

Botox To Treat Gummy Smile

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Abstract:

Excessive display of gums on smiling, is not aesthetically appealing. Gummy smile may be due to various reasons ranging from vertical maxillary excess (skeletal) to hyperactive upper lip (soft tissue) Surgical interventions of soft tissues or the hard tissues can be done to correct the gummy smile, but the stability of such interventions are questionable. An alternative treatment strategy with Botox injections is discussed in this paper.

Key words: *Botox, Gummy smile, Aesthetic smile, Non-surgical treatment.*

INTRODUCTION:

The need for patients to look more aesthetically appealing has led to the cosmetic side of dentistry to flourish more in the recent years. Some of the procedures like smile designing, veneers, teeth whitening have been conventionally done to improve the aesthetic appearance of the individual. A recent trend is the use of Botox, fillers, PRP, facelift etc. One such cosmetic procedure is the use of Botox injections for the treatment of gummy smile.

Botox:

Botulinum toxin (BTX) produced by Clostridium botulinum is a neurotoxic protein.¹ It causes flaccid paralysis, by preventing the release of acetylcholine at the neuromuscular junction². Botox is used to treat many muscular disorders. Overactive muscle movement like in Cerebral palsy, post-stroke spasticity, post spinal-cord injury spasticity can be managed by Botox administration.³ It was first developed by Dr. Justinus Kerner, a German physician. Burgen was the first to discover its neurotoxicity. There are 7 types⁴ of Botulinum Toxin (BTX) of which BTX-A is commonly used.

Mechanism Of Action:

Botulinum toxin binds to the nerves that use acetylcholine as their neurotransmitter. At the nerve terminal, they get bound to the neurons. The neurons, take in the toxin as a vesicle by means of receptor mediated endocytosis. Once inside the cell, the vesicle acidifies activating a portion of the toxin. Then the toxin gets transmitted through the vesicular membrane into the cytoplasm of the neuron. Once inside the cytoplasm the toxin cleaves the SNARE proteins, which prevent the acetylcholine vesicles from binding with the cell membrane, which thereby prevents the release of the neurotransmitter at that junction. This paralyzes the muscles.

Uses In Dentistry:

Botox has been used in dentistry to treat bruxism⁵, TMDs, hemifacial spasm, masseteric hypertrophy etc. It can also be used to treat gummy smiles by paralyzing the elevator muscles of the upper lip.

Gummy Smile:

According to Goldstein, smile line can be of 3 types : High, medium and low; based on the degree of exposure of the gums and the teeth. Gingival smile can also be classified, based on their etiology into skeletal, dentoalveolar and soft tissue.⁶ Gingival display is defined as the the distance between the upper lip's lower border to the central incisors' upper margin.⁷ (Figure 1)

