

# Pyogenic Granuloma of Lower Lip: An Unusual Presentation

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## ABSTRACT

Pyogenic granuloma is a benign inflammatory hyperplasia of connective tissue. It depicts an overzealous tissue response to a known stimulus or injury and is commonly found in the gingiva, especially in the anterior maxilla, and rarely on lips, oral mucosa, and tongue. It is commonly seen during the second, third, and fourth decade in females, with predilection in the third decade. This case report depicts the unusual presentation of pyogenic granuloma of the lower lip in an 11-year-old male child following a positive history of trauma and lip biting, which was successfully managed by excision under local anesthesia.

**Keywords:** Inflammatory hyperplasia, lower lip, pyogenic granuloma.

## INTRODUCTION

Pyogenic granuloma (PG) was first described as “human botryomycosis” by Poncet and Dorin in 1897. Then the term “Pyogenic granuloma” (PG) was coined by Hartzell in 1904.<sup>1</sup> However some authors claim that the present name was given by Crocker in 1903.<sup>2</sup> It is a benign inflammatory hyperplasia of connective tissue. The term PG has been widely considered a misnomer because it neither produces pus nor represents a granulomatous inflammatory process. It is also known by other names such as; “eruptive hemangioma,” “granulation tissue type hemangioma,” “granuloma gravidarum,” “lobular capillary hemangioma,” “pregnancy tumor,” “Crocker and Hartzell’s disease,” “vascular epulis,” “benign vascular tumor,” “hemangiomas granuloma,” and “epulis teleangiectatum granulomatosa.”<sup>1</sup> Pyogenic granuloma is commonly found in the gingiva (75%).<sup>3,4</sup> The extra gingival lesions are quite uncommon, mimicking other benign soft tissue growths or even malignancy, when present.<sup>5</sup>

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## CASE REPORT

An 11-year-old male child presented to the department of Pedodontics and Preventive Dentistry, BPKIHS, Dharan with the chief complain of growth in the midline of the lower lip since two weeks. Positive history of trauma was found one month back along with lip-biting habit.

Intraoral examination revealed a well-circumscribed, single, pedunculated, erythematous mass of size 5 x 5 x 5 mm<sup>3</sup> (Figure 1). On palpation, the lesion was firm in consistency and non-tender. Sign of hemorrhage on irritation was present. There were no signs of discharge, and visible or palpable pulsation. Based on the clinical findings, a provisional diagnosis of Irritational Fibroma was made, and an excisional biopsy was planned.

Informed consent from the parents and assent from the patient was taken for the procedure. The patient was subjected to hematological investigations wherein all values were within the normal ranges. The mass was excised from the base using surgical blade no. 15, followed by primary tissue closure with 4-0 silk suture, and was sent for biopsy (Figure 2, 3). The patient was also motivated to stop the lip-biting habit. Adequate healing was seen in one week, two weeks, and one month follow-up (Figure 4).

Histopathological examination revealed the following findings which also mimicked Lobular capillary hemangioma; para-keratotic hyperplastic stratified



**Figure 1.** Pre-operative photograph.



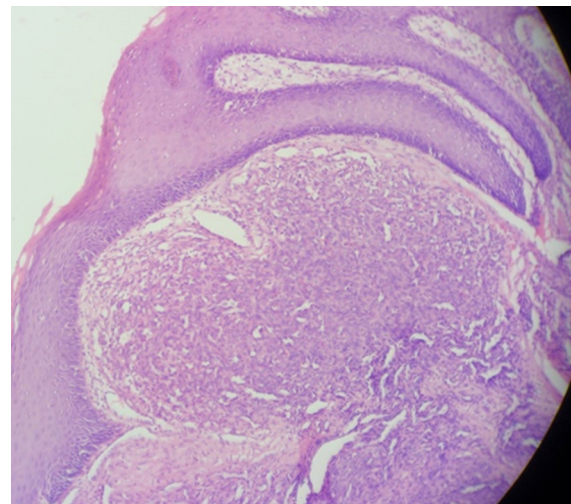
**Figure 2.** Immediate Post-operative photograph.



**Figure 3.** Excised mass.



**Figure 4.** One-month follow-up.



**Figure 5.** Histopathology image (10X,H&E).

squamous epithelium with irregular rete ridges, fibrous underlying connective tissue stroma comprising of dense aggregates of plump fibroblasts, numerous endothelial cell lined blood vessels along with extravasated RBCs with

dense chronic inflammatory cell infiltration predominantly lymphocytes and plasma cells (Figure 5). Based upon the above findings along with clinical correlation, a diagnosis of Pyogenic Granuloma was made.

