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Surgical versus Non-Operative Treatment for Lumbar Disc Herniation: RCT and Observational Cohort Outcomes from SPORT (Spine Patient Outcomes Research Trial)

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Background: The Spine Patient Outcomes Research Trial (SPORT) is the largest study of surgical and non-operative treatment among participants with confirmed diagnoses of lumbar intervertebral disc herniation, spinal stenosis or degenerative spondylolisthesis. This paper reports the one year randomized and two year observational outcomes from the 11 state, 13 site, randomized trial for disc herniation.

Methods: Patients 18 years and older with herniated discs, persistent symptoms for at least six weeks, and confirmed as surgical candidates were eligible for the trial. The surgical intervention was standard open discectomy; non-operative treatment was individualized to the patient by the treating physician(s). Primary outcome measures were the Bodily Pain and Physical Function scales of the SF-36 and the modified Oswestry Disability Index. Secondary measures included sciatica bothersomeness, satisfaction with symptoms, and self-reported improvement.

Results: Five hundred and one subjects enrolled in the randomized trial and 743 patients enrolled in the observational cohort. Fifty-two percent of patients randomized to surgery and 29% of those randomized to non-operative treatment received surgery by three months. In the RCT, substantial improvement occurred over one year in bodily pain, physical function, disability, and sciatica in both treatment arms; the intent-to-treat analysis in the RCT showed a statistically significant advantage for surgical over non-operative treatment for the Oswestry Disability Index, sciatica, satisfaction with symptoms, and self-rated improvement. Secondary, as-treated analyses showed much larger effects for all outcome measures. The Observational cohort was very similar to the Randomized cohort at baseline; 95% of patients choosing surgery had their operation within three months while 19% of the group choosing non-operative care ended with surgery by one year. As-treated outcomes at one year were similar in the observational and randomized cohorts. In the initial treatment choice groups the advantages of surgery diminished between 1 and 2 years and were no longer significant at 2 years but remained significant in the as-treated analyses.

Conclusions: Among patients with a herniated disc and symptoms for at least six weeks, those treated surgically improved more rapidly and achieved greater symptom relief and function at one year than those treated non-operatively. The advantage of surgery diminished somewhat between one and two years of follow-up.