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Case Report

MODIFIED NANCE PALATAL ARCH FOR DEROTATION OF TOOTH- CASE REPORT Sandhya Jain¹, Anil K. Bunkar²*, Ashok Panika³

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Abstract:

Rotation of any tooth needs to be corrected in the initial phase of orthodontic mechanotherapy. Derotation of posterior teeth provides space in the arch and also allows the treatment progress. During rotation correction, undesirable forces make an unwanted movement of the adjacent teeth, which increases the duration of treatment. This case report aims to fabricate and introduce the modified Nance palatal arch that easily allows derotation of the tooth without producing undesirable side effect on adjacent teeth.

Keywords: modified Nance palatal arch, derotation, rotated premolar

Introduction:

Tooth rotation may be defined as the mesiolingual or distobuccal intra-alveolar displacement of the tooth around its long axis. [1] The prevalence of tooth rotation in the untreated population is 2.1-5.1%. [2] The rotation of permanent tooth can be caused by two main etiological factors; first is pre-eruptive disturbances which include injury to tooth bud in childhood, cyst, tumors or supernumerary tooth interferes with the eruption of the tooth. [3,4] The second cause is a post-eruptive disturbance, such as crowding of dental arches, space availability for tooth alignment, functional effects produced by nonnutritive sucking. [3,5] Rotation of any tooth results in malocclusion which needs to be corrected in the initial phase of orthodontic mechanotherapy. The anterior teeth can be easily derotate by elastic archwires, but posterior teeth need more attention for correction. [6] Elastic archwire on posterior teeth for derotation can cause undesirable force on adjacent teeth. [7] Aim of the current case report was to fabricate an appliance that can be used for correction of severely rotated premolar without producing undesirable side effect on adjacent teeth.

Case report:

Diagnosis and treatment planning

A 14-year-old boy reported to the Department of Orthodontics with the chief complaint of proclined upper incisor with esthetic concern regarding the facial appearance. Clinical examination revealed class II div 1 malocclusion with 9 mm overjet and 5mm overbite. Rotated teeth were 15 and 25. The cephalometric analysis revealed a horizontal growth pattern with the retrognathic mandible. The full complement of teeth was present till 2nd

molar with satisfactory oral hygiene. Patient cooperation was also positive.

Fixed modified Nance palatal button with transpalatal arch for anchorage purpose and derotation of premolar was given to the patient. Premolar's MBT bracket on the buccal surface and lingual button on the palatal surface was bonded on the rotated teeth. To produce coupling force bracket were tied with the help of elastic chain from the molar tube and lingual button from the loop of modified Nance palatal button. Patient was advised to report the department as early as possible in case of any breakage. Patient was also motivated to maintain oral hygiene and care of the appliance. Total duration for derotation was 9 weeks.

Discussion:

On the literature, regarding derotation of the posterior tooth by appliance, various case reports were found. All of them showed good result but they do not provide feasibility to change the direction of force application according to the need of case. [8,9]

In the current case report modified Nance palatal button was used. Loops on both arms of the appliance were incorporated. The position of loops can be changed according to the need of direction of the force.

Flexible wires such as NiTi are also can be used for derotation but in case of severely rotated posterior teeth ligation of wire becomes difficult and also produce unwanted force to adjacent tooth. Derotated teeth have a strong tendency for relapse. Supracrestal fibrotomy or pericision along with full-time retention at least for 6 months should provide. [10]

Conclusion:

Fixed modified Nance appliance can efficiently correct the severely rotated tooth in a short time. Derotation of posterior teeth is important for crowding correction as well as helps in achieving the objective of orthodontic treatment: functional efficiency, structural balance and esthetic harmony.



Figure 1: Pre-derotation of premolar



Figure 2: Appliance in situ



Figure 3: Post -derotation of premolars

References

- **1.** Gupta SK, Saxena P, Jain S, Jain D. Prevalence and distribution of selected developmental dental anomalies in an Indian population. J Oral Sci. 2011; 53:231–8.
- **2.** Shpack N, Geron S, Floris I, Davidovitch M, Brosh T, Vardimon AD. Bracket placement in lingual vs labial systems and direct vs indirect bonding. Angle Orthod. 2007;77:509–17.
- **3.** Kim YH, Shiere FR, Fogels HR. Pre-eruptive factors of tooth rotation and axial inclination. J Dent Res. 1961;40:548–57.
- **4.** Hattab FN, Yassin OM, Rawashdeh MA. Supernumerary teeth: Report of three cases and review of the literature. ASDC J Dent Child. 1994; 61:382–93.
- **5.** Vermeulen FM, Aartman IH, Kuitert R, Zentner A. The reliability of assessing rotation of teeth on photographed study casts. Angle Orthod. 2012; 82: 1033–9.
- **6.** Sander C. the Derotation of Premolars and Canines with NiTi Elements Journal of Orofacial Orthopedics/ Fortschritte der Kieferorthopädie March. 2006;67 (2): 117-126.
- **7.** Baccetti T. Tooth rotation associated with aplasia of nonadjacent teeth. Angle Orthod. 1998;68:471-474.
- **8.** Sunda S, Khanna P, Panghal V. Modified Nance Palatal Arch. Modified Nance Palatal Arch. J Med Res Health Educ. 2017;1(2): 9.
- Chauhan D, Datana S, Nagpal V, Agarwal S, Govindraj V. Correction of bilaterally rotated premolars in bilateral cleft lip and palate patients: An innovative approach. Int J Orthod Rehabil. 2019;10(4):185.
- **10.** Wichelhaus, A, Sander C, & Sander F. Development and Biomechanical Investigation of a New Compound Palatal Arch. Journal of Orofacial Orthopedics. 2004; 65(2),104–122.