Open Brow Lift Surgery for Facial Rejuvenation

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KEYWORDS

• Brow lift • Forehead lift • Pretrichial brow lift

KEY POINTS

- Brow lifting is a gratifying operation; creation of a youthful eye/brow complex can by quite dramatic.
- Repositioning of the brows can aid in the appearance of other structures of the upper face, such as the forehead rhytids, glabellar muscles, crow's feet, and upper eye lids.
- Although there are several acceptable methods of brow elevation, a pretrichial brow lift is a predictable, stable, and simple operation to satisfy the cosmetic needs of patients.

Introduction

Brow lifting has been around in the surgical armamentarium for nearly 100 years. Passot in 1919 first described using transverse skin excision of upper forehead skin to elevate the brows.[1] In 1926, Hunt described coronal and hairline excision to achieve a similar result.[2] In the following years, undermining of the pericranium and resection of corrugator muscles became popular.[3] In the 1960s, other modifications such as the pretrichial incision were introduced.[4] In the 1970s, the first description of a "biplanar" approach to the temporal region was described.[5] Flowers has been given credit for emphasizing the importance of establishment of proper brow positioning before upper eye lid surgery.[6] In 1992, Isse introduced the concept of minimally invasive forehead lifting via the endoscopic approach.[7] Since then, there have been a number of modifications to both the "open" and "endoscopic" approaches for brow lifting.[8–18]

This article describes the pretrichial brow lifting. Other types of forehead rejuvenation are described in another article (see Jon D. Perenack's article, "The Endoscopic Brow Lift," in this issue).

Indication for brow lift

Brow lifting is essentially synonymous with *forehead lifting*; the terms are used interchangeably throughout this article. Irrespective of the type of forehead lifting, the main indication for any type of forehead lifting is to create a more youthful position for brows. Repositioning of the brows to a more appropriate position can also aid in the appearance of other structures of the upper face such as softening of the forehead rhytids, relaxation of glabellar muscles (corrugator, procerous, and depressor supercilia), improvement in appearance of crow's feet, and enhancing the appearance of upper eye lids (by improving dermatochalasia of upper lids). An open, bright, and youthful appearance of the eyes and brows, especially in a female, is often one of the first facial features noticed by most people. Patients who have upper eye lid dermatochalasia or fullness often have concomitant brow ptosis. In fact, placing the brows to their proper position in many cases resolves the upper lid fullness.

Advantages of pretrichial brow lift

Pretrichial brow lifting falls in the category of open brow lifting. Other popular open brow lifting techniques include the coronal brow lift as well as mid forehead and direct brow lifting. Endoscopic brow lifting is the other popular technique utilized by many and is discussed in another article (see Jon D. Perenack's article, "The Endoscopic Brow Lift," in this issue).

Ultimately, regardless of the specific approach of brow lifting, elevation of the forehead and rejuvenation of the brows are the only objectives. Clinicians often argue over "inherent" advantages of one cosmetic procedure over another based on anecdotal or "personal" preference and experience. Although one should never argue against experience and consistency of a particular technique, there are a few advantages of the pretrichial brow lifting over other methods. These include:

- Can allow shortening of a long forehead if necessary.
- Can bring anterior hair line more anteriorly if desired.
- No need for special equipment (endoscopic tower and/or instruments).
- No need for fixation devices (resorbable anchors, etc).

Patient selection

Ideal patient for the pretrichial brow lifting is any patient with brow ptosis with normal or elongated forehead. Patient's hair style must be taken into consideration because the incision is placed just inside the hair-bearing scalp. Patients who wear

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their hair combed or pulled back, as opposed to having bangs, must be counseled appropriately because the incision may be perceptible for a few weeks after surgery. As mentioned, brow lifting, regardless of the technique, should always precede upper eye lid blepharoplasty. Evaluation of forehead rhytids, both dynamic and static, in transverse and vertical fashion must also be accounted for (Fig. 1). Good quality preoperative photography is a must, as is in all cosmetic procedures. Forehead skin must also be evaluated; patients with rosacea or oily sebaceous skin tend to have "thick" and "heavy" forehead skin. It is the opinion and observation of the author that patients with thicker forehead skin may have a higher tendency for relapse if appropriate elevation and release of the forehead flap has not occurred. Assessment of the forehead length is also important; pretrichial brow lifting can reduce an excessively long forehead and it can also bring a receding hairline anteriorly. Also, measurement of the actual brow ptosis (comparing the position of the brows with the underlying supraorbital rim) is important, as is recognition of brow asymmetry. Significant brow asymmetry occurs quite frequently.

