



## DIODE LASER ASSISTED VESTIBULOPLASTY: A CASE REPORT

## Dental Science

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## ABSTRACT

Inadequate vestibular depth due to the insufficient width of attached gingiva results in poor plaque control. Vestibuloplasty increases the vestibular depth and can be done utilizing diode laser to prevent the post-operative discomfort for the patient compared to the scalpel technique.

## KEYWORDS:

Diode laser, Vestibuloplasty, Scalpel

## 1. Introduction

Adequate vestibule depth helps in the maintenance of good oral hygiene. Researchers are currently fixed on the notion of 2 mm keratinized gingiva and 1 mm attached gingiva as "gold standard" for healthy periodontium [1]. As a result of inadequate vestibular depth and insufficient attached gingiva, improper plaque control via pathway of gingival inflammation, recession and pocket formation occurs. Considering the mucogingival problem posed by inadequate vestibular depth, an array of treatment procedures such as gingival augmentation with the use of grafts and vestibuloplasty through secondary epithelization are plans to enhance the vestibular depth [2]. Vestibuloplasty is a mucogingival procedure that aims at the surgical modification of the gingiva-mucous membrane relationships including deepening of the vestibular trough, altering the position of the frenulum or muscle attachments, and widening of the zone of attached gingiva [3].

A variety of vestibuloplasty techniques have been advocated in literature such as Edlanplasty, Kazanjian vestibuloplasty, etc. Most of these techniques have been used as pre prosthetic procedures to enhance the vestibular depth related to edentulous denture bearing areas. Clark's vestibuloplasty came into vogue and was more popular in enhancing the vestibular depth and also quite effective in addressing the mucogingival problem associated with the dentition [2].

Periodontal procedures have gradually shifted from an aggressive scenario to a minimally invasive approach. Laser has played a significant role in this shift by providing painless and acceptable procedures. They provide excellent hemostasis for the clinician, and less pain and swelling postoperatively for the patient [4].

Diode laser has been an effective choice for most clinicians worldwide owing to its compact size and affordability. Diode Lasers are semiconductor lasers with a wave length between 805 and 980nm. They are used either in continuous or pulsating modes with fiber-optic surgical tips. [4, 5]

## 2. Case Report

A 21-year old female patient reported at the Department of Periodontia, HKESSN Dental College with swollen lips and excessive bleeding on brushing. On clinical examination, soft and edematous inflamed gingiva with generalized enlargement and the shallow vestibule was noted. Scaling and root planing was done at the first visit and oral hygiene instructions were given. After 15 days, under infiltrative local anesthesia (1:80,000 adrenaline with epinephrine), 980nm Diode laser assisted gingivectomy with respect to the upper anteriors, using continuous mode at 1.5W; and vestibuloplasty with respect to both upper and lower anteriors, at pulse mode at 2.5W was performed.

Surgical time was approximately 20 minutes. When the procedure was completed, analgesic was prescribed (SOS); no antibiotic coverage was used. Extra-oral ice applications were recommended to be used for the first day. No edema could be observed.



[Table/Fig-1]: (I) Swollen lips (II) Inflamed and enlarged gingiva in the upper arch (III) Clinical view after 15 days (IV) Diode laser assisted Gingivectomy in maxilla (V) Diode laser assisted vestibuloplasty in mandible

## 3. Results

Postoperative healing was uneventful and no wound infection could be found. Gingival inflammation and pseudo pockets were found to be resolved. Vestibular depth increased by 2 mm, from 3 mm to 5 mm after a month.



[Table/Fig-2]: (I) Lip changes after 1 month (II) Clinical profile after 1 month (III) Maxillary gingiva following gingivectomy and vestibuloplasty (IV) Mandibular gingiva following vestibuloplasty

## 4. Discussion

Evidence from the literature substantiates the role played by various lasers like; Co<sub>2</sub>, Nd: YAG, Er, Cr: YSGG, Er: YAG and diodes in the

enhancement of predictable clinical outcomes related to numerous procedures in periodontal treatment [6, 7]. Diode lasers owing to their compact size and affordability are used for laser assisted periodontal procedures worldwide. Literature is abundant on the use of diode lasers for various soft tissue procedures from frenectomy, gingivectomy, crown lengthening, gingival depigmentation and gingival troughing to name a few [6,8].

Sutures are needed after many surgical procedures. It is suggested to preserve the epithelium sutures from 8 to 10 days, this is normally the time required by the periosteum to recover. When using laser, in many surgical procedures, sutures are no longer needed, this will impact in the

patient's postoperative comfort [9,13]. Other advantages offered by a laser vestibuloplasty procedure are the following: intervention time of approximately five minutes, precision in the incision, asepsis, analgesia, hemorrhage decrease, little inflammation and edema since tissues and blood vessels with a diameter smaller than the laser beam are vaporized, and nerves, upon being sectioned, are sealed off with the heat of the laser beam [10-13].

## 5. Conclusion

The above surgical case presents the soft tissues options of a 980nm Diode Laser with minimal anesthesia, minimal discomfort, no sutures, no antibiotics, and greater patient satisfaction. Therefore, diode laser assisted gingivectomy / vestibuloplasty assures the patients a better postoperative outcome.

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