

# Surgical versus non-surgical treatment for lumbar spinal stenosis (Review)

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[Intervention Review]

# Surgical versus non-surgical treatment for lumbar spinal stenosis

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## ABSTRACT

### Background

Lumbar spinal stenosis (LSS) is a debilitating condition associated with degeneration of the spine with aging.

### Objectives

To evaluate the effectiveness of different types of surgery compared with different types of non-surgical interventions in adults with symptomatic LSS. Primary outcomes included quality of life, disability, function and pain. Also, to consider complication rates and side effects, and to evaluate short-, intermediate- and long-term outcomes (six months, six months to two years, five years or longer).

### Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, five other databases and two trials registries up to February 2015. We also screened reference lists and conference proceedings related to treatment of the spine.

### Selection criteria

Randomised controlled trials (RCTs) comparing surgical versus non-operative treatments in participants with lumbar spinal stenosis confirmed by clinical and imaging findings.

### Data collection and analysis

For data collection and analysis, we followed methods guidelines of the Cochrane Back and Neck Review Group (Furlan 2009) and those provided in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011).

### Main results

From the 12,966 citations screened, we assessed 26 full-text articles and included five RCTs (643 participants).

Low-quality evidence from the meta-analysis performed on two trials using the Oswestry Disability Index (pain-related disability) to compare direct decompression with or without fusion versus multi-modal non-operative care showed no significant differences at six months (mean difference (MD) -3.66, 95% confidence interval (CI) -10.12 to 2.80) and at one year (MD -6.18, 95% CI -15.03 to

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2.66). At 24 months, significant differences favoured decompression (MD -4.43, 95% CI -7.91 to -0.96). Low-quality evidence from one small study revealed no difference in pain outcomes between decompression and usual conservative care (bracing and exercise) at three months (risk ratio (RR) 1.38, 95% CI 0.22 to 8.59), four years (RR 7.50, 95% CI 1.00 to 56.48) and 10 years (RR 4.09, 95% CI 0.95 to 17.58).

Low-quality evidence from one small study suggested no differences at six weeks in the Oswestry Disability Index for patients treated with minimally invasive mild decompression versus those treated with epidural steroid injections (MD 5.70, 95% CI 0.57 to 10.83; 38 participants). Zurich Claudication Questionnaire (ZCQ) results were better for epidural injection at six weeks (MD -0.60, 95% CI -0.92 to -0.28), and visual analogue scale (VAS) improvements were better in the mild decompression group (MD 2.40, 95% CI 1.92 to 2.88). At 12 weeks, many cross-overs prevented further analysis.

Low-quality evidence from a single study including 191 participants favoured the interspinous spacer versus usual conservative treatment at six weeks, six months and one year for symptom severity and physical function.

All remaining studies reported complications associated with surgery and conservative side effects of treatment: Two studies reported no major complications in the surgical group, and the other study reported complications in 10% and 24% of participants, including spinous process fracture, coronary ischaemia, respiratory distress, haematoma, stroke, risk of reoperation and death due to pulmonary oedema.

### **Authors' conclusions**

We have very little confidence to conclude whether surgical treatment or a conservative approach is better for lumbar spinal stenosis, and we can provide no new recommendations to guide clinical practice. However, it should be noted that the rate of side effects ranged from 10% to 24% in surgical cases, and no side effects were reported for any conservative treatment. No clear benefits were observed with surgery versus non-surgical treatment. These findings suggest that clinicians should be very careful in informing patients about possible treatment options, especially given that conservative treatment options have resulted in no reported side effects. High-quality research is needed to compare surgical versus conservative care for individuals with lumbar spinal stenosis.

## **PLAIN LANGUAGE SUMMARY**

### **Surgical versus non-surgical treatment for lumbar spinal stenosis**

**Review question:** We reviewed the evidence that compares surgery versus non-surgical treatment for a condition called lumbar spinal stenosis. This condition occurs when the area surrounding the spinal cord and nerves becomes smaller.

**Background:** People with lumbar spinal stenosis experience a range of symptoms including back pain, leg pain, numbness and tingling in the legs and reduced physical function. These symptoms prompt people to seek treatment. One option for treatment is surgery. Other treatment options include physical therapy, exercise, braces and injections into the spine.

**Study characteristics:** We included five studies that compared surgical versus non-surgical treatment in a total of 643 people with lumbar spinal stenosis. Average age of participants in all studies was over 59 years. Follow-up periods ranged from six weeks to 10 years.

**Key results:** We cannot conclude on the basis of this review whether surgical or non-surgical treatment is better for individuals with lumbar spinal stenosis. Nevertheless, we can report on the high rate of effects reported in three of five surgical groups, ranging from 10% to 24%. No side effects were reported for any of the conservative treatment options.

Three studies compared spine surgery versus various types of non-surgical treatment. It is difficult for review authors to draw conclusions from these studies because non-surgical treatments were inadequately described. One study that compared surgery versus bracing and exercise found no differences in pain. Another study compared surgery versus spinal injections and found better physical function with injections, and better pain relief with surgery at six weeks. Still another trial compared surgery with an implanted device versus non-surgical care. This study reported favourable outcomes of surgery for symptoms and physical function.

**Quality of the evidence:** Evidence obtained by comparing surgery versus non-surgical treatment is of low quality. Well-designed studies are needed to examine this problem. In particular, researchers need to do a better job of describing the details of non-surgical treatments.