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Injectables + Facial Sculpting Technology Optimizes Outcomes

Mitigating Neurotoxin Resistance: Exploring HIFES as a Treatment Solution

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When injectable neurotoxin for glabellar lines exploded onto the market at the turn of the century, it blew the doors to aesthetic medicine wide open. Not only is the therapy safe and efficacious, but it also has a price point that makes it widely accessible to men and women worldwide.

According to a 2022 consensus paper,¹ injectable neurotoxin is the most frequently performed aesthetic procedure and has an ever-increasing number of aesthetic and medical applications. However, decades of experience have revealed a catch: with time, sometimes for

unknown reasons, patients may become resistant to neurotoxin effects. Long-term data is scarce, but increasingly patients require more units of toxin to achieve desired results. Recent observations suggest that an evolutionary approach to addressing the impact of neurotoxin resistance may benefit from the complementary use of high-intensity facial stimulation (HIFES™) brand technology and synchronized radiofrequency.

Facial aging has often been looked at as a skin issue but, in reality, there is much more contributing to it. Skin, fatty layers, facial muscles, connective tissue and bone, all age independently² and vary based on genetics, environmental exposure and lifestyle. Emface® by BTL Aesthetics (Boston, Mass.) provides a multifactorial approach to the multifactorial nature of facial aging. "We lose muscle mass as we age, which accelerates in our later years. In addition to changes due to aging, regular use of injectable neurotoxin may theoretically accelerate this aging process by contributing to muscle atrophy, because we are effectively inhibiting muscle contraction via deactivation of key localized enervation with neurotoxin," said



The cheek and submentum before and one month after four treatments with Emface

Photos courtesy of Jennifer Levine, MD

facial plastic surgeon Yael Halaas, MD (New York, N.Y.). "So Emface is not only an effective treatment for the appearance of facial aging, but it also addresses the causes as much as the symptoms by restoring the musculature and support."

Emface features BTL's signature Synchronized RF with HIFES brand technology. "The HIFES component selectively stimulates elevator muscles to revitalize facial musculature and structure," shared Amanda Holden, MD, founder and medical director of Holden Timeless Beauty in San Diego, Calif. "Concurrently, the Synchronized RF stimulates collagen and elastin while improving local microcirculation. This serves to tone, rather than enlarge, facial muscle and improve the skin as well, and there is a synergy between the modalities. This unique technology restores facial topography to a more youthful and functional state."

In a recent study³ of 47 patients from four trials, computer-generated three-dimensional (3D) analysis revealed that Emface can favorably change facial topography. Three months after a four-treatment course of Emface, the average

volume in the upper cheeks increased by 3.3 mL while the lower face saw a volume reduction of 2.3 mL. "This effectively created a 'lifted' appearance with a more well-defined jaw-line and reduction in sagging jowls," said Dr. Halaas, who was one of the study authors.

Overcoming Resistance

Primary non-response to neurotoxin has been noted in the literature but is considered very rare and may arise from a variety of sources.⁴ Clinically, concerns about neurotoxin resistance most often refer to secondary non-response, where previously seen outcomes become lessened in quality and/or duration after repeated, regular therapeutic exposure. This likely results from antibody formation over time. Recommendations to prevent or treat resistance include switching to a different toxin or withholding treatment to allow the antibody response to diminish or disappear altogether. "When I see resistance - and I do see it because we do a high volume of neurotoxin - my first question is about where they were treated and what toxin they received," Dr. Halaas mentioned. "There may be incidence of counterfeit product, which is becoming more common, or weak technique, but if they are not responding, the typical next step is to try a different brand among the big five available in the U.S. and/or taking a break from injectable neurotoxin for a while. Some toxins may be less antigenic or may just be different enough to overcome resistance."

According to Dr. Holden, Emface could provide a solution for patients who experience neurotoxin resistance. "You simply substitute the device for neuromodulator treatment and wait several months before resuming injections, periodically. This also provides a better result overall."

Emface can also be used in conjunction with neurotoxins and potentially deliver superior outcomes. "We usually do the neurotoxin first, then a course of four sessions of Emface," Dr. Halaas explained. "We may recommend an extra session or two for older patients. The technique is very straightforward."

