

# Peripheral Ossifying Fibroma: A Case Report

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## ABSTRACT

The gingiva is considered as the site prone for localized growths that are found to be more reactive rather than neoplastic in nature. These lesions being difficult to be identified clinically, can be identified as specific entity on the basis of consistent histopathological diagnosis. Peripheral ossifying fibroma (POF) is usually a fibroma of the gingival which shows areas of calcification or ossification. It is a nonneoplastic enlargement of gingiva. Synonyms for POF include Peripheral cementifying fibroma, Peripheral fibroma with calcification, Calcifying or ossifying fibrous epulis and Calcifying fibroblastic granuloma. This present case report highlights a case of Peripheral Ossifying Fibroma in left upper back region in 40 year old female patient along with clinical, histopathologic and treatment details.

**KEYWORDS:** Gingival overgrowth, Histopathologic diagnosis, oral cavity, Peripheral Ossifying fibroma, Treatment

## INTRODUCTION

Various localized lesions are seen on the gingiva which include Pyogenic granuloma, Peripheral giant cell granuloma, Focal fibrous hyperplasia and Peripheral Ossifying Fibroma (POF).<sup>1</sup>

Classified as a reactive hyperplastic inflammatory lesion, Peripheral Ossifying Fibroma can be defined as focal, reactive, non-neoplastic tumor like growth of the soft tissue that often arises from the interdental papilla.<sup>2</sup> POF accounts for 3.1% of all oral tumors<sup>3</sup> and for 9.6% of all gingival lesions.<sup>4</sup> Menzel in 1872 first described the ossifying fibroma and Montgomery in 1927 assigned its terminology.<sup>5</sup> Clinically peripheral ossifying fibroma appears as a nodular mass, either pedunculated or sessile, usually ulcerated and erythematous or it exhibits a color similar to the surrounding gingiva.<sup>6</sup> POF may occur at any age, but exhibits a peak incidence between the 2<sup>nd</sup> and 3<sup>rd</sup> decades of life. It has a female preponderance (Female: Male - 4.3:1). There is a slight predilection for the maxillary arch in the incisal and cuspid region<sup>7</sup>. Most lesions are less than 2 cm in size, although larger ones occasionally occur<sup>3</sup>. On roentgenogram, in a vast majority of cases, there is no apparent underlying bone involvement visible. Rarely superficial bone erosion seem to appear<sup>3</sup>.

Etiology for POF is not very clear. The pluripotent cells of the PDL have the apparent ability to transform or metaplastically change into fibroblasts, osteoblasts or cementoblasts in response to irritants such as bacterial plaque, calculus, irregular restorations, ill-adapted crowns and orthodontic appliances, and therefore are capable of producing a unique inflammatory hyperplasia, the peripheral ossifying fibroma.<sup>3,5,7</sup> POF, which represents a reactive benign lesion of the connective tissue, is not considered the soft tissue counterpart of the central

ossifying fibroma, representing an osteogenic neoplasm.<sup>7</sup> The central type of ossifying fibroma is considered to be arising from the endosteum or the PDL adjacent to the root apex and expands from the medullary cavity of the bone. On the other hand, the peripheral type is thought to show a contiguous relationship with the PDL, occurring solely on the soft tissues overlying the alveolar process.

The line of treatment for POF is local resection including the peripheral and deep margins. Both the periodontal ligament and the affected periosteal component should also be included in the resection. In addition, elimination of local etiological factors which include calculus and bacterial plaque is required.<sup>8</sup> The recurrence rate is considered rather high for this benign reactive proliferation as reported to vary from 8.9% to 20% respectively. It probably occurs due to incomplete removal, persistence of local irritants and repeated injury. The average time interval for the first recurrence is 12 months.<sup>9</sup>

## CASE REPORT

A 40-year-old female patient reported to the department of Periodontology and Oral Implantology, with the complaint of discomfort while chewing and speaking due to a growth in the left upper posterior region of the jaw. It started as a small papule approximately 12 months ago and gradually increased in size with time to attain the present size. No relevant history of bleeding or pain was recorded. Her medical history was non-significant and no history of any medication at that time. Intraoral examination revealed solitary oval growth present on the interdental and marginal gingiva of the left upper second molar i.e. 27 measuring about 1cm x 1cm. The lesion was pale pink in colour, non tender, freely mobile and blanched on pressure. [Figure 1]

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Figure 1: Clinical presentation of the lesion w.r.t. left upper second molar(27)

The differential diagnosis included irritation fibroma, pyogenic granuloma, fibroepithelial hyperplasia, and Peripheral Ossifying Fibroma. Based on both the clinical and radiographic findings, the provisional diagnosis of irritation fibroma was made.

