Botulinum Toxin Injections Pearls

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For patients undergoing botulinum toxin injections in the area of the procerus and glabellar region who are not undergoing filler injection simultaneously, it is often advantageous not only to inject into the origin and insertion of the muscle but to use part of the botulinum toxin volume to "fill" the vertical glabellar rhytids. This provides for an appreciated, albeit short-term, improvement in the rhytids' appearance prior to the onset of the botulinum toxin effect.

There are several formulations of botulinum toxin available in the United States. The most commonly used products are botulinum toxin (Allergan), Dysport (Medicis), and Xeomin (Merz). These products are all botulinum toxin type A. They do have differences in the expedients used for preparation, the dilution and dosing parameters, and the FDA-approved uses. Much of this data is summarized in Fig. 123.1.

Importantly, botulinum toxin and Xeomin are diluted exactly the same way. If you dilute each vial of 100 units, with 2.0 cc of nonpreserved saline, 1 cc will contain 50 units and each 0.1 cc will contain 5 units. With a dilution with 2.5 cc of nonpreserved saline, 1 cc will contain 40 units and 0.1 cc will contain 4 units of botulinum toxin. Botulinum toxin must be kept in the freezer before use. Xeomin can be stored at room temperature.

Dysport however has very different dosing requirements. Dilution of one vial of Dysport (each with 500 units) with 3 cc of nonpreserved saline will provide for a volumetric equivalent dose per 0.1 cc of botulinum toxin diluted with 2 cc. For instance, 1 cc of Dysport diluted with 3 cc of nonpreserved saline will contain 167 units. 0.1 cc of Dysport diluted with 3 cc on nonpreserved saline will contain 16.6 units. This is equivalent in potency to 5 units of botulinum toxin. In this instance, there is volumetric, potency equivalence between botulinum toxin and Dysport even though the number of units is quite different.

There are subtle differences in effect between toxins. Dysport may have a somewhat faster time to effect, though its effect may last a slightly shorter period of time. Additionally, Dysport may have a somewhat larger zone of diffusion. This can be efficacious in areas where a large, smooth zone of distribution is desired. However, in areas such as the upper eyelid or crow's feet, where diffusion could lead to ptosis, care is advised.

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Fig. 123.1 Comparison of botulinum toxins available in the United States

	Botox Allergan, Inc. Irvine, CA	Myobloc Solstice SSF, CA	Dysport Ipsen, Ltd. Berkshire, UK	Xeomin Merz Germany
Description	Botulinum toxin Type A 900 kd purified neurotoxin	Botulinum toxin Type B	Botulinum toxin Type A hemagglutinin	Botulinum toxin Type A 150 kD purified protein No refrigeration
Expedients	0.9 mg NaCl. 0.5 mg HSA	0.01 M Na succinate, 0.01 M NaCl, 0.05 % HSA	2.5 mg lactose 125 ug albumin	1 mg HSA 4.7 mg sucrose
FDA Approval?	Yes 1989	Yes 2000	Yes 2009	Yes 2010
Indications for use	Strabismus, Blepharospasm Hemifacial spasm, Rhytids Migraines Cervical dystonia	Cervical dystonia	Blepharospasm Hemifacial spasm, Torticollis Focal spasticity	Cervical dystonia Blepharospasm Rhytids