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Hyperplastic lesion of the gingiva in an 8-year-old male with pyogenic granuloma: A case report

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Abstract
Pyogenic granuloma (PG), which is a tumor-like growth, is a reactive hyperplasia of connective tissue in response to irritation. The gingiva is the area that is most often affected. It commonly originates in response to various stimuli, such as traumatic injury, low-grade local irritants, hormonal factors, or some types of drugs. Histologically, the surface epithelium may be intact, may show foci of ulceration, or may exhibit hyperkeratosis. In general, PG is seen in both sexes in the second and third decades of life. This article presents a rare case study of an 8-year-old male patient with PG that was managed by surgical intervention.

Keywords: Pyogenic granuloma, local irritation, soft tissue tumor

Introduction
Pyogenic granuloma (PG) is a benign lesion seen on the skin and mucosal surfaces [1]. In the oral cavity, PG is the most common form of tumor-like growth [2]. Although PG was initially thought to be a horse-transmitted infection, it was later identified as a non-specific infection [3, 4]. Terminologically, PG, is not fully expressed in the lesion, because the lesion is free of pus and it has nothing to do with pyogenic bacteria. Moreover, there is no granuloma formation [2]. When examined in terms of histology, lymphocytes, plasma cells, and neutrophils have been found to be similar to fibroblastic and endothelial proliferation [5]. Various studies have also found the presence of Tie2, Angiopoietin-1 and Angiopoietin 2, EphrinB2, and B4 factors related to vascularization [3, 6].
PG lesions can vary in size from a few millimeters to 2-3 cm. They are benign tumoral lesions with a uniform, lobular, or granular appearance, mostly single, pedunculated, or broadly based [7, 8]. The lesion has a soft consistency, and it has a structural feature that tends to bleed easily with spontaneous or mild irritations [9]. These lesions, which may vary in color from pink to red, brown, and purple, are usually covered with fibrous membranes that exhibit ulcers that have a white-yellowish color [10]. In addition, the lesions are generally painless and occur asymptomatically [5].
Differential diagnosis of PG includes kaposis sarcoma, metastatic tumour, peripheral ossifying fibroma, peripheral giant cell granuloma, angiosarcoma, hemangioma, and hyperplastic gingival overgrowth [11].

Case Report
An 8-year-old male patient was admitted to the Zonguldak Bulent Ecevit University Faculty of Dentistry, Department of Pediatric Dentistry with complaints of swelling of the gums and bleeding in the related area. No pathological findings were identified in the extraoral examination of the child, who had no systemic disease. In the anamnesis taken from the patient, it was learned that the lesion had been present for about 2 months. As a result of the growth of the lesion, it was learned that there was no symptom other than irritation and tenderness due to irritation during chewing and tooth brushing. Intraoral examination revealed that the lower right jaw deciduous first molar tooth had excessive damage due to caries, which was an irritant factor. It was also observed that the lesion was in contact with the upper teeth while the teeth were closed (Figure-1). In this area, only one tooth was clinging with stems around it with a soft consistency, about 1.5 cm in diameter, with a bulky surface, with ulcers and red-purplish lesions (Figure-2).

Radiographic examination showed fracture crown fragments of the lower right jaw deciduous first molar tooth and root resorption of the relevant tooth. It was also found that the first premolar tooth was in the eruption path, and the bone at the top of the tooth was resorbed (Figure-3).

To make a differential diagnosis of different pathological lesions in the mouth, the lesion was excised by excisional biopsy under local anesthesia. Bleeding was stopped with gauze pressure within a few minutes, and the area was covered with periodontal dressing. Postoperative recommendations were made, and the patient was prescribed a 0.12 % chlorhexidine-containing mouthwash solution to be administered twice daily to provide oral hygiene.

The biopsy specimen was sent to Zonguldak Bulent Ecevit University Faculty of Medicine, Department of Pathology for histopathological examination. The histopathological examination results identified the lesion as PG. The patient was recalled for a checkup 4 weeks after the surgical procedure, and no problems in healing were observed (Figure-4). The patient was recalled for follow-up after 6 months. No pathological findings and no recurrence of the lesion were observed clinically and radiographically. The recovery in the surgical area was completely achieved, and the first premolar tooth erupted smoothly in the area (Figure-5 and Figure-6).

