

ESTHETIC CROWN LENGTHENING: A CASE REPORT

ABSTRACT

The periodontal plastic surgeries have been valued and sought by people who claim they want to correct “gummy smile”, which happens when one has expose more gum than teeth when smiling. There are many causes for the gummy smile, this scientific article covers four cases of altered passive eruption of the teeth with excess keratinized gingiva. The harmonic smile disturbed aesthetic is a discomfort that troubles many people, especially women. Based what has been discussed so far, this paper has as main objective report clinical cases of esthetic periodontal surgeries osteoplasty made by undergraduate students of the dentistry program. Such techniques promote a more adequate dental exposure and create anharmonic smile on the patient. The cirurgical procedures were indicated based on the analysis of the smiles. After the procedures were made, we conclude the techniques used were suitable based on the satisfaction of the patient and that they were easy to execute in order to obtain an aesthetic smile.

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KEYWORDS

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INTRODUCTION

The abnormal growing of the size of the gingiva is a characteristic of gingival diseases. Currently, this clinical situation is called gingival overgrowth or gingival enlargement. Such condition of grown up gums compromise the aesthetic smile, inducing the person affected by this condition to pursue cirurgical procedures in order to acquire a more harmonical and attractive smile, increasing one's self-confidence and self-esteem^{1,2}. In cases which the cirurgical intervention is the indicated procedure, the choice of the correct technique used is fundamental in order to have the most predictable result. If the periodontal of protection is involved without no invasion of the biological space, is necessary to investigate if the indicated cirurgical procedure is the chosen option because of the lack or excess of keratinized mucosa.

One of the guide marks for the gummy smile treatment happens when the patient has altered passive eruption, in these cases the patient has jaw growth and normal lips positioning, however, the patient features gum and short dental crowns³. Many techniques have been proposed for the periodontal cirurgical treatment⁴. The gingivectomy was created, in 1979, with a die tissue excision of a pathological periodontal pocket⁵. Widman (1981) published the technique, at the time called "The Original 'Widman' Flap", in witch he described such technique for elimination of

the periodontal pocket with or without suppuration and bone recontouring for the purpose of establishing a new alveolar bone physiology^{5, 6}. Neuman (1920) later suggested changes to the original technique introducing intrasulcular incision and access to better root debridement⁷. In another article, Neuman demonstrated the removal of the gingival collar after mucoperiosteal flap following bone leveling with round bur. Later the technique "retail for papilla preservation" was proposed with the objective of preserve the interdental tissues, making it possible to have greater coverage of the flap in the proximal bone defects treatments, this technique was improved for the use in regenerative procedures and it is often used in anterior teeth^{8,9}.

Currently studies have described the periodontal surgery technique with removal of gingival collar and osteotomy with the purpose to increase the aesthetic crowns and to balance short dental crowns and gummy smiles, increasing the size of the dental crown. A randomized study compared the use of the technique with flap and flapless during the period os twenty months, finding that there were no significant diferences between the two techniques demonstrating the predictability of treatment. The distance between the bone crest and the cemento enamel junction (CEJ), which ranges from 1.5 mm and 2 mm, is is crucial to indicate bone remodeling, where

there is not such distance the osteotomy procedure is done in order to create enough space accommodation of connective tissue attachment, junctional epithelium and gingival sulcus (biological space). Currently, the cirurgical procedures for the treatment of gummy with aesthetic goals have been named in various ways, such as periodontal plastic surgery with aesthetic purpose, increased aesthetic crown. During the undergraduate dentistry program, last semester students already are capable to perform periodontal plastic surgery of low complexity when guided by professors of the periodontics course of the institution. Thus, this paper aims to illustrate, through the report of clinical cases, the improvement of gummy smile of four patients treated by undergraduate students of the dentistry program during practical classes in integrated clinics.

CASE REPORT

Four patients, all female, ages from 20 to 22 years old, all students from the undergraduate dentistry program of Escola Superior de Ensino da Amazônia - ESAMAZ (Belém, PA, Brazil), complained about their "dissatisfaction with their inharmonious smile" because of the small size of their teeth and overexposure of the gengiva whey they smiled.

