New Advances in Facelifting Techniques

Understanding the modified deep-plane facelift

By Samieh S. Rizk, MD, FACS

The jowl, formed by the descended malar fat pad, is lifted in the deep plane from below and repositioned into its youthful home in the hollowed area below the cheekbone. Technical modifications from the originally described deep-plane facelift were aimed at preserving the patient's natural hairline, eliminating the skin-pulling or puckering sometimes seen with sutures placed more superficially in SMAS-type lifts, and with special attention to reducing the recovery time.

To accomplish this, shorter incisions are placed a few millimeters inside of the temporal hair tuft and postauricular hairline (Figure 1), thus preserving these hair bearing regions yet also hiding the scars nicely.

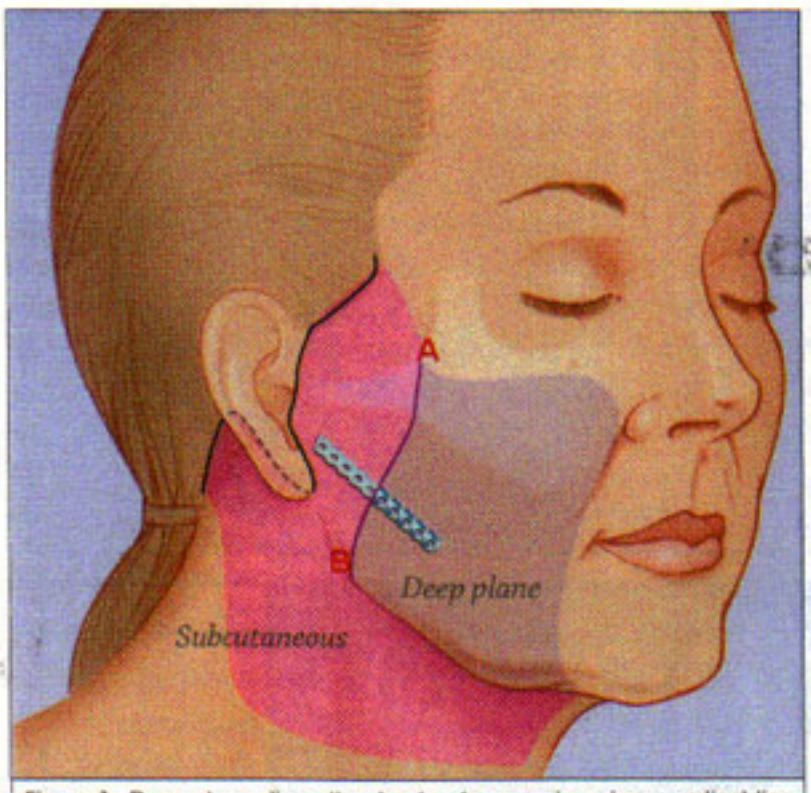

Figure 1. Deep-plane dissection begins from an imaginary vertical line from zygomatic arch to angle of mandible.

One must always find a balance between concealing incisions efficiently and avoiding any pull or alteration of the hairline. I generally prefer to place the incision just inside the hairline. Higher-incision placements would inevitably pull back the hairline in the sideburn and temporal region. However, some patients have a much lower sideburn, and in these cases a higher incision may be acceptable.

With this incision-position modification, women can put their hair up without being concerned about scar visibility while at the same time avoiding the "pulled" look and other undesirable, telltale signs of facelift surgery.

Other modifications include the incorporation of fibrin glue, the avoidance of postoperative surgical drains, and the use of a modified Endotine Ribbon in the deep plane of the face only.

The Endotine Ribbon is a bioabsorbable fixation device that offers unique versatility and ease of use. This deeper placement of the ribbon distributes tension in deeper tissue better than single stitches, thereby eliminating any tension on skin incisions. I also like to add a layer of interrupted buried sutures in temporal and posterior hairline to eliminate all tension on my skin closure, which I believe is the key to an invisible scar.

