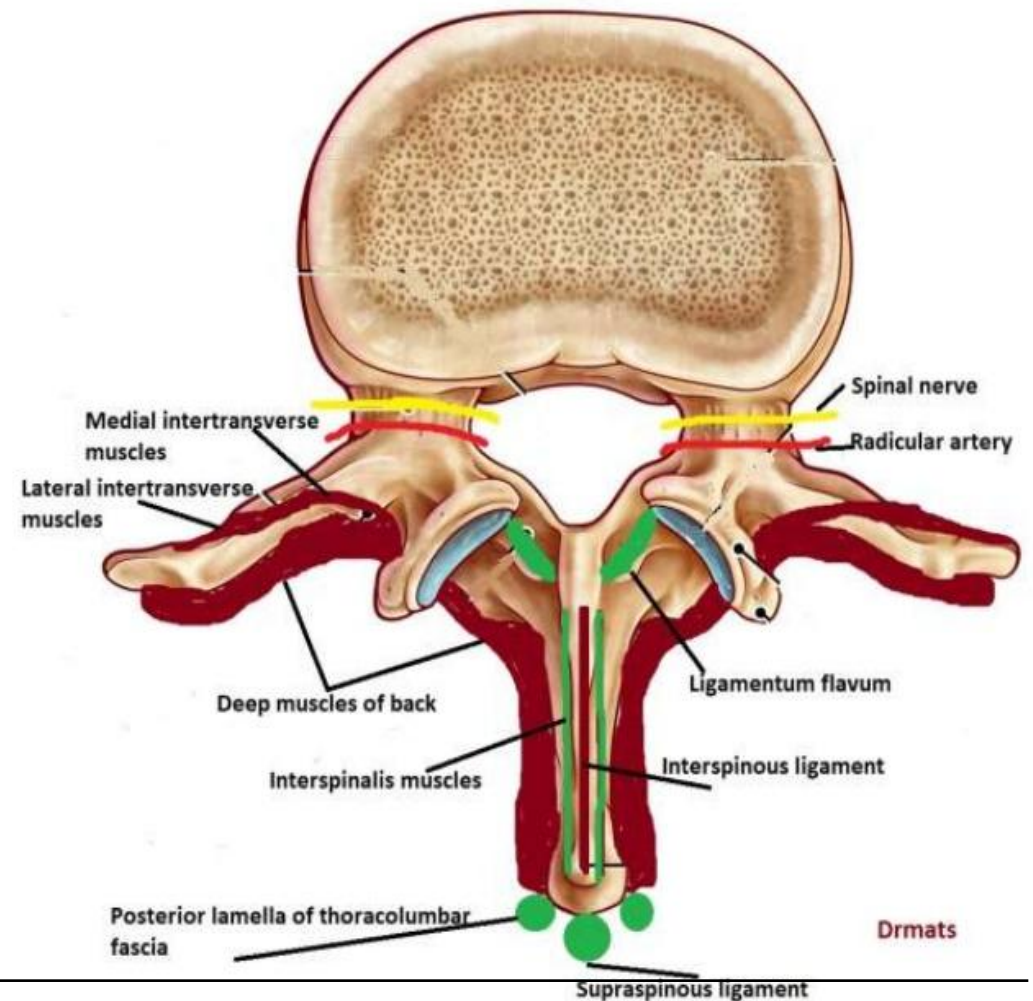


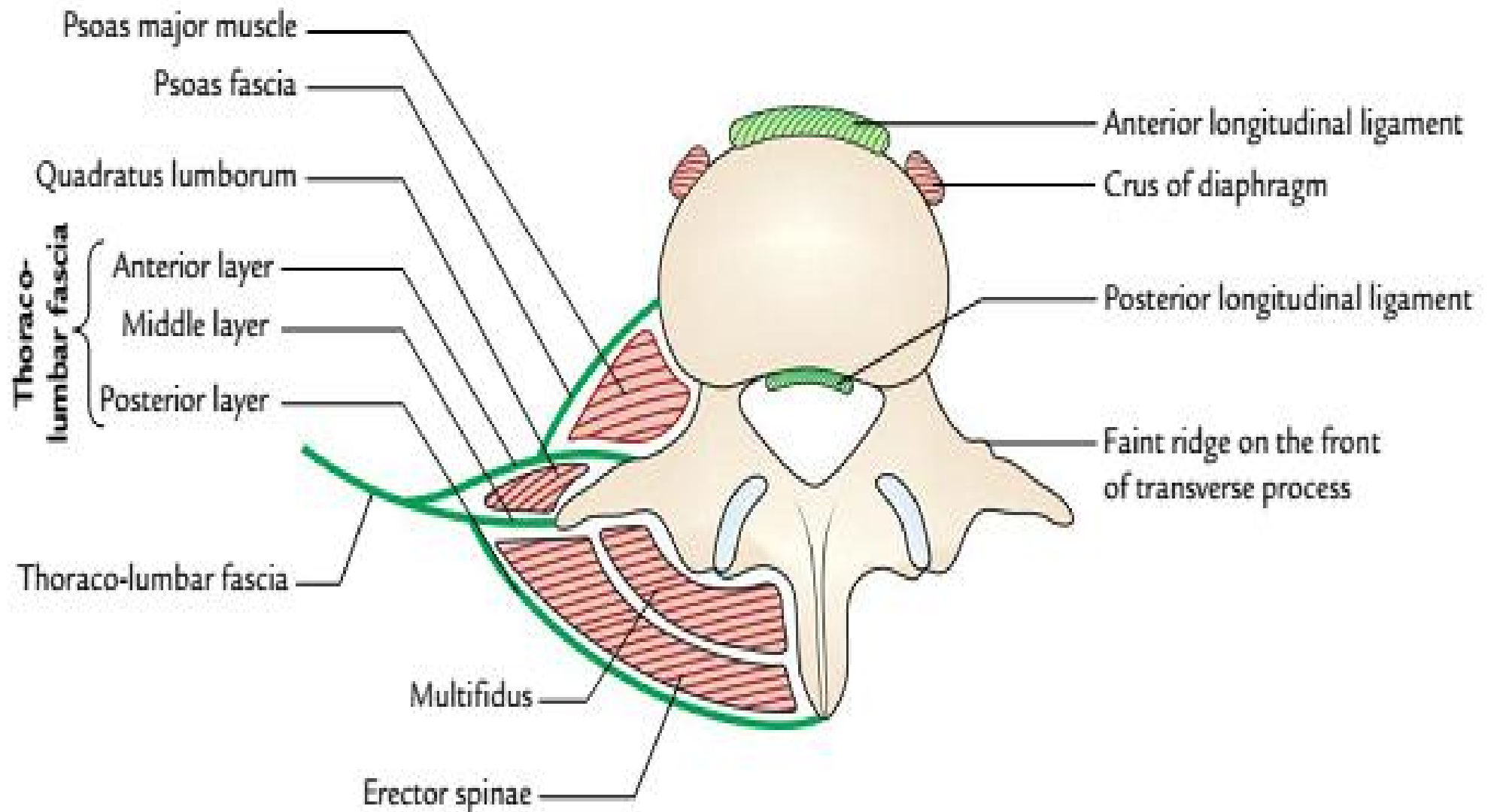


VERTEBRAL ARCH:

► SPINE:

- Quadrilateral
- Projects horizontally backwards.
- Thick along its posterior and inferior borders.
