

Nerve injury after Ankle Surgery: A Retrospective Review of Influence of Regional Anesthesia

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INTRODUCTION

- Peripheral nerve blocks are commonly used to provide anesthesia/ analgesia for foot and ankle surgeries.
- Benefits of regional anesthesia – better pain control and postoperative pain outcomes.(1)
- Small but clinically significant risk of peripheral nerve injury (PNI) -> sensory deficits, motor dysfunction, or chronic neuropathic pain.
- Patient and surgical factors.(2)
- Understanding the patient- procedure and block-related variables associated with PNI is essential for guiding clinical decision-making, improving patient safety, and refining regional anesthesia practices.
- Our hypothesis is that risk of PNI differs among patients undergoing elective foot and ankle surgery based on whether they received PNB.

METHODS

This study was exempt from full IRB review at the University of Virginia. Patient records from a single tertiary care institution were analyzed from 2017 to 2025.

- Inclusion criteria - Age ≥ 18 years, surgery - Total Ankle Arthroplasty, Triple and Subtalar Arthrodesis, Midfoot fusion and calcaneal osteotomy, diagnosis of neuropathic pain, peripheral neuropathy/ nerve injury/ complex regional pain syndrome (CRPS) or new prescription of Gabapentin/Lyrica/Cymbalta in the first 6 months after surgery
- 2 groups – PNB (Yes) and PNB (No)
- Data collected included, patient demographics, and presence of nerve injury before and after surgery.

RESULTS

Table 1. Descriptive statistics of select patient demographic characteristics.

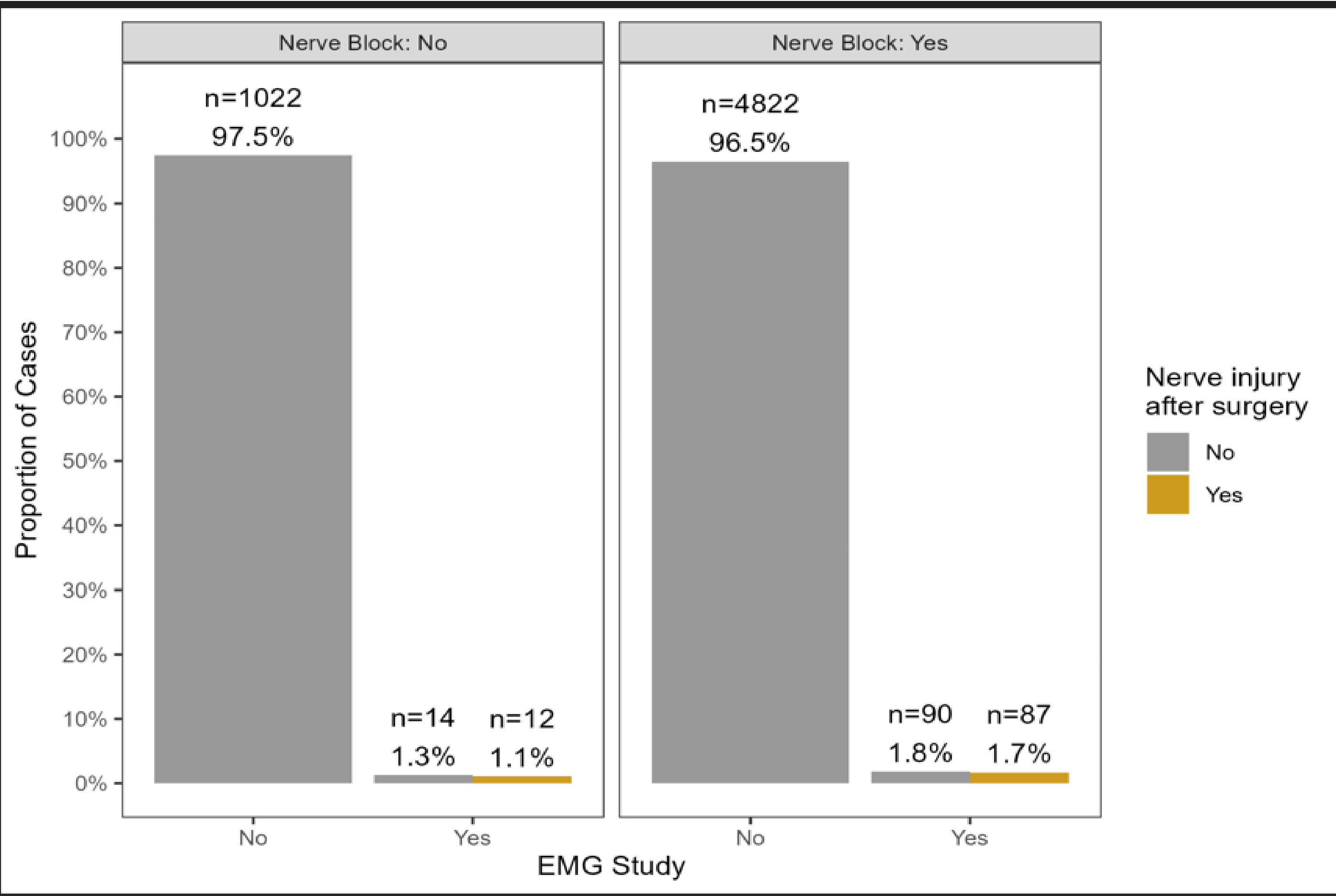
	PNB: Yes n = 5005 (82.6%)	PNB: No n = 1051 (17.4%)	Total N = 6056
Age	53 $\pm$ 17 [IQR: 41, 66]	52 $\pm$ 17 [IQR: 38, 66]	53 $\pm$ 17 [IQR: 41, 66]
BMI	30 $\pm$ 7 [IQR: 26, 34]	30 $\pm$ 7 [IQR: 25, 33]	30 $\pm$ 7 [IQR: 25, 34]
Female	3028 (61%)	655 (62%)	3683 (61%)
White	4224 (85%)	879 (84%)	5103 (85%)
Current smoker: Yes	646 (13%)	139 (13%)	785 (13%)
Current smoker: Quit	944 (19%)	220 (21%)	1164 (19%)
Current smoker: No	3408 (68%)	692 (66%)	4100 (68%)

