Case Report

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Clinical and Histopathological features of Pyogenic Granuloma: A Case Report

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ABSTRACT

Background: Pyogenic granuloma or granuloma pyogenicum is a relatively common, benign non-neoplastic mucocutaneous lesion, as a response to some underlying irritating factor. The name for pyogenic granuloma is misleading because it is not a true granuloma. In actuality, it is a capillary hemangioma of lobular subtype which is the reason they are often quite prone to bleeding. The growth is typically seen in young adults, it may occur in any age, especially in individuals with poor oral hygiene. This article presents a case report of pyogenic granuloma managed by surgical intervention and discusses the important clinical and histopathological features of the lesion.

Keywords: Non-neoplastic, mucocutaneous, Pyogenic Granuloma, Capillary Hemangioma.

INTRODUCTION

Pyogenic granuloma is a commonly occurring inflammatory hyperplasia of the skin and oral mucosa. It was first reported in English literature by Hullihen in 1844 and was first originally described in 1897 by two French surgeons, Poncet and Dor, who named this lesion otyomycosis hominis but the term "Pyogenic granuloma" or "granuloma pyogenicum "was introduced by Hartzell in 1904. It was also called a Crocker and Hartzell's disease.[1] Angelopoulos (1971) histologically described it as "hemangiomatous granuloma" due to the presence of numerous blood vessels and the inflammatory nature of the lesion. The name pyogenic granuloma is misnomer as it is neither associated with pus nor a true granuloma. In actuality, it is a capillary hemangioma of lobular subtype, hence quite prone to bleeding. The incidence is 26.8-32% of all reactive lesions. It is a hyperactive benign inflammatory lesion commonly seen in the oral cavity with gingiva being the most commonly affected site followed by buccal mucosa, tongue and lips. [2] Oral pyogenic granulomas show a predilection for the gingiva, accounting for 75% of the cases. It may occur in all age groups, though it is predominantly seen in young females in the second decade of life, and male to female ratio is 1:99.[3] In this article, a case report of localized gingival enlargement on the palatal aspect of upper right quadrant of the jaw in a 34-year old male patient is presented. The study, discusses the clinical characteristics and features that distinguish this lesion from other similar lesions of the oral mucosa, with special emphasis on the diagnosis and treatment of this condition.

CASE REPORT

A male patient aged about 34-years, reported to the Department of Periodontology of

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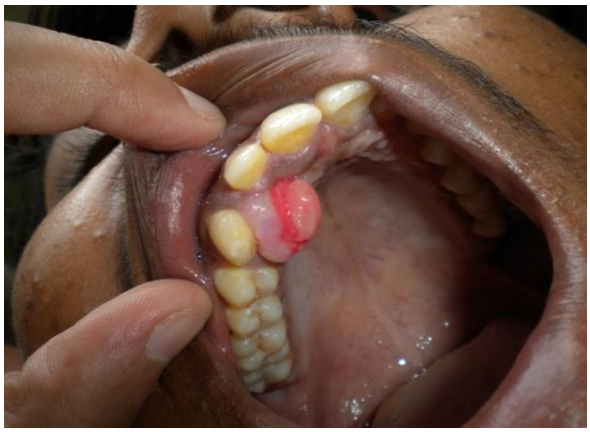

Fig 1: Gingival overgrowth between right maxillary lateral incisor and canine.

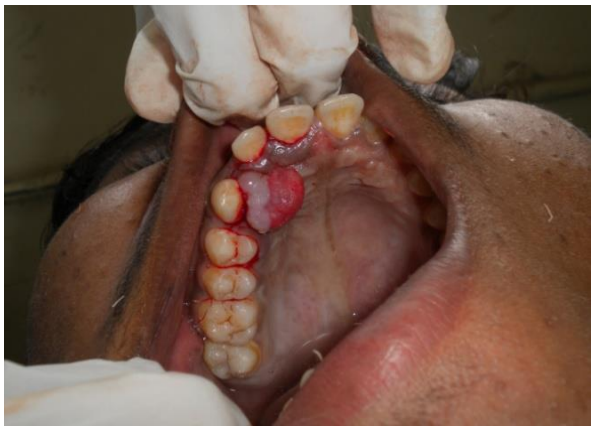

Fig 2: Crevicular Incisions placed on the palatal aspect of maxillary anterior teeth and deep crevicular incision placed at the base of the gingival overgrowth.

