Case Report

Sectional Fixed Orthodontic Appliance for Management of a Pseudo Class III Malocclusion. Case Report

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Abstract:

Background*:** Proper diagnosis and treatment planning are the first steps in the management of pseudo-Class III malocclusion. ***Case Presentation*:** An 11 years old male patient with pseudo-class III malocclusion. ***Conclusion: A class I molar with average overjet and overbite was achieved with a sectional fixed orthodontic appliance.

Keywords: Pseudo-Class III, Functional Shift, Maxilla, Case Report

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Introduction:

Pseudo-Class III malocclusion is characterized by anterior crossbite accompanied by the presence of centric relation (CR) and centric occlusion (CO) discrepancy[1,2]. Mandibular incisor proclination or protrusion, as well as maxillary incisor retroclination or retrusion, may cause incisal interference that promotes forward mandibular displacement[3,4].

Individuals with pseudo-class III malocclusion exhibit a Class I skeletal relationship, an orthognathic mandible, and maxilla, along with a Class I molar relation in CR. However, in CO, they have skeletal and dental features of Class III[5-8]. The aim of early management of pseudo-class III malocclusion is to improve the environment for subsequent dentofacial development9. Fixed or removable orthodontic appliances can be used to achieve treatment objectives of pseudo-class III malocclusion.

Case Presentation:

An 11-year-old boy was referred by his dentist to the orthodontic clinic for the management of anterior crossbite. The patient was medically fit with no significant medical or dental history. Extraoral characteristics include a straight profile, competent lips, and average facial proportions. Intraoral examination showed that the patient was in the early permanent dentation stage, fair oral hygiene. On centric occlusion, the patient has a Class III molar and incisor relationship (Figure 1). The patient was able to achieve edge-to-edge incisors relationship on centric relations (Figure 2)

Figure 1: Pretreatment intraoral photographs on centric occlusion

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Figure 2: Pretreatment intraoral photographs on centric relations

The Panoramic radiograph showed normal condyles, bone trabeculation, mandibular rami, body, and maxillary sinuses (Figure 3). In the maxilla, the right and left canines erupting, unerupted right and left second premolars due to retained primary second molars. The lower left second premolar was blocked due to premature extraction of the lower right primary second molar. Analysis of the pretreatment lateral cephalogram which is taken in centric relation indicated a skeletal Class I relationship, the SNA angle mildly decreased and SNB values were within normal Caucasian values. The maxillary-mandibular plane angle of 27° was within normal limits and the lower anterior face height proportion was 57%. The upper central incisors were within the average inclination to the maxillary plane. The lower incisors were proclined in relation to the mandibular plane and the interincisal angle was within average. The tips of the lower incisors were protruded in relation to A-Pogonion (Figure 4).

Figure 3: Pretreatment panoramic radiograph

Treatment plan

The objectives of phase one orthodontic treatment are: 1. Elimination of anterior functional shift, correct anterior crossbite and molar relationship; 2. Obtain indicated space for lower second premolar eruption. The initial phase of treatment involved using sectional fixed orthodontic appliance 0.022" straight

