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Chairside technique for expediting indirect interim restorations

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The use of flexible casts and dies for the chairside fabrication of interim restorations has been reported to overcome the drawbacks of the direct technique and provide a safe and biocompatible fabrication process.1-5 Because of the elasticity of these casts, removing the interim restoration after complete setting is easy, and the integrity of the casts is maintained. Unlike stone casts, the flexible cast can be reused if a new interim restoration is needed later.1

Different elastomeric impression materials and consistencies have been used to make flexible casts. Although materials such as polyvinyl siloxane have excellent dimensional stability, they are relatively expensive and adhere to the already set impression material.6 For this reason, a second alginate impression is usually made to produce the flexible cast.1

To overcome these limitations, this article proposes the use of hot melt adhesive material (HMA) for the fabrication of flexible casts. HMA is a thermoplastic material usually supplied in sticks, which are melted using an electric gun. It typically consists of a base material such as an ethylene-vinyl acetate copolymer with additives such as wax, resins, plasticizers, and pigments.7

HMAs do not adhere to elastomeric impression materials. This allows easy separation of impressions made with any material, including polyvinyl siloxane without the need for a separating agent. Obtaining the flexible cast from the definitive impression eliminates the need for an additional impression, reduces the time needed for the procedure, and improves the accuracy of the flexible cast details. HMAs are also less expensive than elastomeric impression materials.

Figure 1. Injecting melted hot melt adhesive material in definitive impression.

Figure 2. Hot melt adhesive-made flexible cast.

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PROCEDURE

1. Make a putty (Express STD; 3M ESPE) index mold of the tooth intended for preparation, including 1 neighboring tooth on each side.
2. Prepare the tooth in the usual manner.
3. Make the definitive impression of the prepared tooth and the surrounding tissue with the preferred impression material (Imprint II Garant regular and light body; 3M ESPE) and technique. Wash, disinfect, and dry the definitive impression.
4. To produce the flexible cast, fill the prepared and adjacent teeth by injecting the heated HMA material (3M Scotch-Weld hot melt adhesive; 3M) with an electric gun (Glue Gun LC 606N; Meta Precision Industry Co., Ltd) (Fig. 1).
5. When the HMA material cools, remove it from the definitive impression (Fig. 2). Inspect the flexible cast for bubbles or defects. If necessary, reapply a small amount of the heated HMA material to the impression and replace the cast in the impression.
6. Place the flexible cast into the preoperative index mold and examine it carefully for complete seating. Prepare a mix of autopolymerizing resin material (Success CD; Promedica Dental Material GmbH) and place the mix in the index mold. Immediately seat the flexible cast fully into the index mold and hold both firmly in place by hand or with a rubber band until the resin completely polymerizes.
7. To accelerate the polymerization of resin, immerse the assembly in warm water.
8. After the resin has completely polymerized, separate the putty index mold from the flexible cast (Fig. 3). Flexibility allows easy removal of the interim restoration without damaging either the cast or the restoration.
9. Trim any excess material, remove any undercuts, and shape the interim restoration with rotary instruments in the usual manner.
10. Evaluate and fit the interim restoration on the prepared tooth and adjust the occlusion if needed (Fig. 4).
11. Polish the restoration and cement it in the usual manner.

REFERENCES


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