A Practical Primer For Dysport, Part 2: Strategies for Success with the Periorbital Frame and Special Considerations for Skin of Color

Comprehensive patient assessment, a thorough understanding of facial anatomy, and careful consideration of treatment objectives are key to optimizing periorbital rejuvenation with botulinum neurotoxin A.

Patients seeking facial rejuvenation tend to have a general goal, such as looking younger or more rested, and also specific objectives, one of the most common of which is to improve the appearance of their eyes. The periorbital region is often the first area to manifest the signs of aging; some patients may develop rhytides on animation and under-eye hollows or pigmentation while still in their twenties. Aging around the eyes is insidious, and it is often difficult for patients to pinpoint exactly what has changed and is making them look older. As clinicians, it is essential that we precisely identify these changes so that we can address them with the appropriate treatment modalities.

The Periorbital Frame. I find it helpful to assess the eyes within a periorbital frame, which I define as encompassing the eyebrow, the upper eyelid, the lower eyelid and also the glabella and superior midface. An individualized strategy for the injection of botulinum neurotoxin A (BoNT-A) within the periorbital frame can be formulated by coupling evaluation of each patient's muscle mass and activity and the extent and pattern of hyperdynamic and static rhytides with a thorough understanding of facial anatomy and the patient's treatment objectives. The need for adjunctive treatment with dermal fillers, laser, or light-based devices or chemical peels is determined by evaluation of periorbital volume loss, loss of skin elasticity and dyspigmentation (most commonly, hypopigmentation). In addition, I employ other treatment modalities for integrative rejuvenation of the periorbital frame, including crystal-free microdermabrasion with skin epi-infusion (DermaSweep, CosMedic R&D, Inc.) cosmetic tattooing (permanent make-up), semi-permanent eyelash extensions (Xtreme Lashes) and eyebrow and eyelash tinting.

BoNT-A Products. I consider BoNT-A to be a cornerstone of periorbital rejuvenation, not just for treating crow's feet but also to shape and elevate the eyebrows where appropriate, to enhance eye shape through correction of age-related blepharospasm, and to treat rhytides in auxiliary areas within the periorbital frame such as the glabella. Injection strategies for Dysport (Abobotulinumtoxin A, Medicis) are essentially the same as for Botox Cosmetic (Botulinum toxin A, Allergan). The two BoNT-A products are FDA-approved for the same indication (temporary improvement of glabellar lines) and are identical in many respects, except for a difference in how treatment units are measured: Treatment units for Dysport are different to treatment units for Botox Cosmetic because the product manufacturers have different proprietary assays. Therefore, different numbers of Dysport Units (DU) or Botox Cosmetic Units (BU) are injected to achieve equivalent clinical results.

Despite their overall similarities, Dysport and Botox have a few unique characteristics that may be valuable when individualizing patient treatment. Selection of the appropriate BoNT-A product may be guided by specific patient characteristics and treatment objectives, as in the case presented below.

Case Presentation
A 45-year-old black woman who worked as a travel agent presented complaining that she looked tired and old, especially around her eyes. She wished to improve the appearance of her eyes so that she looked younger. She reported significant sun exposure during her childhood in Africa and that she smoked a few cigarettes a week socially. She had no previous history of treatment with botulinum neurotoxin, dermal fillers, or other modalities of
facial rejuvenation. She wished to see rapid results from her treatment and to minimize the number of injections necessary to fulfill her objectives.

On examination (Fig. 2), this patient had Fitzpatrick skin type V. Assessment of the periorbital frame revealed mild ptosis of both upper eyelids and of the left eyebrow. In repose, she had mild rhytides of the lateral periorbicular region and moderate rhytides of the glabella; these rhytides became significantly more pronounced on animation (smiling and frowning) (Fig. 3-4). Her glabellar muscle mass, as evaluated at maximal frown, was medium. There was moderate volume loss from the lower eyelids, as evinced by prominent under-eye hollows, and there was patchy hyperpigmentation of the lower and upper eyelids. There was mild loss of skin elasticity throughout the periorbital frame.

