

# The Utilitarian Upper Eyelid Operation

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## ABSTRACT

Techniques in oculofacial surgery continue to develop as our understanding of anatomy and pathophysiology continue to evolve. While the centerpiece of the quest to rejuvenate the upper eyelid and brow has for years been the upper blepharoplasty, several modifications to traditional techniques have been developed that allow for enhanced outcomes utilizing less invasive approaches. Techniques discussed include removal of lower lid lateral fat via the upper blepharoplasty, a minimally invasive resuspension lateral canthoplasty performed via the upper eyelid exposure, brassiere lateral brow contouring closure, and correction of lower lid retraction by an “en-glove” technique.

**KEYWORDS:** Upper blepharoplasty, eyelid rejuvenation, lower blepharoplasty, technique

The centerpiece of the quest to rejuvenate the upper eyelid and brow has for years been the upper blepharoplasty, which is extremely safe and, in qualified hands, offers predictable and permanent results—all hallmarks of the ideal cosmetic operation (Fig. 1). To continue the quest to rejuvenate the eyelid area, this presentation will describe more recently developed utilitarian uses and modifications of the traditional upper blepharoplasty.

These modifications are the removal of lower lid lateral fat via the upper blepharoplasty, a minimally invasive resuspension lateral canthoplasty performed via the upper eyelid exposure, brassiere lateral brow contouring closure, and correction of lower lid retraction by an “en-glove” technique. This is followed by a discussion of the uses of filler for cosmetic purposes in the upper eyelid and brow area. To conclude, this article discusses our reasons for discarding several adjunctive procedures formerly associated with the upper eyelid blepharoplasty.

## UPPER EYELID APPROACH TO LOWER EYELID BLEPHAROPLASTY

Dermatochalasis, herniated orbital fat, and a hypertrophic orbicularis can contribute to the cosmetic and functional disfigurement of the lower eyelid. Transcutaneous lower blepharoplasty is the traditional approach that is used to address excess skin, fat, and muscle via an infraciliary cutaneous incision. This approach, while offering excellent exposure to the fat pads, may alter the lower eyelid margin contour and induce lower eyelid retraction, lateral canthal dystopia, ectropion, and scleral show.<sup>1-3</sup>

A transconjunctival approach avoids an external scar and preserves the orbital septum, which may decrease the risk of postoperative lower eyelid retraction. This approach, however, may result in inadequate fat removal due to limited exposure of the smaller, deeper lateral fat pocket.<sup>4</sup>

An upper eyelid incision can be used to access this lateral fat pocket and may be combined with upper eyelid

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**Figure 1** Preoperative (top left) and 6-month postoperative (bottom left) photographs of a 55-year-old man who underwent bilateral upper and lower eyelid blepharoplasty. Preoperative (top right) and 6-month postoperative (bottom right) photographs of a 50-year-old woman who underwent bilateral upper and lower eyelid blepharoplasty.

blepharoplasty and minimal incision canthoplasty as needed.<sup>5</sup> This approach may be particularly advantageous in patients with a prominent lateral fat pocket, upper eyelid dermatochalasis, and lateral canthal laxity.

### Surgical Technique

Topical anesthetic drops are instilled over the eye. Local anesthesia is achieved with a regional injection of 2% lidocaine with 1:100,000 epinephrine.

A limited lateral upper eyelid crease incision is made (Fig. 2); however, a standard upper eyelid crease incision can be performed if concomitant blepharoplasty is considered (Fig. 3). Through the lateral extent of the incision, blunt and sharp dissection is used to expose the lateral canthal tendon and orbital rim. The inferior lateral canthal tendon fibers are then released to better expose the lateral fat pocket. The lower eyelid lateral fat pocket is then exposed via meticulous dissection to release septa. Gentle digital pressure on the globe encourages prolapse of the hidden fat pocket into view. The fat pocket is then conservatively debulked to achieve the desired result. Representative preoperative and postoperative photographs are presented (Fig. 4).

### AESTHETIC LATERAL CANTHOPLASTY

Lateral canthoplasty is a vital element in the rejuvenation of a youthful anatomic appearance and restoration of proper eyelid function and position in the setting of horizontal eyelid laxity, scleral show, ectropion, entropion, and lateral canthal dystopia. The lateral tarsal strip canthoplasty is the traditionally described approach, with an open exposure of the canthal tendon.<sup>6</sup> Disarticulation

