Review Article

University J Dent Scie 2021; Vol. 7, Issue 3

# "Misplaced or Intentionally Misplaced – A Bracket Positioning Overview".

**Abstract:**
In orthodontics, bracket positioning is the utmost part of the treatment planning. Ideally if the clinician using MBT prescription then they should follow the MBT bracket positioning charts to achieve more aesthetic result. Deflection in a bracket positioning to MBT chart may alter the final result as well as may prolong the finishing and detailing stage. Although in some conditions alteration in a bracket positioning may reduce the treatment time as well as reduces chances of the relapse. Generally in a first look it seems that the particular bracket was misplaced but with the help of proper understanding of the basic biomechanics and well planned treatment strategy that the bracket position was justified as intentionally misplaced. This article well discuss all those conditions in which the alteration in a bracket positioning can help clinician to achieve a desired result comparatively in less time with more stability.

**Key words:** Aesthetic result, Intentionally misplaced, MBT prescription, Misplaced bracket, Stability.

## Introduction:

Bracket positioning is one of the most important key factor for affecting final treatment result and duration. Ideal bracket positioning remains always a controversial point for the clinician to achieve the finest result. Various authors suggested various bracket positions with different bracket prescriptions. According to Tweed, incisal edge was guided for the bracket positioning and middle third of the crown was opted as an ideal position for the bracket by Saltzmann. Holdaway suggested that in the deep bite cases occlusal third of the crown was the site for bracket placement and in the open bite cases gingival third of the crown was the site for bracket placement. With the advent of preadjusted edgewise brackets importance of the accurate bracket positioning has further amplified as it is necessary for proper expression of the inbuilt prescription. [1]

Lawrence F. Andrews advocated an imaginary plane "The Andrews Plane" for his straight wire appliance (SWA). When teeth were in normal occlusion then this plane was passing through long axis of the crowns. Ronald Roth developed the second generation of brackets with some modification in the Andrews's prescription to allow overcorrection. Canine & premolar was the key for bracket height positioning in Roth's system. McLaughlin, Bennett and Trevisi developed third generation of brackets in the form of MBT™ Versatile+ Appliance System. They recommended the use of MBT gauge for the bracket placement with Bracket Placement Chart.[2-4]

Some time ideal bracket positioning is was not able to express full bracket prescription as well as to align the teeth in a desirable position due to morphology and malposition of the teeth. Small alteration in the bracket positioning may be

Access this article online

Website: www.ujds.in

Quick Response Code

DOI: https://doi.org/10.21276/ujds.2021.7.3.21

[1]ASHISH KUSHWAH, [2]MUKESH KUMAR, [3]SHRUTI PREMSAGAR, [4]SHASHANK SONI, [5]RAHUL JESWANI

[1]Department of Orthodontics and Dentofacial Orthpaedics, Peoples College of Dental Sciences & Research Centre, Bhopal,
[2]Department of Orthodontics and Dentofacial Orthpaedics, Teerthanker Mahaveer Dental College and Research Center, Moradabad
[3]Department of Orthodontics and Dentofacial Orthpaedics, ITS dental College & Research Centre, Greater Noida
[4]Consultant Orthodontist, Gwalior,
[5]Department of Orthodontics and Dentofacial Orthpaedics, Maharana Pratap Dental College & Research Centre, Gwalior

**Address for Correspondence:** Dr. Ashish Kushwah
MDS in Orthodontics
Senior lecturer, Peoples College of Dental Sciences & Research Centre, Bhopal,
Email: ashishkushwah998@gmail.com

**Received :** 27 July, 2021, **Published :** 31 December, 2021

**How to cite this article:** Kushwah, A., Kumar, M., Premsagar, S., Soni, S., & Jeswani, R. (2021). Misplaced or Intentionally Misplaced – A Bracket Positioning Overview. UNIVERSITY JOURNAL OF DENTAL SCIENCES, 7(3).

judged as a misplaced positioned bracket by some clinician but final outcome was the evidence which clearly shown that the particular bracket was intentionally misplaced. In this article we are discussing various alterations in the bracket positioning from MBT chart with MBT prescription to achieve more esthetic and stable result without using any other bracket system.

