

## Pyogenic granuloma –A case report (Crocker and Hartzell's disease – A Commoner)

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**Abstract:** Exophytic gingival lesions are frequently encountered in our day-to-day clinical practice. Of which, Pyogenic granuloma is a relatively common, benign mucocutaneous lesion. The exact etiopathogenesis is unclear. Trauma, chronic inflammation, pregnancy are considered to be the possible etiological factors. The term 'pyogenic granuloma' is said to be a misnomer, because it is neither associated with pus formation nor a granulomatous lesion. Treatment consists of surgical excision along with eradicating the causative agents. Recurrence of the lesion can be prevented by complete excision of the lesion and by following proper oral hygiene measures. This article describe a case of pyogenic granuloma in a 16year old female which have been successfully managed and maintained.

**Keywords:** pyogenic granuloma, gingiva, hartzell disease

Date of Submission: 23-05-2018

Date of acceptance: 05-06-2018

### I. Introduction

Pyogenic granuloma is a reactive inflammatory hyperplasia which appears in response to various stimuli such as low grade local irritation and traumatic injury.<sup>1</sup> Hullihen in 1844 reported the first pyogenic granuloma. In 1897, occurrence in man was first described as Botryomycosis hominis by Poncet and Dor. The term Pyogenic granuloma or Granuloma pyogenicum was coined by Hartzell in 1904.<sup>2,3</sup> Since then various terminologies were used like Crocker and Hartzell's disease. Angelopoulos based on the histologic view, described PG as Hemangiomatic granuloma. Cawson and coworkers named it as Granuloma telangiectaticum. The various other terminologies used were granuloma Pediculatum Benignum, Benign vascular tumor and during pregnancy as Granuloma gravidarum<sup>4</sup>. The term "pyogenic granuloma" is a misnomer as it is not related to any infection, does not contain pus and is not a true granuloma.<sup>4</sup> Pyogenic granuloma (PG) may occur in all age groups, though it is predominantly seen in young females in the second decade of life because of the hormonal changes in this period. The increased incidence of these lesions during pregnancy may be related to the increasing levels of estrogen and progesterone.<sup>5</sup>

Clinically these lesions usually present as single nodule or sessile papule with smooth or lobulated surface and maybe seen in any size from a few millimeters to several centimeters. As lesion mature, the vascularity decreases and the clinical appearance are more collagenous and pink. It preferentially affects the gingiva, but may also occur on the lips, tongue, oral mucosa and palate.<sup>4</sup> Surgical excision is the treatment of choice and curettage of underlying tissue is recommended with removal of the local factors if present.<sup>6</sup>

### II. Case report

A 16 year old female patient reported to the outpatient Department of Periodontics, Rajah Muthiah Dental College with a chief complaint of gingival over growth for 3 months. The mass was not painful but often bled while eating, rinsing and sometime spontaneously. On Extra oral examination, no abnormalities were detected. Intra oral examination revealed generalized inflamed hyperplastic gingiva with retained deciduous 65. An irregular, sessile exuberant growth in respect to buccal aspect and interdental gingiva of 65 and 26 region evident, measuring about 11×5mm. This discrete lobular growth was covering almost two-third of crown of 65 and 26. On palpation, the growth was soft in consistency, tender and bleeds profusely on probing. Oral hygiene status was poor. Based on the clinical findings, the case was provisionally diagnosed as "pyogenic granuloma". Intra oral periapical radiograph was taken and no bony involvement was seen. Routine hematologic tests were

seen within normal range. After the informed consent of the patient, excisional biopsy was done and the lesion was sent for histopathologic evaluation. The patient was advised post-operative antibiotics, analgesic and maintenance of oral hygiene measures. The excised specimen showed hyperplastic stratified parakeratotic squamous epithelium with an underlying fibrovascular stroma. The stroma consisted of large number of budding and dilated capillaries, plump fibroblast, areas of extravasated blood and dense inflammatory cell infiltrates. The above histopathologic findings were suggestive of pyogenic granuloma.



**Figure 1: Pre-operative view showing pyogenic granuloma**



**Figure 2: Surgical excision of pyogenic granuloma**



**Figure 3: Excised tissue**



**Figure 4: Immediate post-operative view**



**Figure 5: Periodontal dressing placed**

### **III. Discussion**

Pyogenic granuloma is an inflammatory hyperplasia affecting the oral tissues. The precise mechanism for the development of pyogenic granuloma is unknown. Trauma, hormonal influences, viral oncogens, underlying microscopic arteriovenous malformations, the production of angiogenic growth factors, & cytogenic abnormalities have all been postulated to play a role. The over expression of transcription factors, P- ATF2 & STAT3 also may play role in tumorigenesis.<sup>7</sup> Regezi et al., suggested that pyogenic granuloma is caused by a known stimulant or injury such as calculus or foreign material within the gingival crevice resulting in exuberant proliferation of connective tissue.<sup>8</sup> Ainamo suggested that routine tooth brushing habits cause repeated trauma to the gingiva resulting in irritation and formation of these lesions.<sup>9</sup> Release of variety of endogenous substances and angiogenic factors caused disturbances in the vascularity of the affected area.<sup>7</sup> Gingival irritation and inflammation that result from poor oral hygiene, dental plaque and calculus or over-hanging restorations as well as hormonal changes may be precipitating factors in many cases. Because of this irritation, the underlying fibrovascular connective tissue becomes hyperplastic and there is proliferation of granulation tissue which leads to the formation of a pyogenic granuloma.<sup>10</sup> In this case, the patient discussed was a 16 year old female. From the numerous etiologies enumerated above, the probable etiologic factors applicable in this case included the presence of large amounts of calculus due to poor oral hygiene habits and hormonal influence.

