A Practical Primer for Dysport Part 3: Putting It All Together – Strategies for Success with Integrative Rejuvenation of the Upper Face

In-depth understanding of the aging process and appreciation of the fascinating interactions between facial anatomy and musculature are key to achieving the best results with our newest neurotoxin.

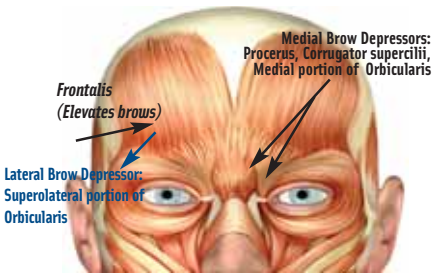
By Hema Sundaram, MD

In previous articles in this series,[1,2] I have discussed strategies for rejuvenation of the glabella, forehead and periocular region with Dysport (abobotulinumtoxin A, Medicis), a botulinum neurotoxin A that was approved by the FDA for aesthetic use earlier this year. In this article and the one to follow, I will discuss some basic and more advanced strategies for integrative treatment of the upper face with Dysport.

Rationale and Goals of Integrative Treatment

Integrative treatment with botulinum neurotoxin A (BoNT-A) is based upon consideration of each patient's facial anatomy, the activity pattern of muscles of expression across the whole face, and the specific interactions between these muscles. The goal is to go beyond mere neuromodulation of distinct muscles and to actually reshape the aging face so that it once again has youthful contours. The rationale for integrative treatment is that it yields more aesthetically pleasing, and potentially longer lasting, results. Integrative treatment of the upper face with BoNT-A is especially fascinating because the neurotoxin plays a primary role in the reshaping process here, with dermal fillers serving as adjuncts. (In contrast, dermal fillers assume a more primary role in reshaping the mid and lower face.)

Fig. 1. Muscles of Brow Elevation and Depression



It is equally fascinating because a keen appreciation of individual variations in anatomy and function of the facial musculature, along with an understanding of facial aging, are crucial to achieving the best results.

In the upper face, the interplay of these factors is well-exemplified by consideration of the Frontalis muscle. From the anatomical standpoint, Frontalis is often depicted in textbooks as traversing the forehead in two distinct bands with central separation; however, the more common clinical presentation is one broad muscular band with no separation.[3,4] From a functional standpoint, there is a complex balance between Frontalis in its role as a brow elevator, and the muscles that depress the brows—Procerus, Corrugator supercilii, Depressor supercilii and Orbicularis Oculi. (Fig. 1) Age-related loss of

Fig. 2



Fig. 2. Facial ideals. The ideal female face is heart-shaped with a prominent upper and mid face and high-arched eyebrows, as exemplified in fiction by Walt Disney's Snow White (left) or in life by the actress Vivien Leigh (center). Clark Gable (Leigh's co-star in 1939's "Gone With The Wind") exemplifies the ideal male face, which is oval or rectangular with more equal prominence of upper, mid and lower face, and lower–set eyebrows.

skin elasticity must also be taken into account. These factors impact the pattern of rhytides on the forehead, the shape and position of the eyebrows and the fullness of the eyelids. Evaluation of these clinical characteristics thus allows determination of the optimal placement of sites for BoNT-A injection into Frontalis.

Educational Initiatives

With the approval of Dysport for aesthetic use, we have our first opportunity as clinicians in the US to select between specific BoNT-A products for our patients, just as our colleagues elsewhere in the world have done for years. I consider both Dysport and Botox Cosmetic (onabotulinumtoxin A, Allergan) to be gold standard therapies for facial rejuvenation. The two products have excellent and comparable efficacy, safety and tolerability profiles. I offer the strategies below with the understanding that Dysport and Botox Cosmetic are the same in key respects, including FDA indication for aesthetic use and safety labeling, general placement of injection points and consistency of results. Selection of one BoNT-A product versus the other may be based upon physician and patient preference, treatment objectives, the slight but distinct differences between products—and other, more prosaic considerations such as the cost of treatment supplies.

A new Continuing Medical Education (CME) initiative, "Advances in Cosmetic Therapy – A Focus on Botulinum Neurotoxin A" (ACT), may be of value to those who wish to develop and advance their skills with the aesthetic use of BoNT-A (see registration information below). The ACT initiative comprises local and regional workshops that provide a clinical and scientific overview of BoNT-A, including consensus recommendations for on-label and off-label aesthetic use of both FDA-approved BoNT-A products and innovative synchronized video of BoNT-A injection techniques and results. Upcoming ACT workshops for which the interested reader may register include one following the Mount Sinai Winter Dermatology Symposium in New York City this December, and one in conjunction with the Advances in Cosmetic and Medical Dermatology Symposium (Maui Derm 2010) in Hawaii this January.

