



Surgical Management of Plaque Induced Gingival Enlargement: A Case Report

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Abstract

Introduction: Gingival enlargement or gingival overgrowth, a common trait of gingival disease, is characterized by an increase in the size of gingiva with multifactorial etiology. **Purpose:** This case report aimed to discuss gingival enlargement case along with the treatment plan of the patient. **Case presentation:** A 50-year-old female patient reported the swelling in the gums of teeth in lower front region since six months ago. Gingival enlargement was treated with modified Widman flap procedure, internal bevel incision, and bone recontouring. These treatment modalities showed significant clinical improvement in the form of pocket depth reduction and gingival contour. **Conclusion:** Dental plaque bacteria served as initial factor of inflammation which induce the occurrence of gingival enlargement. Surgical treatment can be done if the initial phase still presenting gingival enlargement with firm consistency with minimum inflammation.

Keywords: Dental plaque; flap surgery; gingival enlargement

Introduction

Gingiva is one main component of periodontium as connective tissue supporting the teeth.¹ Gingival overgrowth, commonly known as gingival enlargement or gingival overgrowth, was defined as a gingival disease characterized by an increase in the size of the gingiva.² Gingival enlargement is represented by enlarged gingival tissue with a lobulated appearance that gradually extends along the labial, lingual, and coronal aspects to cover the entire anatomic crown of teeth and is associated with gingival bleeding. This condition can lead to esthetic and oral hygiene problems.³

Gingival enlargement may be caused by several etiology and presented with diverse characteristics. The emergence of this condition was known as the body's response to the induction of dental or non-dental plaque. Gingival enlargement is mainly due to plaque accumulation accompanied by local predisposing factors such as malocclusion and systemic factors such as consumption of certain drugs.¹

Gingival enlargement could be acute, chronic, reversible as well as irreversible. As a pathological process, the inflammation of periodontal tissue can produce several responses, such as the final stage of inflammation and repair of tissue integrity, periodontal tissue damage, or fibrosis. The treatment is necessary for this condition due to the interruption of accessibility

and visibility for plaque cleansing.¹ This case report aimed to discuss the gingival enlargement case and the treatment plan.

Case Report

A 50-year-old female patient reported swelling in the gums of teeth in the lower front region six months ago. At the time when she was brushing her teeth, often accompanied by bleeding and felt pain while eating solid food. The patient had a history of dental scaling with a general practitioner about a month ago, yet the gum enlargement persisted. This patient had no systemic disease and reported not smoking with a 57% plaque index. Radiographic examination showed localized bone loss at the mandibular anterior region.

Extraoral examination, including face, eyes, neck, lips, and temporomandibular joint showed a normal condition. Mucosal status showed no abnormality. There was a gingival enlargement in the lower anterior region (tooth 41,42,43). The gingival enlargement was characterized as combined with a soft consistency and easily bleed at the gingival margin and firm consistency at the attached gingiva. The gingival surface was shiny with rounded interdental papilla. There was a deep pocket with a probing depth of 9 mm at the interdental of teeth 42 and 43, premature contact of teeth 11/42, and 12/42, and crowding of the mandibular anterior region



Figure 1. Gingival enlargement of tooth 41-43 and radiograph examination

A radiographic examination showed a horizontal bone defect in the mandibular anterior region. This finding was in line with the pocket periodontal condition in that region. According to clinical and radiographic examination, the patient was diagnosed with localized chronic

periodontitis at the lower anterior region, dental plaque-induced gingival enlargement, and occlusal trauma of tooth 42. The etiology of periodontal disease consisted of bacterial plaque, dental calculus, malposition of teeth, incorrect toothbrushing technique, the presence of gingival enlargement, and traumatic occlusion.⁴

Treatment Procedure

On the first visit, the initial treatment of root planing in the lower mandibular region to eliminate etiological factors and occlusal adjustment due to traumatic occlusion tooth 42 was performed. The patient was educated to do dental plaque cleansing according to the clinical condition that occurs and to use chlorhexidine mouthwash for two weeks. Dental floss using was recommended as an adjunctive tool for cleaning the dental plaque in malocclusion teeth which difficult to remove with a conventional toothbrush.⁵

The initial treatment was evaluated after one month with good results, characterized by a decrease in the interdental pocket depth of teeth 42-43 to 7 mm (Figure 2). Inflammation signs, such as erythema and bleeding were reduced. The deep pockets and gingival enlargement with a firm consistency still remained, so the treatment was continued to the surgical phase, flap surgery on teeth 41-43.



Figure 2. Follow up at first month following initial treatment (scaling and root planing)

The surgical procedure was initiated with a vital sign examination and writing the informed consent. Vital sign examination resulted in normal condition. First, asepsis in the working area was done with povidone-iodine. Local anesthesia procedure using lidocaine with labial and lingual infiltration technique in the mesiobuccal fold of 41-43 region.

The surgery was done with a modified Widman flap technique, in which an internal bevel incision was made throughout the operation site to remove gingival enlargement in the margin area. The initial incision was made 1 mm from the gingival crest using blade no. 15c. Sulcular dan interdental incisions were subsequently made and continued to a vertical incision in the

mesial area of 41 and 43. Afterward, the gingival was retracted using a periosteal elevator which was inserted between the bone and gingiva, then the flap should be reflected with a blunt dissection technique.⁶

Furthermore, cleaning the granulated tissue was performed with a surgical curette, followed by cleaning excessive tissue of attached gingiva using a scalpel and surgical scissors.⁷ Root planing was carried out on the apical surface of teeth 41-43 until a smooth and shiny surface could be achieved. Alveolar bone contouring was done using a bone file until a smooth, even edge of the bone was obtained.⁸ During the flap surgery procedure, the surgical area was cleaned with sodium chloride irrigation solution. Bleeding was stopped using gauze that was soaked in adrenaline which had been diluted with distilled water. Flap was repositioned and closed with an undisplaced flap technique, then an interrupted suture was done with nylon thread 5.0 (Figure 3). The patient was then prescribed mefenamic acid 500mg 3 times a day for 5 days, antibiotic, and chlorhexidine mouthwash 0.2% two times a day for 7 days. Follow-up was done after 1 week and 1-month post-surgery. Satisfactory results were obtained, characterized by the clinical manifestation of normal gingiva with normal pockets. During the healing period, the patient was comfortable with minimal pain (Figure 4).



