KnE Medicine

NaSSiP 6
The International Online Seminar Series on Periodontology in conjunction with Scientific Seminar
Volume 2022

Knowledge E
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Research article

Treatment of Altered Passive Eruption Type 1B: A Case Report

Amalia Perwitasari and Sri Pramestri Lastianny*

Department of Periodontics, Faculty of Dentistry, Gadjah Mada University, Jl. Denta Sekip No. 1, Sinduadi, Sleman, Yogyakarta, 55281, Indonesia

ORCID
Amalia Perwitasari: https://orcid.org/0000-0003-2226-3218

Abstract.

Background: The appearance of the gingival tissue around the teeth plays an important role for the aesthetics. Abnormalities in symmetry and contour of gingival tissue affects the harmonization of the teeth's appearance. Excessive gingival display (EGD) or gummy smile, short clinical crown of tooth are frequent complaints of patients. There are various factors that can cause a gummy smile and a short clinical crown, one of which is altered eruption. The procedure that can provide a solution to this aesthetic, periodontal and restorative problem is crown lengthening. Crown lengthening is a surgical procedure that aims to remove periodontal tissue to increase the clinical length of the dental crown, the crown-lengthening procedure can be achieved with or without bone reduction.
Objective: To describe the management of altered passive eruption type 1B by crown lengthening with osteotomy procedure.
Case Report: A 20-year-old female patient presented to the periodontics clinic of RSGM Soedomo UGM, with a complaint of excessive gum appearance with her right upper front tooth looking short when she smiled. The patient was diagnosed with altered passive eruption. The treatment was crown-lengthening surgery with osteotomy.
Conclusion: Crown lengthening is an effective treatment to retrieve functional and aesthetic disturbances associated with altered passive eruption.

Keywords: gummy smile, altered passive eruption, crown lengthening surgery

Corresponding Author: Sri Pramestri Lastianny; email: sri.pramestri@ugm.ac.id

Published: 25 April 2022

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the NaSSiP 6 Conference Committee.

1. Introduction

Aesthetics is a major concern for everyone, especially when they smile. A harmonious smile is formed from the relationship between the teeth, the alveolar bone and the gingiva. Smile design principles such as recognizing the basic type of face, incisal edge position, tooth components and gingival height are important factors to get a beautiful smile. Aesthetically acceptable beautiful smile is a medium smile category in which all the crowns of the incisors are visible and a gingival appearance of 1-2 mm [1,2]

Excessive gingival display (EGD) in which the clinical crown appears shorter, is an aesthetic disharmony [1]. Excessive gingival display is a condition of excessive maxillary gingiva, visible when smiling, this condition can be called as a gummy smile. This

causes a person to have a high lip line, more than 3 mm from the maxillary anterior tooth margin. Gummy smile is caused primarily by altered passive eruption, skeletal deformities involving vertical maxillary excess, short upper lip, or a combination of the three [2]. Altered passive eruption can cause disturbances to the health of periodontal tissues because excess gingiva interferes the oral cleaning process and can lead to plaque retention, thus this condition requires treatment.

Morphologically classified APE into two types according to the location of the mucogingival junction with respect to the bone crest, and contemplat- ing two subtypes in reference to the position of the bone crest with respect to the cementoenamel line. In type 1, and in addition to excessive gingival margin over- lap on the crown, the dimension of the keratinized gum is considerable – the mucogingival junction being lo- cated more apically than the bone crest. In comparison, in type 2 the keratinized gingival band is narrow, the mucogingival junction coinciding at the level of the ce- mentoenamel line. Both types are in turn classified into subtypes A and B. In subtype A, the distance between the bone crest and cementoenamel junction is 1.5 - 2 mm (which allows a normal dimension of connective fiber attachment in the root cement), while in subtype B the bone crest lies very close to, or even at the same level as the cementoenamel line (Figure 1) [3]. One of the treatments for altered passive eruption is periodontal surgery as crown lengthening, which is a periodontal resection procedure that aims to remove part of the periodontal supporting tissue to increase the exposure of the tooth clinical crown and reshape the biological width [4].

