



“A NEW PERSPECTIVE IN THE NON- EXTRACTION TREATMENT OF BORDERLINE CLASS II DIVISION 2 MALOCCLUSION CASE: A CASE REPORT”

Orthodontics

Dr. Shalu Jain*	Associate Professor, Dept. Of Orthodontics & Dentofacial Orthopedics, Subharti Dental College & Hospital, Swami Vivekanand Subharti University Subhartipuram, Meerut.*Corresponding Author
Dr. Munish Reddy	Professor, Dept. Of Orthodontics & Dentofacial Orthopedics, Subharti Dental College & Hospital, Swami Vivekanand Subharti University Subhartipuram, Meerut.
Dr. Stuti Mohan	Associate Professor, Dept. Of Orthodontics & Dentofacial Orthopedics, Subharti Dental College & Hospital, Swami Vivekanand Subharti University Subhartipuram, Meerut.
Dr. Shruti Choudhary	Consultant Orthodontist, New Delhi.
Dr. Pradeep Raghav	Professor & Head, Dept. Of Orthodontics & Dentofacial Orthopedics, Subharti Dental College & Hospital, Swami Vivekanand Subharti University Subhartipuram, Meerut.

ABSTRACT

To “extract or not to extract” has always been the topic of debate since the era of Angle till date in orthodontic literature. But today with the advent of various intra-oral appliances, non-extraction treatment protocol has taken an upper hand in borderline cases. However, when treatment of class II division 2 malocclusion is discussed, most commonly its treatment planning includes either correction by distal movement of the maxillary dentition or mesial movement of the mandibular dentition¹. This can be achieved either by the extraction of upper first premolars or all first premolars in most cases. But extraction treatment protocol cannot be applied in all cases of class II division 2 malocclusion. Thus, in this case report with proper diagnosis and just by accurate bonding in correct mesiodistal angulation of teeth we were able to finish the case without the intricacies of extraction with enhanced facial esthetics.

KEYWORDS

Class II Division 2 malocclusion, non extraction, bonding, borderline cases

INTRODUCTION

A very famous quote by Margaret Wolfe Hungerford says that "Beauty is in the eye of the beholder," which means beauty doesn't exist on its own but is created by observers, certainly proves itself to be true as of today importance of facial aesthetics and its perception in the society is of utmost importance to each and every individual. So, any kind of malocclusion that is if there is misalignment or incorrect relation between the teeth of the two jaws when they open or close is considered to be unsatisfactory both aesthetically and functionally.

Since the era of Angle's who in 1899 observed that with different sagittal relationship, the facial forms also changed. He classified sagittal occlusal relationships into three types: class I neutral sagittal occlusal relationship, class II disto-occlusion, and class III mesio-occlusion. He further sub-divided class II malocclusions into two divisions: 1) with the protrusion of upper incisors and 2) with the retrusion of upper incisors. Class II division 2 malocclusion was commonly known as “Deckbiss” which meant malocclusion with deep bite².

The prevalence of class II malocclusion is found to be high among Caucasians. In United States of America it was found to be 34% in whites and 18% in blacks.³ It has been reported that prevalence of class II malocclusion was 31% in Danish children population⁴ while it was as low as 8% in Johannesburg,⁵ 11% in Kenya,⁶ 16.4% in Saudi Arabia⁷ and 14.6% in Delhi, India⁸. Although between sub-division of class II malocclusion, prevalence of class II division 2 is less than class II div 1 and is more genetically determined.

The most common features of Angle's Class II div 2 malocclusion can be summarized as having orthognathic maxilla with mild retrognathic mandible, marked horizontal growth pattern with forwardly rotated mandibular base, Skeletal deep bite, Retroclined upper incisors, Lower lip placed slightly behind E-line with prominent chin and constricted mandibular arch width, thus, increased chances for crowding in lower arch⁹.

Treatment of Class II div 2 patient requires careful diagnosis and treatment planning involving occlusal, esthetic and functional considerations. The common treatment options for this malocclusion

includes flaring of incisors, interproximal tooth reduction, and mostly extractions. Mostly for class II division 2 malocclusion, once diagnosed is often treated with upper first premolar extractions for its correction. But with changing trends and today's inventory, non-extraction treatment plan for class II borderline cases is now more adopted than the extraction treatment protocol.

One of the neglected aspect before finalizing the treatment plan for class II malocclusion is for the assessment of mesiodistal angulation of posterior teeth beforehand because just by correctly bonding brackets mesiodistally, distalizing force can be produced from the initial wire itself and one can easily avoid extraction in class II division 2 patients and finish the case in optimal occlusion.

Thus, in this case report, we will be discussing two class II division 2 cases where just by the correct bonding technique we were able to convert an extraction case into non extraction.

Case Report:

An 18yr old boy reported the department of orthodontics with the chief complaint of irregularly placed teeth in upper and lower front teeth region. There was no significant dental and medical history.

On extraoral examination, patient had incompetent lips, convex profile and acute nasiolabial angle. FIGURE 1 (a-c)



Fig. 1a Fig. 1b Fig. 1c
Figure 1 (a-c): Extra oral photographs of the patient –Pre Treatment

On intraoral examination, patient had class II molar relation on right side and end on molar relation on left side with end on canine relationship on both sides. There was overjet of 1mm and overbite of 4mm with matching upper and lower midlines FIGURE 2 (a-e).



