

# Navigating Through a Clinical Dilemma in Treatment of an Elderly Anti-Coagulated Patient with Multiple Rib Fractures: A Case Report.

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**INTRODUCTION:** Multiple rib fractures are associated with significant morbidity and mortality, particularly in elderly patients. Mortality rates are 2-5 times higher in older adults compared to their younger counterparts due to detrimental effects of pain-induced hypoventilation resultant in pneumonia and eventual respiratory failure<sup>1</sup>. The complex co-morbidities can pose serious challenges in choosing and executing safe and effective pain management plan.

**CASE REPORT:** An 80-year-old female with significant past medical history including coronary artery disease, atrial fibrillation (on Apixaban, last dose < 36 hrs prior to the encounter), pacemaker, asthma presented to the ED after sustaining a fall from a staircase resulting in non-displaced fractures of the posterior left 6th, 7th and 8th ribs and associated small left hemopneumothorax along with fractures of 7th, 8th, and 9th transverse processes. Of note, on presentation patient had some residual symptoms from a recent upper respiratory infection including a productive cough. She had severe pain on admission and was unable to clear secretions effectively nor utilize incentive spirometry.

Per primary team, she was receiving acetaminophen and tramadol. She was intolerant to low dose IV morphine which caused significant drop in blood pressure and oversedation. The Acute Pain Service was then consulted.

On the assessment epidural was deemed contraindicated due to anticoagulation status. Given the presence of multiple transverse processes fractures we felt that an erector spinae plane block may be risky due to high-volume nature of the injection and associated TP fractures/hematoma presence resulting in unreliable spread and intravascular uptake. After a discussion with the patient and family a low dose single shot paravertebral block was ultimately offered and accepted by the patient upon weighing the risks and benefits. In our judgement given unilateral adjacent 3 rib fractures the block could achieve adequate spread and provide a temporary relief. We concluded that epidural could be then offered once her anticoagulation status becomes appropriate.

The paravertebral block was carried out at T6/T7 and T7/T8 levels under direct US guidance (*figure 1*). A total of 20ccs of 0.5% bupivacaine with addition of 1:400000 epinephrine and 10mg preservative free dexamethasone was deposited after several negative aspirations.

