

SURGICAL EXCISION OF LARGE PYOGENIC GRANULOMA: A CASE REPORT

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ABSTRACT

Pyogenic granuloma is a non-neoplastic, exuberant, reactive lesion seen in response to local irritation or trauma caused by dental calculus, bacterial plaque, caries, and restorations, with a strong predilection for the gingiva. It is among presenting free case of the frequently encountered oral lesions, occurring at a challenging oral site, the gingiva. A 38 year-old female presented with a relatively large lobulated gingival overgrowth on the marginal and attached gingiva of the maxillary anterior. Total surgical excision was performed and suturing and the periodontal dressing was given. One month after surgical excision, complete healing was observed with no recurrence of the gingival overgrowth. Splinting was placed to stabilize the mobile teeth.

KEYWORDS:**INTRODUCTION**

Pyogenic granuloma is one of the inflammatory hyperplasia seen in the oral cavity. The term "inflammatory hyperplasia" is used to describe a broad spectrum of oral mucosal nodular growths that histologically represent inflamed fibrous and granulation tissue.^[1,2] It includes fibrous inflammatory hyperplasia (clinical fibroma, epulis fissuratum, and pulp polyp), palatal papillary hyperplasia, giant cell granuloma, pregnancy epulis, and Pyogenic granuloma.^[2]

Pyogenic Granuloma is a benign, non-neoplastic, and mucocutaneous lesion that occurs in the skin and mucous membranes.^[3,4] The first case of pyogenic granuloma was described in English literature by Hullien^[5] in 1884, but the term 'pyogenic granuloma' or 'granuloma pyogenicum' was introduced by Hartzell^[6] in 1904. There are two kinds of pyogenic granuloma namely lobular capillary hemangioma (LCH type) and non-LCH type, which differ in their histological features.^[7]

There are several etiologic factors, including hormones (increased in pregnancy and patients using oral contraceptives), localized trauma (biting, fractured tooth, poor restorations), and when there is poor oral hygiene.

CASE REPORT**Case 1**

A 38 years old female patient presented to the department of Periodontology and oral implantology, Pandit Deendayal Upadhyay Dental College and Hospital, Solapur, with a chief complaint of pain and swelling in gums at upper front region of the jaw since 1

year and which was gradually increasing in size. On clinical examination, a localized large-in-size soft tissue tumour covered with white pseudomembrane was found at the buccal aspect of her maxillary incisors which extent on the palatal aspect of maxillary anteriors. The soft tissue tumor was approximately 1.5cm X 2.5cm in size with clear signs of inflammation present in relation to 11,21,22. The swelling was an exophytic lesion manifested as a large erythematous papule on a pedunculated base which was hemorrhagic. The lesion had caused anterior open-bite malocclusion and disturbed her speaking and mastication.



Pyogenic granuloma associated with
11,21and22



Pyogenic Granuloma (Lateral View)



Pyogenic Granuloma (Palatal View)

The lesion was painless and asymptomatic except the slight discomfort to the patient due to the growth. The patient had poor oral hygiene with a lot of dental calculus and soft deposits. Physical examination revealed no other abnormalities, and there was no cervical lymphadenopathy. On hard tissue examination there were palatal displacement of 21 with grade II mobility and buccal displacement of 11 with grade II mobility. Supra-eruption associated with 21. There was moderate supra and subgingival calculus with moderate gingivitis.

The periapical radiograph showed a deep bony defect with 22, Periapical radiolucency associated with 11,21

and 22. Deep angular defect was present on mesial aspect of 22 and horizontal bone loss present with respect with 11 and 21. By considering all the clinical and radiographical features a provisional diagnosis of pyogenic granuloma was made and excisional biopsy was planned. A conventional non- surgical therapy was performed in order to decrease gingival inflammation. There was severe bleeding while doing scaling. The patient was advised to perform and maintain there oral hygiene by brushing twice a day and to use a chlorhexidine mouth rinse of 0.12% twice daily. On observation, there was a gradual reduction in the gingival inflammation after 2 weeks.



Pre-Operative IOPA

Periodontal and surgical approach

Thereafter, after 2 weeks it was decided to further treat the lesion with a surgical approach. 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.



