

JOLT: A Noninvasive Solution for the Correction of the Jowl

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Background: Sagging and loss of elasticity of the facial skin and tissues leads to jowling and an aged appearance. Jowling is a common reason for aesthetic surgical consultations.

Methods: Prospective open-label study of the JOLT (jowl lifting) technique using hyaluronic acid (HA) fillers in healthy women 40–65 years of age with Fitzpatrick skin phototypes II–IV (n = 8). To be eligible, patients had jowling grade 2–3 on the jowl appearance scale as assessed by both the physician and patient. Treatment was administered at the baseline visit and consisted of an average of 6 mL of HA filler, 3 mL per side. Efficacy was assessed at baseline, week 4, and week 12. Assessment measures included the jawline rating scale (JRS) and a five-point global aesthetic improvement scale performed by two independent observers. Success was defined as an improvement of 1–2 grades on JRS.

Results: The mean JRS was improved from 2.75 at baseline to 1.53 at 90 days, which was considered a significant improvement. Mean global aesthetic improvement scale scores at 90 days were 1.44 ± 0.66 (range 1–3), indicating a “very much improved” appearance compared with baseline on both investigator and subject ratings. The procedure was well tolerated by all patients. Injection-related side effects (bruising and localized swelling) resolved spontaneously within 1 week of treatment. No other adverse events were reported.

Conclusions: The JOLT technique effectively uses HA fillers to lift and tighten the lower face/neck and camouflage the remaining jowl, diminishing marionette lines, defining the mandibular border, and improving jowl sagging. (*Plast Reconstr Surg Glob Open* 2024; 12:e5856; doi: 10.1097/GOX.0000000000005856; Published online 11 June 2024.)

INTRODUCTION

Jowling is a common problem that the aesthetic surgeon must address in the facial rejuvenation consult. It is a clear sign of the aging process that occurs slowly over time because the skin, bones, and soft tissues of the face begin to sag and lose elasticity.¹ Several factors can contribute to its appearance, including genetics, gravity, sun exposure, smoking, facial movements, and weight changes.² Options for jowl management include liposuction, lipolytic enzymes, threading, lasers for skin tightening/lipolysis (1440 nm), high-intensity focus ultrasound, deoxycholic acid, radiofrequency, subsuperficial musculoaponeurotic system (SMAS) facelift, and others. The fact that all these

treatment modalities are being used confirms that none is ideal for correcting jowling. JOLT is a hyaluronic acid (HA) filler technique that combines correct tissue displacement and camouflage procedures that result in an important reduction of jowl visibility.

It is now widely accepted that the facial structural foundation of bone and supporting soft-tissue volumes are held together by facial muscles and the aponeurotic system. The seminal 1976 report by Mitz and Peyronie³ on the anatomical details of the superficial fascia introduced the critical concept of the SMAS. During the 1980s, Furnas⁴ discovered that these attachments are retaining ligaments anchoring the facial soft tissues to the skeleton.

Of these, two are of particular importance for the JOLT technique: the zygomatic cutaneous ligament and the platysma auricular ligament. Moss et al⁵ later described other forms of ligamentous attachments,

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mainly in the temporal and periorbital area, in the form of septa and adhesions. One of the most relevant is the direct attachment of the SMAS to the zygoma,⁶ anchoring the soft tissues of the face to this bony bar through the fibrous adhesions of the parotid-temporal fascia and the continuance of the zygomatic cutaneous ligament over the zygomatic arch.⁷

There has been continuous debate about whether it is possible to “lift” the facial soft tissues with noninvasive procedures, especially injectables such as HA. “Lifting” in classical surgical terms of cutting, repositioning, and stitching, is not possible with these procedures; but a “lifting effect,” defined as a change of position of one tissue layer with respect to another tissue layer, SMAS versus bone, can occur. This injector’s “lifting” definition will bring new coherence to what we actually see posttreatment in the patient.

