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Journal of Clinical & Experimental Dermatology Research

Research Article

Minimally-Invasive Laser-Assisted (MILA) Facelift under Local Anesthesia

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ABSTRACT

Introduction: Facelifting procedures are continuously evolving as patients demand increasingly powerful results with less downtime. One way to achieve this is to perform the operation under local anesthesia and harness the power of laser technology.

Methods: First author developed a Minimally-Invasive Laser-Assisted (MILA) facelift technique that was performed in awake patients under local anesthesia.

Results: Two surgeons performed the MILA facelift on 10 patients (9 female, 1 male), with an average age of 61.1 (range: 32-74 years). Average body mass index was 24 (range: 20.5-31.8). The majority (n=8) were primary facelifts while the remainder were secondary facelifts. Average operative time was 203 min (range 120-350 min). There was one unilateral facelift, three isolated facelifts and the rest included ancillary facial rejuvenation procedures. There were no minor or major complications reported or observed with an average follow up time of 8 months (range 5-14 months).

Conclusion: The MILA facelift encompasses modern laser technology with established facelifting principles. This creates a reproducible, safe and efficient operation that can be comfortably performed under local anesthesia. Surgeons can benefit from understanding and embedding these techniques into their practice while patients benefit from a more expedited recovery without compromising aesthetic results.

Keywords: Minimally-Invasive Laser-Assisted (MILA); Facelifting procedures; Superficial Musculo-Aponeurotic System (SMAS)

INTRODUCTION

The Facial rhytidectomy, or facelift, has evolved to a more comprehensive full-face rejuvenation concept to include a collection of complementary procedures performed in a single operative day to create harmony and balance. While this procedure and ancillary adjunct procedures have evolved greatly since Skoog described lifting the Superficial Musculo-Aponeurotic System (SMAS) of the midface in the 1960s, the crux of facelifting remains in how one manipulates/lifts the SMAS [1]. The SMAS layer was later identified anatomically and described in more detail by Peyronie and Mitz in 1976 [2]. A successful facelift operation involves many principles including a complete understanding of the anatomical structures at various levels/planes, meticulous technique, total care of the physiologic needs of the patient, command of vectors, maximizing the physical dynamics of flap transposition and utilizing the SMAS layer for soft tissue elevation while taking tension off the skin. The technical surgical aspects are married to the aesthetic goals agreed upon by both the surgeon and patient. Initially skin-only techniques lacked longevity given the skin's intrinsic characteristic of elasticity. Thus, the more advanced techniques include manipulation of the SMAS. This can be achieved with imbrication (SMASplication), elliptical resection (SMASectomy),

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Received: 19-Jun-2026, Manuscript No. JCEDR-26-42793; **Editor assigned:** 22-Jun-2026, PreQC No. JCEDR-26-42793(PQ); **Reviewed:** 16-Jul-2026, QC No. JCEDR-26-42793; **Revised:** 23-Jul-2026, Manuscript No. JCEDR-26-42793 (R); **Published:** 30-Jul-2026, DOI: 10.35841/2329-9509.26.17.709

Citation: Theodorou SJ, Vranis NM, Rollins A, Durand P, Chia C. (2026) Minimally-Invasive Laser-Assisted (MILA) Facelift under Local Anesthesia. J Clin Exp Dermatol Res. 17:709.

or undermining and advancement ("deep-plane"). Degree of skin undermining is a separate variable that varies based on surgeon preference, patient anatomy and choice of SMAS manipulation. Hashem, et al., reviewed and compared four of the most common modern-day facelift dissection patterns all of which manipulate the SMAS [3].

Ultimately, a surgeon's goal is to deliver a safe, effective and state-of-the-art facial rejuvenation procedure in properly selected patients. While facelift procedures have been performed for decades, we seek to combine well-adopted techniques with the most advanced technology to streamline technical aspects of the operation, improve upon the reproducibility of the operation, accelerate the recovery and yield excellent post-operative results. Expanding upon the guiding principles of the Short Scar Facelift (SSFL) as described originally by Baker, et al., this innovative technique using a Minimally-Invasive, Laser-Assisted Facelift (MILATM) (patent pending, USPTO: 64/048,538) to fulfill the above criteria [4,5]. The foundational aspects of the back-to-the-basics SSFL include younger patient age, discontinuous flap undermining, decreased postop edema, shorter incision length coupled with Superficial Musculo-Aponeurotic System (SMAS) lifting for longevity (imbrication or SMASectomy). Additionally, being able to perform this operation under local anesthesia while patients are awake to avoid complications associated with general anesthesia is regarded as a benefit for some surgeons and patients. Patients are content with achieving their aesthetic goals while experiencing a shorter recovery period and a quicker return to daily activities.