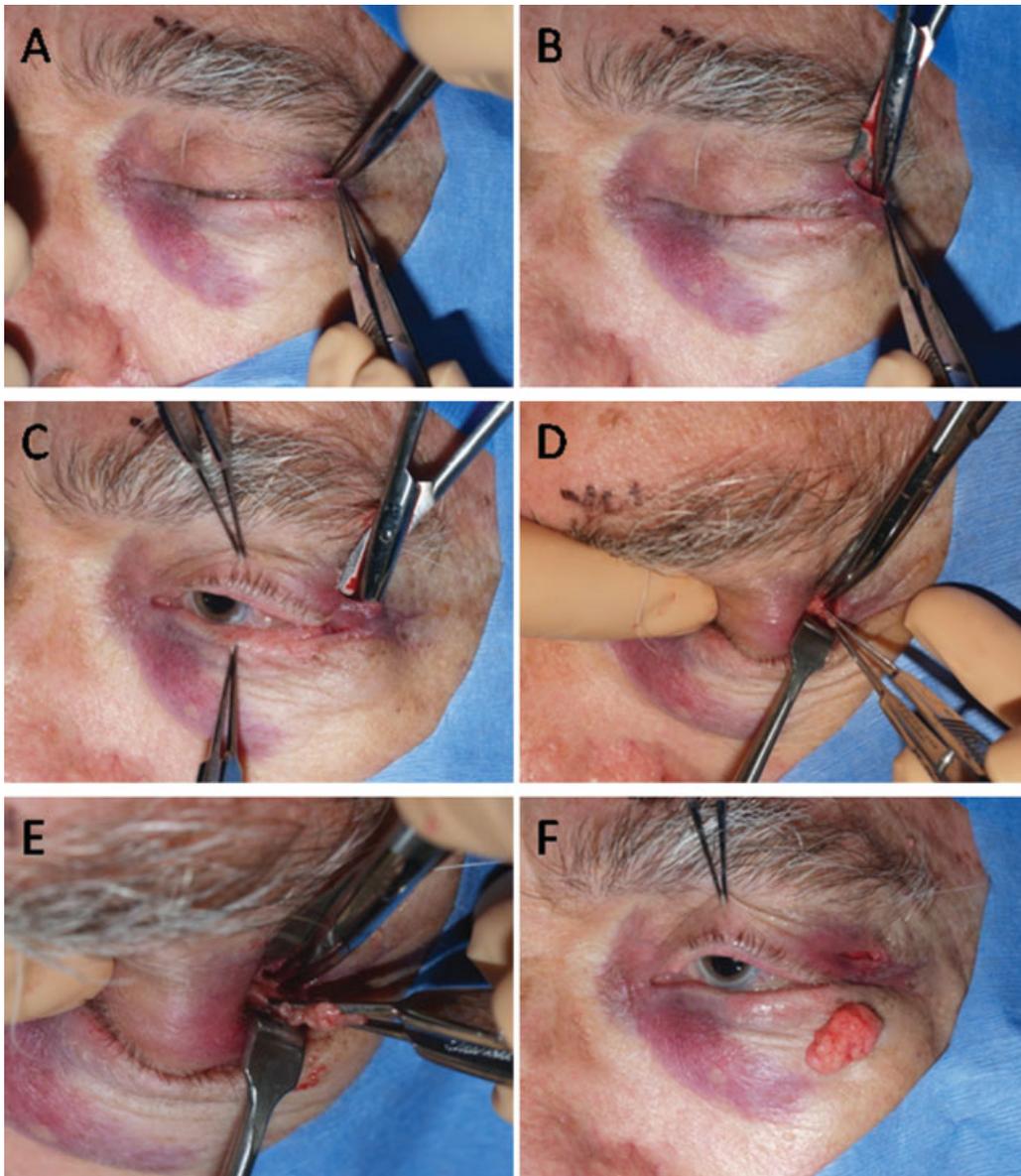
of the upper eyelid/tendon from the lower eyelid/tendon, however, may result in length disparity, misalignment of the mucosal or cutaneous elements of the canthal junction, scar/web formation, and rounding of the canthal angle (Fig. 5).

The authors prefer a minimally invasive resuspension technique using a small upper eyelid crease incision or the lateral part of the upper eyelid incision to disinsert and expose the common canthal tendon.<sup>7</sup> This approach avoids the open canthal incision and decreases the risk of scarring, malposition of the mucocutaneous junction, and length disparity.

### Technique

Local anesthesia is achieved with a regional injection of 2% lidocaine with 1:100,000 epinephrine. A lateral or standard upper eyelid crease incision is made, the latter if a concomitant upper eyelid blepharoplasty is considered. Blunt and sharp dissection is performed to expose the lateral canthal tendon and orbital rim. Using one tip of the Stevens scissors in the orbit and the other outside, the lateral canthal fibers are dissected and disinserted from their periosteal attachments (Fig. 6). As discussed above, the lower eyelid lateral fat pocket can be accessed and debulked as needed.

The lateral lower eyelid tarsus is trimmed using an “en-glove” mincing technique. A double-armed absorbable suture (4-0 Maxon [Synetore, Norwalk, CT] on a CV-23 needle) is used to reattach the lateral canthus to Whitnall’s tubercle inside the orbital rim. Specifically, each needle is passed through the identical spot in the lateral aspect of the lower eyelid tarsus at the gray line (Fig. 6). One needle is passed through the lower half of the tarsus, whereas the other is passed more superficially



**Figure 2** Intraoperative photographs demonstrating the debulking of lower eyelid lateral fat pocket through a small lateral upper eyelid incision. (A) Small incision in upper eyelid crease; (B) sharp and blunt dissection to expose lateral canthal tendon; (C) lower fibers of lateral canthal tendon being cut by Stevens scissors; (D) Senn retractor and gentle pressure on the globe help expose the lower eyelid lateral fat pocket; (E) debulking of the fat pocket; (F) excised fat placed over its in vivo location.

through the upper tarsus, thereby engaging the tarsal tissue. The suture is then tied with appropriate tension on the lower eyelid. Representative preoperative and postoperative photographs are presented in Fig. 7 and Fig. 8.