**BoNT-A Injection Strategy.** This patient received injections of Abobotulinumtoxin A (Dysport) to improve her periorcicular and glabellar rhytides, to shape her eyebrows, and for eye-opening. Dysport was reconstituted with benzyl alcohol-preserved (bacteriostatic) normal (0.9%) saline to obtain a concentration of 200 DU per mL. For crow’s feet and eye-opening, 10 DU (0.05 mL of reconstituted Dysport) were injected at each of two points into the right lateral periocular region and the same injections were made into the left lateral periocular region, for a total of 40 DU on both sides (Figs. 5, 6). For eyebrow shaping, 5 DU (0.025 mL of reconstituted Dysport) were injected subdermally at one point under the lateral edge of each eyebrow approximately 0.5 cm above the orbital rim, for a total of 10 DU on both sides (Figs. 7, 8). To treat glabellar lines, 10 DU (0.05 mL of reconstituted Dysport) were injected at each of five points into the procerus and corrugator muscles, for a total of 50 DU (Figs. 9, 10). During the same treatment session, this patient also received Dysport

**Case 1: Treatment of Glabella and Forehead**

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**Fig. 2**

45-year-old African-American woman. Before Abobotulinumtoxin A (Dysport) therapy: Fig. 2. In repose. Fig. 3. Frowning. Fig. 4. Smiling.
injections to the forehead (Fig. 11), the
transverse nasal rhytides, the marionette
lines and to the neck. (Figs 5-8).

Results. The patient reported onset of
clinical effects within one hour of these
injections, with progressive clinical
improvement over the ensuing four
days. At follow up six and 33 days after
the Dysport injections, the patient
reported that she was very happy with the
results (Figs. 12-23). During the
follow up appointment at 33 days, she
received injections of small particle
hyaluronic acid filler (Restylane, Medics) to the lower eyelids and immediately below the lateral one-third of the eyebrows. She also received small and large particle hyaluronic acid fillers (Restylane and Perlane, Medics) to the nasolabial folds, the oral commissures, and the pre-jowl sulci.

Discussion
This patient received injections of
Abobotulinumtoxin A (Dysport), a
BoNT-A product that was FDA-
approved for aesthetic use in April
2009, to several areas within the perior-
bital frame. Six US clinical trials of
Dysport, conducted over the past seven
years in over 3,100 subjects, show that Dysport is the same as Botulinum toxin A (Botox, Botox Cosmetic, Allergan), a BoNT-A product that was previously approved by the FDA, in key respects, including FDA indication, batch-to-batch consistency, efficacy, safety and tolerability, lack of clinically significant antibody production, predictability of results and general strategy for placement of injection points.3-7

BoNT-A Selection. The selection of Dysport for this patient was based upon consideration of the patient’s stated desires to achieve rapid results and to minimize the number of injection points necessary to achieve these results. In regards to rapidity of results, studies of Dysport6 show that the median time to onset of clinical effects is three days, with some subjects reporting onset of effect within 24 hours of injection, as did this patient. In regards to minimizing the number of injection points, I have found that this is sometimes possible with the use of Dysport, particularly when treating the forehead and the crow’s feet.8 This patient achieved excellent clinical results following Dysport injection at only two points on each side to her crow’s feet and at only four points to her forehead. The rationale for this reduction in the number of injection points is that Dysport may have a slightly wider zone of activity (also referred to as field of effect) than Botox Cosmetic in certain situations. It is of note that this wider field of effect is not associated with any increase in adverse effects. Specifically, the incidence of eyelid ptosis (an indicator of undesirable spread or diffusion after glabellar injection), is low and comparable with both BoNT-A products. Combined data from Dysport studies show a ptosis rate of five percent based on literature reports,10 and a ptosis rate of 3.2 percent from a study of 405 subjects.11

Target Muscles. The target muscle for treatment of this patient’s crow’s feet was the orbicularis oculi, which was injected on each side with Dysport in the lateral canthus region. The inferior injection point on each side was intentionally placed just within the orbital rim to target the orbicularis oculi in this region and bring down the lower ciliary margin by a fraction of a millimeter, thus producing an appealing, wide-eyed look. More pronounced eye-opening may be achieved by injecting a low dose of BoNT-A subcutaneously into the lower pretarsal orbicularis just below the ciliary margin in the mid-pupillary line (Fig. 24, 25). BoNT-A injections to the lower eyelid within the orbital rim should be attempted only in patients with little or no loss of skin elasticity and with small doses of BoNT-A, to avoid lower eyelid droop and/or loss of the ability to close the eyelids forcibly due to over-weakening of the orbicularis oculi.

