

Facial Fillers & Implants

79

Anil R. Shah, MD, Jeffrey B. Wise, MD, & Minas Constantinides, MD



ESSENTIALS OF DIAGNOSIS

- Analysis of the type of rhytid, including anatomic location and depth and whether it is static or dynamic.
- Knowledge of the longevity of each facial injectable.
- Analysis of facial skeletal proportion, occlusion, and preoperative symmetry.

General Considerations

Facial contouring is a recent trend in facial aesthetic surgery. Facial implants serve to add volume, providing a more appealing shape to a person's face. Facial injectables have reached tremendous popularity due to their safety, "no-down-time" appeal, and economics. Both are discussed to provide background on an exhaustive topic.

FACIAL FILLERS AND INJECTABLES

There are a large variety of facial injectables, each serving a different purpose. A brief summary of the most commonly used facial injectables with a delineation of their advantages and disadvantages will be highlighted.

Botulinum Toxin

Botulinum toxin A (BOTOX® [Allergan, Irvine, CA]) decreases facial lines and wrinkles at sites of skin pleating caused by hyperfunctioning mimetic muscles. Botulinum toxin A is FDA approved for treatment of the glabella. Off-label uses have included periorbital lines (crow's feet), platysmal bands, the forehead, and nasolabial and melolabial lines. Botulinum toxin A is also used for hyperhidrosis of the palms and armpits.

Botulinum toxin A causes paralysis by inhibiting acetylcholine release at the neuromuscular junction. This is accomplished in three steps. First, the toxin binds the nerve. Second, the toxin is internalized into

the nerve. Third, the toxin is cleaved by internal proteolytic enzymes, and the degradation by-products interfere with the normal process of vesicle fusion to the plasma membrane. This results in the inhibition of the exocytosis of acetylcholine.

The toxin requires 24–72 hours to take effect, reflecting the time necessary to disrupt the synaptosomal process. In very rare circumstances, some individuals require as many as 5 days for the full effect to be observed. The effects of botulinum toxin last from 2 to 6 months.

The dose of the toxin is measured as 1 standard unit, which is equal to the amount necessary to kill 50% of Swiss-Webster mice injected with that dose. Extrapolating the data from mouse experimentation, Meyer and Eddie estimated that a 104-kg adult male would sustain a lethal dose of botulinum toxin type A at amounts exceeding 3500 units, a dose that far surpasses any dosing regimen in the cosmetic treatment of the aging face.

Botulinum toxin is contraindicated in patients with peripheral motor neuropathic diseases or neuromuscular functional disorders such as Eaton-Lambert syndrome and myasthenia gravis. Similarly, botulinum toxin type A is contraindicated in pregnant patients and those who are lactating, although unintentional administration has not resulted in birth defects or pregnancy issues. Finally, caution should be taken when injecting botulinum toxin type A to those taking aminoglycoside antibiotics or other agents that interfere with neuromuscular transmission, since these agents may potentiate the effects of botulinum toxin both locally and regionally.

Hyaluronic Acid Derivatives

Hyaluronic acid derivatives (Restylane [Medicis Aesthetics, Scottsdale, AZ], Captique [Allergan, Irvine, CA] Juvaderm [Allergan, Irvine, CA]) are glycosaminoglycan biopolymers, similar to the substance found in the intercellular layers of the dermis of the skin, and are very biocompatible. They are used primarily for lip and nasolabial fold augmentation and for fine wrinkles. Some recent uses of hyaluronic acid derivatives include nonsurgical rhinoplasty and volumetric filling in senile earlobe