A Hidden Cause of Refractory Postoperative Pain: Intrathecal Catheter Disruption Following Complex Spinal Reconstruction

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Introduction

- Low back pain is a leading cause of disability and healthcare use
- Management typically progresses from conservative multimodal analgesia to more targeted interventions[1]

Intrathecal Pain Pumps

- Provide medication delivery into intrathecal space for persistent pain
- Allow analgesia with lower systemic medication doses[2]

Surgical Intervention

- Spinal decompression and fusion may be pursued for refractory disease
- For patients with existing intrathecal pumps, additional perioperative considerations are required to maintain catheter integrity and function
- Persistent postoperative pain should prompt evaluation for surgical complications

Case Presentation

- 62-year-old female with chronic, intractable low back pain s/p L4-S1 fusion and intrathecal pain pump placement
- Underwent removal of prior hardware and extension of fusion to T4-S1 with pelvic fixation and bilateral SI joint fusion

Intraoperative Course

- Existing intrathecal catheter disrupted but remained at L3-L4 dural entry site
- Under fluoroscopic guidance, **new catheter placed at L1-L2, advanced to T11-12, and anchored**
- Prior catheter removed, and dural stitch placed

Case Presentation (continued)

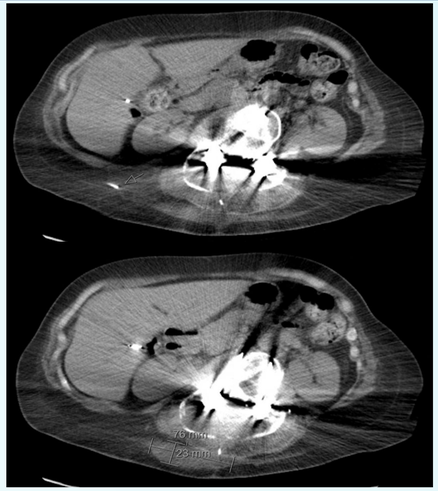
Postoperative Course

- **Severe pain** despite escalating multimodal therapy and intrathecal sufentanil
- **Pump interrogation revealed no technical malfunction**
- Developed prolonged wound healing and **positional serous drainage**
- CT later demonstrated **catheter discontinuity and posterior subcutaneous fluid collection**
- Pump replacement and **catheter revision** restored appropriate function and **improved basal pain control**

Imaging



Xray obtained during rehab admission (unable to visualize radiolucent distal catheter)



Top: Site of catheter discontinuation
Bottom: Posterior fluid collection with visualization of distal intrathecal catheter tip

Discussion

- Intrathecal drug-delivery failure may arise from the pump or catheter.
  - Mechanical complications include kinking, migration, disconnection, and fracture[2,3]
- Pump interrogation evaluates programming, reservoir status, and system alarms but does not confirm catheter continuity or effective medication delivery[2]
- Catheter malfunction may be difficult to recognize after spine surgery because inadequate analgesia may be attributed to expected postoperative pain
- Evaluation should integrate operative history, pain trajectory, wound findings, and structural imaging rather than relying on pump interrogation alone[2]

Conclusion

- Intrathecal catheter disruption is an uncommon but important complication of complex spinal reconstruction
- **Persistent symptoms despite normal pump interrogation warrant independent evaluation of catheter integrity**

References

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