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Original Research

Current Trends in WALANT Surgery: A Survey of American Society for Surgery of the Hand Members



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Purpose: To define self-reported WALANT use among American Society for Surgery of the Hand (ASSH) members. We aimed to define surgeon and practice demographics relative to WALANT use and identify potential barriers for WALANT implementation.

Methods: An anonymous multiple-choice survey was electronically distributed to all active ASSH members. Incomplete surveys were included in the final analysis. Surgeons were asked to provide reasons for not performing WALANT, which were categorized based on general themes. We compared practice and surgeon demographic information relative to WALANT use.

Results: Of 3,826 ASSH members, 869 responded (23%). A total of 79% of respondents had performed at least one WALANT procedure; 62% currently incorporated WALANT into their practice. Hospital-owned outpatient surgery centers were the most common location for WALANT procedures (31%). Canadian surgeons were more likely to use WALANT, compared with US and international surgeons. Surgeons with fewer years in practice and higher-volume surgeons were more likely to use WALANT. There was no statistically significant association between either practice or income structure and WALANT use. For carpal tunnel release (CTR), 13% did not offer patients WALANT, whereas 43% offered WALANT to all patients. Moreover, 51% of surgeons reported that anesthesia staff was required to be present for WALANT cases at their institution. In determining reasons for not using WALANT, 16% reported that they preferred a tourniquet for visualization. Only 2% had concerns regarding epinephrine use in the hand.

Conclusions: The results of this survey illustrate current WALANT use among ASSH members and defines the demographics of those employing WALANT. Lack of familiarity with WALANT and an acceptance of the use of epinephrine in the hand has increased from prior ASSH surveys. Lack of familiarity with the technique, concerns regarding operating room efficiency, and patient preferences remain considerable barriers to more widespread adoption of WALANT procedures.

Type of study/level of evidence: Economic and Decision Analysis V.

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As an alternative to general anesthesia or sedation in the operating room, many hand and wrist procedures can be performed with wide-awake local anesthesia no tourniquet (WALANT) techniques.^{1–4} Potential benefits of this technique include decreasing complications associated with intravenous sedation and

general anesthesia as well as decreased costs.^{5,6} Although the literature on safety, efficacy, and potential cost-savings has increased, there is little information on how frequently WALANT procedures are being performed.

The purpose of this investigation was to define current self-reported WALANT use among active members of the American Society for Surgery of the Hand (ASSH). We aimed to define surgeon and practice demographics relative to WALANT use and identify potential concerns and barriers for the implementation of WALANT procedures. We hypothesized that WALANT use would be common among ASSH members, particularly for those who had recently completed fellowship.

Declaration of interests: No benefits in any form have been received or will be received by the authors related directly or indirectly to the subject of this article.

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Table 1
Baseline Demographics and Frequency of WALANT Procedures Among Active ASSH Members Responding to Survey

Baseline Demographics	n (%)
Practice location, n (%)	
United States	692 (80)
Canada	27 (3)
International	146 (17)
Did not answer	4 (<1)
Practice type, n (%)	
Academic	137 (16)
Private practice with academic appointment	152 (17)
Hospital employed—academic	97 (11)
Hospital employed—nonacademic	77 (9)
Private—group	303 (35)
Private—solo	60 (7)
Government	26 (3)
Other	13 (2)
Years in practice, n (%)	
≤5	182 (21)
5–10	106 (12)
11–20	208 (24)
>20	369 (43)
Income structure, n (%)	
Salary without performance incentive	142 (16)
Salary with performance incentive	221 (25)
Relative value unit based	157 (18)
Percentage of billing	44 (5)
Percentage of collection	214 (25)
Other	90 (10)
Did not answer	1 (<1)
Cases/y, n (%)	
<200	119 (13)
200–500	372 (43)
>500	375 (43)
Did not answer	3 (<1)
Completion of hand surgery fellowship, n (%)	842 (97)
Population in practice location, n (%)	
Urban	437 (50)
Suburban	369 (42)
Rural	62 (7)
Did not answer	1 (<1)

Materials and Methods

We received institutional review board approval; we also obtained permission from the ASSH and received an e-mail list of all active ASSH members. An anonymous survey was electronically distributed to all full, active ASSH members (both US and international) with a valid e-mail address. The survey contained 24 questions. In accordance with ASSH protocols, the introductory e-mail contained a brief overview of the study and link to complete the survey on-line. A second follow-up e-mail was sent 1 week later containing the same information.

Results were uploaded to an on-line spreadsheet. Incomplete surveys (n = 434), which contained some blank fields, were included in the final analysis. In addition to multiple-choice questions, surgeons were asked to provide reasons for not performing WALANT. These free-text responses were analyzed and categorized based on general themes.

