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Pregnancy-Associated Pyogenic Granuloma of the Lip with Spontaneous Postpartum Regression: A Rare Case Report

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KEYWORDS

Pyogenic granuloma; Granuloma gravidarum; Pregnancy tumor; Extragingival lesion; Lower lip; Postpartum regression; Conservative management; High-risk pregnancy; Gestational diabetes; In vitro fertilization

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Abstract

Background:
Pyogenic granuloma, also known as lobular capillary hemangioma, is a benign vascular lesion commonly associated with hormonal changes during pregnancy. Although gingival involvement is most frequent, extragingival presentations are rare and clinically significant.
Case Presentation:
We report a case of a lady in her early 40s, who conceived through in vitro fertilization and developed gestational diabetes and hypertension. In late pregnancy, she developed a rapidly growing, painful lesion over the lower lip associated with spontaneous bleeding for 10–15 days prior to delivery. Clinical examination revealed a vascular, erythematous lesion suggestive of pyogenic granuloma. The patient underwent cesarean section and developed postpartum complications, including acute coronary syndrome and wound gaping, which were managed medically. Surgical consultation confirmed the diagnosis, and conservative management was adopted due to her high-risk status.
Results:
The lesion showed gradual regression and completely resolved within 3–4 weeks postpartum without any intervention. No recurrence was observed during follow-up period of 6months.
Conclusion:
This case highlights an uncommon extragingival presentation of pregnancy-associated pyogenic granuloma with late gestational onset and spontaneous postpartum regression. Conservative management can be considered in selected patients, particularly when the lesion is expected to regress and surgical risks are high. Early recognition and appropriate clinical judgment are essential to avoid unnecessary interventions.

Introduction

Pyogenic granuloma, also known as lobular capillary hemangioma, is a benign vascular lesion characterized by an exaggerated proliferation of capillaries in response to local irritation, trauma, or hormonal influences[1]. Despite its terminology, it is neither pyogenic nor a true granuloma but represents a reactive hyperplastic process driven by angiogenic and inflammatory mechanisms[1]. It commonly affects the skin and mucous membranes, with a marked predilection for the oral cavity, particularly the gingiva, which accounts for the majority of reported cases[1].

Other anatomical sites such as the lips, tongue, and nasal mucosa are less frequently involved, making extragingival presentations relatively rare and clinically significant[2] , extragingival sites such as the lip are uncommon and may pose diagnostic challenges due to their resemblance to other vascular lesions, including hemangioma, Kaposi sarcoma, or even malignant conditions. Such atypical presentations necessitate careful clinical evaluation and appropriate diagnostic consideration.

Pregnancy-associated pyogenic granuloma, also referred to as granuloma gravidarum, represents a distinct clinical variant influenced by hormonal changes during gestation[2]. It typically develops due to the synergistic effect of increased estrogen and progesterone levels, which enhance vascular proliferation, increase capillary permeability, and amplify inflammatory responses to minor local irritants such as plaque or trauma[2].

The prevalence of pregnancy-associated pyogenic granuloma has been reported to range between 0.5% and 5%, highlighting its relevance in antenatal care and oral health3. Among these, extra-gingival lesions account for 5–10% of cases, with lip involvement being a rare presentation.

These lesions commonly appear during the first or second trimester and may increase in size as pregnancy progresses, reflecting ongoing hormonal influence[3]. Clinically, the lesion presents as a soft, erythematous to reddish-purple mass that may be sessile or pedunculated and is characterized by rapid growth over a short period[3] . The surface is often smooth or lobulated, and due to its rich vascularity, the lesion is highly prone to spontaneous bleeding or bleeding on minimal manipulation[3].

Early lesions are typically bright red due to abundant vascular channels, whereas older lesions may appear more pinkish as a result of fibrosis and reduced vascularity[4].

While the lesion is benign, its rapid enlargement, tendency to bleed, and unusual site of occurrence can cause considerable anxiety for patients and clinicians alike[4]. Increasing awareness and improved healthcare access have facilitated earlier recognition and management.

The natural history of pregnancy-associated pyogenic granuloma is variable, with many lesions demonstrating spontaneous regression following delivery due to normalization of hormonal levels[4].

They generally regress spontaneously in postpartum period due to decrease in estrogen and progesterone, which reduces vascular endothelial growth factor and angiopoietin-2 levels, which causes blood vessels to regress and the endothelial cells to enter apoptosis, thereby shrinking the tumour.

Although progesterone is considered a risk factor, exogenous progesterone supplementation during pregnancy does not appear to increase the risk of pyogenic granuloma.

