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# Unusual gingival enlargement in a healthy adolescent: A case of diagnostic and therapeutic challenge

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**Abstract**
Adolescent gingival inflammation is often linked to hormonal fluctuations or inadequate oral hygiene. However, this case involves a 14-year-old girl with significant interdental papillary swelling in both anterior and selected posterior areas, despite having no systemic conditions, hormonal imbalances, or notable plaque accumulation. Non-surgical periodontal therapy produced minimal improvement, prompting surgical intervention through gingivectomy, gingivoplasty, and localized open flap debridement. Histological analysis showed non-specific chronic inflammation. This case emphasizes the importance of early, individualized clinical assessment in young patients presenting with unusual gingival findings that do not align with typical etiologic patterns.

**Keywords:** Adolescent gingival enlargement, gingivoplasty, open flap debridement, non-hormonal gingivitis

## Introduction

Gingival inflammation is commonly observed during adolescence, often considered a benign and reversible condition. In most cases, the inflammation is attributed to increased plaque accumulation and hormonal changes associated with puberty, both of which can heighten the inflammatory response in gingival tissues. Such presentations typically resolve with improved oral hygiene and routine periodontal care, rarely requiring advanced intervention [1, 2].

However, not all adolescent gingival conditions follow this typical course. Occasionally, clinicians may encounter cases where the degree of gingival inflammation appears disproportionate to the observed clinical factors. When such presentations arise in otherwise healthy, compliant individuals with no evident systemic, hormonal, or local causes, they present a diagnostic and therapeutic challenge. These atypical findings necessitate a thorough clinical assessment to rule out fewer common etiologies such as aggressive periodontitis, granulomatous diseases, or neoplastic lesions [3].

This case report details a rare presentation in a 14-year-old female with severe interdental gingival inflammation primarily affecting anterior teeth and selected posterior sites. The patient exhibited excellent plaque control and had no relevant medical, familial, or hormonal history that could account for the clinical findings. Despite consistent oral hygiene and non-surgical periodontal therapy, the condition remained unresolved. Surgical management—including gingivectomy, gingivoplasty, and open flap debridement—was subsequently performed.

This case highlights the importance of considering fewer common causes in persistent gingival conditions among adolescents. Early diagnosis, personalised treatment planning, and timely surgical intervention were essential to achieving favourable outcomes in this otherwise healthy young patient.

## Case Report

A 14-year-old female presented to the department of periodontics with a chief complaint of swollen gums that bled during brushing. She was in good general health, with no systemic diseases or medications reported, and no habit of mouth breathing. At the time of examination, she had not yet experienced menarche and exhibited no signs of hormonal changes typical of puberty. Her family history was negative for periodontal conditions. Dental history revealed irregular professional dental cleanings and a habit of brushing only once daily.

Upon intraoral examination, the patient exhibited generalized inflammation of the interdental papillae, most pronounced in the anterior dentition of both arches. The gingival papillae appeared enlarged, reddened, and easily bled when probed. Some inflammation was also noted in the posterior molar areas. Despite the severity of the gingival swelling, plaque accumulation was minimal, with only slight supragingival calculus deposits observed. Probing depths measured between 4 and 5 mm in the anterior teeth and 3 to 4 mm in the posterior regions.

Radiographic assessment revealed mild crestal bone loss localized to certain posterior teeth, with no evidence of vertical defects or extensive bone destruction. The lamina dura remained intact in most regions. A clinical diagnosis of localized chronic inflammatory gingival enlargement with pseudo-pocketing and early localized periodontitis was made, considering the disproportionate inflammation relative to the minor plaque presence and absence of systemic or hormonal factors.

Initial treatment consisted of thorough scaling and root planing with comprehensive oral hygiene instructions focusing on proper brushing and interdental cleaning, supported by chlorhexidine mouth rinse for two weeks. Although inflammation subsided marginally, persistent papillary enlargement and pseudo-pocketing, especially in the anterior region, necessitated surgical intervention. Gingivectomy and gingivoplasty were performed to reshape

gingival contours anteriorly, while open flap debridement addressed persistent pockets posteriorly. Follow-up visits up to six months post-surgery demonstrated significant improvement in gingival health, reduced probing depths, and no recurrence of inflammation.

**Discussion**

Gingival inflammation in adolescents is commonly mild and often associated with hormonal fluctuations during puberty or inadequate oral hygiene [1, 2]. Pubertal gingivitis is characterized by increased gingival vascularity and immune modulation driven by sex steroid hormones, which can cause an exaggerated inflammatory response to dental plaque [4]. However, this case presented a healthy 14-year-old female with severe interdental papillary inflammation despite good oral hygiene and no systemic or hormonal factors. This unusual presentation suggests a possible unique host inflammatory response or other contributing factors beyond typical etiologies.

Clinically, the patient showed generalised papillary enlargement, erythema, and bleeding on probing, even with minimal plaque and calculus. This contradicts the typical plaque-driven gingival inflammation seen in adolescents and highlights the importance of considering host susceptibility factors [5]. Radiographs revealed only slight localised crestal bone loss posteriorly, consistent with early localised periodontitis rather than aggressive periodontitis, which is characterized by rapid, widespread bone loss [6, 7]. Differentiating pseudopockets from true periodontal pockets is essential because treatment strategies differ; pseudopockets result from gingival overgrowth, while true pockets involve attachment loss [3].

Initial treatment included scaling and root planing, patient education, and chlorhexidine mouthwash. Although marginal inflammation improved, persistent papillary enlargement and probing depths indicated that non-surgical therapy alone was insufficient, likely due to fibrotic tissue limiting healing [8, 9]. Therefore, surgical intervention was necessary. Gingivectomy and gingivoplasty effectively removed hyperplastic tissue and restored natural gingival contours, improving access for plaque control and esthetics [10]. Open flap debridement in posterior sites allowed thorough root surface debridement, crucial for halting disease progression [11, 12].

The positive clinical outcomes—reduced probing depths, improved gingival contour, and absence of bleeding—after six months highlight the effectiveness of a combined non-surgical and surgical approach tailored to the patient's specific needs. This case underscores the importance of individualized treatment planning, especially when clinical findings do not correspond to common risk profiles or typical disease patterns. It also raises awareness of host factors, such as genetic predisposition or altered immune responses, contributing to exaggerated gingival inflammation [4, 13]. Regular follow-up and periodontal maintenance remain vital to prevent disease recurrence and monitor for any progression, especially in adolescents with early periodontitis [8].

**Fig:** A) Pre-operative, B) After Phase I therapy, C) Intra-operative D) Post-operative

## Conclusion

This case demonstrates that notable gingival inflammation and pocket formation may develop in adolescents even when typical causes such as hormonal changes or systemic conditions are absent. A thorough clinical assessment combined with timely treatment involving both non-surgical and surgical approaches led to favorable healing and stabilization. It is important for clinicians to carefully evaluate gingival overgrowth in young patients and avoid attributing it solely to plaque accumulation or hormonal influences without further investigation.

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## Conflict of Interest

The authors declare no conflicts of interest related to this study.

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