

Case Series

PERIPHERAL OSSIFYING FIBROMA: A CASE SERIES

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ABSTRACT

Background: The objective is to evaluate the clinical presentation and histopathological characteristics of Peripheral Ossifying Fibroma (POF) through a case series, emphasizing its clinical variability and diagnostic features.

Materials and Methods: This Descriptive case series was conducted in Department of Pathology at Shri Jagannath Pahadia Medical college Bharatpur Rajasthan from 2023 to 2025. A total of six patients clinically diagnosed with gingival overgrowth and confirmed histopathologically as peripheral ossifying fibroma were included. Clinical records were reviewed for demographic details, lesion characteristics, dimensions and associated symptoms. All lesions were surgically excised and sent for histopathological confirmation.

Results: Out of six cases, five (83.3%) were females and one (16.7%) was male, showing a strong female predominance. The age ranged from 11 to 79 years. Lesions were predominantly located on the gingiva, especially in anterior and interdental regions. The duration varied from 2–3 months to 5–6 years. Most lesions were firm, with one case showing bony-hard consistency. Both pedunculated and sessile forms were observed.

Conclusion: Peripheral ossifying fibroma is a reactive gingival lesion with diverse clinical presentations but consistent demographic and histopathological features. Early diagnosis and complete surgical excision with elimination of local irritants are essential to prevent recurrence.

Keywords: Peripheral ossifying fibroma, gingival lesion, reactive lesion, oral pathology, case series.

INTRODUCTION

Peripheral ossifying fibroma (POF) is a frequent reactive lesion of the gingiva that originates from the periodontal ligament or periosteum and is considered to be a non-neoplastic growth. It is generally a localized, slowly growing mass of the gingiva, most often in the interdental papilla of the anterior maxilla.^[1] The proportion of POF in localized gingival enlargements is high and tends to be more common in young adults, with a strong female bias in its pathogenesis, indicating a possible hormonal role. It is not yet well understood how peripheral ossifying fibroma arises; however, it is commonly believed to arise as a reactive lesion to any of the following chronic local irritants: dental plaque, calculus, ill-fitting restorations, orthodontic appliances, or trauma.^[2] These irritants stimulate the growth of connective tissue cells, leading to the formation of fibrous tissue and subsequent calcification or ossification in the lesion. Definite

diagnosis is based on Histopathological examination. Histologically, POF is characterized by a fibrous connective tissue stroma with varying deposits of mineralized tissue, including bone, cementum-like, or dystrophic calcifications.^[3] Pathophysiologically, the periodontal ligament is believed to be central to the evolution of POF because it is composed of a rich cellular structure and can further differentiate into various cell types, including osteoblasts and cementoblasts. Persistent irritation can induce metaplastic conversion of these cells, leading to the formation of mineralized substance within a fibrous stroma.^[4] This mechanism accounts for the typical ossification or calcification foci in the lesion and lends credibility to the hypothesis that POF is a maturation process of prior reactive lesions, including pyogenic granuloma. Peripheral ossifying fibroma clinically manifests as a nodular, well-defined, sessile, or pedunculated mass. The lesion is generally firm and may be pink or reddish, based on the vascularity and

ulceration.^[5] It is normally less than 2 cm across, though occasional large lesions have been reported in the literature. Though most often asymptomatic, larger lesions may be painful, disrupt mastication, and displace neighbouring teeth if left untreated. Repeated trauma may result in ulceration of the overlying mucosa and, in such instances, may complicate the clinical picture.^[6]

The radiographic appearance is generally non-specific, with POF being a soft tissue lesion. In some situations, the underlying alveolar bone may be superficially eroded or may contain radiopaque foci representing calcified deposits. These results are not diagnostic but may serve as supporting evidence in combination with clinical and histopathological appearances.^[7] Clinically The POF mimics various reactive and neoplastic lesions of the gingiva, including pyogenic granuloma, peripheral giant cell granuloma, irritation fibroma, and peripheral odontogenic fibroma. Therefore, histopathological examination is essential to distinguish it from these look-alikes.^[8] Histologically, POF shows a cellular fibrous stroma with varying degrees of mineralization. The calcified structures can take the form of trabecular bone, cementum-like structures, or amorphous calcifications. The epithelial covering can be intact or ulcerated, and there is often an inflammatory cell infiltration of the overlying epithelial layer. These histopathological characteristics play a critical role in distinguishing POF from other gingival lesions that share similar clinical manifestations.^[9]

Objective

To evaluate the clinical presentation and histopathological characteristics of peripheral ossifying fibroma (POF) through a case series and emphasizing its variability and diagnostic features.

