

BOTULINUM TOXIN INJECTIONS FOR TREATMENT OF CONGENITAL DOUBLE UPPER LIP ASSOCIATED WITH GUMMY SMILE

Noury Adel* 

ABSTRACT

Aim: This case series was performed to evaluate the effect of botulinum toxin injection at the orbicularis oris muscle for treatment of double upper lip.

Methods: Six female patients who had a double upper lip associated with a gummy smile were included in this study. All the patients had a double upper lip associated with their smile. The amount of gum exposure was measured before the treatment. IncoBotulinum Toxin A was injected into the elevator muscles of the upper lip as well as the orbicularis oris muscle, postoperative assessment was done by measuring the amount of gum exposure 2 weeks after the injection.

Results: Post-operative measurements at 14 days follow-up, showed a significant reduction in the amount of gum exposure, all the patients reported a high degree of satisfaction

Conclusion: Botulinum toxin injections can be used as an alternative non-surgical temporary treatment for patients who have a double upper lip.

KEY WORDS: gummy smile, upper lip, Xeomin, botulinum toxin, aesthetics

INTRODUCTION

Double upper lip which may be referred to as hamartoma is a condition that affects the upper lip more than the lower lip, it appears in the form of a bilateral or a unilateral hypertrophic mucosal fold at the upper lip upon smiling. This condition may be due to congenital factor, part of Ascher syndrome

or acquired factors, the latter may be due to ill-fitting denture, trauma or sucking the lips between diastema of the maxillary teeth¹⁻⁴.

Clinically double upper lip appears during smiling or talking, it may also affect the speech and mastication, thus affecting the patient's psychological status and overall facial aesthetics⁵.

* MSc, Oral and Maxillofacial Surgery Specialist at the National institute of neuro motor system

Surgical treatment was the only advocated approach for treating double upper lip where it involves excision of the mucosa and the underlying tissue^{6,7}, since many patient won't prefer the surgical approach the necessity of using a non-surgical approach comes in hand. The present case series describes the use of botulinum toxin injection as a non-surgical treatment modality which offers a temporary treatment for patients with double upper lip accompanied with gummy smile.

MATERIALS AND METHODS

This study included six female Caucasian patients aged from 22 – 37 years who came to our clinic (Hassab Dental Clinic), those patients were seeking treatment for their double upper lip associated with their gummy smile. Four of them had a mixed gummy smile while the other two patients had an anterior gummy smile. Upon consultation all the patient reported that they had this condition since they were young, they described it as a "FOLD" as mentioned by the patient words. Careful examination of the past, present medical and dental history was performed followed by explanation of the surgical and non-surgical treatment modality. All the patient chose to have the botulinum toxin injection over the surgery. Written informed consent were obtained from all patients describing the nature of the procedure as well as the benefits and risks.

Preoperative assessment included measuring the amount of gum exposure before the procedure using an adobe Photoshop software through a standardized photographic pictures, the standardization was achieved by fixing all the parameters at each session during photography, those of which includes the camera position, the settings of the camera as well as the distance between the camera and the patient. Xeomin® 100 unit vial (incobotulinumtoxinA, Merz Company), was diluted with a 2 ml saline free of preservative the injection protocol consists of two stages, the first stage involved injection of the elevator muscles of the lips and the second stage involved injection of the orbicularis oris muscle.

The points for the first stage of injection where chose depending on the type of gummy smile of the patient. For patients with anterior gummy smile, one point on each side was injected with a vertical direction, the location of this point corresponds to 1 cm from the ala of the nose. For patients with mixed gummy smile, the same point mentioned previously in addition to two other points, one of them is a point 1 cm above the deepest point of contraction at the nasolabial fold and the other is mid-way between the two other points (three points running along the nasolabial folds). The latter two points were injected with an angled injection heading toward the zygoma to follow the muscle vector.

The second stage of injection involves injecting the orbicularis oris muscle, the points for injection where chosen depending upon the location of the double upper lip, all the patient had a bilateral double upper lip. So the points of injection were right at the cupid bow on each side of the midline (Figure 1).



Fig. (1) The injection points, yellow dot : a point 1 cm from the ala of the nose, green dot : a point 1 cm above the deepest point of contraction at the nasolabial fold, black dot : a point in between the previously mentioned points, white dots : points for orbicularis oris (Yellow dot only for anterior gummy smile. Yellow, green & black dots all together for mixed gummy smile. Black & green dots only for posterior gummy smile, white dots are applicable in any type of smile if there is a hyperactive orbicularis oris)

All points of injection were injected in a superficial depth (2mm) using an insulin syringe except for the points targeting the orbicularis oris, they were injected intradermally (1mm depth) in an oblique direction, the depth was assessed by blanching of the skin of the lip. The dosage for all the injections were done as mentioned previously in one of our studies⁸.

