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A Large Peripheral Ossifying Fibroma: A Case Report

Divya Pandya* and Anil Kumar Nagarajappa

Department of Oral Medicine and Radiology, Hitkarini Dental College and Hospital, Jabalpur, Madhya Pradesh, India

Corresponding author

KEYWORDS

Calcifications, Hyperplasia, Ossifying fibroma, Periodontal ligament, Reactive

A B S T R A C T

The gingiva is often the site of localized growths that are considered to be reactive rather than neoplastic in nature. Many of these lesions are difficult to be identified clinically and can be identified as a specific entity only on the basis of typical and consistent histomorphology. Peripheral ossifying fibroma is one such reactive lesion occurring frequently in maxillary anterior region in teenagers and young adults. It has been described with various synonyms and is believed to arise from periodontal ligament comprising about 9% of all gingival growths. Here, we report a case of 20 year old man with large peripheral ossifying fibroma in anterior maxilla showing prominent ossifications in radiological image of specimen.

Introduction

Gingival overgrowths are one of the most frequently encountered lesions in the oral cavity (Sumona *et al.*, 2012). Many types of localized reactive lesions may occur on the gingiva including focal fibrous hyperplasia, peripheral giant cell granuloma (PGCG) and peripheral ossifying fibroma (POF) (Terry *et al.*, 2008). They all fall under the general description of benign tumors of connective tissue origin (Shivali *et al.*, 2103). Peripheral ossifying fibroma is a common gingival growth usually arising from the interdental papilla. Trauma or local irritants such as dental plaque, calculus, micro-organisms, masticatory forces, ill fitting dentures and poor quality restorations have been implicated in the etiology. It appears as a nodular mass, either pedunclated or sessile arising from interdental papilla. The colour ranges from red to pink and surface is frequently but not always ulcerated. It is more commonly seen in 1st and 2nd decades of life (50% of all patients being between 5-25 years of age) and has female preponderance. Lesions are usually located anterior to molars and 60% in maxilla measuring in range of 1.6 to up to even 6 cm large (Aena *et al.*, 2010, Jose A *et al.*, 2010, Anirban *et al.*, 2010). In majority of cases there is no underlying bone involvement visible on the radiograph. However, on rare occasions there may be superficial erosion

on bone (Aena *et al.,* 2010). The definitive diagnosis is based on histological examination with the identification of cellular connective tissue and focal presence of bone or other calcifications (Jose A *et al.,* 2010).

Case Report

A 20 year old male patient reported to the Department of Oral Medicine and Radiology with a chief complaint of a growth in upper right front tooth region of jaw since 1 year. The history revealed that growth was gradual in onset, initially peanut size and gradually progressed to present size within 6 months from onset. Growth was associated with mild pain during mastication with difficulty in mastication and brushing and was not associated with any discharge or constitutional symptoms. Patient's medical and dental histories were non contributory. On intra oral examination a well defined solitary exophytic growth was appreciated on upper right front tooth region of jaw (Figure 1) which extended labially from distal half of canine till mesial half of 1st premolar mesiodistally and from marginal gingival till 2-3 mm beyond incisal edges on canine and premolar superoinferiorly (Figure 2). It measured approximately 2x3 cm in dimension, roughly oval shaped and smooth surfaced with multiple pronounced erythematous indentations on inferior aspect of growth due to trauma from opposing arch teeth as growth was interfering with occlusion (Figure 3). The palatal counterpart of growth extended mesiodistally from incisive papilla till distal aspect of 2nd premolar and superoinferiorly covers palatal aspect of lateral incisor, canine and both premolars till 0.5 cm distal to mid palatine raphe. It measured approximately 4x5 cm in dimension, irregularly shaped with bossalated surface (Figure 4). On palpation growth was non tender, firm in consistency pedunclated and stalk was arising from interdental papilla between canine and 1st premolar with erythematous area being mildly tender (Figure 5). There was grade I mobility with 1st premolar with 5 mm periodontal pockets with canine and both premolars on maxillary right quadrant. There were generalized grade II stains and calculus with bleeding on probing. On the basis of history and clinical examination a provisional diagnosis of peripheral ossifying fibroma was made with a list of differential diagnosis which included traumatic fibroma, peripheral giant cell granuloma and pyogenic granuloma. True maxillary occlusal radiograph was made as patient was non compliant for periapical view which revealed no significant bone involvement (Figure 6). Hematological investigations of patient reported no pathology. Extraction of 1st premolar with excisional biopsy under local anesthesia was performed and specimen was obtained in two parts (Figure 7) for which radiograph was made which revealed an irregularly shaped, well appreciable radiopaque foci in centre of palatal aspect of specimen (Figure 8), which was then sent for histopathological examination. H & E stained sections showed stratified squamous epithelium encircling a dense fibrous stroma, bundles of collagen fibers with scattered areas of ossifications confirming a final diagnosis of peripheral ossifying fibroma (Figure 9). Follow up revealed uneventful healing with no recurrence (Figure 10).

