

CASE REPORTS: BOTULINUM TOXIN TYPE A ENHANCES THE OUTCOME OF FRACTIONAL RESURFACING OF THE CHEEK

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Abstract

Fractional resurfacing and fractionally ablative (CO_2) resurfacing have become increasingly popular in recent years. They hold the promise of delivering skin rejuvenation with fewer risks and less downtime than traditional ablative resurfacing. Despite the popularity of the procedures and the trend toward synergistic activity in aesthetic dermatology, there is little documentation regarding the use of botulinum toxins and fractional resurfacing for the midface. This report discusses the use of botulinum toxin type A and fractional resurfacing for the cheek area. Although it is a limited, single case report, it provides insight into the potential for this combination and may serve as a stimulus for a large, well-controlled study to evaluate the use of toxins in this and similar areas.

Introduction

Well-designed clinical trials have documented synergistic responses of various minimally invasive dermatologic surgery procedures including hyaluronic acids and botulinum toxins.¹ Botulinum toxin type A (Botox[®]) has been effectively used in a variety of locations that differ from its FDA-approved indication, and its use in the lower and midface areas have been well-described.² Clinical trials have also documented the safety and efficacy of lasers, lights, or radiofrequency when used in conjunction with fillers or botulinum toxins. This report discusses the use of fractional resurfacing with minimal intervention botulinum toxin treatment in an area of the face that is not traditionally amenable to treatment with toxins.

Case Report

A 58-year-old woman presented for evaluation of rhytides around her eyes. Clinical evaluation revealed that she had multiple periorbital rhytides, many of which continued down to her upper cheek (Figure 1). In addition, she had rhytides that traversed her cheeks and extended beyond the periorbital area. The texture of her skin was notable for prominent pores and diffuse mild photodamage.

During the course of her consultation, treatment options were discussed including chemical peeling, ablative laser resurfacing, cosmeceutical treatments, and fractional laser resurfacing. Her prior cosmetic treatments included botulinum toxin type A treatments of her upper face and she was pleased with her results. She did not want the risks or downtime associated with a medium depth chemical peel and it did not seem probable that lower strength peels or microdermabrasion would provide meaningful results. After a discussion of fractional resurfacing, it was decided to proceed with this treatment. The depth of some of the rhytides traversing her cheek as well as the dynamic component of these rhytides initiated a discussion of the potential for synergistic activity of botulinum toxins with fractional resurfacing for the cheek areas.

At 3 treatment sessions 3 weeks apart, 3 passes were performed with a Palomar 1540-nm fractional laser using 62 J/cm², a 10-mm spot size, and a 10-msec pulse duration. Injections of botulinum toxin A were performed one day prior to the first fractional resurfacing session. Each cheek was treated with 4 injections that utilized approximately one unit of Botox in each injection. The distance between each Botox

Figure 1. Left cheek prior to Botox and fractional resurfacing.

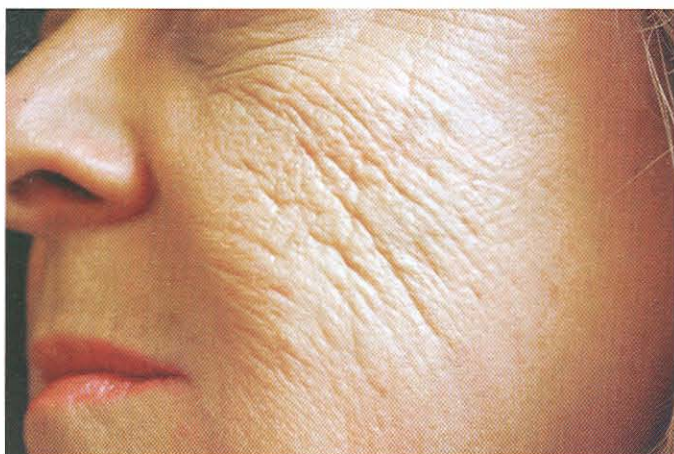
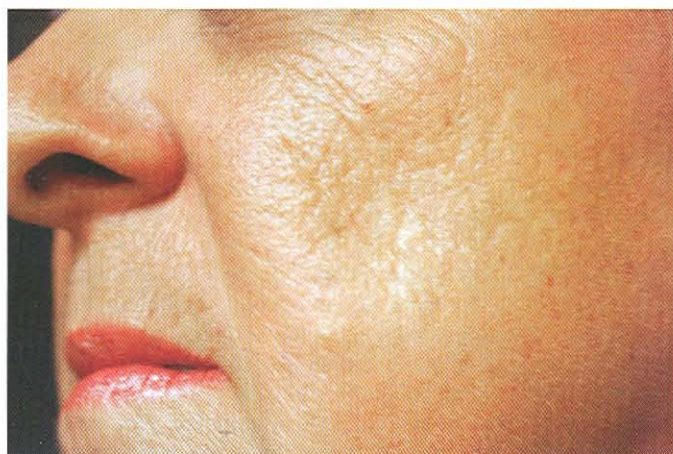


