

Aggressive Pyogenic Granuloma Causing Bone Erosion: Case Report

Dr. Muralee Mohan
Professor

Dr. Arvind Karikal
Asst. Professor

Dr. Smitha Bhat
Asst. Professor

Dr. Ankur Padmaja
P.G. Student

Dr Gopinath Thilak P.S.
P.G. Student

Department of Oral & Maxillofacial Surgery. A.B.Shetty Memorial Institute of Dental Sciences, Deralakatte, Mangalore. NITTE University

Abstract

Pyo-genic Granuloma is a typical clinical presentation arising as a reaction to a nonspecific infection. It involves a neovascular response to an angiogenic stimulus and although it seems that in some cases trauma or hormonal influences (pregnancy and oral contraceptives in mucosal lesions) may play a role, it is likely that the majority of lesions appear de novo.

A soft tissue lesion of benign nature, it is usually treated by excision followed by oral prophylaxis. Here is a case of destructive pyogenic granuloma which was associated with bony erosion of labial cortex which responded well after surgical excision.

Introduction

Pyogenic granuloma is a non-neoplastic inflammatory hyperplasia that responds to various stimuli such as chronic local irritation, trauma, hormonal changes, bone marrow transplant, and reactions to grafts^{1,2}. Pyogenic granuloma is common, acquired, benign vascular proliferations which may occur anywhere on the skin or mucosa and even intravascularly at any age³. These, usually solitary, smooth, bright red, rapidly growing papules often ulcerate and bleed and this, together with cosmetic factors, brings many patients to seek treatment.

Case Report

A 50yr old female patient reported to our department with the chief complaint of swelling in upper front region since two weeks.

The swelling appeared as a small growth and gradually increased in two weeks time to the present size of 3 x 2.5cm. Patient had discomfort in closing the lips, though she did not complain of any bleeding from gums, pain, fever or foul taste.

Examination revealed mild elevation of upper lip on left side of face. There was no tenderness on palpation. No lymphnodes were palpable. Patient had chronic generalized periodontitis with generalized recession. The swelling was a firm mass of 3 x 2.5cm in size which was pedunculated. It

extended from distal aspect of right maxillary central incisor to distal aspect of left maxillary canine, superiorly into the labial sulcus and inferiorly covering two third of the anteriors from right maxillary central incisor to left maxillary canine. There was a root stump of left maxillary central incisor associated with the lesion. The lesion was found to be adhered to the root of left maxillary central incisor with labial cortical erosion in the area of left maxillary central incisor.

Our differential diagnosis in benign category included pyogenic granuloma, peripheral giant cell granuloma & peripheral odontogenic tumor. History of rapid increase in size of the lesion also inclined us to think of malignancy such as squamous cell carcinoma, amelanotic melanoma, leiomyosarcoma or an angiosarcoma.

Pyogenic granuloma presents as a painless and bleeding mass, often arising from interdental gingival papilla that may show rapid growth^{4,5}. It presents as a localised, pedunculated or sessile, polypoid mass, or an ulcerative, painless growth of skin or mucous membrane. The most common intraoral site is the gingiva (nearly 75%), but it also affects the lips, mucosa⁶, and tongue^{1,2}.

Peripheral giant cell granuloma (PGCG) is not a true neoplasm but rather a benign hyperplastic reactive lesion caused by local irritation or chronic trauma⁷. PGCG originates from the periodontal ligament or mucoperiosteum^{8,9}. The lesions can appear at an age, though the highest incidence (40%) is in the fourth to sixth decades of life^{10,11}. PGCG is more common in the lower jaw (55%) than in the upper jaw¹², the reported proportion being 2.4:1¹. To rule out above said differential diagnosis, clinicians have to rely on the histopathological examination of the biopsied tissues.

