
Endoscopic Aesthetic Facial Surgery: Technique and Results

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The endoscopic approach to forehead and midface lifting has become a popular method of face rejuvenation with minimal incisions. We have performed 67 endoscopic face lift procedures in the last four years. Forehead lifting technique included five small scalp incisions, wide subperiosteal elevation, endoscopic myotomy and forehead tissue fixation with screws, superficial temporal fascia (STF) suture to deep temporal fascia (DTF). Midface lifting technique included temporal 2.5 cm and 1.5 cm vertical intraoral incision, midface subperiosteal undermining and midface elevation with cable sutures of Bichat's fat to DTF.

The age median of patients who underwent endoscopic front lift was 46 and of patients who had an endoscopic front lift and midface lift procedure 40 years. Postoperative complication rate was 7.5 percent and included frontal branch weakness (n = 2), hematoma (n = 1), infraorbital nerve paresthesia (n = 1) and asymmetrical smile (n = 1). The main question is the quality of the results. We have reviewed 49 patients who were followed for 3 months or more. Preoperative and postoperative lifesize photographs were analyzed. Regarding eyebrow position, 91% of the patients had a significant to major improvement, 82% had a major improvement in glabellar wrinkles. We observed cheek elevation, improved nasolabial line, increased volume of malar region, elevation of lip angles in patients after endoscopic midface lift. We have found that important advantage of subperiosteal midface lift, when performed in conjunction with endoscopic brow lift, is its ability to move the cosmetic eye unit proportionally, providing for a harmonious facial appearance.

Key words: plastic surgery, face rejuvenation, subperiosteal face lift, endoscopy

INTRODUCTION

With increasing age and in response to gravitational forces, the fat and soft tissues of the cheek drift downward in relation to the underlying bony skeleton. Subperiosteal elevation provides fixation mechanism for elevating the soft tissue of the face over the underlying skeleton. Subperiosteal rhytidectomy is a procedure designed to rejuvenate the upper and middle thirds of the face by means of bicoronal incision (1, 2). The objective is to elevate the soft tissues over the underlying skeleton to reestablish the patient's youthful appearance (3, 4).

Use of endoscope enables surgeons (3, 5, 6) to minimize scalp subciliary or intraoral incisions for subperiosteal face dissection. Endoscopic brow lift has become the method of choice for forehead and upper orbital rejuvenation for many sur-

geons because of its manifest advantages (Figs. 1.1, 1.2, 1.3):

- Short incision, no scalp resection
- Low risk of dividing sensory nerves
- Decreased hair loss
- Good for patients with alopecia
- Precise muscle modification with the aid of magnification.

We introduced the endoscopic approach to forehead and midface lifting in 1997. It was the first experience of endoscopic aesthetic facial surgery in the Baltic States (7).

Endoscopic surgery requires special anatomical skills, endoscopic surgery experience and special equipment. The equipment used is as follows: a 4-mm straight endoscope, a special videocamera which magnifies the operation view by 10–12 times, light source, TV monitor, long endoscopic elevators (curved and straight), endoscopic scissors, sharp-tipped dissector and electrocoagulator.

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The purpose of this study was to present the endoscopic technique in aesthetic facial surgery and our initial experience of 67 cases.

MATERIALS AND METHODS

We introduced the endoscopic approach to forehead and midface lifting in 1997. It was the first experience of endoscopic aesthetic facial surgery in the Baltic States (7)

Forehead lifting.

We determined the primary and conditional indications for endoscopic forehead lifting (8).

Primary indications:

- Ptosis of the eye-brows
- Significant asymmetry of the eyebrows.

Conditional indications:

- A too small distance between the eyebrows and the eyelids
- Vertical glabella frow lines
- Transversal forehead wrinkles
- Transversal wrinkles of the nasal root.

Endoscopic face lift procedures are done under local anesthesia and monitored intravenous sedation or general anesthesia.

We use 0.5% lidocaini with 1: 200,000 epinephrini for infiltration of the forehead, temporal, malar and sublabial regions.

