

Spinal stenosis is a term that means narrowing of the spinal canal or the nerve root foramina. It is thus divided into central or lateral stenosis.

Central stenosis produces compression of the thecal sac: soft tissue (ligamentum flavum and disc) may contribute as much as 40% to this compression.

It is more common in males because their spinal canal is smaller at the L3-L5 level.

Lateral stenosis involves impingement of nerve roots lateral to the thecal sac, as they pass through the neural foramina.

It is made worse with hypertrophy (overgrowth) of the ligamentum flavum and /or joint capsule. Foraminal stenosis affects the exiting (upper) nerve root.

Compression of neural structures produces root ischemia and stenosis also compresses [vascular supply](#) of nerves so that symptoms are predominately those of neural ischemia. (Inadequate blood supply to nerves).

There are many different causes of stenosis, the commonest of which is degenerative changes in the spine. This is also referred to as spondylosis, and tends to occur in the older age groups.

However, there are other causes, including congenital or developmental stenosis. This presents at a much earlier age.

A further cause is spondylolisthesis, which is slippage of one vertebra on another, usually

caused by degenerative problems or trauma. Stenosis may be post-traumatic or post-surgical.

Stenosis can occur at any level in the spine, but most commonly in the lumbar region.

It is the commonest cause of Failed Back Surgery Syndrome (FBSS). Lumbar stenosis is a condition that progresses slowly, and has few clinical signs, thus often delaying diagnosis.

Diagnosis relies mostly on symptomatology raising the possibility of the condition, thereby suggesting relevant investigations.

“Symptoms are often chronic, frequently missed, or misdiagnosed in the medical community, and may cause severe disability or reduction in the quality of life.”( [ii](#))

Epstein et al. ( [iii](#) ) reported on 5 cases in which there was total obliteration of the subarachnoid space. 2 patients had stenosis and spondyloarthropathy, 1 had degenerative spondylolisthesis, 1 had previous spinal fusion and 1 had a large extruded disc.

At laminectomy,

“non-pulsating, thickened dural sac that conformed to the internal configuration of the involved spinal canal”

was found.

Japanese authors Kawauchi, Yone and Sakou ( [iiii](#) ) used a myeloscope to assess the effect of arachnoiditis, present preoperatively, on the outcome for surgical treatment of spinal stenosis.

In 36 patients with lumbar spinal stenosis, they found all had

"various degrees of adhesive changes in the cauda equina".

Patients with marked adhesions went on to do badly at operation and the authors concluded that

"Adhesive arachnoiditis was considered to be one of the causes for the poor operative results for LSS".

Razak, Ong and Hyzan in Malaysia ( [iv](#) ), looked at the surgical outcome for lumbar spinal stenosis. They found that 4 out of 25 cases had recurrent symptoms such as claudication. One of these was due to arachnoiditis.

Jackson and Isherwood ( [v](#) ) looked at 165 patients with symptoms suggestive of degenerative lumbar spine disease.

On MRI, they found central clumping of nerve roots in 16 patients (9.7%), which was associated with spinal stenosis at one of the affected levels in all. 44 patients had spinal stenosis.

Nerve root clumping occurred in association with pure spinal stenosis (10 cases), stenosis secondary to disc prolapse (4 cases) and degenerative spondylolisthesis (2 cases).

Clumping was confined to one vertebral level in 9 cases and extended 2-4 levels in 7 cases, of 5 which, spinal stenosis was present at multiple levels. The appearance of nerve root clumping was "indistinguishable" from that seen in adhesive lumbar arachnoiditis.

The authors concluded:

"Abnormal central clumping of nerve roots as described in arachnoiditis may occur in association with spinal stenosis in the absence of other risk factors although the cause for this appearance remains unexplained. Arachnoiditis-like changes extending over more than one vertebral level are rare (7%) except in the presence of spinal stenosis at multiple levels (29%)."

Another important point to consider is that invasive techniques such as myelograms or epidurals will be entering an already compromised space and this may increase the risk of complications, of which arachnoiditis is one. Some of the studies done on post-myelographic arachnoiditis suggest that stenosis is a factor in the degree of severity. ( [\[vi\]](#) )

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[\[i\]](#) Goldman SM, Funk JD, Christensen VM *J Am Podiatr Med Assoc* 1997 Mar; 87(3): 117-24 Spinal stenosis. A common cause of podiatric symptoms

[\[ii\]](#) Epstein JA, Epstein BS, Lavine LS, Rosenthal AD, Decker RE, Carras R. *J Neurosurg* 1978 Feb;48(2):252-8 Obliterative arachnoiditis complicating lumbar spinal stenosis.

[\[iii\]](#) Kawauchi Y, Yone K, Sakou T. *Spinal Cord* 1996 Jul; 34(7):403-10 Myeloscopic observation of adhesive arachnoiditis in patients with lumbar spinal canal stenosis.

[\[iv\]](#) Razak MA, Ong KP, Hyzan Y. *Med J Malaysia* 1998 Sep; 53 Suppl A: 12-21 The surgical outcome of degenerative lumbar spinal stenosis.

[\[v\]](#) Jackson A, Isherwood I. *Br J Radiol* 1994 Sep; 67(801):840-7 Does degenerative disease of the lumbar spine cause arachnoiditis? A magnetic resonance study and review of the literature.

[\[vi\]](#) Laitt R; Isherwood I; Jackson A *BrJ Radiol* 1996 Aug; 69(824): 693-4 Patterns of chronic adhesive arachnoiditis following Myodil myelography: the significance of spinal canal stenosis and previous surgery.