A COMPREHENSIVE APPROACH FOR AESTHETIC CONTOURING OF THE MIDFACE IN RHYTIDECTOMY

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Over the past two decades, advances in many areas of facial rejuvenation surgery have made us keenly aware of relying less on the exclusive option of facelift in the attempt to accomplish the entire goal of providing a more youthful and vibrant appearance to the face. We have come to realize that other adjunctive techniques (inclusive of brow lift, blepharoplasty, augmentation procedures, face peeling, makeup, and others) are also required if we are to meet today's higher professional standards and patient expectations for esthetic facial enhancement. Thus, rhytidectomy has become only one component of the complex composite picture of facial rejuvenation strategies.

Recently there have been a number of diverse rhytidectomy techniques introduced in the surgical literature. Modifications such as extended superficial musculoaponeurotic system (SMAS) dissections and deep plane and subperiosteal facelifts have all shown the limitations of using only classic subcutaneous dissection. The deep plane and subperiosteal methods attempt to improve midfacial pathology with more extensive and deeper dissection than conventional rhytidectomy. Both methods rely on a common precept of deep soft tissue or muscle repositioning and rearrangement, but paradoxically differ on the basic mechanism used to accomplish similar end results.

However, in the presence of defects caused by the absence of sufficient skeletal structure or soft tissue volume, reliance on soft tissue procedures alone will not provide adequate correction. Similarly, it is not appropriate to rely on regional augmentation to substitute for the comprehensive effects obtained from a complete facelift procedure. With that in mind, this article provides a detailed discussion of various midfacial contouring procedures using alloplastic implants and its application to rhytidectomy. Emphasis is also given to defining specific patterns of midfacial deformity for correct implant selection, a vital step in discerning which patients will benefit from these procedures.

PATHOPHYSIOLOGIC CONSIDERATIONS OF MIDFACIAL AGING

It is acknowledged generally that strong, well-balanced skeletal features, essential hall-
marks for current standards of beauty. Also, best endure the ravages of age. \(^\text{29}\) Analysis of the faces of teens reveals an abundance of soft tissue providing an homogeneous composite of facial form. Full cheeks and smooth, harmonious and symmetric contours free of sharp, irregular projections or indentations commonly embody these youthful qualities. \(^\text{30}\) As one proceeds through time, this picture becomes more complex. Change may bring perceived facial flaws that appear progressively more obvious and pronounced with age, often becoming the focus of one's attention and the motivation for seeking consultation for facial surgery. \(^\text{31}\)

Inherent in the concept of rejuvenation surgery, therefore, must also be recognition that the aging process is a gradual manifestation of various facial defects and configurations. It precipitates relaxation and downshifting migration of subcutaneous fat and inelastic skin and causes atrophy of the deeper buccal fat. A direct anatomic correlation has been demonstrated radiographically between topographic variations of the midface and the loss of buccal fat (Tobias, personal communication, 1991). Disparate movement of the integument will reveal underlying asymmetric bone structure not usually evident in earlier years. Degenerative fat changes also occur in other areas such as the temporal region and in other conditions such as lipodystrophy, and are all treated similarly by supplemental or augmentation techniques. \(^\text{32,33}\)

Depending on the underlying skeletal structure, different but definable configurations of midfacial aging are formed. These include the development of a generalized flattening of the face, thinning of the vermilion border of the lip, formation of jowls, and areas of deep cutaneous depressions of the cheek that are found adjacent to prominent nasotubal folds. \(^\text{34}\) In some, severe degenerative changes of the skin and soft tissue, when combined with deficient underlying bone structure, may exaggerate the gravitational effects of aging. These patients lack sufficient skeletal structure or soft tissue volume for the surgeon to rely on rhinoplasty techniques alone to rejuvenate the face (Fig. 1A).

In contrast, other individuals may have an exceptionally prominent maxillozygomatic complex combined with thin skin lacking in both the subcutaneous and deep supporting fat buffer. In this situation, the skin, directly contact with the underlying bone structure, skeletonizing the face and accentuating existing midfacial depressions that are characteristically apparent to both the observer and subject alike (Fig. 1B). Figure 2, A. The Subalar fit by the maxillary frame, and a superficial triangular recessus (an attempt to connect this mid and radix areas) Six months after surgery. B. By augmenting this depression.
Figure 2. A. The Submalar triangle is an area of midfacial depression bordered medially by the nasolabial fold, superiorly by the malar eminence, and inferiorly by the main body of the masseter muscle. B. Before surgery. Significant depth to the submalar triangular recess (arrow) is shown in this patient, who had already undergone facelift surgery 1½ years ago in an attempt to correct this problem. Without providing supplementary support for the lack of midfacial soft tissue, the deep facial recesses and the adjacent prominent nasolabial fold spontaneously returned 3 months after the initial facelift surgery. C. Six months after surgery. Submalar augmentation was used as the sole procedure to re-expand the midfacial depression. By augmenting this depressed midfacial area, the prominence of the adjacent nasolabial fold is reduced simultaneously.
PREOPERATIVE EVALUATION: PATTERNS OF MIDFACIAL AGING

Correct analysis and identification of distinctive and recognizable configurations of midfacial deformity are essential for selection of the optimal implant shape and size for obtaining the best overall results in facial contouring. In order to provide basic assessment guidelines, we have classified the midface into five external anatomic patterns of deformity that are correlated with and corrected by specific implants (Table 1) (Figs. 4A and 8).

