

**PERIPHERAL OSSIFYING FIBROMA: TWO CASE REPORTS AND LITERATURE  
REVIEW****<sup>1</sup>Dr. Suchetha Aghanashini, <sup>2\*</sup>Dr. Swati George, <sup>3</sup>Dr. Dharani, <sup>4</sup>Dr. Apoorva Sokke Mallikarjunappa, <sup>5</sup>Dr. Sapna Nadiger and <sup>6</sup>Dr. Divya Bhat**<sup>1</sup>Professor and Head, <sup>2</sup>Post-Graduate Student, <sup>3</sup>Post-Graduate Student, <sup>4,5</sup>Reader, <sup>6</sup>Senior Lecturer  
Postgraduate, D.A.P.M.R.V. Dental College, CA-37, 24<sup>th</sup> Main, J P Nagar ITI Layout, 1ST Phase, Bangalore.**\*Corresponding Author: Dr. Swati George**

Postgraduate, D.A.P.M.R.V. Dental College, CA-37, 24th Main, J P Nagar ITI Layout, 1ST Phase, Bangalore.

Article Received on 24/06/2021

Article Revised on 15/07/2021

Article Accepted on 05/08/2021

**ABSTRACT**

Localized growths in the gingiva are often considered to be reactive rather than neoplastic. Most of these lesions are difficult to be clinically identified or identified only on the basis of typical and consistent histomorphology. Peripheral ossifying fibroma (POF) is one such inflammatory reactive hyperplasia occurring in the gingiva. It represents a separate clinical entity rather than a transitional form of pyogenic granuloma with unique clinical features and an array of histopathological features. This article describes two clinical cases of excision of peripheral ossifying fibroma by different surgical techniques occurring in the anterior mandibular region showing significant growth.

**KEYWORDS:** Peripheral ossifying fibroma, Calcifications, gingival hyperplasia, ossifying fibroma.**INTRODUCTION**

Reactive gingival enlargements, frequently occur in the oral cavity. These lesions mainly include peripheral giant cell granuloma, pyogenic granuloma, traumatic fibromas and peripheral ossifying fibroma which arise as a result of such irritants as trauma, microorganisms, plaque, calculus, restorations, and dental appliances.<sup>[1,2,3]</sup>

These lesions are innocuous in nature, and rarely present with aggressive clinical features.<sup>[4]</sup> Amongst these lesions, peripheral ossifying fibroma [POF] is an infrequently occurring outgrowth of the interdental papilla which is focal, reactive, non-neoplastic and tumor-like.<sup>[5]</sup> It appears as a sessile or pedunculated, slow growing solitary mass, color varying from pale pink to cherry with either a smooth or ulcerated surface.

POFs are mostly diagnosed in females in the second decade of life with the anterior maxilla being the most common site of occurrence. The adjacent teeth are usually unaffected, however certain cases, may be associated with migration, mobility, or delayed eruption of permanent teeth.<sup>[6]</sup>

Ossifying fibroma mostly occurs in the craniofacial bones and is categorized into two types: Central and peripheral. Central ossifying fibroma arises within the endosteum or the PDL, adjacent to the root apex and expands into the medullary cavity of the bone. The peripheral type appears to be continuous with the PDL, overlying the soft tissues of the alveolar process.<sup>[7,8]</sup>

Histopathologically it shows the presence of oxytalan fibers interspersed among the calcified structures.<sup>[9]</sup>

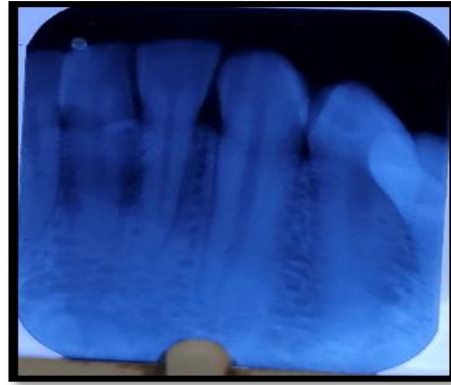
Gardner 1982, termed "POF" for a lesion which was reactive in nature and simultaneously was not an extraosseous counterpart of a COF.<sup>[3]</sup>

**CASE REPORT****Case I**

A 45 year old male patient visited the Department of Periodontics, DAPMRV Dental College and Hospital with a history of a swelling that had gradually increased in size in the past 1 year. There was no history of previous swelling in the oral cavity and no associated past medical or family history.



