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Case Report

Generalized Gingival Enlargement in Young Adult with Chronic Periodontitis: A Case Report

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Abstract

Background : Dental plaque is a natural biofilm that, if inadequately controlled, can lead to gingivitis and chronic inflammatory gingival enlargement. Persistent gingival overgrowth may impair both function and aesthetics, often requiring surgical intervention such as gingivectomy, when non-surgical treatments prove ineffective.
Case Report : A 22-year-old male presented with swollen and bleeding gums. Patient reported no history of systemic diseases or the use of any specific medications. Intraoral examination revealed gingival hyperemia, enlargement, and carious lesions on multiple teeth. Despite initial treatment with scaling root planing (SRP) and oral hygiene instruction, gingival enlargement persisted. Panoramic radiography revealed additional findings, including alveolar crest resorption and impacted third molars. A four-stage gingivectomy was performed under local anesthesia, followed by postoperative care, including antibiotics (Clindamycin), analgesics, mouthwash, and strict oral hygiene maintenance. Restorative treatments and splinting of mobile teeth were also carried out.
Discussion : The patient's gingival enlargement was primarily plaque-induced, further exacerbated by local factors such as dental caries. Scaling and root planing (SRP) alone proved insufficient due to the presence of fibrotic tissue, necessitating surgical intervention via gingivectomy. Postoperative healing was successful, with notable improvements in gingival contour, consistency, and oral hygiene indices. Patient education and adherence to postoperative care were crucial in achieving favorable outcomes.
Conclusion : Effective management of chronic inflammatory gingival enlargement requires accurate diagnosis, appropriate initial therapy, and surgical intervention when indicated. In this case, staged gingivectomy, combined with comprehensive oral care, successfully restored gingival health and aesthetics, emphasizing the importance of individualized treatment planning and patient cooperation.

Keywords : calculus, gingival enlargement, gingivectomy, plaque.

INTRODUCTION

Dental plaque is a structured, grayish-yellow biofilm firmly adhering to intraoral surfaces, including restorations. Composed of bacterial cells and microcolonies within a hydrated exopolymer matrix, its formation follows four phases: bacterial adhesion, phenotypic changes, rapid growth with exopolysaccharide production, and a stable balanced phase.[1,2] While plaque plays a physiological role, excessive accumulation and poor hygiene can lead to mineralization into calculus, which, along with plaque, contributes significantly to oral diseases like gingivitis.[1,3] Clinically, gingivitis presents as changes in gingival contour, color, and consistency without attachment or bone loss, managed by mechanical debridement and improved plaque control. Persistent irritants can lead to chronic inflammatory gingival enlargement, characterized by reddish to bluish, soft, and bleeding-prone gingiva, sometimes covering the tooth crown.[4] In severe cases, surgical treatment such as gingivectomy may be needed.[5,6]

Generalized gingival enlargement is a pathological overgrowth of gingival tissue across both arches, impacting aesthetics, comfort, mastication, and hygiene. It has multifactorial causes, including local factors like plaque and calculus and systemic factors such as hormonal changes, medications (e.g., phenytoin, nifedipine, cyclosporine), and systemic diseases like leukemia or immunological disorders.[7] Differential diagnoses include drug-induced hyperplasia, leukemia-related enlargement, scurvy, and hereditary gingival fibromatosis, requiring thorough clinical evaluation, blood tests, and biopsy.[8] Chronic inflammation from plaque and calculus, hormonal fluctuations in pregnancy or puberty, and systemic diseases like diabetes mellitus or hematologic disorders may exacerbate the enlargement.[9] Treatment should be individualized, addressing dominant contributing factors to achieve optimal long-term outcomes. This article aims to present a comprehensive case report of chronic inflammatory gingival enlargement in a young adult, highlighting the diagnostic approach, and surgical management using conventional gingivectomy.

CASE REPORT

A 22-year-old male patient presented to the central laboratorium of RSND Hospital Semarang, complaining of swollen gums and frequent bleeding while brushing his teeth. The patient had no history of systemic diseases, including hypertension, diabetes, or drug/food allergies. He was neither on any regular medication nor under the care of another physician. Extraoral examination

Figure 1. Initial intraoral presentation of gingival enlargement in the anterior region.
Panoramic radiographic examination revealed radio-opaque structures resembling teeth in the area of teeth 38 and 48 in a mesioangular position, alveolar crest resorption in the regions of teeth 11, 21, 22, 31, 32, 41, and 42, and edentulous areas in the regions of teeth 26 and 36.

