

## Peripheral Cemento-ossifying Fibroma of Mandible: A Case Report

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### Abstract

Peripheral Cemento-ossifying Fibroma is a reactive lesion which has been described with various synonyms and is believed to arise from the periodontal ligament comprising about 9% of all gingival growths. It appears that ossifying fibromas occurs over a wide age range with the greatest number of cases encountered during the second and third decades of life. There is a definite female predilection and almost 60% of the lesions occur in the maxilla. Trauma or local irritation such as dental calculus, ill-fitting denture appliances and faulty restorations are known to precipitate the development of this lesion.

This report discusses a case of Peripheral Cemento-ossifying Fibroma affecting mandibular posterior area of a 45-years-old female. The mass was surgically excised, followed by appropriate treatment of the surgical site.

**Key words:** Fibroma, gingival overgrowth, peripheral ossifying fibroma, peripheral cemento-ossifying fibroma.

### Introduction

A fibroma refers to soft tissue benign neoplastic growth arising due to over production of fibrous tissue in the connective tissue. It represents a reactive focal fibrous hyperplasia due to trauma or local irritation. There are two types of ossifying fibromas: the central type and the peripheral type. The central type arises from the endosteum or the periodontal ligament adjacent to the root apex and causes expansion of medullary cavity. The peripheral type occurs solely on the soft tissue covering the tooth-bearing areas of the jaws.<sup>1</sup>

In 1872, Menzel first described ossifying fibroma, but only in 1927, Montgomery assigned a terminology to it. Cemento-ossifying fibroma although is an uncommon growth of the oral cavity. It accounts for 3.1 % of all oral tumors and for 9.6 % of the gingival lesions.<sup>2</sup> Due to their clinical and histopathological similarities, some peripheral cemento-ossifying fibromas are believed to develop initially as a pyogenic granuloma that undergoes fibrous maturation and subsequent calcification. Trauma or local irritation such as dental calculus, ill-fitting denture appliance and faulty restorations are known to precipitate the development of this lesion. The mineralized product probably originates from periosteal cells or from the periodontal ligament.<sup>3</sup>

Peripheral cemento-ossifying fibroma appears as a nodular mass, either pedunculated or sessile. It most commonly appears to originate from interdental papilla. The color ranges from red to pink and the surface is frequently but not always ulcerated. There is a slight predilection for the maxillary arch (60%) and the incisor-cuspid region (50%) but it can also be found in mandible.<sup>4</sup>

It affects both genders but a higher predilection for females has been reported in the literature. Racial predominance has been reported with 71% whites being affected in contrast to 36% blacks. Peak incidence occurs in the second and third decades of life.<sup>5</sup>

### Case report

A 45-years-old female reported to the Department of Periodontics, Mahatma Gandhi Dental College and Hospital Jaipur, with the chief complain of a painless, swelling in

the mandibular right molar region since one year. It was small in size when started and gradually increased to attain the present size.

Intra-oral examination revealed an oval, hard sessile growth located on the buccal gingiva of the teeth 45, 46 and 47. The gingival growth measured (3.5cm x 2.0cm) and was reddish pink in color (Figure 1). Periodontal examination showed moderate amount of supra and sub- gingival calculus and probing pocket depth of 8mm with respect to 46. Intraoral periapical radiograph revealed moderate horizontal bone loss and advanced grade II furcation involvement in relation to 45, 46 and 47 (Figure 2). Routine hemogram was found to be normal. A provisional diagnosis of peripheral cemento-ossifying fibroma was made. The differential diagnosis included irritational fibroma, pyogenic granuloma and peripheral giant cell granuloma. The patient had no relevant systemic history. The treatment plan included scaling and root planing (Phase I therapy) followed by excision of the overgrowth under local anaesthesia. After extraoral and intraoral asepsis, inferior alveolar nerve block was given. Excision of the over- growth was done by electrosurgery followed by careful debridement of the surgical site using surgical curettes. Periodontal dressing was placed (Figure 3-5). The patient was recalled after 1 week for removal of dressing and checkup. Excised tissue was placed in formalin and sent to the Department of Oral Pathology for histopathological examination. A nine month postsurgical follow-up of the patient showed no evidence of recurrence.

### Histopathology

The section of the biopsied tissue revealed a fibrous overgrowth with areas of mineralized tissue. The connective tissue of the growth showed a cellular stroma which comprises of plumps of fibroblast and fibrocyte cells along with dense bundles of collagen fibers. Few blood vessels with red blood cells (RBC) and proliferating endothelial cells were also evident. There was uniform infiltration of chronic inflammatory cells, predominantly comprising of lymphocytes and plasma cells. The connective tissue also revealed several foci of calcification, which resembled cementum-like and bone-like ossifications. The fibroblasts

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Figure 1: Photograph showing gingival overgrowth in second molar region



Figure 2: IOPA radiograph showing moderate interdenal bone loss with advanced grade II furcation involvement



Figure 3: Photograph showing excision of overgrowth



Figure 4: Photograph showing excised tissue



Figure 5: Photograph showing surgical site immediately after excision

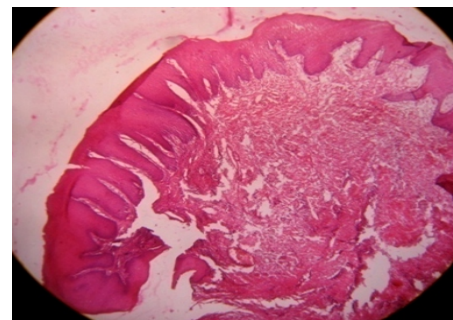


Figure 6: Photograph showing histopathological picture of lesion



Figure 7: Photograph showing postoperative view at 3 months



Figure 8: Photograph showing postoperative view at 9 months

were found to be arranged in the whirls around these irregularly mineralized foci in the connective tissue. The overlying epithelium was hyperplastic, parakeratotic stratified squamous epithelium showing numerous elongated retepegs (Figure 6). Correlating the clinical findings with the microscopic features, the diagnosis of the lesion was established as peripheral cemento-ossifying fibroma.

