Chapter 24

Trends in aesthetic facial surgery: the role of endoscopic brow and minimal access facial lifts

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Introduction

Facial rejuvenation surgery has undergone significant changes. The need for an optimal long-term result with a shorter recovery, fewer complications and reduced scarring has led to a more critical appraisal of traditional surgical techniques and the development of endoscopic, suture/threads and minimal access cranial suspension techniques. This chapter aims to address the roles of endoscopic brow lifting and minimal access facial lifts in facial rejuvenation surgery.

Methodology

A Medline search was employed to gather evidence, using the search terms 'brow lifts', 'rhytidectomy', 'endoscopic brow lifts', 'minimal access face lifts' and supplemented by a hand search of references from the articles obtained.

Endoscopic brow lifting

Anatomy of the forehead

A clear grasp of the anatomy of the forehead, scalp and peri-orbital area, particularly the transition between the tissue planes of the temple and the tissue planes of the forehead along the temporal fusion line, is the key to understanding the mechanism of aging in this area (Figure 1). This will guide the selection of an appropriate technique to reverse these changes. Traditionally we have been taught that the scalp is composed of five layers, skin, connective tissue, aponeurosis, loose areolar tissue and periosteum. Moving from scalp to forehead, the galea aponeurotica becomes contiguous with the superficial temporal fascia, and the periosteum of the frontal bone becomes contiguous with the temporalis fascia. The confluence of these tissue planes occurs just medial to the temporal fusion line of the skull and its continuation as the superior temporal line [1-2]. Near the junction between the temporal fusion line of the skull and the orbital rim is the orbital ligament, a fibrous band connecting superficial temporal fascia to the orbital rim. It limits cephalad superficial temporal fascial movement during forehead flap transposition

