Peripheral Ossifying Fibroma: A Case Report

Nidhi Narwal[1], Madhumani Kumra[2], Yulia Pereira[3], Jyoti Yadav[1]

Abstract:

Peripheral ossifying fibroma (POF) is a relatively uncommon gingival growth usually located in maxillary anterior region and predominantly affects females. It is postulated to appear secondary to irritation or trauma. Definitive diagnosis is established by histological examination, which reveals the presence of cellular connective tissue with focal calcifications. We report a case of POF occurring on edentulous area in relation to 46 in a 30yr old male which is an unusual presentation.

Keywords: Peripheral ossifying fibroma, fibroma, peripheral cement-ossifying fibroma, pyogenic granuloma.

INTRODUCTION

Peripheral ossifying fibroma (POF) is a lesion of the gingival tissues representing up to 2% of all oral lesions that are biopsied. It is a reactive, solitary soft tissue growth that is usually seen on the interdental papilla.[1] It may be pedunculated or broad based; usually smooth surfaced and varies from pale pink to cherry red in color.[2] Although being reported to reach more than 6 cm, they are usually less than 1.5 cm in diameter, and the diagnosis can be made by clinical inspection and biopsy.[3,4] Other terms used in relation to POF to describe its variable histopathologic features are peripheral cementifying fibroma, peripheral fibroma with cementogenesis, peripheral fibroma with osteogenesis, peripheral fibroma with calcification, calcified or ossified fibrous epulis, and calcified fibroblastic granuloma.[1,3] The pathogenesis is uncertain and thought to arise from the periosteal and periodontal membrane.[3]. Histologically, it is a non-encapsulated mass of cellular connective tissue with randomly distributed calcifications and/or mature bone.[4]

CASE REPORT

A 30-year-old male presented with an exophytic mass in the oral cavity. Oral examination revealed a pinkish red smooth, pedunculated, tender mass on the edentulous area in relation to 46. It measured 1.0 x 0.5 cm in size.

Microscopic examination revealed abundant plump fibroblasts with moderately dense collagen fiber bundles in fibrous connective tissue stroma randomly oriented with areas of dystrophic calcifications and ossifications (Fig. 1). Intervening areas of chronic inflammatory cell infiltrate predominantly plasma cells can be seen. The overlying epithelium is hyperplastic parakeratinized stratified squamous epithelium exhibiting thin and long rete-ridges (Fig. 2).

Corresponding Author : Nidhi Narwal Senior lecturer,Department of Oral Pathology and Microbiology, I.T.S Center for Dental Studies and Research, Muradnagar, Ghaziabad. **E-mail:** narwal.nidhi@rediffmail.com **(M)** 08447321955

1 Senior lecturer,Department of Oral Pathology and Microbiology, I.T.S Center for Dental Studies and Research, Muradnagar, Ghaziabad.
2 Professor & HOD, Department of Oral Pathology and Microbiology, Sudha Rustagi College of Dental Sciences and Research Faridabad.
3 Professor, Department of Oral Pathology and Microbiology, Sudha Rustagi College of Dental Sciences and Research Faridabad.

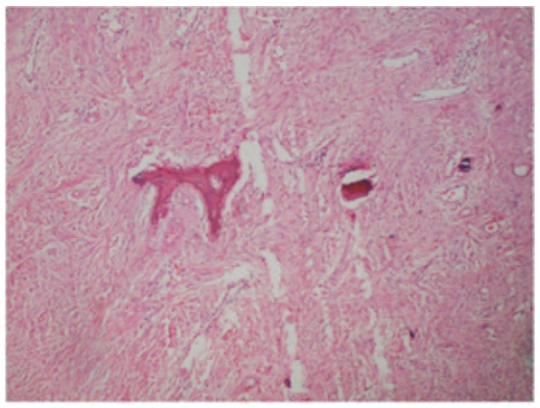

Figure 1: Fibrous connective tissue stroma with areas of dystrophic calcifications and ossifications

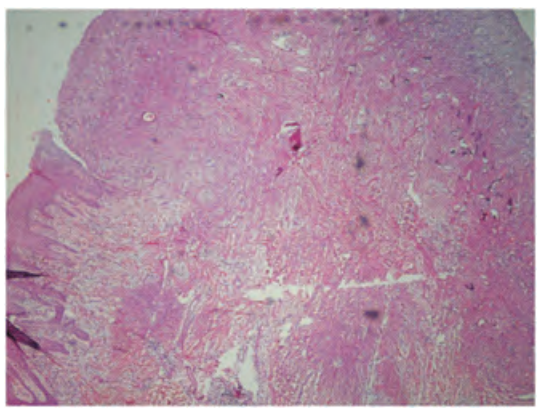

Figure 2: Hyperplastic overlying parakeratinized stratified squamous epithelium with moderately dense connective tissue with calcifications and ossifications.

Discussion

Ossifying fibroma occurs mostly in craniofacial bones and is generally categorized into two types, central and peripheral. The central type arises from the endosteum or the periodontal ligament (PDL) adjacent to the root apex and expands from the medullary cavity of the bone. On the other hand, the peripheral ossifying fibroma (POF) shows a contiguous relationship with the PDL, occurring solely on the soft tissues overlying the alveolar process. In spite of confusing terminology, POF is not the peripheral counterpart of the central ossifying fibroma of the mandible and maxilla, but instead is a reactive gingival lesion known under the generic name of epulis.[4]

POF is a relatively uncommon gingival growth usually arising from gingival fibres of the periodontal ligament as hyperplastic growth of tissue that is unique to the gingival mucosa.[5,6]

