Extended Blepharoplasty

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- Extended blepharoplasty involves extending the dissection of the skin-muscle flap used in standard lower eyelid blepharoplasty to a level below the infraorbital rim. This technique is useful in the management of infraorbital, or malar, bags that are seen in as many as 10% of blepharoplasty candidates. A concomitant eyelid shortening procedure is frequently needed to correct horizontal eyelid laxity. Achievement of satisfactory results depends on the proper suspension of the skin-muscle flap to the lateral canthal periosteum. Extended blepharoplasty is an innovative way to improve infraorbital prominence, which is otherwise beyond the reach of the standard blepharoplasty procedure (Arachnoid Head Neck Surg. 1991;117:606-609).

Lower eyelid blepharoplasty can be a challenging procedure even for the experienced surgeon. In the standard lower eyelid blepharoplasty, judgment and experience guide the surgeon with respect to the extent of skin and fat excision. The potential for postoperative eyelid malposition or ectropion imposes conservatism on the part of the surgeon. However, some patients, particularly the elderly or male patient, tend to have large infraorbital pouches and marked skin redundancy with lax skin tone. Because of the ephemerism, "The lid cannot hold up the cheek," holds true, the standard conservative approach to lower eyelid blepharoplasty is inadequate for management of these patients. The extended blepharoplasty procedure is a modification of lower eyelid blepharoplasty that enables the surgeon to correct infraorbital pouches and excessive skin redundancy.

Other authors have recognized this problem and proposed treatment methods.1 Parnes described festoons of the orbicularis oculi as an occasional cause of baggy eyelids, and categorized them into preseptal, orbital, and jugal. To correct such festoons, he advocated the use of a suture suspending the myocutaneous flap of the lower eyelid to the periosteum of the lateral canthus. However, he limited the dissection of the flap to the level of the inferior orbital rim. Consequently, any correction imposed on the "jugal festoons" was an indirect effect. Castañares proposed a direct excision of the festoons, leaving a facial scar, or a facial rhytidectomy to make them less apparent. Small,2 in 1861, first described the extended blepharoplasty. This involved dissection of the lower eyelid myocutaneous flap beyond the level of the infraorbital rim and onto the anterior maxilla, in order to correct large cheek festoons. This present communication outlines our technique of extended blepharoplasty, and stresses the advantages it offers to select patients without a significant increase in morbidity.

Our use of the technique has been directed toward elimination of blepharochalasis extending beyond the infraorbital rim. While the extended blepharoplasty procedure may be performed alone, it is usually combined with an upper eyelid blepharoplasty. In this case, the upper eyelid blepharoplasty is carried out first. Extended blepharoplasty directly approaches extensive blepharochalasis and blepharoptosis, which standard lower eyelid blepharoplasty does not address. Other indications for the use of this technique include orbital reconstruction, with strengthening of the lower eyelid to support a prosthesis; lower eyelid reconstruction, particularly in cases of postoperative or post-traumatic lower eyelid retraction; correction of scleral show in selected cases of thyroid ophthalmopathy; and reconstruction of the zygoma.

Contraindications for extended blepharoplasty are the same as for the standard blepharoplasty technique. These may be classified into general and ophthalmological. General contraindications include unrealistic patient expectations, bleeding diaatheses, diabetes, smoking, or other medical conditions making elective surgery advisable. Ophthalmological contraindications include monocular vision and...
table thyroid ophthalmopathy. A suspicion of thyroid dysfunction is for a thorough endocrinologic evaluation. The presence of exophthalmia or proptosis should suggest additional caution. Scleral show would prompt the surgeon to search for a history of previous trauma or surgery to the eyelid. The structure responsible for eyelid retraction should be established, and this should be addressed during surgery.

MATERIALS AND METHODS
Preoperative Assessment
Preoperative assessment is similar to that for standard blepharoplasty. In addition, the surgeon should delineate the extent of infraorbital pouching below the level of infraorbital rim. This pouching may be in the form of a single fold of edematous skin assuming a dependent position below the rim, or may appear as a second set of pouching, separate from the fatty palpebral tissues, and extending inferolaterally over the zygoma. The quality of the skin, skin rims, and the amount of fat prolapsing from the various compartments is estimated. "Squinting" of the eyes delineates the orbicularis oculi and its degree of prominence. Scleral show, lagophthalmos, and eyelid tone must be noted and dealt with during surgery. A Schirmer's test is performed on all patients. Each patient is referred for assessment by an ophthalmologist, and preoperative photographic documentation is obtained.

