

## Conservative Therapy and Early Surgery for Sciatica Yield Similar Outcomes

Peul WC, van Houwelingen HC, van den Hout WB, et al. Surgery versus prolonged conservative treatment for sciatica. *N Engl J Med* 2007;356:2245–56.

### Study Overview

**Objective.** To compare the efficacy of early surgical intervention with prolonged conservative care for patients with disabling sciatica.

**Design.** Multicenter, prospective, randomized trial.

**Setting and participants.** 283 patients aged 18 to 65 years with a 6- to 12-week history of sciatica diagnosed by neurologist and with a radiologically confirmed disk herniation were enrolled. Patients who were pregnant or who had cauda equina syndrome, muscle paralysis, previous spine surgery, bony stenosis, spondylolisthesis, severe coexisting disease, or prior sciatica episode within 12 months were excluded.

**Intervention.** Patients were randomized to early microdiscectomy or prolonged conservative treatment with surgery (if necessary). Early surgery was scheduled within 2 weeks of randomization but was canceled if patients exhibited spontaneous symptom improvement. For patients in the conservative treatment group, surgery was offered 6 months after randomization if conservative therapy did not improve symptoms; if patients had progressive neurologic deficits or pain not controlled with medications, surgery was offered earlier.

**Main outcome measures.** Disease-specific disability, intensity of leg and back pain, and time to recovery, as measured by the Roland Disability Questionnaire for Sciatica, the visual analogue scale for leg and back pain, and a 7-point Likert self-rating scale of global perceived recovery. Patients were evaluated at 2, 4, 8, 12, 26, 38, and 52 weeks.

**Main results.** 125 of 141 (89%) patients in the early surgery group underwent microdiscectomy (mean time to surgery, 2.2 weeks). 55 of 142 (39%) patients in the conservative therapy group were treated surgically (mean time to surgery, 18.7 weeks). After 1-year follow-up, there was no significant overall difference in Roland disability scores ( $P = 0.13$ ) or back pain scores ( $P = 0.14$ ) between groups. Patients assigned to early surgery reported faster relief of leg pain ( $P < 0.001$ ) as well as faster rate of perceived recovery

(hazard ratio, 1.97 [95% confidence interval, 1.72–2.22];  $P < 0.001$ ). However, the probability of perceived recovery after 1 year was 95% for both groups.

**Conclusion.** After 1 year, early surgery and conservative therapy for sciatica were equivalent in terms of outcomes; however, surgery does offer quicker relief of leg pain symptoms.

### Commentary

Sciatica is a common problem, with an incidence of 5 cases per 1000 adults in developed countries [1]. Characterized by radiating pain from the low back down the leg, sciatica can cause significant disability. While sciatica typically resolves over time, conservative therapy has not demonstrated unequivocal effectiveness for managing this disabling condition [2]. Nonrandomized trials have suggested that surgery offered earlier leads to more complete relief; however, functional status in the long term was similar to nonoperative therapy [3,4], fueling continued debate over how sciatica should be best managed. In this context, Peul and colleagues initiated the current study to evaluate if surgery confers better outcomes in patients with sciatica as well as to elucidate the optimal time for operative therapy.

This is a rigorous study that incorporated many criteria missing from prior studies [3–5]. Specifically, this study only included patients who had persistent sciatica after 6 to 12 weeks, minimizing inclusion of patients who would have improved naturally. Further, specific radiologic criteria were included, which were correlated to symptoms by neurosurgeons to decrease misclassification. In addition, a single surgical approach was used, eliminating treatment heterogeneity. Lastly, randomization and intention-to-treat analysis minimized selection bias.

The present study suggests that early surgery for sciatica is effective for relieving pain and improving disability, as demonstrated by the significant improvements in all main outcome measures in the surgical group 8 weeks after randomization. However, these effects diminished over time and completely disappeared at 1 year as patients on conservative therapy improved and as more patients crossed over from

conservative therapy to surgical therapy. This suggests that the treatment window for surgery is fairly wide, bolstering conventional wisdom that surgery is a last resort for sciatica.

**Applications for Clinical Practice**

Patients with sciatica do not need immediate surgery in the absence of major neurologic deficits. However, in patients with favorable expectations for surgery [6], early surgery may provide more timely pain relief.

—Review by Mark S. Horng, MD, MPH

**References**

1. Cherkin DC, Deyo RA, Loeser JD, et al. An international comparison of back surgery rates. *Spine* 1994;19:1201–6.
2. Vroomen PC, de Krom MC, Wilink JT, et al. Lack of effectiveness of bed rest for sciatica. *N Engl J Med* 1999;340:418–23.
3. Atlas SJ, Deyo RA, Keller RB, et al. The Maine Lumbar Spine Study, part II: 1-year outcomes of surgical and nonsurgical management of sciatica. *Spine* 1996;21:1777–86.
4. Atlas SJ, Keller RB, Wu YA, et al. Long-term outcomes of surgical and nonsurgical management of sciatica secondary to a lumbar disc herniation: 10 year results from the Maine Lumbar Spine Study. *Spine* 2005;30:927–35.
5. Weinstein JN, Tosteson TD, Lurie JD, et al. Surgical vs non-operative treatment for lumbar disk herniation: the Spine Patient Outcomes Research Trial (SPORT): a randomized trial. *JAMA* 2006;296:2441–50.
6. Lutz GK, Butzlaff ME, Atlas SJ, et al. The relation between expectations and outcomes in surgery for sciatica. *J Gen Intern Med* 1999;14:740–4.

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