MATERIALS AND METHODS

This was a descriptive case series conducted in Department of Pathology at Shri Jagannath Pahadia Medical College Bharatpur Rajasthan during 2023-2025 to evaluate the clinical presentation, characteristics, and variability of peripheral ossifying fibroma (POF). A total of 6 patients diagnosed with peripheral ossifying fibroma were included in the study. The cases were chosen among patients who reported with gingival overgrowths at outpatient dental clinic within a given time frame. Clinical suspicion of reactive gingival lesions was used as the criterion of selection and all of the cases confirmed by a histopathological examination. Each patient was already provided with a detailed clinical history containing demographic information (age, gender), the duration of the lesion, and its growth, and the presence of related symptoms, such as pain, bleeding, or pain during mastication. Specific interest was given to the determination of potential etiological agents including inadequate oral care,

local irritants (plaque, calculus), defective restorations, or trauma.

In all patients, comprehensive intraoral examination was done. The lesions were categorized on the basis of their anatomic location (maxillary or mandibular, anterior or posterior location), size, shape, color (pale pink to reddish), surface features and base (sessile or pedunculated). The lesion consistency was evaluated by palpation and was classified as either firm or hard. Involvement of interdental papilla, ulceration, or any movement of nearby teeth were also well measured. In selected cases radiographic examination was done to evaluate the underlying involvement in the bone or the existence of calcified elements in the lesion. Where present, such findings included superficial bone resorption or radiopaque foci were observed. Complete surgical excision of the lesions under aseptic conditions was done. To reduce recurrence, excision was done to the periosteum, and the adjacent teeth were well scaled and root planed to remove local irritative factors. The specimens excised were fixed in formalin and subjected to histopathological studies. The diagnosis of peripheral ossifying fibroma was confirmed by histopathological examination aimed at determining the presence of connective tissue stroma composed of fibrous tissue and the presence of mineralized components, bone, cementum-like tissue or dystrophic calcifications. A follow-up was performed after the operation to evaluate healing and prevent recurrence. All the pertinent clinical and histopathological information was documented in a systematic format. All six cases were studied descriptively, and the findings were presented in detailed case descriptions to demonstrate the wide range of clinical manifestations and characteristics of peripheral ossifying fibroma.

RESULTS

A total of six cases of histopathologically confirmed peripheral ossifying fibroma (POF) were included in this case series. The demographic distribution showed a marked female predominance: 5 females (83.3%) and 1 male (16.7%). The age of patients ranged from 11 to 79 years, indicating a wide age distribution, although the majority of cases occurred in younger individuals. The duration of lesions varied considerably, ranging from 2–3 months to 5–6 years, indicating variability in growth patterns and delayed presentation in some patients.

Case Descriptions

Case 1 involved an 11-year-old female who presented with a firm, pale-pink, pedunculated mass in the nasopalatine region of 2–3 months' duration. The lesion was relatively small, asymptomatic, and exhibited a typical clinical appearance of POF with a short history.

Case 2 was a 16-year-old female with a long-standing mandibular gingival growth present for 5–6

years. The lesion was notable for its bony-hard consistency on palpation and was associated with pain during mastication, indicating possible functional interference and significant calcification within the lesion.

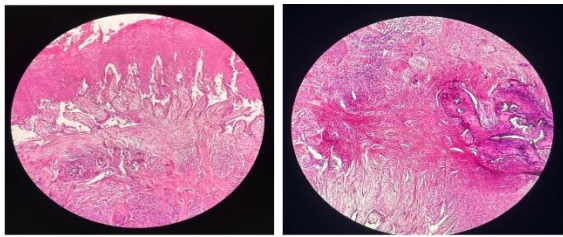


Figure 1: (A) & (B) Photomicrographs (H&E stain, 10x) illustrating a hyperplastic, acanthotic stratified squamous epithelium with elongated rete ridges overlying a cellular fibroblastic stroma. The deeper connective tissue shows characteristic mineralized, cementum-like deposits and woven bone trabeculae.