Results from logistic regression model showed smoking has a positive association with nerve injury. The predicted probability of nerve injury for subjects who quit smoking or currently smoke is about 0.02, compared to the predicted probability of 0.01 for subjects who never smoke.

Table 2. Logistic regression model estimating the likelihood of having nerve injury after surgery.

	Odds Ratio	95% CI	<i>p</i>
Nerve block: No	0.72	0.35 – 1.34	0.3
Gender: Men	1.23	0.78 – 1.93	0.4
Race: African-American	0.54	0.19 – 1.22	0.2
Race: Other	0.64	0.16 – 1.77	0.5
Age	0.99	0.98 – 1.00	0.13
BMI	1.00	0.97 – 1.03	>0.9
Smoking: Quit	2.02	1.18 – 3.40	0.009
Smoking: Yes	2.18	1.20 – 3.82	0.008

Figure 1. Frequencies and proportions of patients with nerve injury after surgery by peripheral nerve block.



DISCUSSION

- Our study shows that around 1.6% patients develop peripheral nerve injury after ankle surgery irrespective of whether a regional block is employed.

CONCLUSION

- Benefits of PNBs should be weighed against the risk of PNI based on patient comorbidities and preference

REFERENCES

- Jarrell K, McDonald E, Shakked R, Nicholson K, Kasper V, Raikin SM. Combined Popliteal Catheter With Single-Injection vs Continuous-Infusion Saphenous Nerve Block for Foot and Ankle Surgery. Foot Ankle Int. 2018 Mar;39(3):332-337. doi: 10.1177/1071100717744331. Epub 2017 Dec 18. PMID: 29254445.
- Jacob AK, Mantilla CB, Sviggum HP, Schroeder DR, Pagnano MW, Hebl JR. Perioperative nerve injury after total knee arthroplasty: regional anesthesia risk during a 20-year cohort study. Anesthesiology. 2011 Feb;114(2):311-7. doi: 10.1097/ALN.0b013e3182039f5d. PMID: 21239974.