Extended Deep Plane Facelift
Incorporating Facial Retaining Ligament Release and Composite Flap Shifts to Maximize Midface, Jawline and Neck Rejuvenation

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INTRODUCTION
To better understand the rationale behind deep plane facelifting and how it differs from lateral superficial muscular aponeurotic system (SMAS) facelifting (high or low), an understanding of the complex anatomy of the SMAS and soft tissues of the face is necessary. The SMAS layer was first described by Mitz and Peyronie in 1976.1 The SMAS layer is continuous with the platysma muscle inferiorly and the temporoparietal fascia and galea aponeurotica superiorly. In the face, the SMAS lies between the subcutaneous adipose tissue, which compromises the superficial fat compartments of the face, and the underlying parotidomasseteric fascia, within which lies the facial nerves. The thickest SMAS is found in the lateral face overlying the parotid gland. The SMAS attenuates as it travels from lateral to medial in the midface, terminating at the lateral border of the zygomaticus major muscle2 (Fig. 1).

Sub-SMAS dissection techniques, first introduced by Skoog in 1974,3 tend to allow for both improvement of aesthetic change as well as increased longevity. The variance of SMAS mobility in different facial regions is important

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when considering the optimal areas for surgical manipulation during facial rejuvenation. The lateral SMAS overlying the parotid gland is generally fixed by the parotid cutaneous fascial attachments connecting it to the underlying parotid gland. We refer to this area as the “lateral fixed SMAS.” Release of these attachments is required for successful mobilization and redraping of the SMAS. SMAS plication or imbrication techniques do not release these tissue attachments, so that redraping the jawline and medial facial tissues is more difficult. In contrast, surgical procedures that release the lateral SMAS from its deep attachments allow for more effective redraping of ptotic facial tissues.

As the SMAS extends medial to the parotid gland, it is not firmly adherent. A transition zone can be seen topographically in the aging face where the medial mobile SMAS descends and the lateral fixed SMAS does not (Fig. 2). The area of the lateral fixed SMAS involutes, creating a scalloping or concavity over the gonial angle, and the neck and jawline lie in the same plane with no distinct mandibular border. As we will discuss elsewhere in this article, deep plane facelifting adds volume and contour to the gonial angle through composite flap shifts, improving the definition of the jawline.

The deep plane facelift enters the sub-SMAS plane at a line that traverses from the angle of the mandible to the lateral canthus. This approximates the transition zone between the fixed and the mobile SMAS. Traditional low SMAS and high lateral SMAS techniques elevate the fixed SMAS that has not descended with age to access the mobile SMAS that has. The deep plane facelift bypasses lifting the lateral fixed SMAS and targets the descended mobile SMAS and medial soft tissues (Fig. 3). The fixed lateral SMAS is fibrous, adherent, and difficult to dissect. The mobile SMAS is areolar in nature and easier to dissect. We believe this variation in SMAS mobility makes facelifting procedures that place traction on the medial mobile SMAS instead of the fixed lateral SMAS more
effective in restoring a youthful appearance. This is true for both sub-SMAS and superficial SMAS plication, imbrication, and SMAS-ectomy techniques.

The deep plane facelift also has biomechanical advantages when lifting the medial soft tissue ptosis of aging compared with lateral SMAS procedures. The sub-SMAS entry point and thus the

Fig. 2. Preoperative view of a 51-year-old woman demonstrating the "fixed" superficial muscular aponeurotic system (SMAS) overlying the lateral face and parotid with a transition zone to the "mobile" SMAS medial to the parotid where the jowl and lower face descends more readily.

Fig. 3. The deep plane facelift enters the sub-superficial muscular aponeurotic system (SMAS) plane at a line that traverses from the angle of the mandible to the lateral canthus, which exists approximately at transition zone between the fixed and mobile SMAS. Traditional low SMAS and high lateral SMAS techniques elevate the fixed SMAS that has not descended to access the medial mobile SMAS that has.
point of suspension for the deep plane flap is anterior and closer to the ptosis in the midface, jowl, and neck so it allows for more effective lifting of facial ptosis. Hooke’s law helps us to understand this concept. Facial tissues have elasticity and are put on stretch during facelifting, thus acting like a spring. Hooke’s law states that the force, or in this case lift, on the spring (the elastic facial tissues) is inversely proportional to the length of the spring. The deep plane suspension point is one-half the distance from the drooping midface and jowl when compared with the suspension point of lateral SMAS approaches. This means that anteriorly based suspension exerts twice the lift on the medial facial tissues (Fig. 4).