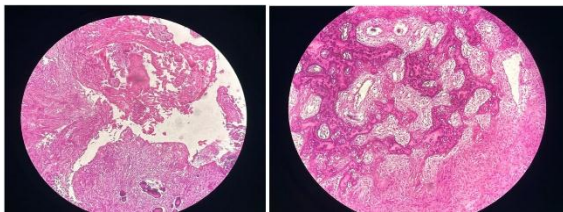


Figure 2 (A) & (B): Photomicrographs (H&E stain, 10x/40x magnification) showing a hypercellular fibroblastic stroma with interspersed mineralized tissue consisting of woven bone trabeculae and basophilic cementum-like deposits, characteristic of Peripheral Ossifying Fibroma.

Case 3 included a 20-year-old male, the only male patient in the series, who presented with a firm, sessile growth in the mandibular anterior region. The lesion was associated with heavy calculus accumulation, highlighting the role of local irritants in its pathogenesis. It was non-tender and moderately sized.

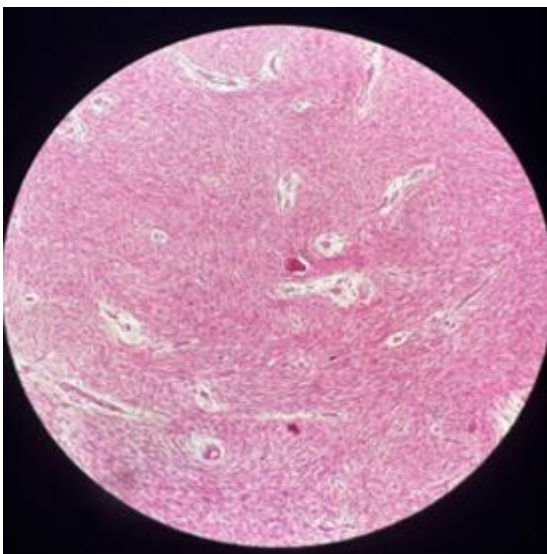


Figure 3: (H&E stain, 10x) demonstrating the core features of Peripheral Ossifying Fibroma. The sections

highlight a densely cellular fibroblastic stroma containing a discrete basophilic cementum-like droplets. Note the high cellularity and the interlacing fascicular arrangement of the spindle cells.

Case 4 was a 33-year-old female presenting with a small (<1 cm), pedunculated growth arising from the interdental papilla between teeth 11 and 12. The lesion was well-circumscribed, firm, and asymptomatic, representing a classical presentation of POF.

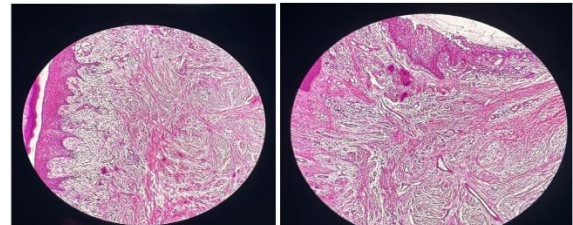


Figure 4: Photomicrographs (A) &(B) (H&E stain, 10x) showing prominent epithelial hyperplasia with elongated rete ridges overlying a hypercellular fibroblastic stroma. Deeper sections reveal characteristic basophilic, globular mineralized deposits interspersed within the spindle cell proliferation.

Case 5 involved a 79-year-old female, representing the oldest patient in the series, who presented with a slow-growing, exophytic maxillary mass of 4–5 years duration. The lesion had a narrow base and demonstrated a chronic course without significant symptoms despite its long duration.

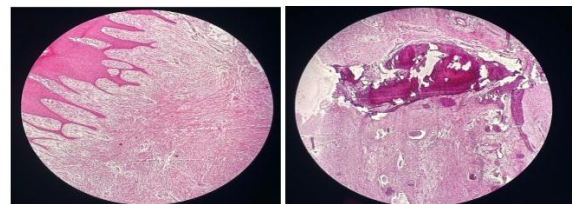


Figure 5: Photomicrographs (A) &(B) (H&E stain, 10x/40x) depicting the full architectural spectrum of Peripheral Ossifying Fibroma. The image shows a hyperplastic, psoriasiform epithelium overlying a hypercellular spindle cell stroma. Note the diverse mineralization patterns, including both discrete basophilic cementum-like droplets and larger, interconnected trabeculae of woven bone.

Case 6 was a 21-year-old female who presented with a firm, non-tender growth in the buccal gingiva of teeth 15 and 16, present for 6 months. The lesion was asymptomatic and exhibited typical features consistent with peripheral ossifying fibroma.



