

REACTIVE LESION OF GINGIVA: A CASE SERIES AND REVIEW OF LITERATURE

Navneet Kaur¹, Jyoti Kadian², Neha Kadian³

1. Postgraduate student, Department of Periodontics and Oral Implantology, Sudha Rustagi College of Dental Sciences and Research, Faridabad.

2. Assistant Professor, Department of Medicine, Post Graduate Institute of Medical Sciences, Rohtak.

3. Postgraduate student, Department of Periodontics and Oral Implantology, Sudha Rustagi College of Dental Sciences and Research, Faridabad.

ABSTRACT:

A diverse group of pathologic process can produce the enlargement of soft tissues in the oral cavity and often present a diagnostic challenge. This soft tissue enlargement may represent a variation of normal anatomic structure, inflammatory reaction, cyst, neoplasm and developmental anomalies. A group of reactive hyperplasias, which develop in response to chronic recurring tissue injury that stimulates an excessive tissue repair response. Reactive lesions found on the gingiva are common and tend to be non-neoplastic growths and not implicated with drug involvement. These lesions include Pyogenic granuloma (PG), irritation fibroma, peripheral giant cell granuloma (PGG), peripheral ossifying fibroma (POF). They are usually not painful and are often overlooked by the patient until they become symptomatic or are identified by their dental healthcare provider. It is recommended to obtain histologic diagnoses for the lesions since their clinical appearances can be similar amongst various lesions, but the recurrence rates are different. This paper presents a case report on reactive lesions and highlights the diverse clinical and Histopathological presentations along with review of the available literature for identification and treatment of gingival lesions.

Keywords: Fibroma; gingival overgrowth; peripheral ossifying fibroma; Pyogenic Granuloma

INTRODUCTION:

Growths of the gingival tissues are common and often result from underlying systemic disease, drug-induced stimulus, local iatrogenic factors, and dental plaque. 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.^[1] Pyogenic Granuloma (PG) is an inflammatory hyperplasia which is non-neoplastic in

nature. Because of the high incidence of oral PG, critical need exists for its proper diagnosis and treatment.^[2] Case reports will supplement the description of each lesion to allow a better understanding for the clinician in developing a differential diagnosis.

CASE DETAIL:

Case 1: A 23-year-old female reported to the outpatient department with a slow-growing gingival growth in the right

*Corresponding Author Address: Dr. Navneet Kaur, Postgraduate Student, Department of Periodontics and Oral Implantology, Sudha Rustagi College of Dental Sciences and Research, Faridabad. Email:kaurnavneet456@gmail.com

posterior mandibular tooth region that had been present for 6 months. The patient's history revealed that a the growth occurred when she was 3 months pregnant for first time and the growth reoccurred in the same area when she was 6 months pregnant for second time. An intraoral examination revealed a sessile growth in the Interdental papilla close to 45 and 46 (Figure 1). The growth measured approximately 2 cm × 1.7 cm in size, was not tender and was firm in consistency. The surface was pinkish red in color and fibrotic. It covers approximately 2/3 of the crown and oral hygiene status is fair. A radiographic examination showed mild crestal bone loss in the region of 45 and 46 (Figure 2). An excision biopsy was performed. A Histopathological examination revealed a covering of Hyperplastic parakeratinized stratified squamous epithelium proliferating into the underlying connective tissue. Part of the section was ulcerated. The underlying connective tissue was dense chronic inflammatory cell infiltrate composed of lymphocytes and plasma cells. Beneath this, the connective tissue shows collagen fiber bundles and numerous basophilic irregular calcifications and areas of ossification showing osteocytes lying within the lacunae (Figure 3). Numerous engorged blood vessels and capillaries can also be seen. A Histopathological examination revealed features of POF.

Case 2: An 18-year-old female reported to the department with slow-growing gingival growth in the left front maxillary tooth region that had been present for 7

months. Initially the growth is pin point in size but with time it was increased in size. Patient went to private practitioner, homeopathic doctor and private hospital for every 2 months and took medications for the same but did not get any relief from the condition. Patient is suspected of hormonal imbalance due to irregularity of menstrual cycle since 2 years so patient was asked to consult gynaecologist and she prescribed TSH, PRL, LH, FSH and US of lower abdomen to rule out PCOD. An intraoral examination revealed a solitary, well-defined pedunculated growth in the maxillary anterior region (Figure 4). The growth measured 1.8 cm × 0.6 cm in size. The surface of the growth appeared reddish pink in color, slightly rough and granular with the growth appearing erythematous in the left half lobule and a pale red color in the right half lobule. Interdentally palatal attachment w.r.t 21 and 22 was observed. On palpation, the growth was non-tender and firm in consistency. An intraoral radiograph showed a mild crestal bone loss in the region of 21 and 22 (Figure 5). The growth was surgically excised. Histopathological analysis showed a Hyperplastic parakeratinized stratified squamous epithelium that was ulcerated in one area. The connective tissue was composed of numerous fibroblasts and chronic inflammatory cell infiltrate predominantly lymphocytes. Several irregular basophilic globular dystrophic calcification and bony trabeculae with osteoid rimming were noted (Figure 6). These features were suggestive of POF.

