

Lumbar dural sac cross sectional area

Studies have evaluated the associations between the dural sac cross sectional area (DSCSA) on MRI and the symptoms of LCCSS ^{1) 2)}.

Smaller DSCSA was directly related to lower health-related quality of life, more back and leg pain, and shorter walking distances before claudication ³⁾. DSCSA was proposed as the most specific and sensitive morphologic parameter predicting the absence or presence of leg pain ⁴⁾. Another study demonstrated that the ratio between the DSCSA of the vertebral body can be used as a diagnostic marker to predict the occurrence of LCCSS ⁵⁾. Narrow DSCSA was significantly associated with the presence of low back pain after adjustment for body mass index, age, and sex ⁶⁾.

Narrowing of the [lumbar dural sac cross sectional area](#) (DSCSA) and spinal canal cross-sectional area (SCCSA) have been considered major causes of [lumbar central canal spinal stenosis](#) (LCCSS). DSCSA and SCCSA were previously correlated with subjective walking distance before claudication occurs, aging, and disc degeneration. DSCSA and SCCSA have been ideal morphological parameters for evaluating LCCSS.

To evaluate lumbar central canal spinal stenosis (LCCSS) patients, pain specialists should more carefully investigate the dural sac cross-sectional area (DSCSA) than spinal canal cross-sectional area (SCCSA) ⁷⁾.

Schonstrom et al. showed that neurogenic claudication due to LSS was better defined by the cross-sectional area (CSA) of the dural sac, but that the CSA of the lumbar vertebral canal was unrelated to that of the dural sac ⁸⁾. From in vitro ⁹⁾ and in situ ¹⁰⁾ studies, the authors postulated that constrictions above the critical size 70 to 80 mm² would be unlikely to cause symptoms and signs of cauda encroachment. Subsequently, conflicting results have been published concerning the relationship between symptom severity and dural CSA. Even after axial loading, no statistically significant correlations were found in some studies ¹¹⁾. However, in another study, the use of the minimal CSA of the dural sac in central stenosis was found to be correlated with neurogenic claudication assessed measuring the maximum tolerated walking distance ¹²⁾.

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