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CASE STUDY

ORAL PYOGENIC GRANULOMA

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ABSTRACT

Pyogenic granuloma is a reactive inflammatory process in which there is a vigorous fibrovascular proliferation of the connective tissue, secondary to low-grade chronic irritant. It is an excessive growth of the oral tissue, which usually arises in response to nonspecific infection. This kind of oral growths mainly affects females than males although they can develop in people of all ages & also usually seen in pregnant women. This case report explains Pyogenic granuloma in a 22-year-old female patient, discussing the clinical and histopathologic features that discriminate this lesion of oral mucosa and management of this lesion.

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INTRODUCTION

"Pyogenic granuloma", in (1844) "Hullihen's" who described first Pyogenic granuloma report in an english literature, but was only in (1904), "Hartzell" first ever introduced the term pyogenic granuloma. It is a response of tissues to a non-specific infection. Pyogenic granuloma is common soft tissue growth of the oral mucous membrane that is considered to be non-neoplastic in nature (Neville, 2002 Vilmann, 1986). It occurs in response to various pathways such as local irritant (It is an inflammatory response to local irritation such as calculus), hormonal imbalance (It is a contributing factor for the development of some pyogenic granulomas), trauma (It occurs as a result of minor traumatic injury to tissue which provides pathway for invasive tissue by no-specific microorganism), or certain kinds of drugs (Sumanth Shivaswamy, 2011). The appearance of pyogenic granuloma is usually a color ranging from red/pink to purple, and can be smooth or lobulated. Younger lesions are more likely to be red because of the high number of blood vessels. Older lesions begin to change into a pink color. Pyogenic granuloma can be painful, especially if located in an area of the body where it is constantly disturbed. Pyogenic granuloma can grow rapidly and will often bleed profusely with little or no trauma. The most frequent intraoral site is the gingiva (approximately 75%).

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Case report

A 22 year old female reported to the department of Periodontology of Manubhai Patel Dental College, Vadodara, India, with the chief complaint of swelling in lower right back tooth region since 6 months which increased in size gradually. Patient felt discomfort on the affected area during mastication. The patient was healthy and her medical history was non-remarkable. The lesion was localized in relation to mandibular right canine, first and second premolar region on the lingual side, (#43,#44,#45) (Figure 1,2) and also enlargement of the papilla of the same region was observed. On clinical examination, the lesion is sessile with a smooth and warty surface, reddish pink in color and 1.5cm×1.0 cm in diameter (Figure 3,4). Oral prophylaxis was carried out and the patient was instructed to maintain her oral hygiene. Following this, surgical excision of the lesion was performed under local anesthesia and sent for histopathologic examination. The surgical site was covered using a periodontal dressing (Coe-pack). The patient was recalled in next 48 hours to evaluate healing. Follow ups were carried out at the time period of 3 months and 6 months. There was no recurrence of the lesion seen after 6 months (Figure 5). On histopathologic examination, parakertinized stratified squamous epithelium is

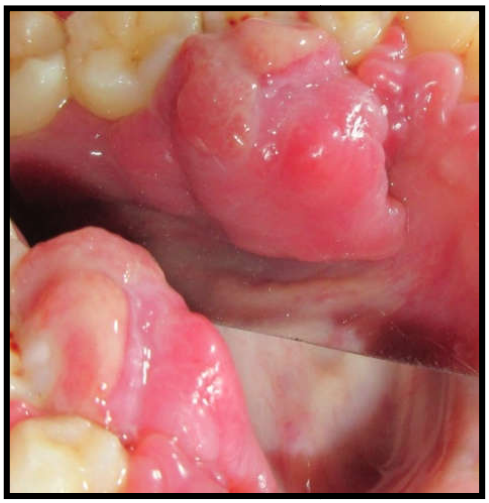

Fig. 1. Pre-operative mirror view of the lesion on lingual side)

Fig.2. Occlusal view of the lesion

Fig.3. Specimen which was 1.0 cm wider

Fig.4. Specimen which was 1.5 cm in length

Fig. 5. Post-operative picture after 6 months

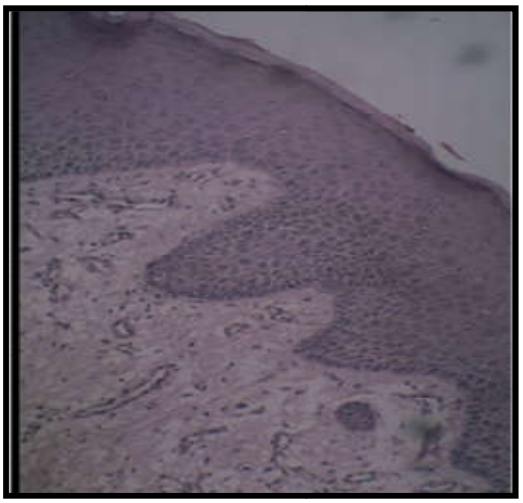

Fig.6. Parakertinized stratified squamous epithelium, the underlying connective shows loosely arranged collagen fibers. The connective tissue shows diffuse infiltration of chronic inflammatory cells that is lymphocytes and plasma cells

seen, the underlying connective shows loosely arranged collagen fibers. Numerous blood vessels line with plump endothelial cells which are seen throughout the section. The connective tissue shows diffuse infiltration of chronic inflammatory cells that is lymphocytes and plasma cells (Figure 6). The histopathological findings confirmed the lesion as a pyogenic granuloma.