Results and Discussion

POF is a relatively common gingival lesion characterized by a high degree of cellularity usually exhibiting bone formation, although occasionally cementum like material or rarely dystrophic calcification may be found instead. The lesion is considered to be reactive rather than neoplastic in nature. The

lesion was earlier described as peripheral fibroma with calcifications by Bhaskar *et al.,* Later the term POF was coined by eversole and Robin (Shivali *et al.,* 2013, Mahavir B *et al.,* 2011, Terry *et al.,* 2008). POF is not the extraosseous counterpart of central ossifying fibroma of maxilla and mandible. The use of a variety of terminologies for POF indicates a great amount of confusion regarding the lesion and its pathogenesis. The various synonyms used were ossifying fibroid epulis, peripheral fibroma with calcification, peripheral cemento-ossifying fibroma, calcifying fibroma, peripheral cementifying fibroma, ossifying fibro epithelial polyp, peripheral fibroma with osteogenesis, peripheral fibroma with cementogenesis, and calcifying fibroblastic granuloma (Sumona *et al.,* 2012, Thorakkal 2012).

POF accounts for 3.1% of all oral tumors and 9.6% of gingival lesions. This condition affects both genders but has been reported to occur at a higher rate in females with peak incidence between 2nd and 3rd decade.

Clinically POF appears as solitary nodular mass that is either pedunclated or sessile. The surface mucosal color changes ranges from red to pink and frequent ulcerations. The mass usually arises from interdental papilla, with slightly more frequently in maxillary arch and incisor cuspid region (50%). Radiographically it shows no relevant finding except for peripheral erosion of bone in some cases with evidence of ossification as with our case. There is much uncertainty about pathogenesis of this lesion. An origin in periodontal ligament has been suggested. The reasons being origin of POF include exclusive occurrence of POF in the gingiva (interdental papilla), proximity of gingiva to periodontal ligament and presence of oxytalan fibres within the mineralized matrix of some lesions. The mature fibrous connective tissue proliferates excessively in response to gingival injury, gingival irritation, subgingival calculus or a foreign body in gingival sulcus. Chronic irritation of periosteal and periodontal membranes causes metaplasia of connective tissue and initiates formation of bone or dystrophic calcification. POFs develop initially as pyogenic granulomas that undergo fibrous maturation and subsequent calcification, thus explaining the more occurrences in females and association of hormonal changes (Sumona *et al.,* 2012, Shivali 2013). Differential diagnosis includes peripheral giant cell granuloma, pyogenic granuloma, fibroma, calcifying epithelial odontogenic cyst (Poonacha K.S *et al.,* 2010).