- Attachments to posterior border:
 1. Thoracolumbar fascia
 2. Erector spinae
 3. Spinalis thoracis
 4. Multifidus
 5. Supraspinous and infraspinous ligaments





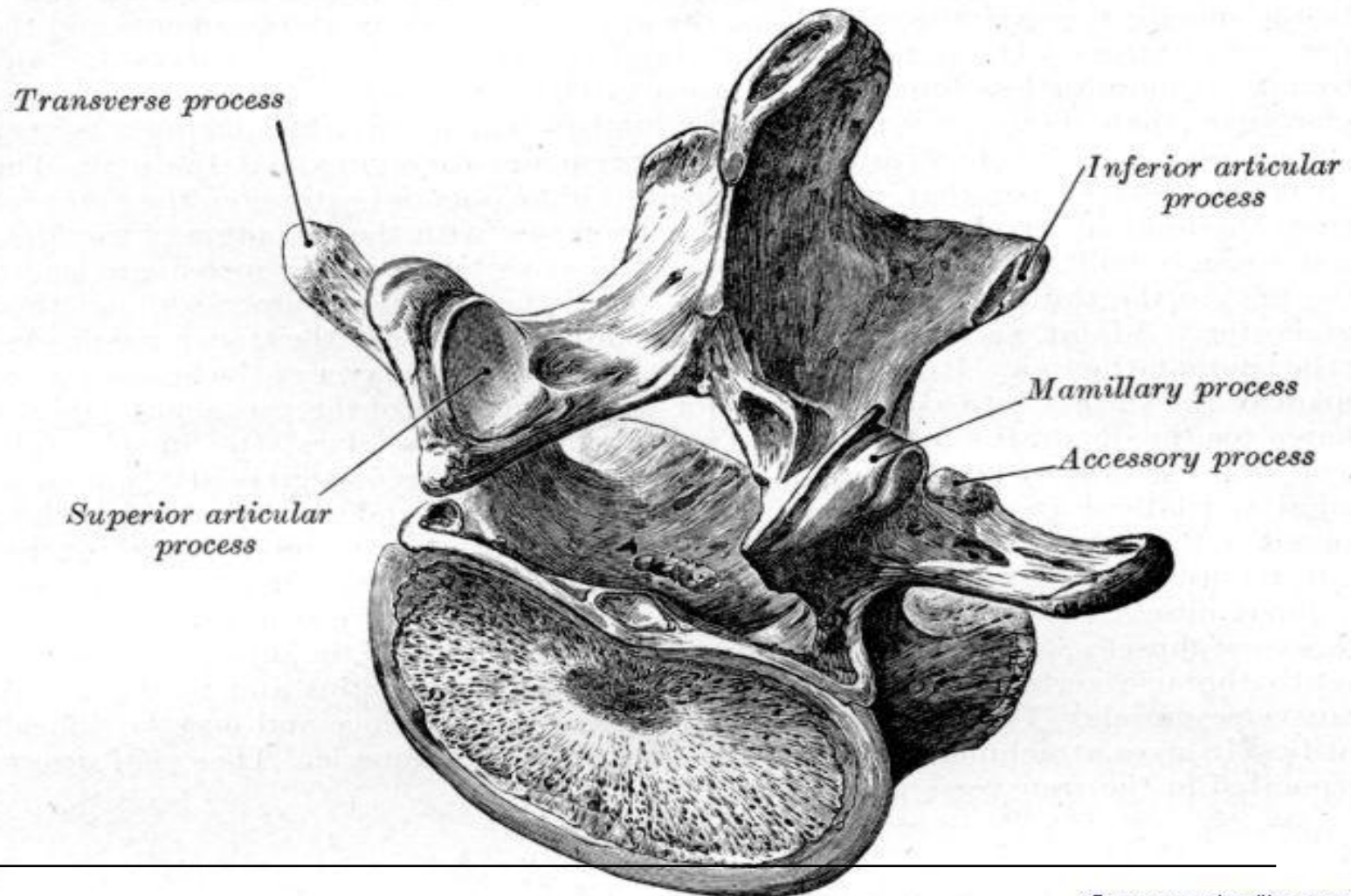
. 2.5 Attachments of the lumbar vertebra.

