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Wide-Awake Anesthesia in the In-Office Procedure Room: Lessons Learned

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Abstract

Background: Wide-awake local anesthesia and no tourniquet (WALANT) has become more popular in hand surgery. Without a tourniquet, there is no need for preoperative testing or sedation. The use of lidocaine with epinephrine has allowed a larger variety of cases to be done safely in an outpatient setting instead of the hospital. "Minor field sterility," which uses fewer drapes and tools to accomplish the same procedures, is a concept that is also gaining recognition. **Methods:** Investigation of hand surgeons performing a majority of cases using WALANT and minor field sterility was the beginning of seeing its potential at our institution. Administration was concerned about patient safety, cost-effectiveness, and patient satisfaction of the proposed changes. Analysis of our institution to determine location of these procedures was also imperative to using WALANT. **Results:** An in-office procedure room was built to allow for WALANT and minor field sterility. The requirements and logistics of developing an in-office procedure room for wide-awake surgery are reviewed in this article. **Conclusions:** The concurrent use of WALANT and minor field sterility has created a hand surgery practice that is cost-effective for the patient and the facility and resulted in excellent patient outcomes and satisfaction.

Keywords: WALANT, wide-awake anesthesia, in-office procedure room, ambulatory surgery, epinephrine, tourniquet

Wide-awake local anesthesia and no tourniquet (WALANT or wide-awake anesthesia) has allowed hand surgery to move from the main hospital operating room (OR) to a minor procedure room. With the increasing popularity of wide-awake anesthesia (using lidocaine with epinephrine as the only medication), many cases can now be done without a tourniquet and sedation.

Cases done in a minor procedure room have shown significant cost savings while maintaining patient safety and satisfaction.

We discuss our experience in starting an in-office procedure room. The rationale and implementation of the room will be discussed along with possible pitfalls.

Introduction

I am a hand surgeon and live in Sioux Falls, South Dakota. I am employed by a hospital system. My group has 12 orthopedic surgeons (3 hand surgeons), 2 podiatrists, and 1 sports medicine family physician. Our hospital is a level II trauma center and serves a population of approximately 400 000. Our referral area includes parts of North and South Dakota, Minnesota, Iowa, and Nebraska. My institution does not have an Orthopedic Residency program.

In the past, local anesthesia has always meant local with some type of sedation. That usually seemed to work for both the patient and surgeon. In spite of that, tourniquet pain can be an issue and often requires some type of monitored sedation. Unfortunately, the sedation does come with a cost: In our hospital, 30 minutes of Certified Registered Nurse Anesthetist (CRNA) supervision costs $230 and 30 minutes in the Post-Anesthesia Care Unit (PACU) is $290 for a total of $520.

In the summer of 2013, there was a lot of discussion on the American Society for Surgery of the Hand Listserv regarding wide-awake anesthesia. I was intrigued by the concept and contacted Dr Don Lalonde in Saint John, New Brunswick. In August 2013, we visited Dr LaLonde and spent several days observing patient care in both the hospital and office. We also had the chance to observe wide-awake surgery in Dr LaLonde's in-office procedure room. This was the first time that I had been exposed to the concept of

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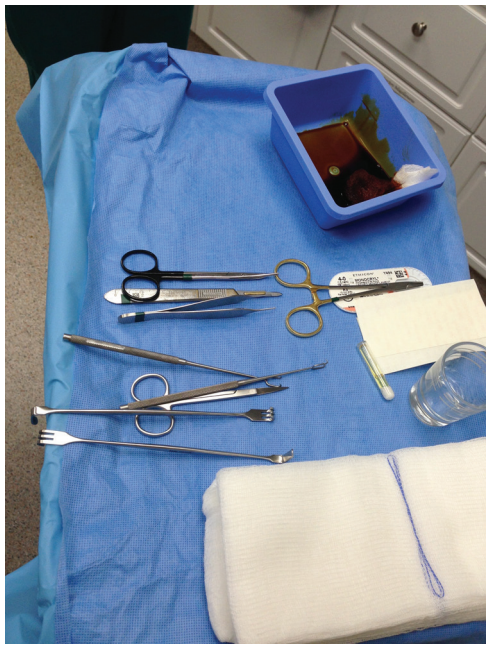

Figure 1. In-office procedure back table.

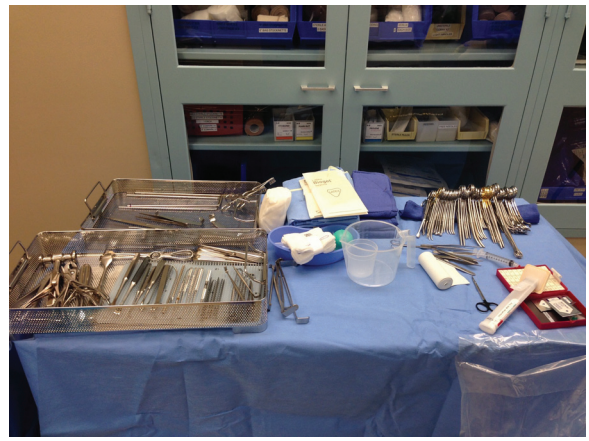

Figure 2. Standard carpal tunnel release procedure back table.

