

In Favor of the Subcutaneous Forehead Lift Using the Anterior Hairline Incision

Yehuda Ullmann, M.D. and Yoram Levy, M.D.

Garmish-Partenkirchen, Germany

Abstract. We present our experience with 980 women who had subcutaneous forehead lifts using the anterior hairline incision, during the years 1989-1996. The dissection is easy and fast; the forehead wrinkles are smoothed by the separation of the septa between the frontalis and the skin. The access to the corrugator and the procerus muscles is easy, and the adjustment of the brows to the desired location can be accurate. We use this approach for 90% of women who are eligible for upper face rejuvenation. We have obtained a 96% satisfaction rate; only 1.8% of our patients had minor and reversible complications. The scar, which is supposed to be the main disadvantage of this procedure, is almost unnoticeable, and none of our patients has permanently changed her hairstyle due to this operation. Now, during the peak of interest in forehead lifts with limited scars using the endoscope, is the time to highlight this time-worn, safe, reproducible, and effective approach.

Key words: Forehead lift — Subcutaneous — Hairline incision — Aging

The main indications for forehead-brow lift are forehead-brow ptosis, lateral upper lid drooping, transverse forehead wrinkling, glabellar creases, and transverse folds at the root of the nose [1].

Forehead lifts can be classified according to the plane of dissection or to the way of approaching the determined plane. The three described planes of dissection include subperiosteal, subgaleal, and subcutaneous. The three main reported approaches are the bicoronal approach, the hairline cut, and the recently widely discussed endoscopic approach with minimal scars. Ad-

ressing the forehead through the temporal area and upper blepharoplasty incision have also been described [2].

Friedland et al. preferred to categorize forehead lifts into four generations: the first generation is limited direct skin excisions without extensive undermining, the second is bicoronal approach with subgaleal dissection and musculature modification, the third is bicoronal incision with extensive subperiosteal dissection, and the fourth is related to the endoscopic approach with various planes of dissection [3].

Particularly now, during the peak of interest in the endoscopic approach and the subperiosteal plane, we think it is worthwhile to highlight and share our experience with 980 consecutive cases of a time-worn, safe, and reproducible method: the subcutaneous forehead lift, using the anterior hairline cut.

Preoperative Evaluation

Most patients coming in for consultation requesting facial rejuvenation are not aware of the contribution of the forehead ptosis to their aged look. It is the surgeon's task to evaluate this element. The assessment should include measuring the distance between the eyebrow and the midpupil, which is ideally 2.5 cm [4]. In women, the apex of the eyebrow should lie above the orbital rim, and in men, at the level of the rim. The forehead and glabellar creases are evaluated during activity and rest. The ideal distance from the brow to the hairline is about 5 cm. The incision line is determined by this distance; when it is more than 6 cm and when the distance between the lateral edge of the brow is more than 4 cm, the hairline incision is performed. We avoid resection of the upper eyelid skin at the time of browlifting.

Operative Technique

The temporal and the frontal hairline are outlined without shaving the hair (Fig. 1). Under i.v. sedation, local

Correspondence to Yehuda Ullmann, M.D., Partnach Klinik of Plastic Surgery, Garmish-Partenkirchen, Germany

Wir bedauern: vorher-nachher-Abbildungen sind in Deutschland seit April 2006 per Gesetz **verboten!**

Sorry: in Germany it is forbidden by law to show fotos before/after



Fig. 1. Preoperative markings.

Fig. 2. One year postoperatively, the anterior hairline scar on the right side is nicely camouflaged; it is less hidden on the left side.

anesthesia is performed using 0.5% lidocaine with epinephrine, 1:200,000. The whole forehead is infiltrated, in addition to supraorbital and supratrochlear nerve blocks. After 15 min of waiting for good vasoconstriction, the incision is performed with anterior beveling of the blade. This maneuver allows some growth of hair through the scar later, which helps to camouflage the scar (Fig. 2). The skin flap is then elevated by a sharp dissection superficial to the frontalis muscle; this dissection separates the septa between the muscles and the skin, thus smoothing out the transverse wrinkles of the forehead. No further resection of the frontalis muscle is needed. The dissection of the skin is completed after passing over the superior orbital ridges (Figs. 3 and 4). The nasal skin is dissected almost up to the tip, if some tip elevation is desired (Fig. 5). The corrugator supercilii and the procerus muscles are removed, preserving the supraorbital and the supratrochlear neurovascular bundles. The skin is redraped with only minimal tension, and skin excess is carefully removed, with only a minimal excision in the central part of the flap, but a more generous removal of skin laterally, to achieve elevation of the lateral parts of the eyebrows (Fig. 6). The skin is closed meticulously with interrupted intracuticular 3/0 prolene sutures (Fig. 7).

