
Successful Management Of Gingival Enlargement By Gingivectomy: A Case Report

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Abstract

Gingival enlargement is a pathological condition characterized by an increase in the size and volume of gingival tissue, which may impair oral function, esthetics, and oral hygiene maintenance. The management of this condition depends on the underlying etiology and severity of gingival tissue enlargement. This case report aimed to describe the successful management of gingival enlargement using gingivectomy in the mandibular anterior region. A 28-year-old male patient presented with a chief complaint of gingival enlargement involving teeth 41 and 42 that had persisted for approximately one year without pain. Clinical examination revealed localized gingival enlargement accompanied by periodontal pocket depths of up to 5 mm. Initial periodontal therapy consisting of scaling and root planing was performed, followed by conventional gingivectomy and gingivoplasty to restore physiological gingival contours. Three weeks after surgery, clinical evaluation demonstrated favorable tissue healing, complete resolution of gingival enlargement, and a reduction in periodontal probing depth to 2 mm. Gingivectomy combined with adequate plaque control can be an effective treatment option for restoring periodontal health, function, and esthetics in cases of localized gingival enlargement.

Keywords: Gingival Enlargement, Gingivectomy, Gingivoplasty, Periodontal, Disease

INTRODUCTION

Periodontal disease is a disorder affecting the tooth-supporting tissues, characterized by inflammatory processes and the destruction of the gingiva, periodontal ligament, cementum, and alveolar bone. This condition compromises the integrity and function of the periodontal supporting structures and, if left untreated, may result in clinical attachment loss and progressive alveolar bone destruction (Anwaristi and Nurfitriya, 2022). Gingiva covers the root surface and alveolar bone, extending coronally to the cemento-enamel junction (CEJ). Anatomically, the gingiva is divided into the interdental gingiva, attached gingiva, and marginal gingiva. Each component is structurally adapted to withstand mechanical and microbial challenges, although they differ considerably in histological characteristics, degree of differentiation, and tissue thickness according to their functional requirements (Anwaristi and Nugrahani, 2026).

Gingival enlargement is a pathological condition of the periodontal tissues characterized by an abnormal increase in the size and volume of the gingival tissue. The enlargement may involve the interdental papilla, marginal gingiva, and attached gingiva, thereby altering the physiological gingival contour and adversely affecting masticatory function and dental esthetics. Clinically, patients with gingival enlargement may present with gingival bleeding, difficulty maintaining oral hygiene, impaired phonetics, and discomfort during mastication (Olivia and Herawati, 2022). The etiology of gingival enlargement is multifactorial. Based on its underlying cause, the condition can be classified as inflammatory enlargement, fibrotic or idiopathic enlargement, and drug-induced gingival enlargement (Tetan-el et al., 2021).

Inflammatory gingival enlargement is primarily associated with local irritants, particularly the accumulation of dental plaque and calculus, which initiate an immune response and inflammatory reaction within the gingival tissues. This process leads to edema, hyperemia, and increased gingival volume and is commonly observed in individuals with inadequate oral hygiene (Watri et al., 2025). In contrast, fibrotic or idiopathic gingival enlargement is characterized predominantly by excessive fibroblast proliferation and collagen deposition within the connective tissue. This condition may be associated with genetic predisposition, systemic disorders, or hormonal influences. Furthermore, several classes of medications have been implicated in the development of gingival enlargement,

including immunosuppressive agents such as cyclosporine, anticonvulsants such as phenytoin, and calcium channel blockers such as nifedipine. The underlying mechanisms are believed to involve alterations in fibroblast metabolism, increased extracellular matrix synthesis, and reduced collagen degradation. Local factors, particularly dental plaque, continue to act as important predisposing factors that exacerbate the severity of the condition (Gartenmann et al., 2020).

The management of gingival enlargement should be tailored to its underlying etiology. In inflammatory cases, initial non-surgical periodontal therapy consisting of scaling and root planing, combined with comprehensive oral hygiene instruction, is considered the first-line treatment to eliminate local etiologic factors and control inflammation. Reevaluation is essential to assess the tissue response following initial therapy. In cases associated with medication use, close collaboration with the patient's physician is recommended to evaluate the possibility of drug substitution or dosage adjustment while maintaining appropriate systemic disease management (Watri et al., 2025).

