Lower Lid Blepharoplasty in Men

Vinay Rao, MD, MPH[a], Patrick K. Sullivan, MD[b,*]

KEYWORDS

• Lower lid • Blepharoplasty • Eyelid • Male • Facial rejuvenation • Aesthetics

KEY POINTS

- Lower lid blepharoplasty is a common aesthetic procedure in men.
- Changes at the lower lid secondary to aging involve the formation of deepened palpebromalar (lid-cheek junction) and nasojugal (tear-trough) grooves.
- Lower lid blepharoplasty using a transconjunctival technique may be preferred in men as it allows easy access to the periorbital fat compartments and nicely hides the surgical incision.
- Maneuvers to improve lower lid deformity include fat excision, orbitomalar ligament release with fat redraping, lower lid support/tightening procedures (canthopexies), and ancillary procedures such as skin resurfacing or autologous fat grafting to blend the lid-cheek junction.

OVERVIEW

A natural transition from the lower eyelid to the midface is paramount for a youthful facial appearance. Periorbital changes secondary to aging are often the first ones noticed by patients; therefore, optimizing lower eyelid contour is critical in facial rejuvenation. The eye exhibits an almond shape with fullness in the surrounding periorbital tissue, normal eyelid skin tone, smooth eyelid skin, and a slight upward tilt from the medial canthus to the lateral canthus.[1] The aging of the lower lid involves periorbital rhytid formation, pseudoherniation of periorbital fat, and lower eyelid laxity.[2] These changes represent the most common reasons why patients express dissatisfaction with their lower eyelid appearance.

The effects of aging on lower eyelid contour are similar across genders.[3] However, special consideration should be given during the surgical planning for lower lid blepharoplasties in men secondary to varying aesthetic norms and patient goals. Understanding the key distinguishing features in lower lid surgery for men is important, as it represents a common concern for male patients. In 2020, 14% of the blepharoplasties conducted in the US were done in men, amounting to the second most common cosmetic procedure performed in men following nose reshaping.[4]

Regardless of gender, lower lid blepharoplasty is recognized as one of the most challenging procedures to master in aesthetic surgery. In this article, the authors will review relevant lower eyelid anatomy, clinical assessment for the male patient, operative approach, postoperative complications, and the current evidence for lower lid blepharoplasties.

ANATOMY OF LOWER EYELID DEFORMITIES

A detailed understanding of both normal eyelid anatomy as well as the anatomic derivations to the changes seen with aging is critical in developing an effective and longstanding surgical result. The lower eyelid is composed of 3 lamellae—the anterior, middle, and posterior.[5] The anterior lamella is composed of skin and the orbicularis oculi muscle, the middle is composed of the orbital septum, and the posterior is made of the transligamentous sling and conjunctiva.[5] The transligamentous sling is the support structure for the lower eyelid and consists of the tarsal plate,

[a] Division of Plastic Surgery, The Warren Alpert Medical School of Brown University, 235 Plain Street, Suite 502, Providence, RI 02905, USA; [b] 235 Plain Street, Suite 502, Providence, RI 02905, USA
* Corresponding author.
E-mail address: cosmetic@drsullivan.com

Clin Plastic Surg 49 (2022) 213–220
https://doi.org/10.1016/j.cps.2021.12.001

capsulopalpebral fascia, and the canthal tendons.[5]

Among the anterior lamellae structures, the lower eyelid skin is the thinnest in the body and therefore is particularly prone to soft tissue changes that occur due to aging. The orbicularis oculi muscle lies just deep into the skin and is divided into the pretarsal, preseptal, and orbital components. The orbicularis muscle is a complex structure with 10 separate heads, consisting of both deep and superficial portions. It originates from the medial aspect of the orbit and inserts at the lateral aspect of the orbit.[6]

The orbital septum originates from the periosteal thickening of the orbital rim called the arcus marginalis.[7] In the lower eyelid, the septum fuses with the capsulopalpebral fascia superiorly and represents the anterior border for the periorbital fat compartments. There are 3 periorbital fat compartments, called the medial, central, and lateral compartment. The medial and central are demarcated by the inferior oblique muscle. The central and lateral are demarcated by an interpad septum and the arcuate expansion of Lockwood's lower lid suspensory ligament.[7]