## Alteration in bracket positioning:

Various alterations in the bracket positioning along with their benefits can be explained under following headings:

### A). In reference of vertical and horizontal plane:

I) In vertical plane- If we change the bracket position in vertical plane then it helps to do intrusion and extrusion of that tooth. (5)

For example, gingivally placed bracket helps the clinician for tooth extrusion. This alteration can be used in case of the open bite where extrusion of anterior teeth was required (figure 1).

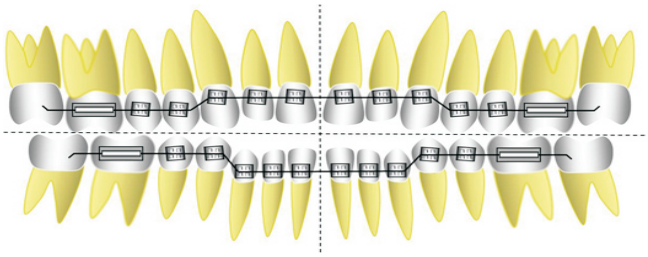

Figure 1- Gingivally placed brackets in anterior teeth in open bite case.

Similarly incisally placed bracket helps the clinician for tooth intrusion. In case of the deep bite clinician should placed braces incisally in anterior teeth which promote the intrusion of anterior teeth (figure 2).

Figure 2- Incisally placed brackets in anterior teeth in deep bite case.

I) In horizontal plane- Ideally bracket midline should be coincide with the long axis of the tooth. Any alteration or offset from the long axis create marginal ridge discrepancy but in the rotated tooth condition ( figure 3) this offset work as overcorrection and increase the stability.[3-6]

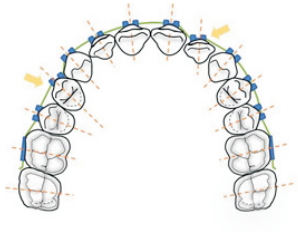

Figure 3- Bracket positioning in the rotated tooth condition.

ii) In an angle to vertical plane- When a bracket is placed on the tooth in an angle to vertical plane (long axis of the tooth) then it will helps the clinician for uprighting the tooth. This bracket positioning alteration generally used in finishing and detailing stage.[6]

iii) Inverting bracket- If we invert the bracket on same tooth in that case the tip remains same but torque will change.
For example in case of blocked lateral incisor (figure 4) if we invert the bracket then tip (8 degree) will remain same but the torque (+ 10 degree to -10 degree) will change which helps to place the root of the lateral incisor root in cancellous bone.[7]

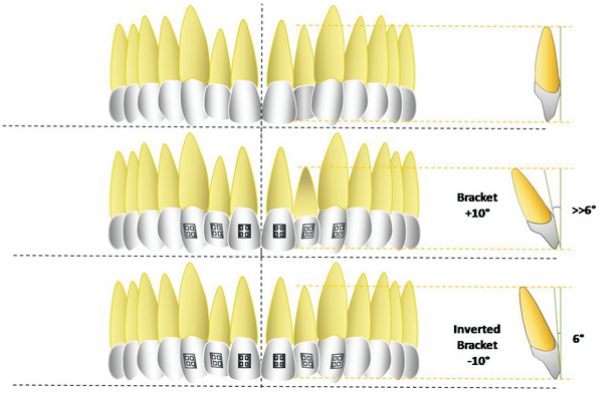


Figure 4- Bracket positioning in case of blocked lateral incisor.

### B). In reference of midline & occlusal plane:

I) Intra arch – If we change a bracket position in same arch by crossing the midline of the arch in that condition torque remain same but the tip change.
For example in case of mesially inclined maxillary canine if we interchanged the maxillary canine bracket then the torque

of canine will remain same but the intentionally misplaced bracket tip helps to upright the canine (figure 5).(8)

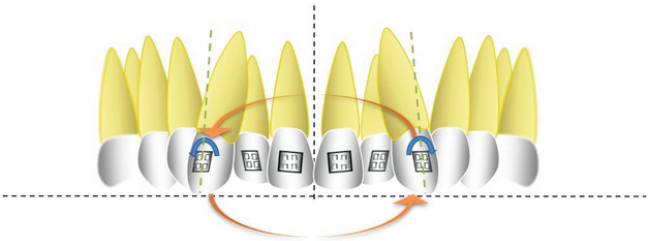

Figure 5- Changing intra arch bracket position.

