The Fundamental Concepts of High SMAS Facelift: Literature Review

Gede Wara Samsarga¹, I Made Suka Adnyana¹, Astrinita Lestari Suyata¹, Shita Diwyani Sudarsa¹, Dewa Ayu Agung Anggita Ningrat²*

ABSTRACT

A number of facelift procedures have been introduced by many surgeons but there is no consensus has yet been established to carry. Since the first description of superficial musculoaponeurotic system (SMAS), it is used as the basis for many facelift methods that produce superior result in rejuvenation compared to traditional skin only facelift. Extended SMAS facelift becoming SMAS modification techniques that is still being developed. It produces two different vector of subcutaneous and SMAS flap, that is essential to restore dropping deep facial tissue with natural appearance. Despite the beneficial use of extended SMAS flap, most of plastic surgeons still traditionally incise the SMAS under the zygomatic arch. However, the low SMAS incision results only on rejuvenation of the lower face and is not sufficient to correct mid-facial aging. Fundamental concepts of high SMAS facelift by reviewing some literatures explain that high SMAS flap transaction allowing the surgeon to achieve greater vertical elevation of the deep structures of the face by undermining the middle face, combined with fixation to a fixed structure produces lasting results and oblique vector of skin envelope creating no tension look. Incision above zygomatic arch turns out to be safely performed without facial nerve injury thorough knowledge of the anatomy. The final result is a balanced and harmonious elevation of sagging tissues of the midface, cheek, and jawline, to such an extent that high SMAS facelift becomes optimal, durable, technically simple, reproducible and with a comparatively high safety margin in facelift procedures.

Keywords: Facelift, High SMAS, Low SMAS, Rejuvenation.


INTRODUCTION

The goals of a face lift are fairly the same across surgeons. All surgeons strive to carry are optimal, durable, technically simple, reproducible and with a comparatively high safety margin.

Many surgeons have presented a variety of facelift and their variations, but still a moment has yet been reached regarding a generally better process or distinct indications for different surgical approaches. As a facial rejuvenation alternative, an advanced facelift procedure that precisely targets the superficial musculoaponeurotic system (SMAS) is becoming more and more popular and being developed.¹

However, there is no consensus has yet been established for rejuvenating faces. In addition, despite research comparing various face lift procedures, there are still no conclusive surgical indications for a facelift. The personal perspective of each surgeon still has a significant impact on the surgical approach used in the field of plastic surgery. To use the best facelift techniques for their patients, surgeons must be aware of the key components of each operative procedure.

“High SMAS” facelift became the author’s choice based on a review of some literatures on the concept of high SMAS facelift. This review will discuss the fundamental concept of the “high SMAS” facelift, including facelift-related anatomy, the importance of SMAS, the benefit of using high SMAS, the comparison of high SMAS facelift and traditional-low SMAS facelift, and the main concepts of high SMAS facelift surgical techniques.

FACELIFT RELATED ANATOMY

Anatomical descriptions of the retaining ligaments, danger zones, and superficial-musculo-aponeurotic system (SMAS) further enhanced our understanding of the intricate facial anatomy.

Layers of Face

The skin, superficial fascia (SMAS), and deep fascia are placed in a sequence of concentric layers on the face, going from superficial to deep. Skin and subcutaneous fat make up the top two layers, followed by SMAS. The superficial temporal fascia (temporoparietal fascia) and galea are cephalically connected to the SMAS, which is continuous with the platysma caudally. The parotidomasseteric fascia, which is attached to the parotid gland and merges superiorly with the deep temporal fascia, makes up the third layer.¹

Over the parotid, the SMAS is clearly defined laterally, but as it advances medially, it becomes thinner. Being the cranial extension of the neck platysma,
the lower face tends to be muscular. The superficial temporal (temporoparietal) fascia, which integrates superiorly with the frontalis muscle, the galea aponeurotica, and the orbicularis oculi, extends across the zygomatic arch but is typically aponeurotic in the mid-and upper face.1,2

