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ORAL PYOGENIC GRANULOMA: A REPORT OF TWO CASES

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ABSTRACT

Background: *Pyogenic granuloma is a benign hyper reactive inflammatory lesion that shows a fast growing focal reactive growth of fibrovascular or granulation tissue with extensive endothelial proliferation. Clinically, the lesion is a raised, red, peripheral growth with the base of the lesion either sessile or pedunculated and shows marked predilection for gingiva. This case reports describes two cases of Pyogenic granuloma (P.G.) which were successfully treated by using surgical excision method.* ***Methods:*** *Two patients presented with a chief complaint of a gingival mass which were surgically excised under local anesthesia followed by a 4 months of reevaluation.* ***Results:*** *The initial diagnosis at presentation was Peripheral giant cell granuloma and Peripheral ossifying granuloma. Radiography showed marginal bone loss accompanying the lesions. Histopathology confirmed the diagnosis of PG.* ***Conclusions:*** *Although Pyogenic granuloma is a non - neoplastic growth in the oral cavity, proper diagnosis, prevention, management and treatment of the lesion are very important. Treatment planning for this condition should take into account the presence of recurrences to evaluate the necessity of an aggressive surgical approach that may involve advanced bone loss and explantation. Further research on the origin of this condition with a larger series of cases is necessary to provide a basis for adequate management.*

KEY WORDS: Pyogenic granuloma; Lobular/ Non - capillary hemangioma

INTRODUCTION

Pyogenic granuloma is the second most common lesion found in the oral cavity. It is a benign hyper reactive inflammatory lesion that shows a fast growing focal reactive growth of fibrovascular or granulation tissue with extensive endothelial proliferation.[1] Clinically it appears as a tumor like growth, but it is considered as a non - neoplastic growth.[2,3] "Hullihen S. P" in 1844 reported the first case of Pyogenic granuloma which is probably the first case in the English literature[4], whereas "Hartzell M. B in 1904 introduced the term "Pyogenic granuloma" or "granuloma pyogenicum"[5]

The name is somewhat of a misnomer in that the lesion does not contain pus, as the word "pyogenic" suggests and is not strictly speaking a granuloma.[2] Pyogenic granuloma represents an exuberant tissue response to local irritation or trauma. Gingival irritation and inflammation that results from poor oral hygiene, dental plaque and calculus or overhanging restorations may be precipitation factors in many cases.[1] Pyogenic granuloma of the oral cavity is known to involve gingiva commonly (75% of all cases). Uncommonly it can occur on the lips, tongue, buccal mucosa, palate and so on.[1,6] Diagnosis of the lesion is mainly by histopathological examination and treatment of Pyogenic granuloma consists of surgical excision along with elimination of irritating local factors.

Case report 1

A 50 year old male patient reported to department of Periodontics, H. K. E society's S. Nijalingappa institute of dental sciences and research, Gulbarga with a chief complaint of swelling in the lower right back tooth region of mouth, which bleed frequently and interfered with eating. The lesion was of negligible size when the patient first noticed it (2 months ago), but had grown slowly over the past 2 months to attain the present size. His medical history was non contributory.

Extraoral examination did not reveal any facial asymmetry. No abnormality was detected in lymph nodes and temporomandibular joint. Intraoral clinical examination revealed solitary exophytic, sessile lesion that measured about 2.5x2.5cm, located buccal to mandibular second (47) and third molar (48).(**Fig.1**) Mandibular third

molar showed grade III mobility. The lesion involved the interdental papilla and attached gingiva. Probing depth was recorded at 6 sites of each tooth using a manual periodontal probe. (Hu friedy Williams graduated probe) The average pocket depth was 5mm. The simplified oral hygiene index was 4.9 which showed that the patient had poor oral hygiene. Intraoral periapical radiograph of that region showed horizontal bone loss. Based on the overall clinical findings it was diagnosed as Peripheral giant cell granuloma.

Etiotrophic phase of treatment included scaling and root planing followed by oral hygiene instructions. Routine blood investigations showed normal results. Just prior to the surgical procedure, the patient is instructed to rinse the mouth for 30 seconds with 0.2% chlorexidine gluconate solution. After obtaining the anesthesia by inferior alveolar nerve block, surgical excision of the granuloma is done. Incision is given along the borders of the lesion using no 15 blade. Bleeding was controlled using pressure application. Periodontal dressing was given. The excisional biopsy specimen is sent to the laboratory for histopathological examination.