"minor field sterility."[15] When comparing his in-office procedure back table for a carpal tunnel release (CTR; Figure 1) with my standard CTR procedure back table (Figure 2), I felt that we had room for improvement.

Following our visit, we returned home and began doing wide-awake anesthesia in the hospital. We also began planning on adding an in-office procedure room. That process took 15 months to complete.

Why Do an In-Office Procedure Room?

There are several reasons for moving surgical cases to an in-office procedure room: off-loading the main OR, significant cost savings, and convenience for both the patient and physician. In our case, we had added several new partners over time and had difficulty scheduling cases. Creating an in-office procedure room increased access for cases. The most important consideration was that we could remodel a room in our clinic space for $15 000 while a new OR in our hospital would cost $5 million. When we began this process, we had several questions that needed to be answered for both the physicians and the administration: Would this be safe for patients, would an in-office procedure room be cost-effective, and would patients be happy with their experience?

Patient Safety

Wide-awake anesthesia has made this transition possible. Using only lidocaine with epinephrine, cases once needing a tourniquet and anesthesia standby could now be done in an office-based procedure room with minimal staffing.

For years, we have been warned about the danger of using epinephrine in the hand. This was based on the experience with digit necrosis and the use of procaine prior to 1948. Recent investigations have shown the safety of using epinephrine in the hand and fingers.[4,6-8,10,12,13,18,23]

Our administration was concerned about the safety of moving cases from the hospital OR to an office procedure room. We used the article by LeBlanc et al to support our case.

The concept of "minor field sterility" has been well documented.[15] In the 2011 article, Leblanc et al described the process: a sterile prep, single drape, minor instrument tray, sterile gloves/mask, no gown, no antibiotics, and only local anesthesia (1% lidocaine with epinephrine). In a multicenter study of 1504 CTRs done in office procedure rooms, there were 0.4% superficial infections and no deep infections.[15]

Cost-Effectiveness

Multiple studies have shown the cost-effectiveness of minor surgical procedures done in an ambulatory setting instead of the hospital.[3,9,11,14,16,17,19,24]

A Canadian study showed the cost savings for CTR done in the ambulatory setting. CTR done in the hospital was almost 4 times as expensive and less than half as efficient when compared with the outpatient setting.[16]

A study from the United Kingdom showed similar results. In an audit of wide-awake surgery patients, a savings of £750 000 ($3.2 million) was seen in the first 1000 patients.[1]

In a US academic medical center, Chatterjee et al compared the cost of doing CTR in the hospital OR versus a clinic setting. They found that an open CTR was 4 times more expensive and an endoscopic CTR was 2 times as

expensive when done in the hospital versus the clinic setting. In addition, there was the profit per case of $1186 in the clinic and a net loss of $650 when done in the hospital. When factoring the "opportunity cost" of lost time and delays in the hospital, the true costs were $6169 for the hospital cases and $670 for the clinic cases. This resulted in a true profit of $1186 for cases done in the clinic and a loss of $3349 per case for hospital-based cases.[3]

The use of wide-awake anesthesia has also been shown to improve practice efficiency. Caggiano et al have shown that nonsurgical times (room turnover times) are lower when wide-awake anesthesia is used when compared with local/monitored anesthesia care (MAC) and general anesthesia.[2]

Nguyen et al reviewed the coding of 160 000 CTRs done in 2006. Procedures done in the hospital outpatient department had higher charges when compared with freestanding surgery centers. The authors felt that there might be potential savings of 30% if carpal tunnel surgery was done in ambulatory surgery centers.[19]

In a recent study, Rhee et al reviewed 100 consecutive hand procedures performed at a military medical center. All cases were done in a clinic-based procedure room. The cost savings for 3 common procedures (CTR, De Quervain release, and trigger finger releases) done in the clinic versus hospital totaled $393 099.53.[20]

Patient Satisfaction

Multiple studies have shown high patient satisfaction with wide-awake anesthesia.[1,5,20,22] In a multicenter study comparing wide-awake anesthesia with intravenous sedation, 93% of both patient groups were satisfied with their anesthesia experience. In that study, the wide-awake group spent less time at the facility, had fewer labs, had less anxiety, and used fewer narcotics than the sedation group.[5] In the surgical audit study by Bismil et al from the United Kingdom, the patient satisfaction was rated 99%.[1] In another study from the United Kingdom, 100 consecutive patients had wide-awake anesthesia for their procedure. Patient satisfaction was high with 91% of the patients rating their operative experience less painful or comparable with a dental visit, 86% preferring wide-awake anesthesia, and 90% would recommend to a friend or family member.[22] In the study by Rhee et al, 71% of the patients rated the perioperative pain of wide-awake anesthesia less than a dental procedure.[20]

In-Office Procedure Room Development

The planning for our office procedure room started in the fall of 2013. As we discovered, development of an office procedure room is not an easy or fast process. Small and Bert have published an excellent primer on the requirements for an office-based ambulatory surgery facility. In that article, they stressed the importance of the legal requirements including state and Medicare certification and accreditation. In addition, they discussed the role of approved construction designs and the management strategy.[21]

The most difficult part of this project was the room certification process.

