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Peripheral Cemento - Ossifying Fibroma Of Anterior Mandible – A Rare Case Report

Case Report

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Abstract

Peripheral Cemento-Ossifying Fibroma (PCOF) is a rare neoplasm of osteogenic origin that is seen as an overgrowth on the gingiva. It is considered to be more reactive in nature than neoplastic nature. It is prevalent in adolescent and young adults; also, the female predilection is seen. In this case report we present a case of a 60 year old patient reported with a chief complaint of growth in the lower tooth region of jaw since 10 years measuring 3.28 X 2.5 X 1.6 cm. The lesion was excised under local anesthesia and followed up for the six months which showed normal healing and normal architecture of bone without any recurrence. In this case report we have discussed the clinical, radiological and histological features of the peripheral cemento-ossifying fibroma. Also the differential diagnosis and treatment has been discussed.

Keywords: Peripheral Cemento-Ossifying Fibroma; Surgical Excision; Cementifying Fibroma; Gingival Overgrowth.

Introduction

Peripheral tumors of odontogenic (PCOF) origin are relatively benign focal reactive overgrowths arising from gingiva. The type of lesions include focal fibrous hyperplasia, pyogenic granuloma, peripheral giant cell granuloma and peripheral cemento-ossifying fibroma [1]. The lesion is classified as a group 3 (odontogenic tumor of mesenchymal origin) tumor according to the WHO's classification, 2017. According to the 1992 World Health Organization (WHO) classification of fibro-osseous lesions, cemento-ossifying fibroma (cementifying fibroma, ossifying fibroma) is considered to be an osteogenic neoplasm, with a significant growth potential [2]. These lesions may arise from constant irritation caused by trauma, microorganisms, plaque, calculus, dental restorations and dental appliances [3, 4]. It is usually associated with irritant agents such as calculus or bacterial plaque, orthodontic appliances, ill-fitted crowns, and irregular restorations. PCOF accounts for 3.1% of all oral tumors and 9.6% of gingival lesions. [5]. It is most commonly observed in female (5:112) adolescents and young adults as a gingival overgrowth in the vicinity of the maxillary incisors or canines. It is presented as a either pedunculated or sessile nodular mass [6]. The colour may vary from red to pink and the surface may or may not be ulcerated [7, 8].

These lesions are usually less than 2 cm in size although lesions larger than 10 cm are occasionally observed.

In this article we aim to report a rare case of peripheral cemento-ossifying fibroma in the mandibular anterior mandibular region of a 60-year-old male patient. In this age group, gender and in the mandibular anterior quadrant, this type of lesion is rare and has not been reported previously in the literature.

Case Report

A 60 years old patient reported with a chief complaint of growth

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in the lower tooth region of the jaw for 10 years. Growth was initially smaller in size and increased to attain the present size. The growth was rapid in the last 2 years. The Patient also reported occasional bleeding while brushing and burning sensation on spicy food intake. He denied the habit of tobacco or alcohol use, also there was no significant medical or surgical history.

Clinical examination:

No facial asymmetry and lymphadenopathy was observed on extraoral examination.

Intraoral examination revealed a single, non-tender swelling measuring approximately 3.5 X 2 X 1.5 cm in the mandibular anterior region extending from lower left premolar till lower right canine. The lesion was spherical in shape and the skin over the swelling was reddish pink in colour with some ulcerations. The swelling was firm in consistency on palpation. It was pedunculated and was not fixed to the underlying structures. (figure 1).

Radiographic Examination:

Radiographic examination (OPG) revealed a well-defined mixed radiolucent - radiopaque mass (predominantly radiopaque), extending from lower left premolar till lower right canine. The underlying bone showed normal architecture and no resorption or pathological changes were observed. (Figure 2).

Blood investigations:

Complete blood investigation was done prior to the surgery and all values, including hemoglobin, bleeding time, clotting time, total and differential WBC counts were within normal limits. The patient was negative for HIV and HBS-Ag.

Provisional and differential diagnosis:

After considering clinical and radiographic examination, provisional diagnosis was made as peripheral ossifying fibroma (even though the age and gender was not in favour) due to the duration and other clinical findings. Differential diagnosis included pyogenic granuloma, focal fibrous hyperplasia and peripheral giant cell granuloma.