## DISCUSSION

In a study done by Saravana et. al,<sup>3</sup> among 655 tumor-like lesions of the oral cavity, 137 lesions were confirmed as PG histologically, showing an incidence of 21%. PG tends to show a marked predilection for the gingiva. Maxillary anterior labial gingiva is the commonest site of occurrence in both genders.<sup>3</sup> PG can also be seen in other extraoral sites like hands, lips; uncommon sites are vulva, penis, esophagus, gut, and tracheobronchial tree. Gastrointestinal PG can cause severe anemia.<sup>5</sup> It is commonly seen during the second, third, and fourth decade in females, due to the increased levels of circulating estrogen and progesterone hormones.<sup>1,3</sup> In the present case, the occurrence was unusual with respect to age, gender and location.

Pyogenic granuloma might commonly result due to exaggerated localized connective tissue reaction to a minor tissue injury or underlying irritation. Calculus, poor oral hygiene, non-specific infection, overhanging restorations, cheek biting, etc. are considered as the irritating factors.<sup>1,3</sup> Due to this irritation, the underlying fibrovascular connective tissue becomes hyperplastic, followed by proliferation of granulation tissue which leads to the formation of a PG. Factors such as inducible nitric oxide synthase, vascular endothelial growth factor, or connective tissue growth factor are known to be involved in angiogenesis and rapid growth of PG.<sup>1</sup> Some authors also stated that oral PG arises as a result of some minor trauma to the tissues that provide a pathway for invasion of non-specific types of microorganisms. The tissues respond characteristically to these organisms of low virulence by the overzealous proliferation of a vascular type of connective tissue.<sup>2</sup> PG has been found to be associated with certain medications such as oral contraceptives, retinoids, gefitinib, cabecitabine and afatinib.<sup>5</sup> In the present case, presence of the lesion can be attributed to trauma as there was a positive history of trauma due to fall and lip-biting habit.

Pyogenic granuloma is also referred to as “pregnancy tumor”, as it is seen during pregnancy especially during the second and third trimesters. Increased levels of estrogen and progesterone modify the vascular response to local irritants which leads to the occurrence of PG.<sup>6</sup>

The lesion can be described as early, established, and healing type, and the color of the lesion may also vary

depending upon the clinical course.<sup>6</sup> The early lesions may appear as pinkish and resemble the normal mucosal color, established lesions appear as reddish to purplish due to the increased vascularity and the healing lesions are usually seen as pinkish to whitish in color. The natural course of PG can also be categorized into three distinct phases; cellular phase, capillary phase/vascular phase and involutionary phase.<sup>6</sup>

The histopathological picture of PG shows exuberant granulation tissue which is covered by atrophic/hyperplastic epithelium that may be ulcerated at times and reveals fibrinous exudates. The Presence of numerous endothelium-lined vascular spaces and proliferation of fibroblasts and budding endothelial cells are the characteristic features of pyogenic granuloma. The presence of mixed inflammatory cells infiltration is also observed. Cawson et al.<sup>7</sup> have described two variants of PG depending on the rate of proliferation and vascularity, namely; lobular capillary hemangioma (LCH) and non-lobular capillary hemangioma (non-LCH). However, it should be remembered that these terms (LCH, non-LCH) have been used to describe PG based on its histopathological variations only, and it is not a true hemangioma in the real sense. The LCH type of pyogenic granuloma is characterized by proliferating blood vessels organized in lobular aggregates as seen in the present case, whereas the non-LCH type shows high vascular proliferation resembling granulation tissue.<sup>6,7</sup> PG can mimic other vascular tumors, including Kaposi form hemangioendothelioma, infantile hemangiomas, vascular malformations and Kaposi sarcoma.<sup>5</sup> The term Lobular capillary hemangioma however is increasingly gaining favor in the dermatologic literature.<sup>2</sup>

The common treatment for PG consists of excision, which is also considered as the treatment modality with the lowest rate of recurrence. Depending on the site, size, and patient wishes; curettage, electrocautery, radiosurgery, cryosurgery (liquid nitrogen spray or a cryoprobe), sclerotherapy, or laser (Nd: YAG, CO<sub>2</sub> and flash lamp pulsed dye lasers) are alternative choices.<sup>5,8</sup> Studies have reported a recurrence rate of up to 15.8% after conservative excision.<sup>2</sup> Studies have also shown that lesions of gingival sites show a higher recurrence rate than lesions from other oral mucosal sites, after simple excision. In pregnant patients, the recurrence rate is more common.<sup>2,3</sup> In the

present case, no recurrence of the lesion was seen during the subsequent visits of one week, two weeks, and one month after the excision.

## CONCLUSIONS

Pyogenic granuloma developing at extra-gingival sites can prove to be a diagnostic challenge to the clinician. This accentuates the importance of thorough history and

clinical examination in the formulation of a diagnosis. However, histopathological examination is necessary to establish a final diagnosis. Cessation of etiologies and regular follow-up can prevent recurrence of such lesions.

**Conflict of Interest:** None

INAPD

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