International Journal Dental and Medical Sciences Research
Volume 4, Issue 3, May-June 2022 pp 220-223 www.ijdmsrjournal.com ISSN: 2582-6018

Pseudo Class 3 correction in 3-year-old children – A case report

Dr. Radhika, Dr. Shaila Masih, Dr. Namita Singh
MDS Resident,
Department of Pedodontics and Preventive Dentistry,
Christian Dental College, Ludhiana, Punjab, India

Submitted: 10-05-2022 Accepted: 22-05-2022

ABSTRACT:Timing of orthodontic treatment particularly for children with pseudo class III malocclusion has always been disputable. Correction of the resulting anterior and posterior crossbite due to pseudo class III malocclusion must be carried out as soon as it is detected to increase the orthopedic effects; thereby increasing the long-term stability of the treatment results. Benefits of early treatment is by preventing adverse growth and re-establishing proper muscle balance before deteriorating effects become well established. The case report delineates pseudo class III in primary dentition successfully treated by using double cantilever spring/ Z spring and jack screw appliance.

KEYWORDS: Crossbite, pseudoclass III malocculusion, primary dentition.

I. INTRODUCTION

Malocclusion, defined as a handicapping Dentofacial anomaly by the World Health Organization, refers to abnormal occlusion which may affect the aesthetics, function, facial harmony & psychosocial well-being. Angle's Class III malocclusion is one of the malocclusions which shows malrelationship of both the upper & lower jaw in sagittal plane or vertical plane, with either maxilla restricted or with mandible being prognathic. Premature contact between the maxillary and mandibular incisors results in forward displacement of the mandible in pseudo-Class III malocclusion; this displacement disengages the incisors and permits further closure into abnormal position.

Correction of Pseudo Class III malocclusion must be carried out as soon as it is detected to increase the orthopedic effects, thereby increasing the long-term stability of the treatment results. The aesthetics of an anterior crossbite are poor, if the condition is left untreated, it has been suggested that it may lead to:

- Temporomandibular dysfunction,
- Potential adverse growth influences on the mandible and the anterior portion on the maxilla, involving not just the teeth and alveolar processes, but skeletal structures of the mandible and maxilla.

The additional benefit of early treatment is by preventing adverse growth and re-establishing proper muscle balance before deteriorating effects become well established.

Therefore, the aim of early treatment is to correct pseudo class III as this type of malocclusion doesn't diminish with age, otherwise it can lead to consequential skeletal class III malocclusion.

a. The Case

A 3-year-old girl with her parents visited Department of Pedodontics and Preventive Dentistry with chief complaint of anterior crossbite and deviated mouth closure. The general health of patient was satisfactory.

Records like Orthopantomogram and cephalometric radiograph along with study models were taken for diagnosis [figure 5 and 6].

Extra oral examination: Mesomorphic built normal gait and posture. Competent lips. Profile was concave [Figure 1].

Intraoral examination: Soft tissues normal [figure 2-4].

Erupted teeth:

D C B A	A B C D E
E D C B A	A B C D E

Erupting:

E	

Maxillary arch: symmetrical with right primary central incisors, right lateral incisor, canine, first and second molars in crossbite.

Mandibular arch: symmetrical, overlapping the maxillary teeth 543211.

Intra oral examination:

1. End on molar relationship

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2. Reverse overjet
3. Functional shift of the mandible to right side on closure.

Radiographic examination by panoramic view revealed that all permanent unerupted teeth present except third molars, while cephalometric radiograph showed no adenoid enlargement.

Figure 1: Right extraoral view

Figure 2: Intraoral front view

Figure 3: Lateral Cephalogram

Figure 4: OPG

II. DIAGNOSIS

The clinical examination revealed pseudo class III on account of an anterior and posterior crossbite in the presence of forward mandibular and functional shift due to premature contact on upper right A B C and D. So, the starting point in diagnosis was by establishing centric relation through guiding the mandible into centric relation.

III. TREATMENT PROCEDURE

Behavior management for this child has done by direct modelling through other children in the department. Double cantilever spring for active movement of A B and C were constructed using 0.6 wires (23 gauge) on the study casts along with C clasps on molars for retention [figure 7] and removable acrylic plate was made with posterior bite blocks on maxillary left and right molars for disoccluding the incisors. Appliance was fixed using Type 1 (luting) GIC. On subsequent visits, every after 1 week, the cantilever spring was activated. The total treatment time was 4 weeks and appliance were removed on the end of the fourth week.

The second phase of the treatment was done with objective of correcting crossbite in relation to right D and E. Hawley's appliance was fixed incorporating jack screw for the segmental expansion in the transverse direction. The appliance consisted of a split acrylic plate joined together by a jackscrew with posterior bite blocks on the maxillary left and right molars [figure 8]. Appliance was fixed using Type1 (luting) GIC. On Subsequent visits, after every 4 days, the appliance was activated by giving one turn per visit. The total treatment time was 2 weeks and appliance was removed on the end of the second week. Finally, the posterior crossbite was corrected by interdigitation between the maxillary and mandibular teeth.

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Figure 5: Appliance design 1

Figure 6: Appliance design 2

Figure 7: Intraoral front view

Figure 8: Post treatment front view

Figure 9: Post treatment right lateral view

Figure 10: Post treatment extraoral view

IV. DISCUSSION

In the present case new treatment modality is demonstrated which is quite simple and rapid method for treatment of Pseudo class III in primary dentition.

Double cantilever spring /Z spring with two cords is ideal for the correction of anterior tooth crossbite where the overlap is less than the freeway space. An Expansion screw is a very small metallic appliance which may be designed to move a single tooth or a group of teeth or the skeletal bases as required. Opening of jackscrew causes distalizing component of the buccal segment teeth & a reciprocal force is delivered to anterior plate & maxillary incisors which is indicated for the correction of the crossbite.

Regarding the timing of orthodontic treatment, some clinicians believed that in many patients, it was best to allow the eruption of the permanent teeth before initiating orthodontic treatment. However, delaying the treatment until the permanent dentition may cause loss of space required for the eruption of the canines7. This lack of space could be caused by the retroclination of upper incisors frequently found in pseudo-Class III malocclusions. Therefore, a growing number of clinicians believe in the advantages of early intervention. Accordingly in the present case orthodontic treatment was started in primary dentition as this type of malocclusion exacerbates during growth although many practitioners however still avoid early correction of pseudo-Class III in the deciduous dentition because of unfavourable experiences with the behaviour of young patients. Despite that the advantage to start treatment in primary dentition is enhancing positive attitude towards dental treatment in general, improving the aesthetic and functional requirements for development and growth and considering the psychological factor of the parents especially if they are aware of their child's malocclusion.

V. CONCLUSION

Pseudo class III correction in the primary dentition with a simple fixed (double cantilever spring) appliance resulted in a positive overjet proclination of upper incisors contributes to the correction of anterior crossbite and the elimination of mandibular displacement. Hawley's appliance with jack screw resulted in correction of posterior crossbite in the primary dentition with incorporating jack screw resulted in its correction.

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