The first deformity (type I) occurs in the patient who has good midfacial fullness and insufficient malar skeletal development. In this case, a malar implant is chosen to augment the zygoma and create a high, arched and more lateral-projecting cheek bone appearance. Classic malar implants such as the small oval or triangular designs are relatively thick in relationship to surface area. When placed directly over the prominence of the zygoma, these implants often produce an abnormal angular protruberance and do not esthetically augment the entire malar complex.

Implant thickness required to achieve desired lateral projection over the malar prominence ranges between 3 and 7 mm, with the majority averaging 4 to 5 mm. In most type I deformities the author prefers to use the newer, shell-type malar implants which have greater surface area. This larger surface area to thickness ratio provides implant stability and reduces the incidence of rotation or displacement. Inferior extension into the subperiosteal space establishes a more normal transition from the localized area of maximum augmenta-

The second deformity (type II) occurs in the patient who has good malar eminence with area of extreme hollow submalar region. This is the antefile or malar deficiency. The surgeon must address this area with a submalar implant to restore the area of hollow.

The third deformity (type III) occurs in the patient who has good malar fullness with area of insufficient malar prominence. This is the hypomalar or malar excess. The surgeon must address this area with a submalar implant to restore the area of prominence.

The fourth deformity (type IV) occurs in the patient who has good malar eminence with extreme hollow submalar region. This is the double contour deformity. The surgeon must address this area with a submalar implant to restore the area of hollow.

The fifth deformity (type V) occurs in the patient who has good malar eminence with area of extreme hollow submalar region. This is the double contour deformity. The surgeon must address this area with a submalar implant to restore the area of hollow.
tation to contiguous areas of relative recession (Fig. 5).

The second deformity (type II) occurs in the patient who has atrophy of midfacial soft tissues and adequate malar development. In this case, submalar implants are used to augment or fill midfacial depressions or provide anterior projection to a flat face (Fig. 6). In this area, the amount of augmentation and potential sites for implant placement are open to a broader range of interpretation and require a greater degree of judgment than the malar area associated with type I deformities.

The third deformity (type III) is a distinctive variant of type II deficiency and occurs in the patient who has thin skin and prominent malar eminences with abrupt transition to an area of extreme hollowness found within the submalar region. This produces the impression of an extremely gaunt or skeletalized facial appearance. In this group of patients the midfacial hollow may be exaggerated instead of remedied by rhytidectomy. Similarly, contouring methods used to smooth out these abrupt changes in surface topography require a more refined transitional type of submalar implant with less anterior projection. This modified, U-shaped second-generation submalar implant has an increased superior-inferior dimension with greater surface area to thickness ratio and is thinner and more tapered than the first-generation implant, it is designed to cradle the inferior portion of an extremely prominent zygoma while simultaneously filling out the submalar area below. In these situations, rather than directly augmenting the malar bone we are able to supplement the area around the bone in order to restore the rounder high cheek bone appearance of a younger age (Fig. 7). Therefore, analysis of the smooth, harmonious cheek contours of youth, particularly as seen in today's fashion photography, concludes that the effect is due only in part to skeletal structure. The other component is the presence of thicker, more robust soft tissue pads that encompass this underlying bony framework.

The fourth deformity (type IV) is the result of combined malar hypoplasia and midfacial soft tissue deficiency, wherein both the submalar and malar regions of the midface require augmentation. In this situation a single combined implant (malar-submalar) must serve two purposes; it must proportionately augment a deficient skeletal structure while simultaneously filling a void created by absent midfacial soft tissue (Fig. 8). One example of patients that fall within this category are those