Another difference between lateral SMAS and deep plane techniques is that the deep plane face-lift allows for soft tissue elevation of the midface, whereas SMAS flap procedures anatomically cannot. The SMAS terminates at the lateral border of the zygomaticus in the midface (as described elsewhere in this article); therefore, elevation and traction on this tissue layer cannot effectively exert force medial to this point (see Fig. 1). The upper and medial midface where the SMAS is absent is occupied by the cheek fat. Rohrich and Pessa divided the cheek fat into the malar and nasolabial superficial facial fat compartments. The malar fat pad was further subdivided into medial, middle, and lateral anatomic divisions. These fat pads are tethered by the zygomatic cutaneous retaining ligaments. The nasolabial fat compartment lies immediately lateral to the nasolabial fold and is tethered by fascial attachments to the zygomaticus major muscle. As aging progresses, the prominence over the malar region flattens with descent of the cheek fat. Volume loss becomes noticeable in the upper and lateral midface, and hollowing of the lower lid–cheek junction is evident. This descended cheek fat creates a synchronous increase and relative widening of the midfacial tissues just lateral to the nasolabial folds (see Fig. 7). The advance of these aging changes converts the heart-shaped face of youth into an inverted triangle shape. These heterogenous changes of the different facial fat compartments has been confirmed in cadaveric and imaging studies.

The deep plane rhytidectomy creates a composite flap of skin, subcutaneous fat, and malar fat medial to the zygomaticus major muscle after releasing the zygomatic cutaneous ligaments. When this composite flap is repositioned vertically, it can be used to volumize the upper midface (Fig. 5). The senior author performed volumetric

Fig. 4. The deep plane suspension point is one-half the distance from the drooping midface and jowl when compared with the suspension point of lateral superficial muscular aponeurotic system approaches. This anteriorly based suspension can exert more lift on the medial facial tissues. SMAS, superficial muscular aponeurotic system.
analysis after vertical vector deep plane rhytidectomy with a 23-month follow-up and demonstrated that patients gain an average of 3.2 mL of midface volume per side. This is the consequence of full composite flap release, allowing tension-free redraping of cheek fat compartments. There is no statistical difference between the cheek volume gain from vertical vector deep plane rhytidectomy, and that achieved 16 months after 10 mL of autologous fat transfer per cheek for midfacial rejuvenation (see Fig. 7). When patients have insufficient volume reservoir to reposition, volume supplementation with fat grafting, injectable fillers, or implant placement may be used as an adjunctive procedure.

Since the original description of deep plane rhytidectomy in 1990 by Sam Hamra, the senior author has developed modifications to further improve rejuvenation of the midface, jawline, and neck. This article describes our volumizing extended deep plane facelift (Fig. 6). In brief, skin flap elevation is performed anteriorly up to a preoperatively marked line traveling obliquely from the angle of the mandible to the lateral canthus. The zygomatic–cutaneous ligaments are lysed similar to Hamra’s technique, but a more extensive release of other facial retaining ligaments is performed as well. Additional ligamentous release includes the medial aspects of the zygomaticus major, the anterior extensions of the masseteric cutaneous ligaments, and the mandibular cutaneous ligaments. We have also extended the deep plane dissection below the angle of the mandible inferiorly. In the neck, the platysma is elevated from its posterior fascial attachments to the sternocleidomastoid muscle to approximately 5 cm below the inferior body of the mandible and anteriorly to the fascia overlying the submandibular gland. This maneuver releases the cervical retaining ligaments that would otherwise limit platysmal redraping. Incorporating a platysmal myotomy inferior to the mandibular border extending medially to the fascia overlying the submandibular gland creates a platysmal sling or hammock that supports ptosis of the gland and defines the submandibular contour. This extended sub-SMAS and subplatysmal approach can also mitigate the need to open the central neck in patients with mild to moderate neck laxity. Last, we have modified the redraping and suspension of the composite deep plane flap to volumize the midface and gonial angle, which

Fig. 5. (A) Midface volume augmentation can be achieved by elevating the descended malar fat pads without addition of facial volume. This requires release of the zygomatic cutaneous ligament and vertical vector lifting. (B, D) Preoperative and (C, E) 9-month postoperative views of a 59-year-old woman who underwent an extended deep plane facelift. Notice the volumizing of the midface with repositioning of the cheek fat compartments.
atrophy with age, thus improving cheek and jawline contour.

