

Functional Outcomes of Flexor Tendon Repair in the Fingers: A Comparison of Wide-Awake Local Anesthesia versus Traditional Anesthesia

Clay Townsend, MD; Tyler Henry, MD; Amr Tawfik, BA; Kyle Plusch, BA; Jonas Matzon, MD; Daniel Seigerman, MD; Samir Sodha, MD; Gregory Toci, BS; Pedro Beredjiklian, MD
 Rothman Institute at Thomas Jefferson University Hospital, Philadelphia, PA

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BACKGROUND

- Flexor tendon lacerations in the fingers (zone I and II) are challenging injuries
- Wide-awake local anesthesia no tourniquet (WALANT) surgery has gained increasing popularity for flexor tendon repairs due to the ability to assess the repair through active motion intraoperatively
- Intraoperative assessment can allow surgeons to visualize and fix bunching at the pulleys or gapping of the repair, and can allow patients to immediately visualize their improved motion
- Data regarding outcomes of flexor tendon injuries repaired under WALANT is limited
- The purpose of our study was to compare the functional outcomes and complication rates of patients undergoing flexor tendon repair under WALANT versus traditional anesthesia ("TA" - general or intravenous sedation)
- We hypothesized that there would be no difference in functional outcomes or complication rates between flexor tendon repairs performed with WALANT vs TA

METHODS

- All patients who underwent a primary flexor tendon repair in zone 1 or 2 without tendon graft for closed avulsions or open lacerations (CPT codes 23656 and 26370, respectively) between 2015 and 2019 were identified
- Procedures performed by one of twelve fellowship trained orthopaedic hand surgeons
- Electronic medical records were reviewed by personnel blinded to the study groups to record patient demographics, range of motion, functional outcomes, complications, and reoperations
- Study groups were created based on whether surgery was performed under traditional anesthesia (general or intravenous sedation (TA group), or with wide-awake surgery using local anesthesia only (WALANT group)

RESULTS

- 65 zone I (N=21) or II (N=44) flexor tendon repairs were included in final analysis: 23 in the WALANT group, and 42 in the TA group
- WALANT group had larger proportion of men, but no other demographic differences (Table 1)
- No statistical differences in final qDASH score, grip strength, VAS pain score, DPC distance, or any range of motion outcomes between WALANT and TA groups (Table 2)

Table 1. Demographics.

	All	WALANT	TA	p-value
N	65	23	42	
Gender				.04
Male	40 (61.5)	18 (78.3)	22 (52.4)	
Female	25 (38.5)	5 (21.7)	20 (47.6)	
Age (SD)	43.7 (17.1)	41.3 (14.1)	45.0 (18.6)	.41
Length of F/U	6.9 (5.7)	9.1 (8.2)	5.7 (3.2)	.07
Digit				.36
1	12 (18.5)	2 (8.7)	10 (23.8)	
2	16 (24.6)	8 (34.8)	8 (19.0)	
3	11 (16.9)	5 (21.7)	6 (14.3)	
4	11 (16.9)	4 (17.4)	7 (16.7)	
5	15 (23.1)	4 (17.4)	11 (26.2)	
Zone of Injury (%)				.43
1	21 (32.3)	6 (26.1)	15 (35.7)	
2	44 (67.7)	17 (73.9)	27 (64.3)	
Received Prophylactic Antibiotics	34 (52.3%)	9 (39.1%)	25 (59.5%)	.12

Legend: WALANT = wide awake local anesthesia no tourniquet; TA = traditional anesthesia; SD = standard deviation.

Table 2. Range of Motion and Functional Outcomes.

	WALANT	TA	p-value
Grip % (Injured/Normal)	69.7 (23.4)	79.6 (29.5)	.27
qDASH	17.2 (14.4)	23.3 (18.5)	.26
Distance to DPC (cm)	2.3 (1.8)	1.9 (1.7)	.51
VAS Pain	0.8 (1.3)	1.2 (1.5)	.41
ROM Digit 1			
TAM	76.4 (33.8)	76.4 (34.3)	1.00
IP Extension	0 (0)	-2.8 (8.0)	.64
IP Flexion	30 (35.4)	31.5 (14.6)	.96
MP Extension	0 (0)	0.4 (5.7)	.93
MP Flexion	46.5 (16.3)	47.3 (18.3)	.96
ROM Digits 2-5			
TAM	193.9 (74.9)	167.7 (88.3)	.27
DIP Extension	1.4 (8.3)	2.3 (7.7)	.68
DIP Flexion	41.6 (21.5)	30.7 (16.7)	.06
PIP Extension	1.7 (10.9)	7.1 (12.5)	.13
PIP Flexion	84.7 (21.9)	82.4 (21.0)	.72
MP Extension	1.3 (4.3)	-0.2 (5.6)	.35
MP Flexion	85.9 (10.4)	83.6 (7.6)	.41

Legend: WALANT = wide awake local anesthesia no tourniquet; TA = traditional anesthesia; qDASH = quick disabilities of the arm shoulder and hand; DPC = distal palmar crease; VAS = visual analog scale; TAM = total active motion; IP = interphalangeal; DIP = distal interphalangeal; PIP = proximal interphalangeal; MP = metacarpophalangeal.

RESULTS (cont.)

- Thirteen complications (20%) and 9 reoperations (13.8%) were observed in the overall study cohort (Table 3)
- Rates of tendon adhesions requiring tenolysis were similar between the WALANT and TA groups (4.3% vs 7.1%; p=.654)
- The WALANT group was found to have a higher reoperation rate (26.1% vs 7.1%; p=.034) than the TA group

Table 3. Complications and reoperations.

	WALANT	TA	p-value
Complications (%)	8 (34.8)	5 (11.9)	.03
Superficial Infection	3	0	
Deep Infection	2	0	
Adhesions requiring tenolysis	1	3	
Rupture	2	1	
Other	0	1 (CRPS)	
Reoperation (%)	6 (26.1)	3 (7.1)	.03
Lysis of Adhesions	1	3	
I&D	2	0	
Re-Repair	2	0	
Other	1 (nail plate removal 2/2 paronychia)	0	

Legend: WALANT = wide awake local anesthesia no tourniquet; TA = traditional anesthesia; I&D = irrigation and debridement.

CONCLUSIONS

- This study represents one of the first clinical studies reporting outcomes of flexor tendon repairs performed under WALANT
- We found no significant difference in rupture rates, ROM, or functional outcomes following zone I and II flexor tendon repairs when performed under WALANT versus TA
- More studies and outcome data are required in order to further characterize potential differences in outcomes of flexor tendon repairs performed with WALANT versus traditional anesthesia.