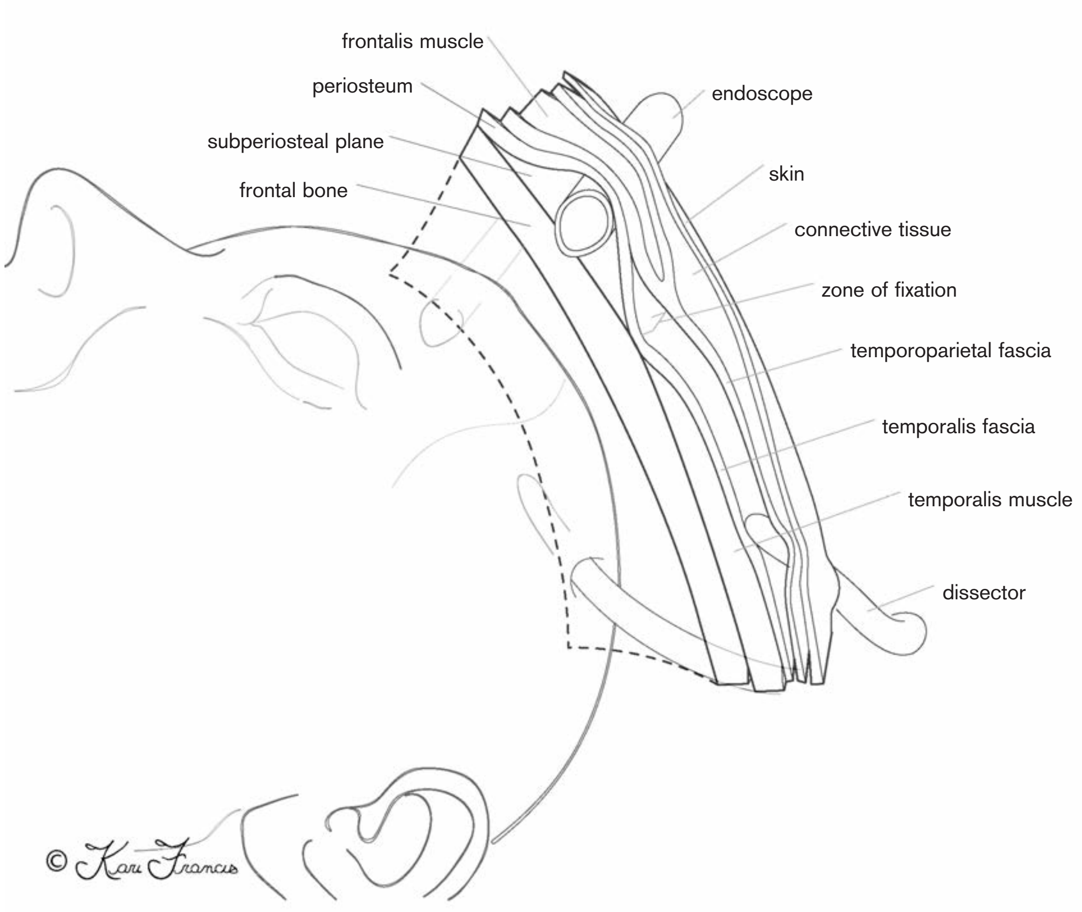

Figure 1. **Anatomy of the forehead.**

by tethering the lateral eyebrow segment to the orbital rim [1, 2].

The galea aponeurotica passes onto the forehead and envelopes the frontalis muscle with a thin layer above and a thicker layer below creating a superficial and a deep galeal layer.

Beneath the deep galeal layer, lies a well defined layer of loose areolar tissue called the subgaleal plane. The subgaleal plane, however, is fused to the periosteum in the lower 2cm of the forehead and in an area just medial to the temporal fusion line of the skull and its continuation as the superior temporal line. The deep galeal layer is further divided into two layers in the lower forehead: one fused with the periosteum and the other lining the deep surface of the muscle creating two spaces:

- The galeal fat pad.
- The subgaleal fat pad glide space which lies deep to the galeal fat pad.

The galeal fat pad extends from 2cm above the orbital rims and across the forehead deep to the lower frontalis muscles, enclosed in the main in a fascial plane that is inserted in the lateral side more inferiorly. Laterally the preseptal fat pad can be found to extend upward over the lateral orbital rim under the descended galea fat pad [1, 2] (Figure 2).

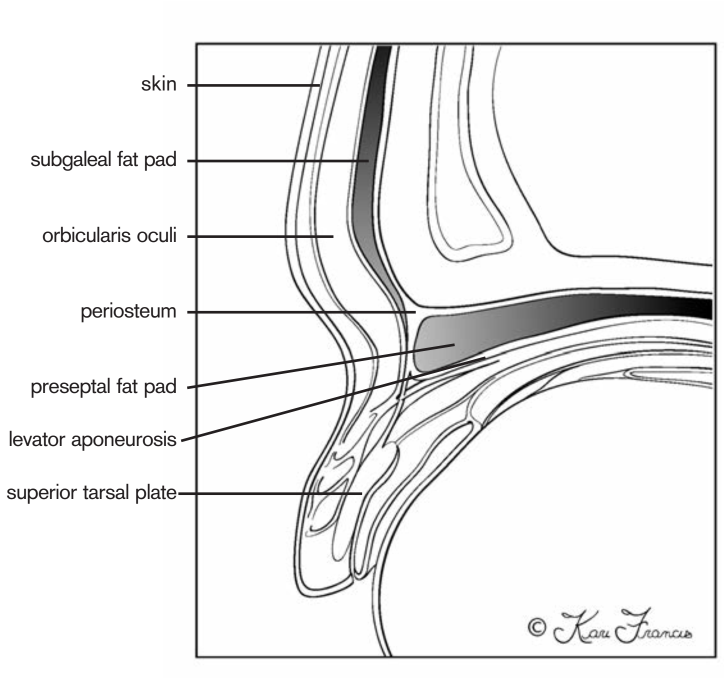

Figure 2. **The galeal fat pad.**

The muscles of the forehead are present in three planes: the superficial (frontalis, procerus and orbicularis oculi) with close adherence to the skin throughout their course, the intermediate (depressor supercilii muscle) and deep (corrugator muscle), both with definite bony origins and direct insertions into the skin (Figure 3).