Although facial soft tissues undergo ptosis over time, the mimetic musculature is unchanged in volume and length.⁸ The implications are obvious, and some other authors have recently addressed the importance of the ligaments for tissue repositioning.⁹ Cohen et al¹⁰ proposed reversing the direction of tissue descent affected by the attenuated retaining ligaments by applying filler injection to specific counteracting vectors.

The JOLT technique is based on advanced knowledge of the role of facial ligaments in supporting and interacting with the soft tissue of the mid and lower face. Modifying the position of these ligaments realigns soft tissue, including the jowl and jawline, and works with the overall technique to reduce or camouflage the jowl (Fig. 1). This can be achieved by the application of HA of different rheology in crucial anatomical regions,

Takeaways

Question: How to use HA fillers to achieve an aesthetic improvement of the jowls in an anatomically sound, comprehensive, and effective way.

Findings: In using HA fillers to reposition facial ligaments and camouflaging the jowl, the JOLT technique can improve the jowl appearance and define the jawline.

Meaning: The JOLT technique is an effective, anatomy-based approach with HA fillers for the correction of the challenging jowl.

specifically, the zygomatic arch and the preauricular area, to displace the SMAS of the lower third of the face and additionally at the labiomandibular fold, the prejowl sulcus, and the mandibular border behind the jowl to disguise the remaining jowling (Fig. 2).

This publication describes the JOLT technique, a non-invasive method using HA, which combines procedures that have a lifting effect on the SMAS of the lower third of the face with procedures that camouflage the residual jowl (overview in Table 1). These alterations can be integral to the shape of the youthful face, improving the perception of the patient’s facial aesthetics.

METHODS

A prospective open-label study of women 40–65 years of age, healthy volunteers, who had not undergone aesthetic medical procedures/fillers within the past 12 months, with jowling grade 2–3 on the jowl appearance scale (JAS, Fig. 3), as assessed by both physician and patient.

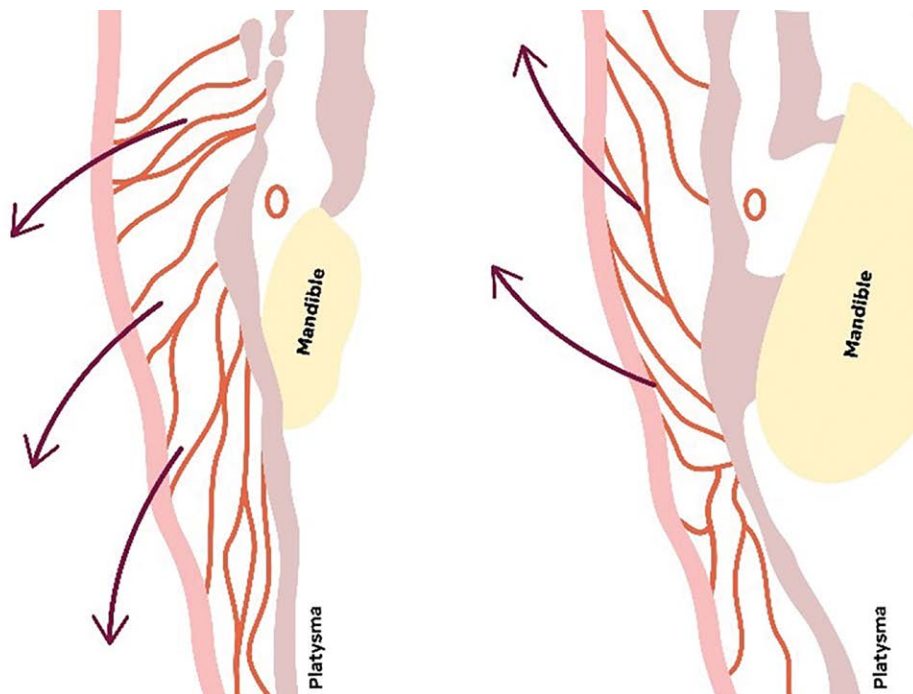


Fig. 1. Overview of subcutaneous soft-tissue organization at the level of the jowl.



