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Laser assisted management of pyogenic granuloma of unusual size: A case report

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Abstract
Pyogenic granuloma is a non-neoplastic inflammatory hyperplasia which is also known as 'Lobular Capillary Hemangioma'. Gingiva is the most commonly affected site for oral pyogenic granuloma followed by tongue, hard palate, lip, buccal mucosa, and the floor of the mouth. Pyogenic granuloma, characteristically presents as a small pinkish soft tissue swelling, the size ranging from few millimetres to a few centimetres. The pyogenic granuloma may have a pedunculated or sessile base and is usually non-tender, but it can bleed on touch. It may arise due to low grade trauma such as chronic irritation due to a sharp tooth or a bad technique of tooth brushing. It may also occur due to hormonal factors, or certain kinds of drugs. In this case report it is shown that the excision of a large gingival pyogenic granuloma was performed by diode lasers (810 nm wavelength, 7W power) which resulted in less stress and fear in patient and the patient did not complain of any discomfort during and after the procedure.

Keywords: pyogenic granuloma, laser, healing, recurrence

Introduction

Clinicians very frequently encounter different types of gingival enlargements. These enlargements exhibits various clinical features with different etiology. The proper diagnosis is essential and adequate knowledge is required for management.

The Pyogenic granuloma is a tumour like lesion originates as a response of the tissues to a nonspecific infection or an exaggerated, conditioned response to minor trauma, as well as poor oral hygiene and may be due to hormonal disturbances, certain medications [1]. Pyogenic granuloma is a common tumour like growth of the oral cavity that traditionally has been consider to be non-neoplastic in nature. Previously pyogenic granuloma was originally thought to be caused by pyogenic organisms, it is now believed to be unrelated to infection rather the pyogenic granuloma is thought to represent an exuberant tissue response to local irritation or trauma. It is not a true granuloma despite of its name.

As pyogenic granuloma is only a benign lesion so, surgical excision, and removal of underlying cause in some cases is the preferred method of treatment. In order to remove pyogenic granuloma lesion cryosurgery, scalpel and laser might be used. LASER application is also a newly recommended technique.

Now a days different lasers, with adequate parameters, are used for the surgery of Pyogenic Granuloma, which include Nd: YAG (Neodymium-Doped Yttrium Aluminium Garnet), CO_2 (Carbon Dioxide Laser), Diode and Erbium family amongst others.

Case Report

A 37 year old female patient complained about difficulty in taking food due to swollen gum in upper jaw for last 2-3 months. Patient was feeling pain during mastication. On clinical examination, it was found that the gingival overgrowth extended from upper left central incisor to the mesial half of upper left canine (Fig.1). The colour was pale pink with bluish hue on the surface. The growth had a peduncle. The size of pedunculated overgrowth was measured with periodontal probe as 15x18mm (Fig.2). The size of the growth was so large that it was hampering oral hygiene maintenance and making the look unesthetic. It was firm on consistency. The surface was non-ulcerated and smooth. There was profound bleeding on probing. Subgingival calculus was present. Intra-oral periapical (IOPA) radiograph showed no signs of periodical infection or bone involvement (Fig.3). After clinical examination it was provisionally diagnosed as pyogenic granuloma.

Thorough oral prophylaxis was done. After one week, the laser assisted excision of the overgrowth was executed. Under local anesthesia, with the diode laser (810 nm wavelength, 7W power) the peduncle of the growth was excised after lifting the movable part of the growth with tissue forceps (Fig. 4 and Fig. 5). The excised growth (Fig. 6) was sent for histopathological evaluation. Vit-E was prescribed to apply topically over the area for one week. Oral hygiene maintenance instructions were given.

The histopathological examination (Fig.7) of the specimen showed a stratified squamous par keratinized hyperplastic and focally ulcerated epithelium. The connective tissue stroma

was enriched with numerous endothelial lined blood vessels with proliferating endothelial cells and budding capillaries. Bundles of collagen fibers were arranged haphazardly in the stroma in conglomeration with intense inflammatory cells comprising of plasma cells, lymphocytes, and few neutrophils. These histopathological findings confirmed the provisional diagnosis of pyogenic granuloma. After two weeks, the patient was recalled. The healing was uneventful. Post-operative pain and complications were absent. Post-operative oral hygiene maintenance is satisfactory. Excision of the growth has facilitated proper oral hygiene maintenance, and relieved the patient. After one month, epithelialization was completed leaving slight depression in that area (Fig.8). The esthetics was also improved.

