

A CONVENIENT APPROACH FOR CORRECTION OF A SEVERELY ROTATED MAXILLARY INCISOR AND DIASTEMA CLOSURE IN MIXED DENTITION COMPLICATED BY A MESIODENS – A CASE STUDY

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Abstract

This article reports a simple and convenient approach other than a conventional orthodontics treatment for correction of the rotation of anterior teeth of a 12-year-old North Indian boy, in mixed dentition stage with class I molar relationship. Mesiolabial rotation was present alongwith a mesiodens irt maxillary left central incisor and a palatally erupted maxillary left lateral incisor was present alongwith, a crossbite. The extraction of the supernumerary tooth was done and to correct the rotation bondable buttons were bonded, an appliance which was composed of a removable plate, Adam's clasp with distal extension and for the engagement of elastics a loop was formed. For the correction of the rotated tooth circumferential supracrestal fibrotomy was performed. Then, orthodontic bracket and continuous Elastic chain used for closer of diastema. Thus, this removable appliance can be a simple less costly and effective treatment alternative for derotation of anterior tooth, especially during the mixed dentition period.

Keywords: Central incisor, Mesiodens, Cross bite, Mixed dentition, Severe rotated tooth.

INTRODUCTION

An obvious mesiolingual or distolingual intra-alveolar displacement of around its longitudinal axis is defined as the rotation of the tooth. The prevalence of tooth rotation is 2.1 to 5.1% in the untreated population.¹

There is a number of factors which are responsible for the rotation of the tooth such as — space availability for tooth alignment, tooth eruption order, and functional influences exerted by the tongue and lips, consonant with a multifactorial model in the origin of tooth malpositions. Supernumerary teeth are found most commonly in maxilla, of which mesiodens is the commonest anomaly.² The midline diastema in between the maxillary central incisors leads to an timing such as treatment selection, adequate patient cooperation, and good oral hygiene all esthetical and malocclusion problems in adult.³ Active treatment is available for the patients who consider diastema as an unacceptable condition. one should always consider the extension and the etiology of the diastema. Interceptive therapy can produce positive results during the early phase of mixed dentition. Not all the diastema cases can be treated with the same modality.⁴

It is very difficult to correct the dental rotation, when it combines with malposition of adjacent tooth and insufficient presence of space in the arch.⁵ The purpose of this case report was to present an alternative approach to conventional orthodontic procedure by introducing a removable appliance followed by minimal fixed appliance, to overcome the disadvantages of the conventional fixed appliance.

CASE REPORT

An 12-year male patient came to the department of pedodontics, Sardar Patel Dental College with the complaint of irregularly positioned upper left front tooth.

Mesiodens irt maxillary left central incisor and a palatally erupted maxillary left lateral incisor was present alongwith, a crossbite. Oral hygiene was fair with mild gingivitis. Patient's parents were informed about the intraoral condition and a written consent was proceed prior to start the treatment, It was aimed to de-rotate the central incisor followed by correction of the diastema. Patient was instructed to wear a fabricated removable appliance, which was made of an acrylic base plate with modified Adam's clasp alongwith distal extension in relation to upper right central incisor for engaging elastics (Figure 1). Elastics were engaged between palatal bondable button and the distal extension of adams clasp (Figure 1). After 4 months of active treatment, bondable buttons were removed and pericision/circumferential supracrestal fibrotomy was performed. Upper right and left central incisors were bonded with MBT 0.022 slot for diastema closure, after placing a sectional 0.019" X 0.025" stainless steel archwire Elastic chain was used for diastema closure. (Figure 2)

DISCUSSION

After extraction of the mesiodens, adequate space was available for the mesiodistal alignment of rotated central incisor. On the palatal surfaces of upper left central incisor bondable buttons were placed after 1 weeks of extraction of mesiodens, (Fig. 1). The presence of supernumerary teeth can be a most common reason for the rotation of the maxillary anteriors.

The associated difficulties were loss permanent teeth eruption, deviated from the normal eruption sites, rotations and root resorption.⁶ In the mixed dentition period for correction of rotation the fixed 2 × 4 appliance can be used after the complete eruption of permanent first molars and incisors.⁷



Figure 1: Removable appliance with modified Adam's clasp

with distal extension and placing bondable buttons, and placement of elastics.

Other difficulty of the fixed appliance is the maintenance of oral hygiene that may lead to decalcification of banded and bonded teeth.⁸

The second options for the treatment of rotation in such type of cases are removable appliance. An Adam clasp with distal extension on central incisor and bonded palatal button and force applied by Elastic chain. In this

appliance, minimum relative force is there; so for anchorage is not an issue.

In addition in case when palatal surface of the rotated tooth is positioned along the dental arch, a removable appliance with labial bow and base plate can be used^{9,10,11} the major disadvantages of this appliance is it can be only indicated when the maxillary central incisors are involved or to correct the mild rotation. The unwanted effects are extrusion and labial tipping of upper incisors.¹²



Figure 2: Placement of MBT bracket with sectional archwire and space closure by continuous Elastic chain

If the midline diastema is created because of missing teeth, with the help of orthodontics or fixed or removable prosthesis the space can be closed. In some other cases, the spaces can also be closed by restorative intervention such as tooth recontouring with composite resin.¹³

With the help of MBT 0.022 slot bracket with a sectional wire mechanics and the midline diastema is closed with the help of elastic chain. The relapse of midline diastema after treatment is very common so it is very essential to put the patient on permanent retention. So, as a permanent retainer lingually bonded fixed retainer is recommended.¹⁴

CONCLUSION

This removable appliance provides a very simple, useful and less expansive treatment option which can be employed for successful correction of the rotation of anterior tooth in mixed dentition period. But ideal case

selection, patient's cooperation and compliance is mandatory for desired results. With the help of the minimal fixed orthodontic convenient approach instead of a conventional orthodontic fixed procedure the midline diastema can be treated.

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