Case Report

A Peculiar Case of Pyogenic Granuloma in a Differently Abled Child with Iron Deficiency Anemia

Shivani Dubey*, Aradhana Agrawal, Vinod Patel, Leena Kumari, Divyani Nandekar, Anusmita Mandal
Department of Pedodontics and Preventive Dentistry, New Horizon Dental College and Research Institute, Bilaspur, Chhattisgarh, India.

Abstract

Pyogenic granuloma is a tumor-like lesion which develops in response to chronic low-grade irritation, trauma, or in pregnancy. It is an inflammatory response seen in the skin and mucosa of the gastrointestinal tract and oral cavity. Since the disorder is not linked with pus and does not histologically resemble a granuloma, the term "pyogenic granuloma" is confusing. The most frequently affected site in the oral cavity is the gingiva. It can also develop extra-gingivally on the lips, tongue, buccal mucosa, palate, and other areas. Pyogenic granuloma often manifests as a reddish-purple, smooth, or lobulated mass that can be sessile or pedunculated. The size of a granuloma can range from a few millimeters to several centimeters. Here, we describe a case report of an 11-year-old girl who had an atypical pyogenic granuloma of the oral cavity that caused iron deficient anemia.

Keywords: General anesthesia, Inflammatory hyperplasia, Iron deficiency anemia, Pyogenic granuloma.

Introduction

Soft-tissue growth in the oral cavity is often challenging. The American Academy of Pediatric Dentistry admits that children are susceptible to a range of periodontal illnesses and disorders, which can be due to neoplasia, cysts, anatomical structures, inflammation, and developmental defects. Even though destructive periodontal diseases in children are incredibly rare, they can still be caused by immunological or systemic conditions.[1] One such entity is the occurrence of pyogenic granuloma. It was first described by Hullihen in 1844, also known as a benign vascular tumor, pregnancy tumor, or benign granuloma pediculatum.[2,3] The pyogenic granuloma is an outcome of reactive hyperplasia from a long-term irritation or trauma.[3] They are soft, pedunculated, or lobulated tumors that are rapidly growing, have a blue to reddish color, bleed easily, and are prone to ulceration.[4] It is found that in almost 75% of the cases, the maxillary gingiva is more frequently affected than the mandible.[5-7] The main causes of pyogenic granuloma are – the use of specific medications, hormonal fluctuations, and continual low-grade irritation.[8-10]

We are presenting a rare case with multiple pyogenic granulomatous lesions in an 11-year-old girl with sub-normality.

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Case Report

An 11-year-old girl reported to the Department of Pedodontics and Preventive Dentistry, New Horizon Dental College and Research Institute with chief complain of pain and bleeding gums for the past 20 days. The parents noticed a change in her eating habits 20 days back and when asked she complained of pain in the left maxillary molar region. There was a swelling that worsened over time to the point where the patient refused to eat or drink. When the child was 4 years old, an intellectual impairment diagnosis (ICD-10-F71) was made.[11] The patient had not reached menarche yet. Extraoral examination revealed a diffuse swelling present on the left side of the face approximately 3 × 3 cm in diameter, the overlying skin was normal and no change in temperature was noticed. Intraoral examination revealed poor oral hygiene. On soft-tissue evaluation, there was a well-defined swelling of approximately 2.5 cm in diameter extending from the 25 to 27 tooth region.

Address for correspondence: Shivani Dubey, Department of Pedodontics and Preventive Dentistry, New Horizon Dental College and Research Institute, Bilaspur, Chhattisgarh, India.
Email: dubeyshivani1606@gmail.com

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The growth was bluish-pink in color, soft in consistency, and pedunculated, with areas of erythematous appearances (Figure 1). The swelling was tender on palpation and bled profusely when touched. A second lesion was observed in the 46–47 tooth region, which was irregular and nodular in appearance with ulcerated margins. The growth was non-tender on palpation (Figure 2). On the child's hard and soft palate, there were several purpuric patches, which suggested signs of force-feeding.

The panoramic radiograph indicated root stump in relation to 26 and deep occlusal caries involving 46 and 36, and numerous over-retained deciduous teeth in the mandibular arch.

Hematological examination revealed that the child had iron deficient anemia, with a hemoglobin level of 6 g/dL and white blood cell count within normal limit. A differential diagnosis of Ewing's sarcoma, pyogenic granuloma, peripheral giant cell granuloma, and peripheral ossifying fibroma was determined based on the time of progression and clinical presentation of the lesion. Due to the patient's neurological condition, a surgical excision and biopsy were performed under general anesthesia.

