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The Ins and Outs of Wide-Awake Hand Surgery

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Article – Review**The Ins and Outs of Wide-Awake Hand Surgery**

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Introduction

As the name might imply, “wide awake local anesthesia no tourniquet” (WALANT) is a surgical method to perform hand surgery using only a local anesthetic without the use of a tourniquet or any sedation and general anesthetics. The WALANT technique takes advantage of the vasoconstrictive effects of epinephrine combined with the local anesthetic effects of lidocaine to create a surgical field that does not require a tourniquet or general anesthesia.¹ The main contributor is epinephrine, which decreases bleeding in the surgical field while also lengthening lidocaine’s absorption and effect.² When first introduced to the surgical world, the WALANT technique was met with some resistance, mostly due to the wide-based belief that high usage of epinephrine can cause digital ischemia; however, several large-scale studies have concluded that epinephrine can be used safely in the hand.³ The benefits of WALANT hand surgery are many, including safety, cost, and convenience. Subsequently, WALANT has enjoyed a steady uptick in utilization nationally and internationally, yielding a need to explore this topic further.²

Indications

Originally, the WALANT technique was performed primarily for smaller soft tissue surgeries like carpal tunnel or trigger finger releases; however, current literature has acknowledged that WALANT could be used for a wide array of osseous procedures as well, such as open reduction internal fixation of distal radius fractures and finger arthroplasty.⁴ Additionally, WALANT hand surgery can be applied for more complex soft tissue procedures, such as tendon transfers and in the management of deep lacerations of the forearm – aka, a “spaghetti wrist.”⁴

Benefits*Economic*

WALANT surgery can provide several economic benefits when compared to its general anesthesia counterpart. These benefits can be broken down into pre-, intra-, and post-operative. Because preoperative medical testing is not typically needed for WALANT

surgery, laboratory tests, electrocardiography, chest radiographs, and office visits may be unnecessary, which would save both patients and providers time and money.⁵ A cost analysis of carpal tunnel release surgery performed using WALANT, as compared to under-sedation techniques, showed an estimated \$235 of pre-operative savings for patients.⁶

Intra-operatively, a 2019 study of the economic impact of WALANT for 150 carpal tunnel and trigger finger surgeries completed in an ambulatory setting, found an average saving of over about \$109 per patient.⁷ Furthermore, in another trigger release study, WALANT was found to lead to shorter mean operating room turnover times as compared to regional anesthesia and tourniquet usage, in addition to yielding lower costs of around \$993 in WALANT compared to \$3,304 with regional anesthesia.⁸ Additionally, a United States hand center was found to have saved \$13,000 from using “lean and green” surgical packs. Such packs were used in efforts to decrease hand surgery waste. Using these packs in conjunction with the WALANT surgery, when performing carpal tunnel release procedures, has shown to be cost-effective and waste conscious.⁹

Postoperatively, patients have the benefits of driving themselves home and assuming normal functionality immediately while avoiding anesthesia recovery time that can result in a period of drowsiness, lightheadedness, nausea, vomiting, urinary retention, and constipation – all common minor complications of general anesthetics. These are just a few of the many studies that point to the cost saving quality of the WALANT procedure.

Operative

Besides the cost saving of the WALANT technique, there are also operative benefits to this anesthesia method. The patient being awake during hand surgery allows the patient to better understand the surgical intervention, facilitates intra-operative education, and appreciate the surgical process. Moreover, certain surgeries such as tendon repair, release, or transfers can have improved outcomes when compared to regional anesthesia techniques.¹⁰ Specifically, it allows the surgeon to assess the quality of the repair, release, or transfer intra-operatively while also demonstrating the outcome directly in real time to the patient. This helps to improve surgical outcomes while also increasing patient satisfaction and encouraging patients to be more active during their post-operative rehabilitation, decreasing the risk of complications such as tendon rupture or adhesions.²

Additionally, WALANT may be the better approach for postoperative pain management as Ayhan and

