Consensus Recommendations for Combined Aesthetic Interventions in the Face Using Botulinum Toxin, Fillers, and Energy-Based Devices

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BACKGROUND The aging process is a complex interplay of intrinsic and extrinsic factors across multiple layers of the face. Accordingly, combining aesthetic interventions targeting different manifestations of aging often leads to better results than single modalities alone. However, no guidelines for a pan-facial approach using multiple interventions have been published to date.

OBJECTIVE To develop consensus recommendations for the optimal combination and ideal sequence of botulinum toxin (BoNT), hyaluronic acid, calcium hydroxylapatite, and microfocused ultrasound with visualization (MFU-V) in persons of all Fitzpatrick skin types.

METHODS AND MATERIALS Fifteen specialists convened under the guidance of a certified moderator. Consensus was defined as approval from 75% to 94% of all participants, whereas agreement of ≥95% denoted a strong consensus.

RESULTS Optimal aesthetic treatment of the face begins with a thorough patient assessment and an individualized treatment plan. Spacing consecutive treatments 1 to 2 weeks apart allows for resolution of side effects and/or to assess results. For same-day treatments, BoNT and fillers may be performed together in either sequence, whereas MFU-V is recommended before injectable agents.

CONCLUSION Expert consensus supports a combination approach using multiple modalities in specific sequence for the safe and effective treatment of the aging face.

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A deeper understanding of the intrinsic and extrinsic factors contributing to changes in the face over time has led to a significant shift toward a 3-dimensional, multilayered approach to facial rejuvenation, in which multiple aesthetic modalities are combined for superior clinical results. Although individualized combination therapy reflects modern aesthetic practice—in 2014, nearly half of all cosmetic patients in the United States requesting noninvasive or minimally invasive interventions received multiple cosmetic procedures at the same time[1]—no guidelines for a pan-facial combined approach have been published. This article presents consensus recommendations for a multimodal approach to early intervention and aesthetic restoration of the face with botulinum toxin (BoNT), hyaluronic acid (HA), calcium hydroxylapatite (CaHA), and microfocused ultrasound with visualization (MFU-V).

Methods and Materials

Fifteen experts in the fields of dermatology, plastic surgery, ophthalmology, and clinical epidemiology convened in June 2015 for a full-day meeting in Vancouver, Canada, to develop consensus-based recommendations for the use of combined aesthetic interventions in the face in persons of all Fitzpatrick skin types. A questionnaire, distributed before the meeting, served as the basis for the agenda and subsequent discussion. The meeting followed a structured consensus approach by a certified moderator (BR). Consensus was defined as approval from 75% to 94% of all participants, whereas agreement of ≥95% denoted a strong consensus (indicated by asterisks). Statements are presented as "recommended" (strong recommendation) or "suggested" (weaker recommendation) after the published Grades of Recommendation, Assessment, Development, and Evaluation.[2]

Recommendations and suggestions focus on early intervention or aesthetic restoration as referenced by a set of 5-point validated grading scales for indications in the upper, mid, and lower face[3–5] (Figure 1). Early intervention refers to individuals with minimal evidence of changes in the face (Levels 0–1), whereas restoration targets individuals with moderate to very severe signs of aging (Levels 2–4). Aesthetic therapies include those that are safe and effective across all skin types and ages: a BoNT formulation without complexing proteins (incobotulinumtoxinA; Xeomin/Bocouture; Merz Pharmaceuticals GmbH, Frankfurt am Main, Germany), a range of low- to high-viscosity cohesive polydensified matrix (CPM) HA formulations (Belotero range; Anteis S.A., Geneva, Switzerland) (Table 1), CaHA (Radiesse; Merz North America, Raleigh, NC), and MFU-V (Ultherapy; Ulthera Inc., Mesa, AZ).

Figure 1. One of the 5-point validated grading scales used to assess the degree of facial aging. This scale shows lower cheek fullness (at rest).

