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Treatment of recurrent pyogenic granuloma: Case report with 1.5-year follow-up

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Abstract

In young adult females, oral pyogenic granuloma predominates in the second decade of life. The gingiva is the most typical site of involvement. In this case study, a 16-year-old female patient was described who had a painless intraoral growth involving the soft tissue of the lower front teeth that bled profusely when being brushed and interfered with her ability to eat. The growth was surgically removed while under local anaesthesia. The patient's case was monitored for 1.5 years to look for any recurrence in this or other regions and to ensure that his oral health had stabilized.

Keywords: Pyogenic granuloma, gingiva, differential diagnosis, painless, smooth, recurrence

Introduction

Pyogenic granuloma (PG) is a non-specific, non-neoplastic reactive inflammatory hyperplasia of connective tissue that appears in the mouth in response to hormonal changes and local aggravating factors like plaque, calculus, broken teeth, rough dental restorations, foreign objects, or any minor trauma to the gingival tissue.

Hartzell coined the phrase "pyogenic granuloma" or "granuloma pyogenicum" in 1904 [1]. Contrary to what its name implies, which is incorrect, it is not linked with pus, and histologically it resembles an angiomatous lesion rather than a granulomatous lesion [2].

In young adult females, oral pyogenic granuloma predominates in the second decade of life [3]. The gingiva is the most typical site of involvement. Poor dental hygiene is the most frequent cause of this condition, with tartar deposits or other foreign materials seen in the associated gingival fissure in 75% of cases [4]. Although it is uncommon, pyrogenic granuloma can also affect the lips, mucosa, tongue, and other areas [5, 6].

Clinically, PG manifests as an exophytic growth that is uniform, lobulated, and has a sessile or pedunculated base. Usually painless and asymptomatic, the lesion grows slowly, though in exceptional circumstances it can expand quickly. The lesion might be pink, red, or purple in hue, with more recent, vascular lesions showing deeper visible pigmentation. Lesions get thicker, denser, and pinker in colour as they mature, and their vascularity declines.

Although PG is well reported in the literature, published cases typically follow the general presentations mentioned above, with atypical signs being infrequently described.

This case report describes an unusual case of a 16-year-old female with an abnormally large pyogenic granuloma extending from the labial to the palatal side of the lower anterior gingiva, which was associated with occlusal trauma and alveolar bone loss and was treated by surgical excision. This case report adds to evidence of the clinical variation in PG.

Case description

A 16-year-old female patient who was otherwise healthy reported having a painless intraoral growth involving the soft tissue of the lower front teeth that caused interference with chewing and frequent bleeding when being brushed. About six months ago, the growth began, and it has now reached its current size. Her medical background wasn't important.

Clinical evaluation revealed no extraoral alterations. A single, soft, smooth, erythematous pedunculated growth of approximately 11 mm by 10 mm was discovered during an intraoral examination in the buccal aspect of the gingiva in connection to the lower anterior (31, 41)

region. Underneath the development, there were significant calculus deposits [Figure 1]. It was accompanied with teeth that were immobile. The patient also mentioned a change in the growth's position, i.e., that it grew larger from the face to the palatal side interdentally and widened the gap between the two mandibular central incisors. With the aid of a UNC-15 probe, a periodontal pocket measuring around 10 mm was discovered. A relative intraoral periapical radiograph [Figure 2] of 31, 41 showed interdental alveolar bone loss.

The growth was surgically removed while under local anaesthesia. A full-thickness flap was raised, granulation tissue was debrided, root planning was done, and the gingiva was contoured to remove the local factors and lesion remnants [Figure 3]. Haemostasis was attained after the flap was closed using 3-0 black silk horizontal mattress sutures [Figure 5] with respect to 31, 41 and simple interrupted sutures between 32 and 31. The excisional biopsy underwent a histopathologic investigation [Figure 4]. The stratified squamous epithelium and fibrovascular connective tissue were visible in the haematoxylin and eosin-stained sections. The epithelium seemed to be wasting away. A large number of dilated blood vessels, budding capillaries, and inflammatory infiltrates suggestive of pyogenic granuloma were present in the underlying connective tissue [Figure 6].

For a review, the patient was summoned back. The healing went smoothly after the excision. History, clinical, radiological, and histological findings all pointed to a pyogenic granuloma in the patient.

The patient recovered well from the treatment after one month [Figure 7], received the diagnosis, and was advised on the value of upholding strict oral hygiene and routine follow-ups to prevent future bone loss, recurrence, and secondary consequences from periodontal disease.

