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Clinical Management of Conventional Gingivectomy in an Adult Patients with Gingival Enlargement

Manta Fany[1], Maria F. Utha[1], Depi Praharani[2*], Melok Aris Wahyukundari[2], Neira Najatus Sakinah[2], Peni Pujiastuti[2], Yuliana Mahdiyah Da'at Arina[2], Desi Sandra Sari[2]

[1]Faculty of Dentistry, University of Jember, Jember 68121, Indonesia

[2]Department of Periodontics, Faculty of Dentistry, University of Jember, Jember 68121, Indonesia
[*]Correspondence author email: praharanidepi.fkg@unej.ac.id

Abstract

Introduction: Gingival enlargement is a pathological overgrowth of gingival tissue commonly associated with chronic inflammation, poor oral hygiene, or local irritants. This condition may compromise periodontal health, esthetics, and oral function, particularly in the anterior region. Surgical intervention, such as gingivectomy, is indicated when fibrotic enlargement persists after initial non-surgical periodontal therapy. **Purpose:** This case report aims to describe the clinical management and outcomes of inflammatory gingival enlargement treated with conventional gingivectomy following non-surgical initial periodontal therapy. **Case presentation:** Two adult patients presented with gingival enlargement in the anterior region accompanied by bleeding during toothbrushing. Clinical examinations revealed firm, fibrotic gingiva with probing depths of approximately 4 mm and no radiographic evidence of alveolar bone loss. Following phase I periodontal therapy, including scaling and root planing, residual gingival overgrowth persisted. Both patients subsequently underwent conventional gingivectomy using a scalpel under local anesthesia. External bevel incisions were performed, followed by gingivoplasty to reestablish physiological gingival contours. Postoperative evaluation at one week demonstrated reduced inflammation, satisfactory wound healing, coral-pink gingiva, and restoration of normal gingival morphology. **Conclusion**: Conventional gingivectomy was effective in managing persistent inflammatory gingival enlargement after initial periodontal therapy, resulting in improved gingival contour, enhanced esthetics, and facilitation of oral hygiene. Long-term success requires adequate plaque control and elimination of predisposing factors to prevent recurrence.

Keywords: Conventional gingivectomy; esthetic periodontal management; gingival enlargement; oral hygiene; periodontal surgery

Introduction

Gingival enlargement, also referred to as gingival hyperplasia or hypertrophy, is characterized by an abnormal overgrowth of gingival tissue resulting from inflammatory, drug-induced, or systemic factors. The most common etiology is chronic inflammatory changes associated with prolonged bacterial plaque accumulation, either localized or generalized within the dentition.[1] Poor oral hygiene, in combination with anatomical irregularities and ill-fitting restorative or orthodontic appliances, further promotes plaque retention and gingival inflammation.[2] In addition to local factors, systemic conditions such as hormonal changes

during pregnancy and puberty, nutritional deficiencies, and the use of certain medications, such as antihypertensives, anticonvulsants, and immunosuppressants, have been identified as contributing factors to gingival enlargement.[3]

Management of gingival enlargement varies according to its etiology, severity, and duration. Treatment modalities may include non-surgical therapy, surgical intervention, or a combination of both.[4] Gingivectomy is a surgical procedure that involves the excision of diseased gingival tissue, with the primary objectives of eliminating suprabony periodontal pockets, facilitating access for root debridement, restoring physiologic gingival contours, and promoting optimal healing.[5] In cases of purely inflammatory enlargement, scaling and root planing may be sufficient; however, when the gingival enlargement is fibrotic or persistent, surgical intervention in the form of gingivectomy is often required.[6]

Periodontal therapy aims not only to restore oral health and function but also to enhance facial esthetics.[7] Gingival tissues play a critical role in smile harmony and significantly influence an individual's self-confidence. Esthetic considerations become particularly important when gingival overgrowth affects the anterior region, as even minor alterations in gingival contour may disrupt smile symmetry and negatively impact social comfort.[8] Surgical correction through gingivectomy can effectively reestablish normal gingival anatomy, thereby improving both esthetic outcomes and psychological well-being.[9]

Various gingivectomy techniques have been described in the literature, including conventional scalpel excision, electrosurgery, laser-assisted methods, and chemosurgical approaches.[10] Among these, the conventional scalpel technique remains widely utilized due to its simplicity, precision, cost-effectiveness, and minimal thermal damage to surrounding tissues, which allows for predictable and uneventful healing.[12] Nevertheless, this technique is associated with certain limitations, such as intraoperative bleeding that may obscure the surgical field and postoperative discomfort.[13]

Despite these limitations, conventional gingivectomy continues to be a reliable and effective treatment option, particularly in clinical settings where advanced technologies are unavailable or economically impractical. In light of these considerations, the present case report describes the clinical management of gingival enlargement in adult patients using a conventional gingivectomy technique, highlighting its therapeutic effectiveness, healing outcomes, and esthetic benefits.