The frontalis muscle originates from a split in the galea approximately 6-10cm above the orbital rim and inserts into the forehead skin just above the eyebrow with no bony origin or insertion. Medially there is a confluence of the frontalis, orbicularis oculi and depressor supercilii with blending of the procerus. It does not insert laterally beyond the middle and lateral third of the eyebrow with the lateral border of the frontalis corresponding to the underlying superficial temporal crest. Depressor supercilii originates from the nasal process of the nasal portion of the frontal bone 1cm above the medial canthal ligament and

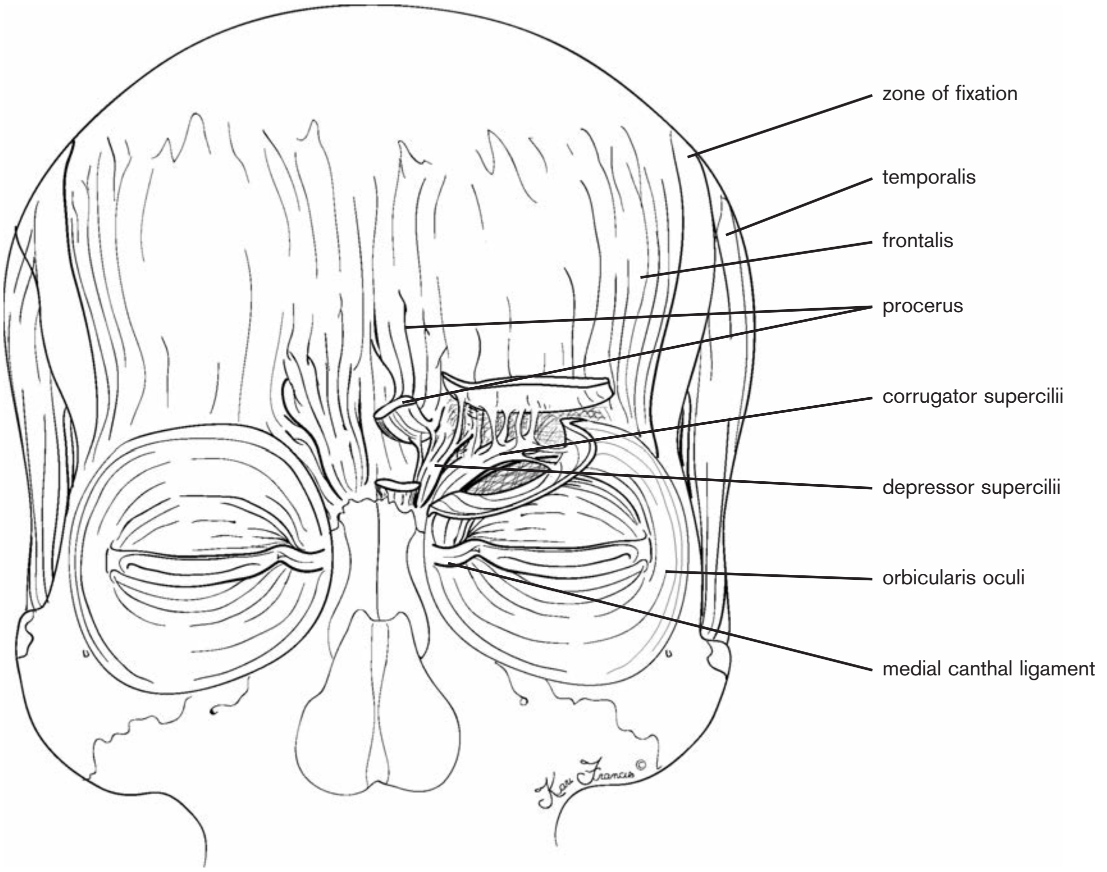

Figure 3. **The muscles of the forehead.**

inserts into the skin beneath the medial head of the eyebrow. It is considered to be distinct from the orbicularis oculi.

Mobility of the frontalis muscle is essentially limited to its inferior 20%, under which exists the galeal fat pad enveloped by the deep galeal plane. The corrugator supercilii muscle passing through the galeal fat pad is incorporated into the roof of the subgaleal fat pad glide space, which then penetrates the frontalis and orbicularis muscles en route to its dermal insertion. Its smooth walls serve as a glide plane surface allowing the corrugator and inferior 20% of the frontalis muscles to move the overlying soft tissues with less resistance. The subgaleal fat pad glide space provides the greatest movement between surfaces [1, 2].

The deep division of the supra-orbital nerve innervating the frontoparietal scalp runs from the orbital rim between the deep galeal plane and periosteum under the glide plane space floor toward the superior temporal line of the skull. It then runs parallel with the superior temporal line and is always found from 0.5 to 1.5cm medial to the superior temporal line [3] until the nerve turns medially to enter the scalp. The superficial division of the supra-orbital nerve runs from the orbital rim over the frontalis muscle to terminate in the anterior scalp in most patients. The frontal branch of the facial nerve runs across the anterior temporal fossa within the superficial temporal fascia before entering the frontalis muscle.