A pilot study combining Emface and neurotoxin was presented at the Maui Derm 2023 Annual Meeting (January 23 - 27, 2023, Maui, Hawaii)⁵ by Suneel Chilukuri, MD. Results showed that the use of neurotoxin before Emface did not inhibit facial contractions necessary for the HIFES treatment to work properly.

The cohort included 12 patients. Two patients were toxin-only control, and the ten remaining received a course of four sessions with Emface starting one to four weeks after neurotoxin injection. No adverse events were reported. Assessment of digital photography, facial expressions, patient comfort and patient satisfaction at one- and three-month followups revealed high efficacy and satisfaction. According to the study, all Emface patients reached satisfactory contractions during sessions; 92% reported high satisfaction with treatment comfort and outcomes. More than 90% of patients experienced aesthetic improvement with facial expressions known to be hampered by neurotoxin treatment (smiling, frowning, expression of surprise). Dr. Chilukuri elaborated on this concept significantly in a review article later in 2023.²

Strategic Synergy

There is always demand for a more comprehensive approach to facial aesthetic treatments, according to J.D. McCoy, NMD, medical director of Contour Medical (Gilbert, Ariz). Emface is a revolutionary modality in that respect. "This represents an evolution of what we can do with neurotoxin," he said. "You may use neurotoxin differently and more artistically when incorporating Emface, and if you space out the treatments you can effectively deal with neurotoxin resistance. Thus, Emface can be used as a complementary treatment with neurotoxins with a great potential benefit.



Before and four weeks after four treatments with Emface Photos courtesy of Sam R. Patel, MD, MBA

Most people do not like needles to the face but tolerate them when they like the results. Also, people describe their face as being 'lighter and tighter' after Emface, and they are eager to do maintenance even before the result begins to diminish. Treatment affects more layers of tissue than neurotoxin so there is a potential synergy, and with Emface there is no downtime."

According to Dr. McCoy, using neurotoxin to target depressor muscles and Emface to target the elevator muscles in the forehead results in less opposing force, balancing the brow. "It creates a beautiful balance of relaxing and decreasing the 'pulldown' while improving the tone of what is pulling everything up. It is almost like a tug of war where you are intentionally putting the weaker individuals on the same end. In the mid-face, Emface targets the zygomaticus major and minor and the risorus. By injecting neurotoxin to affect the lower face depressors, specifically the depressor anguli oris (DAO), the platysma and the mentalis, a finger breadth above the mandible and potentially in the platysma, you are relaxing the key muscles pulling down against the muscles Emface is pulling up. The challenge is that treatment of the lower face with neurotoxins has always been considered more technically difficult, and it requires detailed understanding of anatomy."



Diagram of facial musculature represents protocol whereby Emface treatment of the mid-face is enhanced by injectable neurotoxin. Neurotoxin is injected into the muscles of the lower face and neck as shown (red); these oppose the muscles Emface affects in the midface (blue). By injecting first, then performing Emface later, there is less opposing force on the Emface-treated muscles. Image courtesy of kipargeter at Freepik.com, edited (labeled) by Kevin A. Wilson

A Practice Differentiator

From a business standpoint, providing a solution to toxin resistance is a significant opportunity for those wanting to differentiate themselves from the competition. Sam Patel, MD, founder of LIV Wellness Lounge medspas (Ottawa and LaSalle, III.) and Astra Culture, is a medspa consultant who drives and shares business innovation in the field. "In any typical aesthetic practice, injectables may represent upwards of 50% or even 60% of revenue and contribute greatly to reliable cash flow," he explained. "Their accessibility also serves to bring people into your practice and expose them to your wider armamentarium, much like the inexpensive hamburger brought people into McDonalds who then purchased other things in addition, building a universally known business empire. Similarly, the low barrier to entry and relatively low cost of injectables allows patients to have that consistent and priceless positive, trust-building experience with their aesthetic practitioner."

Dr. Patel added that beyond efficacy and safety the main reason to address neurotoxin resistance using Emface is because toxin resistance is news people will take note of. "Resistance is not new or unknown, but it is more widely discussed. We will see continued discussion as more and more patients experience it and share it on social media. Propagation by social media has a cascading effect." The practice that offers Emface will be poised to offer a real solution that delivers safe, effective and reliable results.