Etiopathogenesis of POF is uncertain, but an origin from cells of the periodontal ligament has been proposed. The reasons supporting the proposal are: exclusive occurrence of POF in the gingiva (interdental papilla), proximity of gingiva to the periodontal ligament, the presence of oxytalan fibers within the mineralized matrix of some lesions, the age distribution which is inversely related to the number of lost permanent teeth, and the fibrocellular response in POF which is similar to other reactive gingival lesions of periodontal ligament origin. However, the occurrence of POF at an edentulous site as reported in our case may cast doubt on the PDL theory of origin. Various local factors (trauma), irritants (plaque, calculus, ill-fitting denture) and hormonal factors have also been implicated in POF induction and progression.[3,7]

Females are more commonly affected than males. Anterior maxilla is the most commonly involved site. Lesions can occur in any age group, predominanting in the second decade of life. It is usually represented as a solitary, pedunculated/sessile, slow growing nodular mass. Unique multicentric variant of POF has also been reported in relation to conditions such as nevoid basal cell carcinoma, MEN- II, neurofibromatosis and gardner's syndrome.[5,6] The surface mucosa is usually smooth or ulcerated and pink to red in color.POF usually measures <1.5 cm in diameter, but patients with lesions of 6 cm and 9 cm diameter have also been reported.[5,6,8]

Ossifying fibromas elaborate bone, cementum and spheroidal calcifications, which give rise to various terminologies used for these lesions. When bone predominates, 'ossifying' term is preferred; while the term 'cementifying' is used when curvilinear trabeculae or spheroidal calcifications are present. When both bone and cementum-like tissues are observed, the lesions have been referred to as cemento-ossifying fibroma.[3] However the term cement ossifying fibroma has been referred to as outdated and scientifically inaccurate, because the clinical presentation and histopathology are same in areas where there is no cementum, such as skull, femur and tibia. Also, there is no histological or biochemical difference between cementum and bone. It merely represents the presence of dysmorphic round basophilic bone particles within ossifying fibroma, arbitrary been called cementicles. The term 'peripheral odontogenic fibroma' has also been used to describe POF, but should be avoided since peripheral odontogenic fibroma has been designated by WHO as the rare and extraosseous counterpart of central odontogenic fibroma.[3,7]

Lesions involving the gingival soft tissues are rare compared to the lesions appearing within bone. 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 . Xray 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.[3,7]

The radiographic features may range from no changes, as seen in the present case to destructive changes. In certain cases, superficial erosion of underlying bone, cupping defect and focal areas of radiopaque calcifications at the center of the lesion can be seen. CT (computed tomography) and MR (magnetic resonance) images can aid in evaluation of the epicenter of the mass. On CT, they appear as a well circumscribed mass with evidence of calcification and mild enhancement after contrast agent administration. At MR imaging, an isointense signal to muscle on non-enhanced T1weighted sequence and an iso-to-low signal on T2 weighted sequence can be seen.[4,8]

Microscopically, POF appears to be a nonencapsulated mass of cellular fibroblastic connective tissue of mesenchymal origin, covered with stratified squamous epithelium, which is ulcerated in 23-60% of cases. Most ulcerated lesions occur in patients of second decade. Abundant fibroblastic proliferation, variable mineralized component, sparse endothelial proliferation and few inflammatory cells are prominent features. The mineralized components may consist of bone, cementum like material or dystrophic calcifications. Less frequently, ovoid droplets of basophilic cementum-like material are formed. Usually the bone is woven, lamellar or trabecular in type and rarely contains unmineralized osteoids and multinucleated giant cells.[5,6] Ten percent of all cases of POF may contain odontogenic epithelial nests as vestigial representation of the dental lamina.[1]

A confirmatory diagnosis of POF is made by histopathological evaluation of biopsy specimens. Features observed are: 1) intact or

ulcerated stratified squamous surface epithelium; 2) benign fibrous connective tissue with varying numbers of fibroblasts; 3) sparse to profuse endothelial proliferatio; 4) mineralized material consisting of mature or dystrophic calcifications and 5) acute or chronic inflammatory cells in lesion.[3,8]

Although POF is a benign, reactive lesion, the recurrence rate is fairly high (8% to 16%); hence the mass should be excised deep into the periosteum with complete removal of all irritants. So, regular follow-up is necessary.[6]

REFERENCES

1. José A. García de Marcos, María J. García de Marcos, Susana Arroyo Rodríguez, Jaime Chiarri Rodrigo and Enrique Poblet. Peripheral ossifying fibroma: a clinical and immunohistochemical study of four cases. Journal of Oral Science, 2010;52(1): 95-99.
2. KS Poonacha, Anand L Shigli, Dayanand Shirol. Peripheral ossifying fibroma: A clinical report. Contemp Clin Dent 2010; 1:54-6.
3. Yadav R and Gulati A. Peripheral ossifying fibroma:a case report. Journal of Oral Science, 2009; 51(1): 151-154.
4. Moon WJ, Choi SY, Chung EC, Kwon KH, Chae SW. Peripheral ossifying fibroma in the oral cavity: CT and MR findings. Dentomaxillofacial Radiology, 2007; 36: 180–182
5. Farquhar T, MacLellan J, Dyment H, Anderson RD. Peripheral Ossifying Fibroma: A Case Report. Pratique Clinique, 2008; 74(9): 809-812.
6. Sudhakar S, Praveen Kumar B, Prabhat MPV. Peripheral Ossifying Fibroma. Online J Health Allied Scs. 2009;8(3):17:1-3
7. Satish BNVS, Kumar P. Peripheral Ossifying Fibroma of Hard Palate – A Case Report. International Journal of Dental Clinics, 2010; 2(2): 30-34.
8. Kumar SKS, Ram S, Jorgensen MG, Shuler CF, Sedghizadeh PP.Multicentric peripheral ossifying fibroma. Journal of Oral Science 2006; 48(4); 239-243