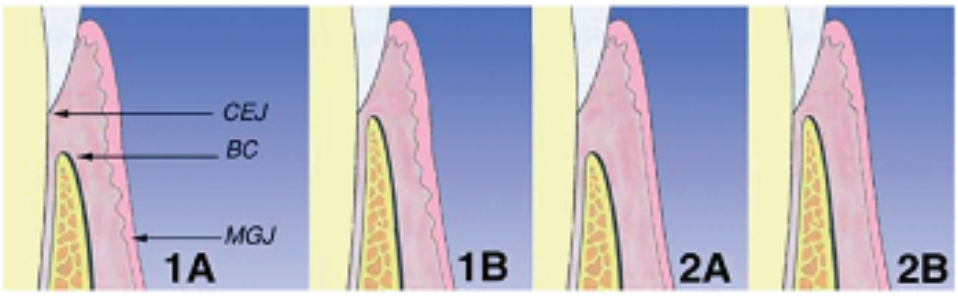

Figure 1: Morphological classification of altered passive eruption (APE).

Crown lengthening is a surgical procedure that aims to remove periodontal tissue to increase the clinical crown length. This procedure can be performed with or without bone resection. Crown lengthening consists of two types, there are functional and aesthetic [5]. Things that need to be considered for a crown lengthening treatment are the width of the keratinized gingiva, the distance between the CEJ and the alveolar bone crest, the root crown ratio, root anatomy, gingival biotype, ferrule, and interdental distance [6] . Observation of crown lengthening is an important factor for the success

of the treatment, characterized by no complaints and no re-occurrence of gingival hyperplasia. In the regeneration phase, soft tissue and hard tissue will reach a stable phase in the 3rd month to the 12th month [2].

This case report aims to describe the correction of altered passive eruption case with a crown lengthening technique that involves bone reduction.

2. Case Report

A 20-year-old female patient came to the periodontics clinic of RSGM Soedomo UGM, complaining of excessive gum appearance as her right upper front tooth looks short when she smiles. The patient said that she never had any systemic disease or allergy to any substance. Extraoral examination showed no abnormalities. In intraoral examination, tooth 12 showed a 3 mm of excess gingival tissue when smiling. There was a malposition of tooth 11 distolabio torsiversion and tooth 12. Clinical examination showed adequate attached gingiva in the maxillary anterior region, asymmetric gingival margin and short clinical crown of tooth 12 (Figure 2). Radiologic findings showed no destruction of anterior maxillary bones (Figure 3)

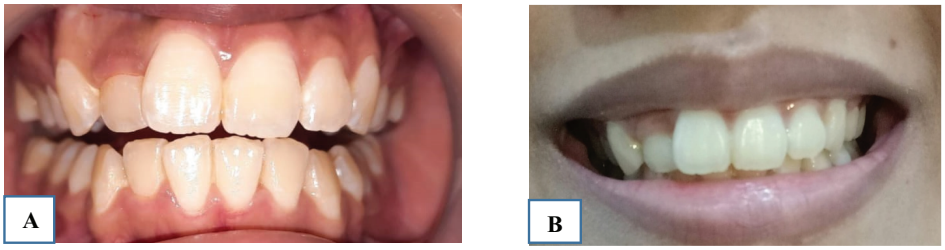

Figure 2: (A and B) : Clinical condition, intraoral examination showed gingival excessive display (EGD) teeth 12.

Figure 3: Panoramic radiographic finding.

Clinical examination showed adequate attached gingiva in the maxillary anterior region, asymmetric gingival margin and short clinical crown of tooth 12 (Figure 2). Gingival keratinized about 5 mm in tooth 12, probing depth 2 mm, and bone sounding 4 mm. The radiograph showed no bone destruction and there was an impaction of tooth 48.

Measurement of probing depth 2 mm, bone sounding 4 mm, to find how much reduction is needed for gingiva and whether or not bone reduction is needed [table 1]

TABLE 1: Probing examination and measurement, bone sounding

	Gigi 12		
	Mesial	Labial	Distal
Ideal proportion	10 mm		
Length	8mm		
Probing depth	2mm	2 mm	2mm
Biological width	2 mm	2 mm	2 mm
Bone sounding	4 mm	4 mm	4 mm
Gingivektomy	2 mm	2 mm	2 mm
Osteotomy	1 mm	1 mm	1 mm
Post operative bone apical-margin distance	3 mm	3 mm	3 mm

Based on the patient's complaints and the examination, a treatment plan is suggested as initial phase therapy with scaling root planing, corrective phase of crown lengthening surgery for tooth 12 with internal bevel incision gingivectomy by opening the flap to reduce bone by 1 mm. The entire procedure was explained to the patient, and the patient consented verbally and informed consent was obtained.

