

**Management of a Pyogenic Granuloma Patient in The Anterior Maxillary Gingiva:
A case study**

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Abstract:

Background : Pyogenic granuloma (PG) is a non-cancerous lesion often resulting from an exaggerated tissue response to local irritation or trauma. This condition usually manifests in the oral cavity and grows rapidly, often mistaken for more serious pathology.

Study Objective: To present the clinical management of a patient diagnosed with PG located on the anterior maxillary gingiva

Case Presentation : A 13-year-old girl visited the Public Health Center with a complaint of gingival growth in the front upper teeth region. The lesion, which initially appeared six months prior, increased in size and caused both functional and esthetic discomfort. Clinical inspection revealed an inflammatory mass between teeth 11 and 21, measuring approximately 14x8 mm.

Result and discussion: The patient is diagnosed as pyogenic granuloma. The main treatment modalities of pyogenic granuloma is surgical excision. Excision of the pyogenic granuloma was a conventional surgical procedure by scalpel 15 under local anaesthesia with adrenaline. The tissue was placed into solution of 10% formaldehyde and the trauma was sutured. Hemostasis was achieved using pressure pack. The soft tissue sample was sent for histopathology which suggested it be pyogenic granuloma.

Conclusion : Pyogenic granuloma, although benign can lead to considerable patient concern. Proper identification and surgical management typically result in favorable outcomes

Keyword : Pyogenic granuloma, excision, a conventional surgical procedure.

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Introduction

Gingiva overgrowth can emerge from numerous etiologies including inflammatory, reactive, neoplastic, or systemic origins. Among reactive lesions, pyogenic granuloma is one of the most

prevalent types, particularly affecting the gingival tissues .[1]

Epulis, a general term for localized gingival enlargement, is considered a pseudotumor originating from the periodontal connective tissue. Contributing factors include local

irritants such as dental plaque, calculus, carious lesions, and mechanical trauma. Hormonal imbalances and poorly fitted restorations also play a significant role in the development of this lesion.[2-3]

Clinically, epulis lesions may present as sessile or pedunculated growths, often pink to red in color, and can range in size. Histologically, pyogenic granuloma belongs to the category of vascular epulides, characterized by capillary proliferation.[4]

Pyogenic granuloma (PG) is a benign proliferation of connective tissue hyperplasia, which frequently occurs on the lips, tongue, buccal mucosa, palate and so on.[5] This lesion is considered one of the most causes of tissue enlargement due to its rapid growth rate. PG occurs predominantly in woman with high level of steroid hormones, and female sex hormones are believed to play a significant role in its pathogenesis. The lesions are often located on the gingival of anterior teeth and arise in response to various stimuli, such as minor irritation, traumatic injury, hormonal factors, or certain medications.[6-7]

Treatment involves surgical excision of the lesion with histopathological evaluation. One important point about pyogenic granuloma that should be emphasized is careful monitoring during surgery because of its vascular nature leading to profuse bleeding.[7]

Case Report

A 13 year old girl patient reported to public health center Satelit, with the chief complaint of swelling on the gums since 6-8 months. The swelling appeared as a small, round growth which gradually increased in size to achieve the present dimension. Then, the swelling is friable and asymptomatic, and causes cosmetic concern when laughing or during mastication.

Intra oral examination the growth was soft, oval with smooth surface extending in

anterior maxillary gingiva. It was a pedunculated lesion attached to the interdental papillary gingiva in between tooth #11 and #21 (**Fig.1**).



Figure 1: Pre – operative

The size was approximated 14x8 mm size with clear sign of inflammation which was hemorrhagic with spontaneous bleeding on probing the area. In addition findings included dental crowding in the maxillary anterior region, proximal caries between teeth #11 and #21, and oral health was also compromised, also dental plaque and calculus. Physical examination revealed no other abnormalities. Past medical history is unremarkable, and the patient is not on any medication.

Based on the findings, a provisional diagnosis of pyogenic granuloma was made and an excisional surgery was planned. Before surgery, full mouth scaling and root planning were conducted to eliminate local irritants. During the procedure, severe bleeding occurred but was controlled within minutes by applying pressure with gauze. The patient was instructed on proper oral hygiene and advised to use a 0,2 % chlorhexidine rinse. Following a - one week observation period, a surgical excision was carried out.

A surgical approach was subsequently chosen for definitive treatment of the lesion. Under local anesthesia with adrenalin, the lesion was excised with a 2mm margin around its base (**Fig.2**). The enlarged lesion was excised down to its base using no. B P 15 blade (**Fig.3**). A lesion was completely removed, with

surrounding soft tissue remnants also trimmed to prevent recurrence. The tissue was placed into solution of 10% formaldehyde, and was sent for histopathological examination (Fig.4). Then, the trauma was achieved using pressure pack. Post operative care of the patient was instructed to continue chlorhexidine rinses, antibiotics and analgesics were prescribed for one week, and follow-up appointments were scheduled to monitor healing.

Histopathological analysis showed specimen revealed neovascularization with chronic inflammatory infiltrates, predominantly lymphocytes and plasma cells, without malignancy—consistent with PG. Based on histopathological report it was finally diagnosed as a pyogenic granuloma (Fig.5). The patient was mentioned on weekly schedule postoperatively, to ensure good oral hygiene in the surgical area (Fig.6).



