

Upper Blepharoplasty

A Novel Approach to Improving Progressive Myopathic Blepharoptosis

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Objective: To describe the results of upper blepharoplasty for the treatment of progressive myopathic upper eyelid blepharoptosis.

Design: Retrospective, noncomparative case series.

Participants: Six consecutive patients treated bilaterally.

Intervention: Upper blepharoplasty in 6 patients (12 eyelids) with progressive myopathic ptosis.

Main Outcome Measures: Subjective visual improvement, ocular comfort, preoperative and postoperative margin reflex distances, lagophthalmos, and degree of corneal keratopathy at last follow-up date.

Results: All patients had subjective visual improvement and denied ocular discomfort. Upper eyelid ptosis, measured by margin reflex distances, was improved. No worsening of lagophthalmos or corneal keratopathy was noted.

Conclusions: Upper blepharoplasty may be an excellent alternative for ptosis treatment in patients with progressive myopathies. Improvement in ptosis, margin reflex distance, without concomitant lagophthalmos, and corneal keratopathy can be achieved. *Ophthalmology* 1999;106:2098–2100

Progressive myopathies involving the levator muscle may cause visually significant upper eyelid ptosis. In patients with progressive myopathic ptoses, poor levator excursion often is seen in conjunction with poor ocular motility. Poor or absent Bell's phenomenon, lagophthalmos, and, in some cases, decreased tear function may cause corneal exposure keratopathy and ocular discomfort. Because correction of upper eyelid ptosis may exacerbate corneal exposure, treatment of these individuals is difficult. Conservative treatment is usually advocated.¹

The approach to ptosis repair depends on the degree of levator excursion and includes maximal levator advancement, levator muscle resection, and frontalis suspension. Often, to protect the cornea, conservative approaches fail to improve superior visual field. Shorr et al² and Holck et al³ recently have advocated upper eyelid surgery in conjunction with lower eyelid elevation to improve visually significant ptosis and to maintain corneal protection in these patients. We describe upper blepharoplasty, with or without lower eyelid surgery, as a technique to diminish upper eyelid

ptosis and maintain corneal protection. By creating a physiologic sling between the upper eyelid and eyebrow via skin and orbicularis excision, adequate eyelid elevation and corneal protection is achieved and postoperative discomfort is minimized. Traditional approaches, including levator resection and frontalis sling procedures, require significant follow-up for ocular discomfort from lagophthalmos and corneal compromise. In one of our practices (AMP), the last three patients treated with frontalis suspension for progressive myopathic blepharoptosis with poor levator excursion required an average of 6.6 follow-up visits and 4 months to manage their corneal exposure complaints.

Patients and Methods

Twelve eyelids of 6 consecutive patients with progressive myopathic blepharoptosis, poor levator excursion, and diminished corneal protection were treated by upper blepharoplasty to improve visually significant ptosis with loss of superior visual field. Patients were recruited from the offices of the authors and treated at Michael Reese Hospital (1), Illinois Eye and Ear Infirmary (1), Childrens Hospital-Los Angeles (2), and City of Hope National Medical Center (2); the patients ranged in age from 6 to 59 years (Table 1). Three patients were male. Each patient had ocular misalignment without subjective diplopia, an absent Bell's phenomenon, diminished orbicularis tone, and chin-up head posturing. Each patient at Childrens Hospital had eyelid elevation to improve his or her chin-up head position and to avoid occlusive amblyopia. One patient (patient 3) underwent levator resection and upper blepharoplasty by a different oculoplastic surgeon 10 years before our evaluation; his initial postoperative course was complicated by poor improvement in margin reflex distance (MRD), exposure keratopathy, and dry eye necessitating frequent follow-up visits. Each patient had a normal fundus examination, negative cardiac

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Table 1. Patient Characteristics

Patient No.	Age (yrs)	Sex	Prior Eyelid Surgery	Pre-MRD (RE;LE:mm)	Levator Excursion (RE;LE:mm)	Bell's Phenomenon	Procedure	Last Follow-up (wks)	Post-MRD (RE;LE:mm)	No. Postoperative Visits
1	6	F	None	-;-2	0;0	Absent	Upper blepharoplasty	6	1;1	2
2	8.5	M	None	-2;-1	0;0	Absent	Upper blepharoplasty	16	1;1.5	2
3	51	M	Levator resection	-2;-3	4;6	Absent	Upper blepharoplasty*	4	1.5;1.5	2
4†	51	F	None	-2;-2	7;6	Trace	Upper blepharoplasty	8	1.5;1.5	3
5	54	M	None	-4;-2	3;4	Absent	Upper blepharoplasty	16	1.0;1.5	3
6	59	F	None	-1;-2	7;6	Absent	Upper blepharoplasty	8	0.5;0.5	2

RE = right eye; LE = left eye; MRD = margin reflex distance, measured with brow elevation.

* Enhancement required to remove excess skin.

† Patient with known oculopharyngeal dystrophy and positive family history.

workup, and a Tensilon test that did not reveal eyelid elevation or improved extraocular motility. The Tensilon test at Childrens Hospital-Los Angeles was performed by an experienced pediatric neuro-ophthalmologist. Patient 4 was French-Canadian, had a positive family history of progressive ptosis and pharyngeal signs (trouble swallowing), and was diagnosed with oculopharyngeal dystrophy.

