

National Institute of Arthritis and Musculoskeletal and Skin Diseases: Surgical versus Non-Surgical Treatments for Low Back Pain

Results from the Spine Patient Outcomes Research Trial (SPORT) will help patients who have low back pain determine if they should undergo surgery or try other, non-surgical treatments.

Lead Agency:

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)/
National Institutes of Health (NIH)

Agency Mission:

The mission of the National Institute of Arthritis and Musculoskeletal and Skin Diseases is to support research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases, the training of basic and clinical scientists to carry out this research, and the dissemination of information on research progress in these diseases.

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Partner Agency:

Office of Research on Women's Health (ORWH)
National Institute for Occupational Safety and Health (NIOSH)
Centers for Disease Control and Prevention (CDC)

General Description:

Surgical versus Non-Surgical Treatments for Low Back Pain

The Spine Patient Outcomes Research Trial (SPORT) has provided evidence that will help patients who have low back pain determine if they should undergo surgery or try other, non-surgical treatments. The 13-center study followed patients who had low back pain caused by herniated disk or spinal stenosis (with or without the forward slippage of one vertebra on top of another) and who were randomly assigned to undergo surgery or to receive non-surgical therapies, or who wanted to choose their own treatment but agreed to participate in an observation study. For people who have both spinal stenosis (a narrowing of the bony elements around the spinal cord and nerve roots in the lower back) and vertebral instability, SPORT clearly demonstrated that patients who underwent decompression and fusion surgery to relieve pressure on the spinal cord and to prevent additional slippage showed substantially greater improvement in pain and function during a 2-year period, as compared with those who received non-operative treatments. The benefits were particularly noteworthy for those patients with more severe disease, whereas patients with minor complaints appeared to do comparably well with non-operative treatments.

Decompression surgery provided a similar benefit for patients for whom spinal stenosis was not complicated by vertebral slippage. Patients reported significantly less pain and disability, and increased physical functioning, within 6 weeks of surgery—benefits that persisted for the 2-year study period. Of note, the functional status of patients who received non-surgical interventions improved slightly during the study, suggesting that people who are reluctant to have surgery to correct spinal stenosis are not subjecting themselves to further damage.

Of the somewhat younger candidates for lumbar discectomy for a herniated disk (an average age of ~42 years), researchers found that those who opted to forego surgery for nonoperative care fared similarly to those who had the surgery. In general, surgery patients experienced slightly more improvement (i.e., less pain, better physical function) over the study period, and particularly in the first 3 months, than those who opted for other treatments. In other words, lumbar discectomy was generally effective in relieving pain from herniated disks, but nonoperative therapies seemed to offer equivalent benefits for patients who could not or chose not to have surgery.

Excellence: What makes this project exceptional?

The study provides valuable information to patients, providers, and policy makers, when making treatment decisions about whether surgery would relieve pain associated with intervertebral disc herniation or degenerative spondylolisthesis with or without spinal stenosis (the three leading reasons people undergo surgery for low back pain).

Significance: How is this research relevant to older persons, populations and/or an aging society?

Low back disorders are common, costly, and often disabling. Back surgeries in aging Americans are one of the fastest growing areas of medical care, with hospital costs exceeding \$21 billion per year.¹ Spinal stenosis (a narrowing of the bony elements around the spinal cord and nerve roots in the lower back) is the most common reason for spinal surgery in Americans over age 65 years. Lumbar discectomy—the surgical removal of all or part of an intervertebral disk—is commonly performed surgical procedure for patients of all ages who have back or leg pain due to a herniated disc. Despite the widespread use, the procedures' effectiveness in comparison with that of non-surgical treatments had not been demonstrated in controlled trials.

Effectiveness: What is the impact and/or application of this research to older persons?

Clinicians now have evidence that older patients who suffer from stenosis are likely to benefit more from decompression and surgery than from non-operative treatments, particularly if they are severely disabled by the disease. However, patients who have spinal stenosis that is not complicated by vertebral slippage and want to delay or avoid having surgery are not subjecting themselves to further damage.

Innovativeness: Why is this research exciting or newsworthy?

Before SPORT, many patients with back pain were conflicted about whether to undergo surgery. Now, people who have back pain due to a herniated disc can be assured that a surgical procedure called lumbar discectomy is generally effective in relieving pain from herniated disks, but—if their

pain is tolerable and their condition is not progressing—their symptoms will likely subside over time, even without surgery. On the other hand, older patients who suffer from stenosis are likely to benefit more from decompression and surgery than from non-operative treatments. However, surgical complication rates increase substantially after 80 years of age, and this must be considered when making treatment selections in older patients.