Botulinum Toxin-A Chemical Denervation for Platysmal Bands: Maximal Dosing Considerations

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Improving the senescent appearance of the neck is of critical importance in facial rejuvenation. With age, the subcutaneous tissue overlying the platysma is lost and the platysma spasms -- leading to prominent vertical neck bands. Furthermore, as skin laxity increases, horizontal rhytides are formed of skin redundancy. These bands and lines can become accentuated with speech and exercise patterns, imparting an aged appearance.

Botulinum toxin-A (BTX-A) relaxes its target musculature by cleaving proteins responsible for the release of acetylcholine from the nerve terminus at the motor end-plate. The effect of BTX-A starts to become apparent within 48 hours, and lasts on average 3 to 4 months in most regions of treatment.[1] There is significant interest in the use of botulinum toxin-A, such as Ona-botulinum A toxin (Botox, Allergan, USA), Abo-botulinum toxin A (Dysport, Galderma, France), or Inco-botulinum toxin A (Xeomin, Merz, Germany), as either an off-label adjunct to traditional neck lifts (pre- or post-operatively) or as an off-label, stand-alone, non-surgical treatment to restore a youthful neck contour by reducing platysmal spasms responsible for vertical neck bands.[2,3] However, there is very wide dose-ranging variability in the literature regarding the proper dosing of botulinum toxin A in the treatment of vertical neck bands.

Matarasso et al, in their 1999 case series, were successful in using Ona-botulinum A toxin (Botox) to treat platysmal bands of various severities. While the majority of subjects in this report had more mild-moderate bands and thus more moderate dosing of 30 to 100 units of Ona-botulinum A toxin per treatment session, severe platysmal bands were treated with dosing up to 250 units of per treatment session.[2] We have significant concern with the Matarasso et al report advocating this higher end dosing for more severe bands. The platysma is known to be a thin muscle, and injected toxin can diffuse to underlying anatomic structures including the larynx, deglutition musculature, and neck flexors. Indeed, dysphagia and weakness in neck flexors have been reported even with Ona-botulinum A toxin dosing above 75 units.[4] In addition, there is a report of severe dysphagia after platysmal injection of only 60 units of Ona-botulinum A toxin with the patient subsequently requiring nasogastric tube feeding for 6 weeks.[5]

A multidisciplinary French consensus has suggested a total dosing of no more of 100 units of Ona-botulinum A toxin, even for severe platysmal bands, with most study authors employing no more than 30 to 40 units in a treatment session.[6] In our hands, 30 to 50 units of Ona-botulinum A toxin in a single treatment session for the entire area of platysmal banding is generally sufficient to achieve a noticeable cosmetic result. The most common patients we see pursuing BTX-A treatments of the neck are often those who have already had a surgical neck lift or sub-mental liposuction, or even effective non-surgical lifting procedures like micro-focused ultrasound (Ultherapy, Arizona, USA), but there are certainly some who have not had surgery and have prominent platysmal banding at rest. With the recent FDA approval of Kybella (Kythera Biopharamaceuticals, California, USA), we will probably see a whole new population of patients who's submental fat pad treatment unmasked their platysmal bands.

Our technique, used by most injectors, pinches the skin with the underlying platysma to lift the vertical bands up (away from the underlying anatomic structures), followed by superficial injection of the lifted area with 2 to 3 units of Ona-botulinum A toxin to create a bleb at each injection site spaced 1 cm to 1.5 cm apart. For the rare patient who may be undertreated, we agree with the Carruthers technique of re-treatment of any undertreated area at subsequent sessions in order to provide a safer method for improving platysmal bands with botulinum toxin.[1]

Botulinum toxin A can be an effective off-label treatment that softens the appearance of vertical platysma bands. With modest dosing levels of 30-50 units of Ona-botulinum toxin A and not the high-doses advocated in some older reports, BTX-A can be a low risk off-label option for patients seeking to improve the appearance of a senescent neckline with prominent vertical platysmal bands.

References

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