



Treatment of Fibroepithelial Hyperplasia with PRF: An Interesting Outcome

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Authors' contributions

This work was carried out in collaboration between all authors. Author VG wrote the draft of the manuscript. Authors SS and PS managed the literature searches. Author RVK designed the figures and contributed to the correction of the draft. Author PA provided the case, the figures and supervised the work. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Introduction: Gingival overgrowths in the oral cavity not only cause functional and esthetic problems but also increase the risk for the development of caries and periodontal disorders when left untreated. This article focuses on a case of gingival overgrowth which was positively dealt with appropriate periodontal therapy and platelet rich fibrin (PRF), a biological bandage.

Presentation of Case: A 38 year old female patient reported to the department with a chief complaint of a long standing gingival overgrowth and tooth displacement in the left front region of the lower jaw since 6 months which was positively managed with appropriate periodontal therapy that included excision followed by the use of a biological bandage, platelet rich fibrin (PRF). Histopathological report revealed a diagnosis of fibroepithelial hyperplasia, a rare self-limiting

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proliferative fibrous lesion of gingiva.

Conclusion: A good esthetic result was obtained after implementing the treatment plan with no recurrence during the 6 months follow up period.

Keywords: *Gingival overgrowth; PRF; fibroepithelial hyperplasia.*

1. INTRODUCTION

The oral mucosa is constantly subjected to external and internal stimuli and therefore manifests a variety of diseases. These lesions usually range from being inflammatory to reactive and neoplastic [1].

Clinically and histologically, reactive lesions are described as non neoplastic nodular swellings that develop in response to chronic and recurrent tissue injury which incites an exuberant or excessive tissue response [2].

The histological classification of localized reactive hyperplastic gingival lesions is somewhat bewildering in the literature [3]. Kfir et al have distinctively classified gingival lesions into pyogenic granuloma, peripheral giant cell granuloma, fibrous hyperplasia and peripheral fibroma with calcification [4].

At present, the accepted classification for localized reactive hyperplastic lesions (LRHL) of the gingiva is as follows: Focal fibrous hyperplasia (FFH), pyogenic granuloma (PG), peripheral ossifying fibroma (POF) and peripheral giant cell granuloma (PGCG) [5].

Here we present a case report where patient had a long standing gingival overgrowth with tooth displacement which was positively accomplished with appropriate periodontal therapy and use of a biological bandage, platelet rich fibrin (PRF). To the authors' knowledge, treating the exposed bone surface after excision of the lesion with PRF has so far not been reported in literature.

2. CASE REPORT

A female patient aged 38 years, reported to the Department of Periodontology with a chief complaint of swelling in the left front region of the lower jaw since 6 months which lead to spacing between the lower front teeth. The swelling started as a small painless growth 6 months back, gradually increasing to the present size and was hindering mastication. Medical and dental histories were non contributory and the routine blood tests were within normal limits.

No abnormality was detected on extraoral examination. Intra-oral examination revealed fair oral hygiene (OHI-S score 2.6, Greene and Vermillion 1964 [6]) with moderate gingival inflammation present in relation to mandibular anteriors. 31 and 32 had a probing depth of 5 mm. Interdental gingiva was bulbous and marginal gingiva rolled in relation to 31 and 32 with Grade II gingival overgrowth (Bokenkamp et al. [7]). The overgrowth was sessile, ovoid and pinkish with a minutely pebbled surface, measuring 0.8 cm buccolingually and 1 cm mesio distally (Figs. 1a and 1b). On hard tissue examination pathologic migration of 31 and 32 was noted. The space between 31 and 32 increased concurrently with the size of the lesion. On palpation the growth was non-tender, firm, non reducible and non compressible with no bleeding on probing.



Fig. 1a.



Fig. 1b.

Fig. 1a and 1b Pre operative: Facial and buccolingual view

Intra-oral periapical radiographs and mandibular occlusal radiographs of the area of interest were obtained, which revealed no underlying bony pathology other than horizontal alveolar bone loss between 31 and 32 and widening of periodontal ligament space (Fig. 2).

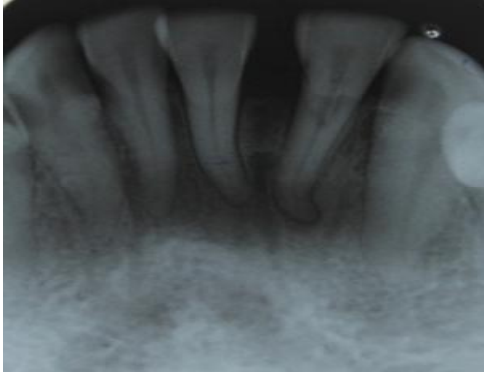


Fig. 2. Intraoral periapical radiograph irt 31 & 32 showing only horizontal bone loss between 31 and 32 with widening of periodontal ligament space

Based upon clinical and radiographic findings, a provisional diagnosis of chronic generalized gingivitis with gingival overgrowth in relation to 31 and 32 was given.