I) Inter arch ( without crossing midline)- If we changed a bracket position from one arch to another arch without crossing the dental midline in that condition tip and torque both will change.

For example if we placed lower right canine bracket on upper right canine without inverting the bracket then tip will change from positive to negative and torque will change from negative to positive (figure 6).

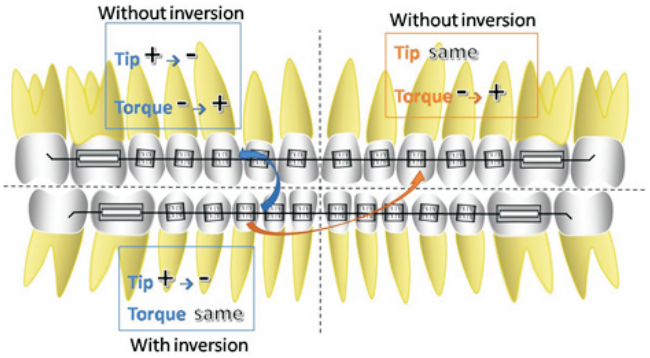


Figure 6- Changing inter arch bracket position.

Bracket inversion along with crossing occlusal line will change the tip but torque remains the same.

III) Inter arch (with crossing midline)- If we changed bracket position from one arch to another arch with crossing the dental midline in that case the tip will remain same but torque will change.

For example if we placed the lower left canine bracket on upper right canine without inverting it then tip will remain same but torque will change (figure 6).

Bracket inversion along with crossing dental midline will not affect bracket prescription.

## C). Special consideration:

IV) Finishing in Class II- McLaughlin, Bennett and Trevisi introduced the aspect of versatility of MBT brackets. Placing the lower molar tube on upper molar tooth when finishing to a Class II molar relationship, taking advantage of the prescription's 0° offset.

For example, if a lower left second-molar tube is placed on the upper right first or second molar, the lower molar tube's original prescription remains the same but 0 degree offset helps in a proper Class II molar finish (figure 7).(2,9)

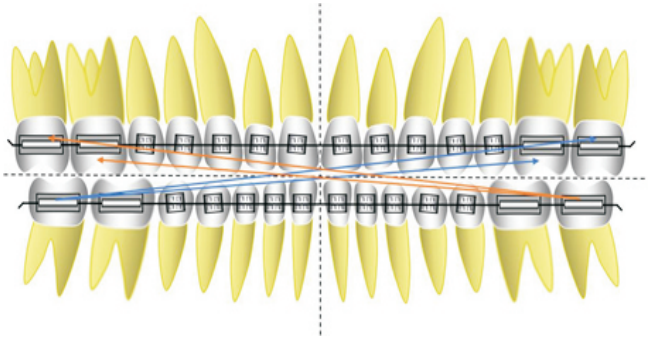

Figure 7- Interchange of molar tube in finishing in Class II molar relation.

I) In dental compensatory Class III- Retroclination of lower incisors is common error with normal prescription to prevent this in Class III situation better to invert mandibular incisors bracket to give +6 degree. In high anchorage cases in which there is need of enhancing molar anchorage it is very much beneficial to invert mandibular incisor bracket. For easy helpful mechanics one should switch the bracket of canine from wither side (intraarch), in Class III treatments i.e. changing tip from +3 degree to -3 degree (figure 8).(10)

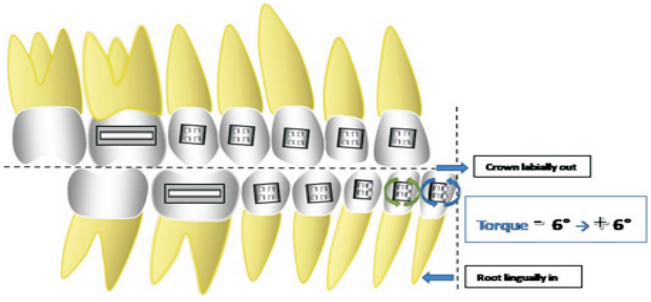


Figure 8- Inversion lower incisor brackets in dental compensatory Class III.