A reactive lesion of the oral cavity that originates from the periosteum or periodontal ligament as a result of local trauma or chronic irritants, typically

manifests as a red-purple nodule involving the gingiva or edentulous alveolar margins that can lead to cupping resorption of the underlying bone^{4,5}. Peripheral odontogenic tumors, such as peripheral ameloblastomas, originate from the gingiva of tooth-bearing areas of the jaws and typically present as painless exophytic growths that may become ulcerated owing to trauma. Cupping⁹ of the underlying bone may occasionally be seen.

Squamous cell carcinomas (SCC) encompass at least 90% of all oral malignancies. In this case the appearance of the lesion, smooth texture & presence of peduncle, absence of tobacco related habits was inconsistent with the diagnosis of SCC, Spindle cell carcinoma¹³, a rare variant of SCC, can also occur on the alveolar ridge.

Lo Muzio et al. reported a case of leiomyosarcoma of the gingiva, which clinically presented as a white to pinkish mass with associated bone invasion¹⁴. Soft tissues sarcomas are uncommon in the head and neck. Its occurrence as a primary or metastatic tumor in the oral cavity is extremely unusual. In fact, only 4% have been found in the pharynx, oral cavity, or paranasal sinuses. Munoz et al have reported a case of angiosarcoma mimicking a pyogenic granuloma^{15,16,17}. The final diagnosis can only be made based on a combination of the clinical findings with the histologic and immunohistochemical features. Although the clinical signs and symptoms in the present case are consistent with the possibility of a sarcoma, gingival origin is rare.

Considering all the aspects a provisional diagnosis of pyogenic granuloma was made & excision under local anaesthesia was planned.

Excisional biopsy was performed along with the extraction of left maxillary incisor root stump. There was not much bleeding during excision. Socket of left maxillary incisor was filled with granulatoma tissue which was curetted and irrigated.

Histopathological report showed

Olsen
The Innovation has this brand

QUALITY CROSS FLEX
(With Touch Panel)

Dental Chair Chair - The Head Delivery Unit With 3 Programmable Working Positions - Zero Friction

- Swivel Touch Control on Delivery Unit and Patient arm
- A full width in table of feet with chairs
- 120kg load capacity
- Auto return to zero position
- 100 chair tilt - manual/automatic/remote control
- Automatic Lock Release
- Synchro-tilt movement of Backrest & Seat
- Chair Light with 3 settings (1600K / 2800K / 3400K lux)
- Flexible arm rest
- Covered table for easy and professional usage
- Low & High Pressure Wash or Sterilization unit
- One used for operation

dentomed
healthcare
www.dentomedhc.com
+91-9654350641, 9560223355

stratified squamous keratinised epithelium with hyperplasia. Ulceration was seen in few areas with acute inflammatory infiltrate. Underlying connective tissue was collagenous and consisted of dilated blood vessels of varying sizes and proliferating endothelial cells. Dense areas of chronic inflammatory cell infiltrate mainly in the form of lymphocytes and plasma cells and extravasated RBCs were seen. Biopsy confirmed the lesion to be pyogenic granuloma.

Discussion

Pyogenic granuloma is one of the inflammatory hyperplasias seen in the oral cavity as a tissue response to irritation, trauma or hormonal imbalances. It is a common benign growth seen in the skin and oral cavity. The first case was reported in 1844 by Hullihen¹⁸ and the term "pyogenic granuloma" or "granuloma pyogenicum" was coined only in 1904 by Hartzell¹⁹. The term however is a misnomer as it is not related to any infection, does not contain pus and is not a true granuloma. It predominantly occurs in females in second decade of life. Vilmann et al. (1986) described that pyogenic granulomas can be of few millimetres to several centimetres in size and commonly involve maxillary labial gingiva^{10,11,20}. Pyogenic granuloma of the gingiva develops in up to 5% of the pregnancies and hence terms like "pregnancy tumour" and "granuloma gravidarum" are commonly used¹². When these are surgically removed during pregnancy, there is a tendency for recurrence. There is an increase in a number of angiogenic growth factors in PG, such as VEGF and b-FGF²¹. These growth factors are also increased in pregnancy, possibly suggesting a reason for the increased incidence seen during pregnancy.

