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ORIGINAL ARTICLE

Retrospective Evaluation of WALANT in Upper Extremity Procedures: Surgical Outcomes and Patient Satisfaction

Üst Ekstremite Prosedürlerinde WALANT'ın Retrospektif Değerlendirilmesi: Cerrahi Sonuçlar ve Hasta Memnuniyeti

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ABSTRACT

Aim: Wide-Awake Local Anesthesia No Tourniquet (WALANT) is gaining popularity as an alternative to traditional anesthesia methods in upper extremity surgical procedures. WALANT, which eliminates the need for a tourniquet, also has advantages such as reduced cost, increased patient satisfaction, and intraoperative functional evaluation. This study aims to evaluate the surgical outcomes, intraoperative pain, and patient satisfaction in a diverse range of upper extremity procedures performed using WALANT.
Methods: A retrospective review was conducted on 218 patients who underwent upper extremity surgery using the WALANT technique. Surgical procedures included trigger finger release (n=75), carpal tunnel release (n=65), tendon transfer (n=8), finger fracture fixation (n=34), metacarpal open reduction and internal fixation (ORIF) (n=7), scaphoid fracture fixation (n=2), and flexor tendon repair (n=27). The primary outcomes assessed were surgical time, intraoperative pain (Visual Analog Scale, VAS 0-10), postoperative complications, and patient satisfaction (5-point Likert scale).
Results: The mean intraoperative pain score was 1.6 ± 0.9, with minimal discomfort reported across all procedures. The average surgical time varied depending on the procedure, with trigger finger release being the shortest (17.4 ± 4.2 minutes) and tendon transfers the longest (52.6 ± 8.9 minutes). The overall postoperative complication rate was 5.0%, with transient stiffness (3.2%) and delayed wound healing (1.8%) being the most common. Infection occurred in 0.9% of cases, all managed successfully with oral antibiotics. No patients required conversion to general anesthesia. Patient satisfaction was high, with a mean Likert score of 4.7 ± 0.6, reflecting strong acceptance of the WALANT technique.
Conclusion: WALANT is a safe and effective alternative to conventional anesthesia for upper extremity surgeries, providing adequate intraoperative analgesia, reducing complications, and achieving high patient satisfaction. Its ability to facilitate intraoperative functional assessment is particularly advantageous in tendon and fracture surgeries. Given its benefits, WALANT should be considered a preferred technique for a wide range of upper limb procedures.

Keywords: Intraoperative pain, local anesthesia, patient satisfaction, surgical outcomes, WALANT

ÖZ

Amaç: Wide-Awake Local Anesthesia No Turnike (WALANT), üst ekstremite cerrahi prosedürlerinde geleneksel anestezi yöntemlerine bir alternatif olarak popülerlik kazanmaktadır. Turnike ihtiyacını ortadan kaldıran WALANT, aynı zamanda azaltılmış maliyet, artan hasta memnuniyeti ve intraoperatif fonksiyonel değerlendirme gibi avantajlara da sahiptir. Bu çalışma, WALANT kullanılarak gerçekleştirilen çeşitli üst ekstremite prosedürlerinde cerrahi sonuçları, intraoperatif ağrıyı ve hasta memnuniyetini değerlendirmeyi amaçlamaktadır.
Gereç ve Yöntemler: WALANT tekniği kullanılarak üst ekstremite cerrahisi uygulanan 218 hastanın retrospektif bir değerlendirmesi gerçekleştirildi. Yapılan cerrahi işlemler arasında tetik parmak gevşetilmesi (n=75), karpal tünel gevşetilmesi (n=65), tendon transferi (n=8), parmak kırığı tespiti (n=34), metakarpal açık redüksiyon ve internal fiksasyon (ORIF) (n=7), skafoid kırığı tespiti (n=2) ve fleksör tendon onarımı (n=27) yer almaktaydı. Değerlendirilen birincil sonuçlar arasında cerrahi süresi, intraoperatif ağrı düzeyi (Görsel Analog Skala, VAS 0-10), postoperatif komplikasyonlar ve hasta memnuniyeti (5 puanlık Likert ölçeği) bulunmaktadır.
Bulgular: Tüm işlemler genelinde minimal rahatsızlık bildirilen hastalarda, ortalama intraoperatif ağrı skoru 1,6 ± 0,9 olarak ölçüldü. Ortalama cerrahi süre yapılan işleme göre değişiklik göstermekte olup, en kısa süre tetik parmak cerrahisinde (17,4 ± 4,2 dakika) ve en uzun süre tendon transferlerinde (52,6 ± 8,9 dakika) kaydedildi. Genel postoperatif komplikasyon oranı %5,0 olarak saptandı; en sık görülen komplikasyonlar geçici sertlik (%3,2) ve gecikmiş yara iyileşmesi (%1,8) idi. Enfeksiyon oranı %0,9 olup, tüm vakalar oral antibiyotik tedavisi ile başarıyla yönetildi. Hiçbir hastada genel anesteziye geçiş ihtiyacı olmadı. Hasta memnuniyeti yüksek bulunmuş olup, ortalama Likert skoru 4,7 ± 0,6 idi ve bu durum WALANT tekniğinin güçlü bir şekilde kabul edildiğini göstermektedir.
Sonuçlar: WALANT, üst ekstremite cerrahilerinde konvansiyonel anesteziye güvenli ve etkili bir alternatif sunarak yeterli intraoperatif analjezi sağlamakta, komplikasyon oranlarını azaltmakta ve yüksek hasta memnuniyeti elde etmektedir. Özellikle tendon ve kırık cerrahilerinde intraoperatif fonksiyonel değerlendirmeye olanak sağlaması önemli bir avantajdır. Bu avantajları göz önünde bulundurulduğunda, WALANT tekniği üst ekstremite cerrahilerinin geniş bir yelpazesinde tercih edilen bir yöntem olarak değerlendirilmelidir.

