

**USE OF FIXED MECHANOTHERAPY IN CORRECTION OF DEVELOPING MALOCCLUSION IN MIXED DENTITION; -A REPORT OF TWO CASES**

**Sadanand Kulkarni<sup>1</sup> and Hemalatha Hiremath<sup>2</sup>**

<sup>1</sup>Department of Pedodontics, Swargiya Dadasaheb Kalmegh Smruti Dental College & Hospital

<sup>2</sup>Department of Conservative and Endodontics, Swargiya Dadasaheb Kalmegh Smruti Dental College & Hospital

**ARTICLE INFO**

**Article History:**

Received 06<sup>th</sup> September, 2020

Received in revised form 14<sup>th</sup>

October, 2020

Accepted 23<sup>rd</sup> November, 2020

Published online 28<sup>th</sup> December, 2020

**ABSTRACT**

Developing malocclusions are fairly common occurrences in the mixed dentition stage. If not treated they may manifest into severe malocclusions and may necessitate comprehensive orthodontic treatment. Removable appliances have lot of limitations like poor control, are bulky and may cause speech changes. Fixed appliances offer better choice and good control of forces leading to better results. This article describes two such cases which were treated with using fixed mechanotherapy.

**Key words:**

Developing malocclusion fixed mechanotherapy

Copyright©2020 *Sadanand Kulkarni and Hemalatha Hiremath*. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**INTRODUCTION**

Children in the age group of 6 years would be having a mixed dentition and the dentition would be in a dynamic state with eruption of each permanent tooth. During this period numerous malocclusions may occur such as delayed/ectopic eruptions, impactions, mild to severe crowding, anterior and posterior crowding, diastema, deep-bite or open bite, ankylosis etc. The aim of treatment in such scenario is to intercept the problem immediately, there by decreasing the complexity of malocclusion and treatment time or sometimes completely avoiding future orthodontic treatment.

The factors which would affect the choice of treatment type are chronological and dental age of child, severity of the malocclusion, availability of eruption path, and patient's compliance for treatment. Among the fixed and removable appliances, fixed appliances have the advantage of shorter treatment time and less compliance problems from children.

In this paper we highlight two cases of cases of successful correction of anterior crossbite using simple orthodontic appliances.

**Case Reports**

**Case 1**

A10-year male child came with a chief compliant of delayed eruption of anterior teeth to Paediatric Dental Clinic.

His parents informed that only one permanent tooth had erupted and the primary tooth had turned dark few months prior. The child was moderately built, with a dolichocephalic face and did not have any aversive medical history or any history of previous dental treatment.

Intraoral examination revealed that the patient had an early mixed dentition with class 1 molar relation and mild crowding in lower anterior region. Upper left primary incisor was over retained, discoloured and in edge-to-edge bite and permanent lateral incisor wasn't erupted (Figure 1).

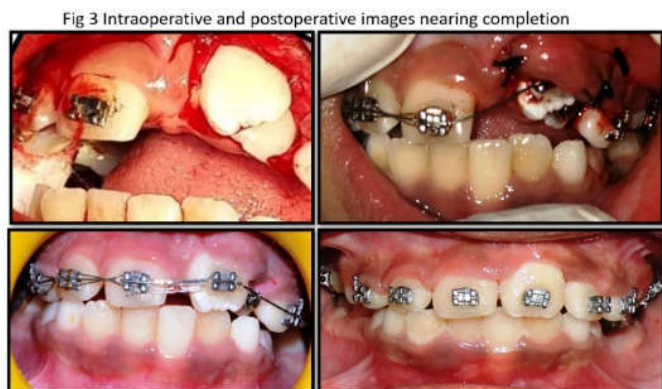
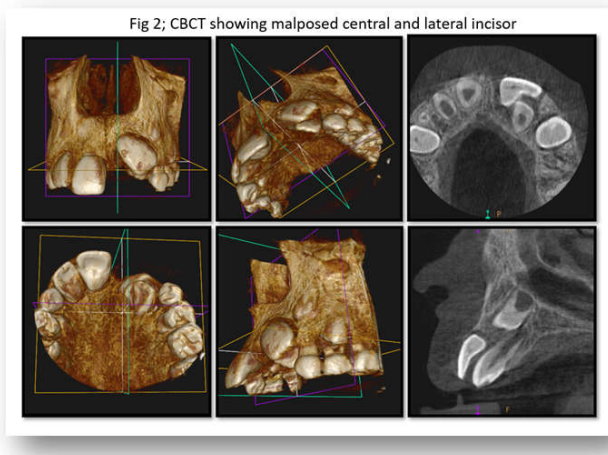
Fig 1 : Preoperative view with over retained 62 and multiple carious teeth|



\*Corresponding author: **Sadanand Kulkarni**

Department of Pedodontics, Swargiya Dadasaheb Kalmegh Smruti Dental College & Hospital

