

# Hair's the Question“?”

Sara Wasserbauer, MD Walnut Creek, California [drwasserbauer@californiahairsurgeon.com](mailto:drwasserbauer@californiahairsurgeon.com)



Every hair surgeon seems to have his or her own proprietary method for local anesthesia, and each one seems to eclipse all others with regards to efficacy, ease of use, and safety. This is one of the areas that I still find useful little clinical pearls either through review of existing literature or when talking with other hair surgeons. Whether it is a complication or just a complicated patient, it is also beneficial to have a broad array of techniques in your professional armamentarium.

## Anesthesia in Hair Transplant Surgery

1. Advantages of effective local anesthesia include:
  - A. Improved hemostasis
  - B. Increased anxiety
  - C. Increased bleeding and thus increased visibility
  - D. Improvement of graft survival directly attributable to effective numbing
2. The “Gate Theory” of pain control posits:
  - A. Sensations such as pressure and vibration can diminish the perception of pain when simultaneously administered during local anesthesia injections.
  - B. Anesthesia should be administered as soon as possible so that pain can be controlled “right out of the gate” for particularly anxious patients.
  - C. Buffering a local anesthetic to the “gate pH” of ~7 with sodium bicarbonate reduces pain at the time of injection.
  - D. Oral administration of benzodiazepines and setting realistic pain expectations for patients are the best methods of early intervention for pain control.
3. Which of the following local anesthetics are ordered correctly from shortest to longest duration of action?
  - A. Lidocaine (xylocaine) alone, lidocaine with epinephrine, bupivacaine (marcaine) alone
  - B. Bupivacaine (marcaine) with epinephrine, lidocaine (xylocaine) with epinephrine, prilocaine (citanest) alone
  - C. Articaine (septocaine) alone, lidocaine (xylocaine) alone, bupivacaine (marcaine) alone
  - D. Lidocaine (xylocaine) alone, articaine (septocaine) with epinephrine, lidocaine with epinephrine
4. Clinically, which of the following shows the order of loss of nerve function with the use of local anesthetics?
  - A. Vibration, touch, pain, temperature, proprioception
  - B. Pain, temperature, touch, proprioception, skeletal muscle tone
  - C. Skeletal muscle tone, proprioception, touch, temperature, pain
  - D. Proprioception, temperature, pain, touch, vibration
5. Sensory innervation of the forehead and frontal scalp is supplied by which of the following?
  - A. Greater occipital nerve
  - B. Postauricular and lesser occipital nerves
  - C. Supraorbital and supratrochlear nerves
  - D. Zygomatico and auriculotemporal nerves
6. Topical local anesthetics (such as EMLA cream, etc.) are best used
  - A. for superficial anesthesia of the donor area.
  - B. with occlusion at the recipient site while donor harvesting is taking place.
  - C. 1-2 minutes ahead of time to make injections less painful.
  - D. in conjunction with pump-style (wand or needleless) anesthesia injectors.
7. Which of the following is true in general regarding local anesthesia?
  - A. Buffered lidocaine is less likely to cause post-operative edema in either the donor or recipient areas.
  - B. The occipital donor area is more sensitive than the hairline area and thus lower concentrations of local anesthetic can be used.
  - C. Saline tumescence can increase bleeding in the donor area and create a less stable cutting surface for initial incisions and later complicates microscopic dissection as well.
  - D. Warming anesthesia solutions to body temperature, using small (30g) needles, and slowing the rate of injection are potential methods of reducing pain.
8. Which of the following medications in a mixture of local anesthetic has the highest potential to decrease graft survival?
  - A. Epinephrine 1:1,000
  - B. Lidocaine 2%
  - C. Kenalog 40mg/ml
  - D. Bupivacaine 0.5%
9. Clinically, what would the earliest indication of systemic toxicity from local anesthetic use be?
  - A. Faintness and syncope treated best with Trendelenberg positioning, head turning to prevent tongue blockage of the throat, and peripheral irritation (cold water, ammonia, etc.)
  - B. Hypotension and bradycardia with hives treated best with oxygen, epinephrine, and diphenhydramine
  - C. Respiratory arrest and convulsions treated best with ACLS protocols
  - D. Tongue numbness, copper penny taste in mouth, and “spots before my eyes,” treated best with Trendelenberg positioning, oxygen, and diazepam

