



Liposomal Bupivacaine Popliteal Block for Ischemic Leg Pain in a Patient on Argatroban Therapy

Jay D. Shah, M.D., Breanna A. Alonzo M.D., Justo Gonzalez M.D.
Department of Anesthesiology, Baylor College of Medicine, Houston, TX 77030, USA



Introduction

Interventional management of chronic ischemic leg pain with regional anesthesia is an approach that requires a variety of considerations before utilization. Anticoagulation status, risks of infection, prior chronic pain-driven central sensitization, and a variety of other comorbidities can affect the utility of regional anesthesia in the acute management of chronic ischemic leg pain. This specific case is an example of a popliteal sciatic nerve block with liposomal bupivacaine providing >24 hours of perioperative analgesia after a femoral-popliteal bypass in a patient on Argatroban anticoagulation.

Case Presentation

Our patient is a 48-year-old male with a past medical history of COPD, substance use disorder (methamphetamines), DVT/PE with heparin resistance, and chronic ischemic leg pain. He previously underwent a left lower extremity (LLE) re-perfusion procedure at an outside hospital. On presentation to our facility, that therapy failed and his leg pain was severe enough to require a Dilaudid PCA and Ketamine infusion. Central sensitization from long-term ischemic leg pain also led to hyperalgesia. He was also placed on an Argatroban infusion due to Heparin resistance with a plan to switch to Bilvalrudin intraoperatively due to a shorter half-life. A popliteal sciatic nerve block was performed with 266mg 20 mL liposomal Bupivacaine with 30 mL Bupivacaine 0.25%. Patient also received 20mg Methadone intraoperatively via OG tube. Post-procedure, the patient endorsed significant pain relief with residual LLE analgesia at 6, 18, and 30 hours respectively. During this time, he only required a single dose of oral Methadone and PCA requirements were eliminated.

Discussion

- **Consideration of peripheral nerve block (PNB) in a patient on Argatroban and Bivalirudin:**
 - Current ASRA guidelines do not include the management of Argatroban infusions in advance of performing a PNB, only that neuraxial is not recommended.
 - However, due to its shorter half-life (<60 minutes), stoppage of the infusion early enough for 3-5 half-lives to occur ensures that minimal residual effect from the anticoagulation will be seen for both the surgery as well as the PNB.
 - Our team waited until 3 half-lives had elapsed before proceeding.
- **Duration of liposomal bupivacaine in peripheral nerve blocks:**
 - Utility of liposomal Bupivacaine and whether it has advantages in blockade duration as compared to normal Bupivacaine is heavily debated with literature to support both theories.
 - The FDA had just expanded its approved indications for liposomal Bupivacaine to include popliteal sciatic nerve blocks in the week prior to our case.
 - Interestingly, our patient experienced a long block duration (> 30 hours), including complete elimination of hyperalgesia.
- **The use of Methadone as a bridge to definitive pain control in a patient dependent on intravenous PCA pumps.**
 - As a PCA and IV ketamine-based pain regimen would not be sustainable long term, the use of single dose Methadone in our patient with severe chronic pain was key to preparing him for success in an outpatient setting.