Figure.1 A Large Solitary Growth in Right Maxillary Region

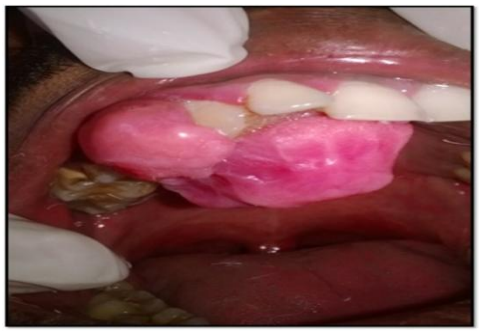


Figure.2 Labial Aspect of Growth

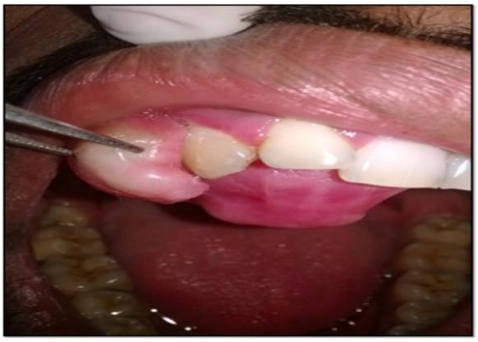


Figure.3 Ulcerative Erythematous Indentation of Opposing Arch Teeth

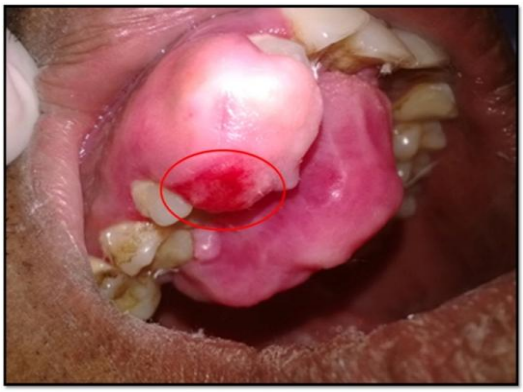


Figure.4 Palatal Aspect of Growth

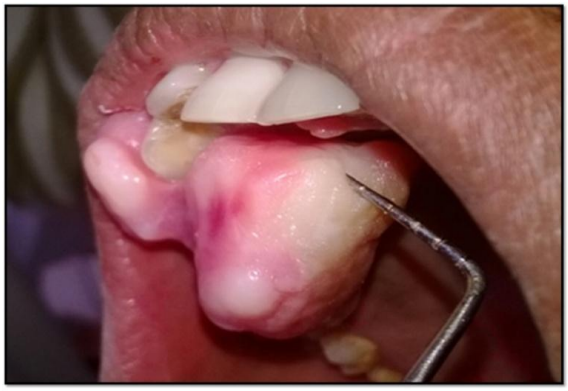


Figure.5 Growth Originating from Interdental Papilla (Blue Arrow)

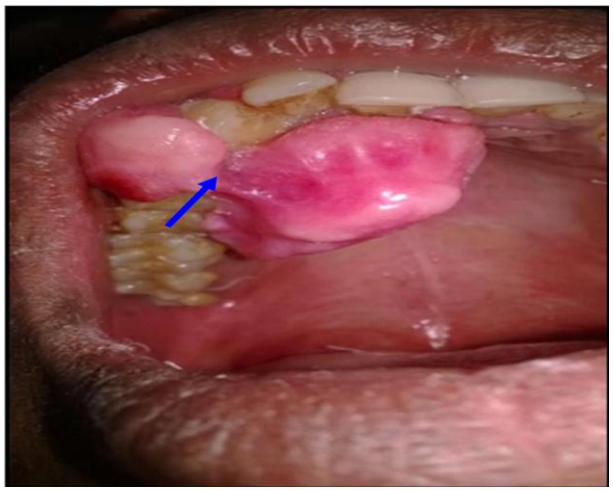


Figure.6 Maxillary True Occlucal Radiograph Revealing No Bony Involvement

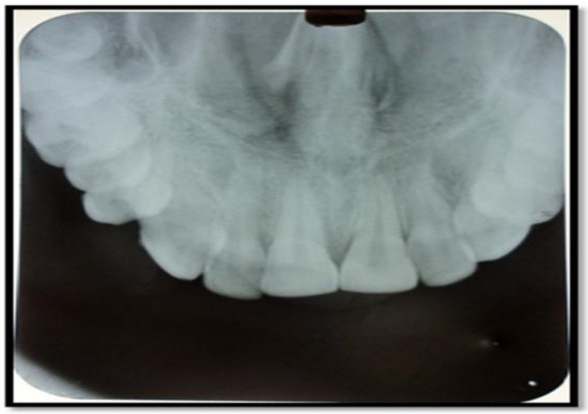


Figure.7 Excised Labial and Palatal Parts of Specimen

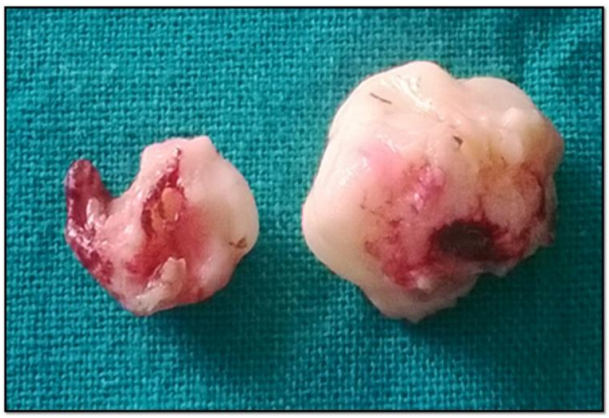


Figure.8 Radiograph of Specimen Showing Ossifications

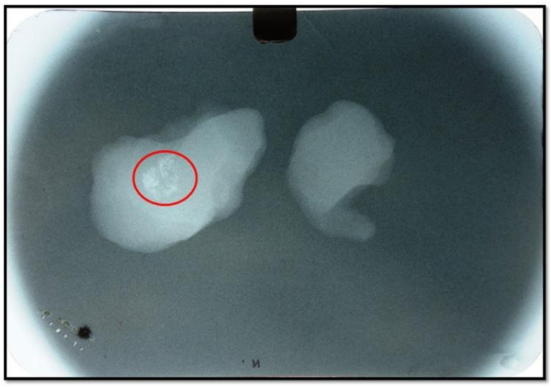


Figure.9 H&E Stains Revealing Fibrous Connective Tissue Stroma with Foci of Ossification (Blue Arrow)