Histopathologically it appears as a mass of granulation tissue with chronic inflammatory cellular infiltration. Endothelial proliferation and the formation of numerous vascular spaces are the prominent features²². The surface epithelium is atrophic in some areas and hyperplastic in others. Surface ulceration and exudation are common features. Pyogenic granuloma is a benign, vascular, reactive tumor of the mucosa or skin. Multiple pyogenic granulomas, known as satellitosis, may appear as a complication of tumor removal or trauma. Development of multiple satellite lesions may present difficulties in diagnosis and management²³.

Various treatment modalities have been used to remove pyogenic granuloma. Effective means include excision, shave excision, laser surgery, sclerotherapy, electrodesiccation, curettage, ligation, or a combination of methods²⁵. Excision with linear closure offers the lowest recurrence rate and allows histological examination of a

tissue sample. Closure, however, leaves a linear scar. Shave excision followed by argon laser photocoagulation is an effective therapeutic alternative that minimizes scar formation while preserving the ability to confirm the diagnosis with histological examination.

Recently, other treatments like Nd: YAG lasers have been used because of less risk of bleeding and superior coagulation characteristics²⁴. Pulsed dye lasers have also been tried with good results²⁵. Cryosurgery has been considered for the treatment of pyogenic granuloma as oral mucosa because of its humidity and smoothness is an ideal site for this technique. It shows excellent aesthetic result²⁶. Excisional treatments result in scars, and hence injection of absolute ethanol, sodium tetradecyl sulfate and corticosteroids have been tried with varied success rates²⁷.

Unconventional treatment like using resorbable suture for ligation can be used with varying results. Peduncular pyogenic granulomas may be ligated at the base using absorbable suture. The tumor is lifted with forceps and ligated at the base with tight suture knots. The tumor will become necrotic and fall off over several days. The procedure is atraumatic and inexpensive and requires no anesthesia or special equipment²².

Persistence or recurrence can be treated with excision or laser surgery. However, the procedure does not allow histologic examination. Cryotherapy, application of silver nitrate, diathermy laser therapy and pulsed-dye laser²⁸ have been used for extra oral pyogenic granuloma.

The treatment of pyogenic granuloma depends on the severity of the symptoms in the lesion. If it is small, painless and free of bleeding, clinical observation and follow up are advised¹². If the lesions are huge, surgical excision and removal of causative irritants (plaque, calculus, foreign material, source of trauma) are among the choice of treatment.

References

1. Jafarzadeh H, Sanatkhani M, Mohtasham N. Oral pyogenic granuloma: a review. *J Oral Sci* 2006;48:167-75.
2. G.H.L. Saravana Short communication. Oral pyogenic granuloma: A review of 137 cases. *British Journal of Oral and Maxillofacial Surgery* 47 (2009) 3183-19.
3. Shafer's text book of oral pathology. 4th Ed, WE Saunders; Elsevier, pp 392-394
4. Mills SE, Cooper PH, Fechner RE. Lobular capillary hemangioma: the underlying lesion of pyogenic granuloma. A study of 73 cases from the oral and nasal mucous membranes. *Am J Surg Pathol* 1980;4:470-9.
5. Silverstein LH, Burton CH, Singh BB. Oral pyogenic granuloma in pregnancy. *Int J Gynaecol Obstet* 1995;49:331-2.
6. Mubeen K., Vijayalakshmi K. R. and Abhishek R. P. Oral pyogenic granuloma with mandible involvement: An unusual presentation. *Journal of Dentistry and Oral Hygiene* Vol. 3(1), pp.6- 9, January 2011
7. Yalçin F, Yalçin S, Berber L, Gür H. Peripheral giant cell granuloma combined with facial hemangioma. A case report. *J Int Acad Periodontol* 2005;7:108-13.
8. Flaitz CM (2000). Peripheral giant cell granuloma: A potentially aggressive lesion in children. *Pediatr. Dent.*;22: 232-233.
9. Pandolfi PJ, Feleffi S, Flaitz CM, Jhonson JV (1999).

