



Research article

Crown Lengthening Surgery for Treating Asymmetric Gingiva: A Case Report

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ORCIDVeronica Septnina Primasari: <https://orcid.org/0000-0002-0307-9733>**Abstract.**

Background: The aesthetic appearance of gingiva is influenced by color, contour, interdental papilla and location of gingival margin. Crown lengthening is one of the surgical procedures performed to improve aesthetic problems. It can be performed by gingivectomy, with or without alveolar bone removal (osteotomy) to obtain a good crown and root ratios.

Objective: To obtain better crown and root ratios, resulting in more aesthetic smile.

Case Report: A 24-year-old woman presented with a complaint that the length of her anterior maxilla teeth was different. Extraoral examination showed a symmetric face with no abnormalities and the patient did not have a systemic disease. Intraoral examination showed that the gingival margins between teeth 11 and 21 was asymmetric, consistency of the gingiva was normal, there was no sign of inflammation and the pocket depth was 2–3 mm. The patient was given scaling in the first phase, and then the alignment of gingival margins of teeth 11–13 with teeth 21–23 was measured. Gingivectomy was performed on teeth 21–23 using scalpel no. 11, gingival contour was formed and the periodontal pack was applied.

Results: The patient reported no complaints at the one-week follow-up and the gingival margin looked symmetrical one-month post-surgery.

Conclusion: Crown-lengthening surgery with a gingivectomy procedure gives a good aesthetic result, in this case, characterized by a symmetrical gingival margin.

Keywords: crown lengthening, gingivectomy, gingival aesthetics

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1. Introduction

Today, more people are considering the aesthetics of their facial, including the teeth and gingiva. The facial aesthetics can be based on i.e., symmetry of the face with the arrangement of the teeth, the shape of the lips with the smile line, alignment of the size, shape and color of teeth [1, 2]. Smile is an important component that can enhance the aesthetics of an individual. There are three components that involve in the smile correction: the teeth, lip frame work, and the gingival scaffold [3]. The aesthetic appearance of gingiva is influenced by color, contour, interdental papilla, location of

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gingival margin, tooth position, type of periodontium, tooth form, and design of the cemento-enamel junction [4, 5].

Asymmetrical gingiva can reduce the appearance of a smile, resulting in reduced self-confidence [2]. Edward P. Allen (1988) [6] has suggested that the ideal relationships of upper anterior teeth are achieved when: 1) The gingival margins of the central incisors are symmetric, and are either even with or 1 mm apical to the margins of the lateral incisors. 2) The gingival margins of the canines should be 1 mm apical to the level of the lateral incisors. 3) A line drawn horizontally at the level of the canine gingival margins should be parallel to the inter-pupillary line. 4) The smile should expose a minimal amount of gingiva apical to the centrals and canines, and should be in harmony with the smile line. 5) The lateral incisors should be exposed 1.5 mm less than the length of the centrals. He also suggested that the crowns of central incisors and canines could be exposed to an overall length of 11 to 12 mm to attain the maximal gingival reduction [6].

Crown lengthening is one of the surgical procedures to improve the aesthetic problems. Crown lengthening is a surgical procedure designed to increase the extent of the supragingival tooth structure for restorative or aesthetic purposes [7]. The indications for crown lengthening surgery are subgingival caries or fracture, inadequate clinical crown length for retention, unequal or unaesthetic gingival heights, restorative needs, gummy smile, and aesthetics needs. For the contraindications are the surgery would create an unaesthetic outcome, deep caries or fracture would require excessive bone removal on contiguous teeth, the tooth is a poor restorative risk, high furcation, inadequate crown to root ratio and predictability, tooth arch relationship inadequacy, no maintainability [1, 4, 8, 9]. The crown lengthening surgery can be done by removing only the soft tissue or both soft tissue and alveolar bone. Removing the soft tissue may be accomplished by external bevel gingivectomy, internal bevel gingivectomy, or flap technique, if the attached gingiva is adequate. A flap procedure and bone recontouring is conducted if there is inadequate attached gingiva [1, 4, 8]. The objective of this case report was to describe the crown lengthening surgery to obtain a better crown and root ratios, resulting in more aesthetic smile.

2. Case Report

A 24-year-old female patient was referred to a Periodontist and complain that she was feel less confident when smiling. The patient has different length of the anterior maxilla teeth, resulting a short clinical crown on left central and lateral incisive to canine. From

extra oral examination, the face looked symmetric, there were no abnormalities, and the patient did not have a systemic disease. From intra oral examination, the gingival margins between teeth 11 and 21 was asymmetric, consistency of the gingiva was normal, no sign of inflammation, and pocket depth was 2-3 mm. (Figure 1) There was no periapical radiolucency at radiographic examination.



Figure 1: Pre-operative, showing the asymmetry gingiva on teeth 21-23.

Patient received scaling on the first phase, then signed the informed consent for the crown lengthening surgery. The alignment of gingival margins of teeth 11 to 23 was measured. From the measurement it was found that the gingival margin of tooth 21 needs to be reduced by 2 mm and the gingival margin of teeth 22-23 was reduced by 1 mm.

