

Eyelid rejuvenation: a marriage of old and new

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Purpose of review

Lower lid anatomy and the subtleties of this region have been studied extensively in the past. The variations that are found in the lower eyelid can lead to complications if the surgeon does not have a complete understanding. Lower lid blepharoplasty techniques have progressed over the past from simple skin excisions to midface and lower eyelid repositioning. With these modifications, our understanding of the anatomy and the function of the lower eyelid improve. This review highlights the findings of lower eyelid anatomy and rejuvenating techniques reported over the past year.

Recent findings

Over this past year anatomic studies have been performed focusing on the aging eye and midface in both Asians and non-Asians. Controversial work has been presented using an injectable (phosphatidylcholine) to ablate fat in the lower eyelids. A myriad of articles have discussed various options for combined midface and lower eyelid rejuvenation. The age-old argument of transconjunctival vs skin muscle techniques has been presented. More recent debates over fat volumetric preservation continue. Finally, a highlight of this year was a retrospective study looking at a conservative approach to blepharoplasty.

Summary

This has been a year of confirmation of old techniques and anatomic findings and a year of increasing complexity in midface lower eyelid rejuvenation. What is clear is that no one technique is ideal for every patient. A basic understanding of lower eyelid anatomy, preoperative evaluation, and a grasp of the multiple techniques will allow us to formulate a treatment algorithm that can be safe and effective for our patients.

Keywords

blepharoplasty, lower eyelid, midface rejuvenation

Introduction

This year's review starts with the new anatomic findings that we see in the Asian eye, discusses major articles in lower eyelid and lower lid rejuvenation, and finishes with midface and lower eyelid combination techniques.

To understand the findings of anatomic variations in lower eyelid, we must first review some key articles. In 1974 Putterman and Urist [1] described the surgical anatomy of the orbital septum. They described in detail the eyelids of white people with their distinct suborbicularis fascia layer. Hawes and Dortzbach [2] described the fusion of the orbital septum and the capsulopalpebral fascia. This fusion was found at approximately 5 mm below the lower border of the tarsal plate. In this fusion, a complex fascia layer develops, and from this point there is also an extension of the capsulopalpebral fascia through the orbicularis to the skin, thus leading to the formation, in part, of the lower eyelid crease. An understanding of these two articles helps us to build upon the multiple techniques that are used in lower eyelid reconstruction and in blepharoplasty (Fig. 1).

Further anatomic studies by Muzaffar *et al.* [3] and Stuzin *et al.* [4] in 2002 both separately described the anatomy of the ligamentous attachments of the lower eyelid and lateral canthal regions. These authors also highlighted some of the anatomic findings in the midcheek and malar regions that help us further understand the techniques of midface rejuvenation combined with lower eyelid techniques.

Lower eyelid anatomy

Lim *et al.* [5**] have described their anatomic study of the Asian lower eyelid. The focus of the study was the capsulopalpebral fascia, orbital septum, and tarsus of the lower eyelid in the Asian population to determine the reasons for eyelid disorders such as epiblepharon and entropion, the incidence of which is higher in Asians, and to further document the anatomic reasons for decreased lower eyelid creasing. The authors evaluated 10 normal Asian lower eyelids; the average age of these cadavers was 67.5 years. The specific differences they found between the Asian and non-Asian eye were as follows. The capsulopalpebral fascia and orbital septum did not fuse prior to the attachment at the tarsal plate on seven of their 10 specimens, and three had minimal attachments.

Interestingly, there was no distinct suborbicularis fascia layer. Because the insertion of the capsulopalpebral fascia was at the posterior and inferior aspect of the inferior tarsal border, whereas the orbital septum is