Surgical technique

Pretrichial brow lifting can be performed under sedation or under general anesthesia. The patient should be placed in a supine position in a reverse Trendelenburg position to elevate the head. A single dose of perioperative antibiotic is administered. After appropriate skin preparation, hair should be combed posteriorly to reveal the anterior hair line. One often can see fine vellus type of hair just anterior to the formal hairline. An extremely irregular incision is marked a few millimeters inside the hairline between the 2 temporal fusion lines (Fig. 2). The irregularity of this incision is important to aid in camouflaging the scar in the future. Local anesthetic with a vasoconstrictor is then injected for hemostasis. After waiting for the vasoconstrictive effects to begin to work, an anteriorly beveled incision is made. The bevel is critical in preserving as many hair follicles as possible on the hair-bearing scalp side of the incision (Fig. 3). If properly performed, hair growth will appear in and around the final incision within 3 to 4 months from these preserved follicles. The elevation of the flap is done in the subgaleal plane; others have advocated elevation in a subcutaneous plane.[15–17] It is the opinion and observation of the author that a subgaleal plane is easier, just as effective as a subcutaneous elevation, and, most important, augments the vascularity of the forehead flap.[18] Subgaleal elevation also protects the frontal branches of the facial nerve that travel in the subtemoporparietal fascia just above the galea. Elevation of the flap is performed bluntly all the way inferiorly beyond the brows. Because the elevation is in the subgaleal plane, there is no need to release the arcus marginalis, although this can be accomplished if necessary across the frontal bar. The forehead flap is essentially an axially based flap based on the supraorbital and supratrochlear arteries. The lateral aspects of this forehead flap are the temporal fusion lines; in cases where significant brow ptosis is present, especially laterally, release of the temporal fusion lines might be necessary to enhance flap elevation.

Once the flap is properly elevated, there should be a significant amount of overlap of the forehead flap and the intact

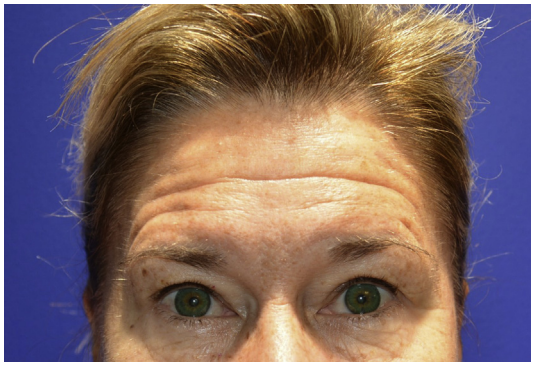

Fig. 1 Note static rhytids of forehead, brow ptosis, and fullness of upper eyelids.

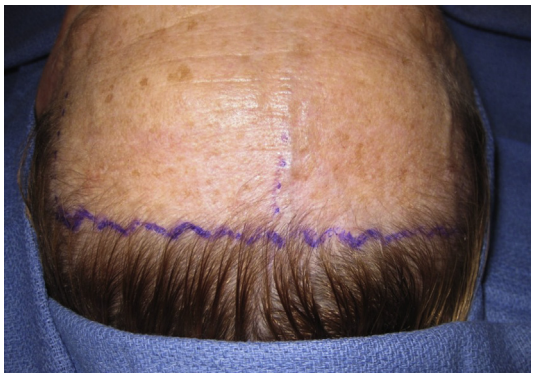

Fig. 2 Irregular incision within the hairline. Note the dotted lines along the temporal fusion lines.

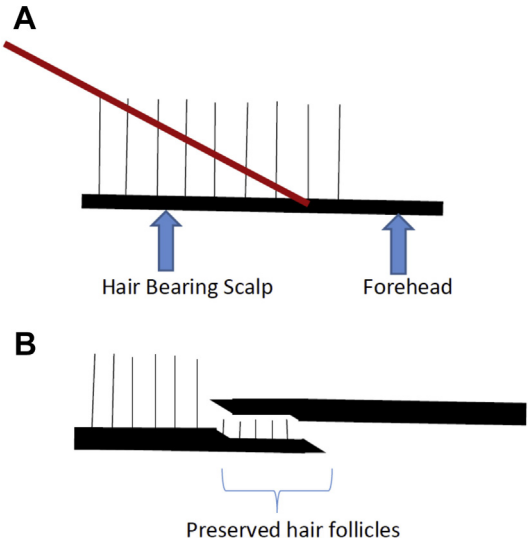

Fig. 3 Extreme bevel (*red line*, *A*) to preserve as many hair follicles on the hair-bearing scalp as possible (*B*). This will ensure future hair growth anterior to incision.