Pyogenic Granuloma : A Case Report

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Abstract

Pyogenic granuloma is one of the inflammatory hyperplasias seen in the oral cavity. It predominantly occurs in second decade of life in young females, possible because of the vascular effects of female hormones. Clinically oral pyogenic granuloma is a smooth or lobulated exophytic lesion pedunculated or sometimes sessile base, which is usually hemorrhagic. The purpose of the article is to describe a case of Pyogenic Granuloma.

Introduction

Localized hyperplastic lesions of the gingiva or "Epulides" as they are commonly known, are a well recognized entity since generations. The word 'epulis' is derived from Greek "epi" and "elon"; meaning 'on the gingiva'. Thus logically this term can be used to describe the clinical appearance of any lesion that appears on the gingiva. This term however, does not give any indication about the nature of the lesion.[1,2]

Pyogenic granuloma (PG) is a common reactive neo formation of the oral cavity, which is composed of granulation tissue and develops in response to local irritation or trauma. Various different names have been given to this entity, reflecting, in part, mistaken concepts about its aetiopathogenesis.

The most widely used term is PG, although it does not adequately describe the lesion's characteristics. The term "pyogenic" implies pus production related to an infectious aetiology; however, no pus-producing microorganisms are associated with PG. Moreover, the lesion is not a true "granuloma" (i.e. a specific type of persistent chronic inflammation).[3]

Hullihen's[4] in 1844 first reported pyogenic granuloma in English literature but the term "Pyogenic granuloma" or "granuloma pyogenicum" was introduced by Hartzell.[5] It is a distinctive clinical entity originating as a response of the tissue to nonspecific infections. It is a tumor like growth that is considered an exaggerated conditioned response to minor trauma. It is well-circumscribed elevated, pedunculated or sessile lesion, which may be covered with necrotic white plaque which clinically resembles pus, hence early clinicians have suggested the name 'Pyogenic Granuloma'. Pyogenic granuloma which often arises in 2nd or 3rd trimester is termed as "Pregnancy Tumor". Although this lesion is reported in all age groups, the peak incidence is reported in third decade of life affecting women more often than men.[6,7]

Case Report

A 37-year-old female reported to the Department of Periodontics, complaining of a swelling in the upper right jaw, which caused discomfort while eating since 6 months. Intra-oral examination revealed a solitary sessile growth of gingiva measuring about 6 x 5 mm in size, extending from 11 (upper right central incisor) to 12 (upper right lateral incisor) & covering the labial gingiva & palatal surfaces of the teeth (Fig. 1). It was reddish pink in color with white patches. The surface was smooth, no ulcerations were seen and it appeared ovoid in shape. On palpation, the growth was firm, non-tender, easily bleeding. Oral hygiene was fair and the tooth associated did not show any mobility. Radiographically, there were no visible abnormalities and the alveolar bone in the region of the growth appeared normal. Routine hemogram was found to be normal. A provisional diagnosis of pyogenic granuloma was made. The differential diagnosis included peripheral ossifying fibroma, peripheral giant cell granuloma, hemangioma and fibroma.

The patient did not have any systemic problems and so the case was prepared for surgery on the basis of the clinical and radiographic evidence. Oral prophylaxis was completed and the lesion was excised under aseptic conditions. After local anesthesia, the enlarged localized lesion was excised with help of a 15 no. B. P. blade up to the base of the lesion (Fig. 2). It was ensured that the lesion was completely excised by trimming up the remnants of the soft tissue adjacent to the tooth to prevent recurrence of the lesion. Periodontal dressing was placed and the patient was recalled after 1 week for removal of the pack and checkup. The excised tissue was sent to the Department of Oral Pathology for histologic examination. After 4 weeks there was no growth visible clinically (Fig. 4). The patient was recalled every month for a checkup.

Histopathological examination revealed a stratified squamous epithelium showing hyperplasia with increased keratinization with proliferating retepegs & underlying connective tissue shows lots of proliferating blood vessels, formation of vascular spaces in fibrocellular stroma infiltrated with inflammatory cells like lymphocytes, plasma cells & macrophages, confirming the clinical diagnosis of Pyogenic granuloma. (Fig.5)

Discussion

Oral Pyogenic granuloma is the most common gingival tumor that shows a striking predilection for the gingival accounting for 75% of all cases. The etiology of Pyogenic Granuloma is unknown. It was believed to be a

botryomycotic infection but later suggested that it is caused by infection of streptococci & staphylococci. But now it is believed that low grade trauma or irritation, hormonal influences, viral oncogens, or certain kinds of drugs are the causative factors. Approximately one-third of the lesion occurs after trauma. Poor oral hygiene may be precipitating factor in many of these patients. Some factors such as inducible nitric oxide synthase, vascular endothelial growth factor or connective tissue growth factor are known to be involved in angiogenesis & rapid growth of Pyogenic granuloma. Additionally certain drugs like cyclosporine have an important role in genesis of Pyogenic granuloma.[8]

In 1980, Davies et al found inclusion bodies in the fibroblast suggestive of disordered protein metabolism. They suggested that Pyogenic granuloma constitute a lesion produced by primitive organizer resulting from gene depression in papillary fibroblast perhaps as a result of ctype virus infection. Lesions are slightly more common in maxilla than in mandible; anterior gingiva is more affected than the posterior. Also the lesion is more common on facial aspect than on lingual or palatal.[9] According to Vilmann et al. majority of the pyogenic granuloma are found on the marginal gingiva with only 15% on the alveolar part. The size varies in diameter from a few millimeters to several centimeters. Rarely does pyogenic granuloma exceed 2.5 cm in size & usually reaches its full size within weeks or months.[10]

Young Pyogenic granulomas are highly vascular in appearance because they are composed predominantly of hyperplastic granulation tissue in which capillaries are prominent. Whereas older lesions tends to become more collagenized & pink. Involvement of bone in Pyogenic granuloma is rare.