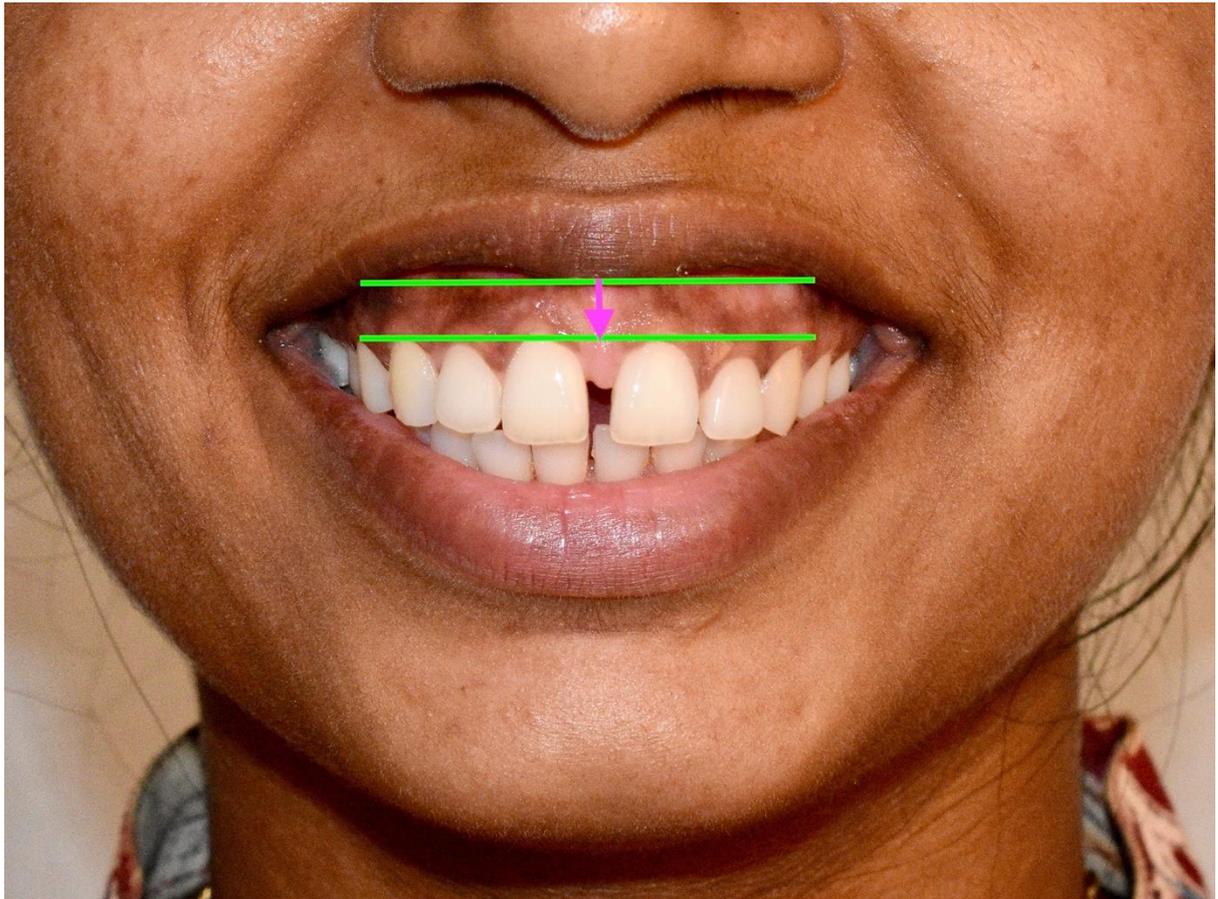


Figure 1: Patient reported to The Department of Orthodontics and Dentofacial Orthopaedics, Sree Balaji Dental College and Hospital, BIHER with a gummy smile of 6mm.

The muscles that aid in bringing about the action of “smiling” are :Levator labii superioris alaeque nasi, levator labii superioris, zygomaticus minor, zygomaticus major, risorius, depressor septi nasi.⁸

Etiology of gummy smile:

Gummy smile can result from

1. Hyperactive upper lip elevator muscles⁹
2. Short upper lip length along the philtrum
3. Delayed passive dental eruption/ gingival hypertrophy

Diagnosis:

The gingival display during smiling (GDS) is considered normal when it is 2-3mm. It is diagnosed as a gummy smile when the value exceeds 3 mm.¹⁰ Generally when the interlabial gap is normal (1-3mm) but the patient shows excessive gums while smiling, the gummy smile is said to be of muscular origin.¹¹

Treatment:

For the gummy smile that has a muscular etiological factor, the surgical interventions do not relieve the hyperactivity of the muscles. Soft tissue surgeries such as lip lengthening procedures can be a treatment option, but their stability is questionable.¹²

Botox As A Treatment For Gummy Smile:

Type A and Type B are the most commonly used Botox injections in dentistry. They are available in the trade names of Dysport, Xeomin, Prosigne and Neuroblock.¹⁴

Procedure:

BTX-A has to be prepared in accordance to the manufacturer's recommendations – 2.5 units per 0.1 ml by 4.0 ml normal saline solution. The site is prepared by applying a topical anesthetic cream : Lidocaine +prilocaine. The needle to be used is 31 gauge 8 mm. For anterior smile, the injection is given at the site where the left and right levator labii superioris alaque nasii muscles overlap. This is roughly about 1 cm lateral and below the nasal ala on each side of the nasal fold. For the posterior gummy smile, the injection is given in the malar region. It follows the path of zygomatico major and zygomatico minor muscles.

Drug Interactions:

The drugs that may alter the effects of Botox are – aminoglycosides, cyclosporine, D-penicillamine, muscle relaxants, quinidine, magnesium sulfate and lincosamide.¹⁵

Adverse effects:¹⁶

1. Short duration – common, localized and not of serious nature.
2. Burning sensation and pain while injecting
3. Edema and erythema around injection site
4. Mild headache
5. Ecchymosis lasting 3 – 10 days
6. Lack of intended cosmetic effect
7. Asymmetric smile
8. Focal tonic movements (twitching)
9. Mild nausea
10. Mild myalgia

Longer Duration – Rare And Can Be Serious

1. Anaphylaxis
2. Urticaria
3. Dyspnea

CONCLUSION:

Although temporary in action and it might require periodic re-injections, still Botox is a good alternative treatment for patients who have a gummy smile due to the hyperactivity of the upper lip elevators. It does drastically improve the patient's smile aesthetically but the patients need to be well informed about the side effects and the nature of the therapy prior to the procedure.

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