The Trans-Blepharoplasty Approach to Lower Lid and Midfacial Rejuvenation Revisited: The Role and Technique of Canthoplasty

“Second Thoughts” focuses on ways in which aesthetic surgeons have modified or even dramatically changed their techniques over time to achieve optimal results. Contributors are Aesthetic Society members and other recognized experts.

Over the past 4 years, I have performed transblepharoplasty lower lid and midfacial rejuvenation on more than 400 patients with the technique previously described.1,2 The surgical principles on which the procedure is based have proven to be sound and have not required major modifications. The essence of the technique is the secure and direct fixation of the full thickness of the cheek (malar fat pad, superficial musculoaponeurotic system, orbicularis, suborbicularis oculi fat, and periorbital) to the periosteum of the lateral orbital rim and the deep temporal fascia. The vertical elevation and fixation of the midface returns lower lid skin and muscle to a more youthful position within the orbit and provides a sound foundation for surgical correction of lower lid aging.

The Role of Canthoplasty

It is a misconception that lateral canthoplasty can be used to support cheek elevation with this technique.3 A properly performed canthoplasty is important, however, in minimizing lower lid morbidity and creating a more natural-appearing, youthful lower lid. Although the basic concept remains unchanged, I have modified the canthoplasty technique.

The four most important factors in preventing lower lid complications, in order of importance, are as follows:

1. Avoiding overresection of lower lid skin.
2. Complete release, elevation, and secure fixation of midfacial soft tissue. The fixation uses direct suture approximation of strong ligamentous structures. In my opinion, this method is more reliable than techniques that depend on long cable sutures anchored in the fat of the cheek.4 Because secure vertical fixation is so important in preventing postoperative complications, I am not comfortable with sutures in fat that would be more prone to partial or complete avulsion when mimetic activity resumes and the inferior pull vectors increase.
3. Redraping and vertical elevation of orbicularis oculi. In younger patients with minimal lower lid skin and muscle laxity, the procedure can be performed via a small lateral orbital incision extending only a few millimeters into the lid proper (endoscopic assistance is helpful). The lateral orbicularis is elevated and sutured to the temporal fascia, providing additional support of lower lid position. In patients with more significant aging, a more complete redraping of the orbicularis with excision of excess tissue, elevation, and fixation provides additional vital lower lid support.
4. Understanding the role and technique of canthoplasty. Canthoplasty can be performed by use of either canthopexy or canthotomy, or both. Plastic surgeons resist canthotomy for fear of complications including lid malalignment, malplacement, and webbing. The simpler technique of canthopexy is more appealing to most surgeons, but it may not adequately address the problem of significant horizontal laxity. The question is how much horizontal laxity is too much? The snapback and distraction tests have traditionally been used but have proven unreliable. For this reason, in the past I have chosen to use canthotomy with indicated horizontal shortening in most patients, reserving canthopexy for patients with minimal degrees of laxity.
Recently I was made aware of a canthopexy technique by Dr. Sam Hamra. The technique appeared intriguing in its simplicity, with a transcanthal mattress suture used to fix the canthus to the periosteum of the lateral orbital rim. With minimal modifications to suit my particular application, I used the technique in several patients with lesser degrees of horizontal laxity and was impressed with its technical ease, reliability, and lack of complications. As a result of this experience, I decided to expand the use to patients with more serious degrees of horizontal laxity in an effort to minimize the use of canthotomy. I have now completed a review of 25 consecutive patients in which this technique was used regardless of the degree of lower lid laxity. The patients ranged in age from 28 to 72 years (average = 56). There were 20 women and 5 men. Exophthalmometric measurements of eye prominence ranged from 16 to 22 mm. Five patients had measurements of 20 mm or greater (prominent globe). The patients have now been followed up from 6 weeks to 4 months, and the incidence of perioperative complications related to the lower lid and lateral canthus have been identified.

Twenty-one of the 25 patients had no complications. Even in older patients with some degree of horizontal excess, proper lid position, including both vertical- and anterior-position relationship to the globe, was maintained.

Two patients had apparent partial failure of the suture, resulting in early inferior displacement of the canthus and lateral aspect of the lower lid. These two problems occurred early in the series and were most likely related to use of a suture of insufficient strength (6-0 Vicryl®). This problem seems to have been eliminated by use of a stronger suture (4-0 or 5-0 Vicryl®).

As might have been expected, the most significant complications occurred in patients over 60 years old, with marked horizontal laxity confirmed by positive lower lid snapback test results. In these two patients noticeable vertical lower lid descent occurred (unilateral in both). Even more troublesome, anterior-posterior swelling pushed the lid away from the globe, exacerbating symptoms of dry eye. In both of these patients lid position and symptoms improved in 12 weeks, but both will probably require revision to obtain ideal position and function. Common to these two patients was the presence of a nonprominent globe (exophthalmometry [EOM] 16). In this anatomic situation, canthopexy alone may not always provide sufficient lid tension because of the short distance between the canthus and the lateral rim, depending on such postoperative variables as edema, hematoma, or overresection of lower lid skin.

