

VERTEBRAL CANAL-I



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Introduction

- Vertebral canal is an elongated cavity inside the vertebral column.
- It is formed by vertebral foramina.

Boundaries-

Anterior-

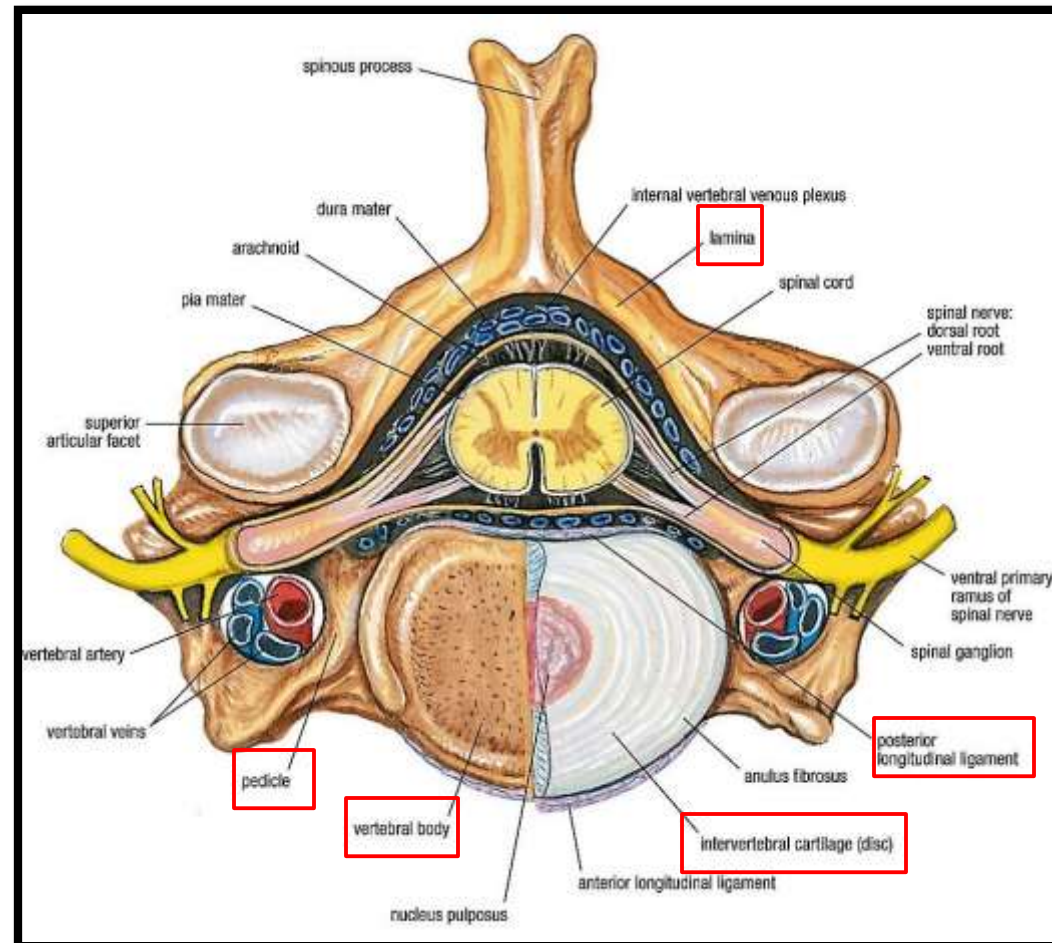
- Vertebral bodies.
- Intervertebral discs.
- Posterior longitudinal ligament.

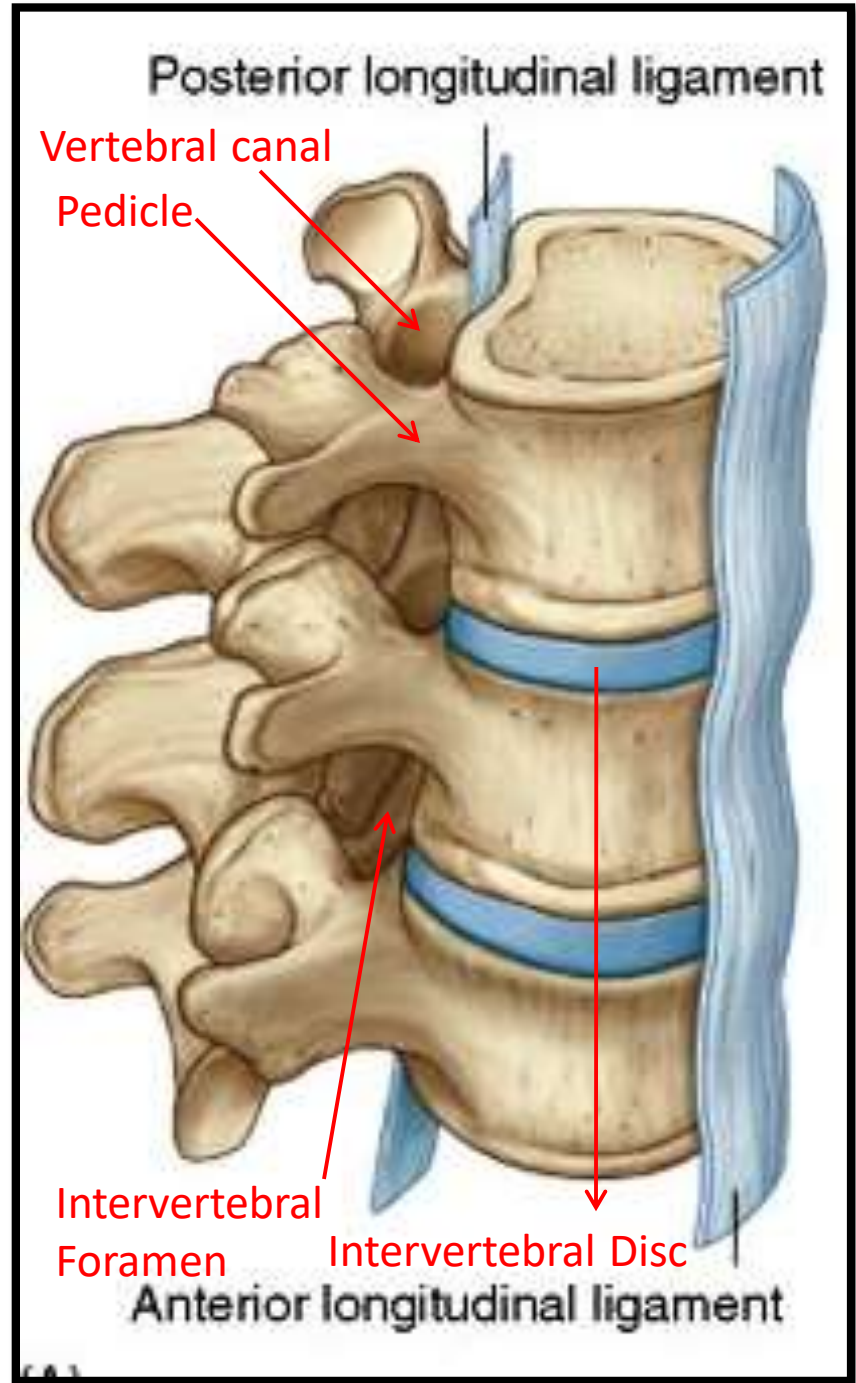
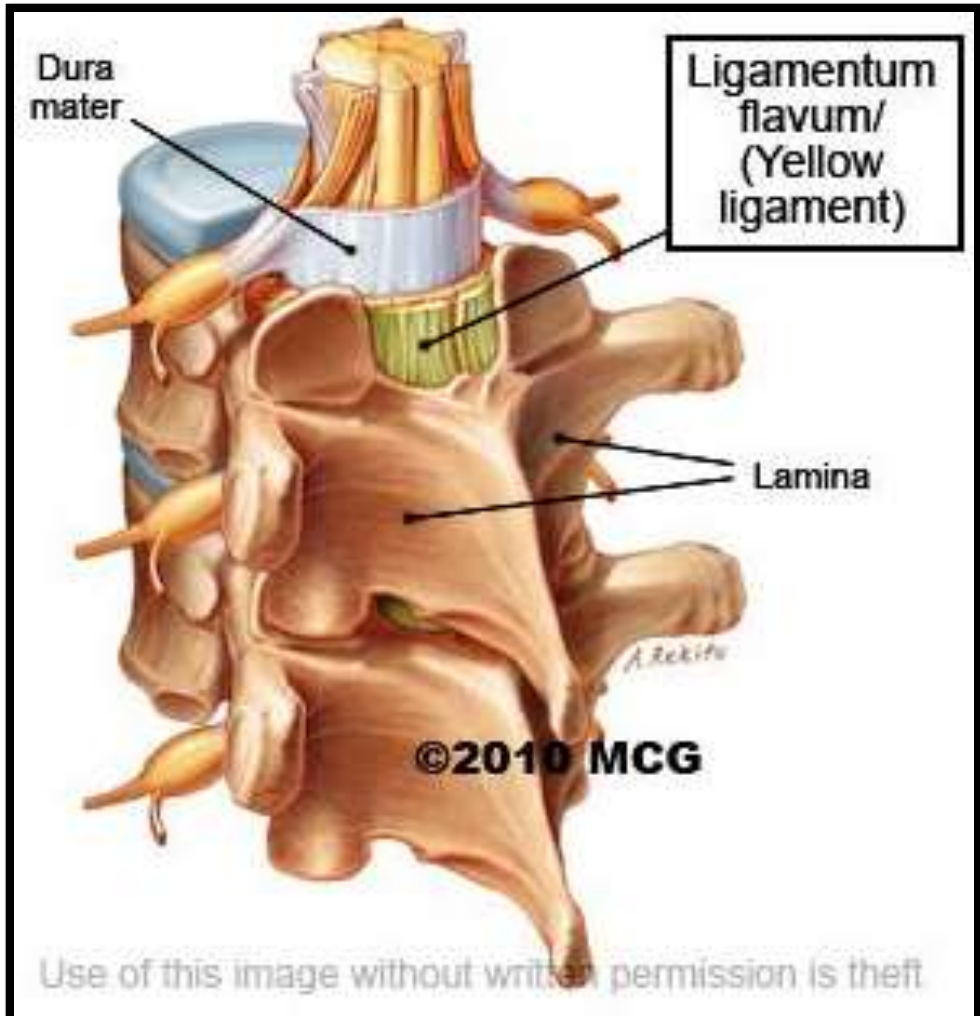
Posterior-

