

PYOGENIC GRANULOMA-A CASE REPORT

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ABSTRACT

Pyogenic granuloma is the most common inflammatory hyperplasia of the oral cavity. It is considered to be non-neoplastic. It occurs due to various stimuli such as local irritation, traumatic injury, certain drugs and hormones. It can also occur on the other parts of oral cavity such as on the lips, buccal mucosa, tongue, palate and floor of the mouth. The lesion is elevated, sessile or pedunculated vascular mass with a smooth, lobulated or even a warty surface. The surface is also associated with ulcers and tends to hemorrhage either spontaneously or upon slight injury. It is conventionally thought to arise either due to chronic irritation or hormonal influences. Histologically, it is multilobular lesion which is stratified squamous, ulcerated and appears hyperplastic at few areas. Connective tissue consists of endothelial cells, blood vessels inflammatory cells and myxoid areas. The present case report is based on the histological, clinical findings, diagnosis and management of pyogenic granuloma of the gingiva.

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INTRODUCTION

Pyogenic granuloma is a common inflammatory hyperplasia of the oral cavity considered to be non-neoplastic.¹ Hullihen was the first person to describe a case of pyogenic granuloma in English literature.² In 1904, Hartzell coined the current term “pyogenic granuloma” or “granuloma pyogenicum, however it is considered a misnomer as it neither produces pus nor does it represent a granulomatous inflammatory process.³ It occurs in about 19.75-25% of all intraoral reactive lesions.^{4,5} It is usually seen in the second (36%) and third (46%) decade, with a female preponderance (male: female 1:4).⁶ 75% of pyogenic granuloma arises in gingiva.⁷ It occurs due to various stimuli such as local irritation, traumatic injury, certain drugs and hormones.⁸ It can also occur on the other parts of oral cavity such as on the lips, buccal mucosa, tongue, palate and floor of the mouth. The lesion is elevated, sessile or pedunculated vascular mass with a smooth, lobulated or even a warty surface. The surfaces of the lesion are often associated with ulcers and tend to be hemorrhagic either spontaneously or upon slight injury.

The condition is mainly related to periodontal pain and in some cases interfering with mastication and making esthetic issues.⁷ It is often seen more commonly in young adults, gingiva being the most common site.⁹ The color may vary from deep red or reddish purple which depends based upon its vascularity.¹⁰ Some lesions have a brown cast if hemorrhage has occurred into the tissue. It rapidly develops to reach full size and remains static for an indefinite time period.

The final diagnosis is based on histological examination after the excision.⁷ Treatment for pyogenic granuloma includes complete surgical excision with curettage of the adjacent tissue; if incompletely removed there are chances of recurrence as these are rarely encapsulated.¹¹ The present article discusses a case of pyogenic granuloma in a female patient along with its clinical, histological findings and treatment.

Case report

A 25-year-old female patient reported to the Department of Periodontics, D.A.P.M.R.V Dental College, Bangalore, with the chief complaint of a swelling in the upper right back tooth region since one month. According to patient, swelling was small at first which gradually enlarged to its present size. Patient also complained of bleeding gums while brushing since 1 month. As reported by the patient pain started 3 days back and aggravates while chewing food and relieves on its own. No history of taking any medications.



Overgrowth present w.r.t. 24 and 25

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Growth measured about 2.4cm x1.2cm x1.4cm

Patient reported no relevant medical history. On intraoral examination, there was a solitary oval growth present on the marginal, interdental and attached gingiva of the right upper premolars i.e. 14 and 15 measuring about 2.4cm x1.2cm x1.4cm. The lesion was pale pink in color, non-tender, lobulated, soft in consistency and blanched on pressure.

Provisional Diagnosis

Based on the history given by the patient and the clinical findings, a provisional diagnosis of pyogenic granuloma with respect to 14, 15 regions were made.