TABLE 1. Cohesive Polydensified Matrix Hyaluronic Acid Formulations

Product	*HA Concentration, mg/mL*
Belotero Soft	20.0
Belotero Balance/Basic	22.5
Belotero Intense	25.5
Belotero Volume	26.0

Botulinum Neurotoxins

Derived from the bacterium *Clostridium botulinum*, BoNT blocks the release of acetylcholine from motor neurons at the neuromuscular junction, producing temporary chemodenervation of muscles lasting 3 months or longer.[6] Of the seven serotypes, Type A (BoNTA) is the most widely used across the world and available in multiple formulations for both therapeutic and cosmetic indications.[7] Guidelines for its use in facial aesthetics indicate a high level of safety and efficacy when injected by experienced clinicians to reduce the appearance of dynamic rhytides and shape the face into more pleasing contours.[8–10] When combined with fillers, lasers, light- or energy-based devices, or surgical procedures, BoNTA often provides a synergistic effect, leading to superior results of greater duration.[11–13]

Hyaluronic Acid

Hyaluronic acid occurs naturally in the skin, making up a significant portion of the extracellular matrix (ECM) involved in tissue repair, along with collagen and elastin, stabilizing intercellular structures and contributing to cell proliferation and migration.[14] Injectable cross-linked HA derivatives, cultivated from the synthetic fermentation of the *Staphylococcus equine* bacterium, attract and bind to water in the skin for immediate volume enhancement, with evidence for the induction of neocollagenesis through mechanical stretching[15] and possible involvement in adipogenesis[16] for more persistent aesthetic effects.

Hyaluronic acid fillers are available in multiple formulations (polydensified matrix family [e.g., Belotero], non-animal stabilized hyaluronic acid family [e.g., Restylane, Uppsala, Sweden], Vycross family [e.g., Juvederm Voluma, Allergan, Dublin, Ireland]) and are appropriate for superficial to deep dermal and subdermal implantation, depending on the viscoelasticity and lift capabilities of the chosen product. Highly viscous fillers provide greater lift and are ideal for deeper implantation, whereas products with low viscoelasticity are lighter and better suited for more superficial injection.[17,18] Hyaluronic acid is the only filler on the market that may be enzymatically dissolved in the event of complications and unintended effects with the injection of hyaluronidase.[19,20] Hyaluronic acid fillers are frequently combined with BoNT injections for greater aesthetic benefits.[8,11,12,21]

Calcium Hydroxylapatite

Calcium hydroxylapatite microspheres comprise biodegradable particles suspended in an aqueous carboxymethylcellulose gel carrier that is eventually absorbed. Implantation of CaHA induces fibroblastic response, resulting in active, physiologic remodeling of the ECM and long-term collagen deposition around the implant for sustained cosmetic improvement of 12 months or longer before the particles are degraded as calcium and phosphate and eliminated through the renal system.[22,23] Highly viscoelastic, CaHA is well suited for supraperiosteal, subdermal, and deep dermal placement but may also be injected more superficially for dermal rejuvenation when diluted 1:1 or 1:2 (Table 2).[24]

Skin Tightening

The development of increasingly sophisticated energy-based devices that stimulate neocollagenesis in the dermis and in subdermal collagen has provided a reliable

TABLE 2. Calcium Hydroxylapatite

Product	*Dilution*	*Notes*
Radiesse	N/A	Worldwide availability
Radiesse	Diluted with 0.3% lidocaine before injection	FDA approved
Radiesse (+)	Premixed with 0.3% lidocaine	FDA approved EU pending
Radiesse	Diluted 1:1 or 1:2 with lidocaine or saline	Ideal for larger areas with more superficial injection

nonsurgical method of reducing cutaneous laxity in the face and neck and other body areas, such as the chest and hands. As the treatments are nonablative, there is minimal downtime and also the treatments can be performed on the same day as other aesthetic interventions, thus fitting beautifully into the Combinations treatment paradigm.