Operative Technique
The procedure may be performed under general anesthesia with intravenous sedation, under general anesthesia if combined with other procedures. We routinely administer methylprednisolone (120 mg) and intravenously at the beginning of the procedure. Lidocaine (Xylocaine) with epinephrine (1:100,000) is used for infiltrative anesthesia. A delay of 6 to 7 minutes is expected to allow adequate vascular constriction to develop.

After the upper eyelid blepharoplasty procedure, the lower eyelid is approached. Incision of the skin is started at a point just lateral to the inferior punctum 2.5 mm below the lash line. It is then carried laterally up to the level of the lateral canthus, which is higher than that generally reached by the standard blepharoplasty procedure. Thereafter, the incision is extended horizontally in a lateral direction over 12 to 15 mm preferably along a preexisting right. Incision is approximately 5 to 4-mm rather than is generally used for standard blepharoplasty (Fig 1).

At the lateral aspect of the incision, sharp scissors are used to spread the fibers of the orbicularis oculi muscle. With the assistant exerting firm downward traction on the cheek, a plane is easily dissected between the orbicularis oculi and the subjacent orbital septum. Blunt dissection of this avascular plane creates a composite musculocutaneous flap anteriorly. Undermining is continued inferiorly into the infraorbital region anterior to the zygoma, 1.0 to 2.0 cm below the orbital rim as needed, as well as laterally into the lateral canthal region (Fig 2). This facilitates later repackaging of the flap and tension-free wound closure. The blunt dissection minimizes trauma to the blood supply of the flap and decreases the risk of damaging the infraorbital nerve. After the undermining is complete, the musculocutaneous flap is elevated by incising the orbicularis oculi superiorly along the subciliary incision. While retractors hold the flap inferiorly, additional exposure of the fat pads is gained by drawing the lower eyelid superiorly with a temporary tarsal suture. Excision of a small strip of orbital septum provides access to the protuberant fat. The fat is gently teased from the surrounding tissue using blunt dissection. One should avoid dam-
with the orbicularis suspension procedure described below. More severe degrees of laxity are treated with a lateral canthoplasty. Extreme cases of laxity may require a horizontal eyelid resection, such as the modified Nick procedure laterally, or the Kuhnt-Szymanowski pentagonal wedge excision at the lateral limbus. The eyelid margin is reapproximated with 6-0 silk everting sutures on the skin starting from the gray line, while 5-0 polyglaclin (Vicryl) sutures are used to reestablish continuity of the tarsal plate and pretarsal strip of the orbicularis muscle.

Redrapage of the lower eyelid musculocutaneous flap is accomplished in a superolateral direction. The patient is instructed to adopt a neutral gaze. Gentle distraction on the cheek is used to simulate the effect of gravity when the patient resumes an upright position. Care must be taken to avoid inferior displacement of the lower eyelid margin during this maneuver. Scleral show is unacceptable at this point, and an 0.5-mm overlap of the lower eyelid on the limbus is preferred. Once estimation of the redundancy of the skin is confirmed, the excess skin and muscle is trimmed laterally (Fig 3). Undermining of the skin around the lateral canthal part of the incision and flap will allow better redrapage of the skin and avoid standing tissue cones (dog-ears) on skin closure.

Proper suspension of the flap is the most important step of the procedure. In the procedure, a permanent horizontal mattress suture (4-0 Monocryl) is placed in the orbicularis and the deeper dermis of the edge of the musculocutaneous flap, and then sutured to the periosteum of the inner aspect of the lateral canthal area (Fig 4). Two such suspension sutures are placed to elevate the flap superolaterally in order to remove all tension from the infraorbital skin sutures line. The rest of the orbicularis muscle is approximated laterally with inverted 4-0 polyglaclin (Vicryl) sutures. Interrupted, everting 6-0 silk sutures maintain the undermined skin edges together. The redundant medial part of the flap is then trimmed and the wound is closed with simple 6-0 silk sutures.