The aging process affects all of these structures resulting in the typified periorbital senescent changes. In general, a youthful lower eyelid is vertically short with concavity over the orbital septum. The lower eyelid should smoothly transition to the convexity of the cheek, which is rounded from medial to lateral with maximal fullness and prominence over the zygoma.[2] Aging results in alterations to all the intricate structures of the lower eyelid. Lower eyelid skin thins, becomes dyspigmented, and periorbital rhytids develop. In addition, and perhaps the hallmark of aging lower eyelid, is the formation of a prominent palpebromalar groove (lid-cheek junction) and nasojugal groove (tear-trough deformity).[8]

The palpebromalar groove is a deep concavity that forms between the lower aspect of the lower eyelid and the cheek. A cadaveric study has suggested this demarcation as a natural cleft occurring between the bony attachments of the preseptal and orbital orbicularis oculi muscles.[9] This cleft is thought to become accentuated over time with periorbital fat pseudoherniation anteriorly through an attenuated orbital septum.[10] Alongside these changes, lower eyelid contour is further altered with midfacial fat atrophy and the descent of the malar fat mound.[11]

The orbital retaining ligament (ORL) is also important to consider when characterizing the palpebromalar groove. The ORL is distinct from the orbital septum and arises from the periosteum of the infraorbital rim and similarly is contiguous with the lateral orbital thickening and the superficial lateral canthal tendon.[12] Notably, the lower eyelid ORL functions as the caudal border of the lower eyelid fat compartments.[13] An intact ORL further contributes to a deepening palpebromalar groove as lower eyelid fat migrates and/or herniates through the orbital septum.

The nasojugal groove can be understood as the medial extension of the palpebromalar groove. Specifically, the nasojugal groove beings at the midpupillary line and medial to the extent of the medial canthus.[9] Similar to the palpebromalar groove, the tear trough deformity is thought to occur secondary to thinner skin in this area, cleft between the preseptal and orbital orbicularis oculi muscles, site of the origin of the medial extent of the preseptal orbicularis muscle at the maxilla below the infraorbital rim, and through accentuation with periorbital fat pseudoherniation and changes in the midface.[9] Overall, these anatomic features that occur with aging provide the basis for the tenets of surgical correction.

CLINICAL ASSESSMENT

Preoperative consultation should begin with discussing the patient's specific concerns and goals for surgery. Only after gaining a clear understanding of the patient's interests can the surgeon detail a customized surgical plan and properly guide patient expectations. Common lower eyelid complaints among male patients are the feeling of a tired facial appearance, sunken eyes, periorbital wrinkles, and lower lid skin looseness. Each of these issues should be targeted if surgical intervention is thought to be indicated.

A detailed medical history to ensure the patient is a good candidate for potential eyelid surgery should be obtained. Specific attention should be made to patients with a past medical history of hypertension, chronic dry eye symptoms, glaucoma, thyroid disease, and those on blood-thinning medications or herbal supplements. Past surgical history of prior lid procedures or recent ophthalmologic procedures should be clarified as repeat periorbital intervention may be unwarranted or should be delayed.

After a good history is obtained, a comprehensive physical examination focusing on the associated facial changes secondary to aging should be conducted. Visual acuity, periorbital sensation, voluntary and involuntary blink response, and normal extraocular muscle function should be confirmed. When examining the eye, the provider should also evaluate the position of the eye by noting the inferior position of the limbus to the lower eyelid margin and the degree of scleral

show. From medial to lateral, the provider should assess for the presence of a prominent nasojugal groove, the extent of the palpebromalar groove, the descent and/or atrophy of the malar mound, and note any pseudoherniation or festooning of the periorbital fat compartments.

Orbital vector determination is another critical component of the preoperative evaluation.[1] Specifically, the globe position is evaluated in relation to the infraorbital rim. This relationship can best be seen in the lateral view of the patient. A neutral vector is defined as the cornea in line with the orbital rim and a positive vector is when the cornea is posterior to the rim. A negative vector, or when the cornea is anterior to the rim, increases the risk for postoperative ectropion, limiting the amount of periorbital fat excision that can be performed.[14]

In our patients, we find classifying patients based on the categories of lower lid deformities they may present with is extremely helpful in both surgical planning and patient education. We have identified 3 classes of lower lid abnormalities (**Fig. 1**). Type I is an isolated tear-trough deformity, Type II combines a tear-trough and a prominent lid-cheek deformity, and Type III is a combination deformity with excess periorbital fat. This conceptual model is helpful when evaluating patients; however, it is critical to offer a tailored approach based on the patient's specific needs. In general, for Type I and Type II patients, we do not remove skin and fat (except the lateral compartment), and, for Type III patients, we tend to remove fat from all 3 compartments.[15]