Local anesthesia was administered with 2% Pehacain. A pocket marker was used to make bleeding points to mark the gingiva according to the required reduction. (Figure 2A) Gingivectomy was performed on teeth 21-23 using a scalpel No. 11. (Figure 2B) The incision starts from the apical of the bleeding points that has been made, incision was made continuously

and as close to the bone without causing the bone to be exposed and angled about 45° to the teeth. After making the bevel incision, a horizontal incision was made between each interdental areas. The remained of the gingival tissue was removed and cleaned with a curette. The gingival contour was refined as desired with a Kirkland and Orban knife, and trimmed with tissue scissors. Bleeding was treated by press the wound area with a gauze that has been moistened with saline solution. The area of operation was irrigated with saline solution and aquadest until it was clean, then cleaning and

drying with a sterile gauze. (Figure 3A) Periodontal pack was placed to cover the area of operation, to reducing pain and bleeding. (Figure 3B)

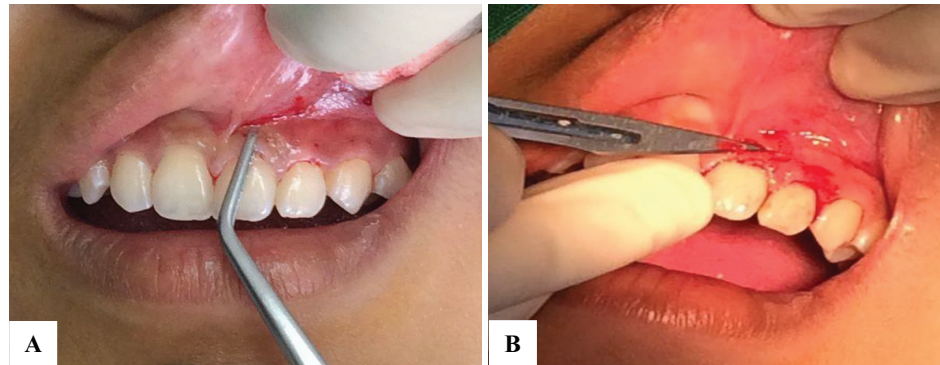


Figure 2: **A)** A pocket marker was used to make bleeding points. **B)** Gingivectomy on teeth 21-23 using a scalpel No. 11.

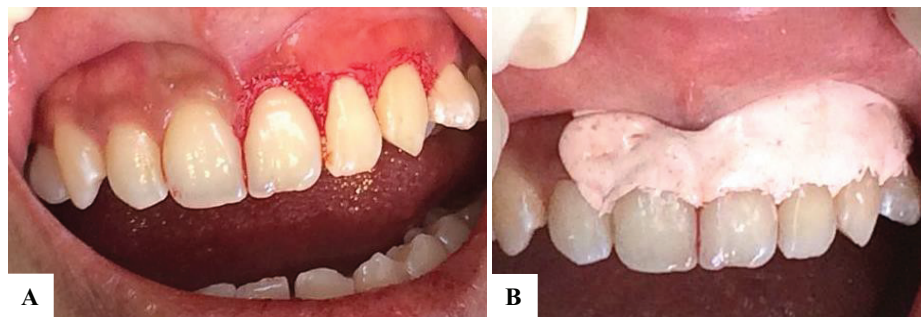


Figure 3: **A)** Result after gingivectomy. **B)** Periodontal pack was placed to cover the area of operation.

Patient did not feel any complaints at one week after surgery, the gingiva was slightly edema in the surgical site. In one month after surgery, the patient did not complain of pain, the gingival margin was looked symmetry, and aesthetically better.

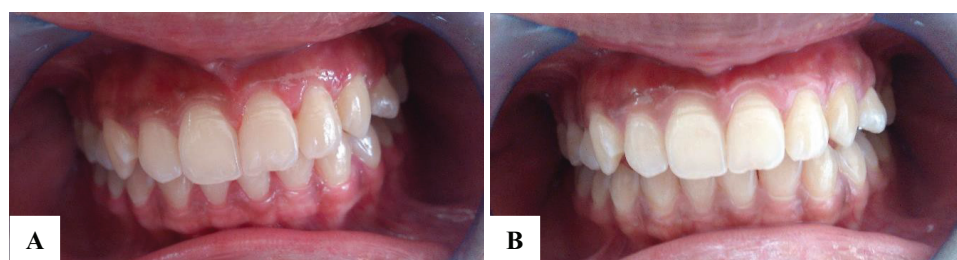


Figure 4: **A)** The gingiva was slightly edema at one week after surgery. **B)** In one month after surgery, gingiva looked aesthetically better.

3. Discussion

The purpose of the crown lengthening surgery in this present case was to obtain an aesthetics smile for the patient with different length of the anterior maxilla teeth, resulting a short clinical crown on left central and lateral incise to canine. Gingival margins contour of the six maxillary anterior teeth plays an important role in smile aesthetics [5]. Asymmetrical gingiva and contour can significantly affect the harmonious appearance of the natural dentition [7]. The gingival margins of the central incisors need to be symmetric to achieved aesthetics smile [6].

Crown lengthening surgery has been categorized as aesthetic or functional. There are various techniques of crown lengthening surgery, including external bevel gingivectomy, internal bevel gingivectomy, or flap procedure, with or without bone recontouring [8, 10]. Gingivectomy can be performed using a scalpel, an electrosurgery, a radiosurgery or a laser [10]. In this case report, crown lengthening surgery was performed by gingivectomy technique using a scalpel.

Crown lengthening has been considered as an adjunct to restorative dentistry [11]. A thorough examination was required before perform the crown lengthening surgery. Crown lengthening surgery for sound teeth is limited by a certain length of teeth, which cannot be exceeded [12]. Patient must be given an understanding about the aesthetics after the crown lengthening surgery, because the perception of aesthetic between clinician and patient can vary [7]. A crown lengthening surgery which is conducted in ideal clinical conditions, will gives satisfactory results from functional and aesthetic point of view [8], as seen in this case.

4. Conclusion

Asymmetrical gingival can affect the aesthetics of a person's face. To improve it, a crown lengthening surgery can be done. Crown lengthening surgery with a gingivectomy procedure, gives a good aesthetic result; in this case characterized by a symmetrical gingival margin.

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