FIGURE 3. A, Laryngostroboscopic view of the patient with bilateral swelling of vocal folds with polypoid degeneration. There were no cyst-like lesions observed during examination. B, On the surgical exploration of the right vocal fold on the border of the vocal ligament, a cystic mass was identified and resected.

The togetherness between cysts and other benign laryngeal lesions are discussed in the literature but not with Reinke edema. Martins et al[7] investigated 72 patients with vocal fold cysts, and in 22 patients associated benign lesions are found such as mucosal bridge, sulcus, polyp, microwebs, varicosity, and contralateral mucosal thickenings. However, there is no clear evidence of cystic formation within the Reinke edema, but our hypothesis states that during the progression of Reinke edema, entrapment of epithelial tissue or retention of mucus would be seen as a minor structural abnormality as well.

Surgical resection of Reinke edema based upon removing the gelatinous material from Reinke space, and various instruments are used for this. During surgery to avoid complications, protecting the vocal ligament and healthy layer of lamina propria is the basic important goal.[4] Reverse in mucosal wave and sufficient glottic closure are obtained usually in first month follow-up. Cessation of smoking is one of the most important factor for inhibiting recurrence. Surgical resection of benign vocal fold lesions would result in sulcus, residual mass lesion, recurrence of the mass, and residual inflammation as reported by Woo et al.[10] After surgical intervention of Reinke edema, granuloma formation is reported in the literature as well.[11] There are no reports regarding cyst formation within Reinke edema primarily or following microresection of the lesion. The compound swelling of the lamina propria would hide the intralesional masses such as cysts especially mucous retention cysts, which are thinner epithelial lining.

Although Reinke edema is a widespread disease of lamina propria, cysts are seen as an epithelial-lined structure with separate internal contents. CD34 fibroblasts play a major role for increased extracellular matrix tissue. Impaired elastic fiber network configuration is observed in histopathologic sections.[12] Vocal fold cysts are thought to occur due to trauma blocking the mucous glands (retention cyst) or entrapment of the epithelial tissue remainings (epidermoid cyst).[13]

In the present cases, we observed both types of cyst formations accompanying Reinke edema. The presence of cyst formation would lead a failure of voice restoration may occur during surgical intervention of underlying primary disease as described in the first case, or following microlaryngeal surgery as observed in the second case, or with recurrence of Reinke edema as shown in the third case. This alignment should be kept in mind during primary resection of Reinke edema and persistence of dysphonia following surgery. But also surgeon should look for a secondary cystic mass to avoid the surgical failure as shown in the first case.

CONCLUSION

Present case report showed variable associations of Reinke edema and vocal fold cysts. As per our knowledge, these are the first descriptions of togetherness of these benign laryngeal lesions. Enlarged Reinke space may hide cystic formations. Palpation of the vocal folds during surgical exploration helps to find out additional subepithelial pathologies. Care should be taken to prevent epithelial entrapment for epidermoid cyst occurrence.

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Lateral Canthal Support in Prevention of Lower Eyelid Malpositioning in Blepharoplasty: The Tarsal Sling

M. Pascali, MD, A. Avantaggiato, MD,† L. Brinci, MD,* V. Cervelli, MD,* and Francesco Carinci, MD†*

Abstract: Lower blepharoplasty is a cornerstone in facial rejuvenation and improvement. Despite its popularity, several adverse effects have been described; of these, postsurgical eyelid displacement, with its aesthetic and functional consequences, is one of the more frequent complications. The tarsal sling procedure is a simplified canthopexy

From the *Department of Plastic and Reconstructive Surgery, University of Tor Vergata, Rome; and †Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Ferrara, Italy.

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Address correspondence and reprint requests to Prof Francesco Carinci, MD, Section of Translational Medicine, Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Via Luigi Borsari 46, 44100 Ferrara, Italy; E-mail: crc@unife.it

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consisting in the fixation of the lateral portion of the septum—the canthal ligament—to the orbital wall periosteum.

The aim of the current research is to demonstrate how the tarsal sling technique is effective in the prevention of lower lid malpositioning.

A retrospective analysis of 40 consecutive healthy individuals was carried out. In group 1, 20 patients underwent standard blepharoplasty; in group 2, blepharoplasty was associated to the tarsal sling canthopexy. Pre- and postsurgical position of the lower eyelid margin was compared through photographic measurements at 5 time points and statistical analysis performed. Group 1 patients evidenced an increased distance between the interpupillary line and the lateral aspect of the lower lid margin. A progressive spontaneous improvement (reduction in scleral exposition) was detected. Patients who underwent the tarsal sling procedure (group 2) reported a postoperative overcorrection of scleral appearance. Two years postsurgery, progressive relapse occurred, but the lower eyelid did not reach presurgical values and maintained a slight degree of overcorrection.