When non-surgical periodontal therapy fails to achieve satisfactory clinical improvement, periodontal surgical intervention, such as gingivectomy, should be considered. Gingivectomy is a periodontal surgical procedure involving the excision of excessive gingival tissue to restore physiological gingival contours and establish a healthier periodontal environment. The procedure removes hyperplastic tissue and recontours the gingival architecture, thereby facilitating effective plaque control by the patient and improving the clinician's access to subgingival areas during periodontal maintenance (Barsoum et al., 2022). Therefore, a comprehensive understanding of the etiology, clinical characteristics, and treatment modalities of gingival enlargement is essential for developing an appropriate treatment plan. An evidence-based and individualized therapeutic approach not only improves functional and esthetic outcomes but also promotes long-term periodontal stability and enhances the patient's overall quality of life.

RESULTS AND DISCUSSION

A 28-year-old male presented to the Soelastri Dental Hospital with the chief complaint of gingival enlargement in the mandibular anterior region. The patient reported that the enlargement had been present for approximately one year without associated pain. His medical history was significant for gastritis. He reported no history of allergies to food, medications, or environmental factors. The patient had undergone professional scaling approximately one year earlier. His family history revealed that his father had hypertension, while his mother had no known systemic diseases. His daily habits included consuming coffee every day, smoking one pack of cigarettes per day, and brushing his teeth twice daily. General examination revealed a blood pressure of 138/86 mmHg. Extraoral examination showed no abnormalities. Intraoral examination demonstrated mild erythema and localized gingival enlargement on the labial aspect of teeth #41 and #42. The Oral Hygiene Index (OHI) score was 4.3, indicating good oral hygiene, while the Gingival Index (GI) score was 0.3, consistent with mild gingivitis. Periodontal probing revealed pocket depths of 5 mm (mesiolabial), 4 mm (mid-labial), and 4 mm (distolabial) on tooth #41, and 5 mm (mesiolabial), 3 mm (mid-labial), and 4 mm (distolabial) on tooth #42.



Figure 1. Preoperative intraoral photograph.

Based on the clinical findings, a diagnosis of localized gingival enlargement involving teeth #41 and #42 was established. The treatment plan consisted of initial periodontal therapy followed by gingivectomy of the labial gingiva of teeth #41 and #42. Before treatment, the patient received a comprehensive explanation regarding the diagnosis, treatment procedure, potential risks, and the planned publication of the case report. Written informed consent was subsequently obtained.

Case management began with initial periodontal therapy consisting of scaling and root planing (SRP). Scaling was performed to remove plaque, calculus, and extrinsic stains from both the crown and root surfaces, whereas root planing was carried out to eliminate contaminated cementum and smooth the root surfaces, thereby promoting periodontal healing. This initial therapy was intended to reduce gingival inflammation, decrease the microbial load within the gingival sulcus, and prevent further periodontal destruction. During the procedure, mild bleeding and dentinal hypersensitivity were observed as expected due to manipulation of inflamed tissues. Following SRP, polishing was performed using a prophylaxis brush and pumice paste to produce a smoother tooth surface and minimize future plaque accumulation. The patient also received oral hygiene instructions, including proper tooth-brushing techniques and the use of interdental cleaning aids when indicated. A follow-up appointment was scheduled one week later to evaluate the periodontal tissue response and determine the need for surgical intervention.

Before the gingivectomy procedure, all necessary instruments and materials were prepared to ensure an efficient, aseptic, and standardized surgical procedure. The operator was positioned at the patient's right front side, while the patient was placed in a semi-supine position to provide optimal visibility and access to the operative field. The surgical area was isolated to minimize contamination by saliva and surrounding tissues, followed by application of an antiseptic solution to reduce the microbial load and minimize the risk of postoperative infection. Local anesthesia was then administered using Pehacaine® to ensure adequate pain control and patient comfort throughout the procedure.

Periodontal probing was repeated to confirm the pocket depth and determine the extent of tissue excision. The base of each periodontal pocket was identified using a pocket marker by inserting the pointed tip parallel to the long axis of the tooth and gently pressing it through the gingival tissue until bleeding points appeared on the external gingival surface. These bleeding points served as clinical landmarks for determining the incision line and ensuring accurate removal of the enlarged tissue while facilitating the establishment of a physiological gingival contour.



Figure 2. Creation of bleeding points using a pocket marker.

An external bevel incision was made with a Kirkland knife beginning slightly apical to the bleeding points, which represented the base of the periodontal pocket. The incision was directed coronally at approximately a 45° angle to the tooth surface to excise the enlarged gingival tissue while preserving a physiologic gingival contour.

