

Peripheral Ossifying Fibroma in Mandibular Posterior Region in a 10-Year-Old Male Child: A Rare Case Report

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ABSTRACT

Background: Gingival growths are one of the most frequently encountered lesions in the oral cavity. Most of these lesions, such as irritational fibroma, pyogenic granuloma, peripheral ossifying fibroma and peripheral giant cell granuloma are innocuous and rarely present with aggressive features. In the majority of cases, these lesions are the result of trauma or chronic irritation. Among these lesions, an infrequently occurring gingival lesion is the peripheral ossifying fibroma. Peripheral ossifying fibroma is a focal, reactive, non-neoplastic tumor-like growth of the soft tissue that often arises from the interdental papilla. It is a growth of the anterior region of mandible and accounts for 3.1% of all oral tumors and 9.6% of the gingival lesions. About 60% of these tumors occur in maxilla and more than 50% of all cases of maxillary peripheral ossifying fibromas are found in the incisor and canine areas. This report discusses a case of peripheral ossifying fibroma affecting mandibular posterior area of a 10-year-old male child. The case was managed with surgical resection. Peripheral ossifying fibroma in this age, especially in male patient and arising in mandibular posterior region, is an occasional entity.

Keywords: Fibrous epulis, gingival growth, peripheral ossifying fibroma, peripheral cemento ossifying fibroma.

INTRODUCTION

Gingival growths are one of the most frequently encountered lesions in the oral cavity. Most of these lesions, such as irritational fibroma, pyogenic granuloma, peripheral ossifying fibroma and peripheral giant cell granuloma, are innocuous and rarely present with aggressive features.¹ Reactive lesions of gingiva are clinically and histologically non-neoplastic nodular swellings that develop in response to chronic and recurring tissue injury which stimulates an exuberant tissue response. Clinically, these lesions mimic various groups of pathologic processes and therefore often present a diagnostic challenge. One of the

infrequently occurring gingival lesions is peripheral ossifying fibroma (POF). Peripheral ossifying fibroma is a focal, reactive, non-neoplastic tumor-like growth of the soft tissue that often arises from the interdental papilla.² POF is an occasional growth of the anterior region of mandible and accounts for 3.1% of all oral tumors and 9.6% of the gingival lesions. About 60% of these tumors occur in maxilla and more than 50% of all cases of maxillary POF are found in the incisors and canine areas. It is most commonly seen in second decade of life with female predominance.^{2, 3} It has not been clarified whether POF is a tumor or represents proliferation of a reactive nature. However, POF shows a clinically benign behavior.⁴ Peripheral ossifying fibroma,

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especially in male patient and arising in mandibular posterior region, is an occasional entity. This report discusses clinical features, etiopathogenesis, histomorphologic features, treatment plan and differential diagnosis of peripheral ossifying fibroma in a 10-year-old male child affecting mandibular posterior area.

CASE REPORT

A 10-year-old male patient reported to the Department of Pedodontics, Faculty of Dental Science, DDU, Nadiad with the chief complaint of painless growth on the gingiva in the lower left back region since 6 months. It had progressed gradually to increase in size and attained the present size. Growth was associated with bleeding on brushing occasionally. The patient did not give any history of trauma.

Intraoral examination revealed a solitary, well circumscribed, ovoid, cauliflower like appearance, pink in colour, sessile growth present in the interdental papilla between 75 and 36, extending mesiodistally from the distal aspect of 75 up to mesial aspect of the 36 region (**Figure 1**). The growth was firm and non tender on palpation. It was non fluctuant, non reducible, and non compressible with mild bleeding on probing. The lesion was about 1.5 x 0.5 cm in size. There was no clinically detectable mobility present in the involved teeth. No secondary changes were seen related to ulceration and fungation. On extraoral examination, the face appeared apparently symmetrical and lymph nodes were non-palpable. Medical history and family history was insignificant. The patient was from low socioeconomic class. Oral hygiene was considerably poor, which may be due to poor oral hygiene awareness. Intra oral periapical radiograph of 75 & 36 was obtained. The radiographic examination was within normal limits, with no findings pertaining to the exophytic lesion (**Figure 2**). Complete hemogram of the patient was within normal limits.

