

## ■ Case Report

# Pyogenic Granuloma: A Case Report

Dr. Md. T Rizwanulla, Dr. Bandana Koirala, Dr. Shivalal Sharma, Dr. Lalita Adhikari  
College of Dental Surgery, BPKIHS

### Abstract

Pyogenic granulomas (PG) are common benign vascular lesions of the skin and mucosa. They are neither infective, purulent nor granulomatous as the name might suggest—rather a reactive enlargement that is an inflammatory response to local irritation such as calculus, fractured tooth, minor trauma, rough dental restorations and foreign materials. Here, we report a case of 13 year old patient with PG and in addition to the knowledge, the importance of biopsy findings in establishing definitive diagnosis has been emphasized.

**Keywords:** pyogenic granuloma, inflammatory hyperplasia, lobular capillary hemangioma.

### Introduction

Pyogenic granuloma (PG) is a kind of inflammatory hyperplasia<sup>1</sup>. It is a common tumor-like growth of the oral cavity or skin that is considered to be non-neoplastic in nature<sup>2</sup>. Hullihen's description<sup>3</sup> in 1844 was most likely the first PG reported in English literature, but the term “pyogenic granuloma” or “granuloma pyogenicum” was introduced by Hartzell in 1904.

There are two kinds of PG namely lobular capillary hemangioma and non-lobular capillary hemangioma type which differ in their histological features<sup>4</sup>. The PG is thought to represent an exuberant tissue response to local irritation, trauma, hormonal factors or certain kinds of drugs<sup>2,5,6</sup>. Clinically these lesions usually present as single nodule or sessile papule with smooth or lobulated surface and are red, elevated and usually ulcerated<sup>6</sup>. They may also develop rapidly, reach full size and then remain static for a time and later becomes fibrotic and indistinguishable from a fibroma<sup>7</sup>. The peak prevalence is in teenagers and young adults, with a female predilection of 2:1<sup>6</sup>. The increased incidence of these lesions during pregnancy may be related to the increased levels of

estrogen and progesterone<sup>8</sup>. Pyogenic granuloma of the oral cavity is known to involve the gingiva commonly (75% of all cases). Uncommonly it can occur on the lips, tongue, buccal mucosa, palate and so on<sup>9</sup>.

Treatment involves excision of the lesion with histopathologic evaluation. One important point about pyogenic granuloma that should be emphasized is careful monitoring during surgery because of its vascular nature leading to profuse bleeding.

### Case report

A 13-year-old female patient presented to our department with a complaint of growth in the mouth involving upper right anterior region which bled frequently and interfered with eating. Her medical history was non-contributory. The patient noticed the growth two and half months back which was slightly smaller than the size at the time of presentation.

Intra oral examination revealed a solitary growing exophytic, pedunculated lesion measuring 2x1x1 cm in the right upper anterior region attached to the marginal gingival interproximally between the right permanent central incisor and the lateral incisor (Fig 1).

---

Address for correspondence:

Dr. Bandana Koirala, Associate Professor  
Dept. of Pedodontics and Preventive Dentistry,  
College of Dental Surgery,  
B.P.Koirala Institute of Health Sciences, Dharan, Nepal.  
E-mail: drkbandu@yahoo.com



*Fig 1: Pre-operative lesion.*

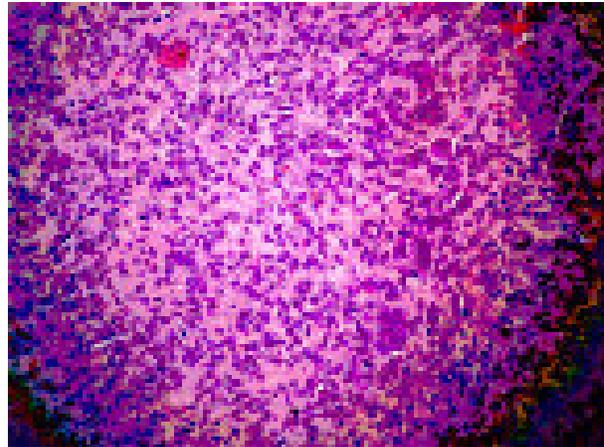
The lesion was firm in consistency and non-tender with minimum bleeding. In addition, the patient had poor oral hygiene. Due to the relatively small size of the lesion an excisional biopsy along with the histopathologic evaluation was done as the treatment (Fig 2).



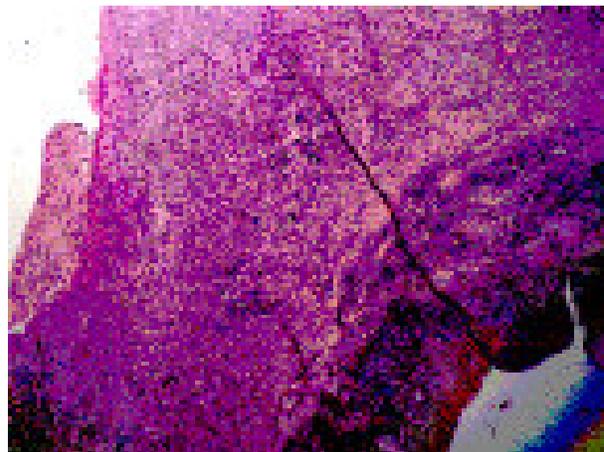
*Fig 2: Excision of lesion done.*

The histopathologic examination revealed stratified squamous epithelium with acanthosis and irregular downward proliferation of retepegs. There is a focal area of ulceration with underlying granulation tissue. The immediate sub-epithelium shows dense infiltration predominantly by plasma cells, neutrophils, lymphocytes and occasional eosinophils. There is presence of multinucleated giant cells of varying size in a stroma composed of ovoid and spindle shaped fibroblasts along with the presence of proliferating, some dilated and congested blood vessels. Areas of

calcification and new bone formation are seen scattered in the stroma (Fig 3 & Fig 4). These findings were consistent with the histopathological diagnosis of pyogenic granuloma.



