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ATYPICAL LOCALIZATION OF PYOGENIC GRANULOMA ON THE UPPER LIP: A CASE REPORT

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ABSTRACT
Pyogenic granuloma is a benign vascular tumor that commonly arises following minor trauma, irritation, or hormonal influences. Although frequently found on the gingiva, hands, or face, localization on the upper lip is considered uncommon. This case report aims to describe the clinical presentation, diagnostic features, and therapeutic outcome of pyogenic granuloma in an unusual location. A 16-year-old girl presented with a two-month history of a red, painless nodule on the upper left lip. The lesion initially appeared as a wound that gradually enlarged and occasionally bled following minor trauma. The patient had been using orthodontic braces for the past four months. Dermatological examination revealed a solitary erythematous papule measuring 0.3 cm with a stalk and crust. Histopathological examination revealed slit-like proliferative blood vessels and inflammatory infiltrates, confirming the diagnosis of pyogenic granuloma. The lesion was treated by shave excision followed by electrocautery. Clinical improvement was observed, with complete resolution of the lesion at the 10-day follow-up. This case underscores the importance of clinical vigilance in recognizing pyogenic granuloma at atypical anatomical sites and demonstrates the effectiveness of shave excision combined with electrocautery as a treatment modality.

Keywords: pyogenic granuloma; upper lip; vascular tumor

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INTRODUCTION

Pyogenic granuloma (PG), also known as lobular capillary hemangioma, is a benign vascular tumor that commonly arises as a reactive proliferation of capillaries in response to local irritation, trauma, or hormonal changes. Although non-neoplastic, the lesion is notable for its rapid growth, friable surface, and tendency to bleed easily. Pyogenic granuloma can occur in individuals of all ages and is frequently observed in the second and third decades of life (Sarwal & Lapumnuaypol, 2024).This vascular lesion is most commonly found on the skin and mucous membranes, particularly in areas prone to trauma such as the gingiva, lips, hands, face, and upper trunk (Kaleeny, J. D., & Janis, J. E., 2024). In pregnant women, it may present as a granuloma gravidarum due to hormonal influences. Less commonly, PG may develop in atypical sites including the upper lip, genitalia, or gastrointestinal tract (Lomeli Martínez et al., 2023). Clinically, PG presents as a solitary, erythematous to violaceous papule or nodule that is often pedunculated and covered with crusts or ulcerations (Ankad et al., 2025). Histologically, PG is characterized by lobular arrangements of capillary-sized vessels with prominent endothelial cells within an edematous stroma and variable inflammatory infiltrate (Sarwal & Lapumnuaypol, 2024).

Treatment options include surgical excision, electrocautery, cryotherapy, laser ablation, or topical agents, depending on the lesion's size, location, and recurrence risk (Preclaro et al., 2024). This case report aims to describe the clinical presentation and histopathological features, and therapeutic response of pyogenic granuloma occurring in an uncommon location—the upper lip—in an adolescent patient, thereby contributing to the literature on atypical PG presentations and their management.

METHOD

This reports presents a descriptive case study of a 16-year-old female diagnosed with pyogenic granuloma of the upper lip. Clinical information was obtained through thorough patient interviews, dermatological examination, and histopathological evaluation. The diagnosis was established based on both clinical and histopathological findings. This report aims to highlight an uncommon anatomical location of a common vascular lesion, thereby enhancing clinical recognition and diagnostic accuracy. Clinical and pathological data were systematically documented to describe the lesion's course and assess the therapeutic response to shave excision followed by electrocautery. An evaluative approach was also applied to assess the clinical significance of the findings, acknowledge the report's limitations, and ensure the reliability of its conclusions

RESULT

Case description, diagnosis, management, and evaluation

A 16-year-old female presented to the Dermatology and Venereology Clinic at Prof. dr. Chairuddin Panusunan Lubis USU Hospital with the chief complaint of a painless reddish lump on the upper left lip that had been present for the past two months. The patient reported that the lesion initially appeared as a wound on the lip, which gradually enlarged over time. The lump had been accidentally bitten once, resulting in bleeding. As the lesion continued to grow and became aesthetically concerning, the patient sought medical consultation at the same clinic. She had been wearing orthodontic braces for the past four months. This was the first occurrence of such a lesion. There was no family history of similar conditions. The patient denied any history of medication use, food allergies, or systemic diseases. She had never taken anticoagulant drugs and had no history of bleeding disorders. There was also no history of wounds healing with keloid formation.On physical examination, the patient appeared well, with a blood pressure of 110/70 mmHg, pulse rate of 88 beats per minute, respiratory rate of 18 breaths per minute, and body temperature of 36.7°C. The patient weighed 46 kg and had a height of 153 cm. Dermatological examination of the upper left lip (labialis superior sinistra) revealed a 0.3 cm erythematous papule with a pedunculated base and crusting. On palpation, the lesion was firm and non-tender (Figure 1).

