

Percutaneous Spinal Cord Stimulator Lead Misplacement with Nerve Root Strangulation – A Case Report



School of Medicine
University of Missouri

Jess Roland, DO¹; Nicholas Madaffer, DO²

1. University of Missouri Department of Physical Medicine and Rehabilitation

2. Harry S. Truman Memorial Veterans Affairs Hospital

Case Diagnosis

Spinal cord stimulator (SCS) lead misplacement with nerve root strangulation

Case Description

- 56-year-old male with post-laminectomy syndrome and recent total SCS replacement (performed at an outside hospital system).
- Presented with acute right axial low back pain and pain at the stimulator site with use of the left lead electrode.
- CT thoracic and lumbar spine revealed inappropriate anterior epidural neurostimulator lead placement.
- Also appeared the other lead was effectively strangulating the left L2 spinal nerve root.
- This observation collaborated well with the patient's report of increased stimulator pain upon activation of the anterior lead as well as pain with forward flexion.
- Neurosurgery referral was placed for removal and reimplantation of the SCS system.

Figures A, B:
Lateral and AP plain films revealing previous lumbosacral spinal fusion

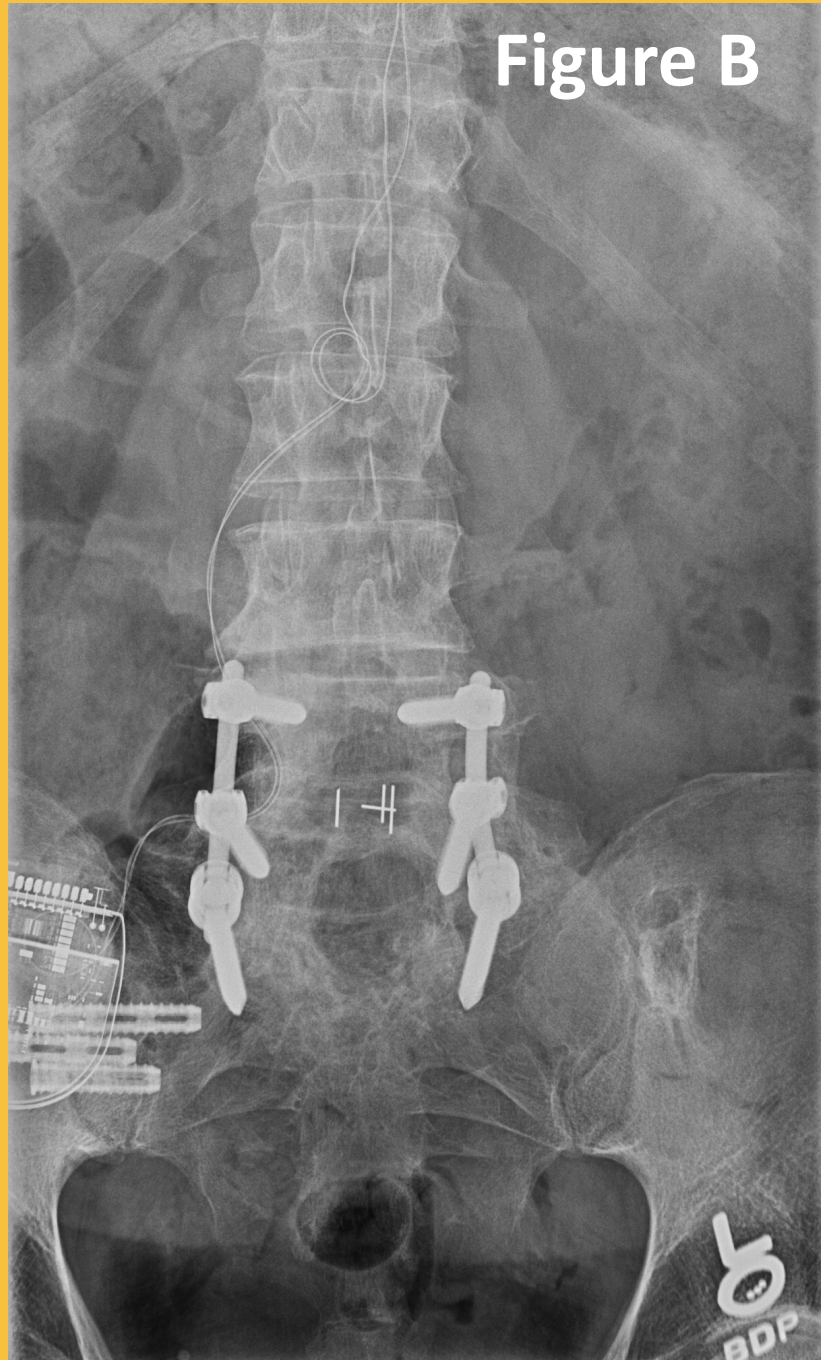


Figure C:
Coronal CT revealing inappropriate anterior epidural lead placement

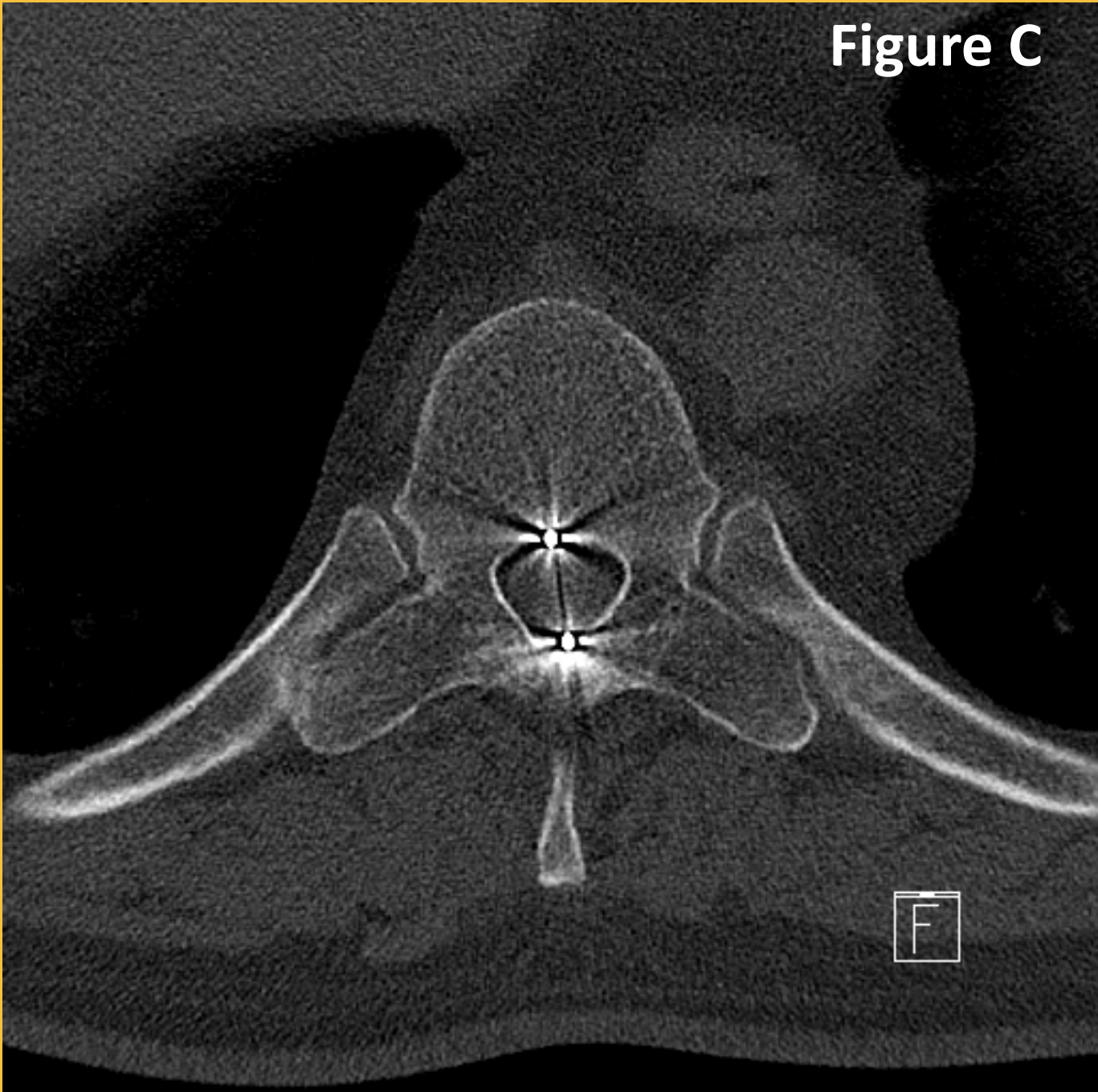
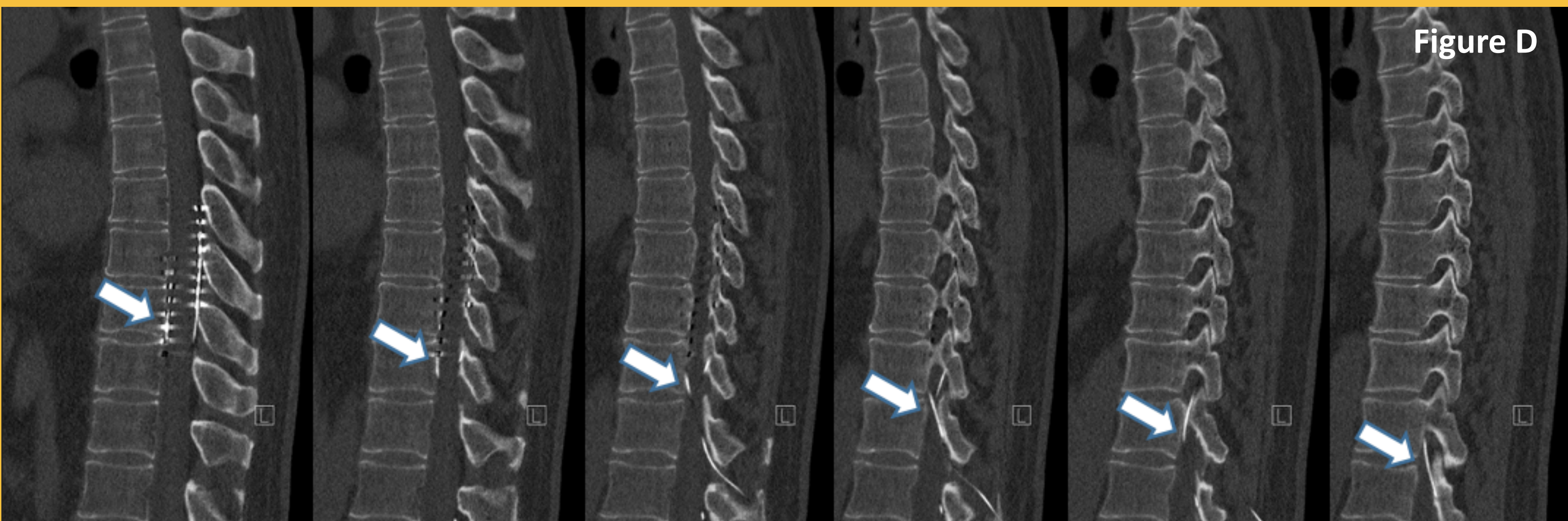


Figure D:
Sagittal slices of thoracolumbar CT demonstrating cranial to caudal course of epidural leads revealing inappropriate anterior epidural lead placement with strangulation of left L2 spinal nerve root.



Discussion

- Complications related to implantation of a SCS are numerous with a high incidence of 30% to 40%.
- The technical (hardware-related) complications, i.e., inadvertent lead misplacement, lead migration, electrode breakage, and implantable pulse generator failure, are more common than biological complications, i.e., infection, dural puncture, pain at implant.
- All technical complications necessitate revision and reprogramming.
- To mitigate such complications, practical guidelines are in place. For example, guidelines encourage visualization of correct placement of epidural leads by obtaining mandatory anterior, posterior and lateral imaging intraoperatively.

Conclusion

- This case report further emphasizes the importance of the careful attention that this minimally invasive procedure requires.
- For clinicians who implant SCS devices and for radiologists who review imaging studies of patients with such devices, understanding the importance of correct anatomic lead placement remains an important component of preventing and identifying hardware-related complications.