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MANAGING A COUNTER-WING ROTATED MAXILLARY CENTRAL INCISOR IN MIXED DENTITION: A CASE REPORT.

Pediatrics

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ABSTRACT

Supernumerary teeth are characterized by presence of extra number of teeth in relation to the normal dentition. Its presence invariably has its effect on the erupting teeth in mixed dentition. Early diagnosis and treatment can reduce its effect as compared to established dentition. Although a plethora of treatment strategies are available in literature for treatment of supernumerary teeth orthodontically. Using simple and effective treatment options does not complicate the process particularly in tiny oral cavities. This case report discusses the management of supernumerary teeth in maxillary arch in a mixed dentition scenario.

KEYWORDS

Supernumerary Teeth, Mesiodens, Fixed Mechanotherapy, 2 X 4 Appliance.

INTRODUCTION

Dental anomalies may be congenital, developmental, or acquired and may include variations in the normal number, size, morphology, or eruptive pattern of the teeth. Congenital abnormalities are typically genetically inherited anomalies and developmental anomalies occur during the formation of a tooth or teeth. On the contrary, acquired abnormalities result from changes to teeth after normal formation. Teeth that form abnormally short roots may represent congenital or developmental anomalies, whereas the shortening of normal tooth roots by external resorption represents an acquired change.[1]

Supernumerary teeth are classified under the developmental anomalies affecting the number of teeth. These teeth develop in addition to the normal complement as a result of excess dental lamina in the jaws, and the tooth or teeth that develop may be morphologically similar to the normal teeth or can be malformed.[2] When these teeth resemble to that of normal anatomy they are referred to as supplemental teeth. Supernumerary teeth that occur between the maxillary central incisors are termed Mesiodens. While those occurring in the premolar region are called the peridens and those found in molar region are distodens.

Mesiodens is a conical type of supernumerary teeth located in the maxillary central incisor region and is generally unerupted. These teeth are frequently associated with various craniofacial syndromes such as Gardner's Syndrome, Cleidocranial dysplasia, and Cleft lip and Palate.[3] However, presence of supernumerary teeth can invariably affect the permanent dentition. Some of the effects can be malalignment of adjacent maxillary incisor, impacted permanent teeth or rotated teeth. Based on the rotation of the distal side of the incisor tooth it can be diagnosed as winging or counter-winging.[4] In this article we present a case report of a counter-winged maxillary central incisor with erupted Mesiodens in mixed dentition.

CASE REPORT

An Eight-year-old male patient reported to the Department of Pediatric and Preventive Dentistry with the Chief complaint of rotated upper front tooth. Facial profile was convex with competent lips. On intraoral examination the child presented with early mixed dentition, and right maxillary central incisor rotated lingually at 90 degrees. Other findings include Angle's Class I canine and molar relationship with overjet and overbite in normal range. There was a conically erupted Mesiodens interposed between the two central incisors, and an erupting left Lateral incisor. (Figure. 1) Treatment objectives were to extract the supernumerary tooth, correction of the rotated tooth, align and level the maxillary anterior segment and provide for retention of achieved results. The parents were informed about the malocclusion and consent was taken to proceed with the treatment.

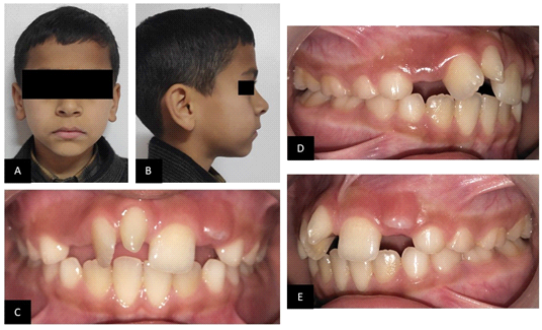

Figure 1. (A) Frontal Extraoral View, (B) Right Lateral View shows Convex profile, (C) Intraoral Frontal View showing Mesiodens interposed between the two central incisors and counter-winged right central incisor, (D&E) Shows Angles Class I Molar Relationship.