### BRASSIERE BROW CONTOURING TECHNIQUE

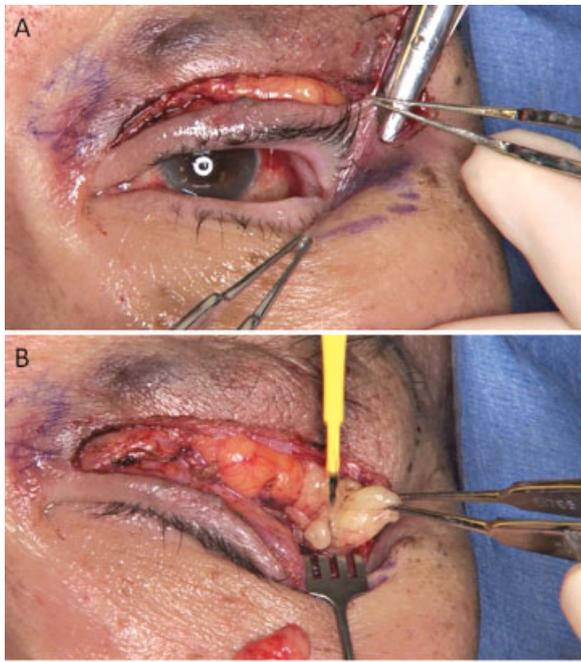
Deflation and descent of the lateral eyebrow fat pad are important parts of aging of the periorbital complex. The authors believe that there are no current surgeries that consistently restore the volume, position, elasticity, and tone of this important eyelid contour. An endoscopic forehead lift elevates the fat pad and addresses descent

but fails to address deflation. Fat injections add volume, but they are variably effective.

An alternative approach to restore volume to the lateral eyebrow fat pad is eyebrow “brassiere” sutures, placed from the orbicularis adjacent to the skin edge to the periosteum at the arcus marginalis. These sutures plump up the fat pad and provide some vertical support, although they cannot be expected to substantially elevate the fat pad.<sup>8</sup>

### Technique

Local anesthesia is achieved with a regional injection of 2% lidocaine with 1:100,000 epinephrine. After



**Figure 3** Intraoperative photographs showing upper eyelid approach to the lower eyelid lateral fat pocket, along with upper eyelid blepharoplasty. (A) Stevens scissors used to release the inferior canthal tendon fibers and incise the septa surrounding the fat pocket. Retractor and gentle digital pressure on the globe can help prolapse the fat pocket into view. (B) The lower eyelid lateral fat pocket is being debulked using monopolar cautery.

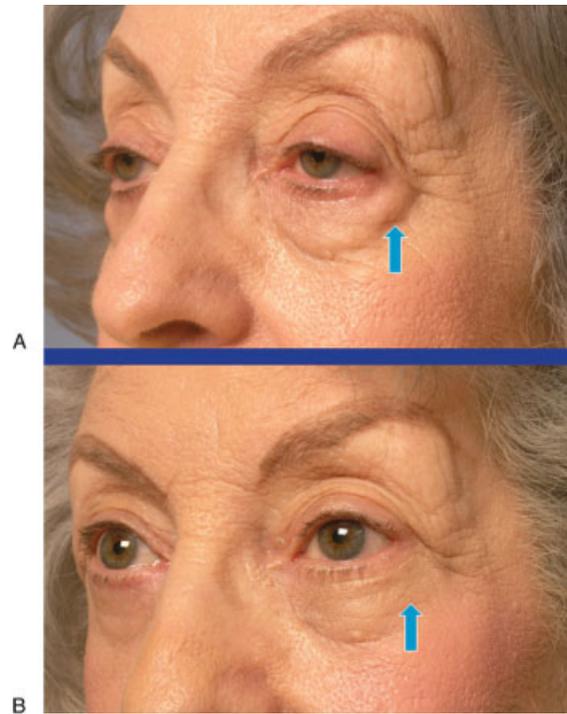
completion of blepharoplasty, two or three sutures are passed along the lateral fourth of the orbital rim using absorbable sutures such as 6-0 Vicryl (Ethicon, Somerville, NJ) (Fig. 9). In contrast with browpexy, the sutures attach the orbicularis oculi edge to the arcus marginalis, plumping up the three-dimensional contour of the fat pad.

In the Asian eyelid, the lateral eyebrow fat pad typically is flat, without a strong rounded contour along the lateral rim. Fat pad brassiere sutures are used conservatively and only in cases where the lateral brow fat has some definition and when the surgeon wishes to create a visible lateral orbital sulcus.