VERTEBRAL ARCH:

► TRANSVERSE PROCESS:

- Tapering and thin.
- Homologous with ribs.
- **Accessory process:** rough elevation on the posteroinferior aspect of each transverse process. It gives attachment to **intertransverse ligament**.

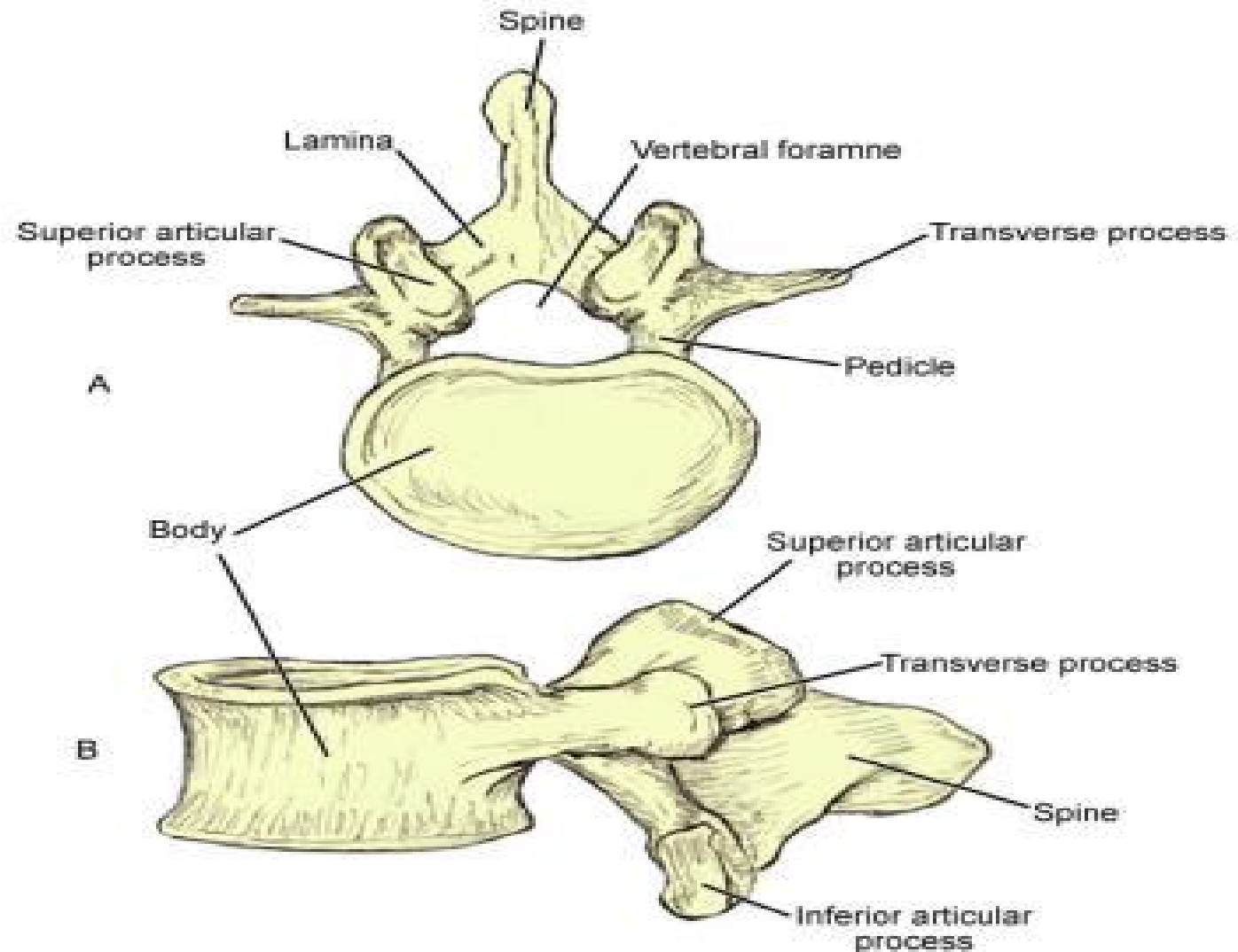
FIG. 277.—A lumbar vertebra. Posterosuperior aspect.