- Vertebral laminae.
- Ligamenta flava.

On each side-

- Pedicles of vertebrae.
- Intervertebral foramina.





Introduction contd...

Communications-

Above-

- With cranial cavity through foramen magnum.

Below-

- With sacral canal



Contents

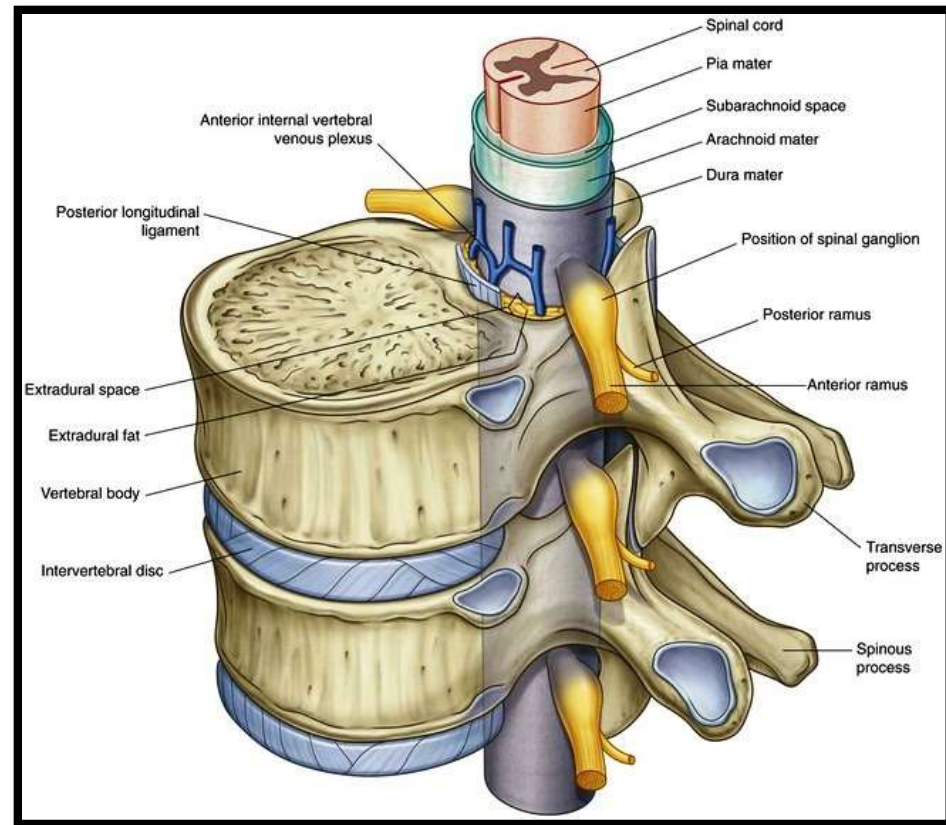
- Spinal meninges.
 - Spinal cord with its nerve roots.
 - Radiculomedullary arteries.
 - Internal vertebral venous plexus.
- Bony wall of the canal is separated from spinal meninges by epidural (extradural) space.

Epidural space-

- It lies between spinal dura and periosteum lining the vertebral canal.
- It is filled with loose areolar tissue and semiliquid fat.

Contents-

- Radiculomedullary arteries.
- Internal vertebral venous plexus.



Radiculomedullary Arteries

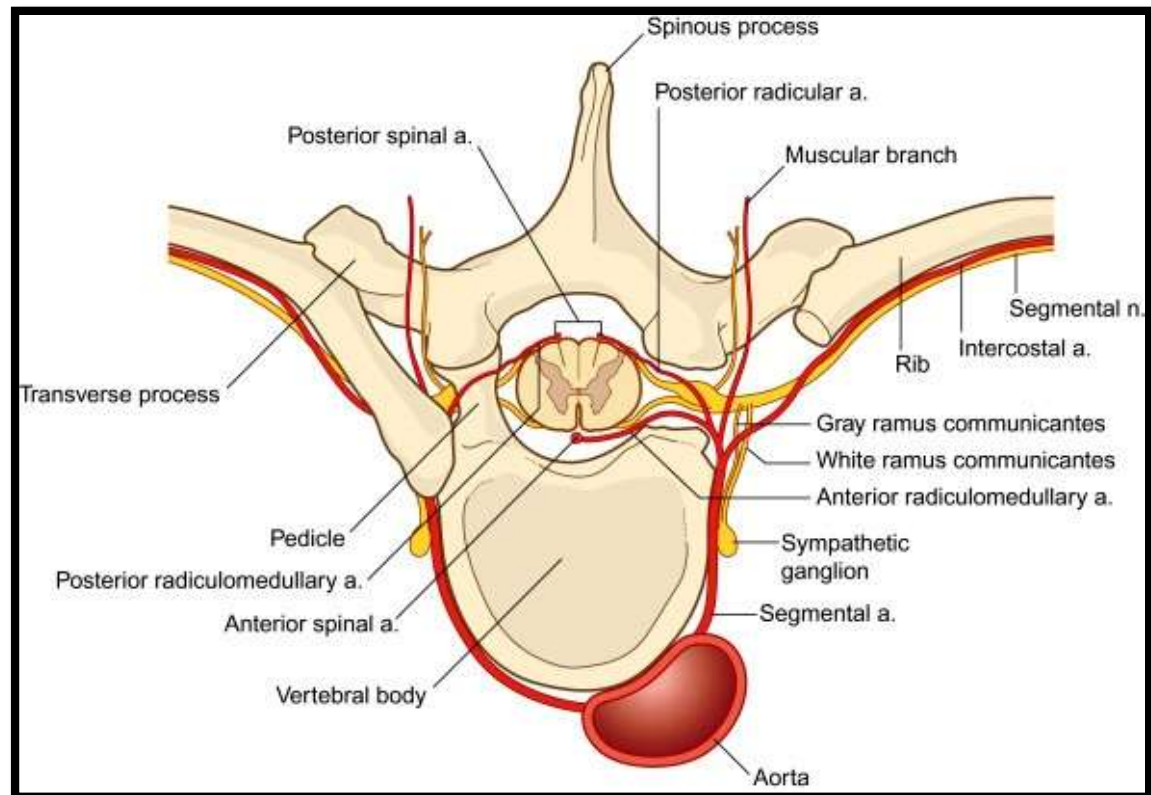
❖ In the **cervical region**, these arteries arise from:

