Axillary Migration of a Thoracic Spinal Cord Stimulator Lead Through the Neuroforamen: A Rare Complication

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INTRODUCTION

- Spinal cord stimulation (SCS) treats refractory neuropathic pain, including post-mastectomy pain syndrome. [1]
- Lead migration is a common hardware complication and usually occurs longitudinally within the epidural space. [1-4]
- Lateral migration through a neuroforamen into an extraspinal location is rarely reported.[5]
- This case describes right lead migration into the axilla after thoracic SCS implantation.

METHODS

- According to the University of Chicago IRB policy, the publication of a single de-identified medically challenging case is not considered human subjects research and is exempt from IRB review.
- We retrospectively reviewed the patient's medical records and removed all patient identifiers.
- Patient and guardian's informed consent was obtained for submission of a case report.
- All interventions aligned with the standard of care.
- No off-label drug use or investigational treatments were involved.

CASE DESCRIPTION

- 49-year-old female with a history of bilateral mastectomy and adjuvant chemotherapy for right breast cancer developed chronic bilateral chest wall neuropathic pain
- Failed medical management with Gabapentinoids, SNRIs, TCAs, topical agents
- Received multiple interventional treatments without significant relief, including intercostal nerve blocks, pectoral blocks, serratus anterior plane blocks, trigger point injections, and an unsuccessful peripheral nerve stimulator trial
- Thoracic SCS implantation was decided as the appropriate next step in intervention
- In 12/2020, a thoracic SCS was implanted by an outside provider, with leads entering the spinal canal at L1-2, and terminal electrodes spanning C7-T3 and T1-T4.
- SCS device initially improved symptoms
- In 1/2021, the patient developed loss of stimulation coverage and vibration sensation in the right axilla. Imaging revealed migration of the right lead cranially and laterally through the C7-T1 neuroforamen into the right axilla
- The patient underwent successful lead revision with device salvage within 2 weeks, restoring therapeutic coverage and continued pain relief today

DISCUSSION

- **Extraspinal migration is an unusual migration pattern,** with the patient in this case experiencing exit through the neuroforamen into the axilla. With lead migration came SCS coverage compromise necessitating revision.
- While the cause currently remains unknown, possible mechanisms **include suboptimal initial positioning, off-midline trajectory, anchor failure, or altered epidural tissue planes**. While **trauma** is also a possibility, as a cause it was excluded due to lack of reporting from the patient's history.
- When diagnosing, cross-sectional imaging may help when radiographs cannot fully define an extraspinal lead course. Revision may salvage the system.
- When evaluating loss of SCS coverage, **lead migration** must be considered as timely revision can restore function.

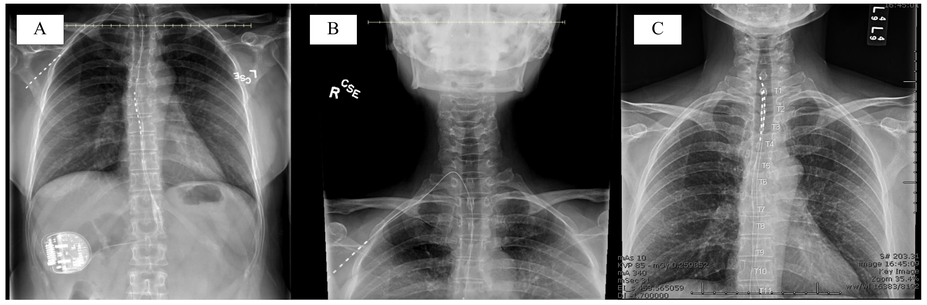


Figure 1: Right Lead Migration and Lead Revision
A) Thoracolumbar Xray Image of R SCS lead migration into the axilla; B) Cervical Xray of R lead migration; C) Post revision Thoracic Xray of SCS leads

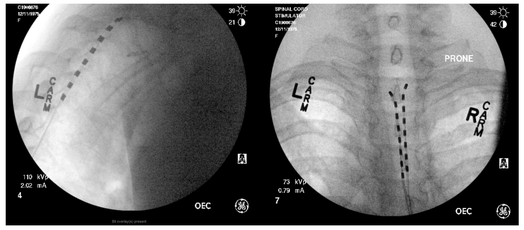


Figure 2: Fluoroscopy Images of SCS Lead Placement from 12/2020

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