We present the first case series of patients who underwent the MILA facelift under local anesthesia. The MILA facelift combines cutting edge laser technology with a simplified approach of the SSFL which, *in toto*, further enhances the overall restorative result and patient experience. This reproducible technique can be utilized by both, the novice and experienced facial rejuvenation surgeon.

MATERIALS AND METHODS

The study was conducted in accordance with the declaration of Helsinki on research and human rights. All seven standard face and necklift views were photographed in the preoperative and postoperative setting using a Cannon T6 camera. The senior surgeon developed and utilizes the novel technique described in detail below to create an efficient and reproducible facelift. Patient inclusion criteria consisted of good psychological surgical candidates for facial rejuvenation, none or well controlled medical co-morbidities, mild to moderate signs of facial aging, excess skin laxity and able to tolerate a procedure under local anesthesia. Patients were excluded if they were active smokers, history of smoking within one month of surgery, body mass index greater than 35. A retrospective review was conducted to include all MILA facelift cases over the past year. Patient pre and postoperative photographs in addition to medical records were evaluated for the analysis. Follow ups occurred on day 1, day 2, week 1, week 6, month 3-4, month 5-7 and month 11-12.

Patient selection

Candidates for the MILA facelift fall under the same criteria for all potential traditional facelift patients with certain modifications. Full history and physical with indicated laboratory results, diagnostic tests and imaging are performed per usual under surgeon guidance. They must all be medically stable with no contraindications to traditional facial rhytidectomy surgery (excessive scarring, etc.). A modified Daniel C. Baker Facial Scale is used to stratify candidates based on their degree of soft tissue laxity and a surgical plan is created accordingly [4,5]. Patients must psychologically accept being aware of the details of the surgery (pressure, sounds, etc.) while remaining compliant to the commands of the surgeon. While oral sedation and local anesthesia provide reproducible calming and complete analgesia, respectively, the patient is cognizant to varying degrees of the surgery. Patient selection extends beyond traditional anatomical and medical merits and must take into consideration his or her psychological state as well (Table 1).

Table 1: Patient considerations and technical considerations for performing the MILA facelift under local anesthesia.

	Patients	Medications	Equipment/room set-up
Pre-procedure	Respond to local anesthesia Anxiety controlled None or well controlled medical co-morbidities	Hold SSRI* for 2 weeks prior Diazepam 10-20mg PO Hydrocodone 5-10mg PO Tylenol 1000mg PO Antibiotic PO (gram+ coverage)	Calming/relaxing pre-procedure room
Intra-procedure	Standard vital sign monitoring	Tumescent solution Re-Dose Diazepam 5mg PO (if over 4 hours)	Cover eyes to protect bright lights Consider sterile ear plugs Manage procedure room conversations Lower electrocautery settings
Post-procedure	Need A driver/adult supervision	Surgeon preference pain control	N/A

Note: *SSRI (Selective Serotonin Reuptake Inhibitor) ≥may potentiate lidocaine toxicity Diazepam (PO)

Surgical technique

Pre-operative markings of the relevant anatomy are made in the upright position. These include midline, inferior border of the mandible, angle and ramus. Additionally, the skin amount of anticipated skin undermining is marked, which is typically anterior to the edge of the parotid gland. After appropriate consent is obtained, oral medications is administered including, but not limited to, 5 mg-10 mg hydrocodone, 10 mg-20 mg diazepam and an antibiotic covering gram-positive bacteria. Adhering to standard sterility protocols, patient is prepared for surgery and 1% lidocaine with 1:100,000 epinephrine is injected into key points around the ear with a 32 g needle in anticipation of the skin incision. Additionally, highly adherent areas, such as the posterior auricular area, infiltration aids with hydro-dissection. Since the patient is not receiving intravenous analgesia, a slow and deliberate injection technique is warranted. Originally described for body contouring by Theodorou and Chia, the less densely innervated subcutaneous space accommodates the drug volume and relatively low pH with little stimulation; this allows an initial analgesic phase to lessen pain as the injection continues with the needle brought more superficially [6]. At this point, the more densely innervated sub-dermis has some analgesia on board making the rest of the delivery of lidocaine less painful and the area can be numbed with minimal reaction from the patient.