RELEVANT ANATOMY

Retaining Ligaments

Fully understanding the function and anatomy of the facial retaining ligaments is paramount to successful rejuvenation of the aging face. If not released, the mobility of facial tissues will be greatly inhibited. With ligamentous release, any applied traction to the lateral rhytidectomy flap can be fully transmitted to the medial facial soft tissues, allowing a natural and complete redraping. These concepts can be viewed as a natural extension to the same reconstructive principles used when soft tissues surrounding cutaneous defects are widely undermined and mobilized during local flap closure. In such cases, it is well-known that wide release allows for successful tissue redraping and a durable, tension-free closure.

Retaining ligaments are strong, fibrous attachments that secure defined dermal regions to deeper structures. They are present both within the face and cervical regions (Fig. 7). Two types of ligaments have been described. Osseocutaneous ligaments run from the periosteum to the dermis. These include the zygomatic and mandibular ligaments. The second type of ligament is formed from a coalescence of superficial and deep facial fascia. Examples of this type of ligament are the parotid cutaneous and masseteric cutaneous ligaments.¹²

The zygomatic retaining ligaments originate from the periosteum of the zygoma body and extend through the malar fat pad and insert into the overlying dermis. The zygomatic retaining ligaments fix the aging midface and cheek fat. Biomechanical studies have shown that the zygomaticocutaneous ligament is the strongest of all of the facial retaining ligaments, elongating by a mere 9 mm.¹³ Additional tendinous attachments run from the zygomaticus major and minor through the malar fat to the skin, reaching the nasolabial fold overlying the maxilla medially. This is called the premaxillary space.¹⁴

The mandibular cutaneous ligaments originate from the periosteum of the parasymphyseal
region of the mandible. They similarly traverse superficially and insert into the overlying dermis. The mandibular retaining ligaments limit the mobility of the skin and soft tissue around the prejowl sulcus. By tethering the skin at the mandibular border, it prevents anterior submental neck skin redraping during rhytidectomy. The further posterior the ligament is displaced from the symphysis the greater tethering effect it has in the neck. In our study of 108 patients, we found the average tethering point to be 5 cm lateral to the symphysis (Jacono AA: Limitation of neck redraping due to mandibular ligament tethering, personal communication, 2013).

Masseteric cutaneous ligaments lie along the anterior border of the masseter muscle. This ligamentous confluence acts to tether the jowl posteriorly. Complete ligamentous release requires elevation of the SMAS to the anterior border of the masseter. The parotidocutaneous ligament lies along the parotid gland, and are bypassed as the sub-SMAS dissection in deep plane surgery begins anterior to their point of termination.

The cervical retaining ligaments of the neck are reproducibly found along the posterior border of the platysma at its junction with the sternocleidomastoid muscle, along the anterior inferior portion of the parotid gland, and along the posterior body of the mandible. They tether the platysma to the deeper cervical fascia along the angle of the mandible and along the anterior border of the SCM. Just like facial ligaments, the cervical retaining ligaments restrict the surgeon’s ability to mobilize and redrape the platysma if not released. Extending the deep plane subplatysmal dissection inferiorly into the neck requires a lateral platysmal dissection to release the cervical retaining ligaments. We have performed anatomic studies that demonstrated that the cervical retaining ligaments release...
ligaments extend for 1.5 cm medial to the anterior border of the SCM. Complete redraping of the platysma thus requires extended platysma flap elevation past this point.

**SURGICAL TECHNIQUE**

**Preoperative Marking**

The patient is positioned upright to be marked preoperatively (Fig. 8). The rhytidectomy incision is marked as well as the path of the temporal branch of the facial nerve, and the deep plane entry point. The deep plane entry point is marked as a line extending from the angle of the mandible to the lateral canthus. This places the area of SMAS manipulation anterior to the fixed lateral SMAS. A horizontal line is drawn across the neck at the level of the cricoid to mark the minimal inferior extent of neck skin elevation. We counsel male patients about the potential for transposition of bearded skin into the ear canal with a retrotragal incision and discuss a preauricular incision as an option. The patient is allowed to decide on the approach. In our practice, approximately 75% of men choose the retrotragal approach for improved incision camouflage.

