



The Impact of Peripheral Nerve Blocks on Chronic Opioid Use After Elective Total Knee Arthroplasty in the United States

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INTRODUCTION

Peripheral nerve blocks (PNB) increasingly used in TKA

Recent data:

Equivalence between catheter and single-shot PNB in immediate perioperative analgesia

Large observational dataset —elective TKA from 2017 to 2021— to evaluate the impact of PNB utilization on chronic postoperative opioid use

We hypothesized

- 1) PNB utilization would be associated with lower odds of chronic opioid use compared to no PNB use
- 2) Continuous PNB using a catheter would be associated with lower odds of chronic opioid use compared to single shot PNB.

METHODS

US Merative MarketScan data (2017-2021):

- 1) patients receiving PNB versus those that did not
- 2) single-shot versus continuous catheter infusion PNB

Primary outcomes:

- 1) **“chronic opioid dependence”** (>120 pills of opioids prescribed or >10 prescriptions between postoperative day 90-180)
 - 2) **“chronic opioid use”** (any opioid refill between postoperative day 90-180)
- Multivariable models report odds ratios (OR) and 95% confidence intervals (CI)

Table 1. Inverse probability of censoring weighting model outcome for chronic opioid dependence/use

Definition 1 for chronic opioid dependence: post op 90-180 days total pills >=120 or number of prescriptions >=10				
	Unadjusted odds	p-value	IPCW OR (95% CIs)	p-value
Catheter vs single shot	1.08 (0.89, 1.3)	0.406	1 (0.99, 1)	0.400
Catheter vs no use	1.18 (0.97, 1.42)	0.095	1 (1, 1)	0.120
Single shot vs no use	1.09 (0.97, 1.23)	0.176	1 (1, 1)	0.170
Definition 2 for chronic opioid use: any use of opioid between post op 90-180 days				
	Unadjusted odds	p-value	IPCW OR (95% CIs)	p-value
Catheter vs single shot	1.05 (0.99, 1.11)	0.052	1 (0.99, 1.01)	0.360
Catheter vs no use	1.12 (1.07, 1.18)	<.001	1.01 (1.01, 1.02)	<.001
Single shot vs no use	1.07 (1.03, 1.1)	<.001	1.01 (1.01, 1.02)	<.001

For the final model, we used the inverse-probability-of-censoring weighting (IPCW) to take into consideration of patients lost to follow-up at 180 days after surgery, and other baseline confounders, including age, sex, Deyo comorbidity group, history of antidepressant use, history of opioid use disorder, amount of opioid use 30 days prior to surgery, inpatient or outpatient surgery, year of surgery (2017-2021), and hospital region (northeast, west, south, Midwest).

RESULTS

- **n=135,571** TKA cases performed between 2017 and 2021
Incidence of “chronic opioid dependence” was **0.8%, 0.9% and 1.0%** without PNB, with single-shot PNB, and continuous PNB
- For “chronic opioid use” this was **14.2%, 15.1%, and 15.8%**
- Multivariable analyses indicated **no association** between PNB utilization and “chronic opioid dependence”
- Single shot and continuous PNB compared to no PNB use were associated with **slightly higher odds of “chronic opioid use”**

DISCUSSION

In conclusion, the use of PNBs and the comparison between single-shot and catheter PNBs did not appear to be associated with lower odds of postoperative chronic opioid dependence and/or chronic opioid use.

However, we did observe slightly increased odds of chronic opioid use associated with PNB use which should be explored in future studies.

Abstract and References