Fig 1: Pre-operative photograph of the Growth

Fig 2: Measurement of the Dimension of the growth: 15x18 mm

Fig 3: Pre-operative radiograph of the area

Fig 4: Excision of overgrowth with Laser

Fig 5: Immediate post-operative after excision of the growth by LASER

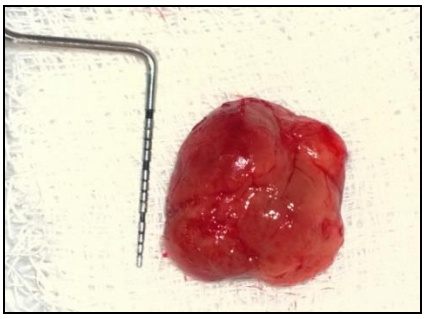

Fig 6: Excised Growth

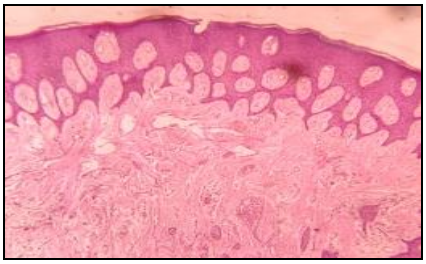

Fig 7: Histopathological Examination

Fig 8: One Month post-operative

Discussion

Hullihen in 1844 first reported pyogenic granuloma [2], while the term "pyogenic granuloma" or "granuloma pyogenicum" was coined by Hartzell in 1904 [3]. Pyogenic granuloma is a smooth or lobulated mass that is usually pedunculated, although some lesion are sessile. As lesion mature, the vascularity decreases and the clinical appearance is more collagenous and pink. The peak incidence is in teenagers and young adults, with female predilection of 2:1 [4]. Typically, the mass is painless, although it often bleeds easily because of its extreme vascularity. Pyogenic granuloma may exhibit rapid growth, which may create alarm for both the patient and the clinician, who may fear the lesion might be malignant. The surface is characteristically ulcerated and ranges from pink to red to purple, depending on the age of the lesion. Gingival irritation and inflammation that results from poor oral hygiene may be a precipitating factor in many patients. A history of trauma before the development of the lesion is not unusual, especially for extragingival pyogenic granuloma. Lesions are slightly more common on the maxillary gingiva than the mandibular gingiva; anterior areas are more frequently affected than posterior areas. Pyogenic granuloma lesions are much more common on the facial aspect of the gingiva than the lingual aspect; some extend between the teeth and involve both the facial and the lingual gingiva. Pyogenic granuloma of the gingiva frequently develop in pregnant women, so much so that the terms 'pregnancy tumour or granuloma gravidarum' often are used.

Few such lesions may begin to develop during the first trimester, and their prevalence increases up through the seventh month of pregnancy. The gradual rise in development of these lesions throughout pregnancy may be related to the increasing levels of estrogen and progesterone as the pregnancy progresses. After pregnancy and the return of normal hormone levels some of these pyogenic granulomas resolve without treatment or it may undergo fibrous maturation and resemble a fibroma. The pyogenic granuloma can present three clinical stages of phases. The "early phase" is characterized by compact cellular stroma and very less lumen formation. In "capillary phase", the lesion becomes matured and highly vascular lobules with high number of intraluminal red blood cells can be seen. The last phase is referred as "involutionary phase" or ''healing phase'' which shows intra- and perilobular fibrosis. Clinically younger lesions appear red to purple due to high vascularity, while older lesions are collagenized and tend to appear pink [5, 6].

Majority of the pyogenic granulomas are found on the marginal gingiva and only 15% of the tumours noticed on the alveolar part of the gingiva according to Vilmann *et al.* [7].

Recurrence of pyogenic granuloma after surgical excision is a known complication but can be prevented. Recurrence might be from the remnant lesion or due to existing irritant.[8]Treatment of pyogenic granuloma involves a complete surgical excision of whole lesion as recurrence rate for pyogenic granuloma is said to be 16% of the treated lesions so re excision of such lesions might be necessary, however it seems that the use of laser will reduce this recurrence rate. Considering the recurrence of lesion, it appears that the type of laser used during surgery, has no effect and furthermore recurrence does not depend on the laser wavelength and it is only affected by the surgical technique.

Conclusion

Pyogenic granuloma is a slow growing benign lesion. Excessive bleeding during excision is normal consequence due to its high vascularity. Laser excisionhas shown better coagulation, hemostasis, and no adverse effects.[8]The proper diagnosis is required clinically as well as by histopathological evaluation. Careful excision along with the stalk is essential to prevent recurrence of it.

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