Rejuvenation of the Male Brow

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KEYWORDS

• Brow lift • Forehead lift • Blepharoplasty • Facelift
• Aging face • Cosmetic surgery

The browlift traces its origins to the early 1900s, when Lexor first described his surgical approach to the aging upper one third of the face. However, it was not until the 1970s that this procedure was introduced into the routine armamentarium of the facial plastic surgeon. Brennan and Pitanguy observed that aging of the forehead is accompanied by specific changes, including descent of the brow and development of temporal and forehead furrows.[1–3]

The youthful brow and forehead are smooth, without significant laxity or rhytidosis. The hairline is youthful, without loss or recession. The brow rests at a position where the upper lid is comfortably visualized at rest. Aging of the brow and forehead is characterized by hooding of the brow, crow's feet, and a sad or angry facial appearance, with a loss of elasticity and thinning of the subcutaneous tissues, and bony resorption of the skull itself.

Failure to address the aging changes that occur in the upper one third of the face during rejuvenative facial surgery may result in an unsatisfactory cosmetic appearance. Failure to address the brow may create an aesthetically displeasing and discordant contrast between the operated-on, youthful-appearing lower two thirds of the face and the unoperated-on aged brow.[4]

The ideal brow position differs in men and in women. To accomplish a natural and pleasing male browlift that retains masculinity, the surgeon must recognize the aesthetic differences between the ideal male and female brow. The ideal female brow is club-shaped medially and begins at a vertical line drawn from the lateral nasal ala. The tapering lateral end of the female brow terminates at an oblique line drawn through the ala, extending through the lateral canthus. The medial and lateral ends are on a horizontal line, with the brow arching laterally, with the maximal height of the brow at the lateral limbus.[5,6]

In men, the brow lies at the level of the supraorbital rim. Although the lateral limbus may be slightly elevated, it certainly does not arch as in the female brow. Rather, it is straight and flat, without the tapering and arching that characterize the female brow. Unlike the ideal female brow position, the male brow is not elevated above the orbital rim. Eyebrow ptosis in men exists when the distance from the midpupil to the top of the brow is less than 2.5 cm. The distance between the inferior border of the eyebrow and the upper lid margin is equal to the vertical height of the eye from palpebral fissure to palpebral fissure.[6–8]

ANATOMY

The bony anatomy of the brow and forehead is defined by the supraorbital rims and the frontal bone of the skull. The supraorbital rim is more prominent in men than in women, creating a more masculine, angular appearance to the brow. The male forehead is more vertically oriented than the female forehead and the anterior male hairline is often more posteriorly displaced than the female hairline. The male brow is characterized by more coarse and angular features than the female brow.[9]

The forehead gains its rich blood supply from branches of the external and internal carotid arteries. The superficial temporal artery is the terminal branch of the external carotid artery. This vessel nourishes the lateral forehead. The zygomaticotemporal branch of the superficial temporal artery accompanies the frontal branch of the facial nerve along part of its course. The medial

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Facial Plast Surg Clin N Am 16 (2008) 299–312
doi:10.1016/j.fsc.2008.04.003
1064-7406/08/$ – see front matter

forehead is supplied by the supratrochlear and supraorbital arteries, both branches of the ophthalmic artery, the first branch of the internal carotid artery. The supraorbital artery arises from the central superior orbital rim, whereas the supratrochlear artery emanates from the superomedial orbit.[10–12]

The sensory innervation of the forehead is complex, actually deriving innervation from all three branches of the trigeminal nerve. Medial innervation of the forehead is from the supratrochlear and supraorbital divisions of the first trigeminal nerve (V1), whereas the lacrimal (V1), zygomaticofacial (V2), and zygomaticotemporal (V3) nerves provide sensation to its lateral aspects. The temporal branch of the facial nerve runs about one finger breadth lateral to the lateral eyebrow. This anatomic landmark is critical and caution must be exercised during the surgical dissection of this region in brow and forehead surgery.[10–12]

The scalp is composed of five layers, and knowledge of these layers is imperative to understanding forehead rejuvenation. The skin and subcutaneous tissue overlie the galea-enveloped frontalis muscle. Loose areolar tissue is found deep to the galea. The easily dissected and nearly subgaleal plane rests superficial to the pericranium. The pericranium is tightly adherent to the underlying bone. Forehead lift dissection is generally performed either in the subgaleal or subperiosteal (subpericranial) planes. Dissection within either layer is swift and nearly bloodless. The subgaleal plane is distensible, whereas the periosteum is tough and less elastic.[13]

The frontalis muscle arises within the galea at the level of the anterior hairline. The galea divides into anterior and posterior leaves. Posteriorly, the galea originates from the occiput, where no bony insertion exists. It functions in raising the eyebrows and glabella. The anterior galea interdigitates with the dermis above the orbital rim. The orbicularis oculi insert superiorly and medially with the frontalis muscle. The corrugator supercilii originate from the bony glabella and extend superolaterally to interdigitate with the frontalis and orbicularis muscles. The procerus originates from the nasal bones and fans superiorly to meet the frontalis and orbicularis muscles. The corrugator acts to draw the eyebrows medially, whereas the procerus draws the medial brows inferiorly. The position of the brow is influenced by aging and gravitational forces, and by the balance of muscles acting on it. The frontalis and, to a lesser extent, the occipitalis act to elevate the brow,[13] which is antagonized by the glabellar complex muscles, predominantly the corrugator supercilii, procerus, and orbicularis oculi muscles, that act to depress inferiorly and medially the brow itself. At the time of browlift, release of the depressor muscle group is key to achieving lasting brow elevation.

Brow and forehead rhytids develop predominantly as a result of underlying regional muscle activity because of the perpendicular attachments from the dermis to the underlying muscular aponeurosis. Repeated contraction of the frontalis muscle results in horizontal forehead creases. The activity of the musculature of the glabellar complex (corrugator supercilii, procerus, and orbicularis oculi muscles) creates vertical furrows between the medial brows and horizontal lines along the root of the nose. Changes in the skin over time due to aging, gravity, sun exposure, smoking, and other insults result in elastosis and heliodermatitis, which contribute to the appearance of an aged brow.

Early brow ptosis is often counteracted, at least in part, by increased activity of the frontalis muscle. That is, with early brow ptosis, the patient often compensates, either subconsciously or involuntarily, by raising the brow, which falsely alleviates the appearance of a ptotic brow. This frontalis muscle hyperactivity is particularly evident when a patient is asked to look in a mirror and then elevates his brows subconsciously as he gazes on his reflection. As time passes, these lines become more deeply etched.[8]

PREOPERATIVE ASSESSMENT

The key to preoperative assessment is a clear understanding of the goals and aesthetic ideals of the patient.[3–5,8] Successful assessment of the brow requires greater insight and thought than other regions of the aging face on the part of both the surgeon and the patient. Recognizing changes in the forehead and brow seems not to be as intuitive or as self-evident as it is for other facial regions. Few patients who have deep perioral rhytids or an obtuse neckline fail to recognize these features of aging, but many patients, and some surgeons, fail to appreciate the contribution of brow position to the aged appearance of the upper eyelids and upper one third of the face. As a result, many patients present requesting facelift while not recognizing the contribution of the upper one third of the face. Similarly, many request blepharoplasty without recognizing the contribution of the ptotic brow to the tired appearance of the eyes. Many patients unknowingly raise their brows while looking in the mirror, which confounds their assessment of the brow and lids, and the surgeon's impression if he/she is not mindful. It is critical to have a patient look in the mirror in repose. At times, it is necessary to ask the patient