Integrity of the lateral canthal tendon should also be assessed independently. Lower lid laxity is critical to identity, as it represents a major contributor to the aged appearance of the lower eyelid.[16] This can be performed reliably using the distraction test. To perform this maneuver, the provider gently distracts the lower eyelid anteriorly until a distinct end point is felt. A distraction of greater than 10 mm is considered abnormal and often indicates lateral canthal tendon insufficiency. Additionally, the provider can simply pull down on the lower lid to assess canthal integrity. A lower lid displacement of more than 3 mm is considered abnormal. When a lax lower eyelid is diagnosed, a lid-shortening procedure should be planned.

SURGICAL TECHNIQUE

Surgical technique for lower lid blepharoplasty in men is not unlike in women. There have been numerous proposed techniques, each with its touted benefits. However, regardless of technique, the goal of lower lid blepharoplasty should be the same. That is, to restore a youthful lower eyelid appearance, achieved by smoothing the lid-cheek junction, filling the tear trough-deformity, and reducing the appearance of bulging fat in the lower eyelid.

The first major controversary in lower lid blepharoplasty technique is the placement of the incision. Some providers prefer to use a transcutaneous (subciliary) approach, which begins with a skin incision 1 mm below the lash line and 4 to 5 mm from the lateral canthal angle within an existing crow's foot. A skin-muscle flap is developed in the preseptal plane beneath the orbicularis oculi and carried down to the orbital rim. The critical step for this technique is the release of the ORL to allow for transposition of periorbital fat and smoothing of the palpebromalar groove. Additionally, the medial portion of the orbicular oculi muscle is detached from its origins in the presence of a tear-trough deformity to allow for the redistribution of fat into this defect.

We prefer a transconjunctival approach for accessing the periorbital fat compartments, emphasizing low complication rates and no visible scarring. We find this technique especially useful in men as complete fat redraping can be performed in patients with more severe deformities, and, as males often do not wear make-up, a hidden scar is even more critical for these patients. Preoperatively, in an upright position, the patient is carefully marked while in a neutral gaze. Each fat compartment is outlined as well as the palpebromalar and nasojugal grooves. The malar mound, if present, is also noted, as we need to ensure not to inadvertently enlarge this area during soft tissue manipulation and fat grafting procedures.

This technique is performed by designing a transconjunctival incision at 6 to 8 mm posterior to the lash line in the retroseptal position. The conjunctiva is divided using a fine point needle electrocautery. Once the conjunctiva is incised, dissection is carried down to the fat compartments that need treatment. If indicated the dissection is continued to the infraorbital rim in a blunt fashion through the capsulopalpebral fascia. The orbital septum and orbicularis oculi muscle are left undisturbed in this approach, which minimizes disruption to the connective tissue and preserves the vascularity of the flap.

Next, the ORL and the arcus marginalis can be released as needed with the dissection all being retroseptal. This maneuver allows for subsequent redraping of the periorbital fat and smoothing of a deepened orbitomalar sulcus and lid-cheek junction.[17,18] Dissection is carried further down in the subperiosteal plane using a Cottle elevator

