

Pericapsular Nerve Group Block Compared to Suprainguinal Fascia Iliaca Block in Total Hip Arthroplasty

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INTRODUCTION

- Regional anesthesia techniques are paramount for post-operative pain management in patients undergoing total hip arthroplasty (THA).^{1,2}
- Improved postoperative pain management reduces pain scores, decreases opioid consumption that, in turn, leads to fewer postoperative complications.²
- Suprainguinal fascia iliaca compartment block (SFICB) injects local anesthetic (LA) beneath the FI fascial layer to block sensory nerve conduction of the femoral nerve, lateral cutaneous nerve, and obturator nerve.¹ Articular branches are thought to be inconsistently blocked with the infrainguinal approach,¹⁻³ studies lack showing spread of LA when the SFICB approach is utilized.
- Pericapsular nerve group block (PENG) targets the articular branches of the nerves to the hip to achieve improved analgesic effect and better pain control by a more proximal approach to the articular nerves (Figure 1 and 2).^{2,3}
- The purpose of this integrative review was to assess the effectiveness of the PENG block compared to the SFICB for pain control in patients undergoing THA.
- PICOT: In adult patients, over the age of 18 years undergoing THA, what is the effect of PENG block compared to SFICB on the numeric pain rating scale (NPRS), dynamic and static measures, at 24 hours, and opioid consumption 24-48 hours postoperatively?

METHODS

- PubMed, Medline, and Embase were systematically searched for relevant literature.
- Search terms: *fascia iliaca block, pericapsular nerve block, total hip arthroplasty*
- Inclusion criteria: compared SFICB to PENG block, underwent THA, adults over the age of 18 years
- Exclusion criteria: the study did not compare both blocks, THA was not included in the study
- 18 citations in PubMed, 3 in Medline, 3 in Embase
- Met criteria: 5 randomized controlled trials

The PENG block and SFICB are comparable in pain control for THA.

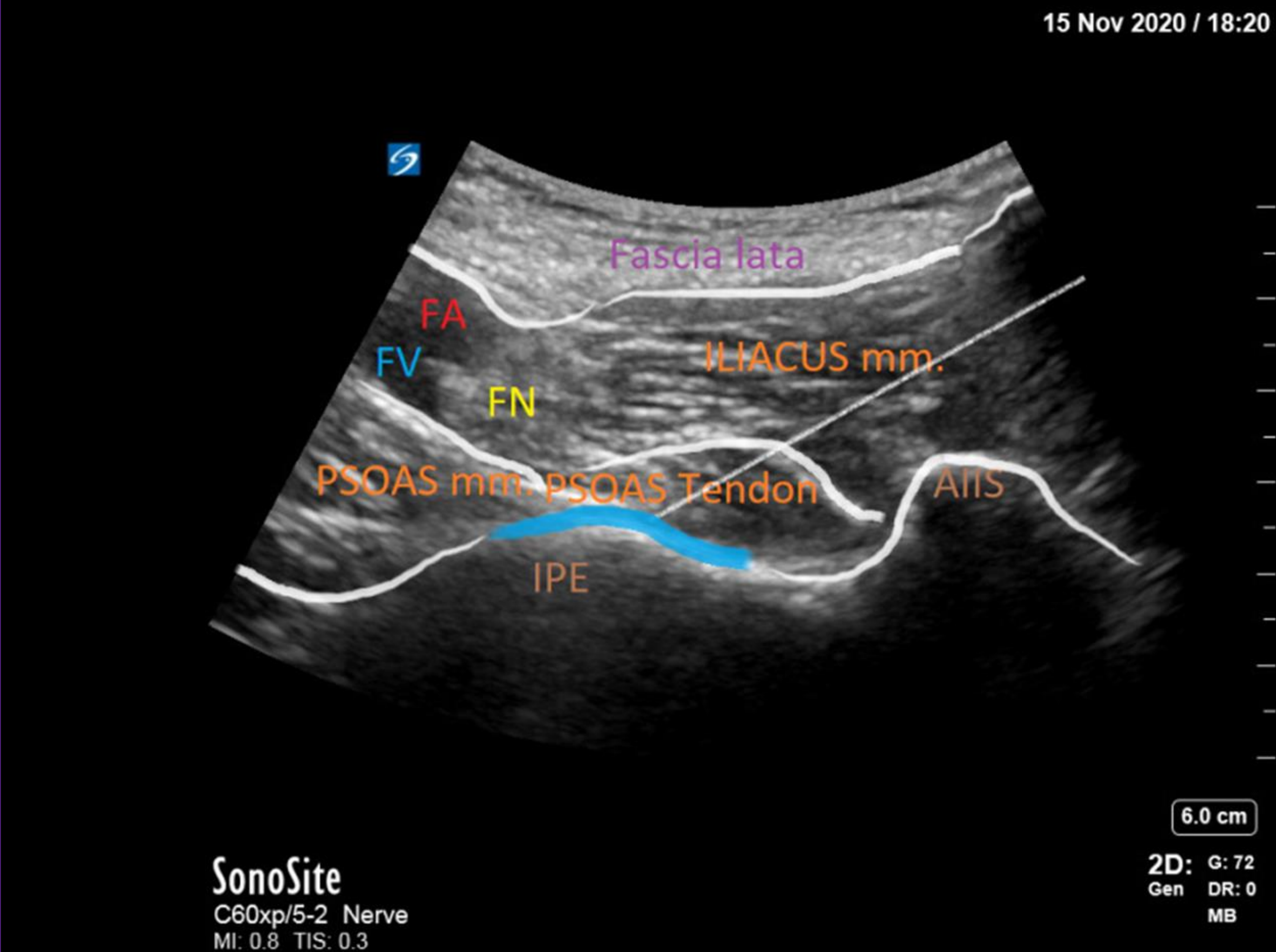


Figure 1. Ultrasound Image of Pericapsular Nerve Group Block. Identification of the anterior inferior iliac spine and iliopubic eminence is achieved and local anesthetic is injected superficial to the iliopubic eminence to lift the psoas tendon to anesthetize the proximal articular branches and spare motor function⁶