Tarsal sling is an easy, fast, and efficacious procedure to prevent eyelid displacement in lower blepharoplasty. Its routine use is a tool to assure further support to lower lids in the younger patients or when lid laxity is absent during presurgical examination.

Key Words: Blepharoplasty, canthopexy, lower lid position measurements, tarsal sling

The lower blepharoplasty is one of the most common surgical techniques and is often the reason for the initial consultation with the cosmetic surgeon. In fact, one of the first signs of facial aging is the alteration of the natural curvature of the lower eyelid-cheek region where skin laxity, muscular atrophy, and emptying processes are often the first patient's complaint.[1] Aim of the surgery is to reshape normal structures enhancing the patient's self image[2] and promoting functional[3] and cosmetic improvement.[4]

Several adverse effects[5] have been signaled with lower blepharoplasty.[6] One of the most common complications is lower eyelid malpositioning, which involves several things including lack of definition of the lateral part of the eyes with rounding of the scleral triangle, eyelid retraction, scleral show and ectropion, and the associated symptoms of ocular irritation.[7,8] The research of the best results on skin and fat must always be associated with correct addressing of the lid's tone that is the first requirement of the lower blepharoplasty.[9] Even if older patients presenting laxity on the presurgical examination (distraction test, snap test, negative canthal tilt, prominent eyes)[10,11] are predisposed to malposition, this problem has been described also in younger patients without signs of presurgical lid laxity.[12]

The plication of the lateral part of the paracanthal portion of the septum[13,14] is a simple and effective canthopexy method aimed to avoid the lower eyelid displacement. In the current research, the effectiveness of the "tarsal sling" technique in the prevention of lower lid malpositioning is evaluated.

CASE STUDIES

Materials and Methods

A retrospective study of 40 consecutive healthy individuals who underwent blepharoplasty between January 2009 and December 2011 was carried out. All of the procedures were performed by the same surgeon (M.P.) and informed consent was acquired from each patient. The information was recorded in such a manner that participants remain anonymous; however, the principles of the Declaration of Helsinki were respected. Group 1 consisted of 18 women and 2 men with an average age of 50 ± 6 years at admission. Group 2 consisted of 17 women and 3 men with an average age of 54 ± 9 years. All patients completed the 2-year follow-up.

An upper blepharoplasty was simultaneously performed in every patient. In group 1, a standard lower blepharoplasty without any additional canthal support was performed. The other 20 patients in group 2 underwent lower blepharoplasty with the tarsal sling canthopexy procedure.

A complete presurgical ophthalmologic examination was carried out, including a palpebral evaluation focusing on the position and tension of the lower eyelid in relation to prominence of the eye globe. None of the 40 participants demonstrated pathologic lid laxity. Smokers and patient referring previous blepharoplasty or midface lifting were excluded.

Surgical Technique

The lower eyelid procedures were performed via transcutaneous approach. The subciliary incision was made 2 mm below the ciliary margin, and a skin flap was elevated. The orbicularis muscle, in its pretarsal portion, was incised and the flap became a skin-muscle flap, then the preseptal dissection proceeded downward to the orbital rim. After release of the anterior lamella, the orbital fat was conservatively removed, preserved, or repositioned on the basis of each patient's individual requirements.

In patients who underwent traditional lower blepharoplasty (group 1), excision of skin excess and the orbicularis muscle was conducted. On average, 2 mm of orbicularis and 2 to 5 mm of skin are removed avoiding any overresection of lower eyelid skin.

In participants treated with the tarsal sling technique (group 2), the paracanthal portion of the orbital septum, or canthal ligament, after release by dissection below the orbicularis, was fastened and fixed, without exposing the canthal tendon. A 5/0 Prolene (Ethicon, Somerville, NJ) on a half-circle P-2 needle was used to suture the canthal ligament to the lateral orbital rim periosteum, as internally as possible by passing through the upper eyelid incision (Fig. 1). This suture was fixed through the periosteum within the lateral orbital rim to maintain the posterior position of the lid margin against the globe. The vertical position of the lateral canthopexy suture was most frequently at the lower level of the pupil, but patients with prominent eyes or negative vectors required additional vertical positioning at the superior aspect of the pupil. In some cases, the part of the orbicularis muscle overlapping the canthal ligament can be included in this suture.

After this canthopexy procedure, the upper margin of the lower eyelid must be placed 1 to 2 mm above the limbus and follow the contour of the globe. In addition, it must not be more than 2 mm distractible from the globe in the anteroposterior direction. In our patients, we ensured these parameters.