VERTEBRAL ARCH:

ARTICULAR PROCEESS:

- **Superior articular facet:** concave & faces medially. Its posterior border has a rough elevation called mammillary process which corresponds to superior tubercle of 12th thoracic vertebra.
- **Inferior articular facet:** convex, laterally.
- Distance between the superior articular process is relatively more than inferior articular process in L1-L3.
- Relation is reversed in L5
- Equal distance in L4.

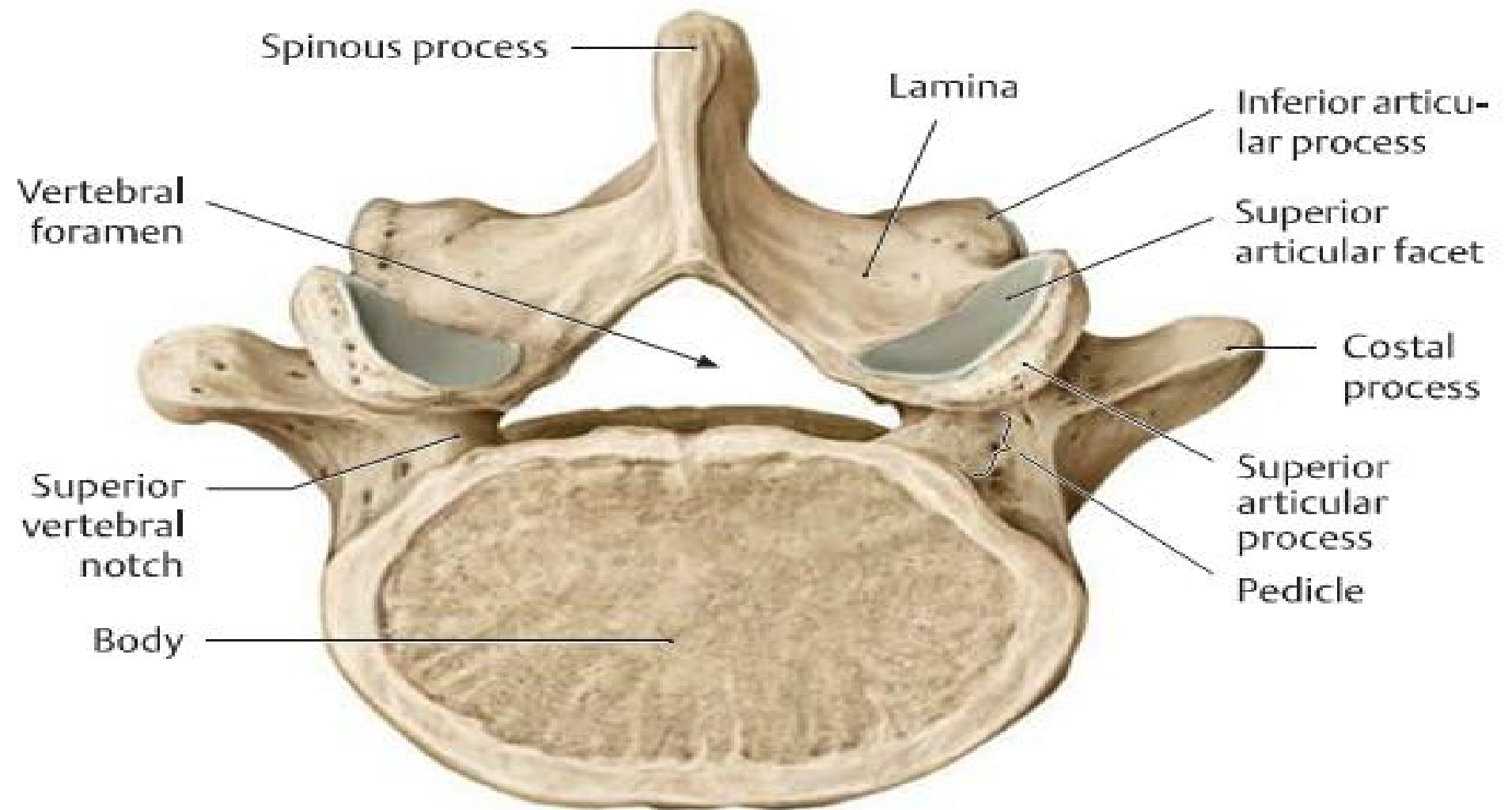




ATYPICAL LUMBAR VERTEBRA (L5):