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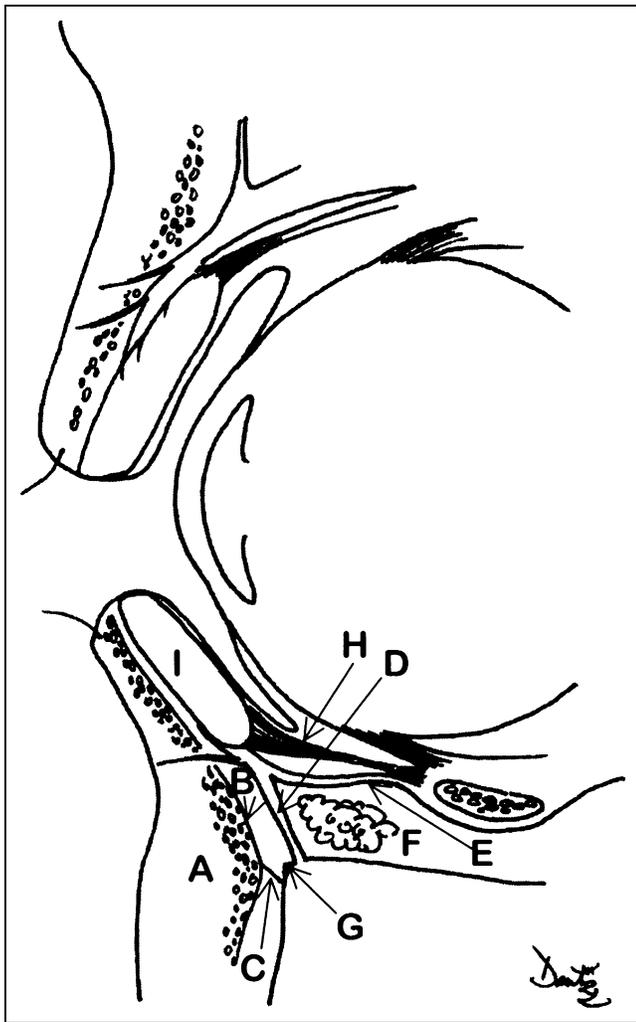
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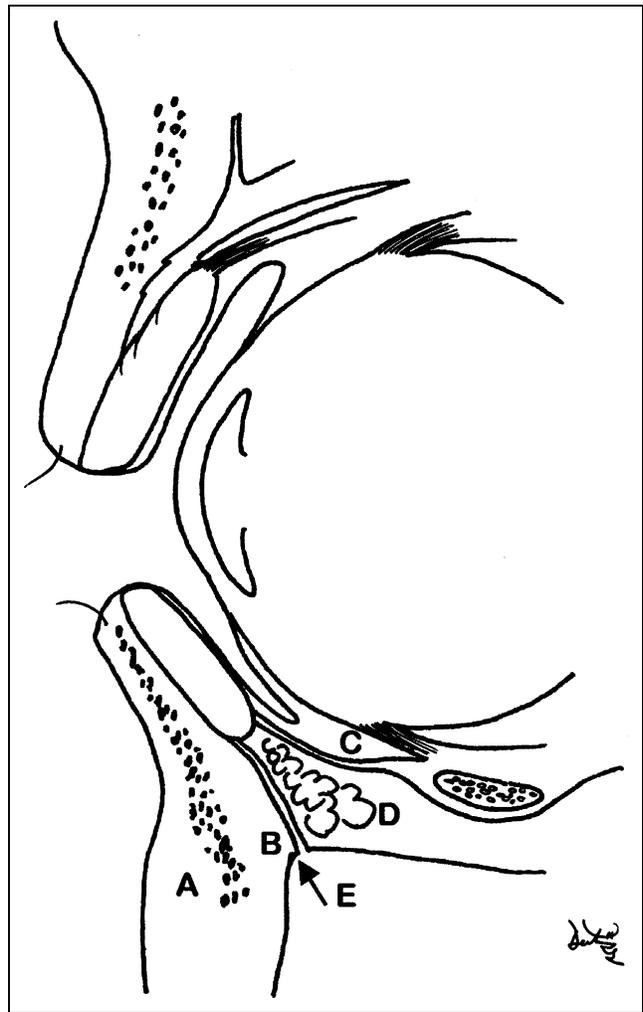
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Figure 1. Non-Asian eye



Lower eyelid anatomy of the non-Asian eye. A, orbicularis oculi muscle; B, suborbicularis fascia; C, orbicularis retaining ligament; D, orbital septum; E, capsulopalpebral fascia; F, orbital fat; G, arcus marginalis; H, Mueller's muscle; I, tarsus. Original drawing by Denton D Weiss, MD.

