Transcutaneous Lower Blepharoplasty with canthopexy when indicated

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Abstract: The eyes have been called the window to the soul and there is no doubt that an esthetic upper face/eyelid complex can enhance any patient. The upper face and Eyelid complex frequently ages faster than the lower face and for that reason many patients from their late 30s may present for eyelid rejuvenation. We describe our experience and evaluate the reliability of the transcutaneous lower blepharoplasty that was used in 20 patients for lower led rejuvenation. The operation was done under local anesthesia. Component procedures varied based on individual anatomy. Fat excision was performed to 18 cases fat transposition was performed to 2cases, skin excision was performed in all cases, and lateral canthopexy was performed to 5cases. The mean follow-up period was 6 months (range, 8 months to 36 months). There were no major complications noted postoperatively, there was one unilateral subcutaneous hematoma, one case of scleral show that improved with taping and massage, two cases of slight chemosis that were managed conservatively and no cases of canthal distortion. Patient satisfaction was high. This study proves that, transcutaneous lower blepharoplasty is safe when performed meticulously, correction of preoperatively diagnosed lower lid laxity is essential; however, when lower eyelid tone is adequate, we believe that no need for additional tightening procedure.
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1.Introduction:

Blepharoplasty is one of the most commonly performed plastic surgical procedures in the United States. Although some refinements in upper blepharoplasty techniques have occurred, lower eyelid rejuvenation has evolved dramatically. In 1928 Noel was the first to describe the technique involving a subciliary incision, which became the standard approach to the lower lid. In 1946 Castanares described the modern blepharoplasty operation, approaching the intraorbital space through a subciliary incision and elevating the skin off the orbicularis muscle to the level of the infraorbital rim. The skin-muscle flap of McIndoe was popularized by Rees and Dupuis in 1970***(1).***

Aesthetic eyelid surgery is a very rewarding procedure for both the patient and surgeon as it can take years of aging off the patient. The first type of skin to become wrinkled is the skin of the eyelids, because it is the thinnest skin of the entire human body. When we communicate with each other, we usually look each other in the eye. Lax eyelids do not allow the inner energy of a person, which is possibly present to a large extent, to become apparent; such a person's capability and even vitality go unrecognized. Excessive reading, PC work, watching TV, working under neon-light illumination, and hereditary factors play a role in this process. The eyelids can reveal changes associated with disorders of the kidneys, heart, and thyroid gland, or which become apparent from alcohol or drug abuse. An eyelid lift will therefore convey the impression of an altogether much fresher person. With its relatively low cost and little effort (2).

Surgical anatomy:

In the lower lid, orbital fat is contained anteriorly by the orbital septum, which separates it from the overlying orbicularis and lower lid skin. Posteriorly, the fat is bounded by the lower lid retractors and conjunctiva of the posterior fornix (3).

It consists of three compartments, small medial, small temporal, and a larger central compartment (Fig.1).The fat in the medial compartment is classically lighter in color and denser than the fat of the other compartments (4).

In the youthful face, orbital fat is held in check by a hearty orbital septum. Weakening of the septum associated with aging, chronic allergic swelling, or Medical problems resulting in fluid retention (i.e., hypo- or hyperthyroidism) may permit anterior prolapse of orbital fat, resulting in steatoblepharon. Aging may also cause atrophy of eyelid fat, creating a superior sulcus deformity. Dietary deficiency alone, however, has not been shown to result in orbital fat loss (5).

Lower Eyelid Crease

The lower eyelid crease, formed by connective tissue fibers extending anteriorly from the

capsulopalpebral fascia into the subcutaneous tissues, is less prominent than its upper eyelid counterpart and is often most noticeable in children. The lower lid crease begins medially 4 to 5 mm inferior to the lower lid margin and slopes inferiorly as it proceed laterally (6).

