

Recurrent Gigantic Pyogenic Granuloma Disturbing Speech and Mastication: A Case Report and Literature Review

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Abstract

A case of gigantic pyogenic granuloma with three recurrences in the lower anterior gingiva is presented. Surgical wide excision of the lesion is the treatment of choice. The tumour must be excised down to the periosteum and the irritants around it removed to avoid recurrence. A contributing factor to the gigantic lesion is hormonal changes during pregnancy. Long-term review for 18 months after the third surgery showed no evidence of recurrence at the surgical site.

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Introduction

Pyogenic granulomas are common benign fibrovascular growths of the oral cavity that are non-neoplastic in nature.¹ They may also present as skin lesions.² Originally, they were thought to be caused by pyogenic organisms but are now believed to be due to an exuberant tissue response to local irritation or trauma and hormonal changes.^{3,4} Females are found to be more affected than males by a ratio of 2:1.¹ In the oral cavity, the most common site of this lesion is the gingivae and the least common site is the alveolar mucosa of edentulous areas.⁵ Studies on the gingival sites by Angelopoulos⁶ indicated that the labial maxillary gingiva was involved more frequently (25%) than other areas such as the lower anterior lingual gingiva (3.95%).

Clinically, the pyogenic granuloma presents as a painless, individual smooth or lobulated mass that is pedunculated, although some lesions are sessile. The surface is characteristically ulcerated and has a tendency to haemorrhage. Its colour ranges from pink to red to purple, depending on the age of the lesion. Longer standing lesion may take on a more fibrous appearance and resembles a fibro-epithelial polyp.^{1,7} The pyogenic granuloma also varies in size from a small growth of a few millimetres to a large, giant or massive lesion that may measure several centimetres in diameter.^{8,9} The increased growth to a large or gigantic lesion will eventually cause difficulty in speech and mastication.

Pregnancy tumour is a well-recognised variant of

pyogenic granuloma which occurs as a result of hormonal changes during pregnancy; and normally regresses spontaneously after parturition.¹⁰ Surgery is usually deferred until after childbirth and only carried out if regression is incomplete. In cases where it is excised during pregnancy, recurrence is high.⁷ It has been reported that intraoral lesions have a recurrence rate of 16% after treatment by superficial excision.⁷ Multiple recurrences have also been noted in rare instances.¹² A case of gigantic pyogenic granuloma with three recurrences in the lower anterior gingiva is described below.

Case Report

A fit 27-year-old Malay lady was referred to the Department of Oral and Maxillofacial Surgery by a private dental practitioner for the management of a large soft tissue swelling in the lower anterior region of three week's duration. It initially started as a small, painless lump which gradually increased in size, but eventually interfered her speech and mastication. There was bleeding during mastication. Clinically, the swelling presented as a spherical pedunculated lesion. It measured at 3.0 x 3.0 x 2.0 cm in size and bled easily during palpation and probing. The lower incisors were proclined due to the mass but were not mobile. The patient's oral hygiene was poor with generalised calculus found around all her teeth. Radiographic examination indicated that this was not a bony lesion. The lesion was excised under local anaesthesia and sent for histopathological examination. The diagnosis was consistent with

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pyogenic granuloma. The patient was referred to the periodontist for prophylaxis and scaling but did not keep her appointment.

Four months later, the patient was referred back by a private medical practitioner. She had swelling at the previous site of complaint. This lesion was smaller than the previous one. It measured at 2.0 x 1.5 x 1.0 cm in size. Generalised calculus and inflammation were present especially on the labial and lingual of the lower incisors. This was a recurrence. It was surgically excised using carbon dioxide (CO₂) laser and the tissue sent for pathological examination. The histopathology report confirmed the diagnosis of a recurrent pyogenic granuloma. The patient was again advised to come for prophylaxis but failed to keep her appointment.

After thirteen months, the patient came back to the department for treatment. The lesion had recurred. She was eight months pregnant on this occasion. Clinically the lesion measured at 6.0 x 5.0 x 3.0 cm causing difficulty in closing her mouth (Figs. 1a & 1b). The upper anterior incisors were biting onto the large lesion leaving their teeth marks (Fig. 2). The lesion also interfered with her speech and mastication. The lower anterior teeth were more proclined and the incisors were mobile due to loss of bony support. An incisional biopsy indicated a recurrent pyogenic granuloma and she was advised to have the tumour removed surgically after childbirth.

Two months after her delivery, she was referred by a medical officer to our department for management of this lesion which was thought to be a carcinoma of the tongue. There was no sign of regression of this tumour after childbirth. The recurrent lesion was eventually widely excised and the mobile incisor teeth extracted; this time under general anaesthesia. The histologic features of the lesion were consistent with a pyogenic granuloma with areas showing features of a fibrous organisation with no evidence of malignancy. No recurrence was noted during the one and a half years periodic reviews following the third surgery (Figs. 3a & 3b).