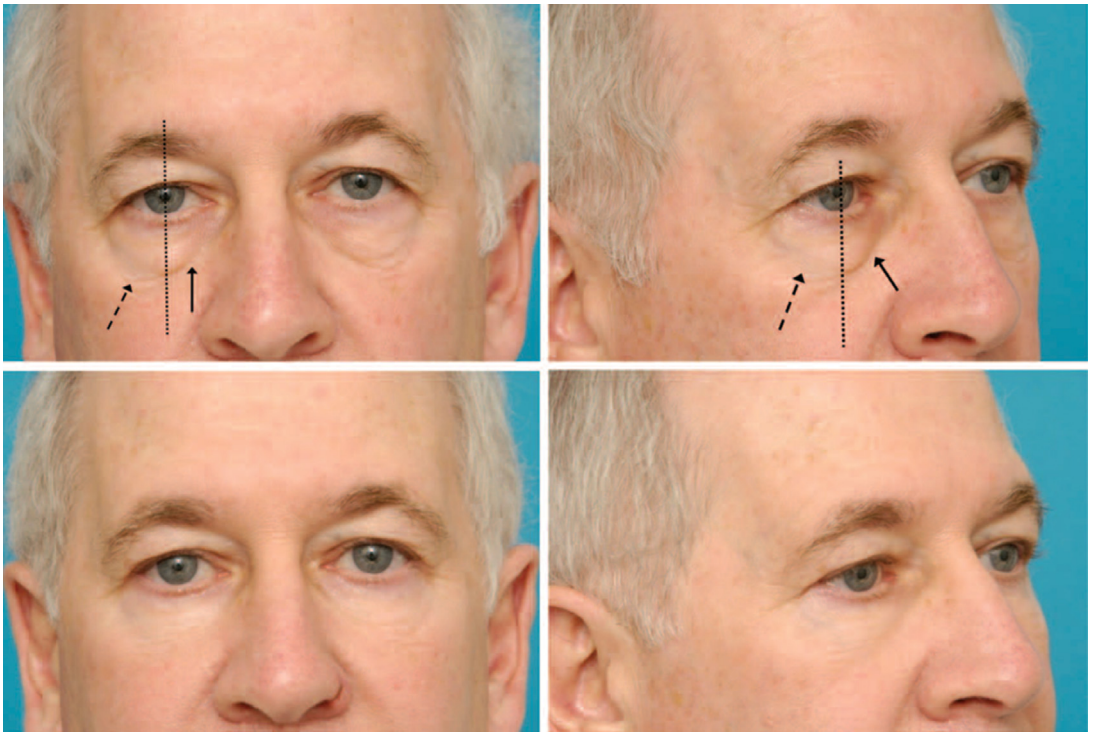

Fig. 1. Lower eyelid deformities associated with aging in a male. (Above) A 65-year-old man with a deepened palpebromalar groove with both s deep tear-trough deformity (*heavy arrow*) and a prominent lid-cheek junction (*dotted arrow*). (Below) His postoperative photos show improvement of these features. (*Courtesy of* Patrick K. Sullivan, MD, Providence, RI.)

with special care to release the dense attachments of the medial and lateral components of the preseptal orbicularis oculi muscle to help correct for the nasojugal and palpebromalar deformities (**Fig. 2**).

The senior author (P.K.S.) prefers a transconjunctival retroseptal approach because it leaves the orbital septum and orbicularis oculi intact. The fat compartments are easily accessed using this technique and periorbital fat excision can occur precisely, customized to the patient's need. Gentle pressure is placed on the upper eyelid over the globe, examining for bulging in any area to indicate under resection. Our preferred technique in men varies from more extensive release of the retaining orbitomalar ligaments (this is especially in the patient with a very negative vector) as described above (**Fig. 3**) to a less extensive targeted periorbital fat excision. This less extensive technique is used in patients who exhibit primarily fat excess and herniation. For most patients, resolution of the palpebromalar and/or nasojugal deformities requires additional ancillary procedures of autologous fat grafting to fill areas of deficit to further help blend contour irregularities.

Patients with lid laxity need resuspension of the lower lid at the lateral canthus. If there is severe lid laxity (>6 mm of lower lid distraction), patients may require a lateral canthoplasty as previously described. In all other patients, a lateral canthopexy is often adequate to suspend, support, and tighten the lateral orbital soft tissue. We use a canthopexy routinely and feel it has helped prevent lower lid malposition and scleral show.

We perform this procedure using a small upper eyelid incision in the natural crease with placement of a polydioxanone (5-0 PDS) suture between the inferior limb of the lateral canthal tendon and the periosteum of the lateral orbital rim. When placing this suture, the provider should confirm the lateral canthal tendon is grasped with gentle pull of the suture to confirm control of the lower eyelid. Placement of the stitch should achieve a gentle upward slant and contour of the lateral lower eyelid to globe. We do not overcorrect but rather place the lateral canthus in the optimal position. Finally, a lateral tarsorrhaphy suture is routinely used to help prevent the appearance of chemosis. That suture is usually removed on day 4.