Aging changes

A youthful eyebrow is one in which the medial brow is at or below the supra-orbital rim and the lateral two thirds of the eyebrow is arched or elevated. Aging in the upper face becomes evident with a descent in the level of the eyebrow and the appearance of wrinkles and furrows, sometimes from an early age. One of the earliest signs of facial aging starting is the descent or flattening of the lateral eyebrow [2-6].

Although partly attributable to the progressive laxity of scalp and forehead soft tissues, with age many other structures promoting mobility and gravitational descent of the eyebrow have been shown to be causative. An understanding of these complex interactions is required in order to surgically address these aging changes.

The lateral margin of the frontalis muscle almost always ends or abruptly attenuates along the temporal fusion line of the skull; therefore, the more medially the palpable temporal line intersects the eyebrow, the less lateral eyebrow support is available from the frontalis muscle [2]. Any lateral eyebrow segment not suspended by the frontalis muscle is pushed downward by the descending temporal fossa soft tissue mass and the depressor forces affecting the lateral brow from the orbicularis oris [7]. Unsupported soft tissues superficial to the plane of the temporalis fascia drift downward with aging. This explains, in part, why the lateral eyebrow segment almost always becomes more ptotic than the medial segment. The galeal fat pad over the superolateral orbital rim is relatively mobile and may act as a lubricating surface for lateral eyebrow descent, possibly complemented in this function by the lateral end of the preseptal fat pad [8] when it extends over the orbital rim. The glide plane space, located between the galeal fat pad and the deepest layer of the multi-layered deep galeal plane, also may facilitate lateral eyebrow ptosis through a glide plane effect from its smooth lining surfaces.

A dynamic equilibrium at the lateral eyebrow level exists between the force of descending temporal fossa soft tissue pushing the eyebrow down and the force of frontalis muscle action suspending it. Action of the corrugator and orbicularis oculi muscles may upset this equilibrium by promoting lateral eyebrow ptosis. The strength of orbicularis depression varies from patient to patient [7]. Action of the procerus muscle, the medial orbicularis oculi muscle and the depressor supercilii may promote medial eyebrow segment ptosis [1, 2]. With aging, attenuation of the facial muscles lead to increased wrinkles and furrows.

The goals of surgical rejuvenation of the forehead include reproducible and long-lasting brow manipulation, attenuation of transverse forehead rhytids, and reduction of glabellar frown lines [9].

History

For nearly a century, aesthetic improvements of the aging upper third of the face have remained a challenging problem [10, 11]. Since the earliest description of brow lifting by Passot in 1919 [12], brow ptosis management has undergone evolutionary changes from the classic coronal open brow and anterior hairline techniques to the more recently described, less invasive techniques, such as the minimal incision lateral brow and endoscopic brow lift [2, 4-11, 13-31].

The use of the endoscope in brow lifting was first introduced in 1992 [13, 14]. Elevation in the subperiosteal plane was subsequently described. This early experience was further developed over the next two years. Isse [14] and Chajchir [15] detailed their method of performing a brow lift through small incisions behind the anterior hairline. Isse noted that a dynamic functional lift could be achieved by modifying or weakening the corrugator supercilii and thus addressing the balance of muscular activity between the frontalis and the corrugator supercilii muscle. He also identified the need to vary techniques on the basis of the configuration of the skull, bony architecture, and soft tissue thickness and tightness.

Other elements of the endoscopic brow lift have subsequently been modified. These include placement of incisions, plane of dissection, muscle dissection and method of flap fixation.

Incisions

The number of incisions generally varies between two and five. The length of incisions generally varies between 1.5-2.5cm. The orientation of incisions may vary also [6, 7, 9, 10, 13-26]. Three triangular incisions are used by De Cordier [17], postulating that the triangular flaps will close in a transverse fashion and allow easy introduction of the endoscope with minimal trauma to the surrounding tissues. The centre of the triangle is in the midline and the other two above both pupils. Baker[18] advocates five incisions, a single vertical incision in the midline, bilateral 15mm incisions at the level of the lateral canthus and 25mm bilateral vertical incisions in the temporal area.