Case Report

Case 1

A 23-year-old female patient presented to the Department of Periodontology, Dental and Oral Hospital, University of Jember with a chief complaint of rough tooth surfaces, bleeding gums during toothbrushing, and enlargement of the mandibular anterior gingiva for approximately two years. The patient reported having a professional dental cleaning 1 year prior and brushing her teeth twice daily using a horizontal scrub technique. She had no significant past medical or allergy history, and her systemic review was unremarkable. Extraoral examination revealed no facial asymmetry or abnormalities.

Intraoral examination revealed generalized erythematous gingiva in the mandibular region with bleeding on probing (BOP) of 36%. Localized gingival enlargement was observed in the mandibular labial anterior segment involving teeth 32, 31, 41 and 42 (Figure 1). The enlarged gingiva exhibited a firm and resilient consistency with a smooth surface texture, without signs of gingival recession, suppuration, or tooth mobility. The patient's Oral Hygiene Index–Simplified (OHI-S) score was 2.0, indicating fair oral hygiene according to the criteria of Greene and Vermillion (1964). Periapical radiographic examination of teeth 32, 31, 41, and 42 revealed no evidence of alveolar bone loss, lamina dura thickening, or widening of the periodontal ligament space.

Based on the clinical and radiographic findings, the patient was diagnosed with Grade I inflammatory gingival enlargement localized to the mandibular anterior region. No systemic or drug-related factors were identified that could exacerbate the condition. The patient demonstrated good cooperation and motivation toward treatment, and therefore the prognosis was considered fair. The clinical presentation indicated gingival enlargement limited to the mandibular anterior teeth without involvement of other regions.

Figure 1. Clinical photograph of the patient's teeth upon initial visit, showing enlargement of the gingiva of teeth 32, 31, 41, and 42.

Case 2

A 24-year-old male patient presented to the same with complaints of rough tooth surfaces, bleeding gums during toothbrushing, and progressive enlargement of the anterior maxillary gingiva over the past year. The patient reported having previously undergone professional scaling and brushed his teeth twice daily using a horizontal brushing technique. He denied any history of systemic disease or medication use. At the time of presentation, the patient was a regular smoker, consuming approximately three cigarettes per day. There was no

Extraoral examination revealed no facial asymmetry or deformity. Intraoral examination demonstrated generalized erythematous gingiva with a bleeding on probing (BOP) score of 14%, along with localized gingival enlargement in the anterior maxillary region involving tooth 12, as seen in Figure 2. The enlarged gingiva exhibited a firm and resilient consistency with a smooth surface texture, without changes in gingival margin position, suppuration, or tooth mobility. Periodontal probing revealed a probing depth of 4 mm in the affected area. The patient's oral hygiene status, as assessed using the Oral Hygiene Index–Simplified (OHI-S), was 1.2, indicating good oral hygiene.

Periapical radiographic examination of tooth 12 showed no evidence of alveolar bone loss, lamina dura disruption, or widening of the periodontal ligament space. Pretreatment clinical photographs documented mild gingival overgrowth in the anterior maxillary region (Figure 2). The prognosis was considered favorable due to the patient's good compliance with oral hygiene practices and absence of systemic disease; however, smoking was identified as a local contributing risk factor.

Figure 2. Clinical photograph of the patient's teeth upon initial visit, showing enlargement of the gingiva of tooth 12.

Case Management

Case 1

During the first visit, a comprehensive diagnosis was established through intraoral and extraoral examination, as well as radiographic evaluations, to formulate a definitive treatment plan. The patient received a thorough explanation of oral health education with emphasis on effective plaque control and the potential consequences of unmanaged calculus accumulation, including halitosis and periodontal disease.[2]

At the second visit, supragingival and subgingival deposits were removed using ultrasonic scaling, followed by polishing with pumice and prophylaxis paste applied using an interproximal rotary brush. The patient was instructed to maintain optimal oral hygiene and scheduled for reassessment one week later.