Figure 2. Left cheek following to Botox and fractional resurfacing.



injection was approximately 0.5 cm. Significant improvement of the radiating rhytides was noted after the first treatment (Figure 2). This improvement increased after the second fractional resurfacing treatment and was enhanced slightly by a third treatment.

Discussion

The safety and efficacy of treatment of movement-associated rhytides using traditional CO₂ ablative resurfacing in conjunction with botulinum toxins has been described.³ Synergistic results obtained in the crow's feet using intense pulsed lights and Botox have also been documented.⁴ Combination usage of chemabrasion with Botox for the treatment of perioral rhytides has been reported and, according to the authors, the addition of toxins to chemabrasion regimens seems to enhance the outcomes attained.⁵ The question of whether or not nonablative lasers, light sources, or radiofrequency devices inactivate Botox has been answered in an elegant article that documents the stability of the botulinum toxin protein after treatment with these types of energy.⁶ However, to date, there has been no description of the safety and efficacy of fractional resurfacing used in conjunction with Botox for the treatment of lines traversing the cheeks.

Given the improvements from adding botulinum toxins to the various resurfacing and rejuvenation modalities cited above, it is reasonable to expect that they would also benefit from fractional and minimally ablative (fractional CO₂) laser treatments. One potential mechanism of action is that the Botox simply relaxes muscles that are causing the dynamic component of the rhytides. This is likely in the case reported here because the onset of improvement was rapid. Another possibility is that during the collagen stimulation and remodeling phase, the use of toxins inhibits muscle activity that would inhibit the remodeling process. This probably contributes to the improvements noted; the degree to which it is responsible remains to be elucidated.

Future studies should dissect the relative contributions from the resurfacing procedure and the toxin. Although the toxin definitely helped to smooth the skin surface, the changes in the texture of the skin and appearance of the fine, dynamic lines of the cheek imply a significant contribution from the fractional component. A split-face study would help to determine whether the contributions are additive or geometric and would also determine whether the combination therapy prolongs the duration of the improvement. Conventional wisdom holds that treatments using Botox should not involve the area of the cheek below the lower lid for fear of inhibiting the movement of the zygomaticus major and minor muscles. In addition, many injectors avoid treatments that relax the lower aspects of the orbicularis oculi. While these notions are correct, it appears that small doses of Botox injected in a diffuse pattern into these areas to relax the superior aspect of the zygomaticus major and zygomaticus minor, as well as of the lower aspect of the orbicularis oculi, may enhance the outcomes of fractional resurfacing lasers. One caveat that should be noted is that very small doses of toxin were used in this case and they were distributed in a wide pattern. This tends to relax, rather than en-

tirely inactivate, the platysma-like muscles that invest the periorbital area and cheek. Also, it remains to be seen which types of patients and what types of resurfacing are optimal for the ideal outcomes.

Conclusion

Combination therapy has become a dominant theme in cosmetic dermatology and plastic surgery. Synergistic procedures such as injections of botulinum toxins and hyaluronic acids and the use of intense pulsed lights and botulinum toxins have been shown to be safe, effective, and beneficial in excess of their expected additive properties. The combination use of botulinum toxins and fractional resurfacing around the cheek area has not been previously described. This area is notoriously difficult to treat effectively and perhaps the use of diffuse, minimal-dose botulinum toxin injections in conjunction with fractional resurfacing will add to the repertoire of effective treatments. It would be beneficial to review data from a controlled study evaluating this treatment to decide whether or not it has widespread applicability.

References

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