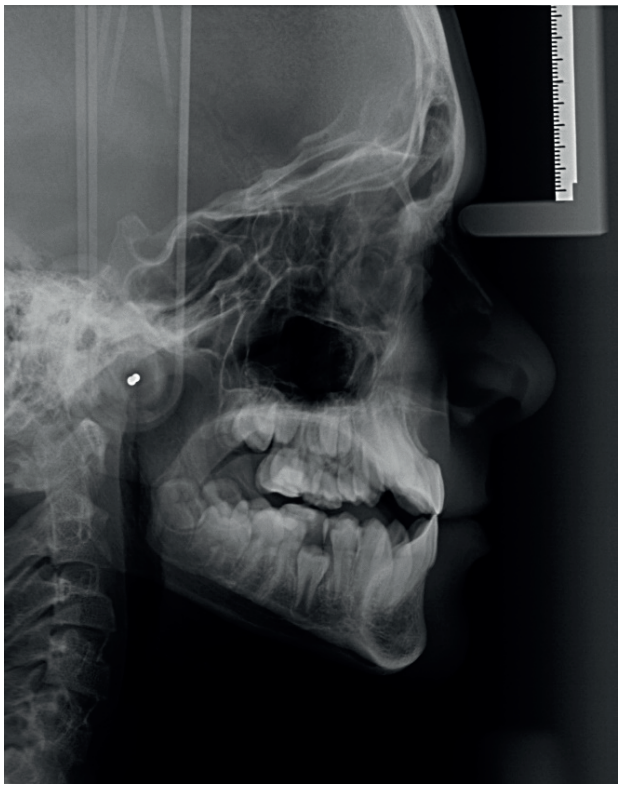

Figure 4: Pretreatment lateral cephalometric radiograph

wire, Roth prescription (Two by Four Appliance). A ball of light cure orthodontic adhesive paste was used to disocclude anterior teeth at the area mandibular first molars.

Treatment Progress

After leveling and alignment, upper and lower 0.017 X0.025" ss wires with two hooks distal to lower lateral incisors in conjunction with Class III elastics (3/16", 3.5 oz) were used (Figure 5). Phase 1 objectives achieved within three months of treatment (Figure 5).

The majority of the dental discrepancy was corrected in phase 2 treatment. A bilateral Class I molar and canine relationship with average overjet, overbite,

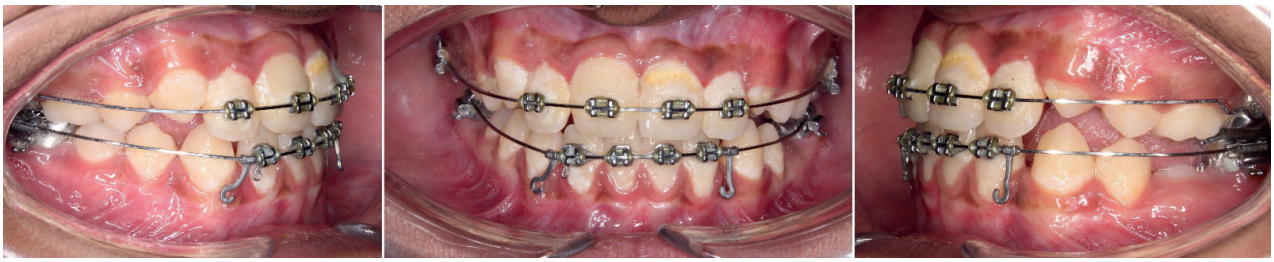

Figure 5: Progress intraoral photographs

skeletal Class I relationship can be seen in post-treatment records (Figure 6). Upper and lower Hawley retainers were used in to retain the final occlusion.

Figure 6: Posttreatment photographs and radiographs

Discussion

Pseudo class III malocclusions require early orthodontic intervention to: prevent worsening of existing problems; and reduce or eliminate the need for orthognathic surgery later on[10]. The presence of anterior crossbite has been linked to several complications, including gingival recession of the lower incisors, incisal attrition, and a detrimental effect on growth[11,12].

In this case, pseudo-Class III corrected by means of 2x4 fixed orthodontics appliances. Class III elastics utilized for retraction of lower incisors to eliminate premature contact and forward mandibular shift. Phase two comprehensive orthodontic treatment was utilized for refining and finishing of occlusion.

Conclusions

To treat pseudo-Class III malocclusions effectively, accurate diagnosis, early intervention, and the development of a case-specific treatment strategy are required. Early management may prevent future skeletal and dental complications.

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Ethical clearance: Not applicable

Conflict of Interest: None

Conflicts of Interest: The author declares no conflict of interest with respect to this case report

Data availability: All data are available within the manuscript.

Author's contribution: The author confirms sole responsibility of this manuscript.

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