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 70 patients who were successfully treated over 6 years by submalar augmentation. This procedure consists of inserting newly designed Silastic (silicone rubber) implants over the malar 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 is 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 corrective 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 preset surgical procedure; instead, they simply want to look younger.

Many who prematurely show cavitary 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 pathophysiologic processes. In one patient, midfacial deficiencies may be primarily due to normal loss, atrophy, or inferior migration of adipose tissue. In another, the perceived flaws may be the revelation by aging of previously hidden imperfections or deformities in bony 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. A trophy of the bony fat pad along with inferior migration of cheek fat joins skin relaxation to deepen nasolabial folds, thins the vermilion border of the lips, and causes depressions, which create characteristic midfacial signs of aging.

Sudden weight loss or anemia evoke similar changes. Watanabe et al describe an equivalent hollowed-out appearance in a group of Japanese patients showing loss of adipose tissue in the temporal fossa.

Conflab describes two patients having a "vade west" appearance of marked cheek depression resulting from premature lipoatrophy localized to the nasolabial fold. Patellar 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 stimulated the replacement of deficient soft tissue.

Oral surgical literature has documented the importance of augmenting midfacial skeletal deformities for improved facial proportions. Oral implants or grafts have been used alone or to mask the aesthetic deformity that may still remain even after completion of successful midfacial surgery.

Noting the importance of restoring depressions in the middle third of the face, Gerow et al suggested oral or cartilage grafts covered with fascia, and Whitaker and Linton proposed using a subcuta-
shaped polyethylene (PTFE) implant to augment the midface, additionally accentuating the lateral malar-eyebrow complex.

PREOPERATIVE EVALUATION

Craniofacial analysis, using cephalometric views primarily in calculations such as the facial proportion index, only gives a general idea of facial form. Consideration must also be given to measurement of soft tissue and its relationship to skeletal structures.

Thus, the surgeon must correctly assess how augmenting bone structure will affect the overlying soft tissue and interact with existing structural deficiencies and/or inelastic skin. In the absence of clinically available three-dimensional imaging for accurate quantitative analysis, clinical observations remain the most important tool for treatment of cosmetic deformities.

Relatively young patients (ages 20 to 50 years) with degenerative soft-tissue changes or deficient malarial bone structures have a sunken or flattened facial appearance. These patients may not regard their faces as aesthetically pleasing due to the "ossification of subcutaneous fat" (Fig. 1). This flattened appearance often motivates relatively young patients to seek asolution for facial rejuvenation surgery.

Patients reaching 35 to 40 years of age may also have facial asymmetry primarily caused by "baby cheeks." Premature asymmetry of facial bones will produce generalized drooping of anterior facial skin, deepening of the nasolabial 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.

The commonly accepted rule 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 rhinoplasty to correct malarial problems. Patients with contrary changes in the cheeks and thin, atrophic skin may demonstrate minimal or no jowl formation or redundancy of skin or masses at the neck. It is more to their advantage to treat their specific malarial deficiencies (Fig. 3).

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 area of the face involving the lateral malar-eyebrow area is marked with a marking pen. The patient is then asked to smile broadly so that the exact medial position of the implant can be determined with minimal distortion.

A small incision is made superiorly on the inner surface of the lip, at the buccal-periosteal junction, extending anteriorly to the infraorbital nerve. The periosteum is incised and elevated superiorly off the anterior surface of the maxilla, and the infraorbital nerve is identified. Total access and exposure are achieved from the anterior surface of the maxilla to the lateral malar-eyebrow area of the facial skeleton (Fig. 2, top left).

Initially, bilateral implants were placed to conform to the medial and inferior malar areas. This design has now evolved to

Fig 1.—Example of the flattened facial appearance ("ossification of subcutaneous fat") that often motivates young patients to seek correction for facial rejuvenation surgery.

Fig 2.—Top, Patient must be the "ideal face-lift candidate" (ie, mid-40s, high cheekbones, good jaw structure), but she has exercise tape formation or loose neck skin. Instead, the most conspicuous problems are related to surface degenerative soft-tissue changes. Bottom, Appearance 16 months after operation. Instead of undergoing rhinoplasty, submalar augmentation was used to fill out the depressions and restore a more youthful appearance to the middle third of the face.
The current preferred "subcutaneous implant" (Fig. 6, top right). These implants have been placed over the canine fossa and anterior face of the maxilla and around the zygomatic process.