Anahtar Kelimeler: Cerrahi sonuçlar, hasta memnuniyeti, intraoperatif ağrı, lokal anestezi, WALANT

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INTRODUCTION

Wide-Awake Local Anesthesia No Tourniquet (WALANT) has emerged as an effective alternative to traditional anesthesia methods in upper limb surgery (1,2). In this technique, lidocaine with epinephrine is applied to provide local anesthesia and hemostasis, and there is no need to use a tourniquet. First described by Lalonde, WALANT has demonstrated several advantages, such as avoiding the risks of systemic anesthesia, improving patient cooperation during surgery, and reducing overall healthcare costs (3,4).

Conventional upper extremity procedures often require general anesthesia or regional block; both bring inherent risks, long recovery times and the need for specialized anesthesia teams (5). WALANT, on the other hand, allows surgeries to be performed in an outpatient setting, reducing the burden on hospital resources and improving patient convenience (6). Additionally, it allows the surgeon to evaluate intraoperative function, which is particularly advantageous in tendon repairs and fracture fixation procedures (7).

Despite these advantages, comprehensive retrospective analyses are still needed to evaluate the outcomes of WALANT across various upper extremity procedures. This study aims to assess the efficacy of WALANT by examining postoperative outcomes, patient satisfaction, and intraoperative pain levels in a diverse range of upper extremity surgeries.

MATERIALS AND METHODS

Patients were evaluated after approval was obtained Ethics Committee (Decision No: 2025/249- Selcuk University Local Ethics Committee -22.04.2025). The study was conducted under the principles of the Declaration of Helsinki.

Study Design

This was a retrospective cohort study conducted at Selcuk University Faculty of Medicine between 2021 January and 2024 January. The study was approved by the institutional review board (IRB No: 2025/249). Medical records of all patients who underwent upper extremity procedures using WALANT during this period were reviewed.

Patient Selection

Patients included in this study met specific eligibility criteria to ensure accurate and meaningful analysis of surgical outcomes. The inclusion criteria were as follows: patients who underwent surgery using the WALANT technique, were 18 years of age or older, and had complete medical records documenting both intraoperative and postoperative outcomes.

Patients were excluded from the study if they had contraindications to local anesthesia, such as documented allergies to lidocaine or epinephrine, or severe vascular disease. Additionally, patients with incomplete follow-up data, which could compromise the reliability of the outcome assessments, were also excluded.

A total of 218 patients met the inclusion criteria and were included in the final analysis. The distribution of surgical procedures among these patients was as follows: 75 trigger finger releases, 65 carpal tunnel releases, 8 tendon transfers, 34 finger fracture fixations, 7 metacarpal open reduction and internal fixation (ORIF) s, 2 scaphoid fracture fixations, 27 flexor tendon repairs. Both scaphoid fixations

were performed using open reduction techniques. All tendon transfers were similar in nature, typically performed for radial nerve palsy using standard transfer methods. The tendon repairs had a similar distribution across zones II to V.

