Enhancing Upper Lid Aesthetics With the Lateral Subcutaneous Brow Lift

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Background: Surgical techniques for improving the upper eyelid aesthetic unit have recently focused on the management of eyebrow position. In our practice, we noticed that in some patients the lateral brow was low preoperatively, whereas in others it was well positioned but overly mobile.

Objective: We describe our experience using the lateral subcutaneous brow lift (LSBL) to elevate and stabilize the lateral brow.

Methods: An incision was marked at the junction of the hair-bearing scalp and forehead, beginning on a line extending superiorly from the mid-pupillary line, and carried down to the subcutaneous plane, just superficial to the frontalis muscle. The subcutaneous tissues were dissected from the frontalis muscle, and the skin and subcutaneous flap were retracted superiorly. The flap was divided vertically, a skin staple was placed, and after assessment of brow position and stability, the medial and lateral excess skin was excised. Tisseel (Baxter Hyland Immuno, Glendale, CA) was found to facilitate hemostasis and, to a lesser extent, flap adherence. At the end of the procedure, the brow was slightly overcorrected to compensate for some postoperative descent. If planned, an upper blepharoplasty was performed in the standard fashion.

Results: The LSBL was performed in 117 patients during a 2-year period; in 82 of these cases the brow lift was performed in conjunction with upper lid blepharoplasty, and in 31 cases it was performed as part of a facial rejuvenation procedure that did not include upper eyelids. All patients reported their scars as imperceptible. Complications included 2 hematomas and 6 cases of hypesthesia confined to the region just posterior to the incision; all resolved within 8 weeks. In 1 case, the flap was inadvertently torn during its elevation; it was repaired and did not affect the outcome.

Conclusions: The LSBL is a safe and technically simple technique that allowed us to achieve optimal aesthetic results in the upper periorbita with few complications and a high patient acceptance rate. (Aesthetic Surg J 2006;26:19-23.)

Obtaining optimal aesthetic results in the upper periorbita requires precise evaluation of eyebrow position and upper eyelid tissues. The upper eyelid tissues and brow should be considered as a functional unit with dynamic interactions.

Significant eyebrow ptosis results in an apparent excess of upper eyelid skin. If not recognized preoperatively, eyebrow laxity may result in further brow ptosis, with narrowing of the brow-lash distance following upper lid skin excision.1-4 This problem may also occur if the lateral brow is overly mobile and is drawn inferiorly with the resection of lateral upper eyelid skin. When performing simultaneous brow elevation and upper lid blepharoplasty, the brow is relocated to its new position prior to excising upper eyelid tissues. Reversing this sequence may result in suboptimal brow position and/or overresection of upper eyelid tissues.

Over the years, techniques of upper eyelid blepharoplasty have remained essentially unchanged. Although controversy persists with respect to the optimal upper lid blepharoplasty technique, all methods utilize a common elliptical skin excision, with varying amounts of muscle and fat removal, to achieve the desired result.1 Techniques for improving surgical outcomes in the upper eyelid aesthetic unit have recently focused on management of eyebrow position. Prior to upper eyelid blepharoplasty, careful preoperative evaluation of both brow position and laxity is essential to optimize upper eyelid aesthetics. Numerous techniques have been reported to improve brow position. Various planes of dissection, incisions, and fixation points have been described, and each technique has its own unique advantages and complications.1-5,10 Most of these procedures focus on optimizing the overall brow aesthetic, which is necessary...
in some but not all instances when a patient seeks improvement in the periorbital region.

In certain instances in our practice, we noted that lateral upper eyelid skin redundancy was not adequately corrected or seemed to recur in spite of adequate lateral upper lid skin resection during blepharoplasty. We believed this was due to the dynamic relationship between the lateral eyebrow and upper lid tissues and sought a technique that would specifically address the lateral brow. We observed that in some patients the lateral brow was low preoperatively, whereas in others it was well positioned but overly mobile. Under such circumstances, it seemed that stabilization and to a lesser degree elevation of the lateral brow would enhance the final result. In this paper, we describe our experience with the lateral subcutaneous brow lift (LSBL).

