



PYOGENIC GRANULOMA: LASER ASSISTED SURGICAL EXCISION USING DIODE LASER- A CASE REPORT.

Oral Medicine

Rakhee Modak*	Assistant Professor, Department of Oral Medicine and Radiology, Bharati Vidyapeeth Deemed to be University Dental College and Hospital, Pune, India. *Corresponding Author
Mayur Chaudhary	Associate Professor, Department of Oral and Maxillofacial Pathology, Bharati Vidyapeeth Deemed to be University Dental College and Hospital, Pune, India.
Shilpa Chaudhary	Assistant Professor, Department of Periodontology, Bharati Vidyapeeth Deemed to be University Dental College and Hospital, Pune, India

ABSTRACT

Pyogenic granuloma is one of the inflammatory hyperplasias seen in oral cavity. These are non neoplastic lesions and are caused by constant low grade trauma, persistent irritation, hormonal imbalance. Clinically these are exophytic outgrowths, that are hemorrhagic. Pyogenic granuloma may occur in all age group, has female predilection in second decade of life due to hormonal changes. Surgical excision is preferred conventional treatment. The application of laser is newly recommended treatment; this includes use of CO2 laser, Nd:YAG laser & Er:YAG lasers. In this case report we describe a pyogenic granuloma in 59 years old female patient, that was treated successfully by using Diode laser with minimum intraoperative bleeding, reduced pain post-operatively. Healing was uneventful, and no recurrence was observed on follow up upto one year.

KEYWORDS

Pyogenic granuloma, inflammatory hyperplasia, hemorrhagic, Diode laser.

INTRODUCTION

Pyogenic granuloma is an inflammatory hyperplasia which occurs in oral cavity.¹ It was described by Hüllihen in 1844 and term pyogenic granuloma was introduced by Hartzell in 1904.^{2,3} The different nomenclatures are "Granuloma gravidarum", "Lobular capillary hemangioma", "Pregnancy tumor", "Granuloma telangiectaticum" due to vascularity seen.⁴ The term pyogenic granuloma is a misleading as the lesion is not pus forming neither resembles a granuloma histologically.⁵ Pyogenic granuloma can develop at any age, but peak incidence is between the age 20 to 30 years. Currently different treatment modalities such as sclerotherapy, cryotherapy, electrodesiccation are used.⁶ Laser application is newly recommended tool, which is effectively used in practice for excision of pyogenic granuloma.

CASE REPORT

A 59 years old female patient reported department of Oral Medicine with chief complaint of gingival overgrowth in upper anterior region of palatal aspect since 6 months. The growth was initially pea nut size and gradually increased to attain present size. The growth was painless but used to bleed oftenly while eating, brushing, on mouth rinsing, sometimes spontaneously. Medical history was not significant.

On intra-oral examination, a solitary gingival overgrowth was seen on anterior palatal region, appeared to be arising from interdental papilla between 11 and 21. The growth was extending upto 2 cm on anterior palate and was covering crowns of 11 and 21 partly. The pathologic migration and spacing was seen between 11 and 21. The growth was oval in shape, pedunculated, lobulated measuring approximately 3 X 3 cm in size. It was pinkish red in colour, surface was smooth and ulcerated. [Fig.1]. On palpation the mass was soft to firm in consistency and easily bleeding on probing. So correlating history, clinical findings, symptoms a provisional diagnosis of pyogenic granuloma was considered. Differential diagnosis included peripheral giant cell granuloma, peripheral ossifying fibroma.

Intra oral periapical radiograph was taken, that did not reveal in bony changes. As lesion was extremely bleeding on touch, we opted for Laser excision of lesion. Patients hemogram was within normal limit. After infiltration of local anesthesia, the lesion was excised using soft tissue Diode Laser (Kavo, USA) with specifications such as Wavelength 940 nm, Output energy 0.1-7 W and input power 300 VA. We used wavelength of 940 nm, 3 Watt power, keeping it on interrupted pulse mode. The tip was positioned at a distance of 1 mm away from lesion, moving around base of lesion. There was minimum intraoperative bleeding, hence we achieved clean cutting and hemostasis with Diode laser. [Fig.2] Necessary postoperative instructions were given to patient and patient was guided for

maintaining meticulous oral hygiene and betadine gargles. Analgesics were prescribed.

The excised tissue was sent for histopathological analysis [Fig 3]. The H and E section showed hyperplastic epithelium with long rete ridges, areas of ulceration seen. Connective tissue composed of collagen fibres interspersed with abundant engorged capillaries, blood vessels lined by endothelial cells were evident. Chronic inflammatory infiltrate chiefly lymphocytes were seen [Fig.4]. Histopathology confirmed lesion as pyogenic granuloma.

The patient visited after 7 days when healing was uneventful and no postoperative discomfort was reported by patient. No recurrence was noted on follow up after 1 year.

DISCUSSION

Pyogenic granuloma (PG) is a common tumor like exuberant tissue response to various stimuli such as chronic low grade local irritation, traumatic injuries, certain drugs.

According to Namazi et al (2012) hormonal imbalance, viral oncogenes, underlying arteriovenous malformation, angiogenic growth factors play role.^{7,8}

Literature also states other factors such as defective restorations, residual roots, aberrant tooth development and even eruption of teeth are precipitating factors for development of pyogenic granuloma. PG occurs in wide age range, but highest incidence is in second decade of life; more seen in females due to increased levels of oestrogen and progesterone.⁹ In our case report patient was 59 years old female and had achieved menopause since past two years. Other contributing factor was calculus for development of pyogenic granuloma.

