Case Report

Peripheral Ossifying Fibroma – A Masquerade

Sharma Manish\textsuperscript{a}, Sharma Gaganjot K\textsuperscript{b}

Abstract

The fibrous overgrowths of the gingiva with calcifications have been documented in the literature under an array of terms one of them being peripheral ossifying fibroma. Here we discuss an unusual presentation of a case of recurrent peripheral ossifying fibroma in a 13-year-old girl, who reported to the department of oral pathology. The primary lesion was diagnosed as pyogenic granuloma and the recurrent lesion as peripheral ossifying fibroma. The POF might have developed as initial lesion with scarcity of ossification and was misdiagnosed as pyogenic granuloma. Though the possibility exists that the lesion is reactive in nature, but based on history of the lesion and the vicinity of the gingiva, the lesion falls into the category of focal reactive overgrowths. This case report is to analyse as to whether these two lesions represent the evolutive phases of the spectrum of the same pathosis.

Keywords:
Peripheral ossifying fibroma; Pyogenic granuloma; Histopathology; Ossifying fibroma.
Introduction

Peripheral ossifying fibroma, a term of considerable confusion is a non neoplastic enlargement of the gingiva which is thought to be reactive in nature. Remarkable perplexity exists over the nomenclature of this lesion and several terms have been proposed to describe its histopathological features, one such term is peripheral-ossifying fibroma named due to the presence of osseous like mineralization. The pathogenesis of the lesion is indecisive and it is thought to be a fibrous proliferation, probably arising from periosteal and periodontal ligament. The present case discusses the clinical, radiological and histopathological features of peripheral ossifying fibroma with special emphasis on organized pyogenic granuloma and briefly reviews the current literature on this condition and underlines the importance of a reasonable differential diagnosis.

Case Report

A female child patient aged 15 years reported to the department of oral pathology in Guru Nanak Dev Dental College and Research Centre Sunam in 2009 with a complaint of slowly enlarging painless mass that was situated labially in the lower anterior region of oral cavity. The lesion had started as a small papule approximately 2 months earlier. She was treated for the similar lesion one year back with excision of the tissue (which revealed pyogenic granuloma on histopathological evaluation). There was no history of trauma and ulceration.

Clinical examination of the oral cavity revealed a nodular mass on the interdental gingiva in relation to the left lateral incisor and canine. The mass was dome shaped and the overlying mucosa was normal in appearance. (Fig 1) Lesion appeared to be freely movable from the underlying bone. It measured approximately 15 mm laterally & 8 mm in the anterioposterior direction. On palpation the inspctory findings were confirmed. The mass was firm, sessile and not fixed to the underlying bone. Radiographic examination (Intraoral periapical) revealed a mixed radiolucent and radiopaque lesion with a rim of peripheral radiolucency. Routine haemogram was done. A provisional diagnosis of peripheral ossifying fibroma was given.

An excisional biopsy was performed under local anesthesia and operative findings revealed that an unencapsulated lesion was removed in two pieces. The tissue was submitted to the oral pathology department for further histopathological evaluation. The differential diagnosis included peripheral ossifying fibroma, organizing pyogenic granuloma, peripheral giant cell granuloma, peripheral odontogenic fibroma (WHO type) and aggressive fibromatosis.

The excised specimen consisted of two nodular masses of soft tissue measuring about 11 mm x 7 mm in size. Radiograph of
the excised specimen bared a dense central radiopacity within the lesional mass (Fig 2).

Microscopic analysis of the submitted tissue with hematoxylin and eosin stained section demonstrated a well circumscribed lesion of cellular fibrous tissue covered by hyperparakeratinized epithelium with focal atrophy (Fig 3). The fibrous component was cellular containing plump fibroblasts arranged haphazardly into the stroma. The sections also exhibited numerous large focal areas of immature bone although some contained lacunae but some were acellular with peripheral osteoid formation (Fig 4). No evidence of malignancy was reported. The connective tissue was infiltrated with chronic inflammatory cells and showed presence of dilated blood vessels engorged with RBCs. The sections with special stain (Masson Trichrome) showed fibroblastic proliferation and formation of osteoid, rimmed with osteoblast like cells. Osteoid appeared to be mature woven bone with or without lacunae. Presence of large number of vessels in the stroma were also evident. (Fig 5, 6, 7).

