Title: Regional Anesthesia in Cubital Tunnel Release Increases Revision Risk and Opioid Demand: A Matched Cohort Study

Majd Mzeihem, MD[1]; John Alvarez, BA[1]; Michael Foy, MD[1]; Diego Barragan, MD[1]; Alfonso Mejia, MD[1]; Mark H. Gonzalez, MD, PhD[1]

[1]Department of Orthopaedic Surgery, University of Illinois at Chicago, Chicago, Illinois, USA

Disclosures: Majd Mzeihem (N), John Alvarez (N), Michael Foy (N), Diego Barragan (N), Alfonso Mejia (N), Mark Gonzalez (N)

Introduction: This study investigates whether the choice of anesthesia, general anesthesia (GA) versus regional anesthesia (RA), in cubital tunnel release (CUTR) influences revision rates, surgical complications, and postoperative opioid prescribing patterns.

Methods: Patients with unilateral cubital tunnel syndrome who underwent CUTR between 2010–2022 were identified in the PearlDiver Mariner database using ICD-9/10 and procedure codes. Based on anesthesia documentation, patients were stratified into GA and RA groups. The primary outcomes were revision CUTR on the same side, 90-day surgical complications (infection, wound dehiscence), and opioid utilization. Cohorts were matched for age, sex, comorbidities (Charlson Comorbidity Index), diabetes, and hypothyroidism. Statistical analyses included independent t-tests, chi-square tests, and multivariate logistic regression, with significance set at $P < 0.05$.

Results: A total of 15,914 patients were analyzed, evenly split between GA and RA cohorts (7,957 each). Surgical complications, wound complications, seroma/hematoma, infection, and opioid abuse did not significantly differ between groups (all $P > 0.05$). However, patients in the RA group demonstrated higher revision rates (3.93% vs. 3.09%; OR 1.29, 95% CI 1.08–1.52; $P = 0.004$) and were more likely to be prescribed oxycodone (22.80% vs. 21.39%; OR 1.09, 95% CI 1.01–1.17; $P = 0.03$) and opioids overall (61.45% vs. 59.70%; OR 1.07, 95% CI 1.01–1.15; $P = 0.02$). No significant differences were found for ulnar nerve injury, complex regional pain syndrome, hydrocodone, or other opioid prescriptions.

Discussion: In this large matched cohort, regional anesthesia was linked to higher revision rates and increased opioid use compared to general anesthesia, despite no differences in surgical or wound-related complications. These findings raise important questions about the influence of anesthesia type on long-term outcomes and postoperative pain management. Careful patient selection and perioperative planning are essential, and prospective studies are warranted to determine whether surgical technique, patient factors, or postoperative care drive these associations.

Clinical Relevance: The type of anesthesia for cubital tunnel release may influence long-term outcomes. While regional anesthesia is commonly favored for intraoperative comfort and recovery, our findings suggest it may be linked to higher revision rates and increased opioid use compared to general anesthesia. Surgeons and anesthesiologists should weigh these risks when planning procedures, and patients may benefit from more individualized anesthesia selection and postoperative monitoring.

	General Anesthesia (N=7957)	Regional Anesthesia (N=7957)	OR (95% CI)	P-value
Seroma, n(%)	42 (0.53%)	37 (0.46%)	0.88 (0.56-1.37)	0.65
Hematoma, n(%)	38 (0.48%)	36 (0.45%)	0.95 (0.60-1.50)	0.91
Infection, n(%)	325 (4.08%)	331 (4.16%)	1.02 (0.87-1.19)	0.84
Wound Dehiscence, n(%)	119 (1.50%)	104 (1.31%)	0.87 (0.67-1.14)	0.35
Revision, n(%)	246 (3.09%)	313 (3.93%)	1.29 (1.08-1.52)	**0.004**
Oxycodone, n(%)	1702 (21.39%)	1814 (22.80%)	1.09 (1.01-1.17)	**0.03**
Hydrocodone, n(%)	2966 (37.28%)	3050 (38.33%)	1.05 (0.98-1.12)	0.17
Other Opioid, n(%)	342 (4.30%)	376 (4.73%)	1.10 (0.95-1.28)	0.21
Opioid, n(%)	4750 (59.70%)	4890 (61.45%)	1.07 (1.01-1.15)	**0.02**
Ulnar Injury, n(%)	39 (0.49%)	40 (0.50%)	1.03 (0.66-1.60)	1
CRPS, n(%)	66 (0.83%)	79 (0.99%)	1.20 (0.86-1.66)	0.32
Surgical Complications, n(%)	762 (9.57%)	834 (10.48%)	1.11 (0.99-1.23)	0.06
Wound Complications, n(%)	463 (5.82%)	454 (5.71%)	0.98 (0.86-1.12)	0.79
Opioid Abuse, n(%)	520 (6.54%)	553 (6.95%)	1.07 (0.94-1.21)	0.31

Table 1. Comparison of Postoperative Outcomes Between General and Regional Anesthesia Groups