

Regional Anesthesia for Bilateral Upper Extremity Fractures in a Post-Heart Transplant Patient

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Introduction

- As the number of orthotopic heart transplants (OHT) continues to grow and the life expectancy of this population increases, patients with heart transplants are likely to present for emergency non-cardiac procedures
- We present the case of a recently transplanted patient who underwent successful operative fixation of bilateral upper extremity fractures
- Our success highlights utilizing regional anesthesia in a staged fashion for bilateral UE fractures to avoid the hemodynamic consequences of general anesthesia and optimize post-operative function in a patient with altered autonomic physiology

Methods

- Informed consent was obtained from the patient to present this case report. It is exempt from IRB review requirements as per Mass General Brigham institutional policy.

Case Description

- 52-year-old male who received OHT six months prior presented for fixation of a left olecranon and right radius fracture after motorcycle accident
- The fixations were performed as a staged procedure under regional anesthesia with propofol sedation and natural airway. If the patient tolerated the left-sided block and fixation, we would then pursue a peripheral block and fixation on the right
- Continuous left retroclavicular brachial plexus block was performed with 0.5% bupivacaine.
- Right single-injection axillary brachial plexus block was then performed with 0.5% bupivacaine. Both fixations were completed successfully. Additional single injection axillary was performed on POD #2.

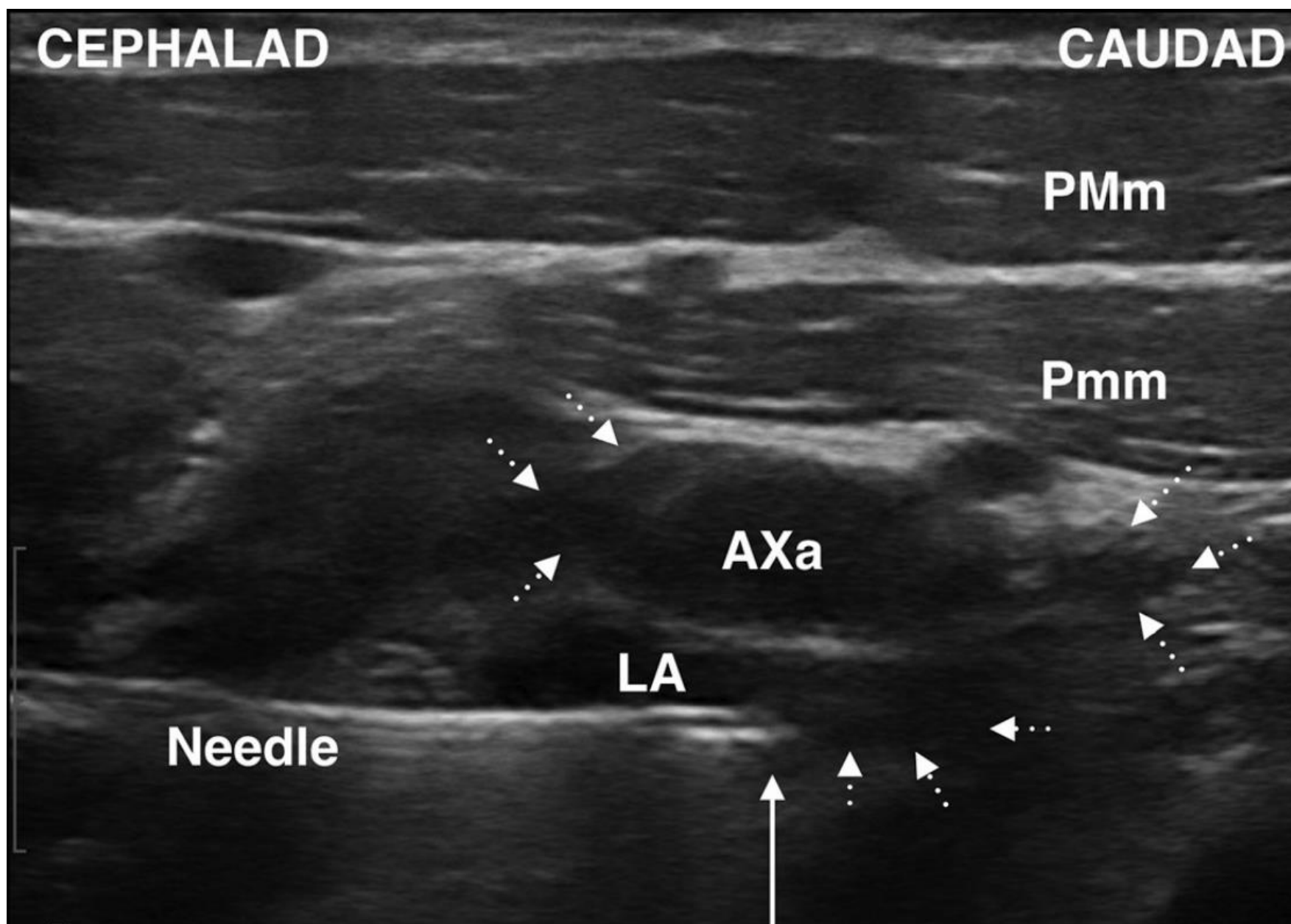


Figure 1: Retroclavicular approach to brachial plexus for a more securely placed catheter. Axa: Axillary artery, PMm: pectoralis major, Pmm: pectoralis minor, LA: local anesthetic

Retroclavicular vs supraclavicular brachial plexus block for distal upper limb surgery: a randomised, controlled, single-blinded trial Grape, Sina et al. British Journal of Anaesthesia, Volume 122, Issue 4, 518 - 524

Discussion

- Avoiding significant vasodilation is critical for patients with recent OHT as their cardiac output is preload-limited and are often unable to mount sufficient reflex tachycardia
- The table outlines our rationale for each stage:

Operative Stage & Site	Peripheral Block	Rationale/Benefit	
1 st – L olecranon	Continuous Retroclavicular Brachial Plexus	▪ Proximal coverage ▪ ↓ risk of hemi-diaphragmatic phrenic nerve blockade¹ ▪ Post-op analgesia with securely placed catheter	
2 nd - R distal radius	Single-Injection Axillary Brachial Plexus	▪ Minimize phrenic nerve involvement ▪ Allow motor function recovery	

- This case demonstrates the utility of regional anesthesia in a staged manner with nerve blocks to minimize risk of diaphragmatic paralysis and hemodynamic instability

References

1. Georgiadis PL, Vlassakov KV, Patton ME, Lirk PB, Janfaza DR, Zeballos JL, Quaye AN, Patel V, Schreiber KL. Ultrasound-guided supraclavicular vs. retroclavicular block of the brachial plexus: comparison of ipsilateral diaphragmatic function: A randomised clinical trial. Eur J Anaesthesiol. 2021 Jan;38(1):64-72. doi: 10.1097/EJA.0000000000001305. PMID: 32925256; PMCID: PMC8324046.