

## Fibroepithelial Hyperplasia Secondary to Orthodontic Treatment: An Unusual Case Report

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### Abstract

Fibroepithelial hyperplasia is a localized or generalized reactive and progressive proliferation of oral mucosa in response to injury or local irritation. It occurs quite often on gingiva, tongue and lip. These lesions could be pathological as well as an esthetic problem that interferes with mastication and speech and also impedes effective plaque control. The causative etiology associated with these lesions includes plaque and calculus, overhanging restorations, foreign bodies, chronic biting and ill-fitting dentures. This article reports the unusual case of fibroepithelial hyperplasia occurred after the commencement of fixed orthodontic therapy wherein the patient was evaluated around 12 months prior to periodontal surgical treatment and reviewed post surgically for 12 months.

**Keywords:** Fibroepithelial hyperplasia; Gingival enlargement; Orthodontic therapy; Irritational fibroma

### Introduction

Oral mucosa is vulnerable to various stimuli which may lead to developmental, reactive, inflammatory and neoplastic lesions [1]. Reactive lesions may arise anywhere in the oral cavity but more oftenly are seen on gingiva, tongue and lip [2]. Reactive lesions of the gingiva have been classified on the basis of their histopathology [3]. Kfir, *et al* [4] classified reactive gingival lesions into fibrous hyperplasia, pyogenic granuloma, peripheral giant cell granuloma and peripheral ossifying fibroma. The term epulides is coined when there is proliferation of connective tissue into gingiva. The etiology for these lesions could be local irritants such as plaque, calculus, overhanging restorations, ill-fitting dentures and chronic biting of cheek and lips.

Fibromas representing reactive focal fibrous hyperplasia occur due to trauma or local irritation. Although the term fibrous hyperplasia more accurately describes the clinical appearance and pathogenesis of this entity, it is not commonly used. It is intimately related to fibrous hyperplasia and in many instances, is histologically indistinguishable from it [5]. In this article, we report an unusual case of fibroepithelial hyperplasia occurred after the commencement of fixed orthodontic therapy and followed 12 months prior to surgical treatment and 12 months after surgical treatment.

### Case Report

A female patient of 18-year-old was referred from Department of Orthodontics, Dayanand Sagar college of dental sciences, Bangalore with the chief complaint of swelling of gums since 3 months and bleeding of gums since 1 month in the upper and lower front tooth region (Figure 1). Patient gives the history of undergoing fixed

orthodontic treatment for the past 1 year and noticed the swelling since 3 months which has aggravated after placement of elastics. Patient noticed swelling of the gingiva initially in the maxillary anterior region including (labial, palatal and lingual) followed by involvement of the whole dentition (Figure 2-4) that gradually increased in size with bleeding of gums while brushing. There were no associated symptoms reported and no relevant medical history.



Figure 1: Pre-orthodontic treatment (labial anterior view).



Figure 2: Gingival enlargement (labial anterior view).



Figure 3: Gingival enlargement (right buccal view).



Figure 4: Gingival enlargement (palatal anterior view).

Intraoral examination revealed fair oral hygiene with an OHI-S score of 1.3 and Gingival Index (GI) score of 1.2 indicating mild gingivitis. On inspection, the gingiva was pinkish in colour, irregular in shape with altered contour, surface texture showed presence of stippling, position was coronal to the cement enamel junction (CEJ), interdental papilla was bulbous and marginal gingiva rounded with Grade II gingival enlargement (labial, lingual and palatal) in the maxillary and the mandibular anterior region and additionally in the maxillary anterior palatal region i.e., with 13 and 23 Grade III gingival enlargement was noticed [6]. On palpation, the gingiva was non-tender, firm and leathery in consistency and non-reducible in size. Bleeding on probing was present.

Based upon these clinical findings, differential diagnosis was given as peripheral giant cell granuloma and irritational fibroma. The lesion was provisionally diagnosed as combined gingival enlargement. Biochemical investigations such as complete hemogram and blood sugar levels were evaluated and were found to be normal.

Treatment plan included etiopathic phase with supragingival and subgingival scaling. Patient was advised to take 2% chlorhexidine gluconate mouthwash twice daily and was reviewed after 2 weeks. On review, oral hygiene was satisfactory but there was no reduction in size of the gingival enlargement. Further, surgical excision treatment was planned. An external bevel gingivectomy technique was performed in the maxillary (labial and palatal) and mandibular (labial and lingual) anterior region (Figure 5) followed by placement of the periodontal pack. The excised tissue was sent for histopathological examination (Figure 6). Post-operative instruc-

tions were given along with reinforcement of oral hygiene instructions. The patient was reviewed after 1 week and 4 weeks (Figure 7) wherein the gingival enlargement was found to be subsided. Further, satisfactory healing with no recurrence of the lesion was noticed after debonding of the orthodontic brackets within 2 months and also after postoperative follow up for a period of 12 months (Figure 8 and 9). The gingiva appeared clinically healthy with no signs of bleeding on probing.



Figure 5: Surgical excision (labial and palatal anterior view).



Figure 6: Excised gingival tissue for histopathological examination.



Figure 7: Post-operative follow up after 2 weeks (labial and palatal view).



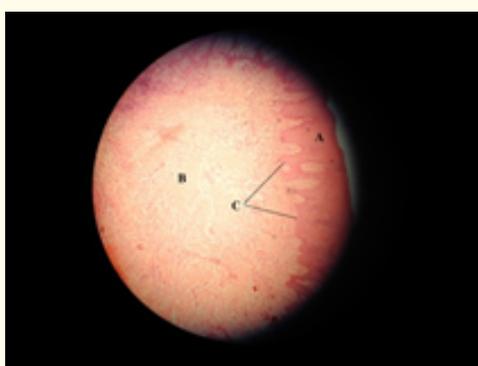
**Figure 8:** Post-operative follow up after 12 months (labial view).