**Incision and Skin Flap Elevation**

Skin incision is initiated with a No. 10 scalpel cutting perpendicular to the skin at the dense hairline of the temporal hair tuft. We use a temporal hair tuft-sparing incision because the deep plane technique causes large flap shifts that would result in removing the temporal hair when skin is removed at the end of the surgery. The temporal and occipital hairline portions of the incision can be extended during the operation if further skin redraping is needed. When a beveled trichophytic incision was used, the long-term outcome commonly resulted in a depressed incision in a significant percentage of cases. We believe this occurs because the skin of the anterior temporal region is thin and the skived edge of the beveled incision tends to become devitalized and heal in a contracted fashion. This is different from the thicker anterior forehead/scalp skin in the area of the frontal hairline, where trichophytic incisions were first described. We have noted temporal scars that are barely perceptible with this modification (Fig. 9).

Coursing inferiorly from the temporal region, the incision should not be placed at the anterior edge of the helical crus cartilage because it can make the root of the helix seem to be unnaturally wide. It should be placed at the natural highlight, which reflects the apparent width of the helical crus. It should then traverse along the posterior edge of the tragus, but not on its inner surface as this can create an unnatural folding of the cheek skin that blunts the tragus and can be a tell-tale sign of a facelift incision. A small step in the incision is placed at the inferior tragus to preserve the natural depression at the intertragic incisure. Around the earlobe, the incision should continue 2 mm inferior to the lobule cheek junction to preserve the natural sulcus between the lobe and the cheek. Posteriorly, the incision should continue a few millimeters onto the posterior conchal cartilage rather than directly in the postauricular crease. This step helps to minimize later inferior descent of the posterior auricular scar into a more visible location with age. In patients with less neck laxity, the incision ends here. If the surgeon is uncertain of the amount of neck skin that will need excision, the incision can always be extended to remove redundancy. In cases of more significant neck skin excess, the incision is transitioned at the level of the triangular fossa down the anterior aspect of the occipital hairline posteroinferiorly. In the past, we used a high transverse incision that was hidden in the occipital hair. This incision requires that the neck skin flap be shifted anteriorly and vertically to prevent hairline margin step-offs, which limits the amount of redundant neck skin that can be removed.

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**Fig. 8.** Important landmarks drawn preoperatively include the trajectory of the temporal branch of the facial nerve, the deep plane entry point, incision lines, and inferior extent of neck skin elevation.
Fig. 9. Postoperative preauricular facelift incision. (A) Preoperative and (B) 12 months postoperatively. Postoperative views of a 53-year-old woman who underwent an extended deep plane facelift. (C) Notice well-healed temporal scar and well-camouflaged retrotragal incision with preservation of infratragal hollow.
After the initial rhytidectomy incision is made, the facial subcutaneous flap is elevated with a No. 10 scalpel. The skin flap is elevated anteriorly approximately 2 cm to allow for placement of an Anderson multiple prong retractor. The retractor is used to place superior and lateral tension on the flap. Direct counter-tension is placed by an assistant manually retracting the skin in the opposite direction and the flap is backlit to visualize the subdermal plexus (Fig. 10). Flap elevation continues with facelift scissors, tips pointed upward, making small, forward-snipping motions to create an even-thickness flap. The intensity of the transilluminated light gives the surgeon the ability to gauge the thickness of the flap and create a uniform depth. Subcutaneous elevation in the cheek ends approximately 2 to 4 mm beyond the marked line of the deep plane entry point (Fig. 11). The deep plane facelift approach poses no risk to the frontal branch because the dissection is superficial in the subcutaneous plane where the frontal branch exists, and the sub-SMAS dissection is begun at the deep plane entry point, which is 2 cm anterior and parallel to the course of the frontal branch of the facial nerve.

The postauricular skin is then dissected in a similar fashion and connected to the facial dissection. Once dissection has reached the anterior border of the SCM, the inferior and medial subcutaneous/supraplatysmal dissection in the neck is accomplished with a lighted retractor to provide tension and facelift scissors using a vertical blunt spreading. Dissecting on top of the supraplatysmal fascia during the medial neck skin elevation preserves a blanket of fat on the skin flap that prevents irregularities and adhesions between the deep dermis of the skin and the platysma postoperatively.


