

Anatomical Basis for Selective Blockade of the Nerve to Quadratus Femoris: A Cadaveric Study with Clinical Correlation

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INTRODUCTION

- Current hip arthroscopy blocks focus on anterior innervation of the joint, often providing incomplete analgesia by missing posterolateral and inferior sensory inputs
- Development of Selective Injection of Nerves for Hip Analgesia (SINHA) block to comprehensively block the sensory innervation to the hip without causing motor weakness
- SINHA Block components:
 - 1.SubQuadratus femoris (SubQ) block
 - 2.Superior gluteal nerve block
 - 3.Pericapsular nerve group (PENG) block
 - 4.Lateral femoral cutaneous nerve block

Objective: To provide cadaveric proof of concept and early clinical validation of selective blockade to nerve to quadratus femoris (NQF) via the SubQ plane while sparing the sciatic nerve.

METHODS

Cadaveric Anatomical Validation Study



Donor Identification

- Two formaldehyde-free cadavers (n = 4)



Ultrasound Guided Needle Placement

- Curvilinear probe placed transversely between greater trochanter and ischial tuberosity
- Needle tip positioned deep to anterior surface of quadratus femoris using in-plane approach



Injectate Injection

- Incremental injection of 8 mL of methylene blue-methylcellulose solution



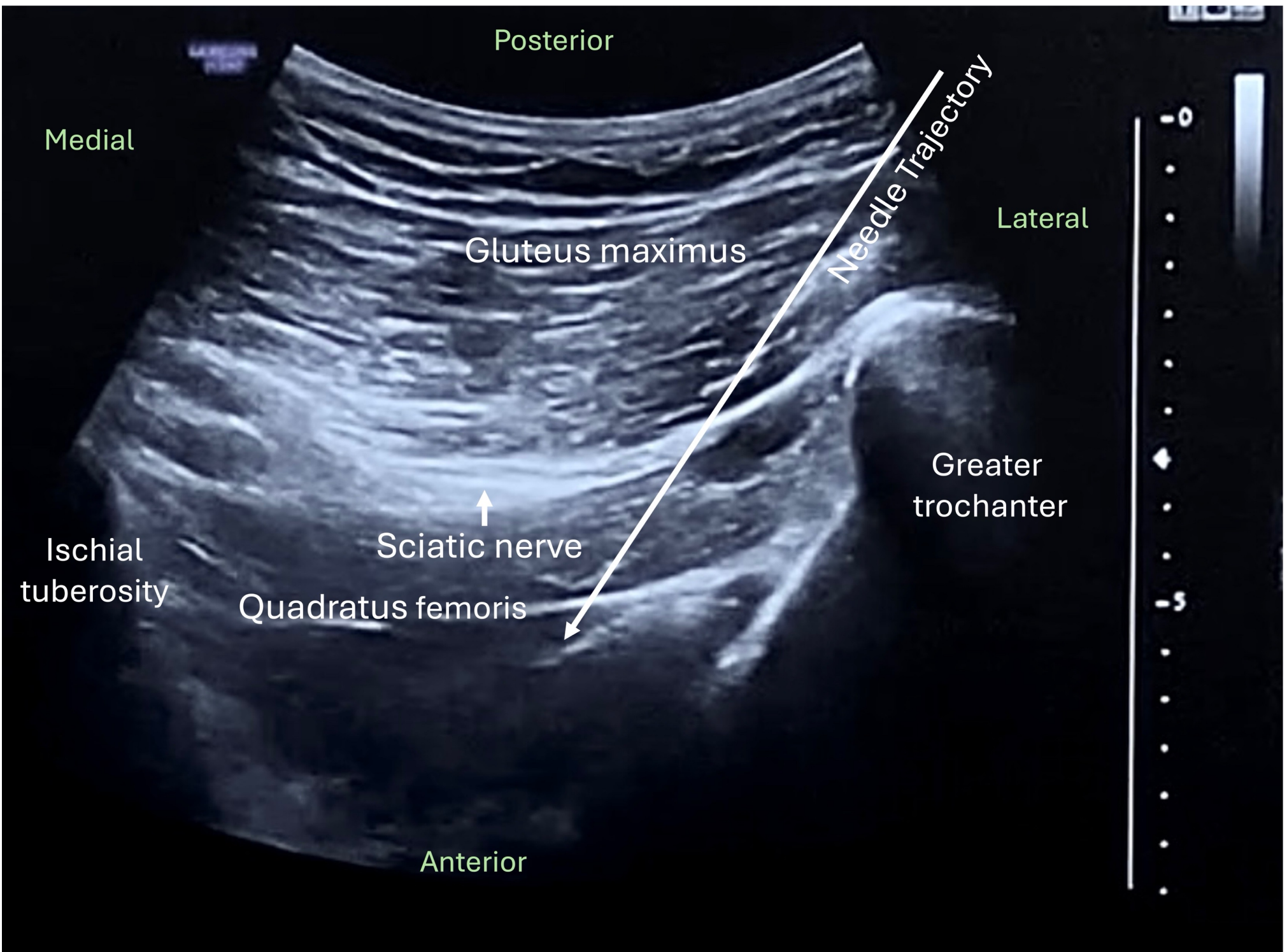
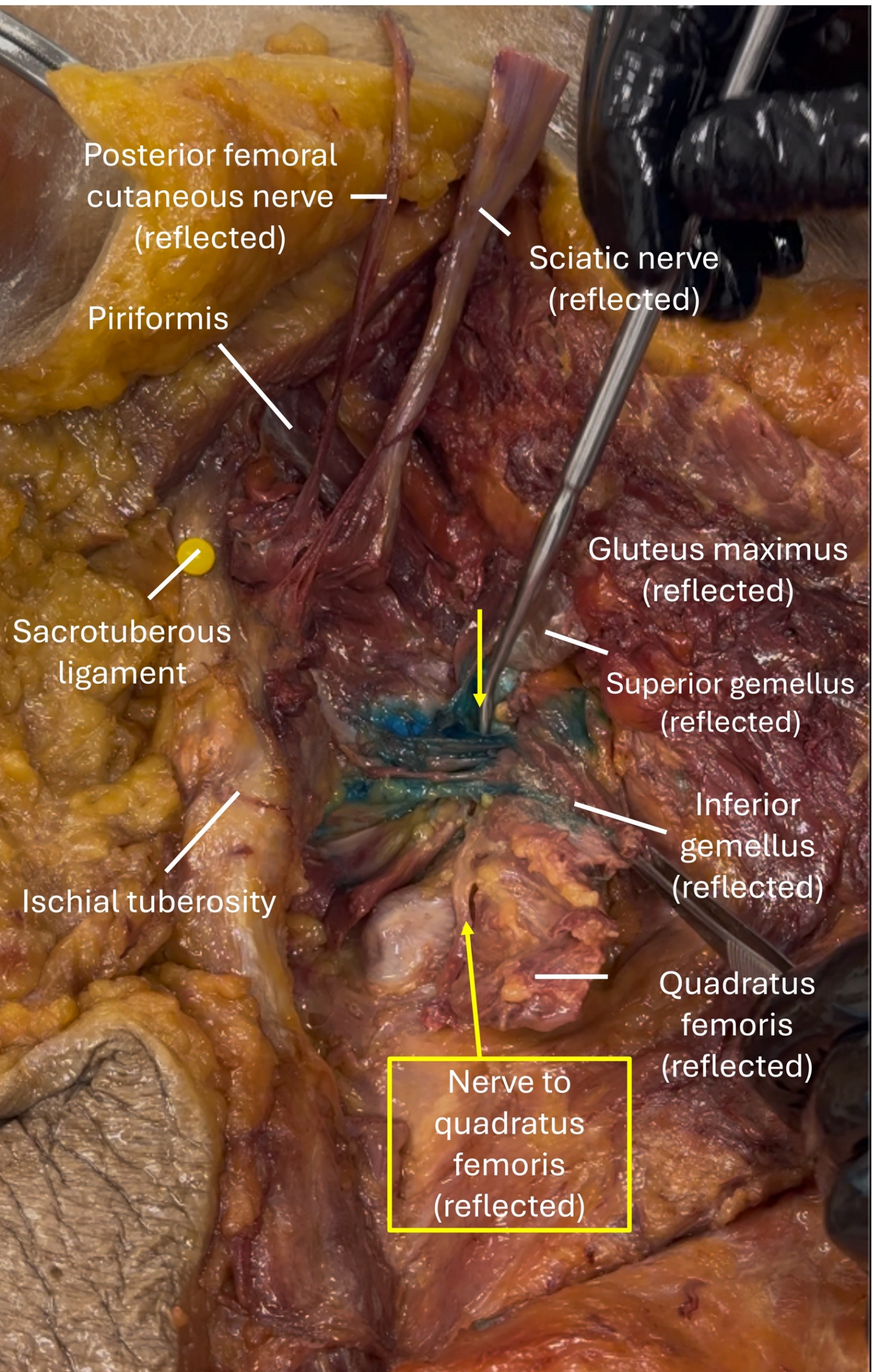
Layered Anatomical Dissection

