

Introduction

- Hip fractures in elderly adults are associated with multiple comorbidities.
- Optimal analgesic regimen with minimal side effects like sedation or muscle weakness has yet to be described.
- Peripheral nerve blocks targeting the anterior and superolateral capsule include the femoral, obturator, and accessory obturator nerves.
- Options for regional analgesia include:
 - Femoral nerve block (FNB)
 - Fascia iliaca block (FI)
 - PENG block¹
- Quadriceps weakness can compromise recovery and increase fall risk where rapid postoperative mobilization is prioritized.
- PENG blocks target articular branches of the hip with minimal muscle weakness but spare the lateral femoral cutaneous nerve which carries incisional pain.

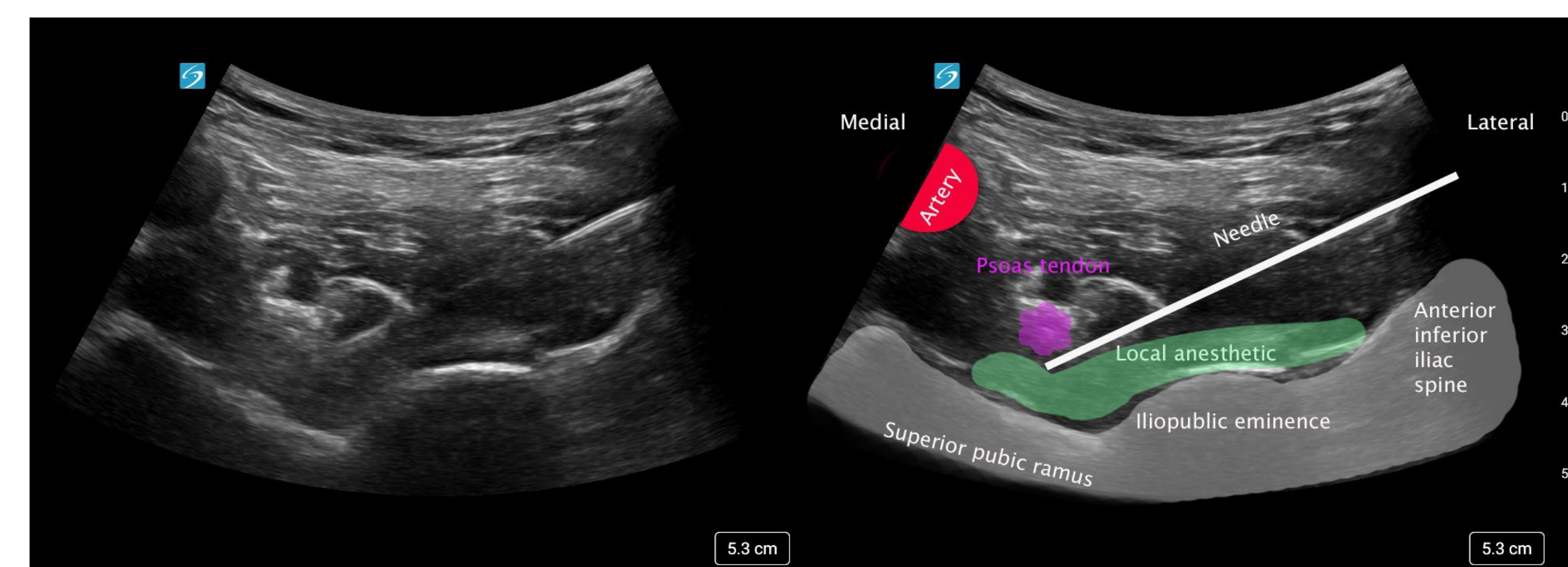


Figure 1: PENG Block

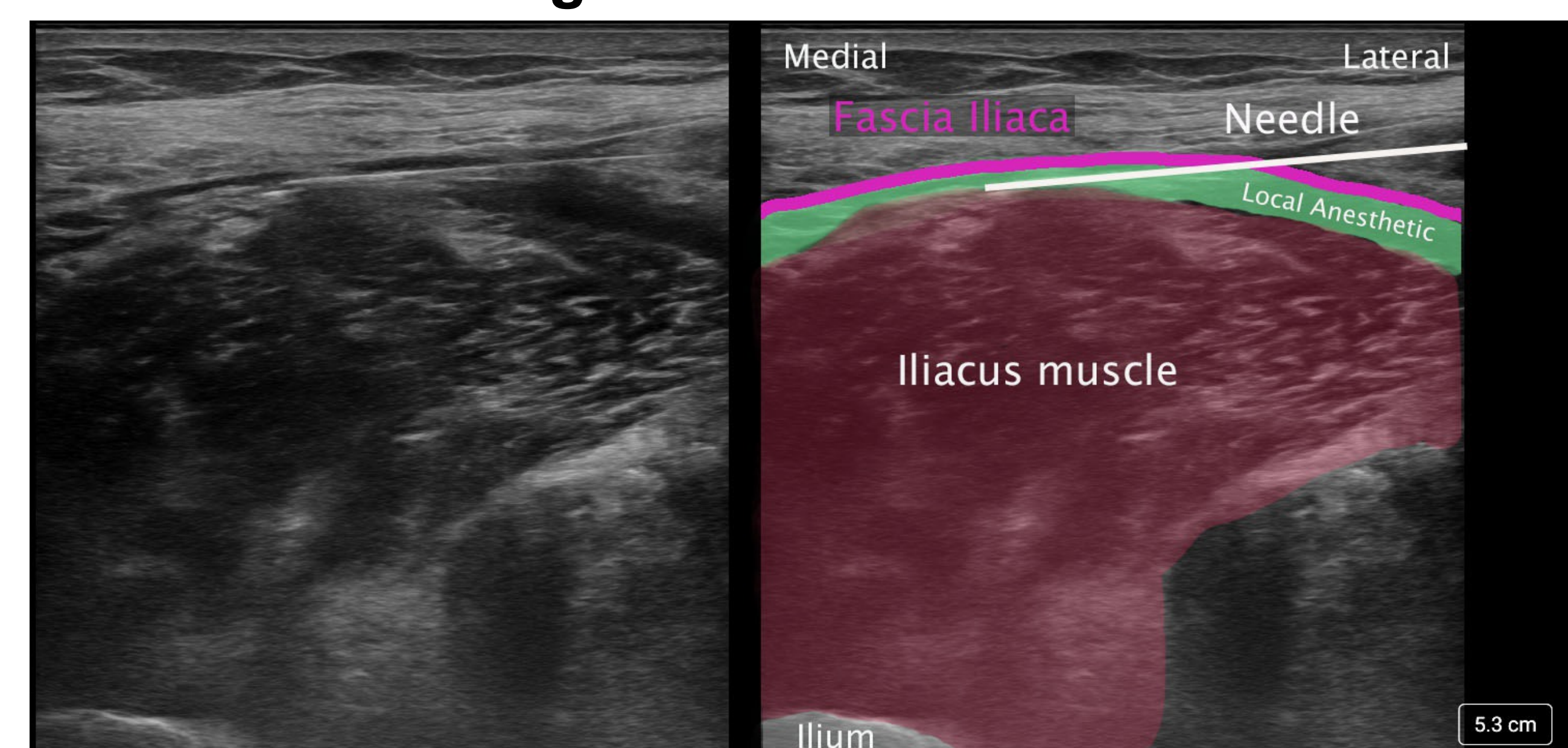


Figure 2: FI Block

Discussion

- We demonstrated an approach to hip analgesia using both FI and PENG.**
- Different local anesthetic combinations can be used in different anatomic locations to best achieve the desired results.**
- FNB and FI have proven effective in providing analgesia, but motor block is an issue for rapid mobilization. Evidence for PENG is mixed but is reliably motor-sparing if avoiding intramuscular injection.²
- We chose FI block with 0.25% bupivacaine to minimize risk of weakness from femoral nerve blockade during PT the next day while still providing analgesic benefit overnight since he would not be mobilized until 18 hours post-block.
- PENG was added to block afferent nerves not covered by the FI with 20mL 0.5% bupivacaine, a higher concentration, since risk of weakness is less than FI.
- PENG and FI do not need to be mutually exclusive. Both have been shown to be effective in spread to desired targets with 20mL or less.³⁻⁴