Ainemo et al discovered that recurrent trauma cause release of various endogenous and angiogenic factors, this leads to increased vascularity of lesion.¹⁰

The gingiva is most common site and mainly maxillary gingiva is affected than mandibular gingiva. The growth mainly arises on interdental papilla and may extend to cover a portion of adjacent teeth. Clinically PG presents as smooth or lobulated exophytic lesion; either sessile or pedunculated usually are hemorrhagic. Size is variable, surface is ulcerated and may be covered by a yellow fibrinous membrane. PG are highly vascular in nature and colour ranges from pink to red as they are composed of hyperplastic granulation tissue.⁶ Hence minor trauma can cause considerable bleeding. Differential diagnosis includes peripheral giant cell granuloma, peripheral ossifying fibroma, hemangioma.

Surgical excision is conventional treatment, other methods include cryosurgery, cauterization with silver nitrate, sclerotherapy with sodium tetradecyle sulfate and monoethanolamine oleate ligation, absolute ethanol injection, Nd:YAG and CO₂ Lasers.^{6,9}

Laser surgery results in less pain and minimum intra-operative bleeding. It is less invasive compared to conventional treatment and less risk of associated infection as Laser surgery maintains sterile conditions intra-operatively.¹² Laser surgery is superior to conventional technique in terms of precision of cutting, bloodless field, no need of suturing.¹³ The other advantages are fast wound healing, less postsurgical discomfort, oedema, scarring and shrinkage.¹³ Rai et al introduced use of Diode Laser for removal of PG. They reported excellent results in pyogenic granulomas.⁹

Akbulut et al reported that Diode lasers are useful for oral soft tissue procedures. They stated that wavelength (810-980 nm) is poorly absorbed by hard dental tissues hence safe and indicated for surgeries near dental structures for cutting, curettage, blood coagulation and hemostasis. Also it is much safer than other lasers, as at extremely close distance or by contact it avoids damage due to beam escape.¹⁴

In our patient, we achieved complete resolution of lesion, with Diode laser without producing any complications. There was better patient compliance. There was no scarring and recurrence on follow up upto one year.

CONCLUSION

The case report concludes that for treating pyogenic granuloma, Diode laser is good therapeutic option. It is effective and safe technique with advantages such as minimum bleeding, reduced pain, hemostasis and reduced postoperative discomfort. A careful management of lesion helps in preventing recurrence.



Fig.1 Solitary, exophytic pedunculated growth measuring approx. 3*3 cm in size on palatal aspect of 11 & 21.



Fig.2 Diode Laser assisted excision of growth, achieved blood coagulation and hemostasis.



Fig 3 :- Excised specimen

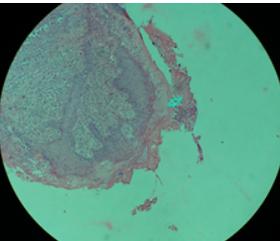


Fig 4 :- Histopath revealed stratified epithelium elongated rete ridges engorged blood capillaries and inflammatory infiltrate.

REFERENCES:-

- [1]. Al-Khateeb T, Ababneh K. Oral Pyogenic granuloma in Jordanians: A retrospective analysis of 108 cases. *J Oral Maxillofac Surg.* 2003; 61:1285-8.
- [2]. Hüllihen SP. Case of aneurism by anastomosis of the superior maxillae. *Am J Dent Sci.* 1844; 4:160-2.
- [3]. Hartzell MB. Granuloma pyogenicum. *J Cuttan Dis Syph.* 1904; 22:520-5.
- [4]. Cawson RA., et al. "Lucas Pathology of Tumors of Oral Tissues". 5th edition. Missouri: Mosby (1998): 252-254.
- [5]. Parrulli R, Franco S, Petruzzi M, Maiorano E, Favia G. Pyogenic Granuloma: surgical treatment with Diode Laser. *Ann Stomatol (Roma).* 2013;4(Suppl 2):35-6.
- [6]. Jafarzadeh H, Sanatkhan M, Mohtasham N. Oral pyogenic granuloma: a review. *J Oral Sci.* 2006; 48(4):167-75.
- [7]. Namazi Esmacil, Baliga Sharmila, Muglikar Sangeeta, Rahul K. A case report of pregnancy tumor and its management using the diode laser. *Journal of Dental Lasers.* 2012;6(2):68-71.
- [8]. Regezi JA, Sciubba JJ, RC J. Oral pathology: Clinical pathologic considerations. 4th ed. Philadelphia: WB Saunders; 2003. pp. 115-6.
- [9]. Rai S, Kaur M, Bhatnagar P. Laser: a powerful tool for treatment of pyogenic granuloma. *J Cutan Aesthet Surg.* 2011 May;4(2):144-7.
- [10]. Ainamo J. "The effect of habitual tooth cleansing on the occurrence of periodontal

disease and dental caries". *Suom Hammaslaak Toim* 67.1 (1971): 63-70.88 Citation: Roshani

- [11]. Wood NK, Goaz PW. In: *Textbook of differential diagnosis of oral and maxillofacial lesions.* 5th ed. USA: Mosby; 1997. pp. 32-4.
- [12]. Asnaashari M, Azari-Marhabi S, Alirezai S, Asnaashari N. Clinical Application of 810nm Diode Laser to Remove Gingival Hyperplastic Lesion. *J Lasers Med Sci.* 2013; 4(2):96-8
- [13]. Kirschner RE, Low DW. Treatment of pyogenic granuloma by shave excision and laser photocoagulation. *Plast Reconstr Surg.* 1999;104:1346-69. [PubMed]
- [14]. Akbulut N, Kursun E S, Tumer M K, Kamburoglu K, Gulsen U. Is the 810-nm diode laser the best choice in oral soft tissue therapy? *Eur J Dent.* 2013;7:207-11