

A Retrospective Review of Nerve Injury Following Ankle Surgery: The Role of Regional Anesthesia as a Contributing Factor

Priyanka Singla MD, Whitney Carter BS, Siny Tsang PhD, Arzu Tekeli MD, Nabil Elkassabany MD
Department of Anesthesiology, University of Virginia, Charlottesville, Virginia

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 = 1336 (96.5%)	PNB: No n = 49 (3.3%)	Total N = 1385
Age	58 ± 14 [IQR: 51, 68]	55 ± 14 [IQR: 27, 36]	58 ± 14 [IQR: 50, 68]
BMI	32 ± 6.9 [IQR: 47, 65]	31 ± 6.5 [IQR: 28, 34]	32 ± 6.9 [IQR: 27, 36]
Female	782 (58.5%)	29 (59.2%)	811 (59%)
White	1174 (89%)	43 (91.5%)	1217 (89.1%)
Current smoker: Yes	139 (10.5%)	4 (8.3%)	143 (10.4%)
Current smoker: Quit	413 (31.1%)	20 (41.7%)	433 (31.4%)
Current smoker: No	778 (58.5%)	24 (50%)	802 (58.2%)

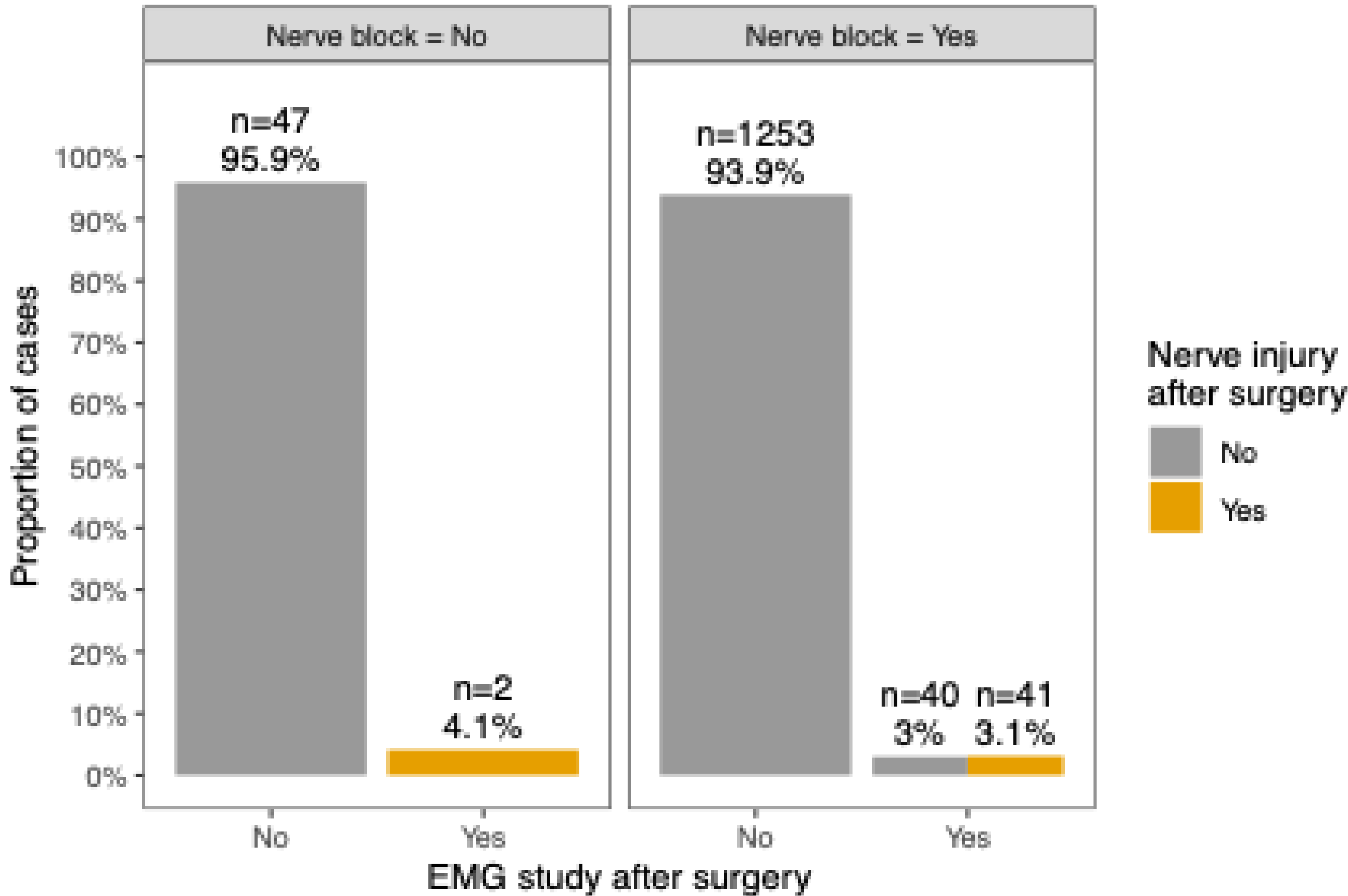
Note: no substantial difference between the two groups.

Results from logistic regression model showed no substantial difference in the likelihoods of having nerve injury after surgery between patients who did or did not receive PNB.

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

	Odds Ratio	95% CI	<i>p</i>
Nerve block: No	1.47	0.23 – 2.09	0.604
Gender: Men	0.73	0.37 – 1.40	0.356
Race: non-white	0.21	0.01 – 1.01	0.128
Age	1.00	0.98 – 1.03	0.929
BMI	0.99	0.95 – 1.04	0.829
Smoking: Quit	0.74	0.33 – 1.53	0.436
Smoking: Yes	1.18	0.38 – 2.98	0.753

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



DISCUSSION

- Our study shows that around 3% patients develop 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

1. 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.

2. 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.