A provisional diagnosis of peripheral ossifying fibroma was made. The differential diagnosis consisted of irritation fibroma, pyogenic granuloma and peripheral giant cell granuloma (PGCG). Consent for the surgical procedure was obtained from the patient's parents after proper counseling. Under local anesthesia, the whole

growth was excised and the underlying surface was thoroughly curetted up to deepest possible tissue. The excised tissue was sent for histopathological examination (**Figure 3**). After controlling bleeding, periodontal dressing was applied and the patient was discharged with prescription of pain killer and chlorhexidine mouth wash. Adjacent teeth were scaled to remove the local irritants. The patient was recalled after one week for review.

Histomorphological examination revealed proliferating parakeratinised stratified squamous epithelium (**Figure 4**). Underlying fibrocellular connective tissue showed mature collagen fibre bundles, chronic inflammatory cell infiltrate and blood vessels. Tiny globular basophilic calcified material was present in the centre of the lesion (**Figure 5**). After three months post-operatively, the patient revealed uneventful healing (**Figure 6**).

DISCUSSION

Menzel first described the lesion ossifying fibroma in 1872, but its terminology was given by Montgomery in 1927.⁵ Ossifying fibroma occurs mostly in craniofacial bones and is categorized into two types central and peripheral. The central type of ossifying fibroma arises from the endosteum or the periodontal ligament (PDL) adjacent to the root apex and expands from the medullary cavity of the bone, and the peripheral type occurs on the soft tissues overlying the alveolar process.⁶ Peripheral ossifying fibroma (POF) is a solitary, slow growing nodular mass that is either pedunculated or sessile. Most often it is located in the gingival papilla between adjacent teeth.⁷ POF has also been described by various synonyms such as peripheral cemento ossifying fibroma, peripheral odontogenic fibroma (PODF) with cementogenesis, peripheral fibroma with osteogenesis, peripheral fibroma with calcification, fibrous epulis, calcifying fibroblastic granuloma, etc.^{8,9}

Almost 60% of the lesions occur in the maxilla and mostly occur anterior to molars. The lesion is most common in the second decade of life affecting mainly females.¹⁰ According to Cuisa ZE *et al.*, the prevalence of this lesion in children aged 5 to 9 years was 10%.¹¹ However Kenney JN *et al.* reported a 1.9% prevalence in children aged 0 to 9 years.¹² About 16 cases have been reported in literature in last 9 years. Among them, only 3



Fig 1: Intraoral examination revealing a solitary, well circumscribed, ovoid, cauliflower like appearance, sessile growth in the interdental papilla between 75 and 36



Fig 2: Intraoral periapical radiograph of the involved region which was found to be within normal limits



Fig 3: Excised tissue sent for histopathological examination

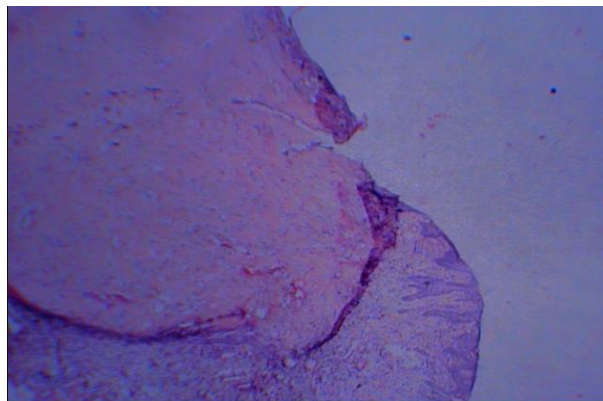


Fig 4: Photomicrograph of the histopathological examination (H & E staining) of the lesion (10X)