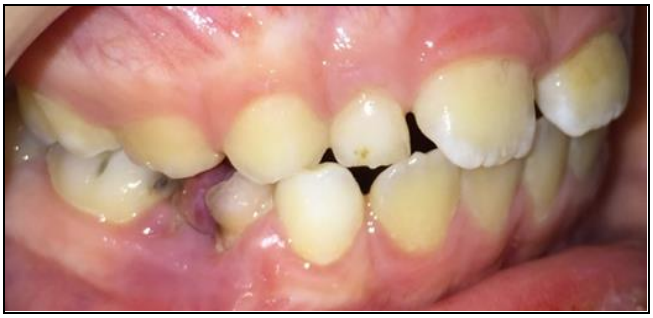

Fig 1: Intraoral sagittal view of the lesion

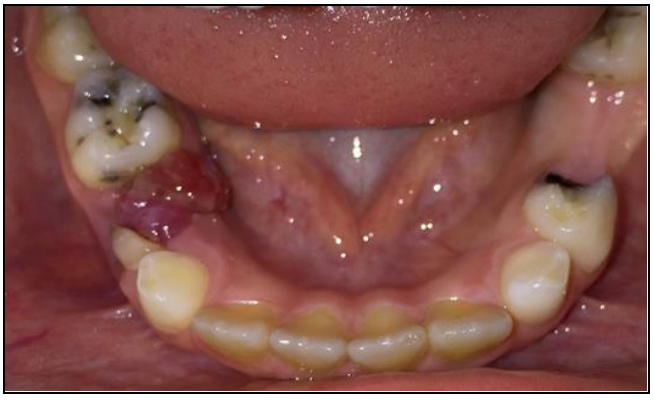

Fig 2: Intraoral occlusal view of the lesion

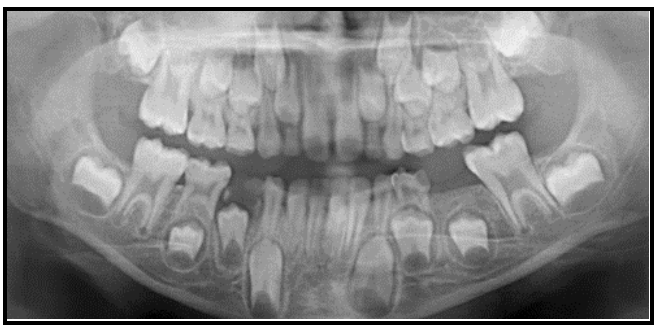

Fig 3: Panoramic view of the patient

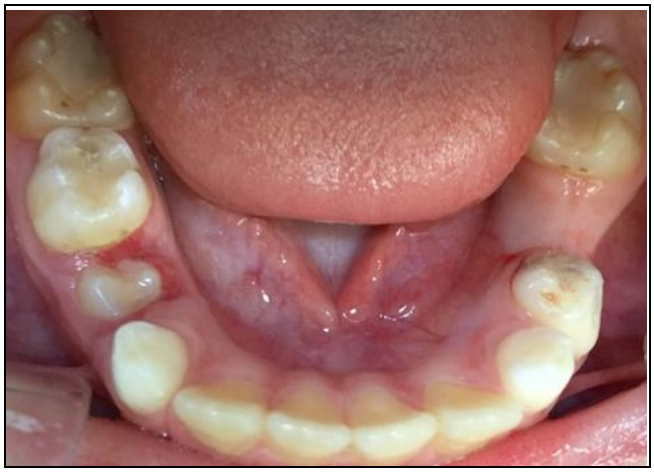

Fig 4: Intraoral view 1-month after excision of the lesion

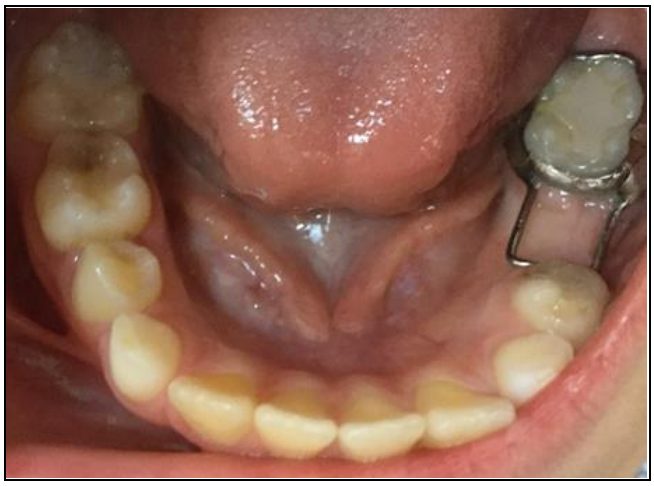

Fig 5: Intraoral view 6-months after excision of the lesion

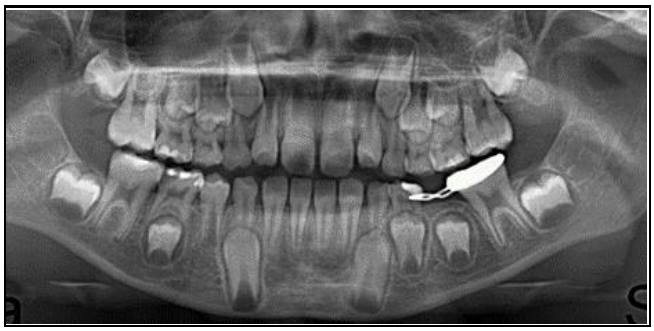

Fig 6: Panoramic view of the lesion 6 months after excision

Discussion

The prevalence of the PG has been reported to range between 26.8% and 32% of all reactive lesions [12, 13]. Zain *et al*. investigated the prevalence of PG in a Singapore population; they reported the highest incidence of PG in the second decade of life [14].

Although PG has been reported in all age groups, it most commonly occurs between the ages of 11 and 40, and its incidence increases in the third decade of life [8]. Skinner *et al*. reported that PG is more often seen in females than males [15]. In young adult females, these lesions are thought to be predominant due to the vascular effects of sex hormones [16]. However, in our case, PG was found in an 8-year-old male patient.

In the oral cavity, the most common site of PG is the gingiva, but it can also occur in the buccal mucosa, tongue, and lips [17]. Gordon-Núñez *et al*. reported that 83% of the 293 cases of

PG were in the gingiva (mostly maxilla), 5.3% in the lip, 5.3% in the tongue, 4.2% in the palate, 0.8% in the buccal mucosa, and 0.4% in the base of the mouth. In addition to the oral cavity, PG lesions can be found in different parts of the body, such as the nose, lips, fingers, and toes [18]. In a different study, it was reported that in 289 cases of PG, 32.7% were in the gingiva, 22.5% were on the fingers, 20.4% were on lips, 12.3% were on different parts of the face, and 10% were on the tongue [17]. In our case, PG was observed in the gingiva, which, as previously stated, is the most common site.