Figure 2. Panoramic radiograph showing alveolar bone resorption and mesioangular impaction of third molars.

Figure 3. Gingivectomy Procedure

revealed no abnormalities. Intraoral examination revealed hyperemia accompanied by gingival enlargement, with soft consistency and rounded contours on the facial aspects of the upper and lower teeth. The Oral Hygiene Index (OHIS) score was 0.8 (good), and the O'Leary plaque index was 32.1% (fair). Grade 1 mobility was noted in teeth 11, 21, 22, 31, 32, 41, and 42. Cavities extending to the dentin were found on the facial surfaces of teeth 11, 21, and 22; the occlusal surfaces of teeth 14, 16, 44, 45, and 47; and the mesial surfaces of teeth 27, 46, and 47. Initial treatment consisted of scaling and root planing (SRP) and oral hygiene instructions; however, the gingival enlargement persisted.

Panoramic radiographic examination revealed radio-opaque structures resembling teeth in the area of teeth 38 and 48 in a mesioangular position, alveolar crest

Figure 4. The patient's intraoral examination after completing all treatments.

resorption in the regions of teeth 11, 21, 22, 31, 32, 41, and 42, and edentulous areas in the regions of teeth 26 and 36.

The patient consented to undergo gingivectomy to improve his dental and oral condition. The gingivectomy procedure was performed over four appointments, starting from region 1 and progressing sequentially to region 4. On December 7, 2023, the first stage of gingivectomy was carried out on the gingiva of region 11–15. The second stage was performed on December 12, 2023, in the gingiva of region 21–25. The third stage was performed on February 4, 2024, in the gingiva of region 31–35. The fourth stage was completed on March 7, 2024, in the gingiva of region 4144. Postoperative follow-ups were scheduled for 7 days and 30 days after each gingivectomy session.

The gingivectomy procedure began with the patient rinsing with water and 10% povidone iodine, followed by asepsis with 10% povidone iodine at the surgical site. Pocket probing was performed using a periodontal probe to determine the location of the epithelial attachment. Local anesthesia was administered using pehacain (lidocaine HCl with 1:100,000 epinephrine) at the mucobuccal fold and interdental areas around the surgical site. Bleeding points were created using a pocket marker inserted into the gingival sulcus parallel to the long axis of the tooth, with the beak resting on the tooth surface to accurately mark the base of the pocket. The blunt end of the pocket marker was inserted into the pocket until it touched the base, while the sharp end remained outside the pocket and was pressed to create three bleeding points––mesial, mid, and distal gingiva.

The hyperplastic tissue was incised using a Kirkland knife assisted by a No. 15 blade for the external bevel on the facial and lingual surfaces, and an Orban knife assisted by a No. 12 blade for the interdental areas. The tip of the Kirkland knife or No. 15 blade was positioned approximately 1 mm apical to the bleeding point and directed coronally at a 45° angle, as close as possible to the alveolar bone without exposing it. Incision was performed using a discontinuous cutting motion. Interproximal gingiva was excised using the Orban knife or No. 12 blade with a horizontal mesiodistal direction and subsequently elevated. Scaling and root planing (SRP) were carried out with a Gracey curette to remove plaque and calculus previously covered by the overgrown gingiva. Gingivoplasty followed, using a No. 15 blade in a unidirectional scraping motion to contour and smooth the gingival surface, eliminating any sharp or irregular edges resulting from the incision.

Through the procedure of surgical, the surgical field was periodically irrigated with sterile saline (NaCl) solution. Upon completion of the gingivectomy, the area was thoroughly irrigated and compressed with sterile gauze soaked in saline, applying light pressure and massaging from apical to coronal for approximately 3–5 minutes to facilitate tissue adaptation. A periodontal dressing was then applied over the surgical site to protect

the wound.