Figure 2. Asian eye



Lower eyelid anatomy of the Asian eye. A, orbicularis oculi muscle; B, orbital septum; C, capsulopalpebral fascia—inferior retractor complex; D, orbital fat; E, arcus marginalis. Original drawing by Denton D Weiss, MD.

inserted on the anterior aspect of the inferior tarsal border, orbital fat was found to be adjacent to the inferior tarsal border. This extension of fat into a higher zone than in the non-Asian population leads to a fuller lower eyelid. In theory, this prevents the subcutaneous extensions of the capsulopalpebral fascia to the skin. Thus, entropion has a higher prevalence in the Asian population because of this lack of subcutaneous extensions (Fig. 2).

Lower eyelid retraction

Posterior and middle lamella contracture after aggressive blepharoplasty surgery is extremely difficult to correct. Taban *et al.* [6^{*}] compared the efficacy of AlloDerm (LifeCell, Branchburg, NJ) and hard palate grafts for lower eyelid retraction repair. This study was a retrospective analysis in which the authors specifically studied patients

with retracted lower eyelids. These patients underwent subperiosteum midface lifting, middle lamella scar release, and placement of lower eyelid AlloDerm graft material. Eleven patients underwent 21 surgical procedures. The authors state that all of their patients had had one prior eyelid surgery. The distance from the pupillary center to the lower eyelid margin was used for measurement comparison. The results of these studies show that 16 of the 21 procedures gave improved lower eyelid position. This improvement averaged 1.6 mm. When overall evaluation was completed, five of the patients did not demonstrate improvement. The range in the follow-up evaluation was 3–12 months.

The authors state that they feel a strong need for a combined midface lift with lower eyelid spacer grafts. The

thick AlloDerm was considered to be the factor leading to improved result *vs* prior study findings. The thickness of the AlloDerm used in this study was 72/999 inches *vs* thin AlloDerm (7-14/999 inches). In comparing thick AlloDerm with hard palate grafts, they authors emphasized the disadvantages of the hard palate graft, which include donor site morbidity such as postoperative discomfort, bleeding, oral candidiasis, and even oral nasal fistula formation. They also described the increased operating time.

We concur that these are all potential postoperative complications with hard palate grafts. The most common sequel from hard palate grafts is pain at the donor site. This can be significantly reduced by placement of an obturator for a week to 10 days. More interestingly, the placement of an AlloDerm graft into the palate defect will significantly reduce discomfort. The follow-up on this study represented a range of 3–12 months. This study would be further strengthened in the future by a second article describing postoperative results later than 12 months.

Lower eyelid rejuvenation using nonincisional techniques

A controversial subject that is beginning to arise in oculoplastic surgery is the use of fat-dissolving injectables. Ablon and Rotunda [7•] have discussed the treatment of lower eyelid fat pads with phosphatidylcholine. Phosphatidylcholine is a lecithin-derived phospholipid and was used in earlier studies to treat infraorbital fat pads. In this study they injected phosphatidylcholine into the infraorbital fat pads every 2 weeks, with a maximum of five sessions being performed. Thirteen patients were treated and evaluated, and 10 patients completed the study. The patients were evaluated by the physicians as well as through a questionnaire. The mean follow-up was 9 months. Using a scale of 1–10 to grade their results specifically, 60% of the patients considered their improvement to be at the level of 5 or above, whereas the physicians thought that 40% of the patients had improvement to this level. There was no significant response in three of the patients.

The side effects that were presented were similar to the side effects reported in a prior study by Rittes [8]. The adverse effects that were reported were transient burning at the injection site, erythema at the injection site, and infraorbital swelling that resolved within days after the treatment. This article represents what we would describe as a controversial treatment to lower eyelid fat herniation treatment. There have been no long-term, double-blinded or placebo-controlled clinical trials to demonstrate the safety and efficacy of this type of treatment. The concern and issues that arise with fat-dissolving treatments in the lower eyelid or throughout the body still warrant extensive, closely monitored clinical trials. The concern with postoperative scarring in other parts of the body can only be

magnified when dealing with the intricacies and finesse mechanics of the lower eyelid.

Lower lid blepharoplasty

De Castro's article [9•] about current surgical concepts for blepharoplasty debates transconjunctival blepharoplasty *vs* musculocutaneous flap technique. De Castro has performed 100 blepharoplasties. These blepharoplasties were divided into patients who underwent transconjunctival approach with or without skin removal and with or without canthopexy. He also performed musculocutaneous flap procedures with or without fat removal and with or without canthopexy. His study followed the patients for 6 months. Evaluation of these patients was achieved via the patients themselves, the surgeon, and a third person.