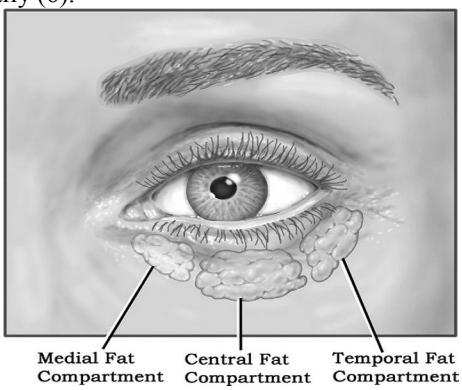

Figure 1 The 3 lower-lid fat compartments: a small medial, small temporal, and a larger central compartment (4).

The criteria of aesthetically pleasing eyes

– Rima oculli (palprebral fissure) should be vertically between 12–14 mm in the adult.

– The horizontal eye axis (distance between the commissures) should be between 28 and 30 mm.

– The lateral commissure should be positioned superior to the medial commissure (2).

Indications:

The indications for lower-lid blepharoplasty include rejuvenation of the esthetic appearance of the eyes, a less-tired look, minimized lower-lid redundancy, and to correct eyelid asymmetries (4).

2.Materials and methods:

From March 2010 to February 2013, 40 lower lid in 20 patients (of which 15 were women and 5 were men).Were operated by transcutaneuos lower blepharoplasty with or without canthopexy. The youngest patient was 35 and the oldest was 50 years old, the mean age was 40 years. The operation was done under local anesthesia. Component procedures varied based on individual anatomy. Fat excision was performed to 18 cases fat transposition was performed to 2cases, skin excision was performed in all cases, and lateral canthopexy was performed to 5cases. Patients were discharged from the hospital two hour following surgery. The mean follow-up period was 6 months (range, 8 months to 36 months).

Measurement

Scleral show, tear trough deformity, and excess skin, orbicularis muscle, and orbital fat were determined. Preoperative standardized photographs. Scleral show was present when the lower eyelid was inferior to the lower limbus during forward gaze. The tear trough deformity was defined as the soft tissue groove overlying the inferomedial orbit . Excess skin and muscle were defined by the presence of redundant lower eyelid. Excess orbital fat was determined by review of the anterior and lateral photographs and the preoperative clinical notes (7).

Clinical evaluation

Any medical problems contraindicating elective surgery will also contraindicate lower blepharoplasty. A review of the past medical history is also important to reveal any contraindications or underlying illnesses that may affect the surgery. The surgeon should always be aware of the possibility of thyroid disease manifesting as orbital disease. Graves' disease can cause globe protrusion, eyelid retraction, and symptoms of dry eyes, whereas hypothyroidism may produce myxedema, which the patient and surgeon may misdiagnose as protruding orbital fat. Lower blepharoplasty candidates should exhibit 12 months of stability in their orbitopathy before elective cosmetic surgery. Abnormal coagulation, autoimmune and inflammatory diseases, actively inflamed or chronic blepharitis, and allergic dermatitis of the face and lid skin should be well controlled before surgery to avoid poor healing. A detailed ophthalmologic history should be obtained including documentation of glasses, contacts, glaucoma, prior eye trauma, and eye medications (4).

Preoperative Photography

Photographic documentation for planning and record keeping is vital for any elective surgery procedure. Besides the anteroposterior, lateral, and oblique views, it is helpful to take an anteroposterior photograph with the eyes closed. This can assist in the planning and marking phase (8).To properly manages a patient's expectations, standardized preoperative photography must be performed. In addition, close-up pictures of the eyes from front and profile views in primary and up gaze must be obtained. Photographs should be reviewed with the patient to allow a discussion about preoperative asymmetry (9).

Surgical technique:

Preoperatively, the surgeon marks the proposed incision with the patient upright.

The operations were performed under local anesthesia, with or without intravenous sedation. Oral anxiolytics such as diazepam are often employed when intravenous sedation is not used. Local anesthesia is accomplished using approximately 2 mL of 1% lidocaine with 1:100,000 epinephrine in 3 to 4 locations along the inferior orbital rim and injected into the proposed transcutaneous incision sites. Careful injection technique provides not only anesthesia, but also hemostasis.