Postoperative instructions provided to the patient included: (1) refraining from eating or drinking for 1 hour following surgery and avoiding hot foods and beverages for 24 hours; (2) avoiding vigorous rinsing, sucking, touching, or manipulating the surgical area with the tongue or hands, particularly during the first 24 hours post-surgery; (3) maintaining oral hygiene by brushing twice daily (in the morning after breakfast and at night before sleeping) with a soft-bristled toothbrush, using the Charter method (for six months post-surgery), in which the bristles are angled 45° coronally and vibrated gently; (4) attending follow-up visits at 1 week post-surgery (for removal of the periodontal dressing) and 3 weeks post-surgery (for evaluation of wound healing). If the dressing dislodges before the follow-up and no pain is present, no intervention is necessary. However, if pain occurs, the patient is advised to contact the dentist immediately; and (5) adhering to the prescribed medications as directed.

Restorative procedures were also performed on teeth 11, 21, and 22 using composite resin, along with fiber splinting of the anterior maxillary and mandibular teeth to improve aesthetics and support gingival healing.

Following the completion of gingivectomy in all four regions and restoration of teeth 11, 21, and 22, the patient's intraoral examination (Figure 2) revealed some residual hyperemia on the facial aspect of tooth 11. The Oral Hygiene Index Simplified (OHIS) score improved to 0.67, indicating good oral hygiene. The patient continued to receive education on proper oral hygiene practices to prevent recurrence of similar conditions.

DISCUSSION

Gingival enlargement is an overgrowth of gingival tissue that affects mastication, speech, aesthetics, and oral function. It is primarily caused by plaque-induced inflammation but may also result from mechanical irritation, iatrogenic factors, drugs, systemic diseases, hormonal changes, vitamin C deficiency, genetics, or idiopathic causes.[10,11]

Chronic plaque exposure can lead to fibrotic gingival enlargement and pseudo-pocket formation, complicating oral hygiene. Contributing factors include abnormal tooth morphology, overhanging restorations, and orthodontic appliances. Early signs include papillary and marginal swelling, which may progress to partial or complete crown coverage.[10,12] The severity of enlargement is categorized as follows: grade 0 (no enlargement), grade I (confined to interdental papilla), grade II (involves papilla and marginal gingiva), and grade III (extends over three-quarters or more of the clinical crown).[10,12]

Intraoral examination for this patient was revealed caries on the facial surfaces of multiple teeth, poor oral hygiene, gingival hyperemia, swelling with rounded contours, and soft consistency. The gingival enlargement was attributed to local factors, specifically plaque and calculus accumulation, exacerbated by carious lesions on the facial surfaces of the teeth.

The initial treatment for gingival enlargement involves scaling and root planing (SRP). This approach is indicated when the gingiva appears soft, discolored, and edematous with cellular infiltration. SRP serves as an initial phase of periodontal therapy, aimed at removing plaque and calculus, which are primary sources of infection.[12] If gingival enlargement persists due to fibrotic tissue that does not resolve after SRP, or if the overgrowth obstructs the removal of tooth deposits, surgical intervention (gingivectomy) is necessary.[12] Gingivectomy involves the removal of the lateral wall of the periodontal pocket, eliminating the pocket and gingival inflammation, thereby restoring physiological, functional, and aesthetic gingival tissue. Additionally, gingivectomy helps reduce the depth of the gingival sulcus, facilitating easier daily oral hygiene maintenance.[12]

In this case, gingival enlargement was managed in a staged approach. The initial phase consisted of nonsurgical periodontal therapy with scaling and root planing (SRP), performed on September 14, 2023. During this visit, the patient received education on the importance of maintaining proper oral hygiene.

Follow-up the patient were conducted on October 3 and October 11, 2024 (20 and 27 days post-SRP, respectively), to monitor changes in gingival enlargement. Clinical examination revealed persistent gingival overgrowth characterized by erythema and soft tissue consistency, particularly in the buccal areas of teeth 15–25 and 35–44. Based on these findings, surgical intervention was indicated.

Gingivectomy was performed in four stages as follows:

1) First stage – December 7, 2023: gingiva of region 11–15
2) Second stage – December 12, 2023: gingiva of region 21–25
3) Third stage – February 4, 2024: gingiva of region 31–35
4) Fourth stage – March 7, 2024: gingiva of region 41–44

Following each gingivectomy session, the patient was prescribed Clindamycin, administered three times daily for five days to minimize the risk of postoperative infection. Clindamycin was selected due to the patient's prior unresponsiveness to Amoxicillin and Ciprofloxacin for dental pain. It was preferred for its higher efficacy compared to Penicillin and Lincomycin in managing persistent infections.[13] Tooth with poor prognosis were extracted on September 26 and October 11, 2023.