There are several monopolar radiofrequency (MRF) systems available. The Thermage Comfort Pulsed Technology system (Solta Medical, Hayward, CA) uses a 4-second radiofrequency pulse with simultaneous skin temperature measurement and skin cooling. Smaller tips and protective haptic contact lenses allow its use on delicate eyelid skin. Other MRF devices (Excilis, BTL Aesthetics, Prague, Czech Republic) and Pelleve (Ellman International, Hicksville, NY) also monitor skin temperature. Subcutaneous delivery of MRF energy bypassing the epidermis is possible using the ThermiTight system (ThermiAesthetics, Irving, Texas). The TruSculpt System (Cutera) is used to treat small areas of subcutaneous fat but may also tighten the skin.[25]

Microfocused Ultrasound With Visualization

The only FDA-cleared technology for a noninvasive brow lift and submental neck lift, as well as for the improvement of rhytides of the décolletage, MFU-V delivers ultrasound energy to selectively heat dermal and subdermal tissues to greater than 60°C in a linear array of tightly focused thermal coagulation points, stimulating long-term collagen remodeling and producing subsequent tissue tightening and lifting without any damage to the epidermal surface.[26,27] Microfocused ultrasound with visualization has been shown to safely and effectively treat skin laxity in the face, neck, and décolletage, as well as other areas of the body, such as the knees, posterior arms, elbows, medial thighs, abdomen, and buttocks, noninvasively lifting and tightening sagging skin.[26,28–30] Treatment can be customized by adjusting energy and focal depth of the emitted ultrasound.[26] Transducers emit frequencies of 4 to 10 MHz, with focal depths of 1.5, 3.0, and 4.5 mm to target the facial dermis, deep dermis, or subdermal tissues (i.e., the superficial musculoaponeurotic system, platysma, and fascial planes) (Table 3). Because of its ability to avoid unintended dermal and epidermal injury, and because melanin does not absorb ultrasound energy, MFU-V can be used safely in a wide range of skin types.[30,31]

General Recommendations for Combination Therapy

For the purposes of these recommendations, the face has been divided into the following treatment areas and/or indications: the upper face (forehead, glabella, temples, and crow's feet); midface (cheek, nose, and nasolabial folds); and lower face (chin, jawline, lip enhancement, perioral lines, marionette lines, and mental crease). Treatments for each set of recommendations are listed in the order in which they would be performed under ideal clinical circumstances, separated by 1 to 2 weeks, unless otherwise indicated.

Individualized Assessment

Optimal assessment of the face begins with a thorough patient history and examination, taking note of skeletal changes, the degree and location of volume loss, muscle anatomy and movement, the appearance of lines and wrinkles, skin quality, and general facial appearance (symmetry or any imbalance in facial

TABLE 3. Frequency, Target Depth, and Imaging Depth of Each MFU-V Transducer

Transducer Types	*Treatment Frequency, MHz*	*Default Energy Level, J*	*Treatment Depth, mm*	*Imaging Depth, mm*
DS 4-4.5	4	0.90	4.5	0–8
DS 7-3.0	7	0.3	3.0	0–8
DS 7-4.5	7	0.75	4.5	0–8
DS 10-1.5	10	0.18	1.5	0–8

DS, deep see.

The corresponding plane reached by each transducer depends on the location and thickness of the target tissue. Use of imaging allows the clinician to correctly target the intended tissue plane and identify the proper choice of transducer depth.

proportions). This analysis lays the foundation for a detailed, individualized treatment plan that balances clinical experience with patient desires and expectations (Table 4). Patients often lack a full understanding of the aging process or the maintenance involved in any type of facial restoration. Making changes visible through a large mirror, photography, and/or wrinkle grading scales will aid in disseminating information and discussing long-term goals.

Ethnic Considerations

Ethnicity often influences treatment goals. With a thicker and more compact dermis, and a higher melanin content, darker skin appears to age more slowly, presenting with muscular or expressive lines, rather than early fine wrinkling, and a delayed occurrence of skin laxity and sagging.[31–33] Individuals with darker skin—more prone to pigmentation changes over time, particularly melasma and post-inflammatory hyperpigmentation[32–36]—place greater importance on improving the complexion or correcting dyschromias through the use of skin-brightening agents.[32] Similarly, ideals of beauty—what is considered aesthetically pleasing in terms of facial proportions—vary by ethnicity and region. In East Asia, for example, cosmetic interventions often focus on shaping and contouring the face in a significantly younger population.[10,37]

TABLE 4. Recommendations for Individualized Assessment and Treatment Plan

1. Thoroughly assess anatomical structure and age-related changes to the bone, fat, muscle, and skin.
2. Discuss treatment goals and ensure the patient understands the progressive nature of the aging process.
3. Formulate an individualized treatment plan.
4. Discuss cost and estimate the most effective treatment(s) and the sequence of procedures and/or treatments.
5. In patients with limited financial means, focus on treating areas that will have the greatest impact.
6. Avoid overtreatment and unnatural results or, conversely, undertreatment and suboptimal results (Note: preventive intervention may be a gradual process that may not always be considered suboptimal).
7. Schedule appropriate follow-up visits to assess and document results.