Figure 1. Clinical presentation showing a 0.3 cm pedunculated erythematous papule with overlying crust on the left upper lip.

The differential diagnoses considered in this patient included pyogenic granuloma, irritation fibroma, and capillary hemangioma. Based on the patient's medical history anddermatological examination, a provisional diagnosis of pyogenic granuloma was made. A histopathological examination was planned to confirm the diagnosis.The patient underwent shave excision followed by electrocautery as the chosen treatment. Prior to the procedure, a detailed explanation was provided regarding the procedure, including its indications, contraindications, and potential side effects. Informed consent was obtained from the patient.

Figure 2. Post-treatment clinical image showing the lesion site after shave excision followed by electrocautery.

After the procedure, the patient was prescribed amoxicillin 500 mg three times daily for seven days, paracetamol 500 mg three times daily as needed for pain, and gentamicin ointment to be applied to the lesion twice daily. The patient was also advised to maintain proper wound hygiene and return for follow-up.Histopathological examination of the excised tissue from the upper left lip revealed an absence of epithelial lining with predominant necrosis. Slit-like, proliferative vascular structures resembling blood vessels were observed, and the stroma showed massive infiltration by mononuclear (MN) and polymorphonuclear (PMN) inflammatory cells. These features are illustrated in Figure 3, which shows areas of necrosis, slit-like vascular channels, and dense inflammatory cell infiltration. The histological findings supported the diagnosis of pyogenic granuloma on the lip. Based on the patient's history, dermatological examination, and histopathological results, the final diagnosis was pyogenic granuloma.

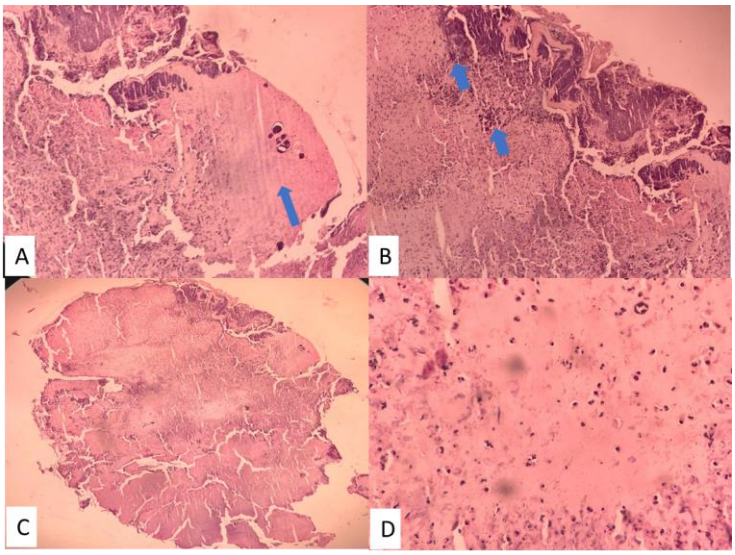

Figure 3. Histopathological examination showing (A) Area of necrosis (blue arrow). (B) Slit-like structures resembling proliferative blood vessels (blue arrow). (C) Overview of the tissue architecture. (D) Infiltration of mononuclear (MN) and polymorphonuclear (PMN) inflammatory cells.

The patient returned for follow-up 10 days after treatment, showing a dry and healing wound (Figure 4). The prognosis: *quo ad vitam bonam*, *quo ad functionam bonam*, and *quo ad sanationem bonam*.

Figure 4. Clinical image at 10-day follow-up showing the post-treatment lesion site.

DISCUSSION

Pyogenic granuloma can occur across all age groups, with a male-to-female ratio of approximately 1:1.2 (Sarwal & Lapumnuaypol, 2024). The condition has been reported in individuals ranging from 4.5 to 93 years of age, with the peak incidence observed between 13 and 35 years (Lomeli Martínez et al., 2023). It is suggested that females are more frequently affected than males. On the other hand, male patients tend to develop lesions at a younger age, typically from childhood to the late twenties, whereas in females, lesions usually appear between the ages of 18 and 40 (Ngan et al., 2021; Preclaro et al.,2024).Currently, the exact etiology of pyogenic granuloma remains unclear. However, the lesion commonly arises following minor trauma. Other proposed predisposing factors include chronic irritation, increased female sex hormones, infections, oncogenic viruses, and arteriovenous anastomoses (Show & Dey, 2020)