#### Discussion

Peripheral ossifying fibroma is a non-neoplastic enlargement of the gingiva that is thought to be reactive in nature. Considerable confusion has existed over the nomenclature of this lesion, and several terms have been used to describe its variable histopathologic features, one of which is peripheral cemento-ossifying fibroma due to the presence of cementum-like calcifications. This lesion has a predi-

lection for maxillary anterior region, but it can also be found in mandible, more commonly in the anterior region. This case discusses peripheral cemento-ossifying fibroma of the mandibular posterior region. Peripheral cemento-ossifying fibroma is predominant in adolescents and young adults, with very few cases being reported in older adults.<sup>4</sup>

Peripheral ossifying fibroma has also been described by various synonyms such as peripheral cemento-ossifying fibroma, peripheral odontogenic fibroma with cementogenesis, peripheral fibroma with osteogenesis, peripheral fibroma with calcification, fibrous epulis, calcifying fibroblastic granuloma etc.<sup>6,7</sup>

Ossifying fibromas elaborate bone, cementum and spheroidal calcifications, which has given rise to various terms for these benign fibro-osseous neoplasms. When bone predominates, 'ossifying' is the appellation, while the term 'cementifying' has been assigned when curvilinear trabeculae or spheroidal calcifications are encountered.<sup>8</sup> When bone and cementum like tissues are observed, the lesions have been referred to as cemento-ossifying fibroma.

Cementifying fibromas may be clinically and radiographically impossible to separate from ossifying fibromas.<sup>9</sup> An attempt has been made by Endo et al., to distinguish cementifying fibromas from ossifying fibromas and fibrous dysplasias by using immunohistochemical analysis for keratin sulfate and chondroitin-4-sulfate, in which the cementifying fibromas showed significant immune-reactivity for keratin sulfate and ossifying fibromas and fibrous dysplasia showed intensive immunostaining for chondroitin-4-sulfate.<sup>10</sup>

Though the etiopathogenesis of peripheral ossifying fibroma is uncertain, an origin from cells of the periodontal ligament has been suggested. The reasons for considering periodontal ligament origin for peripheral ossifying fibroma include exclusive occurrence of peripheral ossifying fibroma in the gingival (interdental papilla), the proximity of gingiva to the periodontal ligament, and the presence of oxytalan fibers within the mineralized matrix of some lesions.<sup>11</sup> 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. Lesions involving the gingival soft tissues are rare compared to the lesions appearing within the bone.<sup>9</sup>

The reported gingival overgrowth has been clearly diagnosed as peripheral cemento-ossifying fibroma after histopathologic examination. Some of the lesions may be misdiagnosed as pyogenic granuloma, fibrous hyperplasia of a peripheral giant cell granuloma, but other peripheral odontogenic tumors should also be considered. In general, the pyogenic granuloma presents as a soft, friable nodule that bleeds with minimal manipulation, but tooth displacement and resorption of alveolar bone are not observed. Although peripheral giant cell granuloma has clinical features similar to those of peripheral ossifying fibroma, the latter lacks the purple or blue discoloration commonly associated with peripheral giant cell granuloma and radiographically shows small flecks of calcification.<sup>12</sup> Thus, the diagnosis of the peripheral ossifying fibroma based only on clinical aspects can be difficult and histopathological examination of the surgical specimen obtained by excisional biopsy is mandatory for an accurate diagnosis.

Furthermore, peripheral cemento-ossifying fibroma tends to occur in the second and third decades of life, with peak prevalence between the ages of 10 and 19 years. Almost two thirds of all cases occur in females, with a predilection for the anterior maxilla, i.e., incisor canine region. Contrary to these findings, in the present case the lesion was present in posterior mandibular region, larger lesion than the usual size of <1.5 cm and patient was in fifth decade of her life. Lesion was successfully treated, and follow-up was done at 3, 6 and 9 months interval to check for any recurrence (Figure 7,8).

Peripheral cemento-ossifying fibroma is a slowly progressive lesion, with limited growth. Close postoperative follow-up is required as the recurrence rate is considered to be high(8%-20%).<sup>13</sup> It probably occurs due to incomplete initial removal, repeated injury, or persistence of the local irritants.<sup>7,14,15</sup> It is important to remove lesions completely by including subjacent periosteum and periodontal ligament, besides the possible causes, to reduce recurrence.

In conclusion, clinically it is difficult to differentiate between most of the reactive gingival lesions particularly in the initial stages. Regardless of the surgical technique employed, it is important to eliminate the etiological factors and the tissue has to be histologically examined for confirmation.

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