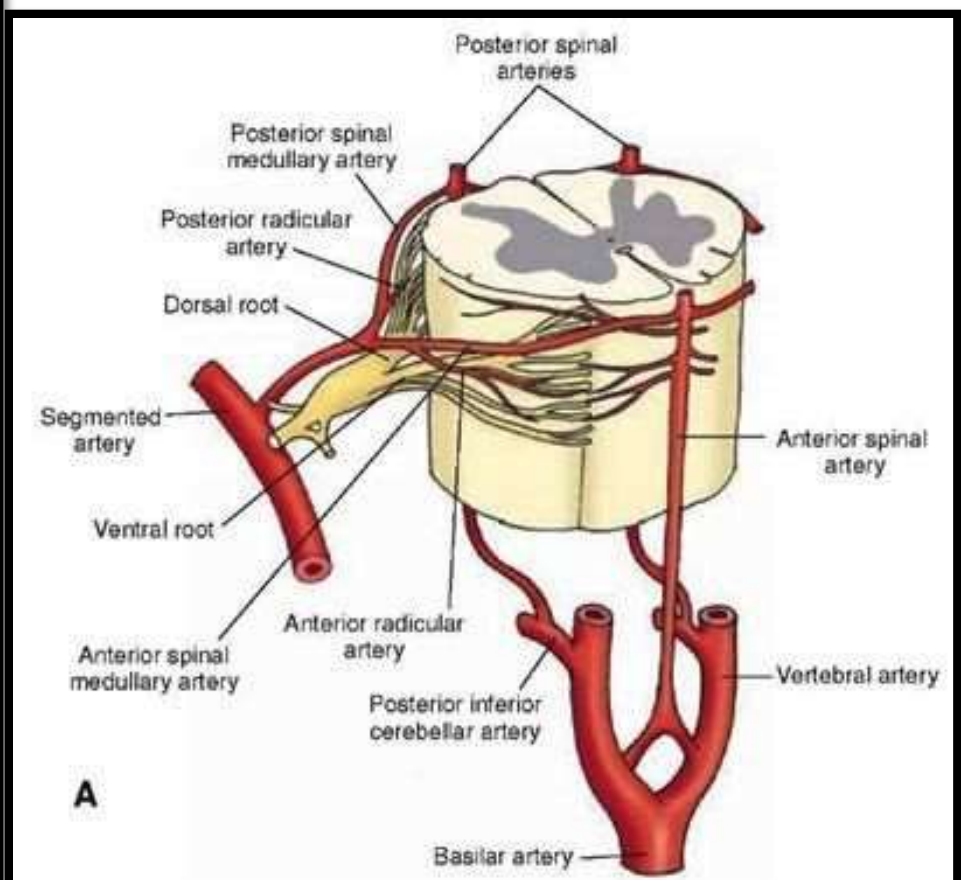
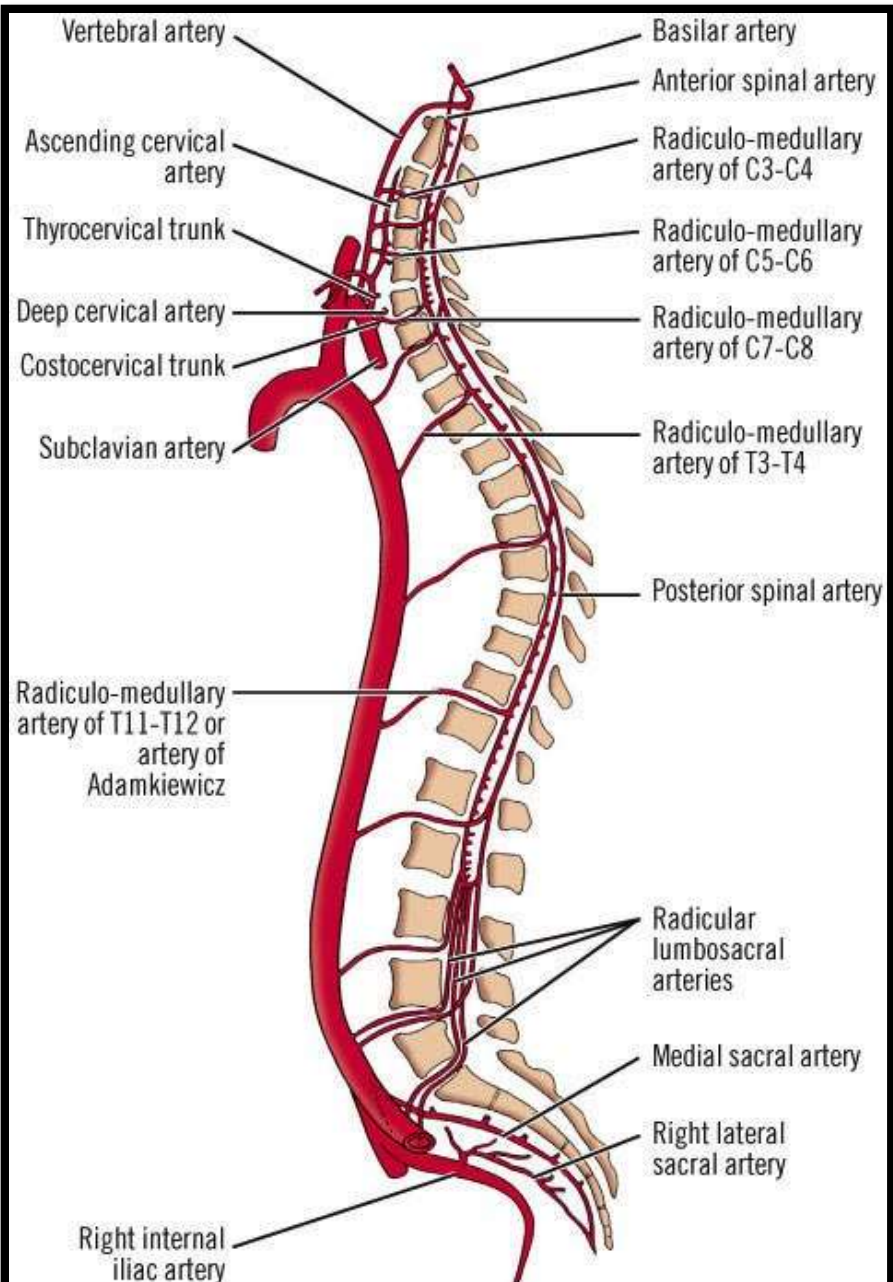
- Ascending Cervical Artery.
- Deep Cervical Artery.

❖ These arteries enter the vertebral canal through **intervertebral foramina**.

❖ These arteries supply:

- Spinal meninges.
- Spinal cord.
- Spinal nerve roots.
- Surrounding bones and ligaments.

