

# LASER EXCISION OF PYOGENIC GRANULOMA: A CASE REPORT

## Authors:

Dr. Sruthi V.G.<sup>1\*</sup>

Dr. Harish Kumar V.V.<sup>2</sup>

III Yr Postgraduate<sup>1</sup>

Department of Periodontology  
KMCT Dental College  
Mukkam, Calicut

Professor and HOD<sup>2</sup>

Department of Periodontology  
KMCT Dental College  
Mukkam, Calicut

## Corresponding Author:

Dr. Sruthi V.G.

Third Year Postgraduate  
Department of Periodontology  
KMCT Dental College  
Manassery P.O., Mukkam  
Calicut, Pin 673602  
Mobile: 9497310415  
Mail: sruthivg25@gmail.com

## ABSTRACT

Pyogenic granuloma is a commonly occurring inflammatory hyperplasia of the skin and oral mucosa in females. It is a relatively common benign mucocutaneous lesion. The term is a misnomer as the lesion does not contain pus nor is it granulomatous. This tumor like growth is considered to be non neoplastic in nature and has a varied clinical presentation. Etiology of the lesions is unknown, but predisposing factors that have been reported include pregnancy, trauma, vascular malformation and chronic inflammation. The most common treatment of pyogenic granuloma is surgical excision but alternative approaches such as laser excision have also been proposed. Here present one such case of pyogenic granuloma, which was excised with diode laser.

**Key words:** Pyogenic granuloma, hyperplasia, diode laser.

## INTRODUCTION

Pyogenic granuloma is a common inflammatory hyperplastic lesion also known as Crocker and Hartzell's disease, granuloma pyogenicum, granuloma pediculatum benignum, benign vascular tumor, and during pregnancy as granuloma gravidarum<sup>1</sup>. It was first described by Hullihen in 1844. And was originally described in 1897 by two French surgeons, Poncet and Dor<sup>2</sup>, and the term pyogenic granuloma or granuloma pyogenicum was introduced by Hartzell in 1904<sup>3</sup>. It is considered as a capillary haemangioma of lobular subtype as suggested by Mills, Cooper, and Fechner, which is the reason they are often quite prone to bleeding<sup>2</sup>. The most common intraoral site is marginal gingiva, but lesions have been reported on palate, buccal mucosa, tongue, and lips. Extra oral sites commonly involve the skin of face, neck, upper and lower extremities, and mucous membrane of nose and eyelid<sup>4</sup>. Trauma, poor oral hygiene, low-grade local irritation, or certain kinds of drugs precipitate the hyperplastic response. It is common in females and may be associated with high levels of steroid hormones<sup>1</sup>.

## CASE HISTORY

A 34-year old woman presented to our department with a chief complaint of a painless swelling on the right maxillary buccal gingiva between 15 and 16 since eight months. She gave a history of a pea-sized swelling initially, which gradually increased to the present size and was associated with bleeding while brushing. She did not recollect any history of trauma or was not under gestation. General physical examination revealed no other abnormalities, and there was no generalized lymph adenopathy. On clinical examination, a single, well-defined pale red, roughly spherical gingival growth of 2.5x4 cm size was seen arising from the gingiva of 15,16 (Figure 1). The surface was smooth without ulceration. On palpation, it was found to be sessile, soft to firm in consistency, non-tender, but not reducible or fluctuant.

On the basis of history and clinical findings, a provisional diagnosis of pyogenic granuloma was made, and a differential diagnosis of peripheral ossifying fibroma, fibroma, and

peripheral giant cell granuloma was considered. Excisional biopsy with diode laser was planned. After local anaesthesia, the lesion was excised with a diode laser using an initiated tip in continuous mode. It was ensured that the lesion was completely excised by trimming up the remnants of the soft tissue adjacent to the tooth to prevent recurrence of the lesion. There present a hidden recession of approximately 2mm in relation<sup>16</sup>. The diode laser provided an optimum combination of clean cutting of the tissue and hemostasis (Figure 2). Then the excised area was covered with a resorbable GTR membrane (Figure 3). Lastly periodontal pack was placed (Figure 4).