Discussion

Pyogenic granulomas were first described by Poncet and Dor in 1879 who regarded the lesions as examples of the human version of *Botryomycosis* of horses, a fungal infection.¹³ In the early nineteenth century, Cocker and Hartzell coined the term "granuloma pyogenicum" to describe these lesions, believing that they were localized bacterial infections.^{14,15} Bacterial stains had demonstrated the presence of Gram-positive and Gram-negative rods in the pyogenic granuloma. These organisms were more common in the ulcerated than in the non-ulcerated lesion and more common near the surface than in the deeper aspects. They were believed to be contaminants from the oral flora.¹⁶

Today, the aetiology of pyogenic granulomas remains

unknown. Of the many possibilities include infection, trauma, localized irritation and hormonal influences have been frequently suggested. A viral aetiology of a C-type virus has been suggested but not proven clinically.¹⁷ Some investigators hypothesized that it was a hyperproliferative vascular response to infective organisms of low virulence. They agreed that these lesions result from recurrent mild irritation to which the tissue reacted by overzealous vascular proliferation.¹ It had been described that even mild trauma such as toothbrushing or local irritation from bacterial plaque or calculus might be the initiating factor. This traumatic incident provided a pathway for the invasion of nonspecific types of microorganism, which resulted in a proliferative inflammatory response.⁴

Pyogenic granulomas can develop at any age but is commonly seen between the ages of 20 and 40 years old.^{3,6} Most studies also demonstrate a definite female predilection possibly due to the vascular effects of female hormones.^{1,18-20} It has been noted that pyogenic granulomas of the gingiva frequently develop in pregnant women, leading to the use of terms like "pregnancy tumour" or "granuloma gravidarum" to describe these lesions.^{21,22} Pyogenic granulomas during pregnancy may begin to develop during the first trimester, and their incidence increases up through the seventh month of pregnancy. Studies have suggested that the gradual rise in development of these lesions throughout pregnancy may be related to the increasing levels of oestrogen and progesterone as the pregnancy progresses.¹² Their occurrence is thought to be due to enhanced tissue response through the action of progesterone to local irritants.²³ In the reported cases, the recurrence of the lesion to a gigantic size might be mainly due to hormonal changes during pregnancy besides the presence of local irritants.

Oral pyogenic granulomas show a striking predilection for the gingiva, which accounts for 75% of all cases. Lips, tongue and buccal mucosa are shown to be the next most common sites, followed by the palate and buccal or labial sulci.⁷ They are much more common on the labial aspect of the gingiva than the lingual aspect but some of them may extend between the teeth and involve both the facial and lingual gingiva.¹² Gingival irritation and inflammation that result from poor oral hygiene may be a precipitating factor of pyogenic granuloma in many patients. Before the development of the lesion, a history of trauma is also common, especially for extragingival pyogenic granulomas.¹ The patient reported in this paper could not recall any history of trauma but clinical examination revealed that she had rather poor oral hygiene. Therefore the most probable cause of her persistent pyogenic granuloma was localised irritants, namely plaque and calculus.

Tissue specimens collected should be submitted for



Fig. 1a. Gigantic pyogenic granuloma in the lower anterior gingiva.

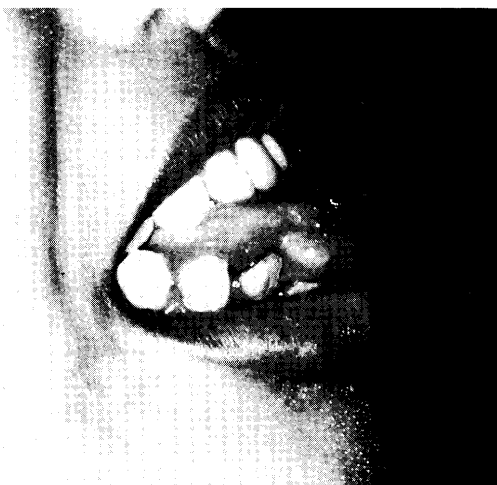


Fig. 1b. Lesion causing difficulty in closing the mouth.