Fig. 2. Schematic representation of the treated areas with the JOLT technique: 1. Pyramid technique. 2. Platysma auricular fascia lifting. 3. Happy face technique. 4. Posterior jawline definition.

Additional inclusion criteria were Fitzpatrick skin phototypes II–IV, provision of written informed consent, and ability to follow study procedures. Exclusion criteria were as follows: pregnancy/lactation, micro- or retrognathia, history of keloid or scar formation, unwillingness to refrain from sun exposure/tanning beds during healing, taking any medications/supplements that increase potential for bruising (aspirin, prescription blood thinner, vitamin E, fish oil), significant medical problems, presence of hair/tattoos that could interfere with assessment of study area, known allergies/sensitivities to injection material, plan to undergo dental procedures, and current cutaneous or mucosal inflammatory/infectious processes. The study was conducted in accordance with good clinical practice.

Treatment was administered at the baseline visit and consisted of approximately 6 mL of HA filler, 3 mL per side (Restylane Portfolio; Galderma International, Zug, Switzerland).

Assessments

Efficacy was assessed at baseline, week 4, and week 12. Assessment measures included the JAS, based on

the validated jawline rating scale,¹¹ performed by two independent observers (a plastic surgeon from Sao Paulo, Brazil, and a dermatologist from Buenos Aires, Argentina). Success was defined as an improvement of 1–2 grades on the JAS. Patients were also assessed with the global aesthetic improvement scale (GAIS), a five-point Likert scale from 0 (much worsened) to 4 (much improved). High-resolution photography using Fotofinder software was also performed, along with Vectra H2 (Canfield Scientific, Parsippany, N.J.) 3D imaging (two patients) for a precise indication of the direction and magnitude of skin movement. Patients performed a separate self-JAS and completed a patient satisfaction questionnaire.

Safety was assessed by collection of adverse events. Patients were photographically assessed before treatment, 30 days, and 90 days after the study treatment.

Techniques

Pyramid Technique

First, the zygomatic arch at both the superior and inferior border is marked. Next, the superficial temporal artery should be located using digital compression and marked to indicate the posterior border of the zygomatic arch injections. Then, the beginning of the malar mount convexity should be traced to indicate the anterior border for injection. With the thumb of the noninjecting hand, the jowl should be pushed as high as possible, toward the middle of the zygomatic arch, until the thumb firmly touches the zygoma's inferior border. The index finger is used to move the extra soft tissues above the arch and simultaneously limit the injection space to its width (Fig. 2).

A noncohesive, very high G' HA product (such as Restylane Lyft; Galderma International) should be applied to the suprapariosteal area with small lateral movements. The needle should be slowly retracted while still applying smaller and smaller amounts of the product until the skin is reached, like a pyramid with its base on the bone. The number of treatment injection points is 3 or 4, and the amount of product per injection is about 0.15–0.2 mL with an interval of 0.5–1 cm between injections. No molding is necessary. [See Video (online), which shows a demonstration of the pyramid technique.]

Table 1. Overview of JOLT-associated Techniques

	Pyramid Technique	Parotid Cutaneous	Happy Face	Prejowl	Mandibular Border
Indications	Lifting	Lifting	Correction of irregularities produced by muscle contraction and volume differences in subcutaneous fat	Anterior projection of the pre-jowl sulcus	Creating a lower jawline in accordance with the lower jowl
Specifications	Displace of the retaining ligaments by applying filler on the zygoma	Product place on top of the platysma auricular fascia	Subcision of the labiomandibular ligament	Projection above the mandibular ligament	Alignment of the mandibular border by product placed subdermally
Quantity injected	0.5 to 1 mL per side	0.5 per side	0.5 per side	0.5 per side	1 mL per side
Anatomical awareness	Superficial temporal artery	Superficial temporal artery	Facial artery	Mental artery	Facial artery
Effects	Ligament support	Ligament displacement	Camouflage	Camouflage	Camouflage