Orban knife was used to complete tissue excision within the interdental papillae. The excised tissue was removed, and the surgical field was irrigated thoroughly with an antiseptic solution to eliminate debris and reduce bacterial contamination. Root planing was subsequently performed using Gracey curettes to remove residual contaminated cementum and create a biologically compatible root surface for periodontal healing.



Figure 3. Root planing using Gracey curettes.

Gingivoplasty was then performed to re-establish a physiological gingival architecture by reshaping the gingival margin and interdental papillae. Once the desired contour had been achieved, the surgical site was irrigated with sterile saline to remove residual blood and tissue debris.



Figure 4. Gingivoplasty procedure.

Hemostasis was achieved by applying gentle pressure with sterile gauze for approximately 2–3 minutes. A periodontal dressing (periodontal pack) was subsequently placed to protect the surgical wound during the initial healing phase, reduce postoperative discomfort, and prevent mechanical trauma during mastication. The patient was prescribed analgesic medication and provided with detailed postoperative instructions, including maintenance of oral hygiene and adherence to a soft diet during the healing period.



Figure 5. Placement of the periodontal dressing.

At the three-week postoperative follow-up, both subjective and clinical evaluations demonstrated satisfactory healing. The gingival enlargement had resolved completely, and the surgical wound exhibited favorable tissue healing. Periodontal probing depths around teeth 41 and 42 had decreased to 2 mm. Although the treatment achieved significant clinical improvement, the overall outcome was considered less than optimal because the patient continued smoking throughout the healing period, and the periodontal dressing became dislodged five days after surgery. Both factors may have adversely affected wound healing.



Figure 6. Clinical appearance three weeks after gingivectomy.

Discussion

Gingival enlargement is a clinical manifestation of periodontal tissue alteration characterized by an increase in gingival volume beyond its normal physiological dimensions. This condition results in changes to the gingival contour and may compromise oral function and esthetics. Clinically, gingival enlargement is frequently associated with alterations in color, consistency, and a tendency to bleed, depending on the underlying etiology and the severity of inflammation. In addition to impairing oral hygiene maintenance, excessive gingival tissue may interfere with mastication, speech, and periodontal treatment procedures (Dalal et al., 2024).

Gingival enlargement can be classified according to its etiology into inflammatory enlargement, drug-induced enlargement, enlargement associated with systemic diseases, neoplastic enlargement, and false enlargement resulting from alterations in the underlying tissues. Histopathologically, gingival enlargement may represent either hyperplasia, characterized by an increased number of cells, hypertrophy, characterized by enlargement of existing cells, or a combination of both processes. These changes are influenced by local factors, such as dental plaque and calculus, as well as systemic factors including hormonal changes, genetic predisposition, and the use of specific medications (Putranto et al., 2025).

Based on its distribution, gingival enlargement can be classified as either localized or generalized. Localized enlargement is further categorized into isolated, discrete, and regional types. Isolated enlargement is confined to the gingiva surrounding one or two teeth and is commonly observed in conditions such as gingival or periodontal abscesses (Amalia et al., 2024). Discrete enlargement presents as a localized tumor-like mass that may be sessile or pedunculated, such as a fibroma or pyogenic granuloma. In contrast, regional enlargement involves the gingiva surrounding several adjacent teeth within a specific area, as seen in inflammatory enlargement associated with habitual mouth breathing in the anterior region. Generalized enlargement affects most or all of the gingival tissues and is commonly associated with drug-induced gingival overgrowth or systemic disorders. Identification of the distribution pattern is essential for establishing the differential diagnosis and selecting the most appropriate treatment approach (Hosadurga et al., 2020). In the present case, the enlargement was confined to the labial gingiva of teeth 41 and 42, which is consistent with localized gingival enlargement.

The pathogenesis of gingival enlargement is initiated by the accumulation of bacterial plaque, which triggers a chronic inflammatory response within the periodontal tissues. Bacterial products, particularly lipopolysaccharides, stimulate immune cells to release pro-inflammatory mediators, including interleukin-1 β , tumor necrosis factor- α , and prostaglandin E2. These mediators increase vascular permeability, promote inflammatory cell infiltration, and stimulate fibroblast and epithelial cell proliferation, resulting in gingival edema, hyperplasia, and fibrosis. During chronic inflammation, increased collagen synthesis combined with reduced collagenase activity leads to progressive connective tissue accumulation and gingival thickening. In addition to plaque-induced inflammation,

gingival enlargement may also result from the use of certain medications, particularly anticonvulsants such as phenytoin, calcium channel blockers including nifedipine and amlodipine, and immunosuppressive agents such as cyclosporine. These medications alter gingival fibroblast metabolism, leading to excessive extracellular matrix production, particularly collagen and glycosaminoglycans, while simultaneously reducing collagen degradation. At the molecular level, these changes are mediated by increased expression of transforming growth factor- β (TGF- β) and connective tissue growth factor (CTGF), both of which contribute to tissue fibrosis. Poor oral hygiene further exacerbates drug-induced gingival enlargement because local inflammation enhances the susceptibility of gingival fibroblasts to proliferative stimuli (Predescu et al., 2024). In the present case, the patient had no history of medications known to induce gingival enlargement, suggesting that chronic plaque-induced inflammation was the primary etiological factor.

