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Treatment of bilateral maxillary buccal exostoses on gummy smile



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ABSTRACT

Introduction: Buccal exostoses are benign, broad-based surface masses of the outer or facial aspect of the maxilla and less commonly at the mandible, usually found in the premolar and molar region. A definitive female sex prediction is the characteristic of this condition. They are painless, self-limiting and may increase patient concern about poor esthetics. Gummy smile is an excessive gingival display during smiling which can occur in response to certain medications such as phenytoin or smaller than normal teeth due to developmental events, tooth eruption abnormalities, orthodontic treatments and even congenital defects. The objective of this treatment is to eliminate buccal exostoses and gingival overexposure with osseous resective surgery and crown lengthening to improve the esthetics of the gingiva, especially on anterior teeth.

Case: A 30-year-old female, buccal exostoses with gummy smile on the buccal aspect from molar to canines region of the bilateral

maxillary arch. This case was managed by a combination of osseous resection surgery to treat exostosis and crown lengthening to remove alveolar bone and excessive gingival. Treatment selected for this case is osseous resective surgery and crown lengthening that aimed for the removal of bone and to achieve a physiological bone architecture bilateral exostoses, functional of gingiva and aesthetic. Treatment selected treatment for this case is osseous resection surgery and crown lengthening that aims for removal of bone and achieving physiological bone architecture bilateral exostoses, functional of gingiva and aesthetic. The surgical procedure was aimed to re-establish the biological width, apically while exposing more tooth structure.

Conclusion: The exostoses and gummy smile result in poor esthetics. Osseous resective surgery and crown lengthening were the treatment options to makes patient smile more proportional and achieving optimal aesthetics.

Keywords: exostoses, gummy smile, osseous resection, crown lengthening

Cite This Article: Lestari, C., Marlie, H., Orienty, F.N. 2018. Treatment of bilateral maxillary buccal exostoses on gummy smile. *Medical Journal* 7(3): 736-740. DOI:10.15562/bmj.v7i3.1245

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INTRODUCTION

Currently, the reason for patient visits a dentist is not only because of the functional problem of the teeth but rather the aesthetic reasons. Aesthetic smile basically depends on 3 components such as gingiva, teeth and lips. Gingiva is the most important component of the alignment of a smile that can be seen from several criteria of gingival health, alignment, position and shape of the dental crown, aesthetic gingival line and a harmonious smile line.¹⁻⁵

Buccal exostoses and gummy smile is a condition that is not accompanied by pain but becomes an aesthetic problem that causes the disharmony of smile. Buccal exostoses are described as a localized, nodular-shaped benign tumor, the exocytosis of a relatively avascular solid cortical bone, often found in buccal or lingual bone and the size may increase with slow progression.⁶⁻⁸ This condition often occurs in the maxillary and rare facial parts of the mandible, commonly found in the premolar and molar regions.⁵⁻⁷ The treatments are palpation examination, palpable rigidly sharp and pointed bone mass with pale gingiva and susceptible to

trauma.^{5,8} This case is more commonly found in men than in women.⁸ Gummy smile is a state of excessively visible gingiva when smiling, where the large gingival dimensions of 2 mm.^{4,9} The prevalence of this case is reported to be about 12% of 1.000 adult patients with an average age of 24 years.² This condition can have a psychological impact on some patients.^{4,9}

The etiology of buccal exostoses is not known certainly, although some experts report that exostoses are caused by multifactorial such as genetic factors, environmental factors, hyper-functional masticatory and further development of jaw bone whereas gummy smile may be caused by certain medication responses such as phenytoin, less normal teeth growth, plaque accumulation, dental eruption disorders, orthodontic treatment and congenital defects.^{3,5-10} Some experts also mention other causes are too high maxillary anatomy, labial elevator muscle hyper function, and gingival enlargement.^{1,11}

Periodontal plastic surgical therapy in cases of exostoses and gummy smile is usually performed