Surgical excision of the lesion



Suturing done with 21,22



Measuring the size of the excised lesion



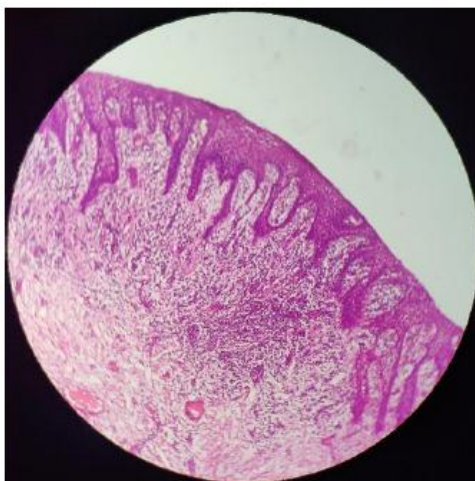
Periodontal dressing was placed over lesion

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. There was severe bleeding while doing excision of the lesion. The bleeding was controlled by application of the pressure pack followed by suturing. After excision, a periodontal dressing was applied for 1 week to protect the wound from trauma and to enhance healing. Antibiotics and analgesics were prescribed for 1 week.

Histopathological evaluation

The excised tissue was sent for histological examination. The lesion was surrounded by parakeratinised stratified epithelium. The epithelium was few cell layer thick and showed prominent rete ridges. The basement membrane was intact. The connective tissue showed abundance of collagen fibres interlacing each other. Few area shows focal calcification. There were small blood vessels with engorged RBC's. Chronic inflammatory cells like lymphocytes and plasma cells were seen in few areas.

Based on clinical and histological examination it was finally diagnosed as a pyogenic granuloma. The patient was recalled after 1 week for the re- evaluation of the lesion. After 4-5 weeks there was no growth visible clinically, the inflammation was eliminated and the palatally placed 21 was repositioned into normal. After that splinting was done with upper anteriors to stabilize the teeth and the full mouth flap surgery was done. Supportive periodontal maintenance at 3 months was prescribed to maintain periodontal health and to re-evaluate this area. There was no recurrence even at the end of 5 months.



Histological section of excise specimen



1 Month Post-operative front view



Postoperative lateral view



Post-operative palatal view



Splinting given to maxillary anteriors

DISCUSSION

Pyogenic granuloma is described as inflammatory hyperplasia that commonly seems like a reaction to irritants, trauma, hormonal changes, or sure medications. Although classically it is called PG, a more correct name would be focal epithelial hyperplasia since the lesion is

not strictly a granuloma or an infection.^[8,9] The term “pyogenic granuloma” is a misnomer due to the fact the lesion does now no longer comprise pus and isn't always strictly talking about a granuloma. Approximately one-third of the lesions occur due to trauma and poor oral hygiene may also be one of the precipitating factors.^[10] It

can develop as a result of chronic, local, low- grade trauma or irritation and due to hormonal factors.^[11,12] Microbial agents such as streptococci and staphylococci may play a role in the etiopathogenesis of this lesion as they infect minor trauma sites during the healing process and vascular overproduction and tumor- like hyperplasia appear as a response.^[12,3]

The pyogenic granuloma is a relatively common reactive, tumorlike growth of the oral cavity. It may occur at any age but seems to be most common in teenagers and young adults.^[13] The study conducted by **Kerr** on 289 cases of pyogenic granuloma, stated that the age group incidence was not significant, cases having been seen in both very young infants and elderly persons with no apparent predilection for any one age group. Nor were any significant differences in occurrence found between the genders. However, in a series of 835 cases discussed by **Angelopoulos**, he noted that about 60% of the lesions occurred in persons between 11 and 40 years of age, that over 70% involved females. The reason for female predilection is because of vascular effects of female hormones.^[14]