The treatment plan included patient education and motivation, Oral hygiene instructions, thorough scaling and root planing, reevaluation and surgical excision of the lesion under local anesthesia. Scaling and root planing was performed for elimination of local irritants. After 1 week of SRP and reevaluation, surgical excision with # 15 blade down to the periosteum was performed [Figure 2] and periodontal dressing was placed. Patient was given post-operative instructions and was prescribed with analgesic (Tablet Dan-P tid ) and mouth rinse (0.2% chlorhexidine gluconate twice-a-day for 1 week). She was recalled, after 1 week for follow-up. The excised tissue [Figure 3] was placed in 10% neutral buffered formalin and sent for the histopathologic examination.



Figure 2: Immediate postoperative after excision of gingival overgrowth with # 15 surgical blade

The laboratory tests performed included, a complete blood picture and thyroid and lipid profiles. All the test results were normal. Radiographic examination revealed no significant finding.[Figure 4]

On histopathological examination, low power magnification (4x) showed a keratinized stratified squamous epithelium (gingiva), overlying a fibrous

Connective tissue stroma which exhibited dense



Figure 3: Excised gingival Growth



Figure 4: IOPAR w.r.t. 27 which shows no significant findings

interlacing collagen bundles and numerous ossifications. High power magnification (40x) exhibited pink homogenous calcified tissue (ossification), with the osteocytes entrapped in the lacunae. This picture is consistent with the clinical diagnosis of POF. [Figure 5]

At 1 week post-operative visit, patient presented for periodontal dressing removal and follow-up examination. There was a satisfactory healing [Figure 6]. Patient is on regular follow-up. There was no recurrence at 3 months follow up. [Figure 7]

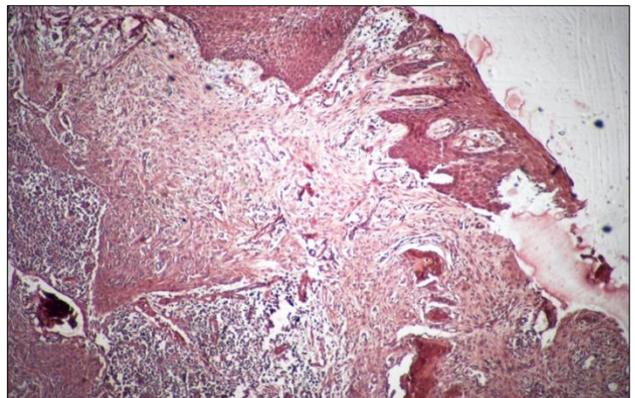


Figure 5: H & E staining showing numerous fibroblasts and basophilic ossification like material



Figure 6: 1 week postoperative picture showing satisfactory healing



Figure 7: 3 months postoperative showing complete healing with no recurrence of lesion

## DISCUSSION

Ossifying fibroma elaborates bone, cementum and spheroidal calcifications, which has given rise to various terms for these benign fibro-osseous neoplasms. When bone predominates, the term "OSSIFYING" is given and when curvilinear trabeculae or spheroidal calcifications are encountered, the term 'cementifying' has been assigned. When both bone and cementum-like tissues are observed, the term, cement ossifying fibroma is assigned. Cementifying fibromas may be clinically and radiographically impossible to separate from ossifying fibromas.<sup>5,10</sup>

