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Combining Third-Generation Ultrasound Liposuction With Helium-Based Plasma Technology Skin Tightening in the Face and Neck

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Abstract

Introduction: Liposuction has been used as the primary technique to remove excess fatty tissue. Ultrasound-assisted liposuction (UAL) combined with helium-based plasma technology (HPT) can remove excess fatty tissue while optimizing skin tightening in the lower face and neck with minimal side effects and complications.

Material and Methods: Retrospective review of consecutive adult patients (24-66 years of age) seeking lower face and/or neck contouring from 2018 to 2022 in 2 clinical practices. Patients underwent the procedure under local anesthesia only or supplemented by oral sedation if performed alone. Vibration amplification of sound energy at resonance (VASER) ultrasound energy delivery was at 40% energy level, pulsed mode with between 3 and 4 minutes of energy delivery to the face and between 3 and 6 minutes to the cervical area. Liposuction was then achieved with 2.0 and 3.0 mm cannulas, careful to minimize fat extraction to avoid contour irregularities. Finally, radiofrequency (RF) energy was delivered at 70 to 80 Joules of every between 1.5 and 3 L/min of helium using 6 passes.

Results: Patient satisfaction rate was 95.5% (56 of 58 patients) using the global aesthetic improvement scale, with 2 noting no appreciable change. Seven patients (12%) experienced temporary unilateral marginal mandibular nerve weakness, all resolved completely within 1 to 6 weeks. Nine (15.5%) patients experienced self-limited minor contour irregularities and 2 (3.4%) with persistent minor depressions desired filler placement. Two (3.4%) morbidly obese patients requested additional liposuction. Expected clinical side effects included mild discomfort, edema, ecchymosis, and itching. No serious adverse effects occurred. This can simultaneously be combined with other aesthetic procedures.

Discussion: A main challenge of percutaneous energy delivery to provide thermal-induced tissue contraction is the balance between maintaining safe external skin temperatures while achieving target temperatures of the internal tissues. The helium plasma device's mechanism of action heats the tissue differently compared with the bulk heating of other RF devices, which makes the HPT a safer technology. Immediate contraction of the substructure of the fibroseptal network (FSN) occurs without heating the dermal full thickness. These collagen fibers when denatured contract up to 65%. The FSN contraction will ultimately result in overlying skin retraction and tightening. Manual suction liposuction creating 8% to 10% skin retraction and ultrasound energy delivery with up to 20% more skin tightening, coupled with the HPT, maximize skin-retraction outcome.

Conclusions: Combining the third-generation UAL technique (VASER) with internal RF HPT (Renuvion) in face and/or neck contouring yields superior patient satisfaction and aesthetic results with no serious adverse effects.

Keywords

facial cosmetic surgery, facial liposuction, facial plastic surgery, liposuction, new technology, tumescent liposuction, ultrasonic liposuction

Introduction

Facial rejuvenation of the aging face encompasses an extensive armamentarium of aesthetic procedures. The aging process alters the surface of our skin down to the bony framework.[1-3] The skin, subcutaneous fat, and facial bones (mainly the maxilla and mandible)[1] atrophy with age. This tissue atrophy results in facial volume loss, producing skin

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