Case Report

# Uncommon Clinical Profiles of Common Reactive Lesion

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## ABSTRACT

There are numerous clinically similar but histologically different focal overgrowth occuring on the gingiva. Peripheral ossifying fibroma (POF) is a reactive lesion of connective tissue and not a soft tissue counterpart of any ossifying lesion. In this study detailed clinical and histological review of two POF cases are reported with successful treatment outcomes. These cases contradict the common norms of predilection of the lesion with regard to age (second decade), gender (female) and site (maxillary anterior). Two cases of gingival enlargement were reported in males at fourth decade of life in right mandibular posterior and maxillary anterior region respectively, but detailed clinical examination and histopathologic findings finally concluded the diagnosis of POF. Due to high recurrence rate early diagnosis followed by complete surgical excision and long term follow up bear importance in management of this lesion. However, no recurrence was seen in any case of this study even after 1-year follow-up of surgical excision.

Key Words : Gingival lesion, Peripheral ossifying fibroma, Epulis, Pyogenic granuloma

## Introduction

In the oral cavity proliferative and differential growth of the connective tissue components of peridontium results in either inflammatory or neoplastic lesions on gingiva.1 Inflammatory lesion of gingiva are produced by irritating agents such as dental plaque, calculus, ill fitting dentures, faulty restorations etc and are known under the generic name of "epulis". A series of reactive gingival lesions having almost similar clinical pictures such as peripheral odontogenic fibroma, peripheral fibroma, peripheral giant cell granuloma and pyogenic granuloma are also included in this category. 2

Peripheral ossifying fibroma (POF) is a painless, non–neoplastic, slow-growing reddish–pink gingival mass arising from the interdental papilla (IDP)3 measuring as small as 1.5cm4 and extending upto 9 cm5 in diameter. It accounts for upto 3% of all oral lesions and 9.6% of all gingival lesions.4 Synonyms for POF are peripheral cementifying fibroma, peripheral fibroma with calcification and peripheral fibroma with osteogenesis.5 POF mainly affects women in the second decade of life3 with 50% of all patients being between 5-25 years of age. The female to male ratio varies from 1.22:1 to 4.3:1.6About 60% of these lesions occur in maxilla and more than 50% of all cases of maxillary POF are found in the incisors and canine areas. The lesion may be present for months to years before the treatment, depending on the degree of ulceration, unpleasant extraoral appearance, discomfort and interference with function.3

Histologically, POF is a nodule lined by stretched stratified squamous epithelium composed of a cellular fibroblastic connective tissue stroma with varying degree of foci of mineralized product (woven and lamellar bone, cementum and dystrophic calcification).7 radiographs may show scattered, irregular radiopacities in the affected area.

This paper highlights the diverse clinical and histological presentation of POF amongst two males which were successfully treated.

## Case Description

Two healthy males reported to the Out Patient Department of Oral medicine and dental radiology and refered to Department of Periodontics, IDST Dental College Modinagar with the chief complaint of a gingival swelling inside the oral cavity.

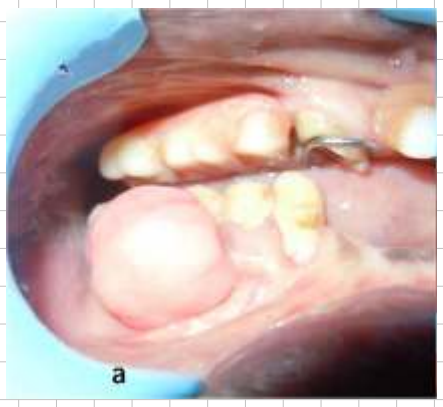
Table 1 - CLINICAL AND HISTOLOGICAL PRESENTATION OF PATIENTS

| CASE N. | Sex | Age | Predisposing factor | Location | Size (cm) | Present since | Clinical picture |
|---|---|---|---|---|---|---|---|
| Case1 | Male | 45yrs | Plaque, calculus, ill fitting denture | Mandibular molar region | 2x1.5x1 | 1year | Sessile, firm, nodular |
| Case2 | Male | 50yrs | Plaque, calculus | Right Maxillary anterior region | 2x1.5 | 6-8months | Sessile, soft and edematous |

Lymph nodes were non palpable in both cases and no apparent extraoral swelling was present.