Figure 2: Established the excision margin



Figure 3:After Excision

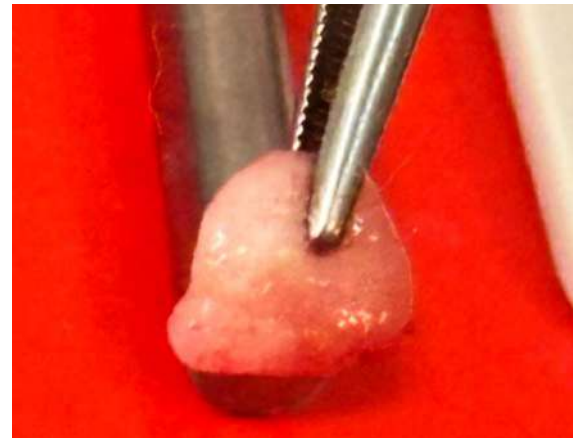


Figure 4: Excised Tissue

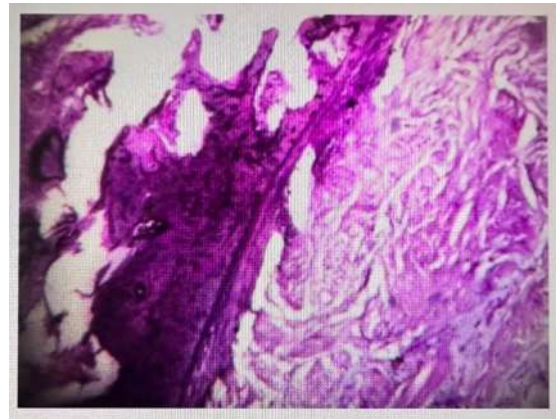


Figure 5: Histopathological slide



Figure 6: Post – Operation

Discussion

Pyogenic granuloma is well known and commonly occurring oral inflammatory hyperplastic condition. In oral, Pyogenic granuloma though to arise from hormonal imbalance, tooth brush trauma, exfoliation of primary teeth, eruption of permanent teeth, defective fillings in the region of tumor, food impaction, certain medication like cyclosporine.[11] However, in the

present case, etiology this case includes calculus and hormonal imbalances.

Pyogenic granulomas are benign vascular lesions. That affect individuals across all age groups, from pediatric to geriatric populations [6,8]. The lesion more prevalent in female than male with ratio 1,15 : 1. In the second decade which could be associated with female sex hormone and contraceptive **medications**. The high - level estrogen and progesterone during puberty and pregnancy deteriorate the already established gingival inflammation by increasing dilation and proliferation of blood vessels and releasing vasoactive mediators from the damaged mast cells. It is thought that the expression of angiogenic factors such as basic fibroblast growth factor and vascular endothelial growth factor can be enhanced by trauma and female sex hormones which cause the development of pyogenic granuloma.[8]

Poor oral hygiene may be a precipitating factor in many of these patient. Some factor such as inducible nitric oxide synthase, vascular endothelial factor, fibroblast growth factor, or connective tissue growth factor, fibroblasts growth factor or connective tissue growth factor are known to be involved in angiogenesis and rapid growth of pyogenic granuloma.[9]

Oral pyogenic granuloma occur on gingiva in 75% of cases. They are more commonly seen on the anterior attached gingiva of the maxilla, more on the labial aspect than on lingual side. Clinically, pyogenic granuloma most often present as a solitary bright red papule or nodule, typically measuring 5-10 mm in diameter. The lesion has smooth surface attached to a sessile base and grows rapidly within 1-3 weeks. Although painless, it is friable and tends because of high vascularity and less collagen fibers, while mature lesion contains more collagen and less vasculature. It is worth mentioning that the clinical feature of pyogenic granuloma in pregnant woman was similar to that non pregnant woman.[10]

Diagnosis of pyogenic granuloma can be established through anamnesis, clinical examination, supported by histopathological examination of the obtained specimen.[12] The differential diagnosis of reactive lesion of the gingiva should include: pyogenic granuloma, fibrous hyperplasia, peripheral giant cell granuloma, and peripheral odontogenic fibroma [4,11]

Histopathological examination of pyogenic granuloma typically reveals tissue partially or entirely invested by hyperplastic parakeratinized or non-keratinized stratified squamous epithelium, often exhibiting areas of atrophy, ulceration, and a fibrinoleukocytic membrane. The predominant architectural feature of the lesion is lobulated or non-lobulated mass of angiomatous tissue. Specifically, lobulated lesions are characterized by dense endothelial proliferation or the proliferation of capillary-size blood vessels. The collagen content within the connective tissue stroma of pyogenic granuloma is generally sparse. Surface ulceration is a common occurrence, and in such cases edema is a prominent finding. Frequently accompanied by an inflammatory infiltrate comprising plasma cells, lymphocytes, and neutrophils. [12]

Furthermore, prolonged chronic irritation possesses the potential to transform the characteristic of this benign tumor, which could lead to more severe complications. Consequently, surgical intervention for the complete excision of pyogenic granuloma is highly recommended to preclude recurrence. Through tissue extirpation also aims to eradicate local etiologic factors, such as residual tissue or fragments, to ensure optimal healing and prevent subsequent lesion recurrence.[13] In the present case the conventional surgical procedure is used by a scalpel was employed. Asnaashari et.al., 2014, reported that the lesion recurrence rate following the conventional method was 16%.[14] The complete removal of the pyogenic

granuloma of this case yielded on optimal outcome. Other conventional surgical modalities for the treatment of pyogenic granuloma reported are cryosurgery in the form of either liquid nitrogen spray or a cryoprobe. Nd: YAG, CO₂ and flash lamp pulsed dye lasers have also been used for the treatment of oral pyogenic granuloma.

Conclusion

Pyogenic granuloma is a benign gingival tumor that typically does not cause pain, but can interfere with chewing function and has the potential to grow significantly, particularly in the setting of inadequate oral hygiene. Proper management including diagnosis, treatment and further prevention is very important. Management involves complete removal of the entire involved soft tissue, including any contributing local irritants, in order to prevent recurrence.

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