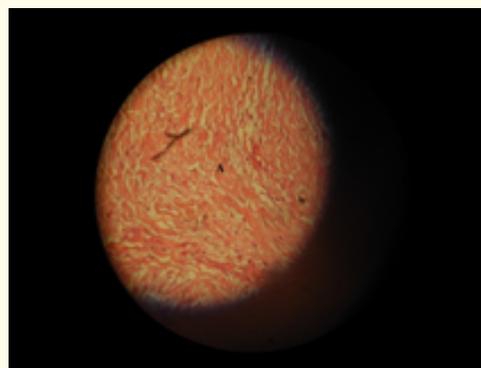
**Figure 9:** Post-operative follow up after 12 months (right buccal view).

### Histopathological Examination

The lesion revealed hyperparakeratinised stratified squamous epithelium with acanthosis (Figure 10). Both bulbous and elongated rete-ridges pattern are seen in different areas of epithelium. The underlying fibrous connective tissue shows bundles of collagen fibres, coursing in an irregular pattern (Figure 11). Areas of hemorrhage were seen. Mild chronic inflammatory cells predominantly of plasma cells and lymphocytes were seen suggesting - “Fibroepithelial Hyperplasia of Gingiva”.



**Figure 10:** H and E stained under 5X shows hyperplastic stratified squamous parakeratinized epithelium with acanthosis. (A – epithelium, B – bulbous and elongated rete pegs, C – connective tissue).



**Figure 11:** Fibrous connective tissue showing bundles of collagen fibers coursing in irregular pattern.

### Discussion

Fibrous growths of the oral soft tissues are common and include a wide variety group of reactive and neoplastic conditions. Fibroepithelial hyperplasias are reactive/inflammatory condition which presents variety of lesions named according to their clinical presentation [1]. They may be either generalized or localized and are found in 1.2% of adults [7]. They are formed as a result of irritation and are not true neoplasm, rather considered as mere fibrous overgrowths. The etiology associated with these lesions included plaque and calculus, overhanging restorations, foreign bodies, chronic biting and over extended borders of appliances. Recurrence rates are uncommon and are mostly caused by repetitive trauma at the same site [2].

Gingival enlargement appears frequently in patients treated with fixed orthodontic appliances. Renkema, *et al.* (2010) reported that there was an increase in average degree of gingival enlargement during orthodontic treatment and decrease in the degree of gingival enlargement post appliance. But, within 3 months of debonding of orthodontic brackets, recurrence of gingival enlargement was noticed. Hence, it was concluded that gingival enlargement that occurs during treatment with orthodontic appliances was reversible [8]. Another study by Kouraki, *et al.* (2005) showed that complete resolution of gingival enlargement developed during orthodontic treatment is not always attained after removal of the orthodontic appliances [9].

In the present case, even though patient was undergoing orthodontic treatment since 9 months, the swelling was noticed only after the placement of elastics. This is in contrary with the earlier studies, where the contributory etiological factor was local irritant (plaque and calculus). Also in this study, though the orthodontic brackets and elastics were placed on the labial aspect, exaggerated fibrotic growth was prominent on the palatal aspect. The possible etiology would be extension of the reactive lesion through the interdental papilla to the palatal aspect. In this study, after the surgical excision, complete reduction in size of the lesion with no

recurrence was noticed after debonding of orthodontic brackets within 2 months and also after postoperative follow up for a period of ten months. This is in contrary with the earlier studies, where the recurrence was noticed after few months of removal of orthodontic appliances.

The possible histopathologic variants of fibroepithelial hyperplasia includes pyogenic granuloma, peripheral giant cell granuloma and irritational fibroma [1]. Daley, et al. [10] suggested that the vascular component of pyogenic granuloma is gradually replaced by fibrous tissue with time and hence, diagnosed as a fibrous hyperplasia. Natheer Al- Rawi [11] noticed that fibrous hyperplasia on the gingiva not only have the same female gender preponderance but also occurs in the same age group as that of gingival pyogenic granuloma. In this case, apart from the gender similarity, the difference was seen in the age group as mentioned in the above studies.

Apart from reactive tissue response of irritants, some authors have reported fibrous gingival growth caused due to drugs. A case report by George P, et al. showed gingival fibrous hyperplasia are associated with drugs (cyclosporin A) [12]. The term fibro-epithelial hyperplasia should not be confused with focal epithelial hyperplasia, a viral infection (HPV virus) wherein the alterations occur only in the epithelium and not in the connective tissue of the oral mucosa [1]. In this case report, the lesion was found in 18-year-old female patient, which is an uncommon feature of fibroepithelial hyperplasia in accordance to earlier case reports, where most of the lesions were found in the middle age groups.

## Conclusion

Knowledge of the frequency and presentation of the most common oral lesions is beneficial in developing an early clinical impression of such lesions and its management in the primary stage with minimum surgical intervention. In this study, there was a gradual increase in growth of the lesion after placement of the orthodontic elastics and further as the surgical excision was done, recurrence of the lesion was not noticed either after removal of the orthodontic brackets nor after the follow up period of 12 months. This shows the overall contrary with the earlier above discussed studies. Further studies are needed to confirm about the recurrence rate of the lesion with the longer period of follow ups.

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