**Preoperative Evaluation**

The periorbital region was critically examined in all patients being evaluated for facial aesthetic surgery. When evaluating the eyebrows, their position with respect to the bony supraorbital rim was noted. The female brow should rest 1 cm above the rim, and the male brow should lie at or just above the level of the rim. Determining the amount of brow laxity is subjective; however, with experience, it is easy to distinguish the “lax brow” from the “fixed brow.” Manual brow elevation was performed. With the patient holding a mirror, the medial and lateral brows were manually elevated. The brow was then returned to its resting position and the lateral aspect of the brow was elevated. The patient was then asked whether they preferred the combined medial and lateral elevation of the brow or isolated lateral elevation. In our experience, most patients desired an isolated elevation of the lateral brow. The appropriate brow procedure was then recommended.

**Indications**

Our indications for performance of an LSBL are the following:
- A patient who desires elevation of the lateral brow.
- A patient with a lax but aesthetically positioned brow who is undergoing upper eyelid blepharoplasty.
- A patient who desires elevation of the entire brow but declines an endoscopic or coronal brow lift.

In the latter group of patients, chemodenervation of the medial brow depressors or transpalpebral resection of the corrugator and procerus muscles may be used to manage the medial brow.

**Technique**

If the LSBL was planned in conjunction with upper eyelid surgery, the brow lift was performed first. Modifications have been made to the technique as described by Miller. The incision was usually marked at the junction of the hair-bearing scalp and forehead, beginning on a line extending superiorly from the mid-pupillary line. It was extended laterally for 4 to 5 cm. The incision could also be shifted slightly laterally for a more lateral lift. We typically marked an ellipse of skin approximately 2 cm at its widest point inferior to the pretichial incision line to serve as a future reference point for skin excision. A reference line was then made approximately 1 cm superior to the brow to mark the inferior limit of the subcutaneous dissection as the flap was elevated. The incision line and area of flap dissection were then infiltrated with local anesthesia with epinephrine. This was an important step in the procedure, as the subcutaneous plane could be hydrodissected off the underlying frontalis muscle.

The incision was carried down to the subcutaneous plane, just superficial to the frontalis muscle. Using a double hook to retract the flap, the subcutaneous tissues were dissected from the underlying frontalis muscle sharply for the first centimeter to help define the proper plane of dissection along the entire length of the incision. The underlying frontalis muscle and accompanying nerves were well visualized and preserved. At this point, we have found the use of a peanut sponge attached to a hemostat to be a safe and expeditious technique for performing the remainder of the dissection in the subcutaneous plane down to the reference line located 1 cm above the brow. Care was taken not to exert undue cephalad tension on the forehead flap. It was possible to tear the skin beyond the area marked for excision.

Once the dissection was complete, the skin and subcutaneous flap were retracted superiorly. The flap was divided vertically along its mid-portion as needed (typically 2 cm), and a central skin staple was placed. After brow position and stability were assessed, the medial and lateral excess skin was excised. The staple was then removed and hemostasis obtained.

At this point, aerosolized Tisseel (Baxter Hyland Immuno, Glendale, CA) was sprayed into the cavity as an assistant maintained pressure on the brow to prevent penetration of air and Tisseel into the upper periorbital. We have found the use of Tisseel helpful in facilitating hemostasis and, to a lesser extent, flap adherence. Once the Tisseel had been applied, the flap was temporarily stapled into position, and pressure was maintained for 3
minutes. A single 3-0 plain gut suture was placed in the center of the incision, and then a 5-0 plain gut suture was run along the length of the incision. The staples were carefully removed to avoid inadvertently lifting the flap as the suture was placed medially to laterally.

At the end of the procedure, the brow was slightly overcorrected, as some descent postoperatively was expected. If an upper blepharoplasty was planned, it was performed at this time. The superior aspect of the skin markings was modified; as expected, the skin excision was typically less than would have been anticipated preoperatively, and the markings were adjusted accordingly. The upper blepharoplasty was then performed in a standard fashion, excising skin, variable amounts of muscle, and fat as indicated. At the conclusion of the procedure, the forehead was padded, and an elastic bandage was kept in place for 24 hours.

Results

Lateral subcutaneous brow lifts were performed in 117 patients during a 2-year period. In 82 cases, LSBLs were performed in conjunction with upper lid blepharoplasty; this represented 31.8% of the 258 upper lid blepharoplasties performed during the study period. (Endoscopic brow lifts were performed in conjunction with 17, or 6.6%, of these 258 upper lid blepharoplasty cases.) Another 31 LSBLs were performed as part of a facial rejuvenation procedure not including upper eyelid surgery, and 4 were performed as isolated procedures.