<table>
<thead>
<tr>
<th>Deformity Type</th>
<th>Description of Midfacial Deficiency</th>
<th>Type of Augmentation Implant Used</th>
<th>Type of Implant Used</th>
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<tbody>
<tr>
<td>Type I</td>
<td>Primary malar hypoplasia; adequate submalar soft tissue development</td>
<td>Requires projection over the malar eminence</td>
<td>Midfacial implant: &quot;split-type&quot; implant extends inferiorly into submalar space for more natural result Submalar implant</td>
</tr>
<tr>
<td>Type II</td>
<td>Submalar deficiency; adequate malar development</td>
<td>Requires anterior projection. Implant passed over face of malar or submalar bone or both in submalar space. Also provides for midfacial fill</td>
<td>Submalar implant (management II; more refined) &quot;U&quot;-shaped to fill within submalar space and around inferior border of prominent zygoma</td>
</tr>
<tr>
<td>Type III</td>
<td>Extensive midfacial atrophy; the skin with abrupt transition to a severe submalar recess</td>
<td>Requires normal anatomic transition between malar and submalar regions; mild to moderate augmentation around inferior aspect of zygoma. A &quot;modified&quot; submalar &quot;U&quot;-shaped implant (maxilla, and inferior submalar projection) fills large submalar void.</td>
<td>&quot;Modified&quot; submalar &quot;U&quot;-shaped implant (maxilla, and inferior submalar projection) fills large submalar void</td>
</tr>
<tr>
<td>Type IV</td>
<td>Both malar hypoplasia and submalar deficiency</td>
<td>Requires anterior and lateral projection; &quot;volume is-packing implant&quot; for entire midfacial restructuring</td>
<td>&quot;Modified&quot; submalar &quot;U&quot;-shaped implant (maxilla, and inferior submalar projection) fills large submalar void</td>
</tr>
<tr>
<td>Type V</td>
<td>Tear trough deformity (secondary malar depression or recession)</td>
<td>Requires site-specific augmentation over infraorbital rim</td>
<td>Tear trough implant; to fill site-specific suborbital groove</td>
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Figure 4. A–E. Posterolateral drawings illustrate the anatomic areas of the midface and five distinctive topographic patterns of midfacial deformity. Specific implants that are customarily used to correct these specific patterns of midfacial deformity are selected (see Table 1).
Figure 4. (Continued).
who typically have a long, narrow face with poorly developed bone structure. Because this condition is associated with premature aging of the skin, these patients are often classified as poor candidates for rhytidectomy. As seen in Figures 9 A to D, total midfacial restoration and lateral mandibular augmentation using a combined malar-submalar and pre-jowl implant provides the structural basis for this patient to derive greater benefit from the concurrently performed rhytidectomy procedure. The fifth or tear-trough deformity (type V)

Figure 5. A: This patient had one of the older, bulkier types of malar implants previously inserted to correct malar hypoplasia (type I deformity). These implants, limited to the malar eminence, produced an abnormally angular projection to the cheekbone and a relative recession to the rest of the midface. B. Eight months after revision malarplasty and replacement with a larger shell-type implant. With augmentation of a greater surface area and extension inferiorly into the submalar space, a more natural, high cheekbone effect is produced.

Figure 7. A: Before surgery, this patient complained of a depressed demeanor exhibited by midfacial flatness (type II deformity). B. Submalar augmentation provided the anterior projection needed to restore a more vibrant dimension to the midthird of the face.

Figure 6. A: Before surgery, this patient complained of a depressed demeanor exhibited by midfacial flatness (type II deformity). B. Submalar augmentation provided the anterior projection needed to restore a more vibrant dimension to the midthird of the face.

Figure 8. The combined malar and submalar implant is combined implant is inserted into soft tissue.
is specifically limited to a deep groove that commonly occurs at the junction of the thin eyelid and the thicker cheek skin, extending downward and laterally from the inner canthus of the eye, across the infraorbital rim and suborbital component of the malar bone (Fig. 10). This deformity also gives the face a disfigured or tired appearance. Recognizing the extremely high rate of occurrence of this age-related defect in patients presenting for blepharoplasty, Flowers uses a tear-trough implant specifically to correct this deformity.

**PROCEDURE**

The day before surgery the patient is started on a broad-spectrum antibiotic regimen that continues for 5 days after surgery. Intravenous...
antibiotics and dexamethasone are also administered perioperatively.

Marking out the Defect

Before starting anesthesia and while the patient is in an upright position, the precise midfacial area to be augmented is outlined with a marking pen. In the majority of cases, the medial border of the implant is placed at or lateral to a line drawn vertically downward from the midpupillary plane or infraorbital foramen.

This initial design drawn on the skin helps both the surgeon and patient decide on the implant shape, size, and position appropriate to accomplish their mutual goals (Fig. 11).

Preliminary Assessment

Determining the type of midfacial deficiency is essential for the preliminary selection of the implant that will achieve the best overall improvement. In such subjective preoperative analysis, there is an obvious need for stan-
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Figure 9. A and B, Prone; C and D, Oblique; E and F, Healed. G and H, Laterals. A, B, C, E, and G, Preoperative analysis of the facial configuration in this 46-year-old patient reveals the presence of severe deficiency in both skeletal structure and skin-tissue volume. S, D, F, and H. Seven months after surgery. Performed concurrently with myectomy, the combined submuscle shell implants were used to restructure the entire midface, and a prepubertal implant was used to add width to the mandible. In this patient, these augmentation procedures were essential for the structural and volumetric enhancement required for the facelift procedure to provide a meaningful, long-term improvement.

dardized measurements to provide guidelines in treatment planning. Considering the infinite variations of facial form, however, most analytic measurements used in determining aesthetic guidelines have been unreliable.

