

Molar Distalization with Deciduous Anchorage: A Case Report

Mridul Khanduri¹ Luv Agarwal² Varun Kashyap³ Harmeet Manocha⁴ Merin Paul^{5*}

¹Professor and Head, Department of Orthodontics, Uttarakhand Dental and Medical Research Institute, Dehradun, India.

²Assistant Professor, Department of Orthodontics, Uttarakhand Dental and Medical Research Institute, Dehradun, India.

³Assistant Professor, Department of Orthodontics, Uttarakhand Dental and Medical Research Institute, Dehradun, India.

⁴Post Graduate Student, Department of Orthodontics, Uttarakhand Dental and Medical Research Institute, Dehradun, India.

⁵Post Graduate Student, Department of Orthodontics, Uttarakhand Dental and Medical Research Institute, Dehradun, India.

ABSTRACT

Background: Early and timely orthodontic treatment is aimed at eliminating the disturbances of skeletal and dental development, to harmonize the stomatognathic system before the complete eruption of all permanent teeth. The advantage of using deciduous teeth as an anchorage is that it is a good method to intercept a developing malocclusion without extractions or any deviation from the normal position of the permanent tooth. This article provides with a successful treatment method of class II malocclusion using deciduous molars as anchorage with Ni Ti coil springs in mixed dentition phase. Distalization of maxillary molar was done, followed by guidance of canine by orthodontic approach and other dental correction using 0.022 MBT appliances. Post alignment results were good and the arch length discrepancy was corrected, the treatment is completed and showed good post treatment results.

Keywords: Class II malocclusion, Distalization, Mixed dentition, Deciduous molars, Ni-Ti coil Spring, Space Regainer.

INTRODUCTION

Molar distalization with deciduous anchorage and NiTi coil spring is a great method for correction of developing class II malocclusion. Since it is difficult for all child patient's to co-operate for the dental treatment and manage the problems of the developing dentition in children with interceptive orthodontic appliances and serial extractions. For cases with mild to moderate arch length discrepancy molar distalization is of significant importance. Space is easier to gain in the maxillary arch¹ than in the mandible because of increased trabecular structure of supporting bone and anchorage is supported by the palatal vault.² In this case, maxillary molar distalization was carried out using Ni-Ti coil spring appliance using deciduous second molars as anchor units with nance appliance that aids in correction of borderline class II malocclusion.

CASE REPORT

Case Presentation

A 10 year old boy presented with the chief complaint of irregularly arranged teeth. He was in mixed dentition phase, had straight profile, class II (end-on) molar relation, unerupted canine in the maxillary arch and 1st premolar had erupted in all the four quadrants (Figure 1 and 2).

Investigation

Orthopantomograph (OPG) revealed the presence of tooth buds of Permanent Canines and 2nd Premolars. Moyer's analysis showed a discrepancy of 4.3 mm, indicating that crowding might be expected in the permanent dentition while in the mandible the space available in the right side was 0.5 mm less on right side and 3.5 mm less on the left side indicating that crowding may be present in the permanent dentition (Figure 3).

Received: Jan. 19, 2018; Accepted: Mar. 16, 2018

*Correspondence Dr. Merin Paul.

Department of Orthodontics, Uttarakhand Dental and Medical Research Institute, Dehradun, India.

Email: paul.merin86@gmail.com



Fig 1: Profile of the patient during pretreatment.

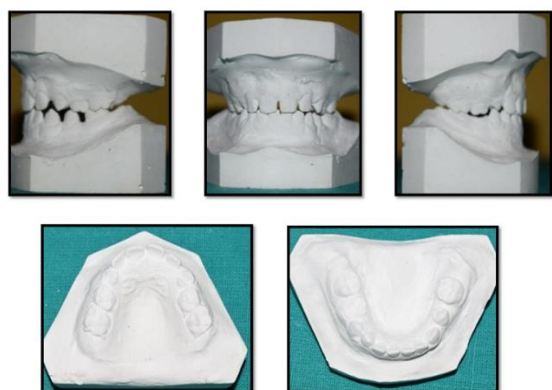


Fig 2: Pretreatment studycast photographs.



Fig 3: Pretreatment OPG.



Fig 4: Maxillary molar distalization with Niti coil spring in place.



Fig 5: Mid treatment profile of the patient.

