

## EDITORIALS



## Decision Making for Treatment of Persistent Sciatica

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Lumbar disk herniations are among the most frequent causes of sciatica.<sup>1,2</sup> Fortunately for patients, sciatica is generally self-limited and resolves within 3 months in 70 to 90% of patients.<sup>2</sup> When symptoms do not improve, surgical diskectomy has been an accepted treatment since it was first described in the *Journal* nearly a century ago.<sup>3</sup> During the past 20 years, several studies, including the Maine Lumbar Spine Study,<sup>4</sup> and clinical trials, including the Spine Patient Outcomes Research Trial (SPORT),<sup>5-7</sup> have characterized the outcomes of surgical and nonsurgical treatment in patients with sciatica and lumbar disk herniation. These and other reports have supported a modest benefit for surgical intervention that diminishes with time since the onset of symptoms.<sup>1,4,6</sup> However, most of these investigations limited inclusion to patients within 3 months after symptom onset<sup>1</sup> or largely included patients with acute sciatica.<sup>6</sup> Thus, the results of these studies must be considered with the perspective that symptoms are likely to regress spontaneously over time.

The question remains as to how to treat patients whose symptoms have persisted beyond the benchmark of 3 months. Furthermore, several reports indicate that prolonged symptom duration has an adverse effect on outcomes.<sup>5,8</sup> In a post hoc analysis of data from SPORT, symptoms lasting 6 months or longer were associated with poorer outcomes after both surgical and nonsurgical management.<sup>5</sup> A systematic review came to similar conclusions, with the period of 6 to 12 months after symptom onset found to be the duration of symptoms beyond which clinical outcomes often worsen.<sup>8</sup> This temporal phenomenon may derive from chronic nerve compression leading to irreversible damage to the microvasculature supporting the spinal nerve, other

changes within the substance of the nerve roots, or changes in the central transmission of pain impulses.

In this context, Bailey and colleagues report in this issue of the *Journal* the results of a randomized trial comparing surgery with standardized nonoperative management in patients with sciatica that had persisted for 4 to 12 months.<sup>9</sup> Patients had not received any interventions for their sciatica, including epidural glucocorticoid injections or physical therapy. In an intention-to-treat analysis, diskectomy was superior to nonoperative care for the primary outcome of leg-pain intensity at 6 months after enrollment.<sup>9</sup> These findings may result from the fact that surgical intervention allowed for more rapid decompression of the compressed nerve root.<sup>5,8</sup> Patients in the current trial who were assigned to undergo surgery received the intervention relatively quickly, at a median of 3 weeks, and it is reasonable to conclude that expeditious removal of the nerve compression minimized the potential for long-term persistence of pain.

Several points regarding the trial should be considered when making judgments about individual patients. The trial limited inclusion to patients who had symptoms for 4 to 12 months but did not account specifically for the effect of symptom duration in this window or other clinical factors known to influence outcome after diskectomy, such as the size of the disk herniation or the extent of nerve-root compression.<sup>5,8,10</sup> The results may also not be generalizable to health systems such as the one in which we practice, which allows (if not encourages) patients to influence the timing of surgery, with some preferring to be relieved of sciatic pain immediately with surgery and others who prefer to avoid surgery and wait for spontaneous im-

provement. Furthermore, as in most trials comparing surgery with conservative care, there are implicit messages regarding the patients in the two groups who crossed over to receive the competing treatment. Seven patients (11%) in the surgical group did not undergo surgery owing to the spontaneous resolution of symptoms. However, of the 64 patients who were assigned to nonsurgical care, 22 (34%) crossed over to undergo surgery at a median of 11 months, presumably because of intolerable pain. In the latter group, there was one postoperative dural tear, one superficial wound infection, one nerve-root injury, and two instances of new-onset neuropathic pain.<sup>7</sup> In previous studies of the treatment of disk herniation, crossover was considered to have reduced the observed effect of surgery as compared with conservative care.<sup>1,6,7</sup> The opposite effect could be present in the current trial and result in an overestimation of the benefit of surgical intervention in patients with persistent sciatica with a simultaneous underestimation of the risks associated with the procedure.

In patients with disk herniation and persistent sciatica lasting 4 months or longer, it has been our practice to provide information about the association between symptom duration and outcomes and to offer a decision regarding surgical or nonsurgical treatment on the basis of the patient's preference. If the patient has no benefit from an appropriate course of nonoperative care, we make a stronger recommendation for surgery. Viewed in this light, it is encouraging that the trial reported by Bailey et al. shows that surgical intervention still results in clinically meaningful improvement in patients with per-

sistent sciatica. However, the trial does not help clinicians determine which patients are most likely to benefit from immediate surgical intervention or the duration of nonoperative care that is acceptable before surgery is recommended.

Disclosure forms provided by the authors are available with the full text of this editorial at NEJM.org.

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## Calming Down about Sedation in Critically Ill Patients

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Invasive mechanical ventilation after tracheal intubation is among the most frequently performed procedures in adult patients admitted to the intensive care unit (ICU). Sedation and analgesia are provided at the time of intubation and may be maintained for hours or days. The aim of sedation is to minimize oxygen consumption and facilitate a patient's ability to remain comfortably connected to a ventilator.

The current status of the use of sedation for mechanical ventilation is most easily understood by reviewing the sequence of developments in the field. Over the past two decades, it has been recognized that prolonged and deep sedation can increase the duration of mechanical ventilation, delay weaning, impair neuromuscular function, produce delirium, and have side effects specific to certain sedative drugs,<sup>1</sup> such as pro-