Certification for minor procedure rooms (cases using pure local anesthesia with no sedation) can be obtained through the American Association for Accreditation of Ambulatory Surgery Facilities in the United States and the Canadian Association for Accreditation of Ambulatory Surgical Facilities.[13] Certification guidelines can be found on both the Center for Medicare and Medicaid Services (www.cms.gov) and Ambulatory Surgery Center Association (www.ascassociation.org) websites.

The biggest surprise was the importance of ventilation and the role it plays in the certification process. Facility ventilation is measured by the minimal total air changes per hour (ACH) and is regulated by each individual state.

South Dakota follows the ventilation requirements of the 2010 Guidelines for Design and Construction of Healthcare Facilities Guidelines which were developed by the Facility Guidelines Institute (www.Fgiguidelines.org). The guidelines were created by the recommendations of 3 societies: the American Society of Heating, Refrigerating and Air-Conditioning Engineers, the American Society for Healthcare Engineering of the American Hospital Association, and the American National Standards Institute.

A classification system based on the type of anesthesia has been developed by the American Society for Heating, Refrigerating and Air-Conditioning Engineers 2011 (ASHARE).

Class A: Local anesthesia
Class B: Minor/major surgery with sedation
Class C: General/regional anesthesia

A Class A case in South Dakota requires a minimum of 15 ACH and a Class C cases requires 20 ACH.

It is important to know what ventilation requirements are needed for your procedure room when an older building is remodeled. You might not have the proper ventilation for your state requirements.

If you are interested in doing a procedure room in your office (either new construction or a remodel of your current office space), I would strongly recommend consulting an engineer or construction company with experience in health care facilities construction.

Lessons Learned

Our first problem was the procedure room light. We tried to save some money and used an old light from a prior

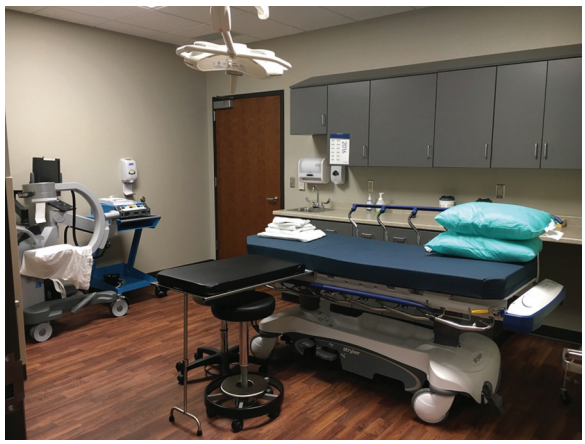

Figure 3. In-office procedure room.

procedure room. This light was not bright enough for doing cases. Even with a headlamp, I did not feel comfortable doing a CTR or Dupuytren case in the office. When buying a light, the unit of measurement is the lux (or meter-candle). The higher the number, the brighter the light. Do not try to save money when buying a light. Purchase the brightest light you can afford.

The second problem was the size of our procedure room (112 sq ft). Once we added equipment and our staff, it became very crowded. We were fortunate to learn from our first procedure room and made changes when we planned our second procedure room. Our new in-office procedure room (Figure 3) is almost double in size (215 sq ft) and has been a nice change. We also have room for a mini-c arm which will allow us to do a wider variety of cases. My only regret is that we still could use more room: If given the chance to do another procedure room, I would ask for a minimum of 250 sq ft.

Does This Work?

In the first 18 months, we have operated on 111 patients using wide-awake anesthesia in the procedure room. We have had no deep infections and 5 superficial wound infections. All infections resolved with oral antibiotics. There have been no secondary procedures.

More importantly, patient satisfaction has been high: 95% of the patients rate their experience the same or better than the dentist, 99% would do wide-awake anesthesia again in the office, and 99% would recommend to a friend or family member.

The literature and our experience has shown that WALANT is safe, cost-effective and results in high patient acceptance and satisfaction.

WALANT has changed my practice in both the hospital and clinic setting. Using lidocaine with epinephrine with no tourniquet or sedation has allowed us to do a large variety of cases in the clinic. Wide-awake anesthesia leads to fewer preoperative labs or examinations, less anxiety, and greater patient satisfaction and convenience. With no sedation, you can talk to your patients and discuss the surgical findings and postoperative therapy.

With limited resources and the prospect of different payment methods in the future, including bundled payments, the in-office procedure room will play a valuable role in our future hand surgery practice.

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Ethical Approval

This study was approved by our institutional review board.

Statement of Human and Animal Rights

This article does not contain any studies with human or animal subjects.

Statement of Informed Consent

No identifying patient information is present in this article.

Declaration of Conflicting Interests

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