Table 1. Simple Dysport Dosing

- Standard Dysport dose per injection point: 10 DU
- Smaller Dysport dose per injection point: 7.5 or 5 DU
- Smallest Dysport dose per injection point: 2.5 DU

Thinking in Tens and Fives

Glabella: Inject 10 DU at each of the 5 standard glabellar injection points (Total 50 DU)

Forehead: Inject 10 DU at 3 to 5 points (Total 30 to 50 DU)

Crow's feet: Inject 10 DU at 2 to 5 points on each side (Total 40 to 100 DU on both sides)

Brow Shaping: Inject 2.5 to 10 DU on each side at 1 point (under lateral eyebrow margin)

Eye Opening: Inject 2.5 to 5 DU on each side at 1 point (at lower ciliary margin in mid-pupillary line)

As clinicians gain experience with Dysport they may wish to modify these suggested starter doses for further individualization of treatment.

Table 2. Three Clinically Relevant Reconstitution Volumes For Dysport

Reconstitution Volume	Volume Containing 10 DU	FDA Labeling?
1.5mL	0.05mL	On Label
2.5mL	0.08mL	On Label
3.0mL	0.1mL	Off Label

Strategy 1: Understand Facial Ideals

The ideal female face has the shape of a heart or inverted triangle, with a prominent upper face and mid face tapering to a less prominent lower face. For men, the ideal is a more oval or rectangular face with approximately equal prominence of the upper, mid and lower face. (Fig. 2) Aging results in loss of facial skin elasticity and volume, and hyperdynamic activity of some muscles of facial expression. These changes, together with the effects of gravity, all play a part in increasing prominence of the lower face relative to the upper and mid face (Fig. 3). This is especially detrimental to the female face because it reverses the ideal triangular or heart-shaped taper. Skilled BoNT-A injection to the upper face can alter the apparent length and width of the forehead, optimize eyebrow position and enhance the size and shape of the eyes. A small change in these features can have a profound impact by restoring prominence to the upper face, which in turn has a slimming effect upon the lower face. The overall result is to shift facial proportions back towards the youthful ideal. (Fig. 4)

Strategy 2. Simple Dysport Dosing (Table 1)

A thorough understanding of Dysport dosing is a pre-requisite for integrative treatment. Dosing of Dysport is easily mastered, whether you prefer to think directly in Dysport Units (DU) or to convert from Botox Units (BU). I find it more logical to think directly in Dysport Units, with 10 DU being a standard dose per injection point, 7.5 DU or 5 DU per injection point being used for smaller doses and 2.5 DU per point being used for the smallest dose. In the upper face, I use this smallest dose of 2.5 DU for conservative brow shaping, eye-opening and minor adjustment of previous treatment. (Fig. 5)

If employing a conversion ratio, the consensus is a ratio of 2.5 DU to 1 BU. Thus, 10 DU is clinically equivalent to 4 BU.

Strategy 3: Simple Dysport Reconstitution (Table 2)

Dysport for aesthetic use is supplied in a sterile vial containing 300 DU of freeze-dried abobotulinumtoxin A. Reconstitution of Dysport, as with Botox Cosmetic, may be performed with a wide range of reconstitution volumes. For Dysport, I find three of these reconstitution volumes, 1.5mL, 2.5mL and 3mL, to be of clinical relevance.

Reconstitution with 1.5mL of normal (0.9%) saline is FDA-approved. Clinicians who prefer to



Fig. 3. Facial Aging. 57-year-old woman in repose before treatment. Note age-related facial lengthening and increased prominence of lower face relative to the youthful ideal.

Fig. 4. Facial Shaping with Dysport. Same woman in repose and smiling before (4a, 4c) and 33 days after Dysport (4b, 4d). Patient reported onset of clinical effect within 24 hours. On full face images, note restoration of prominence to the upper and mid face, primarily through repositioning of the eyebrows and opening of the eyes









Figs.3-6: Patient treated by Hema Sundaram, MD.Photographic images courtesy of the PharmAdura CME initiative, Advances in Cosmetic Therapy–A Focus on Botulinum Neurotoxin A.