**FIG. 1: Preoperative view**



**FIG. 2: Radiographic view**

On intra oral examination, it appeared as a solitary, pedunculated outgrowth involving the marginal gingiva and the buccal interdigital papilla in relation to 32 and 33. [Figure 1]. The lesion was pink in color with a smooth surface and no surface ulceration. It measured approximately 4 cm mesio-distally and 6 cm cervico-occlusally. On palpation, it was painless non-tender, firm in consistency and bled occasionally or when traumatized with a toothbrush. Radiograph revealed only a soft tissue shadow with no significant bony changes. Provisional diagnosis of POF was considered.

After routine blood examinations, thorough scaling and root planning was performed to eliminate the irritating factors in the initial appointments. The area of interest was anaesthetized using 2% lignocaine with 1: 80000 adrenaline, following which excision of the lesion was performed using an electrocautery and under antibiotic coverage. Periodontal dressing was applied and oral hygiene maintenance was instructed.



**FIG.3: Electrocautery done for excision of the lesion**



**FIG.4 : Postoperative view**



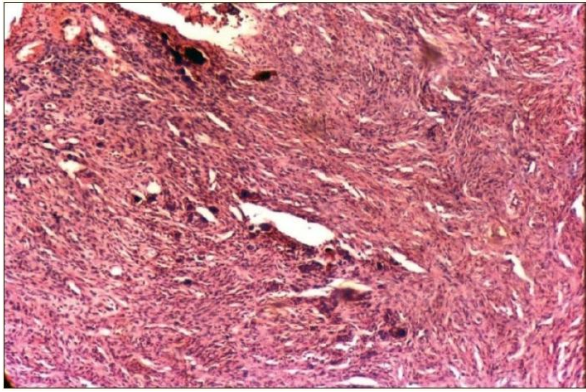
**FIG.5: Periodontal dressing applied**



**FIG.6: Excised lesion**

Microscopic examination showed fibro-cellular connective tissue interspersed with fibroblasts. There appeared to be evidence of scattered basophilic

calcifications in the hypercellular fibroblastic stroma diagnostic of peripheral ossifying fibroma.



**FIG.7:** Histopathological appearance of the excised lesion.

The healing was adequate at 3 months however the patient revisited the department after a year with a recurrence of the lesion at the same site, measuring the same dimensions.



**FIG.8:** Recurrence of lesion at the same site after a year



**FIG.9:** Surgically excised lesion

The patient was re-examined of the blood parameters and a surgical excision of the lesion was carried out in the region of 32 and 33 under local anaesthesia followed by

an elevation of a mucoperiosteal flap to ensure thorough curettage of the adjacent periodontal ligament, and periosteum to prevent further recurrence of the lesion.



**Fig. 10:** Mucoperiosteal flap raised for debridement followed by suturing of the flap and periodontal dressing.

The 6 month follow-up of the case showed normal healing of the area.



**FIG.11:** 6 month postoperative view.



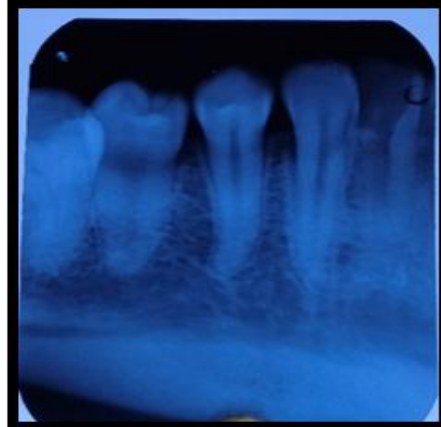
**CASE II**

A 25 year old female patient visited the Department of Periodontics, DAPMRV Dental College and Hospital

with a history of a swelling in the lower left region. There was no history of previous swelling in the oral cavity and no associated past medical or family history.



**FIG.12: Preoperative view**



**FIG.13: Radiographical view**

Intra oral examination revealed it to be as a solitary, pedunculated outgrowth involving the lingual interdental papilla as well as the attached gingiva in relation to 33 and 34. The lesion was pale pink in color with a smooth surface. It measured approximately 6 cm mesio-distally and 9 cm cervico-occlusally. On palpation, it was non-tender, firm in consistency with an absence of bleeding. Radiograph revealed irregular radiopacity interspersed in the soft tissue shadow with no significant bony changes based on which POF was considered.