Case 1- A 45 years old male presented with a progressively increasing large, nodular, sessile growth for first time in the right mandibular first molar region since 1year and was experiencing difficulty while chewing and speaking. The patient was using a removable prosthesis in both arches and had poor oral hygiene. Intraoral examination revealed a growth of 2X1.5X1 cm occupying the right buccal vestibule but not extending occlusally. It was firm in consistency and pale in colour. (Figure-1a)

Figure 1-PRE-OPERATIVE VIEW : Case 1- (a)



Radiographs revealed a faint radiolucent lesion superimposed on underlying bone extending upto root apex in first molar region with resorption of crestal bone between first and second molar but clinically no mobility was evident.

Case 2- A 50year old male complaining of recurrence of a large, exophytic, painless, soft growth in right maxillary incisor region after 6 month of excision of a similar lesion from private dental clinic. He was a smoker with poor oral hygiene. A soft overgrowth following the contour of marginal gingiva measuring 2 cm mesio-distally and 1.5 cm occluso-gingivally was present covering half of the labial surface of central incisor and showing bleeding on gentle probing.(Figure- 1b) Significant attachment loss and radiographic bone loss was seen in maxillary central incisor region along with Grade – III mobility in relation to 11.

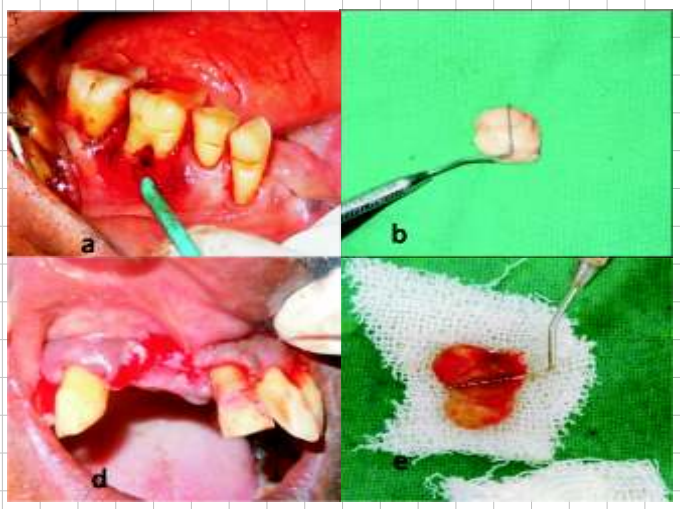
Figure 1-PRE-OPERATIVE VIEW : Case-2 - (b)


Based on clinical presentation, provisional diagnosis of fibroma was made in Case-1 and pyogenic granuloma in Case-2 with differential diagnosis of fibrous hyperplasia, peripheral ossifying fibroma, peripheral giant cell granuloma, peripheral odontogenic fibroma and peripheral cementifying fibroma. All patients were instructed regarding oral hygiene maintenance and motivated to quit the habit of smoking. On the initial visit scaling and root planin was done following which in the subsequent visit after 2 week the lesions was completely excised with 2 -3 mm of surrounding normal tissue under local anaesthesia. (Figure-2 a,b,d,e)

Figure 2- SURGICAL PROCEDURE

Case 1 - (a) Hemostasis with electrocautery immediately after excision (b) Excised tissue

Case 2 – (d) After excision and extraction of right central incisor (e) Excised tissue




The excised tissue was sent for histopathologic examination. Extraction was done i.r.t 11 in Case-2. The area was carefully curetted to remove the diseased granulation tissue, irrigated with saline & bleeding was controlled with an electrocautery unit (Unicorn Medident Pvt Ltd) and the area was covered by a periodontal dressing (Coe—pack). Patients were recalled after1week for pack removal and at 1month, 6month for re-evaluation. (Figure- 2c,f) None of the lesions recurred even after 1year of excision.