"Emface does two things here," Dr. Patel continued. "First, it provides a viable treatment option to those who do not want the needle. Secondly, both modalities may be used together to enhance the outcomes, or separately to space out and minimize the potential to develop resistance. Younger and younger patients are seeking preventative neurotoxin, making this even more important."

Not only is Emface easy to use, but it also does not require the skill of a well-trained and experienced injector, making it cost effective. "Success with neurotoxins has a dependency – the injector – who can make or break your business. Bear in mind that patients want convenience and comfort as well as 'natural' results, which has been the trend driving innovation in all areas of aesthetic medicine for decades. This global cultural shift toward convenience and 'natural' works in favor of Emface. People do not necessarily want to come in and get injected four or five times a year and are increasingly shying away from introduction of foreign substances into their bodies, but the natural result Emface provides – restoring facial topography from the muscles upward to the skin – is very appealing. So you can use them separately or together, appealing to a wider range of patients."

Emface can also be used to treat the neck using its new submental applicator, Emface Submentum, which is specifically designed for this area. "Emface forehead and cheek applicators are designed to treat skin superficially, along with underlying tissues and muscles, to redistribute fat and restore youthful facial contours. Emface Submentum targets soft submental tissues as well as the digastric muscle to reduce submental volume and improve skin laxity," Dr. Holden explained. It primarily affects the digastric muscle and nearby muscle structures, retracting tissue and reducing double chin. Jawline definition is also improved. "The results are game-changing. Everyone knows that treatment of the double chin helps the facial result by providing a consistent global improvement without obvious demarcation between face and neck. Injection lipolysis is effective, but people do not tolerate it well, plus you swell up like a bullfrog each time, temporarily. With Emface Submentum you get no downtime and significant volume reduction, with improvement of overlying skin as well."

A presentation at the 43rd Annual Conference of the ASLMS (Baltimore, Md.)⁶ detailed results of the Emface submental applicator used on



Emface Submentum affects the digastric muscles (as shown), providing lift to the neck and hyoid bone to reduce double chin Image courtesy of BTL Aesthetics



The cheek and submentum before and after four treatments with Emface Photos courtesy of Barry DiBernardo, MD

the neck. Patients (n=37, 42.2 years \pm 12.4, skin types II-V) underwent a course of four 20-minute treatments with Emface submentum and cheek applicators. Analysis of both 3D imaging and magnetic resonance imaging (MRI) showed reductions in double chin volume of 10.77 mL and 36%, respectively. The majority (94%) of patients reported high satisfaction.

"What this all represents to me," commented Dr. Patel, "is the continuing commitment to science and development that we see with BTL Aesthetics. They are not resting on their laurels and are unafraid to share the spotlight with other therapies, which is very wise when you consider that the best outcomes are seen when multiple treatment vectors are employed together. There is definitely more to come, and it will benefit both patients and practitioners."

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HIFES Plus Synchronized RF Boosts Filler Outcomes

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Injectable dermal fillers are a staple in basic facial aesthetic treatments, popular because of convenience and patient satisfaction. As our understanding of the aging face has evolved, so has the armamentarium for treating it, including novel combination approaches that lead to significantly enhanced global outcomes. "All layers of the face age, so we should be treating all of them to get the best overall outcomes," stated dermatologist Robyn Siperstein, MD (Boynton Beach, Fla.). "We use fillers in the superficial and deep fat pads, and lasers and topical medications for the skin, but we were missing an important layer: the muscle."

Enter Emface® from BTL Aesthetics (Marlborough, Mass.), with a revolutionary combination of synchronized radiofrequency (RF) and highintensity facial stimulation (HIFES™) brand energy that selectively tones underlying musculature to restore facial topography to a more functional and youthful-looking state. "Emface addresses this layer by stimulating our muscles and rejuvenating them as shown in clinical studies,"1 Dr. Siperstein continued. "Muscle laxity and loss of volume exacerbate the appearance of aging, so to properly rejuvenate a more youthful appearance in a holistic way, you need to address both of those." This echoes explanations from a 2023 paper by Dr. Chilukuri² delving deeper into the rationale for combining Emface with injectable fillers and neurotoxin: bone, connective tissue, facial muscles and the fatty layer, as well as the overlying skin,



Before and after treatment with Emface in combination with fillers, collagen stimulators and neuromodulators Photos courtesy of Melanie Palm, MD

By Kevin A. Wilson, Contributing Editor

all age independently. Twelve-month data for a recent study presented by Yael Halaas, MD, at the *American Society for Laser Medicine and Surgery* (ASLMS) April 2024 conference in Baltimore, Md., evaluated three study patients via 3D photography to document persistence of volume changes. Sustained improvement was noted in both the zygomatic area (+3.8 mL at three months, +2.6 mL at 12 months) and the jowl (-4.0 mL at three months, -2.7 mL at 12 months), further strengthening this case.