After routine blood examinations, thorough scaling and root planning was performed to eliminate the irritating factors. The area of interest was anaesthetized using 2% lignocaine with 1: 80000 adrenaline, following that excision of the lesion was done along with thorough curettage of the adjacent periodontal ligament, to prevent further recurrence of the lesion. Periodontal dressing was applied and oral hygiene maintenance was instructed to the patient.



**FIG.14: Surgical excision of the lesion**

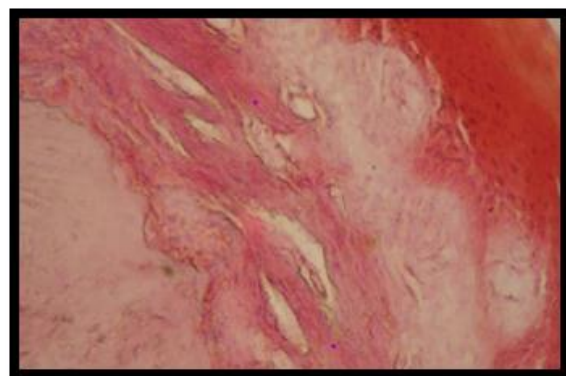


**FIG.15: Postoperative view**



**After a 2 month follow-up, the site showed uneventful healing and was satisfactory.**

The tissue was sent for histopathological examination which showed a hyperplastic parakeratinized stratified squamous epithelium overlying the connective tissue stroma. The stroma comprised of highly cellular mass of proliferating fibroblasts interspersed with fibrillar tissue. There appears to be small trabeculae of lamellar bone along with dystrophic calcifications confirming the presence of peripheral ossifying fibroma.



**FIG.16: Histopathological appearance of the lesion.**

## DISCUSSION

Ossifying fibroma was first described by Menzel in 1872, however the term was coined by Montgomery in 1927.<sup>[10]</sup> Shepherd (1844) reported POF as “alveolar exostosis” and in 1972, Eversole et al.<sup>[11]</sup> coined the term POF. Various synonyms have been named for POF, such as peripheral fibroma with osteogenesis, peripheral cemento ossifying fibroma, peripheral odontogenic fibroma (PODF) with cementogenesis, peripheral fibroma with calcification, fibrous epulis, calcifying fibroblastic granuloma, etc.<sup>[1,12]</sup> stating a controversy in the classification of these lesions.

The proposed concept of its histogenesis is controversial. It has been stated that

1. It has been postulated that POF initially develops as pyogenic granuloma which subsequently undergoes fibrous maturation and calcification. Representing a progressive stage of the pathosis.<sup>[13]</sup>
2. Secondly, POF occurs as a result of inflammatory hyperplasia and the fibrocellular response of the cells of the periodontal ligament/periosteum owing due to its massive occurrence in the interdental papilla. Connective tissue metaplasia occurs, leading to dystrophic calcification and bone formation.<sup>[14]</sup> The presence of oxytalan fibres within the mineralized matrix of some lesion has also been noted.<sup>[2]</sup>
3. Factors such as subgingival plaque and calculus, dental appliances, faulty dental restorations, micro-organisms and food lodgement may trigger inflammatory response<sup>[15]</sup>

POF appears as a smooth lobulated pink mass present on a pedunculated or sessile base. **Jain et al** reported of an increasing incidence in the second decade and declines in incidence after the third decade.<sup>[16]</sup> **Reddy et al** reports of only 0.5% cases in the older age group.<sup>[17]</sup> Conversely Kohli et al. have reported the presence of a POF associated with an anterior mandibular neonate tooth in a 2-hour-old female,<sup>[18]</sup> Buchner and Hansen reported a POF in a 7- month-old infant<sup>[19]</sup> whereas Singh et al. reported a case present in the anterior maxilla in 70-year-old female.<sup>[20]</sup>

Hormonal influences may play an important role, thus having higher female predilection.<sup>[21]</sup> POF is usually occurs in the incisor-canine region.<sup>[22]</sup> **Kfir et al.** reports of its size to be smaller than 1.5 cm in diameter usually

whereas **Poon et al** have reported of a case of giant POF measuring 9 cm.<sup>[23]</sup>

Radiographically, the appearance of POF may range from lack of significant changes to destructive changes depending on the duration of the lesion. Certain cases appear to have varying radiodensities within the lesion, depending upon the degree of mineralization. Superficial bone loss, cupping defect, and focal areas calcification have been reported at the center of the lesion.<sup>[24]</sup> Investigations such as computed tomography and magnetic resonance imaging are helpful in detection of larger lesions.<sup>[25]</sup>

Histologically, the appearance of POF can appear with, either an ulcerated or an intact stratified squamous epithelium. Ulcerated lesions comprise of three zones: **Zone I:** The superficial ulcerated zone - a fibrinous exudate enmeshed within a zone of polymorphonuclear neutrophils and debris.