Clinical Correlation

- Chart review of five patients undergoing hip arthroscopy who received SubQ blocks as part of the SINHA block
- Clinical outcomes evaluated: postoperative motor function, ambulation, foot drop, analgesic efficacy

RESULTS

Cadaveric Anatomical Study



- Proximal portion of NQF bathed in dye while the sciatic or posterior femoral cutaneous nerves remained undyed
- Dye was contained within the space deep to the superior gemellus, obturator internus, inferior gemellus, and quadratus femoris muscles and extended to the superficial posterior hip capsule

CONCLUSION

This study demonstrates the anatomical basis of the SubQ plane block, selectively targeting the NQF without sciatic nerve involvement. Consistent localization of injectate, supported by early clinical observations, suggests a favorable selective sensory blockade profile. When incorporated into the SINHA block, this novel SubQ block shows promise for providing effective analgesia while preserving early postoperative ambulation in hip arthroscopy patients.

Case Series

All five patients demonstrated preserved motor strength, without foot drop, and ambulated prior to discharge with good pain control s/p hip arthroscopy.

Initial PACU Pain Score	PACU Discharge Pain Score	Opioid Use Intra-Op	Opioid Use Post-Op
0	4	Hydromorphone 0.6mg	-
0	5	Fentanyl 100mcg	Oxycodone 5mg
2	2	Fentanyl 100mcg	-
3	3	-	-
0	6	-	Hydromorphone 0.5mg

Table 1. Patient pain scores and opioid consumption after hip arthroscopy

ACKNOWLEDGEMENTS & REFERENCES

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References