Botulinum Toxin: Avoiding Pitfalls 121

John R. Burroughs and Richard L. Anderson

OnabotulinumtoxinA (Botox®) is extremely safe with an LD50 of 3,500 units in humans. Despite a high safety profile, non-life-threatening complications can be frequent and frustrating to both the patient and the physician. Proper understanding of oculofacial anatomy is paramount to correctly understand the indications and proper administration of botulinum toxin. Botulinum toxin injections will not address skin pigmentation/quality, excess skin, contour deformities, volume loss/deformities, or tissue drop. Therefore, it is ideal for recruiting cosmetic surgery to the oculofacial practice.

Prior to scheduling, patients when medically not contraindicated should be advised to avoid aspirin, NSAIDS, and blood-thinning vitamins/supplements for a week before injections to avoid bruising and toxin over-dissemination. We reconstitute onabotulinumtoxinA (botulinum toxin) with preserved saline to maximize patient comfort and dilute each vial with 2.5 mL (4 units/0.1 mL), which we have found to be an ideal dilution for both cosmetic and therapeutic uses. Overdilution increases tissue spread, which is useful in large areas as the forehead, but may increase diplopia or blepharoptosis risk in critical areas of the eyelids. Higher dilutions also have quicker onset and more even distribution of effect. We avoid injection of Botox® near operative sites when combined with surgical procedures such as blepharoplasty or facelifts as postoperative edema may cause toxin diffusion to undesired locations. However, Botox® given at least 4–7 days before surgery is generally safe as it has already been taken up at the neuromuscular junctions and should not spread further. Presurgery Botox® can be helpful when done early for certain surgeries (e.g., brow lifting) and chemical peeling.

Botox® effect is usually seen 2–3 days following injection with maximal effect at approximately 2 weeks. We, therefore, do not recommend any touch-ups until 2 weeks have passed. Ocular complications are fortunately transient and of shorter duration than the intended use but can last up to 3 months. Patients with any degree of blepharoptosis need to receive very careful injections to the forehead and brows to avoid ptosis worsening by potential over-dissemination or by unintended paralysis of their compensatory muscle action. Induced blepharoptosis can be improved by the application of an alpha-agonist (Alphagan® or Iopidine®) or Naphcon®-A antihistamine eyedrop three times daily. Diplopia is more problematic. Dry eye syndrome will generally respond well to ocular lubricants. Displeasing induced brow elevation can be managed by giving small dosages to the protagonist areas. For

J.R. Burroughs, MD, PC (✉)
Colorado Springs, CO, USA
e-mail: john@drjohnburroughs.com

R.L. Anderson, MD, FACS
AO Surgical Arts,
Salt Lake City, UT, USA

M.E. Hartstein et al. (eds.), *Pearls and Pitfalls in Cosmetic Oculoplastic Surgery*,
DOI 10.1007/978-1-4939-1544-6_121,

instance, an overarched lateral brow "Spock or Elvira" effect can be managed by placing a few units into the peaked frontalis area. Brow ptosis is more problematic and should be avoided by notifying patients with preexistent brow ptosis that they are at significant risk if their forehead rhytids are overtreated. Caution is required if the lower eyelids are lax and only very small amounts can be used in the midface to avoid lower eyelid droop or altered facial expressions. If injection site ecchymosis develops, it is best to immediately place gentle pressure to the area to reduce bruising and unwanted over-dissemination of the toxin to surrounding tissues.