Placement of incisions have increasingly been more anteriorly. Frontal hairline incisions have allowed a more precise eyebrow positioning, improving visualisation with increased safety and accuracy. In patients with short foreheads, lifting is improved with incision sites closer to the structure requiring elevation. This is particularly important in patients with very convex foreheads. In patients with long foreheads or male receding patients positioning of the incisions can also be made in the forehead creases [13-26].

Plane of dissection

The main discussion regarding plane of dissection is between subgaleal and subperiosteal dissection or a combination of the two. The first description of subperiosteal dissection was introduced in 1994 [15, 16]. It has been postulated that the inherent rigidity of the tissues overlying the subperiosteal dissection mean that this technique is the most effective at lifting the brow and less likely to suffer from stress relaxation. Also, the scarring following subgaleal dissection produces variable adherence of the tissues to the pericranium with potentially unnatural forehead activity. Finally, the subperiosteal dissection preserves the areolar tissue at the galeal-periosteal interface, maintaining the normal gliding of the frontalis muscle complex over the periosteum [19].

A number of authors have advocated a subgaleal plane posteriorly and a subperiosteal plane for the anterior dissection with a change of planes in the central portion of the forehead. It is generally accepted that as long as the dissections continue down to the orbital rims and nasal bones, that if the galea is released from the periosteum at the supra-orbital rim, the difference in plane has minimal bearing on the overall result [9].

Ramirez [21, 22] has suggested a biplanar endoscopically-assisted forehead lift in patients with a very furrowed or high forehead or with pronounced brow ptosis or asymmetry. By undermining the skin of the superior 3-4cm of the forehead, a more direct impact can be made on the fibrous septae between the muscle and the dermis. This may benefit patients in whom the subgaleal or subperiosteal elevation may not address possible skin redundancy [17].

A US national survey showed that the most common plane of endoscopic dissection was subperiosteal followed by subgaleal and, finally, a combination of both [23] **(III/B)**.

Muscle dissection

Procedures dedicated to forehead rejuvenation address transverse forehead rhytids and reduction of glabellar frown lines, while maintaining long-term brow manipulation.

Action of the corrugator and orbicularis oculi muscles may promote lateral eyebrow ptosis while the procerus muscle, medial orbicularis oculi and depressor supercilii, may promote medial eyebrow segment ptosis. Individual patients must be assessed pre-operatively to determine which portions of the eyebrow are ptotic. The weakening of these muscles is determined by pre-operative function and the result the patient wishes to achieve. It is generally accepted that ablation of the brow depressors is an integral part of the endoscopic forehead lift [17] **(III/B)**. Modifications include muscular detachment, myotomies, myectomies and neurotomies to denervate the brow depressors [10]. Treatment of the corrugator, depressor supercilii and procerus will improve the transverse, oblique and vertical wrinkles of the glabella in addition to elevating the medial brow [17].

Deep transverse lines or furrows are a common complaint caused by contraction of the frontalis. Opinions remain divided on whether to incise/excise a portion of the frontalis to limit its contraction or rely on the transverse lines vanishing once the eyebrows are restored to their normal height and the frontalis relaxes. The need to treat being more apparent in those with thick skin.

Methods of fixation

Fixation of the endoscopic brow has proved difficult and many techniques have been advocated. The frontalis muscle is a powerful elevator medially and centrally but has limited attachments to the lateral third of the brow, and the orbicularis oculi is a stong lateral brow depressor. It is, therefore, difficult to overcome the dynamic depression of the orbicularis oculi, which produces recurrent lateral brow descent after any brow lifting technique with a static lift. The onus of the static lift is dependent upon obtaining secure intra-operative fixation [9].

Fixation devices may be either endogenous or exogenous. Endogenous methods include: extensive galea-frontalis-occipitalis release, lateral spanning suspension sutures, external bolster fixation, anterior port skin excision, galea-frontalis advancement, cortical tunnels, and tissue adhesives. Exogenous techniques include: internal screw or plate fixation, Mitek anchor fixation, external screw fixation, and absorbable K-wires [9].