DISCUSSION

“Pyogenic granuloma" is a relatively common, tumor like exuberant tissue response to localized irritation or trauma. The name pyogenic granuloma is a misnomer since the condition is not associated with pus and does not represent a granuloma

histologically. It is a reactive inflammatory process filled with proliferating vascular channels, immature fibroblastic connective tissue, and scattered inflammatory cells. 75% of all oral pyogenic granulomas reported occurring on the gingiva. Lips, tongue, and buccal mucosa are also seen to be affected. According to Vilmann *et al*. (1986), the majority of the pyogenic granulomas which was found on the marginal gingival with only 15 % of the tumors in the alveolar part. The Pyogenic granuloma may occur in all ages but is particularly seen in the third month of pregnancy and sometimes in the later months because the tissue reaction is intensified by endocrine alteration during pregnancy in females (Lawoyin, 1997). Due to its frequent occurrence in pregnant females; pyogenic granuloma is also called as pregnancy tumor. Due to the first month of pregnancy, the persistent influence of plaque induces catarrhal infection of the gingiva that serves as a base for development of the hyperplastic gingivitis during the last months, modulated by cumulating hormonal stimuli. During pregnancy, pyogenic granuloma when treated by surgical excision may reappear due to incomplete excision (Boyarova, 2001).

Various studies, have revealed that sex hormones manifest a variety of biological and immunological effects. Estrogen accelerates wound healing by stimulating nerve growth factor (NGF) production in macrophages, granulocytes-macrophages-colony stimulating factor (GM-CSF) production in keratinocytes and basic fibroblast growth factor (bFGF) and transforming growth factor beta 1 (TGF-β1) production in fibroblasts, leading to granulation tissue formation. Estrogen enhances vascular endothelial growth factor (VEGF) production in macrophages, an effect that is antagonized by androgens and which may be related to the development of pyogenic granuloma during pregnancy (Kanda, 2005). Ojanotko Harri *et al*. (1991) suggested that progesterone functions as an immunosuppressant in the gingival tissue of pregnant women, preventing a rapid acute inflammatory reaction against plaque, but allowing an increased chronic tissue reaction, resulting in an exaggerated appearance of inflammation. Yuan *et al*. proposed that pyogenic granuloma expressed significantly more VEGF and bFGF than healthy gingiva and periodontium (Yuan, 2000). It is an asymptomatic papular, nodular polypoid mass. The lesion is elevated, pedunculated or sessile masses with smooth, lobulated surface, which commonly ulcerated and shows a tendency to hemorrhage upon slight pressure. It develops rapidly, reaching full size and remains static for an identifiable period with size ranging from few mm to cm. Many times pyogenic granulomas can cause significant bone loss (Goodman-Topper *et al*., 1994). Differential diagnosis of pyogenic granuloma includes peripheral giant cell granuloma, peripheral ossifying fibroma, hemangioma (Eversole, 2002; Regezi Ja, 2003), pregnancy tumor (Tumini, 1998). Peripheral giant cell granuloma is an exophytic lesion that is seen on the gingiva (Neville BW, 2002) and is clinically similar to pyogenic granuloma but peripheral giant cell granuloma (PGCG) is bluish purple compared to the bright red of a typical pyogenic granuloma (Regezi Ja, 2003). Although peripheral giant cell granuloma is more likely to cause bone resorption than a pyogenic granuloma, the differences are otherwise minimal. Depending on its duration, pyogenic granuloma varies in texture from soft to firm and be suggestive of a fibroma (Eversole, 2002; Regezi Ja, 2003). So ossifying fibroma may be another consideration, although this tends to be much lighter in color (Regezi Ja, 2003). One of the most important differential diagnosis of pyogenic granuloma is hemangioma which is a developmental disorder (Eversole, 2002). Oral hemangioma located on the tongue are multinodular and bluish red. There is no clinical and histological difference between pregnancy tumor and pyogenic granuloma that occurs in non-pregnant patients but some authors believe that unlike pyogenic granuloma, pregnancy tumor usually is confined to the interdental papilla (Sonis, 2005).

Management of pyogenic granuloma depends on the severity of symptoms. If the lesion is small, painless and free of bleeding, clinical observation and follow up are advised (Sils, 1996). Other treatment modalities include laser surgery, electrodessication (Sils, 1998; Ishida, 1998). Injection of absolute ethanol, sodium tetradecyl sulfate (sclerotherapy) and corticosteroids have also been tried with successful results in cases with recurrent lesions (Ichimaya, 2004; Moon, 2005). Recurrence occurs in up to 16% of the lesions, which might be due to incomplete excision, failure to remove etiologic factors, or due to re-injury to the area, making follow up necessary (Taira *et al*., 1992; Selvamuthukumar *et al*., 2010).

Conclusion

Pyogenic granuloma is a benign tumor. In the present case report, it can be concluded that pyogenic granuloma can be managed carefully with precise diagnosis and treatment to prevent the recurrence of this benign lesion.

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