



PYOGENIC GRANULOMA- A HABITUE OF THE ORAL CAVITY – CASE REPORT.

Dental Science

Dr. Hima Bindu Reddy. C	Post – graduate Department of periodontics Tamilnadu government dental college and hospital Chennai- 600003 India
Dr. K. Malathi	Professor and Head of department Department of periodontics Tamilnadu government dental college and hospital Chennai 600003 India
Dr. G. Sandhya	Post – graduate Department of periodontics Tamilnadu government dental college and hospital Chennai 600003 India
Dr. S. Varshini	Post – graduate Department of periodontics Tamilnadu government dental college and hospital Chennai 600003 India
Dr. K. Vijay Kumar	Post – graduate Department of periodontics Tamilnadu government dental college and hospital Chennai 600003 India

ABSTRACT

Pyogenic granuloma is a non- neoplastic, highly vascular lesion that is commonly encountered in the oral cavity. It is usually triggered by a low-grade chronic stimulus that results in an exaggerated connective tissue response. Clinically they vary in size and can be pedunculated or sessile. Additionally, it can be in various consistencies depending on the duration of the lesion. Histologically they can be capillary or non-capillary in nature with varying amounts of collagen fibers and endothelial cell proliferation. There are various treatment options available, the conventional treatment modality involves the surgical excision of the lesion followed by a localized full thickness flap procedure. This lesion has high recurrence rate and complete excision with removal of the irritant factors is crucial for prevention of recurrence. This article presents a case report of a large pyogenic granuloma on the gingiva with a detailed account on the clinical and histological features along with the differential diagnosis and treatment modalities.

KEYWORDS

Pyogenic Granuloma, Gingiva, Gingival Hyperplasia.

INTRODUCTION:

Pyogenic granuloma/ Granuloma Pyogenicum is one of the most frequently encountered inflammatory hyperplasia of the oral cavity. It is a non- neoplastic growth commonly involving the gingiva (75%).¹ It usually affects females and common age of occurrence is 11-40 years. It is a tumor like gingival enlargement caused due to an exaggerated conditioned response to minor trauma.

It is believed that a low grade chronic stimulus can trigger an intense localized connective tissue reaction. Some of the etiologic factors include primary tooth exfoliation, eruption of adult tooth, gingival inflammation, food accumulation, poor oral hygiene, hormonal changes, chronic irritants, medications, defective restorations & other traumatic factors. Minor trauma to the tissue provides the pathway for invasion to non-specific microorganisms. Microbiota involved in this condition includes staphylococcus and streptococcus species.

Gingiva, lips, tongue, buccal mucosa, palate, vestibule, and alveolar mucosa are other common sites for pyogenic granuloma. Clinically they appear as a highly vascular inflammatory growth which can be pedunculated or sessile & in varied sizes. One of the key features is the presence of a fibrinous membrane. Histologically they can be classified into Capillary lobular hemangioma where the capillaries are organized & non-Capillary lobular hemangioma where capillaries are intertwined.² It may develop rapidly, reaching full size and remain static for indefinite period. The average size of the lesion maybe 0.9-1.2cm.

Some of the factors involved in angiogenesis & growth includes Nitric oxide synthase, VEGF, FGF, CTGF.³ The treatment choice, classically involves full surgical excision with sub periosteal curettage by raising a localized flap & also removal of the causative factors to prevent recurrence.

Case Report:

A systemically healthy female patient aged 17 years, reported to the dept of periodontics of Tamil Nadu Government Dental College and Hospital with the chief complaint of swelling in the lower right back tooth region for the past 1 month. The patient reported difficulty in brushing in the region of swelling due to bleeding from the region. The swelling is painless which gradually increased in size. The patient gives history of tooth picking due to food lodgment.

On extraoral examination, there was no apparent swelling on the right of the mandible. On intraoral examination, it revealed an inflammatory diffuse gingival enlargement (figure 1) in relation to 46, 47 measuring approximately 14x17mm & oval, covering the vestibular side of clinical crown reaching the occlusal plane (figure 2,3). It is erythematous with a purple hue and soft in consistency with a smooth surface, which bleeds on stimulus. It also presents with yellowish fibrinous membrane and is non tender. There is generalized presence of plaque & calculus and fractured 11 and impacted 48. On radiographic evaluation, IOPA of 46,47 revealed interdental bone loss (figure 4) and hemogram appeared to be within normal ranges.

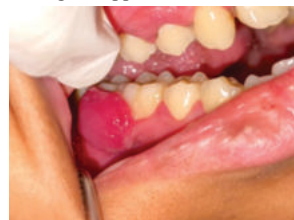


Figure 1: Pre-Operative Photograph- 1



Figure 2: Pre-operative photograph- 2

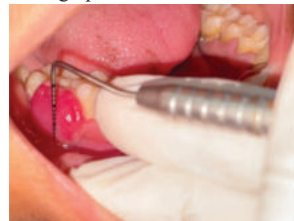


Figure 3: Pre- operative photograph- 4



Figure 4: Preoperative radiograph

A provisional diagnosis of pyogenic granuloma was made. The differential diagnosis included Peripheral Ossifying Fibroma, Peripheral Giant cell Granuloma, pregnancy tumor, hemangioma, fibroma.

