by S. Manjula Jegasothy, MD
and Debra Price, MD

Botulinum A Exotoxin for the Earliest Signs of Neck Aging

Botulinum exotoxin injections have been used throughout the 1990's to treat muscular neck disorders such as torticollis, pharyngeal dysmotility, whiplash injury and dystonic tics.[1,2] More recently, as cosmetic uses of botulinum A exotoxin for rhytide reduction in the aging face have become prevalent, attention has been drawn to its uses in the aging neck as well.

Vectors of Neck Aging

While neck skin is subject to the same extrinsic aging factors as facial skin, (heredity, sun exposure, weight changes, etc.) anatomical neck aging can occur earlier and present more harshly in some individuals, due to underlying muscular tension vectors.

The platysma muscle originates inferiorly from the pectoralis and deltoid fascia over the clavicles and stretches like a handkerchief over the neck until it continues as the superficial musculoaponeurotic system (SMAS) over the mandible. Its anterior fibers interlace (decussate) in 75% of patients, and divide or separate (de-decussate) in the remaining 25% of individuals.

In time, the platysma can loosen laterally and fall toward the midline. In addition, its central band or bands can thicken or contract. This may represent a compensatory hypertrophy from supporting deeper neck structures, or it may be due to anatomical shortening of the cervical spine with age.[3] The thickened central muscle band(s) give a characteristic "turkey-waddle" appearance, which is extremely distressing to most affected patients. Using the platysma to accentuate facial expression can exacerbate this problem in susceptible individuals.[4] Most botulinum exotoxin injection techniques address these vectors of neck aging.

An earlier change seen more frequently is progressive laxity of the skin in its attachment to the platysma, causing the development of multiple horizontal rhytides. It is this facet of neck aging which our technique addresses.

Dr. Jegasothy and **Dr. Price** are both in private practice in Miami, FL.

Other Injection Techniques

Some authors report injecting 50-100 U of botulinum exotoxin into platysmal bands while the patient is actively contracting them. Three to 10 U are injected 1.0-1.5 cm along the bands from the jawline to the lower neck, using a 30 guage needle and a dilution of botulinum exotoxin of 2.0 cc saline per 100 U vial.[5,6] Complications of this technique include hematoma formation, neck soreness and discomfort, and weakness when lifting the head from the supine position. Rarely, even serious complications such as laryngeal muscle weakness, hoarseness, and transient dysphagia can develop.[7]

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Others report a "combination" technique, whereby two to four platysmal bands are treated as above, with a total dose of 30-60 U of botulinum toxin, while an additional 20-30 U are injected at 2.0-3.0 cm intervals (3-5 U per injection) along horizonal rhytides.[4] Concerns about large unit doses include acute motor symptoms, as outlined above, and chronic changes such as further loosening of platysmal insertions and increased ptosis of the submandibular gland laterally in the neck.[3]

Our Technique

We use Botox® botulinum A exotoxin with a dilution of 2.5 cc per 100 U vial. With the patient in a seated position and not actively contracting the platysmal bands, 1-2 U are injected at 2 cm intervals across the entire middle and lower neck (Fig. 1). Care is taken to inject the exotoxin *intrader-*

Fig. 1: Multiple horizontal neck rhytides before treatment.

Fig. 2: Intradermal placement of Botox promotes safe results.

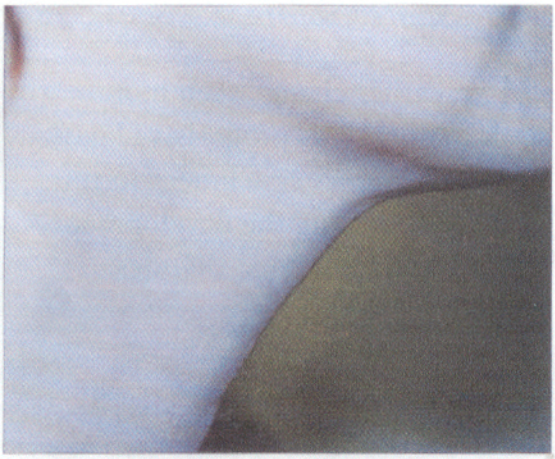

Fig. 3: Horizontal neck rhytides effaced after treatment.

mally, as we postulate that deeper injection into the platysmal muscle fibers increases the incidence of the adverse effects mentioned above. Within 7-10 days after treatment most horizontal neck rhytides are effaced (Fig. 2,3).

Discussion and Conclusion

It is likely that these intradermal injections into the neck still do diffuse to a certain extent into platysmal fibers. This diffusion then relaxes neck skin tension over the platysma, softening the appearance of horizontal rhytides. We postulate that injection into these fibers themselves, as directed by many other neck rejuvenation techniques, may actually diffuse into deeper structures, causing the reported transient motor dysfunction. Thus far, no adverse events have been reported in conjunction with our technique. However, some patients do need to be treated again, 2-3 weeks after the initial injections, for optimal effacement of horizontal rhytides. We find that this botulinum exotoxin injection technique effectively and safely rejuvenates the earliest signs of aging in the neck.

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