

Assessing Spinal Surgery

Editorial Staff

The Cochrane Collaboration is an international network of health-science research volunteers that compiles and reviews clinical trials and then publishes those findings. Many people in the health field view the Cochrane Collaboration as the consensual "last word" in what is and is not supported in the scientific literature.

A recent paper published in *Spine*¹ examined the efficacy of "surgery for lumbar disc prolapse and degenerative lumbar spondylosis." The findings showed good evidence for some surgical procedures, and little or no evidence for others.

The authors began by examining the staggering impact spine surgery has on the cost of care: "In all studies of lumbar spine disorders, 10% of patients account for more than 80% of the total health care and social costs, and 1% of patients who undergo surgery are the most expensive group. Although surgical investigations and interventions account for up to one third of the health care costs,² the scientific evidence for most procedures is unclear."

After performing a comprehensive search of the literature from 1966 to 1998, the authors identified and reviewed 26 randomized controlled trials (RCTs) of lumbar disc prolapse and 14 RCTs of degenerative lumbar spondylosis. From those 40 studies, they were able to draw the following conclusions:

What Evidence Exists on the Clinical Effectiveness of Lumbar Spine Surgery?

1. There is strong evidence (Strength A) that chemonucleolysis with chymopapain produces better clinical outcomes than placebo.
2. There is considerable evidence (Strength A) regarding the clinical effectiveness of discectomy for carefully selected patients with sciatica caused by lumbar disc prolapse. Discectomy provides faster relief from the acute attack (Strength A), although any positive or negative effects on the lifetime natural history of disc problems are unclear (Strength C).
3. There is no acceptable evidence (Strength D) on the efficacy of any form of decompression for degenerative lumbar spondylosis or spinal stenosis.
4. There is no acceptable evidence (Strength D) on the efficacy of any form of fusion for degenerative lumbar spondylosis, back pain or "instability."

What Evidence Exists on Alternative Forms and Techniques of Lumbar Spine Surgery?

1. There is strong evidence (Strength A) that surgical discectomy produces better clinical outcomes than chemonucleolysis.

2. There is moderate evidence (Strength B) that the clinical outcomes of microdiscectomy are comparable with those of standard discectomy.
3. There is moderate evidence (Strength B) that automated percutaneous discectomy produces poorer clinical results than standard discectomy or chemonucleolysis.
4. There is no acceptable evidence (Strength D) of laser discectomy.
5. There is limited and inconclusive evidence (Strength C) on the relative efficacy of different doses of chymopapain, chymopapain compared with collagenase, and collagenase compared with placebo.
6. It is possible that some form of interposition membrane may produce a slight reduction in the formation of severe scar tissue after discectomy (Strength B). There is moderate evidence that clinical outcomes are unchanged (Strength B) and limited evidence (Strength C) that an interposition membrane does not influence the reoperation rate.
7. There is limited evidence (Strength C) that adjunct fusion to supplement decompression for degenerative spondylolisthesis produces less progressive slip and better clinical outcomes than decompression alone.
8. There is limited evidence (Strength C) that fusion alone may be as effective as combined decompression and fusion for patients with Grade I or II isthmic spondylolisthesis and no significant neurology.
9. There is strong evidence that instrumented fusion may produce a higher fusion rate (Strength A), although that needs to be qualified due to the difficulty of assessing fusion). However, other evidence suggests that it does not improve the clinical outcomes (Strength A) and that it may be associated with higher complication rates (Strength D) .
10. There is limited evidence (Strength C) that there is no clear difference in clinical outcomes between anterior or posterior techniques of fusion.
11. There is conflicting evidence (Strength C) that some forms of electrical stimulation may enhance fusion rates, but that stimulation probably does not influence clinical outcomes (Strength C).

References

1. Gibson JNA, Grant IC, Waddell G. The Cochrane review of surgery for lumbar disc prolapse and degenerative lumbar spondylosis. *Spine* 1999;24:1820-1832.

2. *CSAG Clinical Standards Advisory Group Report of Back Pain*. London: HMSO, 1994:65-72.

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