Traditionally, deep-plane facelifts have received some criticism and have been labeled as too invasive and involve a prolonged recovery period. With these modifications, I did not find that to be true. In fact, this modified deep-plane lift heals faster than former SMAS lifts that I have performed.

Plastic surgeons must remain cautious of the surge of many minimally invasive and minimally effective procedures that promise much more than they can deliver. These include, in particular, barbed suture lifts and nonsurgical tightening modalities, which are touted in the media as a replacement for facelifts. These approaches can often result in significant patient disappointment. My foremost goals are a natural and long-lasting result and a rapid recovery.

To my knowledge, this is the first documented use of the Endotine Ribbon in the deep-plane facelift.

Over the years, I have incorporated fibrin glue (Tissel), which has resulted in a more rapid recovery and decreased postoperative hematoma and bruising. However, the most important factor to decrease hematoma and seroma rates is meticulous hemostasis. Fibrin glue can complement but not replace meticulous hemostasis, and it may also help eliminate the necessity of surgical drains after facelift procedures.

By closing and sealing the dead space, fibrin glue has been shown to decrease postoperative drain output. Drains can malfunction, introduce infection into the wound, leak, become misplaced, and entail extra incisions and scarring. They create tracts at the site of removal, necessitate painful extraction, and risk injury to vessels on removal. In the past, the use of drains was routinely advised. However, more recently, many surgeons have moved away from using drains in facelift surgery, unless specifically indicated.

HIGH-DEFINITION FACELIFTING

The newest adjunct to my facelift technique is the use of high-definition endoscopy. I have been using high-definition endoscopic visualization from Dyonics.

This technology lets me better visualize face and neck structures in the deep plane through 50% smaller incisions in temporal hairline and posterior hairline regions.

Previously, endoscopic technology has

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been used primarily in browlifts and subperiosteal midface lifts, rather than through traditional facelift incisions. The smaller incisions enable a more rapid recovery and decrease postoperative swelling.

My practice is located in the New York metro region, in which patients tend to be very sophisticated about the nuances of techniques, the ability to deliver outcomes that are identical and—in many cases—superior, through shorter, well-hidden incisions that offer significant benefit to patients.

Finally, when the bioabsorbable Endotine Ribbon (Figures 2 and 3) is used in the deep plane to lift the sagging SMAS and malar fat pad from below (Figure 4, page 22), tension is distributed over its many "tines."

Contrast this approach to the traditional use of stitches to catch pieces of deep-plane tissue and to place tension on single points, sometimes resulting in tearing of the tissue at these points.

This idea occurred to me after I used the Endotine brow system, which employs the same concept of using multiple tines to distribute tension over many points. After the tension is distributed below the skin, there is no pulling on the skin and the lift looks very natural.

DEMYSTIFYING THE DEEP PLANE

Over the past decade, our understanding of facial aging has changed. At present, we recognize that multiple factors contribute to a youthful look.

For example, a "tight" face is not necessarily a youthful look, and it is not representative of what modern facelift patients desire. It is not just the sagging tissues of the face and neck that cause an aging appearance, but also volume deflation and redistribution in certain key facial regions. The full malar fat pad over the cheek descends to become a jowl around the mouth and the area under the cheek becomes hollow. Sagging neck skin and platysma, along with fat deposition in the submental region and jowl formation at the anterior mandible, all work together to blunt youthful definition.

The deep-plane facelift eliminates the jowl by going under this descended malar fat pad, lifting it, and repositioning it to its youthful home right under the cheek bones.

This deep layer (Figure 4) is thicker and stronger than the traditional SMAS layer. The SMAS layer in "SMAS-type" lifts eventually thins out as we age and becomes a weak layer to lift. In addition, it lacks enough volume to enable it to reposition into hollowed areas.

