

Surgical aspects on lateral spinal stenosis

Indications and principles

Gunnar B J Andersson

Department of Orthopedics, Rush-Presbyterian – St Luke's Medical Center, 1753 West Congress Parkway, Chicago, Illinois 60612, U.S.A. Tel +312 942 5850. Fax +312 942 2101

The term lateral spinal stenosis refers to that subset of spinal stenosis which is confined to the lateral recesses and neuroforamina. It can be defined as an abnormal narrowing of the pathway of the lumbar nerve root, the dorsal root ganglion and/or the spinal nerve. Although occasionally combined with central stenosis, where the narrowing is in the central canal, lateral stenosis often occurs as an isolated entity affecting one or several levels, and one or both sides.

The classification of lateral stenosis can be based on several considerations. Van Akkerveeken (1989) has proposed a classification system based on 5 classes: 1) *etiology*, which includes congenital, developmental, degenerative, traumatic, and neoplastic; 2) *localization of the narrowing*, which can be the lateral recess, pedicle-zone, exit-zone, far lateral zone, or combination thereof; 3) *clinical symptoms*, which include atypical leg pain, neurogenic intermittent classification, nerve root compression, radiculopathy or combinations; 4) *pathoanatomy*, based on the cause of the narrowing and including structures such as ligaments, disc, facet joint or bone; and 5) *pathobiomechanics*, which includes rotational deformities and dynamic stenosis.

The most frequent cause of lateral stenosis is degeneration where disc space narrowing, facet hypertrophy and ligamentum flavum buckling and hypertrophy all contribute. The risk for encroachment on the neural structures is greatest at the disc joint level.

The symptoms in "pure" lateral spinal stenosis are usually either a radiculopathy or atypical leg pain; i.e., it presents with sciatica and neurologic symptoms or as a diffuse, bizarre pain in a nondermatomal distribution. Neurogenic intermittent claudication can also be the presenting symptom but is more often present when lateral and central stenosis occur together.

Diagnosis requires imaging. This is because the symptomatology is variable, and there are few clinical signs that are specific. CT, MRI and myelography can all be used (Andersson and McNeill 1992). Because of its ability to image calcified tissue, CT currently has

many advantages particularly when used in conjunction with myelography, which allows estimates of the cross-sectional diameter of the thecal sack. The main differential diagnosis in patients with radiculopathy is a disc herniation. Patients with atypical leg pain present a particularly difficult subset where pelvic and hip disease, neuropathy and hip disease, neuropathy and herpes zoster should all be considered.

Treatment is at first nonoperative. Activity control, analgesics, NSAID's and corsets constitute the first line of treatment. Epidural steroid injections are occasionally useful, particularly in patients with radiculopathy. Surgical indications include failure of conservative therapy, disabling pain, inability to function and progressive neurologic deficit. Surgery, when performed, should always include a decompressive laminectomy, which includes facetectomy and foramenectomy where required to obtain complete decompression. At the conclusion of the decompression, the lateral recess(es) should be visually open, and the foramina open to easy passage of probes, or also visually open. Discectomy is rarely indicated even with posterior disc bulges which often contribute to the stenosis. Discectomy contributes to post-surgical instability and should be avoided when possible. Fusion should be performed when the spine is preoperatively unstable, or is rendered unstable by surgery. This latter is controversial. Most surgeons agree that fusion should be performed when more than 2/3 of one facet joint is removed, or more than 50% of a facet pair, or more than 50% of successive facets. Those are general guidelines, however, with inadequate scientific basis. There are several possible fusion alternatives. Transverse process fusion (postero-lateral fusion) is probably the most common and logical since a posterior approach must be used to perform an adequate decompression. Internal fixation is increasingly used, and some combine posterior and anterior fusions (Andersson and McNeill 1992).

Summary

Lateral stenosis is a narrowing of the lateral recesses and/or foramina. It is most frequently caused by degeneration. Its clinical expression is variable and diagnosis requires imaging. Treatment is conservative, but should this fail, decompressive laminectomy and sometimes fusion is required.

References

- Andersson G B J, McNeill T W. Lumbar spinal stenosis. Mosby Year Book, St Louis, 1992
- Van Akkerveeken P F. Lateral stenosis of the lumbar spine. Thesis. University of Utrecht, The Netherlands, 1989.