

Evidence-based answers from the  
Family Physicians Inquiries Network

## CLINICAL INQUIRIES

# Q/When should you consider implanted nerve stimulators for lower back pain?

**EVIDENCE-BASED ANSWER**

**A/** CONSIDER IT FOR PATIENTS WITH FAILED BACK SURGERY SYNDROME. These patients can gain more pain relief from spinal cord stimulation (SCS) than from reoperation (strength of recommendation [SOR]: A, 2 randomized controlled trials [RCTs]). SCS can also treat chronic low back pain effectively (SOR: B, cohort studies). It's indicated when conservative measures have failed (SOR: C, expert opinion).

The side effects and failure rates of SCS are well documented and should be considered before recommending the therapy to patients (SOR: A, systematic review of RCTs and cohort studies).

strated that 9 of 24 (38%) SCS insertions were successful, compared with 3 of 26 (12%) reoperations ( $P=.04$ ; number needed to treat=3.8).

**Low back pain shows significant response to stimulation**

A 2004 systematic review of SCS for all indications included 51 studies and 2973 patients.<sup>2</sup> Sixteen of the studies, with a total of 616

patients, focused on low back pain, specifically chronic back pain and failed back surgery syndrome. Two of the 16 studies were prospective controlled trials, 8 were prospective trials without controls, and 6 were retrospective studies.

Both prospective, controlled trials (total of 62 patients) demonstrated statistically significant ( $P<.05$ ) results with SCS. One measured subjective pain and the other used crossover to the other treatment arm (SCS vs surgery) as a marker for treatment failure.

**Consider the side effects**

SCS isn't without side effects. Cameron's systematic review of 51 SCS studies reported rates for a number of complications (TABLE).<sup>2</sup> The most common complication was lead migration—displacement of the spinal electrodes that can cause pain to recur.

**Recommendations**

Evidence-based guidelines for interventional techniques to control chronic pain, published

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**Spinal cord stimulation can relieve pain better than reoperation for patients with failed back surgery syndrome.**

**Evidence summary**

SCS systems comprise transcutaneously inserted leads that deliver low-voltage electronic stimulation to the spinal cord or targeted peripheral nerves. The resulting dermatomal parasthesia can be preferable to chronic painful stimuli. The voltage generator is located externally or implanted internally.

SCS can be used to treat patients with chronic and intractable pain, such as the pain caused by failed back surgery syndrome. The syndrome, defined as persistent or recurrent pain after lumbosacral spine surgery, occurs in 10% to 40% of patients who have undergone lumbosacral spine surgery.<sup>1</sup>

A 2005 prospective RCT enrolled 50 patients with failed back surgery syndrome who were considering reoperation.<sup>1</sup> Twenty-four were randomized to SCS and 26 to reoperation. Success was defined as >50% pain relief measured by a validated visual analog pain scale. The average length of follow-up was 3 years. An intention-to-treat analysis demon-

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**> Chronic low back pain often responds to spinal cord stimulation when conservative measures fail.**

in the January 2007 edition of *Pain Physician*, classify indications for SCS as follows:<sup>3</sup>

■ **Strong indication:** complex regional pain syndrome (CRPS)

■ **Moderate indication:** failed back surgery syndrome, chronic low back pain, and chronic lower extremity pain.

The Society of British Neurological Surgeons lists the following conditions as “good indications” for SCS: failed back surgery syndrome, CRPS, neuropathic pain from peripheral nerve damage, pain secondary to peripheral vascular disease, refractory angina, and brachial plexopathy.<sup>4</sup> **JFP**

**TABLE**

## Major complications of SCS

Complication	Rate
Lead migration	13.2%
Lead breakage	9.1%
Infection	3.4%
Hardware malfunction	2.9%
Unwanted stimulation	2.4%
Battery failure	1.6%
Pain over implant	0.9%

SCS, spinal cord stimulation.

Adapted from: Cameron T, et al. *J Neurosurg.*<sup>2</sup>

### References

1. North RB, Kidd DH, Farrokhi F, et al. Spinal cord stimulation versus repeated lumbosacral spine surgery for chronic pain: a randomized, controlled trial. *Neurosurgery.* 2005;56:98-106.
2. Cameron T. Safety and efficacy of spinal cord stimulation for the treatment of chronic pain: a 20-year literature review. *J Neurosurg.* 2004;100(suppl 3 Spine):254-267.
3. Boswell MV, Trescot AM, Datta S, et al, for the American Society of Interventional Pain Physicians. Interventional techniques: evidence-based practice guidelines in the management of chronic spinal pain. *Pain Physician.* 2007;10:7-111.
4. Society of British Neurological Surgeons/British Pain Society. *Spinal Cord Stimulation for the Management of Pain: Recommendations for Best Clinical Practice.* London: British Pain Society; 2009. Available at: [www.britishpainsociety.org/book\\_scs\\_main.pdf](http://www.britishpainsociety.org/book_scs_main.pdf). Accessed October 3, 2009.

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