Oral Pyogenic granuloma is the most common gingival tumors for 75% of all cases.<sup>4</sup> In an analysis of 244 cases of gingival lesions in south Indian population, Shamim et al. found that nonneoplastic lesions accounted for 75.5% of cases with oral pyogenic granuloma being most frequent lesion, accounting for 52.71% cases, but in children this type of lesion is a very rare identity.<sup>11</sup> The typical lesion involves the interproximal gingiva and increases in size to cover a portion of the adjacent teeth. The lips, tongue, buccal mucosa are the next common sites. The maxillary gingiva is involved more frequently than the mandibular gingiva; the facial

gingiva is involved more than lingual gingival. Also majority of pyogenic granulomas are found on the marginal gingiva; only 15% of tumor on alveolar part.<sup>12</sup>

Clinically pyogenic granuloma is a smooth or lobulated exophytic lesion manifesting as small, red erythematous papule on a pedunculated or sessile base, varying in diameter from few millimeters to centimeters. The surface is ulcerated and friable which may be covered by a yellow, fibrinous membrane and its color ranges from pink to purple depending upon the age of the lesion.<sup>8</sup> The consistency of the tumor gets firmer both with aging of the lesion and elimination of its etiological factors. Its color ranges from pink to red to purple, depending on the age of the lesion. Young pyogenic granulomas are highly vascular in appearance because they are composed predominantly of hyperplastic granulation tissue in which capillaries are prominent. Thus minor trauma to the lesion may cause considerable bleeding, due to its pronounced vascularity whereas older lesions tend to become more collagenized and pink.<sup>13</sup> Although pyogenic granuloma can be diagnosed clinically with considerable accuracy, radiographic and histopathological investigations, aid in confirming the diagnosis and treatment.

Depending upon its rate of proliferation and vascularity, there are two histological variants of pyogenic granuloma called lobular capillary hemangioma (LCH type) and non-lobular capillary hemangioma (non-LCH). The LCH type has proliferating blood vessels organized in lobular aggregates, no specific changes such as edema, capillary dilation or inflammatory granulation were noted. The non-LCH type consisted of a vascular core resembling granulation tissue with foci of fibrous tissue.<sup>14</sup> In this case, the biopsied specimen on histologic examination revealed hyperplastic stratified parakeratotic squamous epithelium with an underlying fibrovascular stroma. The stroma consisted of large number of budding and dilated capillaries, plump fibroblast, areas of extravasated blood and dense inflammatory cell infiltrates. The above histopathologic findings were suggestive of pyogenic granuloma.

Radiographic findings are usually absent.<sup>15</sup> However in some cases long standing gingival pyogenic granulomas caused localized alveolar bone resorption.<sup>16</sup> In the present case, there were no obvious radiographic findings.

Various other benign soft tissue lesions need to be differentiated from pyogenic granuloma. Peripheral Giant cell granuloma, irritational fibroma, lymphoma, capillary hemangiomas & metastatic tumor should be considered in differential diagnosis. Differentiation is done on clinical and histological features which help in providing adequate treatment and therefore a good prognosis.<sup>4,15</sup>

Treatment of pyogenic granuloma involves a complete surgical excision. Excision and biopsy of the lesion is the recommended line of treatment unless it would produce a marked deformity and in such a case incisional biopsy is recommended. Conservative surgical excision of the lesion with removal of irritants such as plaque, calculus and foreign materials is recommended for small painless non bleeding lesions. Excision of the gingival lesions up to the periosteum with through scaling and root planning of adjacent teeth to remove all visible sources of irritation is recommended.<sup>4</sup>

Other treatment modalities include laser surgery, electrodesiccation. Injection of absolute ethanol, sodium tetradecyl sulfate (sclerotherapy) and corticosteroids have also been tried with successful results in cases with recurrent lesions.<sup>17,18,19,20</sup> Recurrence occurs in upto 16% of the lesions, which might be due to incomplete excision, failure to remove etiologic factors, or due to reinjury to the area, making follow up necessary.<sup>21</sup>

#### **IV. Conclusion**

Pyogenic granuloma is a non-neoplastic growth in the oral cavity. Proper diagnosis, prevention, management and treatment of the lesion are very important. Although excisional surgery is the treatment of choice for pyogenic granuloma, removal of causative agents should be the first line of treatment. After surgical excision patient should follow proper oral hygiene measures to prevent recurrence of the lesion.

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Kavitha Jayavel "Pyogenic granuloma –A case report (Crocker and Hartzell’s disease – A Commoner).". *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 6, 2018, pp 69-73.