

Chapter 13 Spinal Cord & PNS

THE SPINAL CORD

The **SPINAL CORD** extends from the foramen magnum down to about L1, L2. At the distal end is the **CONUS MEDULLARIS**. This is a blunted conical terminus at L1. The spinal cord has **MENINGES** that are the same as around the brain, except there is no periosteal layer of the dura mater. The reason for this, is because the vertebral column has to bend and flex. The spinal cord is not fixed to the vertebral canal.

Down from the conus medullaris is the **FILUM TERMINALE**. It is a continuation of pia mater beyond the conus medullaris and it anchors the spinal cord to the coccyx.

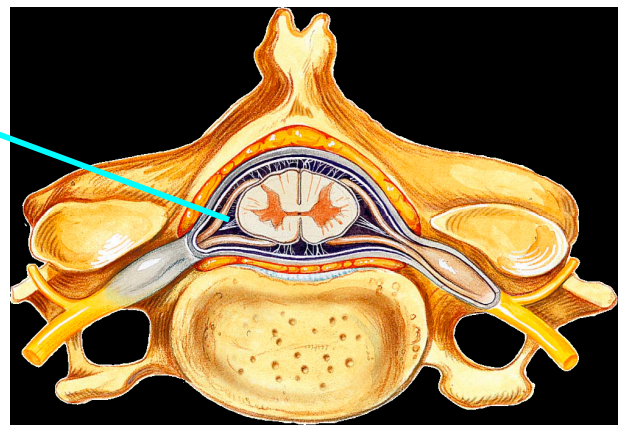
DENTICULATE LIGAMENTS anchor the spinal cord laterally. These are lateral projections of pia mater at each spinal level.

SPINAL ENLARGEMENTS are areas where the spine gets thicker. There are more neurons in these regions because they serve limbs.

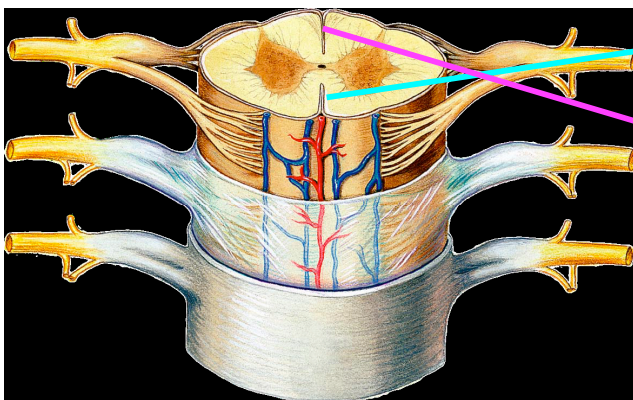
There are two of them:

1. Cervical
2. Lumbar

CAUDA EQUINA is a broom-like collection of nerve roots extending inferior to the conus medullaris. It forms because the vertebral column grows faster and longer than the spinal cord. So, the nerves are pulled inferiorly with intervertebral foramina. This area is where spinal taps are done!



X-SECTIONAL ANATOMY OF THE SPINAL CORD



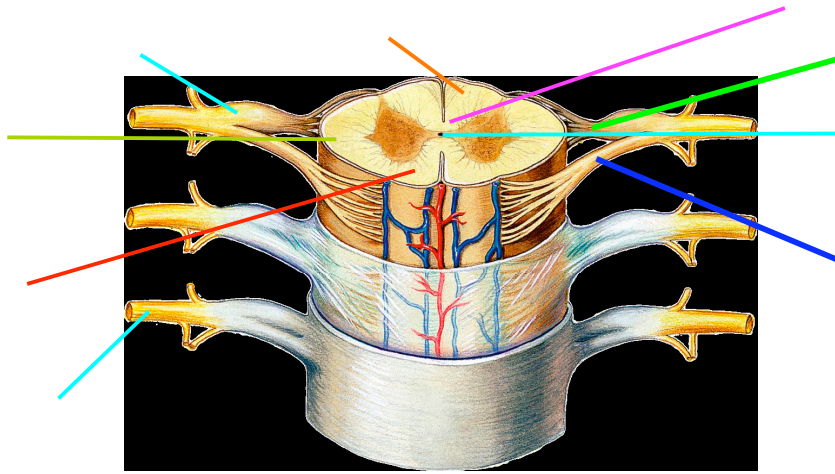
The **ANTERIOR MEDIAN FISSURE** is a deep longitudinal groove along the anterior surface

The **POSTERIOR MEDIAL SULCUS** is a shallower groove along the posterior surface

GRAY MATTER is the internal butterfly-shaped region. The wings have horns! The **ANTERIOR GRAY**

HORNS contain somatic motor neurons (go to skeletal muscle). The **POSTERIOR GRAY HORNS** contain sensory neurons (somatic sensory neurons and visceral sensory neurons). The **LATERAL GRAY HORNS** contain visceral motor neurons...these are located in the thoraco-lumbar region only (T1-L2)

The GRAY COMMISSURE connects the “wings” of the butterfly...it connects the horns. It surrounds the central canal.



WHITE MATTER surrounds the gray matter in three main areas:

1. Posterior columns
2. Lateral columns
3. Anterior columns

SPINAL NERVE ROOTS are divisions of spinal nerve near the cord. They are the DORSAL ROOT and the VENTRAL ROOT.

- The dorsal root carries sensory fibers into the CNS. The DORSAL ROOT GANGLION is a collection of sensory neuron cell bodies (most are unipolar).
- The ventral root carries motor fibers away from the CNS. The cell bodies in anterior and lateral gray horns.

THE PNS

PERIPHERAL NERVES are bundles of axons. Most are mixed nerves, meaning they carry sensory AND motor information.

PERIPHERAL NERVE WRAPPINGS match the organization of muscle wrappings.

- The whole nerve is wrapped by EPINURIUM (fibrous sheath)
- Within each nerve are bundles called fascicles. The bundle is wrapped by PERINURIUM
- Each fascicle is a bundle of axons. Each axon is wrapped in ENDONURIUM.
- The endonurium is superficial to the myelin sheath