All patients were seen for at least 3 postoperative visits, extending to an average of 14 months postoperatively. All patients perceived their scars as imperceptible. There were 2 hematomas. One occurred at the conclusion of the procedure and was immediately evacuated. The other required evacuation in the office the day following surgery. Scalp hypesthesia was reported by 6 patients and was confined to the region just posterior to the incision. These alterations were temporary, and all patients regained full sensation of the scalp within 8 weeks. No alopecia was observed. In 1 patient, the flap was inadvertently torn during its elevation secondary to excessive cephalic traction with a double hook. Meticulous repair was done, and the final outcome was unaffected. There were no cases of brow asymmetry postoperatively. The average operative time was 23 minutes. Representative patient photographs are shown (Figures 1 and 2).

Discussion

It is well documented that there is a tendency for the lateral brow to drift inferiorly following upper lid blepharoplasty.1-4,12 This often results in the appearance of excess upper eyelid skin despite seemingly aggressive skin removal. Careful preoperative evaluation of eyebrow laxity and position is critical in considering patients for upper lid blepharoplasty. McCord1 states that the eyebrow and upper eyelid function as a unit. He likens the eyebrow to a curtain rod and the upper eyelid skin to a curtain. Thus, an upper lid blepharoplasty is analogous to shortening and stabilizing the curtain (ie, upper eyelid skin), and the subsequent brow descent is secondary to downward migration of the curtain rod.

Brow descent after upper lid surgery has not only a mechanical but also a physiologic basis in the patient with severe or moderate dermatochalasis of the upper eyelids. Once the excess skin is removed from the upper lids, the brow elevators are less frequently utilized to assist in upper eyelid elevation, and the brow descends relative to its prior position. A similar phenomenon can

Figure 1. A, Preoperative views of a 50-year-old woman. B, Postoperative view 1 year after blepharoplasty without brow lift. Note persistent lateral hooding despite aggressive lateral upper eyelid skin excision.
be seen in the older patient who has undergone chemoparalysis of the frontalis muscle. Once the frontalis is paralyzed, there is frequently an excess of upper eyelid skin that was not recognized prior to treatment, which is exaggerated if frontalis paralysis occurs laterally. By using the LSBL, we have avoided this situation.

There are numerous methods to elevate or stabilize the position of a lax and ptotic brow. These techniques vary with respect to incision length and location, plane of dissection, and methods of fixation. Similarly, each technique has unique risks and benefits.

The authors have had wide experience with virtually all of the current methods for brow elevation. In their experience, the LSBL offers several advantages when compared with other techniques. The incisions are virtually undetectable postoperatively, as they lie at the junction of the fine hairs on the forehead and the thicker hair of the scalp. Unlike other techniques, there is only one plane of dissection. Unlike the subgaleal or subperiosteal plane, the subcutaneous plane is not a glide plane. This makes it an ideal plane for manipulation of the brow. Flap adherence is rapid and aided by the use of Tisseel. Fixation with screws, tunnels, and sutures is unnecessary. Moreover, the subcutaneous plane is simple to enter and elevate off the underlying frontalis muscle. There is no risk to deeper structures, such as the frontal branch of the seventh cranial nerve and the branches of the supraorbital nerve. We have had no injuries to these deeper structures.

Figure 2. A, C, E, Preoperative views of 3 patients. B, D, F, Postoperative views 1 year after upper eyelid blepharoplasty and LSBL. Note absence of lateral hooding.
Although as yet we have been unable to develop a simple algorithm for optimizing outcomes, sound clinical judgment and an ongoing experience with this simple technique have provided our patients with consistent aesthetic rejuvenation in the upper periorbita.

Conclusion

In reviewing our experience, we have noted the efficacy of the LSBL in treating the group of patients with a well-positioned but lax brow. In this group of patients, brow stabilization is necessary to prophylax against undesirable postoperative lowering of the brow that could result in “recurrent” lateral hooping of the upper eyelid skin, and the consequent tired or saddened look for which many patients seek correction in the first place. The LSBL has optimized our aesthetic results in the upper periorbita. This technique has enabled us to perform more conservative lateral upper eyelid skin resection and, at the same time, minimize postoperative lateral hooping. It is a safe and technically simple technique with a low complication rate and high patient acceptance rate.

References