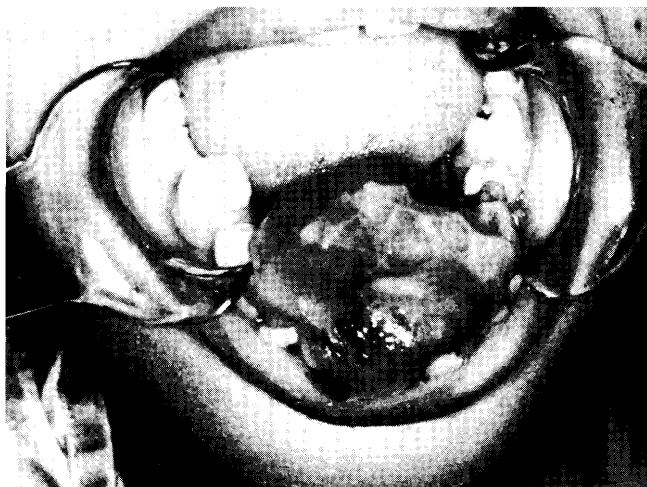


Fig. 2. Upper anterior teeth marks seen on the pyogenic granuloma.

microscopic examination to rule out other more serious diagnoses such as squamous cell carcinoma or verrucous carcinoma.^{1,7} Histologically, pyogenic granulomas characteristically exhibit a lobular arrangement of cap-



Fig. 3a. Postoperatively, the patient was able to close her mouth.

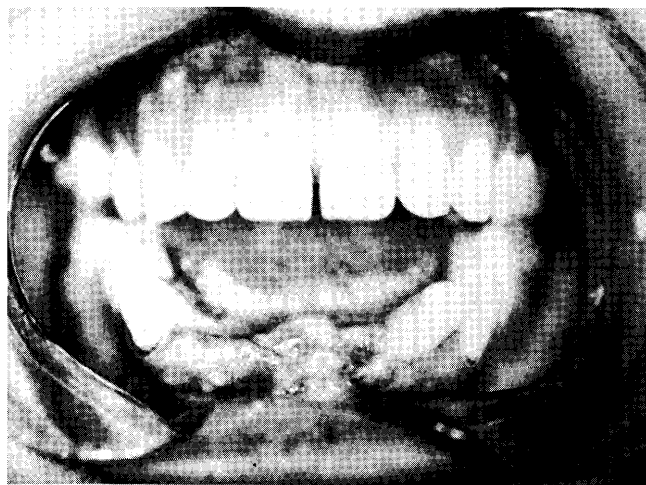


Fig. 3b. Long-term follow up showed no recurrence.

illaries within the deep portion of the lesion. Based on these features, Mills et al⁵ suggested that pyogenic granulomas should be more appropriately called “lobular capillary hemangiomas”. The microscopic features of the large recurrent lesion presented here showed fibrous connective tissue containing varying degree of inflammatory cell infiltrate. Bands of collagen fibres traversed this infiltrate. Parts of the connective tissue with numerous dilated capillaries were covered by hy-

perplastic epithelium while others were ulcerated. These appearances were consistent with that of a pyogenic granuloma.

Once the diagnosis is established, therapeutic options include observation if the lesions are stable and cause few symptoms.¹¹ However, the treatment of choice for persistent large pyogenic granulomas consists of conservative surgical excision down to periosteum which usually is curative.^{1,12} Wide surgical soft tissue excision around the lesion is recommended to prevent recurrence. The vascular constitution of pyogenic granulomas should be borne in mind when excising these lesions, as the larger ones may have many feeding vessels.²⁴ One case report described a loss of 2 litres of blood upon excision of an unusually large pyogenic granuloma which measured at 5 x 4 x 10 cm.⁹ Two cases of recurrent pyogenic granulomas needing en-bloc resection have been presented in the literature.²⁵ These are rare instances and excessive surgery to remove these lesions is not advocated.

The successful removal of a giant-size pyogenic granuloma using laser has been reported.⁸ However, in the present case, there was a recurrence even after carbon dioxide (CO₂) laser was used to remove the first recurrence. This happened most probably because of failure in removing completely the local irritants. For gingival lesions, the adjacent teeth should be thoroughly scaled to remove any local irritants such as dental plaque and calculus. It has been suggested that recurrence is rare even in incompletely excised cases.¹ The advantage of using laser is that no excessive bleeding was noted while removing the gigantic lesion.

Treatment in terms of surgery is normally deferred during pregnancy unless significant functional or aesthetic problem developed.¹⁰ Pregnancy granulomas have been known to regress or entirely disappear several weeks postpartum because the hormonal balances return to normal.² Often, thorough scaling of teeth and meticulous oral hygiene may prevent or aid in resolving the lesion.²⁶ Therefore, during the treatment of these lesions all predisposing factors such as chronic irritation, minor trauma, infection or hormonal influences need to be removed in order to prevent any recurrences.²⁷

Conclusion

It has been suggested that the recurrence rate of a pyogenic granuloma removed during pregnancy is higher. In the present case, surgery was done postpartum. Long-term review for more than 18 months showed no further recurrence at the surgical site. This is due to proper excision of pyogenic granuloma down to the periosteum, removal of irritants coupled with the fact that hormonal changes had returned back to normal. Good results can therefore be achieved with surgical treat-

ment of large or gigantic pyogenic granulomas that affect speech and mastication.

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