

“Send-Off” the Gummy Smile with Esthetic Crown Lengthening- A Case Report

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ABSTRACT

Smile aesthetics refers to the visual appearance of a person's smile, taking into account factors such as tooth size, tooth shape, tooth colour, gum line and overall symmetry. The goal of smile aesthetics is to create a natural, beautiful smile that complements the individual's facial features and enhances their overall appearance. Dentists often work on smile aesthetics to help their patients achieve a more attractive and confident smile. Periodontal procedures can also be used to improve gum esthetics and enhance the appearance of the smile. This case report presents a case of esthetic crown lengthening by electrosurgery. Procedure was performed under local anaesthesia and proved to be safe and efficient with no post-operative complication and healing was uneventful, following 2 months.

Keywords: Crown Lengthening procedure (CLP), Smile esthetics, Electrosurgery unit, Biologic width.

INTRODUCTION

Optimal smile aesthetics is achieved when a person has a smile that is natural-looking, balanced and harmonious with their individual facial features. Factors such as tooth colour, tooth shape and size, gum line contribute in achieving optimal smile esthetics. Framing the teeth, taking care of proper gingival architecture has a tremendous impact on the aesthetics of the smile. A gummy smile is as unaesthetic as a patient with severe recession. A gummy smile is a condition where a person's smile shows an excessive amount of gum tissue, making their teeth appear small and the smile less aesthetically pleasing. Abnormalities in symmetry and contour can significantly affect the harmonious appearance of the natural or prosthetic dentition. Nowadays, patients have a greater desire for more aesthetic results which may influence treatment choice.¹

Garguilo² described various components of the periodontium, giving mean dimensions of 1.07 mm for the connective tissue, 0.97 mm for the epithelial attachment and 0.69 mm for the sulcus depth. These measurements are known today as the biologic width. Ingber and others³ observed that the presence of caries or restorations in close proximity to the alveolar crest may lead to inflammation and bone loss due to violation of the biologic width. Hence, they recommended that the restorative margin be a minimum of 3 mm coronal to the alveolar crest, suggesting that this margin could be achieved through a procedure known as crown lengthening. However, the branch of Periodontics has now entered the branch of periodontal plastic surgery and various periodontal procedures can be used to improve gum esthetics and enhance the appearance of the smile.⁴ Some of the most common periodontal procedures used for

this purpose are Gum contouring or reshaping, Crown lengthening, Gum Grafting and Laser Therapy and out of which Gum contouring and Crown Lengthening are most common.

Crown lengthening is a surgical procedure designed to increase the extent of supragingival tooth structure for restorative or aesthetic purposes by apically positioning the gingival margin, removing supporting bone or both.⁵ Indications for crown lengthening include teeth with subgingival caries or extensive caries that shorten the tooth, fractures, and short clinical crowns caused by incomplete exposure of the anatomic crowns. Therefore, an interdisciplinary treatment approach is needed to address the different treatment parameters and provide the most aesthetic outcome. Good communication between the restorative dentist and the periodontist is important to achieve optimal results with crown-lengthening surgery, particularly in esthetically demanding cases. On the basis of these projections, the periodontist recontours and relocates the gingival margin and the alveolar crest to achieve both an esthetically pleasing appearance and periodontal health.

This case report illustrates the concepts of crown lengthening procedure done using electrosurgery unit in the maxillary anterior region.

CASE REPORT

A 24-year-old female reported to the Department of Periodontology requesting "better-looking smile." and came with a chief complaint of excess gingival display in the maxillary anterior region. Her medical history was non-contributory, and denied a history of smoking or alcohol consumption. Extraoral examination revealed no significant finding.

Pre-operative and Intraoral examination revealed shorter clinical crown height in maxillary anterior region due to slight excess gingiva, which was reddish pink in colour with slightly soft and edematous interdental papilla (Fig. 1 & 2). On clinical examination, it was seen that the biological width of 2.04mm was maintained, therefore there was no need of osseous recontouring in this case and thus removal of excess gingiva with proper gingival contouring with electrosurgery was planned.