Akaslan found when comparing carpal tunnel releases using WALANT to traditional anesthetic techniques with a tourniquet, they found that the WALANT group reported pain scores of 0.73 versus a reported 1.88 for the traditional group.¹¹ Furthermore, a study of patients with bilateral carpal tunnel syndrome, with one side treated with WALANT and the other with regional anesthesia and tourniquet, concluded there was no significant difference in median pain scores between the two sides; however, 91.6% of the patient group declared the WALANT procedure was easier than expected, and 83.3% of patients preferred WALANT.¹¹

Patient Satisfaction

New surgical techniques can be daunting to both surgeons and patients alike. The idea of being awake for surgery can be a source of anxiety for patients, especially when that surgery was previously performed under general anesthesia. This possibility of increased patient anxiety can be a source of reluctance for surgeons to adopt this method.⁴ Yet, Davison et al. showed patient preoperative anxiety levels were significantly lower among WALANT patients than among sedated patients with tourniquets.^{4,12} Additionally, patients treated with WALANT have better perceived comfort scores, as compared to those who were treated with sedation.¹³ Furthermore, Abd Hamid et al. compared 33 patients who underwent WALANT and 32 patients who underwent general anesthesia for open reduction and internal fixation of distal radius fractures, and between these groups, no significant difference in pre-, intra-, and postoperative comfort levels was found.¹⁴ Ensuring patient comfort levels is important after surgeries with the WALANT technique, which is essential for its potential widespread adoption.

Not only does WALANT appear to not pose any significant increase in patient-reported anxiety levels, but it can also allow patients to be participants in their care. Patients are aware of certain surgical steps, which can help them have a better sense of autonomy when it comes to their medical proceedings.²

Waste Reduction

Many studies have also shown the WALANT procedure allows for operating room waste reduction. Thiel et al. showed the WALANT technique coupled with a minimal custom pack of disposable surgical supplies, produced 0.3 kg less waste and cost 55% less in supplies per case compared to sedation and regional anesthesia using a “standard pack” of supplies.¹⁵ Van Denmark et al. found utilizing both WALANT and “minor field sterility” allowed the surgical team to make dramatic changes to their utilization of surgical supplies and led to them creating “green packs” which

saved \$10.64 per case and allowed for a decrease of 5.06 pounds of waste per case.⁹ The waste reduction and cost saving afforded by the WALANT technique means a more efficient allocation of surgical resources when compared to traditional methods, further demonstrating the extravagant draping procedures traditionally seen in hospitals and surgery centers may be unnecessary for certain upper extremity procedures.

Mitigation of Impacts of Social Determinants of Health

In addition to the many other benefits that the WALANT procedure can provide, it is important to acknowledge how WALANT Hand Surgery can affect the social determinants of health many hand surgery candidates face. For many, missing time from work is not always feasible and can heavily impact their lives. Traditionally, patients would have to take time off from work to complete preoperative testing and other activities associated with preparing for surgery.⁵ Since many WALANT procedures do not require the need for preoperative testing, these same patients may not need to miss work when preparing for these procedures.⁵ Postoperatively, patients can drive themselves or use public transportation to return home after WALANT surgery because they are spared the side effects that residual anesthesia may have. This could translate to travel cost savings for the patient and increase their autonomy, as they do not need to rely on others to care for them postoperatively.⁵

In addition to the financial benefits WALANT can provide to patients, it also can be indicated for those who have inadequate access to medical care. Since WALANT does not require an actual operating room or anesthesia team, ambulatory surgery can be performed in more remote or resource-poor places.² Greater access to all types of care should be a goal of all health institutions and WALANT is proving to be a part of the goal to increase healthcare accessibility for all.

Conclusion

Excessive costs, operating room waste, low patient satisfaction, and poor access to quality care are all issues that continue to plague medicine. In the world of orthopedic hand surgery, the WALANT technique continues to prove its utility in combating some of these issues. With its ability to reduce surgical material usage, require fewer surgical staff and operating rooms, increase patient participation in their procedures and recovery, and promote better access to care, WALANT is a surgical technique that should continue to be studied and advanced. The next step will be to increase both surgeon and patient education concerning this surgical technique to help

dismiss any myths still propagating. Patients need to feel empowered when choosing WALANT hand surgery, and surgeons need to feel confident in their abilities to perform while improving patient satisfaction and outcomes.

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