Terese8 relies on the principles of skeletal "zonal anatomy" to assist in the implant selection process. The ultimate problem still remains the inability to determine the exact amount of augmentation required to not only correct the deficiency but also create an esthetically enhanced result. With the integration of
Inclusion and Periosteal Elevation

A small, obliquely oriented 1 to 1.5-cm incision is made in the buccal-gingival sulcus over the lateral part of the canine fossa and lateral buccal sulcus (Fig. 12A). Bleeding is minimized by prior injection of the mucosa and then by compressing it against the underlying bone while making the incision. The incision is carried immediately down to bone. Because the mucosa will stretch and allow complete visual inspection of midfacial structures, a long incision through adjacent submucosal or muscular layers is not necessary.

The incision should be made high enough to leave a minimum of 1 cm of inferior gingival mucosa cuff. If the patient wears dentures, this incision is usually well above the denture’s superior border. Dentures remain in place during and after the procedure, and in our experience have not been found to cause extrusion or increase the incidence of complications.

The periosteum is then elevated superiorly off the anterior surface of the maxilla and dissection is extended in a superolateral direction (Fig. 12B). It is usually not necessary to identify the infraorbital nerve. However, if unusual circumstances require more medial placement of the implant or if the surgeon is unfamiliar with the infraorbital foramen not by elevating the maxilla.

Dissection continues in a plane, providing exposure of the surface of the maxilla laterally over the masseter and zygomatic arch. The midface is similar in the maxilla to the dissection subperiosteal plane, prior to elevation of the external or free border of the elevators over the lateral aspect of the maxilla. This is particularly true for the lateral aspect of the maxilla, as the dissection is extended anteriorly into the zygomatic arch to facilitate the dissection.

Identifying and Opening the Submalar Space

When performing implant procedures alone, intravenous sedation accompanied by a local wide-field block is usually sufficient. When implant surgery is performed with other time-consuming procedures, general anesthesia is preferred. A routine preparation is performed and povidone-iodine (Betadine, Purdue Frederick, Norwalk, CT) impregnated gauze sponges are additionally placed into the buccal-gingival sulcus.

Local anesthetic is injected percutaneously at the level of the periosteal plane. A sufficient amount of infiltration minimizes bleeding and provides increased safety by facilitating dissection. The addition of hyaluronidase (Wydase, Wyeth-Ayerst, Philadelphia, PA) disperses the local anesthetic and reduces soft-tissue distortion.

Figure 11. Prior to elevation of the periosteal, the area receiving augmentation are outlined specifically with the patient in the upright position. In most cases, the medial border of submalar or malar implants is placed at or lateral to the midpalpebral line.
unfamiliar with the intraval facial approach, the infra-orbital foramen nerve are identified easily by elevating the maxilla in a supraperiosteal di-
section. Dissection continues in a subperiosteal plane, providing exposure from the anterior surface of the maxilla medially and continuing laterally over the malar-zygomatic complex and zygomatic arch. This dissection of the midface is similar in scope to that described during the subperiosteal face lift.² It is essen-
tial that the dissection stay on bone in the safe subperiosteal plane, particularly over the mid-
and posterior portions of the zygomatic arch. The external or free hand is also used to help guide the elevator over the designated area to be un-tenninated (Fig. 12C).
A Joweh elevator may be used to start the dissection, but is immediately changed for much broader (approximately 9–10 mm); heavier, curved, and straight periosteal eleva-
tors. This is particularly important when dissecting laterally over the zygoma and zygomatic arch (Fig. 12D); broad elevators facil-
itate the dissection safely and with relative ease within the subperiosteal plane (Fig. 12E).

Identifying and Opening the Submalar Space

The submalar pocket is formed by extend-
ing the subperiosteal dissection inferiorly below the zygoma over the tendinous attach-
ments of the masseter muscle. If in the correct plane, the glistering white tendinous attach-
ments of the masseter muscle are seen between gently and bluntly pushing the superficial tissues inferiorly and away from the deeper tendin-
ous structure. These tendinous attachments are not cut and are left completely intact, pro-
viding a supporting framework upon which the implant may rest (Fig. 12F).

The submalar space may be extended with-
out difficulty for at least 2 to 3 cm interme-
dially below the body of the zygoma. In this located, the contraction of the masseter muscle produces lateral rather than superior-inferior move-
ment and does not cause displacement of the implant. Even in reconstructive cases where more extensive inferior and lateral dis-
sections are made to accommodate larger prostheses, there is surprisingly imperceptible implant motion.

