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Case Report

Peripheral ossifying fibroma: a case report

Renu Yadav and Anubha Gulati

Department of Oral Pathology, Dr HSJ Institute of Dental Sciences and Hospital, Panjab University, Chandigarh, India

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Abstract: A case of peripheral ossifying fibroma (POF) in the mandibular gingiva of a 30-year-old man is described. The lesion was asymptomatic, firm, pinkish red and pedunculated histologically showing cellular, fibrous connective tissue stroma with calcified osseous and cementum-like calcifications. Lesions histologically similar to peripheral ossifying fibroma (POF) have been given various names in the existing literature. Therefore, the controversial varied nomenclature and possible etiopathogenesis of peripheral ossifying fibroma are discussed. (J Oral Sci 51, 151-154, 2009)

Keywords: ossifying fibroma; mandibular gingiva; cementum-like calcifications.

Introduction

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. The pathogenesis of this lesion is uncertain and it is thought to arise from the periosteal and periodontal membrane (1). The peripheral ossifying fibroma is one of the several common reactive hyperplastic inflammatory lesions of the gingiva. However, there have been few reports on this rare lesion. A case of peripheral ossifying fibroma in the mandibular gingiva of a 30-year-old male patient is described here.

Correspondence to Dr. Renu Yadav, H. No 924, Ashirwad Enclave, Sector-49, Chandigarh, India
Tel: +91-172-2631202
Fax: +91-172-2724912
E-mail: renyadava@gmail.com

Case Report

A 30-year-old man reported to the outpatient department with a slow-growing painless growth that had been present lingually in the lower right premolar region. The lesion started as a small papule approximately 2 years earlier. Six months prior to the patient's visit, he had tried to remove the mass manually and managed to remove a portion of it. According to the patient, there was no bleeding or pain on removal of the mass by himself.

Examination revealed an approximately 2 × 1.5 cm pedunculated, non-tender, firm, pinkish red growth present on the lingual gingiva in relation to the mandibular right first and second premolars. The lesion extended up to the level of the occlusal plane and revealed indentations made by the occluding maxillary premolar. The surface at the occlusal plane was pinkish red in colour.

Radiographic examination revealed a faint radiolucent lesion superimposed on the underlying normal bone architecture mesial to the second premolar extending up to the root apex displacing the root of the involved tooth with resorption of the crest mesial to the second premolar (Fig. 1). The patient's past dental and medical histories were non-contributory. Excisional biopsy was performed and the operative findings revealed that the lesion was friable and was removed in several pieces. The differential diagnosis included traumatic fibroma and pyogenic granuloma.

Microscopic examination revealed a dense, cellular, fibrous connective tissue stroma containing numerous calcified osseous structures covered by stratified squamous epithelium (Figs. 2 and 3). A portion of oral epithelium was ulcerated with deposition of a fibrinopurulent exudate. The connective tissue contained several round to ovoid cementum-like calcifications (Fig. 4). The connective

tissue was infiltrated with inflammatory cells and showed the presence of few dilated blood vessels engorged with RBCs. There was no recurrence of the lesion at a 1-year follow-up.

Discussion

Peripheral ossifying fibroma is thought to be either reactive or neoplastic in nature (2,3). Considerable confusion has prevailed in the nomenclature of peripheral ossifying fibroma with various synonyms being used, such as peripheral cementifying fibroma, ossifying fibro-epithelial polyp, peripheral fibroma with osteogenesis, peripheral fibroma with cementogenesis, peripheral fibroma with calcification, calcifying or ossifying fibrous epulis and calcifying fibroblastic granuloma (3).

