


Understanding the Rare Occurrence of Spinal Cord Injury Following Cervical Epidural Injection in Patients with Previous Spinal Surgery: A Case Study and Recommendations for Mitigating Risk

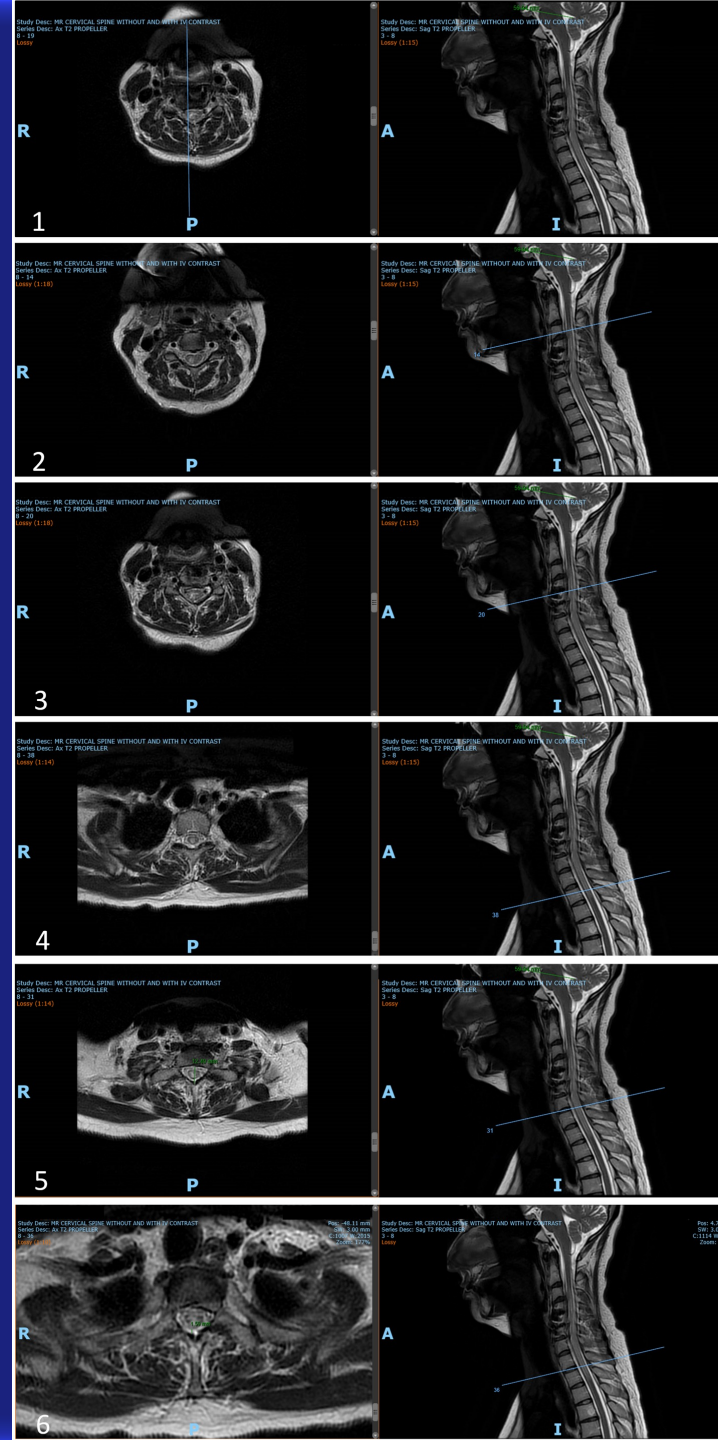
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BACKGROUND

- ❖ Cervical epidural injections (CEI) are generally indicated for conditions like **cervical radiculopathy** and **radiculitis** showing mixed efficacy and are **less extensively studied** for cases of **discogenic pain, axial pain, spinal stenosis, and post-surgery syndrome**.^{1,2}
- ❖ There remains a gap in literature on the **risk of CEI complications** for patients with **prior spinal decompression** experiencing cervical post-surgery syndrome.

CASE DESCRIPTION

- ❖ A woman in her mid-40's presented to the ER with diffuse pain, prickling sensations, and right upper and lower extremity weakness, immediately after an outpatient interlaminar CEI with non-particulate steroid at the C7-T1 level. Prone positioning, AP and lateral views, LOR technique and contrast flow under live fluoroscopy were used.
- ❖ PMHx of cervical herniated discs, degenerative disc disease, rheumatoid arthritis, and prior ACDF at C4-C5 and C5-C6.
- ❖ Over this six-year postsurgical period, she received cervical epidurals every four to six months for refractory, primarily axial neck pain, both with and without minimal sedation given preoperative anxiety.



FINDINGS

- ❖ 24hrs after admission, an MRI [Fig. 1-6] showed no infarction, epidural mass, collection, or abnormal enhancement; however, there was an **abnormally increased T2 signal and decreased T1 signal** in the spinal cord **extending from C3 through T3**.
- ❖ Persisting RLE weakness most consistent with incomplete C4 ASIA D, secondary to intrinsic cord injury from direct needle trauma via ILCEI.
- ❖ Treated with intravenous dexamethasone and discharged to acute inpatient rehabilitation facility for ambulatory dysfunction.

DISCUSSION

- ❖ Performing ACDF with direct decompression may increase the risk of epidural hematoma and epidural fibrosis compared to indirect decompression.³
- ❖ Residual stenosis may pose a risk of neurologic events if fluid is injected into the already restricted spinal canal.
- ❖ One study of 100 ACDF patients, the disc space height changed from 5.49 ± 1.17 mm before surgery to 6.62 ± 1.12 mm at 12 months post-surgery, but some cases showed reduced disc space height at the 12-month mark, indicating variability in post-operative results.⁴
- ❖ The combination of minimal sedation, prior ACDF, anatomic patterns precluding loss of resistance, repetitive microtrauma of posterior vertebral ligaments, and a narrow cervical epidural space may all have contributed to this patient's intrinsic cord injury.

CONCLUSIONS

- ❖ Safety measures include reviewing pre-procedural imaging, limiting or avoiding perioperative sedation, obtaining appropriate lateral or oblique views for needle depth approximation, and limiting the injectate volume to 4mL maximum.⁵⁻⁸
- ❖ Authors suggest for patients with prior cervical spine surgery, providers should meticulously characterize the pain syndrome to define an appropriate evidence-based intervention, understand the previous surgery performed to tailor interventions accordingly, and focus interventions in the lower cervical spine, preferably at C7-T1.