Submalar Augmentation

An Alternative to Face-lift Surgery

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Submalar augmentation is a new approach that effectively deals with many of the problems encountered in midfacial rejuvenation. This study reports the results of 75 patients who were successfully treated over 6 years by submalar augmentation. This procedure consists of inserting newly designed Silastic (silicone rubber) implants over the midface to create the appearance of restoring the vibrant and youthful fullness of the middle third of the face while avoiding distortion of normal facial anatomy. When used alone, it provides an alternative to rhytidectomy in the 35- to 50-year age group. The benefits of submalar augmentation are such that it should be considered a standard part of the surgical approach to facial rejuvenation.


A constant factor found in historical and contemporary definitions of facial beauty is youth. The majority of patients seeking advice on possible face-lift surgery in the 35- to 50-year age group do so for the purpose of restoring attractiveness or correcting perceived facial flaws that have become visible or more pronounced with age. Usually, they do not want to alter bone structure or necessarily to insist on a preexistent surgical procedure; instead, they simply want to look younger. Many who prematurely show exsyratory depressions of the cheeks or nasolabial folds assume that face-lift procedures are their primary rejuvenation option. However, youth is characterized by fullness of the cheeks, most notably seen in an infant's rounded cheeks or a teen's softly contoured face. Aging is not manifested exclusively by the accumulation of facial folds or jowls, but also by loss and/or atrophy of subcutaneous fat, particularly in the middle third of the face.

For many in the 35- to 50-year age group, midfacial depressions and hollows may not be remedied—indeed, they may be exaggerated—if dealt with via rhytidectomy. A more effective, less drastic, and less expensive alternative to face-lift surgery for these individuals is submalar augmentation: a means of restoring youthful appearance of adequately padded skin at healthy levels of distention and elasticity.

CONSIDERATIONS

Successful restoration of a youthful appearance requires accurate analysis of specific signs of aging and of pathophysiological processes. In one patient, midfacial deformities may be primarily due to normal loss, atrophy, or inferior migration of adipose tissue. In another, the perceived flaws may be the result of aging or of previously hidden imperfections or deformities in facial skeletal structure. Adult loss of quantity and character of subcutaneous fat buffer decreases thickness and elasticity in the skin. Loss of this buffer thins the face, renders skin inelastic, and hastens wrinkling. Atrophy of the brow fat pad along with inferior migration of cheek fat into skin relaxation to deepen nasolabial folds, thin the vermilion border of the lip, and cause depressions, which create characteristic midfacial signs of aging.

Golden weight loss or cachexia evoke similar changes. Watanabe et al. describe an equivalent hollowed-out appearance in a group of Japanese patients showing loss of subcutaneous tissue in the temporal fossa. Coolidge describes two patients having a "cadaver-like appearance" of marked cheek depressions resulting from premature lipodystrophy localized to the nasolabial fold. Facial contour was restored by means of placing carved soft silicone rubber on the maxilla beneath the nasolabial fold, a unique treatment because augmenting the underlying skeletal structure is the replacement of deficient soft tissue.

Oral surgical literature has documented the importance of augmenting midfacial skeletal distortion for improved facial aesthetics. Oral grafts or implants have been used alone or to mask the aesthetic deformity that may still remain even after completion of successful maxillofacial surgery. Noting the importance of restoring depressions in the middle third of the face, Guerrevianta suggested using cartilage grafts covered with fascia, and Whitaker and Liston proposed using a pedicle-
shaped plate(s) (PTFE [Proplast] implant) to augment the midface, additionally accentuating the lateral malar-zygomatic complex.

PREOPERATIVE EVALUATION

craniomaxillary facial analysis, using paranasal sinus; primary in calculations such as the facial proportions index, only gives a general idea of facial form. Consideration must also be given to measurement of soft tissue and its relationship to skeletal structure. Thus, the surgeon must correctly assess how augmenting bone structure will affect the overlying soft tissues and interact with existing structural deficiencies and/or translucent skin. In the absence of clinically available three-dimensional imaging for accurate quantitative analysis, clinical observation remains the most important tool for treatment of contour deficiencies.

Relatively young patients (e.g., 35 to 50 years) with degenerative soft-tissue changes or defined midfacial bone structures have a sunken or flattened facial appearance. These patients say they look de-aged, pale, or drab. This is described by one author as the "gentleman of years." (Fig 1). This flattened appearance often motivates relatively young patients to seek consultation for facial rejuvenation surgery.

Patients reaching 25 to 40 years of age may discover facial asymmetry previously camouflaged by "baby cheeks." Pronounced asymmetry of facial bones will produce generalized drooping of anterior facial skin, deepening of the masolabial groove, and flattening on the smaller side of the face. Face-lift surgery is usually unsuccessful as a long-term solution in correcting this problem.

Fig 1. — Example of the flattened facial appearance ("gentleman of years") that often motivates young patients to seek early consultation for facial rejuvenation surgery.

The commonly accepted role that the ideal face-lift candidate is thin, is in the mid-40s, and has prominent malar eminences and mandibular angles does not necessarily apply to all patients, given the limited ability of rhytidectomy to correct midfacial problems. Patients with cavitory changes in the cheeks and thin, atrophic skin may demonstrate minimal or no jaw formation or redundancy of skin or muscles of the neck. It is more to their advantage to treat their specific midfacial deficiencies (Fig 2).

MATERIALS AND METHODS

The day before surgery, the patient is started on a broad-spectrum antibiotic regimen, which is continued for 5 days. Intravenous antibiotics are also given during the surgical procedure. Before the surgical procedure, the patient is placed in a sitting position, and the actual deficiency in the midfacial area is outlined with a marking pen. The patient is then asked to smile broadly so that the most medial position of the implant can be determined without interfering with mimetic function.