High-Quality Skin-Care Regimens

Skin care is critical for optimal and lasting outcomes (Table 5). The use of high-level, broad-spectrum UV protection and other enhancing agents helps maintain skin quality and protects against photodamage and is recommended as part of a regular skin-care regimen. Topically applied facial cosmetic products aim to prevent or slow the effects of aging or the environment and provide cosmetic benefits. Skin-care additives include antioxidants and vitamins to reduce oxidative stress and free-radical damage; moisturizers to smooth and hydrate the skin; retinoids (derivatives of vitamin A) to restore dermal collagen and elasticity and to improve fine lines, hyperpigmentation, and wrinkles; topical peptides and growth factors to boost collagen and elastin production for improvements in laxity and fine rhytides; and skin brightening or bleaching agents for hyperpigmentation.[38,39] Many cosmeceutical formulations contain combinations of skin nutrients and antiaging ingredients that have been shown to significantly improve skin texture and reduce the appearance of fine lines.[40]

Safety and Sequence of Multiple Treatments in One Area

Combining BoNT with soft-tissue fillers and energy-based interventions seems safe and superior to single-tiered approaches without loss of efficacy, increased spread of the toxin, migration, or other untoward effect, regardless of sequence of treatment.[41] Many studies have described the synergistic effects of BoNT and fillers, the combination of which results in greater efficacy and patient satisfaction.[11,12,21,42–45] When injected before fillers, BoNT reduces the dynamic component of the target rhytide, thereby extending the life of the implant. Moreover, evidence suggests that BoNT may decrease skin roughness to produce

TABLE 5. Recommendations for Concomitant Skin-Care Regimens

1. Use broad-spectrum UV protection of at least 30 sun protection factor daily
2. Add a moisturizing agent with restorative additives for improvements in hydration, fine lines, laxity, and dyschromia, and to brighten the skin

a smoothing effect that may be enhanced by the addition of soft-tissue fillers.[46,47]

Data on combination therapy with MFU-V are scarce. Theoretically, combination therapy with MFU-V and stimulatory fillers may provide multilevel cosmetic revitalization, as has been reported histologically.[48] In a case study using histologic data to examine the effects of MFU-V on HA and CaHA injected in the thighs of a 45-year-old woman, Casabona and Michalany found no difference in the appearance of the fillers, inflammatory processes, or product migration; however, combined treatment with MFU-V and CaHA showed increased density and thickening of collagen fibers 6 months after therapy.[48]

For a stepwise treatment approach, expert consensus recommends the use of neuromodulators first, followed by soft-tissue fillers and skin tightening (Table 6). Spacing individual treatments by 1 to 2 weeks allows for resolution of local side effects, such as swelling or bruising, and/or assessment of results. However, it is understood that multiple treatments are often performed during the same visit because of time constraints, scheduling issues, or patient preference. Botulinum toxin and soft-tissue fillers may be performed together at the same visit in either sequence. For same-day treatment with MFU-V in combination with neuromodulators and/or fillers, skin tightening should be performed first, followed by injectable therapies. This sequence is recommended for 2 reasons: first, MFU-V performed immediately after injections may lead to contamination of the multiuse transducers; second, skin tightening involves manipulation of tissues and pressure on the skin, all of which could potentially displace filler material or increase spread of the neurotoxin, although there is no evidence to support this theory.

TABLE 6. Recommendations for the Sequence of Multiple Treatments in 1 Area*

1. If possible, schedule each procedure 1–2 wk apart to allow for resolution of local side effects and/or to assess the results
2. BoNT and HA and/or CaHA fillers may be performed on the same day in either sequence
3. For combination therapy with multiple agents on the same day, MFU-V is performed before injectable agents

*Strong consensus.

