

Nonunion Fracture Allograft Pain Met Its Match with Quadratus Lumborum and Adductor Canal Nerve Block Catheters

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INTRODUCTION

- High energy bony fractures can result in nonunion healing that may require further operation with bone allograft.
- While allografts have benefits¹, bone harvesting requires an additional surgical site that can promote postoperative pain through several etiologies (e.g., violation of periosteum, soft tissue attachment derangement).
- Interdisciplinary planning between regional anesthesiologists and orthopedic surgeons is essential for optimizing pain management in autologous iliac crest bone grafting.

CASE DESCRIPTION

- A 24-year-old male involved in a high-speed motor vehicle accident sustained the following injuries: Left open displaced distal humerus fracture (fx), left closed displaced femoral shaft fx (see figure 1), right distal radius fx, left pelvic ring fx, concussion, left pneumothorax, pulmonary contusion, and grade 1 splenic injury.
- Patient underwent open reduction and internal fixation of the left femur fx with a retrograde intramedullary nail, complicated by nonunion of the distal fracture requiring autologous iliac crest bone grafting one year later.
- Postoperatively, the patient endorsed 9/10 pain from the iliac crest harvest site and 7/10 from his medial distal femur site.

Continuous Quadratus Lumborum and Adductor Canal Nerve Catheters for Postoperative Pain Control after Autologous Iliac Crest Grafting for Non-Union Femur Fracture Fixation



Figure 1. X-ray image displaying the patient’s left closed displaced femoral shaft fracture pre-operatively

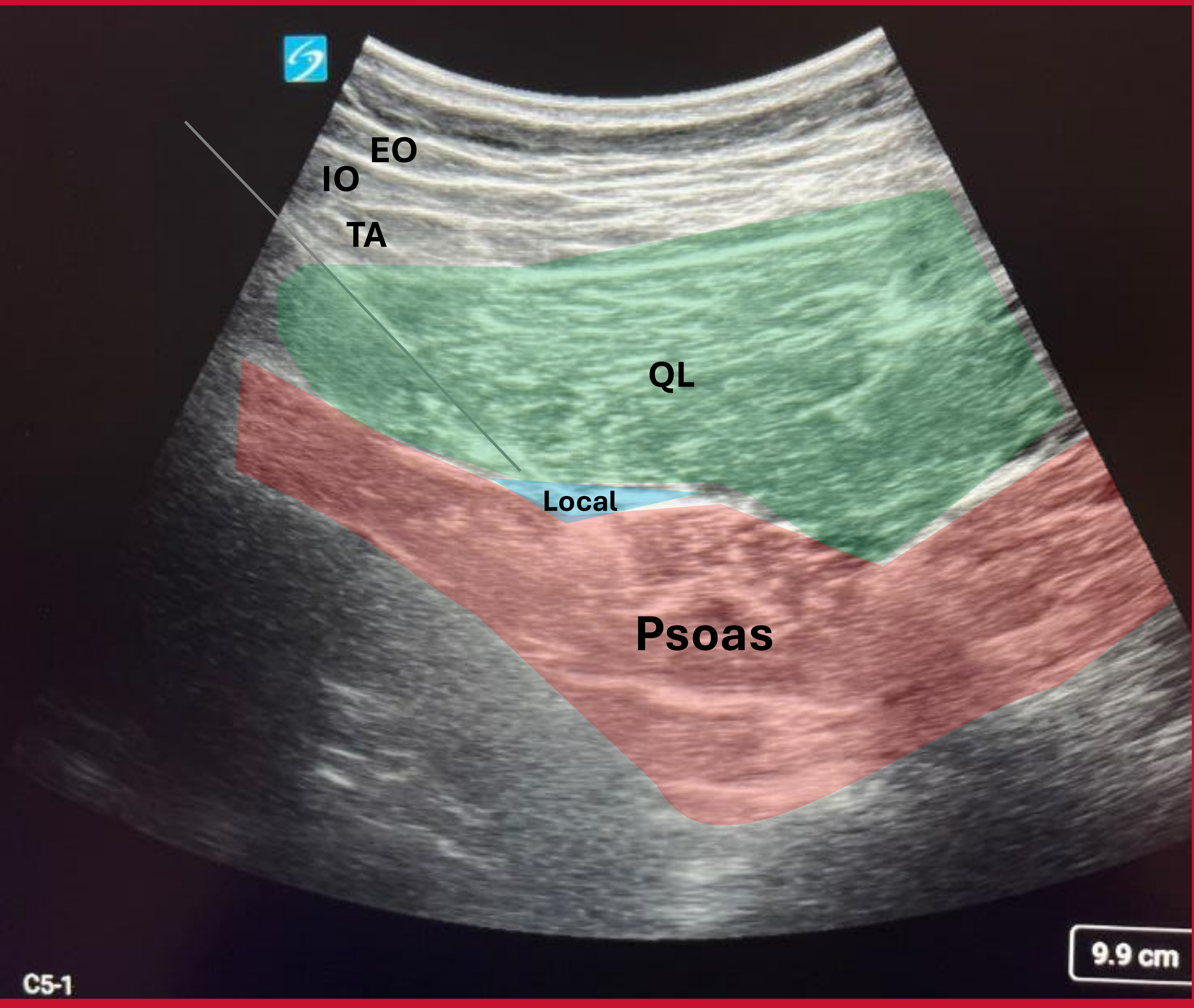


Figure 2. Ultrasound image of the anterior quadratus lumborum (QL) facial plane block performed on the aforementioned patient. Labeled is the location of local anesthetic injection (local), between the QL and Psoas muscles. Also labeled are the external oblique (EO), internal oblique (internal oblique), and transversus abdominus (TA)

CASE DESCRIPTION (continued)

- The regional anesthesia team performed two ultrasound-guided nerve blocks:
 - Left adductor nerve block with 20cc of 0.25% ropivacaine with a peripheral nerve catheter (PNC) infusing 0.2% ropivacaine at 5 cc/hour.
 - Left anterior quadratus lumborum (QL) block (Figure 2) in right lateral decubitus position with 20cc of 0.25% ropivacaine and placement of a PNC infusing 0.2% ropivacaine at 10 cc/hour.
- Within 20 minutes, the patient reported significant pain relief (pain 3/10).
- The patient’s oral milligram equivalents (OME) prior to the block were 69 OME in 2h (34.5 OME/hr) and 52.5 OME over 23 hours following the block (2.3 OME/hr)
- The patient was discharged home on post-op day 1.

DISCUSSION

- This case demonstrates the successful use of postoperative regional anesthesia, including PNCs and continuous infusion, for surgical fixation of a femoral shaft fracture nonunion with autologous iliac crest grafting.
- This case highlights the complementary role of lower extremity nerve blocks and deep fascial plane blocks in multimodal pain management, along with the effectiveness of nerve catheter infusions for patients with short inpatient stays.

REFERENCES

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