Facelifting

71

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Key Points

- To understand the main anatomical consideration during the facelift surgeries.
- To be able to describe the layers of the face.
- To describe the distribution of fat compartments, as well as what makes up the malar fat compartment.
- To be familiarized with the various surgical players technique available for the face life surgeries.
- To be able to identify the common postoperative complications.

71.1 Introduction

Facelifting, also known as a rhytidectomy, technically means the removal of wrinkles by surgery to give a more youthful appearance to the face.

Skin wrinkles typically appear because of the aging processes of skin tissue such as glycation (1). Wrinkles begin to form in the mid-30s. They usually start in the thin skin of the periorbital area. As the body gets older, skin and subcutaneous fat lose its volume and the collagen and elastic fibers lose their elasticity, which results in superficial wrinkles in the remaining face.

Sun exposure is one of the main reasons for wrinkles. The sun makes the skin look older and constant exposure of skin to sun exacerbates this matter. A facelift can rejuvenate patients.

71.2 Facelift Anatomy (Fig. 71.1) [1]

- The first layer in facelift anatomy is the skin. The dermal vascular plexus is responsible for the skin blood supply.
- The next layer is the subcutaneous fat which is in close contact with deeper SMAS and superficial dermis. This layer can be safely undermined without damaging the anatomic structures.
- The third layer is the SMAS layer. This layer separates the subcutaneous fat from the parotidomasseteric fascia and facial nerve branches. The SMAS layer is continuous with the platysma in the neck, the temporoparietal fascia in the temples, and the galea in the scalp. The SMAS layer consists of suspensory ligaments that encase the cheek fat, thereby causing them to remain in their normal position. The SMAS is thicker and more adherent over the parotid, whereas it becomes thinner and

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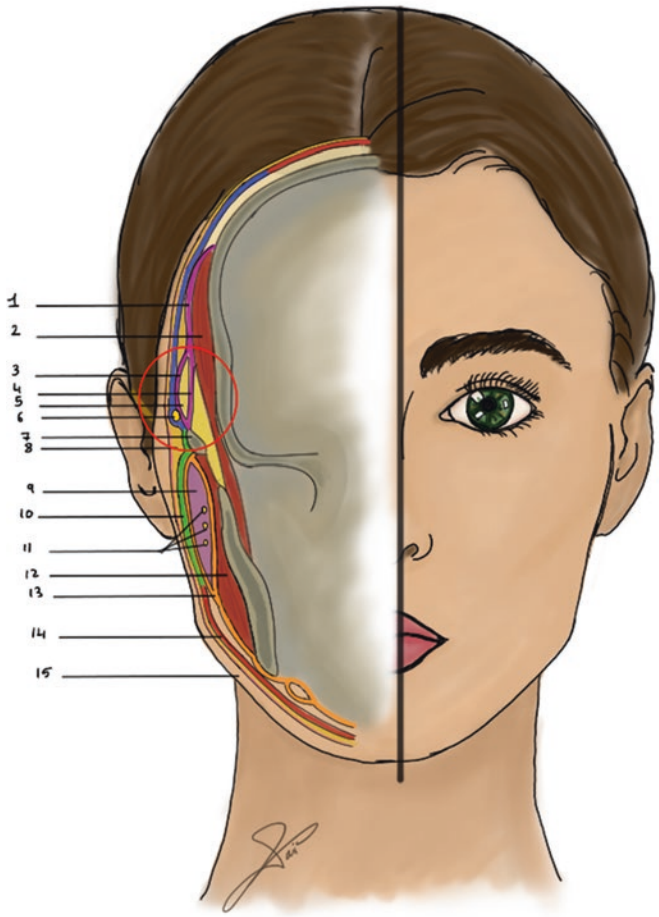

