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Research Article

Gingivectomy Management For Fixed Orthodontic Treatment

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ABSTRACT

Background: A WHO survey placed malocclusion in the top third as a problem in the oral cavity after caries and periodontal disease. In these circumstances, orthodontic treatment is needed to correct malocclusion and aesthetics. Some cases of orthodontic treatment might cause periodontal tissue damage such as gingival inflammation and gingival recession. Gingival hyperplasia was reported followed the orthodontic activation.
Objective: to determine the impact of fixed orthodontic devices on periodontal tissue and to explain the management of gingivectomy in support of fixed orthodontic treatment.
Case: a 20-year-old female patient came to Dental and Oral Hospital of Universitas Airlangga for referral to the orthodontia with gum complaints on the upper and lower teeth appearing to be enlarged during the orthodontic treatment.

Keywords: Orthodontic, hyperplasia, gingivectomy

INTRODUCTION

In the present millennial era, people's needs and desires for dental care are increasing. The WHO survey put malocclusion in the top third as a problem in the oral cavity after caries and periodontal disease. Severe malocclusion can lead to food retention, even occlusion trauma that has a direct impact on the deterioration of periodontal tissue health[1]. In these circumstances orthodontic treatment is needed to improve malocclusion and aesthetics[2,3]. Some cases of orthodontic treatment can also cause periodontal tissue damage such as gingival inflammation and gingival recession[4,5]. The most common periodontal problem is gingival inflammation caused by plaque[6,7] and calculus formation due to the patient's inability to maintain dental hygiene when fixed orthodontic devices are attached[8,9]. Users of fixed orthodontic appliances often develop gingivitis as a whole from mild to severe within 6 weeks of the first installation[10].
The purpose of this case report is to determine the impact of fixed orthodontic devices on periodontal tissue and to explain the management of gingivectomy in support of orthodontic treatment.

PATIENT CHARACTER

Fig.1: Gingival enlargement in the anterior, posterior region of the maxilla and mandible

Researchers got data of the patient who came to Dental and Oral Hospital of Faculty of Dental Medicine, Universitas Airlangga of Periodonsia Department in June 2019 to March 2020 based on the reference of the Orthodontics section there are 15 patients with the following characteristics

Table 1: Distribution of Characteristics of patients undergoing gingivectomy while receiving orthodontic treatment at the Department of Periodontics Dental and Oral Hospital of Faculty of Dental Medicine, Universitas Airlangga for the period June 2019-March 2020

Character	Description	Amount	%
Gender	Male	5	33,3
	Female	10	66,7
	Total	15	100
Age	≤ 20 y.o	7	46,6
	> 20 y.o	8	53,4
	Total	15	100
Orthodontics period Treatment	< 2 years	11	73,3
	≥ 2 years	4	26,7
	Total	15	100

CASE

A 20-year-old female patient came to Dental and Oral Hospital of Universitas Airlangga for referral to the orthodontia with complaints of gum on the upper and lower teeth appearing enlarged. The patient had cleaned tartar 1 year ago. The patient said to brush his teeth twice a day and often bleed. Patients say they do not have high blood pressure, diabetes, drug and food allergies. The patient wants gum enlargement to be treated. The patient has given approval for the publication of this case for the sake of science.

Clinical Examination

Gingival enlargement in the anterior, posterior (labial, buccal) region of the maxilla and mandible (Figure 1). Patients have complaints of occlusion of the maxillary and mandibular teeth. Plaque and calculus are present in all maxillary and mandibular teeth. Malposition of the teeth region 34, 35, 44 and 45. There are multiple diastema in the maxillary and mandibular teeth. There is a suprabony pocket in the tooth region 13,12,11,21,22,23, 33,32,31,41,42,43. Gingival hyperplasia in the dental region 13,12,11,21,22,23, 33,32,31,41,42,43. On radiographic examination there was no bone loss which caused the teeth mobility.

Treatment

At the first visit a subjective examination was carried out, an objective and radiographic examination was then determined by the diagnosis and treatment plan, documentation before treatment and the signing of the informed consent. Phase I periodontal therapy is also carried out namely Dental Health Education (DHE) where the patient is given instructions on how to brush teeth properly, scaling, root planning and polishing to remove plaque and supra and sub gingival calculus. The treatment plan in this case is to do a gradual gingivectomy using a scalpel.

