

Review: evidence for the effectiveness of surgery for low back pain, radiculopathy, and spinal stenosis is limited

QUESTION

Is surgery effective for low back pain, radiculopathy, and symptomatic spinal stenosis?

REVIEW SCOPE

Included studies evaluated surgery as treatment for non-radicular low back pain with common degenerative changes, radiculopathy with herniated lumbar disc, or symptomatic spinal stenosis in patients >18 years of age who had low back pain. Studies reported ≥ 1 of the following outcomes: back-specific function, general health status, pain, work disability, and patient satisfaction. Exclusion criteria included pregnancy and low back pain associated with acute major trauma, cancer, infection, cauda equina syndrome, osteoporosis, and vertebral compression fracture.

REVIEW METHODS

Medline, Cochrane Central Register of Controlled Trials, and Cochrane Database of Systematic Reviews (all to Jul 2008) and reference lists were searched for randomised controlled trials (RCTs) published in English or included in English-language systematic reviews, and English-language systematic reviews published after 1999. Experts were contacted. 74

RCTs, including 62 reported in 22 systematic reviews, met the inclusion criteria: 20 RCTs ($n = 2669$) involved non-radicular back pain with common degenerative changes; 35 ($n = 4732$)* involved radiculopathy with herniated lumbar disc; and 19 ($n = 1994$)* involved spinal stenosis with or without degenerative spondylolisthesis.

MAIN RESULTS

The main results are in the table.

CONCLUSIONS

Discectomy is better than non-surgical therapy for short-term but not long-term relief of radiculopathy. Evidence for the effectiveness of other types of surgery is limited.

*Information provided by author.

Abstract and commentary also appear in *ACP Journal Club*.

ABSTRACTED FROM

Chou R, Baisden J, Carragee EJ, *et al*. Surgery for low back pain: a review of the evidence for an American Pain Society clinical practice guideline. *Spine* 2009;**34**:1094–109.

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► **Clinical Impact Ratings:** GP/FP/Primary care 6/7; Neurology 6/7; Anaesthesiology 6/7; Physical medicine and rehabilitation 6/7; Rheumatology 6/7; Surgery – Orthopaedics 5/7; Surgery – Neurosurgery 5/7

Selected surgical interventions for low back pain, radiculopathy, or spinal stenosis*

Patients	Comparison	Number of trials (n); follow-up	Findings†
Non-radicular back pain with common degenerative changes	Fusion v non-surgical therapy	4 (767); 1–2 years	Fusion was better than non-intensive supervised physical therapy for pain and function (1 RCT) but not clinically (1 RCT) or statistically (2 RCTs) better than intensive rehabilitation with cognitive-behavioural therapy.
	Fusion v artificial disc replacement	2 (596); 2 years	CHARITÉ artificial disc was non-inferior to anterior lumbar interbody fusion (1 RCT), and Prodisc II was better than instrumented circumferential fusion (1 lower-quality RCT) for composite outcomes; results for individual outcomes were inconsistent.
Radiculopathy with prolapsed lumbar disc	Discectomy v non-surgical therapy	4 (968); 2–10 years	Open discectomy was better at {1 year}‡; but not 4 or 10 years (1 lower-quality RCT); microdiscectomy was better at 8 weeks (1 RCT) but not 2 years (2 RCTs); open discectomy or microdiscectomy was better for function and disability at 3 months but not 2 years (1 RCT).
Symptomatic spinal stenosis	Laminectomy v non-surgical therapy	4 (718); 2–10 years	Laminectomy was better for some pain measures up to 2 years (2 RCTs) and at 4 years but not 1 or 10 years (1 RCT); treatments did not differ in 1 RCT.
	Interspinous spacer v non-surgical therapy	2 (275); 2 years	Interspinous spacer was better for overall success at 2 years (2 RCTs, 1 lower-quality). Results for subsequent laminectomy were inconsistent (6% v 22% in 1 lower-quality RCT, 12% v 12% in 1 high-quality RCT).

*RCT, randomised controlled trial.

†Trials were rated high quality (> 4 of 9 or > 5 of 10 criteria) unless otherwise noted.

‡Data confirmed by author.

Commentary continued from previous page

Chou *et al* found that the results of surgical studies were inconsistent (even without considering placebo effects). They did not adequately address potential contributions of physical therapy in those studies, although they appropriately emphasise surgical complications. They note problems with intention-to-treat analyses in this setting, appropriately challenging their statistical and clinical validity. As almost 50% of patients did not adhere to assigned treatments in 2 large studies comparing laminectomy with non-surgical treatment, one wonders why these protocol violations were not considered sufficiently important to preclude publication, especially in a prestigious medical journal.^{4 5}

The major issue in studies of back pain treatment appears to be lack of significant long-term benefits (even at the 20% level) and some side effects of these approaches. Chou *et al* examined treatment modalities that are typically well-reimbursed rather than those that are not, such as education of patients in home exercise programmes. Their analysis of surgical studies found that intensive rehabilitation with cognitive-behavioural therapy was of equal value to fusion surgery for chronic non-radicular low back pain.

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1. **Rothschild BM**. Safety measures, but what about measures to assure education/training/experience? *J Rheumatol* (In press)
2. **Rothschild BM**. Lumbar spondylosis. eMedicine: Neurosurgery: *Spine* www.emedicine.com/med/topic2901.htm (updated 9 Apr 2009).
3. **Rothschild BM**. *Rheumatology: a primary care approach*. New York: Yorke Medical Books, 1982.
4. **Weinstein JN**, Lurie JD, Tosteson TD, *et al*. Surgical versus nonsurgical treatment for lumbar degenerative spondylolisthesis. *N Engl J Med* 2007;**356**:2257–70.
5. **Weinstein JN**, Tosteson TD, Lurie JD, *et al*. Surgical versus nonsurgical therapy for lumbar spinal stenosis. *N Engl J Med* 2008;**358**:794–810.