Forehead lifting operation technique. We have modified the endoscopic subperiosteal forehead technique (5, 9) Fig. 1. Three incisions 1.5 cm long, perpendicular to the hairline are done. Subperiosteal dissection is carried out dorsally. In the temporal regions we use a 2 cm long incision on each side, which runs parallel and 2 cm dorsally to the hairline. Through these temporal incisions we dissect toward the midline, below the superficial fascia of the temporal muscle, until we reach the subperiosteal frontal dissection.

A 4-mm endoscope is then inserted into one of the incisions. Through a second incision a blunt periosteal elevator is inserted to dissect the area of the corrugators, orbicularis and procerus muscles. Then we change to a sharp-tipped special dissector and incise m. depressor supercilli, m. corrugator, the up-



Fig. 1.1. Endoscopic approach to forehead lifting

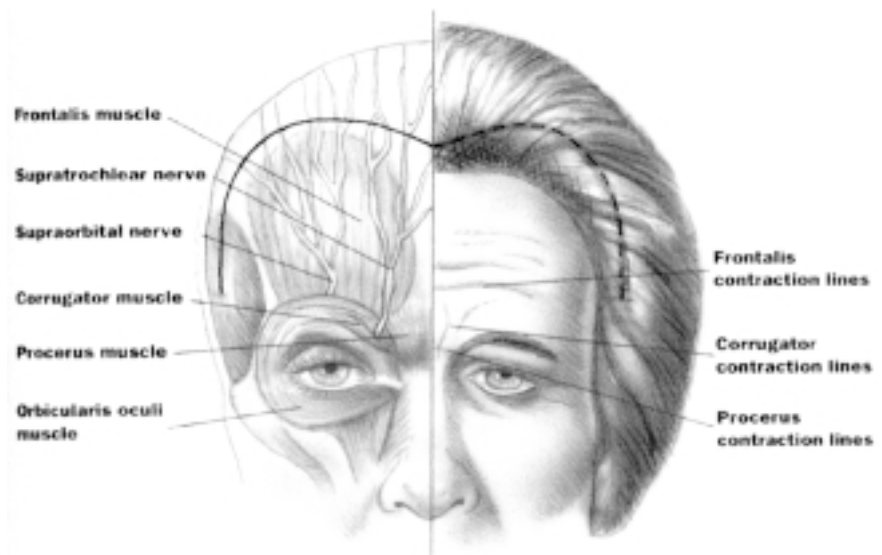


Fig. 1.2. Relation of anatomy of the forehead region and coronal approach during forehead lifting



Fig.1.3. Open coronal approach in forehead lifting

per part of m. orbicularis oculi, m.procerus. Through the temporal incision we cut the adhesio frontotemporalis, which is very important for the elevation of eyebrows. We have found that cutting the adhesio frontotemporalis is enough to elevate the lateral part of the eyebrows. If the clinical situation requires to decrease vertical glabella frow lines and to improve the nasofrontal angle, we perform endoscopic myotomy.

We use only one-point fixation (STF) sutures to DTF in lateral modified eyebrow elevation.

Finally, the elevated forehead tissue was fixed in two ways: first, took sutures were made from the superficial temporal fascia (STF) to deep temporal fascia (DTF) in the temporal region, and second, forehead tissue was fixed with screws.

Midface lifting

The main operative indication was isolated significant ptosis of the deep soft tissue of the middle third of the face. The best candidates for the surgery are young patients (aged 30 to 40 years) with relatively small skin relaxation and good cervical region.

We begin endoscope-assited midface lifing with a small gingival buccal sulcus incision, which is made above the canine tooth and extends approximately 1 cm laterally. Subperiosteal dissection of the anterior maxilla, zygoma, inferior lateral orbital rim and anterior third of the zygomatic arch is performed (10). A headlight is critical for this dissection. The dissection is extended over the tendon of the masseter muscle. Under endoscope visualization the infraorbital complex is identified and preserved.

