

A new method for accurate Bracket Repositioning for final finishing stages in Pre-adjusted Appliances

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ABSTRACT

A correct bracket position is the pre requisite for the good final finishing of an orthodontic case but sometimes due to altered anatomy of tooth it becomes very hard for the operator to reposition the bracket accurately by the visual method alone. Use of marker to record the initial position of the bracket can help greatly in repositioning in such cases. This article describes a case requiring the repositioning of a bracket on a lateral incisor to correct its position.

Key words: dilacerated, lateral incisor, repositioning bracket, finishing

INTRODUCTION

Orthodontic treatment consists of three stages namely alignment & levelling, space closure and finishing and detailing. An orthodontist is judged to be good only when he or she has the ability to finish a case with good final occlusion achieving the six keys laid down by Andrews.¹ Pre-adjusted appliance systems have provided great ease in finishing a case because it involves gradual progression towards finishing when compared to conventional edgewise system where the final finishing starts abruptly in the third stage and involves tedious wire bending to achieve the ideal occlusion. If the brackets are positioned correctly and the tip, torque, and in – out compensations built into the appliance are suited to the patient's dentition, only minimal wire bending will be required (McLaughlin and Bennett, 1991). Although it is quite a difficult task in certain malocclusion cases to place the bracket appropriately in the initial stages and hence there is a need of repositioning the bracket for getting the final correct position achieved. Carlson and Johnson² gave five steps to ensure proper bracket positioning and repositioning. While repositioning brackets there is always some doubt regarding the amount of change to be done in the repositioning of the bracket once debonded. This article discusses a method in which the amount of error might get reduced in repositioning of a bracket on tooth with different anatomy or which needs only a minimal correction which might be hard to be seen visually.

CASE REPORT

A 22 year old male patient reported to the clinics with the chief complaint of irregular teeth. A non extraction treatment plan was finalized owing to good facial proportions and facial profile. While alignment and levelling the case with MBT 022 mechanotherapy, problem was faced in de-rotation of lateral incisor in the first quadrant. A common mistake which might result in non correction of rotation is the differential amount of adhesive on mesial and distal aspect of the bracket which was ruled out by visual inspection in the occlusal view of the tooth. Later on IOPA the cause was determined to be dilacerated root and altered anatomy of crown.(figure2)

Although the general rules for bracket repositioning are clearly outlined in literature, even then commonly we face problem in repositioning of a brackets on a tooth with altered anatomy. When we try to reposition such teeth with the visual method, there is tendency to place the bracket again in the position which seems to be visually correct but not exactly correct owing to the anatomy of the tooth. Although root of the tooth tip was appropriately good in earlier stages but the tooth was rotated because of incorrect mesiodistal positioning of the bracket. The mesial side of the bracket was marked onto the tooth with a marker and the bracket was repositioned correctly while comparing the initial

mark and maintaining the same tip of the tooth which was hard to do without having a mark. Around 7 degrees mesial out rotation was to be corrected and 1 mm distal repositioning was done to correct the same (figures 1-5)



Fig.1: Occlusal photograph of Repositioned right lateral incisor bracket for derotation



Fig. 2: IOPA of the same tooth



Fig. 3: Repositioned bracket and the blue mark showing previous position of the bracket (mesial limit)



Fig. 4 Final corrected position

DISCUSSION

With preadjusted brackets (straight-wire appliances), the position of the bracket on the crown determines the tooth's final tip, torque, height, and rotation.^{3,4} Poorly positioned brackets result in poorly positioned teeth and necessitate many more archwire adjustments. This can lead to an increase in treatment time or a final occlusion that is less than ideal. Poor bracket positioning can render even the most customized prescription ineffective. There are endless number of bracket prescriptions in the market, most differ by only a few degrees. Now, consider how much one can change the prescription by misplacing the bracket on the tooth.⁵ Orthodontists go to great lengths to ensure that each bracket is positioned as ideally as possible. Unfortunately, even under the best of circumstances, ideal bracket placement during initial bonding is often impossible because of limitations brought on by the existing malocclusion or operator error.⁶⁻⁷ The orthodontist should first recognize and then correct these errors early in the treatment process so that wire adjustments can be minimized later. Importance of proper diagnosis of a problem is utmost in correction of such a case, CBCT could be used to exactly determine the planning for this dilacerated lateral incisor. With the visual method already ruled out, there was no alternate option found in the literature for repositioning the bracket so marking the previous position of the bracket helped us to improve the bracket positioning in an efficient manner.

CONCLUSION

Repositioning the bracket on a tooth with altered anatomy is a problematic task. If we fail to reposition the bracket correctly finishing is compromised. Only visual method to correct such a tooth might result in errors and hence marking the initial position of the bracket help us reposition the bracket efficiently. Final esthetic result should always include the microesthetics for which some periodontic procedures can be sought for the proper gingival contours. The correction of the tooth anatomy might need some restorative work once the orthodontic work is complete.

REFERENCES

- [1]. Andrews LF. The six keys to normal occlusion. *Am J Orthod.* 1972;62:296-309.
- [2]. Carlson S K , Johnson E 2001 Bracket positioning and resets: five steps to align crowns and roots consistently . *American Journal of Orthodontics and Dentofacial Orthopedics* 119 : 76 – 80
- [3]. Swain BF. Straight wire design strategies: five-year evaluation of the Roth modification of the Andrews straight wire appliance. In: *Orthodontics: state of the art, essence of the science.* St Louis: CV Mosby; 1986. p. 279-98.
- [4]. Creekmore TD, Kunik RL. Straight wire: the next generation. *Am J Orthod Dentofacial Orthop* 1993;104:8-20.
- [5]. Balnut N, Klapper L, Sandrik J, Bowman N. Variations in bracket placement in the preadjusted orthodontics appliance. *Am J Orthod Dentofacial Orthop* 1992;102:62-7.
- [6]. Zachrisson BU, Brobakken BO. Clinical comparison of direct versus indirect bonding with different bracket types and adhesives. *Am J Orthod* 1978;74:62-78.
- [7]. Aguirre MJ, King JG, Waldron JM. Assessment of bracket placement and bond strength when comparing direct bonding to indirect bonding techniques. *Am J Orthod* 1982;82:269-76.