

The Importance of Positioning and Appropriate Contrast Patterns in Cervical Interlaminar Epidural Steroid Injections: A Case Report

Introduction

- Appropriate needle positioning when performing cervical interlaminar epidural steroid injections (ILESIs) is imperative.
- Retrodural space of Okada = potential space between the ventral vertebral lamina and dorsal surface of the ligamentum flavum.
- In the cervical spine, it allows for communication between facet joints and the interlaminar space, interspinous region, and the contralateral facet joint.¹
- Prior case reports describe inadvertent injections into the space of Okada during cervical transforaminal epidural steroid injections and lumbar ILESIs.²⁻³
- However, there is currently a paucity of evidence demonstrating this occurring during cervical ILESI performed utilizing fluoroscopy, particularly at more caudal levels.

Case Presentation

- MW is a 52-year-old male with a history of chronic neck and back pain who presented for planned C6-C7 cervical ILESI.
- The C6-C7 vertebral interspace was identified by AP fluoroscopy.
- Upon approaching the epidural space, contralateral view utilizing loss of resistance technique was performed.
- Upon injection of contrast, dye localized to the ligamentum flavum but also appeared to spread to the ventral epidural space, altogether consistent with needle positioning in the retrodural space of Okada (**Figure 1**).
- Very slight ventral advancement of the needle resulted in an appropriate epidural flow pattern (**Figure 2**) that was then confirmed on AP view (**Figure 3**).
- Following negative aspiration for blood or CSF, dexamethasone was slowly administered.
- The patient tolerated the procedure well without complication.

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Figure 1: Spread of contrast dye into the ventral epidural space on initial assessment of needle positioning.

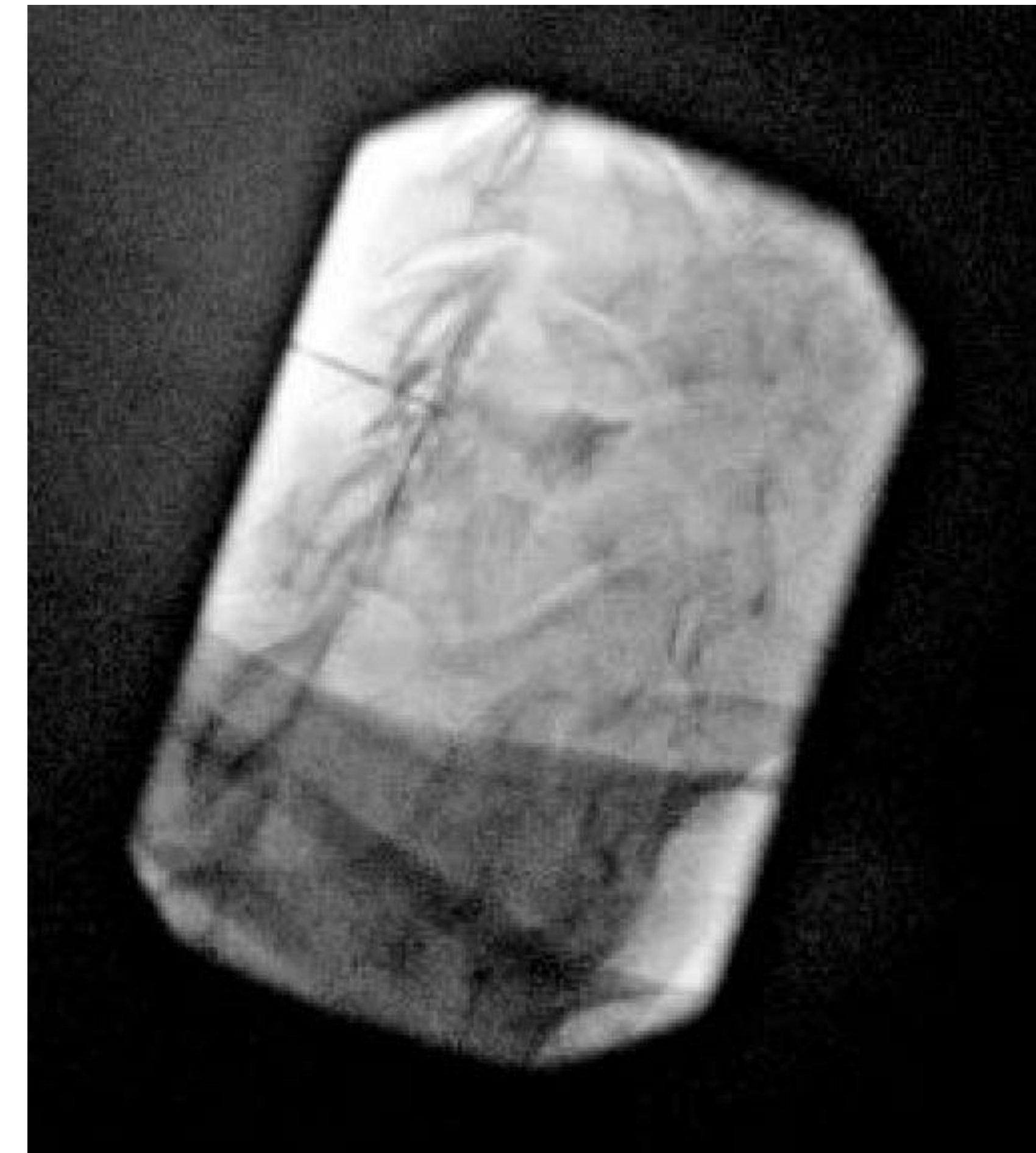


Figure 2: Appropriate epidural flow pattern following ventral needle advancement.