Several factors are involved in the etiopathogenesis of pyogenic granuloma; however, its exact cause remains unknown. Historically, some researchers have considered it an infectious pathology, hence the term “pyogenic.” Regezi et al. regarded pyogenic granuloma as a reactive or reparative process, in which certain stimuli lead to rapid proliferation of connective tissue. Etiological factors believed to trigger this reactive process include trauma, dental calculus, chronic irritation, pre-existing vascular lesions, chronic irritation from the exfoliation of primary teeth, injury to primary teeth, eruption of permanent teeth, defective restorations in the lesion area, occlusal disturbances, food impaction, periodontitis, and trauma from tooth brushing (Lomeli Martínez et al., 2023).According to the literature, the histopathological features of pyogenic granuloma are variable and sometimes nonspecific. This variability is influenced by the biopsy site, the lesion’s stage or duration, and any prior treatment. Histologically, there is proliferation of small blood vessels that may penetrate the epidermis, forming a globular, pedunculated tumor. The epidermis typically forms a collarette at the base of the lesion and may partially or completely cover the tumor with a thin epithelial layer. The endothelial cells resemble those found in newly formed granulation tissue and are surrounded by a mixed population of fibroblasts, mast cells, lymphocytes, and plasma cells, with surface erosion frequently observed (Ngan et al., 2021; Sharma et al., 2021).

Irritation fibroma is one of the most common differential diagnoses of pyogenic granuloma, particularly when located on the lips or gingiva. Clinically, irritation fibroma typically appears as a firm, dome-shaped nodule that is the same color as the surrounding mucosa, non-ulcerated, and rarely bleeds. Unlike pyogenic granuloma, which is often erythematous,

pedunculated, and bleeds easily due to its rich vascularity, irritation fibroma has a fibrous consistency and is usually sessile (Cohen, 2020). Pyogenic granuloma tends to arise rapidly in response to trauma or hormonal changes, whereas irritation fibroma generally develops slowly due to chronic low-grade irritation such as from malocclusion or repeated friction & Histologically, irritation fibroma shows dense fibrous connective tissue without lobular capillary proliferation, which is the hallmark of pyogenic granuloma. (Cohen, 2022; Lomeli Martínez et al., 2023)Capillary hemangioma and pyogenic granuloma are two benign vascular lesions that can appear on the upper lip and often share similar clinical features; however, they have important distinguishing characteristics. Clinically, capillary hemangiomas typically develop during childhood as soft, bluish-red lesions that do not bleed easily, grow slowly, and often undergo spontaneous involution with age. In contrast, pyogenic granulomas tend to develop rapidly in response to local trauma or irritation—such as orthodontic appliance use—and appear as erythematous papules or nodules with a pedunculated base that bleed easily. Histopathologically, capillary hemangiomas are characterized by a dense proliferation of small capillary vessels lined with flattened or rounded endothelial cells, sometimes with erythrocyte-filled lumens. The surrounding stroma is usually fibrous and may contain mild inflammatory cell infiltration. Recognizing these differences is crucial for establishing an accurate diagnosis and determining the appropriate treatment approach. (Amminou & El Harti, 2020; Rachappa & Triveni, 2020; Tedjosasongko et al., 2022).

The standard treatment for pyogenic granuloma consists of excision, which has the lowest recurrence rate. Depending on the location, size, and patient preference, alternative options include curettage, electrocautery, radiosurgery, cryosurgery, sclerotherapy, or laser therapy. For small lesions in cosmetically sensitive areas or in pediatric patients, practitioners may consider non-operative management such as CO_2 laser ablation, or electrocautery if laser treatment is not available (Preclaro et al.,2024). As an alternative, the combination of shave excision with cauterization offers advantages such as shorter procedure time, lower cost, greater patient comfort, and better scar assessment scores trunk (Kaleeny, J. D., & Janis, J. E., 2024).The prognosis for this patient is quo ad vitam bonam, quo ad functionam bonam, and quo ad sanationam bonam. This lesion does not have malignant potential. However, since the condition does not regress spontaneously and may result in bleeding, ulceration, or cosmetic disfigurement, treatment is required. Partial resection through excision or curettage can lead to recurrence in the future (Sarwal & Lapumnuaypol, 2024). Pyogenic granuloma has a tendency to recur, with recurrence rates 15% (Lomeli Martínez et al., 2023). To prevent this, it is important to eliminate predisposing factors (Kaleeny, J. D., & Janis, J. E., 2024).

CONCLUSION

This case report presents the successful management of a pyogenic granuloma on the upper lip in a 16-year-old female. The diagnosis was made based on clinical features and confirmed by histopathological examination. The lesion was effectively treated using shave excision followed by electrocautery. This report highlights the importance of including pyogenic granuloma in the differential diagnosis of vascular lesions on the lip.

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