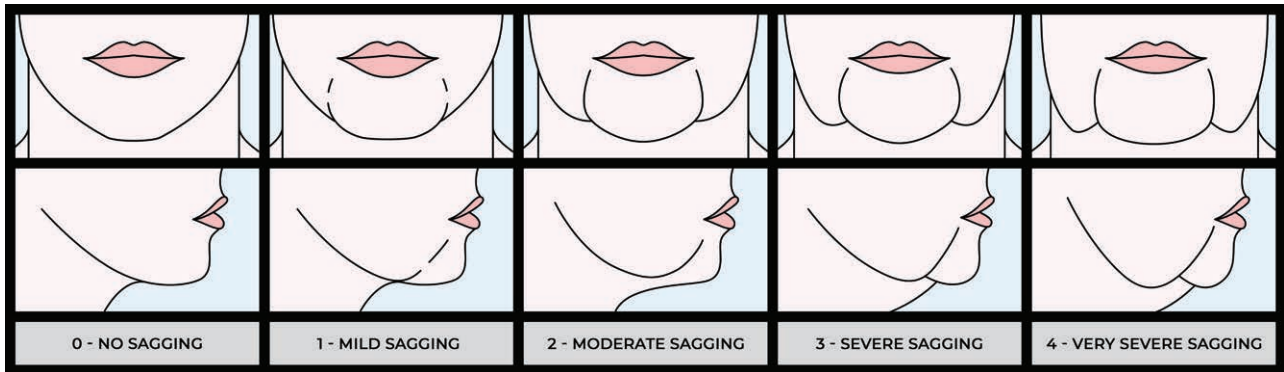


Fig. 3. Jowl appearance scale.

Happy Face Technique

First, the patient should be marked. For this purpose, the jowl is pushed forward, deepening the labiomandibular fold, and the marionette line is marked. A triangle is also drawn under the oral commissure and other labiomental areas with irregularities that need to be corrected. The basis of the happy face procedure¹² is the subcision of the skin from the anterior border of the depressor of the angle of the mouth muscle (depressor anguli oris), the labiomandibular ligament. It is also used to create a personalized subcision area “design” to correct any irregularities. A 25-g cannula is used as a subcision tool and an HA filler of medium to high G’ with good product integration (such as Restylane Volyme or Restylane Defyne; Galderma International).

The cannula entry point is at the junction of a line drawn laterally from the inferior vermilion border and the nasolabial fold (NLF). The cannula is directed in a subdermal plane toward the oral commissure until it reaches the labiomandibular ligament. Taking the skin between two fingers, the cannula is softly pushed through the ligament back and forth until the subcision of the labiomandibular ligament, starting from the oral commissure for a length of 5–10 mm inferiorly, is achieved. Then, the subdermal subcision continues slowly over all the premarked irregularities. Once the area is fully liberated, and the cannula can be easily displaced side to side, the HA is injected until the area smoothing is completed. Soft massage can then be done.

Prejowl Correction

Although it is considered an integral part of the happy face treatment, it is important to understand that the access for the correction of the prejowl sulcus cannot be made from the same entry point because there is a change in the injection plane. First, the mandible border and the area to be treated are marked. A towering technique of injection that begins supraperiosteal—creating 2 or 3 columns with a downward direction—is preferred. The ideal product is an HA with high G’ and no tissue integration (such as Restylane Lift; Galderma International). The total amount of product is approximately 0.3–0.5 mL per side.

