



Research Article

THE NOVEL PERIO ESTHETIC TECHNIQUE (MDR TECHNIQUE) FOR FRENECTOMY IN PATIENTS WITH POST ORTHODONTIC RELAPSE- A CASE REPORT

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ARTICLE INFO

Article History:

Received 4th January, 2021

Received in revised form 25th

February, 2021

Accepted 18th March, 2021

Published online 28th April, 2021

Key words:

Frenectomy, Millers technique, whale tail technique, orthodontic relapse

ABSTRACT

The frenum is defined as the muco membraneous fold that attaches the lip and the cheek to alveolar mucosa, gingival and underlying periosteum. This frenum can jeopardize the aesthetically appealing post orthodontically if neglected. P.D. Miller in 1985 proposed the “millers technique” for orthodontic cases, also added the ideal time to perform this surgery is 6 weeks prior to the removal of appliances. There are reported cases of post orthodontic relapse if this frena is ignored and also no technique has been advocated exclusive for cases with post orthodontic relapse. This present case report adds on light on the newly proposed technique i.e MDR technique which is a combination of paralleling technique and a whale tail technique.

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INTRODUCTION

The word “frenum” springs from the Latin word “fraenum”. Frena, are triangle-shaped folds found in the maxillary and mandibular alveolar mucosa and are located between the central incisors and canine premolar area. A frenum is a mucous membrane fold that contains muscle and connective tissue fibers that attach the lip and the cheek to the alveolar mucosa, the gingiva and the underlying periosteum^[1] Labial frenal attachments are thin folds of mucous membrane with enclosed muscle fibers originating from orbicularis oris muscle of upper lip that attaches at the lips to the alveolar mucosa and underlying periosteum^[2] It extends over the alveolar process in infants and forms a raphe that reaches the palatal papilla. Through the growth of the alveolar process as the teeth erupt, this attachment generally changes to assume the adult configuration. 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.

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 ischaemia 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. The aberrant frena may 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.^[1]

In such cases it is necessary to perform a frenectomy for aesthetic and functional reasons. There are several surgical techniques for removal of labial frenum. Since the procedure of frenectomy was first proposed, a number of modifications have been developed. In most of these procedures aesthetic outcome in terms of attached gingiva with colour matching was not considered and these procedures results in scar formation.^[4-6] Miller in 1985 has presented a surgical technique combining the frenectomy with a laterally positioned pedicle graft. Closure across the midline by laterally positioned gingiva and healing by primary intention resulted in aesthetically acceptable attached gingiva across the midline.^[7] The Millers technique was considered the best in patients who are undergoing orthodontic relapse. But no technique has been advocated where there is post orthodontic relapse in patient with a abberent frenum. Bianchi and Bassetti in 2009 poposed the whale tail technique for the

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treatment of defects in esthetic zone. This technique involved elevation of large flap from buccal to palatal side. Paralleling technique is a type of frenectomy technique that involves the removal of frenum with minimum removal of tissue for better and uneventful healing. This basically involves two parallel incisions and a vertical incision where in the tissue is excised with minimum wound exposure. This case report present the management of aberrant frenum in a post orthodontic relapse subject. Post orthodontic relapse causing diastema is commonly observed if the frenum is not relieved during the orthodontic treatment. Such cases require the removal of frenum without disturbing the interdental papilla which is quite challenging to be done with aesthetic concerns. To the best of our knowledge no technique is exclusively advocated for removal of frenum in patients with post orthodontic relapse exclusively. The proposed new technique (MDR technique) is modification of whale tail and paralleling technique is believed to be beneficial to the clinicians for management of post orthodontic relapse cases due to an aberrant frenum.

CASE REPORT

A 24-year-old female patient was referred to Department of Periodontology and Implantology for an abnormal upper labial frenum. The patient was well aware and concerned about the abnormal attachment of the frenum. Examination revealed a hypertrophied, broad, thick labial frenum of papillary-penetrating type attachment and a mild maxillary central diastema [Figures 1].



