

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 78 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 38- 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.

(Arch Otolaryngol Head Neck Surg. 1989;115:797-801)

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 38- 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 preset surgical procedure; instead, they simply want to look younger.

Many who prematurely show cavity 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 38- 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 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 facial skeletal structure.

Adult loss of quantity and character of a subcutaneous fat buffer decreases thickness and elasticity in the skin.^{1,2} Loss of this buffer thins the face, renders skin inelastic, and hastens wrinkling. Atrophy of the buccal fat pad along with inferior migration of cheek fat joins skin relaxation to deepen nasolabial folds, thin the vermilion border of the lip, and cause depressions, which create characteristic midfacial signs of aging.³

Sudden weight loss or cachexia evoke similar changes. Watanabe et al⁴ describe an equivalent hollowed-out appearance in a group of Japanese patients showing loss of adipose tissue in the temporal fossa.

Coelho⁵ describes two patients having a "cadaver-like appearance" of marked cheek depressions resulting from premature lipodystrophy localized to the nasolabial sulci. Facial contour was restored by means of placing carved soft silicone rubber on the maxilla beneath the nasolabial sulci, a unique treatment because augmenting the underlying skeletal structure simulated the replacement of deficient soft tissue.

Oral surgical literature has documented the importance of augmenting midfacial skeletal deficiencies for improved facial aesthetics.⁶ Onlay grafts or implants have been used alone or to mask the aesthetic deformity that may still remain even after completion of successful maxillofacial surgery.^{7,8}

Noting the importance of restoring depressions in the middle third of the face, Guerrerrosantos⁹ suggested onlay cartilage grafts covered with fascia, and Whitaker and Linton¹⁰ proposed using a paddle-

Accepted for publication January 5, 1989.

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Read before the annual fall meeting of the American Academy of Facial Plastic and Reconstructive Surgery, Washington, DC, September 23, 1988.

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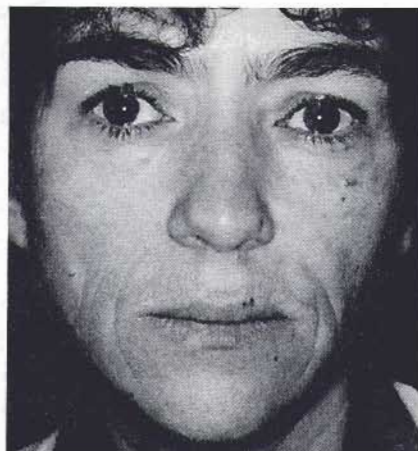


Fig 1.—Example of the flattened facial appearance ("gestalt of sadness") that often motivates young patients to seek early consultation for facial rejuvenation surgery.

shaped polytetrafluoroethylene (PTFE [Proplast]) implant to augment the midface, additionally accentuating the lateral malar-zygomatic complex.

PREOPERATIVE EVALUATION

Craniofacial analysis, using cephalometrics primarily in calculations such as the facial proportion index, only gives a general idea of facial form.¹¹ Consideration must also be given to measurement of soft tissue and its relationship to skeletal structure.¹² 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 observation remains the most important tool for treatment of contour deficiencies.¹³

Relatively young patients (ages 38 to 50 years) with degenerative soft-tissue changes or deficient midfacial bone structure have a sunken or flattened facial appearance. These patients say they look depressed, mean, or haggard; this was described by one author as the "gestalt of sadness"¹⁴ (Fig 1). This flattened appearance often motivates relatively young patients to seek consultation for facial rejuvenation surgery.

Patients reaching 35 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 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.



Fig 2.—Top, Patient might be the "ideal face-lift candidate" (ie, mid-40s, high cheekbones, good jaw structure), but she has minimal jowl formation or loose neck skin. Instead, the most conspicuous problems are related to midface degenerative soft-tissue changes. Bottom, Appearance 16 months after operation. Instead of undergoing rhytidectomy, submalar augmentation was used to fill out the depressions and restore a more youthful appearance to the middle third of the face.

The commonly accepted rule that the ideal face-lift candidate is thin, is in the mid-40s, and has prominent malar eminences and mandibular angles¹⁵ does not necessarily apply to all patients, given the limited ability of rhytidectomy to correct midfacial problems. Patients with cavity changes in the cheeks and thin, atrophic skin may demonstrate minimal or no jowl 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 pro-

cedure, 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 buccal-lingual sulcus within the region of the canine fossa. 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 provided from the anterior surface of the maxilla to the lateral malar-zygomatic areas of the facial skeleton (Fig 3, top left).