Differential diagnosis included inflammatory hyperplasia, peripheral ossifying fibroma, giant cell fibroma, neurofibroma and peripheral giant cell granuloma.

Phase I therapy was initiated which included supra gingival scaling and rinsing with 10ml of chlorhexidine mouthwash (0.2%, Hexitidine®) twice daily for 1 week. Excisional biopsy was planned 1 week after the phase I therapy. The patient was explained regarding the procedure and a written consent obtained. The overgrowth was excised enmass with an external bevel incision and the root surface was scaled and planed thoroughly (Fig. 3). The surgical site was then examined for any residual embedded calculus. As the overgrowth was excised enmass exposure of the underlying alveolar bone was inevitable. PRF was autologously prepared by drawing 9ml of patient's blood and centrifuging it at 2500 rpm for 10 minutes (Choukroun et al. [8]). The outcome was the fibrin clot containing platelets in the middle of the tube between the red blood cell layer at the bottom and the acellular plasma at the top. The clot was removed from the tube and squeezed between gauze squares to obtain a membrane. The

membrane which was thus obtained was placed where the bone exposure was encountered over which a periodontal dressing was placed (COE-PAK®) (Figs. 4 and 5). Post operative instructions were given and the patient was instructed to take analgesics (Tab. Ketorol DT 10 mg) thrice daily for 3 days.



Fig. 3. External bevel incision given, exposed alveolar bone



Fig. 4. PRF placed in the defect site



Fig. 5. Periodontal dressing placed

2.1 HISTOPATHOLOGY

The specimen was fixed in 10% formalin and sent for histopathological examination. The histopathologic report showed hyperplastic stratified squamous epithelium of parakeratinized type and bundles of dense collagen fibers, and few blood capillaries as well as infiltration of chronic inflammatory cells like lymphocytes and plasma cells within the connective tissue stroma. The report was suggestive of focal fibroepithelial hyperplasia. (Figs. 6a and 6b).



Fig. 6a. Excised tissue specimen
A. Highly proliferative parakeratinized stratified squamous epithelium

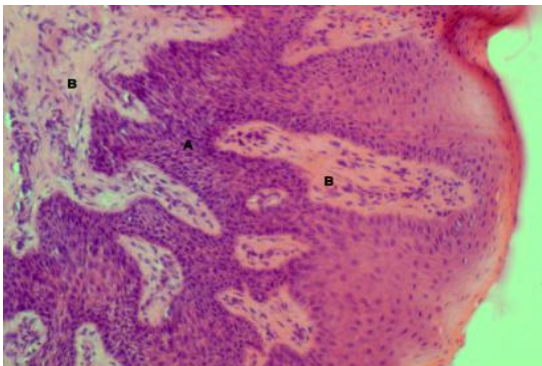


Fig. 6b. H & E section at 10x magnification
B. Connective tissue stroma with dense bundles of collagen

2.2 Post Operative Evaluation

The patient was re-evaluated 1, 3 and 6 months post-surgery and at each visit oral hygiene instructions were reinforced. Intraoral examination revealed adequate oral hygiene maintenance by the patient and no recurrence of

the growth during the follow up period. Interestingly, some amount of closure of the diastema between 31 and 32 was noted at the 6 months recall visit. (Figs. 7a and 7b) Radiograph at 6 months showed minimal differences in the level of alveolar bone. (Fig. 7c).

3. DISCUSSION

Gingival overgrowths in the anterior region of the mouth can have discernable effects on the esthetics, function; while also having a disparaging effect on the psychology of the patient.

In the present case report, the lesion presented as a single solitary sessile lesion involving interdental papilla of 31 and 32. Hence, a clinical diagnosis of gingival overgrowth was given. According to Cooke [9], the sessile lesions in the gingiva are termed as epulides (which is no more used in the literature) and occurs commonly in the maxillary anterior region. On histological examination, the diagnosis of Fibro epithelial hyperplasia was ascertained based on the appearance of stratified squamous parakeratinized epithelium with areas of hyperplasia and the underlying stroma which was characteristically dense fibrous in nature with less vascularity, cellularity and sparsely spotted inflammatory cells.