After the medical history analysis and clinical examination, preliminary radiographic

and periodontal, It was found healthy periodontal tissue support with no bleeding gums, no visible plaque, the presence of short teeth and excess of gingival tissue in the four patients. On examination, by probing, it was observed to a average probing depth of 1mm, however, Bone drilling 15 to the element 25 the distance between the cemento enamel junction and bone crest was less than 1mm.

Based on the anatomy of the gum line, the gingivoplasty has been an alternative to the therapies for aesthetic excess cases the gingival tissue where there is no periodontal disease. The patients were photographed (Figures 1, 2, 3 and 4), molded and then the study models were made, through which the diagnostic wax-up was created and it was possible to designed the clinical crown enhancement surgical procedures with all its functional and aesthetic characteristics for the four patients following the same subsequent procedure for each (Figure 5). In waxing, is programmed cervical gingival contour promoting the triangle where the Zenith of the elements should be slightly distalized to the midpoint of the tooth and gingival margin of central incisors should be by the height of the canines and lateral incisors, slightly below this line. A silicone wall was used on the models to perform a direct simulation in the mouths of patients (Figure 6). One should make the last improvements on the wall quite accurately, cutting the silicone in waxing limits without

any distortion. It was used a self-curing provisional resin with the same tooth color of the patient, which is inserted into the wall of silicone (Figures 7 and 8).

Figure 1. Initial picture of the patient displaying a gummy smile.



The resin occupies the space of the wax on the plaster model, and thus reconstructs the waxing directly on the teeth and gums. As previously stated, it was followed the same sequence of procedures described below. To initiate the procedure, anesthesia was made in the infraorbital nerve on both sides of the jaw, anterior superior alveolar and decreased the

amount of infiltrative anesthesia to reduce the compliance of the gingival tissues.

Figure 2. Initial picture of the patient displaying a gummy smile.



For the demarcation of bleeding points, according to pocket depth, a millimeter probe was used to serve as a guide incision. The initial incision was made with a scalpel blade number 15 at an angle of approximately 45 degrees following the design made by bleeding points. Then the surgical guide was removed with the help of a gengivotomo Orban, the gingival tissue was removed from the interproximal areas (Figures 9 and 10). Thus, after removing gingival collar, a new survey

was performed to check the distance of 3 mm from the cementoenamel junction and bone crest.

Figure 3. Initial picture of the patient displaying a gummy smile.



As the measure was less than 3mm an osteotomy was promoted, removing the bone height in the crown-root direction using a round bur number 18 in heavy rotation and saline irrigation (Figure 11). Bone regularization is important to promote a suitable contour avoiding bone spurs that can interfere with the healing process. The objective of such procedure is to create bumps and pits in the bone architecture and achieve

the best adaptation of the soft tissue in the neck.

Figure 4. Initial picture of the patient displaying a gummy smile.



Figure 5. Waxing simulating the gummy smile.



Figure 6. Silicon wall on the waxed model.



Figure 7. Finished surgical template.



Figure 8. Finished surgical template.



Throughout the surgery, the wound was irrigated thoroughly with saline so that surgical area wouldn't get withered. The procedure was completed with simple

interproximal sutures using wired vicryl 5.0. Post-surgical recommendations were after forty-eight hours you must rinse with chlorhexidine 0.12% twice daily in seven days, gentle brushing in the surgery area, soft and cold foods. Also analgesics and anti-inflammatory were prescribed. The final outcome of the procedure in postoperative follow-up can be seen when comparing the initial and final photos of patients (Figures 12, 13, 14 e 15). After 60 days, the patients underwent dental bleaching using hydrogen peroxide.

Figure 9. Removal of gumpaste.



DISCUSSION

In order to make a correct planning of the case it is necessary to consider the position of the lips, gingival architecture, amount of keratinized tissue, gingival zenith and biological space. Several treatments have been suggested to correct the gummy smile in case of altered passive eruption, among them the minimally invasive when not using flaps and

bone exposure and using the full retail for visualization of bone tissue facilitating the osteoplasty.

Figure 10. Removal of gumpaste.