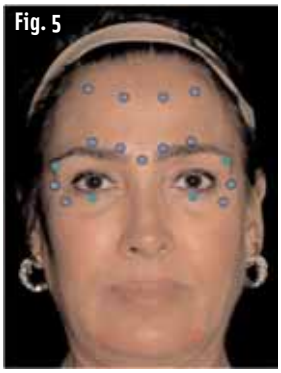


Fig. 5. Easy Dysport dosing. Same woman, showing Dysport injection points. Treatment objectives, with primary target muscles in parentheses, were to improve lines on the glabella (Procerus and Corrugators), and forehead (Frontalis), to improve crow's feet (Orbicularis Oculi), to shape the eyebrows (Corrugators, Procerus, Orbicularis Oculi), and to open the eyes (Orbicularis Oculi). ***Dysport dosages.*** Glabella: 10 DU at each of 5 injection points; Forehead: 10 DU at each of 4 injection points; Crow's Feet: 10 DU at each of 2 injection points; Brow Shaping: 2.5 DU at each of 2 injection points ; Eye Opening: 2.5 DU at each of 2 injection points. ● = 10 DU; ● = 2.5 DU (Note: In the lower face, Depressor Anguli Oris was also injected. These injection points indicated by: ○)

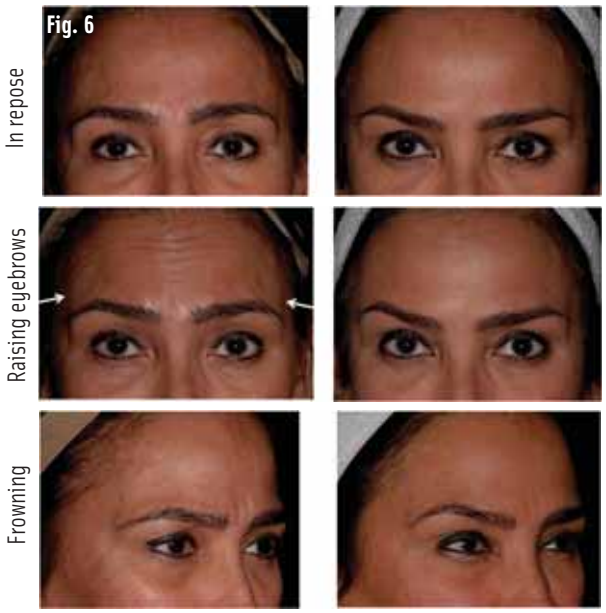


Fig. 6. Reduction in Injection Points. Close-up images of forehead and glabella in repose and on animation (raising eyebrows and frowning) before (left side) and 33 days after (right side) Dysport. Note global improvement in rhytides including lowermost forehead lines (arrowed) and smooth appearance of the whole forehead, achieved with only four injection points to this area (as shown in Fig. 4). Patient and author noted results similar to those previously achieved with injection of BoNT-A (Botox Cosmetic) to the forehead at 12 points using microdroplet technique. Patient's objective of near-immobility on forehead and glabellar animation after BoNT-A treatment was achieved. Notes: 1. Treatment of this patient's lower face will be discussed in a subsequent article. 2. Patient has cosmetic tattooing (permanent make up of eyebrows and eyelids) in before and after images.

inject small volumes of BoNT-A at each point may reconstitute the Dysport vial with 1.5mL saline; 0.05mL of the reconstituted solution will then contain the standard dose of 10 DU. (I prefer this reconstitution volume as I feel that small injection volumes may cause less discomfort for some patients, especially in less distensible areas of the face such as the forehead.) Reconstitution with 2.5mL of normal (0.9%) saline is also FDA-approved. If the Dysport vial is reconstituted with 2.5mL saline, then 0.08mL of the reconstituted solution will contain the standard dose of 10 DU.

A third reconstitution volume, 3mL, which is off FDA labeling, may be useful for those who are accustomed to treating patients with Botox Cosmetic by injecting a standard dose of 4 BU in a volume of 0.1mL at each point. If the Dysport vial is reconstituted with 3mL of saline, then 0.1mL of the reconstituted solution will contain the standard dose of 10 DU, which is considered clinically equivalent to 4 BU.