TREATMENT PLAN AND PROGRESS

Profound anesthesia was achieved by administering Local Anesthesia with 2% Lidocaine with Adrenalin and extraction of Mesiodens was carried out. Hemostasis was achieved and the child was discharged and asked to report for follow up after 2 weeks. Once the child returned with the healed wound an alginate impression was made and dental stone model constructed, for fabrication of a removable Hawley's appliance with double cantilever single tooth Z- spring. A couple was generated by activating both the labial bow and the Z-spring to cause for derotation of right maxillary central incisor. Multiple activation were done during the course of treatment that extend to 3 months. (Figure. 2)

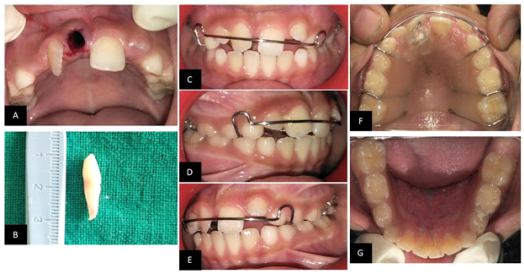

Figure 2. (A) Extraction Socket of Mesiodens, (B) Extracted Mesiodens about 20mm in length, (C-F) Removable Hawley's Appliance with Double Cantilever Z-Spring in place, (F) Mandibular Arch with proximal restoration over left primary first molar.

Following these activations, we were able to derotate the tooth. How ever tight contact did not occur as only tipping took place and a black triangle was seen to be occurring between the central incisors. Later it was decided to proceed with fixed mechanotherapy using 2x4 appliance. The four Maxillary anterior teeth were bonded with 0.022 inch, preadjusted edgewise appliance (MBT prescription) and two maxillary molars were banded with soldered molar tubes. An initial wire of 0.012-inch Niti round wire was placed. After 3 weeks the wire was upgraded to 0.016-inch Niti Round wire and kept for another 3-4 weeks. 0.019 x 0.025-inch Niti wire was placed in subsequent visit and 0.019 x 0.025-inch SS wire was placed in the next visit. (Figure. 3)

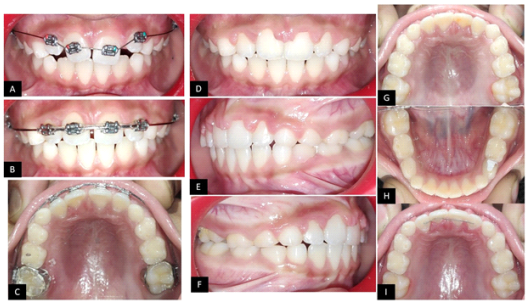

Figure 3. (A) Maxillary anterior teeth bonded with 0.022 inch, preadjusted edgewise appliance (MBT prescription) (B) 0.019 x 0.025-inch SS wire with Elastic Chain Placed (C) Maxillary Occlusal View (D) Frontal View Post Leveling and Aligning (E) Left Lateral View with Angle's Class I Molar Relation. (F) Right Lateral View with Angle's Class I Molar Relation. (G) Maxillary Occlusal View (H) Mandibular Occlusal View (I) Twisted ligature Wire Placed for Retention.

An elastic chain was also placed over the SS Rectangular wire to provide for tight contact. This wire was placed until complete closure of space took place and the teeth got leveled and aligned adequately. Following this a twisted ligature wire was bonded to the palatal aspects of the four incisor teeth to provide for retention and stability.

DISCUSSION

Upon extraction of the supernumerary tooth it was approximately 20 mm in length and had a conical crown form. A positive correlation, though weak is found between increased tooth rotation and bone loss. It is observed in the literature that severity of bone loss increases beyond 20 degrees of tooth rotation.[5] Pure couple mechanics were generated using the removable appliance, however since these appliances only tend to move the tooth through tipping, we were unable to completely level and align the tooth using the removable appliance alone. However removable appliances in particular provide us with advantages such as maintenance of oral hygiene, excellent gingival and periodontal health, and less reactive forces and minimum need for anchorage.[6] Additionally, removable appliance poses with a major drawback of patient compliance. The appliance is solely dependent on wear by the patient which can affect the treatment duration and prognosis. Since we were unable to correct the malocclusion with removable appliance, other commonly used option was the fixed mechanotherapy, using 2 x 4 appliance, it provided the operator with greater control over the tooth movement where both tip and torque could be expressed to align and level the tooth to its ideal position.[7] Although fixed mechanotherapy have some associated pitfalls such as oral hygiene maintenance, and tooth decalcification. However, since the malocclusion gets corrected over the shorter period of time which enhances both the efficiency and efficacy of the therapy,[8] in our perspective with little bit of patient and parent motivation fixed mechanotherapy can be highly successful in treating malocclusion in mixed dentition.

CONCLUSION

Careful diagnosis and treatment planning remain the milestone for successful treatment of problems such as ectopically- erupted teeth and rotated maxillary central incisor. Fixed mechanotherapy in terms of 2 x 4 appliance is a valid option in interceptive orthodontics and its diffusion is advisable not only among orthodontists but also among the pediatric dentists which encounter these situation first hand.

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