ORIGINAL ARTICLE

Safety of Blepharoplasty in Patients With Preoperative Dry Eyes

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Objectives: To assess the safety of blepharoplasty in patients with preoperative dry eyes and to report our surgical technique.

Setting: Private practice with academic affiliation.

Design: Retrospective medical chart review of 67 patients with preoperative dry eyes who underwent blepharoplasty. The technique was modified by preserving the orbicularis oculi muscle and its innervation during upper blepharoplasty.

Main Outcome Measures: The severity of preoperative and postoperative eye dryness by patient survey.

Results: Of the 67 patients, 5 had worsening, 5 had improvement, and 50 had no change in the severity of their dry eyes. Seven patients could not be located for the follow-up survey. Preserving the orbicularis did not affect the cosmetic results.

Conclusions: By preserving the orbicularis muscle and its innervation, the dynamics of eyelid closure, tear pumping, and tear distribution are not affected. Blepharoplasty can be a safe operation in patients with dry eyes.

Arch Facial Plast Surg. 2004;6:101-104

KERATITIS SICCA, OR DRY EYE syndrome, is a common condition affecting many candidates for blepharoplasty. Most surgeons, for fear of worsening this condition, avoid operating on this subset of patients for blepharoplasty. Reports on recommendations or guidelines for surgery in this patient population are scant. Limited skin excision has been recommended by some authors.[1-3] Another study[4] suggests occluding the lower punctum in patients undergoing upper blepharoplasty.

The high number of patients with preoperative dry eyes referred to one of us (S.C.D.) for blepharoplasty stimulated us to review and report our results. The following 3 questions provided the background for this study: (1) Is blepharoplasty safe to perform in patients with preoperative dry eyes? (2) How can we modify the surgery in patients with preoperative dry eyes? (3) Does this modification change the cosmetic results?

To address the second question, the 3 components of normal tearing were noted: (1) production and release of tears from the lacrimal gland; (2) blinking and distribution of tears; and (3) pumping of tears into the nasolacrimal duct. The orbicularis oculi muscle is responsible for components 2 and 3. Moreover, the technique of lower blepharoplasty has evolved from the skin-muscle flap approach to the transconjunctival approach.[5] The outcome is fewer complications of ectropion, retraction, scleral show, and lacrimal pump insufficiency.[5] The difference between these 2 approaches is the preservation of the orbicularis muscle and its innervation. Based on the above reasoning, in the past 4 years we have modified our upper blepharoplasty technique by preserving the orbicularis muscle and its innervation.

METHODS

From January 1, 1997, to September 30, 2000, 436 blepharoplasties were performed. Each patient provided a full history and underwent ocular examination and a basic Schirmer test, with anesthesia of the conjunctival surface. The medical charts of 67 patients who had dry eyes preoperatively were reviewed. All patients with subjective preoperative dry eyes and/or an abnormal basic Schirmer test result were included in the study. An *abnormal* Schirmer test finding was defined as any test result with less than 10 mm of wetting after 5 minutes.

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Figure 1. Upper eyelid skin excision using a Colorado tip needle, leaving an intact orbicularis muscle.

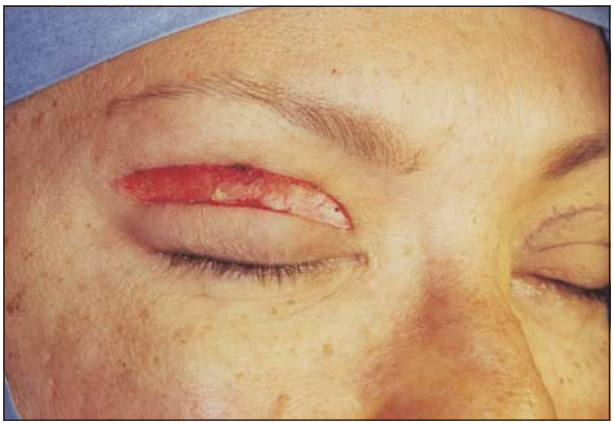

Figure 2. Intact orbicularis muscle after skin excision.

All lower blepharoplasties were performed via a transconjunctival approach for fat removal, with a pinch of skin or laser resurfacing to address skin wrinkling. With upper blepharoplasties, adequate skin was excised with a modified pinch technique to correct the skin redundancy.[6] If debulking of the upper lid was indicated, fat was excised through a buttonhole incision in the orbicularis and septum medially. No orbicularis muscle was excised (**Figures 1**, **2**, **3**, and **4**).

The patients were evaluated postoperatively at routine intervals. Each patient was subsequently contacted and questioned about the severity of his or her dry eyes postoperatively compared with the preoperative baseline. The severity of each patient's dry eyes was reported as better, worse, or the same. Photographs were obtained preoperatively and postoperatively.