Ossifying fibromas elaborate bone, cementum and

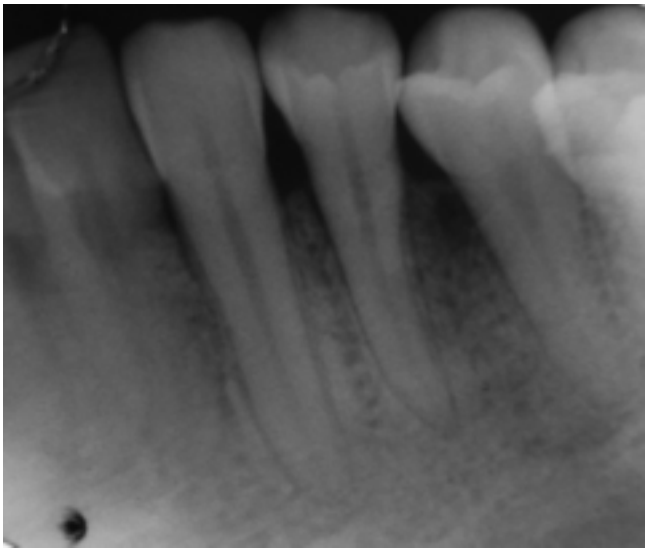

Fig 1. IOPA showing a faint radiolucent lesion superimposed on underlying normal bone architecture mesial to the second premolar extending up to the root apex, displacing the root of the involved tooth with resorption of the crest mesial to the second premolar.

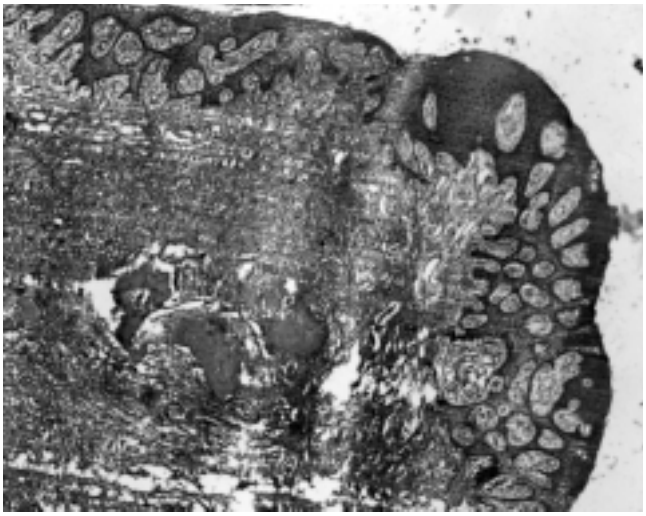

Fig 2. Bony trabeculae within cellular fibrous connective tissue stroma covered by stratified squamous epithelium (H–E staining ×4).

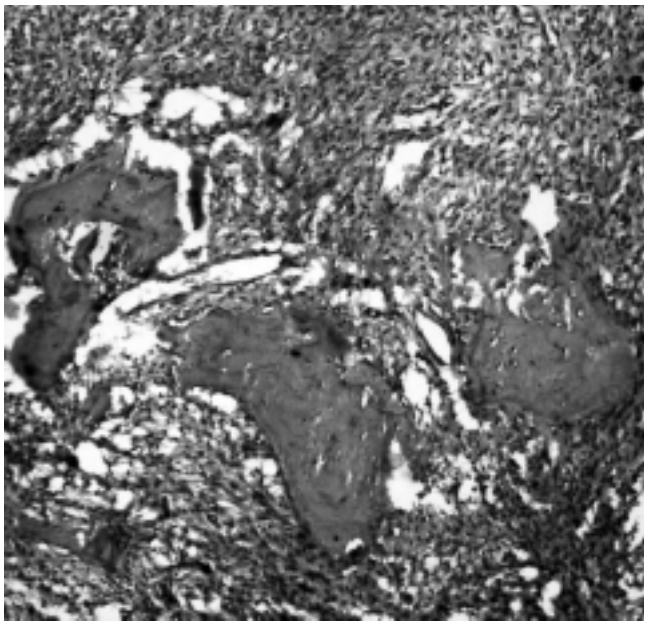

Fig 3. Mixed cellularity consisting of fibroblasts and fibrocytes with bony trabeculae (H–E staining ×10).