Case 3: A 10-year-old male reported to the outpatient department with a slow-growing gingival growth in the left anterior mandibular tooth region that had been present for 1 year. The swelling started increasing gradually over 9-10 months and reached its present size. The patient had not taken any treatment for the same and had no relevant medical history. The patient's history revealed that a growth was causing discomfort and bleeding while brushing. An intraoral examination revealed a pink color in the centre and red color at the margins (Figure 7). The growth measured approximately 1.5 cm × 1 cm in size, roughly oval in shape, firm and fibrotic in consistency. There was an interdental buccolingual attachment covering approx. 2/3rd of the crown w.r.t 32 and 73 and oral hygiene status is fair. A radiographic examination showed crestal bone resorption in between mandibular lateral incisor and deciduous canine and displacement of adjacent teeth (Figure 8). The growth was surgically excised and deciduous canine was extracted. A Histopathological examination revealed a covering of Hyperplastic parakeratinized stratified squamous epithelium exhibiting broad rete ridges. The underlying connective tissue contains chronic inflammatory cell infiltrate composed of lymphocytes and plasma cells arranged perivascularly and scattered throughout the tissue. Beneath this, the connective tissue shows loose delicate, fibrillar in nature collagen fiber bundles which seem to be forming partial capsule like structure (Figure 9). Numerous dilated and thin

walled blood vessels of varying shapes and size lined by plump endothelial cells and flatter cells can also be seen. A Histopathological examination revealed features of PG.

DISCUSSION

The prevalence of reactive lesions of the gingiva is reported to be rather common with the peripheral fibroma being the most common category (56 – 61%) followed in descending order by the Pyogenic granuloma (19 – 27%), peripheral ossifying fibroma (10 - 18%), and peripheral giant cell granuloma (1.5 – 7%) based on over 3000 cases studied.^[3,4]

The first case was reported in 1844 by Hüllihen and the term 'Pyogenic granuloma' or 'granuloma pyogenicum' was coined in 1904 by Hartzell.^[5] PG usually arises in response to various stimuli such as traumatic injury, certain kind of drugs, Poor oral hygiene and compromised periodontal health, Micro trauma due to tooth brushing, Trauma from orthodontic appliances, Hormonal influences during puberty, pregnancy and the use of oral contraceptives have also been implicated.

Eversol and Robin coined the term POF. In 1872, Menzel first described ossifying fibroma, but Montgomery in 1927 gave its terminology.^[6] Buchner and Hasan hypothesized that early POF presents as ulcerated nodules with little calcification, which can be misleading in clinical diagnosis, as the lesion may appear to be a Pyogenic granuloma.^[7] The mineralized component of peripheral

ossifying fibroma varies from 23% to 75% (Farquhar et al, 2008).

The POF may occur at any age range, but exhibits a peak incidence between the second and third decades. The average age is 28 years, with females being affected more than males which coincide with our cases Since POF has an obvious predilection for females and occurs frequently in specific periods of life such as puberty and pregnancy, the existence of hormonal factors in the development of POF has been suggested in the literature.

The histological picture is diagnostic for these lesions. Histologically, POF shows three types of calcification: Dystrophic calcification or lamellar osteoid or cementoid. The present case showed all the three types of mineralization. Moreover, histopathologically, lamellar or woven osteoid pattern predominates; hence, the term "POF" is considered more appropriate.^[8]

POF usually arising from Interdental papilla; PDL cells were thought to be the cells of origin for POF include: exclusive occurrence of POF in the gingiva (Interdental papilla); the proximity of the gingival lesion to the periodontal ligament; the presence of oxytalan fibers within the mineralized matrix of some lesions; age distribution, which is inversely related to the number of lost permanent teeth; and the fibro cellular response in POF, which is similar to the other reactive gingival lesions of PDL origin.^[9]

Depending upon its rate of proliferation and vascularity, there are two histological variants of pyogenic granuloma called lobular capillary Hemangioma (LCH type) and non-lobular capillary Hemangioma (non-LCH). The first type is characterized by proliferating blood vessels that are organized in lobular aggregates whereas the second type consists of highly vascular proliferation that resemble granulation tissue. These differences suggest that two histological types of PG represent distinct entities.^[10]

Recent research has implicated the role of angio-genic factors derived from macrophages in the rapid growth of pyogenic granuloma. Various angiogenic factors including vascular endothelial growth factor (VEGF), angiopoietin-2 (Ang-2), epherin B2, EphB4 and a nitric oxide (NO) synthase have been detected through immunohistochemistry may be responsible for the rapid angiogenesis seen in Pyogenic granuloma.^[11]

Radiographic findings are usually absent. However, Angelopoulos concluded that in some cases long standing gingival pyogenic granuloma caused localized alveolar bone resorption. In the present case, there were no obvious radiographic findings. Radiographic features of POF may 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. Underlying bone involvement is usually not visible on a radiograph. In rare instances, superficial erosion of bone is noted.

