Spinal canal

(or vertebral canal or spinal cavity) is the space in vertebra through which the spinal cord passes.

The spinal canal is the open area in the bones (vertebrae) that make up the spinal column.

The spinal canal houses the spinal cord and nerve roots, and when it becomes constricted or narrowed, it can cause compression of these structures.

This canal is enclosed within the vertebral foramina of the vertebrae. In the intervertebral spaces, the canal is protected by the ligamentum flavum posteriorly and the posterior longitudinal ligament anteriorly.

The outermost layer of the meninges, the dura mater, is closely associated with the arachnoid which in turn is loosely connected to the innermost layer of the meninges, the pia mater. The meninges divide the spinal canal into the epidural space and the subarachnoid space. The pia mater is closely attached to the spinal cord. A subdural space is generally only present due to trauma and/or pathological situations. The subarachnoid space is filled with cerebrospinal fluid and contains the vessels that supply the spinal cord, namely the anterior spinal artery and the paired posterior spinal arteries, accompanied by corresponding spinal veins. The spinal arteries form anastomoses known as the vasocorona of the spinal cord. The epidural space contains loose fatty tissue, and a network of large, thin-walled blood vessels called the internal vertebral venous plexuses.

The spinal canal was first described by Jean Fernel.

Measurements

Either T1 or T2 images can be used for measurements of spinal canal dimensions. These findings are of importance, as not every patient undergoing preoperative MRI assessment will necessarily have both sequences performed and only a single sequence is required for research studies. Our findings are also of relevance in measurement of lumbar canal diameters [1)].

see Cervical spinal canal

see Lumbar spinal canal

1)
Cheung JP, Shigematsu H, Cheung KM. Verification of measurements of lumbar spinal dimensions in T1- and T2-weighted magnetic resonance imaging sequences. Spine J. 2014 Aug 1;14(8):1476-83. doi: 10.1016/j.spinee.2013.08.054. Epub 2013 Oct 4. PubMed PMID: 24314906.