

Frenectomy with Modified Miller's Technique by Using Laterally Displaced Flap: A Case Report

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ABSTRACT

Background: The aberrant frena may imperil the gingival health when they are attached too closely to the gingival margin by interfering in the plaque control or due to a muscle pull. In addition to this, the maxillary frenum leads to compromise the orthodontic result in the midline diastema cases causing a recurrence after the treatment. There are various conservative approaches with their technical and esthetics limitations. Archer's "classical frenectomy" is an extensive procedure with excision of fibers, interdental papilla, and the alveolar bone's exposure up to the palatine papilla with formation of unesthetic scarring. In millers technique a horizontal incision was given to raise a laterally positioned graft and sutured at midline. A better frenectomy approach was attempted by adding a cut back incision to make a primary closure in the midline and avoid an unesthetic scar assisted with a lateral displaced flap.

Keywords: Frenectomy, Modified Miller's Technique, Laterally Displaced Flap.

INTRODUCTION

The perio-ortho aesthetic concerns have led to a matter of importance in seeking dental treatment to obtain a perfect smile. The labial frenum is triangular and attaches the lip to the alveolar mucosa and gingiva. It extends all over the alveolar process in infants and forms a raphe that extends till the palatine papilla. This attachment generally changes to assume the adult configuration through the growth of the alveolar process as the teeth erupts.¹ Taylor² has ascertained that a midline diastema is present in about 98% of children between six and seven years of age, but the prevalence decreases to only 7% in persons 12-18 years old. This high coronal attachment is generally accompanied by hypertrophy of the frenum. The long-lasting presence of a diastema between the maxillary central incisors in adults has often been deemed an aesthetic problem. As the existence of an aberrant frenal attachment being the primary

aetiological factor for the presence of a midline diastema, the goal was focused on the correction of the frenum.³ The frena may also imperil the gingival health by food impaction, pocket formation, and leading to gingival recession. In these scenarios, frenectomy is done for aesthetics, physiological and functional needs.⁴ In the classical frenectomy technique done by Archer⁵ and Kruger⁶, the frenum, interdental tissue and palatine papilla are totally excised, leading to exposure of the underlying alveolar bone, ultimately leading to scarring. This technique culminated in unanesthetic scar, but this approach was encouraged to reassure the removal of muscle fibers, bridging the orbicularis oris with the palatine papilla. It was speculated that if this was not done, the diastema would relapse. Coletton *et al.*⁷ and Breault *et al.*⁸ have used free gingival graft combined with a frenectomy.

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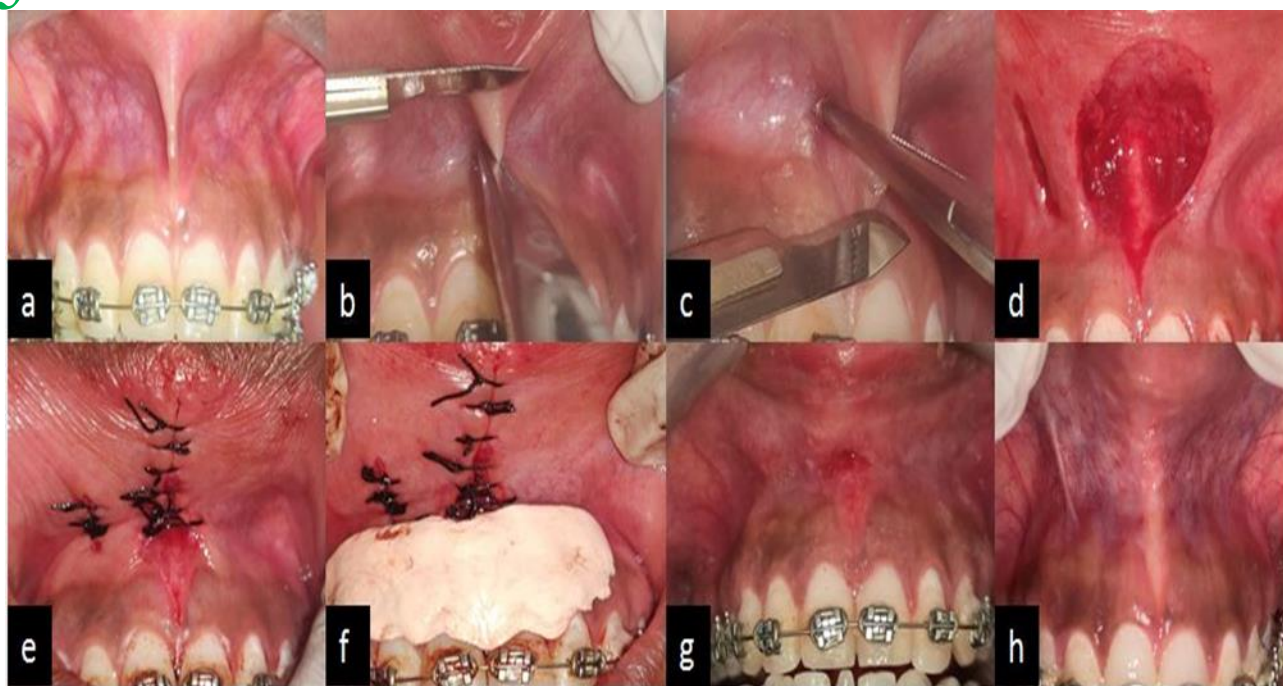