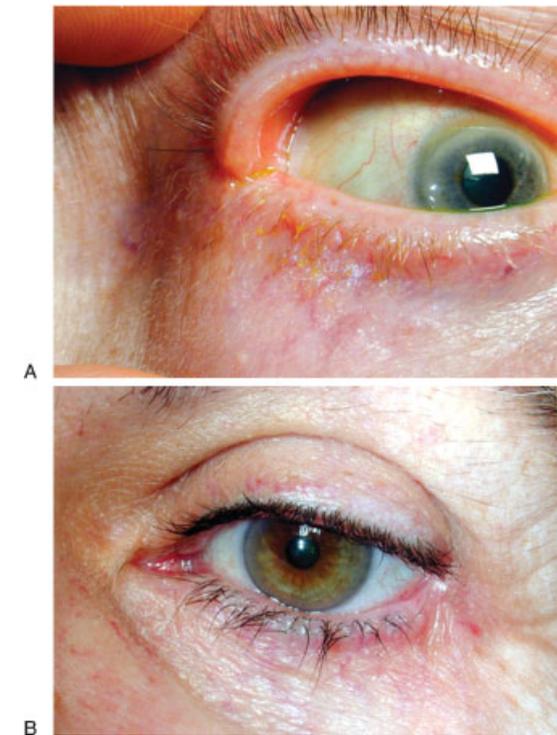
Representative preoperative and postoperative photographs are presented in Fig. 10.

### LOWER LID RETRACTION SURGERY VIA EN-GLOVE LYSIS

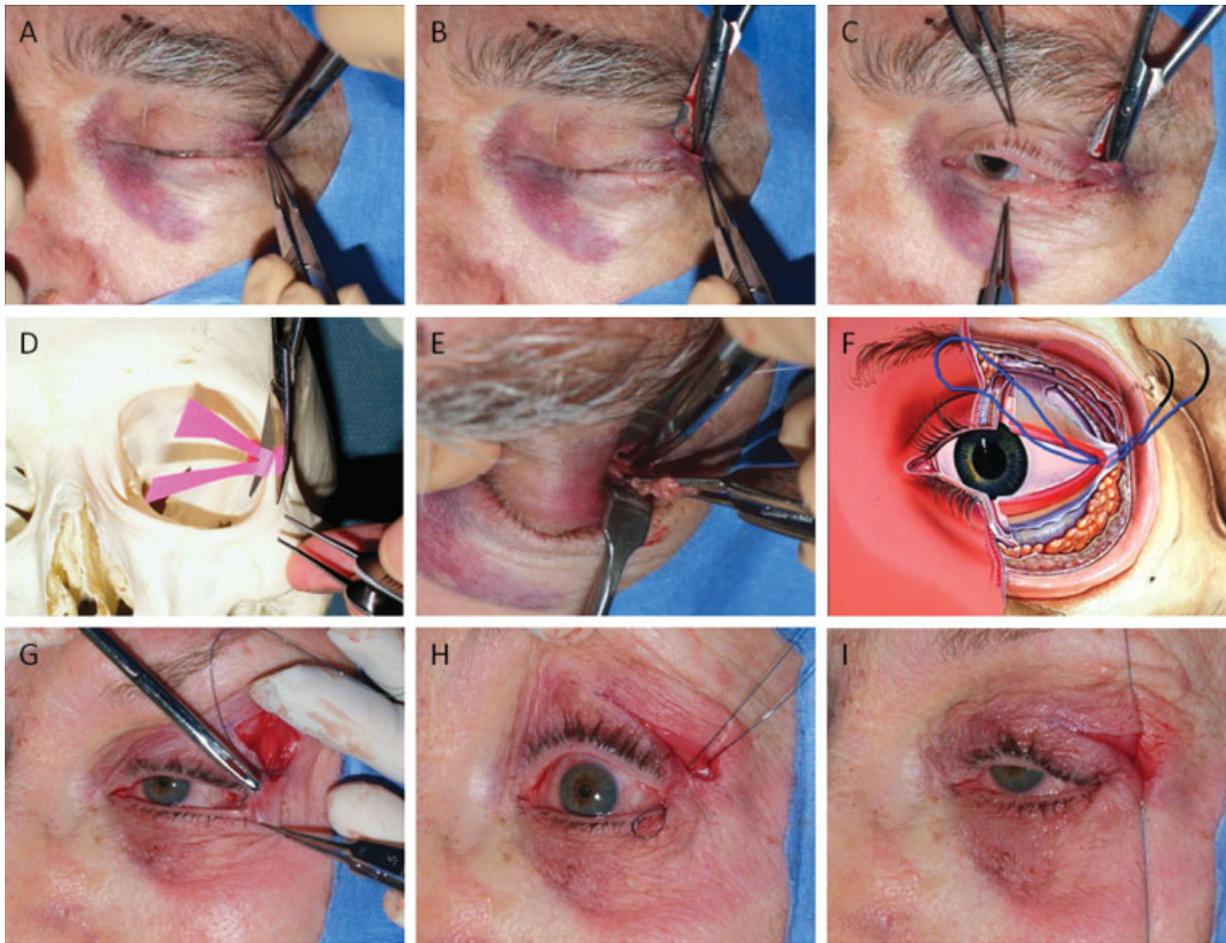
Lower eyelid retraction is a common and challenging problem that can result from a variety of different etiologies, including inflammatory, mechanical, and traumatic (including the iatrogenic trauma of surgery).<sup>1,9</sup> Various surgical techniques have been described and typically employ a graft material as a spacer to the posterior lamella.<sup>10,11</sup>



