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CASE REPORT

Should We Call This Oral Granuloma "Telangiectatic" Instead of "Pyogenic"? A Case Report

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Abstract

Telangiectatic granuloma, traditionally known as pyogenic granuloma, is a benign vascular tumor that appears in the oral mucosa in response to irritant, inflammatory, or traumatic stimuli. This case has a strong academic focus and will be of interest to dental surgeons. Clinicians should be alert to any gingival overgrowth. We present the case of a 79-year-old patient with a profuse lesion on a gingival papilla. Complete excision was performed followed by a confirmatory pathology study. We review the terminology, semiology, etiopathogenesis, and incidence of the lesion. Soft tissue enlargements of the oral cavity often present a major challenge because they may be produced by a diverse group of pathological processes. A tumor-like growth may be the result of a variation in normal anatomic structures, inflammation, cysts, development anomalies, or a neoplasm. We propose a differential diagnosis with other entities based on histopathology, and stress the importance of close follow-up from the time of diagnosis until surgical treatment and resolution. This case report does not query the validity of pyogenic expression but somehow, it might be misleading. We conclude that, in our case, the term "telangiectatic" is more appropriate than "pyogenic."

Keywords Gingival granuloma · Pyogenic Granuloma · Epulis · Hemangioma · Fibroma · Case Report

Introduction

Telangiectatic granuloma (TG), also called pyogenic granuloma, is a benign, predominantly vascular inflammatory lesion that appears on the skin and in the oral mucosa, with a high incidence in the vestibular gingiva, lips, alveolar mucosa, and tongue [1–4]. Its prevalence rate is between 6 and 10%, and it is more frequent in women [3]. "Telangiectasia" is a more appropriate term, given its literal meaning in Greek of "distant dilated capillary vessel." The Latin term "pyogenic" is considered a misnomer since it is often erroneously associated with an infectious origin [5, 6]. Many authors attribute the appearance of this granuloma to local causes, such as the origin of a foreign body tissue reaction. Related processes also include pulp or periodontal inflammation, trauma, or a systemic hormonal condition at puberty and above all during pregnancy known as granuloma gravidarum or pregnancy tumor [2, 7, 8]. Furthermore, this systemic influence may modify plaque-induced gingivitis and facilitate the presentation of TG [8]. Preventive measures focus on avoiding possible trauma related to intake and facilitating oral hygiene in all anatomical spaces, with

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the aim of maintaining satisfactory dental and periodontal health.

The International Society for the Study of Vascular Anomalies classifies TG as an acquired vascular tumor with skin involvement [9] (Table 1). However, at the World Workshop 2017 held jointly by the European Federation of Periodontology and the American Academy of Periodontology, TG was cataloged inside the group of gingival reactive processes [10].

Case Presentation

A 79-year-old patient was referred for the study of a painless proliferative lesion of 2 months' evolution, which had grown to a diameter of 10 mm, from palatal contour towards interproximal buccal space, in the previous 10 days. On inspection, the lesion was seen to be located in the upper jaw between teeth 11 and 12, with an irregular morphology that included the entire gingival papilla.

The patient's history revealed high blood pressure and angina pectoris over the last 10 years. He was undergoing pharmacological treatment with: antihypertensives (bisoprolol, irbesartan), an antiarrhythmic (flecainide), a cholesterol synthesis inhibitor (simvastatin), and an anticoagulant (acenocoumarol). Blood glucose levels were within normal limits. Oral examination revealed abundant bacterial plaque due to sporadic brushing. The patient did not recall any trauma or food impaction in recent months in the area affected by the lesion.

The tumor was profuse but firm and affected the interdental papilla located between the right central and lateral maxillary incisors. It encompassed both the vestibular and palatal sides, partially hiding the crowns of these teeth. The surface was reddish, with slight bleeding on pressure (Fig. 1). The entire mouth was explored and evaluated for diagnosis. No pulp pathology was identified in the teeth adjacent to the lesion, although stage III generalized periodontitis, grade B (2017 World Workshop Classification) [11], and attrition in most occlusal faces due to parafunction were identified (Fig. 1). The patient was instructed in oral hygiene techniques, with special reinforcement in the interdental spaces. Periodontal prophylaxis with scraping and root planing was performed, especially in the area close to the injury. Topical treatment with 0.12% chlorhexidine gel was prescribed for 1 week. INR coagulation values were within the expected limits for decoagulation and withdrawal of acenocoumarol was not required prior to surgery.