RESULTS

None of the six Caucasian female patients reported any complications, all the patients reported a high degree of satisfaction and they were willing to re-do the procedure once the effect of the botulinum toxin wears off. The satisfaction was recorded based on a satisfaction score grade from 1 to 5 (where 1 = not at all satisfied, 2 = slightly satisfied, 3 = neutral, 4 = very satisfied, 5 = extremely satisfied), all patients reported a score of “5 “which means that they were extremely satisfied with the results of

the procedure. Marked reduction in the amount of gum exposure with complete absence of the double mucosal fold was noticed at 2 weeks interval along with a subtle increase in the vermillion height. The subtle increase in the vermillion height was just a clinical observation from our side and was appreciated by the patients as well however we didn’t aim to measure the changes in the vermillion height. (Figure 2&3) (Table 1)

TABLE (1) Statistical analysis for the pre and post gingival display during smiling in the study group (ONE WAY ANOVA)

<i>Gingival Display</i>	<i>Group 1</i>	
	<i>Mean</i>	<i>St Dev</i>
Preoperative	5.16	0.39
14 Days	0.00	0.00
Probability	0.0000*	



Fig. (2) Picture showing the results before and after 14 days of botulinum toxin injection



Fig. (3) Picture showing the results before and after 14 days of botulinum toxin injection

DISCUSSION

Congenital double upper lip is either due to glandular hyperplasia or the persistence of a sulcus between the pars glabrosa and pars villosa during the second and third week of gestation⁹. It was found out that it mostly appears during smiling or talking due to the contraction of the orbicularis oris muscle²

Most patients who have this condition is mainly concerned with its esthetic impact and up to this date surgery remains the only solution to solve this condition by reducing the height of the lip from inside, where several publications evaluated the effect of the surgery in treating double upper lip^{10,11}.

In our study, in addition to the marked reduction in the amount of gum exposure as well as the double mucosal fold, there was a subtle increase in the vermillion height this may be contributed to the fact that relaxation of the orbicularis oris muscle prevents the inward rolling of the upper lip this maintain its thickness and fullness during smiling, it is worth mentioning that this change was previously noticed in another research that advocated the use of botulinum toxin in lip augmentation provided that it is done with caution¹².

As far as we know there is no single study addressing the use of botulinum toxin in treatment of double upper lip. Despite the fact that many patients seek non-surgical treatment options even if it going to be of a temporary effect, and this is what we see daily in our aesthetic practice in the Middle East. The aim of our study was to introduce the use of neurotoxins as a temporary treatment and as an alternative to surgical options in treating patients with double upper lip.

CONCLUSION

Neurotoxin injection can be used for temporary treatment of double upper lip whether associated

with gummy smile or not, putting into consideration the proper dosage and injection protocol.

REFERENCES

1. Peterson A. Electrosurgical correction of maxillary double lip. *Den. Dig.* 1972;78:182–188
2. Martins W.D., Westphalen F.H., Sandrin R., Campagnoli E. Congenital maxillary double upper lip: review of the literature and report of a case. *J. Can. Dent. Assoc.* 2004;70:466–468.
3. Gorlin R.J., Pindborg J.J., Cohen M.M. 2nd ed. McGraw-Hill; New York: 1976. *Syndromes Of The Head And Neck.* pp. 253–255.
4. Eski M., Nisanci M., Aktas A., Sengezer M. Congenital double lip: review of 5 cases. *Br. J. Oral Maxillofac. Surg.* 2007;45:68–70.
5. Aggarwal T, Chawla K, Lamba AK, Faraz F, Tandon S. Congenital Double Lip: A Rare Deformity Treated Surgically. *World J Plast Surg.* 2016 Sep;5(3):303-307.
6. Daniels JS. Congenital double upper lip: A case report and review of the literature. *Saudi Dent J.* 2010 Jul; 22(3): 101-6.
7. Adel N. A Standardized Technique for Gummy Smile Treatment Using Repeated Botulinum Toxins: A 1-year Follow-up Study. *Plast Reconstr Surg Glob Open.* 2022 Apr 25;10(4):e4281.
8. Ali K. Ascher syndrome: a case report and review of the literature. *Oral Surg. Oral Med Oral Pathol Oral Radiol Endod.* 2007;103:e26–e8.
9. Alkan A., Metin M. Maxillary double upper lip: report of two cases. *J. Oral Sci.* 2001;43:69–72.
10. Bhattacharya HS, Agarwal MC, Gummaluri SS, Agarwal A. Surgical Correction of Congenital Double Lip. *Ann Maxillofac Surg.* 2020 Jan-Jun;10(1):198-202.
11. Li Y, Chong Y, Yu N, Dong R, Long X. The use of botulinum toxin A in upper lip augmentation. *J Cosmet Dermatol.* 2021 Jan;20(1):71-74.