A small incision is made superiorly, on the inner surface of the lip, at the basal gingival sulcus within the region of the canine fossa. The periosteum is incised and inverted superiority off the anterior surface of the maxilla, and the infraorbital nerve is identified. Total access and exposure are provided from the anterior surface of the maxilla to the lateral malar-zygomatic areas of the facial skeleton (Fig 2, top left). Initially, Silastic implants were carved to conform to the medial and inferior malar areas. This design has now evolved to

Fig 2.—Top, Patient might be the "ideal face-lift candidate" (i.e., mid-40s, high cheekbones, good jaw structure), but she has recessed jaw formation or loose neck skin. Instead, the most conspicuous problems are related to midfacial degenerative soft-tissue changes. Bottom, Appearance 16 months after operation. Instead of undergoing rhytidectomy, subcutaneous augmentation was used to lift out the depressions and restore a more youthful appearance to the middle third of the face.
the current preferred "submalar implant" (Fig. 3, top-right). These implants have been placed over the canine fossa and anterior face of the maxilla and around the zygomatic prominence.

The implant is then inserted into the pocket and adjusted in position until the desired facial contour is achieved (Fig. 3, center left). The implant is positioned so that the external skin markings are made to correspond to the two bony points before fenestration of the implant. The implant is then removed, and the site is sutured. A 0.06-in. suture is used to suture the skin closure. The fenestration is created using a bur or a 0.06-in. bur. The implant is then replaced in the pocket in the specifically determined anatomic position. The implant is stabilized by suturing with a 0.06-in. suture externally over a bolster, thereby immobilizing the implant in position (Fig. 3, bottom). The wound is then closed in two layers. The submucous closure of the upper lip is sutured without periosteal and subperiosteal release of the lower lip of the incision, and the incision is approximated with a running and alternating locking suture of 4-0 chrome.

At the conclusion of the procedure, an external pressure dressing is used to immobilize the implant. The patient is instructed in the care of the implant.

**RESULTS**

From May 1982 to June 1986, 78 patients underwent submalar augmentation as a sole procedure for midfacial rejuvenation. In this reported series, the procedure has been used specifically as an alternative to rhinoplasty in patients with an age range of 23 to 50 years. Establishing facial symmetry via bilateral surgical procedures is important and difficult, especially since, as Gormley and Harrison\(^1\) point out, pre-existing facial asymmetry may become more apparent after aesthetic surgery. Precise evaluation of the patient's facial size and shape must be combined with careful selection and placement of the appropriate implant. In the five cases of postoperative asymmetry that genuinely required adjustment of the implant, the silicone rubber implant caused no difficulty in repositioning, or replacement.

Two patients were treated for abscesses, which were resolved satisfactorily by drainage and antibiotics. Three experienced slightly reduced unilateral lip mobility, with complete return of function within 4 weeks. Five others mentioned partial upper lip numbness, all also having complete return of sensation within 2 months. Once in place, implants are difficult to palpate owing to their placement under the thicker, more muscularly positioned soft-tissue mass. During the

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initial phase of using the submalar implants, three patients were seen for delayed onset of premaxillary pain at least 6 months or more following surgery. Concurrent sinostitis or an acute exacerbation of chronic allergic rhinitis with significant nasal congestion was found to be the etiological factor in all cases. As soon as the nasal or sinonasal problem was appropriately treated with antibiotics and decongestants, the symptoms were alleviated within 48 hours. Subsequently, this problem did not recur in any of these patients. No evidence of bone erosion has been revealed by subsequent roentgenograms in three patients, findings also supported by literature associated with chin augmentation and malappliance.

The overall results show submalar augmentation to be an extremely low-risk procedure. Patients report little, if any, postoperative discomfort and frequently comment that they have maintained an extremely natural look. Most report that they cannot feel the implant and regard it as a normal part of their facial structure. To date, no implant has been permanently removed or rejected.

COMMENT

As a means of renewing youthful facial appearance, submalar augmentation provides an alternative to rhytidectomy for most 35- to 50-year-old patients, with particular advantage for those for whom face-lift is not indicated or who are not ready for a complete face-lift. Also, an entire group of people, especially men, will consider submalar augmentation despite having rejected the face-lift concept (Fig 4).

By using the submalar implant to augment structure, the appearance of enhanced soft-tissue bulk offers a wider convex area to support the skin, answering many of the problems of hollowness and wrinkling presented in the midface. Successful alloplastic augmentation depends on the material used and on the amount of soft tissue protecting the implant. Placement of silicone rubber beneath thicker skin flaps assures the submalar implant longevity and security. Silicone rubber has advantages over other available materials, particularly conquering the tendencies polytetraim- plants have toward shrinkage and migration and the bacteria-entrapping

Fig 4.—Left, Prooperative; and right, postoperative result 9 months following submalar augmentation used as a sole procedure.

Fig 5.—The submalar implant augments skeletal structure while providing a support for the overlying soft tissues. This repositions the relaxed midfacial soft tissues to a more anterior/superior location and fills out this sunken area.

Fig 6.—Left, Patient in the 35- to 50-year age group seeking early consultation for facial rejuvenation surgery. The patient complained of looking tired and haggard and having a generalized depressed appearance, resulting from loss of soft tissues in the midfacial region. Right, Appearance 16 months after operation. Submalar augmentation was used alone to provide the appearance of soft-tissue enhancement and to restore the bright/cheerful/energy of the middle third of the face.
Fig. 7.—Top, Preoperative view. Bottom, View 4 months after operation. Submalar augmentation was used as a sole procedure to enhance the middle third of the face and to restore a more youthful look.


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