Recommendations for Combination Therapy in the Upper Face

The upper face is prone to early manifestations of aging, specifically in Caucasians. The brow lowers progressively thanks to loss of structural forehead support (bone and fat), a decrease in neocollagenesis in the skin and facial planes, and the repetitive activity of the depressor muscles pulling on the inelastic skin of the forehead.[49] Mimetic musculature leads to the formation of horizontal rhytides in the forehead that become more pronounced and appear etched over time, while the forehead and temples lose soft-tissue fullness.[50] Glabellar rhytides deepen, and lateral canthal rhytides (crow's feet) develop at rest and at smile.

The forehead, glabella, and temples are often assessed as 1 aesthetic unit and treated simultaneously with a combined approach using BoNT for muscle control, soft-tissue fillers to improve temporal hollowing and the contours of the forehead, and/or MFU-V to lift the ptotic brow and tighten the skin (Table 7). Monopolar radiofrequency is preferred for the tightening of eyelid skin because the haptic contact lens protects the globe. Optimal treatment depends on careful patient assessment, choice of interventions, and plane of injection. In the forehead, the presence or absence of brow ptosis will influence the course of treatment, as will gender. For example, BoNT has the ability to achieve a chemical brow lift but can also worsen ptosis, depending on where it is placed.[51] Adept use of neuromodulators can lift and shape the brow as required, particularly for women, who desire a higher, more arched eyebrow.[52]

The upper face is an area of substantial physical variability in terms of anatomy and degree of aging. Reversible filling agents for volume replacement may be preferred; stimulatory fillers may be considered, depending on clinician experience and level of comfort.

TABLE 7. Recommendations for Combined Therapy in the Upper Face

	Early Intervention	*Restoration*
Volume deficiency		
Normal brow	HA*	HA*
Ptotic brow	BoNT to lift the brow*	1st line: BoNT to lift the brow*
		2nd line: MFU-V and/or HA and/or CaHA
Forehead rhytides	1st line: BoNT	1st line: BoNT unless contraindicated*
	2nd line: HA	2nd line: HA*
Glabellar rhytides	1st line: BoNT*	1st line: BoNT*
	2nd line: HA*	2nd line: HA*
Temporal hollowing	N/A	HA fillers
Lateral canthal rhytides	1st line: BoNT	1st line: BoNT*
	2nd line: HA and/or MFU-V	2nd line: MFU-V*
		3rd line: HA*

*Strong consensus.

Recommendations for Combination Therapy in the Midface

Degenerative changes occur in nearly every anatomic component of the midface.[50] Rohrich and Pessa[54] defined distinct superficial and deep fat compartments in the midface and identified volume loss in the deep midfacial fat compartment as one of the primary determinants of an aged appearance.[53] Fat within each compartment changes independently over time, losing volume and shifting as the facial ligaments attenuate and the bony skeleton recedes.[53,55,56] The cheeks lose their projection and take on a sunken appearance, and the nasolabial folds steadily deepen because of volume loss and inferior displacement of soft tissues.[57] The heart-shaped face of youth becomes distinctly pear shaped.[55] Treatment of the midface—defined here as the lateral and anterior cheek, nose, and nasolabial folds—sets the tone for the rest of the face and is often performed before any other interventions (Table 8).

In the cheeks, it is important to distinguish between not only early intervention (Levels 0–1 on validated assessment scales) and volume restoration (Levels 2–4 on validated assessment scales) but also the presence or

TABLE 8. Recommendations for Combined Therapy in the Midface

	Early Intervention	*Restoration*
Cheek volume		
Without laxity	1st line: HA and/or CaHA*	1st line: HA and/or CaHA*
	2nd line: MFU-V	2nd line: MFU-V
	N/A	1st line: MFU-V
With laxity		2nd line: HA and/or CaHA
Nose shaping	1st line: HA	1st line: HA
	2nd line: BoNT if indicated*	2nd line: BoNT if indicated*
Nasolabial folds†		
Alar facial sulcus (upper third)	1st line: HA*	1st line: HA*
	2nd line: BoNT if indicated*	2nd line: BoNT if indicated*
Lower two-thirds	HA and/or CaHA*	1st line: HA and/or CaHA in the cheek and nasolabial fold*
		2nd line: MFU-V in the cheek

*Strong consensus.