**Figure 4** (A) Preoperative and (B) 6-month postoperative photographs of a 60-year-old woman who underwent bilateral upper eyelid blepharoplasty, ptosis surgery, lateral canthal tightening, and debulking of prominent lower eyelid lateral fat pocket (arrow), all through the same incision.



**Figure 5** The traditional lateral tarsal strip can result in (A) length disparity between the upper and lower tendon with misalignment of the mucosal or cutaneous elements of the canthal junction and (B) scarring or web formation in the multicontoured mucocutaneous region.



**Figure 6** Intraoperative photograph series demonstrating lateral canthoplasty through a small upper eyelid crease. (A) Small incision in upper eyelid crease; (B) sharp and blunt dissection to expose the lateral canthal tendon; (C) severing of the lateral canthal tendon; (D) skull view showing release of the tendon (opposite side) using Stevens scissors with one blade in the orbit and the other outside of the orbit; (E) optional debulking of lateral lower eyelid fat pad through the same incision; (F) schematic diagram showing placement of the double-armed suture through the lateral edge of the lower eyelid tarsus (opposite side) and resuspension to Whitnall's tubercle. (From Stewart B. *Orbital Surgery: A conceptual approach*. Philadelphia: Lippincott, Williams & Wilkins 1995:134. Reprinted with permission.) (G, H) Placement of double-armed suture through the lateral edge of the lower eyelid tarsus; (I) lower eyelid and lateral canthus position just after suture was tied.

The authors prefer a minimally invasive en-glove technique with a dermis graft. This technique allows the surgeon to access and release the lower eyelid retractors and to place a spacer graft through a small skin incision.<sup>12</sup> The minimally invasive approach minimizes conjunctival manipulation that may promote further secondary intention healing. The dermis graft provides both volume support and a buffer between the lower eyelid retractors and the septum/orbicularis complex.

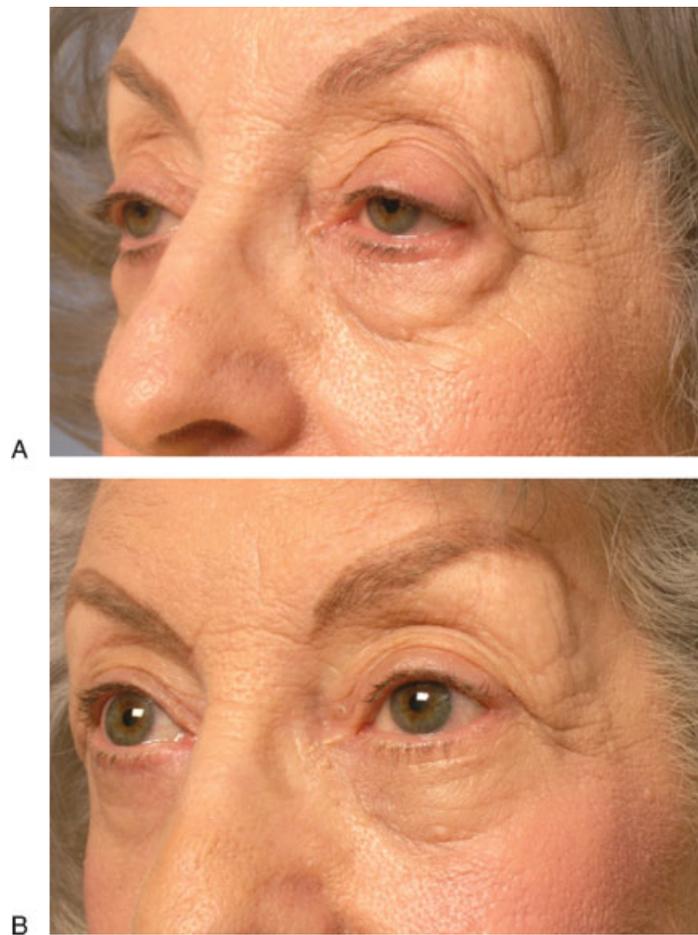
### Technique

Local anesthesia is achieved with a regional injection of 2% lidocaine with 1:100,000 epinephrine. A dermis-fat graft is harvested from a cosmetically concealed location (Fig. 11). The graft is further prepared by dissecting off a

