

A Twisting Tale: Regional Anesthesia in a Patient with Severe Scoliosis

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Introduction

In the elderly population, rib fractures are a common injury that can lead to significant morbidity and mortality. Pain control in elderly patients present unique challenges, primarily due to their heightened sensitivity to analgesic medications and history of pre-existing comorbidities. Epidurals have been shown to adequately control rib fracture pain. When neuraxial anesthesia is contraindicated peripheral nerve blocks are viable alternative. Regional anesthesia serves as a safe alternative for pain management in elderly patients but does not come without its own difficulties, particularly when it comes to patient anatomy and ability to cooperate during procedures.

Case Presentation

As the case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per UNC policy. Patient informed consent was obtained for submission of a case report. We present a case report of a 90-year-old male, DNR and DNI with past medical history of severe thoracolumbar scoliosis complicated by restrictive lung physiology. This patient experienced a ground level fall resulting in bilateral posterior ninth and tenth rib fractures in addition to anterior right fourth rib fracture, and anterior left fourth and fifth rib fractures. His injuries were complicated by hypercarbic respiratory failure, requiring bipap support, and delirium. We were consulted by the MICU team for a possible pain controlling procedure in hopes to improve patient's respiratory function. Upon patient imaging review, patient's severe scoliosis and anticoagulation status made neuraxial anesthesia contraindicated. The decision was made to attempt peripheral nerve blocks with a combination of plain and liposomal bupivacaine to provide long-acting analgesia. In the supine position bilateral serratus anterior plane nerve blocks were placed, followed by adjusting the patient to a right decubitus position for bilateral T10 erector spinae plane blocks. Shortly following the procedure, the patient reported a pain scale of 0/10. The following morning the patient was transitioned from bipap to his baseline oxygen requirement. He was transitioned to inpatient rehab for a short period before experiencing other medical setbacks ultimately causing the family to pursue comfort care.