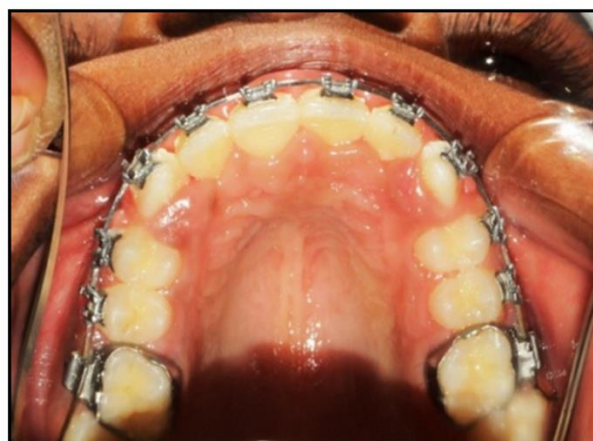


Fig 6: Postdistalization showing space gain and canines and incisors aligned.



Fig 7: Finished case showing torque correction with 0.019 × 0.025 stainless steel wire.

Treatment

A Nance appliance was cemented on E and a NiTi coil spring was placed between E and 6 and MBT brackets (0.22) were placed in the erupted permanent teeth (Figure 2). The permanent molars were distalized creating space for the eruption of permanent canines and premolars. After the eruption of the permanent canines and premolars

with the alignment achieved, the cast analysis showed no need for extraction and expansion (Figure 4 and 5).

DISCUSSION

Gianelly. A et al concluded in their study that molars can routinely be moved distally with little to no patient cooperation using intra arch superelastic NiTi coils or superelastic NiTi wire in combination with a modified Nance appliance. They saw that highest success rate with fewer complications occur when molars are moved distally in the mixed dentition stage of development than in the permanent dentition.^{3,4} Bondemark. L et al concluded that Ni- Ti coil appliance was a better choice than the magnet appliance for the distal bodily movement of the maxillary molars. The advantage lied in the fact that the Ni-Ti appliance design prevented molar tipping and only single activation was required.⁵ Kinzinger et al came to the conclusion that deciduous molars and premolars can be used for anchorage for molar distalization with a pendulum appliance; however, anchorage with premolars only results in the least pronounced dentoalveolar side effects and the anchorage quality of deciduous molar and mixed deciduous molar/premolar anchorage is limited.^{6,7} Karlsson. I et al reached the conclusion that molar distalization is more effective to distalize the first maxillary molars before the second molars have erupted.^{7,8} Consolaro A et al in their study concluded that deciduous teeth when used for orthodontic movement or anchorage for orthopedic purposes, speed up root resorption and exfoliation will occur early.^{9,10,11} Although in this case exfoliation of deciduous molars were less significant as their exfoliation will only create space for the premolars and permanent canines along with the space created by the molar distalization. This method of treatment also eliminates the need of serial extractions which were earlier used to create space (Figure 6 and 7).

CONCLUSION

Therefore, to conclude, in our daily practice we come across many cases of class II div 1 malocclusion which may be due to variety of factors. Developing malocclusions can successfully be intercepted and corrected in the mixed dentition

period by molar distalization with deciduous anchorage.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Hilgers KK, Reford – Badwal D, Resine S, Mathieu GP. Orthodontic treatment provided in pediatric dental residencies. J Dent Educ 2003 Jun; 67(6):614-621.
2. Patil RU, Prakash A, Agarwal A. Pendulum therapy of molar distalization in mixed dentition. Int J Clin Pediatr Dent 2016 9(1): 67-73.
3. Gianelly AA, Bednar J, Dietz VS. Japanese NiTi coils used to move molars distally. Am J Orthod Dentofac Orthop 1991 ;99:564-6.
4. Gianelly AA. Distal movement of the maxillary molars. Am J Orthod Dentofacial Orthop 1998;114:66-72.
5. Brondemark L. A comparative analysis of distal maxillary molar movement produced by a new lingual intra arch NiTi coil appliance and magnetic appliance. Euro J Ortho 22(2000) 683-695.
6. Kizinger GSM, Wehbein H, Gross U, Diedrich PR. Molar distalization with pendulum appliance in mixed dentition: Effects on the position of unerupted canines. Am J Orthod Dentofacial Orthop 2006;129:407-17.
7. Karlsson I, Brondemark L. Intraoral Maxillary Molar Distalization Movement before and after Eruption of Second Molars. Angle Orthodontist, 2006; 76(6)923-929.
8. Consolaro A. Orthodontic movement in deciduous teeth Dental Press J Orthd. Mar-Apr;20(2): 16-9.
9. J. Ghosh and R. S. Nanda, "Evaluation of an intraoral maxillary molar distalization technique," American Journal of Orthodontics and Dentofacial Orthopedics, vol. 110, no. 6, pp. 639-646, 1996.

10. McDonald, RE.; Avery, DR. Dentistry for the child and adolescent, 6th ed. CV Mosby: St Louis;1997. p. 198-205.
11. 10. Altay N, Cengiz SB. Space-regaining treatment for a submerged primary molar: A case report. Int J Paediatr Dent 2002 Jul;12(4):286-289.