

SURGICAL MANAGEMENT OF RECURRENT PYOGENIC GRANULOMA

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Abstract

Pyogenic granuloma is a tumor-like gingival enlargement that is considered an exaggerated conditioned response to local irritants. It usually arises in response to various stimuli such as low-grade local irritation, traumatic injury, hormonal factors or certain kinds of drugs. Histologically, the surface epithelium may be intact, or may show foci of ulcerations or even exhibiting hyperkeratosis. It overlies a mass of dense connective tissue composed of significant amounts of mature collagen. Gingiva is the most common site affected followed by buccal mucosa, tongue and lips. Pyogenic granuloma in general does not occur when excised along with the base and if its causative factors are corrected. This case report presents a case of recurrent pyogenic granuloma managed by surgical excision.

Key words: Pyogenic Granuloma, Recurrent gingival enlargement.

Introduction

Pyogenic granuloma (PG) is a pedunculated hemorrhagic nodule that occurs most frequently on the gingiva. Hullihen's in 1844 reported the first pyogenic granuloma, but the term "pyogenic granuloma" or "granuloma pyogenicum" was introduced by Hartzell in 1904.¹ PG is perceived to be an exaggerated localized connective tissue reaction to minor injury or any underlying irritation. This irritating factor can be calculus, poor oral hygiene, non-specific infection, overhanging restorations etc.²

Oral Pyogenic granuloma shows a striking predilection for gingiva, with gingival lesions accounting for 75% of all cases. Maxillary anterior region is the most common site of occurrence.² 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).¹ Clinically, PG presents as a smooth or lobulated exophytic lesion manifesting as small, red erythematous papules on a pedunculated or sometimes sessile base, which is usually hemorrhagic and compressible. The size varies in diameter from few millimeters to several centimeters, rarely exceeding 2.5 cm.^{1,3} Clinically development of the lesion is slow, asymptomatic and painless but it may grow rapidly. The surface is characteristically ulcerated and friable which may be covered by a yellow, fibrous membrane and its colour ranges from pink to red to purple, depending on age of the lesion.³

The friable, hemorrhagic and frequently ulcerated appearance of the Pyogenic granuloma correlates with its histologic presentation of proliferating endothelial tissue, much of which is canalized into a rich vascular network with minimal collagenous support.^{2,5} The fact that PG lesions are usually located close to the gingival margin suggests that calculus, food materials and overhanging margins of dental restorations are important irritants that should be eliminated when the lesion is excised.² This article reports a case of 18 year old male patient with a recurrent pyogenic granuloma successfully managed by surgical excision.

Case report

An 18 year old male patient reported to the Department of Periodontology with a complaint of gingival overgrowth in the upper left front region of the jaw since 6-7 months (Figure 1). The growth was small in size initially, but slowly grew to attain the present size. Patient gave history of a similar lesion since 8 years for which he had undergone surgical excision twice with the present growth starting 3-4 months after treatment. The lesion also bled when patient brushed his teeth and during mastication. Medical history was non-contributory. Intra-oral examination revealed a solitary red epiphytic, pedunculated growth on the gingiva measuring about 2cm and 2.5 cm in height and width, respectively, in relation to distal surface of upper left central incisor till mesial surface of upper left canine, extending from attached gingiva to the middle third of crown portion of upper left central incisor. The growth was 1cm from the rugae area palatally involving the edentulous region around upper left lateral incisor. No pus discharge was seen or reported. The growth was firm on palpation, non-tender with absence of discharge. Bleeding on provocation was positive.



Figure-1 Pre-operative photograph of the lesion

Although it has been reported in all age groups, higher frequency is observed in the second decade of life, especially among women, probably because of the vascular effects of female hormones.⁴

Complete haemogram revealed all blood cell counts within normal limits. Scaling and root planning were performed in the first visit and the patient recalled after 2 weeks. Chemical plaque control measures were advised in the form of 0.2% chlorhexidine gluconate mouthwash, to be used twice daily. In addition to excisional biopsy of the lesion,

osteoplasty with surgical debridement (Figure 2) of the bony defect in relation to upper left canine was performed under local anaesthesia. The excised lesion was sent for histopathologic examination. Histopathological examination showed a hyperplastic, parakeratinized stratified squamous epithelium.