A CBCT was made which revealed distobuccally placed right central incisor and palatally displaced lateral incisor blocking the eruption path of each other. (Fig; 2) CBCT was helpful in three dimensionally locating all the malposed teeth. Routine blood investigations were done and local infiltration anaesthesia was given and the over retained primary incisor was extracted. This was followed up by raising a small flap to expose the central and lateral incisor. The teeth were isolated and bonding of brackets was done with all upper teeth. ( Figure 3) A 0.014 NITI wire was the first one used for initial alignment and later followed up with 0.016. The diastema was closed using a power chain. The correction was achieved in 8 months of active treatment. (Figure 3)



**Case 2**

A 13-year-old male patient reported with a complaint of mal aligned maxillary incisor teeth to the department of pediatric dental clinic. The left central incisor was distobuccally rotated and the lateral incisor was buccally displaced and out of arch. (Figure 4)

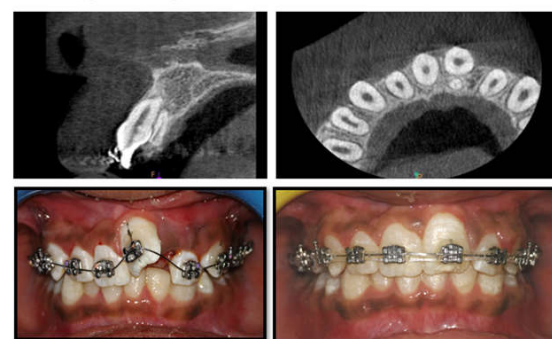
CBCT revealed a small supernumerary tooth palatal to central incisor which appeared to be the cause of malocclusion in the anterior region. (Figure 5)

Mixed dentition space analysis showed the availability of sufficient space for realignment of teeth. The supernumerary tooth was extracted under infiltration and bonding of upper teeth completed. 0.014 NITI wire was used to start alignment followed by 0.017x0.025 niti and 0.017x0.025 stainless steel and the patient was followed up for next 6 months. A permanent braided wire retainer was bonded later.

Fig 4 Preoperative images



Fig 5; - Changes after 6 months of treatment can be seen.



**DISCUSSION**

Developing malocclusion has to be treated as early as possible as if left unattended may lead to severe malocclusion affecting patient's aesthetics and mastication.(1). Early treatment allows harmonization of the occlusion with time, as the permanent teeth are still erupting during this stage of the dentition [2]These developing malocclusions may be treated with removable or fixed appliances. The removable appliances have limitations like patient compliance especially in children, they allow only for tipping movements of teeth, restricted tooth movement range, bulk of the appliance in mouth leading to speech problems. These limitations may prevent effective treatment in children. Fixed appliances are relatively expensive but help in overcoming all drawbacks of removable appliances.

One of the major challenges of fixed appliances is achieving isolation for bonding of brackets and the molar contours of primary teeth. This problem could be avoided by using 2\*4 appliance and placement of molar bands on first permanent molars.(3,4)

If the first permanent molar has not erupted completely placement of the molar band could be a problem. Sometimes, placement of the band also can cause discomfort, and some children may refuse further treatment. Another disadvantage of the 2 × 4 appliance is plaque retention around the bands and brackets. However, this could be easily overcome with good oral hygiene care.

The fixed appliance used in these two cases provides complete control over the arch form and allows three-dimensional control on the teeth involved with the help of a continuous archwire. Hence, its more effectual plus offers good tooth positioning and arch alignment. Furthermore, no laboratory cost is concerned, and it requires only chairside time to fix the appliance. Granting patient cooperation is necessary during placement and removal of this appliance, additionally for maintenance.

NiTi archwires were used mainly because of their unique properties of super elasticity and shape memory which are chiefly useful to align severely malpositioned teeth.[5]In addition, the use of prefabricated and preadjusted MBT brackets used judiciously along with NiTi wires serves as an innovative provision in the field of interceptive orthodontics.

## **CONCLUSION**

The fixed appliance described in these two cases reports is resourceful, patient friendly and easy to use by dentists. When used judiciously the fixed appliances deliver quick and very predictive result with controlled tooth movement three dimensionally.

## **References**

1. Noar J *Interceptive Orthodontics, a Practical Guide*, John, Wiley & Sons, 2014.
2. A.T. Ulusoy and E. H. Bodrumlu, "Management of anterior dental crossbite with removable appliances," *Contemporary Clinical Dentistry*, vol. 4, no. 2, pp. 223–226, 2013.
3. Mckeown H F and Sandler J "The two by four appliance: a versatile appliance," *Dental Update*, vol. 28, no. 10, pp. 496-500, 2001.
4. Major P W and Glover K, "Treatment of anterior cross-bites in the early mixed dentition," *Journal of Canadian Dental Association*, vol. 58, no. 7, pp. 574-575, 1992.
5. Abdelrahman RS, Al-Nimri KS, Al Maaitah EF. A clinical comparison of three aligning archwires in terms of alignment efficiency: A prospective clinical trial. *Angle Orthod* 2015;85:434-9.

### **How to cite this article:**

Sadanand Kulkarni and Hemalatha Hiremath (2020) 'Use of fixed Mechanotherapy In Correction of Developing Malocclusion In Mixed Dentition; -A Report of Two Cases', *International Journal of Current Advanced Research*, 09(12), pp. 23465-23467. DOI: <http://dx.doi.org/10.24327/ijcar.2020.23467.4647>

\*\*\*\*\*