As the dissection moves posteriorly along the zygomatic arch, the space becomes tighter and is not as easily enlarged. However, this part of the space can be opened by gently ad-
ancing a heavy periosteal elevator posteriori-
ally along the inner border of the zygomatic arch.

It is of utmost importance that the dissection be extended sufficiently in all directions to create a large enough space over the zygoma-
 cic谁assial, zygomatic submalar region so that the implant fits passively within the pocket. There must be no compression by the surrounding soft tissue any segment of the implant (Fig. 12G). If an implant is forced into a pocket that is too small, the constricting tissue adjacent to the implant, particularly at the posterior limit of the dissection, will have a tendency to push it toward the opposite direc-
tion causing implant displacement or extru-
sion.¹¹ Under normal conditions, even after large pockets have been made we estimate that the periosteum and soft tissues collapse immediately and obliterate most of the space around the implant within 24 to 48 hours fol-

Routes of Insertion

The intraval face route is recommended for the insertion of submalar or larger surface area implants. It allows for direct examination of all internal structures, ease of implant insertion, optimised placement, and no external scar. More extended inferior dissection of the sub-
malar space is also more effectively and safely performed through the intraval route than through other approaches. Access to this area through a blepharoplasty or facelift approach is difficult technically, and it cannot be con-
fident that the dissection continued inferiorly below the bone is within the correct plane. When performing malar augmentation using smaller implants or inserting tear-tough im-
plants, blepharoplasty or facelift approaches do provide direct access over the infrorbital rim and superior aspect of the maxilla and zy-
goma. However, if the eyelid approach is used to insert larger implants requiring more exten-
sive dissection or if there is laxity of the lower

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Figure 12. A. After repair mucosa and periosteum of canine fossa and alveolar ridge were dissected from the subperiosteal plane. The posterior wall of the dissection was a little posterior to the pterygoid plate. B. The posterior wall of the dissection was posterior to the pterygoid plate. C. The posterior wall of the dissection was posterior to the pterygoid plate. D. The posterior wall of the dissection was posterior to the pterygoid plate. E. The posterior wall of the dissection was posterior to the pterygoid plate. F. The posterior wall of the dissection was posterior to the pterygoid plate. G. The posterior wall of the dissection was posterior to the pterygoid plate. H. The posterior wall of the dissection was posterior to the pterygoid plate.

Final Implant Selection

At this time, via the implant selection, the actual topographic measurements of the implants into the posterior wall of the sinus were expressed through small...
Figure 12. A. After injection with local anesthetic, the mucosa is compressed and a single incision is carried through mucosa and periosteum directly onto bone. The incision is small (1.5 to 2.5 cm) and is placed over the incisive papilla of the canine fossa and lateral buccal sulcus, at least 1 cm above the buccal gingival line. B. Illustration demonstrates the medial subperiosteal dissection (beginning from a position at least lateral to the alveolar process) and extending in a supero-lateral direction. C, D. Using broad periosteal elevator, the free flap (external to the skin) helps guide the dissection over the deepened area to be undermined. E, F. The dissection may be continued inferioiy over both the subperiosteal plane and within the submucosal space, indicating the posterior extent of the dissection. E. The 5- and 10-mm curved and straight periosteal elevators used for undermined. F. The periosteal elevators are positioned over the anterior surface of the maxillary sinus and the submucosal space. This submucosa provides sufficient space to avoid perforation and to allow for an incision to be made. G. The incision is carried through mucosa and periosteum directly onto bone. H. Illustration demonstrates the extent of dissection required for most implant placements. The dissection may be continued inferioiy over both the subperiosteal plane and within the submucosal space.
the zygoma and zygomatic arch or over the masseter tendon, or rest more superiorly on bone or it may overlap both bone and tendon. The larger shell-type malar implants rest primarily on bone in a more superior, lateral position and extend partly into the submalar space. The combined implant will occupy both areas. However, any implant placed in patients with particularly thin skin or prominent bone structure often may require modification by reducing its thickness or length to avoid potential ridging or abnormal projections.

Methods of Fixation

Once implant position has been established, one can determine whether it is necessary to further secure the implant. Although stabilization is not always required, particularly with the larger implants, it can be accomplished by a number of different methods. Internal suture fixation relies on the presence of an adjacent stable segment of periosseous or tendinous structure to anchor the implant. Stainless steel tap screws can also be used, but care must be taken not to enter the maxillary sinus when the implant is positioned over the anterior surface of the maxilla.

Two methods of external fixation can be used to stabilize midfacial implants: indirect lateral suspension or direct fixation. In the lateral suspension technique, long swaged-on arthroscopic needles are passed through the lateral end of the implant, enter the pocket, and are sutured to the skin over the temporal region where the sutures are tied over a bolster (Fig. 13). This method produces indirect superolateral traction on the implant. This technique, which pulls the implant over the body and arch of the zygoma, is more suitable for malar than submalar augmentation.

