



Introduction

- ❖ Clinical management is often difficult in the setting of multi-site trauma such as in the case of MVA, which is especially compounded in the setting of polysubstance abuse. This often results in patient with poor pain tolerance requiring escalating doses of opioid therapy, which creates a vicious cycle. The use of peripheral nerve blocks (PNB) have been shown to decrease overall opioid consumption and can be used effectively to manage postoperative pain in this patient population. Our case aims to highlight the importance of PNBs as part of a multimodal approach to pain management in patients with polytrauma in the setting of polysubstance abuse.

Case Presentation

- ❖ 26-year-old female patient BMI 33 (77.1 kg) with a past medical history of SVT, postpartum depression and drug abuse. She arrived at the trauma unit after an MVA.
- ❖ Toxicology screen was positive for amphetamines, cocaine, and cannabis. Chest CT showed multiple nondisplaced anterior rib fractures, bilateral apical pneumothoraxes, and nondisplaced fracture involving the sternal body. CT of the abdomen and pelvis showed grade III traumatic liver injury, adrenal hematoma, and hemoperitoneum in the pelvis. Right lower extremity X-ray showed fracture of right tibial metaphysis and malleolus.
- ❖ Patient did not respond to opioids and was in acute respiratory distress. APMS was consulted for management of rib fracture pain and bilateral T4 paravertebral (PVB) catheters were placed using ultrasonography.

- ❖ PVBs were initially placed using saline. Followed by intermittent dosing of Ropivacaine 0.2% 6 mL every 30 mins. Figure 1 shows injection of saline only for PVB placement..
- ❖ Day 3, patient underwent open reduction and internal fixation (ORIF) of right pilon fracture and had poorly controlled postoperative pain in PACU. APMS performed rescue right adductor canal and popliteal sciatic nerve block catheters using 20 ml of 0.2% solution for placement. The concentration for the infusions were decreased to ropivacaine 0.1% following PNBs due to LAST concerns. On POD2, PVB catheters were removed with no increase in pain scores. On POD4, lower extremities nerve block catheters were also removed, and the patient was subsequently discharged.



Figure 1: Pleural sliding pre and post procedure with negative aspirate and good pleural depression visualization.

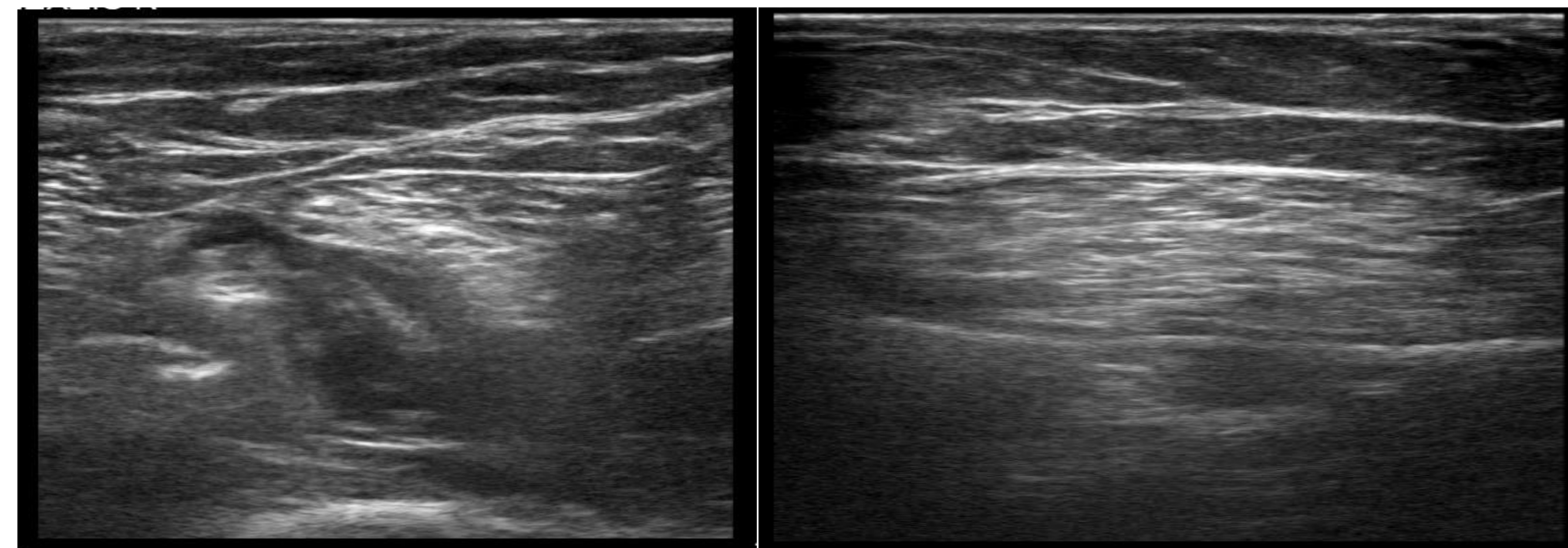


Figure 2: ultrasound guided popliteal and adductor block catheters placement respectively.

Discussion

- ❖ The use of multiple PNB catheters is concerning for LAST. This is a rare but potentially life-threatening complication of regional anesthesia. It occurs when local anesthetics are inadvertently absorbed into the systemic circulation in amounts that exceed toxic thresholds. It can lead to central nervous system and cardiovascular toxicity, with manifestations ranging from mild symptoms to severe, including seizures, cardiovascular collapse, and even death.
- ❖ To prevent LAST, we adhered to safe dosing guidelines :
 - Maximum doses of ropivacaine include 2-3 mg/kg for bolus and 5-10 mL/hr for continuous infusion of 0.2% solution depending on weight and height
 - Patient selection: our patient did not have acute kidney or liver insufficiency, malabsorptive syndromes with low binding proteins that can increase LAST. Our patient is young with normal renal and liver function despite of slight elevation of LFTs on day 1 that normalized by day 4.

Conclusion

- ❖ This case highlights the necessity for a holistic approach in managing of polytrauma patients in the setting of substance abuse and high opioids requirements. Multimodal analgesia including PNBs, and surgical intervention when integrated can effectively contribute to successful pain control and rehabilitation.
- ❖ Signs and Symptoms of LAST were monitored at all times in our patient.
- ❖ Vigilance by the providers regarding recognition of LAST was critical for optimizing patient outcomes.

References: Continuous peripheral nerve blocks: a review of the published evidence. [Pubmed.ncbi.nlm.nih.gov/21821511/](https://pubmed.ncbi.nlm.nih.gov/21821511/) DOI: 10.1213/ANE.0b013e3182285e01

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