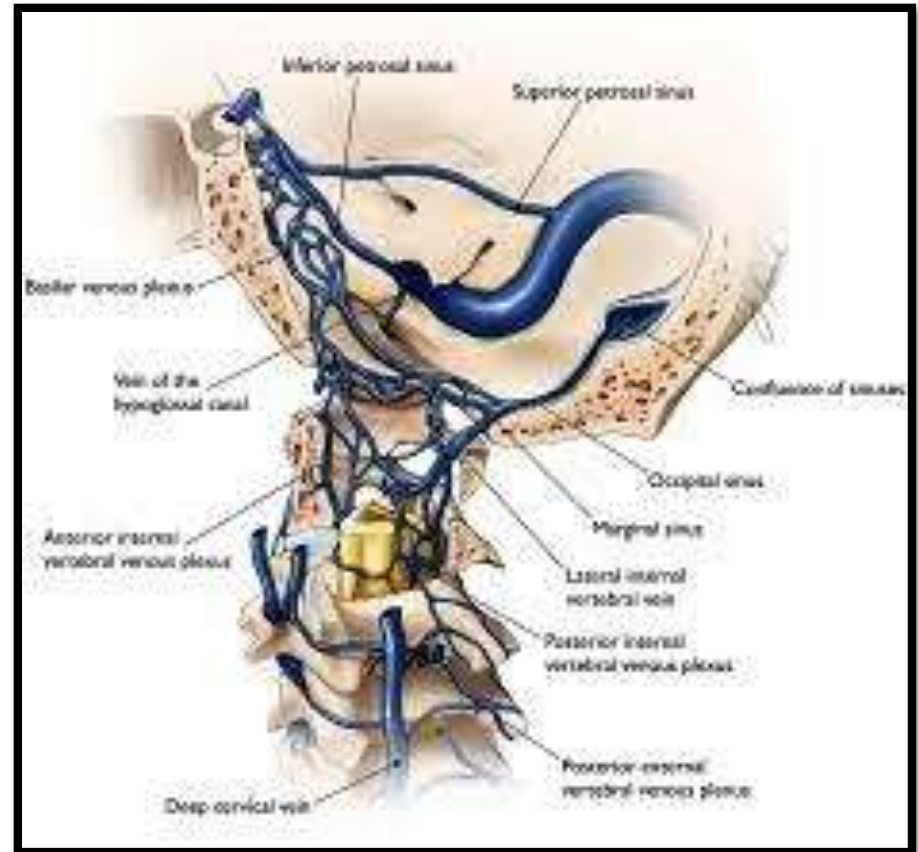




Internal Vertebral Venous Plexus

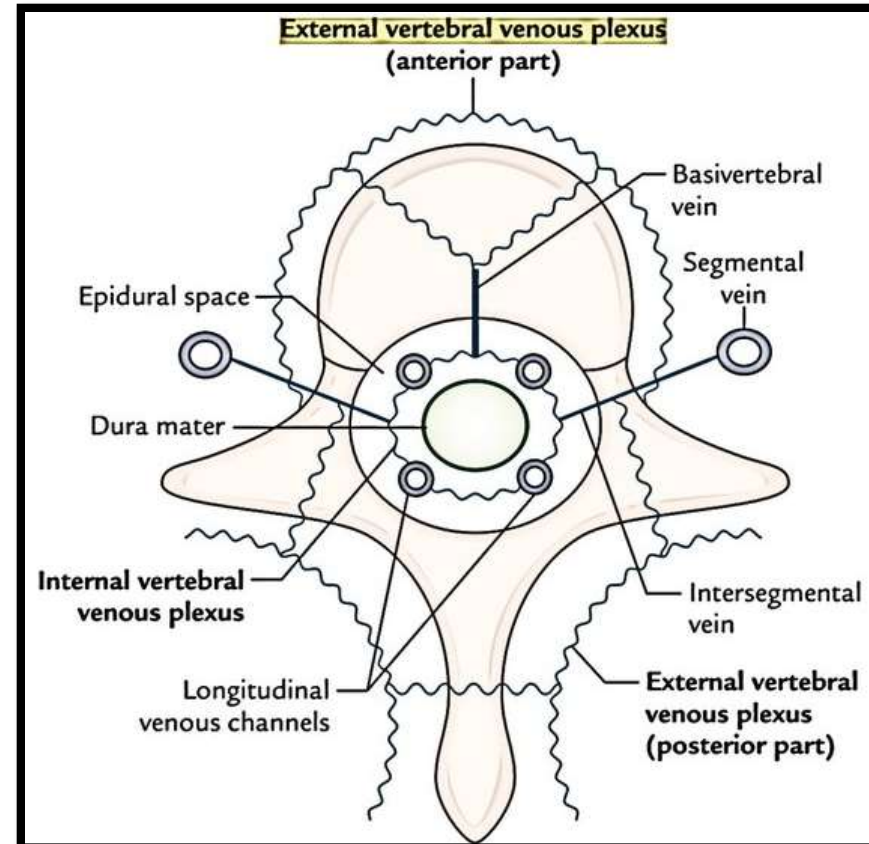
Extent-

- Throughout the length of vertebral canal.
- ❖ The veins of this plexus are **valveless** and communicate with intracranial dural venous sinuses through foramen magnum.
- ❖ It receives veins from:
 - Vertebrae.
 - Spinal meninges.
 - Spinal cord.



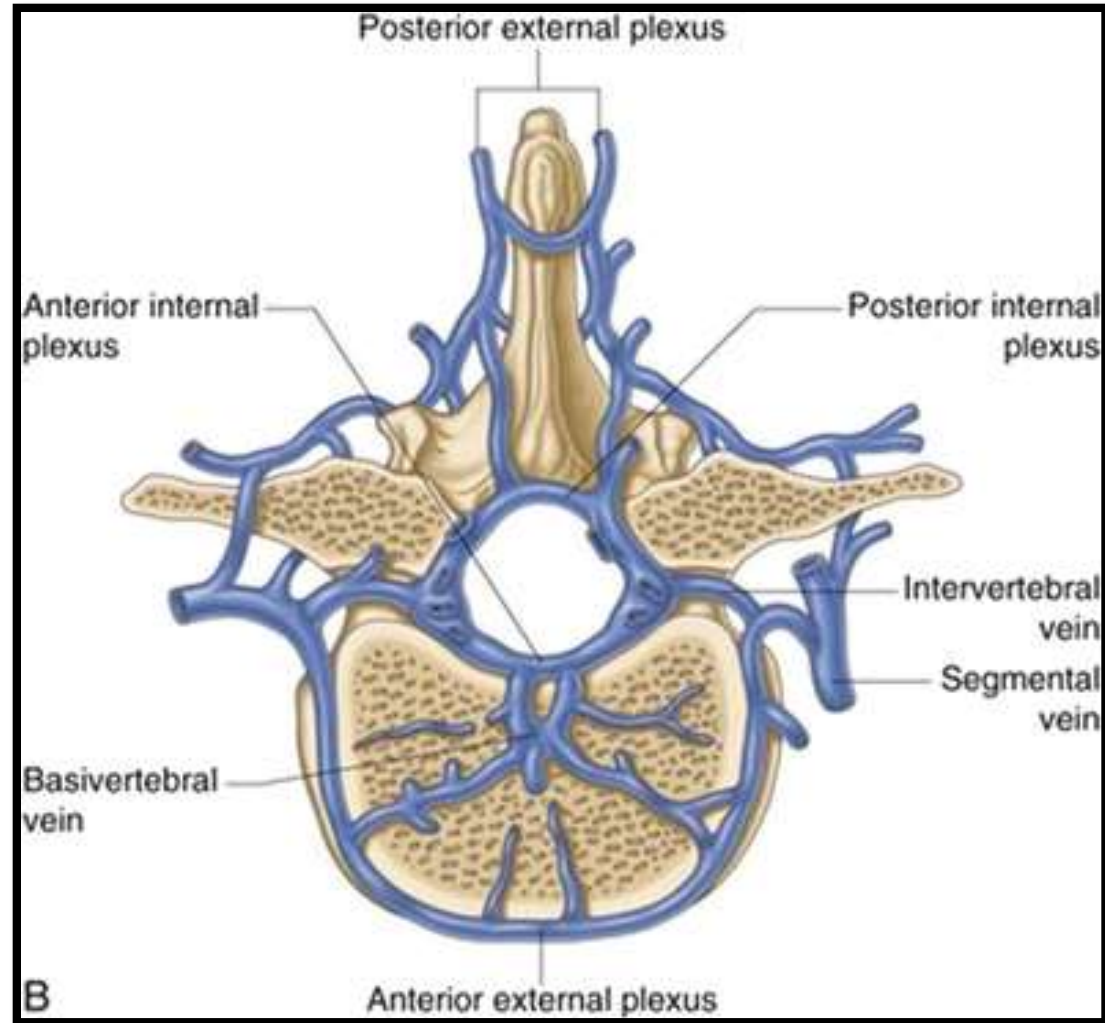
Internal Vertebral Venous Plexus contd...

