



Is Botulinum Toxin Type A Safe for Gummy Smile Treatment in Bronchial Asthma Patients? A Case Report

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Abstract

Background and Aim: The increasing demand for aesthetic enhancements has led to the widespread use of Botox for various facial concerns, including gummy smiles. While its efficacy in treating gummy smiles is established, the safety profile of Botox in patients with underlying medical conditions, such as asthma, remains relatively unexplored. This case report presents a patient with asthma who underwent Botox treatment to correct excessive gingival display. The study aims to demonstrate the potential of Botox for aesthetic improvement in this patient population while emphasizing the need for further research to assess its safety profile. **Results:** A two-week Botox treatment course successfully eliminated the patient's gummy smile without inducing any asthma-related complications or adverse effects. **Conclusion:** Although this case suggests the potential of Botox for treating gummy smiles in patients with asthma, it is essential to conduct larger studies to establish its safety and efficacy. A comprehensive medical evaluation is crucial before considering Botox treatment for individuals with underlying health conditions.

Introduction

The Smile: A Cornerstone of Aesthetics and Social Interaction

A smile holds immense power in shaping perceptions and influencing social dynamics. Research consistently highlights its significant contribution to facial attractiveness, often accounting for nearly a third of overall facial appeal. Beyond aesthetics, a smile serves as a vital communication tool, enhancing self-esteem, and fostering interpersonal connections. Consequently, the pursuit of an aesthetically pleasing smile has become increasingly prevalent.

Gummy Smile: A Common Aesthetic Concern

One common factor affecting smile aesthetics is gingival display, or the visibility of gum tissue during a smile. Excessive gingival display, often termed a "gummy smile," can significantly impact an individual's self-confidence. While various surgical and non-surgical treatments exist, Botulinum toxin type A (Botox) has emerged as a popular and minimally invasive option.

Botulinum Toxin: A Versatile Therapeutic Agent

Botox, derived from the bacterium *Clostridium botulinum*, is a neurotoxin with a remarkable ability to relax muscles.

Its applications extend beyond aesthetics, encompassing the treatment of numerous medical conditions characterized by muscle overactivity. In the realm of cosmetics, Botox has revolutionized wrinkle reduction and facial rejuvenation.

The Intersection of Aesthetics and Medicine: Botox and Asthma

While Botox is a valuable tool in both medical and aesthetic treatments, its use in specific populations, such as individuals with bronchial asthma, requires careful consideration. Asthma, a chronic inflammatory condition affecting the airways, is characterized by recurring symptoms like wheezing, shortness of breath, and chest tightness. Understanding the complexities of asthma is crucial for effective management and for determining the suitability of treatments like Botox.

This review will delve deeper into the mechanisms of Botox, its efficacy in addressing gummy smiles, and the potential implications of its use in patients with asthma.

Case

A 27-year-old woman presented to the clinic with concerns about excessive gingival display while smiling. She expressed dissatisfaction with her appearance and sought treatment options to improve her smile and enhance her overall confidence.

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Figure 1. pre-treatment

Case Description and Initial Findings

A comprehensive oral assessment was conducted on a patient with a history of bronchial asthma. Extraoral photographs were taken to document the patient's smile. Periodontal examination revealed no active disease and gingival exposure was measured using a periodontal probe.

Radiographic evaluation included panoramic and cephalometric imaging. Panoramic radiographs showed a normal bone-to-cementum enamel junction (CEJ) distance of 2mm. Cephalometric analysis determined a Class I occlusion.

To assess upper lip dynamics, the length and mobility of the upper lip muscles were measured at rest and during smiling. Normal lip movement is typically 4-6mm, with hypermobility characterized by double this range [1].

Diagnosis

The patient presented with a gummy smile characterized by a 3mm display of gingival tissue in the anterior region and a 7mm display in the posterior region. This excessive gingival exposure was determined to be primarily caused by hyperactive upper lip movement. Further analysis revealed a lip length of 20mm and excessive muscle activity, measuring 9mm above the normal range.



Figure 2. pre-treatment

The Treatment plan

"In cases of a gummy smile resulting from an overactive levator labii superioris alaeque nasi muscle, botulinum toxin type A is the preferred treatment. This approach is less invasive than surgical options like myectomy and offers a quick onset of results. Patients were informed about the potential temporary side effects of botulinum toxin, such as bruising or swelling at the injection site, as well as the likelihood of the gummy smile



Figure 3. The injection sites

returning within six months due to the temporary nature of the treatment. Following a detailed explanation, patients provided informed consent before the procedure began."

Botox Injection protocol

A 100-unit vial of Botox manufactured by Allergan is mixed with 2.5ml of saline solution following the recommended dilution and storage guidelines [2]. To prevent any local infections, the skin's surface is disinfected using 70% ethyl alcohol and saline solution, [3]. The injection points for the neurotoxin are identified using a white pencil and are strategically located based on muscular activity, particularly smiling, at the "Yonse point," enabling the delivery of Botox to LLSAN, LLS, and Zmi with a single-point injection positioned 1cm lateral to the ala horizontally and 3cm above the lip line vertically [4].

Post injection instruction

The patient is instructed to avoid lying down, exercising, or massaging the injection site for the first 24 hours [5].

Follow-up result

Fifteen days post-procedure, a significant reduction in gingival tissue was observed. The patient reported no discomfort, swelling, redness, bruising, or infection. This absence of adverse reactions indicates successful treatment and high patient satisfaction.

Discussion

Excessive Gingival Display and Botox Treatment: Considerations for Asthmatic Patients

TE excessive gingival display, commonly referred to as a gummy smile, can significantly impact an individual's quality of



Figure 5: Aesthetic results after 15 days of application of botulinum toxin.

life. This condition, characterized by the exposure of more than 2mm of gingiva during a natural smile [6], can be attributed to various factors including gingival, skeletal, anatomic, and muscular elements.

Botulinum toxin A (Botox) has emerged as a popular minimally invasive treatment for gummy smiles due to its efficacy and patient tolerance [7]. By targeting specific facial muscles responsible for upper lip elevation, Botox can effectively reduce gingival display. However, its use in patients with systemic conditions, such as asthma, requires careful consideration.

Asthma, a chronic respiratory condition characterized by airway inflammation and constriction, affects millions globally [8]. While well-managed, it remains a significant health concern.

Given the protein-based nature of Botox and the potential for allergic reactions, its use in asthmatic patients warrants caution. Although research on Botox for gummy smiles in this population is limited, it is crucial to prioritize patient safety and consider potential respiratory complications.

Before administering Botox to an asthmatic patient, a comprehensive medical assessment is essential. This should include a thorough evaluation of asthma severity, control, and previous adverse reactions to medications. Consultation with a pulmonologist or allergist can provide valuable insights into the risks and benefits of Botox treatment in the specific context of the patient's asthma.

Continuous monitoring during and after the procedure is vital to detect any signs of respiratory distress or allergic reactions. Immediate intervention should be available in case of emergencies.

In conclusion, while Botox can be an effective treatment for gummy smiles, its use in asthmatic individuals necessitates a cautious and individualized approach. Prioritizing patient safety and comprehensive medical assessment is crucial to minimize potential risks and ensure optimal outcomes.

Conclusion

Botox injections have demonstrated potential as a safe and effective treatment for gummy smiles in patients with asthma when administered with strict adherence to precautionary measures. Comprehensive medical evaluation is essential prior to the procedure, and a meticulously sanitized environment is crucial for patient safety.

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