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An Overview of Techniques, Indications, and Approaches to the Midface Lift

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Facial rejuvenation surgery has undergone a considerable evolution since the first face-lift reported over 100 years ago [1]. Few reports of face-lift were in the literature until the 1970s. In that decade the superficial musculoaponeurotic system was described and the early lipectomy was performed [2]. Deeper plane face-lifts evolved with many different permutations and variations [3]. It became clear that lifting the superficial musculoaponeurotic system plane allowed a longer and more effective improvement on the jaw line and jowl area. Some of these face-lifts, however, resulted in an unnatural look with a "sweep" deformity. This resulted from effective lifting in the lower portion of the face without concomitant improvement in the midface. In the past 25 years significant debate has revolved around the issue of the midface. Many different midface rejuvenation techniques have been described and espoused creating a great deal of confusion as to the ideal approach and dissection plane.

Effective treatment of the midface has perplexed many surgeons in the past 25 years. The midface anatomy is somewhat complex and improved rejuvenation techniques developed as better understanding of the area was gained through cadaver dissection. Different techniques are more applicable in different patients and the selection of patients is crucial to long-lasting improvement. No single approach has been found to be ideal in all patients. Lower eyelid rejuvenation techniques have improved midface rejuvenation techniques. It becomes clear that the lower eyelid and midface form a continuum that needs to be addressed in its entirety for optimal rejuvenation. The midface may be addressed separately or in conjunction with other procedures, such as face-lift. The modern rejuvenation surgeon selects from a variety of techniques and approaches in each individual patient for optimal results.

Anatomy

Before any midface surgical interventions are attempted, the surgeon should have an intimate knowledge of the three-dimensional midface anatomy. The body of the zygoma and maxilla form the foundation on which midfacial tissue is draped. Deficiency in the bony malar eminence can cause flattening of the midcheek and accelerated midfacial aging. Tooth loss in the maxilla causes accelerated bone resorption with aging, reducing support for the midface.

In all surgeries of the midface and lower eyelid, careful note should be made of the relationship of the infraorbital rim to the cornea. Prominent or "big" eyes are a yellow flag to experienced surgeons, signifying a higher risk for lid malposition or frank ectropion. The cornea more anteriorly situated than the infraorbital rim is deemed a negative vector. This configuration creates a greater risk for retraction of the lower eyelid and incisions that violate the orbicularis or orbital septum must be approached with caution. With a positive vector, the infraorbital rim is situated

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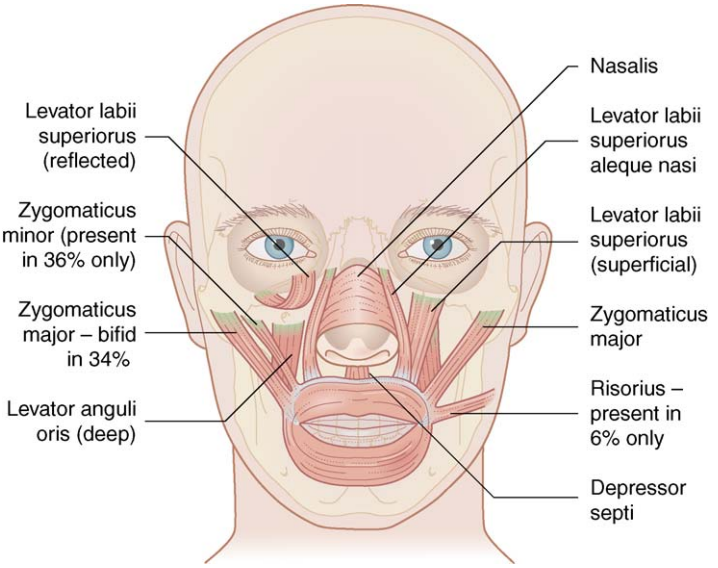

Fig. 1. Muscular anatomy of the midface. (*From* Finn JC, Cox SE. Practical botulinum toxin anatomy. In: Carruthers A, Carruthers J, editors. Botulinum toxin. Philadelphia: Saunders; 2005. p. 19–30.)

anterior to the cornea and with a neutral vector, the cornea is even with the infraorbital rim. These configurations allow a greater margin of safety when working on the midface or lower lid.

The sensory nerves of the midface perforate these midface bony structures. The second division (maxillary) of the fifth cranial nerve supplies sensation toward most of the midface region. The largest branch (infraorbital) exits the anterior maxilla below the orbital rim in the midpupillary line. This nerve should be preserved carefully in all midface rejuvenation procedures. The zygomaticotemporal branch exits from the posterior aspect of the lateral orbital rim, supplying sensation to the temple area. Injury to this branch is common following brow- or midface-lift and causes anesthesia to this area, usually lasting months. A separate sensory branch of the maxillary nerve, the zygomaticofacial nerve, perforates the body of the zygoma and supplies sensation to the lateral cheek and periorbital area [4]. Although preservation is preferable, in many procedures this nerve branch is sacrificed. Whenever cheek tissues are elevated it is common to have temporary numbness caused by interruption of peripheral sensory nerve branches. This sensation should return as these peripheral sensory nerves regenerate.

Muscular anatomy of the midface may seem confusing, but understanding and identifying these muscles is crucial to any rejuvenation procedures (Fig. 1). The zygomaticus major muscle is the most important muscle to the midface surgeon. This muscle has its origin on the inferolateral aspect of the body of the zygoma and extends diagonally to the modiolus. The function of this muscle is to raise and abduct the corner of the mouth. Weakness of this muscle is immediately obvious to the casual observer and causes dramatic asymmetry to the mouth (Fig. 2).

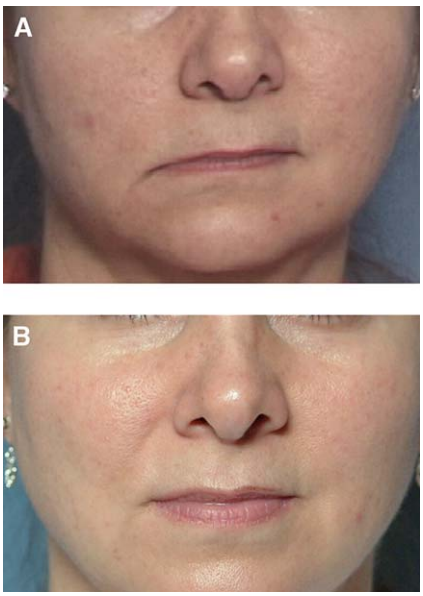

Fig. 2. (*A*) Neuropraxia of buccal branches of facial nerve 1 month following midface lift. (*B*) Spontaneous recovery of neuropraxia 6 months following midface lift.

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