Fig a: Pre-operative view, b: Excision of frenum, c: Excision of frenum, d: Vertical incision mesial to lateral incisor and cutback incision at 45° e: Displaced and suturing of the pedicle, f: Periodontal dressing given, g: 1-week postoperative view, h: 1-year postoperative view.

This procedure avoids scar tissue formation, but a mismatched gingival color in the midline and the necessity for a second surgical site to achieve donor tissue color complicates the technique. Laser frenectomy has been used by various clinicians, which has its relative advantages and disadvantages.

In most cases, it has become mandatory to perform frenectomy to prevent relapse of a midline diastema ensuing closure by orthodontic therapy. Often, the sacrifice of the interdental papilla between the maxillary incisors during the classic frenectomy creates an unacceptable aesthetic outcome. Thus lateral pedicle graft technique is considered as a better approach with acceptable aesthetics due to primary closure and increased width of keratinized tissue.

In 1985 P. D. Miller⁹ proposed a surgical technique combining the frenectomy with a laterally positioned pedicle graft. This procedure resulted in aesthetically pleasing attached gingiva across the midline achieved by laterally positioned graft and healing by primary intention. No attempts were made to excise the transseptal fibers, and hence, the interdental papilla remained undisturbed. Aesthetically and functionally superior results were

obtained. Therefore in the following case report, this technique has been attempted and results are presented.

CASE REPORT

A 20 year old female was referred from the department of orthodontics for midline diastema correction due to high frenal attachment. On general examination, the patient was ostensibly healthy. On clinical examination, a papillary penetrating type of frenum attachment was detected. The tension test was positive and thus, a frenectomy procedure was planned. Written informed consent was obtained from the patient before the surgical procedure.

After administering local anesthesia using 2% lignocaine with 1:80000 adrenalin, primarily the frenum was excised using 'V' rhomboid plasty technique. A vertical incision running alongside the primary incision was performed on the mesial side of the lateral incisor, coronal to marginal gingiva extending upto vestibular depth. In between gingiva and alveolar mucosa, these two incisions were undermined by partial dissection to raise the tissue in a tunnel-like fashion. In this procedure a modification of Miller's technique was done making a cutback incision at an angle of 45° at the apical

end of the parallel incision to minimize the tissue tension and to mobilize the flap more mesially, whereas in Miller's technique complete apical part was excised. The flap was mobilized mesially and sutured to obtain primary closure with 4-0 vicryl interrupted suture across the midline. Post-surgical instructions were given. The patient was advised antibiotics and analgesics for five days. The patient was reviewed after one week post-operatively. A healing zone of attached gingiva, with no loss of interdental papilla was observed. The healing of the surgical site after the procedure was uneventful. The patient was followed upto one year and healing was satisfactory with complete keratinized epithelization and aesthetic color match with adjacent tissue.

DISCUSSION

The conception for management of aberrant frenal attachment has come a long way along with various modifications from Archer's classical frenectomy to Edward's modern technique.¹⁰ Various frenal relocation techniques like Z-plasty¹¹, frenectomy with soft-tissue graft^{7,8} and Laser^{12,13} applications were proposed in order to evade typical diamond-shaped scar tissue formation and to aid in healing by primary intention, but satisfactory results were not obtained.

To overcome this drawback, Miller has proposed a frenectomy technique where lateral pedicle flap has been added to the conventional 'V' rhomboidplasty to prevent post-surgical scar formation. Miller's⁹ technique has advantages of healing by forming a continuous band of gingiva across the midline avoiding unaesthetic scar and preventing loss of interdental papilla by preserving transseptal fibers. A modification of Miller's technique has been done in this case report by giving a cut back incision at an angle of 45°, without excising the apical portion of the flap to increase the vascular supply to the surgical area. This modification will help in accelerated wound healing and less scar formation due to healing by primary intention. The gingival color match with the adjacent tissue was excellent and aesthetically pleasing.

CONCLUSION

The present case report describes the surgical technique combining frenectomy with partial

excision of lateral pedicle flap. This technique is appropriate in cases where aesthetics are of primary concern. This procedure is technique sensitive but provides better results compared to other frenectomy procedures.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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