Structures are removed 7–8 days postoperatively.

Results

During the years 1989–1996, 980 women, average age 59 years (range, 39–81), underwent subcutaneous forehead lift using the anterior hairline incision, by one surgeon (Y.L.). Ninety percent of the patients in our practice who are eligible for upper face rejuvenation are treated using this procedure; only 10% of the patients with a very low hairline or those who refuse the hairline scar are operated on using the bicoronal incision. Dissection time is now 12–15 min. Seven hundred twelve (73%) patients underwent face lifting concomitantly with the forehead-plasty, by doing the forehead after completion of the facial rhytidectomy. One hundred ninety-two (20%) patients had their lower blepharoplasty done during the same session. Upper blepharoplasty was performed on 183 (19%) patients, but it was done 1 week later. A random phone survey, which included 100 patients, revealed that 96% of them were satisfied with the hairline scar and would recommend this procedure to their friends. None of our patients changed her hairstyle permanently due to this operation; a few of them had done it up to 4 months postoperatively.

The complication rate was very low: four (0.4%) patients had a small hematoma, which was treated by squeezing out the blood through the incision line; three (0.3%) cases of scar dehiscence were resutured, with no adverse effect on the final result. Revision of the scar was needed in seven (0.7%), with satisfactory end results. Four patients (0.4%) had asymmetry of their brow position, which was repaired several months later. No skin necrosis, infection, permanent paresthesia, or nerve injury was recorded among our patients using this procedure.

During the last 7 years of using this method, there was no request for revision of this procedure due to relapse of the brows to the preoperative position, although some fine wrinkles of the forehead recurred.

Two demonstrative cases are presented (Figs. 8 and 9).

Discussion

The goal in facial rejuvenation is to obtain nice and attractive harmony between the various elements of the face. Over the past 15 years, the forehead lift has become one of the most important surgical steps in rejuvenation of the aging face. The intensified efforts to limit the long continuous scar caused by the standard bicoronal and the hairline approaches was the main drive to adopt the endoscope for brow lifting. Only three to five different short scars are needed for this procedure. The plastic surgery literature and meetings are focusing recently on this complex browlifting utilizing expensive endoscopic equipment which requires special skill. The topics of using different planes for the dissection and various ways for anchoring the soft tissue to the scalp are also widely discussed [5–9].

But all these efforts toward limiting the scar length may lead to an unsatisfied patient with persistent



Figs. 3 and 4. The dissection is completed after passing over the superior orbital rim.

Fig. 5. The dissection continues over the dorsum of the nose, when some elevation of the tip is desired.

Fig. 6. Removal of skin excess; there is more excision skin laterally.

Fig. 7. The skin is closed with interrupted intracuticular stitches.

forehead wrinkles, asymmetry or even early recurrence of the brow ptosis, due to the limited exposure, inadequate shrinkage of the scalp, which this technique relies on, or failure of the anchoring system. Long-term follow-up for this procedure is still unavailable. There is no doubt that this procedure is very effective for correction of the wrinkles caused by frowning, but this as a solitary complaint bothers only a few of our patients.

Addressing the forehead through frontal and upper blepharoplasty incisions [2] has almost the similar limitations as the endoscopic approach.

Connell [10] made the anterior incision fashionable, but the dissection plane was underneath the galea. Using the hairline cut prevents the danger of causing alopecia. Beveling the incision enables sparing of the hair follicles and ingrown hair into the scar, which makes it less visible. Most of our patients are from North and West Europe, having high and posteriorly curved foreheads, with thin blond hair and a recessed hairline; thus, we find them the most suitable for this procedure. This approach also prevents the not uncommon complication of persistent scalp anesthesia and paresthesia recorded after bi-



Fig. 8. Preoperative front (A), right oblique (B), and left oblique (C) views of a 58-year-old woman before anterior hairline incision forehead lift and extended subcutaneous rhytidectomy, with SMAS. Postoperative front (D), right oblique (E), and left oblique (F) views. Note that the forehead scar is hardly noticeable.