Based on clinical & radiographic evidence, the patient's consent was obtained and prepared for surgery. Oral hygiene instructions were

given, ultrasonic scaling & root planing was done & antibiotics were prescribed. A tangible difference in size & color of the lesion was observed on reassessment (figure 5,6).



Figure 5,6: Change in size and colour of the lesion on reassessment after 1 week after ultrasonic scaling.

The surgical phase involved surgical excision of the lesion using scalpel and blade, while leaving behind a thin keratinized gingiva. Later, A localized full thickness, access flap was raised in relation to 46,47 and thorough curettage was done under local anesthesia. The flaps were approximated using sutures (figure 7) and periodontal dressing was placed and the excised lesion was sent for histopathological examination to the dept of Oral pathology of Tamil Nadu Government Dental College and Hospital. Patient was recalled after 1 week for pack and suture removal. (figure 8) Patient was reviewed after 1 month (figure 9) and 8 months post operative. (figure 10)



Figure 7: Post- operative photograph



Figure 8: post- operative photograph after 1 week



Figure 9: clinical photograph at 1 month review



Figure 10: clinical photograph at 8 months review

Histopathological report revealed Keratinized stratified Squamous surface epithelium of variable thickness and is partly replaced by pyogenic membrane. The underlying connective tissue showed numerous capillaries of varying caliber, endothelial cell proliferation & intense inflammation. (Figure 11,12)

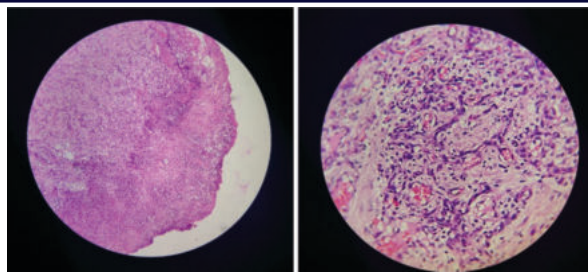


Figure 11, 12: histopathological photograph

DISCUSSION:

There are various theories explaining the etiopathogenesis of this benign vascular lesion. Few state that during an inflammatory reaction to an irritant there is reduced blood flow to the area of tissue where there are numerous cells in a small volume of tissue. As they mature the cells are separated & become a compact mass and there is proliferation of the vascular endothelium.⁴

In a study conducted by Murata et al, they reported that during wound healing after a trauma there is granulation tissue formation & vascular endothelium proliferation & increased fibroblasts, all of which are controlled by cytokines & growth factors such as bFGF. They found increased amounts of bFGF in Pyogenic Granuloma at various stages in the gingiva.⁵

Clinically, they appear highly vascular which bleeds on stimulus. They are soft in consistency and progressively become firm in long standing cases. They are more Common on the facial /buccal sides & anterior than in posterior region. They sometimes also involve the lingual interdental papilla, appearing as a dumbbell shaped lesion. When the lesion reaches the occlusal plane there is presence of a fibrinous membrane formation or ulcer due to repeated trauma to the lesion.⁶

Histologically the epithelium is para keratotic or non-keratinized stratified squamous epithelium. A major part of connective tissue is occupied by lobulated or non- lobulated bundles of highly vascular tissue. There is increased infiltration of inflammatory cells chiefly, neutrophils, lymphocytes & plasma cells. Depending on the duration of the lesion, the histopathological features can vary. If the lesion is long standing one, then increased amount of collagen fibers can be seen in the connective tissue & less amount of vascularized tissue is observed.⁷

There is a multitude of treatment options available for the treatment of pyogenic granuloma. The conventionally used treatment modality is the use of scalpel for the excision of the lesion & removal of the causative factors through curettage after raising a localized flap which was done in the present case. The other treatment options include the use of lasers, cryosurgery, intralesional injection of corticosteroids or sclerosing agents and electrodesiccation.

The differential diagnosis that needs to be taken into consideration are Peripheral Ossifying Fibroma, Peripheral Giant Cell Granuloma, Pregnancy Tumor, Kaposi Sarcoma, Hemangioma, Metastatic Tumors, Fibroma, Hodgkin's Lymphoma, Conventional Granulation Tissue. Peripheral ossifying fibroma is more firm to hard in consistency than pyogenic granuloma and has minimal vascular component.⁸ Peripheral giant cell granuloma can be differentiated due to the presence of multinuclear giant cells and the absence of infectious source.⁹ Hemangioma and pyogenic granuloma though both being highly vascular, they can be differentiated histologically in which hemangioma shows endothelial cell proliferation in the absence of acute inflammatory cell infiltrate.¹⁰ Pregnancy tumor can be ruled out based on the history of the patient. It regresses after delivery. Metastatic tumors can be excluded based on the fact that they involve mainly the attached gingiva and microscopically resemble tumor of origin.¹¹ Kaposi sarcoma can be identified with the presence of dystrophic spindle cells, vascular clefts, extravasated erythrocytes and intracellular hyaline bodies which is a characteristic of this lesion.

Incomplete removal of causative factors, failure to completely excise the lesion or repeated trauma to the region are some of the factors that can lead to recurrence. Pyogenic granuloma is known for its high recurrence rate. According to Tiara et al the recurrence rate of Pyogenic Granuloma is 16%.

CONCLUSION:

Pyogenic granuloma is one of the most frequently encountered lesions of the gingiva and appropriate diagnosis is imperative for optimal treatment outcomes. Complete excision and removal of the causative factors is crucial to prevent recurrence of the lesion.

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