

DIODE LASER IN TREATMENT OF OPERCULECTOMY AND FRENECTOMY IN A CHILD PATIENT : A CASE REPORT

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ABSTRACT

Diode laser is most frequently used in dentistry due to its reliability, versatility, convenience and simple set-up. A thick soft tissue covering the unerupted teeth is conventionally treated by surgical excision. Abnormal frenal attachment is very common and causes problems in function and aesthetics. It is managed by procedures like frenotomy and frenectomy. Lasers are currently becoming popular in various fields of dentistry and provide alternative to conventional scalpel procedures. This article highlights the use of diode laser in the treatment of operculectomy and frenectomy in children. The child was neither administered anesthetics, nor experienced any pain or bleeding during the procedure and was satisfied with the post operative healing.

KEY WORDS

Diode laser, frenectomy, operculectomy, paediatric dentistry

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INTRODUCTION

The use of laser in paediatric dentistry is becoming more and more popular practice nowadays. The wavelength of diode laser is highly absorbed by pigmented tissues containing haemoglobin, melanin and collagen, and shows little absorption by dental hard tissues¹. Thus, this wavelength has a selective action and is usually indicated for cutting, vaporization, blood coagulation, curettage, haemostasis and oral soft tissue operations around dental structures^{2,4}.

The Diode Laser has the following characteristics^{3,6}:

- Complete sterilization of the energy source.
- Eliminates or reduces the need of anaesthesia.
- Due to its high absorption in haemoglobin, it allows excellent control of haemostasis.
- May not require sutures.
- Reduced damage to surrounding tissues resulting in a better post surgery recovery.

Frenum is a fold of mucosa, with enclosed muscle fibers which attaches the lips and cheeks to the alveolar mucosa and/or gingiva and underlying periosteum⁷.

Placeket al⁸ classified frenum based on the extension of attachment of fibers, Mucosal: when the fibers of frenum are attached up to the mucogingival junction, Gingival: when the fibers are inserted within attached gingiva, Papillary: when fibers are extending into interdental papilla, and Papilla penetrating: when the frenal fibers cross the alveolar process and extend up to the palatine papilla.

According to Miller⁹, the frenum is said to be pathogenic when it is unusually wide or there is no attached gingiva along the midline or the interdental papilla shifts when the frenum is extended.

These pathogenic frenums lead to midline diastema, gingival recession, interferes with the denture retention, and compromised gingival health because of poor plaque control and oral hygiene maintenance.

CASE REPORT

A 8 years old child reported to the OPD of Department of Paedodontics and Preventive Dentistry, with a chief complaint of missing upper front teeth. The patient was apprehensive over the missing 11 and 21. The deciduous 51 and 61 had exfoliated almost 1 year back. The eruption pattern of the deciduous teeth was normal.

On clinical examination, a soft tissue bulge was noted in the area of 11 and 21 and was palpable with digital pressure. A high frenal attachment was also noted with respect to maxillary labial frenum. (Fig.1,2) The parents were anxious about the different treatment options and wanted an immediate comfortable treatment modality. The patient was advised LASER assisted operculectomy and frenectomy. After explaining the procedure, consent was taken from the parents before starting the procedure.

PROCEDURE

LASER safety protocol was followed where the patient, operator and assistant were given safety glasses to wear. Topical anaesthesia was given and a 810 nm diode LASER with a fibre of 320 micron was used at power, with a continuous mode. The thick coronal flap over 11 and 21 was excised with minimal bleeding.(Fig.3) For frenectomy, the incision was started with the frenum from attached gingiva on the labial surface extending upwards from inner side of upper lip to the depth of vestibule, making a rhomboid shape.(Fig.4) Suture was not given. Patient was advised to maintain proper oral hygiene post operatively and not to take hot and spicy food for next few days. After 1 month follow up, significant eruption was noted with respect to 11 and 21, and complete healing with mucosal type of frenal attachment was noted.(Fig.5,6)



Figure 1- Pre-operative clinical view

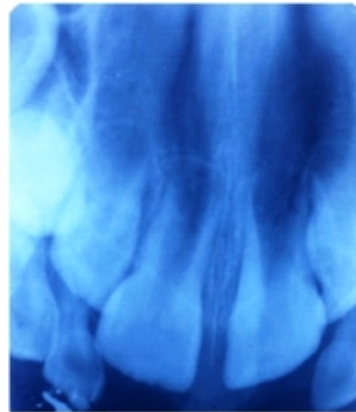


Figure 2- Pre-operative radiographic view



Figure 3- Per-operative view



Figure 4- Immediate post-operative view



Figure 5- 15 days follow up



Figure 6- 1 month follow up

DISCUSSION

Diode lasers are becoming popular over conventional techniques, especially in paediatric dentistry because they are less invasive, which result in reduced postoperative edema¹. They seal off the nerve endings which results in decreased inflammatory response. Also, the formation of a protein layer over the surgical wound protects the wound from external irritation, causing less post operative pain and thus analgesics are not required.¹⁰

The main concept of surgical laser is photothermal interaction, in which, the tissues absorb radiant light and transform it into heat energy, thereby changing the tissue structure. Laser light within is converted to thermal energy on contact with the tissue, causing laser tissue interaction, which can produce reactions like incision, vaporization and coagulation.

On small vessels, laser has coagulation effects, which provide haemostasis and seals off the sensory nerve endings, providing reduced need for anesthesia.¹¹

CONCLUSION

The increasing knowledge about the bio interactions of different lasers and the rapid development in the field of technology has widened the use of lasers in dentistry. They produce an excellent alternative to scalpel surgery, thereby increasing the compliance, especially in paediatric patients.

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