Each patient underwent upper blepharoplasty, removing all excess skin and orbicularis between the eyebrow and eyelid margin. Before surgery, frontalis function was tested and found to be adequate. Intraoperatively, the excess skin was pinched off. Special attention was paid to ensure more skin was not excised, which would result in ectropion, lagophthalmos, and corneal exposure keratopathy. Patients were evaluated at 1 week and 3 weeks after surgery for ocular comfort, eyelid position, and corneal keratopathy. Levator excursion was measured as the distance of eyelid movement from extreme downgaze to extreme upgaze with the ipsilateral eyebrow fixed and the fellow eyelid elevated. Main preoperative and postoperative eyelid measurements included margin reflex distance (distance from the light reflex to upper eyelid with brow elevation) and lagophthalmos on gentle eyelid closure. Pre-MRD and post-MRD were comparable because eyebrow position was equivalent in preoperative and postoperative measurements, as measured by the distance from the inferior corneal limbus to inferior eyebrow. Corneal keratopathy was assessed at the slit lamp with fluorescein.

Results

All patients with progressive myopathic blepharoptosis (visually significant ptosis, poor levator excursion, diminished ocular motility in all fields of gaze, and diminished Bell's phenomenon and orbicularis function) had improvement in their MRD after upper blepharoplasty, the average elevation being 3.25 mm (Table 1; Fig 1). No patient reported increased ocular discomfort after blepharoplasty. No increased lagophthalmos on eyelid closure or exposure keratopathy resulted. One patient (patient 3) required reoperation because of residual excess skin and persistent ptosis with eyebrow elevation. Patient 2 had a lower eyelid-tightening procedure to improve the inferior scleral show and preclude postoperative corneal exposure keratopathy. Patients undergoing upper blepharoplasty required an average of 2.3 follow-up visits before the transfer of their care back to the referring provider.

Discussion

Successful surgical treatment of progressive myopathic ptosis is difficult. Beard created a classification scheme for surgical procedure based on the degree of ptosis and levator excursion.¹ In progressive myopathic blepharoptosis, however, eyelid elevation must be approached cautiously because of compromised corneal protection: poor Bell's phenomenon, dry eye, and lagophthalmos with resultant corneal keratopathy. We present our favorable results using upper blepharoplasty for the treatment of progressive myopathic blepharoptosis. In each case, we attained an improvement in MRD without residual lagophthalmos or exposure keratopathy. As a result, patients experienced less postoperative discomfort and had a speedier recovery requiring less postoperative follow-up.

In our series, patient 3 underwent a conservative upper blepharoplasty. He failed to improve with previous upper blepharoplasty and levator resection by another oculoplastic surgeon. His preoperative eyebrow ptosis was not appreciated, which resulted in residual upper eyelid ptosis. With additional skin and orbicularis excision, he developed an adequate MRD. Alternatively, eyebrow ptosis repair could have addressed this initial blepharoplasty failure. Patient 2 had preoperative lower eyelid retraction. With upper blepharoplasty, he underwent bilateral tarsal strip procedure to diminish the lower eyelid retraction and chance for lagophthalmos and exposure keratopathy. As a result, he did not develop corneal keratopathy and exposure complaints in the postoperative period. For patients with inferior scleral show, lagophthalmos, or exposure keratopathy, upper blepharoplasty may be combined with lower eyelid tightening or retractor recession and spacer graft placement for corneal protection.³

We believe that our approach of upper blepharoplasty works well in these challenging ptosis cases because a physiologic sling between the eyebrow and eyelid is created. On eyebrow elevation, the upper eyelid elevates. On eyebrow elevation, this sling effect is illustrated by eyelash eversion and increased palpebral fissure on downgaze (Fig 2). With the eyebrow in a relaxed state, normal eyelid closure occurs and no lagophthalmos results. This sling

effect is created without exogenous material, thus decreasing the chance of infection, implant exposure, or dehiscence and regression of eyelid elevation. In addition, residual lagophthalmos with resultant corneal keratopathy is avoided, and patients are more comfortable during the post-operative period. The long-term outcome of this procedure is unclear. To date, our longest follow-up is 1.5 years. By telephone interview with each patient or his or her guardian,



Figure 1. Patient 4. Representative example of before (A) and after (B) upper blepharoplasty margin reflex distance with eyebrow elevation. Note the lack of lagophthalmos on eyebrow relaxation and eyelid closure (C).



Figure 2. The sling effect of skin/orbicularis excision is noted by the increased palpebral fissure on downgaze from the before (A) and after (B) skin excision. Note the eyelash eversion with eyebrow elevation, confirming the sling mechanism.

it was found that no recurrent ptosis has developed. With time, repeat blepharoplasty may be indicated for progressive dermatochalasis loosening the sling effect or for development of progressive eyebrow ptosis. The number of times repeat blepharoplasty may be performed has not been evaluated nor is it known for frontalis suspension or levator surgery. The amount of skin excision and the number of repeat procedures would be limited by the risk of ectropion and corneal exposure.

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