In patients with gross asymmetry or implants that are mobile or placed within the submalar space, the direct method of external fixation provides for more exact stabilization. It allows a large pocket to be made for better visual inspection and accurate implant placement, and prevents slippage in the immediate postoperative period.

This direct method relies on implant fusions that coincide to points marked on the skin surface that are used as a guide for implant placement and fixation. Once the implants are correctly positioned within their pockets, a point is marked directly to the medial fornix of the implant on the midline of the lips. The point is then sutured to the skin with a small skin stitch. This stitch is placed at the midline to the right and left of the vermilion border.

The skin is then pulled over the corresponding area of the implant.
as been established, or if it is necessary to do so. Although stabilization of the implant is required, particularly in the vertical plane, this can be accomplished by sutures that are passed through the periosteum of the adjacent bone and tied to the implant. A second mark, which corresponds to the second, adjacent tuberosity, is placed on the skin to locate the second point of fixation of the implant. This figure illustrates the two components (implant and suture), with the respective topographical variations that form the combined implant. The suture is then sutured to the implant, and the implant is stabilized by tying the suture directly over an external bolster (composed of two cotton rolls). The suture and bolster are removed on the third postoperative day.

Figure 14. A-D. Direct external method of fixation. A. The implant is adjusted inside the pocket in the exact position desired; a mark is placed at the point where a right-angle clamp contacts the skin. This corresponds to the position of the first or medial-most fenestration of the implant. B. Symmetrical placement is assisted by measuring the distance from the medial side to both the right and left sides. A second mark, which corresponds to the second adjacent tuberosity, is placed on the skin, C. A double-armed 2-0 silk suture is passed through the posterior surface of the implant and through the fenestrations. From inside the pocket, the needles are passed directly perpendicular to the skin, exiting at the respective external markings, thus providing a two-point fixation. This figure illustrates the two components (implant and suture), with the respective topographical variations that form the combined implant. D. The implant is stabilized by tying the suture directly over an external bolster (composed of two cotton rolls). The suture and bolster are removed on the third postoperative day.

pockets, a point is marked on the skin corresponding directly to the position of the most medial fenestration of each implant. Locating this point is aided by inserting a right angle clamp into the pocket over the first fenestration of the implant. With the tip of the clamp at right angles to the skin while tenting it up, a mark is placed at this point (Fig. 14A). Symmetrical placement of both implants is assisted by measuring the distance from the midpoint to both right and left medial markings (Fig. 14B). The implants are then removed and placed on the skin by lining up the medial fenestration over the corresponding mark, while confirming that the implant is within the general area outlined by the preoperative skin markings. The superior-inferior position of the lateral portion of the implant is then decided and a second point is marked on the skin corresponding to the adjacent implant fenestration. Each end of a double-armed 2-0 silk suture with 1-in straight needles is passed through the medial and central implant fenestrations, looping the suture around the posterior surface. The needles are advanced through the pocket and passed perpendicularly through the skin, exiting at the respective external markings (Fig. 14C). The implant, following the needles, is guided into the pocket. Both implants are examined by palpation and direct
vision to ensure that they are correctly and symmetrically positioned. The implants are then secured in place by gently tying the sutures over a bolster consisting of two cotton rolls (Fig. 147).

Augmentation Performed Simultaneously with Rhynidectomy

Augmentation procedures can be performed either before or after rhynidectomy. Preoperatively, if one is certain of the design and size of implant to be used it can be inserted at the end of the facelift. The only disadvantage to performing augmentation procedures before the facelift is related to the time factor. If the time required to perform the succeeding procedures exceeds the duration of action of the local anesthetic, blood or fluid may accumulate within the pocket. The manipulation by the facelift itself may cause additional accumulations of fluid and directly inhibits the surrounding tissues from immediately closing down the dead space around the implant. In these situations, penrose drains are inserted into the pocket and exit percutaneously through the mucosal incision in anticipation of blood or fluid accumulation that may occur during a prolonged procedure. The drains are usually removed the next day or can be left for up to 72 hours. No infections have occurred from the transoral use of drains. Instead, we have found their use reduces the incidence of hematoma or seroma, frequent causes of infection.

There are, however, more advantages to performing the implant procedure at the beginning of the facelift than at the end. Any moderate amount of tissue edema that may be present at the end of rhynidectomy will limit appropriate implant selection and preclude the ability to make the fine contour or position changes required for more accurate results. Initially performing subperiosteal dissection of the midface combined with supplemental augmentation also enhances the effectiveness of rhynidectomy. Instead of a two-dimensional force being exerted on facial flaps that are pulled over a flat or hollow surface, the expanded underlying infrastructure adds a third force vector such that the skin is repositioned and draped over a larger three-dimensional convex surface (Fig. 177). This reduces the tension exerted on the oral commissure and peri- oral structures. Another advantage is a direct result of the subperiosteal dissection that detaches the insertions of the zygomatic ligament and masseter and minor muscles. Being less tethered to the underlying fixed tissues, the SMAS is able to more effectively pull the mobilized deeper midfacial soft tissues.

