Endoscopic Midfacial Rejuvenation

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KEYWORDS

• Facial rejuvenation • Subperiosteal midface lift • Rhytidectomy • Endoscopic midface lift

KEY POINTS

- The midface and lower lid aging processes are highly interdependent, and attempts at rejuvenation must address both simultaneously.
- The aging process results from soft tissue volume loss, vertical descent of soft tissue, loss of bony projection, and laxity of the overlying skin. Each component must be considered in developing a strategy for rejuvenation.
- Endoscopic subperiosteal lift allows for an ideal vector of suspension, but has limited effect on the nasolabial fold.
- Endoscopic malar lift specifically addresses the nasolabial fold.

INTRODUCTION

Despite the increasing popularity of surgical facial rejuvenation during the 20th century, surgical treatment of the midface was largely ignored. The process of midfacial aging was poorly understood and misinterpreted. To address the midface, patients underwent blepharoplasty with skin and fat resection without addressing the cheek/midface complex, which often exacerbated the aged appearance.

In 1976, the description of the superficial musculoaponeurotic system (SMAS) by Mitz and Peyronie greatly advanced the understanding of midface anatomy.[1] Hamra advanced surgical techniques with sub-SMAS dissection, advocating deep plane and composite lifting of the midface.[2] In the following years, the subperiosteal approach to the upper face was described, along with extended access to the midface via bicoronal incision.[3] In 1994, Ramirez pioneered and popularized the endoscopic midface lift with subperiosteal dissection over the malar eminence and inferior orbital rim via temporal and intraoral approaches, providing effective elevation of the junction between the lower lid and midface.[4] Further, this approach avoided dissection through the preseptal orbicularis oculi.

The senior author has employed the endoscopic subperiosteal approach to the midface since 1995. In the initial 75 cases, gingivobuccal sulcus incisions were utilized to assist with dissection, but these were ultimately abandoned in favor of dissection via temporal incisions alone. The endoscopic midface lift was performed in conjunction with endoscopic brow lift to prevent redundancy of temporal skin. When indicated, blepharoplasty was performed in the same operative setting with skin pinch and transconjunctival fat excision, thus preventing disruption of the middle lamella and minimizing risks of lower lid malposition.

One key concept is that the aging and subsequent rejuvenation of the midface and lower eyelid do not occur in isolation. The aging effects on the

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lower lid and lower face are more appreciated now than ever before. Elevation of the midfacial soft tissues results in shortening of the lower lid with additional soft tissue support, while simultaneously tightening the orbicularis oculi sling with the slight horizontal vector of lifting. Further, this elevation in the midface may improve soft tissue crowding in the jowl area. Despite successful repositioning of the malar fat pad, the nasolabial fold usually is not significantly effaced by this technique. This will be further discussed, but ultimately this remains a limitation that proponents of this approach are willing to accept in exchange for the safety and efficacy of this procedure.

Midfacial aging is multifactorial, with the 4 greatest contributors being soft tissue volume loss, soft tissue ptosis, bony remodeling with decreased projection, and overlying skin changes. Attempts at rejuvenation must be individualized to each patient, with consideration given to each component of midfacial aging. Frequently, patient preference dictates initial intervention with volume restoration through fillers. Once this is not adequate or appropriate to achieve the desired result, surgical intervention is directed to address the patient's greatest deficiencies within the midface. The techniques described herein represent a single modality, while most commonly multiple modalities are combined to create the best possible aesthetic result. Further, the surgical intervention can be thought of as an adjustment of the patient's baseline, from which fillers and resurfacing techniques can be used to refine and maintain the rejuvenation. The described technique is frequently combined with an endoscopic brow lift procedure in order to avoid bunching of excess skin and soft tissue at the lateral canthus and temporal region. For patients in whom a brow lift is not indicated, other options exist for correction of soft tissue ptosis. Although not ideal for the midface, the deep plane facelift originally described by Hamra will most closely approximate the optimal vector of suspension that is achieved in endoscopic techniques.

Innumerable techniques have been described in efforts to attain adequate rejuvenation of the midface while maximizing consistency in results and avoiding morbidity. Here is presented a strong bias toward the endoscopic subperiosteal midface lift over other described techniques. This bias is wrought on the basis of extensive trauma experience in accessing the midface and the senior author's experience of over 1200 cases and patient follow-up spanning nearly 20 years. The authors believe the described technique to be safe, effective, and well within the abilities of most practitioners of facial plastic surgery. The endoscopic malar fat pad lift is presented as an alternative technique for surgical rejuvenation of the midface, with emphasis on improvement of the nasolabial fold.

ANATOMY

A thorough understanding of midfacial anatomy is necessary in any attempt at midfacial rejuvenation. The boundaries of the midface are somewhat indistinct and have been defined with variability throughout the literature. The authors find it most advantageous to define the midface as an inverted triangle with the apex at the nasolabial fold. The lateral border is a line connecting this apex to the lateral canthus, and the medial border is a line connecting the apex along the nasolabial fold to the medial canthus. Classically, the superior limit of the midface has been defined as a horizontal line at the inferior orbital rim. In recent years, the concept of the lower lid and the midface as a single interrelated unit has been popularized. The impact of attempts at midfacial rejuvenation on the lower lid cannot be overstated, and thus the authors consider the superior border of the midface to be the inferior border of the lower lid tarsal plate. This supports the need to address the orbicularis oculi sling in midfacial rejuvenation.

The 3-dimensional volume and contours of the midface are best understood by their individual volumetric contributors. The superficial volumetric contributors are the malar fat pad and superficial orbital fat. The middle adipose layer of the midface consists of the suborbicularis oculi fat (SOOF) and medial deep cheek fat. The deep adipose layer of consists of the medial and lateral deep cheek fat compartments (**Fig. 1**).[5]

The malar fat pad represents the thickening of the subcutaneous fat overlying the maxilla. This triangular volume is superficial to the SMAS and creates much of the prezygomatic convexity associated with the youthful midface. Dissections by Rohrich and Pessa illustrate that the malar fat pad is in fact divided into distinct compartments: nasolabial, medial, middle cheek, and lateral temporal cheek. These compartments are separated by condensations of the superficial fascia and with dense dermal attachments.[5] Some of these facial condensations are thought to be the retaining ligaments of the face and may contain perforating vessels.[6]

The subcutaneous orbital fat is also divided into 3 compartments: superior, inferior, and lateral. The inferior and lateral compartments must be considered when addressing the aging midface. The inferior compartment is bounded superiorly by the inferior border of the tarsus, and inferiorly by the orbicularis retaining ligament (ORL), with these 2 structures joining at the medial and lateral canthi. The lateral orbital fat compartment is bounded