**Discussion**

Peripheral ossifying fibroma, a term that introduced considerable confusion in the histopathology of gingival hyperplasias is reactive in nature. Each and every case of reactive gingival overgrowth which shows mineralized component radiographically or histopathologically may need vague discussion over its presentation. The term peripheral ossifying fibroma was coined by Eversole and Robin. It presented as a localized overgrowth on the gingiva. These growths are commonly considered as reactive rather than neoplastic in nature. Though the etiopathogenesis of POF is uncertain still we agree that POF is a reactive lesion originating from periosteum or cells of periodontal ligament by gingival injury, gingival irritation, subgingival calculus or a foreign body in the gingival sulcus. Exclusive occurrence of POF in the vicinity of gingiva, in the proximity of PDL and the presence of oxytalin fibers within the mineralized matrix of lesion proved the suggested PDL/Periosteum origin. Considering the etiology and clinical presentation of POF, it has been termed with a variety of synonyms in the literature like fibrous epulis with calcification, calcifying fibroblastic granuloma, peripheral fibroma with or without calcification, peripheral odontogenic fibroma with cementogenesis, ossifying epulis and peripheral ossifying fibroma.

Clinically POF commonly presents as a pedunculated or sessile localized overgrowth on the gingiva. On palpation it appears to be firm, nontender and attached to the inderdental gingiva. The overlying mucosa may shows foci of ulceration or it may be nonulcerated with normal mucosa color. The growth is usually slow growing and asymptomatic which was not true in our case where the growth was fast growing and attained a size of about 1.5X1 cm in span of
two months. Previous studies showed that average size of POF is varied from 0.5 cm to 1.2 cm. Only few cases have been reported with a size of more than 2 cm.3 POF typically crops up in patients in the second or third decades.6 It shows a female predilection.4 Our case is in accordance with the literature findings. Clinically color of overlying mucosa in POF contributes to its easy differentiation from pyogenic granuloma (erythematous mucosa) and peripheral giant cell granuloma (bluish-purple mucosa).7

Radiographic features of POF shows variation in the radiopacity. Initial or early lesions do not show any detectable amount of mineralization. But mature lesions make it evident with flecks and patches of radiopacity in the centre of lesion.3 POF may show underlying bone involvement which is rarely evident on a periapical radiograph. In exceptions superficial bone erosion is also noted.8 The present case also showed a mixed radiopacity and radiolucency within the lesion with a rim of radiolucent periphery without any evidence of bone resorption.

Microscopically POF appears to be a nonencapsulated mass of cellular fibroblastic connective tissue of mesenchymal origin covered with stratified squamous epithelium. Surface epithelium may show schism in the continuity due to the ulceration in 23%-66% cases. POF contains areas of fibrous connective tissue, endothelial proliferation and varied amount of mineralization.5 Present case illustrated the fibro cellular mass covered with hyperparakeratinized epithelium with abundant mineralized component at centre. The cellular stroma was composed of ample vascular channels engorged with RBCs and chronic inflammatory infiltrate. Endothelial proliferation was bountiful in the regions of ulceration which was confusing with pyogenic granuloma.9 Although the history of pyogenic granuloma was evident, yet the presence of mineralized component was demanding its differentiation from the other lesions. Buchner and Hensen reported that there are three types of mineralization in the POF: dystrophic calcification, bone (woven or lamellar) and cementum like material. The dystrophic calcification is most prevalent in an ulcerated lesion.2 Candiff stated that mineralization is an inherent potential of periodontal ligament/periosteum. The same lesion that shows minute dystrophic calcification, may also show other type of mineralization, if left long enough.5 PGCG of gingiva may also show mineralized woven bone or calcification but never cementum like materials as in the case of POF.4 In the present case most prevalent mineralized product was woven bone or lamellar bone with osteoblastic rimming. Masson Trichrome staining showed the presence of benign fibroblastic proliferation with gradual production of osteoid and its maturation into the woven bone. No dystrophic calcification and giant cells were evident.
Peripheral Ossifying Fibroma vs Pyogenic Granuloma

