

# Minimal Pain Tumescence Local Anesthesia for Wide-awake Forehead Flap Nasal Reconstruction

Tamara D. Selman, MD\*; You S. Nam, BSc†; Donald H. Lalonde, FRCSC†

## INTRODUCTION

Minimally painful tumescent local anesthesia eliminates the nausea and vomiting of unnecessary sedation as well as the cost and solid waste of unnecessary main operating room sterility.<sup>1</sup> The senior author has performed all stages of more than 30 wide-awake (0 sedation) forehead flap nasal reconstructions with field sterility in minor procedure rooms in the hospital and in the office. The purpose of this article is to illustrate with video how to reliably inject minimally painful tumescent local anesthesia for all 3 stages of forehead flap reconstruction. The only discomfort that patients consistently feel is the initial poke of a tiny 30G needle with no further pain during the injection or during the surgery. This article and its videos demonstrate how to turn this operation into a pleasant patient experience.

## Preparation

1. Tell the patient the local anesthesia will hardly hurt at all, then deliver on your promise. (See **Video 1 [online]**, which shows the marking and the minimally painful tumescent local anesthesia injection technique in great detail for the first stage of a 3-stage forehead flap nasal reconstruction after Mohs excision of a basal cell skin cancer. Patient impressions are included at the end of the video.) (See **Video 2 [online]**, which shows the local anesthesia injection technique for the second stage. This video shows flap elevation off of the nose, sculpturing of the nose and flap, and reinsetting of the flap. Patient impressions are included at the end of the video.) (See **Video 3 [online]**, which shows the minimally painful tumescent local anesthesia injection technique for the third and final stage of flap division,

eyebrow reconstruction, and proximal flap contouring and inseting. Patient impressions are included at the end of the video.) (See **Video 4 [online]**, which shows the field sterility setup of the minor procedure room, 2 other cases of accelerated injection and surgery of the first stage of a forehead flap, other patient impressions, and how to inject the inside of the nose with tumescent local anesthesia for a full thickness nasal defect.)

2. Surgeons can take their time to Doppler the vessels or draw the flap with the patient sitting, because the patient is not sedated. Drawing and local anesthesia injection can be performed before the patient enters the minor procedure room.
3. Perform the procedure with field sterility outside of the main operating room, as is the standard of care for Mohs surgery in the United States with no increased infection rates.<sup>2</sup>
4. Provide a pleasant minor procedure room environment with a calm, reassuring manner for a good patient experience.

## Tips to Almost Pain-free Local Anesthesia Injection of Forehead Flap Nasal Reconstruction

1. Start with a 30G half-inch needle on a 3-mL Luer lock syringe. We prefer 3-mL Luer lock syringes for all nasal injections because of the high injection forces needed to tumesce scarred, tight areas. Small syringes exert larger forces with less effort. Slip-lock syringes blow off the needle and spray the patient (see **Video 1–4 [online]**).
2. In open nasal wounds such as those after Mohs surgery, start by inserting the first needle tip slowly into the fat so the patient might not feel this first needle poke at all. As soon as the bevel of the needle is in the fat, inject and stop moving when you see clear tumescence (visibly, palpably swollen fat and skin). Inject 2–4 mL slowly before moving the needle at all.

From the \*Division of Plastic Surgery, Dalhousie University, Halifax, Nova Scotia, Canada; and †Dalhousie University, Saint John, New Brunswick, Canada.

Received for publication July 20, 2024; accepted October 17, 2024.

Copyright © 2025 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the [Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 \(CCBY-NC-ND\)](#), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

*Plast Reconstr Surg Glob Open* 2025;13:e6569; doi: [10.1097/GOX.0000000000006569](#); Published online 21 March 2025.

Disclosure statements are at the end of this article, following the correspondence information.

Related Digital Media are available in the full-text version of the article on [www.PRSGlobalOpen.com](http://www.PRSGlobalOpen.com).

