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RESEARCH ARTICLE

CLOSURE OF MIDLINE DIASTEMA COMBINED WITH FIXED ORTHODONTIC TREATMENT AND PERIODONTAL SURGERY: A CASE REPORT

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ABSTRACT

Spacing is a common complexity, can be seen in both maxillary and mandibular arches or between any tooth which has to be corrected to bring out the perfect smile for which everyone aims. This case report highlights the treatment of a patient with a midline diastema by using a combination of both fixed orthodontic mechanotherapy and frenectomy procedure. A 22-year-old female patient, whose chief complaint was a small diastema between upper central incisors, had a symmetric face and competent lips. Intraoral examination showed class 1 molar relationship in buccal segment with normal overjet and overbite. For the closure of midline diastema, here we use frenectomy with fixed orthodontic appliances.

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INTRODUCTION

Midline diastemas are one of the most prevalent dental malocclusions. In young adults this may create aesthetics problems, especially in individuals marked by a gap between central incisors higher than 4 mm. Diastema between anterior teeth or generalized spacing may be caused by various factors which can be physiological or dentoalveolar or caused due to missing a tooth, peg shaped lateral, midline supernumerary teeth, due to the position of the teeth in their bony crypts, wrong eruption pathway of the cupids, and due to the increase in size of the premaxilla, proclamation of the upper labial segment, prominent frenum and due to a self-inflicted pathology by tongue piercing.[2,3,4] Approximately 98% of 6 year olds, 49% of 11 year olds and 7% of 12–18 year olds has midline diatoms.[5] The treatment options involves observation and follow up, active orthodontic tooth movement, combined orthodontic and surgical approach, restorative treatment and Mulligan's technique of overcorrection[5]

Diagnosiss

An 22-year-old female reported to the Department of Orthodontics of Burdwan Dental College and Hospital with chief complaint of a gap between upper central incisors. Figure 1 showing pretreatment extraoral and intraoral photographs. She had a symmetric face, competent lips and average smile line. Patient's medical history did not reveal any systemic diseases. Intra-oral periodical radiograph was taken to find out the cause of diastema and to rule out the presence of any unerupted mesiodens. On intraoral examination revealed presence of high frenal attachment and midline spacing between maxillary central incisors (6 mm). The patient had a slightly increased overjet and normal overbite, and class I molar and canine relationship son both sides.

The treatment objective: Objective of the treament was the closure of midline diastema to improve facial esthetics to achieve a balanced smile.

The treatment plan: Space closure by continuous arch mechanics in upper arch. Maxillary frenum removal by frenectomy. Preadjusted edgewise appliances 0.022×0.028 slot (MBT prescription) was bonded to the maxillary and mandibular arches. Initial leveling and alignment was carried out by 0.016 inch NiTi wire, then 0.018 AJ Willcock wire, followed by rectangular 0.019×0.025 Niti . Both the arches were prepared for retraction with posted 0.019×0.025 stainless

steel wire. In upper & lower arch en mass retraction was carried out by using continuous arch mechanics. After obtaining informed written consent from the parents, decision was made to remove high frenal attachment by a surgical technique Frenectomy was carried out under local anesthesia with incision using No. 11 Bard Parker blade. In this technique, lateral incisions were made on either side of the frenum to the depth of the underlying bone. Sutures were placed to identify the free tissue margins on either side of the removed tissue and periodontal pack was placed for a week. Patient was advised to return after a week for suture removal and periodical follow-up once a month. The patient was advised to return after a week for suture removal. After all space closure final settling was done by using 0.012 inch SS arch wire was used for both upper and lower arch with 'w' pattern elastics. The treatment result was at the end of treatment, proper class l molar and canine relation & optimum overjet and overbite both were established in this case. Closure of midline diastema and consonant smile was established. Overall, post treatment results showed significant improvement in facial and smile esthetics. Because of relative macroglossia flexible fixed spiral retainer placed in the maxillary arch to aid in correction of mid line diastema mid treament extraoral frontal photo with mid line diastema showing unesthetic smile, post treatment extra oral frontal photo smile, frontal showing esthetic photo at rest , lateral photo and mid treatment intraoral frontal photo showing midline diastema, mid treatment frontal photo after closure of mid line diastema and post treatment fontal photo are being shown in Figure 1. Post treatment intra oral photos are being shown in Figure 2

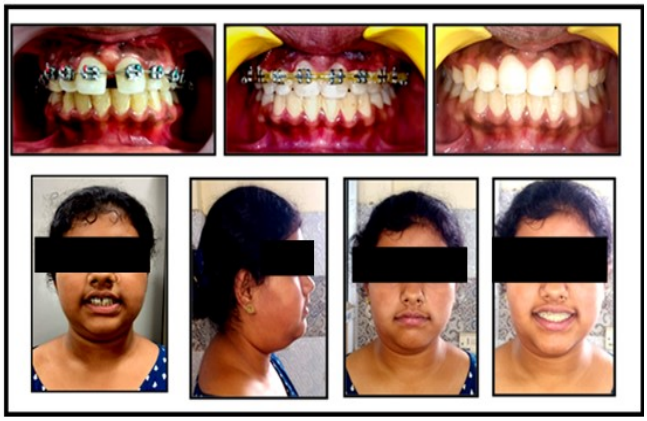

Figure 1.

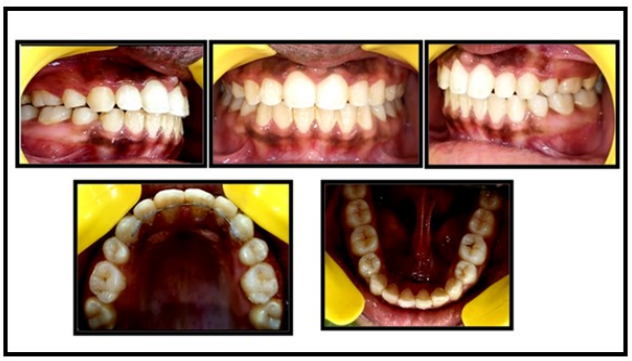

Figure 2.

DISCUSSION

A common aesthetic problem faced in adults is spacing between teeth. Spaced dentition is characterized by interdentally spaces and lack of contact point's .Spacing can be generalized type due to number of teeth involved. The characteristic feature of mixed dentition is the presence of spacing mainly in the anterior segment, which usually is corrected by the termination of mixed and beginning of permanent frenal attachment can be of different mucosal, gingival, and papillary penetrating. It has been stated that when the remaining teeth erupt by 16 years of age, 83% of the maxillary midline diastemas disappear spontaneously.[8] Chances of relapse occurs after treatment of small initial diastema be taken to avoid relapse. Bonded lingual retainers are easily favoured by patients and are nondependentof patient cooperation. [10], In general; abnormal frenal attachment may require removal either before orthodontic treatment or at the end of active orthodontic treatment. The advantage of excision prior to orthodontic treatment is the ease of surgical access. Performing surgery before the orthodontic procedure might impede the closure of diastema by forming a scar tissue, but there is major advantage of excision after orthodontic tooth movement, which helps to maintain closure of diastema.

CONCLUSION

The present case report showed the presence of a thick frenum in the maxillary arch causing midline diastema and aesthetic problem in the patient and also there was a discrepancy in the arch length and total tooth material, which was corrected by a non extraction orthodontic treatment modality along with a frenectomy procedure. A correct diagnosis and early intervention of etiology is always necessary for a proper treatment plan.

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