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Comment on “Botulinum toxin type-A as an alternative treatment for gummy smile: a case report”

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Abstract

Currently, the search for esthetic excellence has become the main objective in the facial treatment. The gummy smile is one of the complaints from the patients, since this situation may influence their self-esteem and social relationship. The development of new techniques, such as the application of botulinum toxin, may be a conservative therapeutic option in the treatment of gummy smile. The purpose of this letter is to comment some points about a case report published in *Dermatology Online Journal*, of a patient with dentogingival discrepancy and severe gummy smile, who was treated with application of botulinum toxin in order to optimize the harmony of the smile.

Keywords: botulinum toxins; smiling; dental esthetics; dentistry

I have read, with great enthusiasm, the article entitled “Botulinum toxin type-A as an alternative treatment for gummy smile: a case report”, authored by Juliane Piráquine Araújo and colleagues [1], published in the July 2018 edition of *Dermatology Online Journal*. The article is very interesting and discusses the application of botulinum toxin in a patient with severe gummy smile. The application of botulinum toxin in cases of gummy smile is an excellent treatment option at present. However, the therapeutic association of gingivoplasty and application of botulinum toxin type A, when indicated, should be performed. I have performed the combination of these techniques at the Universidade Brasil and Bottoxindent Institute (São Paulo, Brazil) for some years now.

As reported by Araújo and colleagues [1] in the mentioned article, the institution of treatment depends on the etiology of the gummy smile, which is multifactorial and may be gingival, dental, skeletal, muscular, or a combination of these. Unfortunately, there are many reports presenting botulinum toxin as the only form of treatment for gummy smile, with little mention of the gingival surgical mediation that would promote gingival health. The case was very well discussed and I congratulate the authors Araújo and colleagues for the article presented. However, I consider it is important to highlight some points and make some suggestions:

The technique of botulinum toxin application has been presented as a minimally invasive technique, which can only be considered as compared to more invasive techniques, such as myotomy or Le Fort I osteotomy (orthognathic surgery). Some may consider this an invasive technique in which intradermal needles are employed [2].

I suggest the photographic presentation of the entire face of the patient, since the facial shape and the biotype of the patient can provide important information for planning and execution of the surgical technique to be used. I have observed that patients with gummy smile present a dolichofacial profile in the cephalometric analysis most of the time. This observation favors not only the initial evaluation, but also the evaluation of the patient's dentogingivofacial harmonization after the institution of the treatments, seeking aesthetic and functional balance. Thus, the vertical maxillary excess as an etiological factor can only be considered if the facial length is evaluated. Therefore, evaluation

of the face and/or head of the patient is important [2-4].

If the function of the *levator labii superioris* muscle was considered as the cause, why was the botulinum toxin applied bilaterally in the zygomatic muscle region (see **Figure 2**, reference [1]). Sometimes the *zygomaticus minor* muscle presents as fibers of the *zygomaticus major* muscle, or is even classified by anatomists as bundles of the *zygomaticus major* muscle. The functional evaluation of muscles in these cases, could only be determined by the use of electromyography, which was not reported in the article by Araújo and colleagues [1].

There were two very close application points between the two muscle groups. It is known that the diffusion halo of botulinum toxin within the muscle is 20mm on average. Therefore, by evaluating the cited **Figure 2**, [1], the two bilateral points next to each nostril are not well demonstrated and also cover the same muscles of a single point of application, as we have recommended [2-4]. The Yonsei point is advocated, located next to each nostril, proposed by Hwang et al. [5] and named in honor of its university of origin — Yonsei University College of Dentistry (Seoul, South Korea). This point comprises the intersection among *levator labii superioris*, *levator labii superioris alaeque nasii*, *zygomaticus minor*, and *major* muscles, the first three being the main muscles involved and responsible for lip elevation.

Similar cases were presented by our group, applying 2 units of botulinum toxin type A (Botox®, Allergan Pharmaceuticals, Westport, Ireland) next to each nostril (Yonsei point), achieving satisfactory results for the patient who presented severe gummy smile

[3, 4]. Even if needed retouching or (re- application), injection into the Yonsei point would yield a satisfactory result [2].

Even following the manufacturer's guidance, I believe it is more interesting to dilute 1ml per 100 units in order to reach the predicted maximum duration of botulinum toxin, which varies from 3 to 6 months depending on the trademark available in the Brazilian market. Regarding the administration, it is worth emphasizing the importance of the use of dermatological topical anesthetic (Emla®, Astra, São Paulo, Brasil) to promote comfort during the injection of botulinum toxin [2].

Routinely, many colleagues report reversibility of botulinum toxin. However, there are no established and validated guidelines in the literature, only conjectures [2].

Additionally, it is worth noting that botulinum toxin has been widely used in several stomatological indications. In addition to the gingival smile, we can mention the parafunctional habits such as bruxism and bruxism, masseteric hypertrophy, trismus, temporomandibular disorders, orofacial pain, facial paralysis, and sialorrhoea. It has also been useful in the prevention of excessive masticatory forces in the osseointegration phase in the treatment with osseointegrated implants and as an adjunct to buccomaxillofacial surgical procedures [2].

In our research group, we are developing a set of useful guidelines for the proper management of the gummy smile.

Potential conflicts of interest

The author declares no conflicts of interests.

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