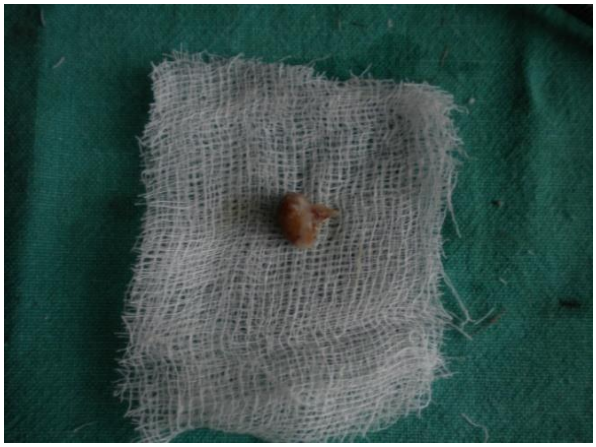

Fig 3: Excised tissue.

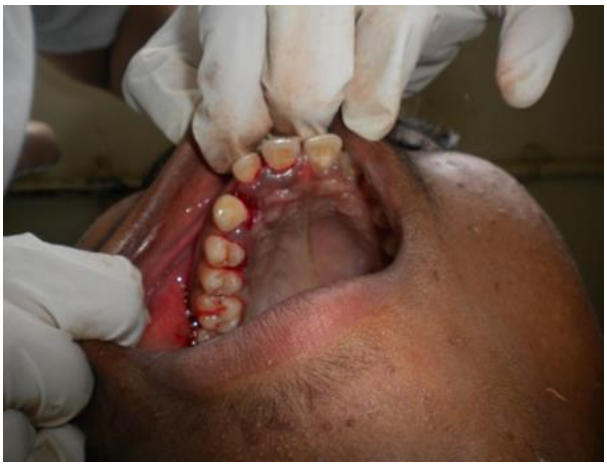

Fig 4: Area after Excision of the gingival overgrowth.

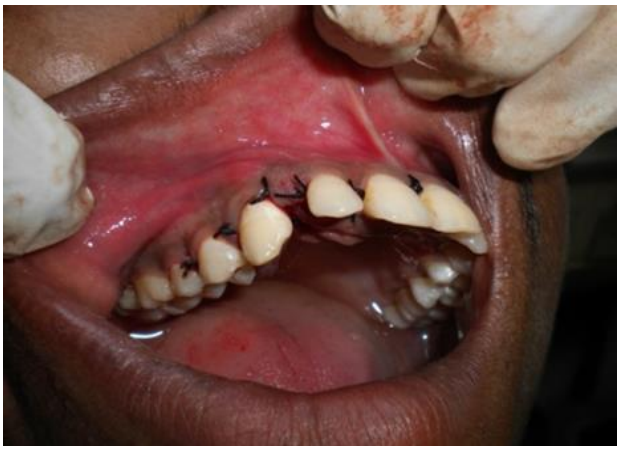

Fig 5: Simple Interrupted Sutures placed.

Fig 6: Periodontal Pack placed.

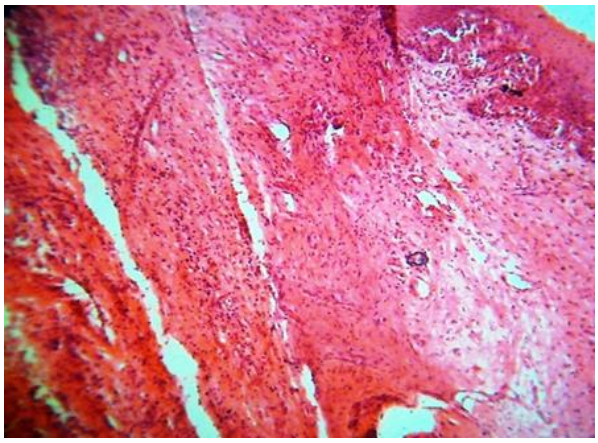

Fig 7: Histopathological features of the gingival overgrowth under(10X) magnification.