Descriptive statistics were used to define baseline demographics and characteristics for participating surgeons. For survey questions regarding case volume and years in practice, Kruskal-Wallis nonparametric rank test was employed to compare the groups' WALANT use. For cases in which non-ranked answer choice categories were used, chi-square test was chosen to compare the distributions of answers between groups.

Results

Of the 3,826 surveys distributed to active ASSH members, 869 responded (23%). Table 1 includes baseline demographics of all

surgeons who responded to the survey. Eighty percent of respondents were from the United States. Table 2 includes additional information about WALANT use and experience with the technique. A total of 79% of respondents had performed at least one WALANT procedure; 62% currently incorporated WALANT into their practice. Hospital-owned outpatient surgery centers were the most common location for WALANT procedures (31%).

Table 3 outlines the percentage of cases performed using WALANT, categorized by decile. Trigger digit release (TDR) was the most frequently performed procedure; over half of responding surgeons reported that they used WALANT for TDR 90% of the time (Fig. 1).

Table 4 categorizes respondents into 3 groups: current WALANT users, former WALANT users, and those who had never used WALANT. Canadian surgeons were more likely to be WALANT users compared with those in the United States and international surgeons ($P = .003$). In addition, surgeons with fewer years in practice were more likely to be current WALANT users compared with those who had been in practice greater than 20 years ($P \leq .001$). Higher-volume surgeons were more likely to use WALANT ($P = .007$), as were surgeons who had used WALANT during residency or fellowship training ($P \leq .001$). There was no statistically significant association between either practice or income structure and current WALANT use.

For CTR, 6% of the 480 respondents reported that either they or their institution had a financial gain associated with performing WALANT procedures. However, surgeons who reported financial gains were not more likely to perform WALANT CTR compared with those who reported no gain ($P = .11$). For TDR, 9% of the 480 respondents reported that either they or their institution had a financial gain associated with performing WALANT TDR. Surgeons reporting financial gain were less likely to perform WALANT TDRs compared with those who reported no financial gain ($P = .01$).

Table 5 illustrates potential barriers to performing WALANT cases. A total of 41% of respondents reported that greater than 90% of patients chose a WALANT procedure when it was offered as an option. For CTR, 13% did not offer patients WALANT, whereas 43% offered WALANT to all patients. Moreover, 51% of surgeons reported that an anesthesia staff member was required to be present for WALANT cases at their institution. Table 6 provides categorized responses for reasons why surgeons elected not to use WALANT. Sixteen percent reported that they preferred a tourniquet or had concerns regarding visualization with WALANT. Only 2% of respondents had concerns regarding epinephrine use in the hand.

Discussion

Currently, 62% of respondents (which included 23% of active ASSH members) perform WALANT procedures. Our results suggest that current WALANT users tend to be younger, higher-volume, North American surgeons. The most frequently performed WALANT procedures are TDR, followed by CTR, de Quervain release, and extensor tendon repair. A 2014 survey study of ASSH members by Munns and Awan⁷ reported that 8% of surgeons were using WALANT for CTR. We report that 16% of ASSH member respondents are performing 100% of CTRs with WALANT and 43% are offering WALANT for CTRs. These data indicate that WALANT use for CTR is increasing for ASSH members.

Although WALANT use is increasing for CTR, widespread adoption of WALANT for surgeries of longer duration and complexity, including flexor tendon repairs, appears to be slower. In a 2016 ASSH survey study of zone II flexor tendon repairs conducted by Gibson et al,⁸ the authors noted that only 20% of respondents had ever performed this procedure using WALANT; 11% employed it for all flexor tendon

Table 2
WALANT Characteristics for Surgeons

Surgeon Characteristics	n (%)
Was WALANT part of residency/fellowship training? (n [%])	
Yes	151 (17)
No	684 (79)
Did not answer	34 (4)
Ever performed WALANT, n (%)	
Yes	689 (79)
No	173 (20)
Did not answer	7 (1)
Currently performing WALANT (of the 689 who ever did), n (%)	
Yes	538 (62)
No	88 (10)
Did not answer	63 (7)
Years performing WALANT (of those 538 currently performing it), n (%)	
≤2	144 (27)
3–5	195 (36)
>5	198 (37)
Did not answer	1 (<1)
Where is WALANT being performed, n (%) (multiple answers allowed/surgeon)	
Outpatient clinic–procedure room	211 (24)
Outpatient surgery center–physician owned	221 (25)
Outpatient surgery center–hospital affiliated	270 (31)
Inpatient hospital	141 (16)