It can develop almost anywhere in the oral cavity (palate, buccal mucosa, tongue and lips), but the gingiva is the most common site.^[15] The lesions are more common in the facial aspect than the lingual or palatal aspects of gingiva and can occur involving both sides including the interdental papilla. In the present case, the lesion appeared on the marginal-attach gingiva of the maxillary anterior teeth region. It may be single or occurs at more than one site, unilateral or bilateral especially when it involves gingiva. The lesion is more common in the maxillary anterior region than the posterior region. Sometimes there is the exudation of purulent material, but this is not a characteristic feature despite the suggestive name of this lesion. It is deep red or red-purple, depending upon its vascularity, painless, and rather soft in consistency. Some lesions have a brown cast if hemorrhage has occurred into the tissue.^[14] Extraorally, it has been reported on the skin of the face, neck, upper and lower extremities, and mucous membrane of the nose and eyelids.^[15,12]

Clinically, the pyogenic granuloma presents as a tumor-like, pedunculated, or sessile mass ranging in size from a few millimeters to several centimeters in some cases. The mass is characteristically red and highly vascular, showing a tendency to bleed in some cases.^[13] The color of the lesion may vary according to the level of vascularity.^[12] Young PGs have higher vascularity and hyperplastic granulation tissue, while older PGs have more collagen.^[3] The lesion is usually an elevated, pedunculated, or sessile vascular mass with a smooth, lobulated, or even a warty surface, which commonly is ulcerated and shows a tendency for hemorrhage either spontaneously or upon slight trauma. The overlying epithelium, if present, is generally thin and atrophic, but may be hyperplastic. If the lesion is ulcerated, it shows a

fibrinous exudate of varying thickness over the surface.^[14]

The pyogenic granuloma is more common in females than in males, especially during pregnancy, presumably because of heightened tissue responsiveness from hormonal alterations. It has sometimes been termed a “pregnancy tumor” or “granuloma gravidarum” but is clinically and histopathologically identical to lesions in nonpregnant individuals.^[13] An oral pyogenic granuloma can develop immediately following the first trimester of pregnancy. Usually, an oral pyogenic granuloma is a slow-growing mass that does not, upon excision, leave a large defect in the periodontium requiring surgical repair. However, an oral pyogenic granuloma often grows into a large mass in the gravid female, which generally emanates from a stalk, originating at an interdental gingival papilla. Although such lesions are commonly known as ‘pregnancy tumors’ or ‘pregnancy epulides’, they are clinically and histologically indistinguishable from an oral pyogenic granuloma occurring in males and in non-pregnant females.^[16] Oral pyogenic granuloma of pregnancy, like pregnancy gingivitis, is merely an exaggerated response to local existing irritants brought about by elevated levels of sex hormones. More specifically, gingival inflammation increases significantly during pregnancy because of elevated levels of circulating hormones. The severity of gingival inflammation appears to follow more closely the levels of circulating estrogen and progesterone.^[17] During pregnancy, intraorally, the interproximal gingival tissues seem to be most involved with inflammatory changes as well as increases in both tooth mobility and probing pocket depths. These inflammatory gingival changes are usually seen at the end of the first trimester but can develop very late and rapidly in the third trimester. Thus the importance of oral hygiene, especially in pregnant and pseudo-pregnant women, cannot be overemphasized. It is also important to be aware that these lesions can become large and result in severe destruction of the periodontium which may necessitate surgical repair of the gingival and alveolar tissues utilizing periodontal plastic surgery techniques.^[11]

Pyogenic granulomas are treated by surgical excision. The lesion occasionally recurs because it is not encapsulated, and the surgeon may have difficulty in determining its limits and excising it adequately. Some recurred lesions may represent examples of a second episode of irritation with reinfection of tissue. When excising a pyogenic granuloma of the gingiva, extreme care should always be taken to scale the adjacent tooth and make certain that it is free of calculus, since the calculus may act as the irritation leading to recurrence of the lesion. Careful microscopic examination of excised pyogenic granulomas will almost invariably reveal fragments of calculus on the inner surface of the lesion adjacent to the tooth.^[8]

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. The removal of causative irritants is the major line of treatment. Excisional surgery is the treatment of choice for pyogenic granuloma, but some new approaches for treatment such as cryosurgery, excision by laser, injection of ethanol or corticosteroids, and sodium tetradecyl sulfate sclerotherapy have been reported as alternative therapies. The present case showed that the combinations of various etiological factors might have caused the inflammatory tissue to cross the threshold from regular gingivitis to granuloma formation. Surgical excision of the lesion is a successful mode of treatment and minimizes recurrence of the lesion.

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