Minimally Invasive Surgical Adjuncts to Upper Blepharoplasty

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KEYWORDS

• Eyebrow anatomy • Eyelid anatomy • Browpexy • Upper eyelid blepharoplasty
• Upper eyelid fat preservation • Orbitoglabellar groove • Lacrimal gland prolapse
• Brassiere brow fat suspension

KEY POINTS

- Contemporary blepharoplasty surgery has undergone a paradigm shift which focuses on techniques that preserve volume.
- A browpexy is a minimally invasive, nonformal, temporal brow stabilization or conservative lift that can be performed in an external or internal fashion.
- The nasal fat pad of the upper eyelid is relatively stem cell–rich and tends to become clinically more prominent with age. This fat can be preserved and redistributed within and outside the eyelid/orbit during blepharoplasty.
- Lacrimal gland prolapse is a normal involutional change that can lead to temporal eyelid fullness. The gland be safely repositioned to its native location during blepharoplasty surgery.
- The brow fat pad can be elevated and supported during blepharoplasty surgery to potentially improve the eyebrow-eyelid transition and contour.

Video of (1) External Browpexy Procedure, (2) Nasal Fat Preservation, (3) Nasal Fat Preservation: Orbitoglabellar Groove, (4) Lacrimal Gland Repositioning, and (5) Brassiere Suture Fixation of Brow Fat Pad accompanyies this article at http://www.facialplastic.theclinics.com/

INTRODUCTION

Upper blepharoplasty is one of the most common facial aesthetic and functional procedures performed in the world today.[1] It is one of the oldest described treatments of the aging face;[2] initially elaborated on in ancient times by Albucasis in Spain,[3] and Ali Ibn Isa in Baghdad.[4] In these early reports, upper eyelid skin was grossly removed with cautery or pressure necrosis. Upper eyelid surgery was then largely forgotten until reemerging in the eighteenth and nineteenth centuries.[5] The procedure has evolved significantly into a technique that also addresses the orbicularis muscle and eyelid/orbital fat. In the 1950s, Costaneras[6] enhanced our understanding of contemporary

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Facial Plast Surg Clin N Am 23 (2015) 137–151
http://dx.doi.org/10.1016/j.fsc.2015.01.013
1064-7406/15/$ – see front matter

upper blepharoplasty surgery by publishing on a more advanced anatomic knowledge of the upper lid, including the various fat compartments. Flowers[7] and Seigel[8,9] popularized tissue excision techniques that led to a high crease, large tarsal platform, and a generally hollow upper sulcus. This subtractive form of surgery was in vogue until the early part of this century when a paradigm shift from surgery based on tissue excision to one in which tissue (ie, muscle and fat) is preserved developed.[10,11] This shift is founded on the concept of recreating the fuller aesthetic of youth rather than the gaunt stigmata of the more traditional excision-based procedures.

This article reviews adjuncts to upper blepharoplasty that can be performed at the time of surgery to potentially enhance results. The techniques described are quick, minimally invasive, low-risk, and mostly focus on the concept of volume preservation. All procedures can be performed through the standard eyelid crease incision except for the external browpexy variant.

INTERNAL AND EXTERNAL BROWPEXY

Contemporary upper blepharoplasty requires an evaluation and assessment of the eyebrow and upper lid as an aesthetic unit. Because temporal brow ptosis is a common aging change that can add to upper eyelid lid fullness, stabilizing or lifting the outer brow has become an essential adjunct to aesthetic upper blepharoplasty.[12,13] Formal brow lifting procedures are invasive, costly, and potentially fraught with motor and sensory neurologic defects.[14–17] A browpexy, or brow suture suspension, is not a formal lift. It is a measured anchoring of brow tissue (muscle and/or fat) to the periosteum of the frontal bone (or bone itself) above the superior orbital rim. Its purpose is to provide stabilization or a slight lift to the outer brow in a minimally invasive way to allow appropriate skin excision during blepharoplasty. It is typically added as an enhancement to blepharoplasty but also can be an isolated procedure.

The internal variant of the procedure was first described by McCord and Doxanas[13] in 1990. In this original description, the subbrow tissue is accessed through a blepharoplasty eyelid crease incision and the brow fat pad is dissected free of the frontal periosteum for variable distances from the orbital rim. A guiding suture can be placed from skin to the internal wound to ensure the appropriate placement of the suspension suture on the undersurface of the brow soft tissue. The area of brow suspension to the frontal bone periosteum is measured directly. A 4-0 Prolene (Ethicon, Somerville, NJ) or similar suture engages the periosteum at this location and also the internal brow tissue at the predetermined area (typically the inferior brow). Two to 3 similar sutures are placed laterally. When all sutures are tied, the brow is anchored to a new position.

Since its early description, there have been modifications of the procedure that have included extended dissection, release of deep retaining ligaments of the brow, extirpation of the temporal brow depressor muscle (lateral orbital orbicularis oculi), and the use of an external anchoring device fixated to the frontal bone (Endotine, Coapt Systems, Palo Alto, CA) (**Fig. 1**).[18–22] The main problem with all these procedures has been inconsistent results. Often no lift or stabilization was noted by surgeon or patient beyond a short-term result. This can be related to surgeon experience, technique, limitation of dissection, weakness of the procedure, or some combination thereof.

More recently, an external variant of this procedure has been described, which has been called the "External Browpexy".[23] In this variant, an 8 mm marking is made, tangential to the superior brow hairs or within the superior brow hairs, at the

Fig. 1. Internal browpexy procedure. Left: Exposure of the brow fat pad above (*black arrow*) and the periosteum of the frontal bone below (*red arrow*). In the initial description of the internal browpexy, the fat pad is secured at a desired location to the periosteum. Right: Modification of procedure with implanted Endotine device.