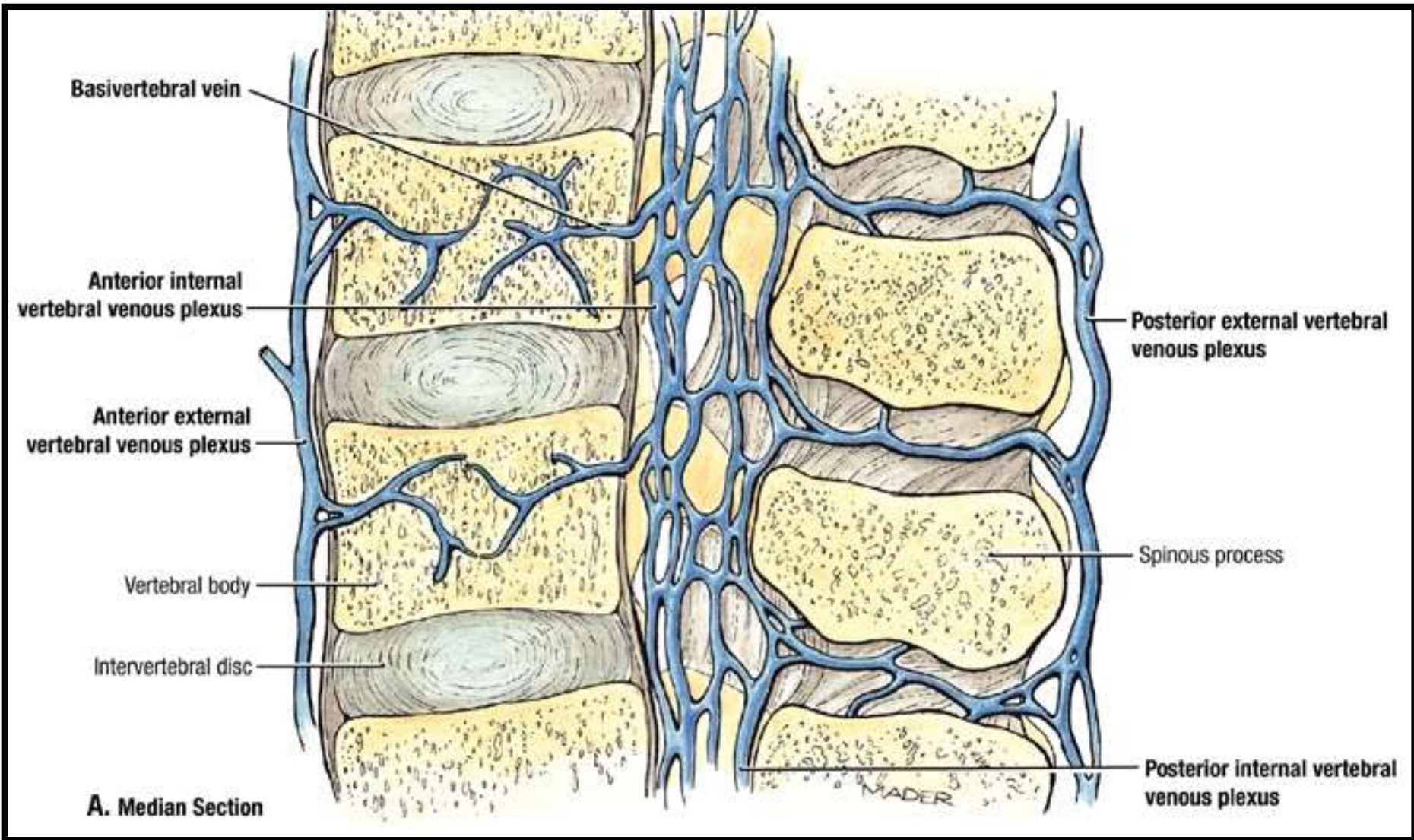
- ❖ It is drained by 4 longitudinal venous channels:
 - 2 anterior.
 - 2 posterior.
- ❖ Anterior part of this plexus receives basivertebral veins and sends efferent intersgmental veins through intervertebral foramina.



Internal Vertebral Venous Plexus contd...

- Intersegmental veins (**intervertebral veins**) drain into external vertebral venous plexus.
- External vertebral venous plexus drains into segmental veins.





Spinal Meninges

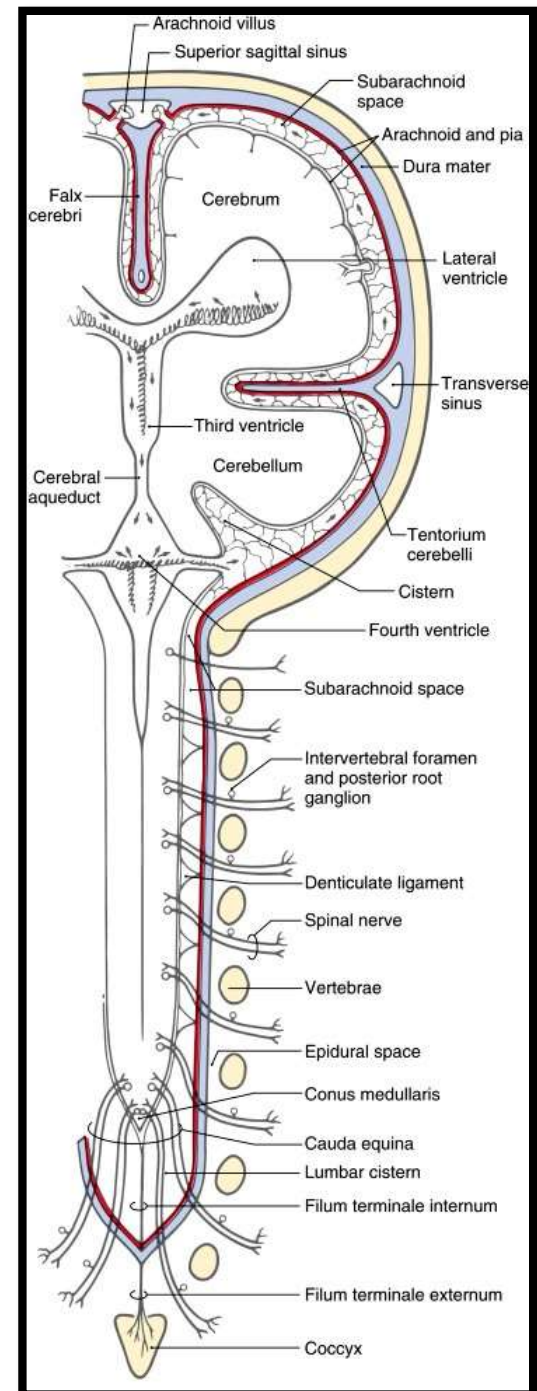
- ❖ Spinal cord is surrounded by **3** meninges (from superficial to deep):
 - Spinal Dura mater.
 - Spinal Arachnoid mater.
 - Spinal Pia mater.

