

Clinical Pearl

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Modelling Clay – A Novel Adhesive used for Indirect Bonding

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ABSTRACT

Accurate bracket placement is of utmost significance in Orthodontics. The indirect bonding technique allows orthodontists to achieve maximum efficiency during bracket placement, helps in accurate bracket positioning. Indirect bonding offers benefits to shorten the chairside bonding procedure. Several methods and techniques have evolved over the years in indirect bonding. These methods have differed either in adhesive used to fix brackets to casts or in the material used to fabricate transfer tray. A simple, efficient and cost-effective method is employed in our department with application of Modelling clay as adhesive and glue gun as transfer tray material for precise indirect bonding technique. Modelling clay used in this technique is soft, non-toxic, does not crumble or dry and enables the orthodontist to easily place the bracket and reposition it accurately on the cast and also aided in maintaining bracket's stability during the fabrication of transfer tray.

Key-words: Indirect bonding, Modelling clay, Glue gun material, transfer tray, Simple, Cost-effective.

INTRODUCTION

Orthodontists share the goal of achieving magnificent treatment results and to provide a beautiful and healthy smile. The success of the orthodontic treatment depends on accurate positioning of brackets during bonding which simplifies the succeeding phases of orthodontic treatment and also increases predictability of the outcome. The indirect bonding technique allows three-dimensional visualization of tooth positioning and more accuracy while placing the brackets [1]. The procedure is performed in the laboratory after which the custom made trays are transferred to the patient's mouth, which ultimately shortens the chair side time by relocating the time factor to the laboratory [2].

There are important advantages to indirect bonding such as accurate bracket placement, reduction of the doctor's chair side time, fitting band on posterior teeth can be avoided, improved potential to bond posterior teeth and improved patient comfort and hygiene. Disadvantages are such as time-consuming laboratory procedures and extra costs with material which are compensated by the significant

advantages, ending up popularising this technique [3].

MATERIALS USED

The materials used in the technique were (Figure 1)

- 1) Modelling clay (Faber-Castell) - soft, non-toxic, does not dry or crumble.
- 2) Glue gun with sticks - It consists of ethylene vinyl acetate copolymers. It is approved by FDA (Food and drug Administration) as non-carcinogenic, non-toxic [4].
- 3) Separating medium
- 4) MBT Gauge
- 5) 3M Unitek victory series brackets.



FIGURE 1 Armamentarium used



FIGURE 2 Reference lines are drawn for determining the desired bracket position



FIGURE 3 Modelling clay is used to place the brackets in predetermined position

CLINICAL PROCEDURES

1) Accurate alginate impressions are made. Working models are prepared in Orthodontic stone which are trimmed carefully, should be devoid of bubbles and voids. A thin layer of separating medium is applied to the models and allowed to dry for an hour.

- 2) Bracket positioning guidelines are drawn on the cast. Black pencil is used to draw the long axis of each tooth on the center of its crown using an orthopantomograph as a supplemental method to observe the tooth angulation. Reference lines are drawn with the help of MBT gauge for determining the desired bracket position. (Figure 2)
- 3) Modelling clay is used to place the brackets in predetermined position marked on the working casts. (Figure 3)
- 4) After the placement of all the brackets, any modelling clay excess should be removed. Orthodontist can easily reposition the bracket with the use of same modelling clay material. The models should be reviewed for final approval and positioning of brackets by the orthodontist following which separating medium is applied on the dentition, and adjacent gingival areas.
- 5) Molten glue stick is flowed over the wings of the brackets, is extended over the palatal surfaces of the dentition on the cast. (Figure 4). All the brackets remained stable in position during this process.
- 6) The fabricated customised transfer tray is placed in water for setting and the excess material is removed with bard parker blade.
- 7) The glue gun tray has the modelling clay material at its bracket base which can be easily removed by sandblasting the bracket base. (Figures 5, 6)
- 8) The clinical procedures includes preparing the patient for bonding after achieving adequate isolation and etching.
- 9) Prophylaxis is performed using extra-fine pumice, and areas of teeth which are to be bonded are etched with 37% phosphoric acid during 30 seconds. Bonding can be done for the complete arch at once or in segments which is determined by the degree of isolation achieved and ease of insertion of the transfer tray. During placement of the tray, the occlusal and labial surfaces of teeth are supported to avoid any displacement. (Figure 7)
- 10) The Transbond XT (3M Unitek) Primer is applied on to the etched teeth surfaces and also the bracket bases followed by application of adhesive on to the bracket bases.

- 11) Light Curing is performed after which the tray is removed using a scaler which marks the completion of the indirect bonding procedure. (Figures 8,9,10,11)
- 12) Excess resin is removed around the brackets with scaler and also from the interproximal contacts.



FIGURE 4 Molten glue gun material is flowed over the incisal and occlusal wings of the brackets



FIGURE 5,6 Custom made transfer tray with the brackets.

CONCLUSIONS

A New Temporary Adhesive Modelling clay can be used for Indirect bonding. The method using modelling

clay and glue gun for Indirect bonding is simple, efficient and Cost-effective and also provides indefinite working time for precise bracket placement. This indirect bonding technique can be proposed as a routine everyday procedure for the ease of execution and the reduction in clinical working time.



FIGURE 7 Intra oral placement of Custom made transfer tray



FIGURE 8 Post bonding intra oral frontal view



FIGURE 9 Post bonding intra oral right lateral view



FIGURE 10 Post bonding intra oral left lateral view



FIGURE 11 Post bonding intra oral maxillary occlusal view

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