

## PERIPHERAL CEMENTO-OSSIFYING FIBROMA – A CASE REPORT

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### Abstract

**Background:** Peripheral cemento-ossifying fibroma is a hard fibrous growth that continues to enlarge, sometimes to a very significant size, unless treated. It is a gingival lesion of reactive nature comprising about 9% of all gingival overgrowths. It occurs sometimes in connection with a fracture or any other type of injury. It is generally asymptomatic until the growth produces a noticeable swelling and mild deformity

**Case report:** This report describes a case of an 55 year old male presenting with swelling of gingiva in the mandibular anterior region for past 3 years. The mass was surgically excised and debridement was done.

**Follow up:** After a follow up period of one year, there were no signs of complications clinically.

**Conclusion:** Histopathological report revealed it as peripheral cemento-ossifying fibroma. No recurrence was observed in the next 6 months.

**Keywords:** Peripheral cemento-ossifying fibroma, Fibroma, Excisional biopsy

### Introduction

“Fibromas” are benign fibrous overgrowths, which arise from the mucous membrane. They are frequently found in the oral cavity and arise due to overproduction of fibrous tissue within the connective tissue. It usually represents a reactive focal fibrous hyperplasia due to trauma or local irritation.<sup>1</sup> The 1992 WHO classification groups under a single designation (cemento-ossifying fibroma) two histologic types (cementifying fibroma and ossifying fibroma) that may be clinically and radiographically undistinguishable. Cemento-ossifying fibroma is a relative rare lesion considered as an osteogenic tumor (nonodontogenic) with variable expressiveness. It is defined as a well-demarcated and occasionally encapsulated lesion consisting of fibrous tissue containing variable amounts of mineralized material resembling bone (ossifying fibroma), cementum (cementifying fibroma), or both.<sup>2</sup> Montgomery in 1927 first coined the term, peripheral cementoossifying fibroma.<sup>3</sup>

Peripheral cemento-ossifying fibroma (PCOF) accounts for 3.1% of all oral tumors and for 9.6% of gingival lesions. The pathogenesis of this tumor is uncertain. Due to their clinical and histopathological similarities, some PCOFs are believed to develop fibrous maturation and subsequent calcification. PCOF is frequently associated with irritant agents such as calculus, bacterial plaque, orthodontic appliances, illadapted crowns, and irregular restorations. The mineralized product probably originates from periosteal cells or from the periodontal ligament. PCOF affects both genders, but a higher predilection for females has been reported in the literature. With respect to race, there is a predominance in Whites (71%) compared to Blacks (36%). It may occur at any age, but exhibits a peak incidence between the second and third decades. However, Neville et al. say that it predominantly affects adolescents and young adults, with a peak prevalence between 10 and 19 years.<sup>2</sup> Clinically, PCOF manifests as a pediculate or sessile nodular mass, which usually originates in the

interdental papilla.<sup>2</sup> The peripheral cemento-ossifying fibroma clinically presents as a pedunculated or sessile exophytic mass, about <2 cm in diameter (occasionally >10 cm), with a color similar to that of the mucosa, unless the surface is ulcerated.<sup>3</sup> There is a slight predilection for the maxillary arch (60%) and the incisor-cuspid region (50%) but may also occur in the mandibular arch.<sup>3</sup> A potential of tooth migration PCOF has been reported.<sup>3</sup>

The present report describes a case of Peripheral Cemento-Ossifying Fibroma in a 55 year old male patient.

### Case report

A 55 year old male patient reported to the Department of Periodontics, Rajah Muthial Dental College And Hospital with a chief complain of a swelling in the lower front tooth region for past 3 years.. History of present illness revealed that the lesion started as a small nodule and has gradually increased to attain the present size, occasionally dull pain present. His past medical history and family history were noncontributory. Extra oral examination revealed normal facial features with left TMJ clicking evident while opening and closing axis.