Results indicated that postoperative edema was present in all of the patients regardless of the procedure, but the patients who had orbicularis muscle procedures had longer periods of edema. Skin excess was a problem in some of the patients who had undergone transconjunctival blepharoplasty. The author thought that in patients who underwent lower lid blepharoplasty with plication of the septum and not fat removal, the results were not optimal.

The author indicated that the best results were achieved in patients who underwent simple surgical procedures. De Castro's recommendations are as follows: First, a transconjunctival approach is the approach to use in patients with excess fat bulging and good skin tone. He states that if there is excess skin after the blepharoplasty, then the skin should be removed. Second, the musculocutaneous flap should be used if the patient has some form of muscle flaccidity and extra skin. Third, a canthopexy should be performed in patients who present preoperatively with some type of sclera or laxity of the lower lid. Fourth, the 'fat bags' should be removed if they are in excess at the preoperative setting. He is not a proponent of the septal plication technique.

De Castro presents what we would say is a reasonable personal algorithm to address the lower eyelid. In his discussion he emphasizes individualization to determine the procedure, and we concur with this finding. A preoperative evaluation looks at lid laxity, fat herniation, lower lid rhytids, and general skin thickness. All of these play a role in the techniques that will give the patient the optimum outcome. The most aggressive approaches to lower lid blepharoplasty and midface have their place, but we respect and hail de Castro's emphasis on simplicity.

Fagien [10], in discussing de Castro's work, questions the simplicity of the approach and emphasizes that there is a significant patient population that requires more aggressive lower lid tightening procedures to improve their outcome. Fagien emphasizes that we ourselves may be at fault

for emphasizing points of the eyelid that patients are not concerned with, such as the nasojugal groove. He also emphasizes the need to give patients realistic expectations about postoperative edema and results. This is extremely important for the more aggressive midface and lower lid orbicularis tightening techniques.

Isolated transconjunctival blepharoplasty

Many authors believe transconjunctival blepharoplasty is a safe approach to lower eyelid rejuvenation, with fewer complications. Interestingly, Schiller *et al.* [11**] have presented a new finding in regards to transconjunctival blepharoplasty and its effects on the superior sulcus.

On initial review it seems odd that a paper on lower lid transconjunctival blepharoplasty would report increased upper lid superior sulcus depth. With critical review of this paper, however, the data are of significant interest. In this study the authors performed a retrospective case review in 39 patients who had isolated fat removed using a laser technique for transconjunctival blepharoplasty. The results showed a deepening of the superior sulcus in 10% of the CO₂ laser transconjunctival blepharoplasty patients. The fat that was removed averaged 0.55 mm (from a range of 0.4–0.9 mm). The authors present several possible mechanisms for the deepening of the superior sulcus. The potential for excessive fat removal was discussed, although it is unlikely because less than 1 mL of fat was removed. The second possibility is a hypoglobus etiology. In this situation, where Lockwood's ligament is potentially divided, loss of support may allow the globe to shift inferiorly, leaving a deepened superior sulcus. They discussed in part the role of the laser and the potential for the laser to have more significant loss of fat secondary to a burn effect, although with clamp-cut cautery techniques, a monopolar cautery also has a burning effect. The authors therefore argue that the loss from secondary burn damage should in part be equated.

If the potential is high that a superior sulcus deepening will occur with this approach, a more conservative approach should be considered on the upper lids. We feel strongly, as the authors do, that loss of support in the lower globe sling plays a role not only in the lower lids but also in the upper lids. Conservative dissection should be performed not only when using a transcutaneous approach, but obviously also in the transconjunctival approach.

Skin muscle techniques of lower lid blepharoplasty

A skin muscle technique using muscle suspension was retrospectively reviewed on 3988 cases by Honrado and Pastorek [12*]. This review summarizes Pastorek's experience over a 30-year period. During this period he had only 67 complications, two hematomas, 24 cases of sclera showing less than 1 mm, and 40 cases of chemosis.

The chemosis cases all resolved within an 8-week period. He states that revision surgery was performed on 41 patients. Pastorek describes his technique as follows. He makes an incision along the lower eyelid, but not past the medial punctum. Elevation of the skin is achieved over the pretarsal muscle. After the skin is elevated off of the pretarsal muscle, an incision line is made lifting the preseptal muscle off of the underlying orbital septum. This is dissected down to the level of the orbital rim. Fat pads are then addressed and the excess skin is resected conservatively. Minimal resection of the muscle is also achieved with a gentle beveling technique to ensure that there are no irregularities. A simple 5-0 polypropylene suture is then placed between the orbital periosteum at the lateral canthal level and the lateral orbicularis muscle with its attached skin. The sutures are placed with a vertical technique. This article represents a solid no-fuss technique that has obviously been successful for Pastorek.