- Hip analgesia remains an issue. He required some opioid likely contributing to urinary retention.
- Longer acting local anesthetics or continuous catheters can be beneficial in his population if placed in motor-sparing locations. We often utilize continuous FI catheters in patients less likely to participate in physical therapy.

Case Report

64-year-old 100kg male with **BMI 31 kg/m²** and **no significant PMH** presented with a **left hip intertrochanteric fracture** after a fall from a bicycle.

Single shot

PENG with 20mL 0.5% bupivacaine
+
FI with 15mL 0.25% bupivacaine
+
Ropivacaine spinal 12.5mg

18:20 DOS
Time = 4 hrs
Spinal Resolved

Patient reports anterior thigh numbness resolved.
FI Resolved

10:00 POD1
Time = 19.5 hrs

POD2
Time = 48 hrs

14:30 DOS
Time = 0

Uneventful PACU stay.
To ward at 18:20.

09:00 POD1
Time = 18.5 hrs

Patient and staff denied quadriceps weakness when working with PT/OT.

14:30 POD1
Time = 24 hrs

- Discharged to SNF due to stairs at home.
- From 24 - 48 hrs: average pain 3.8/10 and 10mg oxycodone total.
- Urinary retention requiring indwelling catheter.

- 30mg (5mg x6 doses) oxycodone total first 24hrs.
- Pain score averaged 4/10 after spinal resolution, less than 6/10 24 hrs preoperatively.

References

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- Aliste J, Layera S, Bravo D, et al. Randomized comparison between pericapsular nerve group (PENG) block and suprainguinal fascia iliaca block for total hip arthroplasty. Reg Anesth Pain Med. 2021;46:874-878. <https://doi.org/10.1136/rapm-2021-102997>.
- Leurcharusmee P, Kantakam P, Intasuwan P, et al. Cadaveric study investigating the femoral nervesparing volume for pericapsular nerve group (PENG) block. Reg Anesth Pain Med. 2023 Nov;48(11):549-552. <https://doi.org/10.1136/rapm-2023-104419>.
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