An Anderson 5-prong retractor is placed at the anterior extent of the skin dissection parallel to the deep plane entry point line. The flap is held under vertical tension away from the body and a No. 10 scalpel is
used to incise the SMAS layer and expose the deep plane (Fig. 14). The incision extends from the mandible to the to the orbital rim near the lateral canthus. A lighted retractor is again used to create vertical tension away from the body and vertical blunt dissection with facelift scissors is performed to elevate the composite flap of skin and SMAS off the parotid–masseteric fascia. The masseteric cutaneous ligaments are released, allowing for more complete repositioning of the jowl (Fig. 15). Complete ligamentous release requires elevation of the composite flap to the anterior border of the masseter.12 Another dissection endpoint is the facial artery, which can be palpated and visualized in the sub-SMAS plane. Elevation of this flap continues superiorly until resistance is reached at the zygomatic osteocutaneous ligament. Blunt dissection through the inferior part of the deep plane flap is continued under the platysma below the mandibular border and onto the neck to facilitate later release of the platysma from the sternocleidomastoid muscle.

The zygomatic ligaments are isolated by blunt dissection of the superior extent of the deep plane entry point in the prezygomatic space.14 Here, the dissection plane lies superficial to the orbicularis oculi muscle. Once the lateral border of the orbicularis is identified, the prezygomatic space can be easily dissected with blunt finger dissection. This dissection is carried medially into the premaxillary space, ending at the nasal facial crease. This technique was originally described as the FAME or finger-assisted malar elevation by Aston21–24 (Fig. 16). Because SMAS is not present medial to the zygomaticus major, the composite flap in this area is composed of skin and the malar fat pad.

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**Fig. 13.** Release of the mandibular ligaments requires dissection to the posterior edge of the tethering point and inferiorly to the lower edge of the mandible as it transitions to neck.

**Fig. 14.** (A) An Anderson 5-prong retractor is placed at the anterior extent of the skin dissection parallel to the deep plane entry point line. (B) With vertical tension on the retractor, a No. 10 scalpel is used to make the incision into the deep plane.

**Fig. 15.** The sub-superficial muscular aponeurotic system dissection continues anteriorly with vertical spreading motion with a facelift scissor until the masseteric cutaneous ligaments are released to the anterior border of the masseter.
At this point, the zygomatic osteocutaneous ligaments have been isolated between the upper and lower composite deep plane flaps. These ligaments tether the SMAS/platysma complex to the malar bone and must be released to accomplish vertical elevation of the composite flap. Sharp dissection of the ligaments is initiated with a No. 10 scalpel staying superficial to the zygomaticus musculature (Fig. 17). Staying superficial to the zygomaticus protects the facial nerve branches, which innervate the zygomaticus muscle from its deep surface. After sharp release of the dense ligaments, blunt dissection continues along the plane of the zygomaticus major and minor until the premaxillary space and nasolabial fold is reached (Fig. 18). A dense maxillary ligament at the inferior border of the premaxillary space is bluntly dissected to complete midface release.

**Release of the Cervical Retaining Ligaments**

With the deep plane now free, the only remaining point that tethers the SMAS–platysma complex from moving vertically is the cervical retaining ligaments. The deep plane flap in the neck is marked from the gonial angle to the anterior border of the sternocleidomastoid muscle extending 5 cm inferiorly into the neck. A lighted retractor provides countertraction and the platysma muscle is partially incised. After incision, the remaining fibrous and ligamentous attachments at the anterior border of the sternocleidomastoid muscle are released with gentle, blunt scissor dissection. This dissection continues

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**Fig. 16.** Elevation of the superior aspect of the deep plane pocket. (A) Blunt dissection at the superior extent of the deep plane entry point, creating a plane superficial to the orbicularis oculi muscle (B). (C) Blunt finger dissection medially to free it to the deep plane to the nasal facial crease. Note the circular hashed marking that identifies the location of the zygomatic ligaments.

**Fig. 17.** Release of the deep plane flap with sharp dissection of the zygomatic ligaments using a No. 10 scalpel cutting from superior to inferior and staying superficial to the zygomaticus musculature.
anteriorly and connects with the subplatysmal dissection plane that was previously created during the facial dissection. The anterior limit of the platysma flap is the anterior border of the submandibular gland so that the platysma flap can suspend gland ptosis (Fig. 19).