Spinal Dura mater-

- ❖ It is the prolongation of meningeal layer of cranial dura.

Extent-

- From **foramen magnum** to **lower border of S2 vertebra**.
- ❖ It is pierced by dorsal and ventral roots of spinal nerves.
- ❖ Its lower blind end is pierced by filum terminale (a process of pia mater).



Spinal Meninges contd...

Spinal Arachnoid mater-

- It is thin, transparent vascular membrane.
- It loosely invests the spinal cord.

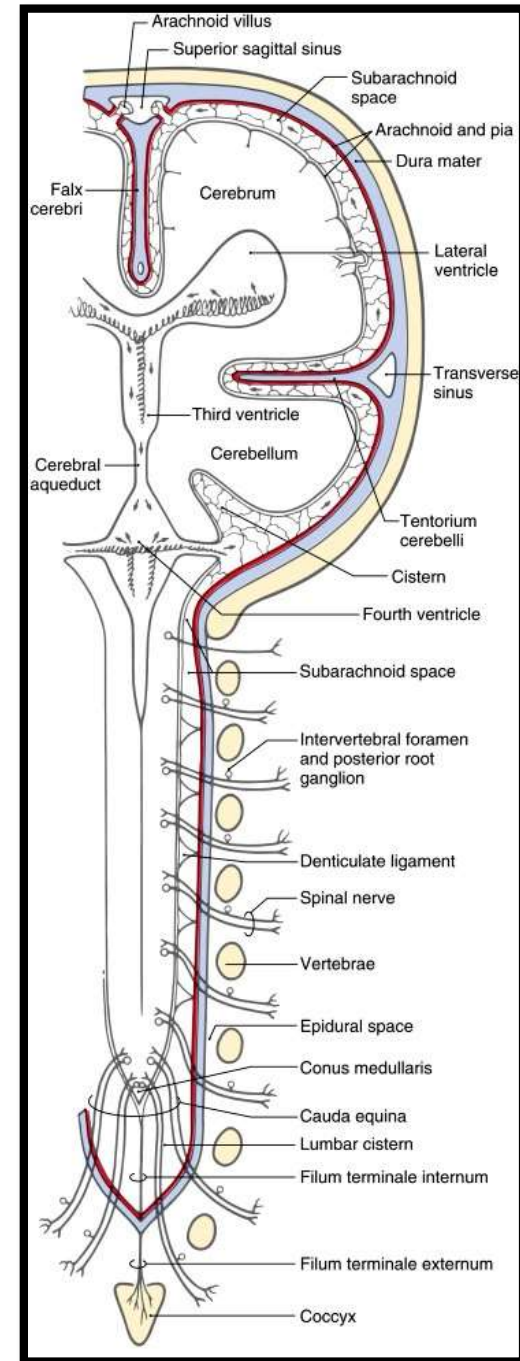
Extent-

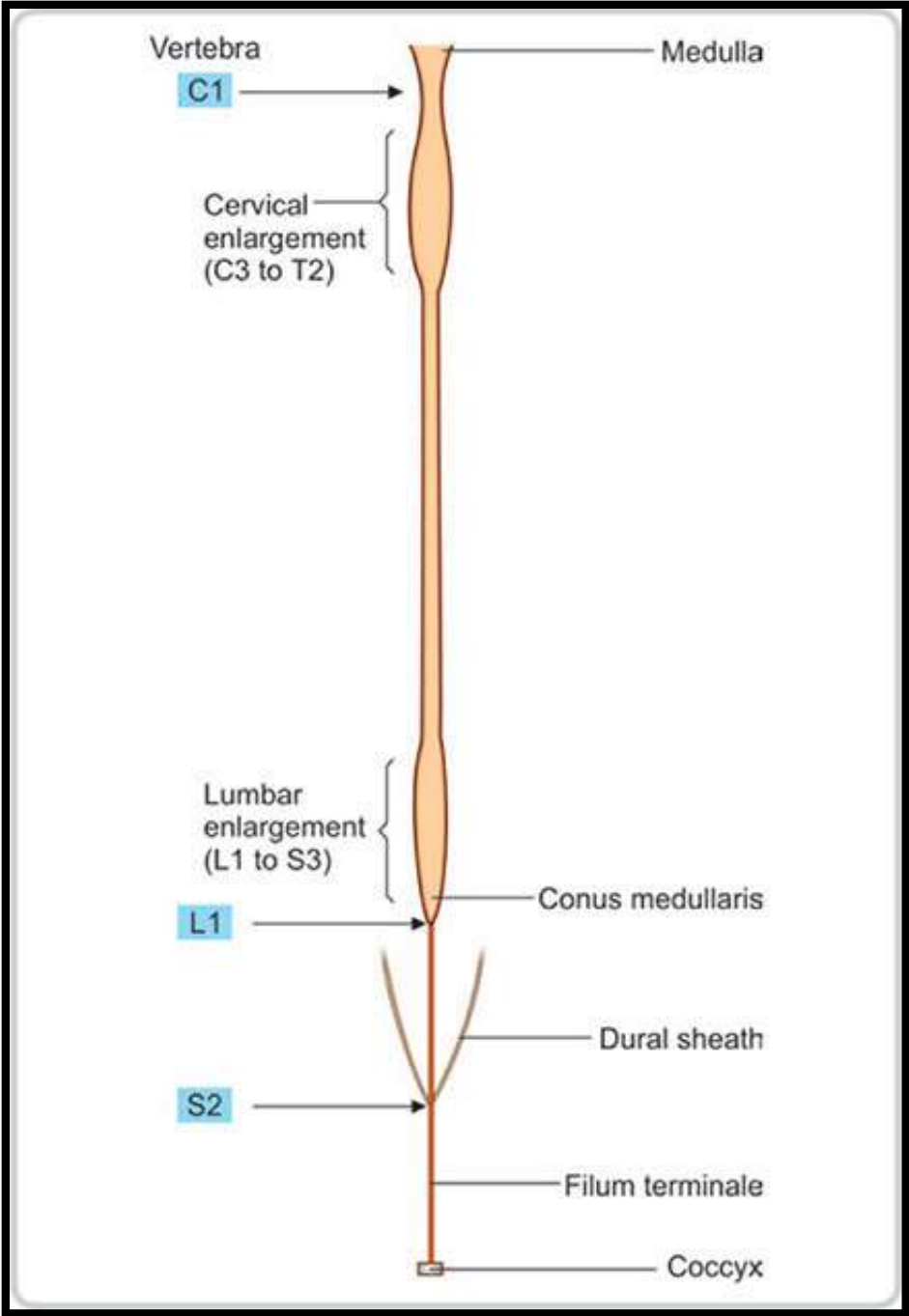
Above-

- It is continuous with arachnoid mater surrounding the brain.