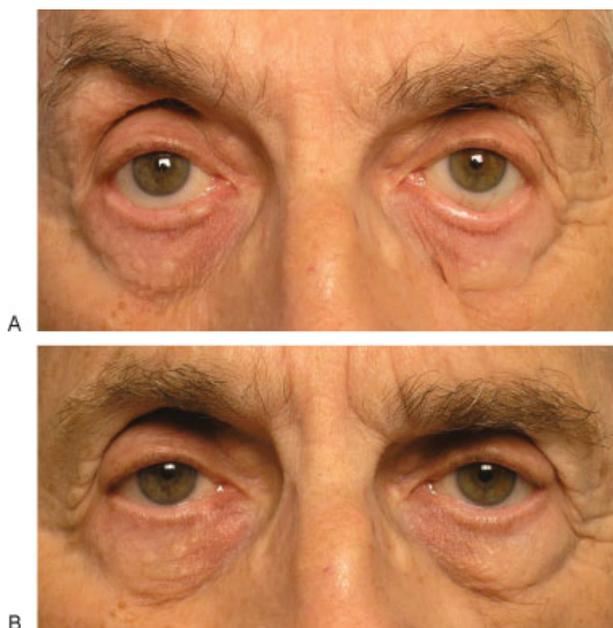
thin layer of epithelium from the underlying dermis with a scalpel. Excision of the dermis is then performed, with a typical graft measuring 8 mm × 35 mm. AlloDerm (Lifecell, Branchburg, NJ), a dermal matrix processed from human allograft skin, can also be used as a spacer graft.

Through the upper blepharoplasty incision (or through a small, 1-cm horizontal incision in the skin made just below or above the lateral canthal tendon) the plane of the lower eyelid retractors is defined. Stevens scissors are used to create a pocket into the subconjunctival space. An "en-glove dissection" is performed, where the retractors are released from the conjunctiva and inferior tarsus (Fig. 11).

The eyelid is then reentered in a more anterior plane adjacent to the arcus marginalis of the orbital rim. The anterior attachments of the eyelid retractors



**Figure 7** (A) Preoperative and (B) 6-month postoperative photographs of a 60-year-old woman who underwent bilateral lateral canthoplasty and lateral lower eyelid fat pocket removal through a small upper eyelid crease incision.



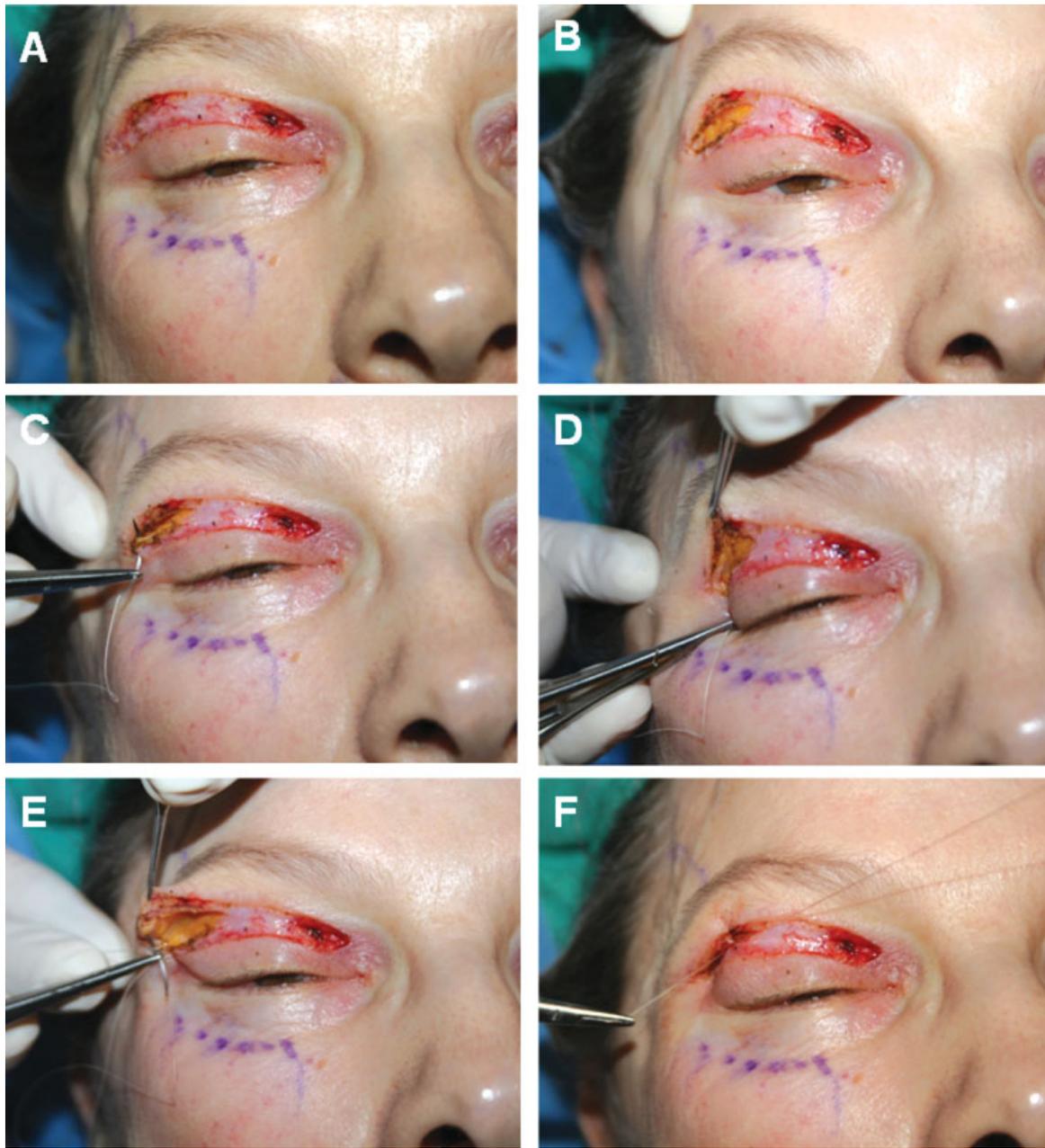
**Figure 8** (A) Preoperative and (B) 6-month postoperative photographs of a 67-year-old man who underwent bilateral lateral canthoplasty.