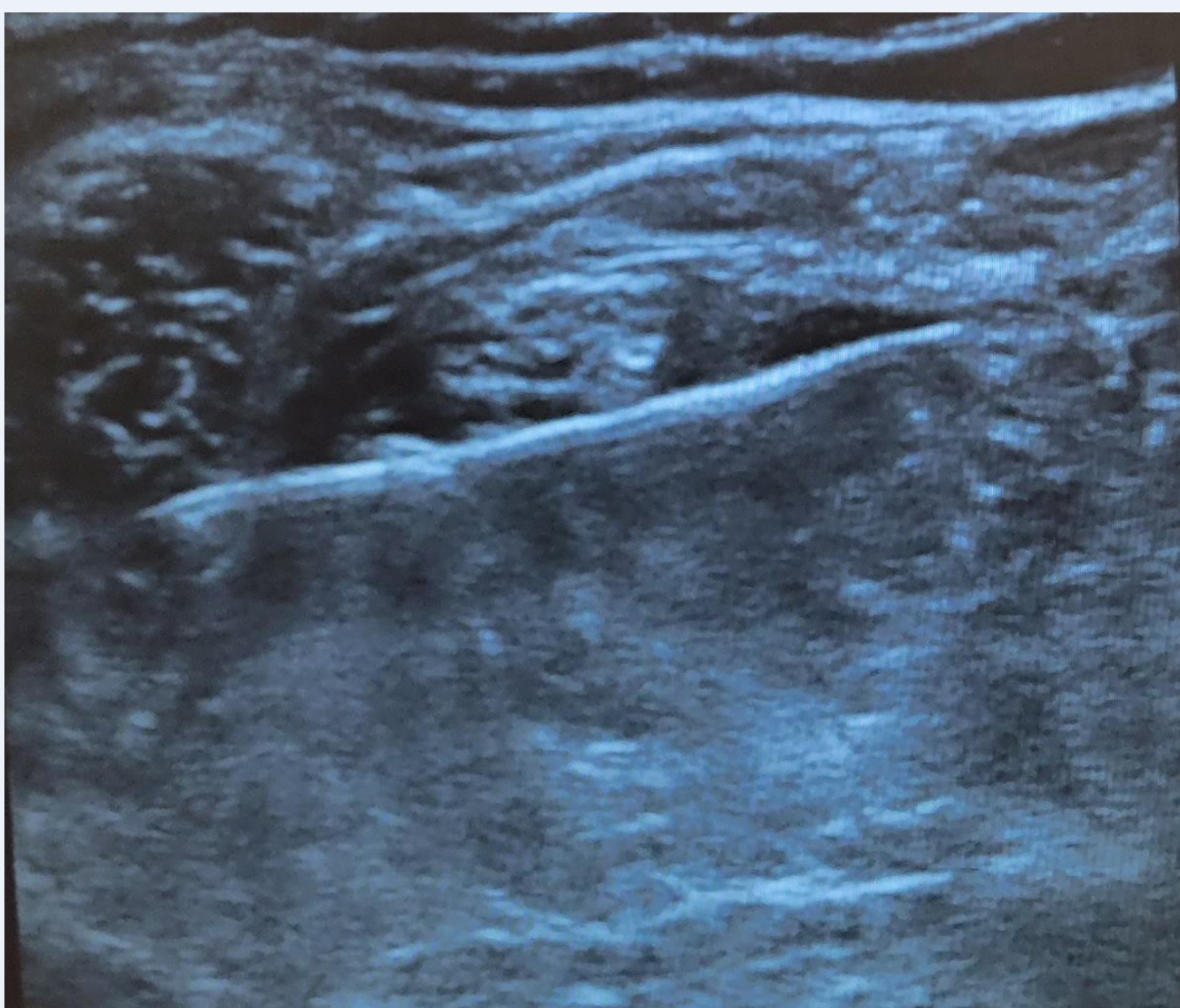


Figure 1: Approach to injection of sciatic nerve using 22g 80mm Pajunk needle

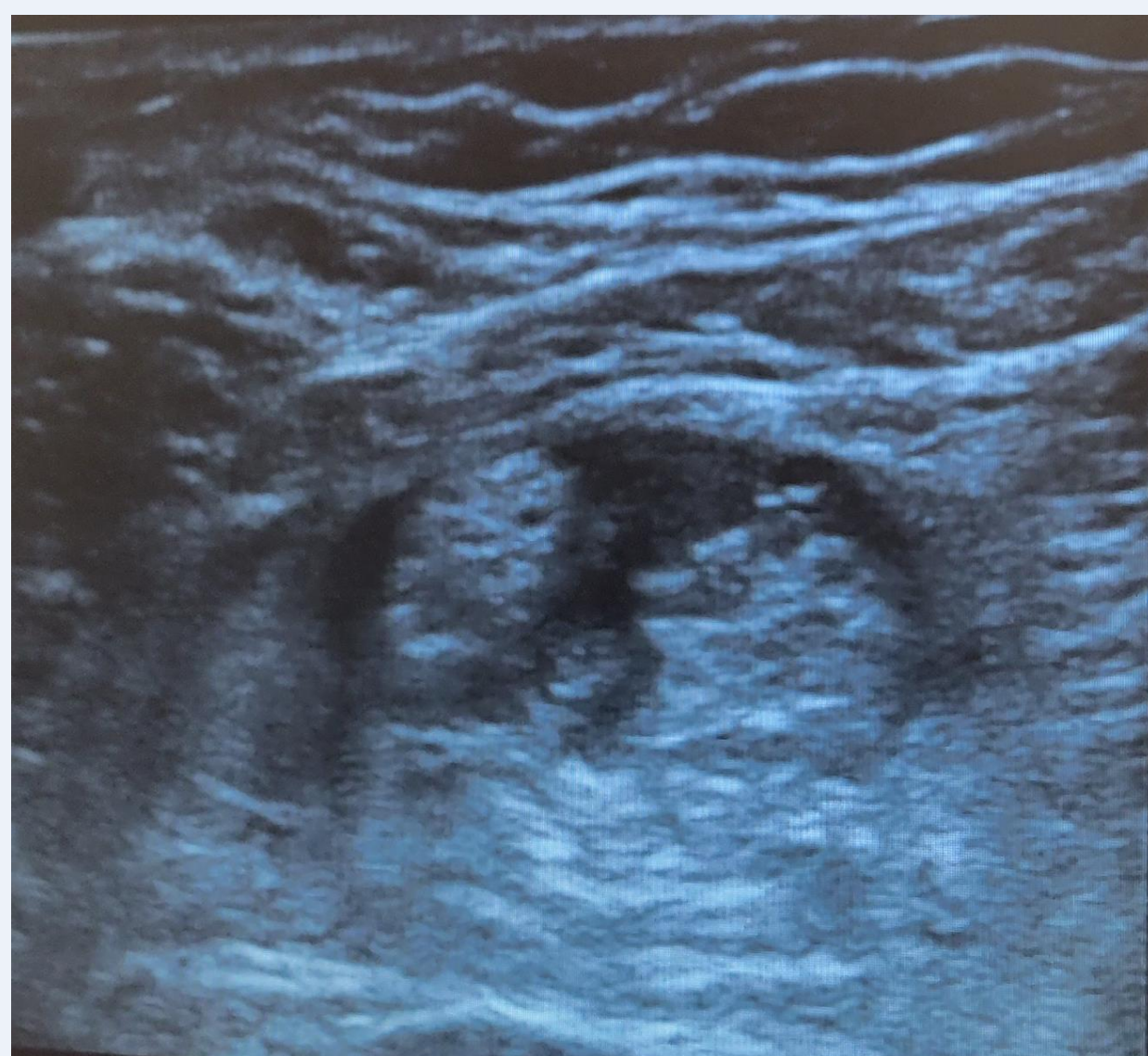


Figure 2: Sciatic nerve bundle after successful injection with local anesthetic

Conclusion

This case report provides an interesting juxtaposition of acute and chronic pain management and the expanding role of regional anesthesia in perioperative pain control. It highlights the use of Methadone as an adjunct in the perioperative setting and its utility in patients with opioid tolerance. This patient allowed our team to navigate uncharted territory in the context of anticoagulation with limited guidelines not only for the block but for the surgical portion as well. Our team chose to proceed with general anesthesia prior to the PNB to avoid interference with the procedure given his significant hyperalgesia. A popliteal block was chosen given its distance from surrounding vessels and our desire to avoid causing a hematoma (i.e. high compressibility, low vascularity.) This block allowed us to focus on LLE ischemic leg pain through thorough, long-lasting sciatic nerve blockade, while minimizing any potential risks of the patients' complex anticoagulation history.

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