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Received: 2018-07-19

Accepted: 2018-7-23

Published: 2018-9-1

to increase esthetics especially when it occurs in the anterior region. One method that can be used in cases of exostoses is periodontal surgery with an opening of the mucoperiosteal flap with osteoectomy and osteoplastic, to obtain a good bone contour.¹² The lesion is taken by performing bone resection using a bone cutter or bone file.⁷ Crown lengthening is performed on the gummy smile case to correct the height of the clinical crown.^{3,9,12} The main purpose of crown lengthening is to enhance the harmonization and symmetry of the smile's appearance.⁵

CASE REPORT

Diagnosis and Treatment Plan

A 29-year-old woman came to the Zirconic Dental Clinic Padang-West Sumatra with a complaint of being unconfident because of the appearance of gums when smiling and a protrusion of the upper gums. Based on history taking was found a slow lesion growth, occurred since 2 years ago. Patients have no history of any symptoms such as pain or discomfort about the condition. There is no disturbed speech function, chewing function or other oral functions and there is no history of systemic disease. There is no family history that has similar conditions. Her dental history is fixed orthodontic device installation for 2 years and was opened 1.5 years ago.

After extraoral examination, there is no abnormality, symmetrical face and convex profile, smile line extends to premolar one. The occlusion of class I angle with over bite is more than normal and examination of TMJ right-clicking. Intra-oral examination of bilateral protrusion is from regions 17 to 13 and from 27 to 23. In palpation examination, it is found that there are some hard, oval-shaped lesions measuring about 0.5 cm × 0.5 cm on the left and right sides. The gingiva in the lesion area is thin and pale. Gingival enlargement is found from the region 13 to 23 so that the length of the clinical crown is short and when the gingival smile is more than 2 mm (Figure 1). Aesthetic smile is analyzed by looking at dental/facial midline, measuring the width and height of anterior teeth using periodontal gauge. Periodontal examination is done by measurement of pocket depth, attachment level, plaque Index and OHI-S (Table 1).

The adjacent teeth are vital and there is no history of pain or sensitivity. Panoramic radiographic examination shows normal condition (Figure 2). From the results of the above examination, then the diagnosis leads to buccal exostoses with gummy smile.

Surgical Procedure

Surgical procedures were initiated with extraoral asepsis with povidone iodine 10% and intraoral with glycoside chlorhexidine gluconate 0.12%. Patients were anesthetized by local infiltration using Septocain (articaine hydrochloride 4% and epinephrine 1: 100.000). After local anesthesia, bone sounding was conducted to determine the peak level of alveolar bone. The first periodontal surgical action was gingivectomy by bleeding point at the ideal position of the width and height ratio of the teeth 13-23 using a pocket marker, external bevel incision using scalpel no.15 and gingival excision for recounting gingiva, after which high of the gingiva was evaluated when the patient smiled (Figure 3).

The next periodontal surgery is a mucoperiosteal flap throughout the region of 17 to 27 with a horizontal incision regardless of the interdental papilla, the flap being opened using a small periosteal elevator to a mucogingival junction (Figure 4). In the maxillary anterior region, bone resection is performed by osteoectomy of the bone margin area until the alveolar bone crystals level is 1 mm or equal to the cemento-enamel junction (CEJ) level. Bone resection by osteoplastic in regions 17 to 13 and 23 to 27 using a low-speed bone skeleton with light pressure until the alveolar bone surface is not protruding and smooth (Figure 5). The flap was stitched with 5.0 silk atraumatic threads and positioned slightly more toward the coronal than CEJ using the interrupted sutures method (Figure 6).

Post-Surgical Procedure

Patients were instructed not to get traumatized or toothbrush on the surgical area for 2 weeks. Patients have given analgesics, chlorhexidine gluconate gargle 0.12%, dental gel applied 2 times daily in the surgical area. The stitches were removed after 7 days of surgical procedures (Figure 7) and re-measured the height of the clinical crown from the incisal edge to the bone gingival edge and examination of the periodontal tissues (Table 2).

Patients were asked to come back 1 year later (Figure 8). Seen from the smile line that the shape of the clinical crown is proportional and the edge of the upper lip is in the marine gingiva, OHI-S is good (Figure 9 and 10).