Excision and biopsy of the lesion is the recommended line of treatment unless it would produce a marked deformity and in such a case incisional biopsy is recommended. 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. Excision of the gingival lesions up to the periosteum with through scaling and root planning of adjacent teeth to remove all visible sources of irritation is recommended.[11] The recurrence rate for pyogenic granuloma is said to be 16% of the treated lesions and so re-excisi1n of such lesions might be necessary.[12]

Various other benign soft tissue lesions need to be differentiated from pyogenic granuloma. A few of these include peripheral giant cell granuloma, pregnancy tumor; and conventional granulation tissue irritational fibroma, capillary hemangiomas & metastatic tumor.[13] Differentiation is done on clinical and histological features which help in providing adequate treatment and therefore a good prognosis.

Correlation with Pregnancy

Pyogenic granuloma develops in up to 5% of pregnancies hence the term "pregnancy tumor" and "granuloma gravidarum" are often used. The hormonal imbalance coincident with pregnancy heightens the organism's response to irritation; however bacterial plaque and gingival inflammation are necessary for subclinical hormone alterations leading to gingivitis. Recent studies regarding molecular mechanism behind development & regression of Pyogenic granuloma are the effect of estrogen accelerates wound healing by stimulating nerve growth factor, Granulocyte-Macrophage-Colony stimulating factor & Fibroblast growth factor (bFGB) and Transforming growth factor beta 1 (TGF-α1) leading to granulation tissue formation. Estrogen enhances Vascular Endothelial Growth Factor (VEGF) production in macrophages, an effect that is antagonized by androgens & which may be related to the development of pyogenic granuloma during pregnancy.[14]

Regarding egression of pregnancy pyogenic granuloma, it is proposed that in the absence of VEGF, Angiopoietin-2 (Ang- 2) causes blood vessels to regress. There is no justification for retaining the term "pregnancy tumor.' They are in agreement with Kerr that lesions of an identical clinical and histologic nature are seen in men as well as in nonpregnant women.[8]

Conclusion

With the presentation of this paper it can be concluded that the combinations of various etiological factors might have caused the inflammatory tissue to cross the threshold from regular gingivitis to granuloma formation. The lesion was painless as nerves do not proliferate within the reactive hyperplastic tissue. Surgical excision is a successful treatment of choice in minimizing the recurrence of lesion. So, the consideration should also be given to correct diagnosis and proper treatment planning.

References

References are available on request at editor@healtalkht.com

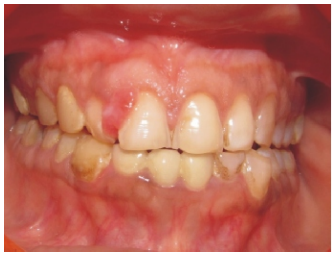

Fig. 1a : Pre-operative

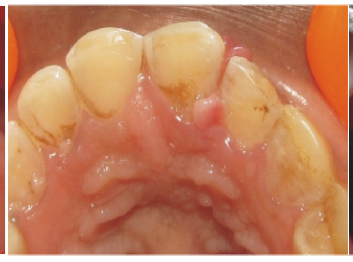

Fig. 1b : Pre-operative Palatal

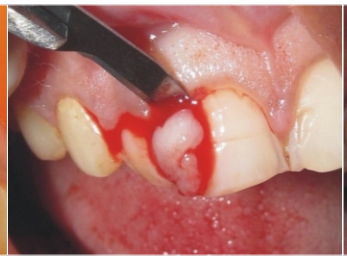

Fig. 2 : Intraoperative

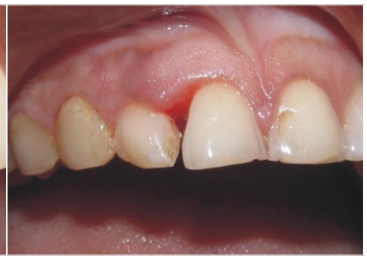

Fig. 3 : After excision

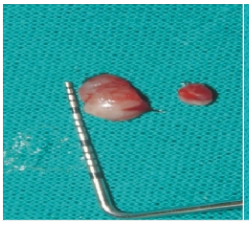

Fig. 3a : Excised tissue.

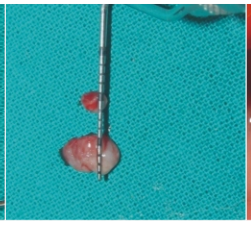

Fig. 3b : Excised tissue.

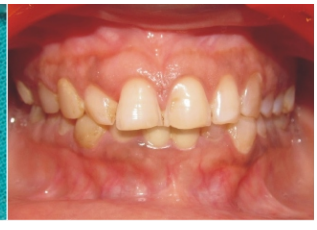

Fig. 4a : Post-operative

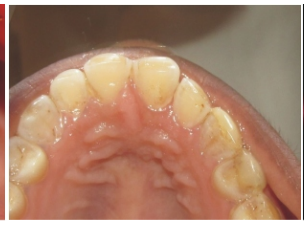

Fig. 4b : Post-operative

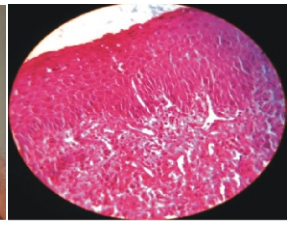

Fig. 5 : Histopathologic slide.