*Fig 3: Photomicrograph (44 X) showing multinucleated giant cells and mixed inflammatory cell infiltrate.*



*Fig 4: Photomicrograph (4 X) showing stratified squamous epithelium with acanthosis.*

### **Discussion**

In the oral cavity pyogenic granulomas show a striking predilection for the gingiva with interdental papillae being the most common site. They are more common in the maxillary anterior region than any other area in the mouth. Gingival irritation and inflammation that result from poor oral hygiene, dental plaque and calculus or over-hanging restorations may be the precipitating factors in many cases<sup>9</sup>. It is possible that micro-ulceration from these irritants in an already inflamed gingiva allows the ingress into the gingival

connective tissue of low virulent oral micro-flora. This evokes an exaggerated vascular hyperplastic response in the connective tissue resulting in the formation of pyogenic granuloma<sup>10</sup>.

Pyogenic granuloma was first thought to be a mycotic infection contracted from horses. Subsequently, it was claimed without scientific evidence that pyogenic granuloma results from a purulent change within benign oral tumors. Recently, the angiogenesis associated factors Tie-2, angiopoietin-1, angiopoietin-2, ephrin B2 and B4 have been detected in pyogenic granuloma by immunochemistry. It is now generally accepted that the lesion is an exaggerated localized connective tissue reaction to minor injury or irritation<sup>10</sup>.

The typical clinical presentation of pyogenic granuloma is a small, deep red to reddish-purple lesion occurring on the gingiva which is either sessile or pedunculated. The surface may be smooth, lobulated or occasionally warty which is commonly ulcerated and shows a tendency for hemorrhage either spontaneously or upon slight trauma. The lesion is painless and soft in consistency; although older lesions tend to become more collagenized and firm. The size of the lesion usually ranges between 0.5cm-2cm, and they may grow at an alarming rate reaching that size in just 4-7 days<sup>5</sup>.

Although pyogenic granuloma can be diagnosed clinically with considerable accuracy, radiographic and histopathological investigations aid in confirming the diagnosis and treatment. Radiographs are advised to rule out bony destructions suggestive of malignancy or to identify a foreign body<sup>9</sup>.

Differential diagnosis of PG includes parulis, peripheral giant cell granuloma, peripheral ossifying fibroma, hemangioma, peripheral fibroma, leiomyoma, hemangioendothelioma, hemangiopericytoma, bacillary angiomatosis, kaposi sarcoma, metastatic tumor, post extraction granuloma and pregnancy tumor. Treatment of pyogenic granuloma consists of conservative surgical excision which is usually curative. There is relatively high rate of recurrence (about 15%) after simple excision<sup>9</sup>. Other conventional surgical modalities for the treatment of pyogenic granuloma reported are cryosurgery in the form of either liquid nitrogen spray or a cryoprobe. Nd: YAG, CO<sub>2</sub> and flash lamp pulsed dye lasers have also been used for the treatment of oral pyogenic granuloma<sup>10</sup>.

## Conclusion

Pyogenic granuloma is a non-neoplastic growth in the oral cavity. Proper management including diagnosis, treatment and further prevention is very important. Regular, careful maintenance of oral hygiene, removal of dental plaque and use of soft toothbrush are important to avoid the occurrence of pyogenic granuloma.

## Acknowledgement

The authors are grateful to Dr. Anju Pradhan, Asst. Professor, Dept. of Pathology, B.P.K.I.H.S, Dharan, for her help in preparation and reporting of the slides.

## References

1. Eversole LR. Clinical outline of oral pathology: diagnosis and treatment. 3<sup>rd</sup> ed, Hamilton: BC Decker; 2002. p. 113-4.
2. Greenberg MS, Glick M. Burkett's oral medicine: diagnosis and treatment. 10<sup>th</sup> ed, Hamilton: BC Decker; 2003. p. 41-2.
3. Hullihen SP. Case of aneurism by anastomosis of the superior maxillae. Am J Dent Sc 1844; 4:160-2.
4. Epivatianos A, Antoniadis D, Zaraboukas T, Zairi E, Pouloupoulos A, Kiziridou A, Iordanidis S. Pyogenic granuloma of the oral cavity: comparative study of its clinicopathological and immunohistochemical features. Pathol Int 2005; 55:391-7.
5. Patil K, Mahima VG, Lahari K. Extralingival pyogenic granuloma. Indian J Dent Res 2006; 17:199-202.
6. Regezi JA, Sciubba JJ, Jordan RCK. Oral Pathology: clinical pathological considerations. 4<sup>th</sup> ed, Philadelphia: WB Saunders; 2003. p. 115-6.
7. Maureen GM, Layton S, Wright JM. Pyogenic granuloma associated with a natal tooth: case report. Pediatric Dent 1992; July/August: vol 14; no-3: 265-67.
8. Ramirez K, Bruce G, Carpenter W. Pyogenic granuloma: case report in a 9- year old girl. Gen Dent 2002; 50-3: 280-1.
9. Amirchaghmaghi M, Farnaz F, Nooshin M, Mozafari PM. Extralingival pyogenic granuloma: a case report. Cases Journal 2008; 1:371.
10. Shenoy SS, Dinkar AD. Pyogenic granuloma associated with bone loss in an eight year old child: A case report. J Indian Soc Pedod Prev Dent 2006; December: 201-3.