

MANAGEMENT OF PUBERTY INDUCED GINGIVAL ENLARGEMENT: A CASE REPORT

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ABSTRACT

Introduction: Puberty-associated gingival enlargement is a periodontal condition characterized by an exaggerated inflammatory response of the gingival tissues to local irritants under the influence of hormonal changes. Clinically, it presents with features similar to chronic inflammatory gingival disease and is often associated with plaque accumulation. In most cases, conventional periodontal therapy such as oral hygiene instructions, scaling, and root planing is effective in controlling the condition. However, when fibrotic enlargement persists despite initial therapy, surgical intervention may be necessary to restore normal gingival architecture and function. **Case Presentation:** A 15-year-old female patient reported with gingival enlargement in the palatal region, with the chief complaint of difficulty in eating for approximately one year. Clinical examination revealed an overgrowth of gingival tissue on the palatal aspect. To eliminate the excess tissue and restore normal gingival form, gingivectomy was carried out using a conventional scalpel technique. **Conclusion:** Puberty-associated gingival enlargement requires appropriate management of local inflammatory factors along with consideration of hormonal influences. When non-surgical therapy alone does not resolve the enlargement, scalpel gingivectomy remains an effective and predictable surgical approach for eliminating excess gingival tissue and improving both function and aesthetics.

Keywords: Puberty-associated gingival enlargement, gingivectomy, periodontal therapy, maxillary anterior region, scalpel technique.

INTRODUCTION

Gingival enlargement is a commonly encountered clinical condition characterized by an abnormal increase in the size or volume of gingival tissues. It is considered a multifactorial condition that usually develops as a response to local irritants such as dental plaque and calculus, in combination with the host's inflammatory response. The interaction between microbial factors and host susceptibility plays a significant role in the initiation and progression of gingival tissue overgrowth.¹

Based on etiological factors and pathological characteristics, gingival enlargement can be classified into several categories. These include inflammatory enlargement (acute or chronic), drug-induced enlargement associated with medications such as anticonvulsants, immunosuppressants, and calcium channel blockers, enlargement related to systemic conditions such as leukemia and granulomatous diseases, and conditioned enlargements seen during physiological states like pregnancy and puberty. Additionally, gingival enlargement may arise from neoplastic conditions or may appear as a false enlargement associated with underlying osseous or

dental structures.²

Among these, inflammatory gingival enlargement related to plaque accumulation is considered the most prevalent form. However, hormonal changes may significantly modify the gingival tissue response to local irritants. Certain medications such as phenytoin, cyclosporine, and calcium channel blockers have also been reported to produce gingival overgrowth as an adverse effect.³ Puberty represents a transitional phase marked by significant hormonal changes that influence multiple tissues within the body, including the periodontium. During this period, there is a marked increase in the levels of sex steroid hormones, particularly testosterone in males and estrogen in females. These hormonal fluctuations can enhance the inflammatory response of gingival tissues to plaque, resulting in a condition often referred to as puberty-associated gingival enlargement or puberty gingivitis.⁴ Management of gingival enlargement depends primarily on identifying and eliminating the underlying etiological factors. The initial phase of treatment usually involves non-surgical periodontal therapy including oral hygiene reinforcement, scaling, and root planing to control plaque-induced inflammation. In cases where

fibrotic enlargement persists despite adequate plaque control, surgical intervention may be required to restore normal gingival morphology and improve both functional and aesthetic outcomes.⁵

Gingivectomy using a conventional scalpel technique remains one of the most widely used surgical approaches for the management of persistent gingival enlargement. This procedure allows precise removal of excessive gingival tissue and helps in re-establishing physiological gingival contours while facilitating improved plaque control for the patient.⁶ The present case report describes the clinical presentation and management of puberty-associated gingival enlargement in a 15-year-old female patient affecting the maxillary anterior region, treated successfully with conventional scalpel gingivectomy following initial periodontal therapy.

CASE REPORT

A 15-year-old female patient presented to the Department of Periodontology with a complaint of swollen gums associated with bleeding during brushing in the palatal region for the past one year as shown in (Fig 1).



Figure 1: Pre-op photograph showing gingival enlargement in palatal region

The patient reported that the gingival enlargement had progressively increased in size over time and was interfering with mastication. Clinical examination revealed the presence of local contributing factors such as plaque and calculus deposits.

The patient also reported a reduction in brushing frequency due to bleeding and discomfort associated with the gingival enlargement. There was no history of systemic illness or use of medications known to induce gingival overgrowth. The patient had attained menarche approximately two years prior to presentation.

Intraoral examination revealed poor oral hygiene with visible plaque accumulation. The enlarged gingival tissue appeared reddish-pink in color with a nodular surface and was predominantly confined to the palatal aspect. Bleeding on probing was noted even with slight

provocation, indicating an inflammatory component associated with the enlargement.

Initial management consisted of Phase I periodontal therapy, which included oral prophylaxis with thorough removal of supragingival and subgingival plaque and calculus. The patient was provided with detailed oral hygiene instructions and was motivated to maintain adequate plaque control. Additionally, a chlorhexidine mouth rinse was prescribed for twice-daily use for two weeks to aid in the reduction of microbial plaque.