Once the proposed incision is fully injected, tumescent fluid consisting of 0.1% lidocaine (<35 mg/kg) with 1:650,000 concentration epinephrine (1.5 ampules epinephrine) in Ringer's lactate or normal saline is slowly introduced into the subcutaneous fat plane *via* either a 20 g spinal needle and/or a small caliber 16 g blunt infiltration cannula (Video 1). Using the same principles of injection as described above, approximately 100mL of fluid is slowly infiltrated into the ipsilateral side of the face just beyond the borders of the preoperative markings. At this point, the surgeon will inject the contralateral face using the same technique. Again, this is the subcutaneous fat layer beneath the dermis and directly over the SMAS. This allows resorption of some of the fluid volume to minimize soft tissue distortion, maximize the lidocaine effect and allow the tumescent fluid to disperse throughout the soft tissues including inferiorly to the SMAS. In a similar fashion, the neck from mandibular border superiorly, hyoid inferiorly and reaching the borders of the sternocleidomastoid muscles laterally is tumesced.

Once the patient has complete analgesia following infiltration of the local anesthetic, stab incisions are made in the submentum, the posterior-auricular hairline, lobule-cheek junction and at the root of the helix-cheek junction. Blunt discontinuous undermining of the subcutaneous space of the neck and face begins with a small caliber, blunt liposuction cannula (Wells Johnson 2.0 mm double Mercedes cannula). This defines the subcutaneous adipose plane and facilitates the eventual flap elevation. Next, application of energy to the subcutaneous-SMAS junction (face) and subcutaneous-platysma junction (neck) is delivered by a laser (Alma Lasers, Israel). In the neck region, energy from a 1470 nanometer wavelength diode: Yttrium Aluminum Garnet (YAG) laser transmitted *via* a fiberoptic fiber coupled through a novel "all-in-one" liposuction cannula provides simultaneous skin tightening, lipolysis and adipose evacuation (Alma Lasers, Israel)(Video 2). The end point is loss of resistance for the surgeon as tactile feedback is critical for this portion of the procedure. Efficiency is maximized by the "all-in-one" technology such that adipose reduction, lipoaspiration of the fat into a sterile container for subsequent autologous fat grafting use and delivery of energy to the subdermis and Fibroseptal Network (FSN) for tightening can all be performed simultaneously.

Above the mandible, the intensity of aspiration is decreased such that excess tumescence is evacuated, however, there is none or minimal adipose reduction to respect the tenet of facial volume preservation. Applying laser energy between the subdermis (above) and the SMAS (below) leads to soft tissue contraction while simultaneously pre-tunneling in the appropriate plane. This maintains a safe margin to protect the skin flap and subdermal plexus, above, and the critical sub-SMAS structures, below. A surgeon must have comprehensive knowledge of anatomy and comfort in operating with cannulas as this maneuver is mostly performed with bimanual palpation and cannula excursion/resistance feel. The cannula tip must remain in the subcutaneous space at all times to avoid placing the tip of the laser cannula near critical nerves and vessels during the closed portion of the procedure. After the laser-assisted tunneling and tightening has been performed, standard facelift and submental necklift incisions are made. The skin flaps have been effectively undermined by the cannula, facilitating an expeditious and easy dissection of the flaps under direct vision. The surgical plane is highly hemostatic and clearly delineated which enhances safety and efficiency. The SMAS/platysma layer is tested for adequate analgesia to ensure patient comfort since that deeper layer may require additional local anesthetic for the suture lift. Electrocautery settings are lowered to avoid stimulating nerves on the SMAS in the event small vessels require cauterization. After the skin flaps are elevated, the midline and/or lateral platysmal flaps of the neck as well as the SMAS layer of the face are brought to midline, tightened and lifted in the traditional manner. Once the underlying SMAS layer is addressed, the surgeon may take the opportunity to assess areas of volume deficiency which can benefit from augmentation by utilizing the previously harvested fat. Finally, excess skin is trimmed and incisions are closed in layers without tension over a closed-suction drain. At the conclusion of the surgical procedure, non-invasive adjuvant treatments such as skin resurfacing lasers, radiofrequency or dermabrasion can also be performed since the patient has excellent residual analgesia. A standard postoperative, bulky facelift dressing is applied and

the patient brought to the Post-Anesthesia Care Unit (PACU) awake and conversant.