3. Management

At the first visit the patient was given dental health education (DHE) regarding her existing clinical conditions and had been performed plaque and calculus removal (scaling root planning) In the corrective phase, the patient was planned to be treated with an aesthetic crown lengthening with bone reduction.

Intraoral asepsis was performed with betadine solution. Infiltration anesthesia in the buccal fold of teeth 12 and 13. Initial probing was performed to determine the ideal zenith and marginal gingival distances for gingivectomy. Bone-sounding measurement by using UNC-15 probe to decide the necessity of osteotomy (Figure 4A). The gingiva labial and buccal were marked with a pocket marker by the depth of 2 mm (Figure 4B). A 2 mm gingivectomy was performed on mesial,buccal and distal of tooth 12 with an

internal bevel incision to allow the open flap immediately, using a scalpel number 15. A sulcular incision on tooth 13 was performed in order to expand the operating area. Then the flap is opened using a rasparatorium to get a sufficient field of view. Osteotomi performed 1 mm to mesial, buccal, distal aspect of tooth 12, using round bur (Figure 5)

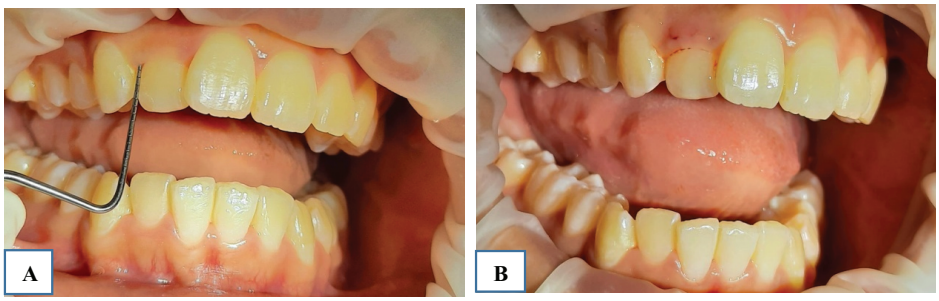

Figure 4: (A). Probe measurement of ideal proportions of teeth and gums (B). creation of a bleeding point with pocket markers of teeth 12.

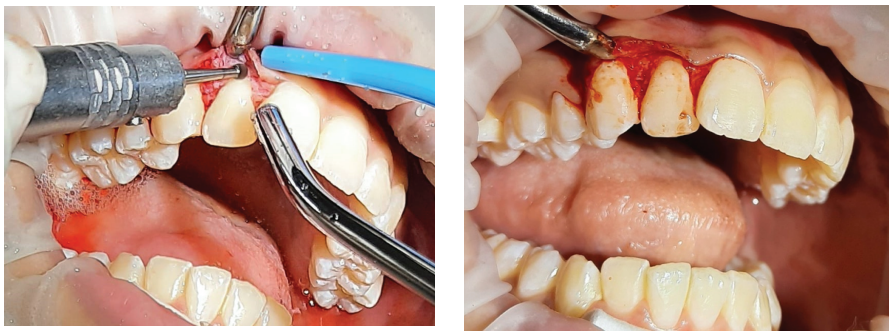

Figure 5: Osteotomi were performed.

Excess gingiva that has been excised and the remaining calculus should be removed with a curette to leave a smooth and clean surface. Re-measure the distance of gingival margin to the crest of the postoperative bone with probe, when it reaches 3 mm, proceed the treatment with tissue adaptation and perform interdental suturing using interrupted 6.0 sutures (Figure 6). Finally, the surgical area is closed using a periodontal dressing (Resopac®)

Figure 6: Post sutured.

The patient was prescribed antibiotics (amoxicillin 500 mg, 3 times a day for five days), and analgesics (mefenamic acid 500 mg, 3 times a day for five days). Patients were also instructed to use Minosep Gargle mouthwash twice a day for one week, and were given information about the discomfort for the first 1-2 days. Patients were instructed to maintain oral hygiene, avoid hot, acidic, spicy and hard foods and drinks, and not to rinse too hard.

The patient returned for a 5-day follow-up, the patient complained of pain for the initial 2 days, and the periodontal dressing was removed 24 hours after surgery. Clinical examination showed that the interdental tooth 12 was still enlarged, therefore the patient was instructed to continue the Minoceps Gargle for one week and maintain oral hygiene (Figure 7).