Fig 1 Pre-operative view



Fig 2 Intra-operative view

SURGICAL PROCEDURE

After clinical examination, non-surgical therapy was initiated which included ultrasonic scaling and root planing for supragingival bio-film control, correction of brushing habits, oral hygiene instructions, use of medicated toothpaste and mouthwash and improving dietary habits. The patient was re-evaluated after 10 days.

Adequate anaesthesia was achieved by administering 2% xylocaine HCl with adrenaline 1:80, 000. After adequate anaesthesia, gingival zenith with the help of UNC 15 probe is evaluated (Fig 3). Excision of the tissue using needle electrode (Fig 4 & 5) was done and further using loop electrode gingival recontouring was done for upper anterior region (Fig. 6 & 7). Patient was advised not to do brushing in that region and

not to consume any hot & spicy food for at least 10 days postoperatively and asked to take antibiotics and anti-inflammatory drugs as recommended. 10 days postoperatively

patient recalled for follow up. No postoperative complications were seen & healing was proceeded uneventfully.



Fig 3 Gingival Zenith measured



Fig 4 Needle electrode being placed



Fig 5 Immediate Post-op



Fig 6 Loop electrode being placed



Fig 7 Gingiva recontouring



Fig 8. Two months post-op view

CLINICAL RESULTS

Patient showed uneventful healing following 2 months (Fig. 8). Esthetic results were obtained proving electrosurgery to be advantageous over other treatment modalities for crown lengthening. The chief complaint of the patient was resolved and optimal esthetic outcomes were achieved.

Patient's perspective- The patient's complaint was resolved and the clinical crown height had returned to normal. The patient was very satisfied with her treatment

outcomes. As a result, this patient had regained her self-confidence and morale.

DISCUSSION

Smile aesthetics refers to the visual appearance of a person's smile, taking into account factors such as tooth size, tooth shape, tooth colour, gum line and overall symmetry. The primary goal remains to maintain the dentition with a healthy intact dentogingival unit. The achievement and maintenance of ideal gingival margin levels and architecture constitute essential requirements for esthetic crown lengthening

procedures. A conservative display of approximately 2-3 mm of the marginal gingival is generally considered as part of the ideal esthetic smile. In contrast excessive gingival display or shorter crown can severely compromise the appearance of the individual.⁶

In comparing the handling properties between conventional, laser, and electrosurgery, it was observed that in conventional method excessive bleeding occurred with inadequate visibility in the operating field. Whereas in electrocautery the electrode cuts on its side as well as on its tip, angulated electrode meets the clinical need, cuts are made with ease when the device is set correctly, hemostasis is immediate and consistent, the wound is nearly painless and the tip is self-disinfecting.⁷ For this case, it was decided to perform procedure using electrosurgery.

One of the disadvantages of electrosurgery and laser over conventional is the damage produced by lateral heat. Lateral heat damage is the area of coagulation necrosis produced around the incision line due to unwanted heat production. Histologically, in a study it was found that the lateral heat damage in case of laser is 28.3-98 μm^8 and that in case of electrocautery is 0.12-0.31 mm wide.⁹

The satisfactory outcomes in the present case report can be attributed to the following reasons. a) The patient was very well motivated. b) The patient had very good compliance. This can also be because the patient's symptoms were getting relieved in the subsequent visits. c) The patient did not have a very severe disease that couldn't be arrested.

However, there are certain limitations as well. All the patients might not report the problems well within time and might not even consider their poor aesthetics a problem. This leads to delay in consulting with their dentists. And when short clinical crown height becomes a major problem, the patient would have already succumbed to the gingival enlargement stage.¹⁰ So, patient

motivation is of paramount importance in attaining such outcomes clinically.

CONCLUSION

Crown lengthening is a successful procedure for improving the aesthetics of a smile or providing more tooth structure for a dental restoration. It is considered a safe and effective procedure when performed by a qualified dental professional, such as a periodontist or a general dentist with additional training in gum surgery. When performed in ideal clinical conditions, crown lengthening gives satisfactory results both from a functional as well as aesthetic point of view.

Declaration by Authors

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