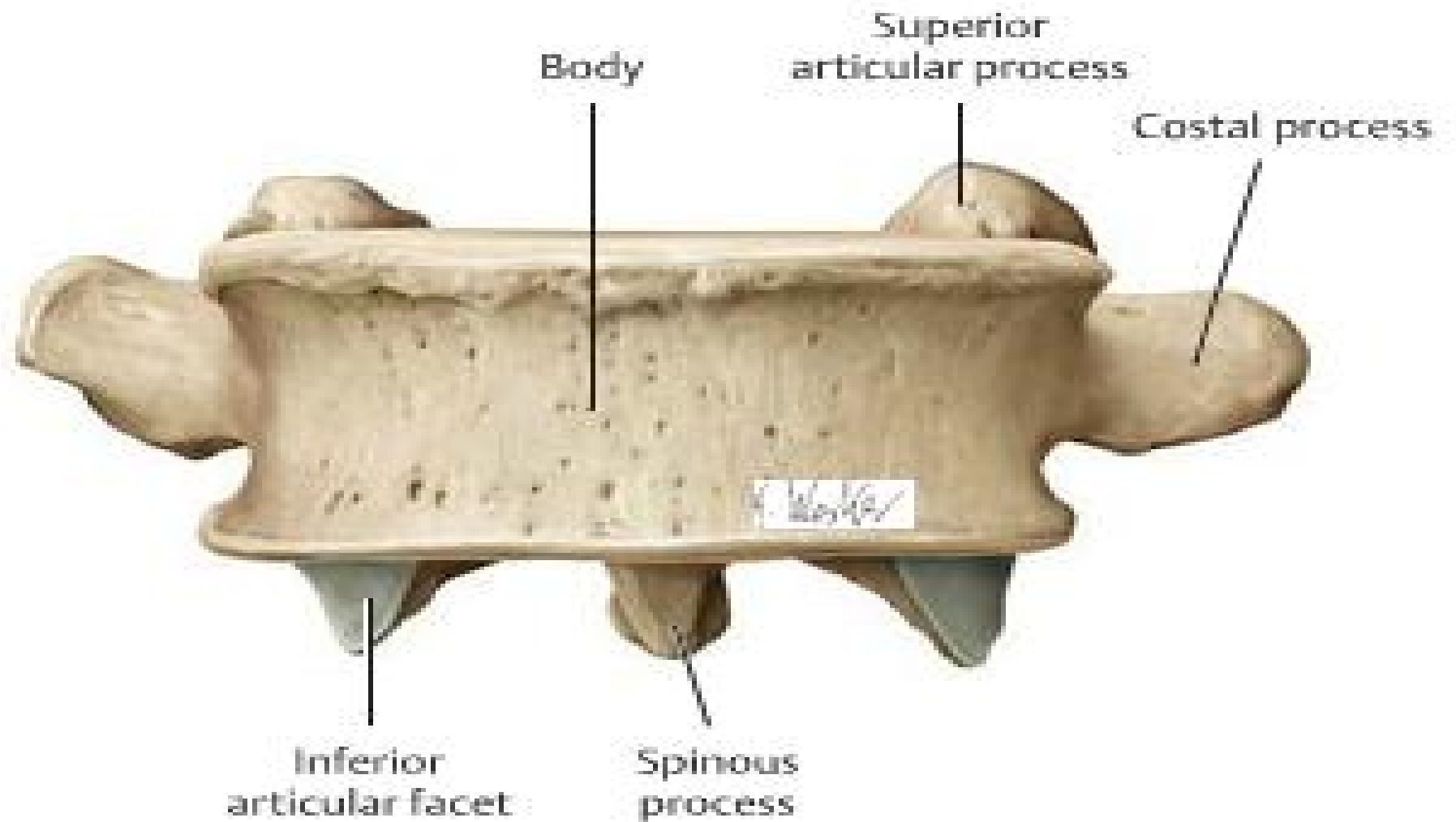
ATYPICAL LUMBAR VERTEBRA/L5:

- Body is very large and vertical height of its anterior surface is greater than its posterior surface.
- Transverse process is massive, stout and pyramidal. Arises mainly from the pedicle and encroaches on to the body.
- Spine is small in size. Its upper border is rounded and down turned at its dorsal part.
- The distance between inferior articular process is more than superior articular process.



