

General

Abrupt Loss of Spinal Cord Stimulation After Trauma: A Case-Based Approach to Evaluation and Management

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Spinal cord stimulation (SCS) is an established therapy for refractory neuropathic pain following lumbar spine surgery and frequently allows for meaningful pain reduction, functional improvement, and minimizing reliance on pharmacotherapy and opioids. Despite its efficacy, hardware-related complications remain an important cause of treatment failure.

We present a fictional teaching case of a 68-year old man with persistent bilateral radicular pain after lumbar decompression who experienced 80% relief following SCS implantation. Eight months later, after a motor vehicle collision, he developed abrupt loss of stimulation coverage and recurrence of severe neuropathic symptoms. This teaching case discusses appropriate next steps for evaluation and management in this particular clinical scenario.

TEACHING CASE

A 68-year-old man presents to the pain clinic with recurrent bilateral lower extremity neuropathic pain eight months after successful spinal cord stimulator (SCS) implantation.

His history is notable for prior lumbar decompression and fusion performed several years ago for spinal stenosis at L4-S1. Despite surgery, he continued to experience persistent bilateral radicular pain radiating down both legs. Repeat surgical evaluation did not recommend additional intervention. He underwent extensive conservative management including epidural steroid injections, lumbar medial branch blocks, radiofrequency ablation, and sacroiliac joint injections with minimal relief.

Pharmacologic therapy included acetaminophen, celecoxib, pregabalin 100 mg three times daily (discontinued due to sedation). Amitriptyline was trialed but caused intolerable dry mouth and sedation. He remained on oxycodone 10 mg four times daily but reported ongoing sedation and constipation without adequate pain control.

Given refractory neuropathic pain, he underwent an SCS trial with 80% pain relief, followed by uncomplicated permanent implantation with cylindrical leads placed at the middle of the T7 and T8 vertebral bodies. Over the following months, he experienced sustained relief and successfully reduced opioid use to oxycodone 5 mg every 6 hours as needed for breakthrough pain.

Eight months post-implant, the patient was involved in a motor vehicle accident. Immediately afterward, he reported

abrupt loss of SCS coverage and return of severe bilateral leg pain.

TEACHING QUESTIONS

QUESTION 1

What is the most likely cause of abrupt loss of SCS coverage after trauma in this patient?

- A. Generator battery failure
- B. Lead migration
- C. Epidural hematoma
- D. Device infection

QUESTION 2

What is the most appropriate initial diagnostic step?

- A. Immediate revision surgery
- B. CT myelogram
- C. X-ray of thoracic and lumbar spine to evaluate lead position
- D. MRI

QUESTION 3

What is the most appropriate next step if imaging shows minimal lead migration but coverage has shifted?

- A. Revision surgery
- B. Reprogramming attempt
- C. Explantation

D. Conversion to DRG stimulation

ANSWERS AND DISCUSSION

- Question 1 – Correct Answer: B

Lead migration is the most common hardware-related complication following SCS implantation, particularly after physical trauma. Migration may result in loss of paresthesia coverage or reduced efficacy.¹⁻⁴

- Question 2 – Correct Answer: C

Plain radiographs (AP and lateral views) are the first-line imaging modality to evaluate lead position.⁵⁻⁷ X-rays allow comparison with prior post-implant films to identify displacement.

- Question 3 – Correct Answer: B

Minor migration may be corrected with reprogramming before considering surgical revision.^{7,8} Revision is reserved for significant displacement or failed reprogramming attempts.

EDUCATIONAL DISCLAIMER

This case is a fictional teaching example created solely for educational purposes and does not represent a real patient. It should not be construed as medical advice. Clinical decisions must be individualized and guided by current evidence and professional judgment.

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