After fat excision and/or redraping, and the lateral canthopexy excess skin can be addressed

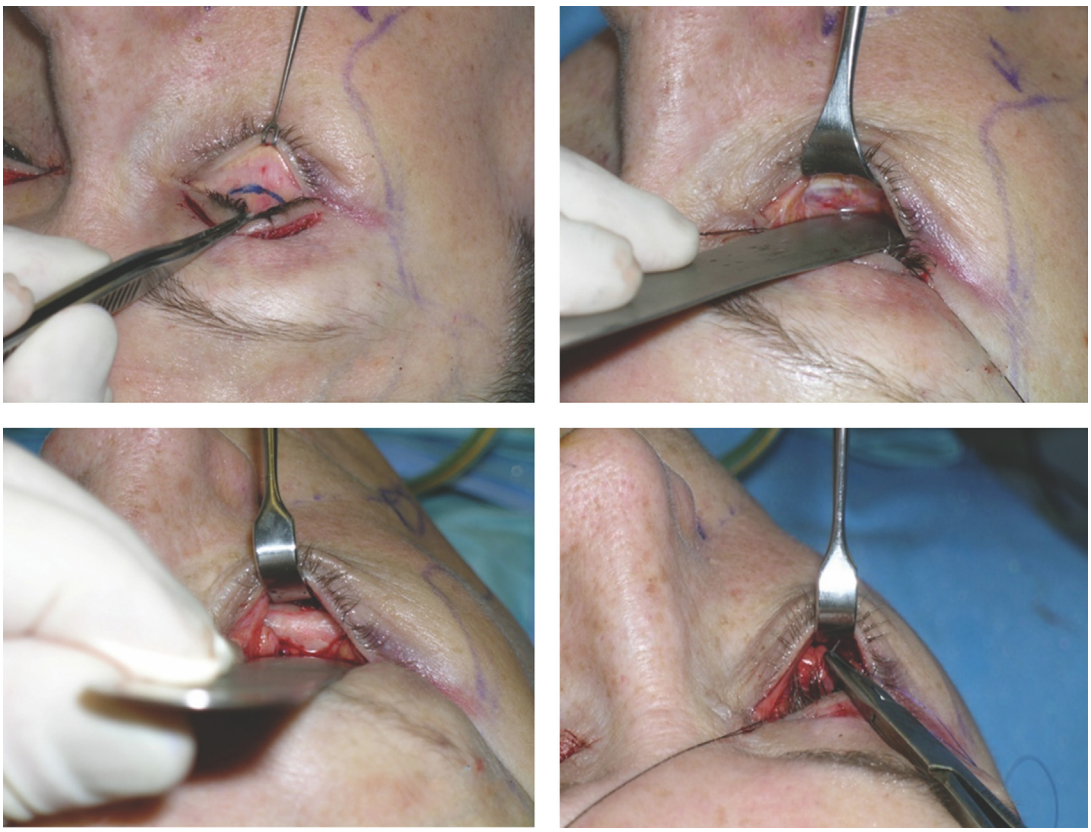

Fig. 2. Lower eyelid blepharoplasty using a transconjunctival retroseptal approach. (*Top Left*) Transconjunctival retroseptal incision designed 6-mm posterior to the lash line. (*Top Right*) Dissection through the capsulopalpebral fascia to expose the infraorbital rim and orbital retaining ligament. (*Bottom Left*) Release of the orbital retaining ligament to expose the infraorbital rim in the subperiosteal plane. (*Bottom Right*) Exposure of periorbital fat with redraping along the lid-cheek junction and suture fixation. (*Courtesy of* Patrick K. Sullivan, MD, Providence, RI.)

using a careful pinch technique. In our experience, we find that excess skin resection is rarely needed for lower eyelid blepharoplasty once the appropriate amount of fat is removed and redistributed. Chemical peels and laser resurfacing are also treatments we use to address skin aging.

COMPLICATIONS

The most feared complication following blepharoplasty Is vision loss by retrobulbar hematoma, which has been reported in less than 0.05% of cases and most frequently occurs intraoperatively or within the first 24 hours postoperatively.[19] We have never had blindness or loss of vision in any of our hundreds of lower lid surgeries. Other early complications include corneal abrasion, infection, hematoma, and chemosis. In lower lid blepharoplasty, lid malposition can also be a problem. This complication can effectively be avoided with careful preoperative clinical assessment to characterize the presence and severity of lower lid laxity. Choosing the correct lower lid resuspension technique, either canthoplasty or canthopexy, is an important step to properly position the lower lid in the optimal position.

