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CASE REPORT

Recurrent intraoral pyogenic granuloma with satellitosis treated with corticosteroids

E Parisi[1], PH Glick[2], M Glick[1]

[1]*Department of Diagnostic Sciences, New Jersey Dental School, University of Medicine and Dentistry of New Jersey, Newark, NJ, USA;* [2]*Craniofacial Reconstruction Center, Children's Hospital of Philadelphia, Philadelphia, PA, USA*

The development of recurrent pyogenic granulomas as multiple satellite lesions has not been reported in the oral cavity. This report describes an unusual case of intraoral pyogenic granuloma recurring multiple times after surgical excisions with the formation of satellite lesions. Due to failure of surgical management, an alternative approach was taken. We illustrate how the lesions were successfully treated with a series of intralesional corticosteroid injections.
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Introduction

Pyogenic granuloma is typically a solitary, benign vascular growth. The clinical presentation is generally of a dull red, sessile or pedunculated, smooth-surfaced nodule that may easily bleed, crust, or ulcerate. Lesions may also grow rapidly.

Lesions may be found inside the oral cavity or extra-orally. The most common site intra-orally is the gingiva, but lesions have been described on the lips, tongue, buccal mucosa and palate. Extra-oral sites commonly involve the skin of the face neck or upper and lower extremities, and the mucous membranes of the nose and eyelids.

In a minority of cases, minor trauma and/or chronic irritation are cited in the etiopathogenesis of pyogenic granulomas (MacLeod and Soames, 1987). This lesion may also appear during pregnancy. However, in most cases, the cause is elusive. As infective organisms such as peliosis hepatis (*Bartonella henselaea*), bacillary angiomatosis (*B. henselae* and *B. quintana*), Kaposi's sarcoma and angiolymphoid hyperplasia (human herpes virus type 8) have been identified in other vascular tumors, some authors have postulated that infective agents may play a part in recurrent pyogenic granuloma (Janier, 1999). However, there is no evidence confirming the presence of infectious organisms in larger groups of patients with pyogenic granulomas.

The development of multiple pyogenic granulomas, known as satellitosis, may occur as a complication of tumor removal or trauma (Zaynoun *et al*, 1974). This unusual phenomenon may complicate the diagnosis and management. Satellitosis of the skin has been reported to develop around the site of a recently treated pyogenic granuloma within weeks or months (Taira *et al*, 1992). The pathogenesis of this phenomenon is unclear. One author suggested that exogenous factors such as trauma and endogenous substances released from tumor cells may promote the development of these granulomas (Strohal *et al*, 1991). We describe a case of a intra-oral pyogenic granuloma with recurrent nodules in the site of previously treated healing wound and adjacent gingival tissue resembling satellitosis on the skin.

Case report

A 33-year-old female presented to the Oral Medicine clinic with localized gingival swelling of 3-year duration. The lesion was nodular and originally appeared on the facial gingiva between teeth number 6 and 7, bled easily on manipulation, but was not painful. She had endured eight excisional biopsies and one cauterization procedure. Within 2 weeks following each surgical excision and curettage, the patient reported that the lesion would recur, returning to the original size. A second lesion with similar clinical features appeared on the adjacent papilla approximately 2 weeks after the final surgical procedure.

Her medical history included endometriosis and intermittent infertility treatments from 2001 to the present. Her medications included Clomid® (*clomiphene citrate*; Aventis Pharmaceuticals, Bridgewater, NJ, USA) and prenatal vitamins. The review of systems was non-contributory.