It is generally accepted that PG is a result of localized, excessive reaction of connective tissue against minor injury or underlying irritation [19]. Some studies have concluded that the resulting traumatic factors are the main etiological factor for PG development [8, 10]. The factors that cause irritation include calculus, poor oral hygiene, rough restorations, cheek-biting, and nonspecific infections. Due to these irritations, the fibrovascular connective tissue becomes hyperplastic and PG occurs by proliferation of granulation tissue [2]. In our case, we believe that fractured tooth fragments around the mass and poor oral hygiene were the predisposing factors for the formation of PG. In addition, due to its localization and size, the mass, which is irritated by chewing, can be susceptible to growth and bleeding.

PG can be treated appropriately with proper diagnosis and appropriate treatment planning. Treatment entails complete surgical excision of the mass. While re-occurrence of PG after excision is a possible complication, this can be prevented with proper treatment. In general, PG lesions do not occur when all etiologic factors are removed and the lesions are excised with the stem of the lesion [17]. In previous studies, the rate of recurrence of PG varies from 3% to 23%, and these relapses are usually associated with partial removal of the lesion or the patient's chronic habits [3, 14, 20]. In these circumstances, it is necessary to remove the agent and re-excise the lesions. The patient should be followed up well after the operation, and the contributing factors should be eliminated to decrease the possibility of recurrence [17].

This paper presents a case report in which PG, with the presence of tooth fractures due to bad oral hygiene, was managed with surgical intervention. This case is noteworthy due to the age and gender of the patient (8-year-old male), which is rare in cases of PG.

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