Lower eyelid and midface rejuvenation combination techniques

The pathophysiology of lower eyelid and midface aging has been presented by Patipa [13*,14] in his two-part article discussing the technique of transblepharoplasty lower eyelid and midface rejuvenation. In part I [13*], the description of aging focuses heavily on the malar fat pad descent secondary to laxity, and the lateral canthal tendon downward positioning that leads to a rounding of the lateral canthal zone. The author emphasizes that insult to the orbital septum by transposing or resecting the orbital fat leads to scarring and further downward positioning of the lower eyelid.

The author subsequently describes in detail his specific surgical technique. The malar pads are marked out. An incision line is made along the infraciliary region in the area just beyond the lateral canthus. Orbicularis oculi muscle incision is then made lateral to the lateral canthal angle. Elevation from this point is in the preperiosteum, although the author describes that it can be a subperiosteum plane to the level of the orbital foramen. A backcut is made that then mobilizes the malar fat pad. A limited cantholysis is performed. The lateral canthus is positioned back into the lateral orbital tubical with double arm 5-0 Vicryl (Ethicon, Inc.).

The author states that after he performs this portion of the procedure, the transconjunctival blepharoplasty is performed to correct the protruding orbital fat pads. Once completed, the final stitch is placed in the gray line of the lateral upper and lower eyelids. This allows for the lateral canthal angle to be reconstructed. Finally, the Vicryl suture that was placed in the tubical is tightened, thus completing the tightening of the lower lid. The author describes using a 4-0 Vicryl suture to the periosteum at the junction of the inferior lateral orbital rim to the

undersurface of the muscle of the malar fat pad. The remainder of the orbicularis oculi muscle is further tightened by suturing the superior extent of the orbicularis oculi muscle, which extends up to the level of the lateral canthal angle with three 5-0 Vicryl sutures. Two triangles of skin are then excised. The author states that this is performed as in a conventional blepharoplasty. Finally, a frost stitch is placed. It should be noted that it is left in for 4 days and the skin sutures are left in for 7 days.

When the author reviewed the results, he stated that he had performed 65 transblepharoplasty midface elevations. Nine hard palatal spacer grafts were used. Two of the patients had residual lower eyelid retraction and two had residual lateral canthal tendon laxity. Six patients had lateral canthal scar thickening. Patipa states that he does not use AlloDerm because he had problems with postoperative inflammation and therefore prefers the hard palatal grafts. The thickness of the AlloDerm was not discussed.

From this review, the author concludes that there are specifically four steps that are the keys to reconstruction and rejuvenation of the lower eyelid midface. These are as follows: The attachment of the orbicularis muscle to the orbital septum should be preserved as a single unit; the orbital septum should be left intact when removing fat as this prevents middle lamella inflammation; in most patients, the lateral canthal tendon needs to be reinserted into the lateral orbital tubercle zone; and the midface should be supported with a suture that imitates the orbital malar ligament (i.e., a suture extending from the midface to the lateral orbital rim region).

Throughout the portion of the article describing the pathophysiology of midface descent, the author does not discuss the loss of facial volume. We think the descriptions of midface aging and laxity are accurate but that facial volume and fatty volume issues also play a significant role in the aging face, specifically the aging midface, and that laxity alone is not the complete culprit [15]. As a second note, leaving sutures in the lower lids for 7 days leads to potential epithelial ingrowth and epithelial inclusion cyst problems.

Part II of Patipa's article [14] further photographically presents patients in whom his techniques have been used. Patipa emphasizes the use of midface elevation but also palatal mucosal grafts to correct the abnormalities seen in the severe lower eyelid margin retraction. Another option for this type of reconstruction when there is enough conjunctiva is thin-sheet porous polyethylene (MedPor; Porex Corp.) placed underneath the orbicularis muscle.