**REVIEW**

**Importance of SMAS**

The platysma muscle, the parotid fascia, and the fibromuscular layer covering the cheek make up the superficial musculoaponeurotic system, or SMAS, which is frequently described as an organized fibrous network.4 This system, which has region-specific anatomy, separates the deep and superficial adipose tissue of the face. The superficial facial muscles, including the frontalis, inferior orbicularis oculi, mid-face levators, and orbicularis oris, are all covered by the SMAS, a thin layer of fascia that lies on top of the platysma.5

These muscles can be tightened in order to tens the SMAS. The SMAS then transmits these stresses to the overlaying dermis via the fibrous septa to produce face movement from the central facial muscles. The temporoparietal fascia, which is located above the zygoma, is isometric when the SMAS thickens above the parotid gland and in the temporal region.6

Our faces change shape as we move and express ourselves because the skin is elastic. It is unable to sustain support for deeper facial tissues that are sagging. Skin is not a support; it is a covering. Since drooping facial tissues are strongly related to the superficial musculoaponeurotic system (SMAS), repositioning them makes sense. Because of its inelastic nature, the SMAS can offer the midface, cheek and jowl region, and periorbital region with firm and long-lasting support. While pulling on the SMAS increases curves, pulling on the skin flattens out facial features.4

The SMAS can be used to restore drooping deep facial tissue, which retains natural skin function and gives the skin a more natural appearance. Skin incisions heal naturally and without stress. Natural preauricular outlines are kept. Furthermore, employing the SMAS prolongs the life of a facelift.5

**HIGH SMAS FACELIFT BENEFIT**

**Traditional Facelift**

Traditional facelifts merely raise the surface skin flap, which does not lift the skin beneath the zygoma or have a long-lasting effect. Additionally, over time, the classic simple facelift results in subsequent skin drooping because of poor facelift surgery fixation. As a result, the layer between the superficial skin and the SMAS layer becomes separated, eventually leaving a noticeable scar along the incision line. To avoid scarring, the deeper layer of skin around the incision should be sutured.6

For almost three decades, operations focused on the superficial musculoaponeurotic system (SMAS) have been the mainstay of facial rejuvenation techniques. Since the SMAS’s first description by Mitz and Peyronie in 1976, plastic surgeons have utilized it successfully as the basis for many facelift methods. The fundamental idea of using the SMAS to restore facial youth has stood the test of time and has developed into a trusted method to accomplish facial rejuvenation, regardless of whether a SMAS lift or plication is carried out.6,7

**Low SMAS Facelift vs. High SMAS Facelift**

Despite the SMAS’s beneficial use, most plastic surgeons only incise the portion of the SMAS below the zygomatic arch. The alterations brought on by mid-facial aging have not historically been addressed by these operations. The nasolabial fold deepens with mid-facial aging, the malar fat pad descends with loss of malar prominence, the lower eyelid skin descends below the orbital rim, and the tear trough deepens. A low SMAS facelift or an infra-zygomatic procedure cannot appropriately address these alterations. Connell and Barton’s successful use of the high or supra-zygomatic arch SMAS has inspired us to make this operation the cornerstone of our facial rejuvenation regimen. The mid-face can rotate in a wider arc thanks to the high SMAS, which is located above the zygomatic arch. Raising the malar fat pad vertically and softening the nasolabial fold results in a more rejuvenated midface.6,9

More of a lateral facial pull is observed after conventional facelift surgery. This pull vector does not always meet the patient’s needs since it ignores the alterations brought on by mid-facial aging. By enabling the surgeon to achieve a vertical vector elevation of the deep fascial system while also allowing for an oblique vector elevation of the skin envelope, the high
SMAS facelift approach produces a unified and natural lift. Dissecting superior to the zygomatic arch is the primary difference in the high SMAS facelift. The SMAS is dragged more vertically after being undermined. Instead of the SMAS’ cut superior edge, it is thus attached to the deep temporal fascia.

