#2317042 Adding genicular and anterior femoral cutaneous nerve blocks for knee arthroplasty analgesia, randomized double blinded trial

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INTRODUCTION

- Our standard peripheral nerve block regimen for total knee arthroplasty (TKA) includes **adductor canal nerve block (ACB) and infiltration between the popliteal artery and capsule of the knee (IPACK).**
- However, patients still report moderate to severe post-operative pain.
- **Genicular nerve block (GN) and anterior femoral cutaneous (AFCN) nerve block** are emerging techniques that might provide complementary analgesia coverage.
- This study aimed to examine the analgesic efficacy of adding GN and AFCN to our current regimen.

METHODS

- This double-blinded, randomized controlled clinical trial was approved by our Institutional Review Board (#2023-0063) and registered on ClinicalTrials.Gov (NCT05980546). TKA patients provided consent between June 12, 2023 and September 4, 2025.
- Eligible participants were randomized to the control group (ACB, IPACK) or intervention group (ACB, IPACK, GN, AFCN). All patients received standardized pain management regimens.
- **The primary outcomes were:**
  - **Worst numeric rating scale (NRS) pain in the post-anesthesia care unit (PACU)**
  - **Cumulative opioid consumption (morphine milligram equivalents, MME) 24 hours after induction end.**

There was a significant reduction in opioid consumption on POD1 and no difference in worst NRS pain up to 7 days after TKA with the addition of the GN + AFCN to our standard protocol of ACB + IPACK

Table 1. Patient Demographics

	Control (N=121)		Intervention (N=117)		
	N	%	N	%	p-value
Sex					0.36
Female	64	52.89	55	47.01	
Male	57	47.11	62	52.99	
Race					0.028
Asian	10	8.26	4	3.42	
Black or African American	11	9.09	2	1.71	
Other	10	8.26	9	7.69	
Unknown	7	5.79	4	3.42	
White	83	68.6	98	83.76	
Ethnicity					0.13
Hispanic or Latino	14	11.57	8	6.84	
Not Hispanic or Latino	99	81.82	106	90.6	
Unknown	8	6.61	3	2.56	
ASA level					0.87
1	5	4.13	5	4.27	
2+	116	95.87	112	95.73	
	Median (Q1, Q3)	Min, Max	Median (Q1, Q3)	Min, Max	p-value
Age	67.0 (61.0, 73.0)	37.0, 80.0	65.0 (61.0, 72.0)	45.0, 79.0	0.46
BMI	28.72 (26.45, 30.56)	17.76, 34.55	27.62 (25.41, 30.31)	17.80, 35.38	0.19

Table 2. Worst Pain Score by Numeric Rating Scale

Time Point	Group	N	Median	Lower Quartile	Upper Quartile	Minimum	Maximum	p-value
PACU	control	121	7.0	6.0	8.0	0.0	10.0	0.060
	intervention	117	7.0	5.0	8.0	0.0	10.0	
POD1	control	121	8.0	5.0	9.0	2.0	10.0	0.709
	intervention	117	7.0	5.0	9.0	0.0	10.0	
POD2	control	121	8.0	7.0	10.0	2.0	10.0	0.835
	intervention	117	8.0	7.0	9.0	2.0	10.0	
POD7	control	121	7.0	5.0	8.0	0.0	10.0	0.862
	intervention	117	7.0	5.0	8.0	0.0	10.0	

There were 54.6% and 45.4% patients who experienced severe pain (≥7) in the PACU in the control and intervention groups, respectively (p=0.087).

Table 3. Cumulative Opioid Consumption

Time Point	Group	N	Median	Lower Quartile	Upper Quartile	Minimum	Maximum	p-value
24 Hours	control	121	60.0	35.0	78.0	7.5	135.0	0.070
	intervention	117	45.0	30.0	75.0	0	142.5	
POD1	control	121	22.5	15.0	37.5	0.0	75.0	0.023
	intervention	117	15.0	7.5	30.0	0.0	75.0	
POD2	control	121	52.5	37.5	75.0	0.0	193.5	0.260
	intervention	117	52.5	22.5	75.0	0.0	165.0	
POD7	control	121	7.5	0	15.0	0	56.0	0.250
	intervention	117	7.5	0	22.5	0	80.0	

24 Hours time point is defined as from Induction end time to the next 24 hours; POD1(2) is defined as from the time patient was discharged from the PACU to POD 1(2); POD7 only included opioid consumption on day 7.

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RESULTS

- There were no significant differences between groups in terms of primary outcomes.
- For the secondary outcomes of NRS pain, opioid consumption, Brief Pain Inventory Short Form, satisfaction, and readiness for discharge, there were no differences observed except **opioid consumption on POD1 was statistically significant between the control group and intervention group (p=0.023)** (Table 3). The median (Q1, Q3) readiness for discharge times were 16.2 (5.20, 23.4) hours and 6.2 (5.1, 20.1) hours in the control and intervention groups respectively (p=0.12).Blinding was preserved in both groups.

DISCUSSION

- With the addition of GN and AFCN blocks to our standard peripheral nerve block regimen including ACB and IPACK blocks for TKA patients, our study showed **no differences in worst NRS pain in the PACU, at POD1, POD2 or POD7**. There was a **significant reduction in opioid consumption on POD1** in the intervention group.

Full Abstract →