## Hair's the Question

from page 161

1. **A.** Anxiety should decrease when anesthesia is effective and there is no known correlation with graft survival.
2. **A.** Other answers may be valid as well, but only A accurately describes the "Gate Theory."
3. **A.** In general, the addition of epinephrine allows for a longer duration and the decreased need for larger doses of the anesthetic.
4. **B.** Pain is the first function to be lost and skeletal muscle tone is the last.
5. **C.** Although C is the correct answer, all of them together constitute the list of nerves that provide sensory innervation to the scalp!
6. **B.** Since 1-2 hours (preferably with occlusion) is needed for optimal superficial anesthesia, application to the donor area can be inconvenient. Pump-style injectors minimize the pain of local anesthesia through their slow and metered infusion speeds.
7. **D.** Buffered anesthetic causes increased post-operative edema. Saline tumescence has many advantages including decreased bleeding overall, a firmer cutting surface in the donor area, and improved microscopic dissection via increased distance between the hair follicles. The donor area is typically less sensitive than the hairline area.

8. **A.** Epinephrine is at high concentration through its vasoconstrictive effects, which may decrease oxygen supply to the newly grafted hair. Of course, all medications have risk to the patient no matter how minor the surgery or how small the dose.
9. **D.** Choice A simply describes a common vasovagal reaction and its correct treatment. True allergic reaction as described in B is rare and potentially fatal but may present with hypotension and bradycardia B. Respiratory arrest and convulsions as noted in C would be late signs.

## Bibliography

1. Unger, W.P. *Anesthesia*. In: W.P. Unger, Ed. Hair Transplantation, 4th ed. Chapter 8.
2. Data on the half lives and duration of action of various local anesthetic agents were obtained through Lexi-Comp, Inc. and <http://www.uptodate.com>. ♦

## Physicians & Medical Assistants Wanted

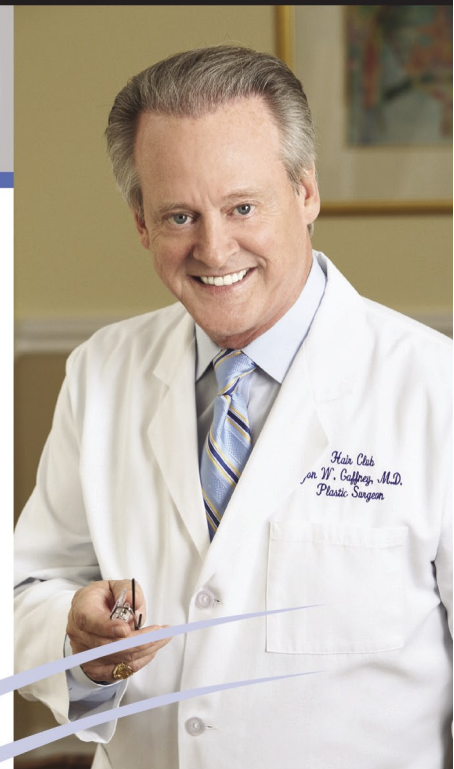
Hair Club,® the industry leader in hair restoration, is expanding and opening new centers throughout the USA.

We are seeking talented physicians and medical assistants with experience in follicular unit hair transplantation to work with us in our expanding markets.

If you are interested in working with a team that makes a difference in people's lives, you like to travel and enjoy working with motivated professionals, we invite you to contact us:

HR Department (800) 251-2658  
Email: [recruiting@hcfm.com](mailto:recruiting@hcfm.com)  
[www.hairclub.com](http://www.hairclub.com)

**HAIRCLUB®**



Experience More.™