This supports a conservative management approach in asymptomatic or minimally symptomatic cases[4].

In most cases complete resolution is seen spontaneously post naturally, but it may persist in 8-10% of the cases, where surgical removal is necessary.

However, persistent, large, or symptomatic lesions may require active intervention, including surgical excision, laser therapy, or topical treatments depending on clinical indications[4], followed by histopathological examination for definitive diagnosis.

With a recurrence rate of 17% in pregnancy.

In this context, the present case is noteworthy due to its occurrence on the lower lip, an uncommon extragingival site, and its spontaneous regression in the postpartum period without the need for intervention. Such cases highlight the diverse clinical spectrum of pregnancy-associated pyogenic granuloma and emphasize the importance of accurate diagnosis and individualized management strategies.

Treatment of pyogenic granuloma primarily involves removal of triggering factors such as drug triggers, poor oral hygiene, oral trauma, or adjacent piercings to reduce recurrence. Topical timolol gel 0.5% may be used when necessary. Although pyogenic granulomas are benign and non-infectious, treatment is often indicated due to bleeding or ulceration. Common treatment modalities include excision with curettage and cauterization, while laser therapies such as pulsed dye laser or CO_2 laser are also effective.

Case Presentation

A woman in her early 40s, with a history of infertility for 16years presented in late pregnancy with complaints of a rapidly enlarging lesion over the lower lip associated with intermittent pain and spontaneous bleeding. The patient had conceived through in vitro fertilization following a history of two failed IVF attempts and multiple ovulation induction cycles. Her antenatal period was categorized as high-risk due to the presence of gestational diabetes mellitus and gestational hypertension, for which she was on regular medical management. She was also receiving progesterone supplementation along with low-dose aspirin and anticoagulant therapy.

The lesion was first noticed approximately 10–15 days prior to delivery as a small swelling over the lower lip, which progressively increased in size over a short duration. It was associated with episodes of spontaneous bleeding and bleeding on minimal manipulation. There was no associated history of trauma, infection, or similar lesions in the past. No constitutional symptoms such as fever or weight loss were reported.

On clinical examination, the lesion was located on the lower lip and appeared as a soft, erythematous to reddish-purple mass with a smooth surface. It was vascular in nature, with a tendency to bleed on touch. The size of the lesion was clinically appreciable, and its rapid growth along with friability suggested a reactive vascular lesion. There were no signs of regional lymphadenopathy. Oral cavity examination did not reveal similar lesions elsewhere, and systemic examination was unremarkable apart from the known obstetric comorbidities.

Based on the clinical presentation, obstetric background, and morphological features, a provisional diagnosis of pregnancy-associated pyogenic granuloma was made. Differential diagnoses considered included hemangioma, capillary malformation, amelonotic melanoma, kaposi sarcoma, cherry angioma, ancillary angiomatosis.

The patient subsequently underwent cesarean section at an outside hospital for obstetric indications. The postoperative period was complicated by acute coronary syndrome, which was managed with antiplatelet agents, diuretics, and supportive care. In addition, she developed wound gaping that required secondary suturing. During the postpartum period, the patient continued to experience intermittent bleeding from the lip lesion, which necessitated further evaluation.

A surgical opinion was obtained, and the diagnosis of pyogenic granuloma was clinically confirmed. Considering the patient's recent major obstetric complications, ongoing systemic therapy including antiplatelet agents, and the known natural tendency of pregnancy-associated pyogenic granulomas to regress after delivery, a conservative management approach was adopted. No immediate surgical intervention, laser therapy, or topical treatment was initiated.

The patient was followed up regularly in the postpartum period. Over a duration of 3–4 weeks following delivery, a gradual decrease in the size of the lesion was observed. The episodes of bleeding subsided progressively, and the lesion underwent complete spontaneous regression without any intervention. There was no recurrence noted during the follow-up period of 6months.

This case is significant due to the occurrence of pyogenic granuloma at an uncommon extragingival site, namely the lower lip, along with its onset in late pregnancy. Furthermore, the complete spontaneous regression in the postpartum period without surgical management highlights the role of conservative treatment in selected cases, particularly in

patients with high-risk obstetric profiles and associated comorbidities.