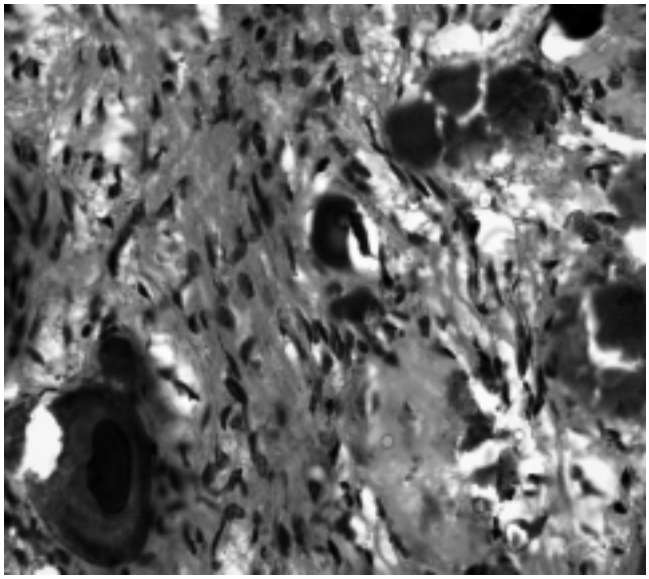

Fig 4. Round to ovoid basophilic cementum-like calcifications (H–E staining ×40).

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 (4). When bone and cementum-like tissues are observed, the lesions have been referred to as cemento ossifying fibroma (4). Cementifying fibromas may be clinically and radiographically impossible to separate from ossifying fibromas (2). An attempt has been made by Endo et al. to distinguish cementifying fibroma from ossifying fibromas and fibrous dysplasias by using immunohistochemical analysis for keratan 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 (5).

The term 'cemento ossifying' has been referred to as outdated and scientifically inaccurate (6), because the clinical presentation and histopathology of cemento ossifying fibroma are the same in areas where there is no cementum, such as the skull, femur, and tibia. These are all ossifying fibromas; those that happen to occur in the jaws should not be termed cemento ossifying fibromas merely because of the presence of teeth. Moreover, there is no histologic or biochemical difference between cementum and bone. Cemento ossifying fibroma is the term given mainly due to the presence of dysmorphic round basophilic bone particles within ossifying fibroma, which have arbitrarily been called cementicles. However, these so-called cementicles are not from cementum but instead represent a dysmorphic product of this tumour analogous to the keratin pearls, which are a dysmorphic product of squamous cell carcinoma (6).

Though the etiopathogenesis of peripheral ossifying fibroma is uncertain, an origin from cells of the periodontal ligament has been suggested (3). The reasons for considering periodontal ligament origin for peripheral ossifying fibroma include exclusive occurrence of peripheral ossifying fibroma in the gingiva (interdental papilla), the proximity of gingiva to the periodontal ligament, and the presence of oxytalan fibres within the mineralized matrix of some lesions (3). 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 (1).

Lesions involving the gingival soft tissues are rare compared to the lesions appearing within bone (2). 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 (7). X-ray diffraction analysis indicated that the mineral phase of both central and peripheral tissues consists of apatite crystals and that the crystallinity of these apatites is lower than that of bone apatite. Also, it was suggested 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 (8). Peripheral ossifying fibroma tends to occur in the 2nd and 3rd decades of life, with peak prevalence between the ages of 10 and 19. Almost two thirds of all cases occur in females, with a predilection for the anterior maxilla (9,10). In the present case, the findings except for age did not correlate with the general characteristics. The size of the peripheral ossifying fibroma ranges from 0.4 - 4.0 cm (1). At its greatest dimension, the average lesion measures approximately 1.0 cm (1). In the present case, the dimensions of the lesion were well within the above mentioned range.

Radiographic features of the peripheral ossifying fibroma vary. Radiopaque foci of calcifications have been reported to be scattered in the central area of the lesion, but not all lesions demonstrate radiographic calcifications (1). Underlying bone involvement is usually not visible on a radiograph. In rare instances, superficial erosion of bone is noted (1). In the present case also, faint radiographic findings were found which indicated that this could be an early stage lesion.

A confirmatory diagnosis of POF is made by histopathologic evaluation of biopsy specimens. The following features are usually observed during microscopic examination: 1) intact or ulcerated stratified squamous surface epithelium; 2) benign fibrous connective tissue with varying numbers of fibroblasts; 3) sparse to profuse endothelial proliferation; 4) mineralized material consisting of mature, lamellar or woven osteoid, cementum-like material, or dystrophic calcifications; and 5) acute or chronic inflammatory cells in lesions (1,3). All of these features were present in this case. Local surgical excision including the involved periodontal ligament and periosteum of POF is the preferred treatment (10), which was performed in this case. The recovery was uneventful and the patient has remained tumour-free for 1 year. Although POF is a benign, reactive lesion, the recurrence rate is fairly high. Therefore, the patient is still on regular follow-up.

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