Figure 2- Intra-operative view after excision, osteoplasty and surgical debridement of the bony defect

The connective tissue was loose fibrillar and comprised of numerous proliferating capillaries, dense mixed inflammatory infiltrate, and extravasated red blood cells (Figure 3). The histopathological examination confirmed the clinical diagnosis of pyogenic granuloma. Healing was satisfactory. The patient was recalled after one week, 1 month, three months (Figure 4) and six months. At each visit, oral prophylaxis and oral hygiene instructions were reinforced. Even after six months, there was no recurrence of the lesion.

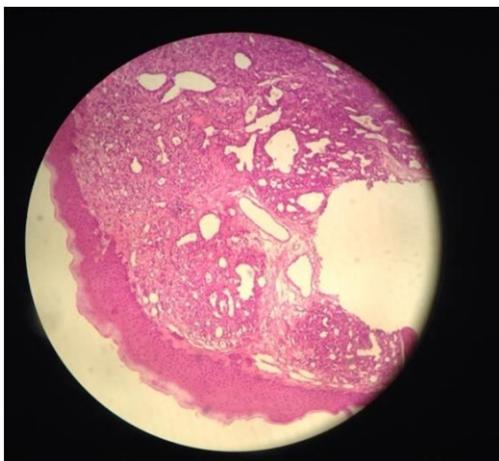


Figure3- Photomicrograph of the biopsy specimen



Figure 4- Three months post-operative view of the site

Discussion

Pyogenic granuloma is an inflammatory hyperplasia affecting the oral tissues. The precise mechanism for the development of pyogenic granuloma is unknown. Trauma, hormonal influences, viral oncogens, underlying microscopic arteriovenous malformations, the production of angiogenic growth factors, & cytogenic abnormalities have all been postulated to play a role. The over expression of transcription factors, P- ATF2& STAT3 also may play role in tumorigenesis.^{6,7}

While some investigators regard PG as a benign neoplasm, it is usually considered to be a reactive tumour like lesion which arises in response to various stimuli such as chronic low-grade local irritation, traumatic injury, hormonal factors, and certain kind of drugs such as cyclosporine.¹ A case associated with guided tissue regeneration has also been mentioned in the literature.⁸ Hormonal changes of puberty and pregnancy may modify the gingival reparative response to injury.⁹

Differential diagnosis of pyogenic granuloma includes peripheral giant cell granuloma, pregnancy tumour, peripheral ossifying granuloma, metastasis of malignant tumours, hemangioma, inflammatory gingival hyperplasia, Kaposi sarcoma, angiosarcoma, non-Hodgkin's lymphoma. Peripheral giant cell granuloma is an exophytic lesion that is seen exclusively in gingiva, is more likely to cause bone resorption, with appearance of multinucleated giant cells. Diagnosis of pregnancy tumour is valid clinically in describing a PG occurring in pregnancy, with no clinical or histological differences. Kaposi's sarcoma of AIDS shows proliferation of dysplastic spindle cells, vascular clefts, extravasated erythrocytes and intracellular hyaline globules, none of which are features of pyogenic granuloma. It can be distinguished from Angiosarcoma by its lobular growth pattern, well defined vessels, and cytologically bland endothelial cells.¹

Being a benign lesion, surgical excision is the preferred treatment option. Other surgical modalities for the treatment of PG include cryosurgery in form of either liquid nitrogen spray or a cryoprobe, Nd: YAG and CO2 Lasers, flash lamp dye lasers etc. Sodium tetradecyl sulphate sclerotherapy offers an alternative treatment option because of its simplicity and lack of scarring, even though multiple treatment sessions are required. In the present case, an excisional biopsy was performed for histopathological examination and treatment.

The recurrence rate of PG is approximately 16%, based on reported data. Recurrence may result from incomplete excision, failure to remove etiologic factors or re-injury of the area.^{1,9} In the present case, hormonal factors could be related to the etiology of PG, as significant endocrinal changes could occur in this age group. There was no scar formation and patient was satisfied with treatment outcome. No recurrence was reported until 6 months of follow-up.

Conclusion

Although pyogenic granuloma is a non-neoplastic growth in the oral cavity, proper diagnosis, prevention, management and treatment of the lesion are very important. Pyogenic granuloma arises in response to various stimuli such as low-grade local irritation, traumatic injury, sex hormones or certain kinds of drugs, so removal of causative irritants (plaque, calculus, foreign materials, and source of trauma) is the major line of treatment. Surgical excision is a successful treatment of choice in minimizing the recurrence of lesion.

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