The subciliary incision for this technique is somewhat variable based on the patient's anatomy

and desired correction, and ranges from a 2 to 3 mm skin pinch along the subciliary margin to an incision that extends up to 1 to 1.5 cm laterally from the lateral canthal attachment in a crow's foot line if needed (Fig.2). A No. 15 blade is used to make the superficial incision through the skin only, 1 to 2 mm below the ciliary margin. The dissection is meticulously undertaken in the plane between skin and muscle with careful attention to hemostasis and not to compromise the muscle. Care is always taken with cautery hemostasis in the periorbital region not to damage the eyelash follicles. The muscle was incised at the inferior aspect of the tarsus, converting to a skin-muscle flap, and preseptal dissection proceeded down to the level of the orbital rim. Gentle pressure was used to depress the globe, and the periorbital fat was assessed. The excess periorbital fat was removed through perforating incisions in the orbital septum, accessing each of the three lower lid compartments individually (Fig.1). In all lower blepharoplasty procedures, great care was taken to avoid over resecting the lower eyelid skin. To determine how much skin to remove, the lower jaw was opened, the edges of the incised orbicularis muscle were opposed, and the skin was redraped in the cephalic direction. The excess skin extending beyond the incision was then excised, with the maximal vertical dimension placed just beneath or just lateral to the lateral canthus (4).

Lower lid laxity was evaluated by intraoperative lid distraction. The degree of laxity was used to determine the type of lateral canthal support. A lateral canthopexy was performed for moderate lid laxity, which was considered less than 6 mm of lid distraction away from the globe. A double-armed 4-0 Prolene was used to suture the tarsal plate and lateral retinaculum to the lateral orbital rim periosteum (Fig.3). The mattress suture was placed through the periosteum within the lateral orbital rim to maintain the posterior position of the lid margin against the globe (7).

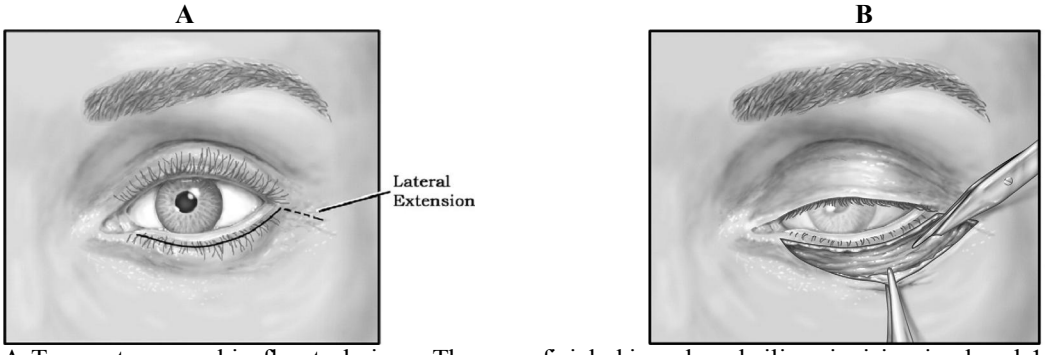

Figure 2 A Transcutaneous skin flap technique. The superficial skin-only subciliary incision is placed 1 to 2 mm below the ciliary margin and can extend up to 1 to 1.5 cm laterally from the lateral canthal attachment in a crow's foot lin**. B** Transcutaneous skin-muscle flap technique. At the lateral portion of the incision, the orbicularis fibers are penetrated and blunt dissection proceeds from lateral to medial separating the orbicularis muscle from the underlying fibrous orbital septum (4).

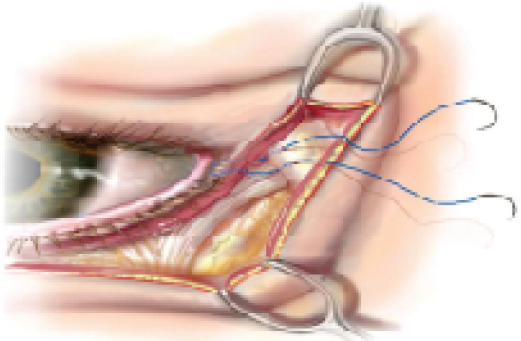

Figure3 Canthopexy. The tarsoligamentous sling is tightened by suturing the lateral canthal tarsal plate to the lateral orbital rim (7).