The dissection plane immediately below the platysma ensures that the marginal mandibular and cervical branches of the facial nerve down remain deep, on the superficial cervical fascia. Dissection immediately under the platysma in the neck below the gonial angle is a safe plane protecting the marginal branch of the facial nerve, analogous to dissection just underneath the SMAS in the cheek is a safe plane protecting the facial nerves. The nerves above the gonial angle are in the parotidomasseteric fascia and below it in the superficial cervical fascia. These layers are contiguous. The marginal branch would be at risk if dissection under the SMAS.

Fig. 18. (A) Deep plane flap is released through the zygomatic ligaments and (B) elevated to the nasolabial fold.

Fig. 19. Release of the cervical retaining ligaments. (A) Surgical marking of the lateral platysmal border at its connection to the sternocleidomastoid muscle extending 5 cm below the angle of the mandible. (B) A No. 15 scalpel is used to make a broad and gentle incision until a lip of tissue is obtained, the edge grasped and sharp dissection within the sternocleidomastoid muscle fascia is continued for approximately 1 cm, (C) Subplatysmal flap freed after bluntly dissect through the ligaments 3 cm anterior to the sharply elevated flap.
and platysma is continued medial to the facial artery where the nerves become more superficial. Therefore, dissection in this region should be avoided.

**Deep Plane Flap Suspension**

Because the skin flap was raised slightly beyond the deep plane entry point in the face, this cuff of SMAS tissue is used for suture suspension. Five to 7 suspension sutures are placed (the author’s preference is 4-0 nylon with PS-2 needle in most cases). The angle of flap suspension transitions from vertically dominant at the mandibular angle to horizontally dominant near the orbit (**Fig. 20**). This maximizes elevation of the cheek fat pads while preventing distortion of tissues in the temple region and lateral to the eye. The vector of lift for the composite flap in deep plane rhytidectomy is vertical oblique. The individual’s anatomy dictates the exact angle. In a study of more than 300 patients, the average vector approached 60° relative to the Frankfort horizontal plane25 (**Fig. 21**). Suture suspension begins with a half-mattress suture connecting the SMAS cuff at the deep plane entry point to the parotid masseteric fascia in the preauricular region for suspension of the inferior portion of the flap.

It is important to note that redraping of the inferior deep plane composite flap create improved mandibular contour. With age, the area over the lateral fixed SMAS and gonial angle becomes concave, blunting the jawline as it transitions into the neck. The inferior part of the composite skin and SMAS deep plane flap is fixated at the level of the gonial angle. This volumizes the gonial angle and creates a more distinct mandibular/jawline contour (**Fig. 22**).

The superior portions of the flap in the upper cheek are suspended to the deep temporal fascia. Importantly, the point of flap suspension for the upper flap is to the deep temporal fascia 2 cm above the zygomatic arch, similar to the high and lateral SMAS facelift. Repositioning the ptotic midface revolumizes the upper cheek over the zygoma. Volumetric analysis with 23 months of follow-up has shown that this suspension technique give patients an average gain of 3.2 mL of volume in each hemi midface9 (**Figs. 23 and 24**).

**Lateral Platysma Suspension in the Neck and Skin Closure**

After resuspension of the composite flap in the face is finished, attention is directed to redraping of the cervical platysma. A horizontal myotomy of the platysma is performed parallel to the inferior margin of the mandible for approximately 4 cm,
ending at the area over the submandibular gland. The inferior platysmal tab is anchored to the mastoid fascia with a 3-0 nylon suture and positioned just below the margin of the mandible (Fig. 25). The vector of pull runs along the submandibular region and away from the cervicomental angle. This platysmal flap places its maximal tension at the most anterior extent of the myotomy, allowing for support of the submandibular region, elevating any ptotic

Fig. 22. (A, B) The inferior part of the composite skin and superficial muscular aponeurotic system (SMAS) deep plane flap is fixated at the level of the gonial angle. This volumizes the gonial angle and creates a more distinct mandibular/jawline contour. Preoperative view of (C) a 56-year-old woman, (E) a 57-year-old woman, and (G) a 58-year-old woman. (D, F, H) The same patients at 12 months postoperative after volumizing extended deep plane rhytidectomy with composite flap repositioning to augment the gonial angle.
Fig. 23. (A, C) Preoperative and (B, D) 9 months postoperative views of a 57-year-old woman who underwent an extended deep plane facelift with zygomatic ligament. Notice the volumizing of the midface with repositioning of the cheek fat compartments.
Fig. 24. (A, C) Preoperative and (B, D) 15 months postoperative views of a 62-year-old woman who underwent an extended deep plane facelift with zygomatic ligament. Notice the volumizing of the midface with repositioning of the cheek fat compartments.
submandibular tissues, while concomitantly increasing a hollow below the angle of the mandible that exists in youth. Interestingly, this also places more traction on the platysma anteriorly and can help to smooth out platysmal bands, avoiding the need to open the neck (Figs. 26–28). Additional sutures are used to redrape the incised platysmal edge over the sternocleidomastoid muscle. A Jackson-Pratt drain is placed in the hairline, and positioned in the lower neck until the next morning.