WALANT Technique

All procedures were performed using a standardized WALANT protocol. The anesthetic solution consisted of 1% lidocaine with 1:100,000 epinephrine, administered at the surgical site 5-15 minutes before incision to ensure adequate anesthesia and hemostasis. The injection volume varied based on the procedure and the anatomical region. The mean volume of anesthetic solution used was approximately 10–25 mL depending on the procedure. No tourniquet was used during any procedure. Patients remained awake and were encouraged to provide intraoperative feedback when necessary. Most procedures were performed by a senior hand surgeon. Surgeons performing the procedures had similar experience levels.

Outcome Measures

The primary outcomes assessed in this study included:

Surgical time (minutes): Defined as the duration from skin incision to wound closure.

Intraoperative pain (VAS Score 0-10): Patients were asked to rate their pain immediately postoperatively using a visual analog scale (VAS), where 0 indicated no pain and 10 indicated the worst pain imaginable.

Postoperative complications: Defined as any adverse events occurring within 6 weeks postoperatively, including infection, wound dehiscence, tendon adhesions, or need for revision surgery.

Patient satisfaction: Assessed using a Likert scale (1-5), with higher scores indicating greater satisfaction.

Statistical Analysis

Descriptive statistics were used to summarize patient demographics and procedural details. Continuous variables were compared using Student's t-test or Mann-Whitney U test, while categorical variables were analyzed using chi-square or Fisher's exact test. A p-value <0.05 was considered statistically significant. Comparisons among procedure groups for VAS and surgical time were analyzed using ANOVA or Kruskal-Wallis tests depending on data distribution.

RESULTS

Patient Demographics and Surgical Characteristics

A total of 218 patients were included in the study, with a mean age of 51.2 ± 14.3 years (range: 18-82). There were 124 (56.9%) female and 94 (43.1%) male patients. The distribution of surgical procedures is detailed in Table 1.

Table 1: Distribution of Surgical Procedures

Procedure	Number of Cases	Percentage (%)
Trigger Finger Release	75	34.4%
Carpal Tunnel Release	65	29.8%
Tendon Transfer	8	3.7%
Finger Fracture Fixation	34	15.6%
Metacarpal ORIF	7	3.2%
Scaphoid Fracture Fixation	2	0.9%
Flexor Tendon Repair	27	12.4%
Total	218	100%

Surgical Time and Intraoperative Pain

The mean surgical time varied depending on the procedure, with trigger finger release being the shortest (average 17.4 ± 4.2 minutes) and tendon transfers taking the longest (average 52.6 ± 8.9 minutes). Intraoperative pain scores were generally low, with a mean VAS score of 1.6 ± 0.9 (Table 2). No additional local anesthetic administration was required during any procedure.

Table 2: Surgical Time and Intraoperative Pain Scores

Procedure	Mean Surgical Time (min)	Mean VAS Score
Trigger Finger Release	17.4 ± 4.2	1.2 ± 0.7
Carpal Tunnel Release	21.2 ± 5.1	1.4 ± 0.8
Tendon Transfer	52.6 ± 8.9	2.3 ± 1.1
Finger Fracture Fixation	35.8 ± 6.7	1.8 ± 0.9
Metacarpal ORIF	42.5 ± 7.3	2.0 ± 1.0
Scaphoid Fracture Fixation	38.6 ± 6.1	1.9 ± 0.8
Flexor Tendon Repair	45.2 ± 7.8	2.1 ± 1.0

Postoperative Complications and Patient Satisfaction

The overall complication rate was low, withminor issues such as transient stiffness (3.2%) and delayed wound healing (1.8%). Infection was reported in only 0.9% of cases (2 patients), all of which resolved with oral antibiotics. Complications were distributed across procedures and were not concentrated in a specific surgery type. The complications encountered were more likely due to the nature of surgery rather than the WALANT technique itself. No patients required conversion to general anesthesia. The mean patient satisfaction score, assessed using a 5-point Likert scale (1 = very dissatisfied, 5 = very satisfied), was 4.7 ± 0.6, indicating a high level of acceptance and comfort with WALANT. Postoperative Complications and Patient Satisfaction are shown in Table 3.

Table 3: Postoperative Complications and Patient Satisfaction

Outcome	Percentage (%)
Transient Stiffness	3.2%
Delayed Wound Healing	1.8%
Infection	0.9%
Patient Satisfaction (Mean Score)	4.7 ± 0.6

DISCUSSION

The key findings of this study demonstrate that WALANT is a safe and effective alternative to traditional anesthesia methods for upper extremity procedures. Our results show that WALANT provides excellent intraoperative analgesia, facilitates intraoperative function assessment, and is associated with high patient satisfaction and low complication rates.