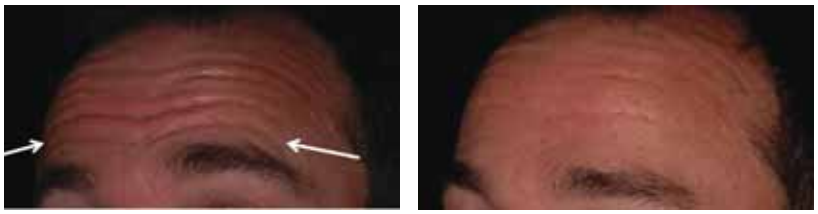
Strategy 4. Reduce Injection Points

As noted above, general placement of injection points for Dysport is the same as for Botox Cosmetic. One of Dysport's more interesting properties is that it may have a slightly wider zone of activity (hereafter referred to as field of effect) than Botox Cosmetic in certain situations. It is important to note that neither product's field of effect is associated with any increase in adverse effects. Specifically, the incidence of eyelid ptosis, which is 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 2.1 percent and the Dysport package insert reports a ptosis rate of two percent from a study of 398 subjects[5] while the package insert for Botox Cosmetic reports a ptosis rate of five percent based on literature reports,[6] and a ptosis rate of 3.2 percent from a study of 405 subjects.[7] Dysport's wider field of effect may permit a reduction in the number of injection points necessary to achieve optimal results for some patients.



Fig. 7. Improvement in Challenging Rhytides. 45-year-old man showing placement of Dysport (abobotulinumtoxin A) injection points to glabella and forehead, and results on animation (raising eyebrows) before and 33 days after treatment. Both patient and author noted fewer residual lines immediately above the middle and lateral one-thirds of his eyebrows (arrowed) after abobotulinumtoxin A than after previous BoNT-A (Botox Cosmetic). Note preservation of some forehead mobility after treatment, in accordance with patient's treatment objectives. ● =10 DU

Fig. 7: Patient treated by Hema Sundaram, MD. Photographic images courtesy of the PharmAdura CME initiative, Advances in Cosmetic Therapy—A Focus on Botulinum Neurotoxin A.



to that which I have previously obtained by injecting Botox Cosmetic at five to eight points on each side using the microdroplet technique.

In the upper face, this is most evident when treating the forehead and the lateral periocular regions. Clinicians and patients may consider this reduction in injection points to be advantageous because it potentially decreases discomfort during treatment and also the risk of ecchymosis.

Improvement of rhytides across the whole forehead with preservation of facial expressivity and a natural look can be achieved by injection of Dysport at three to seven points, with a dosage of 5 to 10 DU at each point. (Fig. 6) I find that these clinical results are reminiscent of those that I have obtained previously when injecting Botox Cosmetic at 10 to 15 points across the forehead using a microdroplet technique, whereby the Botox Cosmetic is reconstituted with a relatively large volume of saline (I have typically used 5 mL) and small doses (typically 1 to 3 BU) are injected at each point. I have also found that Dysport's wider field of effect may permit improvement for some patients in rhytides that have been traditionally thought to be less amenable to BoNT-A treatment, such as the lines that lie immediately above the middle and lateral one-thirds of the eyebrows. (Fig. 7)

In the lateral periocular region, injection of Dysport at two or three points on each side with a dosage of 10 to 20 DU at each point can yield a pattern of global improvement in some patients similar

Strategy 5: Make Fact-Based Decisions

This past year is notable for the approval of a new BoNT-A product for aesthetic use in the US, and by new, FDA-mandated safety labeling for all approved botulinum neurotoxin products: Botox Cosmetic, Dysport and Myobloc (rimabotulinumtoxin B, Solstice Neurosciences). As clinicians, our responsibility is to uphold and honor the FDA's new safety guidelines and risk evaluation and mitigation strategy, while dialogue continues to determine what specific guidelines pertain to the aesthetic use of Dysport and Botox Cosmetic.

It is also our responsibility to insure that selection of a specific BoNT-A product for our patients is based upon facts. It is perhaps inevitable that misconceptions have arisen, given the prevalence of marketing campaigns and media hyperbole in the field of aesthetic medicine, and the profound impact that these non-medical information sources may have upon the psyches of patients and clinicians alike. It is worth keeping in mind that a number of additional BoNT-A products will find their way to our shores over the next few years. As with Dysport and Botox Cosmetic, these new products will have already been approved and safely used elsewhere in the world prior to their arrival in the US. And, like Dysport and Botox Cosmetic, they will undergo extensive studies in

the US as a pre-requisite for FDA approval. It seems somewhat naïve to believe that the introduction of new BoNT-A products could be detrimental merely because it represents a change to the *status quo*—particularly in the face of incontrovertible clinical and scientific evidence that this is not the case. We have benefited greatly from expansion of our therapeutic armamentaria with new dermal fillers and lasers. We have every reason to believe that the availability of more than one BoNT-A product is similarly beneficial and further advances our paradigms of patient care. ■

Next month: Taking Advantage of Quicker Onset, Achieving Smoother Transition Zones and Perfecting Your Strategies for Integrative Rejuvenation of the Upper Face.

