

Popliteal Nerve Block for Postoperative Analgesia in Severe Lower Extremity Lymphedema: A Case Report

Jessica Dougherty, MD, Sara Meitzen, MD
Department of Anesthesiology, UC San Diego Health, La Jolla, CA, USA

Introduction

- Lymphedema is a chronic condition characterized by impaired lymphatic drainage, tissue fibrosis, and altered local anatomy.
- This raises concerns regarding infection risk, altered local anesthetic absorption, and nerve identification when performing peripheral nerve blockade.
- We present a case highlighting the feasibility, safety, and effectiveness of a popliteal peripheral nerve block for postoperative analgesia in a patient with severe lower extremity lymphedema.

Methods

- Block placement was for a 35-year-old, otherwise healthy male, weighing 174.2 kg (BMI 54), with severe idiopathic right lower extremity lymphedema, presenting for right lower extremity I&D with wound VAC placement.
- The patient was positioned in left lateral decubitus position with operative leg up (Figure 3).
- A single-injection, ultrasound-guided popliteal peripheral nerve block was performed on the right lower extremity using a linear transducer (12-3 MHz, SonoSite).
- A 20-gauge Tuohy needle was advanced under direct US visualization, the needle tip was positioned subperineural to the sciatic nerve, and 20 mL of 0.5% bupivacaine with 1:400,000 epi was injected incrementally, with visualization of circumferential spread around both tibial and common peroneal nerve branches (Figure 2).

Figures



Figure 1 (Left). Posterior view demonstrating severe unilateral right lower extremity lymphedema. **Figure 2 (Upper Right).** Popliteal fossa ultrasound image demonstrating the tibial nerve (TN) and common peroneal nerve (CPN) adjacent to the tibial artery (A); medial and lateral orientation indicated. **Figure 3 (Lower Right).** Left lateral decubitus positioning for ultrasound-guided popliteal nerve block.

Results

- A single-injection, ultrasound guided popliteal peripheral nerve block was performed successfully for postoperative pain control.
- Despite significant lymphedema, the sciatic nerve and its branches were readily identified under ultrasound, although slightly deeper and partially obscured compared to a limb without lymphedema.
- Local anesthetic deposition and nerve spread appeared consistent with standard technique.
- The block produced effective anesthesia, and analgesia onset and duration were comparable to those observed in patients without lymphedema.

Discussion

- Severe lymphedema may distort anatomy and alter local anesthetic pharmacokinetics, but peripheral nerve blockade can still be performed safely and effectively.
- With careful ultrasound guidance, regional anesthesia provided predictable blockade and reliable postoperative analgesia in this patient population.

References

1. Azhar SH, Lim HY, Tan BK, Angeli V. The unresolved pathophysiology of lymphedema. *Front Physiol.* 2020;11:137. doi:10.3389/fphys.2020.00137. PMID:32256375.
2. Pirri C, Pirri N, Ferrarato C, Petrelli L, Macchi V, Porzionato A, De Caro R, Ozcakar L, Stecco C. Ultrasonographic anatomy and examination of the subcutaneous tissue in lymphedema. *J Ultrasound Med.* 2025;44(10):1733-1740. doi:10.1002/jum.16742. PMID:40509636.
3. Desai N, El-Boghdady K, Albrecht E. Peripheral nerve blockade and novel analgesic modalities for ambulatory anesthesia. *Curr Opin Anaesthesiol.* 2020;33 (6):760-767. doi:10.1097/ACO.0000000000000928. PMID:33027077.