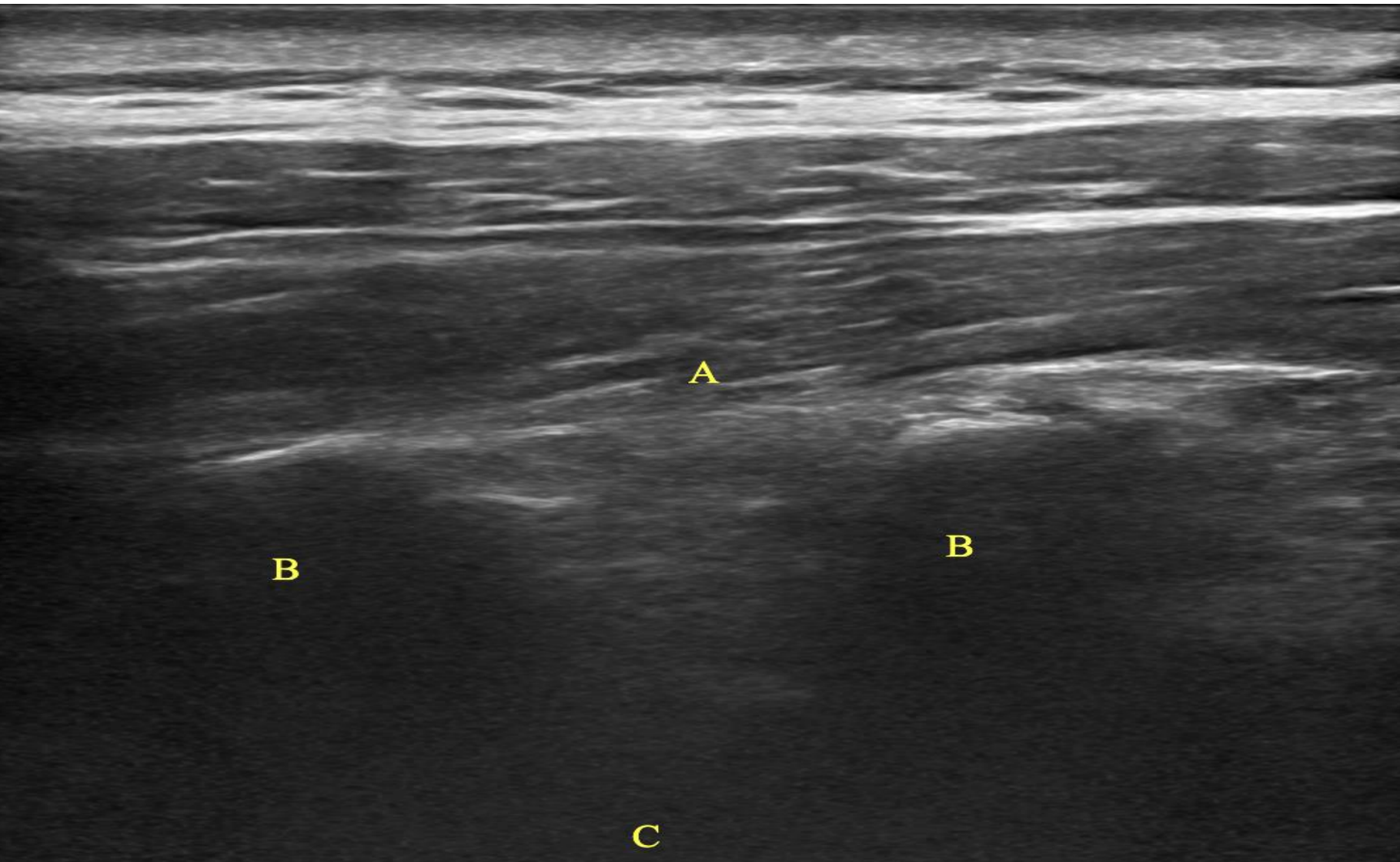


**Figure 1:**  
T6-7 Paravertebral Space

- A) Paraspinal Muscles
- B) Transverse Processes
- C) Pleura

Shortly upon completion of the block, the patient began experiencing dizziness and a sense of impending syncope. She was immediately placed in a supine position and preemptively treated with crystalloid infusion and phenylephrine boluses as blood pressure was cycling with minimal improvement in her symptoms. Her blood pressure was 71/42 and eventually improved on phenylephrine drip. Shortly thereafter she started complaining of new onset anterior left chest pain. Oral nitroglycerin was administered with minimal effects. EKG, Chest Xray, pertinent labs were obtained and were unremarkable.

The patient soon began to experience rigors and decision was made to start intralipid bolus with a low-level suspicion of LAST. Upon completion of the infusion, chest pain and rigors resolved, and blood pressure stabilized off pressors. The patient then described her state as back to baseline however her rib/back pain further improved, and she was able to cough more effectively.

Patient remained stable off pressors and comfortable for > 20hrs and ultimately received an intercostal block the following day and eventually an epidural catheter. The remainder of the hospital stay was only significant for a transient spike in creatinine on day 7 which returned to normal with hydration and PO intake and she was discharged to self-care on day 8.

**DISCUSSION:** This report signifies the challenge in choosing the best approach to pain management in the elderly anti-coagulated trauma patient. Employment of a single shot paravertebral block appeared to be a rational choice at the time, however, not risk free. Although the nerve block successfully alleviated patient’s pain and contributed to mitigating risk of pulmonary complications, the patient inadvertently suffered a brief adverse reaction which could be attributed to a profound sympathetic block versus an episode of LAST. Hemodynamic stabilization along with overall improvement after intralipid infusion further advocate for the diagnosis however could also be coincidental.

Differential diagnoses at the time also included vasovagal episode, pneumothorax, NSTEMI- however normal CXR, EKG, unchanged troponin trend, along with the need for pressor therapy and other associated symptoms may not support these causes.

In conclusion, paravertebral block may serve as a "bridge" approach to epidural in carefully selected chest trauma pain who are outside of recommended anticoagulation free period, however the possibility of a hemodynamic collapse or LAST due to increased vascular uptake in the setting of associated posterior rib fractures/ TP fractures should be taken into the consideration.

## REFERENCES:

- SD; TVEH. An update on regional analgesia for rib fractures. Current opinion in anaesthesiology. Accessed February 18, 2024. <https://pubmed.ncbi.nlm.nih.gov/30020155/>.
- Kim M, Moore JE. Chest trauma: Current recommendations for rib fractures, pneumothorax, and other injuries. Current anesthesiology reports. 2020. Accessed February 18, 2024. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7223697/>.
- Christopher J. Tignanelli M. Adherence to evidence-based practices for patients with rib fractures and associated mortality rates. JAMA Network Open. March 26, 2020. Accessed February 18, 2024. [https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763490#:~:text=Rib%20fractures%20are%20associated%20with,22%25%20for%20older%20adults\).&text=Of%20patients%20aged%2060%20years,injury%20worse%20than%20rib%20fractures.](https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763490#:~:text=Rib%20fractures%20are%20associated%20with,22%25%20for%20older%20adults).&text=Of%20patients%20aged%2060%20years,injury%20worse%20than%20rib%20fractures.)