**Zone II:** Beneath the surface epithelium - exclusively composed up of proliferating fibroblasts along with a diffuse infiltration of chronic inflammatory cells composed up of lymphocytes and plasma cells.

**Zone III:** This zone appears to have more collagen, with higher cellularity and less vascularity. The presence of osteoid and occurrence of osteogenesis is a prominent feature, extending upto the first zone.

The mineralized material can generally take one or more of the following:

1. Woven or lamellar bone either surrounded by osteoid, or occurring in trabecular form;
2. Spherical cementum-like substance or large acellular round-to-oval eosinophilic bodies;
3. Dystrophic calcifications, ranging from minute clusters of basophilic granules or large solid irregular masses.<sup>[1]</sup>

There however does not appear to be a complete histological distinction between bone and cementum, and as such dystrophic calcifications arise in fibro-osseous lesions in other bones as well.<sup>[26,27]</sup>

The differential diagnosis can be summed up as per Table 1. Its differential diagnosis may also include neoplastic growth due to its occurrence and similar presentations. **Zhang et al** have included cancer as a differential diagnosis in only 2% of cases.<sup>[28]</sup>

Lesion	Clinical features	Histological features
Pyogenic granuloma	Age-Not definitive Site-gingiva (most common), tongue, buccal mucosa Features - pedunculated or sessile, asymptomatic fast growing soft red mass, bleeds easily Mostly associated with young females, and in pregnancy	Endothelium lined vascular channels engorged with red blood cells and chronic inflammatory cells
	Age- 4th to 6th decade	Large number of multinucleated

Peripheral giant cell granuloma.	Site - Exclusively on gingiva present anteriorly Features- Reddish or Purplish rapidly growing soft or firm mass which may be sessile or pedunculated. usually 0.5-1.5 cm in size with surface ulceration	giant cells in vascularized fibro cellular stroma with inflammatory cell infiltration.
Peripheral ossifying fibroma	Age-11-20 years Site- Exclusively on gingiva Features - Firm, pedunculated mass, colour same as surrounding mucosa No bone involvement seen on radiograph.	Cellular fibrous connective tissue containing numerous calcified deposits Minimal vascular component.
Peripheral odontogenic fibroma Uncommon	Age-5-65 years Site – gingiva Features - Slow growing solid, firmly attached gingival mass which sometimes may displace teeth. Soft tissue counterpart of central odontogenic fibroma	Islands of Odontogenic epithelium seen

The treatment of POF requires proper surgical intervention comprising of complete excision of the lesion and debridement of the periosteum and periodontal ligament. In young adults, reactive gingival lesions can exhibit an exuberant growth thereby reaching a large size in a short span. Additionally, POF may cause bone erosion resulting in displacement of teeth, or delayed eruption. Therefore early recognition and definitive treatment may pose less risk to tooth and bone loss.<sup>[22]</sup>

## CONCLUSION

POF appears as one of the common solitary swelling in the oral cavity which may clinically be misdiagnosed as pyogenic granuloma. Radiological and histopathological examination is required for confirmation of its diagnosis and surgical intervention is employed, to eliminate the etiological factors.