Next, a temporal scalp incision is made, incising through the temporal fascia. Inferior dissection is initiated in a plane superficial to the superficial layer of deep temporal fascia. Under endoscope visu-

alization, the dissection is continued over the frontal bone, lateral orbital rim and the zygoma, connecting intraoral dissections (Fig. 2). We modified the Ramirez (Fig. 3.1) fixation and created an original two-point fixation method of midface lifting. The first 3/0 PDS or Monocryl suspension suture we make in the lowest point of the ptotic Bichat fat pad to DTF. The second 3/0 PDS or Monocryl suspension sutures the lateral point of Bichat's fat pad to DTF (Fig. 3.2). The first cable suture elevates lip angle and increases the volume of the malar region, the second suture decreases

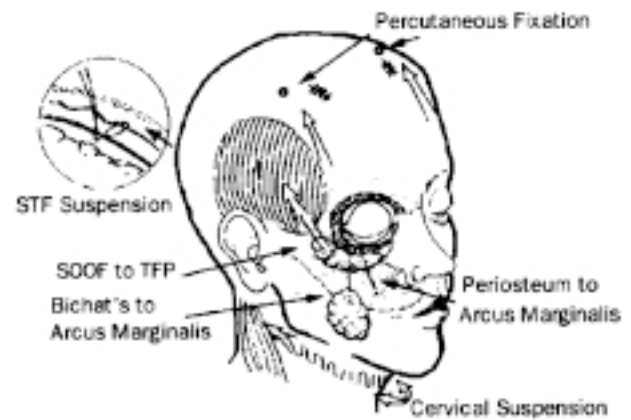


Fig. 3. Midface lifting: suspension sutures according to O. Ramirez

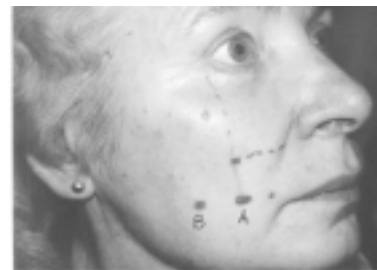


Fig. 3.1 Midface lifting: suspension sutures



Fig. 2. The area of forehead and midface subperiosteal undermining

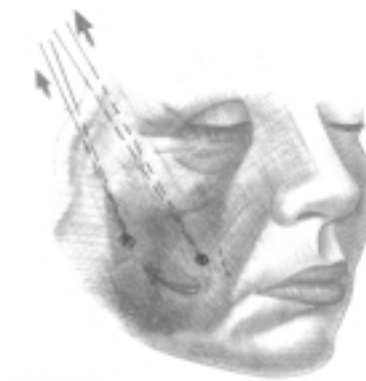


Fig. 3.2. Our original two-point-fixation method of midface lifting: suspension sutures in the lowest (A) and lateral (B) points of ptotic Bichat's fat pad and fix to deep temporal fascia (DTF)

the ptosis of *m. depressor anguli oris* and restore the mandibular line of the face. Finally, we make sutures STF to DTF. The excess scalp and skin is resected, bilateral drains are placed, and the incisions are closed.

RESULTS

Endoscopic subperiosteal face rejuvenation procedures have been performed in 67 clinical cases. There were 65 female and 2 male patients. The age of the patients that underwent endoscopic front lift ranged from 22 to 63 years (median, 46) and of the patients that had endoscopic front lift and midface lift procedure ranged from 27 to 54 (median, 40). In our series, the complication rate was 7.5 percent and included frontal branch weakness ($n = 2$), hematoma ($n = 1$), infraorbital nerve paresthesia ($n = 1$) and asymmetrical smile ($n = 1$); 4.5 percent of complication occurred during our first ten operations. One patient had two complications (hematoma and infraorbital nerve paresthesia). In another 57 clinical cases we had only 2 complications: transient frontal branch weakness and asymmetrical smile.

The main point is the quality of the results. We have reviewed 49 patients who were followed for 3 months or more. Preoperative and postoperative lifeseize photographs were analyzed.

Regarding eyebrow position, 91% of the patients had a major to significant improvement, in 6% the improvement was minimal, and 3% showed no improvement. 82% of the patients showed a major improvement in glabellar wrinkles.

We observed cheek elevation to improve the nasolabial line, increase the volume of malar region, elevate lip angles in patient after endoscopic midface lift (Figs. 4.1, 4.2, 5).