- An aggressive peripheral giant cell granuloma in a child. *J. Clin. Pediatr. Dent.*; 23: 353-355.
10. Neville BW, Damm DD, Allen CM, Bouquet JE (2002). *Oral and maxillofacial Pathology*. 2nd Ed., WB Saunders, Philadelphia, pp. 437-495.
 11. Regezi JA, Sciubba JJ, Jordan RCK (2003). *Oral Pathology: clinical pathologic considerations*. 4th Ed, WE Saunders, Philadelphia, pp. 115-116.
 12. Sills ES, Zegarclli OJ, Hoschander MM, Strider WE (1996). Clinical diagnosis and management of hormonally responsive oral pregnancy tumor (pyogenic granuloma). *J. Reprod. Med.*, 41: 467-470, 12.
 13. Ellis GL, Corio RL. Spindle cell carcinoma of the oral cavity. A clinicopathologic assessment of fifty-nine cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1980;50:523-33.
 14. Lo Muzio L, Favia G, Farronato G, Piattelli A, Maiorano E. Primary gingival leiomyosarcoma. *J Clin Periodontol* 2002;29:182-7.
 15. Mario Muñoz, Florencio Monje, Alonso del Hoyo and Rafael Martz'n-Granizo. Oral Angiosarcoma Misdiagnosed as a Pyogenic Granuloma. *J Oral Maxillofac Surg.* 56:488-491. 1998
 16. Toth BB, Fleming TJ, Lomba JA, et al: Angiosarcoma metastatic to the maxillary tuberosity gingiva. *Oral Surg Oral Med Oral Pathol* 52:71, 1981
 17. Carr RJ, Green DM: Oral presentation of disseminated angiosarcoma. *Br J Oral Maxillofac Surg* 24:277, 1986
 18. Hullihen SP (1844). Case of aneurysm by anastomosis of the superior maxilla. *Am. J. Dent. SC.*; 4: 160-162.
 19. Hartzell ME (1904). *Granuloma Pyogenicum*. *J. Cutan. Dis. Symp.*, 22: 520-525.
 20. Vilmann A, Vilmann P, Vilmann H (1986). Pyogenic Granuloma: evaluation of oral conditions. *Br. J. Oral Maxillofac. Surg.*, 24: 376-382.
 21. Yuan K, Jin YT, Lin MT. The detection and comparison of angiogenesis-associated factors in pyogenic granuloma by immunohistochemistry. *J Periodontol* 2000;71:701e9
 22. Richie L. Lin, MD; Camila K. Janniger, Pyogenic Granuloma. *Continuing Medical Education*. Volume 74, 229-232; October 2004
 23. E. Parisi, M. Fatahazadeh. Recurrent pyogenic granuloma in a female patient. *Oral Surgery Oral Medicine Oral Pathology* Volume 97, Number 4
 24. Powell JL, Bailey CL, Coop land AT, Otis CN, Frank JL, Meyer I (1994). Nd: YAG laser excision of a giant gingival pyogenic granuloma of pregnancy. *Lasers Surg Med.*, 14: 178-183.
 25. Meffert JJ, Cagna DR, Meffert RM (1998). Treatment of oral granulation tissue with the flash lamp pulsed dye laser. *Dermatol. Surg.*, 24: 845-848.
 26. Ishida CE, Ramos S (1998). Cryosurgery in oral lesions. *Int. J. Dermatol.*, 31: 342-344.
 27. Parisi E, Glick PH, Glick PL (2006). Recurrent intraoral pyogenic granuloma with satellitosis treated with corticosteroids. *Oral Dis.*, 12: 70-72.
 28. Ajay R. Sud, Swee T. Tan. Pyogenic granuloma treatment by shave-excision and/or pulsed-dye laser. *Journal of Plastic, Reconstructive & Aesthetic Surgery* (2010) 63, 1364e1368

Legends

- Fig 1 : Intra oral picture of the lesion
 Fig 2 : Lesion attached to root stump with erosion of labial cortex
 Fig 3 : Excised mass with the root stump