Figure 6: Photomicrographs (A) &(B) (H&E stain, 10x/20x) demonstrating the characteristic features of

Peripheral Ossifying Fibroma. Note the hyperplastic overlying epithelium and the deeper, highly cellular fibrous stroma containing a mixture of interconnected

woven bone trabeculae and basophilic cementum-like calcifications.

Table 1: Clinical Characteristics of POF Cases (n = 6)

Case	Age/Sex	Site	Duration	Base	Consistency	Symptoms	Key Finding
1	11/F	Nasopalatine	2–3 mo	Pedunculated	Firm	None	Pale pink mass
2	16/F	Mandibular gingiva	5–6 yr	—	Bony hard	Pain	Long-standing lesion
3	20/M	Mandibular anterior	—	Sessile	Firm	None	Heavy calculus
4	33/F	Interdental (11–12)	—	Pedunculated	Firm	None	<1 cm lesion
5	79/F	Maxillary gingiva	4–5 yr	Pedunculated	Firm	None	Exophytic growth
6	21/F	Buccal (15–16)	6 mo	—	Firm	None	Non-tender mass

DISCUSSION

Peripheral ossifying fibroma POF is a reactive lesion of the gingiva, which is characterized by specific clinical and histopathological characteristics and usually occurs with a response to persistent local irritation. The current case series of six patients underscores the inconsistency in clinical presentation and affirms some of the long-standing characteristics of POF documented previously. There was an evident female majority in this series (83.3%), which agrees with the previous research reports that POF is more common in females, perhaps due to hormonal effects on the gingival tissues. Most of the cases were observed in younger, but one case was reported in a 79-year-old patient, so POF cannot occur only in the second and third decades of life, just suggesting that the age spectrum of its appearance is rather large. Past studies have also indicated that POF primarily affects adolescents and young adults, but not exclusively.^[10] The lesions in this study were mainly found on the gingiva, especially in the anterior maxillary areas and interdental papilla, which is consistent with the predilection areas of POF reported previously. The implication of the activity of the mandibular and maxillary anterior areas about POF origin is that periodontal ligament cells, which are more exposed to the accumulation of plaque and the local irritant, are the origin of POF. The nasopalatine area is a slightly less frequent location, although it is still within the range of gingival involvement.^[11]

The length of lesions varied, ranging from a few months to a few years. The long-term lesions, as in the present case with a history of 5-6 years, were harder to palpate, which may have been due to gradual calcification or ossification. The result is consistent with the literature, indicating that POF can develop out of earlier reactive lesions, whereby progressively more mineralization can be attributed to a harder consistency. Most lesions were firm and clinically pedunculated or sessile, with a slight predominance of the former.^[12] The lesions ranged in color from pale pink to normal mucosal color, reflecting varying levels of vascularity and fibrosis. These results agree with the clinical presentation of POF as described in the literature. The patient also

reported pain on mastication only in one instance, meaning that POF is not symptomatic in most cases unless it is of a large size, which may interfere with the normal functioning of the mouth.^[13] The reactive nature of POF is confirmed by the association with local irritative factors, especially heavy calculus in one instance. Plaque, calculus or trauma chronic irritation is thought to be one of the most important etiological factors, which causes the increase in the connective tissue and its further calcification. The fact that some cases could not be attributed to identifiable irritants may indicate clinical inability to detect them or could be due to other factors. In all instances, management consisted of total surgical excision, the standard modality of treatment.^[14,15] The significance of eliminating local irritants and excising the lesion cannot be overestimated; recurrence rates reported in the literature range from 8 per cent to 20 per cent. Even though the recurrence in this short case series was not evaluated, there is a necessity to conduct long-term follow-up to observe the regrowth. The limitation of the case series is its small sample size, and the study is descriptive, limiting generalizable findings. Nevertheless, it also proves to be effective in illustrating the wide range of clinical presentations of peripheral ossifying fibroma and the need to carry out a comprehensive clinical assessment and histopathological confirmation.

CONCLUSION

Peripheral ossifying fibroma is a common reactive gingival lesion characterized by a wide range of clinical presentations but consistent underlying features. This case series highlights its strong female predilection, frequent occurrence in the gingival and interdental regions, and association with local irritative factors. Although most lesions are asymptomatic and slow-growing, variations in size, duration, and consistency may occur, especially in long-standing cases with increased calcification. Early diagnosis, histopathological confirmation, and complete surgical excision, along with elimination of local irritants, are essential for effective management and prevention of recurrence.

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