are then released using blunt dissection. Adequate release of the anterior and posterior eyelid retractors allows the eyelid to rest in a position above the inferior limbus.

An absorbable suture is attached to one end of the graft. A long Keith needle is guarded with a 6-cm segment of intravenous tubing, and the needle and the tubing are clamped together with a hemostat so that the guarded needle can pass freely through the en-glove dissection pocket.

Once the guarded tip of the needle is pushed to the medial extent of the dissection pocket, the tubing is withdrawn, and the needle is used to pull the suture and the attached graft through the lower eyelid. The medial end of the suture is then knotted or tied to the skin with a second suture. The lateral edge of the graft is sutured to the lateral canthal tendon or orbital rim.

The eyelid is stabilized to the eyebrow using multiple mattress reverse Frost sutures, setting the retractors on stretch and stabilizing the graft. The pressure dressing and temporary tarsorrhaphy are removed in 1 week. Representative preoperative and postoperative photographs are presented in Fig. 12.



**Figure 9** Intraoperative photographs demonstrating the brassiere brow contouring technique. (A) After completion of the blepharoplasty, (B) incision is made through the orbicularis oculi muscle down to the superolateral orbital rim. (C–F) An absorbable suture (Vicryl) is used to attach the two edges of the cut orbicularis oculi to the periosteum of the superolateral orbital rim. Two to four interrupted sutures can be placed along this region but should not go past the lateral limbus to avoid mechanical lagophthalmos.

### EYELID FILLERS

Injectable tissue fillers are a viable, minimally invasive modality for the treatment of volume loss in the periorbital area. Frequently used fillers include Radiesse (BioForm Inc, San Mateo, CA), a synthetic calcium hydroxyapatite in an aqueous gel medium, and Restylane (Medicis Aesthetics, Scottsdale, AZ), a hyaluronic acid gel. The latter allows for a non-permanent, adjustable tissue expansion effect and has

been described for the treatment of periorbital hollows, lower eyelid retraction, lagophthalmos, and other eyelid malpositions.<sup>13–16</sup>

### Technique

Topical 5% lidocaine is applied over the eyelid skin 30 minutes prior to the procedure. Infiltrative local anesthesia is deferred to minimize tissue distortion.



**Figure 10** (A) Preoperative and (B) 3-month postoperative photographs of a 52-year-old woman who underwent conservative upper eyelid blepharoplasty and brow contouring using the brassiere technique. Note the improved and fuller three-dimensional contour of the eyebrow fat pad.

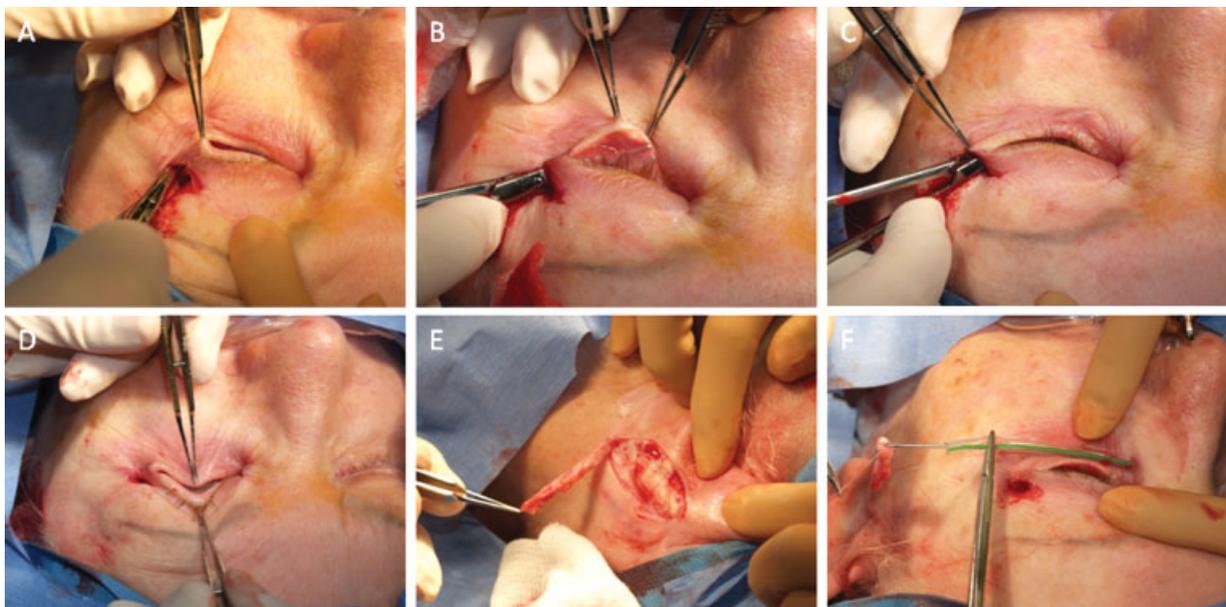
Using a 30-gauge needle, hyaluronic acid gel is injected in small amounts in the areas of the orbital rim, zygomatic, and septal confluence hollows. Multiple passes of the needle are performed to create a layered,