Postoperative care consists of head elevation and continuous application of ice-cold wet compresses for at least 24 hours. Gentle use of ophthalmic drops during the day and ointment during the night adequately protects the cornea and conjunctiva. Patients are instructed to apply topical antibiotic ointment to the wound two to three times a day, until the sutures are removed on the fourth postoperative day. The horizontal eyelid resection sutures (Vicryl or Kuhnt-Szymanowski) are left in place for a total of 7 days.

**RESULTS**

The senior author (P.A.A.) has used the extended blepharoplasty technique for 3 years. The experience and long-term results obtained from seven cases have been encouraging and support further application of the technique. Approximately 10% of the patients may be unacceptably less than the preferred 5%.

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Fig 5.—A 44 year-old man with infraorbital pouching. Top left, Preoperative anteroposterior view. Top right, Preoperative right lateral view. Bottom left, One-year postoperative anteroposterior view. The procedure involved elevation of the flap 2 cm beyond the infraorbital rim, 6-0 horizontal eyelid shortening, and 8 mm lateral skin excision. Bottom right, Postoperative right lateral view.
patients presenting for blepharoplasty may be candidates for this technique. Of the patients in our series who qualified for the extended approach were men. Their ages ranged from 44 to 61 years, with an average age of 54 years.

In all patients, severe lower eyelid pouching extended below the infraorbital rim. The extended technique was applied without causing a significant increase in operative time. This lower eyelid myocutaneous flap was elevated as much as 2 cm below the infraorbital rim in three patients and 1 cm or more in the others. On the average, 7 mm of redundant skin was excised from the lateral aspect of the flap. This is more than the average of 2.5 mm that we remove laterally in the standard blepharoplasty procedure. More aggressive myocutaneous flap elevation was performed in the later cases, as more confidence in the orbicularis suspension was obtained. Horizontal eyelid shortening was performed in every instance, removing an average of 4.9 mm.

Follow-up ranged from 6 to 15 months. Chemosis seemed more prevalent than in standard cases, but resolved in all patients within 2 to 6 days. Some degree of minor dimpling may occur if the suspension stitch is placed too superficially in the dermis. This can be corrected by skin undermining during the surgery and with massage postoperatively. One patient presenting with scleral show preoperatively had persistent show postoperatively. The patient was asymptomatic and pleased with the result. All patients were very satisfied with the improvement achieved. No patient suffered facial hypesthesia in the infraorbital nerve distribution. None of the patients in this group suffered from dry eye symptoms preoperatively or postoperatively. Figure 5 illustrates a representative case.

COMMENT

Extended blepharoplasty utilizes wider undermining of the standard blepharoplasty myocutaneous flap in the region of the upper cheek and zygoma. Redrapage of this larger flap allows elimination of, or at least improvement in, the infraorbital pouches that cannot be addressed with standard blepharoplasty techniques. This redrapage often provides some lift and smoothing of skin in the mid-cheek region, but should not be promoted as a substitute for facial rhytidectomy. The patient should not be led to anticipate significant improvement in the melolabial fold, even though minor improvements may be noted.

Although relatively easy to describe and perform, extended blepharoplasty calls for cautious and judicious application. The larger myocutaneous flap and skin excision, especially in older patients, constitutes a significant risk for postoperative scleral show and dry eye syndrome. Hence, great emphasis needs to be placed on the use of nonresorbable suspension sutures to secure the flaps to the lateral canthal periodontum.

Extended blepharoplasty is an innovative way to address edematous “bags” of skin or festoons of orbicularis oculi muscle extending below the infraorbital rim. It represents a valuable modification of the standard blepharoplasty procedure, and provides a significant improvement of infraorbital pouching not otherwise available. Our experience has provided us with good results and justifies its continued use.