Treatment:

The treatment plan decided for this lesion was complete excision under local anesthesia. The area was infiltrated with local anesthetic for anesthesia and haemostasis. Two sharp incisions were made. Subperiosteal dissection was done. The lesion was removed completely in one piece along with underlying periosteum. Haemostasis was achieved and the closure was done using 3-0 silk. (Figure 3) The patient was prescribed with oral Amoxicillin 500mg and Piroxicam 20mg for postoperative pain and infection control.

Figure 1. Preoperative photographs showing a spherical, reddish pink lesion with some areas of ulcerations on the surface present in the mandibular anterior region extending from 34 to 43.

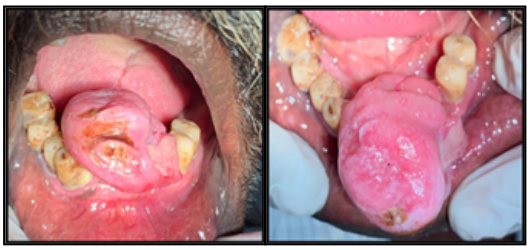


Figure 2. Radiograph (OPG) showing a well-defined mixed radiolucent - radiopaque mass (predominantly radiopaque), extending from 34 to 43. The underlying bone shows normal architecture and no resorption or pathological changes are observed.

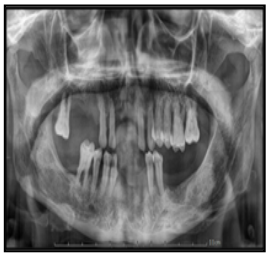
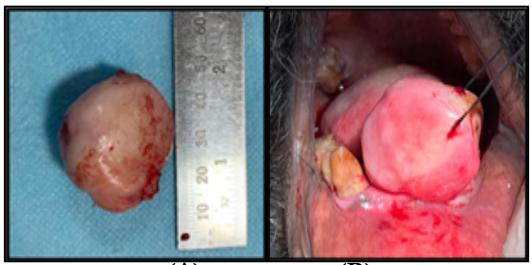


Figure 3. (A) Excised tissue measuring 3.28 X 2.5 X 1.6 cm in dimensions. (B) Intraoperative photograph showing pedunculated lesion present in the mandibular anterior region.



(A) (B)

Figure 4. Haemostasis achieved and closure done with 3-0 Silk.

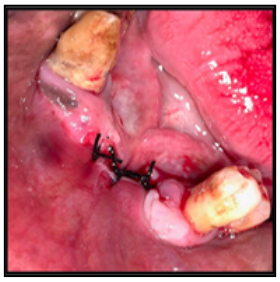
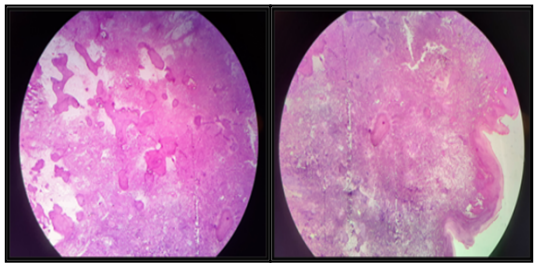


Figure 5. Photomicrograph showing fibrocellular connective tissue stroma with numerous calcified areas scattered throughout. Areas with osteoid formation showing trabeculae of woven and mature bone were also noted. The cellular areas showed presence of plump fibroblasts with moderate inflammatory cells infiltration and increased vascularity. The overlying epithelium was hyper-parakeratinized with variable thickness. Also the area of ulceration replaced by fibrinopurulent membrane can be observed.



The lesion was measured using a scale (3.28 X 2.5 X 1.6 cm in dimensions) and sent for the histopathological examination. (Figure 4).

Follow-up:

Patient was recalled after 7 days for suture removal; showed satisfactory healing. Next follow up was done after six months; showed excellent healing and no evidence of recurrence.

Microscopic examination:

The microscopic examination revealed fibro cellular connective tissue stroma with numerous calcified areas scattered throughout. The calcified areas predominantly comprise of cementoid areas with basophilic calcifications resembling cementum. The areas with osteoid formation showing trabeculae of woven and mature bone were also noted. The cellular areas showed presence of plump fibroblasts with moderate inflammatory cells infiltration and increased vascularity. The overlying epithelium was hyper-parakeratinized with variable thickness. Also the area of ulceration replaced by fibrinopurulent membrane was noted. (Figure 5).