The patient was instructed to apply cold compression on the face over the surgical area during the first few hours post operatively. The following medications were provided: Amoxicillin (500mg tid for 5 days) and Ibuprofen (400mg BD for 3 days). The patient was instructed not to use any mechanical plaque control device at the surgical site for 1 week and to rinse twice daily with 0.2% chlorexidine gluconate. After 1 week the patient is instructed to brush using ultrasoft tooth brush.

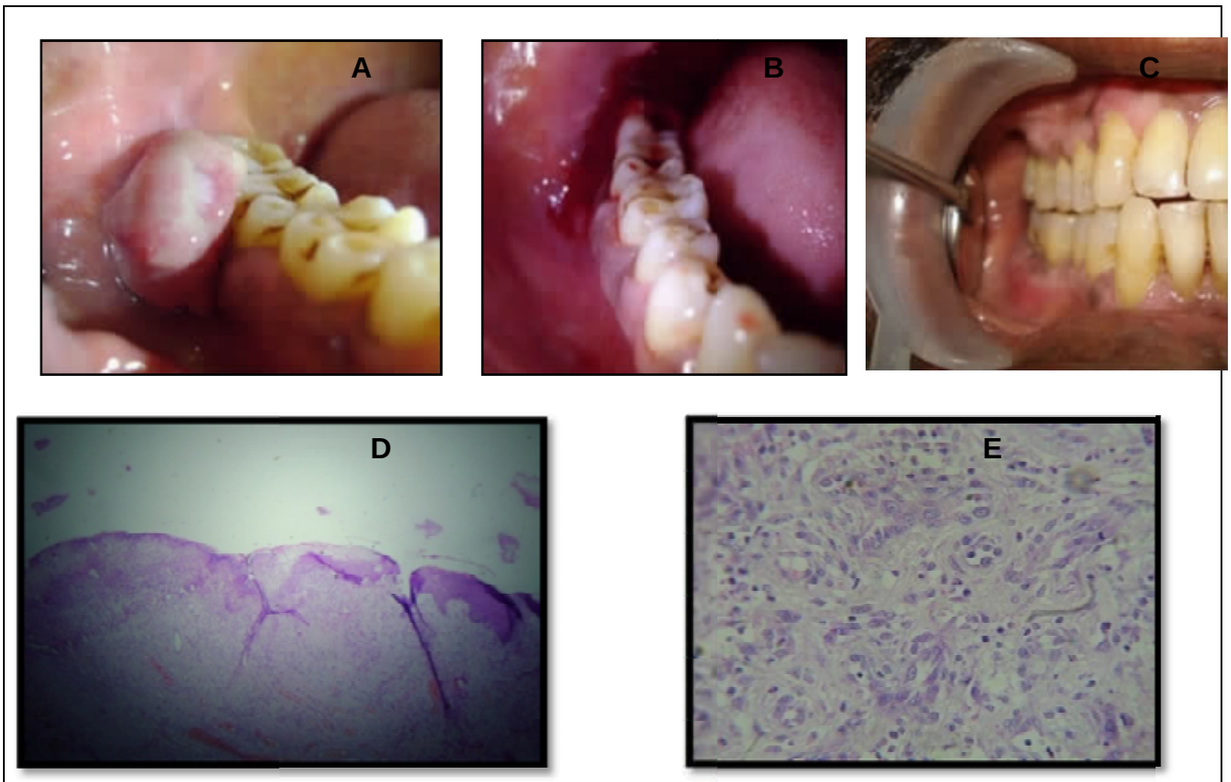

Fig.1. A) The lesion located between the second and third molar involving the interdental papilla and attached gingiva. B) Immediate Post operative photograph. C) 4 months post operative photograph D) Low magnification(4X) of PG of lobular capillary hemangioma type. E) Higher magnification(40X) of PG showing small capillary endothelial-lined spaces surrounded by a perithelial or pericytic layer of cells.

