

COMPARATIVE EVALUATION OF FRENECTOMY PROCEDURES WITH THREE DIFFERENT TECHNIQUES: A CASE REPORT

Jyotsana Tanwar¹, Shital A. Hungund²

1. Post Graduate Student, Darshan Dental College and hospital, Udaipur, Rajasthan

2. Professor & Head, Darshan Dental College and hospital, Udaipur, Rajasthan

ABSTRACT:

The frenum is a mucous membrane fold that attaches the lip and the cheek to the alveolar mucosa, the gingiva, and the underlying periosteum. The frenum may jeopardize the gingival health when they are attached too closely to the gingival margin, either due to an interference in the plaque control or due to a muscle pull. In addition to this, the maxillary frenum may present aesthetic problems or compromise the orthodontic result in the midline diastema cases, thus causing a recurrence after the treatment. The management of such an aberrant frenum is accomplished by performing a frenectomy. The present article is a compilation of a brief overview about the frenum, with a focus on a series of clinical cases of frenectomy which were approached by various techniques have also been reported. 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. However, there isn't sufficient evidence supporting the use of electrocautery in frenectomy. Aim of the study is to compare the conventional scalpel technique the electrocautery technique and laser technique for frenectomy procedure.

Key words: Frenum, Frenectomy, scalpel, electrocautery, laser.

INTRODUCTION:

Aesthetic concerns have led to an increasing importance in seeking dental treatment, with the purpose of achieving perfect smile. The continuing presence of a diastema between the maxillary central incisors in adults, has often been considered as an aesthetic problem. The presence of an aberrant frenum being one of the aetiological factors for the persistence of a midline diastema, the focus on the frenum has become essential [1].

The frenum may also jeopardize the gingival health by causing a gingival

recession when they are 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.

The abnormal frena are detected visually by applying tension over the frenum to see the movement of the papillary tip or the blanch, which is produced due to ischemia in the region. The frenum is characterized as pathogenic when it is unusually wide or when there is no apparent zone of the attached gingiva along the midline or the interdental

papilla shifts when the frenum is extended.

CLASSIFICATION

The labial frenal attachments have been classified as mucosal, gingival, papillary and papilla penetrating, by Placek et al (1974) [3].

1. Mucosal – when the frenal fibres are attached up to the mucogingival junction.
2. Gingival – when the fibres are inserted within the attached gingiva.
3. Papillary – when the fibres are extending into the interdental papilla.
4. Papilla penetrating – when the frenal fibres cross the alveolar process and extend up to the palatine papilla.

INDICATIONS

The frenum is characterized as pathogenic and is indicated for removal when

1. An aberrant frenal attachment is present, which causes a midline diastema.
2. A flattened papilla with the frenum closely attached to the gingival margin is present, which causes a gingival recession and a hindrance in maintaining the oral hygiene.
3. An aberrant frenum with an inadequately attached gingiva and a shallow vestibule is seen.

4. The aberrant frena can be treated by frenectomy or frenotomy procedures. Frenectomy is the complete removal of the frenum, including its attachment to the underlying bone, while frenotomy is the incision and the relocation of the frenal attachment. Frenectomy can be accomplished either by the routine scalpel technique, electrosurgery or by using laser.

CASE DETAIL:

CASE 1: CONVENTIONAL FRENECTOMY

A 21 year old male patient was reported to department of periodontics with abnormal frenum pull between central incisors and was undergoing orthodontic treatment for mal-alignment of teeth (fig. 1). The medical status of patient was non contributory.

The area was anaesthetized with a local infiltration by using 2% lignocaine with 1:80000 adrenaline. The frenum was engaged with a haemostat which was inserted into the depth of the vestibule and incisions were placed on the upper and the undersurface of the haemostat until the haemostat was free (fig. 2). The triangular resected portion of the frenum with the haemostat was removed. A blunt dissection was done on the bone by scalpel to relieve the fibrous attachment (fig. 3). The edges of the diamond shaped wound were sutured by using 4-0 black silk with interrupted sutures (fig. 4). The area was covered with a periodontal pack (fig. 5). The pack and the sutures were removed 1 week post-operatively (fig. 6).

