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## Surgery is Best for Patients with Spinal Stenosis, Third SPORT Study Shows

LEBANON, NH – Individuals suffering from a common back condition known as spinal stenosis improve more with surgery than with non-surgical treatment, according to a multi-center, multi-state trial led by Dartmouth clinician-researchers. However, the study also reveals that patients who choose not to have surgery are likely to improve over time.

The paper, published in the February 21<sup>st</sup> edition of the New England Journal of Medicine, is the third in a series of study results from the Spine Patient Outcomes Research Trial (SPORT.) The seven-year, \$21 million trial is led by Dr. James N. Weinstein, Chair of the departments of Orthopaedics at Dartmouth-Hitchcock Medical Center and Dartmouth Medical School, and Director of the Dartmouth Institute for Health Policy and Clinical Practice.

Dr. Weinstein, a practicing spine surgeon, said the spinal stenosis study will be significant for millions of patients and their doctors. “Spinal stenosis is the most common reason for lumbar spine surgery in patients over 65,” he said. “For the first time, we have an evidence base on which to advise our patients.”

The SPORT studies were launched in 2000 to look at the three most common back conditions leading to surgery: herniated disk with sciatica; spinal stenosis; and a variation of spinal stenosis where one vertebra has slipped forward over the other, a condition known as spondylolisthesis. Although \$24 billion is spent annually on back surgery, until SPORT there had not been a large scale randomized trial conducted to find out how effective operative procedures were when compared with non-surgical therapies for these three conditions.

In the first study results, for herniated disk with sciatica, although surgical patients did slightly better than non-surgical patients, both groups showed significant improvement at 1 and 2 years from entering the trial. In contrast, these most recent spinal stenosis studies show a marked advantage for those patients who had surgery. Surgical patients saw improvement more rapidly and reported better physical function and less pain than did the non-surgical patients, who reported only moderate improvement 2 years after their diagnosis.

But says Weinstein, it’s significant that almost none of the non-surgical patients got worse without an operation. And on average, they reported small improvements in all measures.

“What we now know and can share with our patients is that they have a choice. If they choose surgery, they will improve greatly. But if their preference is not to have surgery, their condition is not likely to worsen and they will see some improvement over time,” he said.

Spinal stenosis is a narrowing of the spinal canal that causes a progressive squeezing of the nerves, leading to pain in the buttocks or legs when walking or standing. It is most commonly seen in adults over 60. When surgery is performed, excess bone, ligament, and soft-tissue are removed to allow more room for the nerves, a procedure called a laminectomy. Lumbar spinal fusion may, in rare cases, also be performed to prevent instability of the spine. Non-surgical treatments for spinal stenosis include physical therapy, exercise, chiropractic, epidural injections, and anti-inflammatory drugs.

The design of SPORT is unique, in that it enrolled both randomized and non-randomized – or observational – patients in the study. 289 patients were enrolled in the randomized group and 365 in the observational group. As with the other SPORT studies, there was crossover in both groups, i.e. patients randomized or who had chosen surgery, crossing over to the non-surgical group and vice versa. At two years 67% of patients randomly assigned to surgery had had surgery, whereas 43% of those randomly assigned to non-surgical care ultimately had surgery. Overall, 400 patients had surgery and 254 received non-surgical treatment.

Studies from the SPORT trial looking at cost-effectiveness and other measures will be released in coming months. SPORT was funded in large part by the National Institutes of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) at the National Institutes of Health (NIH.).

Co-authors of the paper, “Surgical versus Nonsurgical Therapy for Lumbar Spinal Stenosis” were: Tor Tosteson ScD, Jon D. Lurie MD, MS, Anna N.A. Tosteson ScD, Emily Blood MS, Brett Hanscom MS, all of Dartmouth; and Harry Herkowitz MD of William Beaumont Hospital; , Frank Cammisia MD, Hospital for Special Surgery; Todd Albert MD and Alan S. Hilibrand MD, Rothman Institute at Thomas Jefferson University; Scott D. Boden MD, Emory University; Harley Goldberg, DO, Kaiser Permanente; Sigurd Berven MD, University of California at San Francisco; and Howard An MD of Rush-Presbyterian-St. Lukes Medical Center.

Centers participating in the study in addition to Dartmouth were:

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Emory University, Atlanta, GA  
NYU/Hospital for Joint Diseases, New York, NY  
Hospital for Special Surgery, New York, NY  
Kaiser Permanente, Oakland, CA  
Nebraska Foundation for Spinal Research, Omaha, NE  
Rothman Institute @ Thomas Jefferson Hospital, Philadelphia, PA  
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