Fixation should hold the brow tension free not pull or distract the brow. If the fixation is performed under tension, brow ptosis will recur and alopecia may develop from the vertex of scalp tension. Fixation must hold the brow position until enough healing has occurred to prevent recurrence. Romo *et al* [24] demonstrated in a rat model that it requires three months for the periosteum to completely heal after periosteal elevation in the frontal region.

Fixation must be simple, reproducible, safe and give long-term results, while being cost-effective. The ideal fixation device has yet to be defined (Table 1) **(III/B)**.

Other methods of forehead lifting

The main benefits of endoscopic brow lifting, as compared with the classical bicoronal open lift [30, 31], are related to the limited access incision and the associated decreased incidence of alopecia resulting from the shortened scar. There is also the advantage of not dividing the deep branch of the supra-orbital nerve producing a lower incidence of numbness and postoperative neuralgia after endoscopic techniques. From an aesthetic standpoint the long incision of the coronal brow lift has several disadvantages. It is situated distant to the eyebrow and thus long-term fixation is more difficult. A 2:1 ratio of scalp resection to eyebrow elevation is required via the coronal

Table 1. Comparative factors in fixation devices for endoscopic brow lifts.

	Effectiveness	Technical complexity	Risk of complications	Cost
Suture fixation	+	+	+	+
Cortical bone tunnels	+++	+++	+++	+
Internal screw fixation	++	++	++	++
External screw fixation	++	++	++	++
Tissue adhesives	+	+	+	++

approach accounting for the significant hairline shift commonly associated with this procedure. The long-term fixation is also achieved by scalp excision only, which is less stable compared with the more rigid fixation of securing scalp to calvarium as seen in the endoscopic lifts. As the posterior scalp is a mobile structure there is a tendency for the posterior scalp to re-descend. Controlling brow shape is more difficult with long scar techniques with the tension of fixation distributed along the incision. It cannot address individual portions of the brow. Endoscopic techniques allow access incision placement directly superior to the region that requires elevation [25].

Complications, however, of endoscopic brow lifting include alopecia, hairline position change, asymmetry, prolonged paraesthesia over the forehead/brow area, scalp dysaesthesia and frontal nerve paralysis [23, 26]. It would seem that the initial surge of enthusiasm for the endoscopic technique has since tailed off with a decrease in the number of procedures performed. Possible reasons include more stringent criteria for patient selection and the use of other equally or effective medical and surgical techniques [23]. These include surgery through the upper eyelid, minimal incision brow lift/foreheadplasty [2-6, 29], minimally invasive thread/mesh/suture suspension [27, 28], botulinum toxin injections and laser resurfacing [10, 11].

Minimal access facial surgery

Facial rejuvenation surgery continues to evolve with more consideration given to minimal downtime while providing instant results, which are longer lasting. This has become especially important for younger patients or for those wishing for minimal changes in appearance. The introduction of minimal access face lifts will be discussed in the remainder of this chapter [32-50].

Anatomy

In the midface, the superficial musculo-aponeurotic system (SMAS) is a fascial layer separating the subcutaneous fat from the fascia enveloping the parotid gland, the mimetic muscles, and facial nerve branches. The SMAS is an extension of the superficial cervical fascia into the face and is continuous with the temporoparietal fascia in the temporal region. The SMAS is thickest over the parotid region and becomes thin in its anterior extent over the malar region. The malar fat pad, a triangular subcutaneous structure based at the nasolabial fold with its apex at the malar eminence, lies superficial to the SMAS in the anterior midface. Ligaments from the periosteum of the zygoma run through the subcutaneous portion of the malar pad and insert directly into the dermis [32]. The SMAS extension (the temporoparietal fascia) invests the frontal (temporal) branch of the facial nerve (cranial

VII) and the branches of the superficial temporal artery. This superficial fascia is separated from the deep temporal fascia by loose areolar tissue [34]. The deep temporal fascia covers the temporalis muscle and splits to envelop the periosteum of the zygomatic arch [33]. Both subcutaneous dissection planes and that immediately above the deep temporal fascia will avoid damage to the frontal branch of the facial nerve.

Aging

The malar fat pad is the focus of the central third of the face whose borders include the nasolabial fold, the infra-orbital rim, and the zygomatic prominence. It is fixed by fibrous septae or suspensory ligaments and attached to the mimetic muscles below and to the dermis superficially.