Figure 2- SURGICAL PROCEDURE

Case 1- (a) Parakeratinized squamous epithelium,

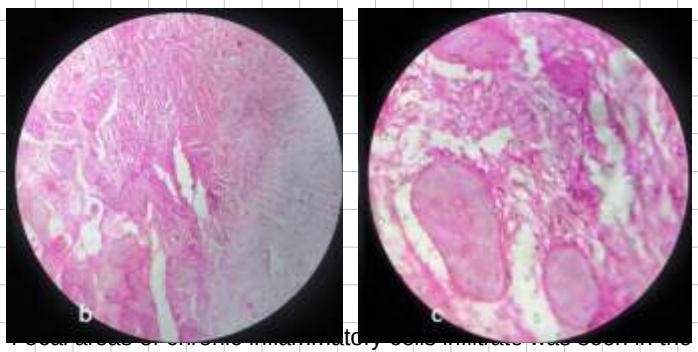

H/E staining of the tissue sections showed the following-

Case-1- Highly cellular delicate fibrous connective tissue stroma exhibiting immature and mature bony trabeculae was seen.

Figure 3- HISTOLOGICAL PICTURE at 4X, 10X and 40X

Case 1- (b) Fibrous stroma with basophilic calcification,

(c) Bony trabeculae.




stroma. Overlying epithelium was parakeratinized stratified squamous in nature and appeared to be proliferating.

Figure 3- HISTOLOGICAL PICTURE at 4X, 10X and 40X

Case 1- (c) 3 month post op healing

Case 2 - (f) 3 months post op

Case 2- Revealed a moderately dense, fibrous and a highly cellular connective tissue stroma. Minute basophilic globules of calcified material could be appreciated in the stroma along with focal area of mixed inflammatory cell infiltrates.

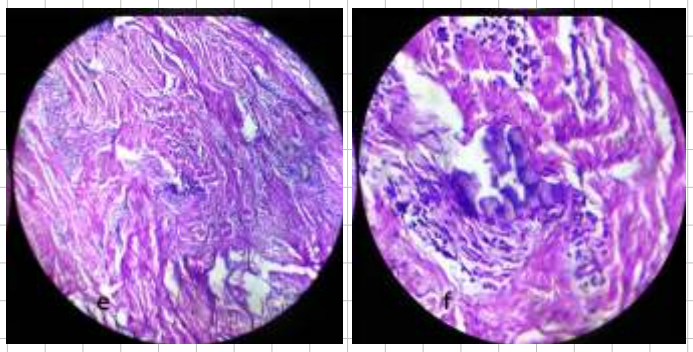
Figure 3- HISTOLOGICAL PICTURE at 4X, 10X and 40X

Case 2 - (e) Basophilic globules of calcified masses with extravasated RBCs, (f) Calcified masses with osteoid.


Moderate amount of vasculature along with extravasated RBC's were evident in the stroma at places. Overlying stratified squamous epithelium appeared atrophic in areas.

Figure 3- HISTOLOGICAL PICTURE at 4X, 10X and 40X

Case 2- (d) Atrophic stratified squamous epithelium,




## Discussion

Peripheral ossifying fibroma (POF) may be a neoplastic or reactive lesion of the gingiva and the final diagnosis depends on clinical, radiographic and histologic presentation. Various fibro-osseous lesions affecting the jaw were classified by Wladron and this encompasses fibrous dysplasia, benign fibro osseous neoplasms (ossifying fibroma), and a heterogeneous group of reactive lesions (osseous dysplasia, POF).8

In 1992, WHO categorized the neoplastic lesion under the term "cementifying ossifying fibroma". Based on their histologic picture these are further classified into two - cementifying fibroma and ossifying fibroma that may be clinically and radiographically indistinguishable. However, term cemento-ossifying is not appropriate as there is no histochemical or biochemical differences between bone and cementum, thus they all belong to ossifying fibroma (OF).9