CURRENT EVIDENCE

The senior author previously performed a comprehensive review regarding the current evidence regarding lower blepharoplasty techniques.[20] One of the major considerations in lower lid blepharoplasty is the decision between performing a transconjunctival or transcutaneous approach. For transconjunctival approaches, many authors have argued for aggressive ligamentous release to properly redistribute periorbital fat and blend the lower lid with the midface.[20] In these cases, the fat can either be preserved and transposed or conservatively resected. Excess skin resected using the skin pinch technique has been

Fig. 3. Case example of the senior author's preferred technique for lower lid blepharoplasty in men. (Above) This is a 60-year-old-man who presented with redundant upper eyelid skin and was concerned with puffiness below the eyes. A skin-only resection of the upper lids was performed. The patient exhibited significant pseudoherniation of fat at the lower eyelid resulting in a deepened palpebromalar and nasojugal groove. To address this issue, a transconjunctival retroseptal approach was used with conservative fat excision and redraping. (Below) The postoperative photos show significant improvements in the upper and lower lid aesthetics. (*Courtesy of* Patrick K. Sullivan, MD, Providence, RI.)

demonstrated as effective, as providers can take advantage of the absence of undermining and can even use laser resurfacing procedures as an adjunct. Authors have reported a good to excellent success rate performing these combined techniques.[21]

Others have reported on their experience with the transconjunctival approach and saw satisfactory results when assessing for various objective measures such as pupil to eyelid margin, pupil to tear trough distance, tear trough width, and changes at the intercanthal angles without any major complications.[22] Hidalgo and colleagues published a series of 248 patients undergoing their particular lower lid approach using transconjunctival access, reporting excellent outcomes and a 2.4% revision rate.[23]

Transcutaneous approaches have been associated with malposition at a rate anywhere between 15% and 20%, orbicularis denervation atrophy, and a 1% rate of possible frank ectropion in some series.[23,24] Authors have argued that transcutaneous access allows for more aggressive ligament release allowing for more definitive treatment of severe deformities. Barton and colleagues described their technique of a transcutaneous access and a broad orbital retaining ligament release in 71 patients with severe deformities, illustrating excellent results and 1 patient suffering from lower lid malposition.[25] For some authors, the additional benefit of a transcutaneous approach is the ability to perform a suborbicularis oculi fat (SOOF) lift. Using a SOOF-lift, authors contend that there is an increased ability to blend the lid-cheek junction by redraping this fat over the orbital rim.[26]

Still, conventional lower lid blepharoplasty, consisting of skin-muscle flap technique and without fat resection or transposition or midfacial procedures, remains a popular choice for some providers. Maffi and colleagues reported outcomes on 2007 lower lid procedures using this approach, yielding excellent results and only a 0.04% lower lid malposition rate.[27]

SUMMARY

Lower lid blepharoplasty is a critical technique to master as it remains an important aesthetic concern for men. Lower lid techniques vary but center around addressing the consequences of aging, including the formation of a deep palpebromalar groove and tear-trough deformity. There is limited literature available publishing on clinical outcomes relating to lower lid blepharoplasty in men, in particular. In our experience, the anatomy of the aging eyelid is somewhat similar across genders. As a result, providers can use standard techniques involving either skin-muscle flap, orbital retaining ligament release, fat transposition, fat excision, and/or midfacial filling procedures. Providers may prefer using transconjunctival access in men to best hide the incision and still provide periorbital rejuvenation. We have found fat injections to be a particularly helpful adjunct to lower

lid blepharoplasty in rejuvenation of the male lower eyelid, lid-cheek junction, and cheek abnormalities.

CLINICS CARE POINTS

- Assess orbital vector during your preclinical assessment to ensure the appropriate surgical plan is chosen
- Grade the severity of lower lid laxity as most patients will require lid tightening or shortening procedures
- Transconjunctival approach should be designed in the retroseptal plane to preserve the orbital septum and provide direct access to the periorbital fat compartments
- Be careful not to over resect when removing periorbital fat as this may create an unnatural, hollowed out appearance to the eye
- Targeted periorbital fat excision along with autologous fat grafting to the lid-cheek junction may be all that's needed to provide an optimal result for the male patients

DISCLOSURE

The authors have no relevant financial disclosures.

