



AESTHETIC CROWN LENGTHENING WITH ANTERIOR MAXILLARY OSTEOTOMY FOR ACHIEVING IDEAL CLINICAL CROWN LENGTH: A CASE REPORT

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Abstract

Introduction: In the maxillary anterior region, the gingival labial margin position is an important parameter in the achievement of an ideal smile. The concept of aesthetics in dental care has grown both among practitioners and society. Most of the patients who visit dentists today have realized and want a more attractive and more aesthetic appearance of teeth when smiling. The aesthetic smile has a balance in the proportions of lips, teeth, and gingiva. But sometimes the disharmony resulted in the appearance of a smile to be not ideal. Crown lengthening is a surgical procedure aimed at the removal of periodontal tissue to increase the clinical crown height.

Objective: Knowledge of the management of Crown Lengthening surgery through exposure to several cases by doing the crown lengthening with an osteotomy to achieve the ideal clinical crown and restore its function and aesthetics.

Case: A 32 years-old female patient came to the Hasanuddin University Dental and Oral Hospital with a complaint that she wanted to improve the aesthetics of her anterior teeth. with a chief complaint of front teeth looking short. He was diagnosed with an altered passive eruption in connection with a gummy smile.

Case Management: Open flap debridement was done on the anterior maxillary teeth using bone graft and membrane after occlusal adjustment. Crown lengthening was performed by gingivectomy technique with osteotomy, and interdental papilla was preserved.

Conclusion: The relationship between the periodontium and the restoration is critical if gingival health and esthetics are to be achieved. Crown lengthening is an effective treatment in correcting dysfunctions and aesthetics.

Keywords: Crown Lengthening, Short clinical Anterior teeth, Crown Lengthening Procedure, Osteotomi.

Introduction

The concept of dental aesthetics has developed in both practitioners and society. In general, patients who visit the dentist today are aware of and want a more attractive appearance of the teeth and a more aesthetic smile. The development of Modern dentistry currently offers many restoration methods to improve the appearance of the gingival tissue around the teeth¹.

Aesthetics remain everyone's attention and needs, especially in a smile that could improve confidence. A smile is formed by a good connection of teeth, related to alveolar bones and gingival, and lips as parts of the oral cavity. The principle of a smile design is building a balance of lips, gingival, and teeth².

Excessive gingival display (EGD) and short clinical crowns are disorders of smile harmonization and may cause periodontal problems as patients complain³. The excessive gingival display is a condition of excessive maxillary gingiva visible while smiling, also known as a gummy smile. A gummy smile impacts aesthetically and most are caused by the altered passive eruption, skeletal deformity involving vertical maxillary excess, short upper lip, or a combination of the three⁴.

Gingival enlargement is defined as a condition where the size of the gingiva increases from normal which can cause aesthetic problems and dental hygiene. An increase in gingival size is a common feature of gingival disease. The surgical method that can be done for this situation is crown lengthening⁵.

The altered passive eruption is clinically indicated by a gummy smile and a short clinical crown⁶. Several approaches could achieve the correction of the altered passive eruption. One of them is crown lengthening periodontal surgery to decrease excessive gingiva tissue, expose the whole anatomy of the clinical crown, and reform the correct biologic width. Crown lengthening includes gingivectomy, and apically positioned flap, with or without osteotomy, depending on the etiology⁷.

In carrying out crown lengthening, several considerations are needed including aspects of biology and gingival anatomy. The term biological gingival width, (GBW) means the area of gingiva attached to the tooth surface, located coronal in relation to the alveolar crest.

Crown lengthening is indicated to protect the subgingival or subcrustal from tooth fracture, carious lesion, or restoration margin of 1-3mm according to some authors the gingival margin can be 4-5. It is biologically wide by 2mm with 1mm occupied by the junctional epithelium and the other 1mm occupied by connective tissue. Gingival sulcus after crown lengthening surgery can be obtained. An additional 1–2 mm of root coronal exposure to the alveolar crest, for a total tooth length of 2.5 to 3.5 from the restoration margin. Periodontal health is also an important prognostic of the tooth to be restored and is an integral part of it in the long term^{8,9}.

This case report is intended to describe the procedure of an osteotomy to achieve the ideal clinical crown length and restore functions and aesthetics.

Case Report

A 26-year-old female patient came to Hasanuddin University Oral and Dental Hospital complaining that she wanted to improve the esthetics of shorter maxillary anterior teeth. The patient has no allergies to drugs, food, or weather. On extraoral examination, there were no abnormalities, and on intraoral examination the status of dental hygiene (OHI-S) and periodontal tissue was good, the gingiva was pink, the consistency was springy, and the

minimum probing depth was no tooth mobility. Exaggerated and short gingival display (EGD). Clinical crown

Clinical examination of the maxillary anterior region between teeth 13 to 23 asymmetrical gingival margin, and short clinical crowns of maxillary anterior teeth. Gingival analysis reveals gingival zenith high on gears 12 and 13.



Figure 1. Clinical Crown Intra-oral picture.

Treatment Plan

Phase 1 (dental health education (DHE)), maxillary and mandibular scaling, phase II gingival enlargement, phase III restoration 13 to 23, phase IV (maintenance).

Case Management

Before the procedure, the patient was given a povidone-iodine 1% gargle, and then betadine solution 10% was applied as an extraoral and intraoral antiseptic. Local anesthesia was injected into teeth in 13 to 23 areas. Initial probing was performed to determine the ideal zenith and marginal gingival distances for gingivectomy. Bone-sounding measurement by using a UNC-15 probe to decide the necessity of osteotomy. The ideal measurement of the dental-gingival complex is approximately 3 mm. If there is any smaller distance should need alveolar bone osteotomy.

