Ultrasound-Guided Parasternal Catheter in a Polytrauma Patient with Respiratory Failure

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Introduction

- Polytrauma is associated with an increased risk of extubation failure, prolonged hospital stays, greater functional disability, and higher readmission rates.
- Regional anesthesiologists are uniquely positioned to provide innovative pain management strategies for polytrauma patients to improve outcomes.
- We present a case of a patient who experienced significant trauma burden prompting the use of a parasternal catheter for a sternal fracture to improve analgesia and facilitate extubation.

This case is devoid of patient-identifiable information and is exempt from IRB requirements as per Boston University policy.

Case Report

A 45-year-old male with insulin-dependent diabetes mellitus, hypertension, neuropathy, and daily cannabis use was brought by ambulance after a motor vehicle collision involving airbag deployment and significant extrication.

He presented with substernal chest pain, sternal tenderness, and ethanol intoxication. Injuries consistent with initial imaging were sternal and rib fractures, L2-L5 transverse process fractures, multiple displaced pelvic fractures, retroperitoneal hematoma, and interlobular septal thickening.

He underwent interventional radiology aortography with bilateral internal iliac angiography and embolization, along with placement of a left distal femoral traction pin. The Acute Pain Service performed bilateral parasternal single-shot blocks and initiated a ketamine infusion.

Three days after initial presentation, the patient underwent percutaneous pelvic ring fixation. Immediately postoperatively, he developed hypoxemia and respiratory failure requiring reintubation. Given the injury profile and initial relief following the single-shot blocks, we placed a right parasternal catheter.

Post-extubation, he reported most of his pain in the lower back and hips, prompting placement of an L2-L3 epidural catheter, which remained in situ for six days.

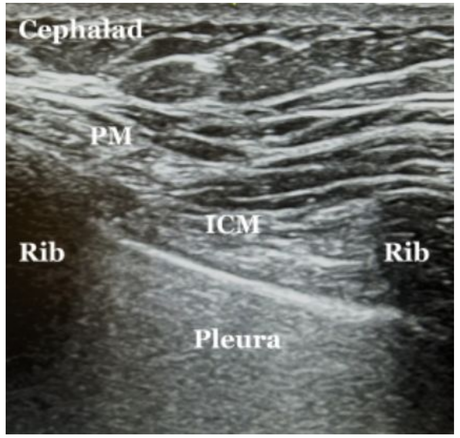

Figure: Parasternal intercostal ultrasound view demonstrating pectoralis major (PM), intercostal muscles (ICM), ribs, and pleura used for placement of an ultrasound-guided parasternal catheter.

Conclusions

- Early extubation has been shown to reduce ventilator days and the risk of pneumonia.[3]
- In polytrauma patients with complex injury profiles, implementing pioneering methods of analgesic delivery– such as ultrasound-guided parasternal catheters– may help to facilitate successful extubation, minimize opioid exposure, and decrease hospital duration, readmission rates, and functional disability.[1,2]

References

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