Initially, Silastic implants were carved to conform to the medial and inferior midfacial areas. This design has now evolved to

the current preformed "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 medial precut fenestrations in the implant. The implant is then removed, and 0-0 silk sutures on tapered or Keith needles are passed around the under-surface and through the fenestrations of the implant. The needles are advanced through the pocket and then directly and perpendicularly passed through the skin, exiting at the external markings (Fig 3, center right). The implant is replaced in the pocket in the specifically determined anatomical position. The implant is stabilized by tying the sutures externally over a bolster, thereby immobilizing the implant in position (Fig 3, bottom). The wound is then closed in two layers. The subcutaneous tissue of the upper flap is sutured to the periosteal and supraperiosteal tissues of the lower edge of the incision, and the mucosa is approximated with a running and alternating locking suture of 4-0 chromic.

At the conclusion of the procedure, an external pressure dressing is used to immobilize the implants further.¹⁶ This is removed the first postoperative day, and adhesive dressings (Band-aids) are then applied over the bolster. The bolster is removed on the third or fourth postoperative day. The direct fixation technique prevents implant slippage while allowing for creation of a large pocket.

RESULTS

From May 1982 to June 1988, 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 rhytidectomy in patients with an age range of 38 to 50 years.

Establishing facial symmetry via bilateral surgical procedures is important and difficult, especially since, as Gorney and Harries¹⁷ 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 adjust-