thread-like configuration until the desired three-dimensional contour is achieved. A cotton-tip applicator is used to apply gentle pressure to minimize bruising. Figure 13 shows a middle-age man with superior sulcus hollowness treated with 0.4 mL Restylane on each side. Figure 14 depicts a younger woman with an “A-frame” deformity of the superior eyelid treated with 0.2 mL Restylane on each side.

Placement of filler too superficially will result in visible lumps, given the thin periorbital skin. For this reason, filler injections are placed in the suborbicularis plane, with multiple, thread-like layers, which avoids excessive, irregular deposition of filler. Hyaluronic acid gel is generally well tolerated, and complications are usually minor: bruising, redness, and pain at the site of injection. Contour irregularities may be ameliorated by the addition of hyaluronidase, which can reduce the effect of the filler at specific sites.

### DISCARDED TECHNIQUES

The authors have abandoned several procedures accomplished through the upper eyelid incision with published descriptions.<sup>17</sup> We have abandoned the subperiosteal forehead lift through the upper eyelid approach. This approach can lead to prolonged postoperative swelling from interruptions of vital lymphatic drainage. We also believe that the small incision approach in the superior hair-bearing scalp with bone tunnel fixation is both



**Figure 11** Intraoperative photographs demonstrating en-glove lysis of lower eyelid retractors and scar with placement of a dermis-fat graft. (A) Small skin incision above the lateral canthus allows access to the lower eyelid retractors plane. (B) Lower eyelid retractors and any scar are released using blunt and sharp dissection until the conjunctiva is “windowpane” thin. (C) The Stevens scissors reenter the lower eyelid in a more anterior plane, adjacent to the arcus marginalis, to release any remaining attachments/scar, aided by stretching the eyelid vertically. (D) Photograph illustrates appropriate eyelid stretch after release of retractors and scar. (E) Harvesting of postauricular dermis-fat graft. The epithelium is dissected *in vivo*, followed by excision of dermis-fat. (F, G) An absorbable suture is attached to one end of the graft.



**Figure 11** (Continued) A Keith needle, guarded with intravenous tubing, is passed across the en-glove dissection pocket. (H) Then, the intravenous tubing is withdrawn and the needle used to pull the suture and attached graft through the lower eyelid. (I) The suture medially is tied onto itself at the skin, while the lateral edge of the graft is sutured to the lateral canthal tendon. The small skin incision is closed and frost sutures placed to stabilize the eyelid, with assistance of a pressure dressing.



**Figure 12** (A) Preoperative and (B) 6-month postoperative photographs of a 60-year-old woman who underwent bilateral lower eyelid retraction surgery secondary to thyroid orbitopathy via en-glove lysis and placement of AlloDerm graft.



**Figure 13** A middle-age man with generalized superior sulcus hollowness, treated with 0.4 mL Restylane on each side: (A) preinjection; (B) 6 months postinjection.



**Figure 14** A 32-year-old woman with "A-frame" superior sulcus deformity who underwent injection of 0.2 mL Restylane in each upper eyelid: (A) preinjection; (B) 12 months postinjection.

easier and more dependable. For similar reasons, the transblepharoplasty approach with internal fixation device<sup>18</sup> for brow lifting is discouraged.

The efficacy of Botox, (botulinumtoxin A, Allergan, Irvine, CA) has also rendered obsolete the lysis of the corrugator muscles through the medial part of the upper eyelid incision. It is our experience that transblepharoplasty lysis of the corrugator muscles yielded partial and short-term results.

**CONCLUSION**

The cosmetic upper eyelid operation to rejuvenate the middle face has few equals in plastic surgery. A review of newer techniques performed through the upper eyelid approach introduces the opportunity for further refinement of reliable, safe, and time-tested results.

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