Transferring the implant position from the mouth to the definitive cast is one of the most critical steps in implant prosthodontics. To achieve a passive fit of the prosthesis, an accurate implant impression is crucial because discrepancies can induce both biologic and technical complications. Analysis of available research data suggests that a direct (pick-up) impression technique with splinted copings is the technique of choice, particularly for multiple implants. However, the traditional method of splinting the copings with autopolymerizing acrylic resin is a technique-sensitive and time-consuming procedure. This report describes a straightforward method of splinting impression copings with light-polymerizing acrylic resin, with minimal amount of autopolymerizing acrylic resin. The method also can be used to verify splinting accuracy. (J Prosthet Dent 2014;111:254-256)

Dental implants, because they do not have a periodontal ligament, are not able to compensate for even minor misfits of the superstructure.¹ Therefore, recording a correct 3-dimensional orientation rather than surface detail is necessary to avoid biologic and technical complications.² Many factors are involved in transferring the implant position from the mouth to the cast, including the implant connection type and impression coping design, the number of implants and angulation, the impression technique, and the impression material. Whereas the influence of different impression materials appears to be less critical, impression techniques are considered as a major factor that influences impression accuracy.³,⁴ Implant impression copings can be repositioned into the impression material after impression making with a closed tray (indirect, transfer) technique or can be transferred with impression material with an open tray (direct, pick-up) technique. Both techniques and their modifications are used to achieve implant impression accuracy. To improve the stability of the impression coping, splinting techniques have been adopted. Although there are conflicting data on the effects of different impression
Techniques and splinting, a systematic review has revealed that more studies reported higher accuracy with direct techniques when splinting was used. Different materials have been suggested for coping splinting, including acrylic resin, plaster, polyvinyl siloxane, and polyether. The application of an autopolymerizing acrylic resin to a scaffold of dental floss is a common technique. However, this is time-consuming and technique-sensitive procedure when multiple implants are to be restored in the posterior region because unpolymerized resin can be displaced by the cheek or tongue, and the splint can be detached from the coping. Autopolymerized acrylic resins shrink during polymerization and generate strains. To compensate for acrylic resin shrinkage, the splint can be sectioned and reconnected with a small amount of resin.

This article describes a method to splint impression copings with a light-polymerizing custom tray acrylic resin. The mechanical properties of light-polymerized resins have been rated superior to autopolymerized resins. The advantages of this technique include an easy and fast way to connect impression copings (especially for multiple implant-supported prostheses), better patient acceptance, the uniform coverage of impression copings with an adequate thickness of resin, the uniform thickness of the splint, and the avoidance of intraoral resin monomer. Also, the consistency of light-polymerizing resin does not require the use of dental floss. The verification of splinting accuracy can be done before impression making as well as after cast fabrication to evaluate the accuracy of the cast. The disadvantages include possible problems of access for the light-polymerization unit, interference with the impression tray due to the thicker layer of resin surrounding the impression coping, inadequate adaptation of the light-polymerizing resin to the coping, incomplete polymerization of the material, and an inability to fully avoid the use of autopolymerized acrylic resin.

**Technique**

1. Remove the interim abutments and place the direct implant impression copings (EZ Plus; Megagen Co) (Fig. 1). Make a radiograph to confirm the complete seating of the impression coping.

2. Cut an appropriate 5-mm-wide strip of acrylic resin from the light-polymerizing custom tray material (Individo Lux; Voco GmbH) (Fig. 2).

3. Light-polymerizing acrylic resin strip adapted to impression copings.

4. Polymerization of splint.

5. Splint was cut and rejoined with autopolymerizing acrylic resin.
Wrap the resin strip around the copings and shape with a modeling spatula to ensure good adaptation of the material and provide space beneath the splint for impression material (Fig. 3). Light-polymerize for 60 seconds on each side with a 1200 mW/cm² light-intensity unit (Elipar Free Light 2; 3M/ESPE) (Fig. 4).

3. After the resin has polymerized, cut the splint with a small diameter rotary instrument (D203; Hager & Meisinger GmbH) to compensate for the shrinkage and rejoin with autopolymerizing acrylic resin (Pattern Resin; GC) (Fig. 5).

4. Adjust the custom tray and make a definitive impression with polyvinyl siloxane material (Take 1 Advanced HB Tray and medium viscosity material; Kerr Corp) (Fig. 7). The Sheffield test can be performed on the definitive cast with the same or an additional set of splinted copings to evaluate the accuracy of the definitive cast.12

REFERENCES