3. If the nasal skin is intact, use sensory noise such as pinching the skin into the needle to decrease the pain of the first poke.
4. Only reinsert the needle in clearly tumesced skin so the patient never feels needle reinsertion, but only feels the first needle poke.
5. Alternate needle reinsertion sites (right to left and back to right, or caudal to distal and back to caudal) to give time for the previous injection site to get numb so all needle reinsertions are painless.
6. In the forehead, start at the eyebrow and work superiorly to tumesce the area of the supraorbital nerve from proximal to distal.
7. In the nose, start tumescing in the mid-dorsum where the skin is distensible. Work your way down to tumesce the less distensible tip. Inject the alae and the columella last, as they are the least distensible and the most sensitive parts. Reinject the alae and the columella just before you start the surgery. They are the areas with the highest blood flow, and therefore, the fastest washout of the local anesthesia.
8. Typical volumes of local anesthesia for the first stage would be 20mL in the nose and 25mL in the forehead. We inject 1% lidocaine with 1:100,000 epinephrine buffered with 1mL of 8.4% sodium bicarbonate added to each 10mL of local anesthesia.
9. Follow all the other rules of minimal pain tumescent local anesthesia injection.<sup>3</sup>
4. Avoid the uncomfortable needle insertion of unnecessary intravenous lines. We do not routinely monitor the patients, as they are unsedated, but it is an option when it is safer to do so.<sup>5</sup>
5. To decrease your complication rate, take advantage of the intraoperative time to educate the awake patient on how to look after the flap and the forehead wound when they get home.
6. The patient can sit up and go home at the end of the procedure.
7. Wide-awake surgery is safer in patients who have medical comorbidities that aggravate sedation risks and complications.

**Tamara D. Selman, MD**

Division of Plastic Surgery

Department of Surgery

Dalhousie University

201 Kingswood Drive, Hammonds Plains

Halifax, Nova Scotia B4B 1L4, Canada

E-mail: [tammy.selman@dal.ca](mailto:tammy.selman@dal.ca)

## DISCLOSURES

*Dr. Lalonde receives royalties from Thieme Book Publishers and as a consultant for Accurate Surgical & Scientific Instruments, Corp. The other authors have no financial interest to declare in relation to the content of this article.*

## REFERENCES

1. St Denis-Katz HN, Bastianelli M, Macdonald J, et al. Complex nasal reconstruction in a wide-awake ambulatory setting: a study of efficacy and perioperative patient experience. *Plast Reconstr Surg Glob Open*. 2022;10:e4431.
2. Alam M, Ibrahim O, Nodzenski M, et al. Adverse events associated with Mohs micrographic surgery: multicenter prospective cohort study of 20,821 cases at 23 centers. *JAMA Dermatol*. 2013;149:1378–1385.
3. Joukhadar N, Lalonde D. How to minimize the pain of local anesthetic injection for wide awake surgery. *Plast Reconstr Surg Glob Open*. 2021;9:e3730.
4. Connors KM, Kurtzman JS, Koehler SM. Successful use of WALANT in local and regional soft tissue flaps: a case series. *Plast Reconstr Surg Glob Open*. 2023;11:e4756.
5. Farkash U, Herman A, Kalimian T, et al. Keeping the finger on the pulse: cardiac arrhythmias in hand surgery using local anesthesia with adrenaline. *Plast Reconstr Surg*. 2020;146:54e–60e.

## Other Tips to Awake Forehead Flap Nasal Reconstruction

1. Epinephrine is safe in awake flap elevation,<sup>4</sup> but inject the local anesthesia just outside the cutting line on the forehead to avoid injuring the flap vessels with the sharp needle tip.
2. Inject the local anesthesia at least 30 minutes before the first incision to give ample time for the tumescent epinephrine vasoconstriction to work. This avoids the need for electrocautery. We have cautery available but rarely use it.
3. After local injections, have the patient void to avoid the uncomfortable need to urinate during the surgery.