After midfacial augmentation is completed, an internal method of fixation may be used. At this point the mucosal incision is closed and the facelift is begun. If it is determined that direct external fixation is necessary and extended anterior facial skin or SMAS dissection is anticipated, then the implants are left in place and the mucosal incision is closed par- tially with one or two temporary sutures. At the conclusion of the facelift, the mucosal incision is reopened and the external sutures are passed and stabilized to an external bolster.

Figure 16. The patient depicted on this page is typical of the new patient presentation. The age group of patients is younger, and the correction of the "brow" from occurring.

Figure 15. The subperiosteal implant aug- ments the anterior facial structure, adding a third vector factor, so that instead of stretching the skin over a smaller concave structure A, it is draped over a larger, con- vex structure, requiring more surface area of skin for coverage B. This avoids applying excessive tension on the skin.

Facelift

After the implant is in place, the facelift is usually performed in the submaxilla and cases of minimal rela- tive platysmal bands of subplatysmal fat through a submental incision.

The submental or preplatysmal plane, flap This will eventually subcutaneous cervico- continuous elevation allowed to rotate an anterior and posterior direction. Unless the neck has subcutaneous fat, we found that the subplatysmal is found to be the most natural plane. The plane is extended to the zygomatic arches, and makes platysma difficult. If platysma or inferior edges are grasped.
procedure at the be-

gan at the end. Any

receding edema that may be

manifestation will limit

adequate results.

The subperiosteal

dissection is performed

under local anesthesia.

The mastoid incision is

adjacent to the ear. The

area is then injected

with intravenous air
to improve visualization.

When the incision is

completed, the skin

flaps are elevated.

The dissection is then

continued to the level of

the zygomatic arch.

The zygomatic arch

is then detached from

the temporalis muscle.

The dissection is then

continued to the level of

the zygomatic arch.

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anterior facial folds—seek consultation for rhinodectomy as the solution to most of these problems. Whenever the rhinodectomy procedure is extended or an ablative procedure is added, the benefits of doing so must be substantial enough to justify additional risk.

Alternatively, adjunctive procedures or more radical rhinodectomy approaches may reduce a large percentage of patient dissatisfaction with rhinodectomy results. This is particularly relevant when a technically proficient procedure yields suboptimal results because of unrecognized skeletal or soft tissue deficiencies or both. In the area of the midface, patient dissatisfaction after conventional rhinodectomy is often tied to lack of long-term improvement in alleviating the nasolabial folds and adjacent depressions. These limitations have been attributed to nonrelease of the zygomatic ligamentous attachments and the facial attachments of the SMAS that remain fixed to the zygomatic and facial muscles after subcutaneous or conservative SMAS dissection.

For optimal correction of the nasolabial folds to occur, total release of the SMAS attachments to the zygoma anterior to the zygomaticus major muscle is necessary. By contrast, overzealous attempts via multiple or extended rhinodectomy to reduce anterior facial folds, particularly in older patients with atrophic, inelastic skin, without simultaneously augmenting existing deficiency may cause unnatural pull lines around the mouth or a light, skeletonized, mask-like appearance with general loss of facial expression (Fig. 16).

The enhanced benefits obtained from extended SMAS, deep plane, or subperiosteal face lift procedures are based on the effective mobilization and repositioning of the deep soft tissues or facial muscles and ligaments. However, avoidance of increased risk of facial nerve injury requires the surgeon to have substantial experience in rhinodectomy before increasing the complexity and scope of the procedure.

As with any surgical modality, appropriate patient selection is crucial for long-term efficacy. Patients with good skeletal structure and an abundance of midfacial fat are not candidates for augmentation. Similarly, in patients with atrophy of buccal fat pads and extensive ptosis of zygomatic cheek pads, the redundancy found in the nasolabial folds exceeds the potential for cheek flap translocation procedures alone to effectively correct this condition.

The subperiosteal facelift elevates and repositions the periorbital and separates the zygomaticus major and minor and levator anguli oris muscles and entire soft tissue components from their bony attachments over the malar-zygomatic complex. It then exerts superior traction on these muscles and adjacent soft tissues by mobilizing and anchoring the flap to temporalis fascia. The deep plane approach leaves facial muscles intact, separates cheek fat from the muscles, and pulls the superficial fibroadipose tissue in a lateral direction. The facelift flap is used as the vehicle to reposition the cheek fat which is sutured under extreme tension. However, the descent of cheek fat is but one pathophysiologic event among many that shape the configurations of midfacial aging. The amount of rejuvenation that will be accomplished using soft tissue translocation techniques also depends on the percentage that remains of the original volume of fat present in youth.