For brow shaping, the superolateral aspect of orbicularis oculi, which depresses the lateral aspects of the eyebrows, was injected with Dysport. Weakening of this lateral brow depressor allowed the relatively unopposed frontalis muscle to elevate the lateral aspects of the eyebrows. The patient’s overall brow shape was also impacted by the Dysport injections into the frontalis itself, and into the procerus, corrugator supercilii and superomedial portion of orbicularis oculi. The lateral injection point on each side to the frontalis was placed slightly higher than the medial injection point on each side.
Aging is not relevant to skin of color; this is a clinical approach that over-focuses on looking less old than a white patient. At any given age, she may be perceived as having greater elasticity and fewer static rhytides; thus, rejuvenation strategies for diverse patient populations. The periorbital frame of a 57-year-old woman in repose before (Fig. 24) and 33 days after Dysport treatment (Fig. 25). Objectives of Dysport treatment, with primary target muscles in parentheses, were to improve lines on the glabella (procerus and corrugators), forehead (frontalis), and eyebrow shape (corrugators, procerus, orbicularis oculi), to open the eyes (orbicularis oculi), and to improve crow's feet (orbicularis oculi) and marionette lines (depressor anguli oris). Subcutaneous BoNT-A injection points for eye-opening are shown. Slight descent of the lower ciliary margin, resulting in opening of the eyes, is evident after treatment. Notes: This patient’s treatment will be discussed in subsequent articles. Patient has permanent makeup (cosmetic tattooing) of eyebrows and eyelids in before and after photos.

**Fig. 24** Eye-Opening as Part of Upper Face Rejuvenation with Dysport. 57-year-old woman in repose before (Fig. 24) and 33 days after Dysport treatment (Fig. 25). Objectives of Dysport treatment, with primary target muscles in parentheses, were to improve lines on the glabella (procerus and corrugators), forehead (frontalis), and eyebrow shape (corrugators, procerus, orbicularis oculi), to open the eyes (orbicularis oculi), and to improve crow’s feet (orbicularis oculi) and marionette lines (depressor anguli oris). Subcutaneous BoNT-A injection points for eye-opening are shown. Slight descent of the lower ciliary margin, resulting in opening of the eyes, is evident after treatment. Notes: This patient’s treatment will be discussed in subsequent articles. Patient has permanent makeup (cosmetic tattooing) of eyebrows and eyelids in before and after photos. **Fig. 25**

- 2.5 DU each injection point.

**BoNT-A and Skin of Color**

The pattern of periorbital aging in patients of color differs from that of white patients in several respects. A full understanding of these differences is a pre-requisite for clinicians who wish to devise successful rejuvenation strategies for diverse patient populations. The periorbital frame of a patient of color tends to have better skin elasticity and fewer static rhytides; thus, at any given age, she may be perceived as looking less old than a white patient. A clinical approach that over-focuses on loss of skin elasticity and presence of static rhytides as hallmarks of periorbital aging is not relevant to skin of color; this may lead to under-diagnosis and under-treatment of aging changes with consequent patient dissatisfaction. It is essential to listen to patients’ concerns, which generally center on what has happened to their faces as they aged; these changes from the baseline of youth serve as an invaluable aid for the clinician in assessing the individual aging process.

On clinical evaluation, I have found that the mass of the glabellar muscles and of other muscles of facial expression may be relatively greater in women of color than in white women of similar physiological frame and build. Dynamic rhytides may be prominent in the glabellar and lateral periorbicular regions, as in the case of this patient when she frowned or smiled, even when static rhytides are not pronounced in repose. Aging in skin of color is often characterized by volume loss, which contributes to ptosis of the eyelids and/or the eyebrows and under-eye hollows. This pattern of aging has given rise to the aphorism that skin of color ages by folding rather than by wrinkling.