Every third month, the patient was summoned back for follow-up care and to be checked for potential recurrence. There hasn't been a recurrence in this case after 1.5 years of monitoring [Figure 8].

Discussion

Pyogenic granuloma is an inflammatory hyperplasia that is not cancerous [8]. It happens 2:1 more frequently in females than in males [9]. According to a review study, 22% of young patients develop PG, with frequency peaking in the second decade [9]. Our case illustrates a PG that happened to a male in his early 40s, defying these statistics. These lesions are frequently brought on by local irritations, which can also include plaque, calculus, and the buildup of foreign elements [8]. The patient in this case had a substantial plaque and calculus buildup in addition to generalized periodontal disease, which may have aided in the development of the lesion. Clinically, PG manifests as an amorphous, lobulated, or smooth mass. In the majority of cases, including that of our patient, its extremely vascular nature results in frequent bleeding [10]. The degree of underlying vascularity in connection to the clinical history affects the lesion's colour, which also varies [11].

Due to subsequent ulcerations, the surface may occasionally, as in the case that was recorded [10], be covered by a pseudo-membrane. In PG, radiographic findings are typically lacking [8]. PG can occasionally cause bone deterioration [12]. A male child patient with PG had considerable bone loss in his upper teeth, according to Goodman-Topper *et al.*'s study [13]. Shenoy *et al.* [14] reported another instance of PG involving a cupping defect of the alveolar bone between the primary molar and the first permanent molar in a young girl. Additionally, PG has

been linked to modest bone loss in the upper front region of adult patients, according to several investigations by Singh *et al.* and Saikhedkar *et al.* [15, 16]. Additionally, Angelopoulos came to the conclusion that localized alveolar bone resorption, which results in localized periodontitis, can occasionally be brought on by long-standing gingival pyogenic granulomas [17]. A severe widespread alveolar bone loss, which was particularly advanced bone surrounding the PG, was seen in the current patient. The pattern of bone deterioration in our case may have been brought on by the pressure from the growth of the PG, but it might also have been the local progression of his severe overall periodontal disease, perhaps as a result of irritation or inflammation in the area.

Very infrequent dental visits by our patients made it difficult for us to compare radiographic results over time. His patchy follow-up is another factor that explains why the lesion was so big when it was first evaluated. The three separate stages of a pyogenic granuloma are (i) the cellular phase, (ii) the capillary/vascular phase, and (iii) the involution phase [11]. Peripheral giant cell granuloma, peripheral ossifying fibroma, oral squamous cell carcinoma, metastatic cancer, haemangioma, and granulation tissue hyperplasia are among the usual differential diagnoses depending on the various phases of PG [8, 11, 18, 19]. Histopathologic analysis and biopsy results are used to make a final diagnosis of PG [8].

With varied surface ulceration and intralesional fibrinous exudates, PG exhibits the proliferation of excess granulation tissue under a mixture of atrophic and hyperplastic epithelium [8]. Vascular gaps with proliferating fibroblasts and endothelial cells bordered by endothelium are another significant histopathologic characteristic of PG. Mixed inflammatory cell infiltration is also observed [8].

For gingival pyogenic granuloma, the first line of treatment is surgical removal of the lesion followed by curettage of the underlying tissue [3]. Cryotherapy, electrocautery, sodium tetradecyl sulphate and monoethanolamine oleate ligation sclerotherapy, pure ethyl alcohol injection dye, neodymium-doped yttrium aluminium garnet (Nd: YAG) and carbon dioxide (CO₂) laser photocoagulation, and intralesional corticosteroids are some of the additional treatment options [20, 21].

Less chance of infection, less bleeding, accurate cutting with good judgment of cutting depth, reduced need for antibiotics and analgesics post-operatively, no need for suturing, reduced pain during and after the procedure, faster wound healing, and less chance of recurrence and scarring are some advantages of laser surgery over traditional options [21]. Despite these benefits, lasers are not widely employed because of their high initial and ongoing expenses, which make them inefficient. Furthermore, for dentists or dental experts using lasers, technical expertise and skill are crucial [21].

