



Single-Centre Trends in Neuraxial Technique-Drug Combinations and Peripheral Nerve Block Combinations for Total Hip Arthroplasty

Periklis Giannakis MD¹, Alexandra Sideris PhD^{1,2}, Alex Illescas MPH¹, Lisa Reisinger MD¹, Juliet Rowe MPH¹, George Go¹, Stavros G. Memtsoudis MD MBA PhD^{1,2}, Jashvant Poeran MD PhD¹, Daniel Maalouf MD MBA^{1,2}

¹Department of Anesthesiology, Critical Care & Pain Management, Hospital for Special Surgery, New York, NY, USA

²Weill Cornell Medicine, New York, NY, USA



Weill Cornell
Medicine



INTRODUCTION

What we do know: Neuraxial anesthesia (NA) and peripheral nerve blocks (PNBs)→ improved outcomes in total hip arthroplasty (THA).
↑ trends of NA/PNB utilization in THA

What we don't know: Detailed description of how regional anesthesia is operationalized; e.g. type of NA or PNB, or specific medications used

Therefore, we describe: 1) the most common NA technique/medication combinations, and 2) the most common PNB combinations in THA

Why us? High volume of regional anesthesia→ data uniquely suited to describe granular regional anesthesia practice patterns

METHODS

Study design: Retrospective case-series (IRB#2022-2392). Follow-up until discharge.

Setting: Single-center. Hospital for Special Surgery. Inpatient and outpatient surgery. January 1,2021-January 19,2023

Participants: All adults undergoing elective primary THA

Exposures: NA and PNB

Variables: NA; neuraxial technique, neuraxial medication of choice and second neuraxial medication. PNB; usage, location/type and number of PNBs, up to 3

Objective: To describe the five most frequently used neuraxial technique-drug combination pairs and the five most frequent PNB location/type combinations

Our findings underscore our preference for motor-sparing regional anesthesia techniques, emphasizing rapid recovery and comprehensive analgesia tailored to the specific THA approach

Characteristics of neuraxial block / peripheral nerve block		
Regional Anesthetic	Incidence (N)	Incidence (%)
Neuraxial block	9327	96.1
Single medication	8181	84.3
Double medication	1146	11.8
PNB	2671	27.5
Single PNB	923	9.5
Double PNB	1738	17.9
Triple PNB	10	0.001

Top five neuraxial technique-drug combination pairs, and PNB location combinations					
Neuraxial Location and Drug Combinations	Incidence (N)	% of Neuraxial Blocks	PNB Location Combinations	Incidence (N)	% of PNBs
Spinal with mepivacaine	5043	52.0	Fascia Iliaca & PENG	1103	41.5
Combined spinal/epidural with mepivacaine	1932	19.9	PENG	984	37.0
Spinal with bupivacaine and mepivacaine	1070	11.0	Lateral Femoral Cutaneous & PENG	269	10.1
Combined spinal/epidural with bupivacaine	336	3.5	Lumbar Plexus	220	8.3
Spinal-Bupivacaine	334	3.4	Fascia Iliaca	44	1.7

RESULTS

Population: N=9,707 THAs, n=9,327 (96.1%) NA & n=2,671 (27.5%) PNB

Descriptive data: The most common neuraxial technique-drug combination pair was **spinal anesthesia under mepivacaine (n=5043, 52.0% of neuraxial blocks)** and the most common PNB combination was **fascia iliaca and pericapsular nerve group (PENG) block (n = 1103, 41.5% of PNBs)**

DISCUSSION

High volume of regional anesthesia: PNB utilization rate is more than double than what has been described in multi-institutional claims data
NA adoption is almost universal
Interpretation: Preference for regional anesthesia techniques and adherence to evidence-based recommendations

Mepivacaine vs bupivacaine: Mepivacaine was used substantially more than bupivacaine.
Interpretation: Earlier PACU discharge, motor function return and better bladder control

Spinal vs epidural vs spinal/epidural: Preference for spinal anesthesia
Interpretation: Earlier motor function return, sensory block onset (possibly), lower drug dosage requirements, lower risk of post-dural puncture headaches (possibly)

PENG (± Fascia Iliaca or Lateral Femoral Cutaneous): PENG was used in n=2,356 (88.2% of cases with PNB)
Interpretation: PENG→ minimized femoral nerve involvement→ minimized motor impairment
Posterolateral approach: preferred at HSS→ ± Fascia Iliaca Block
Direct anterior approach: ± Lateral Femoral Cutaneous Block

More Info →

