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Periodontology

LASER ASSISTED EXCISION OF PYOGENIC GRANULOMA: A CASE REPORT

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ABSTRACT Pyogenic granuloma (PG) is a common tumor-like growth of the oral cavity, considered to be of non-neoplastic nature, often caused by constant low-grade trauma as well as poor oral hygiene and maybe due to hormonal disturbances. Pyogenic granuloma is one of the inflammatory hyperplasias seen in the oral cavity. This term is a misnomer because the lesion is unrelated to infection and in reality arises in response to various stimuli such as low-grade local irritation, traumatic injury or hormonal factors. It predominantly occurs in the second decade of life in young females, possibly because of the vascular effects of female hormones. Clinically, oral pyogenic granuloma is a smooth or lobulated exophytic lesion manifesting as small, red erythematous papules on a pedunculated or sometimes sessile base, which is usually hemorrhagic. The surface ranges from pink to red to purple, depending on the age of the lesion. Surgical excision, and removalof underlying cause in some cases, is the preferred method of treatment as it is only a benign lesion. In order to remove this lesion, scalpel, cryosurgery, diathermy and laser are used . The aim of this study is to assess the stages of treatment, recovery and recurrence of PG when the soft tissue diode laser is used.

KEYWORDS : pyogenic granuloma; soft tissue diode laser; female patient.

INTRODUCTION

In 1897 Pyogenic Granuloma (PG) was described for the first time by two French surgeons Poncet and Dor[1,2]. As the lesion is not a true granuloma, the term PG can be misleading[3].Pyogenic granuloma of the skin and oral cavity can form as a result of various etiologic factors that have been put forward by different researchers[4]. Chronic low grade trauma[5], physical trauma[6], hormonal factors[7], bacteria, viruses [8]and certain drugs[9] have been considered as contributory factors in the development of pyogenic granulomas. Poor oral hygiene, foreign material in the gingiva, calculus, and local irritants generally are the advancing causes[4].

These lesions possess certain clinical features such as being painless, sessile or pedunculated exophytic masses with a base beginning from the gingival margin or, in most cases, from the interproximal tissues in the maxillary anterior.

The size can vary from case to case but it hardly ever exceeds 2cm and it will return unless completely removed. In 70-75% of the cases, oral pyogenic granuloma is observed in gingiva, followed by the tongue, lips, and buccal mucosa[4,10]. Pyogenic granuloma can develop at any age but in the majority of cases, 60%, PG is observed in the 10-40years old age group, with the incidence peak between the ages of 20 to 30. Moreover, the possibility of PG is twice as likely with regards to females[1,11].The treatment of this lesion can be carried out using different approaches. To remove PG, scalpel, cryosurgery and laser might be used. Conventional surgery can be followed by several complications such as intraoperative bleeding, difficulties in wound healing and maintenance of sterility during surgery.[10] The use of lasers in a variety of surgical procedures has been well documented. Diode lasers present a solid semiconductor as active medium, by associating aluminum, gallium, and arsenate (with wavelengths varying between 800 and 980 nm) in the visible andinvisible range of near infrared waves. As its wavelength is poorly absorbed by hard dental tissue, diode laser is safe and well indicated for soft oral tissue surgeries in regions near the dental structures and for cutting, vaporization, curettage, blood coagulation, and hemostasis in the oral region[11].The possibility of recurrence of the lesion has reported to be 16%, however it seems that the use of laser will reduce this recurrence rate. The purpose of this study is to assess the stages of treatment, recovery and recurrence of PG when the diode laser is used.

CASE REPORT:PYOGENIC GRANULOMA

A 24 years old female patient reported to the department of periodontics, peoples dental academy, with a chief complaint of painless growth of gum in the maxillary molar region since 1 year. She also complained of the lesion being associated with bleeding while brushing. The patient was apparently all right when she first noticed lesion in the buccal region of the posterior maxillary teeth region one year back. To start with the lesion was peanut in size and slowly progressed to attain the present size (Figure 1).

There was no history of swelling in any other part of the body and had no relevant medical history.

Clinical examination

Extraoral examination

No abnormality detected.

Intraoral examination

Inspection: A solitary discrete gingival over growth was visible on buccal aspect of maxillary molar region measuring 1*1.8 mm in size. The growth was roughly oval in shape, colour is varying from pinkish red, and surface was smooth.

Palpation: The inspectory findings regarding number, site, shape and size were confirmed & the lesion was found to be pedunculated with stalk.

EXCISION TECHNIQUE:

The treatment comprised of oral prophylaxis and excisional biopsy of the growth with diode Laser (4 Watts). To start with thorough scaling & root planning was carried out & the response to the same was evaluated after 3-4 weeks of time. Then the excisional biopsy of the lesion was done by using diode LASER (4 watts) in the absence of local anaesthesia (figure 2 &4). The patient was discharged with necessary post-operative instructions for maintenance of good oral hygiene and keeping the area clean. No additional analgesic or antibiotic was recommended. The patient was visited in 7 days and the healing process was desirable (Figure 6)

HISTOPATHOLOGICAL EXAMINATION:

The specimen was sent for histopathological examination in formalin Buffer Solution 10%(figure 3). Histopathological view of the specimen stained by Hematoxylin and eosin showed a soft tissue fragment covered by Para keratinized stratified squamous epithelium which was ulcerated and replaced by fibrinoleukocyter membrane in some spaces. Proliferation of multiple blood vessels, hemorrhage and inflammatory cell infiltration was also seen in the connective tissue (Figure 5).The characteristics confirmed the diagnosis of PG.