Figure 1: Thoracic Vasculature



Figure 2: Thoracic Spine

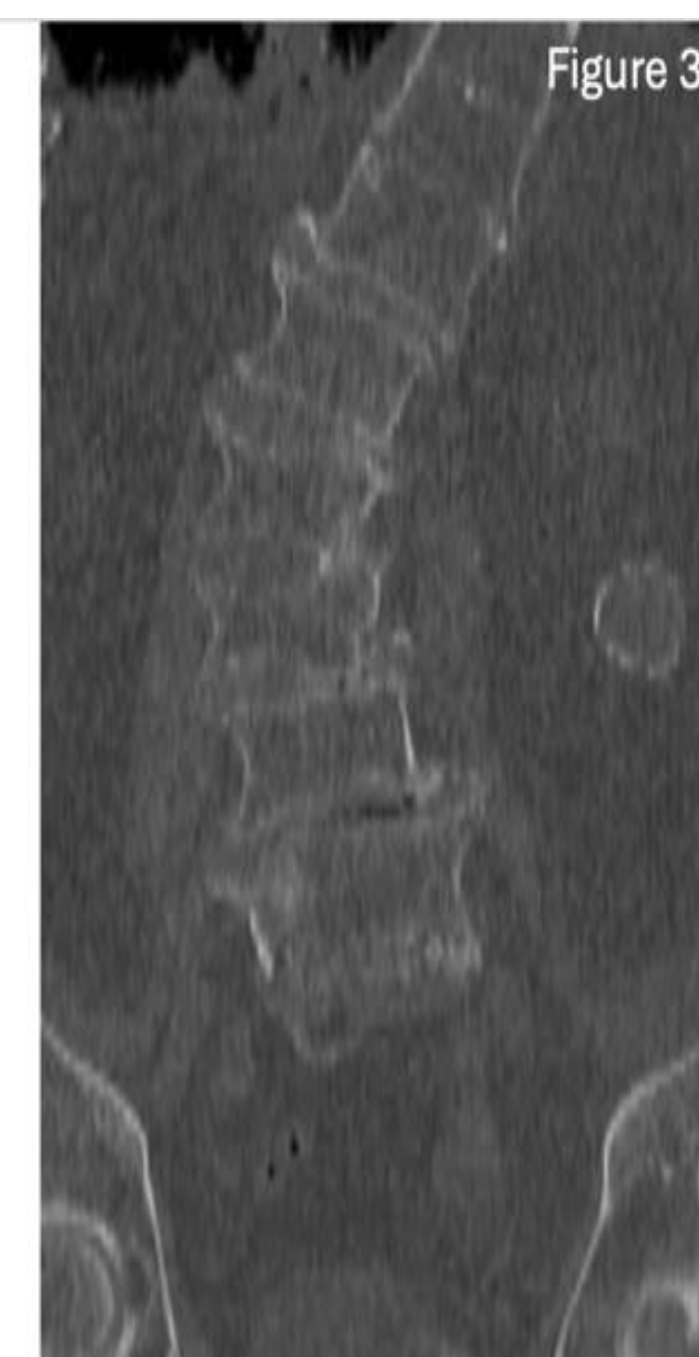


Figure 3: Lumbar Spine

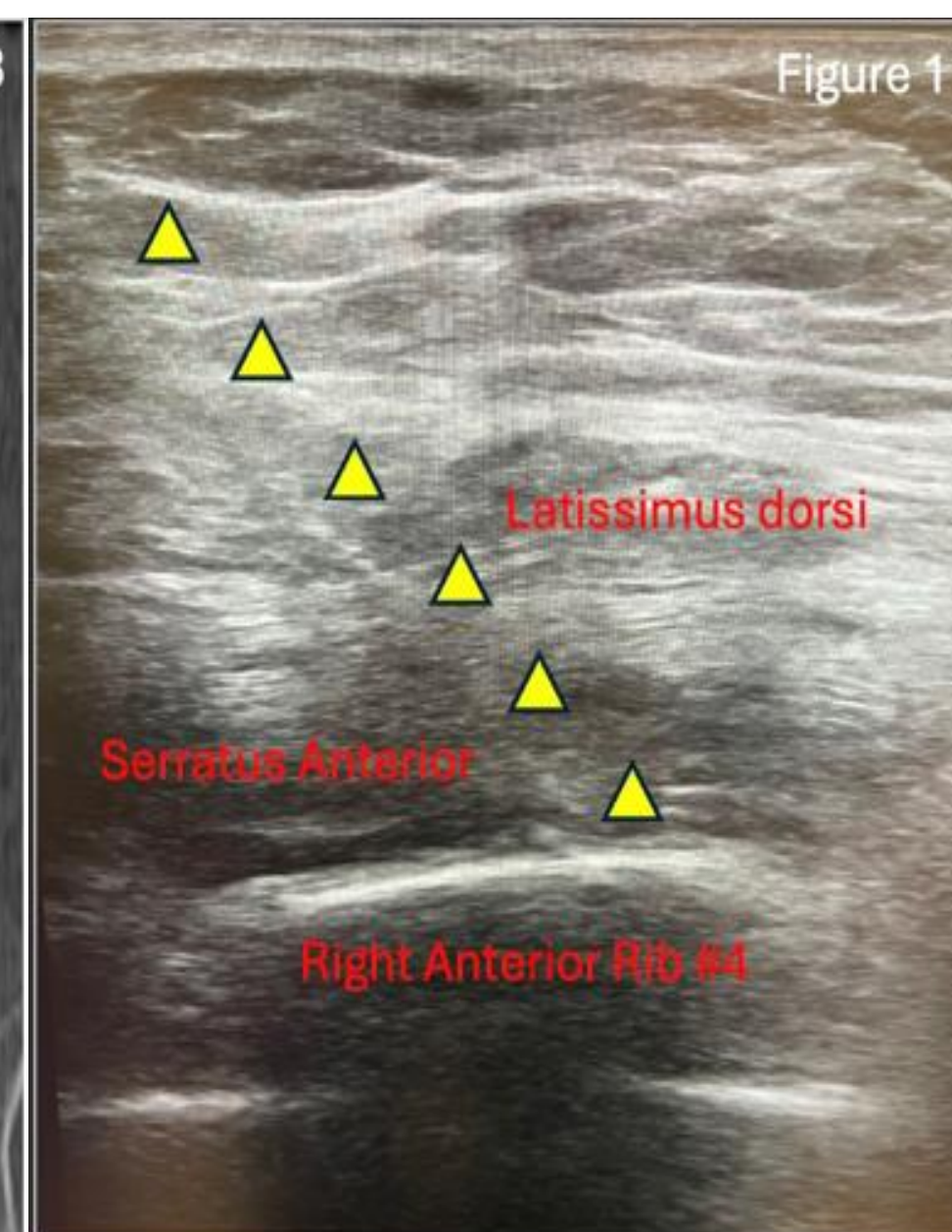


Figure 1: Right Anterior Rib 4 Serratus Anterior Block

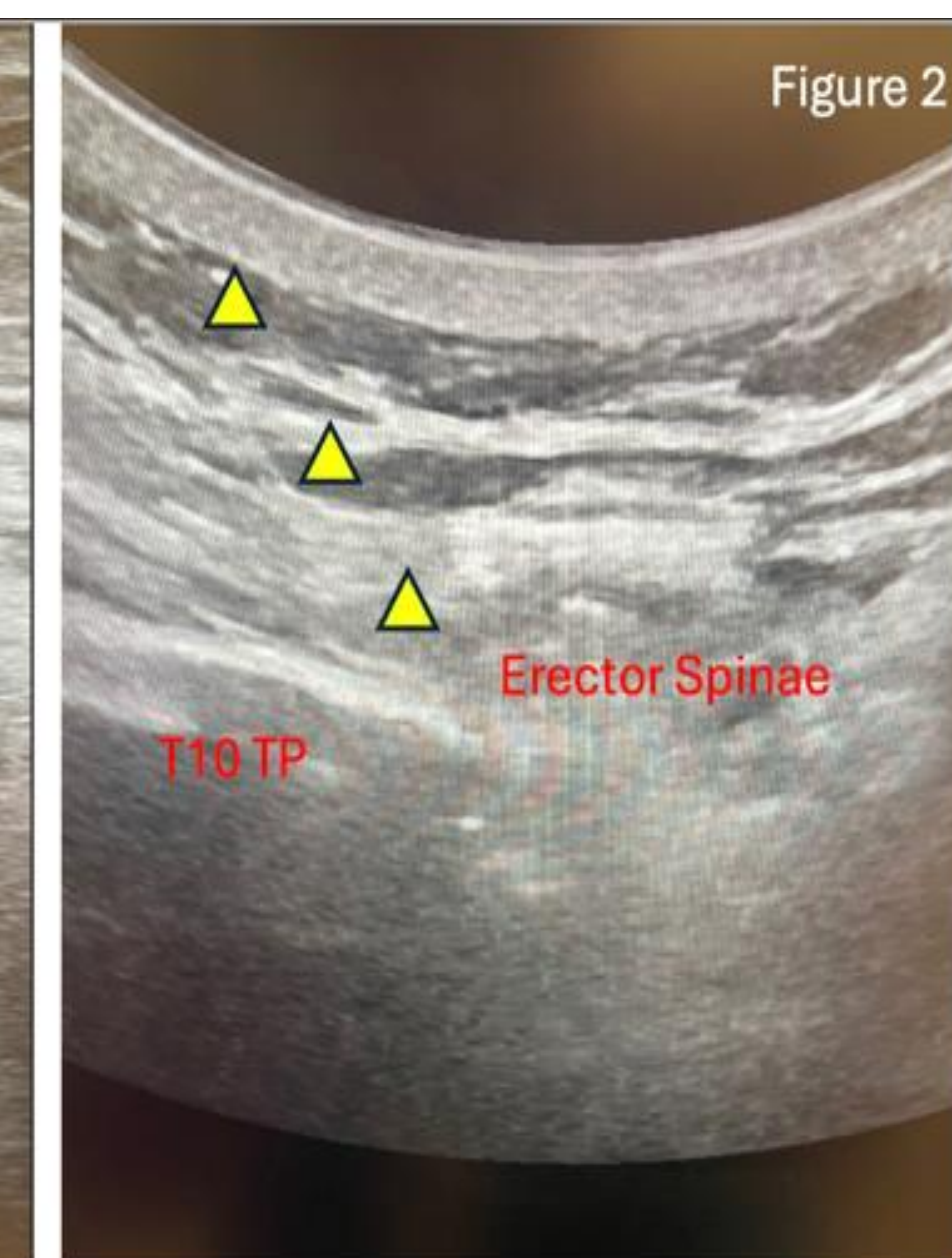


Figure 2: Left Sided T10 Erector Spinae Block

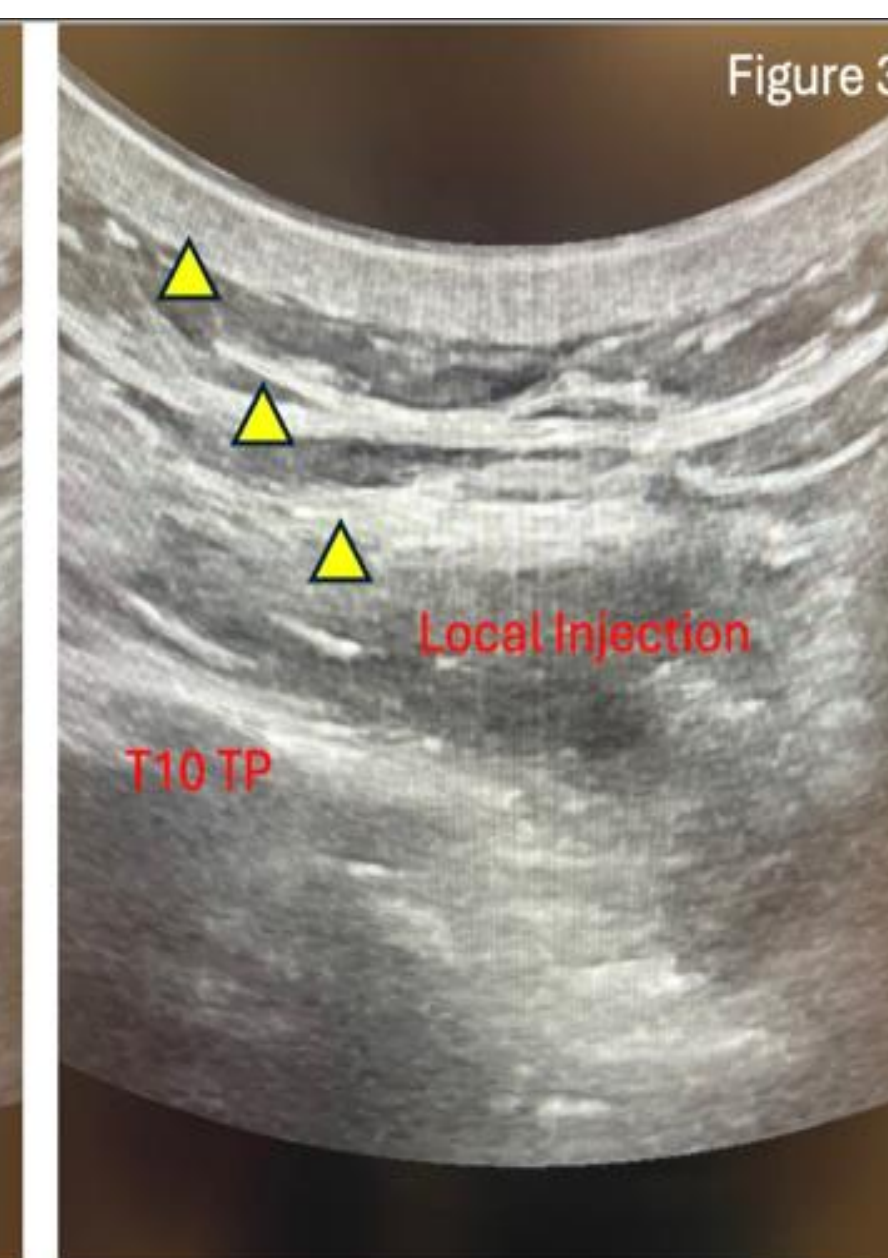


Figure 3: Left Sided T10 ESP Post Injection

Discussion

Respiratory function following rib fractures can be complex to treat particularly in elderly patients with known restrictive lung pathologies. Although epidurals are still preferred, sometimes patient anatomy and anticoagulation status can prevent placement of neuraxial anesthesia. Peripheral nerve blocks and nerve catheters are a viable option when epidurals are contraindicated. Serratus anterior plane blocks are suitable for anterior rib coverage with possible spread one to two levels above/below the injection site. For posterior rib coverage, erector spinae plane blocks provide adequate coverage with possible coverage one to two levels above/below the injection site. For patients with advanced directives prohibiting intubation, it is important to provide them with as much support as possible to preserve spontaneous respiration.

References

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1. Malekpour, M., Hashmi, A., Dove, J., Torres, D., & Wild, J. (2017). Analgesic choice in management of rib fractures: paravertebral block or epidural analgesia? *Anesthesia & Analgesia*, 124(6), 1906–1911. <https://doi.org/10.1213/ane.0000000000002113>
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