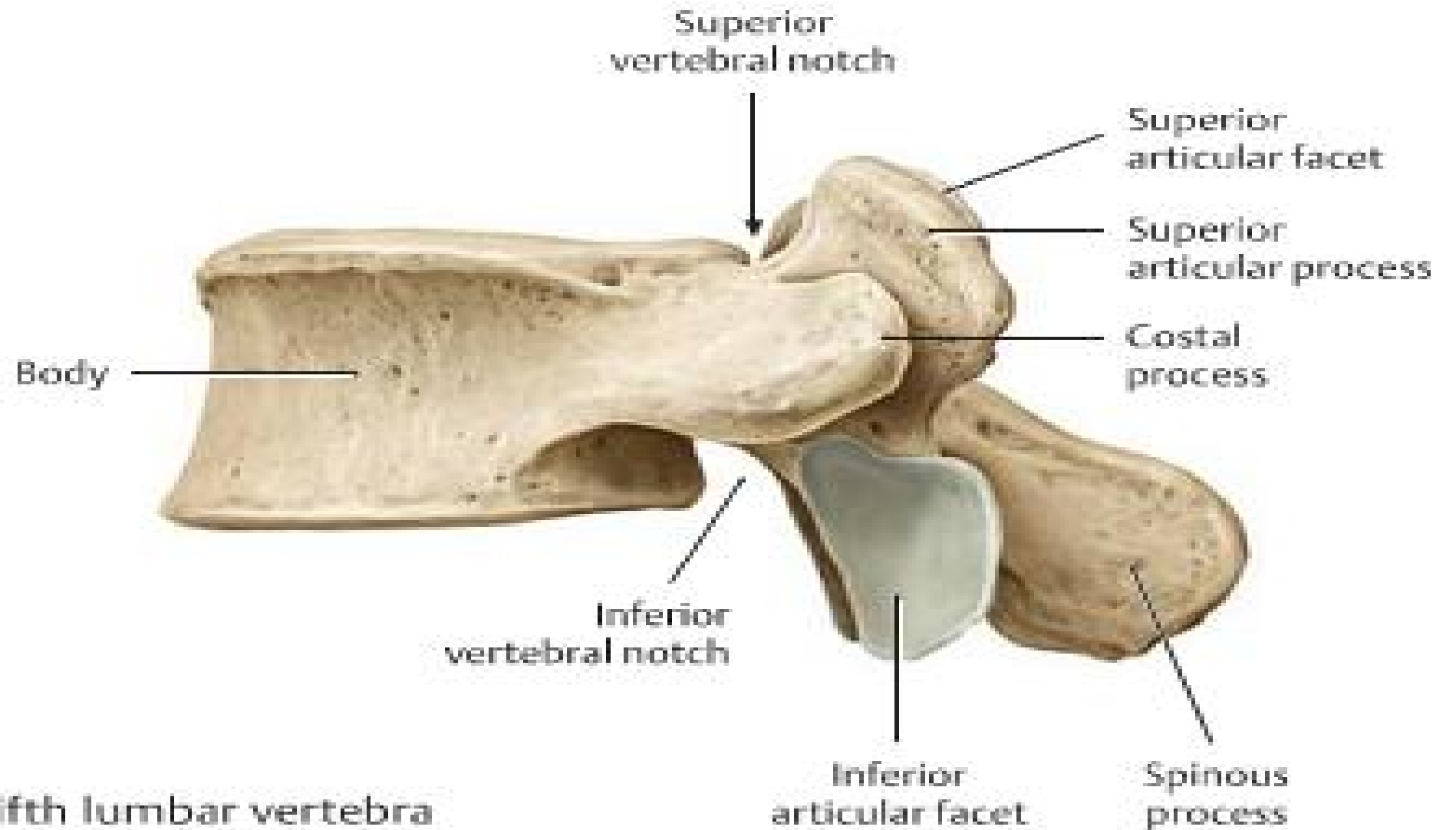
c Fifth lumbar vertebra

C Lumbar vertebrae, superior view



c Fifth lumbar vertebra

D Lumbar vertebrae, anterior view



c Fifth lumbar vertebra

B Lumbar vertebrae, left lateral view

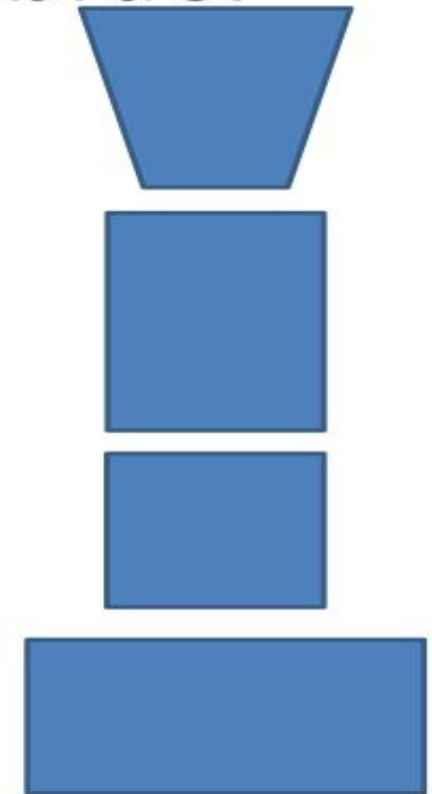
ANTERIOR RELATIONS OF 5TH LUMBAR VERTEBRA:

1. Both common iliac arteries.
2. Both common iliac veins.
3. Formation of inferior vena cava.
4. Median sacral vessels.
5. Sympathetic trunk.

FAWCETT'S RULE:

Fawcetts's rule for identification of individual lumber vertebrae.

- Trapezium : L1/L2
- Vertical rectangle : L3
- Square : L4
- Horizontal Rectangle : L5



OSSIFICATION:

- PRIMARY CENTERS: 3 (1 for body and 1 for each half of vertebral arch)
- APPEARANCE: 9-16 weeks of IUL.
- FUSION:
 - Each half of vertebral arch with each other :- 1 year.
 - Vertebral arch with body:- 3-6 years.

