

Hand Surgery Using Local Anesthesia

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KEYWORDS

- Dupuytren disease • Fractures • Dislocations • Flexor and extensor tendons • Arthrodesis
- Ganglions • Carpal tunnel release • Hand trauma

KEY POINTS

- Local anesthesia as a field block or regional nerve block is a simple and useful tool and an adjuvant in the management of hand surgery problems.
- Many patients can tolerate local anesthesia procedures in the hand with a tourniquet time of up to 30 minutes.
- A wide variety of hand surgery problems, both elective and traumatic, can be treated with local anesthesia without the need for any sedation and general anesthesia.

INTRODUCTION

Hand surgery is unique because it is a field whereby the OHIO principle can be easily applied: only handle it once. This is a simple principle that is applicable to many aspects of life, including hand surgery. A once-in-and-once-out approach is a simple way to treat most hand traumas in a weekly fracture clinic. It is easier for patients to be assessed and treated in one visit without undergoing the inconvenience of preoperative fasting, taking time from work, or rescheduling family commitments.

What proportion of our day is spent in bringing patients into procedure rooms, asking them when they last ate, whether they have allergies, and in moving to different rooms for terminal cleaning and changeover? Trainees and staff can help leverage our time. Perhaps we focus on how we can explain postoperative care, prescriptions,

and follow-up visits during the course of operating under local anesthesia. The authors use 3 procedure rooms and a consultation room concurrently in a fully accredited private facility. This practice allows a surgeon to perform a high number of new consultations annually and operate on most of these individuals, often on the same day, which permits direct and internal marketing for a minimal external marketing budget. Most of the authors' overhead expenses are spent on staff salaries to help ensure high-quality patient-centered care. A comprehensive electronic medical record system helps in scheduling, tracking outcomes, managing specimens, dictating consultation and operative reports, submitting billings, and communicating to other health care providers.

The World is Flat: A Brief History of the 21st Century by Thomas Friedman (2007) explains how and why the world has changed in the last 2 decades. The Internet permits almost anyone to

The authors have nothing to disclose.

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Clin Plastic Surg 40 (2013) 567–581

<http://dx.doi.org/10.1016/j.cps.2013.08.004>

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research their diagnosis, treatment, and even their surgeon. Patients as consumers or customers are now more informed than ever before.

In a time of fiscal restraint in the health care profession, it behooves us all to provide timely and effective care in a cost-effective manner. Surgery of the hand under local anesthetics can not only avoid the adverse effects of general anesthesia and the hospital cost of both preoperative and postoperative care as well as the administration and paperwork but there is also great convenience for both the surgeon and patients. Many common hand surgical procedures can be performed under local anesthesia in a minor operative suite with minimal intervention and monitoring.

Simple, elective surgery is not likely to threaten a person's life, but it is the general anesthetic that poses the greater overall health risk. Readers are directed to the article by Chung and Harris elsewhere in this issue. The avoidance of general anesthesia when reasonably possible may be, at times, uncomfortable for patients; however, the relative trade for a lower health risk is worthwhile if the patients' health demands it. Present patients with all options.

LOCAL ANESTHETIC IN HAND SURGERY

The use of a local anesthetic in hand surgery has recently increased, as indicated by increasing published reports in the literature.¹⁻⁴ The advantages are its increased safety profile, ease of use, and effectiveness in providing painless anesthesia. Wide-awake surgery also allows surgeons to check their work, as in gapping in flexor tendon repairs.¹ In addition, a recent study shows that patients preferred local anesthetic to intravenous regional anesthesia in a randomized controlled trial for carpal tunnel release because of better intraoperative and postoperative pain control.²

An important consideration when using local anesthetic is hemostasis control. Although tourniquets can still be applied and used, local anesthetic with epinephrine has repeatedly been shown to be efficacious and safe.^{5,6} A prospective multicenter study following 3110 patients showed no complications of epinephrine (1:100,000 concentration or less) when used in finger and hand surgery. If a tourniquet is preferred, a randomized controlled study of forearm versus upper arm tourniquet showed that the former is better tolerated even with a mean time of 25 minutes.⁷ In addition, the use of topical or injectable anesthetic under the tourniquet can be used to reduce tourniquet-associated pain.⁸

DIGITAL BLOCKS

Numerous techniques have been described for digital block. These techniques include transthecal versus 2 dorsal or web space injections.

Chiu⁹ originally described the transthecal technique in 1990. He injected 2 mL of lidocaine into the potential space of the flexor tendon sheath at the level of the palmar crease. Of the 420 patients, only 4 required supplemental local anesthetic infiltration; there were no observable complications. In 1991, Harbison¹⁰ described a variation of this technique whereby lidocaine was injected into the subcutaneous tissues of the proximal flexion crease of the target finger. A randomized control study comparing these two techniques showed that injection into the subcutaneous tissues was easier to administer and better tolerated by patients.¹¹

The 2-injection dorsal or web space injection was advocated to be less painful than the volar injections.¹² The local anesthetic is injected into the web space on either side of the finger to be anesthetized (**Fig. 1**). The question of whether it is less painful was recently contraindicated by a study showing that 27 volunteer patients preferred the single volar subcutaneous injection versus the 2-injection dorsal method.^{13,14}

WRIST BLOCK

There are variations of how the median, ulna, and radial nerves contribute to sensory innervation of the hand. A comprehensive wrist block must



Fig. 1. The nerve block is administered to this patient.

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