REFERENCES

1. Jelks GW, Jelks EB. Preoperative evaluation of the blepharoplasty patient: Bypassing the pitfalls. Clin Plast Surg 1993;20:213–23.
2. Mendelson BC. Fat preservation technique of lower-lid blepharoplasty. Aesthet Surg J 2001;21:450–9.
3. Barrera JE, Most SP. Management of the lower lid in male blepharoplasty. Facial Plast Surg Clin North Am 2008;16:313–6.
4. American Society for Aesthetic Plastic Surgery. Cosmetic surgery National Data bank: Statistics 2012. Available at: https://www.plasticsurgery.org/documents/News/Statistics/2020/cosmetic-procedures-men-2020.pdf. Accessed September 5, 2021.
5. Muzaffar AR, Mendelson BC, Adams WP Jr. Surgical anatomy of the ligamentous attachments of the lower lid and lateral canthus. Plast Reconstr Surg 2002;110:873–84.
6. Loeb R. Aesthetic surgery of the eyelids. New York: Springer-Verlag; 1989.
7. Nahai F. The Art Aesthetic Surgery: Principles and Techniques. St. Louis, Missouri; 2nd edition; 2011.
8. Hamra ST. The role of the septal reset in creating a youthful eyelid-cheek complex in facial rejuvenation. Plast Reconstr Surg 2004;113:2124–41.
9. Haddock NT, Saadeh PB, Boutros S, et al. The tear trough and lid/cheek junction: anatomy and implications for surgical correction. Plast Reconstr Surg 2009;123:1332–40.
10. Tomlinson FB, Hovey LM. Transconjunctival lower lid blepharoplasty for removal of fat. Plast Reconstr Surg 1975;56:314–8.
11. Mendelson BC, Muzaffar AR, Adams WP Jr. Surgical anatomy of the midcheek and malar mounds. Plast Reconstr Surg 2002;110:885–96.
12. Ghavami A, Pessa JE, Janis J, et al. The orbicularis retaining ligament of the medial orbit: Closing the circle. Plast Reconstr Surg 2008;121:994–1001.
13. Rohrich RJ, Pessa JE. The fat compartments of the face: anatomy and clinical implications for cosmetic surgery. Plast Reconstr Surg 2007;119:2219–27 [discussion 2228–31].
14. Pessa JE, Desvigne LD, Zadoo VP. Changes in ocular globetoorbital rim position with age: implications for aesthetic blepharoplasty of the lower eyelids. Aesthet Plast Surg 1999;23:337–42.
15. Sullivan PK, Drolet BC. Extended lower lid blepharoplasty for eyelid and midfacial rejuvenation. Plast Reconstr Surg 2013;132(5):1093–101.
16. Rankin B, Arden R, Crumley R. Lower eyelid blepharoplasty. 2nd edition. New York: Thieme; 2002.
17. Pacella SJ, Nahai FR, Nahai F. Transconjunctival blepharoplasty for upper and lower eyelids. Plast Reconstr Surg 2010;125:384–92.
18. Hamra ST. Arcus marginalis release and orbital fat preservation in midface rejuvenation. Plast Reconstr Surg 1995;96:354–62.
19. Hass AN, Penne RB, Stefanyszyn MA, et al. Incidence of postblepharoplasty orbital hemorrhage and associated visual loss. Ophthal Plast Reconstr Surg 2004;20:426–32.
20. Drolet BC, Sullivan PK. Evidence-based medicine: blepharoplasty. Plast Reconstr Surg 2013;133(132):1195–205.
21. Kim EM, Bucky LP. Power of the pinch: pinch lower lid blepharoplasty. Ann Plast Surg 2008;60(5):532–7.
22. Rohrich RJ, Ghavami A, Mojallal A. The five-step lower blepharoplasty: blending the eye-lid cheek junction. Plast Reconstr Surg 2011;128(3):775–83.
23. Hidalgo DA. An integrated approach to lower blepharoplasty. Plast Reconstr Surg 2011;127:386–95.
24. Rosenberg DB, Lattman J, Shah AR. Prevention of lower eyelid malposition after blepharoplasty: anatomic and technical considerations of the inside-out blepharoplasty. Arch Facial Plast Surg 2007;9:434–8.

25. Barton FE Jr, Ha R, Awada M. Fat extrusion and septal reset in patients with the tear trough triad: a critical appraisal. Plast Reconstr Surg 2004;113: 2115–21.
26. Rohrich RJ, Arbique GM, Wong C, et al. The anatomy of suborbicularis fat: implications for periorbital rejuvenation. Plast Reconstr Surg 2009;124(3): 946–51.
27. Maffi TR, Chang S, Friedland JA. Traditional lower blepharoplasty: is additional support necessary? A 30 year review. Plast Reconstr Surg 2011;128: 265–73.