RESULTS

Ten consecutive patients underwent MILA facial rhytidectomy procedure under local anesthesia over a nine-month period. The overwhelming majority (n=9, 90%) were women. There was one male patient in our cohort. Average patient age was 61.1 years old (range: 32 to 74 years). The majority of patients were caucasian (n=6, 60%), while the remaining patients were of Hispanic (n=3, 30%) and African American (n=1, 10%) origin. Average operative time was 203 minutes (range: 120 to 350 min. There was one unilateral facelift (10%), three isolated facelift/necklift (30%) and six cases that had ancillary blepharoplasties in addition to the facelift/necklift procedure (40%). The majority were primary facelifts (n=8, 80%) while two of them (20%) of the patients previously had a facelift procedure. While all patients underwent laser-lipoaspiration of the neck, only four (40%) underwent an open midline necklift with a platysmaplasty. Two of the caucasian patients (20%) had an additional skin resurfacing laser procedure in addition to the subdermal laser procedure. There were no (n=0, 0%) minor complications and no (n=0, 0%) major complications (thermal injury of the skin, contour irregularities, seromas, hematomas, mortality or return to the operating room). Patients were followed for an average average of 8 months (range: 5 to 14 months). (Table 2,3).

Table 2: Patient and surgeon demographics (n=10 patients).

	Average/count	Range
Age	61.1 years	32-74 years
Gender		
Male	1	
Female	9	
Ethnicity		
Caucasian	6	
Hispanic	3	
African American	1	
BMI*	24.2	20.5-31.8
Surgeon		
Surgeon 1	7	
Surgeon 2	3	

Note: *BMI: Body Mass Index

Table 3: Procedural data and patient results.

	Average/count	Range
Local	10	
Duration of surgery	203 min	120-350 min
Primary facelift	8	
Secondary facelift	2	
Unilateral facelift	1	
Isolated facelift	3	
Open necklift	4	

Ancillary procedures		
Quad blepharoplasty	1	
Upper blepharoplasty only	3	
Lower blepharoplasty only	2	
CO_2 laser skin resurfacing	2	
Earlobe repair	1	
Length of follow-up	5 months	2-11 months
Minor complications	0	
Major complications	0	

DISCUSSION

The MILA™ facelift harnesses benefits of established facelifting principles coupled with cutting-edge technology to deliver safe and efficacious results in an efficient manner. Additionally, the ability for the surgeon to perform this high-level operation while awake adds additional benefit by mitigating general anesthesia risks. Procedures that were traditionally thought of as an arduous undertaking can be broken down into a series of simple steps to alleviate much of the stress for surgeons. Yet, the average operating time for this procedure (which several patients had additional ancillary procedures) was less than 3.5 hours. Facelifting under local anesthesia is not a novel concept. Frojo, et al. published their six-year experience with 174 patients who underwent this procedure while awake and comfortable. Two thirds of their operations were SMAS plications and the remainder were MACS lifts. The reported complications include hematoma (13.2%), seroma (3.4%), emesis (3.4%), infection (2.9%), scar revision (2.3%) and ear deformity (1.1%) [7]. A recent systematic review concluded that results from a medial *vs* lateral SMAS manipulation showed no difference in longevity and appearance of the midface [8].