► OSSIFICATION:

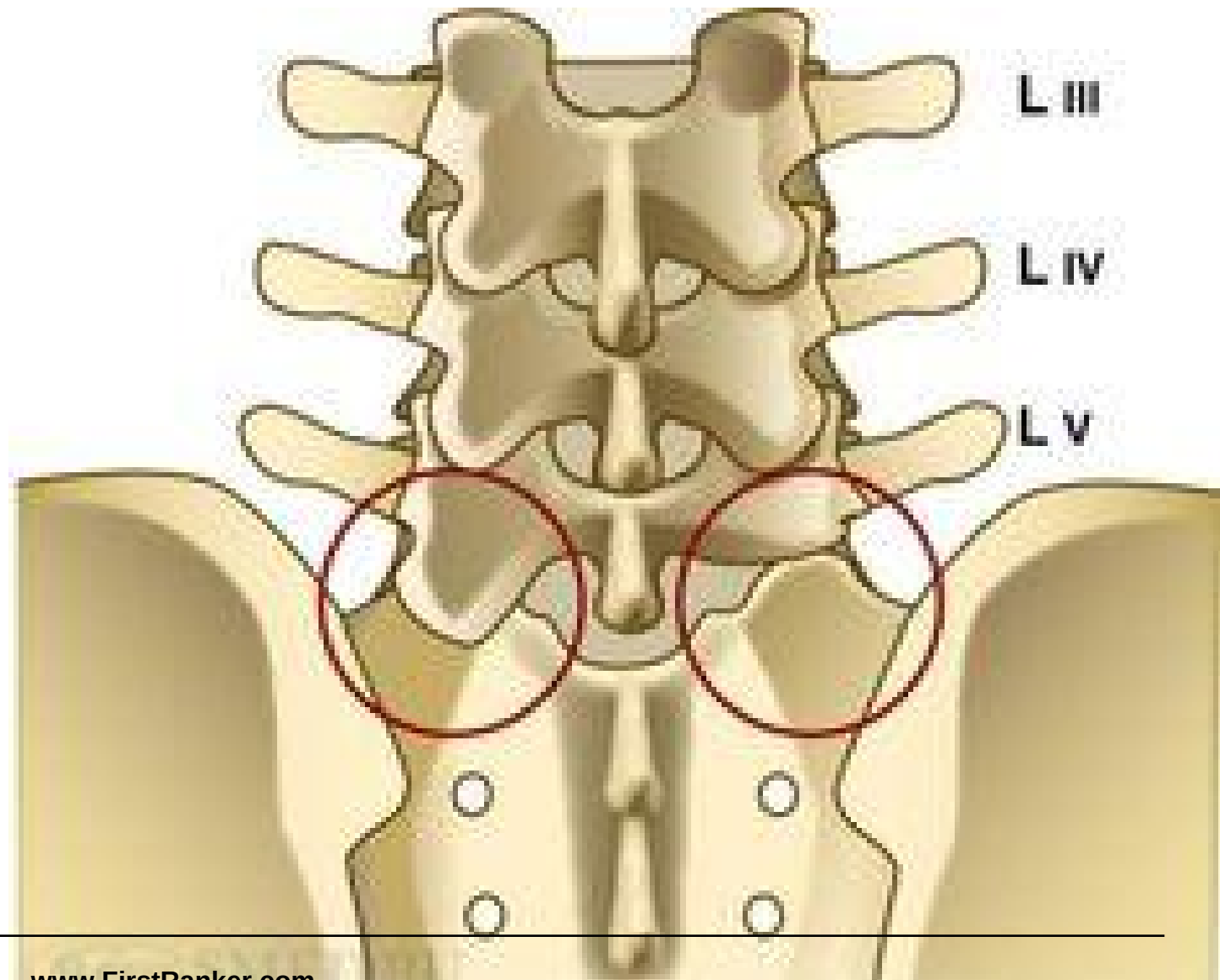
- SECONDARY CENTERS:
 - 5 (1 each for annular epiphyseal ring (upper and lower surface of body).
 - 1 each: tip of transverse process
 - 1 for tip of spine.
- APPEARANCE: puberty
- FUSION: 25 years.
- 2 Additional centers appear, 1 for each mammillary process.



APPLIED ANATOMY:

1. SACRALIZATION:

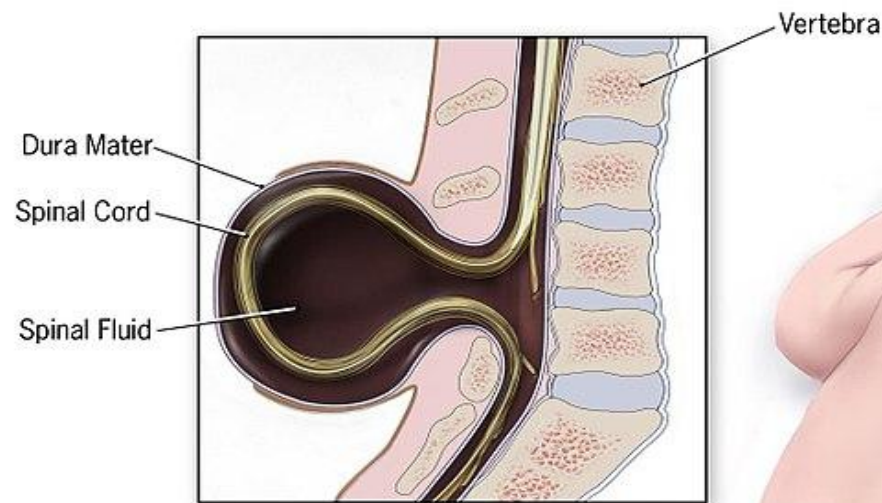
- Fusion of L5 with sacrum.
- Transverse process of L5 may articulate with ala of sacrum and compress the L5 spinal nerve.