Figures 1 A hypertrophied, broad, thick labial frenum of papillary-penetrating type attachment and a mild maxillary central diastema

The “blanch test” was positive on pulling the upper lip. A full complement of teeth was present with adequate buccal vestibular depth except in the frenal area. An adequate amount of attached gingiva was present at the maxillary anterior region without any mucogingival problems. This new technique of frenectomy was planned considering the patient’s concern for esthetics and the wide, thick hypertrophied frenum with high abnormal attachment, which can leave a wide defect after excision by traditional techniques, leading to scar formation and also as the patient had undergone orthodontic treatment twice and had no interest in any sort of fixed orthodontic treatment. Hematologic investigation was carried out, and results were within normal limits. Medical history was noncontributory.

Surgical Technique

The surgical technique is a hybrid of paralleling technique and whale tail technique. The novel technique consists of a two stage surgery. Initial stage where whale tail technique is used where the bucco palatal fibers are released and the bone defect

is cleaned and the second stage includes the paralleling technique for removal of frenum.

After local anesthesia. A semilunar incision was made at the midpalatal suture behind the central incisors [Figure 2].

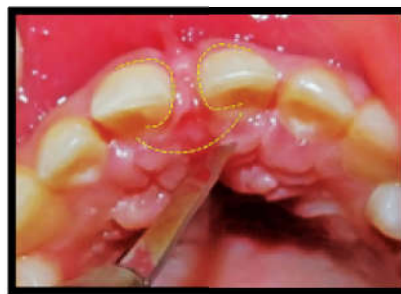


Figure 2 A semilunar incision was made at the midpalatal suture behind the central incisors

The incision was continued in the form of a sulcular incision to the mesial of the central incisors and extended to their distobuccal line angles. This primary incision was made for the purpose of papilla preservation. The semilunar incision started on the palatal surface has been continued in the form of a sulcular incision to the interproximal area. [Figure 3].



Figure 3 The semilunar incision started on the palatal surface has been continued in the form of a sulcular incision to the interproximal area.

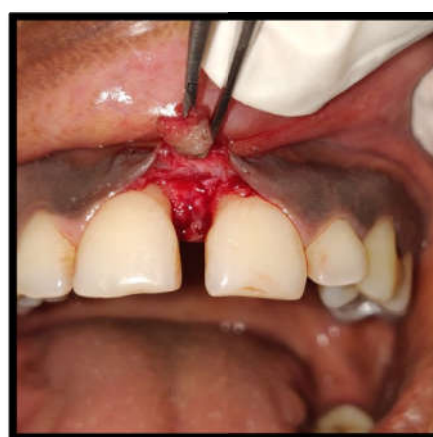


Figure 4 A periosteal elevator was used to elevate the flap palatally, through the diastema, and move it buccally

A periosteal elevator was used to elevate the flap palatally, through the diastema, and move it buccally [Figure 4]. A 1.0- to 1.5-mm full-thickness flap was then elevated to completely eliminate the frenal attachments to the buccal bone. Since the frenal attachments had a buccopalatal direction and had entered the bone defect, the defect was completely cleaned of these attachments using a bone file [Figure 5] No attempt was

made to dissect trans-septal fibers between approximating central incisors at this stage of surgery.



Figure 5-A 1.0- to 1.5-mm full-thickness flap was then elevated to completely eliminate the frenal attachments to the buccal bone. Since the frenal attachments had a buccopalatal direction and had entered the bone defect, the defect was completely cleaned of these attachments using a bone file

The flap was repositioned in its original place in the palate and sutured with 5-0 chromic gut suture [Figure 6].



Figure 6 The flap was repositioned in its original place in the palate and sutured with 5-0 chromic gut suture.