the institution with a chief complaint of swelling in relation to upper anterior teeth that bled profusely while brushing of teeth. It began as a tiny growth which was painless and gradually increased in size to the present state over a period of 3-months. Mild intermittent pain was associated with the growth which increased on chewing food. Patient's medical, surgical and family histories were non-contributory. His personal history revealed that he has a habit of tobacco chewing, 2-3 tobacco packets a day since 2 years. General physical examination revealed that the patient has normal gait, moderately built, and nourished.

Intraoral soft tissue examination showed an exophytic growth on the palatal aspect between maxillary right lateral incisor and canine. The growth covered approximately 2/3 of the crown of the teeth. The growth was 1.5 cm × 0.8 cms in size, roughly oval in shape, reddish pink, ulcerated, and was associated with bleeding on probing. The growth was soft on palpation with mild tenderness. The lesion was attached with a sessile base. In addition, oral hygiene of the patient was poor with calculus and stains. Periapical radiograph showed mild bone loss between maxillary right lateral incisor and canine.

After proper examination and diagnosis, initial therapy consisted of oral hygiene instructions. Supra and subgingival scaling under local anaesthesia was performed along with coronoplasty. Plaque control instructions were repeated until the patients achieved a plaque score of ≤ 1. A re-evaluation examination was performed 6 weeks following completion of initial therapy to determine patient's response to the therapy and to confirm the need for surgical excision.

A complete surgical excision of the growth was done under aseptic conditions. Excision of the lesion up to and including the mucoperiosteum was carried out under local anesthesia using a scalpel and blade, followed by curettage and thorough scaling of the involved teeth. Periodontal dressing was placed and patient was recalled after 1 week for removal of the pack and checkup. On re-evaluation, no complaints were reported by the patient. The healing was satisfactory. Patient was kept on a follow up for 4 months. The excised tissue was sent for histopathological examination.

Histopathological examination showed a orthokeratinized stratified squamous epithelium. The epithelium was thin, atrophic with short retepegs and showed areas of ulceration with fibrinous exudate. The underlying connective tissue stroma showed dilated and engorged blood vessels, extravasated red blood cells and budding endothelial cells, few proliferating fibroblasts with PMN's, lymphocytes and plasma cells. The definite diagnosis of pyogenic granuloma was made. The patient was recalled every 1 month for maintenance and to check for possible recurrence. This case was followed up for a period of 4 months and no recurrence of the lesion was observed.

DISCUSSION

Regezi et al. suggested that pyogenic granuloma is caused by a known stimulant or injury such as calculus or foreign material within the gingival crevice resulting in exuberant proliferation of connective tissue.[4] Ainamo (1971) suggested that routine tooth brushing habits cause repeated trauma to the gingiva resulting in irritation and formation of these lesions. Release of variety of endogenous substances and angiogenic factors causes disturbances in the vascularity of the affected area. Trauma to deciduous teeth, aberrant tooth development, occlusal interferences, immunosuppressive drugs such as cyclosporine, overhanging restorations and wrong selection of healing cap for implants are some of the other precipitating factors for pyogenic granuloma.[5] Because of this irritation, the underlying fibrovascular connective tissue becomes hyperplastic and there is proliferation of

granulation tissue which leads to the formation of pyogenic granuloma.

Oral pyogenic granulomas may occur in all ages but is predominantly seen in young adults, and are more frequently encountered in females in their second decade due to increased levels of circulating hormones estrogen and progestrone.[3] Hosseini et al. observed that gingival enlargements increased in pregnancy and atrophied in menopause.[6] Jafarzadeh et al. has reviewed the correlation of oral pyogenic granuloma, pregnancy and the role of oral contraceptives in detail.[7] However, the effects of female hormones on oral pyogenic granulomas were questioned by Bhaskar and Jacoway (1966) since they found lesions both in males and females with no specific sex predilection.