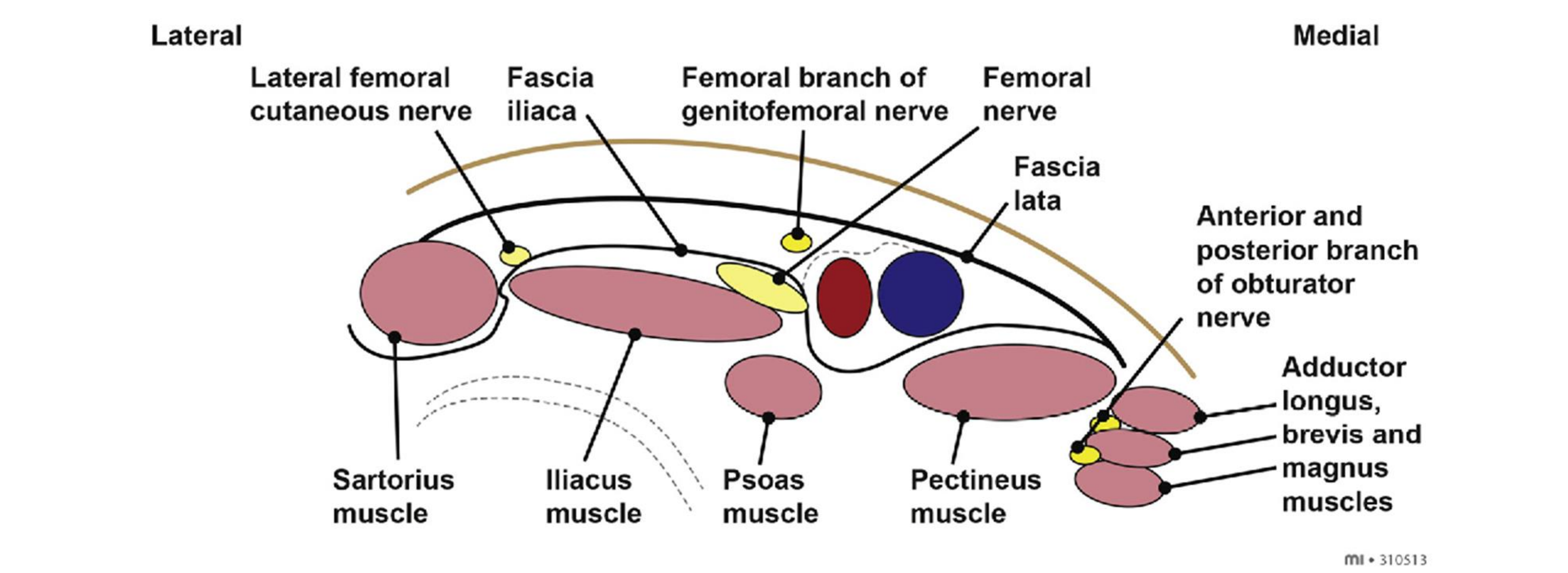


Figure 2. Anatomical Landmarks of the Fascia Iliaca Compartment Block and Pericapsular Nerve Group Block.⁷ The pericapsular nerve block provides a more proximal approach intended to provide better analgesic coverage of the articular nerves.^{2,3,6} The suprainguinal fascia iliaca compartment block provides more proximal coverage of the articular nerves compared to the infrainguinal approach targeting the femoral nerve along with articular branches^{4,7}



REVIEW of LITERATURE/ CRITICAL APPRAISAL

- 2 of 5 studies reported decreased dynamic NPRS at 24 hours in the PENG block compared to the SFICB in THA^{2,3}
- 1 of 4 studies reported decreased static NPRS at 24 hours in the PENG compared to the SFICB in THA¹
- 1 out of 5 studies reported a decrease in opioid consumption in the PENG block compared to the SFICB in THA²
- Different dosage and volume of LA between SFICB and PENG block in studies
 - Two studies utilized same dose of LA but different volumes, lending more volume to the SFICB^{4,5}
 - Two studies utilized different dosage and volume of LA, favoring the SFICB^{1,3}
 - Only 1 study utilized the same dose and volume²
- Different modalities of primary anesthetic
 - 2 studies utilized general anesthesia^{1,2}
 - 3 studies utilized spinal anesthesia^{3,5}

GAPS IN KNOWLEDGE

- Small pool of study participants in each study creates difficulty translating results into clinical practice along with heterogeneity between study protocols
- Inconclusive studies describing spread of the LA in the SFICB create difficulty in comparing the proximal spread of LA in the PENG block

RECOMMENDATIONS FOR PRACTICE / CONCLUSIONS

- In adults patients undergoing THA, PENG and SFICB blocks provide comparable pain control as evidenced by similar postoperative pain scale scores and quantity of opioid consumption 24-48 hours after surgery
- At 24-48 hours there are inconclusive results of reduced opioid consumption and decreased dynamic and static NPRS.
- Further studies are needed to analyze the spread of local anesthetic comparing the PENG block and the SFICB block
- Further studies with larger study arms and more standardized protocols are needed to translate comparability of pain control between the blocks in THA

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