Unsurprisingly, fillers and Emface work better together. For example, a study³ of Emface patients (n=47) from four trials using two different imaging and 3D analysis systems saw an average volume increase in the upper cheeks of 1.65 mL and an average volume reduction of 1.08 mL in the lower face, three months after a course of treatment. Intuitively, increases in volume from another source (in this case Emface) allow for reduced and/ or more strategic placement of filler material. "While Emface does not replace fillers, it does restore facial topography to some degree," commented facial plastic surgeon Jennifer Levine, MD (New York, N.Y.). "It will provide a better, more natural-looking overall result, and may allow us to inject more sparingly because of the way Emface has been shown to augment volume in the cheeks, a common filler implantation site."

A Synergistic Combination

But experts wondered: Would Emface cause issues with fillers? Dermatologist Bruce Katz, MD of JUVA Skin & Laser Center (New York, N.Y.) presented study⁴ outcomes at the 2024 Annual Meeting of the *American Society for Dermatologic Surgery* (October 2024). "When we originally saw what Emface could do, many of us realized its potential but also saw possible contraindication with implanted filler. Would Emface cause issues with fillers, such as breakdown of filler material, already implanted in the face?" he asked. "I suspected this would not be a problem and BTL was eager to do the study."

Patients (n=6) were injected using hyaluronic acid fillers in the mid-face, and then underwent a course of four 30-minute sessions with

Emface. Both two-dimensional (2D) and three-dimensional (3D) photographs were taken for comparison at baseline as well as after treatments and follow up at one, three and six months. "We were surprised that not only were there no problems with the fillers, Emface seemed to visibly enhance the filler effect. Patients who might have needed more filler became completely corrected, in my opinion. Also, I noted that the skin over the treated areas had greater luminosity. We only did six patients because overall improvement was a secondary endpoint, the primary focus was on the integrity of implant-

ed fillers after a full course of Emface, and it passed with flying colors." Dr. Katz added that use of fillers after a full course of Emface was not studied but would be an obvious and valuable next step. "Emface is a significant, new technology that is transforming how we treat the aging face in general," Dr. Katz added. "It works incredibly well with injectables and has become a staple in our facial armamentarium."

Dr. Levine sees the rationale both ways. After comprehensive full-face analysis, treatment protocol depends on the patient's individual needs and time constraints. "In my mind it is better to do Emface, then implant fillers strategically – for the most part just as you would without Emface, but with a better overall result. But it is extremely advantageous to be able to do both, concurrently. Many patients are busy or have an event coming up, so we can confidently compress the overall treatment time without sacrificing outcomes."

Natural Enhancement

According to Melanie Palm, MD, director of Art of Skin MD (Solana Beach, Calif.), Emface delivers next-level results in combination because enhancement is so natural. "By augmenting the patient's existing facial topography in a way that never existed before, whatever else we do will automatically look better and more natural for that individual." As one of the first adopters of the technology in California, she saw and capitalized on this potential, especially for long-term injectables patients. "There are natural vectors



Before and after treatment with Emface in combination with fillers, collagen stimulators and neuromodulators Photos courtesy of Melanie Palm, MD

of lift where structural muscle support plays a daily role in our facial expressions. To be able to fortify them and restore those natural contours with Emface, such as the Ogee curve of the cheek, has been amazing. Our goal should be to maintain facial shape and authenticity of the person that we are treating, and not alter overall proportions of the face dramatically in an unpleasing way. Emface's unique correction helps us achieve those ends more effectively when we use fillers."

"Whether it is injectable fillers, collagen-stimulating agents or neuromodulators, Emface is a key player in providing patients with the best, most natural-looking overall result," Dr. Palm added. "You can think of Emface as physical therapy for your face, but I like to think of it as providing a better canvas for the artist."

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