DISCUSSION

The desire to get a beautiful facial profile and smile have become one of the main goals of visiting a dentist. The anterior teeth are considered essential for the beauty of the individual and can increase self-confidence.³ In this case report an aesthetic



Figure 1 Pre-Surgery Condition



Figure 2 Panoramic Radiography



Figure 3 Post gingivectomy



Figure 4 Mucoperiosteal flap



Figure 5 Bone resection



Figure 6 Interrupted suture



Figure 7 Surgical suture removal day 7



Figure 8 After 1 year evaluation



Figure 9 Smile before surgery



Figure 10 Smile after 1-year surgery

Table 1 Pre-Surgical of Periodontal Assessment

Keratinized Gingiva	9	7	8	8	8	8	8	7	7	9	7	8
Tooth Width	9	10	7	8	7,5	9	9	6	9	7	9	9
Tooth Length	4	4,5	5	7	7,5	10	9	6,5	7	5	5	4
PD Oral	3-3-3	3-3-3	2-2-4	2-2-2	2-2-2	1-2-2	2-2-2	2-3-2	2-2-2	2-2-2	2-2-2	2-2-2
PD Vestibular	3-3-3	3-3-3	2-2-3	2-2-2	2-2,5-2	2-2-2	2-2-2	1-2-3	2-2-3	2-2-2	2-2-2	3-3-3
Teeth	17	16	14	13	12	11	21	22	23	24	26	27

PD: Pocket Depth

Table 2 Post-operative of Periodontal Assessment

Keratinized Gingiva	9	6	7	8	8	8	11	6	6,5	5	6,5	7
Tooth Width	10	9	7	8	7	9	8	5,5	7	6	7	8
Tooth Length	4	4	5	7,5	7,5	11	8	6	6,5	4,5	4,5	4
PD Oral	3-3-3	3-3-3	2-2-4	2-2-2	2-2-2	1-2-2	2-2-2	2-3-2	2-2-2	2-2-2	2-2-2	2-2-2
PD Vestibular	2-2-3	2-1-2	2-1-2	1-1-1	1-1-1	1-1-1	1-1-1	1-1-1	1-1-1	1-2-2	2-2-2	2-2-2
Teeth	17	16	14	13	12	11	21	22	23	24	26	27

PD: Pocket Depth

disorder arises in the patient's smile due to buccal exostoses and gummy smile. False enlargement that occurs is not the actual enlargement of the gingival tissue but arises as a result of increased bone tissue size. Buccal exostosis is a benign growth, which occurs in the outer aspect of the upper jaw and is rarely found in the mandible. This condition does not feel pain and grows into a larger size slowly.¹³ Bone resection and crown lengthening surgery performed can restore the patient's periodontal tissue in normal proportions and produce a harmonious smile.³

In this case, resection and crown lengthening surgery were selected after the operator learned the etiology, performed extra and intraoral examinations, measurements on dental dimensions and radiographic examination. Resection bone surgery is recommended to improve the stability of a smile performed in conjunction with crown lengthening. A bone sounding examination is performed to determine the peak level of the alveolar bone about the cemento-enamel junction, thus allowing proper resection surgery to optimize the aesthetics. In this case, the type of flap opening performed is a mucoperiosteal flap to improve bone contours in the vestibular portion, achieving maximal dental dimensions and ensuring stable results.¹⁴

Crown lengthening is performed to form an accurate bone width and improve gingival asymmetry. The crown lengthening procedure requires gingivectomy to obtain maximum gear display, so the minimum value of keratinized gingival is 2-5 mm. Also, papilla management is an important aspect of

surgery. The interproximal bone should be removed carefully to maintain the anatomical structure, so that the interproximal tissue is allowed to grow coronally, the papilla should change the distance from the top of the bone to the base of the contact area (about 5 mm or less). This can be achieved through crown lengthening, as presented in this case report.¹⁵

After evaluation of one year postoperative gingival surgery, there is no apparent gingival recession, bleeding on probing negative but mild exposures are found in area 13 without complaint, good OHI-S. Based on the anamnesis result, the patient is satisfied with the outcome of the treatment.

CONCLUSION

Exostosis and gummy smile can reduce a person's aesthetic condition. Bone resection and crown lengthening surgery are one of the treatment options to make the patient's smile more proportional and achieve optimal aesthetics.

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