The second stage of surgery was a frenectomy accomplished without invading the papilla (paralleling technique) [Figure 7]. Gingivoplasty of any excess labial and/or palatal tissue in the interdental area was done, preserving the integrity of the interdental papilla. Sutures were placed using 5-0 chromic gut [Figure 8].



Figure 7 The second stage of surgery was a frenectomy accomplished without invading the papilla (paralleling technique)

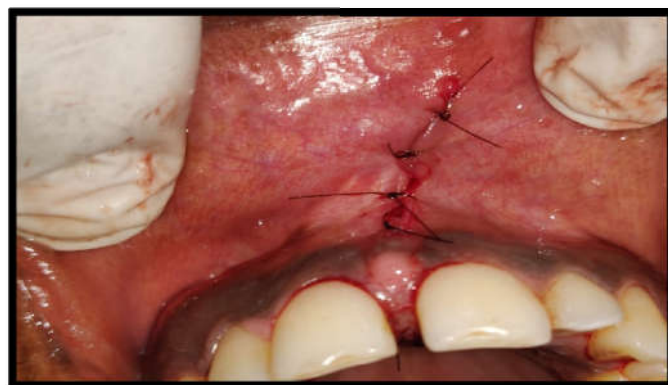


Figure 8 Sutures were placed using 5-0 chromic gut

The surgical area was dressed with COE PAK (GC America). Dressing and the sutures were removed one week later. A healing zone of attached gingiva was clearly visible with no loss of interdental papilla after a month [Figure 9]



Figure 9 A healing zone of attached gingiva was clearly visible with no loss of interdental papilla after a month

RESULT

The outcome of this surgical procedure shows this technique produced a pleasing aesthetic result. The unilateral pedicle flap shows complete healing with zone of attached gingiva, no scar and colour of gingival tissue was comparable to the adjacent tissue. Healing was obtained by primary intention. No loss of interdental papilla was observed. No complication was noted during healing period. Patient's compliance was also very good.

DISCUSSION

In the era of periodontal plastic surgery, management of aberrant frenum has travelled a long journey from Archer's [8] and Kruger's [9] "classical techniques" of total frenectomy to Edward's [10] more conservative approach. Recent techniques added frenal relocation by Z-plasty, [11] frenectomy with soft-tissue graft [12,13] and Laser [14,15] applications and paralleling techniques to avoid typical diamond-shaped scar and facilitate healing.

In this context, MDR technique is the to go type for orthodontic relapse cases. The MDR technique offers the advantages of both paralleling and whale tail technique: [17,18] Like results in no loss of the interdental papilla and no scar tissue. The purpose of elevating a partial thickness of gingival tissue for lateral displacement is to achieve a healing with primary union that heals rapidly with minimal edema, no local infection or serous discharge, no separation of wound edges, and no or minimal scar formation. [19] The healing process is

regulated delicately by different cytokines like interleukins, platelet derived growth factor, transforming growth factor, fibroblast growth factor, epithelial derived growth factor, insulin like growth factor and provides added advantages, such as gain in attached gingiva in the region previously covered by the frenum, excellent color match, healing by primary intention, minimal scar formation, and prevention of coronal reformation. This technique may be suitable in situations where anterior esthetics is of primary importance. Presence of an adequate zone of attached gingiva is an important parameter during consideration of this technique. The technique is reliable and easy to perform and provides excellent esthetic results.

CONCLUSION

While an aberrant frenum can be removed by any of the modification techniques that have been proposed, a functional and an aesthetic outcome can be achieved by a proper technique selection, based on the type of the frenal attachment.

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How to cite this article:

Dayakar M.M *et al* (2021) 'The Novel Perio Esthetic Technique (MDR Technique) For Frenectomy In Patients With Post Orthodontic Relapse- A Case Report', *International Journal of Current Advanced Research*, 10(04), pp. 24258-24261
DOI: <http://dx.doi.org/10.24327/ijcar.2021.24261.4809>