1. temporal fascia proper
2. Temporalis muscle
3. Superficial layer of deep temporal fascia
4. Deep layer of the deep temporal fascia
5. Superficial fat pad
6. Frontal-temporal branch of facial nerve
7. Zygomatic arch
8. Subcutaneous fat
9. Parotid gland
10. SMAS
11. Facial nerve branches with in the parotid gland
12. Masseter muscle
13. Parotidomasseteric fascia
14. Platysma muscle
15. Skin

Fig. 71.1 Coronal view showing the face layers, and the red circles represent the temporal region. (1). temporal fascia proper. (2) Temporalis muscle. (3) Superficial layer of deep temporal fascia. (4) Deep layer of the deep temporal fascia. (5) Superficial fat pad. (6) Frontal-temporal branch of facial nerve. (7) Zygomatic arch. (8) Subcutaneous fat. (9) Parotid gland. (10) SMAS. (11) Facial nerve branches within the parotid gland. (12) Masseter muscle. (13) Parotidomasseteric fascia. (14) Platysma muscle. (15) Skin

mobile medially. Resuspension and securing the SMAS anatomical layer can lead to rejuvenation of the face, by counteracting aging and gravity caused laxity. When this layer is stretched or pulled, it moves the entire lateral face in the desired vector. Superficial Musculo-Aponeurotic System (SMAS) layer using one of a multitude of facelift surgeries is vital in achieving natural and long-lasting outcome techniques.

– The fourth surgical plane is the sub-SMAS plane. It contains the parotidomasseteric fascia (investing fascia over the parotid gland and masseter muscle). It is important to know that the facial nerve motor branches and the parotid duct run under this layer. Hence by operating superior to this layer, the facial nerve branches are protected (Fig. 71.1).

71.2.1 Malar Fat Compartment (Fig. 71.2)

The malar fat compartment described by owsley is considered to play a very important part in the youthfulness of the cheek area.

The malar fat compartment is the inverted triangular areas that consist of the nasolabial fat compartment, the medial cheek fat and in some extent the inferior orbital fat compartment.