ii) Switching bracket for tooth substitution- In case of the congenital missing teeth (for example upper right canine) or unfavorable impacted teeth of extracted tooth due to some pathology adjacent tooth will substitute that canine in the extraction line of treatment by placing the canine bracket on upper right first premolar to convert it in to canine.(9,11)

iii) For smile arc- For esthetic smile arc there is a special prescription called Smile Arch Protection (SAP) bracket positioning in which for patient unique aesthetic need position of bracket is planned. Mostly the maxillary incisors positioned more towards gingival side than the bracket of canine. The mandibular posterior teeth bracket are positioned towards gingival side to avoid hindrance from occlusion, while the mandibular front brackets are placed incisally for proper overbite control.(12,13)

iv) For correction of occlusal cant- Occlusal cant is an important factor affecting smile esthetics. Rotation of the jaw in its longitudinal plane also called ROLL. For correction of the dental occlusal cant clinician should placed the braces occlusally in one quadrant and gingivally on the opposite quadrant for selective intrusion and extrusion of teeth respectively.[14,15]

v) For therapeutic molar relationship- For achieving the therapeutic Class I molar relationship we have to place molar tube in that manner so that we can see more of the distobuccal cusp than the mesiobuccal cusp. For achieving the therapeutic Class II molar relationship we have to place molar tube in that manner so that molar tube should be parallel to the occlusal plane. Therapeutic Class III is the opposite of the therapeutic Class I molar relationship. For achieving therapeutic Class III molar relationship we have to place molar tube in that manner so that we can see more of the mesiobuccal cusp than the distobuccal cusp (figure 9).[16]

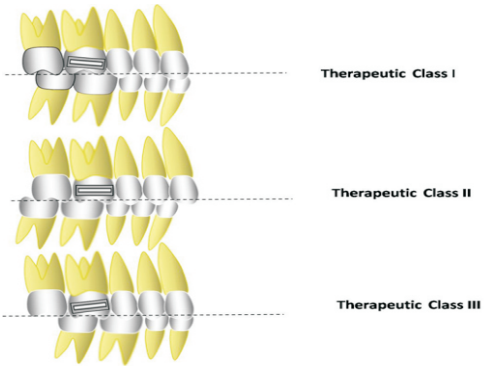


Figure 9- Molar tube position for therapeutic molar relation.

I) For midline diastema closure- If we interchange the upper incisors brackets then tip will change and torque remained same. It causes mesial root movement and when we applied diastema closure force then crown moves towards mesial direction.

## Discussion:

Any orthodontic treatments require planned approach through which a clinician gains a improved finishing within less required treatment time. So we need prior judgment of placement of the bracket. In this we place the bracket intentionally to add a more correction and stability.

Andrews support the bracket placement at the long axis of the center of crown until middle of the slot is at the centre of the crown height, but if we require the rotation, intrusion or extrusion then we have to place the bracket according to our need.[17-20]

In 1975 Roth [21, 22] use the preadjusted bracket prescription for 5 years after this he adapted the bracket prescription to overcorrected position through which he established an overcorrected position of teeth at the end of orthodontic treatment. If we are not making changes we are not making progress. According to Meyer and Nelson [23] if there is an error of 3mm to the long axis of bracket placement on premolar vertically so we found a change in 15 degree torque and 0.04 mm change in the in/out adjustment. This change found due to change in the inclination of the buccal and facial surface of the crown.

All the changes and advancement of the orthodontic treatment require the clinician precisely study the pretreatment position of the teeth and place the bracket position in an approved manner on the tooth so that in the end of treatment we found a better result of the dentition/ occlusion.