Louarn [16•] from the French Society of Plastic and Reconstruction Surgery presented an article entitled 'The concentric malar lift: malar and lower eyelid rejuvenation'. This article presents Louarn's midface rejuvenation tech-

nique in conjunction with the lower eyelid repositioning. He presented what he describes as a minimally invasive technique for malar and lower lid rejuvenation surgery. His technique specifically is performed through two incisions; one is a lateral upper eyelid incision, and the other a standard subciliary lower eyelid incision. Once the lower eyelid skin is minimally lifted, a lateral incision is made in the orbicularis oculi muscle, exposing the lateral orbital rim region. A subperiosteum release is performed from this incision, releasing the entire arcus marginalis. Louarn then reports that the essential portion of his rejuvenation is to place sutures in the opposite vectors of facial aging.

To better understand the technique, we must first make the orbit a clock; the three drill hole ports are placed at the 7 o'clock, 8 o'clock, and 10 o'clock positions. The 8 and 10 o'clock positions are divided precisely by the lateral canthal tendon. The author describes the elevation of the malar fat pad as essential once the entire arcus marginalis has been released because there is a deepening of the trough that occurs. This depression is filled with the elevation of the pad once the permanent sutures are placed in the orbital rim ports.

The author also states that in this technique, there may be bunching of the skin in the superior lateral canthal zone. Patients with excessive amounts of skin will require a temporal lift. Through this technique the anterior cheek, lateral cheek, and lower lid are repositioned in a more youthful configuration. The author describes these lifts as concentric malar lifts and postoperative photographs that are presented to document the elevation of the specific zones. Louarn emphasizes that releasing the arcus marginalis must be done gently and that preservation of the medial canthus in the medial canthal region is essential to decrease prolonged postoperative edema. The author states that he has had no secondary eyelid malpositions attributable to posterior medial lamella retraction because he does not invade the septal orbicularis plane.

In his 9 years' experience using the malar lift suspension sutures, he has had only one stitch slip and one case of residual lateral excess that could be corrected easily with secondary temporal lift.

Although this article is presented as a minimal approach to the midface and lower eyelid, we would argue that drilling holes through the lateral orbital rim is at least moderately invasive. The postoperative edema results the author describes are consistent with other types of orbicularis suspension techniques. Drilling of this area appears to be more invasive; it does not appear that his postoperative swelling issues are more extensive. Although we appreciate the use of suspension sutures to rejuvenate the midface and lower eyelids, we once again have to bring up the question about volumetric issues as an adjunct to this

surgical procedure. We think it is crucial for the young surgeon to be cautious at all times during the formation of midface procedures that extensive compression is not placed in the region of the zygomatic facial nerve branch. Although neuropraxia in these areas is often resolved, this is an unnerving complication that can be prevented. We commend the surgeon with his 9 years of experience in not having this type of complication.

Atiyeh and Hayek [17] state that too much fat volume is removed in standard lower lid blepharoplasty, leaving the patient with a hollowed-out appearance. The effects are 'a concavity-convexity deformity' as initially described by Goldberg *et al.* [18]. In their technique, orbital fat is placed over the rim and the suborbicularis oculi fat pad is sutured to periosteum of the rim. The preseptal orbicularis is attached to the lateral orbital rim above the lateral canthus. Skin is removed conservatively.

These authors have used a combination of techniques described individually in a fashion that they feel allows for solid lower eyelid and midface rejuvenation. No mention is made of the postoperative swelling and edema that can be an issue in midface elevation with periosteum suspension sutures.

In an article we highly recommend reading as preparation, Hamra's journey [19] to rejuvenate the face is described in 'Arcus marginalis release and orbital fat preservation in midface rejuvenation'. His most recent article [20**] is a continuation of his personal journey in face rejuvenation. In this article he describes the septal reset. In short, the septal reset starts by first releasing the arcus marginalis. The orbital septum is then sutured in its new position with interrupted 5-0 Vicryl to the periosteum beyond the arcus marginalis. This allows the orbital fat to soften the nasojugal groove. He also describes an orbicularis muscle sling and a transcanthal canthopexy.

A review of the composite facelift is presented, again emphasizing the vertical elevation of the midface lateral canthal and lateral temporal regions. Finally the author describes various anatomic types that he has seen and describes his personal approach to each of these anatomic findings. He specifically describes five lower eyelid midface variable types: Type 1 is a positive vector, type 2 a negative vector, type 3 a negative vector in a patient with a wide orbit and normal amount of orbital fat, type 4, a malar crescent or mound deformity in a patient with a wide orbit and elongated orbicularis and excessive fat, and, finally, type 5 is a patient with hollow eyelids with the wide orbit and decreased orbital fat. The author states throughout these different types that the septal reset and composite facelift with small modifications can give a very successful rejuvenation. Hamra also describes the septal reset as a safe and predictable and reproducible technique.