SMAS resection techniques, or "SMASectomies," have a tendency to "skeletonize" the face and cheeks, creating a gaunt, pulled look—especially in a thin face.

Early in my practice, I struggled with many SMAS-type lifts in order to achieve the jaw line and cheek definition seen with the deep-plane lift, only to find them to be somewhat suboptimal in patients who presented with a significant jowl.

Though SMAS lifts provided a notable improvement and patients were initially satisfied, I found that I had to pull tighter at the SMAS and skin level to get a better result. I preferred not to do so because of the risks of comprising a natural-looking appearance, which is paramount in my practice in Manhattan. My personal disappointment with SMAS lifts was also due to the lack of volume repositioning I was able to achieve with the deep plane, as the SMAS layer alone did not provide enough volume to reposition.

Figure 2. The Endotine Ribbon is a bioabsorbable fixation device that offers unique versatility and ease of use.

Furthermore, the necessity of separating the skin from the SMAS layer in SMAS-type lifts would sometimes result in a thinning of the skin and appearance of telangiectasias in the skin.

SMAS lifts can sometimes violate the subdermal plexus with cautery, which is not ideal in patients with a history of nicotine use. This does not occur with the deep-plane facelift, as separation of the skin from deeper tissue is not done anterior to a vertical imaginary line from zygomatic arch to angle of mandible (Figure 1).


Figure 3. The deeper placement of the Endotine Ribbon distributes tension in deeper tissue better than single stitches.

Finally, the repositioning of the deeper SMAS and malar fat pad (Figure 4—yellow arrow) in the deep-plane facelift more thoroughly addresses the sagging tissue and allows for more volume distribution.

By keeping the tension in the deeper tissue, less tension can be placed on the skin, enabling the scars to heal better.

EVOLUTION AND MODIFICATION OF THE DEEP-PLANE FACELIFT

1) Incisions are shorter both in the temporal and posterior hairline incisions. The shorter incisions are feasible with placement of high-definition endoscopes to visualize structures in the face and neck.

Traditionally, a longer incision would allow better visualization, which is important to safely identify blood vessels, nerves, and other important structures. However, the high-definition endoscope system provides unparalleled images and clarity through the smaller incisions, especially as the endoscopes are placed and maneuvered easily from the periauricular region.

2) Dissection and fixation—Deep-plane dissection begins from an imaginary vertical line from zygomatic arch to angle of mandible (Figure 1—point A to B). Dissection proceeds anteriorly under the malar fat pad and above the masseteric fascia towards the jowl. Superiorly, dissection is under the malar fat pad and over the zygomaticus muscles (Figure 4—yellow arrow).

Prior to modifying my technique with the use of the Endotine Ribbon, I would raise the deep plane ledge in the face and attach it to the preauricular region with multiple horizontal mattress 3-0 PDS sutures.

In the neck, I still perform a subcutaneous dissection toward the midline, identify the posterior border of platysma, and dissect a small subplatysmal flap and fix it to mastoid periosteum with multiple horizontal mattress 3-0 PDS sutures. The skin flaps would then be redraped and trimmed as needed to avoid tension.

3) When I first started using Coapt's Endotine products, it was as part of a

Figure 4. The repositioning of the deeper SMAS and malar fat pad in the deep-plane facelift more thoroughly addresses the sagging tissue and allows for more volume distribution.

browlift procedure. Rather than using a single stitch, the Endotine brow-fixation system uses five tines (or small hooks) that hold the brow and fix it. This system is far superior to other brow-fixation methods I used in the past, such as stitches into screws and stitches into bone tunnels, in which fixation depends on single points.

The Endotine Ribbon had the same concept as the brow device and offers similar advantages of tension distribution along multiple tines. However, I did not dissect in the superficial subcutaneous tissue in the face where the ribbons were traditionally being placed with tines facing down on the SMAS. I did not see the usefulness in the deep plane until it occurred to me to flip the ribbon in the deep plane, with the tines grasping the jowl from beneath it (Figure 1).

