

Pyogenic granuloma associated with a natal tooth: case report

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Introduction

The pyogenic granuloma is a clinical entity which originates as an overexuberant connective tissue response to a stimulus or injury.¹ Trauma and local irritation have a significant impact on the development of the pyogenic granuloma.² This lesion is particularly important to dentists because of its common intraoral occurrence and sometimes alarming clinical course.¹

The pyogenic granuloma is seen most frequently on the gingiva, but occasionally is found elsewhere in the mouth in areas of frequent trauma such as the lips, the buccal mucosa, and the tongue. Previous dental extractions, exfoliating primary teeth, bone spicules, root remnants, toothbrush trauma, and gingival irritation from bacterial plaque and calculus have been reported as possible etiologic factors of pyogenic granuloma at gingival sites.² It now generally is agreed that the pyogenic granuloma is not a response to any specific infective agent.

The lesion is usually an elevated, pedunculated, or sessile mass. The surface may be smooth, lobulated, or even warty. The pyogenic granuloma is typically deep red or reddish-purple due to its vascularity, but may have a brown cast of hemorrhage. These lesions usually are ulcerated, and subsequently become covered by a yellow-tan fibrinous exudate. Pyogenic granulomas do not produce pus, as the term "pyogenic" implies.^{1,3}

The pyogenic granuloma may develop rapidly, reach full size, then remain static. Hormonal changes of puberty and pregnancy may modify the clinical course. Pyogenic granulomas are associated so frequently with pregnancy that the term "pregnancy tumor" has been used. The lesions range in size from a few millimeters to several centimeters in diameter. They have no apparent predilection for any age group, but tend to occur in females more frequently than males.^{1,3}

Treatment for the pyogenic granuloma involves conservative local excision, except in cases of hormonal (e.g., pregnancy) tumors.⁴ In cases of "pregnancy tumors," the lesions usually are left untreated until postpartum when they may resolve, or lessen in severity. Because the lesions are not encapsulated, their limits are hard to define. The surgeon must be careful to excise the connective tissue from which the lesion arises, and to remove any etiologic factors.^{1,3} Pyogenic granulomas recur occasionally, probably due to incomplete excision, failure to remove etiologic factors, or reinjury.³

Our case report presents a pyogenic granuloma associated with a natal tooth. This case suggests that the extraction of a natal tooth may have stimulated the

development and rapid clinical growth of a pyogenic granuloma.

Case Report

A 6-day-old male patient was referred to a Plano, Texas, pediatric dentist's office by a pediatrician for evaluation of an enlarging mass on the patient's anterior mandibular alveolar ridge (Fig 1, next page). The patient was a healthy, Caucasian, 6-lb, 12-oz product of a normal, uncomplicated full-term pregnancy, and was

the first-born child to a healthy 17-year-old mother and a healthy 21-year-old father. The single unusual finding after birth was a mandibular anterior natal tooth.

The parents reported an extremely mobile tooth attached to a mass on the lower jaw. The parents followed their pediatrician's advice and removed the tooth with their fingers a few days after birth. They reported no unusual or prolonged



Fig 1. Six-day-old patient with a pyogenic granuloma affecting the mandibular anterior alveolar ridge. Three days previously, a mandibular anterior natal tooth was extracted by the patient's parents. Note the patient's grandmother's ungloved finger in photograph.

bleeding after the tooth was extracted. The parents noted that the mass had begun to enlarge rapidly following removal of the natal tooth.

At 16 days of age, the patient was placed under local anesthesia, and the lesion was excised. The lesion was 0.6 cm x 0.4 cm x 0.4 cm. Histologic examination revealed a mass of capillaries, acute and chronic inflammatory cells, fibrin, and delicate fibrous tissue. The capillaries, although small, were numerous and prominent in areas of the specimen (Fig 2, next page). The diagnosis of pyogenic granuloma was made.



Fig 2. Photomicrograph demonstrating granulation tissue stroma with prominent vascularity. Arrows indicate the most prominent areas of proliferating blood vessels. H & E stain, original magnification x33.

Ten days after surgery, the excision site was healing adequately, and there were no signs of recurrence. The postsurgical course was uneventful. One month later, the patient returned for a follow-up evaluation. The excision site had healed fully, with no recurrence of the lesion. A raised area at the surgical site was normal in color and there was no increased vascularity, as would be seen with a recurring pyogenic granuloma (Fig 3).

Discussion

This case report suggests that a natal tooth, and/or extraction of this tooth, may have stimulated development of a pyogenic granuloma, a relationship not reported previously. The parents reported that before extracting the natal tooth, they noticed a small mass underlying the tooth. The microtrauma of the gingival tissue associated with an erupting tooth has been shown to be associated with the development of pyogenic granulomas.² If the pyogenic granuloma existed before the extraction, then the trauma associated with the extraction of the natal tooth by the parent probably contributed to the rapid growth of the lesion. If the pyogenic granuloma did not exist before extraction, the parents may have irritated the gingival tissue attached to the natal tooth while attempting extraction, or left a portion of the tooth or a bony spicule, thus producing the lesion.

The differential diagnosis of reactive lesions of the gingiva should include: pyogenic granuloma, fibrous hyperplasia (fibrous epulis), peripheral giant cell granuloma, and peripheral odontogenic fibroma.⁴ These lesions, though, are not normally present in neonates. In this case, congenital epulis of the newborn also was considered due to the age of the patient and the clinical appearance of the lesion. However, it should be noted that the congenital gingival granular cell tumor occurs

in females eight times as often as in males, and in the maxilla three times as often as in the mandible.⁵ Due to the location of the lesion, an eruption cyst also was considered as part of the differential diagnosis. Eruption cysts in neonates usually are located at the mandibular central incisor region. However, in contrast to this lesion, eruption cysts generally resolve with eruption of the tooth, and need no surgical intervention.⁶ Additionally, a hemangioma was considered because of the color and vascular nature of the lesion, and most hemangiomas are present at birth or arise at an early age. However, most hemangiomas occur on the lips, tongue, buccal mucosa, and palate.¹

Pyogenic granulomas in newborns have not been reported as occurring frequently. Jorgenson et al. (1982) examined 2,258 neonates. They reported a high frequency of gingival and palatal cysts of the newborn, and a significantly lower frequency of alveolar lymphangiomas.⁷ However, lymphangiomas of the alveolar ridge of neonates have been reported to occur almost exclusively in African Americans, and lymphangiomas in the mandibular arch are most often limited to the posterior lingual surface of the mandibular ridge.⁷⁻⁹ Additionally, gingival cysts of the newborn are not reactive lesions, are not associated with erupting teeth, and are generally approximately 1 mm in diameter.^{6,7}

In cases of natal teeth, a radiograph may be exposed to determine the amount of root development, the relationship of a prematurely erupted tooth to its adjacent teeth, and whether the tooth is a supernumerary tooth or one of the primary teeth.¹⁰ Because of the size, history, and appearance of the lesion, a radiograph might have been indicated in this case, but none was exposed. Recurrence of the lesion would suggest radiographic examination.



Fig 3. Intraoral photograph of patient one month after surgical excision of pyogenic granuloma. The raised area at the surgical site was determined to be a result of normal healing.

Although this case represents an extreme outcome of a natal tooth extraction, previous re-ports have documented that tooth extraction may stimulate development of a pyogenic granuloma.²

Pediatric dentists should make every effort to educate parents and the medical community on the preferred treatment for natal teeth. If extraction of a natal or neonatal tooth is indicated, then it should be performed by a dentist to avoid unnecessary trauma to the area.

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