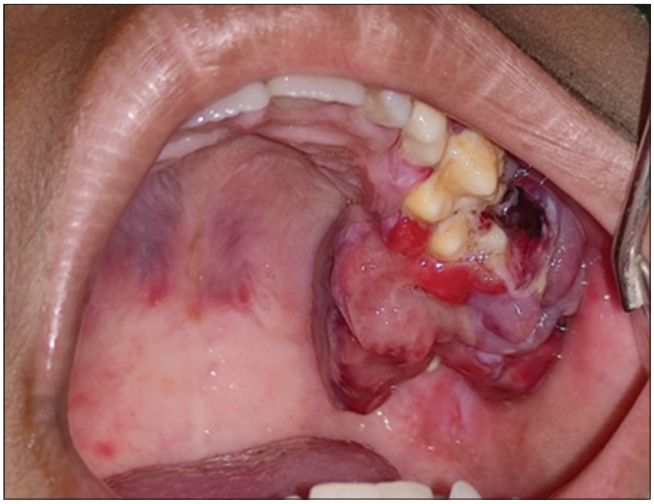

Figure 1: Lesion seen intraorally in the maxilla extending from the 25 to 27 tooth region

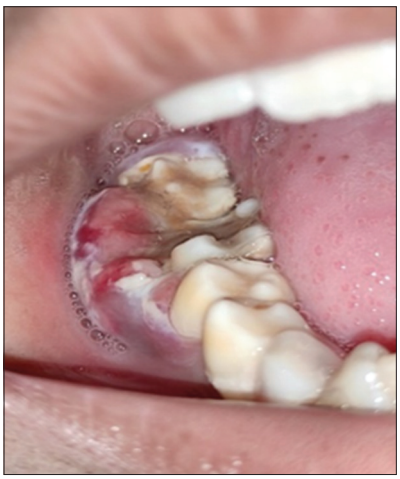

Figure 2: Lesion seen intraorally in the buccal surface of the mandible. With respect to 45 to 47 tooth region

Surgical procedure

The parents provided with their written and informed consent. General anesthesia was administered under complete aseptic condition. The lesion was excised from the vestibular aspect of the palate and separated from the underlying bone with a periosteal elevator, with the root section of 26 adhering to the soft tissue. The mandibular lesion was also removed, along with over-retained 73, 74, 75, and 83. Hemostasis was established using silver nitrate solution and the surgical wound was left exposed for healing with secondary intention. The removed sample measured 3.5 × 3 × 1 cm (from 26 to 27 tooth region) and 1.5 × 1 × 1 cm (from 46, 47 tooth region) were sent for histological testing. Recovery went uneventful (15-day follow-up illustrated in Figures 3 and 4).

Histopathology

Microscopic examination revealed stripes of ulcerated stratified squamous mucosa with underlying dense granulation tissue and inflammatory cells suggestive of pyogenic granuloma. The adjacent mucosa showed mild reactive atypia. No evidence of malignancy was seen. As a result, a diagnosis of pyogenic granuloma was established.

