

Endoscopic Carpal Tunnel Release with Monitored Anesthesia Care versus Local Anesthesia - Analysis of Operative Times and Patient-Reported Outcomes

Thomas Carroll, Akhil Dondapati, Andrew John Rodenhouse, Samantha Hoffman, Constantinos Ketonis

INTRODUCTION: We hypothesized that patients undergoing endoscopic carpal tunnel release (CTR) with monitored anesthesia care (MAC) versus local anesthesia will demonstrate significantly longer operative times and time to discharge from an outpatient surgical center. Local and MAC cohorts will demonstrate similar complication rates and Patient-Reported Outcomes Measurement Information System (PROMIS) scores pre- and postoperatively.

METHODS: This is a 5-year retrospective study of 1,036 patients undergoing isolated endoscopic carpal tunnel release with MAC versus local anesthesia within an outpatient surgical center. Demographic data, medical comorbidities, hand dominance, operative times, surgical complications, PROMIS Upper Extremity (UE), Pain Interference (PI), and Physical Function (PF) scores were analyzed.

RESULTS: In total, 607 patients underwent endoscopic CTR with MAC and 429 patients with local anesthesia. The local cohort demonstrated shorter total operating room time (26.7 +/- 4.3 vs. 29.0 +/- 4.1 minutes; $p < 0.05$), tourniquet time (12.4 +/- 2.5 vs. 13.1 +/- 2.1 minutes; $p < 0.05$), postoperative time to discharge (15.9 +/- 9.8 vs. 53.8 +/- 11.0 minutes; $p < 0.05$), and total time spent in surgical center (83.2 +/- 18.7 vs. 129.3 +/- 20.7; minutes $p < 0.05$). Pre- and postoperative PROMIS UE, PF, and PI scores were similar between the two cohorts ($p > 0.05$), however, PROMIS PI improved to a higher degree between pre- and postoperative in the local group (-1.5 vs. -0.8; $p = 0.02$). The rate of early and late surgical complications including superficial infection, deep infection, and revision surgery were similar between the two groups ($p > 0.05$).

DISCUSSION AND CONCLUSION:

The patients within the MAC cohort demonstrated longer total operating room time, tourniquet time, postoperative time to discharge, and total time spent in the surgical center. Early and late surgical complications, as well as pre- and postoperative PROMIS scores were similar between the two groups. Patients undergoing local anesthesia, however, noted a more significant improvement in PROMIS PI between pre- and final postoperative visits.

Table 1: Cohort Characteristics of Endoscopic Carpal Tunnel Patients with MAC Versus Local

Characteristic	MAC (n=607)	Local Anesthesia (n=429)	p-value
Age, years (SD)	51 (12)	54 (13)	$p < 0.05$
BMI (SD)	29 (6)	32 (6)	$p < 0.05$
Sex (%)			0.299
Female	348 (57)	232 (54)	
Male	259 (43)	197 (46)	
Race (%)			0.452
White	516 (85)	381 (89)	
Black	68 (11)	43 (10)	
Other	23 (4)	5 (1)	
Ethnicity (%)			0.125
Not Hispanic	552 (91)	403 (94)	
Hispanic	28 (5)	12 (3)	
Unknown	27 (4)	14 (3)	
Dominant Hand	382 (62.9)	277 (64.6)	0.589
Tobacco Use	85 (14.0)	69 (16.1)	0.354
Diabetes	97 (16.0)	78 (18.2)	0.352
Hypothyroidism	30 (4.9)	34 (7.9)	0.052

Table 2: Operative Details Following Endoscopic Carpal Tunnel Patients with MAC Versus Local

Characteristic	MAC (n=607)	Local Anesthesia (n=429)	p-value
Total Operating Room Time (SD)	29.0 (4.1)	26.7 (4.3)	$p < 0.05$
Tourniquet Time (SD)	13.1 (2.1)	12.4 (2.5)	$p < 0.05$
Post-Operative Time to Discharge (SD)	53.8 (11.0)	15.9 (9.8)	$p < 0.05$
Total Time in Surgical Center (SD)	129.3 (20.7)	83.2 (18.7)	$p < 0.05$
Complications			
Superficial Infection* (%)	7 (1.2)	4 (0.9)	0.73
Superficial Infection with RTOR (%) **	4 (0.7)	2 (0.5)	0.68
Deep Infection with RTOR (%)	0 (0)	0 (0)	1.0
Revision for Symptoms Persistence (%)	9 (1.5)	3 (0.7)	0.25
Revision for New Onset Symptoms (%) ***	7 (1.2)	3 (0.7)	0.46
Number of Post-Operative Visits (SD)	1.5 (0.8)	1.4 (0.9)	0.06
Pre-Op PROMIS Upper Extremity (SD)	38.7 (7.8)	38.5 (8.4)	0.69
Post-Op PROMIS Upper Extremity (SD)	37.9 (6.2)	37.4 (6.9)	0.22
Change in PROMIS Upper Extremity	0.8 (3.2)	1.1 (4.2)	0.19
Pre-Op PROMIS Physical Function (SD)	42.9 (8.1)	43.2 (7.4)	0.54
Post-Op PROMIS Physical Function (SD)	43.5 (5.9)	42.9 (7.1)	0.14
Change in PROMIS Physical Function	0.6 (2.9)	0.3 (2.4)	0.08
Pre-Op PROMIS Pain Interference (SD)	57.0 (7.1)	57.3 (8.2)	0.53
Post-Op PROMIS Pain Interference (SD)	56.2 (5.9)	55.8 (6.8)	0.31
Change in PROMIS Pain Interference	0.8 (5.7)	1.5 (5.8)	0.06

Operative times provided in minutes. *Superficial infection requiring only oral antibiotics; **Superficial infection requiring return to operating room; ***Patients with initial period of symptom relief then new onset of carpal tunnel symptoms requiring return to operating room.