

Postlaminectomy problems with reference to spinal fusion

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Postlaminectomy problems is a term often used in the literature describing all types of problems after lumbar spine operations. Disregarding such examples as unrealistic expectations of the operation and psychological disturbances, there are four major types of postlaminectomy problems with special reference to fusion of the lumbar spine which tends to be used with insufficient discrimination for remaining symptoms after decompressive lumbar spine surgery. Principally four pain patterns after laminectomy afflicted with insufficient pain relief can be distinguished: 1) primary total or subtotal absence of pain relief regarding sciatica; 2) relief of sciatica but significant remaining or new low back pain; 3) recurrent sciatica later in the course; and 4) symptoms explained by induced iatrogenic instability.

Absence of sciatic pain relief

Primary absence of relief from sciatic pain after decompressive operation indicates an incorrect pre-operative diagnosis or an incorrect operation. The patient should be re-examined clinically and with neuroradiological investigations and possibly also with nerve root blocks in order to pin point the symptomatic lesion.

Significant low back pain

In patients with relief of sciatic pain after operation for disc herniation or spinal stenosis but with significant low back pain of unchanged character as compared to preoperatively, a lumbar spine fusion of the affected segment may be considered (Figure 1). In the case of e.g. degenerative spondylolisthesis, the pain eliciting segment is defined like also in progressive disc reduction after discectomy; the symptomatic level in low back pain after decompression is often obvious, but in most cases vertebral slipping or disc reduction postoperatively do not cause major clinical problems (Jönsson et al 1992).

Recurrent sciatica

Recurrent sciatica after a primarily uncomplicated course after laminectomy morphologically usually is due to either recurrent nerve compression or the development of fibrosis/scar tissue.

A clinical picture with primary improvement after the operation but with slowly recurring sciatic symptoms after months to years, often including numbness, burning, and tingling sensations, is usually a sign of progressive fibrosis around the nerve roots and often constitutes what is labelled as the failed back surgery syndrome in the literature. Repeat CT and gadolinium-enhanced MRI investigations should be performed in order to exclude recurrent disc herniation or stenosis as explanation for the symptoms. The ability of gadolinium-enhanced MRI to distinguish scar tissue from recurrent disc is documented (Annertz et al 1992). In our own material of more than 500 cases of decompressive lumbar spine surgery with a minimum follow-up of 2 years, recurrent symptoms due to discogenic or bony encroachment occurred in 4 percent. The most common course for recurrent sciatica is fibrosis or at least is not explained by nerve compression.

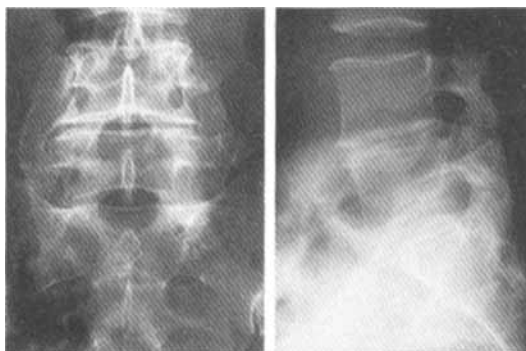


Figure 1. Posterolateral L4–L5 fusion, performed because of low back pain and progressive disc height reduction after discectomy, successful regarding sciatica, in a 30-year-old woman.

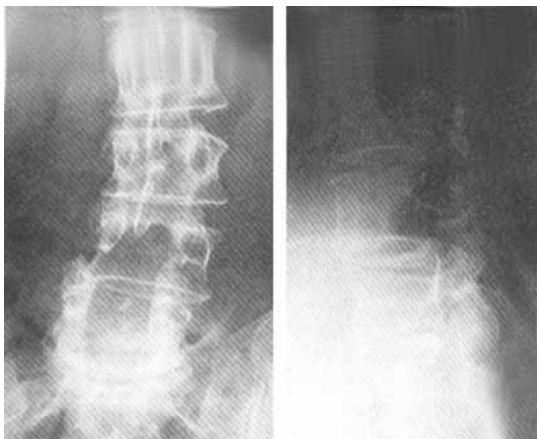


Figure 2. Asymmetric lowering of the disc due to L4-L5 facetectomy on the right side.