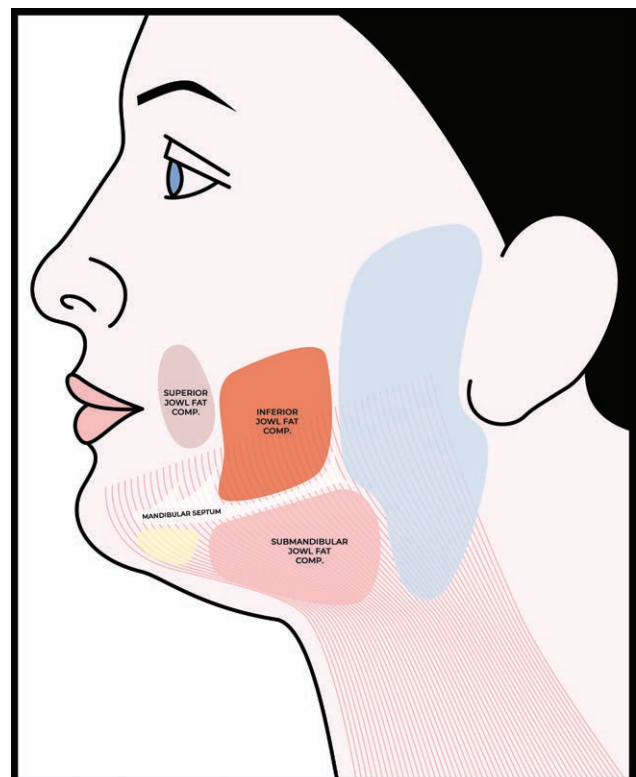


Fig. 4. The mandibular septum plays a vital role in defining the jawline.

Readjusting the Lateral Jawline

First, the anatomical mandibular border is marked, and then a new line is drawn 2 or 3 mm below. The latter line should be aligned with the most inferior line of the descending jowl (Fig. 4). Regarding the lateral length of the HA application, it should begin at the posterior border of the jowl and end at the mandibular angle. In men, the HA application can also be extended to the first 2 cm of the mandibular ramus to achieve a more acute gonial angle. The authors recommend using a 25-g cannula in a subdermal injection plane, a retrograde technique, and always framing the product between the fingers. The product recommendation is a noncohesive HA with a high

Table 2. Amount of HA Filler Injected in Each Patient

	PX1	PX2	PX3	PX4	PX5	PX6	PX7	PX8
#mL	7	5	7.5	6	6	10	10	8

PX, patient.

G, little integration into the tissue, and a suitable lifting capacity (such as Restylane Lyft; Galderma International). In women with thin skin, it might be wise to change to a more moldable integratable product (such as Restylane Defyne; Galderma International). The jowl itself is not injected at any time.

Platysma Auricular Fascia Lifting

Furnas⁴ described that the posterior border of the platysma attached intimately to the overlying skin in the anteroinferior auricular region and named it the preauricular parotid cutaneous ligament, redefine by Mendelson part as the platysma auricular fascia. To locate this ligament, an entry point is made for a 25-g cannula around 1 cm in front and 2 cm below the tragus. The cannula is then introduced vertically upward in the subdermal plane until ligament resistance is identified. Reposition the cannula between the auricular cartilage and the ligament and apply the HA filler in a retrograde fashion from the helical crus until the inferior border of the tragus. It is important to finish by molding the product towards the tragus. The product of choice is a noncohesive medium to high G' HA (such as Restylane Classic; Galderma International). The total amount of product will be around 0.5 mL per side.

RESULTS

Patient Population

Ten women of Latin ethnicity, between 40 and 65 years old (mean age 54 years) with no history of previous aesthetic procedures were enrolled. Of these, eight completed the follow-up and are included in this analysis and discussion for the procedure; the patients were injected with the Restylane portfolio.

Effectiveness

Table 2 shows the amount of HA filler injected in each patient. The mean amount of filler used was 7.4 mL. Table 3 presents the JAS ratings for each patient at baseline and the 90-day follow-up visit. The JAS pretreatment evaluation averaged 2.75. The posttreatment evaluation averaged at 90 days was 1.53, resulting in a difference of 1.2. Considering that the inclusion criteria for the selection of patients was a maximum of 3 on the scale, the difference of 1.2 is considered a significant improvement. Normal asymmetric results were observed in most patients, but in one, the examiners rated each side with