The excised tissue was sent for histopathologic examination, which shows stratified squamous keratinized epithelium and underlying connective tissue. The connective tissue is densely collagenous with numerous budding blood capillaries. Endothelial lined vascular channels engorged with RBCs and extravasated RBCs are also seen. Dense chronic inflammatory cell infiltrate predominately lymphocytes and plasma cells are also evident. The characteristics confirmed the diagnosis of pyogenic



granuloma. The patient was recalled after 10 days, and her postoperative healing was uneventful (Figure 5). Then the patient was recalled after 2 months, the surgical site was healing well, with no evidence or recurrence of the lesion (Figure 6).



## DISCUSSION

Although pyogenic granuloma may appear at any age, 60% cases are observed between the ages of 10 and 40; incidence peaks during the third decade of life and women are twice as likely to be affected<sup>5</sup>, due to the increased levels of circulating hormones, estrogen and progesterone<sup>1</sup>. It is more common in children and young adults<sup>5</sup>.

Clinically, it presents as an elevated, smooth or exophytic, lobulated, sessile, or pedunculated growth that may show ulcerations or may be covered by yellow fibrinous membrane. Gingiva, especially the marginal gingiva, is affected more than the alveolar part<sup>6</sup>. Gingival irritation and inflammation that result from poor oral hygiene may be a precipitating factor in many patients<sup>7</sup>. Lips, tongue, or buccal mucosa may also be affected. Its size varies from a few millimetres to several centimetres, and it is usually slow growing, asymptomatic, and painless, but at times it grows rapidly<sup>6</sup>, reach its maximum size, and remain static<sup>8</sup>. They may typically begin as small, red papules that rapidly enlarge to become pedunculated raspberry-like nodules. Rarely, patient may develop multiple satellite angiomatous lesions after excision of a solitary pyogenic granuloma<sup>2</sup>. The colour varies from red, reddish purple to pink depending on the vascularity of the growth<sup>6</sup>.

Differential diagnosis of pyogenic granuloma includes peripheral giant cell granuloma, peripheral ossifying fibroma, fibroma, peripheral odontogenic fibroma, hemangioma, conventional granulation tissue, hyperplastic gingival inflammation, Kaposi's sarcoma, bacillary angiomatosis, angiosarcoma, and non-Hodgkin's lymphoma. Histologically, pyogenic granuloma shows prominent capillary growth within a granulomatous mass.



Although the conventional treatment for pyogenic granuloma is surgical excision, a recurrence rate of 16% has been reported<sup>1</sup>. There are also reports of the lesion being eliminated with electric scalpel or cryosurgery<sup>9</sup>. Other methods used by various workers include cauterization with silver nitrate, sclerotherapy with sodium tetradecyl sulfate and monoethanolamineoleate<sup>10</sup>, ligation, absolute ethanol injection dye<sup>11</sup>, Nd:YAG and CO<sub>2</sub> laser<sup>12</sup> shave excision, and laser photocoagulation<sup>13</sup>.

**Laser therapy using continuous and pulsed CO<sub>2</sub> and Nd: YAG systems** have been used for a variety of intraoral soft tissue lesions 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 present improved haemostasis and coagulation. It also depolarizes nerves, thus reducing postoperative pain, and also destroys many bacteria and viral colonies that may potentially cause infection. Reduced post-operative discomfort, oedema, scarring, and shrinkage have all been associated with its use<sup>13</sup>.

Powell et al applied Nd:YAG laser for excision of Pyogenic granuloma. Lower risk of bleeding compared to other surgical techniques and superior coagulation characteristics over CO<sub>2</sub> laser was observed<sup>14</sup>. White et al also proposed that CO<sub>2</sub> and Nd:YAG lasers are successful surgical options when performing excision of benign intraoral lesions<sup>15</sup>. Flash lamp pulsed dye laser was used by Maffert et al for excision of a mass of granulation tissue which did not respond to the usual treatment methods<sup>16</sup>. Rai et al introduced laser as a powerful tool for treatment of pyogenic granuloma. They proposed laser therapy, since it has the advantage of being less invasive, limitation of hemorrhage during surgery, a better field of view for the surgeon and sutureless procedure with minimal post operative discomfort<sup>2</sup>.

