

Excision of Peripheral Ossifying Fibroma Using Diode Laser: A Case Report

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Abstract

Peripheral Ossifying Fibroma (POF) presents similarly to other soft tissue reactive lesions, such as pyogenic granuloma, fibrous hyperplasia and peripheral giant cell granuloma. LASER contributes significantly to intra-oral surgeries of soft tissues. Specifically, diode laser is an effective soft tissue laser for incision, hemostasis and coagulation and at a wavelength in the range of 800-980 nm it is well-absorbed by pigmented tissues. In this case presentation a healthy 17 year old male patient reported with a small tumor on right buccal gingiva. Under local anesthesia the lesion was excised completely using 980nm wavelength fiber-optic diode laser. Histopathological diagnosis was peripheral ossifying fibroma. The patient was presented for follow-up for 3 months and no evidence of recurrence or post-operative complications was seen. Diode LASER removal of Peripheral ossifying fibroma can be a treatment of choice as it presents with minimal complications and near perfect post-operative healing.

Keywords: Peripheral Ossifying Fibroma, Diode Laser, Excision

Introduction

The gingiva is often the site of localized growths which are reactive in nature and are collectively known as Epulis. The peripheral ossifying fibroma, pyogenic granuloma, fibrous hyperplasia and peripheral giant cell granuloma are some of the lesions which are frequently seen on gingiva. These lesions may arise as a result of irritants such as trauma, microorganisms, plaque, calculus, faulty restorations, and dental appliances.¹ POF usually composed of cellular fibroblastic tissue and that contains one or more mineralized tissues-bone (woven and lamellar), cementum-like material, and dystrophic calcification. Some authors classified this lesion as fibrous epulis, whereas for the others proposed the term calcifying fibroblastic granuloma. Other names proposed for this lesion are soft fibroma, peripheral fibroma with calcifications and peripheral odontogenic fibroma.³

Lasers have become widely used in surgery and dentistry since the development of first laser

prototype by Maiman in 1960.² Applications of lasers in dentistry include ablation of lesion, incisional and excisional biopsies, gingivectomies, gingivoplasties, soft tissue tuberosity reduction and crown lengthening procedures.⁴ Diode laser system has found large recognition in the field of dentistry as a result of its practical characteristics and large number of applications.⁵ The diode laser wavelength is delivered in continuous wave or gated pulse in a contact mode which can cut softy tissues.⁶ The energy level is absorbed by pigmentation of the soft tissues and make diode an excellent hemostatic agent.² The present case report emphasizes the successful treatment of POF in maxillary aesthetic zone using 980nm diode laser.

Case Report

A healthy 17 year old male patient reported to department of periodontology, Faculty of Dental Sciences, RUAS, Bangalore in August 2016 with a small tumour on right buccal gingiva. The



patient gave a history of toothbrush trauma before two months, the lesion increased in size gradually and attained the present size.

Intraoral examination revealed a solitary sessile growth present on the buccal keratinized gingiva in relation to 12 and 13. The lesion is oval in shape and measures approximately 1.5 x 1 cm in size. Extends mesiodistally from mid-buccal aspect of 12 to distal aspect of 13 and superoinferiorly from muogingival line i.r.t 12, 13 to middle third of crown of 13. The lesion is reddish in colour and surface is lobulated.



Fig. 1 Localised gingival enlargement

The growth is non - fluctuant, non - compressible, firm in consistency and showed mild bleeding on probing. Tenderness seen only on firm pressure but not on light palpation. Radiographic examination showed no changes pertaining to the growth.

Treatment: Under local anaesthesia the lesion was excised completely using 980nm wavelength diode laser. The fibre optic 300nm diameter was used to give a fine cut. The laser was applied at the junction of lesion and healthy tissue vertically to tumour and parallel to the mucosa. The incision was extended in anterioposterior direction separating the lesion. Care taken not to come in contact with the maxilla avoiding any changes in the hard tissue.

Postoperative pain was not complained. Haemostasis was under control. Sutures were not given. Periodontal pack was placed. Histopathological diagnosis was peripheral ossifying fibroma.



Fig. 2 Diode laser applied for excision



Fig. 3 Immediate post-operative

The patient was presented for follow-up for 3 months and no evidence recurrence or post-operative complications seen.



Fig. 4 Post-Operative after 3 months

Discussion

Menzel first described the lesion ossifying fibroma in 1872, but its terminology was given by Montgomery in 1927.⁷ POF is a solitary, slow



growing nodular mass that is either pedunculated or sessile or it may have a broad attachment base. These lesions can be red to pink with areas of ulceration, and their surface may be smooth or irregular. Most often it is located in the gingival papilla between adjacent teeth³. Although they are generally < 2 cm in diameter, size can vary; reports range from 0.2–3.0 cm to 4 mm–8 cm.^{3,9,10}

Though the etiopathogenesis of POF is uncertain, origin from cells of periodontal ligament has been suggested. The reasons for considering periodontal ligament origin include excessive occurrence of POF in the gingival interdental papilla, the proximity of the gingival to periodontal ligament, the presence of oxytalan fibres within the mineralized matrix of some lesion, and the fibrocellular response in periodontal Ligament^{1,11}. The female to male ratio reported in the literature varies from 1.22:1 and 1.7:1 to 4.3:1^{1,12}. By most reports, the majority of the lesions occur in the second decade, with a declining incidence in later years^{1,8}.

LASER contributes significantly to intra-oral surgeries of soft tissues. LASER usage is promising in patients who need minimal operative and post-operative blood loss and discomfort. The advantages of LASER includes a relatively bloodless surgical and post-surgical course, minimal swelling and scarring, requisite of minimal or no suturing, reduction in surgical time when minimal or no anesthesia is used, minimal or no post-surgical pain¹³. Specifically, diode laser is an effective soft tissue laser for incision, hemostasis and coagulation.¹⁴ at a wavelength in the range of 800-980 nm it is well-absorbed by pigmented tissues and so can selectively target the darkened, inflamed tissues and pigmented bacteria. Trials have confirmed the bactericidal effect of the diode laser. It potentially has a “guided tissue regeneration-like” effect by retarding the epithelial migration and may achieve a more complete epithelial removal than conventional mechanical methods as shown in vitro.¹⁵

Although, many other cases were reported where surgical excision was carried out using scalpel or electrocautery to resolve the pathology and aesthetic treatment outcome was achieved^{16,17,18}. Treatment outcome of the present case report is in accordance with other cases reported by various authors advocating usage of LASER for excision of POF.^{19,20}

Conclusion

Diode LASER removal of Peripheral ossifying fibroma can be a treatment of choice as it presents with minimal complications and near perfect post-operative healing. Further Case Series with longer follow up and studies with larger sample size should be conducted to confirm the results.

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