

Minimally Invasive Options for the Brow and Upper Lid



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KEYWORDS

- Brow • Upper eyelid • Eyebrow anatomy • Eyelid anatomy • Fillers • Neuromodulators
- Facial aging

KEY POINTS

- Aging of the brow and upper eyelid occurs in all tissue planes and involves cutaneous changes, volume loss, and tissue descent.
- Volume restoration and neuromodulation have become an integral part of eyebrow/eyelid aesthetic rejuvenation.
- Surgical lifting techniques alone, without addressing volume loss, are insufficient to address aging of the brow/upper eyelid complex.
- Preservation and restoration of skin quality can have dramatic rejuvenating effects to the brow and upper eyelid.

INTRODUCTION

Appropriate aesthetic rejuvenation of the eyelids and periorbital soft tissues requires a detailed knowledge of relevant anatomy and normal aging changes, and techniques to comprehensively address the presenting deficits and attain natural results to treatment. It has long been accepted that changes in skin quality and appearance and tissue descent convey obvious signs of aging and are principal players in this process. Surgical procedures to elevate and remove excess tissue have traditionally been considered the preferred means to address tissue sagging. Chemical denervation (neuromodulation; Botox botulinum toxin A [BoNTA]) has allowed the addition of effacing hyperdynamic lines and has been shown to be an excellent adjunct to surgery.¹ Over the

past few decades, a paradigm shift has occurred, in which it has become clear that facial aging is a more complex, three-dimensional process, affecting all tissue planes (skin, muscle, fat, and bone).² The importance of the role of volume loss in this intricate process has been particularly emphasized,^{1–7} especially in relation to the eyelids and periorbita.^{7–12} As facial aging has been evaluated from the perspective of both tissue descent and deflation, more acceptable outcomes to treatment, both surgical and nonsurgical, have emerged.^{8–12} As of 2011, statistics from the American Society of Plastic Surgery show that injection of BoNTA remains the single most performed cosmetic procedure in the United States (approximately 2.6 million procedures).¹³ Also, the potential for restoring a youthful shape and contour to a patient's face has made fillers the fastest growing

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minimally invasive cosmetic procedure in the United States.¹⁴ In 2011, about 1.2 million facial filling procedures involving hyaluronic acid (HA) were performed, constituting 84% of all filler procedures, and BoNTA and HA together comprise 75% of all nonsurgical procedures performed.¹³ These data underscore the importance of contemporary minimally invasive methods of facial rejuvenation. Sundaram and Kiripolsky¹⁵ described their means of addressing facial aging with an outcome-based approach to treatment. They called this the 4 pillars of rejuvenation. This approach includes (1) replacement of tissue volume, (2) regeneration of tissue quality, (3) rebalancing of facial vectors and proportions, and (4) improvement of skin reflectance. Minimally invasive techniques designed to address these principles have become core adjuncts to modern aesthetic facial rejuvenation and have allowed practitioners a means of attaining natural outcomes while avoiding the stigma of volume loss and hollowing associated with older reductive surgical techniques. This article focuses on minimally invasive options to rejuvenate the brow and upper lid complex, with a review of the relevant

anatomy and contemporary concepts in upper facial aging.

EYEBROW/EYELID ANATOMY

Although a detailed description of anatomic considerations of the eyebrow and eyelid is beyond the scope of this article, a general understanding of the relevant structures of significance and how they transition from the brow to the eyelid is important. The eyebrow is a multilayered structure composed of cilia, skin, muscle, fat, and connective tissue elements.¹⁶ The skin is thicker than that of the eyelid, which is important when manipulating the brow/lid transition. The paired frontalis muscles are the elevators of the eyebrow and originate from the galea aponeurotica, span the forehead from superior temporal line (STL) to STL, and insert on the skin (no bone insertion) at the superior brow after interdigitating with various muscle groups.¹⁷ These muscle include the orbital orbicularis oculi muscle laterally, and the orbicularis oculi, procerus, and corrugator supercillii muscle medially (Fig. 1).^{6,17} Although the frontalis is the only elevator of the eyebrows, the orbital

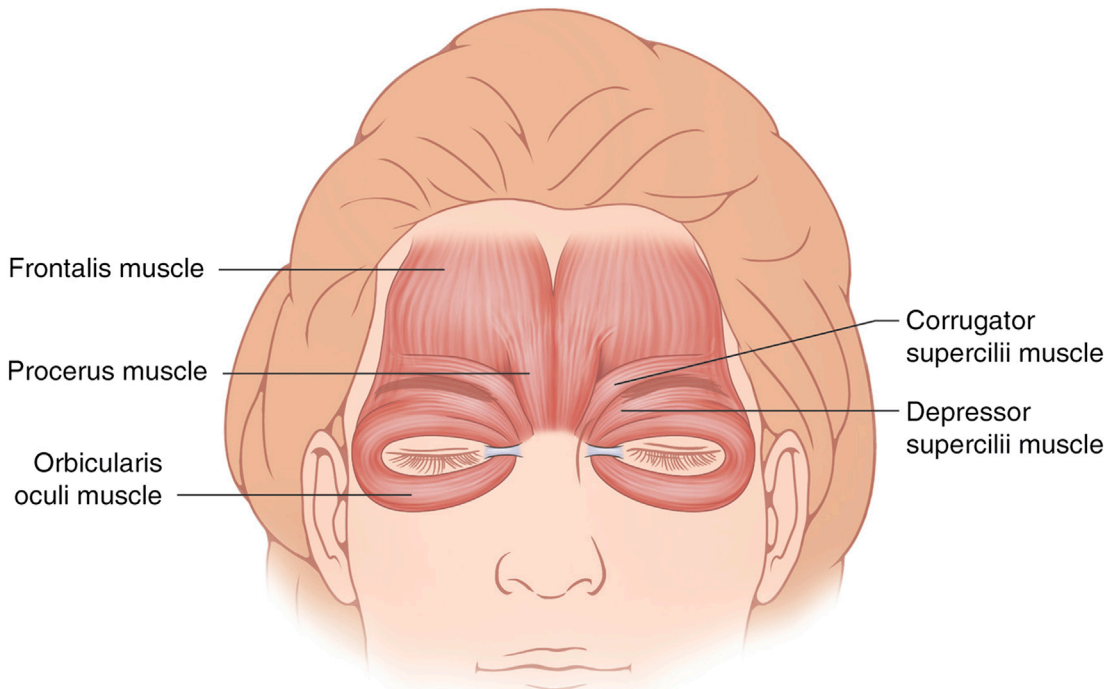


Fig. 1. Muscles that elevate and depress the eyebrows. Note the frontalis (brow elevator), and the orbital orbicularis, corrugator, and procerus muscles (brow depressors). The frontalis has no bone attachment and indirectly inserts into the skin after interdigitating with the brow depressor muscles. (From Tan KS, Oh SR, Priel A, et al. Surgical anatomy of the forehead, eyelids, and midface for the aesthetic surgeon. In: Massry GG, Murphy MR, Azizzadeh B, editors. Master techniques in blepharoplasty and periorbital rejuvenation. New York: Springer; 2011. p. 11–24; with permission.)

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