Table 3
Surgeons Who Responded That Various Percentages of Procedures Were Performed Using WALANT, by Procedure Type

Procedure	Respondents, n (%)	Median Response (%)
Trigger digit release	535 (62)	90
Carpal tunnel release	533 (61)	50
de Quervain release	534 (62)	50
Extensor tendon repair	531 (61)	50
Mass excision	525 (60)	40
Flexor tenolysis	520 (60)	20
Flexor tendon repair	530 (61)	10
Trapeziometacarpal arthroplasty	529 (61)	0
Distal radius fracture fixation	526 (61)	0
Hand fracture fixation	529 (61)	0
Dupuytren, single digit	527 (61)	0
Dupuytren, two to three digits	527 (61)	0
Flexor tendon reconstruction	523 (60)	0

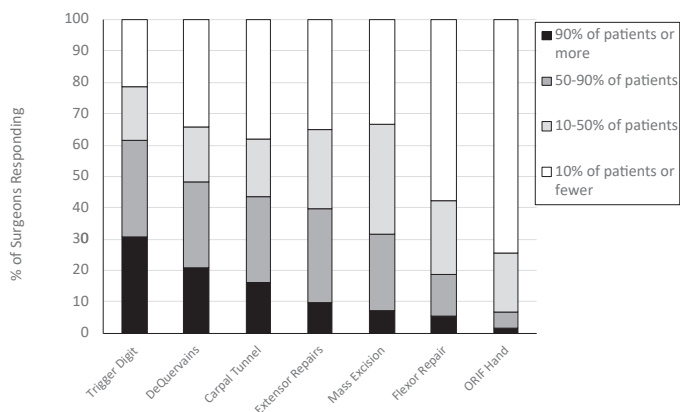


Figure 1. Bar graph for each procedure type illustrating what percentage of surgeons reported that the percentage of that procedure is done with WALANT. ORIF, open reduction internal fixation.

repairs. In comparison, we report that 52% of respondents performed 10% or more of flexor tendon repairs using WALANT, and only 5% performed all flexor tendons repairs with WALANT. Trapeziometacarpal arthroplasty, distal radius fracture fixation, and hand fracture fixation are infrequently performed using WALANT.

This survey emphasizes some substantial institutional barriers to WALANT implementation. There have been a number of investigations analyzing WALANT-associated cost-savings. Rhee et al⁵ reported 70% to 85% cost-savings for the Military Healthcare System with a procedure room–based WALANT program. Eliminating preoperative testing, anesthesia fees, and facility fees from operating rooms can contribute to lower costs associated with WALANT in a procedure room. Kazmers et al⁶ reported on total direct costs for open CTR performed with either sedation or local anesthesia only in operating rooms and procedure rooms. For open CTR performed with local anesthetic only, performing the procedure in an operating room compared with a procedure room resulted in a 6.3-fold increase in total direct costs.⁶

Respondents were asked whether there was any personal or institutional financial gain associated with WALANT use. Potentially, by eliminating operating room and anesthesia fees, surgeons or institutions could contract with insurance companies to increase professional fees for these office-based WALANT procedures. Less than 10% of respondents reported financial gain associated with performing WALANT procedures, and those surgeons were not more likely to use WALANT compared with other surgeons. More detailed survey analyses in the future may be required to better understand the financial implications of WALANT procedures. Respondents to our survey reported that only 24% of WALANT cases were being performed in a procedure room. Kazmers et al⁶ also reported an 11-fold increase in total direct costs for open CTR performed in an operating room with monitored anesthesia care sedation compared with procedure room CTR with local anesthesia, in part owing to anesthesia and hospital payments. We report that 45% of respondents stated that anesthesia staff was required to be present for WALANT cases at their facility. Anesthesia staffing requirements, particularly for WALANT cases performed in an operating room, appear to be a major current barrier to maximizing potential cost-savings associated with WALANT.

There were several limitations of this study. A lower response rate may be prone to selection bias. It is possible that ASSH members who did not perform WALANT may have been less likely to respond to the survey. With only 23% of members responding, there was some inherent response bias and the results may not be

Table 4
Comparison of Baseline Characteristics of Surgeons Who Reported They Were Currently Using, Formerly Used, or Never Used WALANT