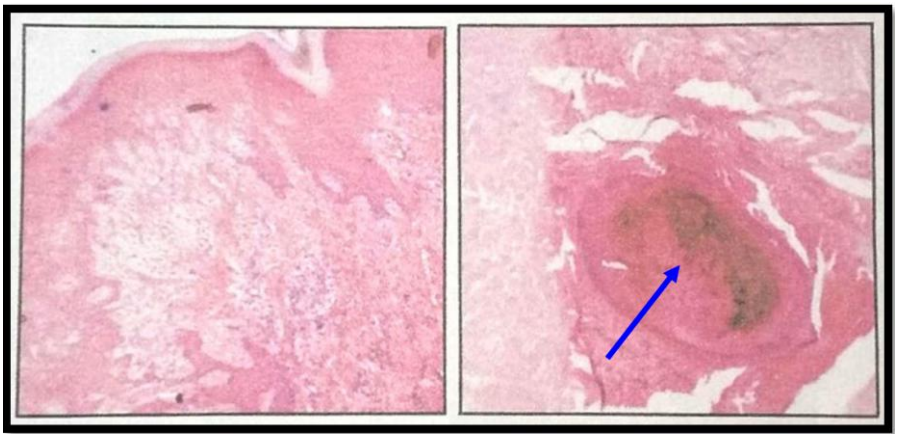
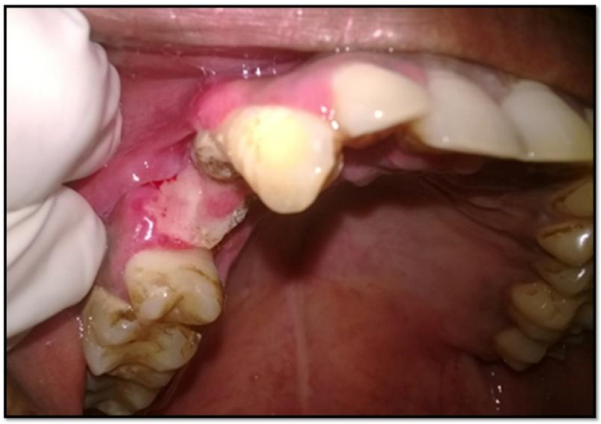


Figure.10 1 Week Post Follow-Up Showing Uneventful Healing



Histologically, POF can exhibit either ulcerated or intact stratified squamous epithelium. In a typical ulcerated lesion, three zones can be identified:

Zone 1 – superficial ulcerated zone covered with fibrinous exudates and enmeshed with polymorphonuclear neutrophils and debris

Zone 2 – zone beneath the surface epithelium composed almost exclusively of proliferating fibroblasts with diffuse infiltration of chronic inflammatory cells mostly lymphocytes and plasma cells

Zone 3 – more collagenized connective tissue with less vascularity and high cellularity, osteogenesis consisting of osteoid and bone formation is a prominent feature, which can even reach the ulcerated surface in some cases.

The calcified material can generally be mature lamellated trabecular bone, immature highly cellular bone, circumscribed amorphous, almost acellular, eosinophilic or basophilic bodies and minute microscopic granular foci of calcification (Poonacha K.S *et al.,* 2010).

Surgery is the treatment of choice. The mass should be excised down to periosteum because recurrence is more likely, if the base of the lesion is allowed to remain. The teeth associated with POF are generally not mobile, though there have been reports of dental migration secondary to bone loss. Recurrence rate has been estimated to be 16-20% by various studies. The reasons includes, incomplete removal of lesion, failure to eliminate local irritants and difficulty in access during surgical manipulation due to intricate location of POF being present usually at interdental areas (Shivali *et al.,* 2013, Aena *et al.,* 2010). Various tissue lasers such as diode lasers can also be used (Vidyaa *et al.,* 2012). Our present case showed just the deviation in gender else all clinical, radiological and histological features were supporting the literature

Conclusion

POF is a slowly progressing lesion, the growth of which is generally limited. Many cases progresses for longer periods before patients seek treatment because of lack of symptoms associated with the lesion. A slowly growing pink soft tissue nodule in anterior maxilla of an adolescent should raise suspicion of a POF. Discussion of differential diagnosis should be done tactfully to prevent unnecessary distress to patient. Close postoperative follow up is required because of the growth potential of incompletely removed lesions.

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