The implant is then inserted into the pocket and adjusted in position until the desired facial contour is achieved (Fig. 8, center left). The implant is positioned so that the external skin margins are made to correspond to the two nodal points illustrated in the implant. The implant is then removed, and 0.0 silk sutures are tied over the lips to hold the implant in place around the undersurface and through the fasciitis of the implant. The sutures are then tied off and passed subcutaneously and percutaneously (Figs. 9, center right). This implant is replaced in the pocket in the appropriately determined anatomic position. The implant is then stabilized by tying the sutures externally over a bolster, thereby immobilizing the implant in position (Fig. 9, bottom). The wound is then closed in two layers. The subcutaneous tissues of the upper flap are secured to the periosteal and supraperiosteal tissues of the lower edge of the implant, and the overlying skin is approximated with running and alternating Vicryl sutures of 0.0 dacron.

At the conclusion of the procedure, an external pressure dressing is used to immobilize the implants further. This is removed 10 days postoperatively, and adhesive dressings (Rentac) are then applied over the bolster. The bolster is removed on the third or fourth postoperative day. The direct surgical technique prevents implant migration while allowing for creation of a large pocket.

RESULTS

From May 1962 to June 1968, 78 patients underwent subcutaneous 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 35 to 50 years.

Establishing facial symmetry via bilateral surgical procedures is important and difficult, especially since, as Courney and Harries (1960) point out, pre-existing facial asymmetry may become more apparent after aesthetic surgery. Precisely evaluating the patient's facial size and shape must be combined with careful selection and placement of the appropriate implant. In the case of postoperative asymmetry, this generally required adjustment of the implant, the silicone rubber implant caused no difficulty in repositioning or replacement.

Two patients were treated for abscences, which were resolved satisfactorily by drainage and antibiotics. Three experienced slightly reduced unilateral lip mobility, with complete return of function within 4 weeks. Five of the mentioned partial upper lip numbness, all also having complete return of sensation within 3 months. Once in place, implants are difficult to palpate owing to their placement under the thicker, more medially positioned soft-tissue mass.
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 sinusitis 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 sinus 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 malapraxy.\textsuperscript{11,12}

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.

\section*{Comment}

As a means of renewing youthful facial appearance, submalar augmentation provides an alternative to rhytidectomy for most 35- to 55-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, more open area to support the skin, answering many of the problems of hollowness and wrinkling presented in the malar area. Successful alloplastic augmentation depends on the material used and on the amount of soft tissue present in the malar area. Successful alloplastic augmentation is predictable, because the implant\textsuperscript{12} is surrounded or enveloped by soft tissue to maintain the submalar implant longevity and security.

Silicone rubber has advantages over other available materials, particularly for predicting the tendency of polyurethane implants to work without shrinkage and migration and the bacteria-trapping
ingrowth of granulation tissue. Secondary repositioning of palisade, easily fragmented polytetrafluoroethylene is also difficult. Silastic is biologically inert and nontoxic, has mechanical and thermal stability, and causes little tissue reaction. It is not absorbed, can be precisely shaped, and does not warp or disintegrate. Since placement material for large soft-tissue deficiencies does not yet exist, we have provided a technique that simulates soft-tissue enhancement and produces the appearance of increased soft-tissue bulk (Fig 3). By properly augmenting the skeletal structure, the inferiorly displaced soft tissues are returned to a more anatomic superolateral position, providing a natural contour to the face (Figs 6 and 7). Medial placement of the implant also raises the inferiorly displaced lateral commissures while externally advancing and rotating the vermilion, thereby increasing lip fullness. Positioning the lateral extension of the implant along the inferior edge of the commissure further reduces risk of implant exposure. Subcutaneous augmentation emphasizes a restorative approach to facial rejuvenation surgery and provides a simple, effective, and inexpensive alternative to face-lift surgery for most individuals in the 30- to 60-year age group.

References


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