At the follow-up visit, the patient reported persistent bleeding during toothbrushing. Clinical examination revealed fair oral hygiene (OHI-S score of 2.0), bleeding on probing, and localized gingival enlargement involving teeth 32, 31, 41, and 42. The gingiva appeared erythematous, soft, and smooth, with probing depths of approximately 4 mm, without signs of suppuration, gingival recession, or tooth mobility. Based on these findings, a diagnosis of chronic inflammatory gingival enlargement was confirmed, and surgical management by conventional gingivectomy was planned.[5,6] Informed consent was obtained after explaining the procedure, potential risks, and expected postoperative outcomes.

The surgical procedure began with asepsis of the operative field using povidone-iodine, followed by local infiltration anesthesia using 0.5 cc of Pehacain administered in the labial region of teeth 32, 31, 41, and 42 to anesthetize the incisive nerve. Pocket marking was performed using pocket-marking forceps to create bleeding points at the distolabial, mid-labial, and mesiolabial aspects of the involved teeth. External bevel incisions were initiated 1–2 mm apical to the bleeding points using a No. 15 surgical blade at a 45° angle directed toward the incisal edge. The enlarged gingival tissue was excised, and the interdental areas were refined using the same blade to achieve smooth and continuous margins.[13]

Following tissue excision, meticulous root debridement was performed using Gracey curettes to remove residual calculus, necrotic cementum, and inflamed granulation tissue. Gingivoplasty was subsequently carried out using a No. 15 blade or Kirkland knife to reestablish a physiologic scalloped gingival contour in accordance with the underlying root

anatomy.[11] The surgical site was thoroughly irrigated with sterile 0.9% saline solution to remove debris. A periodontal dressing was then placed to protect the surgical wound and promote healing, ensuring adequate coverage and stability over the operated area. Postoperative instructions were provided, including guidance on oral hygiene measures, dietary recommendations, and prescriptions for analgesics and antiseptic mouthwash.[10] The patient was scheduled for a postoperative review one week after surgery.

At the one-week postoperative evaluation, the gingiva appeared coral pink with minimal residual erythema and no evidence of gingival enlargement (Figure 3). Complete resolution of the enlargement was observed, and the patient reported no pain or discomfort in the operated area. The gingiva showed no signs of inflammation or infection, and the gingival contour had returned to a normal physiologic form.

The patient expressed improved comfort and satisfaction with both esthetic appearance and masticatory function, reflecting favorable short-term clinical outcomes following conventional gingivectomy.

Figure 3. Evaluation of gingivectomy results after 7 days on teeth 32, 31, 41, and 42.

Case 2

During the initial visit, a comprehensive diagnostic evaluation was performed, including intraoral and extraoral examinations, as well as clinical and radiographic assessments, to establish an appropriate treatment plan. The patient was educated on the importance of maintaining optimal oral hygiene and informed that incomplete removal of calculus may contribute to halitosis and progression of periodontal disease.[2]

At the subsequent visit, ultrasonic scaling was performed to remove plaque and calculus deposits, followed by polishing with a combination of prophylactic paste and pumice using a

rotary bristle brush. The patient was instructed to continue proper oral hygiene practices and scheduled for a follow-up appointment one week later.

At the follow-up visit, the patient reported bleeding during toothbrushing. Clinical examination revealed good oral hygiene, with an OHI-S score of 0.5, positive bleeding on probing, and localized gingival enlargement associated with tooth 12. The gingiva appeared erythematous, firm in consistency, and smooth in texture, with a probing depth of 4 mm, and without signs of suppuration, gingival recession, or tooth mobility. Based on these findings, a diagnosis of Grade I gingival enlargement was established, and surgical management in the form of conventional gingivectomy was indicated. The procedure, its objectives, potential risks, and postoperative care were explained in detail, and written informed consent was obtained prior to treatment.[5,6]

Asepsis of the operative field was achieved using povidone-iodine, followed by local infiltration anesthesia with 0.5 cc of Pehacain administered in the labial region of tooth 12 to anesthetize the anterior superior alveolar nerve. Pocket marking was performed using pocket-marking forceps to create bleeding points at the distolabial, mid-labial, and mesiolabial aspects of the involved tooth. Discontinuous external bevel incisions were made 1–2 mm apical to the bleeding points at a 45° angle directed coronally using a No. 15 surgical blade. The enlarged gingival tissue was excised, and the interdental areas were refined using a No. 12 blade to obtain smooth and harmonious gingival contours.[13]