The tine end of the ribbon and the other perforated end of the ribbon were too long. Originally, the length of the ribbon was based on placement and fixation from a temporal incision where length was needed, but I was trying to fix the deep plane a shorter distance to the preauricular region, which is a much shorter distance to pull. Trimming on both sides left about five or six tines on the ribbon, which worked very well. Furthermore, the ribbon was not palpable as the deep plane covered all the tines (2.5 mm thick).

The tines of the ribbon engaged the jowl and deep plane from underneath, hooking onto a large surface area of the deep plane and not just at the edge. The lift looked much smoother, and there was no puckering or pulling at the skin surface. I secured the perforated preauricular portion of the ribbon with 3-0 PDS sutures.

To test the strength of the lift, I counterpulled in order to try to pull the cheek downward. However, the lift was very strong in the deeper tissue, and the skin did not manifest any signs of tension. The tines were very secure because of the deep plane pushing down onto them.

In the neck, I still use the sutures because of the palpability of the Endotine Ribbon. Possible visibility in the subcutaneous plane, though temporary (3 months), was unacceptable to my patients and myself.

The advantage of the Endotine Ribbon in tension distribution over a large surface area in the deeper tissue is significant compared with the use of individual stitches in the face.

Internal studies show that the bioabsorbability of the Endotine Ribbon, with in-growth of the tissue over a 12-week period, is similar to some stitches. The tissue in-growth occurs in the holes in the ribbon device, which further strengthens it.

In around 8 weeks, the tissue biologically reattaches and stabilizes to a new position—the ribbon provides an additional safety of 4 weeks of fixation before it dissolves.

The ribbon was FDA approved in 2006 and consists of bioabsorbable 82% L-Lactide and 18% glycolide. I trimmed it from an original length of 16 mm down to about 8 mm, which is ideal for use in the deep plane. The tines that grasp the deep plane are 2.5 mm high. As they engage the deep plane, they become nonpalpable.

4) Submentalplasty—Early on in my practice I would perform a submentalplasty by removing a small strip of midline fat and platysmal bands, and then reattaching the platysma in the midline down to the level of hyoid bone with multiple 3-0 PDS sutures. Then, I would transect it a few millimeters in order to take the tension off the cord in the midline.

This approach produced a pleasant cervicomental angle along with the lateral lift in most patients. However, after following these patients over a long period of time, I believed this procedure "skeletonized" the neck too much and produced too many muscular fasciculations, which I had to repetitively treat with Botox.

Currently, I reserve doing submentalplasties with the facelift procedure to female patients with extremely heavy necks and for male facelift patients.

5) Fibrin glue—The circulating nurse prepares the Tissel fibrin glue (Baxter) in the operating room. Fibrin glue is sprayed from a dual sprayer after the deep work is completed and after I have redraped and fixed the skin in its final position. Approximately 1 cc is sprayed from the open incisions in preauricular and postauricular areas. Pressure is held with wet gauze for 3 minutes on each side.

The use of fibrin glue demonstrates a significant decrease in the rate of hematoma formation. Surgical drains are not used, but patients wear a pressure dressing for 24 hours. However, many surgeons are uncomfortable with the omission of drains and seek an additional source of protection against hematoma formation. Fibrin glue can give this added protection.

Using the techniques described above, I have obtained consistently superior and reproducible results with a rapid recovery. After my significant experience with parotid surgery and facial nerve dissection, I feel comfortable in the deep plane and have had no incidence of facial nerve injury. However, it is widely accepted that experience and comfort level in this plane varies among surgeons. ■

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A recommended reading list accompanying this article can be found by visiting www.plasticsurgerypractice.com.

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See also "Liposuction of the Neck" by Michael A. Persky, MD, FACS, in the July 2008 issue of *PSP*. Go to www.plasticsurgerypractice.com and click on "Archives."