After resuspension of the face and neck, attention is turned to redraping of the skin. The facial skin is suspended in the same plane as the composite flap. The majority of the skin is removed vertically in the temporal region (Fig. 29). Because the cervical skin has been lifted off the platysma, redraping does not need to equate the platysmal lift vector. Adequate elevation of the temporal skin in the subcutaneous plane avoids bunching. In patients with more significant laxity, the temporal incision must be carried along the hairline superior to the lateral brow to avoid a dog ear deformity. Deep, everting 4-0 Vicryl sutures are placed along the temporal incision prevent depression and spreading of the scar over time. Skin closure is completed with everting 5-0 nylon vertical mattress sutures. The remainder of the incision is closed with 5-0 nylon sutures anteriorly, 5-0 nylon sutures behind the ear, and 4-0 nylon sutures in the occipital hairline (Fig. 30). The majority of anterior sutures are removed after 4 to 5 days.

We perform subcutaneous liposuction in the neck in less than 10% of our patients, and only when they have significant supraplatysmal fat excess, which can be grasped and clearly identified before injection. In general, we prefer to leave the natural blanket of fat between the skin and platysma to avoid forming depressions from adhesions and retraction. When performing submental liposuction we use modern techniques that mitigate the chance of commonly noted irregularities.26–35 In general, we have found that elevating the neck skin flap before
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Fig. 26. (A, C) Preoperative and (B, D) 12 months postoperative views of a 51-year-old woman who underwent an extended deep plane facelift. Note improvement in anterior neck cording without opening the neck.
Fig. 27. (A, C) Preoperative and (B, D) 12 months postoperative views of a 61-year-old woman who underwent an extended deep plane facelift with platysma hammock suspension of the submandibular gland and improvement in anterior neck cording without opening the neck.
liposuction controls the amount of fat on the neck skin and decreases the risk of postoperative topographic irregularities. After flap elevation we use a 3-mm flat-tipped liposuction cannula to then remove supraplatysmal fat and sculpt the neck (Fig. 31).

Fig. 28. (A, C) Preoperative and (B, D) 12 months postoperative views of a 58-year-old woman who underwent an extended deep plane facelift with platysma hammock suspension of the submandibular gland and improvement in anterior neck cording without opening the neck.
Adjunctive Submental Procedures and Platysmaplasty

Our main indications for rhytidectomy without opening the neck is if the submental platysmal and skin laxity is corrected when the surgeon places 3 fingers at the deep plane entry point, a line from the angle of the mandible to the lateral canthus, on both sides of the face and moves the skin vertically. If the patient still has significant neck redundancy with this maneuver and platysmal cording exists, then a midline platysmaplasty is indicated in addition to the vertical neck lift. We use 3 other indications for a midline approach. If widely separated midline platysma bands exist, midline plication is used to bridge their dehiscence. This is described as a DeCastro type III decussation pattern.36 Additionally, a midline approach is used when subplatysmal surgery, such as subplatysmal fat removal, is performed to prevent cobra neck deformity occurring postoperatively. Last, midline plication is indicated when intraoperatively the midline platysmal redundancy remains after the lateral platysmal lift is performed bilaterally. If it is determined preoperatively that the patient will require anterior platysmaplasty, this is performed before rhytidectomy. Increasing the number of procedures performed in the submentum increases the chances of irregularities, and each maneuver must be performed precisely and in a metered fashion.

A small submental incision is made and the submental skin is dissection with a curved iris scissor. Once an entry skin flap has been made, a skin hook is used to place the cervical skin under traction, while subcutaneous flap elevation continues using a blunt curved scissor (Metzenbaum).