## CONCLUSION

Diode laser can be effectively used for the excision of pyogenic granuloma to minimize dis-

comfort during and after surgery. The use of diode laser offers a new tool that can change the way in which existing treatments are performed.

## REFERENCES

1. Bansal V, Konidena A, Mann AK, Farooq F. Diode laser excision of pyogenic granuloma: A case report. *Journal of Dental Lasers*. 2019;13(2):52.
2. Rai S, Kaur M, Bhatnagar P. Laser: a powerful tool for treatment of pyogenic granuloma. *Journal of cutaneous and aesthetic surgery*. 2011;4(2):144.
3. Asnaashari M, Mehdipour M, MoradiAbbasabadi F, Azari-Marhabi S. Expedited removal of pyogenic granuloma by diode laser in a pediatric patient. *Journal of lasers in medical sciences*. 2015;6(1):40.
4. Parrulli R, Franco S, Petrucci M, Maiorano E, Favia G. Pyogenic granuloma: surgical treatment with diode laser. *Annali di stomatologia*. 2013;4(2):35.
5. Nthumba PM. Giant pyogenic granuloma of the thigh: a case report. *Journal of medical case reports*. 2008;2(1):1-3.
6. Bhaskar SN, Jacoway JR. Pyogenic granuloma—clinical features, incidence, histology, and result of treatment: report of 242 cases. *Journal of oral surgery (American Dental Association: 1965)*. 1966;24(5):391-8.
7. Burket LW, Greenberg M, Click M. *Burket's oral medicine 11th ed*. BC Decker Inc. 2008;214-5.
8. Neville BW, Damm DD, Allen CM, Chi AC. *Oral and maxillofacial pathology*. Elsevier Health Sciences; 2015.
9. Gupta R, Gupta S. Cryo-therapy in granuloma pyogenicum. *Indian Journal of Dermatology, Venereology, and Leprology*. 2007;73(2):141.
10. Matsumoto K, Nakanishi H, Seike T, Koizumi Y, Mihara K, Kubo Y. Treatment of pyogenic granuloma with a sclerosing agent. *Dermatologic surgery*. 2001;27(6):521-3.
11. Ichimiya M, Yoshikawa Y, Hamamoto Y, Muto M. Successful treatment of pyogenic



- granuloma with injection of absolute ethanol. *The Journal of dermatology*. 2004;31(4):342-4.
12. Raulin C, Greve B, Hammes S. The combined continuous-wave/pulsed carbon dioxide laser for treatment of pyogenic granuloma. *Archives of dermatology*. 2002;138(1):33-7.
  13. Kirschner RE, Low DW. Treatment of pyogenic granuloma by shave excision and laser photocoagulation. *Plastic and reconstructive surgery*. 1999;104(5):1346-9.
  14. Powell JL, Bailey CL, Coopland AT, Otis CN, Frank JL, Meyer I. Nd: YAG laser excision of a giant gingival pyogenic granuloma of pregnancy. *Lasers in Surgery and Medicine: The Official Journal of the American Society for Laser Medicine and Surgery*. 1994;14(2):178-83.
  15. White JM, Chaudhry SI, Kudler JJ, Sekandari N, Schoelch ML, Silverman Jr S. Nd: YAG and CO2 laser therapy of oral mucosal lesions. *Journal of clinical laser medicine & surgery*. 1998;16(6):299-304.
  16. Meffert JJ, Cagna DR, Meffert RM. Treatment of oral granulation tissue with the flashlamp pulsed dye laser. *Dermatologic surgery*. 1998;24(8):845-8.
  17. Rodriguez IA, Selders GS, Fetz AE, Gehrman CJ, Stein SH, Evensky JA, et al. Barrier membranes for dental applications: A review and sweet advancement in membrane developments. *Mouth Teeth*. 2018;2(1):1-9.