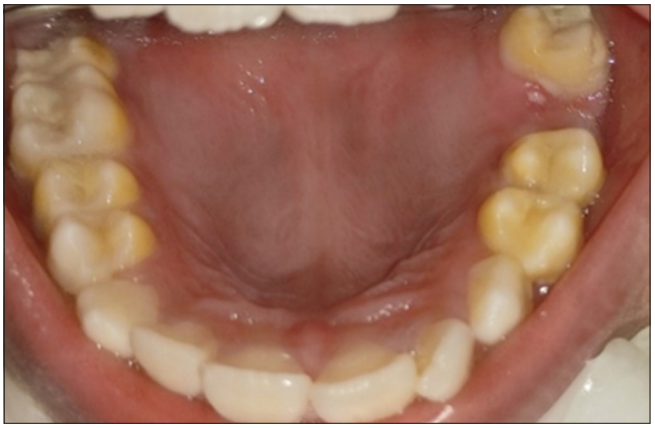

Figure 3: Fifteen days' post-operative maxilla

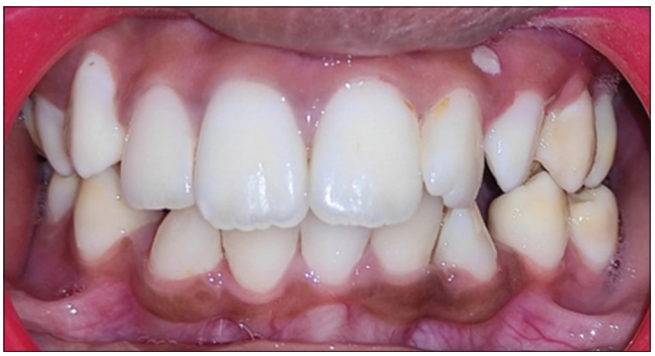

Figure 4: Occlusal view 15 days' post-operative

Discussion

Injury to the gingival crevice caused by any etiological factor such as irritation, trauma, non-specific infection, overhanging restorations, calculus, poor oral hygiene, and so on, results in an inflammatory hyperplastic reaction that might lead to the formation of pyogenic granuloma.[12-15] Most commonly, it has been found in the mucosa of the upper respiratory tract, the oral cavity, and the skin.[16] We present a rare case of pyogenic granuloma in a differentially abled child, leading to iron deficiency anemia.

Clinically, it appeared as a lobulated or smooth exophytic lesion with a pedunculated or sessile base. The size of the lesion might range from a few millimeters to several centimeters. Pyogenic granuloma rarely grows larger than 2.5 cm and reaches its full size within 2 weeks.[6,7] Its maturation is most often asymptomatic, painless, and slow, but the rapid growth of the mass has been observed.[17] The superficial layer is friable and ulcerated and it is occasionally coated with a fibrinous membrane, which is yellowish in color and changes from pink to red to purple with time.[7] Newly formed lesions are extremely vascular in nature, with capillaries infiltrated inside granulation tissue, allowing for rapid bleeding of the lesion as a result of minor trauma.[17]

Histologically, pyogenic granuloma is classified into two types: Lobular capillary hemangioma (LCH) and non-LCH (non-LCH). Type 1 has an inflammatory granular tissue reaction or capillary dilatation and is superficially organized by lobular aggregates. Type 2 has a modest luminal diameter in the core and a greater number of blood vessels.[2,18,19] According to the patient's histological examination, she had type II non-LCH pyogenic granuloma.

Bone loss related to the lesion is uncommon but has been found on occasion.[20] In the current case report, considerable bone loss was seen around 26 such that it was solely covered with granulation tissue. This is consistent with the findings of Razi MA and Angelopoulos AP, who also documented bone loss in long-standing pyogenic granuloma.[8,21]

It occurs in 5% of all pregnancies, the underlying cause is considered to be poor oral hygiene combined with hormonal imbalance; hence, the terms "granuloma gravidarum" and "pregnancy tumor" have been coined.[22] The difference between pyogenic granuloma and ordinary granulation tissue is that clinically pyogenic granuloma has multiple occurrences, rapid growth, and a 16% likelihood of recurrence.[23-26]

In this case, the pyogenic granulomas were bleeding so profusely as to cause iron deficiency anemia in a non-menstruating female child. The pain and bleeding during chewing added to nutritional deficiency.

Treatment options include resection under local or general anesthesia, cryosurgery, lasers, sclera therapy, and others. In this situation, the patient's sub-normality was a factor in putting the patient under general anesthesia. After the lesion had been entirely removed, a counseling session was conducted for parents, and the patient had oral prophylaxis done and was sent to a hematologist, nutritionist, and a psychiatrist for additional care. There was a 7-day, 15 days, 1-month, and 3-month follow-up. After receiving 3-month iron supplement, the patient's hemoglobin count increased to 9 g/dL and she is still under needed care.

Conclusion

Pyogenic granulomas are painful non-neoplastic growths in the oral cavity that quickly increase in size over a short time. In the present case, the patient's mental state made it tough for her to receive proper care when the lesion was small. Furthermore, after treatment, parents were counseled and proper oral hygiene instruction was given. Pediatric dentists should be familiar with the treatment options for such lesions and be prepared to provide optimal treatment to the patient.