Hydro-dissection with tumescence followed by discontinuous undermining and thermal dissection was shown to be, safe, fast and lead to less bleeding for facelifts [9]. Using their tumescent technique in combination with the hemostatic effect of the 1470 wavelength diode: YAG, the authors observed decreased bruising and venous engorgement. This is similar to our experience where patients have minimal bruising in the early post-operative period (Figure 1). Patients were able to walk out of the surgery center in less than thirty minutes after their procedure finished and went back to their regular routines (except for heavy exercise) by the second day after surgery. The tumescent also allows for adequate local anesthesia such that systemic intravenous anesthesia and intubation is rendered unnecessary. This mitigates all the potential complications that are associated with such deep states of anesthesia. Since 2016, Kaye, et al. have utilized tumescent with water assisted liposuction techniques to the face [10]. Through liposuction they are able to reduce subcutaneous thickness to contour the face and undermine in a discontinuous fashion for ease of flap dissection. There is a highly artistic skill component when performing lipoaspiration in the face, as preservation of fat in certain areas of the face is critical in restoring a youthful appearance (Figure 2). Evacuating too much fat will skeletonize the face resulting in a more aged appearance.

Figure 1: Healing timeline for a 32-year old weight-loss patient that had MILA facelift under local at various time points in the healing journey. (Top-frontal series, Middle- right oblique, Bottom- Left lateral series).

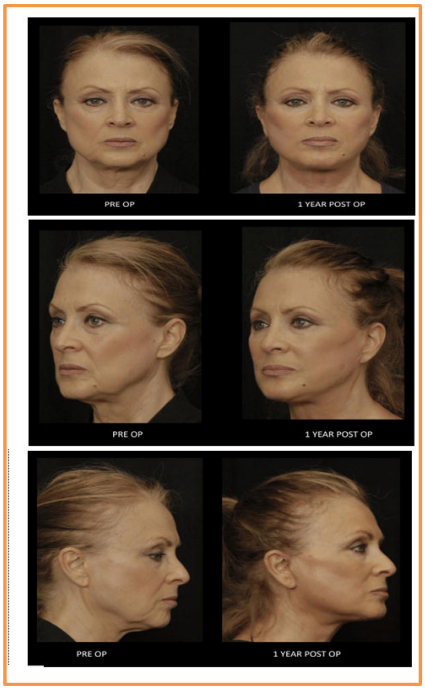

Figure 2: Pre-operative and one year post-operative results of a 61 year-old patient that underwent a MILA facelift under local anesthesia. (Top-Frontal, Middle-Left oblique, Bottom right lateral). The sustained improvement in facial elevation and jawline is seen at one year.

Slow tumescent methodology (Wells Johnson infiltration at speeds 50-100) at a plane deep to the dermis and into the FSN (Fibroseptal Network) and above SMAS has multiple benefits. When performing these operations awake, it is comfortable for the patient. Second, expansion of the plane is less abrupt leading to less bruising as it avoids direct contact with the subdermal plexus which is the source of most bruising postoperatively. Third, it provides a low stakes opportunity for the surgeon to familiarize themselves with the tactile feedback of placing the cannula in the correct plane prior to repeating these maneuvers with the laser-aspiration cannula. Facelift surgeons must maintain a meticulous and precise facelift dissection plane because being too superficial compromises flap perfusion or leads to an inadvertent "buttonhole" in the skin flap while being too deep compromises SMAS integrity and risks nerve injury. The prior tactile feedback of tumescing the subcutaneous layer is followed by performing low power liposuction in the same layer. This helps create tunnels at the appropriate depth, evacuate excess fluid and ultimately makes the skin flap dissection much more predictable. The resulting "honeycombing" of the subcutaneous later expedites the efficiency of eventual flap dissection.

Technical nuances of this novel operation that differ from more traditional methods pertain to the awake nature of the procedure, the tumescent technique, laser application and ability to perform a notable SMAS lift using plication techniques.

Since patients are awake, care to minimize disturbing ancillary noises or conversations in the operating room is critical. Local infiltration is carefully and slowly performed to ensure patient comfort. Administering the tumescent with a cannula creates anterograde anesthesia as the tip advances into previously numb areas. One of the biggest differences is that most of the procedure is performed prior to opening the incisions. Success is highly contingent on the surgeon's ability to navigate into the correct plane and remain in the correct plane using mental three-dimensional perception along with bimanual palpation of the cannulas/laser tip for navigation all while following the cures of the face and neck. Once this is executed well, dissection of the skin flap is easily performed. Lastly, operating though a short-scar design to visualize and perform the SMAS lift is also technically demanding that requires finesse. (Figure 3)

Figure 3: Pre-operative, 1 week, 2 week, 1 month lateral progression photographs of a 68 year-old patient that underwent a MILA™ facelift under local anesthesia. Demonstrates the potential for rapid recovery and ability to resume social engagements within a month after surgery.