The second visit of the gingiva still looks enlarged. The first gingivectomy is performed in the 13-23 region of the labial side to form the ideal gingival contour:

a. Extra oral disinfection is done using iodine smears on the lips and surrounding area circularly from the center of the lips rotating towards the outside of the lips. Disinfection is also carried out in the intra oral part of the gingivectomy to be done to minimize pathogen contamination in the area.
b. Followed by infiltration anesthesia using 1 ampoule of articaine on the gingival papilla, then slowly attaching the gingiva and alternating to the tooth region 13, 12, 11, 21, 22, 23.
c. With pocket marker forcep obtained bleeding points from the labial and interdental teeth 13, 12, 11, 21, 22, 23. (Figure 2)

Fig.2: Determination of bleeding points with PMF

d. External bevel incision using scalpel no. 15 C with an angle of 45 ° following the gingival contour. The position of the sclapel above the bleeding point with the bevel leads to the coronal teeth uncontinues from distal tooth 13 to distal tooth 23 (Figure 3).

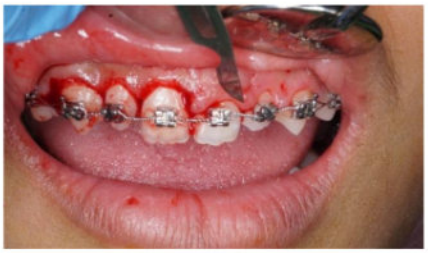

Fig.3: The incision is made above the bleeding point in an uncontinuous manner

e. After the gingiva is completely cut and removed, it appears that the gingival margin has not been physiologically well contoured so gingivoplasty is performed which forms the gingival margin until it looks sharp according to normal gingival contours using an orban knife and Kirkland (Figures 4 and 5)

Fig.4: Gingival gingivoplasty is performed using an orban

Fig.5: Gingival gingivoplasty was performed using kirkland

f. Dental Region 13, 12, 11, 21, 22, 23 Irrigated with Normal Saline solution, dried with gauze and then covered with periodontal dressing. (Figure 6)

Fig.6: Closing the operating area with periodontal dressing

g. Medicate the patient to take 500 mg of Amoxicillin antibiotics and anti-pain mefenamic acid 500 mg, each taken three times a day after eating for five days. To get good results, patients are instructed to avoid eating and drinking hot, spicy, and acidic. Also asked not to rub the part that has been covered with dressing, keep OH clean; if the pack is removed before 3 days immediately contact the operator and return to Dental and Oral Hospital.

h. Patients were instructed for control 7 and 14 days later

The next visit was 7 days after gingivectomy, a pack removal, and control of the results of the first operation. Clinical examination shows a reddish color on the area that has been done gingivectomy (Figure 7).

Fig.7 : healing process in 7 days after gingivectomy

Fig.8: healing process in 14 days after gingivectomy

DISCUSSION

In this case the patient was diagnosed with chronic marginal gingivitis caused by the accumulation of plaque and calculus, another cause was trauma to the use of fixed orthodontic devices. Patients with orthodontic treatment must maintain oral hygiene and the strength of abnormal fixed orthodontic devices should be avoided in order to prevent inflammation of the periodontal tissue and possible alveolar bone loss[10].

Diedrich et al divided the periodontal treatment into 3 phases of preorthodontic phase, orthodontic phase, postorthodontic phase. In the periodontal preorthodontic phase treatment, eliminating inflammation by maintaining oral hygiene through plaque control, scaling and root planning. Bleeding on probing is an indicator of periodontal disease is a disorder that is progressive and active so that the emotion is always considered before and during treatment. In the orthodontic phase, there are 4 things to consider. First, strength and reaction to periodontal tissue due to excessive strength will cause alveolar bone resorption or dehiscences. Second, the occurrence of gingival hyperplasia as a result of oral hygiene that is not considered or because the strength of the orthodontic tool is too large. Third, patients with periodontal tissue damage, the strength of orthodontics should be as light as possible with a longer period. Fourth, always monitor the health of periodontal tissue for inflammation so that it does not inhibit tooth movement[11].

In this case, gingival hyperplasia is due to an initial condition in which there is multiple distema, normal traction force to correct occlusion abnormalities and plaque buildup due to food retention due to the use of fixed orthodontic devices.