Postoperative care

-Postoperatively, the patient is monitored for any signs of bleeding, edema, and chemosis.

-During the first 72 hours minimal physical activity is recommended.

-Patients should remain supine with approximately 30 degrees of head elevation provided by pillows (4).

-We ask that patients apply ice packs every hour after leaving the recovery room for the first 48 hours.

- Prescriptions for antibiotics and pain medication are provided.

-The patient is instructed to apply a petroleum-based ophthalmic antibiotic ointment to the incision sites two to three times daily.

- One week postoperatively, the Prolene sutures placed in the transcutaneous procedures are removed.

-After 3 weeks, post blepharoplasty patients may resume their full regimen of activities (10).

3.Results:

This series included 20 patients, of which 15 were women and 5 were men. The mean patient age was 40 years (range, 35to 50 years). The mean follow-up period was 6 months (range, 8 months to 36 months). Component procedures varied based on individual anatomy. Fat excision was performed to 18 cases fat transposition was performed to 2cases, skin excision was performed in all cases, and lateral canthopexy was performed to 5cases.

There were no major complications noted postoperatively, defined as those that would have otherwise required surgical intervention for correction. Although not all patient results were optimal, lower lid malposition requiring revision was not seen in any of the patients. There was one unilateral subcutaneous hematoma, one case of scleral show that improved with taping and massage, two cases of slight chemosis that were managed conservatively and no cases of canthal distortion. Patient satisfaction was high (Figs.4-7).

Fig.4. (*Left*) Preoperative views of a 45 years old woman before lower blepharoplasty. (*Right*) Postoperative views at16 months follow up show excellent result.

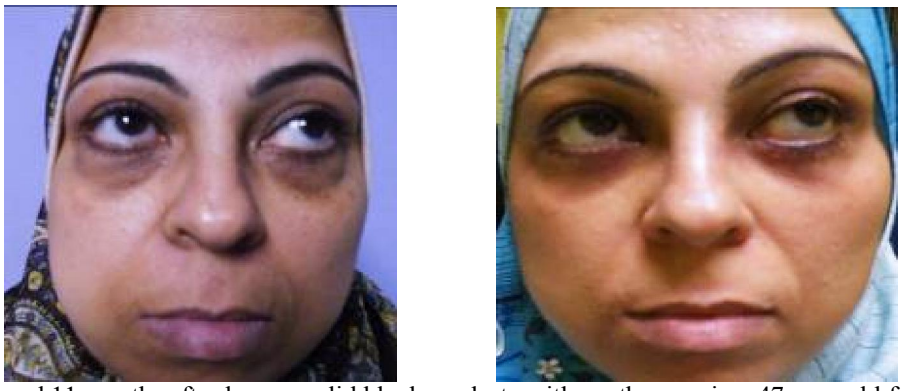

Fig.5. Before and 11 months after lower eyelid blepharoplasty with canthopexy in a 47years old female patient.

Fig. 6. Before and 1 year after lower eyelid blepharoplasty in a 50years old female Patient.

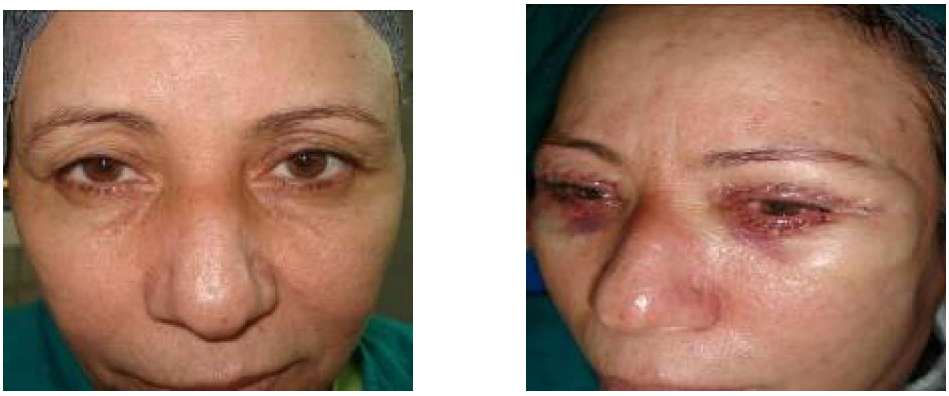

Fig. 6. A female 50 years old patient before and early after upper and lower blepharoplasty.