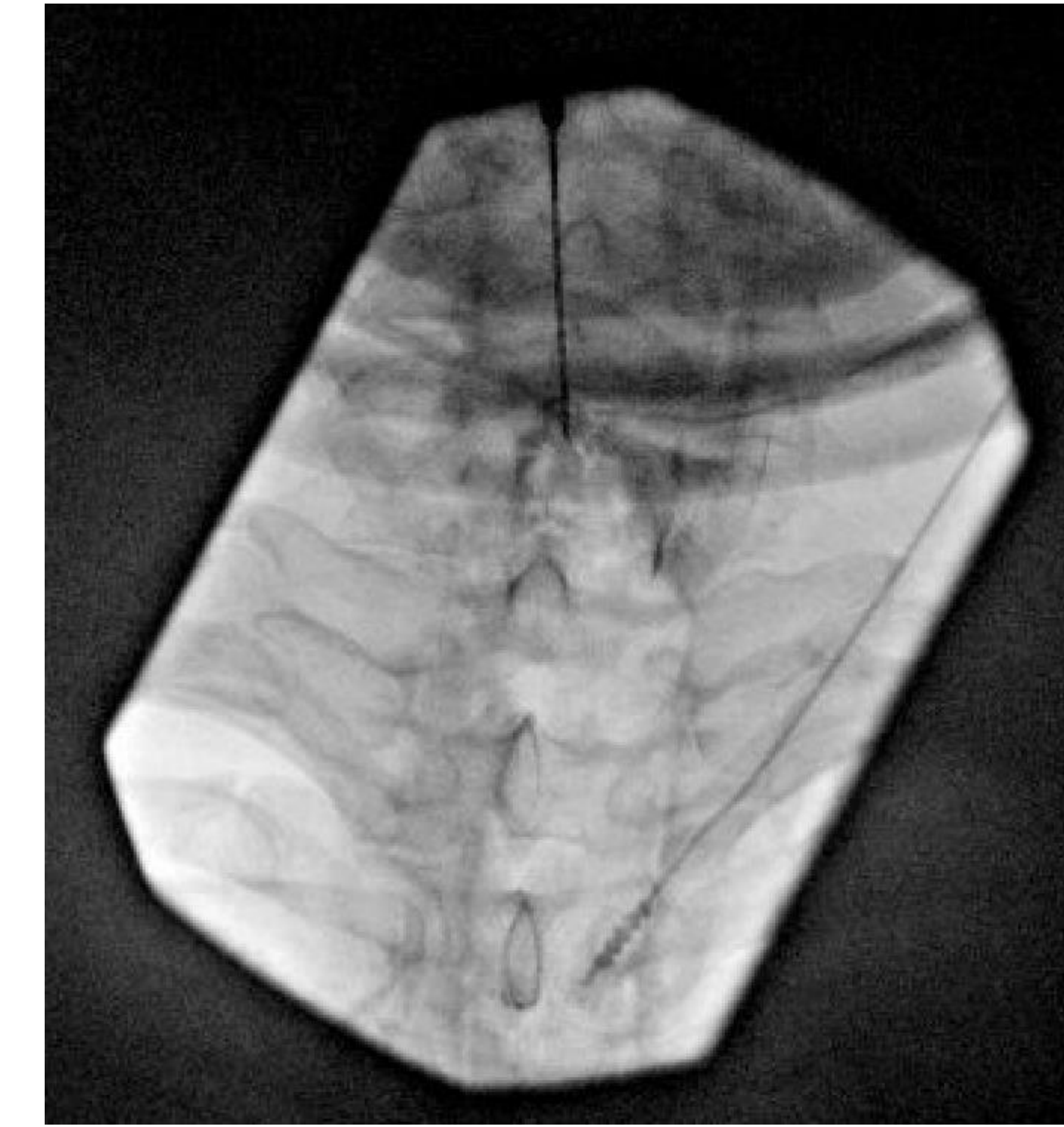


Figure 3: Confirmation of epidural flow pattern on AP view prior to dexamethasone injection.

Discussion

- Location (e.g., C5-C6 or higher) and technique (e.g., paramedian needle approach) are associated with greater risk for injection into the retrodural space of Okada when performing ILESI.⁴
- Risk for inadvertent injection into the retrodural space of Okada is greatest at the C5-C6 level.⁵
- Reported rates for nontarget injections in this space during CT-guided cervical ILESI have ranged from around 2-6%.⁴⁻⁵
- While complication rates have shown to be low with minimal severity, inaccurate injections may result in diminished pain relief or treatment failure, which may then impact diagnosis and future treatment.

Conclusions

- Unintentional injection into the retrodural space of Okada can occur during interventional spinal procedures.
- This case demonstrates that this may occur even at lower levels during cervical ILESIs.
- Gaining a greater understanding of the anatomy of this retrodural space anatomy and appropriate contrast patterns may reduce the risk of nontarget injections and potential treatment failure.

References