Fixation is not a reliable anti-gravity technique by itself. The SMAS needs to be separated, raised, and then fastened to a fixed framework. The high SMAS approach, when paired with attachment to a stable structure, gives long-lasting benefits by allowing for a larger vertical elevation of the deep facial tissues. The deep temporal fascia is the permanent structure in the high SMAS facelift. Although this method softens the mid-face more, it is not frequently used out of concern for frontal branch damage. It enables fixation to the robust, deep temporal fascia and enables the entire face and neck envelope to be compressed. The nasolabial fold becomes softened as a result. The malar structures have been brought back to a more youthful state. The SMAS-Platysma Complex can be pulled vertically by extending the dissection inferiorly to the platysma. The entire facial musculoskeletal corset is tightened as a result. There is no stress on the skin of the face since the SMAS is attached to the deep temporal fascia. The writers have discovered that this method is secure, dependable, and yields great long-lasting results.

Based on figure 1 (A), Note that the upper border of the flap lies below the zygomatic arch. Low SMAS flap after dissection and suspension (B). The area of flap effect (solid green circle) is limited to the lower cheek and jowl, and no improvement is obtained in the midface, infraorbital, or perioral regions (black dashed circle). Note that the upper border of the flap lies over the zygomatic arch (C). High SMAS flap after dissection and suspension (D). The area of the flap effect (solid green circle) also encompasses the midface, infraorbital, and perioral regions (black dashed circle), in addition to the cheek and jowl.

**SURGICAL TECHNIQUE**

**Skin incision**

Poor incision design can cause unnatural and aberrant anatomical changes, including tragal malposition, scarring, hair loss, loss of the temporal hair tuft, and pixie ear deformity.

The skin incision showed in figure 2. The maximum distance from the lateral canthus to the temporal hairline that is advised is 4 cm (W). Traditional temporal scalp incision (A—red line) is safe to employ if pinch test skin shift measurements X and Y when added to the already existing distance W, do not exceed 4 cm. The prehelical flap, sometimes known as the “rescue” flap, is a tiny anterior deviation in the lower temporal scalp incision (point B). This stops unexpected face skin without hair from penetrating the sideburn and temporal scalp. A temporal hairline incision pattern is advised if the temporal hairline (C—green line) moved by skin advancement is greater than 4 cm from the canthus. To avoid visibility in this sparse area, the incision ends short (superiorly) of the frontotemporal hairline (shown by the arrow).

The postauricular crease should receive the retroauricular incision (orange dashed line). Expected occipital skin shift (Z) is measured for occipital incision design under the assumption of optimal tangential redrape as indicated. The retroauricular incision crosses the exposed portion of the mastoid at the level of the superior auditory meatus to create the occipital scalp incision (D—red line) if the skin displacement is less than 2 cm. The retroauricular incision follows the same path and then follows the occipital hairline (E—green line) if the skin displacement is larger than 2 cm.10

---

**Figure 1.** High and low SMAS techniques compared.
Temple Dissection
We employ a two-plane approach and protect the superior temporal vessels in the temple. The temporal hair-bearing fasciocutaneous flap that is located anterior to the incision is undermined when the dissection is deeper and carried through the galea (superficial temporal fascia) to the fascia of the temporalis muscle. This dissection should be carried anteriorly to the lateral brow, inferiorly to the mid-temple, and superiorly to the temporal crest. It is typically simple to complete.\textsuperscript{6,12}

SMAS Dissection
With thorough knowledge of the anatomy of the frontal and zygomatic branches of the facial nerve, high SMAS flap transection is safe. The facial nerve's branches are visible and well-preserved. The SMAS is dissected using sharp scissors to be freed from the masseter muscle, parotid gland, and SMAS malar connection. Unless the surgical approach of elevating the skin over the SMAS causes injury, the SMAS flap is always sufficient for supporting the face.\textsuperscript{8}