Orbital pathology associated with aging is also due to diverse etiologies. Although repositioning muscle structures as performed in composite rhytidectomy may enhance the periorbital region in patients with good bone structure, it will not provide the degree of augmentation required for effective change in most cases of malar hypoplasia or substantial midfacial soft tissue loss.

In current midfacial contouring procedures using larger implants, the extent of subperiosteal zygomaticomaxillary-supramaxillary undermining that approaches the limits of dissection performed during subperiosteal facelift is far greater than in previous traditional augmentation procedures using smaller implants. Extending the dissection inferiorly below the zygomatic arch and superio1y to the masseter muscle further mobilizes an extra component of midfacial soft tissue. This area corresponds directly to the submaxilar space and is undermined routinely when performing submaxilar augmentation. During this midfacial subperiosteal dissection, the zygomatic muscles are consequently released from their bony insertions. The SMAS, formerly attached and tethered by its muscular attachments, is no longer completely bound by a fixed anatomic structure. Theoretically, this wide subperiosteal undermining provides the SMAS greater effectiveness in elevating the deep plane during rhinodectomy. It allows facial structures to function as if subperiosteal undermining was performed and subperiosteal undermining along the parasympathetic attachments of the masseter muscles, or jowl sulcus. This process establishes a smooth, soft transition between the nasolabial folds and the cheek flap.
lap translocation properly correct this condition. The facelift elevates and repositions the subcutaneous and superficial soft tissues and subcutaneous fat in an anterior and inferior direction. The procedure is performed with the patient under general anesthesia and involves the creation of a subcutaneous incision along the hairline and a subperiosteal dissection to the level of the masseter muscle. The subcutaneous fat and superficial soft tissues are then repositioned and secured with sutures. This results in a reduction in the appearance of the jowl and a more defined jawline. The procedure is often combined with other techniques such as laser resurfacing or injectable fillers to further enhance the results.
Figure 18. A and C. Preoperative views. B and D. Postoperative views 18 months after upper and lower blepharoplasty, rhytidectomy, and submalar augmentation were performed. By producing a slight convexity to the midaface, submalar augmentation provided a more vibrant and youthful appearance and prolonged the results of rhytidectomy.

The osteal plane further provides an enhanced foundation and support to facilitate re-draping of the midfacial soft tissues to achieve the smooth external contour of the midaface that is exemplified in youth (Figs. 18A–B). It is also important to emphasize that the addition of facial augmentation procedures is not intended to correct generalized integumentary chalasis and soft tissue ptosis associated with the aging face, or to substitute for performing a complete facelift procedure, inclusive of adequate platysma and SMAS dissection (Figs. 19A and B).

Whenever more extensive dissection or other surgical procedures are performed in conjunction with blepharoplasty, a greater postoperative edema and longer recovery time must be anticipated. Additional amounts of edema formation procedes is typically more persistent than found with or subperiosteal face lifts.
other surgical procedures are performed in conjunction with rhinoplasty, increased postoperative edema and a more prolonged recovery time must be anticipated. This additional amount of edema caused by augmentation procedures is usually less severe or persistent than found after complete deep plane or subperiosteal facelift. However, it will also vary according to the extent of the implant procedure and the concurrently performed rhinoplasty.

Over the past 10 years we have found that in structure- or volume-deficient patients the addition of augmentation procedures proved vital for enhanced and prolonged improvement following rhinoplasty (Figs. 9A–7J).
CONCLUSION

In conclusion, accretion reveals that the procedure is not only the first but also by the accumulation must be restriction of facial appearance. We face lift as only a part of a proper bulge of facial contouring as a way of achieving more sustainable results in rhinoplasty.

*The author has a team design.

References


Figure 20. A and C. This patient had undergone rhinoplasty a few years before, with rapid recurrence of (left and right) pathology. Analysis of the mucosa reveals recurrence of the submucosal triangular depression. A necessary supportive framework is required to assist in maintaining and preventing the midfacial soft tissue pads, which are reversibly repositioned by the face lift, from migrating in an interfacial direction. B and F. Platysma lift after revision rhinoplasty (with SMAS and platysma plication), combined with subcutaneous and mandibular augmentation.
is particularly interesting to observe a substantially greater degree of patient satisfaction associated with revision facelifts. These patients had the unique opportunity to compare the results of prior rhytidectomy to those obtained after the revision facelift surgery was concurrently performed with augmentation procedures (Figs. 20A and B).

CONCLUSION

In conclusion, accurate preoperative analysis reveals that the aging process is manifested not only by the development of loose skin but also by the accumulation of facial defects that must be restructured to truly restore a youthful appearance. We should, therefore, view the facelift as only a partial solution to the appearance problems of facial aging, and regard facial contouring as a necessary foundation for achieving more successful and longer lasting results in rhytidectomy.

*The author has a financial interest in the implant of his design.

References


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