Management of the present case began with Phase I periodontal therapy to eliminate local etiologic factors, including plaque and calculus, followed by gingivectomy to remove the excessive gingival tissue. Initial periodontal therapy is considered the cornerstone of treatment because it reduces the microbial burden and controls inflammation before surgical intervention. However, when fibrotic tissue persists despite adequate non-surgical therapy, gingivectomy becomes necessary to restore physiological gingival architecture. Gingivectomy effectively eliminates the periodontal pocket wall, improves access for root debridement, and facilitates the establishment of a healthy periodontal environment. Although alternative approaches such as electrosurgery and laser-assisted surgery are available, conventional scalpel gingivectomy remains a predictable and widely accepted treatment modality for localized gingival enlargement (Prihandini and Faizah, 2022).

Conventional gingivectomy is performed using a scalpel in combination with periodontal surgical instruments such as the Kirkland and Orban knives. This technique offers several advantages, including precise tissue incision, minimal lateral tissue injury, rapid wound healing, and excellent tactile control during surgery (Arnov et al., 2025). Nevertheless, intraoperative bleeding remains one of its principal limitations because it may reduce surgical visibility and increase procedural time. The fundamental objective of conventional gingivectomy is the removal of the periodontal pocket wall together with the enlarged gingival tissue, thereby eliminating inflammatory tissue, restoring physiological gingival morphology, and improving both functional and esthetic outcomes. Furthermore, removal of excessive tissue enhances access to previously obscured tooth surfaces, allowing complete removal of plaque and calculus deposits while re-establishing a normal gingival sulcus depth that facilitates effective long-term plaque control (Zoheir and Hughes, 2019).

Gingivectomy is frequently combined with gingivoplasty to achieve optimal periodontal architecture. Whereas gingivectomy focuses on the excision of excessive gingival tissue, gingivoplasty reshapes the gingival margin and interdental papillae to recreate a physiologic gingival contour that is harmonious with the surrounding dentition. This combined approach not only improves esthetic outcomes but also facilitates long-term plaque control by reducing plaque-retentive areas and improving patient access during routine oral hygiene procedures (Dalal et al., 2024).

The prognosis of conventional gingivectomy is generally favorable because the procedure does not involve manipulation of the alveolar bone or other hard tissues. Successful outcomes depend on several factors, including effective plaque control, stable systemic health, and patient compliance with postoperative instructions. In addition, postoperative oral hygiene education and regular periodontal maintenance are essential for preventing disease recurrence (Sopiatin et al., 2019). Placement of a periodontal dressing following surgery may provide additional benefits during the early healing phase by protecting the surgical wound from mechanical trauma, stabilizing the reshaped gingival tissues, maintaining hemostasis, and reducing postoperative discomfort and dentinal sensitivity. However, successful healing ultimately depends on meticulous postoperative care, including maintenance of adequate oral hygiene, avoidance of local trauma, and adherence to postoperative instructions. In the present case, favorable healing was observed three weeks after surgery, with complete resolution of the gingival enlargement and a reduction in probing depth from 5 mm to 2 mm. Nevertheless, the

clinical outcome was considered less than optimal because the patient continued smoking during the healing period and the periodontal dressing became dislodged five days after surgery, both of which may have adversely affected periodontal wound healing.

CONCLUSION

Gingival enlargement is characterized by an abnormal increase in gingival tissue volume resulting from excessive cellular proliferation and accumulation of extracellular matrix components, particularly collagen, in response to inflammatory stimuli. The condition is initiated by a chronic inflammatory response to dental plaque or other etiologic factors, leading to fibroblast activation, increased collagen synthesis, and reduced collagen degradation. Consequently, the gingival tissues become enlarged and thickened, potentially compromising oral function, plaque control, and esthetics. Management of gingival enlargement depends on identifying and eliminating the underlying etiologic factors, combined with meticulous plaque control and appropriate periodontal therapy.

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