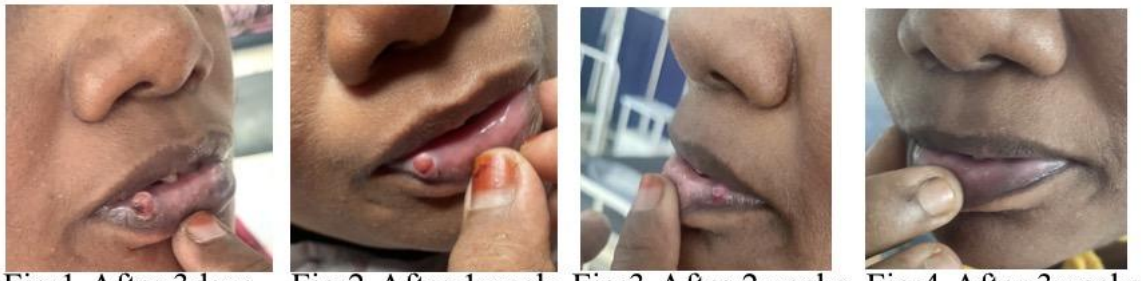

Figure 1-4 : Sequential spontaneous postpartum regression of pregnancy-associated pyogenic granuloma of the lower lip over 4 weeks

Discussion

Pregnancy-associated pyogenic granuloma is a hormonally influenced benign vascular lesion characterized by rapid growth, friability, and a tendency to bleed. A key finding from existing literature is that these lesions are strongly linked to elevated estrogen and progesterone levels, which enhance angiogenesis and inflammatory responses. Goh et al.[5] demonstrated that such lesions frequently regress spontaneously after delivery due to hormonal withdrawal, highlighting the self-limiting nature of the condition.

Another important observation is that although gingival involvement is most common, extragingival presentations are increasingly reported. Mhatre et al.[6] described atypical occurrence in non-gingival sites, emphasizing that hormonal influence can affect multiple mucocutaneous surfaces. The present case supports this finding, as the lesion developed on the lower lip, an uncommon location.

Clinically, pyogenic granuloma is characterized by rapid onset, erythematous appearance, and spontaneous bleeding. Jafarzadeh et al.[7] identified rapid vascular proliferation as the hallmark feature, while Gondivkar et al.[8] highlighted the combined role of local irritation and hormonal factors in lesion development. In our case, the lesion evolved within 10–15 days and showed recurrent bleeding, consistent with these established clinical patterns.

With respect to management, Lee et al.[9] reported that surgical excision remains the standard treatment for persistent or symptomatic lesions. However, Oakes et al.[10] emphasized that conservative management is appropriate during pregnancy, especially when complications are minimal. This is a critical clinical point, as unnecessary intervention may increase morbidity.

Several studies have specifically documented spontaneous regression in pregnancy-associated cases. Delbrouck et al.[11] reported regression of nasal lesions postpartum, while Alalula et al.[12] observed similar outcomes without surgical intervention. These findings align with the present case, where complete resolution occurred within 3–4 weeks after delivery.

However, not all lesions regress spontaneously. Bi et al.[13] noted that larger or persistent lesions may require active treatment, indicating variability in clinical course. This reinforces the need for individualized management based on lesion behavior and patient condition.

From a diagnostic perspective, differentiation from other vascular lesions is essential. Ahmed et al.[14] highlighted the importance of careful clinical assessment, particularly in atypical locations, to exclude malignancy or other vascular tumors. In our case, classical clinical

features and predictable regression supported the diagnosis without invasive procedures.

A noteworthy finding in this case is the late gestational onset, which contrasts with the commonly reported early trimester presentation. This suggests that, in addition to hormonal factors, systemic conditions such as gestational diabetes and hypertension may influence lesion development. Furthermore, the patient's history of IVF and exogenous hormone use may have contributed to enhanced vascular reactivity, representing a potential emerging risk factor.

Conclusion

Pregnancy-associated pyogenic granuloma is a benign, reactive vascular lesion with a well-established hormonal basis. Although it most commonly involves the gingiva, extragingival presentations, particularly involving the lip, are uncommon and may pose diagnostic challenges. The present case highlights an atypical presentation occurring in late pregnancy in a high-risk obstetric patient with multiple comorbidities, including gestational diabetes and hypertension, along with a history of assisted reproductive techniques.

A key clinical observation in this case was the rapid onset and bleeding tendency of the lesion, which is consistent with its highly vascular nature. Importantly, the lesion demonstrated complete spontaneous regression within 3–4 weeks postpartum without the need for surgical or medical intervention. This underscores the self-limiting nature of pregnancy-associated pyogenic granuloma in selected cases and supports a conservative management approach when clinically appropriate.

This case emphasizes the importance of accurate clinical recognition, especially in unusual sites, to avoid unnecessary invasive procedures. It also highlights the need for individualized management strategies, particularly in patients with increased surgical risk. Awareness of the natural course and variability of this condition can aid clinicians in optimizing patient care while minimizing intervention-related complications.

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