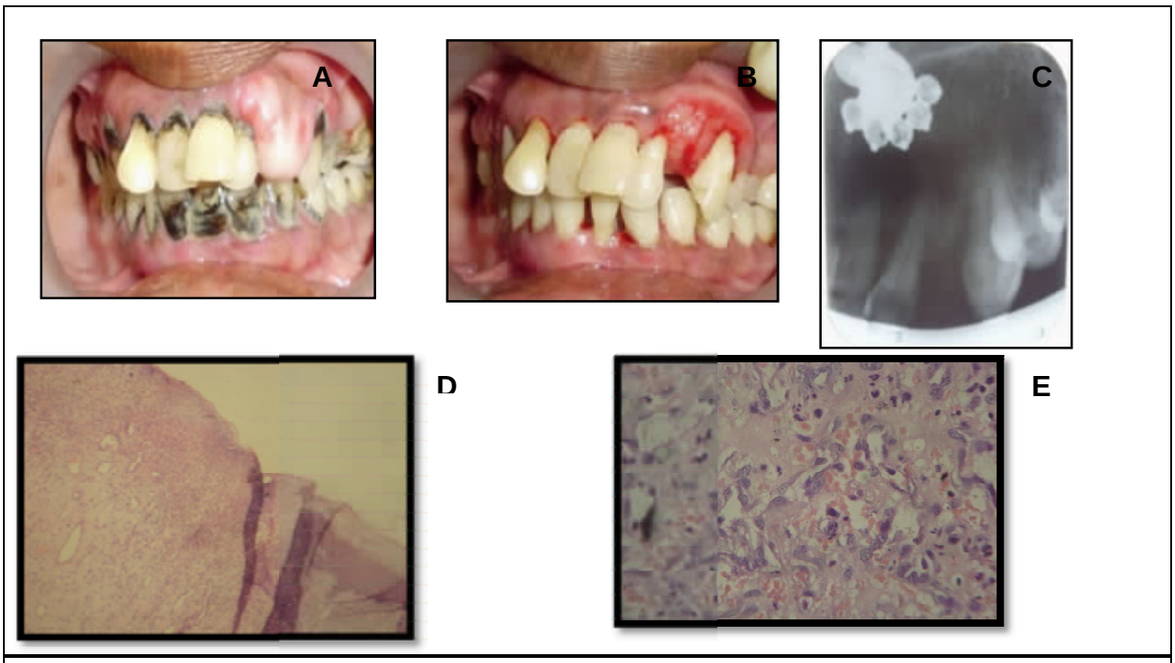

Fig.2. A) The lesion located between the lateral incisor and canine. B) Post operative photograph. C) IOPA showing vertical bone loss in the canine region. D) Low magnification (4X) of PG E) Higher magnification(40X) of PG showing proliferating capillaries surrounded by perithelial cells and inflammatory cell infiltration.

Case report 2

A 40 year old female patient was referred with a chief complaint of swelling in the upper front tooth region which posed an esthetic problem to the patient. The lesion was of negligible size when the patient first noticed it (1 year ago), but had grown slowly over the past 1 year to attain the present size. Extraoral examination did not revealed any asymmetry. On intraoral examination a solitary exophytic lesion was found between the lateral incisor(22) and canine(23) which measured about 1.5x2.0cm involving the buccal, palatal and interdental papilla. The lesion was soft in consistency and does not showed any bleeding on palpation. Color of the lesion is similar to that of normal mucosa and the oral hygiene of the patient was poor with a simplified oral hygiene index score of 4.5. Intraoral periapical radiograph of that region showed a vertical bone loss.

After routine blood investigations which showed the normal result thorough scaling and root planning was performed and oral hygiene instructions were given. Just prior to the surgical procedure, the patient is instructed to rinse the mouth for 30 seconds with 0.2% chlorexidine gluconate solution. After obtaining the anesthesia by infraorbital nerve block and, surgical excision of the granuloma is done. Bleeding was controlled using pressure application. Periodontal dressing and post operative instructions were given to the patient. The following medications were provided: Amoxicillin (500mg tid for 5 days) and Ibuprofen (400mg BD for 3 days).

Discussion

Pyogenic granuloma is a benign hyper reactive inflammatory lesion that shows a fast growing focal reactive growth of fibrovascular or granulation tissue with extensive endothelial proliferation.[1] The name is somewhat a misnomer in that the lesion does not contain pus, as the word "pyogenic" suggests and is not strictly speaking a granuloma.[2]

Several etiological factors have been proposed for PG. Previously it was thought to be caused by pyogenic organisms, but it is now believed to be unrelated to infection.[2] Other etiological factors are, A) Chronic irritation.[7] (Presence of calculus or overhanging margins of restorations). B) Chronic trauma C) Vascular effects of female steroid hormones[8] D) Use of oral contraceptive pills[8] E) Use of certain kind of drugs such as immunosuppressants[9] F) Iatrogenic factors[10] G) Recently at the molecular level Kuo Yuon et al reported that an imbalance between the angiogenesis enhancers and inhibitors, i.e over expression of vascular endothelial growth factor (VEGF) and Basic fibroblast growth factor (bFGF), which are the angiogenesis enhancers and

decreased amount of angiostatin which is a angiogenesis inhibitor plays a role.[11]

Clinically, PG appears as a tumor like growth, but it is considered as a non - neoplastic growth.[2, 3] Epivationos et al based on the histopathological examination reported that there are two kinds of PG namely lobular capillary hemangioma (LCH type) and non-LCH type.[12] The tissue overgrowth varies from small growths of only a few millimeters in size to larger lesions that may measure 2 to 3 centimeters in diameter. Typically, the mass is painless, although it often bleeds easily due to its extreme vascularity.[13]Surface ulcerations are usually present in areas where the tumor is subjected to trauma.