Combining ancillary skin resurfacing modalities with lifting procedures increases patient satisfaction and the overall appearance of the result. However, applying thermal energy to the undermined skin flaps at the time of index rhytidectomy has always given surgeons hesitation. Some surgeons will avoid it and separate the two procedures while others will decrease fluence and other settings to soften the intensity of the laser over areas that have been undermined. Albeit complications are uncommon, a recent metanalysis did find increased rates of wound healing complications and skin compromise when laser resurfacing modalities were applied to the skin flap at the time of the facelift [11]. For the MILA facelift, the energy from the laser is applied in the subdermal, subcutaneous, supra-SMAS plane instead of to the epidermis and dermis. Theoretically, this mitigates the risk of thermal damage to the epidermis. Additionally, the newly created 300-micron diameter optical fiber-compared to the standard 600-micron fiber used previously in body procedures-on this platform reduces the spread of energy delivered making it safe to use in delicate areas such as the face.

In our series, we did not observe any evidence of delayed wound healing, transient epidermal pigmentation changes or skin flap compromise. Future studies with a larger cohort of patients will be needed to validate these observations but applying the thermal energy in deeper layers should preserve dermal integrity and vascularity. Surgeries were performed by two surgeons in this cohort, demonstrating the potential for reproducibility of result by following the same sequence of surgical steps.

For surgeons who routinely perform concomitant laser resurfacing with facelift surgeries, application of controlled thermal energy in deeper layers does not preclude this combination of procedures. In patients that would benefit from improvement in pore size, pigmentation and fine rhytids, the hybrid laser (CO_2 and 1570 nm wavelength) (Alma Lasers, Israel) was used in two of the patients. There was no evidence of flap ischemia, necrosis, delayed wound healing or other pigmentation complications in any of these four face flaps. The hybrid nature of the laser which harnesses benefits of the ablative CO_2 modality and a non-ablative 1570 nm modality without significant recovery down-times. We witnessed rapid re-epithelialization and near complete recovery from the laser by the seven day follow-up appointment.

Skeptics may question the viability of extracted fat after a thermal laser energy has been applied to it rendering it inadequate for fat transfer. However, prior studies, using a very similar 1470 nm diode: YAG radial emitting laser assisted liposuction reported extremely high SVF cell viability (97% and 98%) from the extracted lipoaspirate [12,13]. A study by Levenberg, et al. found that the lipoaspiration samples from the 1470 nm diode: YAG laser assisted liposuction had significantly higher cell viability and overall more favorable composition for fat transfer compared to mechanical lipoaspiration [14]. "Preservation fat grafting" is a term to indicate the ability to preserve the adipose adjacent growth factors and stem cells with high adipose cell viability, without damaging the donor site. Thus, the use of the laser-assisted liposuction is multifactorial: 1) Loss of resistance endpoint indicates appropriate honeycombing for a safe flap dissection; 2) ablation and coagulation of small vessels leading to less bruising and hemosiderin deposits; 3) fat reduction with possibility of repurposing fat for structure and regenerative effects (preservation fat grafting); 4) restoration of the SFS ligamentous tension for a spherical soft tissue shrinking effect [13].

Age

Traditionally, facelifting procedures were thought to be reserved for the older population as fascial descent was a sequela of the aging process. Advances in surgical technique, social media influence for facial sculpting, increased access to surgeons, decreased perceived complication profile and rapid fluctuations in facial volume all contribute to the recent trend of younger patients presenting for facelifting procedures. Many patients that experience significant weight-loss fluctuations after using Glucagon-Like Peptide-1 (GLP-1) inhibitor medications also note facial volume deficiency and soft tissue laxity. Additionally, as patients dissolve hyaluronic acid from previously overfilled faces a similar observation is observed residual facial volume atrophy and soft tissue laxity leading to patient dissatisfaction [15]. Patients and surgeons turn to the gold standard for this reason which remains to be a facelift with fat transfer for volume restoration. The youngest patient in our cohort was 32 years of age after massive and rapid weight-loss secondary to a GLP-1 inhibitor. The advent and popularity of this new class of drugs leading definitive and impressive weight-loss solutions deserve a definitive and impressive minimally invasive solution.