Differential diagnosis of POF (Table-2) includes Peripheral odontogenic fibroma (POdF), pyogenic granuloma, peripheral giant cell granuloma, gingival hyperplasia and fibroma.10

| | Clinical Features | Histological Features | Differentiating Feature |
|---|---|---|---|
| Pyogenic Granuloma | Site - gingiva (most common),lips, tongue, buccal mucosa Features– vascular neoplasm pedunculated/sessile, fast growing asymptomatic soft red mass that bleeds easily | Endothelium lined vascular channels engorged with red blood cells & chronic inflammatory cells | Initial stage of POF ressembles pyogenic granuloma but on calcification, Size usually < 1cm. |
| Peripheral Odontogenic Fibroma | Age – 5-65 years Site - gingiva Features - Slow growing solid, firmly attached gingival mass. | Islands of Odontogenic epithelium seen | Odontogenic epithelium absent in POF. |
| Peripheral Giant Cell Granuloma | Age – 4th to 6 th decade Site- Exclusively on gingiva, mostly anterior to molars Features- Reddish purple, rapidly growing soft or firm mass which may be sessile or pedunculated. | Large number of multinucleated giant cells in vascularized fibrocellular stroma with inflammatory cell infiltration | Radiographically, it shows bone resorption while POF rarely shows erosion of bone. |

POF usually originate from periodontal ligament cells mainly fibroblasts. This is further confirmed by: exclusive appearance of POF in the gingival tissue, close to the periodontal ligament and presence of oxytalan fibers within the mineralized matrix.11 Gingival fibroblasts promote inflammation and the resulting immune response can be identified in the periodontal ligament of associated teeth. In active periodontal lesions, the tissue adjacent to bone shows a positive expression for IL-6 which is expressed by the osteoblasts as an indirect effect of the IL-1 & 1â expressed by the gingival fibroblasts. This might have resulted in areas of calcification as reported in Case -1 of this study.

Another pathogenesis of POF was proposed by Prasad S12 which suggested that fibrous maturation and calcification of gingival lesions such as peripheral giant cell granuloma, pyogenic granuloma might progress into POF as the presence of moderate amount of vasculature along with extravasated RBCs may contribute to the misdiagnosis of pyogenic granuloma. This might be the pathogenesis of POF in Case-2 of this study

Most of the studies suggest that majority of POF cases occurs during 2nd decade of life as Eversole and Rovin stated that the constant irritation during exfoliation of the deciduous teeth and eruption of the permanent teeth may result in an increased incidence of reactive lesions.6 However, our cases reported to the department in 4th decade of life which justifies the study of Zhang et

al in Chinese population.13 Only 0.5% cases are found in older males14 and oldest reported male was of 65years, but in our cases we found POF occuring in 45 and 50 years old males.

Radioopaque foci of calcification have been reported in the central area of POF but not all lesions show radiographic calcification. Usually underlying bone involvement is not visible but in rare instances superficial bone erosion may be present.11 In this study none of the cases showed calcification, but bone resorption seen in Case-2 might be because of periodontitis and not because of pressure induced by POF lesion.

The confirmatory diagnosis of POF is based on histological findings11 including-

(a) Intact and stretched stratified squamous epithelium,

(b) Fibrous connective tissue with varying degree of fibroblast activity, myofibroblasts and collagen,

(c) Sparse or profuse endothelial proliferation may be observed,

(d) Mineralized material representing lamellar or woven osteoid, cementum or dystrophic calcification,

(e) Inflammatory plasma cells.

Usually ulcerated lesions show dystrophic calcification as seen in Case-2 of this study. Our cases show similar histopathologic pictures which confirmed the diagnosis of the lesion being peripheral ossifying fibroma.

The treatment of choice for these lesions is complete surgical excision with the removal of the irritating factors. In Case-3 lesion was excised with extraction of involved tooth. Due to the high rate of recurrence (8% to 20%), close postoperative monitoring is required. POF recurs due to incomplete removal of the lesion, failure to eliminate local irritants and difficulty in accessing the lesion during surgical manipulation.15 No recurrence was seen in any case after 1 year follow up.

## Conclusion

POF is a slowly progressing lesion of maxillary anterior region with female prelidection which may be retained for a long period of time before patient seeks treatment because of the lack of symptoms. However, this report highlights the diverse clinical and histological findings of POF and discusses the contentious terminologies used for the disease. Proper follow-up is mandatory to rule out recurrence.

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