Eight days after scraping and root planing, the affected tissue was removed under local anesthesia (articaine 4% with epinephrine 1:100.000) using a conventional surgical blade and an internal bevel technique. No alveolar bone involvement was observed. Thorough curettage of the lesion base was formed using a Columbia Universal 13–14 curette, saline irrigation and discontinuous 4/0 silk suture with U-stitches (Fig. 2). The use of gauze soaked with tranexamic acid was indicated in the first few hours immediately after

Table 1 Summary of the classification of vascular anomalies, according to *International Society for the Study of Vascular Anomalies (ISSVA) 1997*

Vascular tumor	Vascular malformation
Infantile hemangiomas	Capillary malformation
Congenital hemangiomas	Venous malformation
Tufted angioma (with or without Kasabach-Merrit syndrome)	Lymphatic malformation
Kaposiform hemangioendothelioma	Arterial malformation
Spindle cell hemangioendothelioma	Arteriovenous fistula
Rare hemangioendotheliomas	Arteriovenous malformation
Dermatologic acquired vascular tumors (Pyogenic granuloma)	Combined malformation

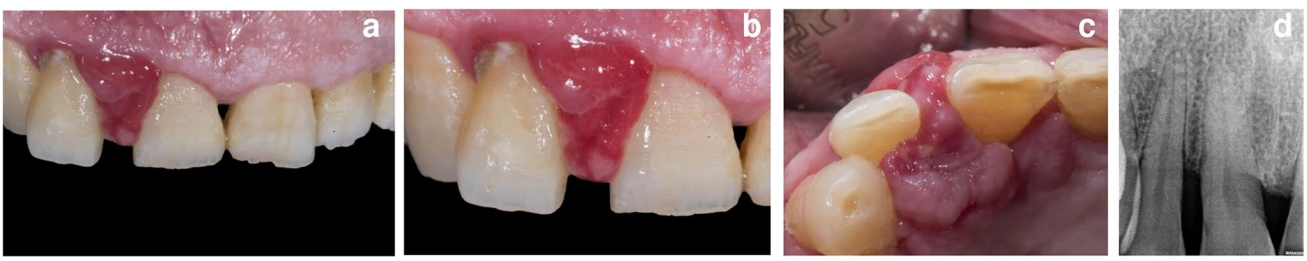

Fig. 1 Clinical images of the first visit: **a** to **c** The volume and coloration of the TG are observed in both oral and palatal views; **d** Periapical X-ray image of incisors adjacent to the lesion, note the reduction of the interdental bone level

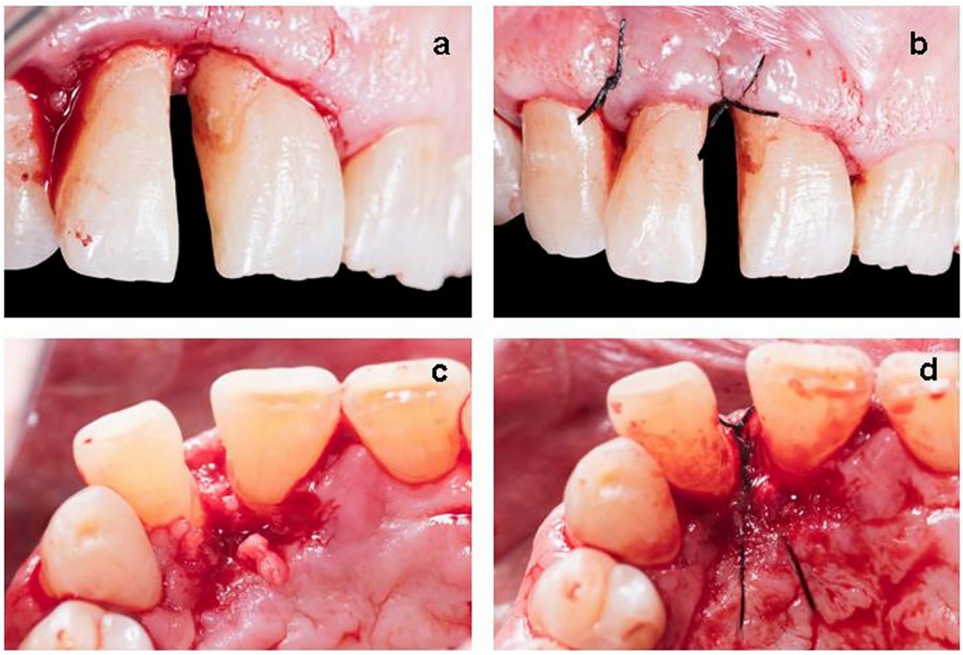

Fig. 2 Intraoperative images during TG excision: **a** to **d** Images after surgical excision and sutured area in both oral and palatal views