Below-

- It ends at **lower border of S2 vertebra.**





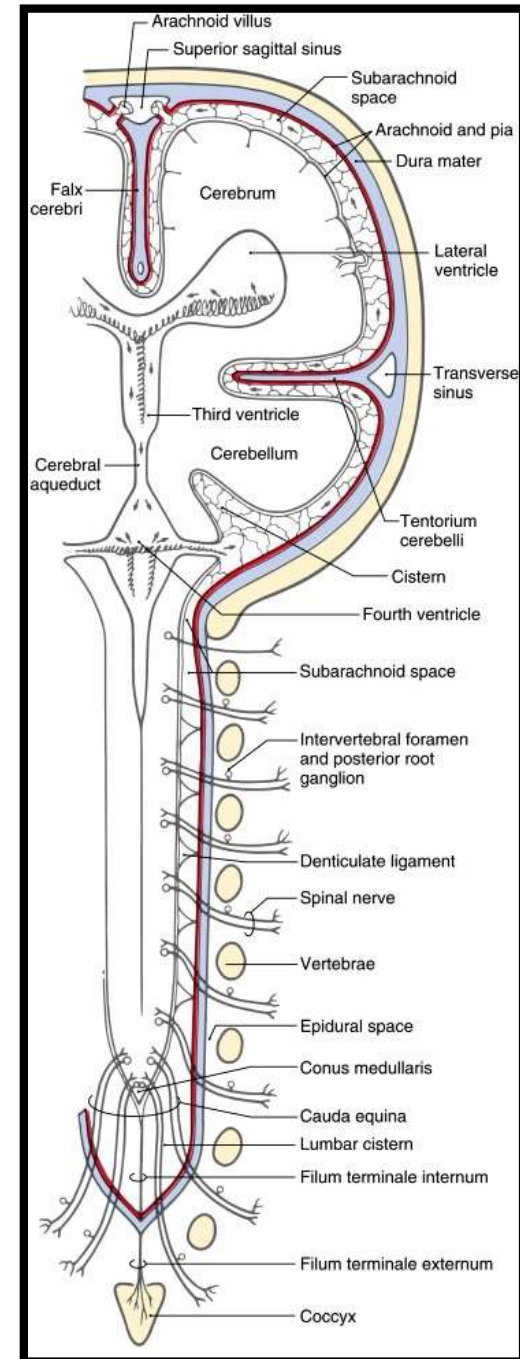
Spinal Meninges contd...

Spinal Pia mater-

- It is a vascular membrane and closely invests the spinal cord.

Processes of Pia mater-

- Filum Terminale.
- Ligamenta Denticulata.
- Linea Splendens.
- Subarachnoid septum.



Filum Terminale

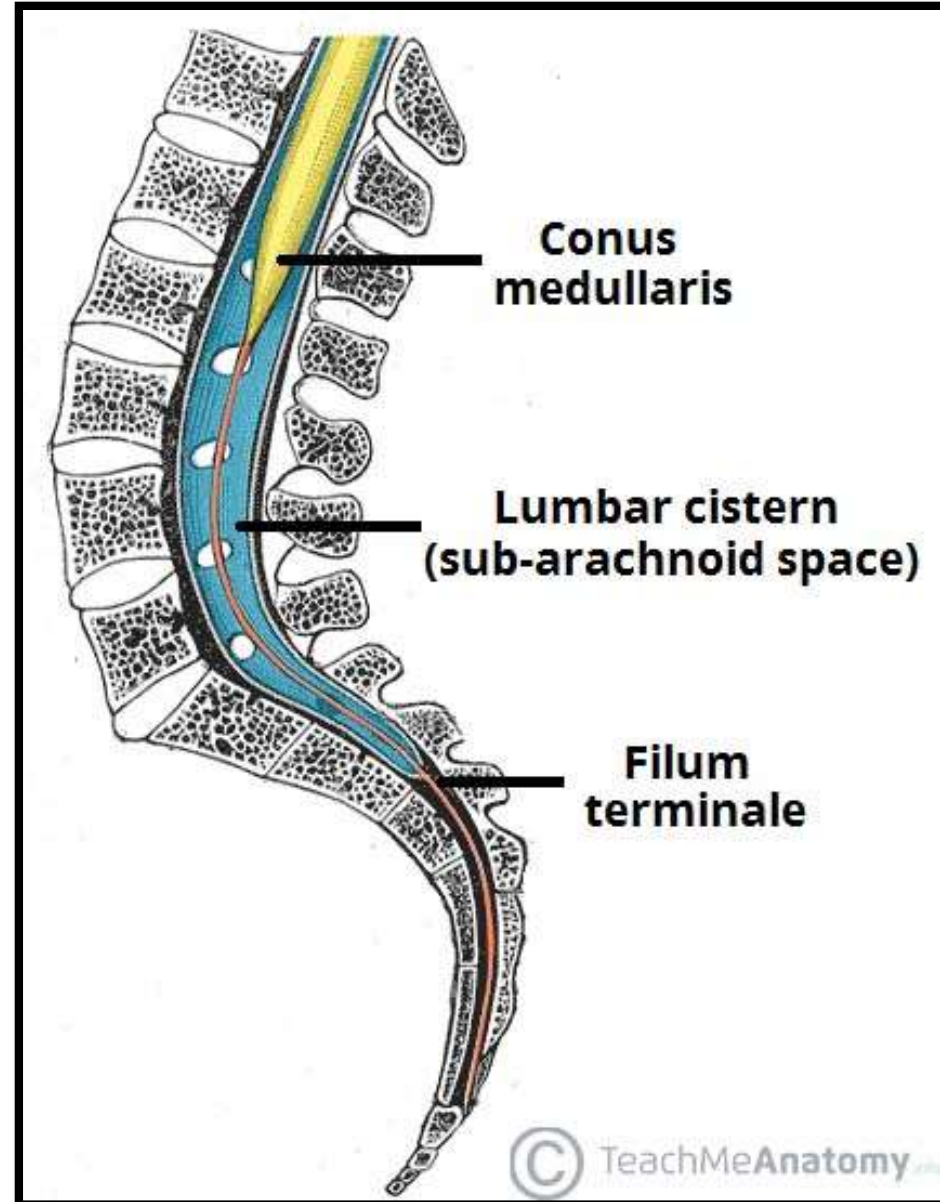
❖ It is a thin thread like prolongation of pia mater beyond conus medullaris (lower end of spinal cord).

Extent-

- From tip of conus medullaris to the base of coccyx.

Length- ~ 20 cm

❖ It passes through vertebral canal and emerges through sacral hiatus to gain attachment on the dorsal surface of 1st coccygeal vertebra.



Filum Terminale contd...

Parts-2

❖ Filum Terminale Internum.

❖ Filum Terminale Externum.

Filum Terminale Internum-

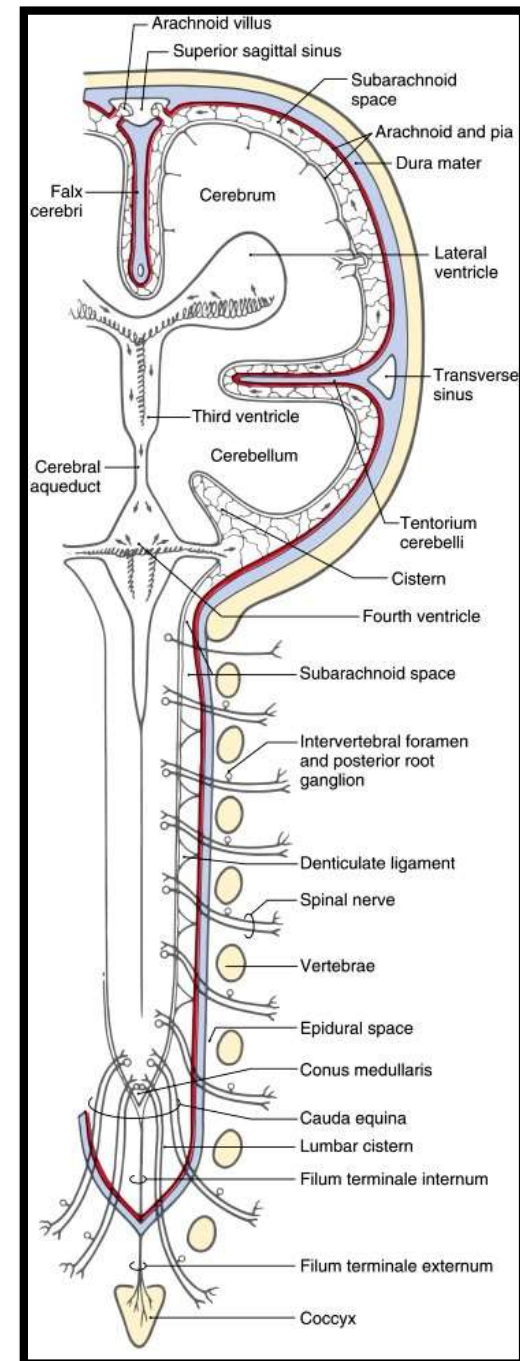
- It lies within the dural sac.

