



Diode Laser Assisted Excision of Gingival Hyperplasia: A Clinical Report

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Authors' contributions

Author SJ designed and performed the study, wrote the protocol, and wrote the first draft of the manuscript. Authors SK and HS managed the analyses of the study, authors MK and SP managed the literature searches. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Gingival enlargement is a feature of gingival disease. It can occur because of the various etiological factors. Once the etiology of the gingival enlargement is understood, the treatment plan can be made. Classical methods for excising the gingiva include the use of scalpel & electrocautery. Alternatively, other advanced technologies like the usage of lasers have made enormous progress in the field of dentistry used for various soft tissue surgeries. The application of diode laser in oral surgery has been attributed to the fact that it is safe for pigmentation and vascular lesions. The diode laser is one of the systems in which photons are generated via electric current with various wavelengths in continuous and pulsed mode. Diode laser with wavelengths ranging from 810 to 980 nm used as a possible modality for oral soft tissue surgical procedures. Laser application has various advantages as they provide a bloodless surgical field with excellent haemostasis, minimal swelling and soft tissue scarring. In the present case report, diode laser was used for excision of gingival overgrowth.

Keywords: Diode laser; soft tissue excision; gingival hyperplasia.

1. AIM

The aim of this case report was removal of gingival overgrowth with minimally invasive technique using soft tissue laser to minimize post-operative discomfort to the patient.

1.1 PRESENTATION OF CASE

A male patient of age 20 years came to the department of periodontology with a complaint of gingival growth in the lower posterior region of mouth since past 1 month. On intraoral examination, there was irregularly shaped gingival overgrowth in relation to 46 (Fig. 1) Lesion was pedunculated present on attached gingiva and was painless. Surgical excision using diode laser followed by histopathological examination was planned. The patient underwent phase I therapy before excising the growth. A full mouth meticulous scaling and root planning were done.

Adequate local anaesthesia of surgical site was achieved and diode laser of wavelength 810nm, output power 3.5 W was used to excise the lesion from the base with diode laser tip kept perpendicular to the surface (Fig. 2). Tip was moved slowly in a brush paint like motion In order to achieve coagulation, the surface of the lesion was carbonized, with the formation of chard layer (Fig. 3).

After the excision, biopsy sample was transferred to formalin 10% solution and was sent for histopathologic evaluation. The patient was given the post-surgical instructions and was prescribed amoxicillin 500mg and ibuprofen 200mg 3 times per day for 5 days. The excised tissue was tiny bit measuring approx. 0.5 x 0.4x 0.4 cm in dimension, creamish grey in colour and soft in consistency. The wound healed with secondary intention. The patient was recalled after 10 days for follow up.

10 days post operatively patient showed surgical site with uneventful healing (Fig. 4). The H & E stained section of the specimen shows stratified squamous epithelium atrophic at areas with edematous underlying connective tissue showing dense acute inflammatory cell infiltrate and numerous lymphatic channels and confirmed the lesion as "inflammatory gingival hyperplasia" (Fig. 5).

2. DISCUSSION

Gingival enlargement can occur because of the various etiological factors. Most commonly it occurs because of inflammation or fibrous overgrowth or a combination of two [1]. In such a case gingiva present to be soft, edematous, hyperemic or cyanotic and usually painful or at least sensitive. In puberty, gingival hyperplasia can be due to poor oral hygiene, inadequate nutrition or system variation in hormonal stimulation [2].

Clinically. Whenever gingival enlargement causes aesthetic or functional problem, its removal becomes mandatory. Knowing the aetiology is crucial in making the decision for its removal. Once the aetiology of the gingival enlargement is understood, the treatment plan can be made. Classical methods for excising the gingiva include the use of scalpel & electrosurgery. Alternatively, other advanced technologies like the usage of laser can treat enlarged gingivae successfully. Laser technology is widely accepted in the field of dentistry. It is a minimally invasive technique allowing excellent wound healing. This technique does not require suturing of the surgical site and allows treatment in short duration, which represents a decisive benefit for the patient.

Semiconductor diode lasers are portable compact surgical units with reliable benefits. They offer reduced costs in comparison to other modern hard laser devices [3]. Laser can be used in a continuous or pulsed mode through contact or noncontact application on tissues in various clinical approach and treatment modalities.

Lasers provide excellent haemostasis and field visibility in soft tissue procedures. In comparison with scalpel, electrocautery or high frequency devices, lasers offer maximum postoperative patient comfort [4].

Laser device has various advantages, it provides minimal swelling, scarring and coagulation, no need for suturing, reduced surgical time with less postoperative pain and edema. Also, the laser instantly disinfects the surgical wound and no mechanical trauma to the tissue [5]. Laser causes thermal necrosis by tissue



Fig. 1. Pre operative view



Fig. 2. Diode laser tip is placed



Fig. 3. Immediate post operative



Fig. 4. 10 Days post operative

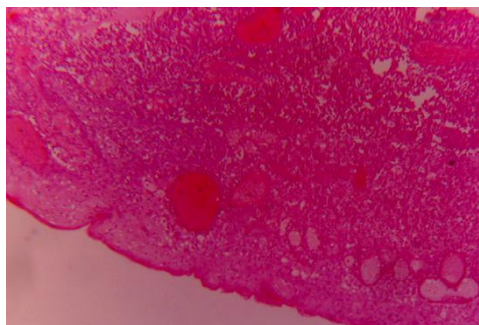


Fig. 5. Histopathological picture of lesion

vaporization and protein denaturation, sealing of the ends of sensory nerves, decrease their ability to transmit stimuli and decreasing pain [6].

Due to deeper penetration of laser system, antigen, antibodies, cytotoxic protein and sub-epithelial lymphocyte are all denatured. Destruction of the epithelium causes less risk of oedema and the dressing layer of denatured protein enhances healing leading to less risk of secondary infection [7].

Wave length, power, wave form (continuous or pulse type), tissue optical properties and tissue thermal properties, these factors determine the

initial tissue effect of laser are [8]. In this case report, laser tip was used in contact mode, directly over the lesion. Electrosurgical unit produce sufficient haemostasis but result in greater thermal injury and causes muscle fasciculation and delayed wound healing [9]. However, laser unit provides minimal damage to the adjacent tissue, coagulation blood vessels and lead to less post-operative bleeding and excellent healing [10].

3. CONCLUSION

Diode soft tissue laser is of great advantage over the conventional method to treat soft tissue

surgery. The result was obtained with minimal inflammation with no scarring & confirmed with histological findings.

CONSENT DISCLAIMER

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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