Facelift Adjunctive Techniques: Skin Resurfacing and Volumetric Contouring

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KEYWORDS

• Facelift • Laser • Skin resurfacing
• Midface • Neck • Contouring

Posterior cervicofacial rhytidectomy is variably effective for reduction of jowling and improvement of mandibular contour, and may provide only limited temporary improvement of midface contour.[1,2] In predisposed patients, posterior cervicofacial rhytidectomy may worsen the appearance of midfacial (eg, submalar) volume loss.[3] Commonly employed posterior cervicofacial rhytidectomy (eg, superficial muscular aponeurotic system [SMAS]) approaches may minimally efface[4] or may even accentuate melolabial fold depth.[5] Posterior cervicofacial rhytidectomy may also result in discordant facial rejuvenation if intrinsic skin aging and age-related changes of the forehead, periorbital and perioral areas, and submentum and neck are not also addressed. In addition, improvements in mandibular and midface contour obtained via rhytidectomy generally diminish over time as tissues undergo stress relaxation and gravitational changes postoperatively[1]– changes that are typically greater in patients with more advanced chronologic age, advanced skin photoaging or heavier body habitus, and in those with a history of smoking or significant weight loss. Optimization of facial rejuvenation outcomes therefore requires meticulous execution of rhytidectomy techniques while also addressing skin photoaging, rhytidosis, and idiosyncratic age-related volumetric tissue changes.

ADJUNCTIVE PROCEDURES OF MIDDLE FACIAL THIRD

Posterior cervicofacial SMAS imbrication or plication rhytidectomy procedures may not adequately address age-related structural changes in the midface including malar fat pad descent, melolabial fold ptosis, and submalar volume loss. Alternative rhytidectomy procedures conceived to enhance midface outcomes (eg, improve effacement of melolabial fold with composite facelift,[4] deep plane facelift,[6] extended SMAS facelift with direct plication of the malar fat pad,[7] subperiosteal midface lift[8]) have not met universal acceptance as a result of variable efficacy and increased surgical risk. Certain adjunctive procedures are commonly performed with posterior cervicofacial rhytidectomy. Concurrent subperiosteal submalar augmentation effectively reverses submalar insufficiency and provides long-term improvement of midface contour.[9] Concurrent midface soft tissue augmentation (eg, via filler injections, autologous fat transfer, or SMAS graft[10]) may provide temporary improvement of relative midface volume loss (created in part by osseous midface changes[11–13] and malar fat pad descent[2,4,7,8,10]) and partially camouflage descended fat at the melolabial fold. Even though increasing benefit (greater camouflage of anatomic correlates of descended fat) may be obtained with secondary and tertiary

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autologous fat grafting procedures, the primary underlying problem (descended fat) remains unaddressed.

Mobilization of ptotic malar fat pad tissues during subperiosteal midface lifting may not sufficiently efface the melolabial folds or recruit or adequately fixate enough tissue to provide long-term improvement of midface contour.[2,8,10] As early as 1989 McKinney and Cook advocated lipocontouring of the nasolabial fold during facelift surgery.[14] Despite reporting consistent synergistic improvement in the midface, the technique did not become popularized.

Nonetheless, the idea that substantial aesthetic improvement of the midface may be obtained via tissue removal as opposed to tissue repositioning or soft tissue augmentation is an intriguing concept. Although still early in its inception, an appealing alternative to repositioning displaced midface fat or to camouflage of the anatomic correlates of displaced midface fat involves use of a novel 1444-nm Nd-YAG lipolysis laser (see later discussion).

Preoperative evaluation of the aging midface should address the suborbital, malar, submalar, melolabial fold, or lip cheek groove, and the maxillary dentoalveolar structures. Aesthetic rejuvenation of the midface must at a minimum attempt to restore volume in the suborbital, malar, and submalar areas, and to improve the contour of the medial cheek. Transblepharoplasty or transoral alloplastic augmentation or transcutaneous or transoral injection with hyaluronic acid or calcium hydroxylapetite filler materials should be considered for suborbital insufficiency. Transoral alloplastic augmentation should be considered for malar, submalar, and combined malar-submalar insufficiency. Although modest correction of malar and/or submalar insufficiency may be obtained with injectable filler materials, results with alloplastic implants are generally superior both in volumetric correction and longevity of results. Patients with loss of maxillary alveolar height and volume may exhibit greater caudal midfacial volume loss for which optimum correction may require alloplastic implants, soft tissue augmentation, and dentoalveolar correction (eg, prosthetic denture).

SUBMALAR AUGMENTATION

Transoral placement of submalar implants should immediately follow rhytidectomy to minimize any risk of cross contamination and wound infection. Transoral submalar implant placement requires significantly less dissection for pocket creation than for placement of a malar or combined malar-submalar implant. The dissection should extend anterior to the masseter muscle fibers and superolaterally over the distal zygoma to create a pocket just large enough to accept the implant. On completion of undermining, use of sterile implant sizers allows determination of final implant shape and size. The pocket should be irrigated with antibiotic-containing solution before placement of the implant. Fixation is not generally required for submalar implant placement. The procedure has high patient satisfaction, is relatively quick and has a low complication rate.

LASER LIPOLYSIS-ASSISTED FACIAL CONTOURING: MELOLABIAL FOLD

Retrusion of the anterior maxilla and enlargement of the pyriform aperture contribute to midfacial soft tissue sagging and deepening of the melolabial fold.[12–14] Remote procedures designed to reposition ptotic midfacial soft tissues have been variably effective at best.[8] Empirically, it follows that direct reduction of ptotic midfacial soft tissue should be highly effective.[2] Although not commonly performed because of the need for a lengthy incision, direct excision of the melolabial fold (debulking of ptotic skin and fat) is unparalleled for effective rejuvenation of the medial cheek. An emerging alternative involves laser-assisted volumetric contouring of the melolabial fold with a novel 1444-nm Nd-YAG fiber laser.

Compared with other wavelengths currently used for laser lipolysis (eg, 1064 nm, 1320 nm) the 1444-nm Nd-YAG laser offers numerous advantages that arise from greater specificity for subcutaneous fat and tissue water.[15] **Fig. 1** shows the absorption curves for fat and water for the most common lipolysis laser wavelengths. The greater selectivity of the 1444-nm lipolysis laser provides improved efficiency and greater thermal confinement[15] (energy relatively more localized near source, ie, tip of laser fiber), which are extremely important features that enable safe use of this technology for subregional facial contouring. With reduced thermal diffusivity (a relative measure of thermal conduction through tissue, in this case, fat) and decreased energy requirement for lipolysis, the 1444-nm lipolysis laser may be used in areas where tissues are delicate and where there exists a corresponding need to limit nonspecific collateral tissue damage.

Subregional facial volumetric tissue contouring assisted by 1444-nm lipolysis laser may be performed concurrent with or independent of rhytidectomy procedures. Treatment areas include the medial cheek (melolabial fold area), caudal