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Short Communication

Indirect bonding made easy: An improvised and unique technique with enhanced efficiency and patient comfort

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Abstract

Introduction: The indirect bonding technique enhances bracket placement accuracy and reduces chairside time, thereby improving treatment efficacy and patient comfort. Over the years, advancements have been made, including the use of light-cure resins and vacuum-formed trays to streamline the process.

Materials and Methods: This technique involved three main stages: initial preparation, laboratory stage, and clinical stage. Initial preparation included oral prophylaxis and preparation of study models. In the laboratory stage, guiding lines were marked on study models, and double-sided thin tissue adhesive tape was applied to facilitate bracket placement. A vacuum formed retention tray was then created to transfer brackets intraorally without the use of traditional adhesives. In the clinical stage, brackets were bonded using light-cure composite adhesive resin, ensuring precise positioning and optimal curing.

Results: This improvised technique of indirect bonding may reduce chairside time significantly and facilitate accurate bracket placement however, further controlled studies are needed to substantiate the above facts.

Conclusion: The indirect bonding technique described in this article ensures accurate bracket placement, enhances treatment efficiency, reduces the complexity as well as duration of the laboratory procedure.

Keywords: Indirect bonding, Accurate bracket placement, Novel technique

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1. Introduction

Indirect bonding technique was first described by Silverman and Cohen in the year 1972.[1] The technique aimed at eliminating the use of separators and bands, improving bracket placement accuracy and reduce chairside time, thereby, enhancing the efficacy, efficiency and patient comfort during bonding. Over the years' various modifications to this technique have been proposed by various authors using different bonding agents including chemical and heat cured resins and even glues.[2–5] Currently, light cure resins are used with transparent vacuum formed trays.

Indirect bonding involves an extensive amount of laboratory work which includes accurately positioning the brackets on the study models using resins/glues and preparation of transfer trays. The laboratory process is time consuming and requires specific resins for stabilizing brackets as described by Sondhi et al.[5]

A novel technique utilizing a double-sided thin tissue tape has been presented with the aim of reducing the complexity and duration of the laboratory procedure.

2. Materials and Methods

This technique involved three stages which can be described as:

1. Initial preparation
2. Laboratory stage
3. Clinical stage

2.1. Initial preparation

1. Patient preparation involved oral prophylaxis followed by alginate impressions of upper and lower arches.
2. Study models were prepared using type IV dental stone.

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2.2. Laboratory stage

1. Guiding lines were marked on the study models using a black pencil. The lines included long axis of clinical crowns (vertical) drawn with the help of an OPG radiograph and individualized bracket positioning according to the crown lengths (horizontal). **(Figure 1)**

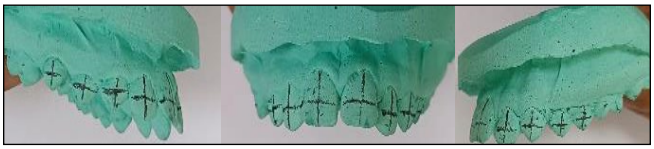

Figure 1: Guiding lines on study models

2. A double-sided thin tissue adhesive tape was placed on the study models **(Figure 2)** and the outer layer was removed. **(Figure 3)**

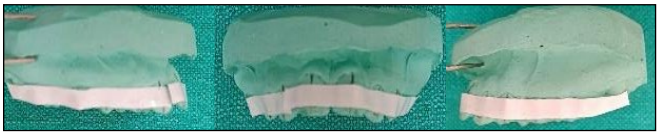

Figure 2: Double sided tape

Figure 3: Outer layer of the tape removed

3. The brackets were then accurately positioned on the study models.**(Figure 4)**

Figure 4: Brackets positioned

4. Bracket positioning was rechecked using a bracket positioning gauge as well as by evaluating from the occlusal view, to ensure accuracy. **(Figure 5)**