4.Discussion:

Blepharoplasty plays a vital role in facial rejuvenation; lower eyelid blepharoplasty may be indicated for the presence of excess skin and/or orbital fat. Preoperative evaluation should include a thorough medical and ophthalmic history, along with a vision examination. Symptoms of preexisting dry eye should be elicited preoperatively, as they directly correlate with postoperative complications. Physical examination should take into account lower eyelid position, and cheek projection (7).

The periorbital area is a complex and dynamic area that changes dramatically with aging. Understanding and performing periorbital aesthetic surgery requires a thorough knowledge of orbital anatomy, physiology, and periorbital aesthetics

Cumulative anatomical understanding and advances have helped guide our technical execution, improve surgical results, and reduced the dreaded postoperative complication rates. Preservation of lower lid fat and minimal if any skin removal have gained widespread acceptance. In addition, performing some form of canthal strengthening or support has become a mainstay of lower lid surgery, as advocated long ago by Flowers. Muscle preservation may also help retain lower lid shape and support long term result (11).

Varied techniques for lower blepharoplasty have been described. It aims to provide a concave lower lid with no tear trough and malar palpebral groove, increase lateral canthal definition with no scleral show, remove excess skin with no ectropion, and improve quality of the overlying skin. Historically, a standard lower blepharoplasty was done through a subcilliary incision with a raised skin and muscle flap, followed by identification of herniation of medial, middle, and lateral fat. The fats were excised and the base cauterized, the flap was redraped, excess muscle and skin were excised, and the skin repaired (12, 13). Disadvantages of this technique are a resultant convex lower lid in the long term and no guaranteed correction of the tear trough or malar palpebral groove. The pinch blepharoplasty is a well-known technique where only excess skin is excised through a subcilliary approach. This corrects only excess of skin in the anterior lamella with no other anatomical changes (14). This procedure can be combined with lateral canthopexy. The main proponents of these procedures are Hamra, Barton, and Hester. Tightening of the orbicularis oculi muscle in a vertical vector provides support for the repositioning and stabilization of fat (15).

Some surgeons believe that producing an incision in the orbicularis leads to denervation of the

muscle and significantly increases the chance of developing postoperative scleral show or ectropion, despite normal preoperative lower lid tone. The dual innervation of the orbicularis oculi has been well studied. The inner canthal orbicularis, which is responsible for eyelid closure and tone, is innervated by the buccal branch of cranial nerve VII, whereas the extracanthal orbicularis, which is responsible for squeezing and animation, is innervated by the zygomatic branches of the facial nerve. Damage or denervation of the buccal branch can impair the canthal orbicularis, cause significant changes in lower eyelid function, and decrease eyelid support and tone. The standard surgical incision used in the traditional technique divides the extracanthal orbicularis and does not cause abnormalities in lower eyelid function or tone. The buccal branch is essentially undamaged and is sufficient to maintain muscular tone (16).

In this study, the transcutaneous blepharoplasty produces excellent aesthetic results, with no major complication, scleral show occur only in one case, done without canthal support but improve conservatively. We feel this is an acceptable result and does not indicate the need for a tightening procedure to every case of lower blepharoplasty. With a good preoperative evaluation we can determine the surgical technique specifically used to address management of the orbital fat, skin, muscle, and lateral canthus.

Conclusion:

The transcutaneous approach to blepharoplasty is an effective method to treat periorbital aging in the lower lid. In cases of lower lid laxity, canthopexy should be used. The grade of satisfaction was high regardless of the technique applied. If the basic surgical principles are followed, can achieve a high percentage of good results and a low rate of complications.

In summary, a suitable procedure must be selected for each patient individually, instead of trying to fit each patient to the same technique.

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