

“COMPARATIVE RESULTS OF CONVENTIONAL SCALPEL AND DIODE LASER FRENECTOMY TECHNIQUES IN THE CLINICAL MANAGEMENT OF ABERRANT LABIAL FRENUM”**Dr. Aparna Suraj N.^{1*}, Dr. Suchetha Aghanashini², Dr. Sapna Nadiger³, Dr. Darshan B. Mundinamane⁴,
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ABSTRACT

An aberrant maxillary labial frenum is capable of creating diastema, gingival recession, poor denture retention and also affects aesthetics.^[1,2,3] It further encroaches the gingival health when it is closely attached to the gingival margin. Such conditions have to be treated by frenectomy, which is the complete removal of frenum.^[4] While performing frenectomy, conventional scalpel techniques have their own traditional drawbacks. To overcome them, we have novel techniques like electrocautery and lasers, which are increasingly being used in routine periodontal practice.^[5] This case report describes two cases, one of which was treated by the conventional scalpel technique and the other by diode laser technique. Reduced haemorrhage, pain and discomfort during speech and chewing were observed following laser therapy, compared to the conventional therapy.^[6] Thus, the use of soft tissue diode laser could be an alternative to conventional scalpel technique for maxillary labial frenectomy as it causes less pain, less bleeding, provide better patient perception and improves healing of tissues.^[7,4]

KEYWORDS: frenum, frenectomy, scalpel technique, diode laser.**INTRODUCTION**

A frenum is a fold of mucous membrane containing muscle and connective tissue fibres, which attach the lip and the cheek to the alveolar mucosa, the gingiva and the underlying periosteum.^[5,8]

The presence of an aberrant frenum is one of the etiological factors responsible for diastema between the maxillary central incisors in adults, which is considered as an aesthetic problem. Frenum may cause gingival recession, jeopardizing the gingival health, when it is attached too closely to the gingival margin, either because of an interference with the proper placement of a toothbrush or through the opening of the gingival crevice because of a muscle pull, thus leading to plaque accumulation.^[5,9,10]

An aberrant frenal attachment can be diagnosed by pulling on the patient's upper lip (*tension test*). If the attachment is abnormal, pulling on the lip will result in movement of the tip of the papilla or blanching of tissue due to ischemia at the site. Frenectomy is indicated in these cases.^[11] Frenectomy is the complete removal of the frenum, including its attachment to the underlying

bone.^[9] It can be performed either by the scalpel technique or electrocautery.^[4,12,13] Recently, to improve the effectiveness and efficiency of periodontal surgery, laser frenectomy has been performed. Lasers makes it possible for a minimally-invasive procedure.^[9] Diode lasers have the advantages of being compact, affordable, ease of operation, simple set up, and versatile.^[7] Therefore, the purpose of the present article is to describe and compare two clinical cases of frenectomy, which were approached by scalpel and diode laser technique.^[14]

CASE REPORT**Case 1: Frenectomy using conventional scalpel technique**

A 35-year-old female patient consulted with the chief complaint of spacing between her upper front teeth. Medical history was non-contributory. Intraoral clinical examination revealed the presence of midline diastema with high, fibrous labial frenal attachment (**Fig. 1**). A simple blanch test was performed and a positive blanching of the papilla was noted.

Technique: The area was anesthetized with 2% lignocaine by local infiltration method. Then, the frenum was engaged with a hemostat which was inserted into the depth of the vestibule and incisions were placed with a #15 Bard-Parker (BP) blade on the upper and the under surface of the hemostat until the hemostat was free. The triangular resected portion of the frenum with the hemostat was then removed and a blunt dissection was done to relieve the fibrous attachment. The edges of the diamond shaped wound (Fig. 2) were later sutured using 4-0 black silk sutures (Fig. 3). The area was covered with a periodontal dressing (Coe-Pak) (Fig. 4). Patient was recalled after 1 week for suture removal and after 2 weeks for follow-up (Fig. 5). Also, the diastema between the teeth was later corrected with a composite restoration.



