

Given a choice after 5 years, most recipients of a spinal cord stimulator would say “Yes” to reimplant

Nearly all recipients of a spinal cord stimulator implant to treat Type I chronic complex regional pain syndrome expressed satisfaction with the device and indicated to researchers after five years of use that they would gladly undergo reimplantation were the choice offered them, according to a study published in the February 2008 issue of the *Journal of Neurosurgery*.

The authors obtained this result after performing a randomized trial in which 36 patients with Type I chronic complex regional pain syndrome were allocated to receive a spinal cord stimulator and physical therapy, while a control group of 18 patients was allocated to receive physical therapy alone. (Type I chronic complex regional pain syndrome, the authors note, is a painful, disabling disorder for which no treatment with proven effect is available.)

Of the 36 patients, 24 were determined to be appropriate candidates for implantation. More than 80% of them experienced pain relief significantly exceeding that of the patients who received physical therapy alone, the investigators observed.

Efficacy well-documented

Studies dating back to the 1990s have demonstrated the efficacy of spinal cord stimulation in relieving Type I as well as Type II complex regional pain syndrome, along with failed back syndrome and peripheral neuropathy. Newer indications for spinal cord stimulation include cancer pain, abdominal pain, interstitial cystitis,

phantom limb pain, diabetic neuropathy and postherpetic neuralgia. The January 2008 issue of *The Review of Cardiovascular Medicine* confirms that spinal cord stimulation is effective in the treatment of intractable angina pectoris. (Fact: In Europe, intractable angina pectoris is the leading indication for use of spinal cord stimulation.)

According to a study published in the journal *Pain Practice* (March 2006), an implanted spinal cord stimulator helps most refractory neuropathic pain sufferers experience at least a 50% reduction in the level of pain, with minimal side effects. Moreover, many such patients who benefit from spinal cord stimulation are able to dramatically trim their consumption of analgesics, the journal indicated. Improved quality of life is reported by implant recipients and there are potential cost savings to the healthcare system, *Pain Practice* added.

An important point raised by this same *Pain Practice* article was that many physicians view spinal cord stimulator implantation as an intervention of last resort, when in fact they should esteem it in the exact opposite regard. “[E]vidence suggests that early intervention with spinal cord stimulation results in greater efficacy and, in the case of failed back surgery syndrome, should be considered before re-operation,” the journal states.

Mechanisms not fully understood

Spinal cord stimulators generate an electrical impulse near the dorsal surface

of the spinal cord to create paresthesia, thereby changing the patient’s perception of pain. It is not fully understood how the effects of spinal cord stimulation are mediated, but one explanation floated in the November 2007 issue of *European Journal of Pain* holds that a complex set of interactions must occur at several levels of the nervous system and take in both spinal and supraspinal mechanisms. “Results suggest that spinal cord stimulation is able to influence neurobiological processes at the supraspinal level and that the clinical effects may be at least in part of cortical origin,” the journal offers.

Other research efforts have led scientists to speculate that the mechanism of action behind spinal cord stimulation involves a “closing of the gate” by the antidromic activation of large-diameter afferent fibers in either the brain stem or thalamocortical systems, which then produces both ascending and descending inhibition activation of anterior pretectal nucleus.

Three main parts

As for the device itself, a spinal cord stimulator consists of three main parts.

The first is the electrical pulse-generator (which can come in the form of a radiofrequency receiver, depending on the manufacturer and model). The generator is implanted into either the abdomen or buttocks. The unit (except for the radiofrequency version) is powered by either a rechargeable or nonrechargeable battery.

(The downside to the nonrechargeable option is the battery must be surgically replaced each time it runs out of power.)

The second part is a wiring harness. It contains electrical leads that connect to the generator and extend outward into the epidural space.

The final component is a wireless hand-held controller that the patient operates to activate or deactivate the stimulator and to increase or decrease the amount of pulse traveling through the electrical leads. Some device models are physician-programmable to allow for preset stimulation patterns customized to the patient's individual requirements.

The implanted part of the spinal cord stimulator is introduced by a pain medicine specialist or other appropriately trained surgeon using either a percutaneous approach or surgical laminectomy (or laminotomy). In any event, the patient is kept awake so as to provide feedback about the paresthesia effect, which abets the process of deploying the electrical leads in the optimum locations.

Prior to implantation, though, it is customary to conduct a trial with a temporary device to determine whether the patient is a suitable candidate for a permanent spinal cord stimulator. During the trial – which normally runs three to five days – a percutaneous lead is connected to an external pulse generator. Patients are deemed appropriate candidates for a permanent device if they experience at least a 50% improvement in pain during the trial.

Conclusions

Spinal cord stimulation is an effective – albeit overlooked – treatment for severe

chronic pain. It is FDA-approved and has been around since the 1940s, with over 100,000 patients currently experiencing pain relief because of it.

Spinal cord stimulators are good not only for treating extremity pain but also axial pain and radicular pain. Complex regional pain syndrome and failed back syndrome are the two most prominent conditions for which spinal cord stimulators are appropriate. However, newer applications for it have been identified.

Spinal cord stimulators represent one of the rare instances where the patient is able to take a “test-drive” of an implant device beforehand. These test-drives last less than one week, by which time it will be apparent whether or not the device is effective enough to merit going forward with implant surgery. The ability to trial before implantation removes doubt about efficacy from the patient's mind and allows the patient to go into surgery with far greater confidence. All of which translates into greater satisfaction.

An encouraging number of chronic-pain patients seen here at Comprehensive Pain Management prove to be good candidates for a spinal cord stimulator. Our team has over the years successfully provided genuine life-changing relief for the vast majority of them – a reason among many why we have grown to become the Baton Rouge area's leading resource for treatment of chronic pain.

We're here to help all your chronic-pain patients and in particular those cases where achievement of desired good results has proven elusive.

Comprehensive Pain Management can perform evaluations of your patients and make intervention recommendations or, at your behest, initiate treatment and perform

follow-up. Whichever path you choose, we pledge to keep you apprised every step of the way. Satisfied by the high-quality services and interactions delivered at each encounter, your patients will return to you as willing as ever to continue entrusting you with their ongoing care.

For more information about Comprehensive Pain Management, please call 225-368-2300.

Call 225-368-2300 today to schedule your preferred appointment time. We encourage, honor and welcome your referrals.



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