Dr. Sundaram serves on the Steering Committee for The PharmAdura Continuing Medical Education initiative, "Advances in Cosmetic Therapy - A Focus on Botulinum Neurotoxin A" (ACT), which is supported by independen educational funding from Medicis Pharmaceutical Corp. Physicians may register to attend a local ACT program by calling 1-877-252-5100 ext.29 or by faxing information to PharmAdura, LLC. at 1-845-398-5108.

Maui Derm 2010 (Advances in Cosmetic and Medical Dermatology) runs from January 23 to 27, 2010 and includes a full day dedicated to didactic presentations and live injection training sessions for botulinum neurotoxins and dermal fillers. Physicians may register for Maui Derm 2010 at http://www.acmd-derm-hawaii.com/

Dr. Sundaram has performed media work for Allergan, Inc., serves as a Consultant and Speaker for Johnson &Johnson, as a Clinical Investigator, Consultant and Speaker for Medicis Pharmaceutical Corp., as an Advisorand Speaker for SkinMedica, Inc., and as a Clinical Investigator and Speaker for Syneron Medical.

1. Sundaram H. A Practical Primer for Dysport Part 1: Speaking the Language and Strategies for Success with the Glabella and Forehead. Practical Dermatology. 6(7):25-29.

2. Sundaram H. A Practical Primer for Dysport Part 2: Strategies for Success with the Periorbital Frame and Special Considerations for Skin of Color. Practical Dermatology. 6(8):33-38.

3. Fodor PB, Nicanor GI, eds. Endoscopically Assisted Aesthetic Plastic Surgery. 1996. Mosby. New York.

4. Sundaram, H. Facial Rejuvenation With AbobotulinumtoxinA of a 45-Year-Old Man. August 2009. Medscape CME Aesthetic Medicine Resource Center. http://cme.medscape.com/viewarticle/707424

5. Dysport Summary of Product Characteristics. Ipsen, Ltd. June 2007.

6. Botox Cosmetic Package Insert, Allergan, Inc. 2008.

7. Botox Cosmetic Product Monograph, Allergan, Inc. Revised March 2002. Accessible online at www.fda.gov/cder/foi/label/2002/botuall041202LB.pdf

Product News

First Benzoyl Peroxide Foam. Onset Therapeutics' BenzEFoam Emollient Foam, the first prescription foam formulation of benzoyl peroxide (5.3%), is now available. BenzEFoam is designed for patients with body acne to permit easy spread of the medication over large body areas. Onset says the foam covers five to six times more surface area than gel and cream formulations. Featuring Onset's proprietary Delevo foam technology, BenzEFoam has also demonstrated low rates of cutaneous irritation and dryness in clinical trials and has shown to be very effective in reducing acne-causing bacteria on the back, the company says.

Ablative Post-Procedure Care. For patients recovering from CO_2 and fractional CO_2 procedures, SkinMedica offers the Ablative Post-procedure Kit. Available at SkinMedica.com or direct dispensed by physicians, the kit includes Skin Cleanser, TNS Ceramide Treatment Cream with NouriCel-MD (a proprietary blend of growth factors), and broad-spectrum sunscreen. The kit retails for $65. ■



Advertising Index November/December 2009 ■ ■ ■

Advertiser	Page
Centocor Ortho Biotech. www.centocor.com • 800-457-6399	19-20
Galderma www.galdermausa.com • 817-961-5000	9-10, 37-38
Iridex www.iridex.com	29
Onset Therapeutics. www.benzefoam.com • 888-713-8154	14,15
Ortho Dermatologics www.orthodermatologics.com	2-3
South Beach Symposium www.southbeachsymposium.org	53
Stiefel. www.stiefel.com	23-24, 45-46

For advertising inquiries please contact:

Alan Guralnick, Publisher
aguralnick@bmctoday.com • 484-581-1832

Carol Levine, Account Manager
clevine@bmctoday.com • 973-868-0392