## Conclusion:

There are various types of bracket prescriptions like Andrews, Roth and MBT, but the clinicians require more cost, inventory and knowledge for using the multi-bracket systems or customize bracket systems. Alteration in the bracket position during start of the treatment requires less time for the finishing of the treatment. Intentionally alteration of the bracket position at beginning on the tooth provides a better finishing and detailing on occlusion which reduce the repositioning of

the brackets in finishing and detailing stage. Only we have to decide which condition of the tooth position requires intentionally alteration of the same bracket on different tooth & same bracket at different position of the same tooth. Thus this will give the information to the clinician about the use how to change the bracket at different position and that will provide a better result in orthodontic treatment.

## References:


1. Balut N, Klapper L, Sandrik J, Bowman D. Variations in bracket placement in the preadjusted appliance. Am J Orthod Dentofacial Orthop 1992;102: 62-67.
2. McLaughlin R.P, Bennett JC : "Bracket Placement with the Preadjusted Appliance." J Clin Orthod 1995; 29: 302-311.
3. McLaughlin R, Bennette J, Trevisi H. Systemized orthodontic treatment mechanics, Mosby,St. Louis,2001.
4. Fowler PV. Variation in the perception of ideal bracket location and its implication for the preadjusted appliance. Br J Orthod 1990;17: 306-10.
5. Sardarian, A, Danaei SM, Shahidi S, Boushehri SG, Geramy A. The effect of vertical bracket positioning on torque and the resultant stress in the periodontal ligament—A finite element study. Prog. Orthod 2014; 15:50.
6. Brandao, R.C.B. and Brandao, L.B.C.: Finishing procedures in orthodontics: Dental dimensions and proportions (microesthetics),Dent. Press J. Orthod. 18:147-174, 2013.
7. Thickett E, Taylor NG, Hodge TM. Choosing a pre-adjusted orthodontic appliance prescription for anterior teeth. J orthod 2007;34(2):95-100.
8. Kravit ND, Miller S, Prakash A, Eapen JC. Canine bracket guide for substitution cases. J clin orthod 2017;51(8):450-3.
9. Kravit ND, Miller S. The rules of bracket flipping and switching. J clin orthod 2020;54(2):518-20.
10. Johnson E. Selecting custom torque prescriptions for the straight-wire appliance. Am J Orthod Dentofacial Orthop 2013;143(4):161-7.
11. Palma ED, Giuseppe BD, Tepedino M, Chimenti C. Orthodontic management of bilateral maxillary canine-first premolar transposition and bilateral agenesis of maxillary lateral incisors: a case report. Dental Press J Orthod 2015; 20(2): 100–109.
12. Sarver, DM. The importance of incisor positioning in the esthetic smile: The smile arc. Am. J. Orthod dentofacial orthop 2001;129:96-111.
13. Thomas R. Pitts. Bracket positioning for smile arc protection. J Clin Orthod 2017;51(3):142-56.
14. Ackerman JL, Proffit WR, Sarver DM, Ackerman MB, Kean MR. Pitch, roll, and yaw: Describing the spatial orientation of dentofacial traits. Am J Orthod Dentofacial Orthop 2007; 131: 305-10.
15. Kumar M, Goyal M, Sharma H, Kushwah A, Mishra S. Asymmetrical extraction in an asymmetrical face. J Clin Orthod 2020;54(3):177-85.
16. Nangia A, Darendeliler MA. Finishing occlusion in Class II or Class III molar relation: therapeutic Class II and III. Aust Orthod J 2001;17(2):89-94.
17. Andrews FL. The straight wire appliance origin, controversy, commentary. J Clin Orthod 1976;10:99.
18. Andrews FL. Straight wire appliance, arch form, wire bending and experiment. J Clin Orthod 1976;10:8.
19. Andrews FL. The S.W.A. explained and compared. J Clin Orthod 1976;10:174.
20. Andrews FL. The S.W.A. syllabus of philosophy and techniques. San Diego: LF Andrews Foundation for Orthodontic Education and Research, 1974.
21. Roth HR. Five years clinical evaluation of the Andrews S.W.A. J Clin Orthod 1981;11:175.
22. Roth HR. Functional occlusion for the orthodontists, part III. J Clin Orthod 1981;11:175.