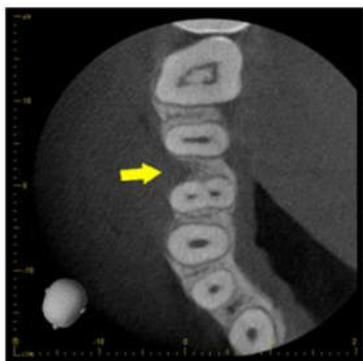
Differential Diagnosis

Peripheral Ossifying Fibroma- POF is frequently observed in the incisor-canine region. There is a slight predilection for the maxillary arch. POF is a solitary, slow growing nodular mass that is either pedunculated or sessile which is in close resemblance to Pyogenic Granuloma. POF occurs on the soft tissues overlying the alveolar process. Most often it is located in the gingival papilla between adjacent teeth. Radiographs of certain lesions may show radiopaque calcifications at the center of the lesion. Histological picture establishes confirmatory diagnosis.

Peripheral Giant cell Granulomas (PGCG) – PGCG are proliferative growths that occur on gingival tissue. It has a close resemblance to Pyogenic Granuloma in terms of clinical features, sex and site predilection. PGCG has a typical bluish red tint in contrast to pyogenic granuloma that has a characteristic bright red color. PGCG has shown to have an extensive array of range in sizes and exhibits rapid growth and can reach a significant size within several months.

Radiographically

On CBCT analysis the coronal and periapical portion of 14 and 15 appears to be normal. There is angular bone loss in the interdental region of 14 and 15 involving the coronal thirds of the buccal aspect of the bone and medially extending till almost middle third of the inter – crestal region.



Treatment

The treatment plan included patient education and motivation, oral hygiene instructions, thorough scaling and root planing, re-evaluation and surgical excision of the lesion under local anesthesia using scalpel method. Scaling was performed for elimination of local irritants. After 1 week of phase I therapy and re-evaluation, excision and curettage was planned. The patient’s consent was taken prior to surgery. Adequate amount of local anesthesia was given (Lignox 2% A; 1:80000 conc).The mucoperiosteal flap was raised and debridement was done and sutured. The excised lesion was sent for histopathological examination.

Patient was given post-operative instructions and was prescribed with analgesic, antibiotics. Periodontal dressing was applied over the surgical area.



Surgical excision was done



Pre op Excised lesion Excised lesion One week post op

The excised tissue was placed in 10% neutral buffered formalin and sent for the histopathological examination. Follow up of patient was carried out at one week and one month. After two months the lesion recurred and measured about 0.7cm x 0.6cm x 0.3 cm size. It was again surgically excised. The mucoperiosteal flap was raised and PRF was placed to promote soft tissue healing. 10 ml of blood was taken from anticubital vein for the preparation of PRF by Choukroun’s method. Post operatively there was inadequate width of attached gingiva which will be addressed later. The surgical area was sutured and periodontal dressing was applied. The excised lesion was sent for histopathological examination.



Recurrence of lesion



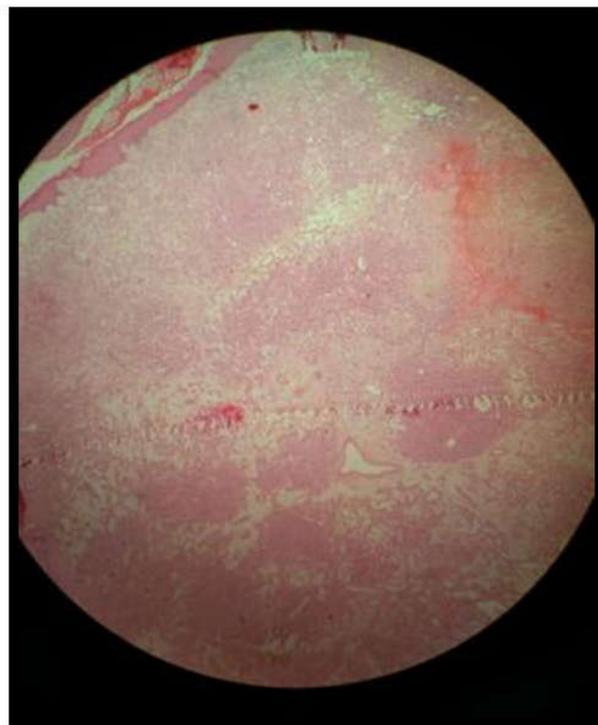
Surgical excision was done



PRF placed



Sutures placed



Diagnosis

Based on the history given by the patient, clinical findings and histopathological report, the diagnosis was given as pyogenic granuloma.