With age, characteristic changes occur in the central third of the face. Gravity and the repeated actions of facial animation stretch the suspensory ligaments, resulting in a gradual descent of the malar fat pad and the overlying soft tissues. As the pad descends, the malar eminence becomes flatter, the nasolabial fold becomes deeper and more prominent, progressive jowl formation disrupts the smooth line of the mandible, and loss of tissue in the infra-orbital region creates a tired, hollow appearance that characterises the aging face. Correction requires proper identification and mobilisation of the malar fat pad to reposition the architecture and recreate a youthful appearance [32-35]. Traction on the malar fat pad in a supero-oblique direction, along a line from the midportion of the nasolabial crease to the junction of the zygoma and temporal bones, elevates the skin of the medial cheek and flattens the nasolabial fold.

Surgical goals for midface rejuvenation include elevation of the corner of the mouth, restoration of the prominence of the cheek, and improvement of the nasolabial fold.

Unlike the midface, the aging changes of the lower face and neck occur at a plane of descent deep to the SMAS, at the fascial cleft between the superficial and deep facial fascia layers. The platysma has a single small bony attachment at the anterior mandible and is chiefly supported by the midcheek SMAS. The SMAS has been shown to develop aging changes characterised by conversion of elastic connective tissue to fibrous connective tissue, with loss of elasticity and tone, similar to that seen occurring in skin. These changes in the skin and SMAS result in decreased support for the skin, platysma, and subcutaneous fat in the lower face and neck, which undergo gravitational descent at the plane between the SMAS and the underlying deep cervicofacial fascia [36, 37].

History

Almost three decades ago the SMAS was described by Mitz and Peyronie [38], and Skoog [39] demonstrated that dissection could be performed beneath the SMAS, and a new era in face-lift surgery began. In 1977, Owsley [32] reported plicating the SMAS tissue, which gave an optimal traction of the lower facial tissues. During the following years, different surgeons chose to use the SMAS in different ways, but typically, a single large flap was elevated over the lower cheek. In the early 1980s, Jost and Lamouche [40] published articles on resection and even segmentation of the SMAS flaps pulling in different directions. Recently, Baker [41] published his work on short scar face lifts with a lateral SMASectomy. Saylan [42, 43] described a technique that required a modified SMAS plication in purse-string form with the soft tissue (the SMAS, the parotid fascia, and the extension of the platysma of the submandibular region) being pulled together by means of U- and O-shaped purse-string sutures with multiple small bites and fixed to the periosteum of the zygomatic bone [42, 43]. This was performed via an S lift which Tonnard subsequently modified as the MACS lift (minimal access cranial suspension lift) combining the U- and O-suture techniques with a malar fat pad hitching suture (extended MACS) [44, 45]. Various other midface suspension techniques have been described using sutures [33, 46, 47] in different planes [33, 46, 47]. Subperiosteal undermining and repositioning with sutures *en bloc* have been incorporated into minimally invasive endoscopic-assisted mid and lower face-lift procedures. In 2000, the use of threads and barbed sutures was introduced into facial cosmetic surgery as a no downtime facial rejuvenation procedure either on their own or as an adjunct to other surgical procedures [48-51].

Minimal access cranial suspension

The MACS lift is a facial rejuvenation procedure used to correct the aging neck and lower third of the face, and can be extended to address the middle third of the face (extended SMAS). The technique is a pure antigravitational facial rejuvenation achieved by acting on the deep facial soft tissues and the skin in the same vertical direction. Strong purse-string sutures are anchored to the deep temporal fascia and zygomatic arch following minimal skin undermining through a pre-auricular and temporal prehairline incision [44, 45].

With a simple MACS, two purse-string sutures are used for correction of the neck, the jowls and the marionette grooves. They both are anchored to the deep temporal fascia above the zygomatic arch 1cm in front of the auricular helix. The first suture runs as a narrow vertical U-shaped purse string to the region of the mandibular angle. Tying of this suture under maximal tension produces a strong vertical pull on the lateral part of the platysma muscle correcting the cervicomental angle of the neck region, which has been liposuctioned previously. The second purse-string suture starts from the same anchoring point above the zygomatic arch and runs obliquely in the direction of the jowls as a wider O-shaped loop. This suture corrects the jowls, the marionette grooves, and the downward slanting of the corners of the mouth. With the extended MACS, an additional undermining of the skin over the malar region is performed. A point marked 2cm below the lateral canthus is marked, with the patient in the standing position and is the inferior limit of the third purse-string suture. This suture also originates from the deep temporal fascia, but in its anterior part, lateral to the lateral orbital rim. It provides a strong correction of the nasolabial fold, an enhancement of the malar region, a lifting of the midface, and a shortening of the vertical height of the lower eyelid [44, 45].