†For these recommendations, the nasolabial fold has been divided into the upper third (the alar facial sulcus) and the lower two-thirds.

absence of significant skin sagging. Augmentation begins in the lateral cheek and moves anteriorly for optimization of filler volume. Replacing lost volume and support in the cheeks through fillers and MFU reinflates the fat pads and tightens and lifts the zygomatic-buccal retaining ligaments, respectively, often improving the appearance of the nasolabial folds and other imperfections without any additional treatment (Figure 2). In the midface, then, the nasolabial folds are treated last.

Filler rhinoplasty is an effective technique to augment and reshape the nose. However, this area is particularly susceptible to vascular injury.[58] Blood supply to the upper part of the nasal dorsum is partially supplied by the dorsal nasal artery, a branch of the ophthalmic artery.[59] Careful choice of filling agents and injection techniques is strongly recommended. Novice injectors may wish to use reversible fillers, whereas more experienced clinicians may be comfortable with stimulatory agents. Botulinum toxin can be used to correct the appearance of "bunny lines"—horizontal rhytides that traverse the nasal bridge and the downward slope of the nose when the patient is smiling.[59,60]

Recommendations for Combination Therapy in the Lower Face

During the aging process, bony and soft-tissue structures in the lower face undergo significant alterations. Loss of volume and laxity of ligaments cause skin to droop over a changing bony skeleton.[61] Oral commissures turn down and eventually evolve into deep marionette lines. The jawline loses definition, and jowls emerge. The chin develops a mental crease and a pebbled appearance. The lips flatten, and radial lip lines appear.[62]

Optimal revitalization of the lower face involves a comprehensive treatment regimen combining multiple modalities to address dynamic musculature, loss of volume and support, and skin laxity (Table 9). Combination therapy using BoNT and fillers is particularly effective in the lower face and mobile perioral region and has been shown to provide greater results than either treatment alone, with significantly longer-lasting effects.[11,45]

In the chin, BoNT weakens the forceful contraction of the mentalis muscle responsible for the mental crease and dimpling. Fillers create better definition and fill residual depressions. Shrinking of the mandible and the redistribution of fat lead to the emergence of jowls and a lack of definition along the jawline. Small amounts of BoNT injected along the jaw and into the lateral, upper platysmal band—the "Nefertiti lift"[61,63]—will improve the appearance of the pouches, whereas jawline augmentation creates greater definition. Type of filler used depends on injector preference. In general, fillers with greater viscoelasticity are preferred for placement along the jaw to provide exceptional support. In patients with skin laxity (assumed under jaw "restoration" in these recommendations), the addition of MFU-V helps lift the jowls for a tighter

Figure 2. Patient (A) before and (B) 6 months after 1 treatment session with 2 syringes of high-viscosity HA filler to the midface and jawline, 1 syringe of low-viscosity HA filler to etched-in lines, and 880 lines of MFU-V to the entire face and neck with the 4.5 mm, 4 MHz transducer, 3.0 mm, 7 MHz transducer, and 4.5 mm, 7 MHz transducer (consistent with the amplify protocol). Courtesy Sabrina Fabi, MD. Adaptations are themselves works protected by copyright. So in order to publish this adaptation, authorization must be obtained both from the owner of the copyright in the original work and from the owner of copyright in the translation or adaptation.

TABLE 9. Recommendations for Combined Therapy in the Lower Face

	Early Intervention	*Restoration*
Chin	1st line: HA and/or CaHA* 2nd line: BoNT if indicated*	BoNT and HA and/or CaHA
Mental crease	BoNT*	BoNT and HA and/or CaHA*
Jawline	BoNT if indicated	MFU-V, HA and/or CaHA, and BoNT if indicated
Lip enhancement	1st line: HA* 2nd line: additional effects with BoNT and/or MFU-V (for lip eversion)	1st line: HA* 2nd line: additional effects with BoNT and/or MFU-V (for lip eversion)
Perioral rhytides	1st line: BoNT* 2nd line: HA*	1st line: BoNT and HA* 2nd line: MFU-V*
Marionette lines	1st line: HA and/or CaHA 2nd line: BoNT if indicated	1st line: HA and/or CaHA in the midface and jawline 2nd line: BoNT if indicated