Interestingly, older patients with significant laxity but who had more prominent globes (EOM 20–24) did well.
without canthotomy and lid shortening. In this anatomic situation more horizontal lid length is needed to bridge the increased distance between the canthus and orbital rim. Thus with tightening of the canthopexy suture, sufficient tightness of the lid against the globe maintains proper lid position in the perioperative period. However, with the prominent globe, the surgeon should always be cognizant of the problem of "bowstringing," the lid under the globe if tension is excessive or fixation to the orbital rim not high enough.\(^3\) With the experience of this "mini-series" in mind, I have now modified my approach to canthopexy and use modifications of the Hamra technique shown in Figures 1 and 2.

**Canthopexy Without Canthotomy**

In canthopexy without canthotomy (Figure 1), I use a double-armed 4 or 5-0 Vicryl\(^\text{®}\) buried mattress suture technique through the full thickness of both lids, including the most lateral aspect of the tarsal plates but excluding the skin. Both needles are then used to pass the suture from inside out through the periosteum of the lateral orbital rim at the appropriate vertical position. With the knot secured, the lower lid is elevated slightly from its preoperative position related to the limbus. The 2 or 3 mm of suture that traverses the inside of the lid in the far lateral recess of the canthal angle in contact with the sclera has not proven problematic and is, of course, eventually resorbed. On the basis of my experience with this technique, I now use canthopexy (without canthotomy) in more than 90% of patients, including a large number of patients with more severe lower lid laxity. The key points are that after canthopexy is completed, the upper margin of the lower lid should lie 1 to 2 mm above the limbus, follow the contour of the globe, and most important, not be distractible from the globe more than 2 mm in the anterior-posterior dimension.

**Canthopexy With Canthotomy**

The technique of canthopexy with canthotomy (Figure 2) is the same as canthopexy without canthotomy, except that indicated horizontal shortening of the lower lid is done (3 to 5 mm). Suture placement is the same as for canthopexy. A real advantage of this technique modification is that as the suture is secured, the lateral edges of the upper and lower lid are brought into exact anatomic approximation, eliminating the need for an additional "alignment" suture (Figure 2B).

I now use canthopexy with canthotomy in approximately 10% of my patients. The patients most likely to need this technique will be older with significant horizontal laxity and, more importantly, will have a nonprominent globe, decreasing the distance the canthus will be moved laterally by canthopexy alone.
The patient in Figure 3, a 52-year-old woman with prominent globes (EOM 21 mm), is shown before surgery and 4 weeks after surgery. She did well with canthopexy alone, in spite of having significant horizontal laxity. In the presence of a prominent globe, canthopexy is more likely to provide sufficient lower lid tension to prevent its distraction of no more than 2 mm away from the anterior surface of the globe.

The patient in Figure 4 is a 63-year-old woman with nonprominent globes (EOM 16 mm) and obvious horizontal laxity (positive snapback test result). At 4 weeks after surgery she has descent of the right lid with anterior-posterior edema pushing the lid away from the globe, exacerbating dry eye symptoms. Although there has been improvement in lid position with time (12 weeks), a revision will most likely be required.

**Summary**

If plastic surgeons perform lower lid rejuvenative surgery, they should be able to perform canthopexy when indicated. I now perform a canthopexy on all patients undergoing lower lid blepharoplasty with or without midface rejuvenation. The surgeon should choose a technique that best meets his or her needs and become comfortable with the nuances of its use. After a long experience with a technique requiring canthotomy, I am now using the technique described by Dr. Hamra. With certain modifications I use it for canthopexy alone or with canthotomy and excision of horizontal excess in indicated patients. Although my experience is relatively short, it appears that this approach will reduce the need for canthotomy in a significant percentage of patients.

It is important to remember that no variation of canthal support will protect the lower lid from gross surgical misadventure. In those patients referred to me with the most severe complications after transconjunctival blepharoplasty lower lid and midfacial rejuvenation, the complications have resulted from gross overresection of lower lid skin. After vertical midface elevation and fixation, the unwary surgeon will see more "apparent" vertical lower lid skin excess and will always be tempted to overresect. Remember, even skin in older patients will recover some tone once midfacial support has been restored and inferior pull on the lower lid by the weight of the sagging midface eliminated. The surgeon should always be conservative with lower lid skin excision. A minimal revision for slight skin excess is much better than major reconstructive procedures.
References


Reprint orders: Mosby, Inc., 11830 Westline Industrial Drive, St. Louis, MO 63146-3318; phone (314) 453-4350; reprint no. 701/93855

CALL FOR MANUSCRIPTS

Scientific Forum of Aesthetic Surgery Journal

Editor in Chief, Stanley A. Klatsky, MD

Physicians engaged in the practice of aesthetic surgery are invited to submit original articles on clinical studies, special topics or case reports to the Aesthetic Surgery Journal Scientific Forum.

Manuscripts will be reviewed and authors notified of their status within 45 days of submission.

Most articles will be published within six months of acceptance.

For complete instructions on manuscript submission, see the Information for Authors in this issue.

Mosby