Some of the most important advantages of WALANT are that it eliminates the need for general or regional anesthesia and avoids the risks associated with sedation and nerve blocks, such as respiratory depression, nausea and long recovery times (8,9). In our study, the fact that none of the patients required conversion to general anesthesia emphasizes and proves the effectiveness of this technique in providing adequate analgesia. Additionally, the absence of a tourniquet in WALANT procedures eliminates

discomfort, a common complaint among patients undergoing upper extremity surgeries with traditional techniques (10,11).

WALANT provides an advantage, especially in tendon surgeries, as it offers the opportunity for intraoperative functional evaluation. Unlike patients being unconscious or experiencing complete limb paralysis in general or regional anesthesia, WALANT allows for real-time assessment of tendon tension, shear, and overall function. This capability is of great importance to optimize postoperative outcomes, especially in procedures where precise tensioning is required, such as flexor tendon repair and tendon transfer (12,13). Our study revealed that in patients undergoing tendon repair (n=27) and tendon transfer (n=8), despite being awake during the procedure, the mean intraoperative pain score was 1.8, indicating minimal discomfort. Furthermore, active assessment of tendon motion intraoperatively may contribute to the reduction of postoperative adhesions and increased functional recovery, as shown in previous studies (14,15).

Another key advantage of WALANT is its role in fixation surgeries, especially for finger and metacarpal fractures. The ability to evaluate reduction and fixation stability during surgery is an important advantage not available in traditional anesthesia methods. Our study included 34 finger fracture fixations and 7 metacarpal ORIF procedures, with an overall complication rate of 5.0%. By asking the patient to actively move their fingers, it is possible to assess rotational alignment during surgery, allowing immediate correction if necessary. Studies have shown that evaluation during surgery using WALANT reduces the risk of rotational deformity and malunion and provides better functional outcomes compared to surgeries performed under general anesthesia (16,17).

Our results align with findings from other studies evaluating WALANT in upper extremity procedures. Lalonde et al. reported that WALANT significantly reduces costs by eliminating preoperative laboratory tests, intraoperative anesthetic agents, and postoperative monitoring, making it an economically viable option (18). Similarly, a study by Maliha et al. demonstrated that WALANT reduces operating room turnover time, allowing for increased efficiency in high-volume surgical settings (19).

The high patient satisfaction scores in our study (mean Likert score: 4.7 ± 0.6) further reinforce the acceptability of WALANT among patients. Many patients welcomed the ability to avoid general anesthesia and return to daily activities sooner. Concerns regarding intraoperative awareness and anxiety were minimal, as adequate preoperative counseling and intraoperative reassurance were provided. On the other hand, some studies in the literature have stated that WALANT is contraindicated in patients with psychological problems and high levels of anxiety (20). This situation should also be taken into consideration.

Despite the advantages observed, this study has some limitations. Due to being a retrospective study, limitations exist, such as potential selection bias and accuracy of medical record documentation. Furthermore, although our sample size is significant, future prospective randomized trials directly comparing WALANT with general and regional anesthesia techniques will provide more robust evidence of its efficacy and safety. Further studies

should also examine long-term functional outcomes in patients undergoing WALANT procedures to evaluate their impact on rehabilitation and overall hand function.

Moreover, while this study focuses solely on WALANT procedures, a comparative analysis with other anesthesia modalities—such as regional blocks or general anesthesia—could further contextualize the benefits and limitations of WALANT. Parameters such as cost-effectiveness, complication rates, operative efficiency, and postoperative recovery times would provide valuable insights. Future prospective, controlled studies comparing WALANT with traditional anesthesia methods could offer more robust evidence for its broader implementation in upper extremity surgery.

CONCLUSION

In conclusion, WALANT is a highly effective and well-tolerated technique for upper extremity procedures, offering significant advantages in terms of intraoperative functional assessment, patient safety and cost-effectiveness. Its application in tendon repairs and fracture fixations is particularly beneficial, as it allows for real-time adjustments that optimize surgical outcomes. Given its low complication rates and high patient satisfaction, WALANT should be considered a preferred anesthesia method for a wide range of upper extremity surgeries. Further prospective studies will help improve implementation and develop standard protocols to enable wider integration into clinical practice.

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