SPINA BIFIDA:

- It occurs due to non fusion of two halves of the vertebral arch. Meninges and spinal cord are exposed and may herniate out in midline through the gap.

Spina Bifida (Open Defect)

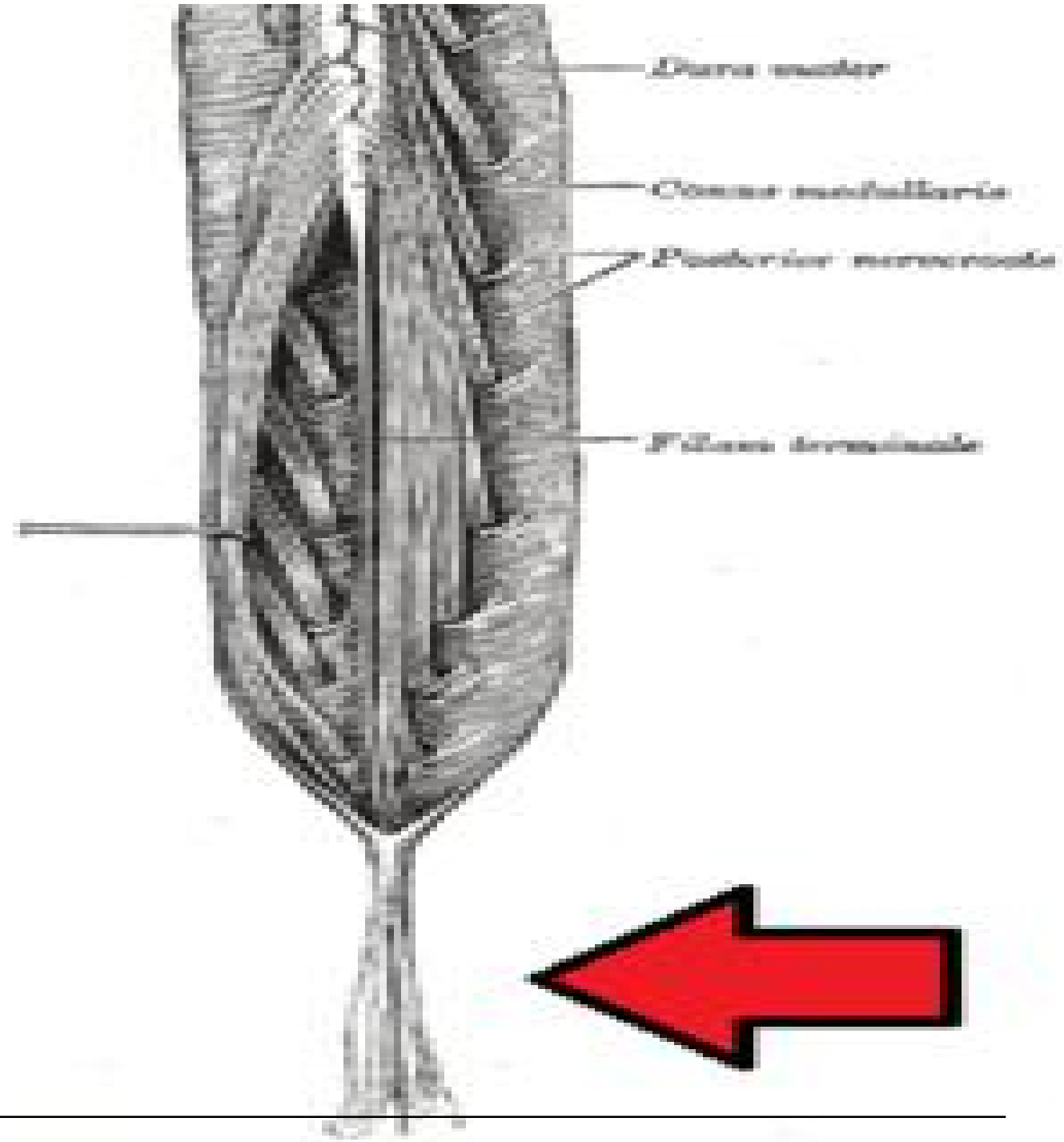


CAUDA EQUINA SYNDROME:

Due to compression of cauda equina (L2-S1)

Clinical presentation:

1. Flaccid paraplegia
2. Saddle shaped anaesthesia
3. Bladder and bowel involvement
4. Impotence
5. Absence of knee and ankle reflex



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THANK YOU.