# Spinal Cord Stimulator

- Spinal cord injury and electrical stimulation: analysis of neuroplasticity in a case report
- Home-based intervention and monitoring in spinal cord injury: evaluating method and compliance in a telehealth trial
- Efficacy and safety of short-term spinal cord stimulation and pulsed radiofrequency in the treatment of postherpetic neuralgia: a meta-analysis
- Cervical Spinal Cord Stimulator Malfunction Secondary to Lead Fracture
- Penile Pain With Allodynia Following Spinal Cord Stimulation (SCS) Implant: A Case Report
- Epidural Hematoma in an Elderly Patient With Multiple Comorbidities on Aspirin Following Spinal Cord Stimulator Trial: A Case Report
- Piezo1 deletion ameliorates inflammation and functional recovery in spinal cord injury through altering microglia/macrophage phenotype
- Case Studies in Neuroscience: Movement-Related Cortical Stimulation to Enhance Corticospinal Transmission in Chronic Incomplete Spinal Cord Injury

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see also Wireless spinal cord stimulation.

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A Spinal Cord Stimulator (SCS) or Dorsal Column Stimulator (DCS) is a type of implantable neuromodulation device (sometimes called a “pain pacemaker”) that is used to send electrical signals to select areas of the spinal cord (dorsal columns) for the treatment of certain pain conditions. SCS is a consideration for people who have a pain condition that has not responded to more conservative therapy.

In the United States Failed Back Surgery Syndrome is the most common use while in Europe the most common use is peripheral ischemia.

As of 2014 the FDA had approved SCS as a treatment for failed back surgery syndrome (FBSS), chronic pain, Complex Regional Pain Syndrome, Intractable angina, as well as visceral abdominal and perineal pain[1] and pain in the extremities from nerve damage.

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Cylindrical-type leads can be implanted percutaneously. In contrast, paddle leads (lamitrode) require more invasive surgery (i.e., laminotomy or laminectomy) for placement into the epidural space, thereby offering several advantages over percutaneous leads (octrode), including less lead migration and better paresthesia coverage.

MIS techniques for spinal cord stimulation (SCS) surgical paddle implantation is associated with less perioperative morbidity and surgical site back pain, shorter external neurostimulator trial duration, and long-term device stability benefits [1)].

Precision Spectra

Precision

CoverEdge

see Boston Scientific.

## Case series

A total of 47 patients who underwent thoracic SCS for first time were retrospectively studied through chart review. These patients were categorized into two groups, with Group I patients taking a morphine equivalent dose (MED) of less than 100 mg and Group II patients taking an MED of more than 100 mg preoperatively.

Group I had 22 patients, and Group II had 25 patients. The average age in Group I was 53.45 years, and the average age in Group II was 50.16 years. There were seven males (38%) and 15 females (62%) in Group I, and in Group II there were 11 males (44%) and 14 females (56%). The average LOS in both groups was two days. In Group I, there were 16 patients (73%) who had an LOS of one day and six patients (27%) who had an LOS of more than one day, and in Group II there were 11 patients (44%) who had an LOS of less than one day and 14 patients (56%) who had an LOS of more than one day, with a P value of 0.047. On univariate analysis, postoperative fever and PCA usage correlated with longer hospital stay, with a P value of $< 0.001$.

Patients on high-dose chronic opioid therapy, defined as an MED greater than 100 mg, who undergo thoracic spinal cord stimulator surgery tend to have longer postoperative hospital stays compared with patients on lower-dose opioid therapy [2].

## Spinal Cord Stimulator Reimplantation

In a Single-patient case report Pina et al. from the UMass Chan Medical School, Worcester; Beth Israel Deaconess Medical Center, Boston; Brigham and Women's Hospital, Boston; Prince Mohammed Medical City, Sakaka City; Radboud University Medical Center, Nijmegen published in the Pain Medicine Case Reports to describe a rare instance of successful spinal cord stimulator (SCS) reimplantation in a patient with postlaminectomy syndrome (PLS) after a prior explant due to unwanted stimulation. The case supports reconsidering SCS reimplantation in select patients with PLS, despite prior explantation and technical reimplantation challenges due to epidural scarring [3]

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**Review:**

This case report presents an anecdotal success of SCS reimplantation following prior explantation in a patient with PLS. While technically accurate and clearly written, the clinical relevance is highly limited due to its N=1 nature and lack of systematic follow-up. The presence of epidural scarring complicating lead placement is neither novel nor unexpected in the postlaminectomy population. The primary takeaway—that reimplantation can still be effective—is not groundbreaking and lacks the statistical power or mechanistic insight to move the field forward. Furthermore, the authors offer no imaging, intraoperative details, or objective pain measures beyond a vague “>50%” relief metric. The discussion fails to contextualize this within the broader literature on explant/reimplant outcomes or predictors of success.

**Final Verdict:** Anecdotal with minimal novelty; limited academic or clinical value.

**Takeaway for the Practicing Neurosurgeon:** In rare cases, SCS reimplantation may be worth attempting even after prior failure, but patient selection remains unclear and evidence remains anecdotal.

**Bottom Line:** Interesting as a rare event, but adds little to evidence-based practice or decision-making algorithms.

**Rating:** 2/10

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1)
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2)
Madineni RA, Smith CM, Clark SW, Boorman DW, Wu C, Wang D, Harrop JS, Sharan AD. Effect of Preoperative Opioid Dosage on Postoperative Period After Thoracic Spinal Cord Stimulator Surgery. Pain Med. 2017 Nov 16. doi: 10.1093/pm/pnx250. [Epub ahead of print] PubMed PMID: 29155958.
3)
Pina FJR, Sottosanti E, Bulat E, Madabhushi S, Alrowaily F, Kollenburg L, Robinson C. Prior Hypermobile Spinal Cord Stimulator Removal With Difficult Reimplantation due to Epidural Scarring Provides Relief in Postlaminectomy Syndrome. Pain Med Case Rep. 2024 Mar;8(2):61-64. PMID: 40608377.