Figure 3. Surgical procedure



Figure 4. Follow up. A. 1 week; B. 1 month



Discussion

Gingival enlargement is defined as abnormal enlargement of gingival tissue. This condition may be caused by hyperplasia, hypertrophy and cell fibrotic. Hyperplasia described the increase in cell number which increase the tissue volume. Hypertrophy refers to increase in cell size. Although the mechanism of pathogenesis was different, hyperplasia and hypertrophy often occur in the same time and represent a related process.⁹

According to Agrawal, fibrosis was defined as part of immune mechanism against periodontal inflammation progressivity. Along this process, fibroblast had important role to form large amount of collagen and non-collagen protein in extracellular matrix. Hence in gingival enlargement cases, increased of matrix deposition was not balanced by enzymatic degradation, resulting in fibrotic changes in soft tissue.¹⁰

Gingival enlargement can be caused by several etiology and various characteristic. The patient in this case, gingival enlargement was diagnosed with dental plaque induced gingival enlargement, which chronic periodontal tissue in long period produced fibrosis. Dental plaque control behavior is the first step of gingival enlargement treatment. Based on study by Haslina in 2011, stated that good oral hygiene and plaque elimination could able to decrease severity of gingival enlargement and increase gingival health status. Adequate plaque control could be also prevent the recurrence of gingival enlargement following surgical therapy.¹¹

Patient's tooth malposition resulted an inadequate of plaque removal.¹² Therefore, the patient needs dental floss as a tool to remove the plaque. Flossing movement was taught to the patient to prevent plaque formation which in turn leading to tissue inflammation. The present of occlusal trauma on tooth 41 and 42 was aggravating the tissue inflammation, then it was necessary to do occlusal adjustment. According to Passanezi, the presence of traumatic occlusion accelerated the tissue destruction rate due to pre-existing periodontal disease, therefore it was necessary to do occlusal adjustment on initial treatment phase.¹³

Surgical treatment including gingivectomy or flap surgery could be done in the case of persistent gingival enlargement following initial therapy.¹⁴ Gingivectomy is the removal of gingival tissue for the gingival enlargement which limited to papilla area and gingival margin. Gingivectomy can be indicated for gingival enlargement without the involvement of clinical attachment loss.¹⁵

When the affected area of gingival enlargement extends to attached gingiva or in the case of clinical attachment loss and there was true pocket or bone defect, then the treatment of choice

was surgical flap technique. According to the study by Proestakis, gingivectomy and flap surgery procedure could both reduce the gingival enlargement well, nevertheless flap surgery procedure might reduce the occurrence of gingival recession after surgery.¹⁶ In the present case, gingivectomy was not recommended due to could cause the occurrence of mucogingival problem, risk of tissue bleeding while surgical procedure, and post-surgical treatment would be more difficult.

Periodontal flap technique used in gingival enlargement treatment was the technique variation as in the treatment of periodontitis. In this case, modified Widman surgery flap technique was done, the first incision performed 1-2 mm from free gingival crest aiming to remove the enlarged gingival tissue. Fibrotic tissue was then cleaned comprehensively following the flap exposure thereby leaving healthy gingival tissue (Figure 5).¹⁷

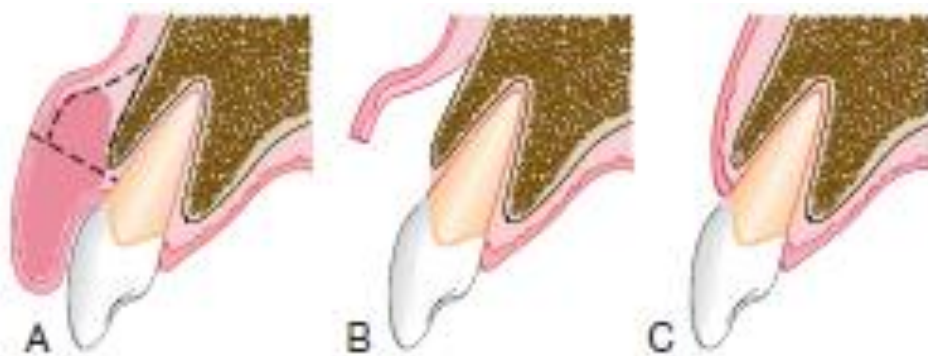


Figure 5. Treatment of gingival enlargement by flap surgery technique. A. Internal bevel incision followed by thinning of enlarged gingival tissue, dotted line indicated the incision and dark pink area indicated area to be excised. B. After elevation of the flap, the enlarged portion of the gingiva is removed. C. The flap is repositioned over the alveolar bone and sutured.¹⁷

At the control of post-surgical treatment showed the improvement of gingival condition, inflammation signs was minimal and the pocket was normal. Restorative phase can be done by referral to orthodontic department for the treatment to correct the teeth malposition in order to prevent the recurrence of gingival enlargement.

Conclusion

Gingival enlargement can be caused by several etiology, which dental plaque bacteria served as initial factor of inflammation that acted as an important role in the occurrence of gingival enlargement. Surgical treatment can be done if the initial phase still presenting gingival enlargement with firm consistency with minimum inflammation.



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