ORIGINAL RESEARCH PAPER

Pedodontics

KEY WORDS: Frenectomy, High labial frenum, Midline diastema

# FRENECTOMY: BREAKING THE BARRIER

**Dr Sakshi Singh*** Post Graduate Student, Department of Pedodontics and Preventive Dentistry Kothiwal Dental College and Research Centre, Moradabad, U.P, India. *Corresponding Author

**Dr Ashish A. Sinha** Professor, Department of Pedodontics and Preventive Dentistry Kothiwal Dental College and Research Centre, Moradabad, U.P, India.

**Dr Somy Agarwal** Post Graduate Student, Department of Pedodontics and Preventive Dentistry Kothiwal Dental College and Research Centre, Moradabad, U.P, India.

**Dr Priyanka Biswas** Post Graduate Student Department of Pedodontics and Preventive Dentistry Kothiwal Dental College and Research Centre, Moradabad, U.P, India.

**ABSTRACT**

One of the causes of midline diastema is an abnormal labial frenulum. This case report showcases the successful and efficient surgical management of an aberrant maxillary labial frenulum in a 17-year-old patient. The follow-up evaluation revealed optimal healing. The midline diastema was further closed using fixed appliance. The patient showed successful closure of the midline diastema within a time period of four months.

## INTRODUCTION

Due to concerns about aesthetics and the desire to achieve a flawless smile, the significance of dental care has increased. One of the most frequent aesthetic issues in the stage of mixed and permanent dentition is the distance between the maxillary central incisors.[1] A maxillary midline diastema is characterised by a distance between the proximal surfaces of the maxillary central incisor that is greater than 0.5 mm.[2] Labial frenum attachments are membrane folds containing veiled muscular fibres that come from the orbicularis oris muscle of the upper lip and connect the lips to the periosteum and alveolar mucosa.[3] When the frenum is attached too closely to the gingival margin, it may jeopardize the gingival health by causing a gingival recession, either because of an interference with the proper placement of a toothbrush or through the opening of the gingival crevice due to muscle pull.[4]

### Case Report

A 15-year-old male patient reported to the Department of Pedodontics and Preventive Dentistry with the chief complaint of spacing in the upper front teeth since 7 years. On clinical examination pull test revealed a papilla penetrating type of maxillary labial frenum attachment and midline diastema. Medical history was not significant. Clinical photographs, radiographs and measurements revealed a 5 mm diastema between the central incisors (Figure 1). An informed consent was obtained and haematological examinations were performed and labial frenectomy was planned using the classical technique introduced by Archer (1961) and Kruger (1964).[4]

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 (Figure 2 a) and incisions were placed using No.15 Bard Parker blade on the upper and the undersurface of the haemostat until the haemostat was free. The triangular resected portion of the frenum with the haemostat was excised and removed. The fibrous attachments were relieved (Figure 2 b). The edges of the diamond shaped wound were sutured by using 4-0 black silk with interrupted sutures (Figure 2 c). The area was covered with a periodontal COE-pack (Figure 2 d). The patient was kept under antibiotic prophylaxis for 5 days. The patient was recalled after a week for suture removal and satisfactory healing was observed (Figure 2 e).

Patient did not complain of any disturbance in speech and mastication after the surgical removal of high frenum. The overall appearance of the patient's soft tissues, gingiva and superior lip were found to be healthy and esthetic for further orthodontic treatment of midline diastema was planned.

All preoperative data was collected and orthodontic treatment was initiated one month after frenectomy. The metal brackets were bonded to the maxillary and mandibular teeth. A 0.016" NiTi arch wire was used and secured with elastic chain (Figure 3 a). After 1.5 months, there was slight closure of the diastema and 0.017" arch wire was used and secured with elastic chain (Figure 3 b).

After 3 months of orthodontic treatment, there was complete midline diastema closure with proper alignment of maxillary and mandibular arch (Figure 3 c). All brackets were debonded (Figure 3 d) and lingual retainers were placed on the maxillary and mandibular arch to prevent relapse (Figure 3 e,f).