Table 3. Jawline Rating Scale Ratings for Patients at Baseline (before Treatment) and at the 90-day Visit

	Baseline Visit		Follow-up Visit	
	Examiner 1	Examiner 2	Examiner 1	Examiner 2
Patient 1	2	2	1	1
Patient 2	2	3	2	2
Patient 3	3	3	2	2
Patient 4	3	3	0	1
Patient 5	3	3	2	1.5*
Patient 6	2	3	2	1
Patient 7	2	3	2	3
Patient 8	3	4	1	1

*The observers rated the left side 1 and right side 2.

different grades. The final assessment was done comparing the 90-day follow-up visit photographs versus baseline to corroborate the results duration.

Table 4 shows the GAIS scale results at the 3-month visit. There was a mean score of 2.37 in the evaluation of satisfaction with the procedure, which coincides with the evaluation obtained by the observers in the post-treatment JAS improvement. Both patients and investigators alike rated their satisfaction with treatment at the 90-day visit. Mean subject-rated GAIS scores at that time were 1.44 ± 0.66 (range, 1–3), indicating a “very much improved” appearance compared with baseline. Similar values were reported by the investigator.

Safety

The procedure was well tolerated by all subjects. Injection-related side effects (bruising and localized swelling) resolved spontaneously within 1 week of treatment. No other adverse events were reported.

Cases

Case 1

A 56-year-old woman presented with tissue sagging (ie, inferior descent of the malar fat pad, presence of NLFs, marionette lines, and facial jowling) along with loss of facial oval shape and contour of the jaw line. She is shown in Figure 5. The subject received 5 mL of HA [Restylane (+); Galderma International] according to the above-mentioned protocol. No injections were performed directly to the NLF, tear trough, or other areas.

As can be appreciated in Figure 5, there was a highlighted malar mound without increase of the bizygomatic distance, giving an overall improvement in facial shape. There is a softening of the NLF and marionette lines,

Table 4. GAIS Scoring for Each Patient

PX1	PX2	PX3	PX4	PX5	PX6	PX7	PX8
3	3	1	2	3	3	2	2

PX, patient.