FIGURE 1: PREOPERATIVE PICTURE

FIGURE 2: LASER ASSISTED EXCISION

FIGURE 3: EXCISED TISSUE

FIGURE 4: POSTOPERATIVE PICTURE

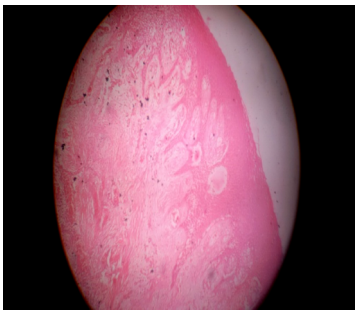

FIGURE 5: HISTOMICROGRAPH

FIGURE 6: POSTOPERATIVE PIC AFTER 1 WEEK

DISCUSSION:

The pyogenic granuloma is a relatively common, tumor like, exuberant tissue response to localized irritation or trauma. Pyogenic granulomas occur at any age, but they most frequently affect young adults. The maxillary gingiva (especially in the anterior region) is involved more frequently than the mandibular gingiva; the facial gingiva is involved more than the lingual gingiva. Three quarters of all oral pyogenic granulomas occur on the gingiva, with the lips, tongue (especially the dorsal surface), and buccal mucosa also affected. A history of trauma is common in extragingival sites, whereas most lesions of the gingiva are response to irritation. Individual's with poor oral hygiene and chronic oral irritants most frequently are affected.[12,13] Early lesions bleed easily due to extreme vascularity. Pyogenic granulomas can have a rapid growth pattern that can cause alarm. If left alone, a number of pyogenic granulomas undergo fibrous maturation and resemble and/or become fibromas. A number of lesions affect both the facial and lingual gingivae. Pyogenic granulomas usually present as smooth or lobulated red-to-purple masses that may be either pedunculated or sessile. As lesions mature, the vascularity decreases and the clinical appearance is more collagenous and pink[14]. Pyogenic granulomas vary in size from a few millimetres to several centimetres and are painless.[12] These tumors are soft to palpation. A history of trauma is common in extragingival sites, whereas most lesions of the gingiva are a response to irritation. Individuals with poor oral hygiene and chronic oral irritants (eg, over-hanging restorations, calculus) most frequently are affected.

Histologic examination reveals sectioned soft tissue consisting of a lesion composed of ulcerated mucosa covering a core of cellular fibrous connective tissue admixed with proliferating vascular channels and a mixed inflammatory infiltrate. This lesion is a reactive/ inflammatory process. Differential diagnosis for PG is fibroma, peripheral ossifying fibroma, irritation fibroma, peripheral giant cell granuloma. The treatment of choice is conservative surgical excision. For gingival lesions, excising the lesion down to the periosteum and scaling adjacent teeth to remove any calculus and plaque that may be a source of continuing irritation is recommended[15]. Pyogenic granuloma occasionally recurs, and a re-excision is necessary. There currence rate is higher for pyogenic granulomas removed during pregnancy. The only outpatient care is observation of the surgical healing 1 week after removal. Prevention consists of routine scaling and home care, especially during pregnancy. No complications are anticipated with removal of this lesion other than the chance of a cosmetic gingival defect. The prognosis is excellent, and the lesion usually does not recur unless inadequately removed. Lesions removed during pregnancy may have a higher recurrence rate.

Focus patient education on better oral hygiene, and consider recommending pulsating mechanical toothbrushes with timers. These tooth brushes encourage better hygiene.1Laser therapy using continuous and pulsed CO_2 and Nd:YAG systems have been used for a variety of intraoral soft tissuelesions such as haemangioma, lymphangioma, squamous papilloma, lichen planus, focal melanosis, and pyogenic granuloma, because they carry the advantage of being less invasive and sutureless procedures that produce only minimal postoperative pain. Rapid healing can be observed within a few days of treatment, and as blood vessels are sealed, there are both a reduced need for post-surgical dressings and improved haemostasis and coagulation. It also depolarizes nerves, thus reducing post-operative pain and also destroys many bacterial and viral colonies that may potentially cause infection. Reduced post-operative discomfort, oedema, scarring and shrinkage have all been associated with its use.8

RESULTS: The patient reported no pain after surgery and did not use any systemic antibiotics. The patient was satisfied after the surgery. Chlorhexidine mouthwash was given to the patient. Pathology results confirmed Pyogenic granuloma. After 2 weeks, complete healing was observed.

CONCLUSION: Excisional surgery is the preferred treatment method for PG. The application of laser can be considered as an effective and safe technique for excision of this lesion with minimal invasion and many clinical advantages such as less intra-operative bleeding, hemostasis and reduced pain and times of healing.

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