Figure 3. Removal of a medial fat pocket through a small buttonhole incision in the orbicularis and septum medially. This buttonhole incision is parallel to the fibers of the orbicularis muscle.

Figure 4. Removal of a central fat pocket through the same medial buttonhole incision in the orbicularis and septum.

RESULTS

Of the 436 patients, 67 had dry eyes preoperatively. There were 47 women and 20 men (age range, 38 to 81 years [mean, 64.6 years]). The follow-up ranged from 1 to 48 months (mean, 16.1 months). Seven patients could not

be located for further questioning about their dry eyes. All patients underwent upper blepharoplasties. Thirty-two patients had upper blepharoplasty only. Twenty-five patients had upper and lower blepharoplasties. Other concomitant procedures were performed as indicated, including canthopexy, canthoplasty, and conjunctival Müeller muscle resection.

The **Table** compares the preoperative and postoperative severity of the patients' dry eyes. Of the 60 patients for whom survey results were available, 5 (8%) reported worsening, 5 (8%) reported improvement, and 50 (83%) reported no change in the severity of their dry eyes. Of the 5 patients who reported worsening, 1 was clinically symptomatic preoperatively. All patients who reported an improvement were symptomatic preoperatively.

All of the patients had at least 6 weeks of clinical follow-up. None of the patients exhibited postoperative lagophthalmos or required further reconstructive surgery. Patients were satisfied with the cosmetic outcomes (**Figure 5** and **Figure 6**).

Comparison of Preoperative and Postoperative Severity of Dry Eyes in 67 Patients With Preoperative Dry Eyes

Result	No. of Patients	Preoperative Findings
Worse	5	1 Symptomatic
		4 Abnormal Schirmer test result only
Better	5	All symptomatic
No change	50	6 Symptomatic
		44 Abnormal Schirmer test result only
No follow-up	7	2 Symptomatic
		5 Abnormal Schirmer test result only

COMMENT

Ninety-two percent (55/60) of the patients in this study had no change or an improvement of their dry eyes postoperatively. New onset of dry eyes or worsening of preoperative dry eyes can occur in patients who undergo an aggressive upper or lower blepharoplasty. This probably results from lagophthalmos, lower lid retraction, lacrimal pump insufficiency, or a combination of these. The postoperative integrity of the orbicularis muscle plays an important role in all of these conditions resulting in dry eyes. Some authors recommend staging, by operating on the upper eyelids first, followed by the lower eyelids several weeks later, excising conservative amounts of skin, muscle, and fat.[3] Based on our experiences, no staging is necessary in patients with dry eyes. By preserving the orbicularis muscle and its innervation during surgery, the dynamics of eyelid closure, tear pumping, and tear distribution are not clinically affected. In addition, by preserving the orbicularis muscle, appropriate amounts of

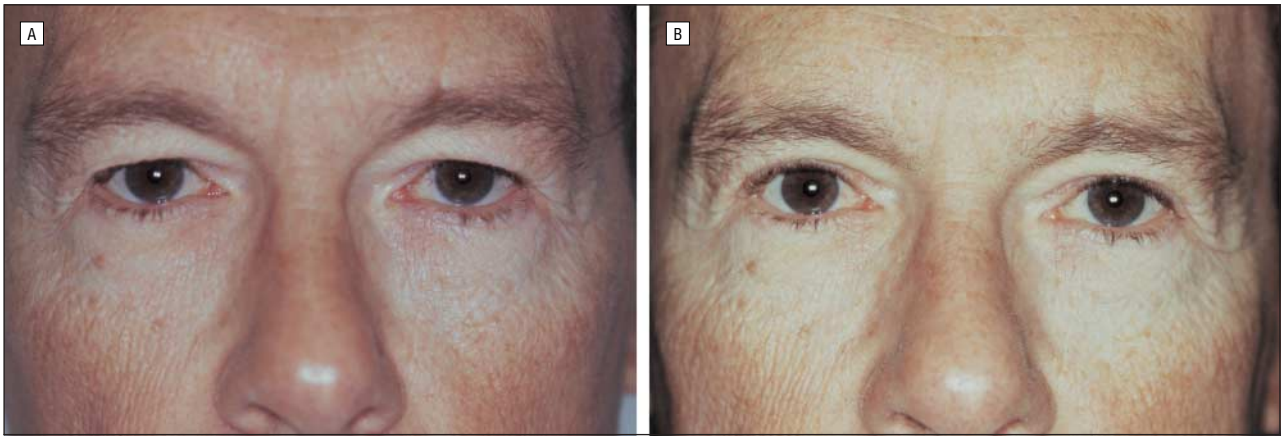

Figure 5. Representative patient who underwent bilateral upper blepharoplasty. A, Preoperative photograph. B, Postoperative photograph.