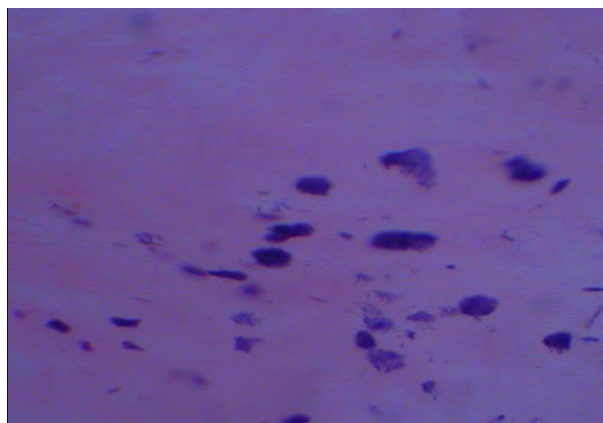


Fig 5: Photomicrograph of the histopathological examination (H & E staining) of the lesion (40X).



Fig 6: Healing at 3 months post-operatively.

belonged to second decade of age, whereas others belonged to higher age group. Out of 16 cases, 13 were females and 10 had their lesions located in anterior maxilla (**Table 1**). The present report is a rare case of peripheral ossifying fibroma in a 10 year old male child occurring in mandibular posterior region.

Though the etiopathogenesis of POF is uncertain, origin from cells of periodontal ligament has been suggested.¹³ The reasons for considering periodontal ligament origin include excessive occurrence of POF in the gingival interdental papilla, the proximity of the gingiva to periodontal ligament, the presence of oxytalan fibres within the mineralized matrix of some lesion, and the fibrocellular response in periodontal ligament.^{6,7} Dental calculus, plaque, microorganisms, dental appliances, and restorations are considered to be the irritants triggering the lesion.¹⁴ Chronic irritation of the periosteal and periodontal membrane causes metaplasia of the connective tissue and result in initiation of formation of bone or dystrophic calcification.

The role of growth factors must be considered since they can induce gene transcription silent in inactive cells and also can induce entry of the cells in to the cell cycle. As a periodontal lesion, growth factors such as the fibroblast growth factor-2 (FGF-2) are likely to be involved. FGF-2 is present in different periodontal tissues and besides other effects, it has a mitotic action on fibroblasts; increase preosteoblasts which will derive in osteoblasts and consequently form bone.

Hormonal influence may play a role too, as the lesions show a female predilection, with increasing occurrence in second decade of age and declining after third year.¹³ However higher prevalence of occurrence of this lesion in older females have been reported in literature in last few years. Also, the rare occurrence of this lesion found in males raises questions regarding the pathogenesis of this type of lesion. In vast majority of cases, there is no apparent underlying bone involvement visible on the roentgenogram. However, superficial erosion of bone is noted occasionally.^{6,7,15}

Peripheral ossifying fibroma (POF) has to be differentiated from traumatic fibroma,

peripheral giant cell granuloma, pyogenic granuloma, and peripheral odontogenic fibroma. Traumatic fibroma occur on buccal mucosa along the bite line. The site of occurrence of POF is usually gingiva which differentiates it from traumatic fibroma. Pyogenic granuloma presents as soft, smooth or lobulated red to purple mass, small in size that bleeds with tendency to hemorrhage and may or may not occasionally or do not show calcifications but tooth displacement and resorption of alveolar bone are not observed. POF is at times misdiagnosed as pyogenic granuloma.²⁵ However, the colour and consistency of POF differentiates it from pyogenic granuloma. Moreover, radiological and histopathological examination is required for confirmation of diagnosis. POF has to be differentiated from peripheral giant cell granuloma and peripheral odontogenic fibroma. Peripheral giant cell granuloma has clinical features similar to POF however POF lacks the purple or blue discoloration commonly associated with peripheral giant cell granuloma (PGCG) and radiographically shows flecks of calcification.²⁶ Peripheral odontogenic fibroma is an uncommon neoplasm that is believed to arise from odontogenic epithelial rests in periodontal ligament or attached gingiva itself. It is possible to histologically differentiate PGCG and peripheral odontogenic fibroma from POF as PGCG contains giant cells, whereas peripheral odontogenic fibroma contains odontogenic epithelium and dysplastic dentine.¹⁴