Suggested readings include the following:

References

Facial Plastic Analysis and Discussion

Extended Blepharoplasty

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Discussion by Frank M. Kamer, MD

Presently, there is no consensus among surgeons when skin flaps or skin-muscle flaps should be utilized. Traditionally, the skin-muscle flap has been used in patients in whom a small amount of excess skin excision (<3 mm) is anticipated. If larger amounts of skin needed to be removed, a skin flap was utilized. Many surgeons, however, employ a skin-muscle flap in all cases while other surgeons prefer skin flaps in all but the young patient with tight skin. In 1977, Spira attempted a clinical study to clarify the situation. In a group of 26 patients ranging in age from 35 to 65 years old, he performed a skin-muscle flap on one lower lid and a skin flap on the contralateral lower lid. His operative results were assessed from color transparencies by several plastic surgeons, residents, and students. The photographs were made from 3 to 12 months following surgery. Except for one or two minor disparities, the observers felt that there were no significant variations between the two eyes.

Adamson has chosen the skin-muscle flap as his method of choice. This technique transects the pretarsal orbicularis oculi muscle, an important component of lower lid support. The tarsoligamentous complex is of particular surgical importance. It is composed of the pretarsal orbicularis oculi muscle, the medial and lateral canthal tendons, and the fibrous tarsal plate (tarsus). Lower eyelid position and tone are related in great part to the integrity of the tarsoligamentous complex. The increase in lower lid laxity with age has been attributed to stretching of the lateral canthal tendon. Preservation of the pretarsal orbicularis oculi muscle with its medial and lateral tendons and the fibrous tarsal plate as a single unit, the tarsoligamentous complex, aids in resisting contractile forces placed on the lower lid.

Persistent eyelid malposition following lower lid blepharoplasty may result from overzealous excision of skin or muscle, scar formation and contracture within the lower eyelids, adhesions of the orbital septum, or dystonic muscle function of the orbicularis oculi muscle. Eyelid malposition, therefore, results when forces acting on the lower lid in an inferior direction overcome the support of the tarsoligamentous complex.

Rees believes that lid retraction is more frequent after extensive skin undermining than following the skin muscle flap technique. He feels that the skin flap has a tendency to contract like a free skin graft does but to a lesser extent. Aston, on the other hand, believes that the possibility of postoperative scleral show is reduced by utilizing a skin flap and preserving the attachments of the orbicularis oculi muscle to the tarsus and the orbital septum.

Preservation of the tarsoligamentous complex by placing the skin incision in a crease approximately 4 mm below the lashes as advocated by McCollough and English appears to offer few theoretical advantages. Preserving the pretarsal skin adds little if any support to the lower lid. Furthermore, placement of the incision at this lower level makes for a more visible scar that can be difficult to camouflage, even with eyeliner.

The choice of the best indicated surgical technique is subjective, influenced by one's skill, training, knowledge and overall aesthetic judgment. As a rule, it is best to obtain a maximal result with a minimum of surgery, as complications often rise with an increase in surgical intervention. A conservative approach aids in preventing radical alterations in the normal aging eyelid. Compromises must frequently be made between the "ideal" eyelid and a more individualized surgical result. Certain conditions cannot be significantly improved or changed by lower lid blepharoplasty. For example, rhytides of the lower lid skin can rarely be improved by blepharoplasty alone. Attempting to eliminate these wrinkles and fine lines by removal of excess skin often results in pulling of the lower lid margin downward, causing unacceptable scleral show, if not frank ectropion. An ounce of prevention is worth a pound of cure, especially as it relates to the aesthetic unit of the eyelid, eye, and orbit.

Adamson has attempted to present an anatomic classification and treatment of aesthetic and functional eyelid abnormalities in a well-organized outline. Skin flaps, transconjunctival, and pre-excision techniques are not included in this retrospective study, yet wedge resections, lateral canthotomies, and lateral suspension sutures are. Is too much surgery being performed in attempting to correct all the anatomic variations and perceived deformities of the aging eyelid? Is it ever worth requiring a secondary reconstructive procedure to repair complications that may have been prevented by a more conservative approach? Are the risks worth the rewards? These are the questions that must be answered by each one of us in establishing our surgical philosophy.

This type of study enables surgeons to compare their aesthetic results with measurable data concerning complications, function, and patient satisfaction. It can help influence the evolution of our surgical philosophy and technique, keeping routine from becoming one's master in the pursuit of improved functional and aesthetic results.

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References