Figure 1: Pre-operative View

Intraoral examination revealed fair oral hygiene, and a pale pink, firm, oval, pedunculated growth located on the labial surface of the gingiva in relation to 31 and 33 region; measuring approximately 2.0 x 1.5 cm in diameter, apicocoronally it extends from the 2/3rd of the clinical crown to the MGJ, with no ulcerations, discharge or vascular changes. [Figure 1]

On palpation, the inspection findings were confirmed. The mass was firm in consistency, pedunculated, non-tender and no bruit or pulse was felt. Probing pocket depth was 6mm in relation to 32 and 33 region. IOPA revealed widening of PDL space in relation to 32 with crestal bone loss in relation to 32 and 33. [Figure 2]



Figure 2: Intraoral periapical Radiograph

Routine hemogram was found to be normal. A provisional diagnosis of pyogenic granuloma was made. The differential diagnosis included irritational fibroma, calcifying fibroma or peripheral odontogenic fibroma. Patient revealed no relevant systemic history. Treatment plan included scaling and root planing (Phase I therapy) followed by surgical excision. Under local anaesthesia, an excisional biopsy was performed and the underlying surface was thoroughly curetted up to deepest possible tissue [Figure 3]



Figure 3: Surgical excision

After achieving hemostasis, periodontal dressing was placed. The patient was discharged with a prescription of antibiotics, analgesics and chlorhexidine mouth wash and was recalled after one week for a follow up. The one week follow up was uneventful with the surgical site showing signs of healing. The Excised tissue was sent for histopathologic analysis. A one month follow up followed by 3 and 6 months postsurgical follow-up of the patient showed complete healing of the tissues with no evidence of recurrence. [Figure 4]



Figure 4: Post-operative after 6 months

#### Histopathological report

The H&E stained section [Figure 5] of the biopsied tissue revealed a fibrous connective tissue, which comprised of bundles of collagen fibers in a cellular stroma. Numerous plump to spindle shaped fibroblasts were present. The connective tissue also revealed several foci of bone-like ossifications. The overlying epithelium was hyperplastic, parakeratotic stratified squamous epithelium showing numerous elongated retepegs. Few blood vessels with RBC and proliferating endothelial cells were also evident. Chronic inflammatory cell infiltrate was seen evenly distributed in the whole area and the cells comprised mainly of lymphocytes and plasma cells. Thus, a final diagnosis of peripheral cement-ossifying fibroma was established correlating the clinical findings as well as the microscopic features.