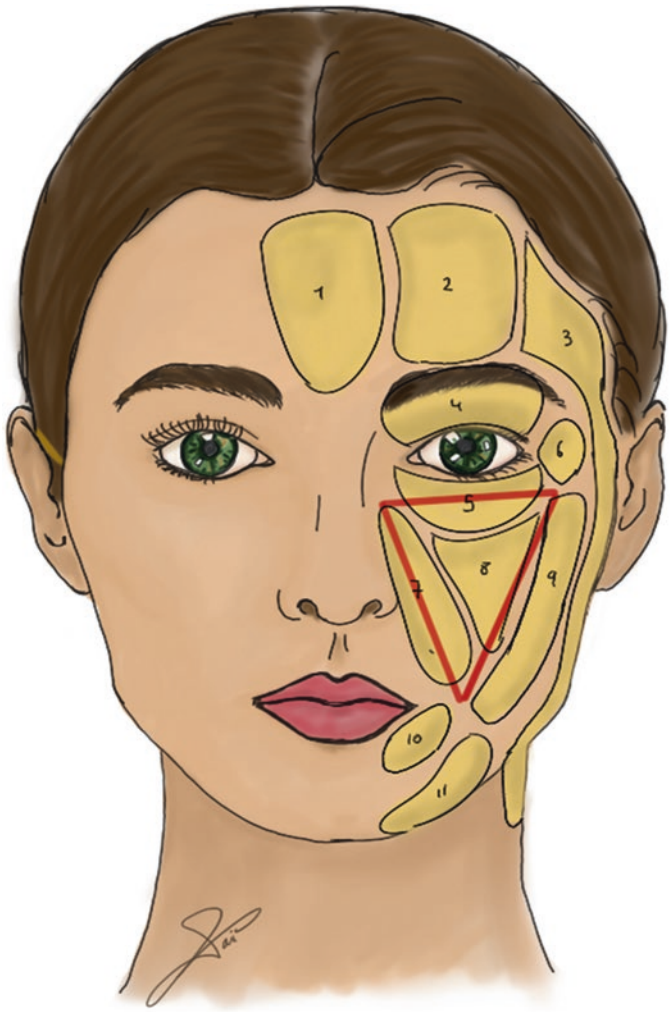

Fig. 71.2 Showing the superficial fat compartment and the malar fat compartment in the red triangle. (1) Central forehead fat compartment. (2) Middle temporal fat compartment. (3) Lateral temporal-cheek fat compartment. (4) Superior orbital fat compartment. (5) Inferior orbital fat compartment. (6) Lateral orbital fat compartment. (7) Nasolabial fat compartment. (8) Medial cheek fat compartment. (9) Middle cheek fat compartment. (10) Superior jowl fat compartment. (11) Inferior jowl fat compartment

71.3 Indications for Facelift Surgery

Ideally, the patient should be around the age of 50 or below.

A facelift is performed to rejuvenate the appearance of the face. Aging of the face is most shown by a change in position of the deep anatomical structures, notably the platysma muscle, cheek fat and the orbicularis oculi muscle. These lead up to three landmarks namely (Fig. 71.3):

- An appearance of the jowl (a broken jaw line by ptosis of the platysma muscle).
- Increased redundancy of the nasolabial fold (caused by a descent of cheek fat).
- Increased distance from the ciliary margin to the inferior-most point of the orbicularis oculi muscle (caused by decreasing tone of the orbicularis oculi muscle).

Evaluation of the psychological aspect of the patient must be done carefully.

71.4 Facelift Techniques

Many different procedures of rhytidectomy exist. The differences are mostly the type of incision and the area of the face that is treated. Expectations of the patient, the age, possible recovery time, and areas to improve are some of the many factors taken in consideration before choosing a technique of rhytidectomy.

In the traditional facelift, an incision is made in front of the ear extending up into the hairline. The incision curves around the bottom of the ear and then behind it, usually ending near the hairline on the back of the neck. After the skin incision is made, the skin is undermined from the deeper tissues with a scalpel or scissors over the cheeks and neck. At this point, the deeper tissue (SMAS) is exposed and can be manipulated.

The excess skin is then removed, and the skin incisions are closed.

71.4.1 Subcutaneous Facelift

Subcutaneous facelift or skin-only facelift was initially the major concept of the facelift procedure.

It consists of subcutaneous dissection above the SMAS and suitable only to reduce the facial skin excess.

The results of a skin-only facelift are limited because of not addressing other senile facial structures. After a while, the skin viscoelasticity

