**Troell RJ. Liposuction 20-year learned experience (part 2): optimizing cosmetic outcomes while minimizing complications. Am J Cosmet Surg. 2025;0(0). doi:10.1177/07488068251352069.**

**ABSTRACT**

**Introduction:** Twenty-year liposuction single surgeon experience with surgical technique progression based on literature searches and multiple clinical studies comparing different variables.

**Materials and Methods:** Both retrospective and prospective clinical studies of different surgical techniques including microcannula suction-assisted liposuction (mSAL), standard cannula size suction-assisted liposuction (SAL), water-jet–assisted liposuction (WAL), ultrasound-assisted (UAL), third-generation ultrasound (vibration amplification of sound energy at resonance [VASER]), laser-assisted (LAL), nutational infrasonic liposculpture (NIL), high-definition liposuction (High-Def), helium-based radiofrequency technology (HBT), and lipoabdominoplasty, as well as variables to include epinephrine dosing, lidocaine concentrations, superwet vs tumescence, closure vs no closure of incisions, external ultrasound postoperative treatment benefits, and duration of compression garment and foam use.

**Results:** Prospective study using tumescent, mSAL in 16 patients revealed 87.5% patient satisfaction without contour deformities. A retrospective study using superwet, standard sized cannula SAL revealed a 94.4% satisfaction rate in 190 patients with more fat removal, better skin tightening but with observation of minor contour irregularities in 8.9%. Prospective study (n = 10) comparing Manubat/Blugerman dissector to one side of the abdomen compared to Mercedes cannula undermining revealed more rapid fat removal on dissector side; however, it resulted in more intraoperative bleeding and postoperative bruising. Prospective study (n = 15) where incisions were closed with sutures on one side of the abdomen and flanks and the other side remained open. The latter had less observed ecchymoses. Prospective study of lidocaine varied concentrations revealed a statistically significant increased pain when the concentration was below 800 mg/L using the superwet technique. Prospective study with an equal number of patients (n = 50) at 1 mg of epinephrine/L wetting solution compared to 1.5 mg/L. There was no increased heart rate intraoperatively with less observed ecchymoses postoperatively. The WAL retrospective study (n = 50) revealed less fat removal than SAL, less ecchymoses but a requested revision rate of 20% for more fat removal. The UAL and the progression to high-definition muscle liposculpting revealed a higher patient satisfaction rate with better muscle contouring and skin tightening. Retrospective study using UAL and HBT in the face/neck (n = 58) and body (n = 160) with a 95% patient satisfaction rate and more subjective skin tightening.

**Discussion:** Each clinical study, designed to compare 2 different variables in a controlled setting, confirmed best practices.

**Conclusions:** The liposuction technique that optimizes safety and outcomes include awake, tumescent, or superwet wetting solution delivery using standard-size cannulas with an epinephrine dose of 1.5 mg/L, lidocaine dose greater than 800 mg/L, UAL high-definition sculpting, adding HBT to maximize skin tightening, a fitted compression garment for 1-month duration, postoperative therapeutic ultrasound, lymphatic massage, and manual massage.

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