DISCUSSION

Pyogenic granuloma is a well-identified inflammatory hyperplastic oral lesion which comprises about 1.85% of all oral pathologies, other than caries and gingivitis. Usually, the lesion is neither symptomatic nor painful, but minor trauma to the growth can induce significant bleeding.¹²

The rapid growth of PG is mainly attributed to factors such as inducible nitric oxide synthase, vascular endothelial growth factor (VEGF), basic fibroblast growth factor, and connective tissue growth factor.¹³

PG is a benign, hyperplastic, localized reactive lesion, which occurs at any age with higher female prevalence. Chronic irritation from plaque, calculus, bony spicules, orthodontic appliances, etc., may lead to the induction of excessive connective tissue with numerous blood vessels enriched growth, which is characterized by a red surface, soft consistency and a pedicular base. It might be located anywhere on the gingiva, lip, and alveolar mucosa as cited in report of Rathore *et al.*¹⁴

Cawson *et al.*; has described it as “granuloma telangiectacticum” due to abundant blood vessels present in histological sections. There are two types of pyogenic granuloma namely Lobular Capillary Hemangioma (LCH type) and non LCH type. Both differ in their histological features.^{15, 16} Pyogenic granuloma may occur in all ages but is predominantly seen in second decade of life in young adult females possibly because of vascular effects of female hormones.¹⁷

Histopathological Examination

Histopathological report revealed a multilobular lesion comprised of epithelium and connective tissue components. The epithelium is stratified squamous type which is ulcerated at many places and also appears hyperplastic at few areas. The fibrocellular connective tissue is flooded with proliferating endothelial cells, capillaries, medium to large sized blood vessels and inflammatory cells. Myxoid areas are also evident in the connective tissue. Histopathological report after recurrence of the lesion revealed a stratified squamous parakeratinized epithelium which is atrophic. The underlying connective tissue has numerous thin-walled blood vessels of varying sizes, arranged in a lobular pattern. Endothelial cell proliferation is prominent. Mild chronic inflammatory infiltrate is observed. Areas of hemorrhage are also present.

According to Vilmann *et al*, majority of the pyogenic granulomas are found on the marginal gingiva with only 15 % of the tumors on the alveolar mucosa.¹⁸

Clinically pyogenic granuloma is seen as a smooth, lobulated exophytic lesion with a pedunculated or sessile base. Pyogenic granuloma grows in size from few millimeters to several centimeters, however seldom exceeds more than 2.5cm in size.

Some of the lesions tend to grow rapidly and attain large sizes.¹⁹ In the present case the lesion was 2.4cm x1.2cm x1.4cm. Pyogenic granulomas are usually associated with significant bone loss.²⁰

Pyogenic granuloma can be treated by several methods. The treatment modality varies depending on the extent of the lesion. When it is small, painless and free of bleeding, elimination of the causal factors is recommended along with surgical excision extending till the periosteum.

The use of scalpel technique does not require special armamentarium, simple and requires minimum time and effort. Other treatment options like lasers, cryosurgery, injection of absolute ethanol, sclerotherapy and intra-lesional corticosteroids are also used.^{21, 22} Different wavelengths of laser have been used for various soft tissue procedures.²³ Recurrence occurs in up to 16% of the lesions, which might be due to incomplete excision or failure to remove etiologic factors.^{24,25}

Platelet-rich fibrin is a second generation platelet concentrate which enhances both soft and hard tissue healing. PRF is the activated form of a plasmatic molecule called fibrinogen. The fibrin formed after the centrifugation is changed into biologic glue which consolidates the initial platelet cluster. The fibrin architecture entraps various numbers of leukocytes in the fibrin matrix, allowing an intense slow release of growth factors, and favors the sealing of wound borders and facilitates rapid epithelialization.²⁶ A recent systematic review by Miron *et al* has proven the potential of PRF on wound healing after regenerative therapy for the management of various soft-tissue defects.²⁷

The use of PRF membrane following excision of recurrent PG also prevented the underlying resorption and esthetic soft-tissue coverage.

CONCLUSION

Pyogenic granulomas are commonly encountered soft tissue enlargements. Careful diagnosis is essential to differentiate this lesion from other vascular lesions. Meticulous oral hygiene should be instituted. Surgical excision of the lesion, along with curettage should be done to prevent recurrence.

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