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Management of Orthodontic Therapy-Associated Gingival Overgrowth in Maxillary Anterior Region: A Case Report

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Abstract
Gingival enlargement is a frequent periodontal condition that may arise from inflammation , drugs, systemic diseases, or can be of idiopathic origin. A typical characteristic of gingival overgrowth, which can be brought on by fibrous overgrowth, gingival inflammation, or a combination of the two. It is a complex ailment arising from interactions between the environment and the host or different stimuli and gingival inflammation is a comon occurance in In orthodontic patients, the fixed appliances often favour plaque accumulation and thereby develop exaggerated gingival response, leading to functional and esthetic concerns. Clinical consequences such as persistent infection, inflammatory hyperplasia, gingival recession, attachment loss, or gingival overgrowth may arise if oral hyegiene is not maintained after the device is placed. Therefore impeccable and optimal plaque control during orthodontic treatment is mandatory Accompanying plaque accumulation in certain circumstances may make the clinical appearance worse. This case report describes the gingival enlargement in maxillary anterior teeth reported in 42 year old male patient undergoing orthodontic therapy. After phase 1 therapy surgical excision and histopathological diagnosis was confirmed emphasising the need for oral care during orthodontic treatment particularly .

Keywords: Gingival overgrowth, orthodontic therapy

INTRODUCTION

Gingival inflammation is the most common clinical manifestation of periodontal disease and usually arises as a host response to bacterial plaque accumulation at the gingival margin[1,2]. In its early stages, it presents as redness, edema, bleeding on probing, and loss of normal gingival contour[3]. If left untreated, chronic inflammation may stimulate soft tissue proliferation, giving rise to gingival enlargement (GE)[4].

Gingival enlargement refers to an abnormal increase in the size of gingiva and can present as localized or generalized overgrowth involving marginal, attached, or interdental tissues.[5] The etiology is multifactorial: it may result from chronic plaque-induced inflammation, systemic factors (such as hormonal changes in puberty and pregnancy), medications (phenytoin, cyclosporine, calcium channel blockers), hereditary gingival fibromatosis, hematological disorders, or idiopathic causes[6]. Clinically, enlargement may cause functional impairment (speech, mastication), esthetic concerns, and difficulty in maintaining oral hygiene, often worsening the underlying condition[7,8].

In orthodontic patients, gingival enlargement is commonly observed due to fixed appliances acting as plaque-retentive factors and altering the microbial flora[9]. This exaggerated tissue response is often both inflammatory and fibrotic in nature, presenting as bulbous or lobulated gingiva that may interfere with appliance placement, impede tooth movement, and compromise smile esthetics [10]. While initial nonsurgical periodontal therapy can reduce inflammation, persistent fibrotic enlargement often requires surgical intervention in the form of gingivectomy or gingivoplasty[11,12].

The present case report is about a 42-year-old male undergoing orthodontic therapy at the Hospital who reported to the department of periodontics with swollen enlarged gingiva in the maxillary teeth. The gingival enlargement acted as impediment for retainers and was referred for excision of the same.

Case Presentation

A 42-year-old male reported to the Department of Periodontology with the chief complaint of swollen gums in the upper anterior region labially as well as palatally. He had been undergoing fixed orthodontic therapy. The patient experienced difficulty in maintaining oral hygiene due to gingival overgrowth, accompanied by bleeding on brushing and compromised esthetics.

Patient had history of diabetes and was well controlled with Hba1c at 7. His medical history however is not known to cause gingival enlargement.

On intraoral examination, gingival enlargement was evident, predominantly in the maxillary anterior region(both labially and palatally). The gingiva appeared reddish-pink, soft, and edematous with a accentuated contour, covering almost one-third of the clinical crowns. Probing depths ranged from 4–6 mm in the affected areas, and local deposits of plaque and calculus were present. Based on the clinical findings and history, a diagnosis of inflammatory gingival enlargement associated with orthodontic therapy was made.

Initial therapy consisted of thorough supragingival and subgingival scaling followed by root planing. Oral hygiene instructions were reinforced, including the modified Bass brushing technique and use of interdental aids such as proxa brush was reinforced. After a week, the clinical assessment was done, and there was slight regression in the overgrowth althought it had not completely subsided. Therefore a gingivectomy procedure was scheduled for the patient.