Photometric Evaluation

Full-size, 1 : 1 standardized photographs (Frankfurt horizontal plane) were taken of each patient before surgery. Position, facial expression, focal distance, and camera settings were standardized.

FIGURE 1. In patients receiving the tarsal sling, the suture passed through the canthal ligament in the lateral aspect of the septum. Fibers of the orbicularis and/or the tendon were occasionally incorporated in the suture.

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Postoperatively, additional sets of photographs were taken after 30 days, 6 months, 1 year, and 2 years, and lower lid position was measured. All photos were sized with Adobe Photoshop CC (Adobe Systems Inc, San Jose, CA) to maintain initial proportions. Linear measurements were performed with Adobe Illustrator CC after drawing an interpupillary line. The distance (mm) between this line and the lower eyelid margin was registered by tracing and measuring a perpendicular line that was tangential to the lateral part of the limbus.

Statistical Analysis

All data were reported in a Microsoft Excel file (Microsoft, Redmond, WA) and SPSS software (SPSS Inc. Chicago, IL) was used to analyze the data. A paired sample test was performed between each surgical group to detect lower eyelid position (ie, between pre- and postsurgical procedure, between postsurgical procedure and 6 months follow-up, between 6 months and 1-year follow-up, and between 1-year and 2 years follow-up).

RESULTS

Distances between interpupillary line and lower eyelid margin are as follows: Group 1: Presurgery = 7.2 ± 2.2 mm, 30 days = 9.6 ± 3.0 mm, 6 months = 9.1 ± 2.6 mm, 1 year = 8.8 ± 2.5 mm, and 2-years = 8.6 ± 2.5 mm; Group 2: Presurgery = 8.7 ± 2.5 mm, 30 days = 6.9 ± 1.8 mm, 6 months = 7.7 ± 1.8 mm, 1 year = 8.2 ± 1.9 mm, and 2 years = 8.6 ± 2.1 mm.

Patients treated with the tarsal sling procedure exhibited an overcorrection of the lower eyelid position in the immediate postoperative observations. Two years after surgery, a progressive relapse occurred, but the lower eyelid did not completely reach the presurgical values, remaining slightly overcorrected (Fig. 2 A-E). In group 1, in which this prophylactic canthopexy was not performed, after a postsurgical period where an unwanted increased distance was observed, between the interpupillary line and the lateral aspect of the lower lid margin, a progressive reduction in scleral exposition occurred, but full recovery was never obtained (Fig. 3).

DISCUSSION

The lower eyelid retraction after surgery seems to be dependent by multifactorial elements; in each case there is a dynamic imbalance between the lateral suspension system of the lower eyelid, midfacial soft tissues elasticity, postsurgical scar contraction of the septum, and posterior lamella to the orbital rim. The scarring occurs through shortening of the skin-muscle layer to the point that it overrides the elasticity of the tarsoligamentous sling. This can occur in a vertical plane by pulling the lid downward, which causes scleral show, or in a horizontal plane by turning it outward, which causes ectropion.[15]

FIGURE 2. A-E, 50-year-old female patient who asked for improvement of her tired and aging appearance and consequently underwent blepharoplasty with tarsal sling. A, before blepharoplasty with tarsal sling; B, after 30 days; C, after 6 months; D, after 1 year; and E, after 2 years. No functional or aesthetic complaints were reported by the patient.

FIGURE 3. Differences in mm between pre- and postsurgical eyelid position after 30 days, 6 months, 1 year, and 2 years in patients treated with and without the tarsal sling procedure (red and blue columns, respectively).

Another element that may play a role in lid laxity, after a transcutaneous approach, is the motor denervation of the pretarsal orbicularis oculi muscle.[16] Some authors suggest that emphasis given to lid support in lower blepharoplasty is not necessarily a medical problem; they consider the rounding of the scleral triangle as a cosmetic complaint only.[17]

The choice of a more conservative surgical procedure on skin and fat to prevent eyelid malpositioning in lower lid blepharoplasties can limit the possibility to strengthen the anterior lamella and correct the skin or muscle excess when they are present. Some have suggested that in the transconjunctival approach, the lid malpositioning is less frequent, although additional procedures (such as laser resurfacing) may be required to reduce wrinkling.[18] Moreover, retrobulbar hematoma (a significant complication that can lead to amaurosis) is described as more frequent in this approach.

