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Multidisciplinary Approach to Treatment of Midline Diastema with Abnormal Frenal Attachment – A Case Report

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Abstract

Recent years have seen a substantial growth in the acceptance of advanced therapies. Midline diastemas and spacing in patients are among the most typical complaints made to the department of Periodontology. The main concern with such circumstances is the substandard aesthetics that are associated with them. Despite the numerous restorative therapy strategies available to deal with these scenarios, their long-term efficiency is still in controversy. The root problem, as in this incidence, is aberrant frenal attachment. To establish a consistent treatment plan, it is crucial to eliminate the etiologic configuration. Localized gingival recession and midline diastema, both of which can impede dental hygiene techniques and eventually have had an aesthetic impact, are spurred on by an aberrant labial frenum. An anterior tooth was restored with direct composite restoration in the current case after a frenectomy was performed to alleviate the aberrant frenal attachment. This specific instance illustrates a successful frenectomy procedure that heals by primary intention at the region of thick, extensive aberrant frena.

***Keywords**: Anterior spacing, frenectomy, Composite restoration, midline diastema, Aesthetic management*

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Introduction

In terms of a person's overall facial representation, dental aesthetics is fundamental. A smile enhances a person's countenance. An aesthetically appealing smile is mostly contingent on the appropriate balance of the teeth's size, morphology, and positioning in respect to the alveolar ridge and periodontal tissue [1]. In need to have the perfect smile, dental treatment has become progressively significant to aesthetic appeal. The appearance of a diastema between an adult's maxillary central incisors is frequently regarded as a cosmetic concern. Focusing on the frenum has become crucial since the prevalence of an anomalous frenum is one of the reasons of a midline diastema's retention [2]. A "midline diastema" is a phenomenon that emerges in the anterior maxilla in the midline and is characterized as a space wider than 0.5 millimetres in between proximal surfaces of contiguous teeth [3]. Patients frequently complain about all this aesthetic issue. The frena may also jeopardize the health of the gingiva by causing a gingival recession when they are too closely linked to the gingival margin, which might be attributable to a constriction with the appropriate adjustment of a toothbrush or through the unveiling of the periodontal fissures as a consequence of a muscle pull [4]. It poses a variety of challenges concerning communication and aesthetic appeal. Here, a novel algorithm for the aesthetic closure of a midline diastema induced by frenectomy and restorative treatment is presented.

Case Report

The primary complaint of a 22-year-old healthy female who visited the department of periodontology at the A B Shetty Memorial Institute of Dental Sciences, Deralakatte seemed to be that his upper front teeth were spaced apart. She sought quick intervention for this ailment. Midline diastema (1 mm) with papillary penetrating high, fibrous labial frenal attachment is revealed throughout an intraoral clinical examination. A basic blanch evaluation was done, and it demonstrated that the papilla had significantly blanched. [Figure 1]. Upper right central incisor (tooth #11) and upper left central incisor (tooth #21) showed minor incisal edge irregularities [Figure 1]. The patient was advised about the several therapeutic approaches and any potential drawbacks. Again, for long-term efficacy of therapeutic interventions, it was recommended to execute invasive (labial frenectomy) and reconstructive (composite build-up) procedures. The risks, complications, and possible outcome of procedures were explained, and written informed consent was taken.

Surgical Procedure

A local anesthetic solution (using 2% lignocaine with 1:80000 adrenaline, LOX 2% Neon Laboratory, India) was infiltrated in the soft tissue surrounding the frenum. Armamentarium –Haemostat, scalpel blade no.15, gauze sponges, 4-0 black silk sutures, suture pliers , scissors, and a periodontal dressing (Coe-pak). The frenal attachment in the present case was of the papilla penetrating form [Figure-1]. A local infiltration using 2% lignocaine with 1:80000 adrenaline was employed to anaesthetize the area. A haemostat was utilized to engage the frenum; it was inserted into the vestibule's depth, and incisions were performed on its lower and upper surfaces until the haemostat was disengaged [Figure-2]. The haemostat-equipped triangular resected part of the frenum was resected. To release the fibrous attachments, the bone endured a blunt dissection. The diamond-shaped wound's edges were sutured securely by adopting interrupted sutures with 4-0 black silk [Figure-3]. The area was covered with a periodontal pack. A periodontal pack had been placed to the site. Yet another week after procedure, the packs and the sutures were removed off. Following the surgery, there have been unappealing or labial tissue scaring after two weeks. [Figure-4]