Fig. 4.1. A 37-year-old patient before endoscopic face lift



Fig. 4.2. A 37-year-old patient after endoscopic face lift



Fig. 5. The right side of the face before and the left side after operation. Comment: forehead wrinkles disappear, the contour of the eyebrows changes – the lateral part is elevated more than the medial, the youthful eye in the left side – the lateral angle of the eye is higher than the medial, a decrease lid–cheek junction distance, elevated lip corners and changed the central oval of the face

DISCUSSION

Our technique represents a new approach to face lifting. The endoscopic technique allows rejuvenating face in early forties, when aging process manifests as eyebrow and malar ptosis without skin excess. Midface subperiosteal undermining allows to correct the central oval of the face without preauricular incision. If the patient's face has a laxity of skin in preauricular and cervical region, we perform classical face lifting. The most frequently mentioned complication in subperiosteal lifting is temporary paralysis or paresis of the frontal branch of the facial nerve (2–5% of all clinical cases) (1, 2, 4). We observed two patients (3%) who developed a transient frontal nerve paresis and were fully recovered at

day 53 and day 75 postoperatively. We agree with other authors (6, 11, 3) that careful dissection with endoscopic visualization allows to avoid trauma of the temporal branch of the facial nerve.

We have found an important advantage of subperiosteal midface lift. When performed in conjunction with endoscopic brow lift, it is its ability to move the cosmetic eye unit proportionally, leading to a harmonious facial appearance (Figs. 6.1, 6.2, 7.1, 7.2). We never get a “surprised-look” appearance after endoscopic face lift, which is observed postoperatively in brow-lift patients. The upper cosmetic eye unit is repositioned superiorly, but the lower eye unit is not moved enough in front lift.



Fig. 6.1. A 42-year-old patient before endoscopic face lift



Fig. 6.2. A 42-year-old patient after endoscopic face lift



Fig. 7.1. A 35-year-old patient before endoscopic face lift, upper eyelid surgery and neck liposuction



Fig. 7.2. A 35-year-old patient after endoscopic face lift, upper eyelid surgery and neck liposuction

Subperiosteal midface lifting repositions the lower eye unit so as to eliminate “surprised-look” appearance. Some authors (6, 11) perform midface lifting by placing two suborbicularis oculi fat sutures. We have found this method of fixation helpful in de-flattening the nasolabial line, but not enough for malar region augmentation and cheek elevation. We improved the cheek duplication method (10) and used two-point suspension sutures in the lowest fat and lateral points of Bichat’s fat pad. We have found that our midface suspension method repositions the tissue more gradually and in several directions. We

make suborbicularis oculi fat pad suspension sutures only for patients with festoons.

CONCLUSIONS

According to our experience, endoscopic subperiosteal rhytidectomy is an effective procedure designed to rejuvenate the upper and middle thirds of the face for young patients with a relatively small skin relaxation. Of course, endoscopic subperiosteal lift must be performed by experienced surgeons, because difficulties may be encountered.

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ENDOSKOPINĖ ESTETINĖ VEIDO CHIRURGIJA: TECHNICA IR REZULTATAI

S a n t r a u k a

Šio darbo tikslas – išanalizuoti 67 operacijų endoskopinio subperiostalinio veido pakėlimo techniką ir rezultatus. Aprašyta endoskopinio kaktos ir vidurinės veido dalies pakėlimo technika. Pastebėjome, jog kompleksinis kaktos ir vidurinės veido dalies subperiostalinis pakėlimas harmoningai atjaunina veidą. Endoskopinė technika leido išvengti didelių skalpo ir veido pjūvių. Mūsų pacientų amžiaus vidurkis – 40 metų. Šio amžiaus veidui būdingas antakių ir vidurinės veido dalies audinių nusileidimas, o ne veido odos perteklius ir raukšlės. Endoskopiniu metodu pakelavome nuslinkusius vidurinės veido dalies audinius. Gauti rezultatai nuteikia optimistiškai.

Raktažodžiai: plastinė chirurgija, veido atjauninimas, subperiostalinis veido pakėlimas, endoskopija