Surgeon Characteristic	WALANT Use			P Value
	Currently (n = 538)	Formerly Used (n = 88)	Never Used (n = 173)	
Practice location, n (%)				.003
United States	442 (69)	70 (11)	129 (20)	
Canada	20 (87)	2 (9)	1 (4)	
International	73 (55)	16 (12)	43 (33)	
Practice type, n (%)				.11
Academic	92 (71)	17 (13)	20 (16)	
Private practice with academic appointment	90 (68)	15 (11)	28 (21)	
Hospital employed—academic	56 (60)	12 (13)	25 (27)	
Hospital employed—nonacademic	52 (75)	2 (3)	15 (22)	
Private—group	196 (68)	32 (11)	59 (21)	
Private—solo	26 (52)	5 (10)	19 (38)	
Government	19 (76)	3 (12)	3 (12)	
Other	7 (54)	2 (15)	4 (31)	
Years in practice, n (%)				<.001
≤5	134 (75)	19 (11)	25 (14)	
6–10	76 (75)	8 (8)	18 (18)	
11–20	140 (71)	16 (8)	40 (20)	
>20	188 (58)	45 (14)	90 (28)	
Income structure, n (%)				.31
Salary without performance incentive	87 (66)	16 (12)	29 (22)	
Salary with performance incentive	142 (71)	23 (11)	36 (18)	
Relative value unit based	103 (69)	16 (11)	30 (20)	
Percentage of billing or collection	161 (69)	22 (9)	52 (22)	
Other	44 (54)	11 (14)	26 (32)	
Cases/y, n (%)				.003
<200	58 (55)	19 (18)	28 (27)	
200–500	223 (65)	32 (9)	86 (25)	
>500	254 (73)	37 (11)	59 (17)	
Completion of hand surgery fellowship, n (%)				.69
Yes	522 (67)	86 (11)	166 (21)	
No	16 (64)	2 (8)	7 (28)	
Was WALANT part of residency/fellowship training?				<.001
Yes	122 (87)	12 (9)	6 (4)	
No	397 (63)	74 (12)	158 (25)	
Population in practice location, n (%)				.60
Urban	265 (66)	43 (11)	92 (23)	
Suburban	229 (67)	38 (11)	73 (21)	
Rural	44 (75)	7 (12)	8 (14)	

representative of all ASSH members. Our longer survey may have contributed to some respondents choosing not to answer all questions owing to question fatigue. However, a shorter survey would not have allowed for a detailed analysis of current WALANT trends. Surgeons self-reported reasons why patients chose

WALANT compared with other forms of anesthesia, and this was subject to recall bias. We chose to limit the scope of this investigation to WALANT procedures and did not solicit information regarding the use of local anesthesia with a tourniquet for shorter cases.

Table 5
Potential Barriers to Performing WALANT

Response to Question	Surgeons Responding, n (%)
Surgeons who reported percentage of patients offered WALANT who elect to undergo it (532 surgeons responded [61%]):	
0% of patients	4 (1)
1% to 50% of patients	91 (17)
50% to 90% patients	217 (41)
≥90% of patients	220 (41)
Surgeons offering WALANT to CTR, n (%) (533 surgeons responded [61%]):	
I offer WALANT to all.	231 (43)
I offer WALANT to patients who can tolerate being awake.	151 (28)
I only offer WALANT to patients who request no anesthesia.	80 (15)
I do not offer WALANT.	71 (13)
Surgeons offering WALANT to trigger digit release patients, n (%) (529 surgeons responded [61%]):	
I offer WALANT to all.	328 (62)
I offer WALANT to patients who can tolerate being awake.	120 (23)
I only offer WALANT to patients who request no anesthesia.	46 (9)
I do not offer WALANT.	35 (7)
Is anesthesia team member required to be present for WALANT case? (N [%]) [517 surgeons (59%) responding]	
Yes	233 (45)
No	265 (51)
Not sure	19 (4)

Table 6

Categorized Responses From ASSH Members for Not Performing WALANT Procedures (n = 266)*

Categorized Response	n (%)
Prefer tourniquet/visualization issues	37 (16)
Satisfied with current techniques	37 (16)
Unfamiliar with WALANT/lack of training	33 (14)
Efficiency	33 (14)
Patient preferences	28 (12)
Administrative barriers	28 (12)
Anesthesia concerns	21 (9)
Other/unclear reason	20 (9)
Outside scope of practice	13 (6)
Financial concerns	5 (2)
Use of epinephrine	4 (2)
Concerns regarding WALANT effectiveness	3 (1)
Sterility	1 (0)
Impact on training residents/fellows	1 (0)

* Data are presented as n (%).

The results of this survey illustrate current WALANT use among ASSH members and define the demographics of those using WALANT. Surgeon familiarity with WALANT and an acceptance of the use of epinephrine in the hand have increased. Lack of familiarity with the technique, concerns regarding

operating room efficiency, and patient preferences remain considerable barriers to more widespread adoption of WALANT procedures.

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