Histopathologically, it is very important to understand the difference between the similar sounding lesions, i.e. POF, peripheral odontogenic fibroma (POdF), central ossifying fibroma (COF) and central odontogenic fibroma (COdF). Despite of similarity in terminology, POF is a completely distinct entity from POdF and COF. The POF, representing a reactive benign lesion of connective tissue, is not the soft tissue counterpart (or related anyhow) to central ossifying fibroma which represents an osteogenic neoplasm.²⁶ Similarly, the reactive lesion POF is completely different from POdF which is in fact a neoplasm of odontogenic ectomesenchyme with included odontogenic epithelium. As opposite to POF and COF, the POdF does represent the extraosseous counterpart of the COdF and is related to it.²²

Treatment requires proper surgical intervention that ensures deep excision of the lesion including periosteum and affected periodontal ligament. Thorough root scaling of adjacent teeth and/or removal of othersources of irritants should be accomplished. In children, reactive gingival lesions can exhibit an exuberant growth rate and reach significant size in a relatively short period of time.²⁰

CONCLUSION

Clinically it is difficult to differentiate between most of the reactive gingival lesions particularly in the initial stages. Thus, it is important to eliminate the etiological factors and the tissue has to be histologically examined for confirmation. Incidences of recurrence have been

put at 16–20%.²⁰ Reasons include incomplete removal of lesion, failure to eliminate local irritants, difficulty in access during surgical manipulation due to intricate location of POF being present usually at interdental areas.³ Regardless of the surgical technique employed, etiological factors should be eliminated and long postoperative follow up should be mandatory. The POF represents a reactive benign lesion of connective tissue and is not the soft tissue counterpart of ossifying fibroma (COF) and is also not related anyhow to peripheral odontogenic fibroma (POdF). Role of hormones in the pathogenesis of peripheral ossifying fibroma (POF) is questionable. Further research should be carried out to study the molecular basis of this lesion, with emphasis on its etiopathogenesis.

Table 1: Cases of peripheral ossifying fibroma reported in last few years

Author	Age	Gender	Location
Charro HE <i>et al.</i> , (2007) ¹⁶	68	F	Maxillary anterior
Martins Junior JC <i>et al.</i> , (2008) ¹⁷	32	F	Maxillary anterior
Farquhar T <i>et al.</i> , (2009) ¹⁸	12	F	Maxillary anterior
Kim JJ <i>et al.</i> , (2009) ¹⁹	66	F	Mandibular posterior
Poonacha KS <i>et al.</i> , (2010) ²⁰	12	F	Maxillary posterior
Vivekanandh RG <i>et al.</i> , (2011) ²¹	45	F	Maxillary anterior
Mishra MB <i>et al.</i> , (2011) ²²	45	F	Mandibular anterior
Yadav A <i>et al.</i> , (2011) ³	45	F	Mandibular posterior
Sah K <i>et al.</i> , (2012) ²³	13	M	Maxillary anterior
Pal S <i>et al.</i> , (2012) ²⁴	31	F	Mandibular posterior
	45	M	Maxillary anterior
	23	F	Maxillary anterior
Bhasin M <i>et al.</i> , (2013) ²⁵	60	F	Maxillary anterior
Grimaldo- Carjevschi M <i>et al.</i> , (2014) ¹³	28		Mandibular posterior
Kapoor H <i>et al.</i> , (2014) ¹	58	M	Mandibular posterior
Batra J <i>et al.</i> , (2015) ²	25	F	Mandibular posterior

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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