In addition to antibiotics, the patient was prescribed: (1) Mefenamic acid 500 mg (analgesic), three

times daily for three days; and (2) Chlorhexidine gluconate 0.12% mouthwash, twice daily for seven days to support oral hygiene. The patient was also instructed to maintain oral hygiene by brushing twice daily (morning after breakfast and at night before bed) using the Charter method and to return for control after seven days.

During follow-up after each gingivectomy, no pain reported. Clinically, the gingiva showed well-defined contours and firm consistency across all treated regions. The Oral Hygiene Index-Simplified (OHI-S) and the O'Leary Plaque Index both demonstrated improved scores, indicating good plaque control. Gingival healing was satisfactory, and continuous reinforcement of oral hygiene practices was provided.

The disappearance of gingival enlargement and signs of inflammation after SRP indicated that the enlargement was primarily inflammatory, influenced by the patient's level of oral hygiene. The patient demonstrated a good ability to maintain oral hygiene, as reflected in the improvement of the plaque index from high to low levels. However, despite resolving the inflammation, gingival overgrowth persisted after a month, due to the lack of tissue return to its original state, necessitating surgical intervention.

Gingival enlargement can arise from a variety of etiologies, making differential diagnosis essential when evaluating such cases. One condition to consider is gingival fibromatosis, a rare hereditary disorder characterized by slow, progressive gingival overgrowth without marked inflammation or attachment loss.[6,14] It typically presents with dense, fibrotic tissue and may be associated with certain syndromes or familial traits. Another important differential is drug-induced gingival overgrowth (DIGO), commonly linked to medications such as phenytoin, cyclosporine, and calcium channel blockers like nifedipine, which stimulate fibroblast proliferation and extracellular matrix accumulation.[6,14] In this case, the patient reported no history of systemic medication use, and clinical examination did not support the diagnosis of either DIGO or gingival fibromatosis. Therefore, the diagnosis of chronic inflammatory gingival enlargement, primarily caused by plaque and calculus accumulation, was deemed most appropriate.[6,14]

The treatment approach for gingival enlargement depends on the underlying cause and pathological changes. Although conventional scalpel gingivectomy was selected as the main treatment approach, alternative surgical modalities such as electrosurgery and laser therapy are also viable options.[11,12] Electrosurgery provides advantages such as better intraoperative bleeding control and reduced operative time; however, it may result in thermal damage to surrounding tissues, delayed healing, and patient discomfort.[11,12] Laser gingivectomy, particularly using diode or CO□ lasers, offers benefits including minimal bleeding, reduced pain, and faster healing.[12] Despite these advantages, laser techniques are often limited by higher costs, limited accessibility, and the need for specialized training. In this case, conventional gingivectomy was selected based on its clinical efficacy, operator expertise, and the available equipment at the treatment facility.[11,12]

The prognosis for this patient is good, as oral hygiene is well maintained, oral health conditions have improved, there is no systemic disease, and the patient is cooperative. In this case, after the gingiva healed from gingivectomy, the patient was also given fiber splinting on maxillary and mandibular anterior teeth to prevent the periodontitis from worsening. Long-term evaluations have shown that gingivectomy, as part of periodontal treatment, can achieve and maintain clinically healthy periodontal conditions in patients with advanced periodontal disease. This periodontal health was sustained over a 14-year follow-up period in most patients and sites, with comparable effectiveness observed across both younger and older patient populations.[15–17]

CONCLUSION

This case demonstrates that chronic inflammatory gingival enlargement can occur in systemically healthy young adults and may persist despite initial non-surgical therapy. A structured, individualized management approach involving staged gingivectomy, comprehensive oral hygiene education, and adjunctive restorative care proved successful in restoring gingival health, function, and aesthetics. This report underscores the importance of recognizing plaque as a primary etiologic factor even in the absence of systemic or pharmacologic triggers, and the need for timely surgical intervention when conservative approaches fail.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

Ethics approval and consent to participate

The patient provided written informed consent for the publication of this case and accompanying clinical images.

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