Title: Long-Term Pain Relief Using an SCS Device Capable of Simultaneous Combination Therapy and Dorsal Horn Modulation

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Introduction/Statement of the Problem: Developing “all-in-one” spinal cord stimulation (SCS) systems with capability for multiple types of neurostimulation paradigms is thought to be key for empowering patients to identify the best treatment approach suitable for their specific needs. Here, we provide an update to our evaluation of outcomes in patients using a new SCS system designed to combine multiple waveform availability, delivered in a sequential and/or simultaneous manner, with an algorithm engineered to enable manipulatable control of stimulation field shape allowing for specific targeting of nerves located in the spinal dorsal horn.

Materials and Methods: This is a consecutive, multi-center case-series based on retrospective chart review as part of an ongoing real-world evaluation of SCS outcomes for chronic pain (Clinicaltrials.gov identifier: NCT01550575). Patients were implanted with a newly designed SCS system (Precision Spectra WaveWriter, Boston Scientific) capable of combination therapy and multiple waveforms while also equipped with a novel algorithm providing patient-specific customization of stimulation field shape for use in spinal dorsal horn targeting.

Results: To date, a total of 420 patients have been analyzed with a mean Baseline NRS score of 7.2±1.8. Overall pain score was reduced by a mean 4.9±2.5 points at last follow up (mean: 208 days, p < 0.0001). Twenty-three percent (95 of 420) of these patients reported being pain free (NRS=0) and 61% (256 of 420) reported a pain score of 2 or less. Additionally, a 5.1±2.4 point improvement in overall pain was reported at 3-months follow-up and similarly sustained out to 12-months (n=122) (p<0.0001).

Conclusion: These results provide support for the postulate that an SCS system designed to provide combination therapy, multiple waveform options, and enhanced targeting capabilities, can allow for highly effective pain relief outcomes in a patient-specific manner within the real-world clinical setting.