The patient was recalled after ten days for re-evaluation. Clinical examination revealed a noticeable reduction in gingival inflammation and improvement in gingival condition; however, residual fibrotic gingival enlargement persisted in the palatal region. Considering the persistence of the enlargement and the patient's

difficulty in eating, surgical management was planned.

Gingivectomy was performed using the conventional scalpel technique under local anesthesia to remove the excess gingival tissue and restore normal gingival contour shown in (Fig 2).



Figure 2: Intraoperative view showing gingivectomy performed using the conventional scalpel technique.

The procedure was carried out carefully to eliminate the enlarged tissue and establish a physiologic gingival architecture that would facilitate effective plaque control. Postoperatively, the patient was prescribed medications including antibiotics and analgesics

for five days and was advised to maintain proper oral hygiene. Follow-up examination after one week showed satisfactory healing of the surgical site. Subsequent follow-ups at three weeks and one month demonstrated uneventful healing with a marked improvement in gingival contour as shown in (Fig 3)



Figure 3: Post-operative view showing satisfactory healing.

No recurrence of gingival enlargement was observed during the follow-up period, and the patient reported improved comfort while maintaining oral hygiene.

DISCUSSION

Puberty-associated gingival enlargement is categorized under dental plaque-induced gingival diseases that are modified by systemic factors such as hormonal changes in the currently accepted classification of periodontal diseases. During puberty, elevated levels of sex steroid hormones can influence gingival tissues and alter the host response to local irritants, resulting in exaggerated inflammatory changes within the gingiva.⁷ These hormonal fluctuations affect cellular activity in the periodontium by modulating fibroblast function, epithelial cell turnover, and vascular permeability, which may enhance the inflammatory response to dental plaque.⁸

The increase in gingival inflammation observed during puberty is not solely related to plaque accumulation but is also associated with alterations in the subgingival microbial environment. Certain bacterial species have been reported to increase in number during this period due to their ability to utilize steroid hormones as growth factors. A study conducted by Nakagawa demonstrated a significant rise in gingival inflammation during puberty along with an increased prevalence of microorganisms such as *Prevotella intermedia* and *Prevotella nigrescens*, suggesting a relationship between hormonal changes and microbial composition.⁹

Several epidemiological and longitudinal investigations have also documented a higher prevalence of gingival inflammation during puberty compared to other age groups. These findings support the concept that hormonal variations during adolescence can enhance the gingival response to local irritants, thereby contributing to the development of gingivitis or gingival enlargement.^{10,11}

The management of gingival enlargement primarily depends on identifying and eliminating the underlying etiological factors. The initial approach generally includes non-surgical periodontal therapy such as scaling, root planing, and reinforcement of proper oral hygiene measures to control plaque-induced inflammation. When gingival enlargement persists despite adequate plaque control, surgical intervention may be indicated to remove the excessive tissue and restore normal gingival morphology.¹²

Gingivectomy remains one of the most widely used surgical procedures for the treatment of gingival enlargement. Grant and co-workers described gingivectomy as the surgical excision of the soft tissue wall of a periodontal pocket in order to eliminate diseased tissue and facilitate the re-establishment of healthy gingival architecture.¹³ This procedure is particularly useful in cases where the enlargement is primarily fibrotic and where sufficient keratinized gingiva is present to allow surgical excision.

Various surgical techniques have been described for performing gingivectomy, including the use of scalpels, electrosurgery, and laser devices. Previous comparative studies have indicated that different surgical approaches can achieve similar clinical outcomes with respect to healing and tissue response when appropriate surgical principles are followed.^{14,15} More recent reports have also evaluated alternative technologies such as diode lasers for gingival excision procedures; however, the choice of technique largely depends on the clinical situation, operator preference, and available equipment.^{16,17}

In the present case, the patient initially underwent phase I periodontal therapy, which resulted in improvement in gingival inflammation but did not completely resolve the gingival overgrowth. Therefore, surgical removal of the enlarged gingival tissue was carried out using a conventional scalpel gingivectomy technique. The procedure resulted in satisfactory healing and significant improvement in gingival contour, with no evidence of recurrence during the follow-up period. These findings emphasize the importance of combining effective plaque control with appropriate surgical management when treating puberty-associated gingival enlargement.

CONCLUSION

The surgical management of the gingival enlargement using the conventional scalpel gingivectomy technique resulted in a significant reduction of the excessive gingival tissue and restoration of normal gingival contour. Postoperative healing was satisfactory and uneventful, with a marked improvement in gingival appearance and patient comfort. During the follow-up period, no evidence of recurrence was observed, and the patient reported improved ability to maintain oral

hygiene.

The successful outcome of the present case highlights the effectiveness of conventional scalpel gingivectomy in the management of puberty-associated gingival enlargement when non-surgical therapy alone is insufficient. Proper elimination of local etiological factors combined with surgical removal of fibrotic tissue plays an important role in achieving favourable clinical results.

Furthermore, long-term success in such cases depends on adequate plaque control, regular professional periodontal maintenance, and good patient compliance with oral hygiene practices. Early diagnosis and appropriate management can help prevent functional and aesthetic complications associated with gingival enlargement during puberty.

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