CASE 2: FRENECTOMY BY ELECTROCAUTERY

A 23 year female patient reported to department of periodontics with the chief complaint of spacing between maxillary central incisors and was concern for esthetics (fig. 7). The medical history of the patient was taken.

The area was anaesthetized with a local infiltration by using 2% lignocaine with 1:80000 adrenaline. The frenum was engaged with a haemostat which was inserted into the depth of the vestibule. Two incisions using the electrode were made as in the classical frenectomy technique, above & below the hemostat (fig. 8). Continuous saline irrigation was given while using the electrocautery. The triangular tissue of labial frenum was then removed for both the cases with the hemostat, and it was made free (fig. 9). The edges were sutured by using 4-0 black silk with interrupted sutures The area was covered with a periodontal pack (fig. 10). The pack and the sutures were removed 1 week post-operatively (fig. 11).

CASE 3: FRENECTOMY BY LASER

A 20 year male reported to department of periodontics with the chief complaint of spacing between maxillary central incisor and spacing was gradually increasing. On clinical examination, it was observed that a thick frenum pull was penetrating interdental papilla and was continuously applying pressure due to which spacing was gradually increasing (fig. 12).

The area was anaesthetized with a local infiltration by using 2% lignocaine with 1:80000 adrenaline. The frenum was engaged with a haemostat which was inserted into the depth of the vestibule. Two incisions were made with the diode laser above and below the hemostat (fig. 13). The sharp edges were obtained (fig. 14) and were sutured and periodontal pack was applied (fig. 15, 16). The pack and the sutures were removed 1 week post-operatively (fig. 17).

DISCUSSION:

Nevertheless, inspite of the various modifications which have been proposed for frenectomy, the widely followed procedure which remains is the classical technique. The classical technique leaves a longitudinal surgical incision and scarring, which may lead to periodontal problems and an unaesthetic appearance, thereby necessitating other modifications.

Among all the approaches for frenectomy which were employed in the present case series, the laser procedure offered the advantage of minimal time consumption and a bloodless field during the surgical procedure and less post-operative discomfort to the patient. The techniques like simple excision and a modification of V- rhomboplasty fail to provide satisfactory aesthetic results in the case of a broad, thick hypertrophied frenum. This may be due to the inability to achieve a primary closure at the centre, consequently leading to a secondary intention healing at the wide exposed wound. It may become a matter of

concern in the case of a high smile line exposing anterior gingiva.

The outcome of all surgical procedures showed that the techniques produced a pleasing aesthetic result. On healing, a wider zone of attached gingiva was obtained. It was color matched with adjacent tissue. Healing was obtained by primary intention. No complication was noted during healing period. Patient's compliance was also very good for both the cases. The only added advantage in the laser procedures was bloodless field while operating, which also reduced the patient's discomfort.

Though lasers have marked the beginning of their use in soft tissue management, electrosurgery units are "far less expensive than the least expensive diode lasers" and hence it can be questioned whether "the advantages of the diode laser are significant enough to compensate for the additional cost". Also when David et al compared mucosal incisions made by scalpel, CO₂ Laser, electrocautery, he concluded that, on subjective evaluation of ease of use, constant-voltage electrosurgery on a scale of 0 to 4, followed by the CO₂ laser. The speed of incisions and excisions, measured in seconds, was also faster for electrosurgery unit as compared to CO₂

laser. The collateral tissue damage was also less in electrocautery group as compared to laser. Other advantages of it over lasers, are that they require no safety glasses and can remove large amounts of tissue quickly. Hence till certain extent, we can justify the use of electrocautery over the novel technique of laser in routine practice. The healing was also comparable with the conventional scalpel technique, without any delay. This is in contrast to the literature suggesting delay in healing, when electrocautery is used. Need to do suturing was eliminated while treating the patient with electrocautery, which also reduced the risk of post-operative infection. Also the patient treated with electrocautery didn't have any pain post operatively, nor did he have any collateral tissue damage, which otherwise is claimed while opting for electrocautery.