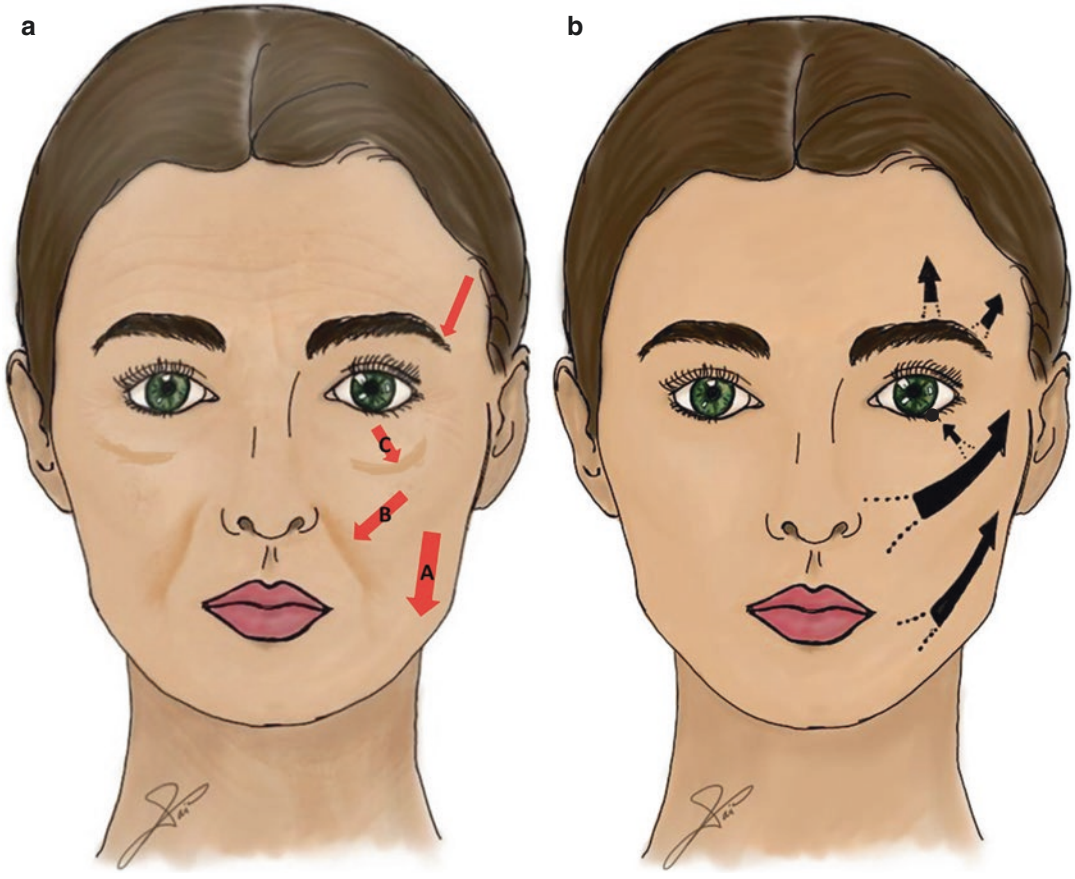

Fig. 71.3 (**A**) Jowl (a broken jaw line by ptosis of the platysma muscle); (**B**) Increased redundancy of the nasolabial fold (caused by a descent of cheek fat). (**C**) Orbital folds in the eye area (caused by decreasing tone of the orbicularis oculi muscle). Black arrows: The intended effect of a facelift

property causes loosening of tightened skin [2]. Intact subcutaneous tissues are susceptible to ptosis after some time because they are not manipulated in this technique.

This skin-based facial rejuvenation and facelift surgeries did not have outcome longevity. Skin by its very nature accommodates stretch and over time, in a matter of months, the effects of the initial surgery had been lost.

71.4.2 SMAS Plication Facelift

Manipulation of the SMAS would yield a more natural and a long-lasting facial rejuvenation and facelift results.

This technique solves the senile changes of the face including skin wrinkles and deep soft tissue sagging simultaneously. The strong fibrous composition of the SMAS layer gives it greater strength against gravity than skin.

The simplest SMAS-based surgery involves widespread skin undermining from in front of the ear, to close to the lips and across the cheek (Fig. 71.4). Skin undermining often extends into the neck as the procedures often need to be combined for a harmonious and good outcome. The dissection plane in this technique is supra-SMAS. After dissecting in the subcutaneous plane, the SMAS layer is exposed. At this point the redundancy in the SMAS is marked out and using permanent sutures, the mobile segment of the SMAS layer is plicated and fixed to the posterior relatively immobile layer (Fig. 71.5). This lifts the lower face and the neck but is unable to address the mid-cheek region. The skin excess is then excised and the skin is closed in layers.

The advantage of this operation is that it is very safe in regard to any possible threats to the facial nerve. The facial nerve traverses in the sub-SMAS plane.

The disadvantage of this surgical technique lies in its inability to address the mid-cheek region. The widespread undermining of the facelift surgery skin flaps leaves them prone to small areas of necrosis at the most distal part near or behind the ear.