Though the etiopathogenesis of peripheral ossifying fibroma is uncertain, an origin from cells of periodontal ligament has been suggested. The reasons for considering the origin of POF as PDL, include exclusive occurrence of POF in the gingiva (interdental papilla), the presence of oxytalan fibres within the mineralized matrix of some lesions and the proximity of gingiva to the periodontal ligament.<sup>11</sup> Excessive proliferation of mature fibrous connective tissue is a response to gingival irritation, gingival injury, a foreign body in the gingival sulcus or subgingival calculus. Chronic irritation of the periodontal and periosteal membrane can cause metaplasia of the connective tissue resulting in initiation of bone formation and dystrophic calcification. It has also been suggested

that the lesion can be caused by fibrosis of granulation tissue.<sup>12</sup>

The size of the POF can vary from 0.4 to 4.0 cm<sup>12</sup> and whites (71%) are more frequently affected than blacks (36%).<sup>14</sup> Peripheral ossifying fibroma tends to occur in the 1<sup>st</sup> and 2<sup>nd</sup> decades of life. The peak prevalence is seen between the ages of 10 and 19. Almost two thirds of all cases occur in females, with a predilection for the anterior maxilla.<sup>15</sup> The surface is frequently but may not always be ulcerated. According to Mulcahy and Dahl and Cundiff, there is a high prevalence of ulceration, i.e., 62% and 65%. Among the patients with ulcerated lesions the male: female ratio was equal in the 2<sup>nd</sup> decade and in all other decades there was a female predominance.<sup>16,17</sup> In the present case the size of the lesion is well confined within the above mentioned range. Also the female predilection, in this case, is in accordance with the above mentioned analysis.

Radiographic features of POF vary. In some cases, radiopaque foci of calcifications are reported to be scattered in the central area. In most of the cases, underlying involvement of bone is not visible on a radiograph but rarely superficial erosion of bone can be noted.<sup>18</sup> In the present case, no radiographic findings were found which indicated that this could be an early stage of the lesion.

A confirmational diagnosis of POF is made by histopathologic evaluation of biopsy specimen. The following features are usually observed during the microscopic examination:

- (1) Intact / ulcerated stratified squamous surface epithelium;
- (2) Benign fibrous connective tissue with numerous fibroblasts;
- (3) Less to marked proliferation of endothelium;
- (4) Mineralized material which consists of lamellar, mature or woven osteoid, cementum-like material or dystrophic calcifications; and
- (5) Inflammatory cells that may be acute or chronic.<sup>8,12</sup>

Moreover, histopathologically, lamellar, mature or woven osteoid pattern predominates; hence, the term "POF" is considered more appropriate.

In a typical ulcerated lesion, three zones could be identified:<sup>11</sup>

*Zone I:* The superficial ulcerated zone covered with the fibrinous exudate enmeshed with PMNLs and debris.

*Zone II:* The zone beneath the surface epithelium composed almost exclusively of proliferating fibroblasts with diffuse infiltration of chronic inflammatory cells i.e. Plasma cells and Lymphocytes.

*Zone III:* More collagenized connective tissue with high cellularity and less vascularity. Osteogenesis consisting of osteoid and bone formation is a prominent feature and it can even reach the ulcerated surface in some cases.

Various modalities for treatment include surgical excision by scalpel, laser and radial/electrosurgery.<sup>19</sup> The CO<sub>2</sub> laser has been effectively found to excise the lesion with excellent diagnostic microscopic evaluation and causes minimal distortion of the biopsy sample.<sup>20</sup> The advantages of laser include minimal postoperative pain and elimination of suture at biopsy site. If the base of the pathologic lesion has not been completely removed, then recurrence of lesion can occur.<sup>21</sup> Thus, surgical excision including the involved periodontal ligament and periosteum is the preferred treatment,<sup>13</sup> which was performed in this case.

The recurrence rate of POF has been considered high for reactive lesions, and it probably occurs due to incomplete removal, persistence of the local irritants and repeated injury.<sup>3,6</sup>

According to a series of 134 POF's analyzed by Cuisia and Brannon, the average time interval for the first recurrence is 12 months.<sup>14</sup> Early surgical treatment of the POF, including removal of identifiable etiological factors, is required to obtain satisfactory gingival repair and minimize possibility of recurrence. In the present case, no recurrent rate was observed till 3 months and further follow up visits have to be maintained to check for recurrence of the lesion.

## CONCLUSION

POF is a slowly progressive, benign lesion with limited growth. Since it is difficult to diagnose only on the clinical basis, histopathologic confirmation is necessary. Complete surgical excision down to the periosteum is the chosen mode of treatment and as the recurrence rate is high (8-20%),<sup>5</sup> close post-operative follow-up is required.<sup>21</sup>

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