Length- ~15 cm.

Filum Terminale Externum-

- It lies outside the dural sac.

Length- ~5 cm.



Ligamenta Denticulata

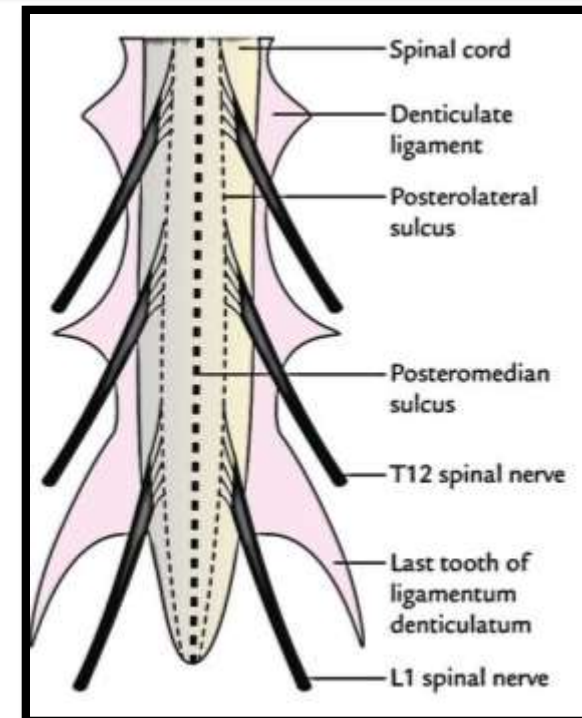
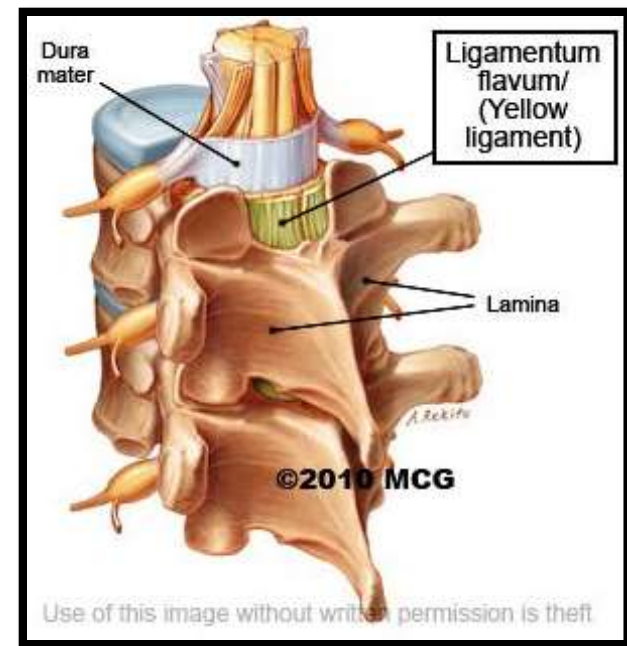
- These are ribbon-like transparent bands of pia mater.

Location-

- On each side, between ventral and dorsal roots of spinal nerve.

Extent-

- From foramen magnum to the point between the emergence of T12 and L1 spinal nerves.



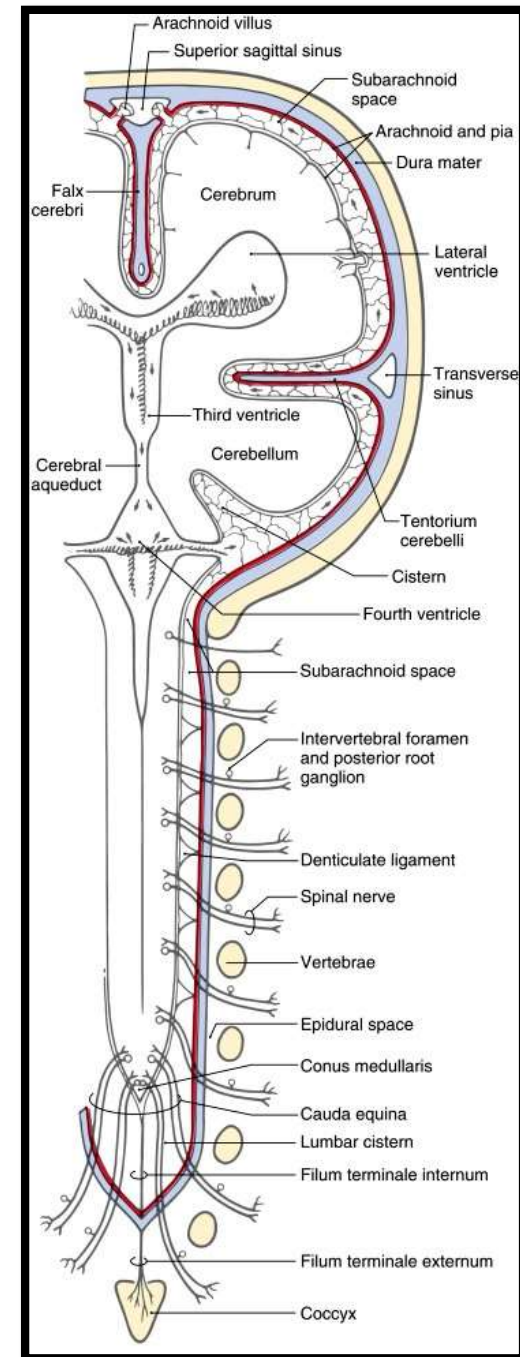
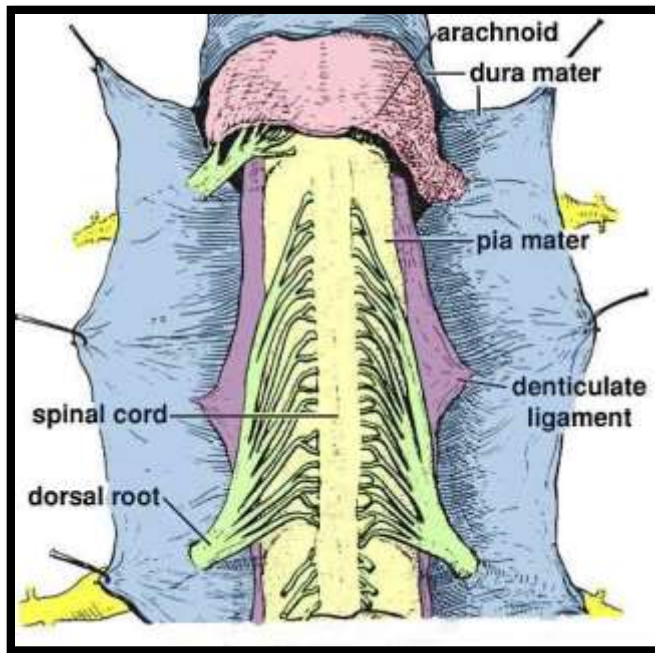
Ligamenta Denticulata contd...

Attachment-

- Lateral margin of each Denticulate ligament sends 21 tooth-like projections.
- These projections pass through subarachnoid space and arachnoid mater and attach on the inner surface of dural tube between the point of emergence of two spinal nerves.

Function-

- Anchor the spinal cord in middle of subarachnoid space.



Processes of Pia mater contd...

Linea Splendens-

- It is a thickened band of pia mater along the anterior median fissure of spinal cord.

Subarachnoid septum-

- It is a fenestrated pial septum in the midsagittal plane posteriorly.

Attachment-

- It is attached to the arachnoid mater posteriorly.

