

Midface Implants

Surgical and Nonsurgical Alternatives



Diya Tantawi, MD^a, Seth Eberlin, MD^b, Jay Calvert, MD^{c,*}

KEYWORDS

- Facial rejuvenation • Facial implants • Midface implants • Facial aging
- Aesthetic surgical procedures

KEY POINTS

- Midface rejuvenation may be performed on its own or, as is more commonly done, as a component of total facial rejuvenation.
- The major limitation to midfacial lift is the difficulty in providing long-term correction of the nasolabial fold and the malar descent.
- The osteocutaneous ligament must be released with any effective midfacial rejuvenation technique; this firm ligament anchors the skin over the body of the zygoma.
- Ptosis alone does not account for the changes observed in the aging midface; in addition, selective hypertrophy of the upper portion of the cheek fat pad is also observed in the aged face.

INTRODUCTION

The promise for a more natural rejuvenation of the midface, along with the quest for less-invasive eyelid incisions, has led to the refinement of midfacial rejuvenation techniques.

Only recently has the volumetric component of midface aging become a recognized essential clinical finding. The pathways developed to correct this component were repositioning of soft tissues when the displaced volume was adequate and additive when more volume was required to recapture the soft tissue fullness of youth.¹ Recognizing that facial skeletal augmentation remains an essential aspect of cosmetic and reconstructive surgery, most facial plastic surgeons still perform predominantly soft tissue procedures. Skeletal volume enhancement represents the underlying framework, and, therefore, remains an essential

aspect of esthetic and reconstructive facial plastic surgery.

Midface rejuvenation may be performed on its own or, as is more commonly done, as a component of total facial rejuvenation. With age, the convex contour of a youthful face is lost as the malar fat pad descends in an inferomedial direction, resulting in the following:

- HOLLOWED appearance to the lower eyelids
- Skeletonized infraorbital rim
- Prominent nasojugal fold
- Deepening of the nasolabial fold
- Pronounced labiomandibular fold
- Jowling

Correction of ptosis of the malar fat pad and orbicularis oculi muscle is essential in the correction of midface aging.

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^a US Department of the Army, Beaumont Medical Center, Special Operations Task Force, 8th Medical Brigade, Michigan; ^b University of Southern California, Los Angeles, CA, USA; ^c Roxbury Plastic Surgery Clinic, 465 North Roxbury, Suite 1001, Beverly Hills, CA 90210, USA

* Corresponding author.

E-mail address: drcalvert@roxburysurgery.com

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The major limitation to midfacial lift is the difficulty in providing long-term correction of the nasolabial fold and the malar descent. Failure to address skeletal deficiencies with this will compromise final form and function. Technologic advances in biomaterials and implant design have provided surgeons with a variety of different alloplastic options to enhance the facial skeleton. Long-term clinical results have begun to demonstrate the applicability and low complication rate associated with these materials.

Consistent manipulation of the facial skeleton, using a variety of techniques in more than 150 patients over the past 8 years by the senior author, shows that complications have been minimal, with no cases of paresis, minimal degree of facial edema, and, in most cases, patients can return to work within 1 week after surgery.

HISTORICAL PERSPECTIVE

Historically, skin excision with direct closure was the mainstay of facial rejuvenation procedures in the early part of the twentieth century; however, this was proven ineffective. Standard face-lift techniques described midface rejuvenation and lower lid laxity management through a standard or extended face-lift incision, which was somewhat progress; however, with aging, this process proved to be ineffective as well. Periorbitoplasty was first described by Tessier² using a subperiosteal face lift. The beneficial effect of the subperiosteal face lift was extended to the entire periorbital area, involving the origins of the midface musculature, and the orbicularis oculi muscle. Other techniques required a full blepharoplasty incision and a canthopexy for suspension of the midface and for prevention of ectropion and eyelid malposition.³⁻⁵

Ortiz-Monasterio, Tapia and colleagues,⁶ and Ramirez and Pozner,^{7,8} proponents of the subperiosteal plane of dissection, published their techniques of liberating the facial soft tissues from the underlying skeleton. They used principles of osteotomies to recreate volumetric changes in the facial skeleton.

Three-dimensional rejuvenation of the midface and volumetric resculpturing was pioneered by William Little,⁹ as he recognized architectural reshaping of the face for rejuvenation and in the replacement of lost volume during facelift.

Relevant Surgical Anatomy

The malar fat pad is to be addressed in any midface operation. It is a triangular structure that borders the inferior lower eyelid at its waist and the zygomatic arch laterally, down to the modiolus.

Aging causes the malar fat pad to flatten, lose volume, and pull downward.

A structure that must be released with any effective midfacial rejuvenation technique is the osteocutaneous ligament. This firm ligament anchors the skin over the body of the zygoma. Another relevant structure is the trough deformity, which we adhere to the definition as the area located at a position inferior to the orbital rim, where volume loss has allowed the surface anatomy to show the triangular confluence of the inferomedial aspect of the orbicularis oculi muscle, the levator alaeque nasi muscle, and the levator labii superioris muscle.^{1,2,10-12}

Attention to the relevant anatomy of the region and careful handling of tissues can minimize any complications. Poor outcomes can lead to functional anatomic deformities that can be devastating to the patient and the surgeon alike.

Volumetric Analysis and Types of Implants for the Midface

In addition to the standard physical assessment done of the lower lid tone, canthal tilt, lid shape and tear-trough deformity, and nasojugal groove, which is beyond the scope of this discussion. Various methods have been introduced into the literature for midface volumetric analysis of the malar fat pads, suborbicularis oculi fat pad, and the orbital fat, although all depend on the experience of the surgeon to infer a translation of this volume intraoperatively.

A recent study of volumetric analysis of soft tissue changes in the aging midface using high-resolution MRI¹⁰ indicated that ptosis alone does not account for the changes observed in the aging midface. Selective hypertrophy of the upper portion of the cheek fat pad also was observed in the aged face.

Advances in computer and graphic imaging technology are rapidly making an impact on facial plastic and reconstructive surgery. Computer simulation of complex surgical procedures can be obtained in 3 dimensions. Surface volume can be obtained with a laser surface scanner, processed by a computer to create the image. However, because of the financial costs, the verdict is still out regarding the potential uses of this technology. In short, there is no substitute for sound clinical judgment, thorough preoperative facial analysis, and strict adherence to fundamental surgical principles.

Ideal implant technology does not yet exist. The qualities of which are biocompatible, chemically inert, no foreign body or hypersensitivity reaction, noncarcinogenic, and easily shaped. However, a

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