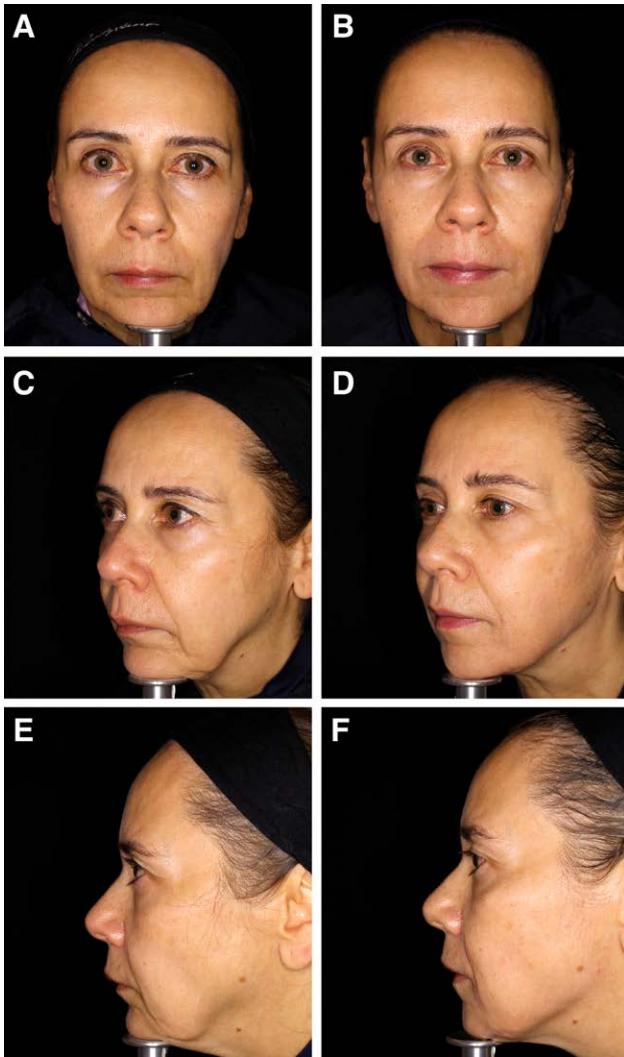


Fig. 5. Follow up of 56-year-old patient, case 1, at baseline and 90 days post treatment. A, Pretreatment frontal. B, Pretreatment three-fourths view. C, Pretreatment left lateral view. D, Post treatment frontal view. E, Post treatment three-fourths view. F, Post treatment left lateral view.

marked improvement of jawline definition, and an important lifting and masking of the jowl. Notice the added lifting of the submental skin.

Case 2

A 54-year-old woman with photodamage, medium-thickness skin, loss of oval shape, with the presence of NLFs, marionette lines, jowling, and loss of jawline definition (Fig. 6).

The subject underwent 7 mL of HA [Restylane (+)] according to the above-mentioned protocol. No injections were performed in other areas outside of the protocol. Postinjection photographs immediately and 90 days after demonstrate softening of the NLF and marionette lines and marked improvement of jawline definition and important camouflaged the jowl. Note the overall improvement in facial shape. The patient



Fig. 6. Patient in case 2 at baseline (A, C) and 90 days post treatment (B, D).

reported satisfaction with the results, noting she felt very happy, and that the overall appearance of her face was natural.

DISCUSSION

Functional anatomy may explain how the formation of the jowl is related to the necessity for skin gliding when opening the mouth. The retinacula cutis connecting the skin to the muscles over the jowl is longer and scarcer than in any other supraplatysmal areas and allows for much greater mobility of the skin and subcutaneous fat in this area. The laxity of the elastic platysma muscle sheet (SMAS) also allows significant lifting despite its mandibular attachment (Fig. 1).^{13,14} Repositioning the attachments of the SMAS at the zygomatic arch and preauricular area has a direct lifting effect on the jowl.

A strong mandibular border without prominent jowls is seen as a cardinal sign of a youthful face as jowling occurs with age, contributing to squaring of the face and loss of jawline definition.¹² Several techniques may be used to create a strong mandibular border; but to divert attention from the jowl and camouflaged it, the border needs

to be redefined and readjusted to align with the lower border of the jowl. The HA must lie below the mandibular septum in the subdermal layer to carry this out.¹⁵ As shown in Figure 4, the mandibular septum is considered the fixation point of the platysma to the mandible, playing an essential role in the formation of jowling.

We would consider the following as contraindications to using the JOLT technique: previous injection in the areas with nonabsorbable filler, previous SMAS facelift, hypersensitivity and/or prior adverse reactions to HA products, active skin infections, recent laser treatments or chemical peels affecting the area being considered for JOLT, pregnancy, and current use of blood thinner medications. We would also consider there could be limitations of the technique in patients with grade 4 score on the JAS or those with thick, heavy skin.

CONCLUSIONS

The JOLT technique is a nonsurgical procedure using HA fillers that is applied to lift and tighten the skin and underlying tissue of the lower face and neck and camouflage the remaining jowl. It can be very effective in reshaping the face into a more youthful appearance, diminishing the marionette lines, defining the mandibular border, and improving jowl sagging. However, the procedure's effectiveness will depend on the patient's specific characteristics, including their skin elasticity and the degree of laxity in their facial tissues. To determine whether the JOLT technique is an appropriate solution for jowling in a specific patient, a thorough facial assessment should be performed. New knowledge of anatomy provides a better understanding of the pathophysiology of aging, and its logical application in rejuvenating treatments will give our patients more advanced, balanced, holistic, natural-looking results.

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DISCLOSURES

Drs. Rosengaus and Cardenas Sicilia have served as speakers for Galderma. Galderma Mexico supplied study materials and funding for editorial support.

PATIENT CONSENT

Patients provided written consent for the use of their images.

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