Fig. 71.4 Extent of facelift skin flap undermining in SMAS plication and lateral SMAS-ectomy

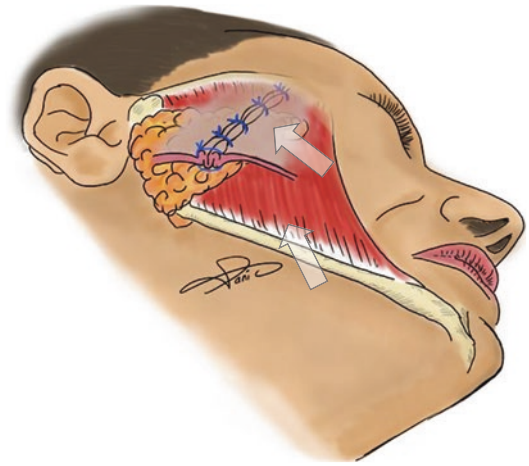

Fig. 71.5 In SMAS plication technique, the mobile segment of the SMAS layer is plicated and fixed to the posterior relatively immobile layer. This lifts the lower face and the neck (arrows)

71.4.3 Lateral SMAS-ectomy

Lateral SMAS-ectomy is a technique that involves the excision of the redundant lateral

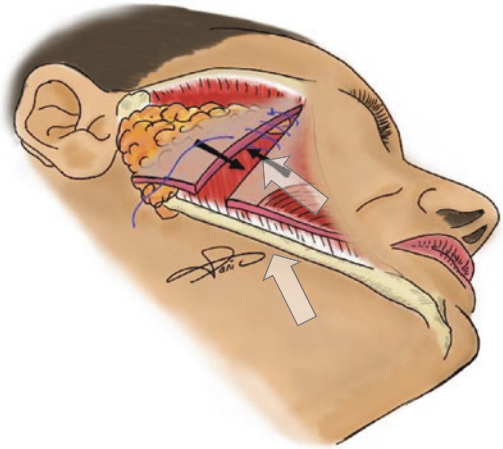

Fig. 71.6 Lateral SMAS-ectomy technique involves the excision of the redundant lateral SMAS between the mobile and the fixed SMAS. With excision of redundancy in the SMAS, tightening of the SMAS is achieved. The anterior SMAS layer which is mobile is stretched in a superoposterior direction and fixed to the posterior fixed SMAS layer. The vector of tracing the SMAS layer is perpendicular to the nasolabial fold

SMAS between the mobile and the fixed SMAS. With excision of redundancy in the SMAS tightening of the SMAS is achieved. The anterior SMAS layer which is mobile is stretched in a superoposterior direction and fixed to the posterior fixed SMAS layer. The vector of tracing the SMAS layer is perpendicular to the nasolabial fold. This often allows for a more nuanced and sculpted facelift surgery outcome in comparison to SMAS plication. The risk of facial nerve damage is slightly higher than plication owing to the incision made in the SMAS.

The outcomes of this procedure continue much longer than the SMAS plication technique due to the stronger fixation of the SMAS layer.

The mid-cheek region remains out of the scope of this technique (Fig. 71.6).

71.4.4 Deep Plane Facelift (DPFL)

Deep plane rhytidectomy was suggested in place of traditional facelifting to correct aging changes of midface (i.e., malar fat pad) and nasolabial grooves more accurately. The SMAS lift is an effective procedure to reposition the platysma muscle; however, the nasolabial fold is better addressed by a deep plane facelift or composite facelift.

The main concept of this technique was based on reversing gravity's effect by manipulating tissues deep to SMAS (example repositioning the malar fat pad and release of facial ligament) to make more satisfying changes in older patients. Dissecting in sub-SMAS layer allows manipulating deep soft tissues of the face gives rise to major changes and improvements of senile faces. By dividing the ligaments that connect the overlying skin and SMAS to the underlying skeleton, the composite unit is advanced as a whole. With permanent retaining sutures put in place, both the amount of skin undermining and skin excision become minimal. The skin is closed without a dead space or tension resulting in better wound healing, less postoperative edema, and faster recovery.

This technique is associated with high risk of facial nerve damage.