Figure 3. Progressive spondylolisthesis L4-L5 due to facetectomy on the right side

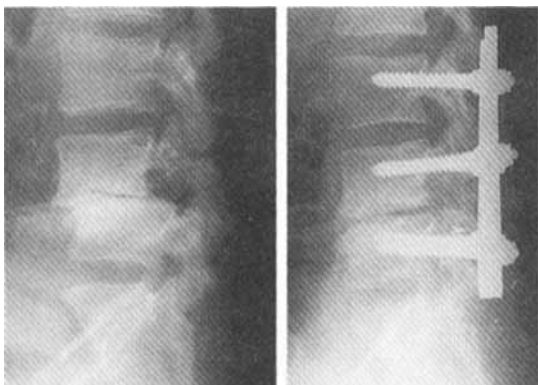


Figure 4. Progressive L4-L5 spondylolisthesis due to facet joint resection before and after reduction and fixation with VSP-plates.

Recurrent sciatica is very dissatisfying to the patient as well as the surgeon and has led to desperate attempts at lumbar spine fusion with a hope of decreasing the symptoms of the patients. However, fusion can not be regarded as the ultimate solution to

the failed back surgery syndrome, even if it has been recommended, alone and/or in conjunction with decompression, from some spinal centers. It would seem essential in the future to determine what groups of patients with recurring symptoms that may benefit from a repeat operation in order to avoid failed back surgery as the next step in treatment.

Induced instability

Induced instability is the clinical picture associated with total facetectomy or resection of the entire articular process, inferior or superior, adjacent to the decompression. These patients often describe primary relief from claudication or sciatica after the operation but soon afterwards, usually within weeks or months, experience a feeling of instability of the spine combined with sudden radiating pain from the spine to the leg, usually not distinctly dermatome localized. The symptoms are mechanic and can usually be totally relieved by the recumbent position. Often the patients become totally dependent on a stiff corset for ambulation. These symptoms are typical for induced instability by too radical a decompression of the spine. The patients are definitely worse off post- than preoperatively. The diagnosis, in addition to the clinical picture, may often be disclosed by plain radiography and, when in doubt, CT will give the answer. Secondary effects of facetectomy may be asymmetric lowering of the disc (Figure 2) and progressive spondylolisthesis (Figure 3). All these patients share the same clinical picture.

If induced instability is occurring secondary to facetectomy, major remaining nerve compression should be excluded by means of MRI or CT. If the patient becomes totally painfree in the recumbent position and with a corset, only spinal fusion over the unstable segment is indicated. Because of the very wide resection performed at the first surgical procedure, stabilization with plates is recommended in combination with bone grafting.

Being a referral department, we have been faced with these types of problem to an increased extent the last few years. In 13 consecutive patients referred to us with this clinical and radiographic picture, aged between 41 and 77 years, stabilizing operations using VSP-plate fixation and bone grafting have been performed (Figure 4). The patients have felt an immediate improvement regarding the instability symptoms and at follow-up, all except one experienced significant or total resolution of symptoms.

In conclusion, total facetectomy can and should be avoided in most decompressive operations on the degenerative lumbar spine. If it is necessary for relief of nerve compression, concomitant fusion should be considered.

Table 1. Postlaminectomy problems with reference to spinal fusion

	Fusion
Absence of sciatic pain relief	No
Significant remaining low back pain	?
Recurrent sciatica	No
Induced instability	Yes

Summary (Table 1)

- Absence of relief of sciatica after laminectomy is not an indication for fusion.
- Significant remaining low back pain with a distinct morphologic explanation sometimes may be considered an indication for fusion.
- Recurrent sciatica due to fibrosis is not relieved by fusion.
- Induced instability because of facetectomy responds well to fusion.
- Fusion for unspecific remaining complaints after decompressive surgery, not explained by distinct morphologic findings, should be avoided.

References

- Annertz M, Hägglund G, Holtås S, Jönsson B, Strömqvist B. Contrast-enhanced MRI versus myelography and contrast-enhanced CT in post-discectomy problems. *Eur Spine J* 1992; 1: 84.
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