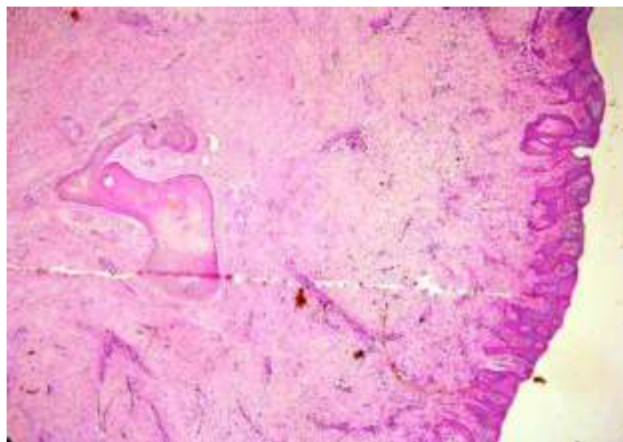


Figure 5: Histopathological view



## Discussion

Peripheral ossifying fibroma is thought to be either reactive or neoplastic in nature. Considerable confusion has prevailed in the nomenclature of peripheral ossifying fibroma with various synonyms being used, such as peripheral cementifying fibroma, ossifying fibroepithelial polyp, peripheral fibroma with osteogenesis, peripheral fibroma with cementogenesis, peripheral fibroma with calcification, calcifying or ossifying fibroma epulis, and calcifying fibroblastic granuloma. Ossifying fibromas elaborate bone, cementum and spheroidal calcifications, which has given rise to various terms for these benign fibroosseous neoplasms. When bone predominates, "ossifying" is the appellation, while the term "cementifying" has been assigned when curvilinear trabeculae or spheroidal calcifications are encountered. When bone and cementum-like tissues are observed, the lesions have been referred to as cemento-ossifying fibroma.<sup>2</sup> Endo et al. distinguished cementifying fibroma from ossifying fibromas and fibrous dysplasias by using immunohistochemical analysis for keratin sulfate and chondroitin-4 sulfate in which the cementifying fibromas showed significant immunoreactivity for keratan sulfate and ossifying fibromas, and fibrous dysplasias showed intensive immunostaining for chondroitin-4-sulfate.<sup>4</sup> It has been suggested that origin of peripheral ossifying fibroma is from the cells of periodontal ligament. The reason for considering the periodontal ligament as the origin for peripheral ossifying fibroma is the occurrence of peripheral ossifying fibroma in the gingiva (interdental papilla), (i.e.,) the proximity of gingiva to the periodontal ligament, and the presence of oxytalan fibres within the mineralized matrix of some lesions. Excessive proliferation of mature fibrous connective tissue is a response to gingival injury, gingival irritation, subgingival calculus, or a foreign body in the gingival sulcus. Chronic irritation of the periosteal and periodontal membrane causes metaplasia of the connective tissue and resultant initiation of formation of bone or dystrophic calcification. It has been suggested that the lesion may be caused by fibrosis of the granulation tissue.<sup>2</sup> Mesquita RA found higher numbers of argyrophilic nucleolar organizer regions (AgNORs) and proliferating cell nuclear antigen-(PCNA-) positive cells in ossifying fibroma than in peripheral ossifying fibroma, indicating higher proliferative activity in ossifying fibroma.<sup>5</sup> X-ray diffraction analysis indicated that the mineral phase of both central and peripheral tissues consists of apatite crystals and that the crystallinity of the apatites might improve progressively with the development of the lesion, possibly to the same degree as that of bone apatite.<sup>6</sup> Peripheral ossifying fibroma tends to occur in the 2nd and 3rd decades of life, with peak prevalence between the ages of 10 and 19.<sup>2</sup> Eversole and Rovin stated the similar sex and site predilection of pyogenic granuloma, peripheral giant cell granuloma, peripheral ossifying fibroma, these lesions may simply be varied histologic response of irritation.<sup>7</sup> Gardner stated that peripheral ossifying fibroma, cellular connective tissue is so characteristic that a histologic

diagnosis can be made with confidence, regardless of the presence or absence of calcification.<sup>8</sup> Buchner and Hansen hypothesized that early POF presents as ulcerated nodules with little calcification, allowing easy misdiagnosis as a pyogenic granuloma.<sup>8</sup> Because the clinical appearance of these various lesions can be remarkably similar, classification is based on their distinct histologic differences. The POF must be differentiated from the peripheral odontogenic fibroma (PODF) described by the World Health Organization.<sup>8</sup> Histologically, the PODF has been defined as a fibroblastic neoplasm containing odontogenic epithelium.<sup>9</sup>

Despite a preponderance of the literature supporting differentiation, some authors continue to argue that the POF (or peripheral cemento-ossifying fibroma) is the peripheral counterpart of the central cementoossifying fibroma.<sup>10</sup> The POF, as discovered in this case, is a focal, reactive, nonneoplastic tumour-like growth of soft tissue often arising from the interdental papilla.<sup>9</sup> It is a fairly common lesion, comprising nearly 3% of oral lesions biopsied in 1 study 1 approximately 1%-2% in other studies.<sup>2</sup> In 1993, S. Das and A. Das obtained similar results, with 1.6% POFs among 2,370 intraoral biopsies.<sup>11</sup> POFs are believed to arise from gingival fibers of the periodontal ligament as hyperplastic growth of tissue that is unique to the gingival mucosa.<sup>7,8</sup> This hypothesis is based on the fact that POFs arise exclusively on the gingiva, the subsequent proximity of the gingiva to the periodontal ligament, and the inverse correlation between age distribution of patients presenting with POF and the number of missing teeth with associated periodontal ligament.<sup>12</sup> The POF lesion is generally small and does not require imaging beyond radiographs. Treatment consists of conservative surgical excision and scaling of adjacent teeth. The rate of recurrence has been reported at 8.9, 9,14,16 and 20%.<sup>13</sup> Therefore, regular follow-up is required. Local surgical excision including periodontal ligament and periosteum of the POF is the preferred treatment, which was performed in this case.

## Conclusion

POF is a relatively slow advancing lesion with generally limited growth. It represents a reactive non-neoplastic lesion of connective tissue. Its diagnosis based only on the clinical aspects can be difficult and hence histopathological examination of the surgical specimen obtained by excisional biopsy is mandatory for an accurate diagnosis. Treatment modality consists of surgical excision of the lesion, scaling of adjacent teeth. Regular postoperative follow-up is required because of the growth potential of incompletely removed lesions and high recurrence rate of 8-20%.

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