CONCLUSION:

This case series shows equivalent results for three of the techniques, with slight benefit of the laser over the conventional scalpel technique. However, there is a need for further longitudinal studies with larger sample size to establish the exact efficacy of laser technique over the conventional scalpel technique for frenectomy procedure.

REFERENCES:

1. Devishree, Sheela Kumar Gujjari, P.V. Shubhashini. Frenectomy: A Review with the Reports of Surgical Techniques. *Journal of Clinical and Diagnostic Research*. 2012 October, Vol-6(8): 000-000.
2. Frenectomy Using Electrocautery: A Case Series. *Advances in human biology* 2013;3(2):1-41.

3. Huang WJ, Creath CJ. The midline diastema: a review on its etiology and treatment. *Pediatric Dentistry*. 1995;17:171–9.
4. Jhaveri H. Jhaveri Hiral., editor. *The Aberrant Frenum*. Dr. PD Miller the father of periodontal plastic surgery. 2006:29–34.
5. Dibart S, Karima M. Dibart Serge, Karima Mamdouth. *Practical Periodontal Plastic Surgery*. Germany: Blackwell Munksgaard; Labial frenectomy alone or in combination with a free gingival autograft; p. 53.
6. Gontijo I, Navarro RS, Naypek P, Ciamponi AL, Haddad AE. The application of diode and Er:YAG lasers in labial frenectomies in infants. *J Dent Child*. 2005;72(1):10–5.
7. Kahnberg KE. Frenum surgery. I.A comparison of three surgical methods. *Int J Oral Surg*. 1977;6:328–33.
8. Glenn A et al. The diode laser as an electrosurgery replacement. *C.E. article electrosurgery*, 2013, 6-13.
9. John Liboon et al. A Comparison of Mucosal Incisions Made by Scalpel, CO₂ Laser, Electrocautery, and Constant-Voltage Electrocautery. *Otolaryngol Head Neck Surg* March 1997; Vol. 116; No. 3; 379-385.
10. Miller PD, Allen EP. The development of periodontal plastic surgery. *Periodontology* 2000. 1996;11:7–17.

FIGURES:

CASE 1:



FIG. 1: PRE-OPERATIVE (HIGH MAXILLARY FRENAL ATTACHMENT)

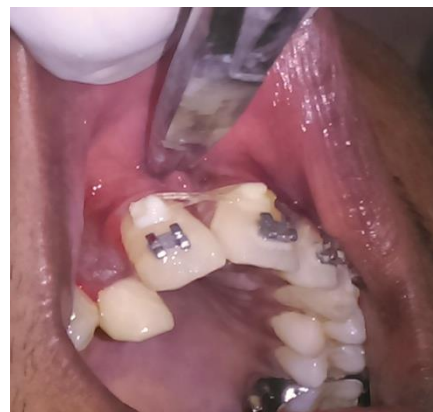


FIG. 2: HOLDING FRENUM WITH HEMOSTAT UPTO THE DEPTH OF VESTIBULE



FIG. 3: BLUNT DISSECTION WITH SCALPEL



FIG. 4: SUTURED WOUND



FIG. 5: PACK PLACED



FIG. 6: POST-OPERATIVE (AFTER ONE WEEK)

CASE 2:



FIG. 7: PRE-OPERATIVE (HIGH MAXILLARY FRENAL ATTACHMENT)



FIG. 8: INCISION WITH ELECTROCAUTERY



FIG. 9: CLEAR WOUND WITH BLOODLESS FIELD AND SMOOTH MARGINS



FIG. 10: PACK PLACED



FIG. 11: POST-OPERATIVE (AFTER ONE WEEK)



FIG. 15: SUTURING DONE

CASE 3:



FIG. 12: PRE-OPERATIVE (HIGH MAXILLARY FRENAL ATTACHMENT)



FIG. 16: PACK PLACED



FIG. 13: INCISION WITH LASER



FIG. 17: POST-OPERATIVE (AFTER ONE WEEK)



FIG. 14: BLOODLESS, CLEAN FIELD AFTER INCISION