surgery, as well as antibiotic treatment for 7 days (amoxicillin/clavulanic acid 875/125 mg/8 h). The patient was instructed to carry out meticulous oral hygiene with the use of a surgical brush and to apply chlorhexidine gel every 12 h.

All the tissue fragments were taken and immersed in a bottle containing 10% formaldehyde for pathology study. The diagnosis of the excisional biopsy was "telangiectatic granuloma" (Fig. 3). Control visits were scheduled for 1 month, 3 months, and 1 year. The clinical evolution of periodontal tissues was favorable, with an improvement in the gingival architecture of the region and no recurrence (Fig. 4).

Discussion

According to the WHO classification of 2015, telangiectatic granuloma is a vascular entity that is included in the gingival disorders and edentulous alveolar ridges subgroup. Similar entities such as fibrous and giant cell epulis, flabby ridges, and peripheral giant cell granuloma [3] also appear in this group.

The prevalence of TG is more than twice as high in women as in men: ratio 2.38:1, perhaps due to the influence of hormonally induced vascular changes [1–3].

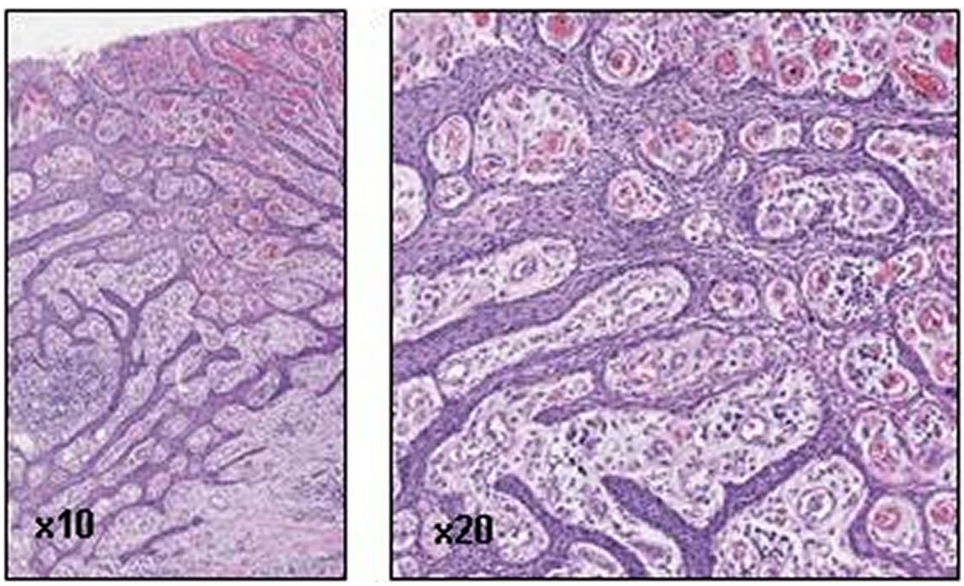

Fig. 3 Histopathology image obtained from the sections after immersion in paraffin. Acanthotic epithelium showing pseudoepitheliomatous hyperplasia. The connective tissue shows a mixed inflammatory infiltrate between the fiber bundles around a profuse vascular network. Red blood cells are observed inside the dilated vessels. (H&E, at 10 and 20 increases)