Figure-1: Papilla penetrating type of Frenal attachment

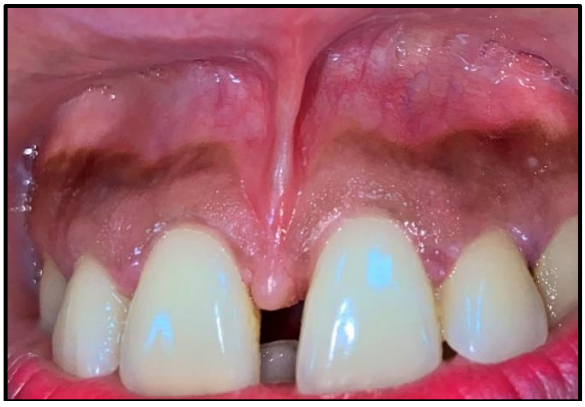


Figure-2: Triangular resected portion of the frenum

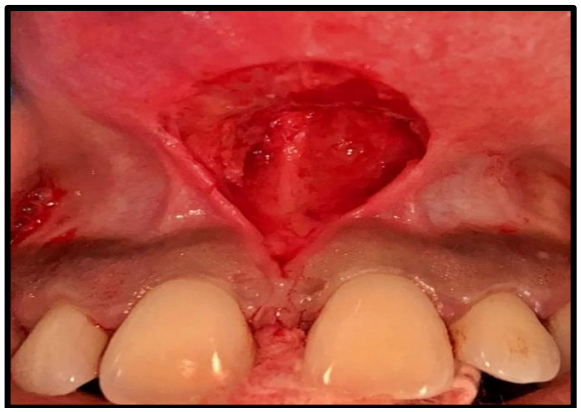


Figure-3: Sutured by using 4-0 black silk with interrupted sutures

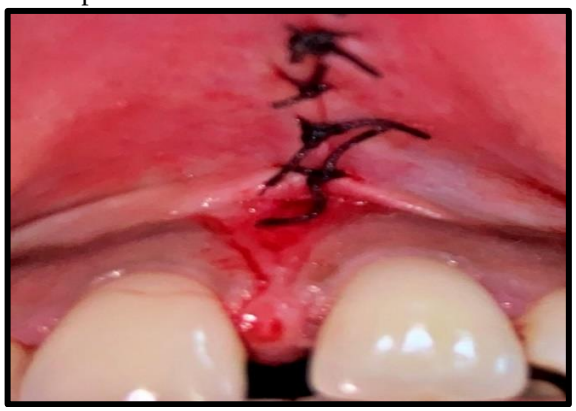


Figure-4: Healing after 2 weeks

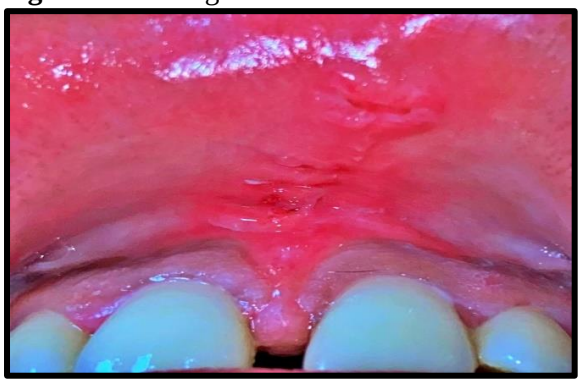
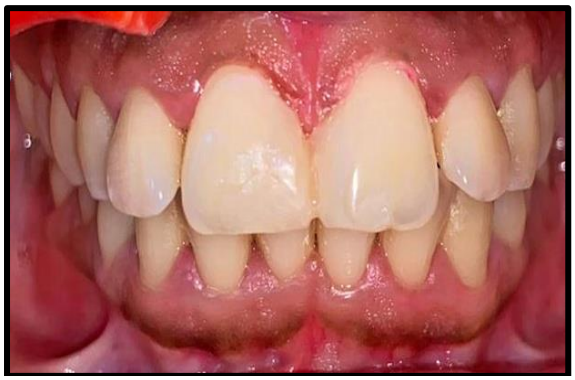