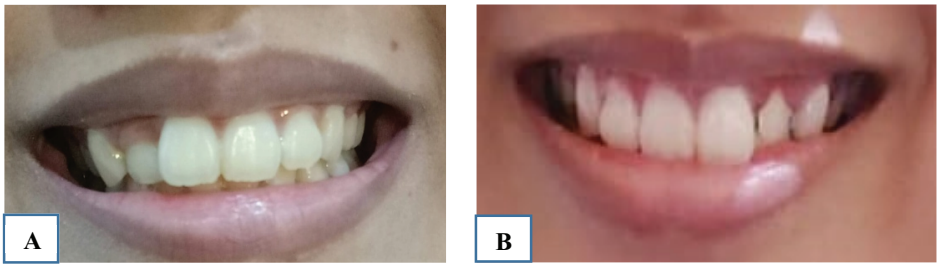

Figure 7: (A)Clinical features before surgery. (B)Clinical features of the first evaluation (D+5).

4. Discussion

In this case, there is excessive gingival condition or gummy smile, the short apprearance of clinical crown is the patient's complaint. The gummy smile, in this case, was caused by altered passive eruption, as the gingival margin failed to migrate apically until it reached the CEJ, resulting in the position of the gingival margin coronaly [7].

Based on the classification of altered passive eruption according to Coslet, the altered passive eruption in this case can be categorized into type 1 sub-category B. Type I is the amount of gingiva that is quite attached. Subcategory B is the crest of the bone more coronal to or right on the CEJ. The treatment performed was crown lengthening with an internal bevel incision gingivectomy technique and bone reduction.

The determination of this action is carried out after passing a series of tests, i.e the decision after bone sounding by measuring the distance between the cemento-enamel junction and the crest of the alveolar bone. Reduction of the alveolar bone is necessary if the distance between the cemento-enamel junction and the bone crest is less than 3

mm [78. Even conventional alveolar bone reduction procedures require flap opening to view the bone as a whole.

The cause of the gingival enlargement in the above case was plaque as a local factor and crowding of teeth. Plaque control is a simple way to record the presence of plaque on the surface of individual teeth. This record can also be used by patients to see progress in doing the plaque control treatment, and can also be used to motivate patients. In this case, the patient's teeth were crowded or not align, after crown lengthening treatment, patient were advised to have orthodontic treatment as it will make easier for the patient to maintain dental hygiene and prevent the recurrence of gingival enlargement. Suture removal is recommended two weeks after surgery to maintain wound healing maturity [9]

5. Conclusion

Aesthetics is an important part of dentistry today. Gummy smile and short clinical crown due to altered passive eruption. Crown lengthening surgery is an effective treatment to correct functional and aesthetic disturbances associated with altered passive eruption.

References

[1] Gupta GD, Gupta R, Gupta N, Gupta U. Crown lengthening procedures - A review article. International Organization pf Scientific Research-JDMS. 2015;14(4):27-37.

[2] Cesar JJ, de Carvalho MPF, da Silva CR. Flapless aesthetic crown lengthening: A new therapeutic approach. Revista Mexicana de Periodontologia. 2011;I(2): 103-108

[3] Coslet GJ, Vanarsdall R, Weisgold A. Diagnosis and classification of delayed passive eruption of the dentogingival junction in the adult. Alpha Omegan. 1997;10:24-8.

[4] Dolt AH, Robbins JW. Altered passive eruption: An etiology of short clinical crowns. Quintessence Int. 1997;28:363-72.

[5] Hempton TJ, Dominici JT. Contemporary crown lengthening therapy: A review. American Dental Association. 2010;141:648-650.

[6] Saihas B, Pawar S, Rakhewar PS. Crown lengthening procedure: Various techniques a case series. IOSR Journal of Dental and Medical Sciences. 2017;16(6):40-46.

[7] Illueca FA. Altered passive eruption (APE): A little-known clinical situation. Medicina Oral Patologia Oral Cirugia Bucal. 2011;16(1):100-4.

[8] Bhuvaneswaran M. Principles of smile design. Journal Conservative Dentistry. 2010;13(4):225-32.

[9] Polson AM. Periodontal regeneration: Current status and directions. St. Louis: Quintessence; 1994.