Regarding the age of occurrence there is a considerable disagreement in the literature. Epidemiological studies shows that it is predominant in the 2nd decade of life. Studies done in Jordanian[14] and Singaporian[15] population is in agreement with this. In contrast to this recent study by Epivationos et al reported that average age of the patient was 52 years with a peak incidence of occurrence in 6th decade of life. Some authors believe that patients are mostly males less than 18 years of age, females in the age range 18 to 39, and older patients with an equal gender distribution.[12]

PG is common disease of skin it is extremely rare in the gastrointestinal tract, except for the oral cavity where it is often found on keratinized tissues such as gingiva and hard palate.[10] Extraorally they appear around the nail beds of the finger, toes, palm and over the lips. Intraorally 65-70% of the lesions involve the gingival tissues. The maxillary arch is more frequently affected than the mandibular arch, in addition to that anterior areas of the gingiva, in both jaws, are more frequently involved than posterior areas.[13, 16]

The gingival lesions usually presents with a smooth surface, but lobulations may be present due to the superficial, dilated vascular spaces that produce a raspberry appearance, the lesions are commonly ulcerated due to trauma and the ulcerated regions are covered with fibrinous exudates.[16] Color of the lesion changes from pink to red and from red to purple depending on the age of the lesion. Young PG's are highly vascular in appearance because of increased number of capillaries.[2]

Histopathologically, PG shows a high vascularity with extreme endothelial proliferations and numerous vascular spaces, that resembles granulation tissue.[16] Polymorphs, as well as chronic inflammatory cells are consistently present throught the oedematous stroma with microabscess formation. The natural history of the lesion follows three distinct phases. In cellular phase, the lobules are compact and cellular with little lumen formation. In the capillary phase, the lobules become highly vascular with abundant intraluminal red blood cells. In the involutionary phase, there is a tendency for intra & perilobular fibrosis with increased venular differentiation.[17]

Biopsy findings have an important role and are definitive in establishing the diagnosis.[7] Differential diagnosis of PG includes Peripheral giant cell granuloma,[2] Peripheral ossifying fibroma,[6] Metastatic cancer,[7] Hemangioma,[18] Pregnancy tumor,[19] Bacillary angiomatosis,[20] Non - Hodkin's lymphoma.[21]

In two of the cases presented here, the first case was provisionally diagnosed as peripheral giant cell granuloma based on the overall clinical findings i.e bluish - purple color of the lesion, presence of horizontal bone loss, predilection of PGCG for gingiva. But the histopathological report of the lesion reported it as a case of Pyognic granuloma of lobular capillary hemangioma type, where the proliferating blood vessels are organized in lobular aggregates with oedema, capillary dilation and inflammatory cell infiltration.

In the second case even though clinically it was diagnosed as a case of PG based on the findings i.e Non - specific gingival enlargement and chronic generalized periodontitis a provisional diagnosis of peripheral ossifying fibroma can be made, because POF originates from the interdental papilla and the color of the lesion will be similar to that of normal mucosa as seen in the present case. But the histopathology of this lesion showed features of PG of non - lobular capillary hemangioma type with proliferating capillaries surrounded by perithelial cells at the center of the lesion, RBCs and inflammatory cell infiltration.

Treatment of this localized inflammatory lesion consists of the removal of any causative irritant factor that may be present, followed by either, a) Simple surgical excision b) Curettage or shave excision c) Cryotherapy d) Laser therapy e) Sclerotherapy.

Simple surgical excision is associated with a low risk of recurrence, but often leaves a visible scar. Curettage or shave excision, with cautery, is more likely to succeed in 1 session than cryotherapy; both may leave a smaller scar than surgery. Laser therapy, which may require multiple sessions, and sclerotherapy may be least likely to cause visible scarring.[22]

Recurrence can be seen in upto 16% of the cases, so in some cases re-excision is necessary. Recurrence is believed to result from incomplete excision, failure to remove etiologic factors or re-injury in that area. Lesions involving the gingiva shows much high recurrence rate than lesions from other oral mucosal sites.[23]

CONCLUSION

Even though pyogenic granuloma is a non-neoplastic growth in the oral cavity, proper diagnosis, prevention and treatment of the lesion are very important to avoid recurrence. Removal of the local irritating factors and surgical excision are most important treatment modalities.

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