Fibro epithelial hyperplasia otherwise known as irritational fibroma, oral fibroma or as fibromatosis fibroma occurs with a prevalence rate of 1.2% [4]. Most fibromas denote reactive focal fibrous hyperplasia due to trauma or local irritation. ¹²The term "Fibro epithelial hyperplasia" was suggested by Deley et al. 1990 which implies a reactive localized tissue response and is therefore a better term to "fibroma" which wrongly implies, a benign neoplastic proliferative fibrous lesion [10].

Although the term Fibro epithelial hyperplasia, precisely describes the clinical appearance and pathogenesis of this entity, it is not commonly used. It is most often, a slow growing well-defined lesion that occurs at any age but most commonly occurs during the third, fourth and fifth decades of life. Females are twice as frequently affected as males [11].

One of the important factors that may aggravate the response of gingival tissue is poor oral hygiene which can result in enlargement of gingival tissue [12]. In the present case, gingival

tissue irritation due to presence of subgingival plaque and calculus may have led to the development and progression of the overgrowth. The presence of enlarged gingiva and pseudopockets, does not allow proper maintenance of oral hygiene, which may further lead to accumulation of the deposits and foul odor in the oral cavity. Bleeding on tooth brushing may be attributed to the inflammatory changes in gingiva [13].

Earlier, repair of exposed wound surfaces after excisional procedures was considered challenging. The modern era of tissue engineering has made treatment of these defects simple and easy with the use of PRF, an autologous blood borne growth factor. In our case, the enmass excision of the overgrowth led to bone exposure. Additionally, the presence of denuded bone concomitantly increases the incidence of infection which can further complicate the wound healing [14].

As the hyperplasia, in our case, was excised en mass, there was no soft tissue left to achieve primary closure, leaving behind an open wound area with bone exposure. If left to heal by secondary intention there would be bone necrosis with severe loss of alveolar bone delaying the healing. Hence, to accelerate healing, we decided to use autologous PRF in the form of biologic bandage to cover the exposed bone. It was observed that at time of 1 week postoperative evaluation (photograph not taken), the excision site had completely healed with formation of inter dental soft tissue.

PRF acts as a biological connector and the fibrin matrix facilitates neo-angiogenesis and epithelial cell migration [15-17]. PRF also consists of cytokines such as interleukin 1 β , -4, and -6, and growth factors such as TGF- β 1, platelet derived growth factor, vascular endothelial growth factor and connective tissue growth factor which are gradually released as the fibrin matrix gets resorbed, thus creating an environment for perpetual healing process. As well, the presence of leukocytes and cytokines in the fibrin network can significantly help in the self-regulation of inflammatory and infectious phenomena within the grafted site. Thus, PRF has been proven in protecting open wounds and accelerating the healing process [14-17].

In the present case of fibroepithelial hyperplasia, excision followed by placement of PRF led to the enhancement of pink esthetics and some

amount of remission of diastema between 31 and 32 [Fig. 7b].



Fig. 7a. 1 month post operative



Fig. 7b. 6 months post operative immediately after scaling

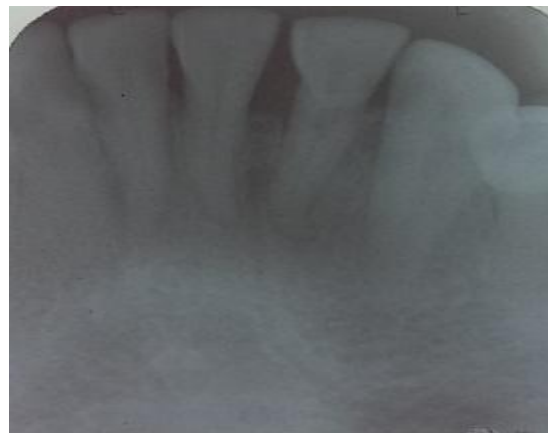


Fig. 7c. Intraoral periapical radiograph irt 31 & 32 showing minimal changes in the alveolar bone level

Recurrences of such lesions are rare. However Cooke in his review reported recurrence in 3 cases out of 78 biopsy specimens [9]. The present case was followed for a period of 6 months with no recurrence observed.

4. CONCLUSION

The multitude of histological entities that we observe of reactive hyperplasia may be due to connective tissue response to varied intensities of gingival irritation. Presence of associated symptoms, related systemic disorders, and location and growth patterns of the overgrowth gives clue to adequately diagnose and treat their typical histopathologic architecture. The application of autologous platelet-rich fibrin could present new possibilities for enhanced healing and functional recovery. In our case the enmass excision and the adjunct use of PRF has resulted in improved gingival architecture which enhanced both the aesthetics and functional outcomes.

CONSENT

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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