

Cardiotoxicity following local anesthesia for follicular unit extraction (FUE) hair transplant: case report and review

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Abstract

Background: Hair transplantation is performed in the office setting with locally injected anesthetic, nearly exclusively. Lidocaine is injected alone or combined with longer-acting amide anesthetics, epinephrine, or other agents. Safe maximum doses of lidocaine are based on patient weight. 4.5 mg/kg lidocaine, or 7 mg/kg lidocaine with epinephrine, is an often cited maximum local dose. However, cardiac, nervous system, and other adverse effects can occur unpredictably. Unique feature of hair transplantation may also warrant vigilance for toxicity at lower doses.

Case presentation: 45 yr male underwent 972 follicular unit extraction (FUE) grafts for androgenic alopecia, in 6.6 hours over two days. 90 ml total of local anesthetic solution was injected [60% Lidocaine 0.5% + 40% Marcaine 0.25%, w/epinephrine 1/200,000], with dicloxacillin and dexamethasone oral, midazolam 35 mg intramuscular. Chest pain and vomiting hours after surgery prompted emergency room visit and overnight hospital observation. During hospitalization, new onset atrial fibrillation was diagnosed, also dehydration. Intravenous and oral diltiazem resolved all symptoms and arrhythmia. Cardiology prescribed oral diltiazem, discontinued anticoagulation, advising routine follow up.

Discussion: Local anesthesia for FUE hair transplantation may more accurately resemble a combination of local injection, nerve block, and tumescent anesthesia, versus local injections in other body areas.

Published dosing standards should be followed for local anesthetics including lidocaine, though monitoring for toxicity is warranted regardless of dose. Prolonged scalp injections may not follow pharmacokinetics of dissimilar tissues nor for tumescent lidocaine, and a different standard may need to be developed. Multiple agents in anesthetic solution, and medications such as for sedation, can promote adverse effects. Medications may compete with lidocaine for cytochrome P450 metabolism, such as benzodiazepine administered here. Further, prolonged use of high dilution local anesthetics, in a highly vascular tissue with minimal adiposity, may be unique to hair transplantation. Hair transplantation thus warrants further study as to safe local anesthetic dosing strategies.

References

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Biography

Reuben I Thaker, MD, JD, MPH, practices cosmetic surgery and wellness medicine, in private practice, Las Vegas, Nevada. His practice focuses on minimally invasive techniques to optimize cosmetic outcomes, and minimize risks associated with anesthesia and prolonged recovery times. In addition to multiple clinical board certifications, he completed a National Institute of Health Fellowship, with a research focus on wound healing and immunological properties of the dermis.

Notes/Comments: