

The Vital Role of Regional Anesthesia in the Intraoperative Management of Critically Ill Patients: A case report

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Introduction

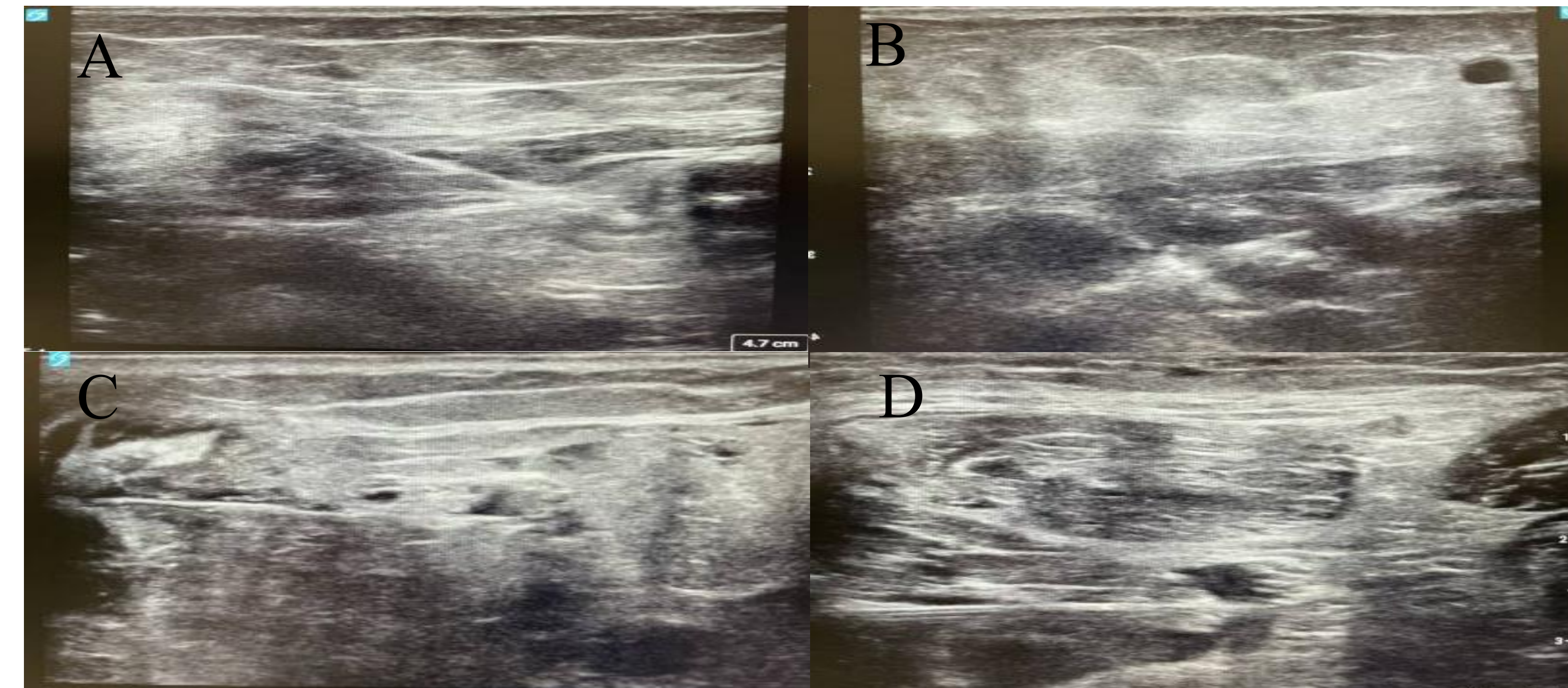
- Regional anesthetic techniques are well accepted in the post-operative analgesic management of critically ill patients. However, their use as a primary intraoperative anesthetic technique is often overlooked.
- Barriers to the use of regional techniques in the most critically ill patients can include provider comfort level, concerns of local anesthetic toxicity, difficulty with patient positioning and concern for failed blocks.
- These barriers are significantly magnified when multiple regional techniques are required to achieve adequate surgical anesthesia.
- With appropriate planning and communication between clinical teams and thorough patient education, combined regional techniques allow for the benefits of avoiding general anesthesia or neuraxial techniques and can provide a safe, hemodynamically stable and comfortable anesthetic option for the most critically ill patients who would otherwise be at high risk for peri-operative anesthetic complications.



Initial Presentation of lower extremity ischemic changes



Healing fasciotomy wounds following wound vac therapy



US images: A. Left Saphenous, B. Right Saphenous, C. Left Popliteal sciatic, D. Right Popliteal sciatic (All images demonstrate significant edema)

Case Presentation

- A medically complex 57-year-old female presenting for surgical washout and closure with vac application for bilateral medial fasciotomy wounds of the lower extremities, eleven days after bilateral femoral thrombo-emblectomies. Her initial postoperative course following revascularization was complicated by bilateral lower extremity compartment syndrome requiring bilateral four-compartment fasciotomies.
- Pertinent comorbidities included severe ischemic cardiomyopathy (left ventricular ejection fraction of 15-20% on recent echocardiogram), biventricular ICD, bilateral ventricular thrombi with severe tricuspid regurgitation, coronary artery disease status post seven percutaneous interventions, chronic obstructive pulmonary disease with current tobacco and methamphetamine use and uncontrolled diabetes mellitus.
- Due to ongoing systemic anticoagulation, a neuraxial technique was not feasible. After a thorough discussion with the patient and surgical team, we performed bilateral saphenous nerve blocks at the adductor canal and bilateral sciatic blocks with a popliteal approach utilizing a total of 40 milliliters of 0.5% ropivacaine. Femoral blocks were not possible given the recent surgical incisions overlying the femoral vessels.
- The case was successfully performed with standard ASA intraoperative monitors and a natural airway with light sedation utilizing a dexmedetomidine infusion.
- The procedure was well tolerated without the need for vasopressor support, and the patient recovered without complication in the post-anesthesia care unit before transfer to inpatient acute care.

Discussion

- Critically ill patients present a multitude of anesthetic challenges that must be considered and managed intraoperatively.
- Combining multiple regional anesthetic techniques for a single case can provide a strategy for certain patients to avoid unnecessary anesthetic risks with minimal hemodynamic insult or the need for airway manipulation.
- In addition, regional anesthesia can provide profound post-operative analgesia, extending the advantages of hemodynamic stability and minimizing the need for systemic analgesics.
- As an important consideration when using multiple regional techniques, it is crucial to consider local anesthetic toxicity, especially in critically ill patients with pre-existing cardiac, renal and hepatic dysfunction. Careful calculation and planning are required before proceeding.

Conclusion

- Utilizing clear communication with all providers, thorough planning by the anesthetic team, and appropriate patient selection, this case exemplifies the successful use of combined regional techniques as the primary anesthetic for a medically challenging patient.

References

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