Intraoral access has been proposed to avoid complications associated with violation of key lower eyelid anatomical structures. This specific access is useful for repositioning lower eyelid fat combined with midface elevation and fixation to the deep temporal fascia, but it requires an additional pinch lower blepharoplasty procedure to treat skin excess.[19]

It has been shown that lower eyelid position and tone strictly depend on the tarsoligamentous complex consisting of the medial and lateral canthal tendons and the fibrous tissue of the tarsal plate.[20]

The lower blepharoplasty procedures are always focused on preserving pretarsal fibers of the orbicularis (anterior lamella), whereas the care given to preserve the posterior lamella is not always consistent. Many surgical techniques seem closely related; the key step is to fix the supporting eyelid anatomic structure (lateral retinaculum,[21] tarsal plate,[22] canthal ligament,[23] canthal tendon,[24] orbicularis muscle) to the orbital periosteum or to a drilled hole in the lateral orbital wall. This attachment can be done with or without interruption of the lateral canthus or by combining canthotomy and canthopexy as, for example, in the tarsal strip procedure wherein a tongue of tarsus is dissected and lifted up after cutting the lower arm of the lateral canthus.[25]

The major differences with the tarsal sling technique used in the current study are not only in the partial or total interruption of canthal structures, but in the avoidance of posterior lamella violation, which always happens when the tarsus is dissected from the conjunctiva. In the case of tarsal sling, the most involved structures are not the canthal tendon or tarsus, but the canthal ligament and the septum. Anatomically, the orbital septum is continuous with the orbital periosteum. The reinforcement of the canthal tendon is carried out through procedures on the surrounding supporting structures, and this is the reason for the term "sling." This term was previously used by Tenzel[26] related to the canthus in treatment of lagophthalmos and was referred to a canthoplasty technique.

The tarsal sling is a canthal support procedure that acts only on the middle lamella, without canthal tendon excision or weakening. In fact, the canthal ligament is the septal thickening immediately below the orbicularis muscle and above the canthal tendon, thus its simple plication can be easier for the surgeon and less invasive for the patient; moreover, it involves only structures embryologically related and avoids any artificial fixation to other anatomic elements.

In the current study, measurements were performed between the interpupillary line and the lower eyelid margin on a perpendicular line that was tangential to the lateral part of the limbus that is the more affected zone when scleral show occurs. Slight differences in gazing up or down can influence the lower lid position, and even though we standardized the photos, no craniostat was used to fix the head position to any device. Therefore, we were able to maintain

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reproduction of the primary gaze in all of the pictures. Moreover, the patients included in the current study showed no relevant clinical signs of pre-existing risks for malposition (eg, excessive laxity, proptosis, negative vector).

Our statistical data demonstrated that the tarsal sling procedure is effective to prevent lower eyelid malpositioning. Surgical time was not extended; in fact, the entire procedure requires only a few minutes. Thus, it may be routinely applied in lower blepharoplasty procedures as a preventive measure, even if the eyelid tone is apparently normal at presurgical examination.

Of course, this does not suggest that other techniques to correct or prevent extreme eyelid laxity should be abandoned; in fact, the participants included in the current study showed no relevant clinical signs of pre-existing risks for malposition (eg, excessive laxity, proptosis, negative vector). In these cases, additional canthopexis or canthoplasty procedures should be mandatory.

In the current study, however, we demonstrated, by quantitative comparison, the effectiveness of a simplified canthopexy, which can be used on a widespread basis, with little difference in technique.[27] In the future, a longer follow-up period can be useful to more completely evaluate surgical results and ensure stronger statistical comparisons between techniques.

A primary goal of surgery is to obtain positive results through minimal corrective procedures. Prevention of complications is almost always easier than treating them after the fact. The preventive canthal support procedure (tarsal sling), during transcutaneous lower blepharoplasty, is effective in scleral show prevention and is easy and fast to perform. The overcorrection present in the postsurgical period produces a certain degree of attractive almond-shaped eyes, but after spontaneous relapse, a long-lasting result is obtained.

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Kimura Disease Presenting As an Eyelid Mass in a Young Asian Male

Sungmin Jang, MD, Hwa Lee, MD, PhD,* and Sehyun Baek, MD, PhD†*

Abstract: The diagnosis of Kimura disease should be strongly considered in any patient of Asian descent who presents with painless subcutaneous nodules predominantly involving the head and neck region in association with marked eosinophilia and elevated immunoglobulin E. Surgical resection of the lesions can be performed to prevent relapse. Here, the authors report a case of Kimura disease presenting as an eyelid mass in a 13-year-old Asian

From the *Department of Ophthalmology, Korea University College of Medicine, Ansan; and †Department of Ophthalmology, Korea University College of Medicine, Guro, Korea.

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Address correspondence and reprint requests to Hwa Lee, MD, PhD, Department of Ophthalmology, Ansan Hospital, Korea University College of Medicine, 516, Gojan-dong, Ansan-shi, Kyunggi-do 425-707, Republic of Korea; E-mail: lifa98@hanmail.net

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