The recurrence rate of POF has been considered high and may vary from 8.9% to 20 % (Bhaskar & Jacoway, 1966; Kenney et al, 1989; Eversole & Rovin, 1972). It probably occurs due to incomplete initial removal, repeated injury or persistence of local irritants. The average time interval for the first recurrence is 12 months (Das & Azhar, 2009). A recurrence rate of 16% has been reported for PG. Bhaskar and Jacoway have reported recurrence rate of 15.8% after surgical excision.^[12] Sapp et al. in 1997 stated that oral Pyogenic granuloma have a relatively high rate of recurrence after simple excision.

CONCLUSION

Peripheral ossifying fibroma has a high rate of recurrence, making post-operative follow-up mandatory. Successful treatment involves obtaining an accurate diagnosis through histopathologic

analysis, complete removal of the gingival lesion, and addressing the local irritants with follow-up care, as well as dental hygiene maintenance to prevent or treat recurrence. Similarities in all reactive gingival lesions show differences in age, type, location, duration, and histologic features. The definitive diagnosis is based on histological examination with the identification of cellular connective tissue and the focal presence of bone or other calcification. However, it has not been established whether POF is a tumor or represents proliferation of reactive nature. Imperative in the treatment of reactive gingival lesions is the complete removal of local irritants such as defective restorations, calculus, or trauma. Regular dental hygiene maintenance with professional follow-up care should reduce the incidence of recurrence for most types of gingival lesions.

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FIGURES:

Case 1



Figure 1: Intraoral photograph showing the gingival overgrowth

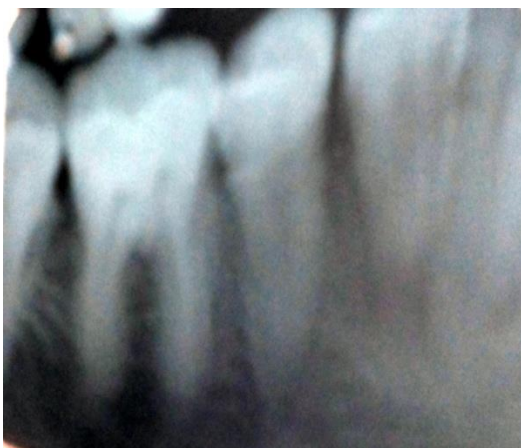


Figure 2: IOPA showing mild crestal bone loss

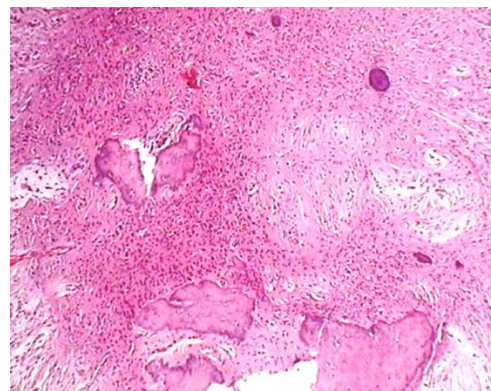


Figure 3: photomicrograph of the lesion showing collagen fiber bundles and basophilic globules depicting dystrophic calcification with in a moderately cellular fibrous stroma

Case 2



Figure 4: Intraoral photograph showing the gingival overgrowth



Figure 5: IOPA showing mild crestal bone loss



Figure 8: IOPA showing mild crestal bone resorption

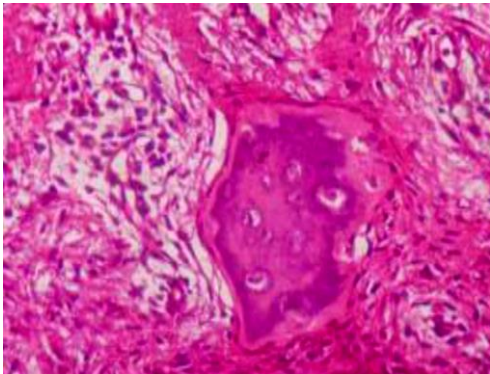


Figure 6: photomicrograph of the lesion showing cellular fibrous connective tissue containing numerous irregular basophilic globular dystrophic calcification

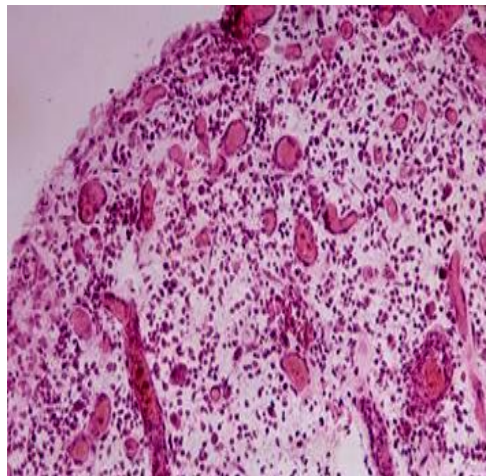


Figure 9: photomicrograph of the lesion showing loose delicate, fibrillar collagen fiber bundles in connective tissue and endothelial cells

Case 3



Figure 7: Intraoral photograph showing the gingival overgrowth before and after 9 months