Figure-5: Composite restoration done after 2 weeks



Restorative procedure

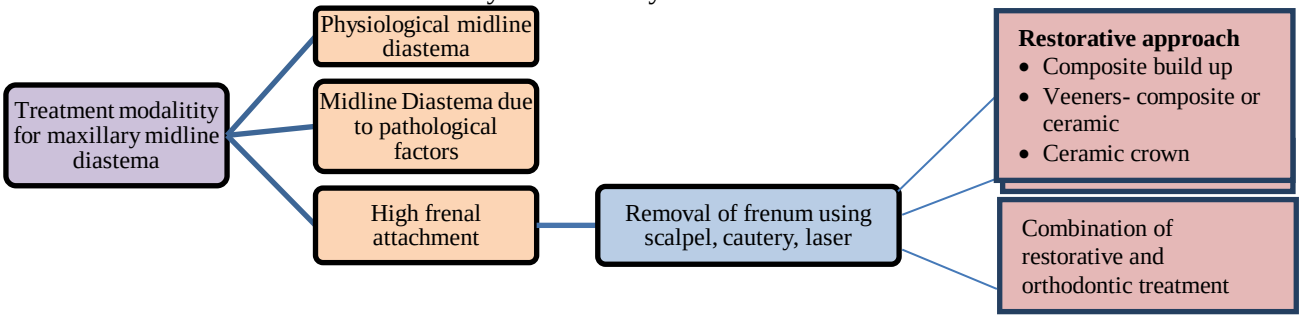
It was intended to restore the upper central incisors' abnormal incisal borders after 2 weeks. The midline diastema after frenectomy was restored using composite resin (Shofu Composite shade A3.5) [Figure 5]. The interdental contacts were restored to prevent the opening up of spaces between the incisors. Finishing and polishing were adequately performed with the help of finishing burs and discs.

Discussion

Since not all diastemas could be treated in a similar manner in terms of duration or treatment methods, clinicians should be aware of the genesis, repercussions, and extent of the diastema. The clinician should analyse all potential therapy options before proceeding ahead with any treatment plan since a successful treatment regimen depends on judicious case selection, appropriate methodology, sufficient patient compliance, and ongoing excellent oral hygiene. An accurate diagnosis and an intervention that is based on the precise etiology of the midline diastema are necessary for effective therapy. Clinical evaluations are necessary for a proper diagnosis [Flowchart- 1]. Circumstances that really are developmental, pathological, or iatrogenic Such oral habits, soft tissue abnormalities, physiological obstacles, dental abnormalities, and/or skeletal disharmonies may result in or induce temporary midline diastemas. [5,6].

The periodontal status is determined by specific types of maxillary frenum, according to Mirko et al. [7]. Whenever the maxillary frenum was attached using the gingival, papillary, or papillary penetrating forms, those with pathological alterations in the papilla had significantly reduced periodontal resistance compared to individuals who had similar type of attachment but a stable papilla. If a hypertrophic labial frenum creates a diastema and makes it challenging to maintain excellent oral health, a frenectomy is frequently recommended [8]. To preserve the patient's aesthetically appealing look, we were using the scalpel technique to eliminate the frenum as well as composite reconstruction.

Flowchart- 1: Treatment modality for maxillary midline diastema



Conclusion

The multidisciplinary approach of frenectomy along with composite restoration has a very good prognosis in the management of midline diastema caused to papillary penetrating frenal attachment.

***Conflict of Interest*: None**
***Source of support*: Nil**
***Ethical Clearance*: Obtained**

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