Patients with significant aging changes of midface and mentolabial fold are good candidates for this procedure.

71.4.5 Extended SMAS Lift

The main procedure protocol in this method is dissecting and drawing skin and SMAS flaps separately. The vector of stretching the SMAS layer is different from the skin.

After widespread undermining of the skin towards and very close to the nose and the corner of the mouth (Fig. 71.7), the SMAS is accessed on the zygomatic or the cheekbone skeleton and is undermined towards the apple of the cheek (Fig. 71.8). Resuspension of the undermined SMAS against the skeleton or underlying stable tissues then achieves the lift. Finally, the skin is closed over the lifted SMAS.

The vector of retracting the SMAS layer is more vertical than the skin flap. The SMAS and platysma flaps can be rotated in the postauricular area to improve the jowl and cervical contour. The SMAS flap is advanced superolaterally, perpendicular to the nasolabial fold in the malar fat pad area.

Fig. 71.7 The extent of the skin undermining and the neck incision in an extended or high SMAS facelift technique

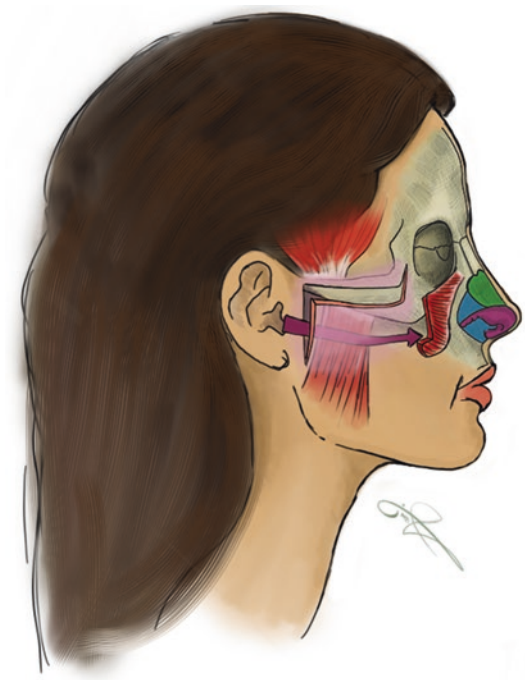

Fig. 71.8 Extended SMAS technique for access to the midface and cheek

The advantage of this technique is that it is a powerful tool in addressing aging and the descent of the mid-cheek.

Maximum effects on lower face and neck can be achieved by creating a continuous SMAS-platysmal flap.

The outcomes of this technique are long-lasting due to releasing the facial ligaments and repositioning of the malar fat pad.

The risk of facial nerve damage is relatively high in this method.

The compromised viability of the skin flap is a major concern in this technique.

71.4.6 Complications of the Facelift Procedure [3–6]

The most feared complications of facelift surgery are facial nerve damage (1%) and flap necrosis (1–2%).

Hematoma (the most common complication, it is dangerous because it may lead to infection and flap necrosis).

Infection.

Venous thromboembolism.

Pre- and postauricular skin necrosis.

Pre- and postauricular scar hypertrophy.

Temporal alopecia.

It has been reported that the complication rate in patients with a high body mass index (BMI) over 25 was 9.5%, compared to 4.7% in normal-weight patients undergoing a facelift [5].

Take Home Messages

- The facial changes during aging are due to the loss of the soft tissue elasticity, volume redistribution, and skin changes.
- There is no single surgical technique that has proven to be superior in the treatment of the different varieties of facial aging; hence the surgeon should

always individualize each case to provide the best outcome for the patient.

- The surgeon should always try to minimize the chances of causing a facial nerve injury, by following the right anatomy and planes during dissection; in addition, the use of the nerve stimulation tool should be always considered.
- Postoperative hematoma can be reduced by good intraoperative hemostasis and blood pressure control.
- It's not advisable to operate on an active smoker, since the risk of skin necrosis is increased.

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