Spinal Epidural Hematoma Managed Conservatively Following Spinal Cord Stimulation: A Rare Case Report

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Background

- **Spinal cord stimulation (SCS)** is a safe and effective treatment for chronic pain, offering an alternative to surgery and long-term medication use
- As SCS use increases, concerns have emerged regarding complications, particularly spinal epidural hematoma (SEH)
- The reported incidence of hematoma following SCS is ~0.81% overall, with 0.32% neuraxial hematomas, most commonly epidural[1]

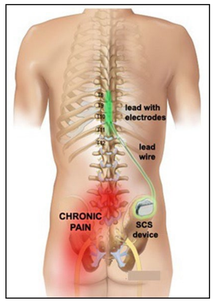

Fig. 1. Abbott's Spinal Cord Stimulation (SCS) System is an implantable device, called a neurostimulator, to treat long-term (chronic) pain (FDA.gov)

- **SEH presentation:** Acute onset severe back pain with radiculopathy, typically occurring after SCS lead removal, with risk of permanent neurologic damage if untreated
- **Diagnosis:** MRI is the imaging modality of choice for identifying SEH and assessing spinal cord compression
- **Standard management:** Urgent surgical decompression (laminectomy) is recommended to prevent rapid neurologic decline[2]
- **Clinical outcomes vary:** Existing case reports demonstrate both permanent deficits and full recovery following emergent surgical intervention[3]
- **Emerging perspective:** Rare cases suggest conservative management may be a potential alternative, challenging the traditional paradigm of mandatory surgical intervention

Case Significance

Case focus: Presents an unconventional case of spinal epidural hematoma (SEH) with full recovery without emergent surgical intervention

Clinical insight: Explores factors contributing to a favorable outcome with conservative management

Implication: Highlights potential limitations of current treatment protocols and the need for a more nuanced, patient-specific approach to SEH management

Case Description

- A 73-year-old Caucasian male presented for follow-up with worsening chronic right-sided low back pain and recurrent bilateral peripheral neuropathy in his feet
- His past medical history included hypertension, hypercholesterolemia, peptic ulcer disease, and benign prostatic hyperplasia, with no history of tobacco or alcohol use
- He previously underwent right-sided L3/4 and L4/5 radiofrequency ablation procedures with notable symptomatic relief
- After evaluation by the attending physiatrist, a decision was made to proceed with spinal cord stimulator (SCS) trial placement at T9-10 for symptom management. The percutaneous SCS trial was performed approximately six months later without procedural complications
- Five days after lead placement, the patient returned for lead removal, reporting a **50% improvement** in neuropathic paresthesia's but new severe onset back pain; imaging showed no lead migration
- Due to persistent pain and elevated blood pressure, he was sent to the emergency department, where MRI revealed a dorsolateral epidural collection (likely hematoma) from T10–L2 with associated canal stenosis (**Fig. 2. & 3.**), though he remained neurologically intact throughout his stay in the ICU and was managed conservatively without surgical intervention

Results

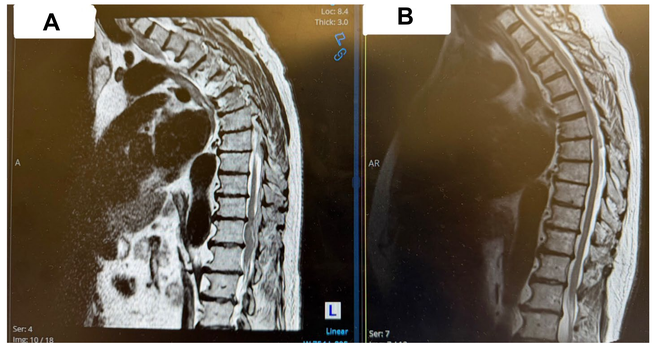

Fig. 2. Sagittal MRI of the thoracolumbar spine demonstrating a left dorsolateral epidural collection extending from T10–T11 to the L1–L2 disc space, with associated canal stenosis most pronounced at T11–12 and T12–L1 **(A)**

Follow-up imaging **(B)** shows near-complete interval resolution of the collection with improved spinal canal caliber.

- Approximately two weeks after discharge from the ED, the patient followed up with the orthopedic spine surgeon and reported significant improvement in back pain. He continued to deny any neurological deficits. Repeat non-contrast thoracic spine MRI demonstrated interval improvement with decreased mass effect from the previously identified epidural hematoma (**Fig. 2. & 3.**)
- The patient remained **clinically stable** at subsequent follow up one week later with continued symptom resolution and no new neurological complaints, and he was ultimately transitioned to follow-up on an as-needed basis.

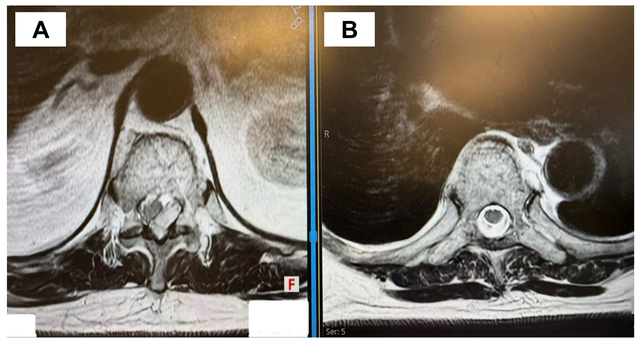

Fig. 3. Axial MRI demonstrating a left dorsolateral epidural collection producing mass effect on the thecal sac and associated canal narrowing **(A)**, with interval improvement/near resolution of the collection and decreased mass effect on follow-up imaging **(B)**

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Stronger starts here.

Conclusions & Recommendations

Clinical Implication & Management:

1. **Standard of care context:** Spinal epidural hematoma (SEH) is typically managed with urgent surgical decompression to prevent neurological deterioration, consistent with current guidelines and established clinical practice
2. **Potential alternative approach:** This case suggests that in carefully selected, neurologically stable patients, conservative management may be a potential alternative in specific scenarios, without replacing established surgical guidelines
3. **Shared decision-making** combined with close clinical monitoring enabled successful non-operative management of this patient, with preservation of neurological function and effective pain control
4. **This case underscores** the importance of individualized treatment planning, particularly emphasizing neurological status and overall clinical stability when determining management approaches.

Recommendation for future practice:

1. **Need for evidence-based criteria:** Further research is needed to establish clear, evidence-based selection criteria for identifying which patients with spinal epidural hematoma (SEH) may be appropriate candidates for conservative management
2. **Patient safety optimization:** These criteria should aim to reliably identify patients who can safely avoid surgical intervention while minimizing the risk of delayed neurological deterioration or irreversible deficits
3. **Balancing risk and intervention:** Improved guidance would also help reduce unnecessary operative procedures, ensuring that surgical intervention is reserved for patients most likely to benefit

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