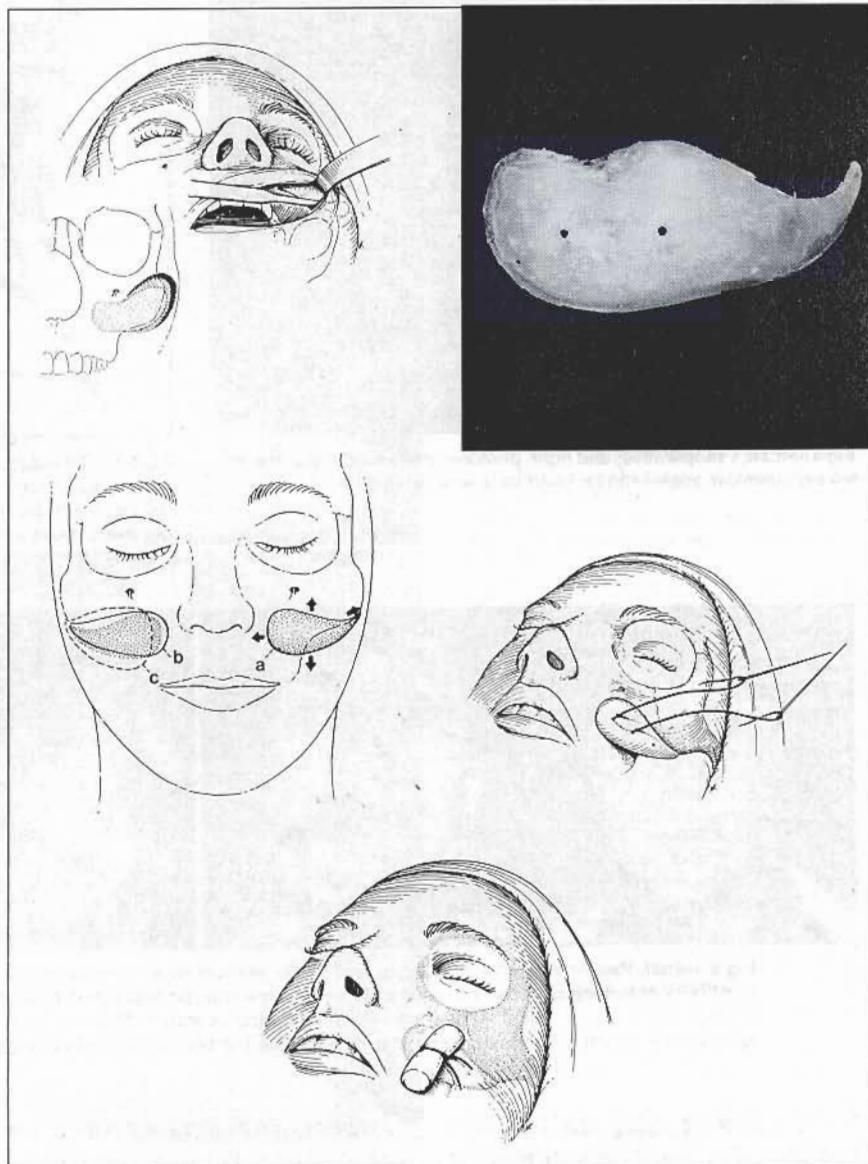


Fig 3.—Top left, Through the intraoral approach, the infraorbital nerve is identified, and dissection is continued laterally around and inferior to the zygoma also exposing the superior tendinous insertions of the masseter muscle. The pocket is made large enough so that there is no encroachment of soft tissue on any part of the implant. Top right, The submalar implant is specifically designed to deal with the "three-dimensional" problems encountered in midfacial structure. Center left, The submalar implant can be placed in an inferior to superior or medial to lateral position as desired over the anterior surface of the maxilla by considering the desired change in contour. Center right, A double-armed 0-0 silk suture passes around the posterior surface, through the implant fenestrations. From inside the pocket, the needles are passed directly perpendicular to the skin, exiting at the external markings, corresponding in position to the implant fenestrations. Bottom, The implant is stabilized by tying the suture directly over an external bolster.

ment 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 3 months.

Once in place, implants are difficult to palpate owing to their placement under the thicker, more medially positioned soft-tissue mass. During the

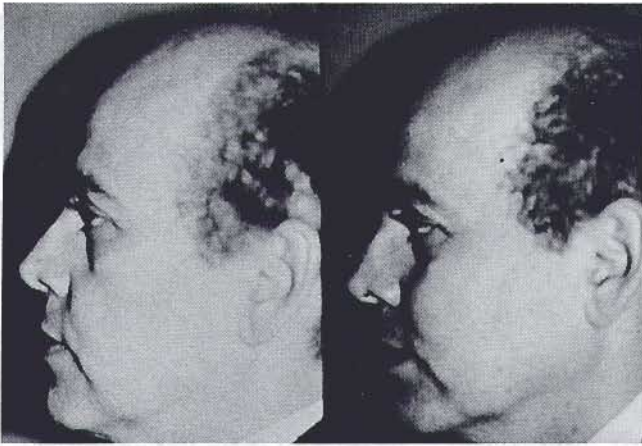


Fig 4.—Left, Preoperative; and right, postoperative result 9 months following submalar augmentation used as a sole procedure.

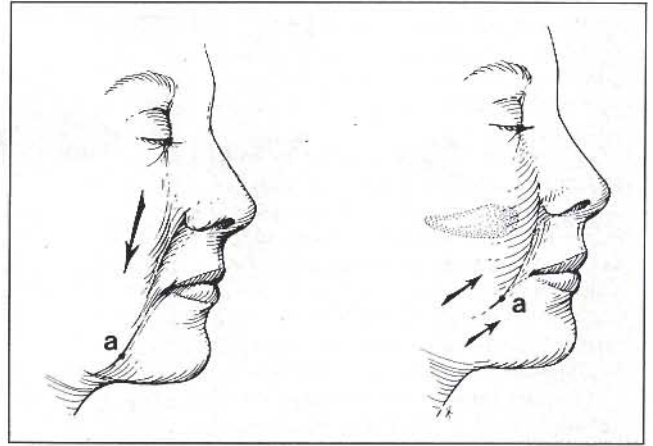


Fig 5.—The submalar implant augments skeletal structure while providing a support for the ptotic overlying soft tissues. This repositions the relaxed midfacial soft tissues to a more anterosuperior location and fills out this sunken area.



Fig 6.—Left, Patient in the 38- to 50-year age group seeking early consultation for facial rejuvenation surgery. The patient complains 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 brightness and vibrancy of the middle third of the face.

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 malarplasty.^{18,19}

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 38- 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.^{20,21} 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 polytef implants have toward shrinkage and migration and the bacteria-entrapping



Fig 7.—Top, Preoperative views. Bottom, Views 10 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.

ingrowth of granulation tissue.^{8,22} Secondary repositioning of pliable, easily fragmented polytef is also difficult.²³ Silastic is biologically inert and non-porous, 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 replacement 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 5). By

properly augmenting the skeletal structure, the inferiorly displaced soft tissues are returned to a more anterosuperior location, providing a natural contour to the face (Figs 6 and 7). Medial placement of the implant also raises the inferiorly displaced lateral commissure while externally advancing and rotating the vermilion, thereby increasing lip fullness. Positioning the lateral extension of the implant along the inferior edge of the zygoma further reduces risk of implant exposure. Submalar augmentation emphasizes a restorative ap-

proach to facial rejuvenation surgery and provides a simple, effective, and inexpensive alternative to face-lift surgery for most individuals in the 38- to 50-year age group.

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