Fig. 2a

Fig. 2b

Fig. 2c



Fig. 2d

Fig. 2e

Figure 2 (a-e): Intra oral photographs of the patient –Pre Treatment

It was also noted that the roots of posterior teeth were distally angulated. FIGURE 3 (a,b)



Fig. 3a

Fig. 3b

Figure 3 (a,b): Intra oral markings of mesiodistal angulation of posterior teeth

On cephalometric analysis, he had class II skeletal pattern with orthognathic maxilla and retrognathic mandible, average growth pattern, retroclined upper and lower teeth. On model analysis, there was a space gain of 5.5mm and 2.1mm in upper and lower arch respectively. FIGURE 4



Figure 4: Cephalogram- Pre Treatment

After complete diagnosis, case was planned to be treated by non-extraction treatment protocol and as the crowns of all teeth were mesially angulated and roots of the posterior teeth were distally angulated, it was decided to accurately bond the brackets distally according to the tooth mesiodistal angulation so that when the continuous wire will pass through the brackets, it will mimic the effect of second order bend and thus will produce a distalizing force on the maxillary teeth as the teeth will experience second order bends on each posterior teeth on both right and left sides of the arch. This effect will not only provide space for alignment of anterior teeth but also upright them. Class II elastics will be given after initial stage of levelling and alignment to achieve class I molar and canine relationship bilaterally. The effect on mandible will be a counter clockwise rotation of it, thereby improving the profile of the patient.

Thus, patient was recalled and after taking all the preliminary records, vigilant bonding both horizontally and vertically was done with MBT bracket system with .018 slot. Appropriate Wire sequencing was followed i.e initiating from .014niti/ss, .016niti/ss, .016x.022niti/ss till .017x.025niti/ss. Special precaution were taken while bonding posterior teeth where the brackets were precisely bonded distally as per the angulation of the teeth so as to produce the distalizing force as discussed above. FIGURE 5 (a,b).



Fig. 5a

Fig. 5b

Figure 5 (a,b): Accurate Bonding with Intra oral markings of posterior teeth

After 8 months of treatment, upper teeth were aligned and uprighting of posterior teeth was achieved along with class II elastics, achieving class I molar and canine relationship bilaterally, mid stage treatment

records were taken FIGURE 6 (a-h).



Fig. 6a

Fig. 6b

Fig. 6c



Fig. 6d

Fig. 6e

Fig. 6f



Fig. 6g

Fig. 6h

Figure 6 (a-h): Extra oral and Intra oral photographs of the patient –Mid Stage

After final finishing and detailing, the case was finished with optimal occlusion and enhanced esthetics of the patient. FIGURE 7 (a-l).



Fig. 7a

Fig. 7b

Fig. 7c



Fig. 7d

Fig. 7e

Fig. 7f



Fig. 7g

Fig. 7h

Fig. 7i

Figure 7 (a-i): Extra oral and Intra oral photographs of the patient with cephalogram –Post treatment

CONCLUSION

With careful diagnosis and treatment planning extraction treatment protocol can be avoided in those class II division 2 cases which have incorrect mesiodistal angulation. Thus, accurate bonding technique both horizontally and vertically will help finish such cases via non-extraction technique with significant improvement in profile.

REFERENCES

1. Lalitha Ch, Vasumurthy S, Vikasini K (2011) Recent advances of Pendulum appliance for effective molar distalization. Indian J Dent Adv 3: 572-576.
2. Angle EH. Treatment of Malocclusion of the Teeth and Fractures of the Maxillae (7th edn). Philadelphia, SS White Manufacturing Co: 1907:50-2.
3. Kelly JE, Harvey CR. An Assessment of the occlusion of the teeth of youth 12-17 years. Washington DC, 1977 US Government Printing Office. In: Salzman JA. Malocclusion and treatment needs in United States youths 12-17 years of age. Am J Orthod 1977;72:579-81.
4. Helm S. Malocclusion in Danish children with adolescent dentition: an epidemiologic study. Am J Orthod 1968; 54(5):352-66.

5. Hirschowitz AS. Dental caries, gingival health and malocclusion in 12-year-old urban black school children from Soweto, Johannesburg. *Community Dent Oral Epidemiol* 1981; 9:87-90.
6. Ng'ang'a PM, Karongo PK, Chindia ML, Valderhaug J. Dental caries, malocclusion and fractured incisors in children from a pastoral community in Kenya. *East Afr Med J* 1993;70:175-8.
7. Al-Emran S, Wisth PJ, Boe OE. Prevalence of malocclusion and need for orthodontic treatment in Saudi Arabia. *Community Dent Oral Epidemiol* 1990;18(5):253-5.
8. Kharbanda OP, Sidhu SS, Sundaram KR, Shukla DK. Prevalence of malocclusion and its traits in Delhi children. *J Indian Orthod Soc* 1995;26(3):98-103.
9. Dodda KK, Prasad SE, Kanuru RK, Nalluri S, Mittapalli R, Raghavendra. Diagnostic features of Angle's Class II div 2 malocclusion. *J Int Soc Prevent Communit Dent* 2015;5:513-7.