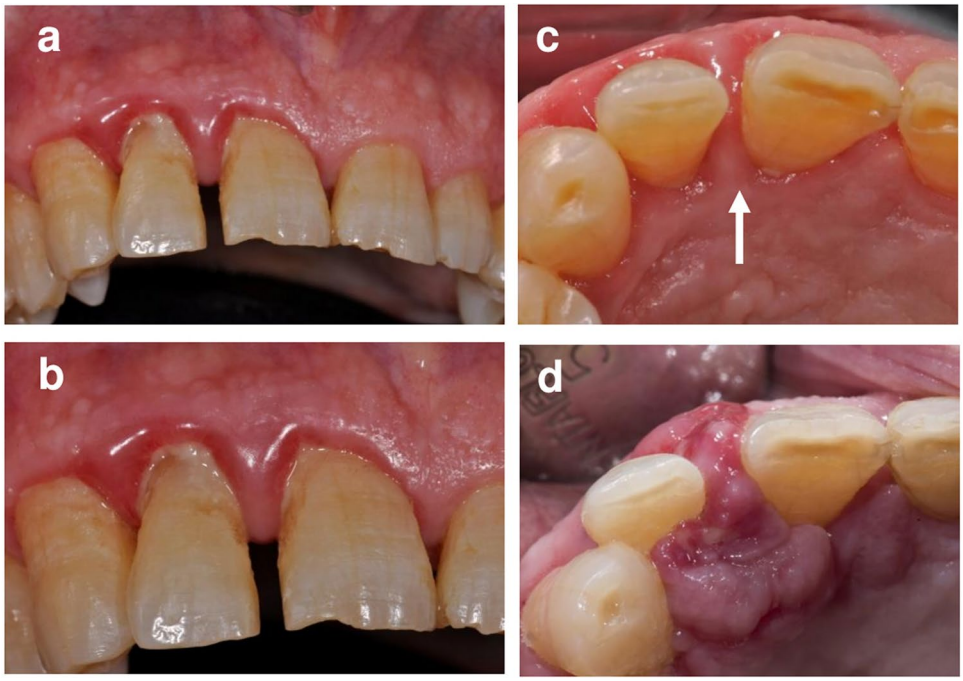

Fig. 4 Clinical images 12 months after surgery: **a** to **d** A normal size papilla is seen from all angles, though inflamed by the presence of bacterial plaque. Note the evident decrease in diastema 1.2–1.1 and the improved lateral positioning pre and post-surgery

However, divided according to age, TG is more prevalent in male adolescents below 18 years than in females, and in adults, the rate is quite similar [4, 7]. Some authors indicate that the mean age of onset is higher in men: 64 years compared to 45 years in women [3]. Among the most plausible etiopathogenesis are tissue reaction to a foreign body of irritating and/or traumatic origin, the used of certain drugs such as those related to gingival overgrowth, vascular lesions, and alterations in dental eruption [4, 7, 12]. TG may appear due to a process of over-healing or tissue repair in which the tissue healing sequence is intensified.

The inflammatory etiology may originate in the pulp or the gums, in chronic processes or due to the accumulation of biofilm in retentive areas, especially in overflowing margins of iatrogenic restorations and out-of-contour crowns with overextended prosthetic margins. Sometimes, physiological situations associated with hormonal changes such as pregnancy, menstrual cycle, puberty, or oral contraceptive intake in plaque-induced gingivitis may induce it [8]. In our patient, the etiology may have been food or foreign body impaction, such as bristles of interdental brushes in a location with underlying periodontitis and the presence of unnoticed active periodontal pockets [4].

Due to its exophytic appearance, TG is also known generically as epulis [3, 5, 10]. The binding to the underlying tissue can be pedunculated or sessile, as in our case [13].

In our patient, the markedly reddish coloration of the lesion indicated the presence of a profuse vascular network and a notable degree of inflammation. The appearance of the papilla defined it clinically as a severe gingival overgrowth favoring the dysmorphism termed localized papillary nodule [8, 14]. Although the patient had a cardiovascular history, a pharmacological cause seems unlikely because he had not received any drug that induces gingival enlargement and only one papilla was affected (Fig. 1). Although an inflammatory origin was indicated, occlusal trauma cannot be ruled out as a contributing factor [3].

On occasion, the local pressure exerted by the TG can lead to diastemization of the adjacent crowns and even a degree of pathological dental migration. In the case reported here, the diastema before surgery was 4 mm, and on the lateral incisor was also displaced in the vestibular direction. After excision of the lesion, a progressive reduction of the diastema of up to 50% was observed, together with an improved positioning of the lateral incisor; this occurred without reabsorption of the adjacent bone as has been reported in other cases of TG in the literature [2, 15] (Figs. 1 and 4).