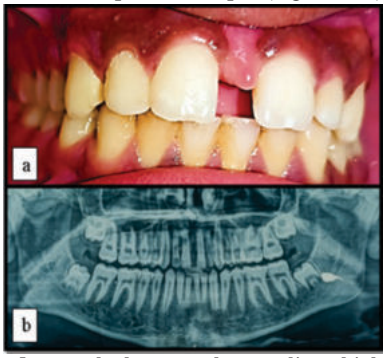
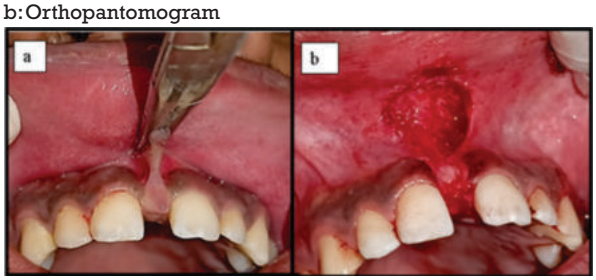



**Figure 1** a: Intraoral photograph revealing thick maxillary frenum
b: Orthopantomogram



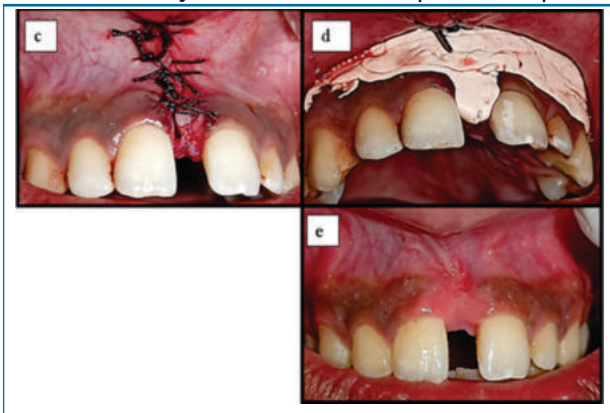



**Figure 2** a: Haemostat holding the thick frenum to its depth
b: Incision placed, fan-shaped wound
c: Suture placement
d: COE pack application
e: Follow up after 1 week

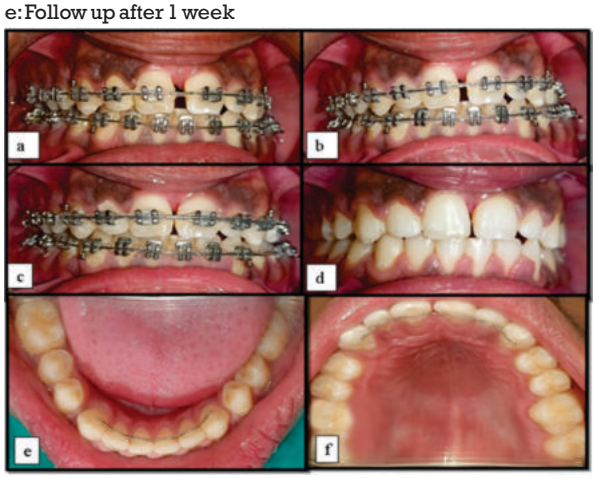



**Figure 3** a: Placement of brackets in maxillary and mandibular arch with 0.016" arch wire
b: Placement of 0.017" arch wire after 1.5 months
c: Closure of midline diastema after 3 months
d: Debonding the brackets
e: Mandibular lingual retainers
f: Maxillary lingual retainers

## DISCUSSION

The upper and lower lips as well as the tongue are stabilised by the frenum's primary function. Frenum can be categorised according to where it is attached.

Classification of frenum by Placek et al (1974)[5]

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

The spacing between the maxillary incisors, or diastema, can be caused by a number of conditions, including high frenum attachment, microdontia, macrognathia, supernumerary teeth, peg laterals, missing lateral incisors, midline cysts, and habits like thumb sucking, mouth breathing, and tongue thrusting.[6] The surgical technique known as a frenectomy seeks to remove extra interdental tissue and lessen the tension on the marginal gingiva tissues. Additionally, it prevents a diastema relapse, which may help the orthodontic treatment protocol even more; it restores the area's anatomy, which enhances the aesthetic; and it aids in preventing periodontal issues. Clinical situations in which frenectomy is performed include:[7]

- To aid in the closure of a diastema for successful orthodontic treatment;
- To prevent the relapse of diastema after treatment;
- To eradicate undesirable tension on the gingival papilla or gingival margin;
- To grant effective and adequate toothbrushing in the area of the fraenum.