BoNT-A is a valuable component of the rejuvenation strategy for skin of color to address dynamic rhytides and to correct eyebrow and eyelid ptosis. I have observed greater longevity of injected BoNT-A in many patients of color, compared to white patients, perhaps due to intrinsic differences in the dermal structure and musculature of skin of color. This anecdotal observation is supported by a randomized, double-blind, placebo-controlled study in which subjects, including a subset of 106 African-Americans, received a single treatment of Abobotulinumtoxin A (Dysport) to the glabella with variable dosage based on gender and individual muscle mass. The median duration of clinical effect was 117 days for the African-American subjects, compared to 109 days for the whole Dysport-treated study cohort. The response rate at day 90 after treatment was 70 percent for African-American subjects and 57 percent for the whole Dysport-treated cohort.

**Multimodal Periorbital Rejuvenation**

Patients such as the one presented in this article, who have significant volume loss from the periorbital frame, benefit from the combined use of BoNT-A and dermal fillers. The synergistic benefits of combining BoNT-A therapy with hyaluronic acid fillers are well-documented. I consider particulate hyaluronic acid fillers to possess the characteristics necessary to optimize both efficacy and safety when restoring volume to the periorbital frame, given that it is an anatomically and aesthetically unforgiving area. Specifically, particulate hyaluronic acid fillers are homogeneous, can be injected via small gauge needles with slow, controlled anterograde technique, and can be reversed if required through the injection of hyaluronidase or simple extrusion. In this patient, particulate hyaluronic acid (HA) fillers served as an adjunct to Abobotulinumtoxin A (Dysport) for brow shaping and for amelioration of age-related brow ptosis. HA fillers may also be used adjunctively with BoNT-A to maximize improve-
ment in the glabellar region of patients who have deep furrows due to significant loss of volume and skin elasticity.

Conversely, Abobotulinumtoxin A (Dysport) served as an adjunct to the particulate HA fillers injected into the lower eyelid and lateral periorcular regions of this patient by addressing dynamic rhytides and iron chelators (TNS Acid (Vitalize peel, SkinMedica). The Jessner's chemical peels with retinoic acid (Leverette peel, SkinMedica) served as an adjunct to the injection of dermal fillers into the lower eyelid by reducing shearing force upon the fillers due to muscle overactivity. I have discussed specific injection techniques previously for volume restoration to skin of color.14,15 The injection of dermal fillers into the lower eyelid may also improve hyperpigmentation of this area, which is a common feature of periorbital aging in patients of color. I can often further improve lower eyelid hyperpigmentation with a 470 to 980nm energy device that likely produces a high level of patient satisfaction. The patients presented in this article were treated under the aegis of a new CME initiative, “Advances in Cosmetic Therapy - A Focus on Botulinum Neurotoxin A” (ACT). Through regional seminars and workshops, the ACT initiative (registration information below) provides a clinical and scientific overview of botulinum neurotoxin A therapy, including synchronized video of Dysport injection techniques and treatment results, new consensus recommendations for on-label and off-label aesthetic use of Dysport, and a review of previous consensus recommendations for Botox Cosmetic. CME programs like the ACT initiative facilitate a deeper understanding of the rationale and optimal strategies for aesthetic treatment with BoNT-A. This enables clinicians to rise to the challenge of advanced level facial rejuvenation with BoNT-A and to enjoy the immense gratification that results from performing it well.

Conclusion

T he eyes are such a centerpiece of the face that periorbital rejuvenation invariably produces a high level of patient satisfaction. The patients presented in this article were treated under the aegis of a new CME initiative, “Advances in Cosmetic Therapy - A Focus on Botulinum Neurotoxin A” (ACT). Through regional seminars and workshops, the ACT initiative (registration information below) provides a clinical and scientific overview of botulinum neurotoxin A therapy, including synchronized video of Dysport injection techniques and treatment results, new consensus recommendations for on-label and off-label aesthetic use of Dysport, and a review of previous consensus recommendations for Botox Cosmetic. CME programs like the ACT initiative facilitate a deeper understanding of the rationale and optimal strategies for aesthetic treatment with BoNT-A. This enables clinicians to rise to the challenge of advanced level facial rejuvenation with BoNT-A and to enjoy the immense gratification that results from performing it well.