The pocket depths were marked with a pocket marker to create a bleeding point as a guide to cut excessive gingiva. Gingivectomy and internal bevel incision with scalpel number 15 were performed on mesial, buccal, and distal aspects of the tooth from the gingival margin and following the bleeding point. Bone sounding was carried out to determine the thickness of the soft tissue layer and the distance between the alveolar bones.

Then continued to measure the length of the clinical crown using Chu gauges to help achieve the ideal clinical crown size, using a pocket marker to determine bleeding points from 13 to 23 on the interdental part, the gingiva. cut using a scalper with a blade size No.15 at an angle of 45 degrees following the contour of the gingiva on the apical side of the bleeding

point from interdental teeth 13 to 23 with the direction of the scalpel bevel towards the tooth incisal continuously.

Bleeding is controlled by using gauze which is pressed gently. Furthermore, the work area was irrigated using 0.9% saline and covered with a periodontal dressing. Postoperative instructions were given along with antibiotics (Amoxicillin 500 mg, three times a day for 5 days) and anti-inflammatory analgesics (ibuprofen three times a day for 3 days). Patients are advised to use 0.2% chlorhexidine gluconate mouthwash every 12 hours for a week. Control after 1 week.

After that, a buccal full-thickness flap was performed using a sulcular incision performed, and the interdental papillae were preserved by the flap incision technique. Because of that, the shape of the interdental papillae can be maintained to prevent gingival recession and loss of the interdental papillae, mainly for aesthetic reasons. The lid is dissected with raspberries to achieve a suitable field of view. After surgery, the patient is instructed to eat a soft food diet and the medicines given are taken according to the rules avoid hot food and drinks, spicy foods, brushing your teeth carefully If there is bleeding, the patient is instructed to contact the nearest dentist, dental clinic, or hospital. and postoperative control is scheduled after one week.

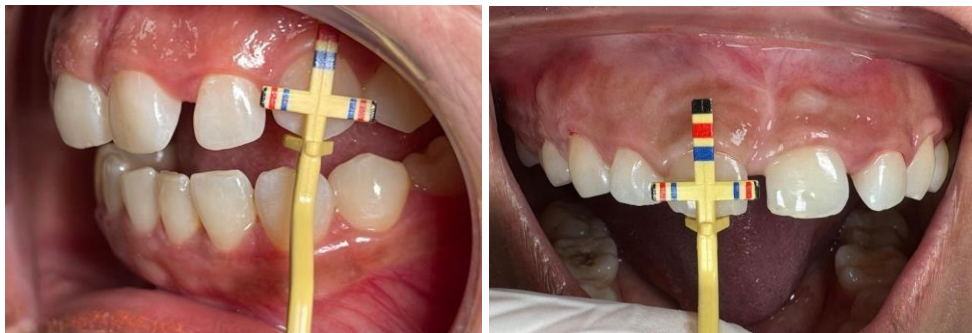


Figure 2. Measure the length of the crown using chu gauges.



Figure 3. Tissue examination using bone sounding.



Figure 4. Desinfectant extra and intra oral



Figure 5. Anestesi



Figure 6. Pocket marker to know the bleeding point.



Figure 7. insisi and excisi gingiva (Crown Lenghtening)



Figure 8. Buccal flap dissection using raspatorium.



Figure 9. osteotomy using carbide bur and handpiece



Figure 10. Irrigation



Figure 11. Procedure wound closure with stitches.



Figure 12. Application of periodontal dressing.

Treatment Results

The patient experienced mild pain for the first 24 hours after surgery, then the patient no longer felt pain and no complications occurred. The gingiva improved during a 1-week follow-up for removal of the periodontal pack. Then a 3-month follow-up was carried out and the patient's gums began to heal.



Figure 13. 3 months Post operation

Discussion

Short crowns are clinically proven as the chief complaint of a patient with a gummy smile. Therefore, gingiva the margin tends to be more incisal or occlusal. The treatment is a crown lengthening with gingivectomy, and internal bevel incision technique followed by osteotomy to achieve ideal crown length and restore function and esthetics.

The goal of this procedure is the formation of gingival margins with ideal Proportions postoperative contour. The crown lengthening procedure is done to reduce existing excess gingiva, expose anatomic clinical crowns, and reform proper biological width. The crown procedure can be done in several ways. Choice based on gingival architecture, level of bone apex, gingival biotype, and palate level. If the level of the alveolar apex is more than 3 mm from the gingival margin tissue dissection is performed. And if bone resection isn't done, there are two options, gingivectomy with an external bevel or apical repositioning of the flap with the reverse bevel incision. If the level of the alveolar apex is less than 3 mm from the gingival margin.

The procedure is an apically positioned flap with bone resection. In this case report, crown lengthening was performed by gingivectomy technique and internal bevel incisions. Ideally, the dental-gingival complex measurement is approximately 3 mm. If the distance is less, an alveolar bone osteotomy should be performed. Full-thickness flap with sulcular and interdental incision was made and the interdental papilla was preserved with the flap technique to maintain the shape of the interdental papillae to prevent a recession, shrinkage of the gingiva, and procedures for removing the interdental papillae, mainly for aesthetic reasons.

Conclusion

Currently, patient demand for aesthetic enhancement plays an important role in the field of dentistry. Crown lengthening is a disfiguring procedure aimed at the removal of periodontal tissue to increase the length of the crown clinically, both to support aesthetic value and to support restorative treatment. To get good results from crown lengthening, one must always pay attention to the biological width factor that contributes to the response of the periodontal tissue. The appropriate clinical examination determines the success of the treatment.

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