Scalpel surgery, electrical scalpel surgery, or laser surgery are all options for performing the procedure. More precise and conservative approaches are being used in the era of periodontal plastic surgery to provide more functional and appealing results. However, the conventional scalpel technique was employed in the current case report, and it showed good postoperative healing.[4]

There are a few different schools of thought when it comes to treating aberrant frenal attachments; frenectomy can be performed either before, concurrently with, or following the conclusion of orthodontic therapy for the closure of the midline diastema. Scar tissue may prevent the diastema from closing if surgery is done before orthodontic tooth movement, hence excision after orthodontic tooth movement is the creation of scar tissue, which aids in maintaining the diastema's closure.[8]

However, the benefit of excision prior to orthodontic treatment is the simplicity of surgical access. After orthodontic closure, surgical access is more constrained, and it will be unable to completely remove all remnant fibrous tissue from the interdental suture area.[9] The majority of diastema cases respond well to physical approximation of the incisor using a complete braced and bonded orthodontic device.[10] In most situations, a bonded palatal fixed retainer is advised to stabilise the outcome after treatment. For patients wearing bonded retainers, appropriate dental hygiene instructions and the use of floss threaders should be recommended. In larger diastemas, this retention should be permanent so as to prevent the relapse.[9]

## CONCLUSION

Closure of the maxillary midline diastema with high frenum attachment, frenectomy and concurrent orthodontic treatment are reliable treatments. Considerations for probable consequences should be made before performing a frenectomy. The papilla penetrating frenum was present in the current case report, and the classical conventional approach produced a successful result. The technique was easy to use and produced the desired outcomes. Orthodontic therapy was started to completely close the space between the maxillary central incisors. The results were obtained to the utmost pleasure of the patient.

## REFERENCES

1. Devishree, Gujjari SK, Shubhashini PV. Frenectomy: a review with the reports of surgical techniques. J Clin Diagn Res. 2012;6(9):1587-92.
2. Abdulateef DS, Ali AJ, Othman NF. The prevalence and etiology of maxillary midline diastema among orthodontic patients attending Shorsh Dental Clinic in Sulaimani City. Sulaimani Dent. 2014;1:86-90.
3. Kotlow LA. Oral diagnosis of abnormal frenum attachment in neonates and infants: evaluation and treatment ofmaxillary frenum using the Erbium YAG Laser. J Pediatr Dent Care. 2004;10:11-4.
4. Jhaveri H. The Aberrant Frenum. In: Dr. Hiral Jhaveri (ed), Dr. PD Miller the father of periodontal plastic surgery. 2006;29-34.
5. Mirko P, Miroslav S, Lubor M. Significance of the labial frenum attachment in periodontal disease in man. Part I. Classification and epidemiology of the labial frenum attachment. J Periodontol 1974;45:891-4.
6. Kaushik N, Srivastava N, Kaushik M, Sharma N, Khattar S. Esthetic Management of Papillary Penetrating Frenum Using Conventional Technique: A Case Report with one year follow up. Int J Adv Res 2016;4:1248-55.
7. Mittal M, Murray AM, Sandler PJ. Maxillary labial fraenectomy: indications and technique. Dental Updat. 2011;38(3):159-62.
8. Chauhan D, Kirtaniya B, Tuli A, Chauhan T. Closure of midline diastema through combined surgical and Removable orthodontic approach. SRM J Res Dent Sci 2013;4:46-9.
9. Koora K, Muthu MS, Prabhu R. Spontaneous closure of midline diastema following frenectomy. J Indian Soc Pedod Prev 2007;3:23-26.
10. Jakati S, Shrinidhi M, Soumya BG, MR Jyothirmayee, Pasala D. Pre orthodontics frenectomy: Flip side of the coin-A case report. Advance Research Journal of Multidisciplinary Discoveries 2019;33(7):28-32