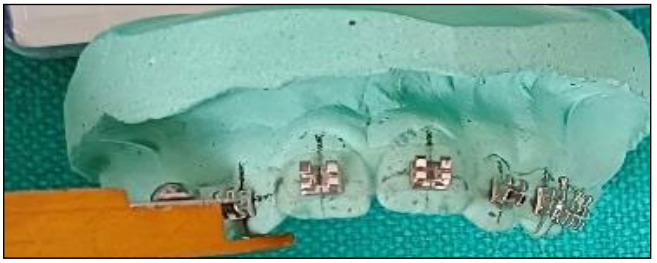

Figure 5: Bracket positioning verified

5. DuraSoft thermoplastic sheet (1.5 mm) was then adapted on the study models to form vacuum retention pickup tray. **(Figure 6)** The adapted tray was then trimmed at the level of 2mm apical to the gingival margin. **(Figure 7)**

Figure 6: Adaptation of thermoplastic sheet to form pickup tray

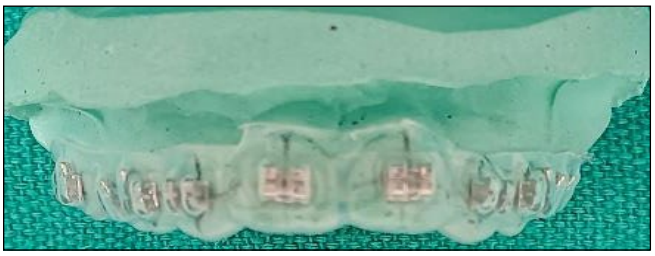

Figure 7: Trimming of the tray

6. The vacuum formed retention tray was gently separated from the study models ensuring that the bracket position was not disturbed. The tray was placed in a soap solution for 20 min to facilitate easy removal of the adhesive tape from the bracket surfaces without dislodging the brackets. **(Figure 8)**

Figure 8: Tray dipped in soap solution

7. The adhesive tape was gently removed from the bracket bases without disturbing the bracket position. **(Figure 9)** The tray was then ready for intra-oral transfer of brackets.

Figure 9: Tray with brackets after removal of adhesive tape

2.3. Clinical stage

1. The labial surfaces of the teeth were etched using 37% phosphoric acid for 15 sec. The labial surfaces were then washed and dried. Bonding agent was applied. (TransBond XT). **(Figure 10)**

Figure 10: Etching and application of bonding agent

2. TransBond XT adhesive resin was applied on the bracket bases and the tray was placed intra-orally **(Figure 11)**

Figure 11: Adhesive resin application and intra-oral tray plcaement

3. The adhesive resin was light cured for 10 secs on each tooth initially for stabilization and subsequently for 20 more secs on each tooth with the tray in-situ. It was ensured that the tray was stabilized during the curing process. **(Figure 12)**

Figure 12: Light curing of adhesive resin

4. The tray was gently pulled and removed using a weingart utility plier from the apical portions of the brackets. **(Figure 13)**

Figure 13: Tray removal

5. Bracket position was re-evaluated using positioning gauge to confirm correct placement. Bonding process was now completed. **(Figure 14)**

Figure 14: Bonding completed

3. Results

This improvised technique of indirect bonding reduced chairside time significantly, improved patient comfort and associated breakages were minimal when proper isolation was maintained. The technique is recommended for routine bonding with the aim of enhancing accuracy of bracket placement and reducing bonding time.

4. Discussion

Indirect bonding ensures accurate bracket positioning and reduced chairside time.[6] However, the laboratory process is time consuming and requires various adhesives and glues to stabilize brackets on the study models. Numerous modifications of this technique have been proposed since its introduction. Thomas RG (1979) used BisGMA resin for indirect bonding.[2] Knight (1996) used ThermaCure composite and Light vinyl polysiloxane material for this technique. Sondhi (1999) prepared custom bases using light cured adhesive resins.[6] Over the past few decades, various other modifications have been proposed like controlled etching system, bonding with light cure adhesive pre-coated brackets and use of moisture active adhesives.[7–9]

The presented technique eliminates the use of any chemical in the form of adhesive/glues during the laboratory stage. Use of a double- sided adhesive tissue tape has been suggested for easy placement and removal as well as reducing the laboratory working time. This is an efficient way of performing indirect bonding and at the same time ensuring accurate bracket positioning by using a transparent pick-up tray that ensures adequate visualization of brackets during placement and curing process.

5. Conclusion

The indirect bonding technique described in this article facilitates accurate bracket placement, enhances treatment efficiency and may reduce the complexity as well as duration of the laboratory procedure however further future-controlled studies are needed.

6. Source of Funding

None.

7. Conflict of Interest

None.

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