

# Effect of Botulinum Toxin Pretreatment on Laser Resurfacing Results

## A Prospective, Randomized, Blinded Trial

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**Background** Facial laser resurfacing and chemodenervation with botulinum toxin type A are used independently as means of nonsurgical facial rejuvenation. Recent reports in the literature have described combining these 2 therapies, claiming improved and longer-lasting laser resurfacing results. To date, no scientific investigation has been undertaken to prove or disprove this theory.

**Design** Institutional review board–approved, prospective, randomized, blinded study at university-affiliated outpatient cosmetic surgery offices.

**Intervention** Patients had one side of their face injected, at specific anatomic subsites (crow's feet, horizontal forehead furrows, and glabellar frown lines), with botulinum toxin 1 week before laser resurfacing. After receiving an injection, patients underwent cutaneous laser exfoliation on both sides of the face with either a carbon dioxide or an erbium dual-mode laser.

**Main Outcome Measures** Patients' injected (experimental) and noninjected (control) sides were compared after laser resurfacing. Follow-up was documented at 6 weeks, 3 months, and 6 months after laser resurfacing. Subjective evaluation, based on a visual analog scale, was performed in person by a blinded observer. Furthermore, a blinded panel of 3 expert judges (1 facial plastic surgeon, 1 oculoplastic surgeon, and 1 cosmetic dermatologist) graded 35-mm photographs taken during postoperative follow-up visits.

**Results** Ten female patients were enrolled in the study. A 2-tailed *t* test showed that all sites that were pretreated with botulinum toxin showed statistically significant improvement ( $P \leq .05$ ) over the nontreated side, with the crow's feet region showing the greatest improvement. Comparing results between the carbon dioxide and erbium lasers did not result in any statistically significant differences.

**Conclusions** Hyperdynamic facial lines, pretreated with botulinum toxin before laser resurfacing, heal in a smoother rhytid-diminished fashion. These results were clinically most significant in the crow's feet region. We recommend pretreatment of movement-associated rhytides with botulinum toxin before laser resurfacing. For optimum results, we further recommend continued maintenance therapy with botulinum toxin postoperatively.

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