Several authors have indicated that evolution after excision and subsequent controls is satisfactory in most cases, despite the possibility of recurrences [6]. TG has a high proliferation rate [9]. Since there is no habitual association with an infection, the current trend is to abandon the traditionally used term "pyogenic" which created some confusion due to its apparent relation to a purulent exudate, and instead to use the term "telangiectatic," which reflects the vascular etiology [2, 6, 16].

The histopathology study indicated a granuloma, which by definition is an inflammatory nodule composed of active macrophages, epithelioid cells, multinucleated giant cells, lymphocytes, and plasma cells [7] in the underlying connective tissue surrounded by collagen fibers and with a

high-density vascular pattern [2, 5]. TG may be predominantly fibrotic [5, 7] or granulomatous [6].

The histopathology analysis presented showed an epithelial acanthosis with hyperplasia and a connective tissue containing mostly vessels in an organized structure, separated by fibrous septa with an inflammatory infiltrate. In most vessels, the endothelial walls were seen to contain red blood cells (Fig. 3) thus reflecting the similarity of TG to capillary lobular hemangioma [7].

Several studies have shown that endothelial cells are able to proliferate under inflammatory stimuli by increased secretion of angiogenetic growth factors such as VEGF and bFGF, in cases of TG and vascular tumors [17]. At this point, female sex hormones may stimulate the secretion of these factors from activated monocytes/macrophages to factors that would also protect from apoptosis, which would thus extend the development of TG [17]. It seems that some lesions may also favor the stimulation and release of angiogenetic factors [4].

The differential diagnosis includes processes such as capillary hemangioma [5], peripheral ossifying fibroma, peripheral giant cell granuloma, oral metastasis, non-Hodgkin lymphoma, bacillary angiomatosis, conventional granuloma, and various manifestations of fibrotic gingival disorders [2–4, 6, 7, 15]. In older patients like ours, neoplastic-type processes must also be ruled out, especially if there is no clear irritative cause. Kaposi's sarcoma and angiosarcoma are entities that do not present a lobular structure surrounded by fibrotic septa, and basal and squamous cell carcinomas differ from TG in the lack of a vascular network [7].

The treatment performed in our case was similar to that described in analogous clinical cases published in the literature, including scraping/curettage of the area with maximum sanitization, surgical removal of the tumor, instructions regarding oral hygiene, and adjustment of the occlusion. Sometimes, a dental splint or bite plate may be indicated to control potential traumatic factors, and/or endo-periodontal pathology treatment [2, 6, 7]. It should be noted that around 16% of gingival granulomas recur and that some tissue may escape removal, especially if meticulous curettage of the excised area is not performed [4] or if there is a lack of control of TG-promoting factors which is frequently associated with the absence of periodontal maintenance.

The surgical excision is usually performed using a conventional gingivectomy, but the electrosurgery or the application of Nd: YAG laser is also an option due to its good coagulation [18]. Other more conservative choices have also been described such as the intratumoral injection of absolute ethanol, due to its dehydrating and thrombotic effect on the vessels with subsequent ischemia in the TG parenchyma [19]. Other techniques such as the sodium tetradecyl sulfate sclerotherapy, cryosurgery, and electrodissection [4] have also been reported. However, surgical treatment with excision of the lesion associated with concomitant intraoperative curettage remains the most reliable and effective approach.

Conclusions

This examination of an atypical oral granuloma draws attention to the terms used to designate this type of injury. Careful management of the lesion along with recommended prophylactic measures is important to minimize the risk of possible recurrences. This case report does not query the validity of pyogenic expression but somehow, it might be misleading. We conclude that, in our case, the term "telangiectatic" is more appropriate than "pyogenic."

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Author Contribution ARR, LBL, JRN, and JMR have made an individual contribution to the writing of the manuscript. ARR and JRN performed the surgical procedure; LBL and JMR carried out conception and design of this case report. ARR, LBL, JRN, and JMR drafted the article and reviewed it critically for important intellectual content.

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Data Availability Data transparency is applied.

Code Availability Not applicable.

Declarations

Ethics Approval Not applicable.

Consent to Participate Consent to participate was obtained from all authors.

Consent for Publication Written informed consent was obtained from the patient.

Conflict of Interest The authors declare no competing interests.

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