Wir bedauern: vorher-nachher-Abbildungen sind in Deutschland seit April 2006 per Gesetz **verboten!**

Sorry: in Germany it is forbidden by law to show fotos before/after

Wir bedauern: vorher-nachher-Abbildungen sind in Deutschland seit April 2006 per Gesetz **verboten!**

Sorry: in Germany it is forbidden by law to show fotos before/after

Fig. 9. Preoperative left view (A) of 47-year-old woman. (B) One and one-half years post forehead and face lift. The same patient, preoperative v (C) and 1.5 years postoperatively (D) demonstrating the durability of the results obtained.

coronal incision [3]. Vogel and Hoopes [11] reported about 33% persistent forehead hypesthesia/paresthesia, similar to reports concerning the subgaleal lift [12]; they attributed it to the transection of the supraorbital nerve during the creation of the frontalis muscle flap. According to our experience, dissecting the forehead flap subcutaneously enables disconnection of the septa between the frontalis muscles and the skin. This eliminates the need for excising strips of the frontalis, and nice redraping of the skin is achieved. Crow's feet near the eyes are also addressed via this approach.

Going all the way to dissection above the muscles completely prevents the most frightening complication of this procedure, the frontal nerve injury. Access to the procerus and the corrugator muscles is also very easy.

Our experience with 980 patients, during the last 8 years, with only a 1.8% minor complication rate, is really encouraging. We obtained a 96% satisfaction rate and the

results are long-lasting due to the nice exposure, we enables addressing all the elements contributing to upper face aging. The results obtained using this approach as a part of whole-face rejuvenation contribute the harmony needed to accomplish our concept of beauty.

We believe that now, during the "endoscopic era" is the best opportunity to report our experience with safe, reproducible, effective, and long-lasting methods of foreheadplasty. This may give beginners and plastic surgeons who are not familiar with the endoscopic approach the confidence they need.

References

1. Rees TD, Aston SJ, Thorne CHM: Blepharoplasty and facialplasty. In McCarthy (ed) Plastic surgery. W. B. Saunders: Philadelphia, p 2400, 1990
2. Knize DM: Anatomy of a frown: Basis for limited incision

- approach to treatment of eyebrow ptosis and glabellar lines. *Perspect Plast Surg* **10**(1):1, 1996
3. Friedland JA, Jacobsen WM, TerKonda S: Safety and efficacy of combined upper blepharoplasties and open coronal browlift: A consecutive series of 600 patients. *Aesth Plast Surg* **20**:453, 1996
 4. McKinney P, Mossie RD, Zukowski ML: Criteria for the forehead lift. *Aesth Plast Surg* **15**:141, 1991
 5. Vasconez LO, Core GB, Gamboa-Babadilla M, Guzman G, Askern C, Yamamoto Y: Endoscopic techniques in coronal brow lifting. *Plast Reconstr Surg* **6**:879, 1994
 6. Toledo LS: Video-endoscopic facelift. *Aesth Plast Surg* **18**:149, 1994
 7. Ramirez OM: The anchor subperiosteal forehead lift. *Plast Reconstr Surg* **6**:993, 1995
 8. Ramirez OM, Pozner JM: Subperiosteal minimally invasive laser endoscopic rhytidectomy: The SMILE facelift. *Aesth Plast Surg* **20**:463, 1996
 9. Toranto IR: The subperiosteal forehead lift. *Clin Plast Surg* **19**(2):477, 1992
 10. Connell B: Brow ptosis. Local resections. In 3rd International Symposium on Plastic and Reconstructive Surgery of the Eye and Adnexa. Williams & Wilkins: Baltimore: p 238, 1982
 11. Vogel JE, Hoopes JE: The subcutaneous forehead lift with anterior hairline incision. *Ann Plast Surg* **28**:257, 1992
 12. Adamson PA, Johnson CM, Anderson TA Jr, et al.: The forehead lift. *Arch Otolaryngol* **111**:323, 1985