With cryosurgery, aberrant tissue is specifically and locally destroyed by using cold substances like liquid nitrogen spray and gases like nitrous oxide, carbon dioxide, and freons [22]. Cryotherapy is more localized in action, causes less stress, discomfort, and suffering, lessens bleeding and scarring, lowers the risk of infection, retains the mineralized component of bone, and is simple to administer [22]. It is most helpful for people for whom surgery is not an option because of their age or complex medical history. The potential for

excessive swelling and lack of accuracy in freezing depth and area are two drawbacks of cold therapy. Advanced operator expertise and experience are also needed for cryotherapy [22].

Given the patient's symptoms and in accordance with professional recommendations, we chose to treat the patient definitely and right away using excision and curettage. This patient was advised to have any foreign bodies, calculus, poor restorations, or other local contributory factors removed, but he hasn't yet done so [3]. Other therapeutic therapies include cryosurgery, lasers, and intralesional corticosteroids [2]. In this instance, the lesion was successfully removed in accordance with recommendations and in spite of its magnitude, and the underlying bone was curetted in an effort to reduce the likelihood of recurrence. The patient was highly advised to seek additional dental treatment due to the advanced periodontal disease and significant plaque and calculus buildup, both for the patient's overall health and to manage these contributing causes.

Pyogenic granuloma recurrence is 16% more likely to occur on the gingiva and is caused by either incomplete removal, failure to address the underlying causes, or reinjury to the afflicted gingival area [2, 9]. This patient will be observed as closely as possible throughout and after receiving complete dental care to keep an eye out for any recurrence in this or other areas and to ensure that his oral health has stabilized.



Fig 1: Pre-operative image showing pedunculated growth in relation to 31, 41.



Fig 2: Intraoral peri apical radiograph.



Fig 3: intraoperative image showing just after excision.

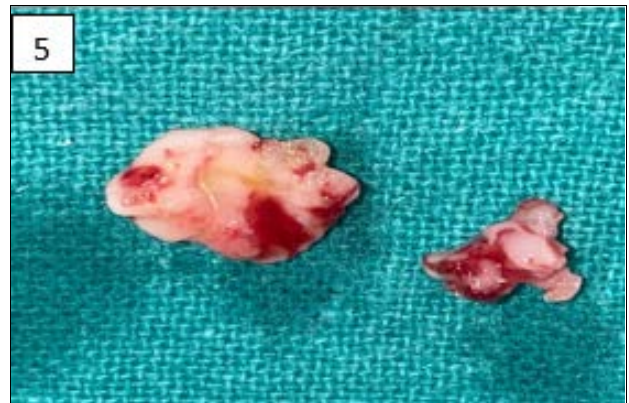


Fig 4: Image showing the excised mass.



Fig 5: Post a suturing image.

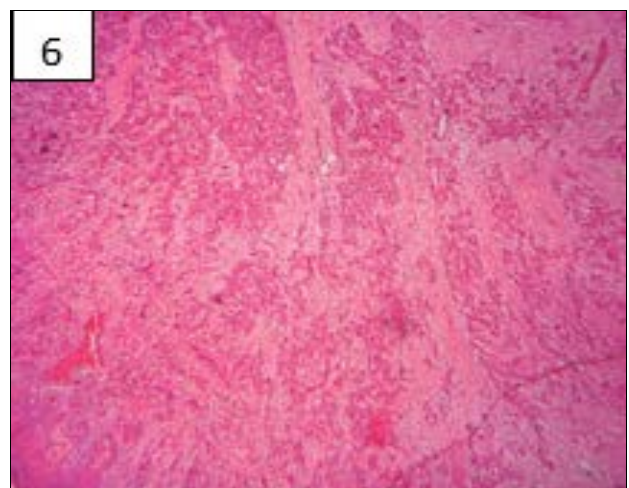


Fig 6: Histopathological features.



Fig 7: Image showing healed tissue at follow-up of 1 month.



Fig 8: Image showing healed tissue at follow-up of 1.5 years.

Conclusion

A typical benign inflammatory lesion seen in the mouth cavity is called a pyrogenic granuloma. Most often, it is connected to annoying local circumstances. Due to its structural characteristics and ease of bleeding, it occasionally might result in serious consequences. It is crucial to identify this lesion at an early stage in order to avoid unintentional and severe therapy. You should also act quickly to stop a recurrence and rule out other potential causes of localized oedema. With curettage, gingival overgrowth is completely removed, lowering the likelihood of recurrence. Additionally necessary are careful observation and proper dental hygiene routines. This case serves as an example of how PG can become large and appear with significant bone loss around the teeth, as well as how these lesions can obstruct normal function.

Conflict of Interest

Not available

Financial Support

Not available

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