At this point, the medial edges of each side of the platysma muscle are identified. The subplatysmal plane is extended laterally to the anterior border of the submandibular gland. The intraplatysmal fat is dissected away from the platysmal borders using blunt dissection and bipolar cautery for hemostasis. This midline mobilization of the platysma is extended approximately to the inferior border of the cricoid. The interplatysmal and subplatysmal fat is then removed from the submental area using suction monopolar cautery. Once the fat is removed, the subplatysmal flap is extended laterally.

The anterior belly of the digastric muscle is identified, and is sculpted with monopolar suction cautery if it contributes to submental fullness as identified on preoperative photographs. The neck is irrigated, and the midline platysmaplasty is closed using interrupted, buried 4-0 Vicryl sutures. There are key sutures used when closing the midline platysma. The first

Fig. 29. The majority of the skin redundancy is removed vertically in the temporal region.

Fig. 30. (A) Preauricular and (B) postauricular skin closure.
suture is placed at the cervicomental region. Here, the platysmal edges are sutured to the midline hyoid fascia to prevent separation and a midline banding after healing. Additional interrupted 3-0 Vicryl sutures similarly adhere the platysmal edges to the deep submental tissues along the length from the chin to the hyoid to aid in cervical definition. The platysmal corset continues inferiorly to the level of the cricoid (Figs. 32–34).

Special Considerations in Deep Plane Rhytidectomy

Efficacy
There is a paucity of data comparing efficacy of rhytidectomy by technique. Short-term follow-up has shown higher efficacy in techniques using more aggressive SMAS manipulation, boasting fewer secondary procedures and happier patients. The need for tuck up varies widely among rhytidectomy techniques and surgeons. SMAS plication and imbrication techniques have been shown to carry the highest tuck up rates of up to 21%, and up to 50% at 2 years. More extensive skin flaps with extended SMAS dissections have a lower tuck up rate of 11%. The deep plane rhytidectomy reproducibly carries substantially lowered tuck up rates of 3% to 4%, which is statistically significant.

Studies on medium-term efficacy show that less invasive SMAS approaches have a greater recurrence of neck laxity than jowl reformation. There are few long-term follow-up data available for review. Patients presented for secondary facelifts after primary SMAS plication rhytidectomy on average 9 years later. Secondary facelifts were sought after primary SMAS flap rhytidectomy on average 11.9 years later, suggesting this is a slightly more durable procedure; however, the data remain too limited to draw conclusions and the significance of this information is unclear.

Complications
It is important to clarify that more aggressive dissection with deep plane techniques does not portend an increased risk to the patient. The rates of facial nerve damage and hematoma in deep plane rhytidectomy has been shown to be equal to those of less invasive techniques. Our incidence of temporary facial nerve injury with an extended deep plane approach is 1.2% in a prior study reviewing...
Fig. 32. (A, C) Preoperative and (B, D) postoperative views of a 62-year-old woman with excessive platysmal redundancy. She required a concomitant midline corset platysmaplasty suspended to the hyoid fascia with an extended deep plane facelift.
323 patients who underwent this technique with the primary author, and has remained stable on follow-up review of more than 800 cases. This temporary facial nerve injury rate is the same as less invasive SMAS plicating and suturing techniques that can cause temporary traction injury.

Deep plane surgery bears an improved risk profile in some aspects when compared with the traditional less extensive surgeries. It is associated

Fig. 33. (A, C) Preoperative and (B, D) 12 months postoperative views of a 56-year-old woman with excessive platysmal redundancy. She required a concomitant midline corset platysmaplasty suspended to the hyoid fascia with an extended deep plane facelift.
Fig. 34. (A, C) Preoperative and (B, D) 12 months postoperative views of a 70-year-old woman with poor submental contour requiring concomitant subplatysmal lipectomy, digastric reduction and midline corset platysmaplasty suspended to the hyoid fascia with an extended deep plane facelift.
with lower rates of skin flap sloughing and need for tuck up procedures.18,41

SUMMARY

The volumizing extended deep plane rhytidectomy is a safe procedure with superior outcomes in facial rejuvenation. A comprehensive understanding of the facial anatomy and pathophysiology of aging is imperative to incorporate this procedure successfully. The extended deep plane facelift incorporates additional ligamentous release of the face and neck to create durable redraping of face and neck ptosis redraping. This includes the zygomatic cutaneous, masseteric cutaneous, mandibular cutaneous, and cervical retaining ligaments. Deep plane dissection creates composite flaps that can be redraped to volumize the midface and gonial angle along the jawline, thus improving cheek and jawline contour.

REFERENCES