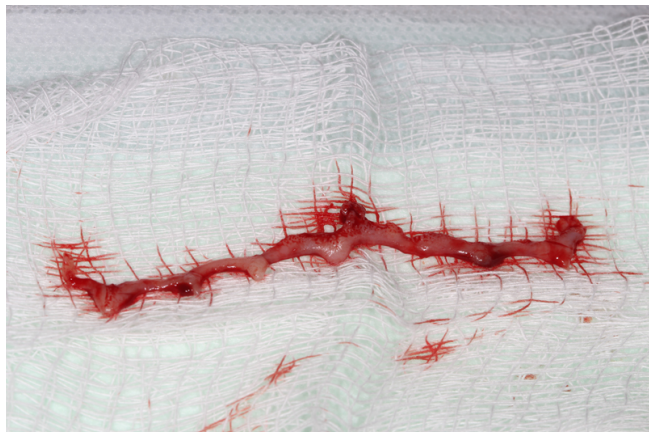


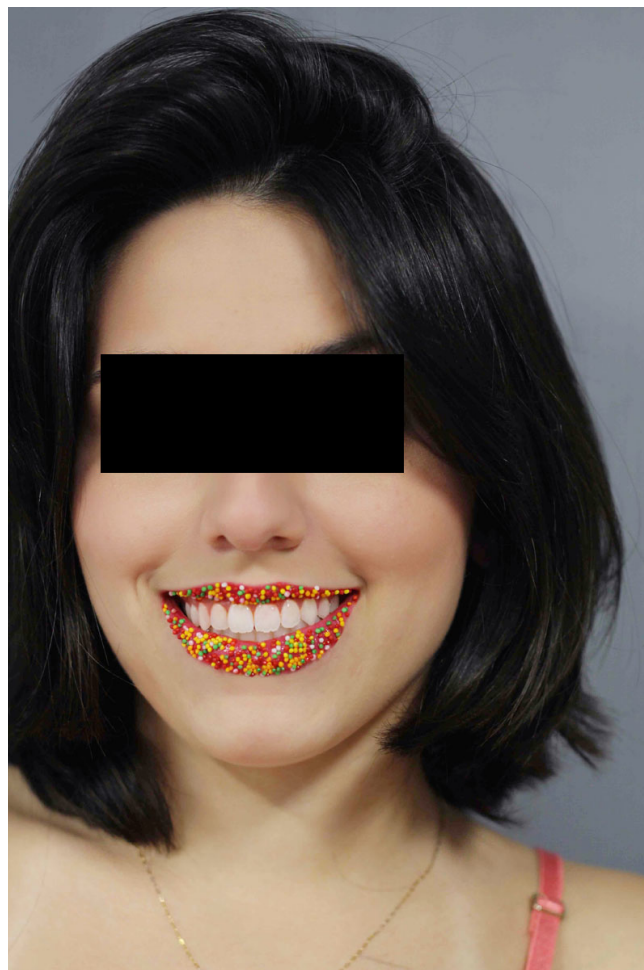
Figure 11. Biological space lower than 3 mm.



It is inherently to the technique that the procedure be used appropriately with compliance within the biological patterns, thereby determining a correct positioning of interpapillary tissue and avoiding root exhibitions or gingival retraction. In some cases, only the gum and removal of excess osteotomy procedure can't solve cases of short

crowns. In such cases, one should associate esthetic restorative procedures through crowns or veneers of veneers, these cases are planned in waxing diagnosis through waxing study model.

Figure 12. Final picture of the patient after 60 days.



Therefore, this step favors both planning of procedures to be performed as well as assists the patient in the decision whether or not to chose surgery as a way to correct the gummy smile. The fact is that the improvement of the patient's self-esteem occurs with decreasing the gummy smile

discrepancy, with greater exposure of dental tissues, getting a more harmonious smile, with rounded and symmetrical contours, demonstrating a more comfortable and aesthetic smile.

Figure 13. Final picture of the patient after 60 days.



CONCLUSION

Through these case reports, one can conclude that the techniques supply the desired expectations of the patient when properly planned. Therefore, a proper planning to solve the aesthetic problem should include the analysis of the smile and the

periodontal parameters according to the biological spaces.

Figure 14. Final picture of the patient after 60 days.



Retail surgical techniques and osteotomy/osteoplasty are well accepted by patients and easy to be performed by undergraduate students of dentistry programs, while respecting the proper planning and guided by the professors of the subject.

Figure 15. Final picture of the patient after 60 days.



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