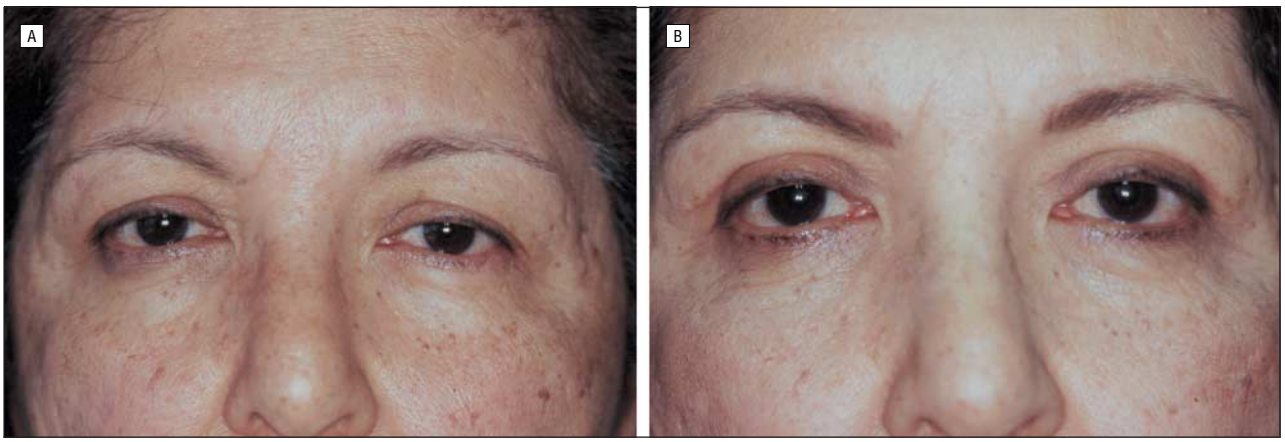

Figure 6. This patient underwent bilateral upper and lower blepharoplasty. A, Preoperative photograph. B, Postoperative photograph.

skin and fat can be removed, with little fear of complications. Becker[4] recommends, in addition to conservative skin excision, punctal occlusion at the time of surgery. We did not find punctal occlusion necessary, and this can always be safely performed at a later date, if clinically indicated. Despite the limitations of this study (ie, its uncontrolled retrospective design), blepharoplasty can be performed in most patients with dry eyes by excising a conservative amount of skin and, most important, by preserving all of the orbicularis oculi muscle and its innervation.

The results of this study showed an 8% (5 of 60 patients) incidence of worsening of dry eyes after blepharoplasty. However, none of these patients experienced any symptomatic corneal complications or required further reconstructive surgery. They did, however, require increased amounts of artificial tears. Blepharoplasty can be offered to patients with dry eyes as long as they are informed of these potential risks.

The basic Schirmer test was used in this study to screen for the presence of dry eyes. Some authors believe that this test is an unreliable method to diagnose dry eyes.[6-8] We used this test because it is practical, inexpensive, easy to perform, and familiar to most surgeons performing blepharoplasties. Although false-negative test results are possible, determining the presence of low tear production is important to document preoperatively, especially in patients who are asymptomatic. In this study, of the 5 patients who had worsening of their dry eyes, 4 were asymptomatic and had an abnormal Schirmer test result preoperatively. Therefore, the Schirmer test might play a role in identifying subclinical dry eyes.

From a cosmetic standpoint, we achieved our goals using certain modifications, without the need to remove any of the orbicularis muscle during upper blepharoplasty. The skin redundancy was addressed by an adequate excision, using a modified pinch technique. The upper eyelid was debulked or deepened by removal of fat from the medial and central pockets. Preserving the orbicularis in upper blepharoplasty serves several purposes. In addition to maintaining its function as a protractor, sparing the orbicularis preserves the natural fullness of the superior sulcus, to avoid a potential sunken appearance that may evolve over time. Preserving the orbicularis also gives a natural, nonsurgical appearance to the upper eyelids. Based on the cosmetic outcome of the subset of patients with dry eyes, we now preserve the orbicularis in all of our upper blepharoplasty procedures, with rare exceptions. The exceptions to orbicularis preservation are in Asian patients undergoing blepharoplasty and in patients lacking a crease or having an asymmetrical crease.

CONCLUSIONS

Based on the results of this study, blepharoplasty can be safely performed in patients with preoperative dry eyes. By preserving the orbicularis muscle and its innervation, the dynamics of eyelid closure, tear pumping, and tear distribution are not affected. Moreover, preserving the orbicularis does not affect the cosmetic results. The advantages of preserving the integrity of the orbicularis muscle in upper blepharoplasty in patients without dry eyes should be given consideration.

Accepted for publication September 5, 2003.

This study was presented at the American Academy of Facial Plastic and Reconstructive Surgery section meeting of the Spring Combined Otolaryngological Society Meeting; May 12, 2001; Palm Desert, Calif.

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