Correspondence: Ernesta Parisi, Department of Diagnostic Sciences, University of Medicine and Dentistry, New Jersey Dental School, 110 Bergen Street, D-860, Newark, NJ 07103, USA. Tel: +1 973 972 7211, Fax: +1 973 972 3164, E-mail: parisier@umdnj.edu
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The extra-oral examination was essentially negative. Intra-oral examination revealed a deformity of the gingival papilla between teeth number 6 and 7 with well-defined erythema of the gingival margin that was 0.3 mm in width (Figure 1). There was a 0.3×0.5 cm nodular, erythematous enlargement of the facial papilla between teeth number 7 and 8. The lesion extended interdentally to the palatal papilla as a 0.5×0.5 cm nodular erythematous enlargement with a granular surface (Figure 2). Oral hygiene was well maintained, and no exacerbating factors were identified. The patient had received several deep scaling procedures of the upper right quadrant and was being followed by a periodontist for 3-month recalls. No improvement was noted after each scaling.

The previous biopsy specimens were all signed out as pyogenic granuloma. Each biopsy slide was reviewed and revealed a nodular mass of fibrous connective tissue with dilated capillaries, chronic inflammatory cells and fibroblasts dispersed within the reactive granulation tissue. In the later specimens, bone fragments and foreign material were observed (Figure 3). The diagnosis was revised to pyogenic granuloma with satellitosis due to the eruption of multiple satellite lesions following treatment of the primary lesion.

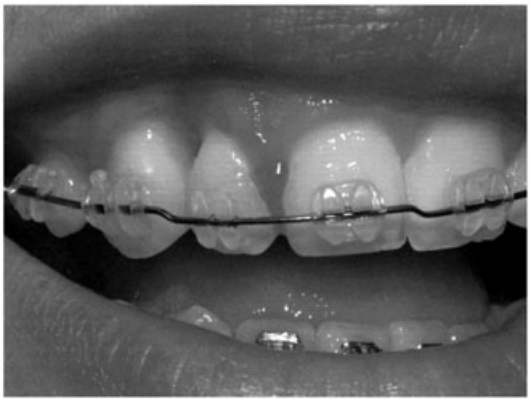

Figure 1 *Prior to treatment* - Facial view of the ninth recurrence of this lesion, will a prumation of a new lesion affecting the papilles between the right maxillary central and lateral incisors

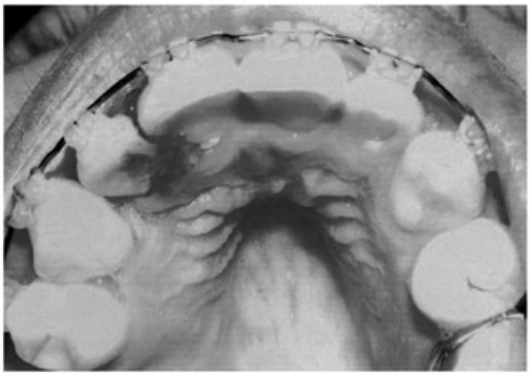

Figure 2 *Prior to treatment* - Palatal view of the lesion which extends to the palatal papilla

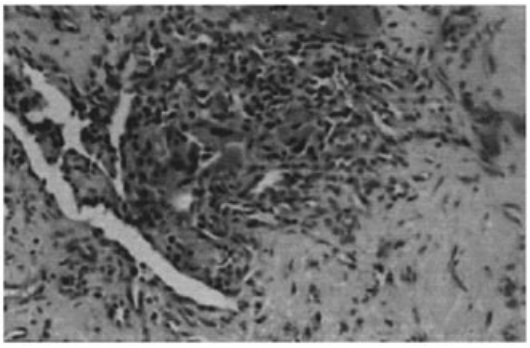

Figure 3 *Photomicrography, 4OX magnification-H&E stain* - The tissue underlying the epithelium demonstrates interstitial edema, chronic inflammatory granulation tissue with increased *vascularity*. A foreign body is present, and could not be identified

The etiology of these lesions remains elusive. As an alternative to another surgical procedure, the lesion was injected with intralesional corticosteroids. A solution was prepared by diluting 0.1 ml of triamcinolone 40 mg ml^{-1} with 0.5 ml of 0.5% bupivicaine. A total 0.1 ml of the mixture was injected into the lesion. The first and second injections were given 1 week apart, and the remaining four injections were given bi-weekly over a period of 9 weeks. At each visit, significant improvement of the lesions was noted. During a follow up visit at 10 weeks, the lesions were 90% resolved, with some residual erythema remaining. However, the lesions were no longer nodular, but appeared slightly raised (Figures 4 and 5).