At the upper edge of the zygomatic arch, the SMAS is dissected. The orbicularis oculi muscle is divided as the dissection reaches the corner of the lateral canthus. The parotid and masseter muscles, which are medially and inferiorly to the platysma, are next dissected. It is frequently possible to achieve the desired vectors for the cephalad support of the cheek, jowl, midface, submental area, periorbital region, lid-cheek junction, and angle of the mouth without the need for a third flap by making an incision on the upper part of the zygomatic arch that is high enough. The SMAS is released from the lateral zygomatic eminence superficial to the zygomaticus major when sub-SMAS dissection is carried medially till the zygomaticus major is encountered.\textsuperscript{8}

SMAS Suspension
After the SMAS flap has been raised and fully released, the superior edge of the flap is grabbed and moved in different directions to achieve the best results, partial separation of the skin flap from the SMAS (lamellar dissection) is required.\textsuperscript{10}

**Figure 2.** Incision design. Periauricular, scalp, and hairline incision.

**Figure 3.** Proper and improper vector of SMAS shift.

**Skin Flap Elevation**
Particularly in the preauricular region and over the upper-medial cheek, where a deep dissection can harm the underlying SMAS and impair its utility as a flap, skin flaps should be lifted abruptly under direct eyesight and blind dissections avoided. The underside of the flap, however, has a distinctively rough, pebbled or cobblestone appearance and is more yellow in color if dissection is done in the correct plane. Because skin and SMAS flaps must be advanced in opposing directions in order to achieve the best results, partial
This is along a posterior-superior vector parallel to the long axis of the zygomaticus major muscle in all but the most unusual cases. If the mesotemporalis is softly pressed inferiorly while sutures are being inserted, suspension in this way is substantially assisted. This method safely suspends the upper cheek, jowl, and midface while avoiding any damage to the frontal branch of the facial nerve. There is no requirement for or recommendation for suturing over the zygoma or along the infraorbital rim.\textsuperscript{6,9}

Based on figure 3, The SMAS should shift in a path that is parallel to the zygomaticus major muscle’s long axis (A). The function of the zygomaticus major muscle is affected if the SMAS is moved along a posteriorly oriented vector (B) rather than along its long axis. This may cause the nasolabial fold to deepen, give the mouth the appearance of being pulled, and cause aberrant facial movements. When a vertical vector (C) is employed in a vertical facelift, an analytical difficulty arises.\textsuperscript{6,13}

**Skin Flap Repositioning Skin Flap Trimming and Closure**

The skin is redraped in an oblique orientation based on the correct vector of SMAS lift after the SMAS has been fixed. After that, the skin can be pulled and redraped in a more horizontal plane to give the area a more natural appearance. Without applying strain, the skin is first fastened above and behind the ear. Then the temple skin is cut and tension-free inserted, and finally, the occipital skin. The pre-tragal skin is adjusted and loosely inserted into the retro-tragal position.\textsuperscript{6,12}

**Post Operative Care**

Patients are told that it frequently takes two to three months to appear excellent in a picture or to be recognized at a significant event. They are also told to anticipate some rigidity and numbness in the facial and submental regions for a period of six to nine months. During the first few weeks following surgery, patients are recommended to refrain from any strenuous activities, including heavy lifting, stooping, straining, and forward bending.\textsuperscript{5,9}

**CONCLUSION**

In conclusion, the high SMAS makeover enables the SMAS to be pulled primarily vertically. The deep temporal fascia is intimately attached to the vertical vector. The SMAS-platysma complex is dragged laterally in the neck and anchored to the mastoid fascia after the platysmal bands are split. Mid-facial youth is restored, and the entire musculofacial corset of the face is tightened while the amount of tension on the facial skin is kept to a minimum. We believe this treatment is a secure and efficient way to revive a youthful facial appearance.

**CONFLICT OF INTEREST**

We declare that there were no conflicts of interest in this study.

**FUNDING**

The authors are responsible for the study funding without the grant, scholarship, or other funding resources.

**AUTHOR CONTRIBUTION**

All of the authors equally contributed to the study.

**REFERENCES**