Discussion

Ossifying fibromas have been advocated in literature since the late 1940s. Similar lesions have been referred by multiple names such as, epulis, peripheral fibromas with calcification, peripheral ossifying fibromas, calcifying fibroblastic granuloma, peripheral cementifying fibroma, peripheral fibroma with cementogenesis, and peripheral cemento-ossifying fibroma [9]. 'Peripheral cemento-ossifying fibroma' term was first coined by Montgomery in 1927 [10]. The term cemento-ossifying fibroma is given mainly due to the presence of dysmorphic round basophilic bone particles within the ossifying fibroma, called cementicles, which in reality are not from the cementum, but instead represent a dysmorphic product of this tumor, similar to the keratin pearls seen in squamous cell carcinoma [4]. There is still a controversy surrounding classification of these lesions.

On the basis of benign fibro-osseous lesions established by Wladron [5], PCOF is considered as a fibro-osseous dysplasia and has been included in the group of non-odontogenic tumours since the 1992 WHO classification; However, according to WHO classification of odontogenic tumors 2017, it is classified as an odontogenic tumor of mesenchymal origin.

The etiopathogenesis of peripheral cemento-ossifying fibroma is still uncertain. It has been suggested that it arises from cells of the periodontal ligament [8]. The exclusive occurrence of PCOF in the gingiva is the main reason for considering its origin to be periodontal. Also the proximity of gingiva to the periodontal ligament and the presence of oxytalan fibers within the mineralized matrix of same lesions justifies the reason. Excessive proliferation of mature fibrous connective tissue is a response to injury to gingival tissues resulting from microorganisms, plaque, calculus, dental restorations and dental appliances. Chronic irritation of the periosteal and periodontal membrane results in metaplasia of the connective tissue and resultant bone formation or dystrophic calcification. Some authors have also suggested that the lesion may be the result of fibrosis of the granulation tissue [11].

Peripheral cemento ossifying fibromas are most commonly observed in female [6] adolescents and young adults as a gingival overgrowth in the vicinity of the maxillary incisors or canines. The lesion is initially represented as an asymptomatic tumor which progressively grows to the point where it causes pain as well as functional alteration and cosmetic problems [12].

This was observed in the presented case with enlarged mass with slight pain, burning sensation and cosmetic deformity. The lesion usually does not affect the underlying bone or the teeth involved;

however, cases of tooth migration and bone destruction have been reported [13]. Also the lesion is poorly vascularized and well circumscribed which makes it easier for excision as compared to other fibro osseous lesions like fibrous dysplasia.

Peripheral cemento ossifying fibromas may follow different patterns depending on the amount of mineralized tissue on a radiograph [7]. Radio-opaque foci of calcification seen scattered through the central part of the lesion; however, not all lesions show calcifications on radiographic examination [11]. Underlying bone involvement is usually not seen on radiographs. In rare cases, superficial bone erosion is observed. In the presented case no change in the architecture of bone was observed.

Histopathologically, peripheral cemento-ossifying fibroma shows either an intact or ulcerated stratified squamous epithelium. The connective tissue is highly cellular, which comprises fibroblasts, with calcification in the central part, which may consist of bone, cementum-like material, dystrophic calcification or a combination of all these. Histopathological analysis of the presented case showed similar microscopic features as described in the microscopic examination above microscopic examination.

Peripheral cemento-ossifying fibroma shows excellent prognosis and low rate of recurrence if managed with the correct surgical technique. The complete removal of the lesion along with the underlying periosteum and curettage is recommended to minimize the recurrence; however, adequate surgical clearance is not mandatory in pedunculated lesions and can be managed with curettage. Some authors have advocated that the recurrence rate of peripheral cemento-ossifying fibroma is high for reactive lesions [14] and the probable reasons of recurrence include incomplete removal of the lesion, repeated injury or persistence of local irritants [15].

There was no recurrence observed in this case even after six months post operatively. The patient is still on a regular schedule of follow up (every 6 months).

This case was reported in an elderly male individual, also the site of occurrence is anterior mandible which makes this case unique.

Summary

To summarize, peripheral cemento-ossifying fibroma is a slowly progressive lesion with limited growth. The lesions are reported after a long time of occurrence due to absence of the symptoms like pain or burning sensation. A reddish pink lesion with firm consistency and history of long duration of time in anterior mandible region, irrespective of the age and gender can be suspected as a peripheral cemento-ossifying fibroma. However, the combined evaluation of clinical, radiographic and histopathological examination is required for accurate diagnosis. Treatment consists of complete excision of the lesion including periodontal ligament periosteum and curettage. Also examination and removal of presence of any local irritant is recommended to minimize the recurrence. Postoperative follow-up is required because of the growth potential and recurrence rate is observed for incompletely removed lesions.

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