Discussion

This case is unique because of the highly unusual rate of recurrence of the pyogenic granuloma. Recurrent lesions could be a result of incomplete excision, however it is unlikely the case in this situation given that the patient had eight surgical procedures performed at the site. Furthermore, this is the first case of intra-oral pyogenic granuloma reported with satellitosis.

Recurrent pyogenic granuloma with satellitosis is a rare phenomenon that has been reported in the literature (Warner and Wilson, 1968). Documented cases describe this occurrence on the skin, typically near a

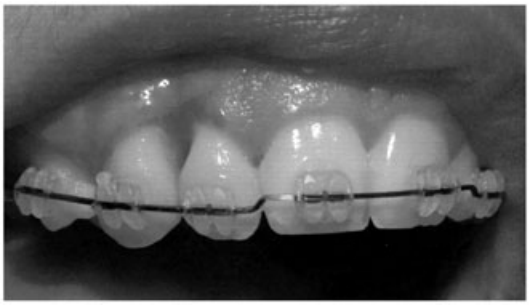

Figure 4 *At 10 week follow up* - Both gingival and palatal lesions have regressed significantly in response to treatment with corticosteriods

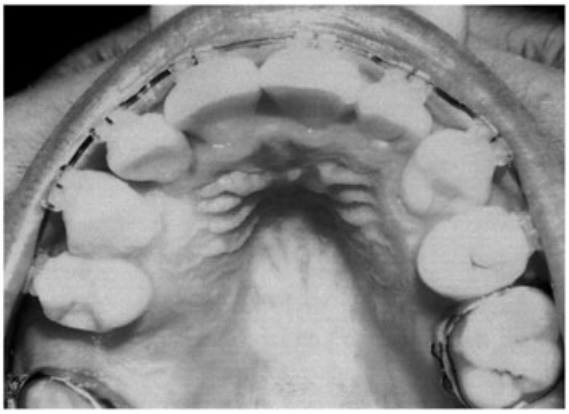

Figure 5 *At 10 week Follow Up* - Both gingival and palatal lesions have regressed significantly in response to treatment with corticosteriods

primary scar, where it appears around a manipulated pyogenic granuloma (Taira *et al*, 1992). Satellitosis tends to be asymptomatic and lesions are characterized as being similar to the original lesion. The histological picture of satellitosis is identical to the primary lesion. The pathogenesis of satellitosis remains unclear, however there may be a relationship to an angiogenic factor elaborated by the primary lesion (Amerigo *et al*, 1983).

Pyogenic granulomas are treated with various methods, most commonly by excision. Other possible treatment options include curettage, cryotherapy, chemical and electric cauterization, and the use of lasers. Success with sclerotherapy using ethanolamine oleate has also been reported in treating pyogenic granulomas of the skin (Matsumoto *et al*, 2001).

There have been no reported cases of treating pyogenic granulomas with intralesional corticosteroids. We believe the lesions responded to the anti-inflammatory and vasoconstrictive actions of the corticosteroids, and may have prevented or suppressed the release of angiogenic factors.

To minimize the risk of misdiagnosis, a biopsy should be performed to confirm the diagnosis. Pyogenic granuloma may be confused with various benign and malignant conditions. Intralesional steroid injections have been used to treat many oral mucosal diseases, specifically vesiculobullous lesions. It is important to carefully inject the appropriate amount of steroid to prevent tissue necrosis. With proper indications and careful injection, our method may become an alternative treatment for pyogenic granuloma, particularly for highly recurrent lesions.

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