Surgical Treatment of the Brow and Upper Eyelid

Scott Shadfar, MD[a,*], Stephen W. Perkins, MD[a,b]

KEYWORDS

• Blepharoplasty • Upper eyelid • Forehead lift • Brow lift • Upper facial rejuvenation

KEY POINTS

- The surgeon must be meticulous when marking the patient for upper eyelid blepharoplasty before surgery, and the surgeon should make use of a fine-tip marker and small calipers.
- The age-related changes in the eyelid and eyebrow continuum are multifactorial, with volume loss or deflation (bony and fat atrophy) taking on an equivalent contribution in the aging process as the classically described tissue descent and skin changes.
- The frontal hairline, slope of the forehead, and structure of the underlying frontal bone should be considered when preparing for and choosing any surgical intervention to ensure proper approach selection and incision placement.
- The key to guiding and stabilizing brow position is releasing the periosteum at the arcus marginalis.
- Patients with hairlines that prevent a standard endoscopic approach may benefit from a combination procedure using trichophytic or transverse mid-forehead incisions to address medial brow ptosis.

INTRODUCTION

The periorbital region and upper third of the face are often the first facial areas to show signs of aging, with patients presenting with subjective complaints of having an unrested, angry, or sad appearance. Upper facial aging commonly manifests as brow ptosis, upper facial dynamic and static rhytids, volume loss and periorbital hollowing, with associated prolapse of periorbital fat, and dermatochalasis.[1,2]

The brow and upper lid anatomy, as well as the aging and esthetic analysis, are described in further detail within the earlier portions of this issue. When evaluating a patient for surgical intervention, the relationship of the upper eyelids relative to the other structures forming the upper third of the face, including the eyelid margin position, eyebrows, forehead, and the location of the frontal hairline should be analyzed in continuity.[3] The expression, brow-eyelid continuum, has been accepted by surgeons, and can be used to counsel patients and draw attention to the fact that treatment of these structures relative to each other, as opposed to in isolation, will allow the surgeon to achieve a more harmonious and esthetically pleasing rejuvenation.[3]

The age-related changes in the eyelid and eyebrow continuum are multifactorial, similar to other regions of the face. Several philosophies describe aging as a 3-dimensional process, with volume loss, deflation, and bony and fat atrophy taking on an equivalent contribution in the aging process, as the classically described tissue descent and skin changes. These changes include the rhytids, skin thinning, and laxity seen with loss of dermal collagen and solar damage.[1,4–6]

The surgeon must carefully assess each factor individually and recognize the interrelationship between the characteristic aging patterns and the

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[a] Meridian Plastic Surgeons, 170 West 106th Street, Indianapolis, IN 46290, USA; [b] Department of Otolaryngology/Head and Neck Surgery, Indiana University School of Medicine, 705 Riley Hospital Drive, RI0860, Indianapolis, IN 46202-5230, USA

* Corresponding author. 170 West 106th Street, Indianapolis, IN 46290.

E-mail addresses: DrShadfar@gmail.com; Sperkski@gmail.com

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surrounding anatomic structures to select the appropriate treatment. In this article, the authors explore the various approaches and techniques available for surgical rejuvenation of the upper face, including the upper periorbital region.

PREOPERATIVE PLANNING AND PREPARATION

The optimal results begin with appropriate preoperative planning and preparation. The surgeon should have a clear understanding of the surgical and nonsurgical techniques available to achieve the desired outcome and meet the expectations of the patient and surgeon alike. Considerations into the etiology of each patient's complaints and anatomic findings should be weighed against the effect that the procedure will have on the brow-lid continuum. This will allow the surgeon to accomplish the shared goals, while avoiding or reducing the need for revisions or further corrective procedures.[1]

Assessment of the patient's brow should include the brow position, height, brow curvature or arch, and the brow's relationship to the upper eyelids and hairline. The surgical techniques in brow elevation or stabilization aim to reshape the brow position relative to the adjacent forehead and upper eyelid skin. The surgeon should be conscientious that an overly elevated brow may not only result in a surprised look but also impart an aged appearance.[7,8]

The frontal hairline, slope of the forehead, and structure of the underlying frontal bone should be considered as well when choosing the appropriate surgical approach and incision placement (**Table 1**).[9,10] Additionally, documenting hyperfunctional brow musculature (corrugator supercilii, procerus, frontalis, orbicularis) may persuade the surgeon to consider myotomies or myectomies during their surgical intervention to reduce skin wrinkling.[7,11,12]

Blepharoplasty of the upper eyelid is indicated when the eyelids require contouring due to excessive or redundant upper eyelid skin, or when herniated periorbital fat calls for resection and redistribution. The preoperative evaluation should include critical evaluation of the skin, orbicularis muscle, prolapsed fat, the size and position of the lacrimal gland, levator palpebrae superioris function, and the position of the upper eyelid relative to the pupillary light reflex.[1] The limitations of blepharoplasty and the role of adjuvant procedures must be discussed with the patient. Nonsurgical management using botulinum toxin would be a more suitable treatment for the patient with significant crow's feet requesting periorbital rejuvenation. Similarly, the patient with fine wrinkling and "crepe paper" skin may achieve significant improvement with skin resurfacing, as opposed to blepharoplasty.[7] For those patients with volume loss contributing to the signs of periorbital aging, volumizing the brow with hyaluronic acid fillers or autologous fat may help give a more youthful appearance to the brow and periorbital region.[2,13,14]

The preoperative assessment of the patient seeking rejuvenation of the brow and upper eyelid complex should include a complete medical history to evaluate for systemic disease processes, such as autoimmune or collagen vascular diseases, endocrinopathies with ocular manifestations, dry eye symptoms, and visual acuity changes.[7] Often ocular physical examination findings can be a manifestation of a systemic disease process, such as allergy or thyroid-associated exophthalmos, and it is important to distinguish whether the changes to the brow and upper eyelids are truly related to hereditary or age-related changes (dermatochalasis and steatoblepharon). Comorbidities may have ocular consequences as well, and the appropriate workup should be completed, including blood levels of thyroid-stimulating hormone if thyroid-related endocrinopathies are suspected, in addition to consultation with an endocrinologist or ophthalmologist when indicated. Any patient with history of dry eye or visual acuity changes should be evaluated by an ophthalmologist.[7]

UPPER EYELID REJUVENATION

Patient Marking and Positioning

The surgeon must be meticulous when marking the patient for upper eyelid blepharoplasty before surgery, and the surgeon should make use of a fine-tip marker and small calipers. The patient may be marked in a seated or supine position, as long as the surgeon accounts for the tissues of the brow being drawn artificially higher in a supine position compared with when the patient is seated.

A difference of 1 to 3 mm from one eyelid to the next may create perceptible asymmetries. The surgeon's contralateral hand is used to reposition or brace the eyebrow superiorly, isolating the perceived contribution of brow ptosis from true upper eyelid dermatochalasis. Alternatively, if a forehead lift is indicated at the same time as the upper eyelid blepharoplasty, the surgeon may elect to perform the forehead lift first, and then measure and mark the appropriate amount of upper eyelid skin excision necessary to provide rejuvenation of the upper eyelid complex, so as to minimize the risk of lagophthalmos.[7]