References

1. American Academy of Pediatric Dentistry. Classification of Periodontal Diseases in Infants, Children, Adolescents, and Individuals with Special Health Care Needs. Chicago, IL: American Academy of Pediatric Dentistry; 2022. p. 451-65.
2. Hullihen SP. Case of aneurism by anastomosis of the superior maxillare. Am J Dent Sci 1844;4:160-2.
3. Kamal R, Dahiya P, Puri A. Oral pyogenic granuloma: Various concepts of etiopathogenesis. J Oral Maxillofac Pathol 2012;16:79-82.
4. Rosa CG, Lay AC, La Torre AC. Oral pyogenic granuloma diagnosis and treatment: a series of cases. Rev Odontol Mex 2017;21:253-61.
5. Eversole LR. Clinical Outline of Oral Pathology: Diagnosis and Treatment. 3rd ed. United States: PMPH-USA; 2002. p. 113-4.
6. Nayyar AS, Lakshmana N, Sahu D. Lobular capillary haemangioma: A case report. Int J Clin Case Rep 2016;6:18-20.
7. Regezi JA, Sciubba JJ, Jordan RC. Oral Pathology: Clinical Pathological Considerations. 6th ed. Philadelphia, PA: WB Saunders; 2003. p. 217-50.
8. Razi MA, Debnath S, Qamar S, Tripathi A. Management of pyogenic granuloma in pediatric patients using electrocautery. Int J Periodontol Implantol 2019;4:141-6.
9. Mussalli NG, Hopps RM, Johnson NW. Oral pyogenic granuloma as a complication of pregnancy and the use of hormonal contraceptives. Int J Gynecol Obstet 1976;14:187-91.
10. Miller RA, Ross JB, Martin J. Multiple granulation tissue lesions occurring in isotretinoin treatment of acne vulgaris--successful response to topical corticosteroid therapy. J Am Acad Dermatol 1985;12:888-9.
11. World Health Organization. International Classification of Diseases: Ninth Revision, Basic Tabulation List with Alphabetic Index. Geneva: World Health Organization; 1978.
12. Sosa L, Ramírez D, Palacios MF, Arteaga S, Dávila L. Pyogenic granuloma: a case report. Dental Act Venice 2010;48:1-12.
13. Verma PK, Srivastava R, Baranwal HC, Chaturvedi TP, Gautam A, Singh A. Pyogenic granuloma - Hyperplastic lesion of the gingiva: Case reports. Open Dent J 2012;6:153-6.
14. Arcos-Castro M, Rojo-Botello NR, Quezada-Rivera D. Retrospective study from 2002 to 2006. Pyogenic granuloma, peripheral giant cell granuloma and multicentric peripheral ossifying fibroma prevalence. Rev Odont Mex 2008;12:137-41.
15. Kadeh H, Saravani S, Tajik M. Reactive hyperplastic lesions of the oral cavity. Iran J Otorhinolaryngol 2015;27:137-44.
16. Kusakabe A, Kato H, Hayashi K, Igami T, Hasegawa H, Tsuzuki T, *et al*. Pyogenic granuloma of the stomach successfully treated by endoscopic resection after transarterial embolization of the feeding artery. J Gastroenterol 2005;40:530-5.
17. Jafarzadeh H, Sanatkhani M, Mohtasham N. Oral pyogenic granuloma: A review. J Oral Sci 2006;48:167-75.

18. Parisi E, Glick PH, Glick M. Recurrent intraoral pyogenic granuloma with satellitosis treated with corticosteroids. Oral Dis 2006;12:70-2.
19. 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.
20. Goodman-Topper ED, Bimstein E. Pyogenic granuloma as a cause of bone loss in a twelve-year-old child: Report of case. ASDC J Dent Child 1994;61:65-7.
21. Angelopoulos AP. Pyogenic granuloma of the oral cavity: Statistical analysis of its clinical features. J Oral Surg 1971;29:840-7.
22. Sills ES, Zegarelli DJ, Hoschander MM, Strider WE. Clinical diagnosis and management of hormonally responsive oral pregnancy tumor (pyogenic granuloma). J Reprod Med 1996;41:467-70.
23. Enzinger FM, Weiss SW. Soft Tissue Tumors. 3rd ed. St Louis, Mo: Mosby; 1995. p. 829-37.
24. Kapadia SB, Heffner DK. Pitfalls in the histopathologic diagnosis of pyogenic granuloma. Eur Arch Otorhinolaryngol 1992;249:195-200.
25. Panjwani S, Issrani R, Keluskar V, Naik Z. An unusual presentation of pyogenic granuloma. Indian J Dent 2012;3:178-81.
26. Draidi Y, Al-Wraikat MA, Obeidat LK, Hyasat AN. Unusual site of extraoral pregnancy tumor: A case report. J R Med Serv 2016;102:1-4.