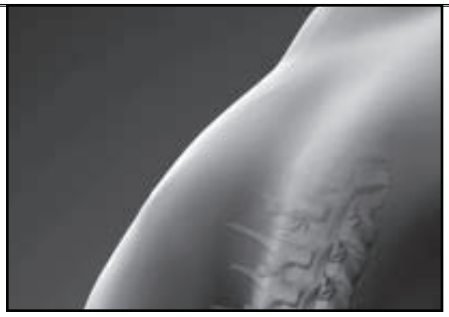

Spinal Cord Stimulation for Chronic Pain: Observations from over 20 years' experience

By David T. Hanks, PhD

I preface my remarks by stating the following comments regarding my opinions are based on over 20 years' experience with spinal cord stimulation (SCS) for chronic pain, including CRPS/RSD: I have personally psychologically evaluated over 7,000 patients for these devices, have been involved in the operating room with over 6500 SCS trial and implants, and have led a support group for patients with SCS during this same time period. My support group for patients with SCS is the only one I am aware of. Feedback from the support groups' patients I have evaluated have provided a significant basis for my opinions. I also state that I have been a paid consultant to Medtronic, the main manufacturer of spinal cord stimulators, for the past 10 years. I am involved in helping to train their clinical field representatives in the psychological evaluation and treatment of candidates for SCS, important aspects of follow up, the value of the support groups, and as an ongoing advocate for any and all technologies that can help patients have better pain control and quality of life.

In contrast to some reports indicating about a 60% success rate with SCS for chronic pain, my observation is that the rates for success are higher. This is likely due to the fact that the physicians I work with have extensive experience with SCS. One of them, Dr. Ralph Rashbaum, is a world leader with this device. He and I have about 90% of our patients go from trial to implant and about 50% to 80% improvement in pain control and daily function with SCS. As with any procedure or device, the greater the experience of the physician, the more likely the success rates will be higher.

However, the success rates with people who have CRPS/RSD have been lower. About 80% of these patients go from trial to implant and have about a 50% to 65% improvement in pain control and daily function. A small percentage of CRPS/ RSD patients actually perceive the stimulation as aversive or aggravating of their pain, and consequently either do not go on to implant after their trial or stop using the device after a period of time. In about 50% of the patients with CRPS/RSD that are implanted, about half of those will find they can only tolerate the stimulation for a period of time, and then the stimulation becomes aggravating. They turn off the device when this occurs and the aggravation goes away. In some of these patients, the time frame where use of the device is helpful can diminish over time to their eventually not using it at all. However, there are a good number of patients who can tolerate the stimulation and use the device indefinitely.

Low Risk and Reversibility

Likewise, the technology is such that different electrodes, or leads, can be later placed to cover areas where CRPS/RSD has spread beyond the initial target areas for which the device was originally implanted. Most patients with SCS have low back, neck, leg, and arm pain from failed surgeries. The devices have also been successfully used in lieu of surgery, such as in the patients where surgery is contraindicated due to extent of pathology, or other risks. As the devices are a low risk compared to a larger surgery, and the patient has an opportunity for trial with the device, usually over the course of 5 to 7 days, and it is reversible, the technology has become a very good option in terms of

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treatment. I also believe the low risk and reversibility of SCS makes it a good option in terms of treatment for anyone who has CRPS/RSD. Contrary to some opinions I am aware of that any surgery for CRPS/RSD can make the syndrome worse, I have not seen this happen. My guess is that this procedure is safer to try and has little to no risk for causing the CRPS/RSD to permanently increase, spread (because the procedure only involves the placement of a lead in the spinal canal) and does not involve the actual nerves involved in the syndrome.

WHAT SCS DOES, in **my opinion**, is MASK the PAIN by providing a perceived **different sensation** to the PAINFUL areas.

I am also aware of stimulator leads being placed on peripheral nerves, as opposed to being in the spinal canal, particularly for CRPS/RSD. The success rates with this procedure are more variable, likely due to the same reasons SCS for CRPS/RSD is variable in general. However I always recommend this be tried, as this is the only way to determine how any individual might respond. If the trial does not provide at least 50% benefit, as mandated by insurance carriers, then the patient is no worse off than he or she was before the trial.

What SCS does, in my opinion, is mask the pain by providing a perceived different sensation to the painful areas. The "stimulation" is usually described as a "tingling, massaging, or vibrating sensation." This is usually compared to the way a TENS (Transcutaneous Electrical Nerve Stimulation) unit feels; but many tell me the main differences are that the stimulation is a deeper sensation and covers a larger target area. As the stimulation pattern tends to be fairly broad in its coverage, it does not do as well in covering a smaller painful area, as the stimulation will also be felt in other nonpainful areas in order to cover painful ones. This needs to be kept in mind. Likewise, the stimulation is usually stronger in some areas and not as strong in others, at the same time. Many times, the stimulation is perceived initially in the extremity and is perceived as moving into other areas when the amplitude of intensity is turned up. For example, in covering low back and leg pain, it is usually stronger in the legs in order to feel it in the low back. One of the additional benefits of having a trial is the patient has an opportunity to determine if having it stronger in some areas and less strong in others is acceptable and still beneficial. Although the different companies that manufacture stimulators often state that their device can better target specific areas, patient feedback is that it primarily is a broad pattern encompassing many areas in order to cover the ones needed.

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