Routine blood investigations were carried out, which were within normal range.

Under local anesthesia, bleeding points were marked to outline the depth of the pockets. External bevel incisions were made with a no. 15 Bard-Parker blade, and the enlarged gingival tissue was excised. Interdental tissues were carefully removed and any remaining tissue tags were eliminated using curettes and scissors. Gingivoplasty was subsequently performed to restore a natural physiologic contour of the gingiva. Hemostasis was achieved, and a non-eugenol containing periodontal dressing was applied to protect the surgical site. The excised tissue was submitted for histopathological examination, which revealed features consistent with inflammatory fibro-epithelial hyperplasia.

The patient was given post-op intructions prescribed analgesics and advised to use a chlorhexidine mouth rinse for postoperative care. The periodontal dressing was removed after seven days, and the surgical site showed satisfactory healing.

Discussion

Orthodontic appliances provide and create favorable conditions for plaque accumulation, altering the microbial ecosystem and leading to inflammatory gingival responses [13,14]. When thorough oral

hyegiene is not maintained such inflammation persists, it may result in chronic gingival enlargement, which not only affects esthetics but also interferes with orthodontic mechanics and patient compliance[15,16].

The management of gingival enlargement begins with nonsurgical therapy aimed at controlling microbial plaque and assessing the reversibility of lesions [17,18]. In the present case, scaling and root planing effectively reduced inflammation but did not resolve the fibrotic component,[19] which is consistent with literature reports emphasizing the limited role of nonsurgical therapy in managing fibrous enlargements[20].

Histopathological studies of orthodontic-associated gingival enlargements have demonstrated epithelial hyperplasia, elongated rete ridges, dense connective tissue, and inflammatory cell infiltration[21,22]. These findings were confirmed in the present case, reinforcing the inflammatory and fibrotic nature of the lesion.

Surgical excision of the gingival overgrowth remains the most predictable method for treating gingival enlargements and re-establishing gingival contour [23,24]. Several case reports have highlighted the success of this approach in orthodontic patients, with improved esthetics, elimination of pseudo-pockets, and restoration of effective oral hygiene[25]. Nevertheless, long-term stability is dependent on strict plaque control, professional maintenance, and continued interdisciplinary monitoring [26].

The interdisciplinary approach between orthodontists and periodontists plays a crucial role in such cases. Orthodontic mechanics should not exacerbate periodontal conditions, and periodontal health must be maintained to allow for uninterrupted orthodontic progress[27,28]. In the present case, collaboration between specialties ensured a favorable outcome with no compromise to orthodontic therapy.

Conclusion

This case emphasizes the significance of interdisciplinary approach between the periodontist and orthodontist for early recognition and management of orthodontic therapy -induced inflammatory gingival enlargement. A combination of non-surgical and surgical periodontal therapy successfully restored gingival health, contour, and esthetics in this 42 year old orthodontic patient. Close collaboration between specialties and patient compliance remain the cornerstones for long-term success.

Fig -1 PREOPERATIVE PHOTOGRAPHS

Fig -2 POST-OPERATIVE PHOTOGRAPHS (AFTER 1 WEEK)

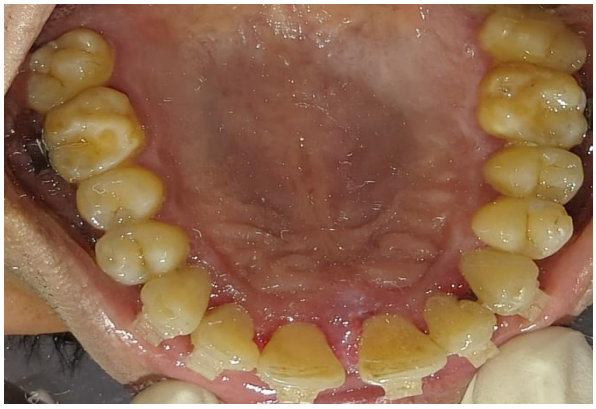

Fig -3 POST-OPERATIVE PHOTOGRAPHS (AFTER 1 MONTH)

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