



Effect of the gummy smile on facial attractiveness

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Abstract

A gummy smile is considered a disorder which will lead to immoderate gingival display, and most people are esthetically unaccepted. Many etiologies are linked to a gummy smile, including immoderate maxillary development, delayed passive eruption of teeth, over eruption of teeth, and hyperactive muscles of the upper lip. Various management strategies are present for corrections of gummy smiles. The dentist should decide which is better based on the etiology of the condition and the need of the patient.

Keywords: Gummy smile; Esthetic; Dental proportion; Facial proportion

1. Introduction

A smile is the highest recognized expression of a person; it is examined and studied by various aspects such as lip line, smile arc, dental components as well as gingival components, negative lateral space, smile symmetry, occlusal frontal plane, upper lip curvature [1,2].

A gummy smile is often defined as excessive, 2 mm or more, the revelation of maxillary gingiva at the time of smiling [3]; temporary crowns and abnormal size of maxillary incisors are some of the prominent reasons behind the development of a gummy smile. In addition, it may result due to imprudent vertical-maxillary growth of or superior alveolar bone, resulting in divergence between the upper lip and gum line while spontaneous smiling [4].

A gummy smile is a frequent finding ascribable to various intra- or extra-oral etiological states, including abnormal lip length or movement, gingival hyperplasia that decreases the length of clinical crown length, and vertical maxillary excess (VME), or dentoalveolar overeruption [5]. Furthermore, immoderate exposure to gingivae is a critical aesthetic concern, especially among the young population [5-7].

2. Smile and facial attractiveness

Beauty is vigorous; its parameters keep altering over time; recently, the core interest in cosmetic dentistry [8] and facial surgeries, including rhinoplasty [9], has enhanced, resulting in people of different ages seeking cosmetic treatment. The aim of these surgeries and treatment is to achieve a beautiful and proportional smile and face [10]. The results acquired from most studies [11] concluded that there were several different perceptions in different age groups varies due to changing attitudes, way of living, and thoughts. The anterior maxillary teeth are a critical esthetic part of a smile [12].

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Noticeable improvement in facial and smile esthetics is one of the primary reasons for individuals to seek different cosmetic therapies. An immoderate display of gingiva upon smiling, usually called a "gummy smile," for example, is often linked with upper lip hypermobility [13], which is frequently treated with various treatment options such as injection of botulinum toxin [14]. Moreover, discontentment with a smile and features is a prominent motivational factor for older patients to seek cosmetic treatments, including laminate veneers, surgical correction of the gingiva, or facial cosmetic surgeries.

3. Etiology and diagnosis

The etiology of the gummy smile includes:

- Vertical maxillary excess
- Changed passive eruption of teeth
- Dentoalveolar extrusion
- hyperactive upper lip muscles (levator anguli oris, levator labii superioris alaque nasii, levator labii superioris, and the zygomaticus muscles)
- or combinations of them [15].

Practitioners should consider its leading cause for an accurate diagnosis and proper treatment for the gummy smile.

The clinical diagnosis of a gummy smile must include the determination of:

clinical crown length (gingival margin to incisal edge).

- Anatomic length of the crown (from the cemento-enamel junction to sharpened edge).
- Width of Keratinized gingiva (free gingival margin to mucogingival junction).
- Depth of the probing (from the base of gingival sulcus to the gingival margin).
- Attachment of frenal
- Overbite and overjet space present between teeth.
- The vertical limits of the smile.

Also, a radiographic examination should be done to measure

- level of the bone.
- Any maxillary protrusion.
- excessive vertical maxilla.

4. Treatment

Two primary treatments for gummy smiles are invasive treatments such as crown lengthening or lip repositioning or a neurotoxin, for instance, Botox.

4.1. Neuro Toxin

Botulinum toxin injection has been recognized as an exceptionally minimally invasive management option for gummy smiles. Nevertheless, it is recommended to be utilized for patients whose gummy smiles appear due to hyperactive lip muscles. Botulinum toxin, upon intramuscular administration, detaches the synaptosome-associated protein called SNAP-25 by restricting acetylcholine and allowing the repolarization at the end of the synapse, leading to a marked reduction in elevator muscle activities and relaxing the pulling up action of the lip during smiling [16].

IV Botulinum toxin is one of the most frequently used methods to treat gummy smiles. Of course, some side effects might be, but the benefits are much more. The technique for the Botox injection is mentioned: for treating a gummy smile, Botox is necessarily injected into the abnormally active elevator muscles of the lip in order to block abnormal contractions and so to restrict the lip from being pulled too far up during smiling.

4.2. Lip repositioning

lip repositioning helps in the invasive correction of a gummy smile by restricting the pullback of the elevator smile muscles, leading to a narrow vestibule and limited muscle pull, hence decreasing gingival display upon smiling.[17]

In 1973, Kostianovsky and Rubinstein first described the term "lip repositioning," [18] supported later by Litton and Fournier [19] for correcting EGD for the short upper lip. This technique has been an invasive procedure. The lip repositioning procedure's benefits over other treatment options for the correction of a gummy smile is that it is less complex, safe, and practical, with stable and excellent treatment outcomes after healing.

People with a gummy smile with conditions such as excessive maxillary prominence are not perfect candidates for lip repositioning. Hence, proper diagnosis is necessary before the selection of this procedure is extremely important.

The procedure is related to an elliptical incision in the vestibule dept. The elliptical incision borders are outlined with the help of a marking pencil. The inferior border of the incision was extended and placed at the mucogingival junction. Generally, it is considered that the ideal distance between the inferior and superior borders should be two times the repositioning length required in the smile. A scalpel was used to make the partial-thickness incisions around both the superior and inferior border. Partial-thickness dissection is used to remove the outlined mucosa, displaying the underlying connective tissue. An interrupted suture was used to approximate the area of frenectomy for a regular symmetry. Additionally, interrupted sutures were also utilized to complete the remaining closure and for the stabilization of the new mucosal margin to the gingiva.

4.3. Crown lengthening

Crown lengthening is a surgical treatment done by a dentist or a periodontist; during the surgery, by removing the excess of the gingival, we increase the height of the clinical crown in the anterior maxillary teeth. It is essential to know the reason for the gummy smile.

It is possible to use digital smile design software to make a guide for the surgery in order to not go over the 80% width to length ratio of the teeth. It is crucial to not forget the dental esthetic during the crown lengthening surgery because it can create long teeth and is not esthetically accepted by the patient.

There are three types of crown lengthening, and the dentist must decide which one is more suitable for the patient:

- Gingival tissue excision
- Apical position of the flap
- Apical position of the flap with bone depletion:
 - Osteoplastic – reduction of bone without altering the periodontal ligament
 - Osteoectomy – reduction of bone and periodontal ligament

5. Conclusion

A gummy smile is a disorder which causes an unesthetic appearance in the individual; it is vital to know the cause and etiology of the condition in order to choose the proper treatment for the patient. Depending on the clinical situation, the bone might need to be separated so that significant space for the biological width of the gingiva and formatting of the gingival sulcus can be made.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

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