*Strong consensus.

appearance (Figure 3). For early intervention in patients without skin laxity, BoNT in the lateral, upper platysmal band may be appropriate. The addition of MFU-V and high-viscosity HA and/or CaHA is suggested when necessary. With its high viscoelasticity, CaHA is ideal for placement along the jaw.[62–65]

The perioral region is considered 1 aesthetic unit comprising the lips, oral commissures, and marionette lines. Lip revitalization aims to add volume or restore symmetry and ideal balance between the upper and lower lips, improve fine rhytides and mouth corners, or add definition and structure to a flattened upper lip. Rejuvenation of the supporting structures around the perioral complex—addressing fat loss and bony remodeling—often affects the lip itself without any direct injection. Similarly, injecting filler into the midface and along the jawline softens the marionette lines. Botulinum toxin reduces repetitive muscular activity, enhancing the longevity of the implant.

The perioral area is sometimes difficult to treat. Mobility may cause fillers to clump, particularly with

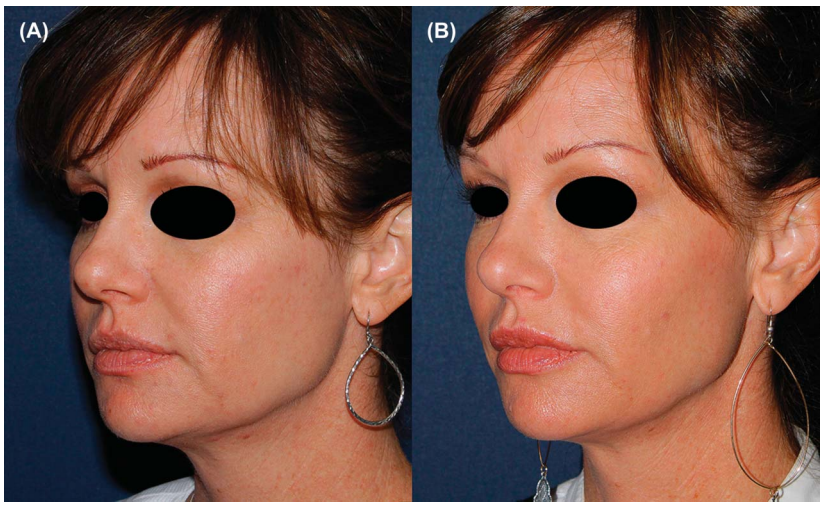

Figure 3. Patient (A) before and (B) 3 months after 1 treatment session with 1 syringe of CaHA and 550 lines of MFU-V to the full face and upper neck using the 4.5 mm, 4 MHz transducer, 3.0 mm, 7 MHz transducer, and 4.5 mm, 7 MHz transducer (consistent with the 5.0 plus protocol). Courtesy Sabrina Fabi, MD. Adaptations are themselves works protected by copyright. So in order to publish this adaptation, authorization must be obtained both from the owner of the copyright in the original work and from the owner of copyright in the translation or adaptation.

products of higher viscoelasticity. Particulate fillers, such as CaHA, are contraindicated in the lips.

The consensus conference briefly discussed the extremely recent FDA and Health Canada approvals for treatment of submental fat with sodium deoxycholate (Kybella, Belkyra; Allergan). Because the Regulatory approvals had only recently passed and the product launches had not yet occurred, none of the participants had yet had any experience apart from the Refine 1 and 2 Phase III studies. This will undoubtedly be an important subject in upcoming consensus conferences.[66]

Summary

Because aging in the face is a complex interplay of many extrinsic and intrinsic factors across multiple tissue planes, it is not surprising that concomitant combination therapy using a number of treatment modalities has grown increasingly common to address biometric volume loss and alteration. These consensus recommendations focus on a return to the youthful, 3-dimensional topography of the face using a multifaceted approach that safely incorporates 2 or more modalities—administered concomitantly or in recommended sequence—along with an ongoing skincare regimen for optimal aesthetic benefits. Careful consideration of anatomical changes with increasing age is paramount for the successful management of the aesthetic patient.

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