Neck

The laser component of the MILA facelift is not to achieve epidermal resurfacing, rather to harness its ability of contraction on the deeper tissues, aid in dissection and restore tightness of deeper ligamentous structures. Studies have found that the laser-assisted liposuction yields a greater degree of skin contraction compared to traditional techniques [16]. Since 2006, laser delivered energy in the subdermal plane has been performed for skin retraction and collagen deposition [17]. The 1470 nm wavelength laser targets water and hemoglobin as the main chromophores and converts the energy into heat through photothermal effects. The high absorption affinity ensures that the thermal effect is localized within a narrow range (penetrating about 2 mm into the tissue), minimizing damage to surrounding healthy tissue. Lasers around this particular wavelength are known to tighten the vertical fibers/septa of the extracellular matrix, particularly when used in conjunction with lipo-aspiration [17]. The synergy between FSN tightening (laser effects) and volumetric reduction (lipoaspiration effect) allows for easier, less traumatic fat removal and better aesthetic contours.

Face

The goal of soft tissue reduction and retraction can also be applied to the face using the 1470 diode: YAG (Alma Lasers, Israel) laser with facial liposuction. This is only to be used in cases where patients present with excess volume and adiposity in the mid and lower face.

Pronounced nasolabial folds due to medial malar fat excess or heavy jowls can benefit from this type of combination treatment as well. Following volume reduction and tightening, the lifting component of the MILA facelift restores the position of the soft tissues creating an elegant and balanced overall aesthetic. In patients that lack midface volume, the use of 1470 diode: YAG laser is only for undermining/coagulation and ease of flap dissection. A small degree of SMAS contraction with eventual collagen deposition in this layer only contributes to the mechanical lift attained by the surgeon. Again, the main purpose of the lift is to restore soft tissue that has descended to a more

youthful position. This is further enhanced with targeted preservation fat transfer to restore missing midface volume. Controlled thermal injury is known to stimulate a wound healing cascade that eventually leads to enhanced collagen remodeling and neovascularization to improves skin texture and soft tissue elasticity over time [16,18].

Future directions-regenerative

The regenerative potential of fat has been well studied and remains of grave interest. Adipose derived multipotent stem cells, stromal vascular fraction, exosomes and other regenerative cells and/or growth factors are abundantly found in fat [19-21]. Their pluripotent potential coupled with immune modulation ability, paracrine activity angiogenesis stimulation makes it a potent and clinically applicable in breast reconstruction and facial aesthetics [19]. Use of additional devices that apply minimally manipulative techniques under point-of-care conditions can be utilized after fat harvest in order to produce a pellet of clinically useful, concentrated regenerative cells [20,21]. Lastly, obtaining objective measurements to quantify patient satisfactions would further enhance the utility and acceptance of this procedure.

Limitations

We acknowledge that findings of this paper are limited by the small sample size and follow-up time. However, the main purpose of this was to describe the technical details of this surgical procedure such that surgeons can understand the technique and add to their armamentarium. The most significant complications would appear by 3 moths after the procedure and our average follow-up time far exceeds this. Additionally, the findings reveal that surgeons can perform this procedure in a safe and comfortable manner.

CONCLUSION

Facelift procedures continue to rise in popularity and younger patients are now presenting to surgeon offices requesting definitive facial rejuvenation. This phenomenon is a combination of “filler fatigue” as well as the widespread adoption of GLP-1 inhibitors. Designing a procedure that is efficient, safe, reproducible and effective is of paramount importance. This procedure, under local anesthesia, meets these riteria and is important for surgeons to have in their armamentariums as they evaluate patients for surgical candidacy. The 1470 nm diode: YAG laser offers multiple benefits that include ease of flap dissection, restoration of FSN contraction and decreased post-operative ecchymosis. The ability to perform this comprehensive facial rejuvenation without the need of general anesthesia allows for an even greater population of patients that meet surgical candidacy criteria. With advantages including an excellent safety profile and faster recuperation while maintaining excellent analgesia and patient comfort, patient have a positive experience overall.

DISCLOSURE

Drs. Theodorou and Chia receive royalties from Thieme Publishing. Dr. Vranis receives compensation from Revance and InMode Ltd. Drs. Rollins and Durand do not have any financial disclosures.

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