With both the MACS and extended MACS, the skin redraping is in a pure vertical direction and the skin excess tailored at the temporal incision. The malar stitch leads to an excess of skin at the lateral lower eyelid which can be adjusted via a lower lid blepharoplasty incision [44, 45].

Early results of this technique have shown satisfactory results of almost 95%, with the remaining patients undergoing subsequent additional procedures to the neck, either anterior or posterior cervicoplasty. However, long-term results of this technique are not yet available [44, 45].

Threads and sutures

Threads/sutures can be used as the sole means of tissue repositioning in a closed approach, or as part of an open facial rejuvenation approach that may incorporate an endoscopic, supraperiosteal or subperiosteal face lift [46-51]. The cephalad reposition of the cheek tissues brings about a series of effects on the surrounding adjacent tissues. Therefore, in addition to elevation of the malar area, results may include shortening of the lower eyelid distance, flattening of the nasolabial fold, elevation of the submalar tissue, improvement of jowling, and a decrease in fullness of the submalar area.

Indications for the procedures include descent of mid and lower face fatty tissues, palpable fatty tissue of good volume, unwillingness to undergo conventional face-lift surgery, contraindications for more invasive facial surgery (hypertension, previous cardiac surgery, diabetes, heart problems), a facial configuration characterised by voluminous facial fatty tissue in a round face so that the conventional face lift would likely not yield sufficient results, no excess skin flaccidity, a secondary lift with insufficient result in the centre oval of the face, and late or congenital facial paralysis [46-51].

Contraindications to use of threads/sutures as the sole procedure include insufficient facial fat volume, presence of marked wrinkles, excess skin, a positive HIV test, medication that causes fat atrophy and skin with cystic acne [46-51].

Various threads and sutures have been described. They vary in terms of positioning and the tissues being elevated, the number/length of the sutures/threads and the composition of the threads/sutures themselves [46-51].

Many of these procedures utilise non-absorbable sutures in the dermis and subcutis to lift lax skin. Sasaki [46] found that non-absorbable sutures allowed a longer-term result than absorbable sutures and elevation of the malar fat pad was better with two sutures rather than [1]. More recently, he utilised Goretex grafts with improved results.

If threads/sutures are incorrectly placed, the skin becomes merely puckered or may even become depressed. The threads/sutures may be placed too superficially and cause visible dimpling and tethering, or may be placed too deeply and have little effect. Complications of 25-30% with barbed sutures have been described with palpability, migration, infection, skin dimpling, extrusion, and hyperalgia being the commonest [50, 51]. Suture fixation has shown complications of 10% in larger series [46].

The durability of threads/sutures in facial rejuvenation is unknown long term and asymmetry of cosmetic effect may require correction with additional sutures [46-51].

Conclusions

Endoscopic brow and minimal access facial lifts provide facial rejuvenation with limited scarring. They can provide long-term results with a shorter downtime, when compared with more traditional surgical techniques, in a carefully selected patient population.

Recommendations	Evidence level
◆ The most common plane of endoscopic dissection is subperiosteal, followed by subgaleal and, finally, a combination of both.	III/B
◆ Action of the corrugator and orbicularis oculi muscles promote lateral eyebrow ptosis, while action of the procerus muscle, medial orbicularis oculi and depressor supercilii promote medial eyebrow segment ptosis. Treatment of the corrugator, depressor supercilii and procerus improve the transverse, oblique and vertical wrinkles of the glabella in addition to elevating the medial brow.	III/B
◆ The ideal endoscopic forehead fixation device has yet to be defined.	III/B
◆ Minimal access cranial suspension face lifts result in shortened scars.	III/B
◆ Minimal access cranial suspension is an antigravitational facial rejuvenation achieved by acting on the deep facial soft tissues and the skin in the same vertical direction.	III/B
◆ Thread/suture-only facial rejuvenation surgery has been associated with increased complications.	III/B

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