We must concur with Fagien's discussion article [21] that there are difficulties that can occur after the composite facelift, specifically the potential deinnervation of the orbicularis muscle that in most cases does return, as Hamra describes. With this postoperative complication, a patient may have long-lasting effects of poor lid malpositioning, even though reinnervation of the muscle has occurred. We do concur with Hamra and applaud him for his continued focus on vertical vector elevation of the midface brow and temporal zones. It has been Hamra's focus on these vectors that has led to the evolution of his surgical techniques in composite facelift with septal reset and lower lid stabilization. Hamra describes five different forms of rejuvenation in his experience, from least optimal to most optimal. The most optimal rejuvenation occurs, per Hamra, with orbital fat being moved downward and the orbicularis muscle upward. In the five techniques there is an absence of any discussion in regards to fat removal. We personally think that orbital fat removal, whether done transconjunctivally or in an open technique, still has a role in some patients in whom facial rejuvenation is the goal.

Conclusion

The 2004–2005 year of lower eyelid and midface rejuvenation has been one of continued divergence of techniques. Two fields of thought continue to arise. One is fat-sparing resuspension midface rejuvenation and lower eyelid technique. The other is a simpler approach with skin, muscle, moderate orbital fat resection, and minimal suspension in specific patients.

Certain key points should be addressed with the young surgeon that we have found are reinforced by the multiple articles that have been discussed here. First, no one specific technique is appropriate for every patient. A simple approach to the lower eyelid, with the physician being conscious of skin-sparing and fat-sparing techniques, will give a consistent result. The ability to perform some form of canthopexy or lid tightening procedure is essential in lower lid blepharoplasty to get consistent results. The midface rejuvenation techniques focusing on vertical vector elevation are inspiring and at the same time should be reviewed with a suspicious eye. Midface rejuvenation, specifically as stated in multiple articles involving orbital and periosteum elevation and multiple periosteum sutures, invariably will result in significant amounts of edema in the postoperative phase. The final results, which can be outstanding, can also be disastrous if the physician is not conscientious, with meticulous hemostasis, extreme caution in elevation near the facial nerve, and monitoring the patient closely postoperatively to address issues and concerns in the 3-week to 4-week recovery period.

Concerns are noted in a number of the articles regarding invasion of the orbicularis muscle and septum orbitale. There is a growing trend toward preserving at this junction

and in doing so preventing scarring, which can lead to retraction. Once again, we think this plane can be invaded and outstanding results can be achieved as noted in two of the articles presented this year [12*,22]. One article specifically focuses on lid suspension after this type of technique, and we concur that lid suspension is extremely important for any patient with lid laxity [12*]. A conservative resection of skin and muscle with postoperative massage can achieve a very similar result without having the classic lateral canthal edema that exists after suspension sutures are placed.

We also commend Fagien for the two discussion articles that have been mentioned here, both of which strongly address the multiple issues that occur with lower lid blepharoplasty and emphasize that preoperative patient counseling is necessary. In doing so, we the surgeons can prepare the patients for edema, swelling, and specifically the risks that can occur with the more aggressive approaches. Interestingly, the volumetric changes that have been noted in the periorcular area after conjunctival blepharoplasty should also be looked at in terms of standard blepharoplasty techniques and midface techniques. Unfortunately, very rarely is a midface procedure performed with lower lid blepharoplasty that does not include upper lid surgery. It will be interesting to know whether the same superior sulcus issues arise from orbital fat repositioning outside the orbital rim.

As a final note, we are extremely concerned about the use of fat-melting agents being injected into the periorcular zone because of the risk of vascular injection, severe scarring, and potential ocular injury. We are not opposed to periorcular fat injection and rejuvenation using a conservative approach, but the opposite techniques of fat-dissolving agents being injected into orbital fat raise extreme alarms. Injection into the vascular structure, muscular scarring, fat scarring, and orbital injury are all potential risks with these agents, and conservative critical review of these techniques must continue. Caution should be noted at the highest level.

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