Pyogenic granuloma of the oral cavity appears as an elevated, smooth or exophytic, sessile or pedunculated growth covered with red hemorrhagic and compressible erythematous papules, which appear lobulated and warty showing ulcerations and covered by yellow fibrinous membrane. The color varies from red, reddish purple to pink depending on the vascularity of the growth.[8] The size varies in diameter from few millimeters to several centimeters, rarely exceeding 2.5 cm.[7] Clinically, development of the lesion is slow, asymptomatic and painless but it may grow rapidly.[9] Young pyogenic granulomas are highly vascular in appearance, because they are composed of predominantly hyperplastic granulation tissue in which capillaries are prominent. Thus, minor trauma to the lesion may cause considerable bleeding, whereas older lesions tend to become more collagenised and pink.[8]

Histologically pyogenic granulomas are classified as the LCH type and the non-LCH type. The LCH type has proliferating blood vessels organized in lobular aggregates; no specific changes such as edema, capillary dilation of inflammatory granulation are noted. The non-LCH type consists of a vascular core resembling granulation tissue with foci of fibrous tissue. In the central area of the non-LCH pyogenic granuloma a greater number of vessels with perivascular mesenchymal cells non-reactive for alpha smooth muscle actin (SMA) is detected as compared with the lobular area of the LCH type pyogenic granuloma, thereby Epivatioanos et al., suggested that the LCH and the non-LCH pyogenic granulomas have different pathways of evolution.[10] Yuan et al. suggested the etiology of pyogenic granuloma to be due to an imbalance between the angiogenesis enhancers like, vascular endothelial growth factor (VEGF), basic fibroblast growth factor (bFGF) and angiogenesis inhibitors angiostatin and thrombospodin1.[11]

Radiographic findings are usually absent.[12] However, Angelopoulos (1971) concluded that in some cases long standing gingival pyogenic granulomas caused localized alveolar bone resorption. Pyogenic granuloma is a benign lesion; therefore surgical excision is the treatment of choice. Other conventional surgical modalities for the treatment of pyogenic granuloma are cryosurgery in form of either liquid nitrogen spray or a cryoprobe. Sodium tetradecyl sulphate sclerotherapy successfully offers a better alternative than excision because of its simplicity and lack of scarring, even though multiple treatment sessions are required.[7] In the present case there was no scar formation and patient was satisfied with the outcome.

Despite the possible occurrence of scars, Biopsy is the method of choice for adequate diagnosis of oral lesions. In the present case, an excisional biopsy was performed for diagnosis and treatment. Various other benign soft tissue lesions need to be differentiated from pyogenic granuloma which include peripheral giant cell granuloma, Kaposi's sarcoma, non -Hodgkin's lymphoma, hemangioma, pregnancy tumor; conventional granulation tissue etc.[13] Differentiation is done on the basis of clinical and histological features which help in adequate treatment and good prognosis. Due to the proliferating blood vessels differential diagnosis of pyogenic granuloma from a hemangioma is made histologically in which hemangioma shows endothelial cell proliferation without acute inflammatory cell infiltrate, which is common finding in pyogenic granuloma.. Conservative surgical excision of the lesion with removal of irritants such as plaque, calculus and foreign materials is recommended for small painless non-bleeding lesions.

Recurrence of pyogenic granuloma after excision is a known complication but can be

prevented, it is said to be up to 16% of the treated lesions and so re-excision of such lesions might be necessary. Incomplete excision, failure to remove etiologic factors or repeated trauma contributes to recurrence of these lesions.[7, 2] Vilmann et al.(1986) emphasized the need of follow-up, especially in pyogenic granuloma of the gingiva due to its much higher recurrence rate.[14] The present case was followed up for a period of 4 months and no recurrence was observed.

CONCLUSION

Pyogenic granuloma is benign in nature and usually do not attain unusually large size. Considering these characteristics, it can be adequately treated with correct diagnosis and proper treatment**.** This case report presents a case of gingival pyogenic granuloma in a male patient giving an insight into its etiologies, clinical features, histological presentations, treatment modalities and recurrence rates.

CONFLICT OF INTEREST

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

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