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Case Report

Catch them early and treat them Young: Early Orthodontic treatment in developing Class II cases, a review and case report

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ABSTRACT

Developing Class II malocclusion is relatively a common presentation in the mixed dentition stage. Early interception and treatment at an appropriate age can avoid a host of problems that may complicate future orthodontic treatment. This article highlights a case report and gives an insight regarding the topic.

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1. Introduction

Almost every dentoskeletal malocclusions initiate and develop during the transitional dentition and as studies suggests that genetic factors works more during embryonic life, while environmental factors influence the developing occlusion.^{1,2} Contrary to the general concept of only prevention or interception, early orthodontic treatment includes all types of preventive, interceptive, or corrective treatments applied during the primary or mixed dentition, before the complete development of occlusion.³

Early treatment has various benefits for patients and practitioners, such as better patient compliance, better final esthetic results due to growth modification, more stable results, less damage to teeth and supporting structures, the availability of more treatment options, a better chance to prevent extraction, and better use of growth potential.⁴

Untreated malocclusions are susceptible to many problems such as dental caries, periodontal disease, bone loss, and temporomandibular joint problems. The most significant detrimental effect of the untreated malocclusion is on the appearance of the patient as shown in studies

by Shaw et al^{5,6} that severe malocclusion is likely to be a social handicap. Facial esthetics have also been found to be a significant determinant of self- and social perceptions and attributes. Tung and Kiyak⁷ and Kilpeläinen et al⁸ concluded that perceptions of facial esthetics influence psychologic development from early childhood to adulthood.

2. Case Report

10-year-old male patient with late mixed dentition came to the dentistry department with a Class II div. 1, deep bite and proclined anteriors in both arches.

Patient's guardian also complained about lack of self confidence in the patient due to the abnormal facial appearance which was hampering the studies and participation with his peers in all other activities. The sad looking eyes was clearly indicating the psychological status of the patient.

The patient was diagnosed with a dento-skeletal Class II div. 1 malocclusion, dental deep bite and a mandibular retrusion. She reported bilateral molar and canine Class II, 6 mm of deep bite, 11mm overjet, severe proclination of the upper incisors and coincident midlines. His facial

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features consisted of convex profile for an evident retrusion of mandible. Figures 1 and 2

Because of rural setup and poor economic conditions of the patient, radiographic records of the patient were not available.

2.1. Treatment objectives

Although our the main treatment objectives were:

1. To correct the Class II dento-skeletal relationship.
2. To obtain an ideal overbite and overjet.
3. To promote an anterior repositioning of the mandible.

But in this case, Our initial goal was to provide early treatment as it not only to reduce the time and complexity of fixed appliance therapy but also to eliminate or reduce the damage to occlusion that can be produced if treatment is postponed. Also To help the patient psychologically.

Additional treatment goals included leveling and aligning, optimizing the posterior occlusion, aiming at Class I molar and canine relationship, improving the facial profile and obtaining a natural lip position.



Figure 1: a,b,c: Extra oral pre treatment photographs



Figure 2: a-e: Intra oral pre treatment photographs

2.2. Treatment plan

Due to lack of specialized materials and instruments at the rural setup and poor economic conditions, we could not plan for either myofunctional therapy or fixed orthodontic treatment. We decided to give an interception device i.e.



Figure 3: Anterior inclined plane appliance

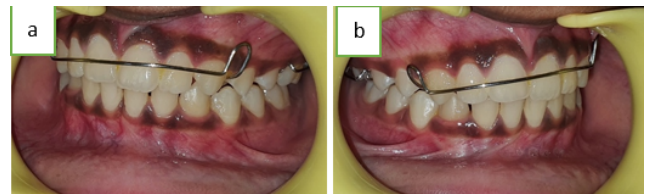


Figure 4: a,b: Mid treatment with appliance



Figure 5: a-c: Extra oral post treatment photographs



Figure 6: a-e: Intra oral post treatment photographs

Anterior Inclined plane to correct the malocclusion and to achieve our treatment goals as much as possible to achieve. Figures 3 and 4

2.3. Treatment results

After 6 months of active phase, treatment objectives set in the pretreatment plan were achieved. The Class II malocclusion had been completely corrected; proper overbite and overjet were achieved. In particular, the overbite was reduced to 2 mm. The extraoral records show improvement of the profile.

The same appliance was used as a retention appliance. Figures 5 and 6

3. Discussion

The main aim of early orthodontic treatment is to prepare an conducive environment for normal occlusal development, more essentially to eliminate or control any environmental factor disturbing normal occlusal development.

There are varied opinions regarding long-term benefits of orthodontic treatment at an early age for Class II malocclusion. One school of thought is that it is better to intervene early in Class II situations when the problem is skeletal and especially if the problem is the result of mandibular retrusion. While Others found no difference in the final result and prefers a single-phase treatment approach due to reduced overall treatment time. The questions related to early treatment have led to the need for critical analyses of the effectiveness of such an approach.

Many Studies^{9–11} concluded that, for children with moderate to severe Class II problems, treatment seems to be as effective in late childhood as it is at an earlier age. Therefore both the single- and two-phase approaches are effective in the correction of Class II malocclusion. They also emphasized that this correction is the result of both skeletal and dental changes.

