

Stimulating Recovery: Two SCI Stories Redefining the Limits of SCS

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Abstract

Introduction: Spinal cord injury (SCI) remains a devastating condition with limited options for functional recovery and chronic pain management. Traditionally, spinal cord stimulation (SCS) has been reserved for refractory neuropathic pain; however, emerging evidence suggests its potential in promoting motor recovery and autonomic function in SCI patients. This report presents two illustrative cases exploring both conventional and novel indications for SCS.

Method: We describe two patients with SCI who underwent SCS implantation. The first, a middle-aged male with post-traumatic SCI due to a gunshot wound, presented with intractable neuropathic pain. The second, a young adult female with complete paraplegia following a motor vehicle accident, was selected for neuromodulation targeting motor and sensory improvement. Both patients underwent comprehensive clinical evaluation, imaging, psychological assessment, and intraoperative neuromodulation testing. Outcomes were assessed using pain scales, spasticity grading, and functional mobility indices.

Discussion: The first patient experienced a significant reduction in pain intensity (VAS from 9 to 3) and decreased reliance on opioids within the first three months post-SCS. The second patient, despite complete motor paraplegia (AIS A), demonstrated unexpected early gains in trunk control,

reduced spasticity, and subjective improvement within three months of stimulation onset. No device-related complications were observed.

Conclusions: These two cases underscore the expanding therapeutic potential of SCS in SCI. While pain relief remains a well-established indication, neuromodulation may potentially offer functional benefits even in complete SCI. These observations advocate for broader research into the neuroplastic and rehabilitative effects of SCS and encourage reconsideration of candidacy criteria in the SCI population.

References

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