Authors considered that peripheral ossifying fibroma falls within the spectrum of pyogenic granuloma and its maturation pathosis. They suggested that histomorphologic appearance of pyogenic granuloma and initial POF represent a single entity. Preliminary POF matures and shows mineralized components, a similar process of maturation was suggested for the pyogenic granuloma which if left untreated will eventually becomes more fibrous with some areas of mineralization. An oral pathologist must recognize the wide histomorphic spectrum of POF. In its early stages lesion is composed of only fibrocellular tissue, abundant vasculature with some dismorphic mineralization which may not gain proper attention and the lesion may be diagnosed as pyogenic granuloma. An author suggested that POF is a not a separate entity but a transitional form of pyogenic granuloma. Although both may have similar clinical appearance, etiology or considerable histopathology, they should be considered under one umbrella of focal reactive overgrowths (Flow chart 1). Mineralization occurring in pyogenic granuloma is considered to be a secondary phenomena but in POF it is de novo. This can be explained by stating that POF occurs in the vicinity of PDL where fibroblasts have an inherent property for producing mineralized component. Thus POF is nothing but transformation of pyogenic granuloma which is restricted to interdental region and shows de novo mineralization.

Peripheral Ossifying Fibroma vs Peripheral Odontogenic Fibroma

The second differential diagnosis includes peripheral odontogenic fibroma (WHO type). Some of the confusion regarding the POF and PODF has undoubtedly arisen from the similarity in clinical appearance and occasional overlap in histological features. The Peripheral Ossifying Fibroma must be histologically differentiated from PODF. The main histological difference between these two lesions is the presence of hypocellular stroma containing inactive looking odontogenic epithelium and dysplastic dentin or cementum like material in the PODF.

DIAGNOSTIC DIFFICULTIES WITH POF:

In the present case lesion was a nodular gingival overgrowth from the interdental area. Following the history of the lesion, a similar lesion from the same area was primarily diagnosed as pyogenic granuloma an year back. Recurrence of the lesion gave an absolutely different diagnosis of POF. Because of its overlapping clinical and histopathological spectrum with pyogenic granuloma, it does not need a categorical separation but needs an improved nomenclature within the focal reactive overgrowths of gingiva with its idiosyncratic or characteristic features.
CHRONIC IRRITATION
TO GINGIVA/GINGIVAL SULCUS

\[ \downarrow \]

INCREASED FIBROBLASTIC
PROLIFERATION

\[ \downarrow \]

PYOGENIC GRANULOMA
OR INITIAL LESION OF POF

\[ \downarrow \]

FIBROUS MATURATION
& SCLEROSIS

\[ \downarrow \]

OSSIFICATION

\[ \downarrow \]

ORGANIZED PYOGENIC GRANULOMA
OR PERIPHERAL OSSIFYING FIBROMA

FLOW CHART: HISTOLOGICAL SPECTRUM OF PG AND POF
Fig 1. Clinical presentation of gingival overgrowth of anterior Mandibular region in a 15 year old female child.

Fig 2. Specimen radiograph showing radiopaque flecks.

Fig 3. Hyperparakeratinized epithelium with focal area of mineralization. (H&E stained section at 4X microscopic power)

Fig 4. Trabecular woven bone with peripheral osteoid formation. (H&E stained section at 10X microscopic power)

Fig 5. Plump fibroblasts showing collagen (green) deposition. (Masson Trichrome stained section at 40 X microscopic power)

Fig 6. Formation of osteoid (green) with entrapped osteocyte like cells. (Masson Trichrome stained section at 40 X microscopic power)

Fig 7. Maturation of osteoid (green) into woven bone (red) rimmed with osteoblast like cells (Masson Trichrome stained section at 40 X microscopic power)
Conclusion

This case report reinforces the perception that focal reactive overgrowths like PG and POF need to be considered as two extremes of a single entity, or as the progressive stages of the same pathology. The line of attack or treatment modality remains the same for all focal reactive overgrowths that is, complete eradication of the lesion and elimination of etiological factors.

References


Citation : Sharma M. Sharma GK. Peripheral Ossifying Fibroma: A masquerade. Annals of Dental Research 2012; 2 (1): 36-43