Fig. 1: A midline diastema with high, fibrous labial frenal attachment.



Fig. 2: Diamond shaped wound after incision made with Bard-Parker blade.

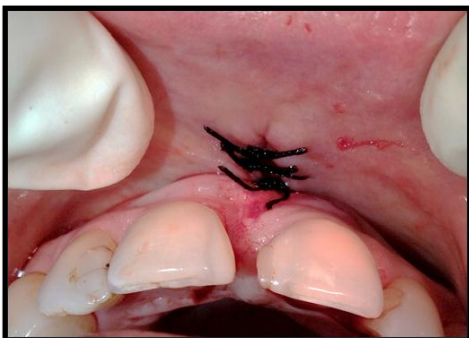


Fig. 3: Immediate post-operative view after the sutures placed.



Fig. 4: Periodontal pack placed.



Fig. 5: Post-operative view after 2 weeks.

Case 2: Frenectomy using diode laser

A 26-year-old female patient visited with the chief complaint of spacing between upper front teeth. Medical history was non-contributory. Intraoral clinical examination revealed the presence of midline diastema with high, fibrous labial frenal attachment (Fig. 6) and a positive blanching of the papilla.

Technique: Under a small amount of anaesthesia, a 445nm diode laser at 2W power was used in continuous wave in contact mode, moved in a paint brush stroke, from the base to the apex of the frenum thereby excising it (Fig. 7). A saline serum was regularly used during the procedure. The area was covered with Coe-Pak (Fig. 8). Good mucosal healing was seen after 1 week (Fig. 9). Patient was recalled after 2 weeks for follow-up, during when midline diastema was closed by composite restoration (Fig. 10).



Fig. 6: A midline diastema with high, fibrous labial frenal attachment.



Fig. 7: Immediate post-operative view with no bleeding and no requirement of sutures.



Fig. 8: Periodontal pack placed.



Fig. 9: Mucosal healing at 1 week follow up.



Fig. 10: Post-operative view after 2 weeks with the closure of diastema.

DISCUSSION

The most common location for the development of frenum abnormalities are maxillary and mandibular central incisors, canine and premolar areas.^[9]

Depending upon the extension of attachment of fibres, Placek et al in 1974 classified frenum as follows:

1. Mucosal- when the fibres are attached up to mucogingival junction
2. Gingival- when fibres are inserted within attached gingiva
3. Papillary- when fibres are extended into interdental papilla
4. Papilla penetrating- when the fibres cross the alveolar process and extend up to the palatine papilla.^[1]

Case 1 patient showed a papillary type of frenal attachment, while Case 2 presented with a papilla penetrating type of frenal attachment.

Conventional frenectomy requires the use of scalpel and sutures, both of which are the sources of fear and anxiety in patients.^[15] Case 1 patient showed fear and anxiety throughout the procedure and also reported moderate pain, difficulty in chewing and speaking during the first postoperative week. Whereas, Case 2 patient was more comfortable and compliant during the procedure and reported less post-operative discomfort. Healing period were similar in both the cases; however, less pain and discomfort were experienced by the patient who underwent a laser frenectomy.

Lasers offers several advantages. High rate of patient acceptance is one of the greatest advantages of laser use. Other advantages include, little chance for mechanical trauma, minimal scarring, haemostasis, less postoperative swelling, reduction in bacterial population at the surgical site, less need for suturing, faster healing, and less postoperative pain. Photo physical characteristics of lasers, produces detoxification and bactericidal effects on the human body. Thus, in periodontal therapy, laser treatment may serve as an alternative or adjunctive therapy to mechanical approaches.^[16]

CONCLUSION

Both conventional scalpel and diode laser-assisted frenectomy operations are effective in maintaining the new position of frenulum attachment. Laser treatment can be added as an alternative or as a complementary technique to the conventional methods, as it offers less postoperative discomfort.^[17,18] However, the high cost of laser device, together with the requirement of intensive training in its operation, could still be seen as limiting factors for the widespread use of this therapeutic modality.^[19]

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