Following excision, the exposed root surfaces were thoroughly debrided using Gracey curettes to remove residual calculus, necrotic cementum, and granulation tissue. Gingivoplasty was then performed using a No. 15 blade or a Kirkland knife to recontour the gingiva and reestablish a physiologic scalloped form consistent with the underlying root anatomy.[11] The surgical field was irrigated with sterile 0.9% sodium chloride solution to remove debris and assist in achieving hemostasis. A periodontal dressing was subsequently applied to cover the surgical area and stabilize the wound. Postoperative instructions included the use of prescribed analgesics and antiseptic mouthwash, avoidance of mechanical trauma to the surgical site, and maintenance of oral hygiene. The patient was scheduled for a postoperative review one week after surgery.[10]

At the one-week postoperative evaluation, healing was uneventful, with the gingiva appearing coral pink and free from edema or inflammation, as seen in Figure 4. The gingival

contour was physiologic and symmetrical, and the patient reported no pain or discomfort. In addition to functional and esthetic improvements, the patient expressed satisfaction with the treatment outcome. These findings support the effectiveness and reliability of conventional gingivectomy for the management of localized gingival enlargement when proper surgical technique and postoperative care are implemented.[7,14]

Figure 4. Evaluation of gingivectomy results after 7 days on tooth 12.

Discussion

Persistent gingival inflammation is frequently accompanied by gingival enlargement. Following the initial phase of periodontal therapy, a reduction in gingival overgrowth was observed in several areas, supporting the notion that a substantial portion of the enlargement was associated with inflammatory changes resulting from plaque accumulation and inadequate oral hygiene. This improvement was consistent with the overall enhancement of oral hygiene demonstrated by the patient, as reflected by a reduction in the plaque index. Eid et al. (2014) similarly reported that gingival enlargement is closely related to oral hygiene status. Nevertheless, certain areas of gingival enlargement persisted even after the elimination of the primary etiological factors.[15] This residual enlargement may be partly attributed to local contributing factors such as dental crowding and malalignment, which were still present in this case.

Periodontal therapy fundamentally includes dental health education and thorough mechanical debridement, such as scaling and root planing.[16] These procedures were performed in the present cases, followed by gingivectomy to eliminate residual gingival pockets and restore appropriate gingival contour. Scaling effectively removes plaque, calculus, and extrinsic stains from the tooth surface, while root planing further smooths the root surface by eliminating necrotic cementum, bacterial toxins, and soft debris.[17] This combined approach

reduces inflammation, facilitates gingival healing, and minimizes bleeding during toothbrushing. Subsequently, gingivectomy provides improved access for oral hygiene maintenance and allows recontouring of the gingival margin to achieve a more physiologic appearance. Peres et al. (2019) reported that gingivectomy converts deep periodontal pockets into shallower, more maintainable sulci, thereby enhancing plaque control. This treatment approach is particularly effective when patients demonstrate compliance with oral hygiene instructions and follow-up care.[18]

Gingivectomy involves the surgical excision of enlarged gingival tissue surrounding periodontal pockets to facilitate plaque control and reestablish normal gingival architecture. Various techniques may be employed, including the use of a scalpel, electrosurgery, or laser devices. In the present cases, the scalpel technique was selected due to its simplicity, cost-effectiveness, and favorable healing outcomes compared with electrosurgical methods, which may delay healing as a result of thermal tissue damage.[19] One week after surgery, the gingival tissues appeared healthy, with no evidence of residual swelling.

The healing process following gingivectomy follows a predictable sequence. On the first postoperative day, proliferation of connective tissue cells and neovascularization occur beneath the inflamed tissue surface. By the third day, immature fibroblasts populate the granulation tissue and initiate formation of new gingival margins. Re-epithelialization typically occurs between five and fourteen days postoperatively, although tissue maturation and keratinization may continue for up to four weeks.[20] Preventing recurrence of gingival enlargement is as important as the initial surgical intervention. Patient motivation and adherence to proper oral hygiene practices are critical determinants of long-term success. In cases involving dental crowding or malalignment, adjunctive orthodontic treatment following gingivectomy may help reduce plaque retention and prevent recurrence.[21] Repeated gingivectomy procedures should be avoided, as excessive removal of gingival tissue may result in gingival recession, dentin hypersensitivity, and compromised esthetics.

Conclusion

Within the limitations of this case report, conventional gingivectomy proved to be an effective surgical approach for managing inflammatory gingival enlargement that persisted after initial non-surgical periodontal therapy. The procedure successfully eliminated residual gingival overgrowth and restored physiologic gingival contour, facilitating improved plaque

control and favorable short-term healing outcomes. Long-term success depends on adequate oral hygiene maintenance and management of local predisposing factors to minimize the risk of recurrence.

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