

Tumescent liposuction: Lidocaine dose

Tumescent liposuction is an (often) office-based procedure where a large volume of crystalloid mixed with epinephrine and lidocaine is injected subcutaneously into the patient's fat, which is then aspirated. Due to the fact that some of the injectate is aspirated along with the fat, and that poor blood supply to fat (along with the epinephrine) slows systemic absorption of the lidocaine, much larger doses of lidocaine than typically used for nerve blocks are considered safe.

Despite a usual max dose of 7mg/kg of lidocaine with epinephrine, the max dose of lidocaine in tumescent liposuction is considered **35-55mg/kg**.

Mild symptoms of local anesthetic toxicity appear at lidocaine concentrations of $6\mu\text{g/mL}$ and the below paper looked at 14 patients undergoing multiple tumescent local anesthetic infiltrations with various doses and with and without liposuction. The maximal serum concentration was noted to be $4.3\mu\text{g/mL}$ with a lidocaine dose of 45mg/kg (the maximum dose in this study). The maximum serum concentrations were lower in patients who did get liposuction. Notably, the best fit model between maximal serum concentration and lidocaine dose fit reasonably well and shows a low likelihood of reaching $6\mu\text{g/mL}$ serum concentration with an infiltration dose of 55mg/kg. There is also substantial experience and anecdotal evidence of the safety of lidocaine doses up to 55mg/kg in tumescent liposuction.

It is important to note that this study also showed a peak serum concentration typically of 10-18 hours after infiltration, long after these patients have been discharged home. Additionally, these patients may have obesity and related comorbidities such as sleep apnea so vigilance and education is warranted, especially in an office based setting and/or if sedation is provided.

Further Reading: Klein JA, Jeske DR. Estimated Maximal Safe Dosages of Tumescent Lidocaine. *Anesth Analg*. 2016;122(5):1350-1359. doi:10.1213/ANE.0000000000001119