## REFERENCES

- Bhaskar SN, Jacoway JR. Peripheral fibroma and peripheral fibroma with calcification: Report of 376 cases. *J Am Dent Assoc*, 1966; 73: 1312-20.
- Eversole LR, Rovin S. Reactive lesions of the gingiva. *J Oral Pathol*, 1972; 1: 30-8.
- Gardner DG. The peripheral odontogenic fibroma: An attempt at clarification. *Oral Surg Oral Med Oral Pathol*, 1982; 54: 40-8.
- Buduneli E, Buduneli N, Unal T. Long-term follow-up of peripheral ossifying fibroma: report of three cases. *Periodontal Clin Investig*, 2001; 23: 11-14. [Crossref]
- Neville BW, Damm DD, Allen CM, Bouquot JE (1995) *Oral and Maxillofacial Pathology*. Philadelphia: WB Saunders Co., 374-376.
- Kumar R S, Sateesh CP, Shreedhar A. Peripheral ossifying fibroma: A rarity in elderly males. *J Dent Sci Res.*, 2017; 2: 1-5.
- Killi VP, Penmatsa T, Narendra R. Peripheral ossifying fibroma: A case report. *Int J Case Rep Imaging*, 2012; 3: 11-4.
- Keluskar V, Byakodi R, Shah N. Peripheral ossifying fibroma. *J Indian Acad Oral Med Radiol*, 2008; 20: 54-6.
- Wright BA, Jennings EH. Oxytalan fibers in peripheral odontogenic fibromas. A histochemical study of eighteen cases. *Oral Surg Oral Med Oral Pathol*, 1979; 48: 451-3.
- G. Sujatha, G. Sivakumar, J. Muruganandhan, J. Selvakumar, and M. Ramasamy, "Peripheral ossifying fibroma-report of a case," *Indian Journal of Multidisciplinary Dentistry*, 2012; 2(1): 415-418.
- Eversole LR, Leider AS, Nelson K. Ossifying fibroma: a clinicopathologic study of sixty-four cases. *Oral Surg Oral Med Oral Pathol*, 1985; 60: 505-511.
- Walters JD, Will JK, Hatfield RD, Cacchillo DA, Raabe DA. Excision and Repair of the Peripheral Ossifying Fibroma: A Report of 3 Cases. *J Periodontal*, 2001; 72: 939-44.
- Prasad S, Reddy SB, Patil SR, Kalburgi NB, Puranik RS. Peripheral ossifying fibroma and pyogenic granuloma. Are they interrelated?. *N Y State Dent J.*, 2008; 74(2): 50-52.
- Satish BN, Kumar P. Peripheral ossifying fibroma of hard palate: A case report. *Int J Dent Clin.*, 2010; 2: 30-4. Peripheral cemento-ossifying fibroma of maxilla. Chatterjee A, Ajmera N, Singh A *J Indian Soc Periodontol*, Jul, 2010; 14(3): 186-9.
- Jain A, Deepa D. Recurrence of peripheral ossifying fibroma: A case report. *People's J Sci Res.*, 2010; 3: 23-5. [Google Scholar] [Ref list]
- Reddy GV, Reddy J, Ramlal G, Ambati M. Peripheral ossifying fibroma: Report of two unusual cases. *Indian J Stomatol*, 2011; 2: 130-3. [Google Scholar] [Ref list]
- Kohli K, Christian A, Howell R. Peripheral ossifying fibroma associated with a neonate tooth: case report. *Pediatr Dent*, 1998; 20: 428-429. [Crossref]
- Buchner A, Hansen LS The histomorphologic spectrum of peripheral ossifying fibroma. *Oral Surg Oral Med Oral Pathol*, 1987; 63: 452-461. [Crossref]

19. Singh AP, Raju MS, Mittal M. Peripheral ossifying Fibroma: A case report. *J Nebr Dent Assoc*, 2010; 1: 70-72.
20. Shetty DC, Urs AB, Ahuja P, Sahu A, Manchanda A, Sirohi Y *Indian J Dent Res.*, Jan-Feb, 2011; 22(1): 56-61.
21. Kenney JN, Kaugars GE, Abbey LM. Comparison between the peripheral ossifying fibroma and peripheral odontogenic fibroma. *J Oral Maxillofac Surg*, 1989; 47: 378-82.
22. Poon CK, Kwan PC, Chao SY. Giant peripheral ossifying fibroma of the maxilla: report of a case. *J Oral Maxillofac Surg*, 1995; 53(6): 695-698. doi:10.1016/0278-2391(95)90174-4
23. Kendrick F, Waggoner WF Managing a peripheral ossifying fibroma. *ASDC J Dent Child*, 1996; 63: 135-138. [Crossref]
24. Chaudhari S, Umarji HR. Peripheral ossifying fibroma in the oral cavity: MRI findings. *Case Rep Dent*, 2011; 2011: 190592.
25. Mohiuddin K, Priya NS, Ravindra S, Murthy S. Peripheral ossifying fibroma. *J Indian Soc Periodontol*, 2013; 17(4): 507-509. doi:10.4103/0972-124X.118325
26. Poonacha KS, Shigli AL, Shirol D. Peripheral ossifying fibroma: A clinical report. *Contemp Clin Dent*, 2010; 1(1): 54-56. doi:10.4103/0976-237X.62520
27. Zhang W, Chen Y, An Z, Geng N, Bao D. Reactive gingival lesions: a retrospective study of 2,439 cases. *Quintessence Int*, 2007; 38(2): 103-110.