Today, the aesthetics of a smile are highly considered by sufferers who use fixed orthodontic appliances. Then obtained the incidence rate of patients with gingival hyperplasia due to the use of fixed orthodontic devices that require gingivectomy in June 2019-March 2020 as many as 15 patients with some of the characteristics listed in table 1.

CONCLUSION

In order to get the results of the treatment as expected, then before starting treatment using fixed orthodontics or gingivectomy, IEC is required for patients. Communication, explaining the purpose of periodontal treatment, which is to clean plaque and calculus found on the entire surface of a patient's teeth to reduce inflammation, and proceed with gingivectomy to reduce gingival hyperplasia.

Information, given to patients, scaling can cause teeth to feel achy and there is little bleeding in the oral cavity due to the process of taking calculus in supragingival and subgingival, and gingivectomy is the act of reducing gingiva as well as an explanation of the process of gingivectomy and the periodontal healing process.

Education to patients, plaque control and calculus which is not done periodically can cause bad breath and even inflammation of the gingiva and even the possibility of alveolar bone resorption. In addition, good cooperation between orthodontics and periodontics in dentists and patients must be established to obtain the expected results together.

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REFERENCES

1. Sullijaya B, Sunarto H. Persiapan jaringan periodontal pada pasien ortodontk-periodontik: Laporan kasus,. Jakarta: 2014.
2. Avriliyanti F, Suparwitri S, Alhasyimi AA. Rinsing effect of 60% bay leaf (Syzygium polyanthum wight) aqueous decoction in inhibiting the accumulation of dental plaque during fixed orthodontic treatment. Dent J (Majalah Kedokt Gigi) 2017;50(1):1.
3. Herniyati H. The increased number of osteoblasts and capillaries in orthodontic tooth movement post-administration of Robusta coffee extract. Dent J (Majalah Kedokt Gigi) 2017;50(2):91.
4. Rahmawati D, Retno Indrawati R, Roestamadji RI, Setiawatie EM, Yuliati A, Bramantoro T. Osteogenic ability of combined hematopoetic stem cell, hydroxyapatite graft and platelet rich fibrin on rats (Rattus novergicus). J Krishna Inst Med Sci Univ 2017;6(4):88–95.
5. Yamamoto Z, Mohamad I, Rohaya MAW, Zarina I. Orthodontic Treatment Effects on Inflammatory Marker Profiles in Saliva Before and After 2 Archwire Changes. In: AIP Conference Proceedings. 2015. page 10–7.
6. Ruslin M, Samad R, Burhanuddin DP, Tajrin A, Fauzi A, Rasul MI, et al. Demography of oral health status for students and teachers in Islamic boarding school. J Int Dent Med Res [Internet] 2019;12(2):677–81. Availablefrom:https://www.scopus.com/inward/record.uri?eid=2s2.085069525724&partnerID=40&md5=2855a5ee57f112214cf077cd3891cd9b
7. Mudjari S, Achmad MH, Singgih MF, Rieuwpassa IE, Akbar FH. Nickel and chromium ion levels in hair and gingival crevicular fluid with the corrosion of brackets in orthodontic patients: A

longitudinal study. Pesqui Bras Odontopediatria Clin Integr [Internet] 2019;19(1). Available from: https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064946511&doi=10.4034%2FPBOCI.2019.191.64&partnerID=40&md5=df8d6cc1523cd0e3841094835737fa75

8. ARIFFIN SHZ, DIN RDS, JAAFAR IM, SENAFI S, Wahab RMD. External Apical Root Resorption as a Result of Orthodontic Treatment at Six and 12 Months. Sains Malaysiana 2017;46(8):1299–307.
9. Hisham S, Ariffin Z, Yamamoto Z, Abidin Z, Megat R, Wahab A, et al. Cellular and Molecular Changes in Orthodontic Tooth Movement. Sci World J 2011;11:1788–803.
10. Newman M, Takei H, Klokkevold P, Carranza F. Carranza's clinical periodontology. 12th ed. Saunders. St. Louis, Missouri: Elsevier; 2015.
11. Diedrich P. Limits of orthodontic treatment of periodontally affected dentitions [review; in German]. Dtsch Zahnärztl Z 1990;45:131–135.

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PAGE 2

PAGE 3

PAGE 4

PAGE 5