Functional appliances continue to be a controversial topic. Their use, effectiveness, and mode of action have been discussed by many authors.

Advocates of functional appliances cite stimulation of mandibular growth caused by forward positioning of the mandible^{12,13} Histologic studies shows a significant increase in cellular activity when the mandible is hyperpropulsed,^{14–16} thus aiding in the correction of Class II malocclusions. However, some investigators disagree with these findings, claiming that the changes might be only those expected with normal growth or conventional fixed therapy.^{17,18}

Anterior glenoid fossa remodeling and spontaneous anterior mandibular displacement that occurs after elimination of a functional retrusion also have been accredited to Class II correction.^{19,20}

4. Conclusion

The main advantage of starting early is to utilize growth potential to modify skeletal growth, and to eliminate the need for or reduce the duration of second-phase of treatment as considerable amount of midfacial and mandibular growth occurs during the transitional dentition.²¹

While the lack of success with myofunctional appliance treatment has been attributed to a lack of patient compliance and the inability to control the amount and direction of mandibular growth, proper motivation and education of the patient and their parents are essential in achieving desired results.

5. Source of Funding

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6. Conflict of Interest

None.

References

1. Kingsley NW. A Treatise on Oral Deformities as a Branch of Mechanical Surgery. *Am J Dent Sci.* 1880;13(12):57.
2. Case C. Dental Orthopedia and Cleft Palate. New York: Les L. Bruder; 1921.
3. Kloehn S. Guiding alveolar growth and eruption of the teeth to reduce treatment time and produce a more balanced denture and face. *Angle Orthod.* 1947;17(1):10–33.
4. Brodie AG. On the growth pattern of the human head from the third month to eighth year of life. *Am J Anat.* 1941;68(2):209–62.
5. Shaw WC, Rees G, Dawe M, Charles CR. The influence of dentofacial appearance on the social attractiveness of young adults. *Am J Orthod.* 1985;87(1):21–6.
6. Shaw WC. The influence of children's dentofacial appearance on their social attractiveness as judged by peers and lay adults. *Am J Orthod.* 1981;79(4):399–415.
7. Tung AW, Kiyak HK. Psychological influence on timing of orthodontic treatment. *Am J Orthod Dentofacial Orthop.* 1998;113(1):29–39.
8. Kilpeläinen PV, Phillips C, Tulloch JF. Anterior tooth position and motivation for early treatment. *Angle Orthod.* 1993;63(3):171–4.
9. Ghafari J, Shofer FS, Jacobsson-Hunt U, Markowitz DL, Laster LL. Headgear versus function regulator in the early treatment of Class II, division 1 malocclusion: A randomized clinical trial. *Am J Orthod Dentofacial Orthop.* 1998;113(1):51–61.
10. Keeling SD, Wheeler TT, King GJ. Anteroposterior skeletal and dental changes after early Class II treatment with Bionators and headgear. *Am J Orthod Dentofacial Orthop.* 1998;113(1):40–50.
11. Tulloch JF, Phillips C, Proffit WR. Benefit of early Class II treatment: Progress report of a two-phase randomized clinical trial. *Am J Orthod Dentofacial Orthop.* 1998;113(1):62–72.
12. Meikle MC. Remodelling the dentofacial skeleton: the biological basis of orthodontics and dentofacial orthopedics. *J Dent Res.* 2007;86(1):12–24.
13. Hägg U, Du X, Rabie A. Initial and late treatment effects of headgear-Herbst appliance with mandibular step-by-step advancement. *Am J Orthod Dentofacial Orthop.* 2002;122(5):477–85.
14. Charlier JP, Petrovic A, Stutzman J. Effects of mandibular hyperpropulsion on the prechondroblastic zone of young rat condyle. *Am J Orthod.* 1969;55(1):71–4.
15. Elgoyen JC, Moyers RE, Mcnamara JA, Riolo ML. Craniofacial adaptation to protrusive function in young rhesus monkeys. *Am J Orthod.* 1972;62(5):469–80.

16. Mcnamara JA, Bryan FA. Long-term mandibular adaptations to protrusive function: an experimental study in Macaca mulatta. *Am J Orthod Dentofacial Orthop.* 1987;92(2):98–108.
17. Creekmore TD, Radney LJ. Frankel appliance therapy: orthopedic or orthodontic? *Am J Orthod.* 1983;83(2):89–108.
18. Schulof RJ, Engel GA. Results of Class II functional appliance treatment. *J Clin Orthod.* 1982;16(9):587–99.
19. Bendeus M, Hagg U, Rabie B. Growth and treatment changes in patients treated with a headgear-activator appliance. *Am J Orthod Dentofacial Orthop.* 2002;121(4):376–84.
20. Barnouti ZP, Owtad P, Shen G, Petocz P, Darendeliler MA. The biological mechanisms of PCNA and BMP in TMJ adaptive remodeling. *Angle Orthod.* 2011;81(1):91–9.
21. Graber T. Functional appliances. In: *Orthodontics: Current Principles and Techniques*. 4th edn. St. Louis: Elsevier Mosby; 2005. p. 493–542.

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