The orientation of a definitive cast should be recorded and reproduced to indicate the most appropriate path of placement and undercut areas for the fabrication of a removable partial denture (RPD). One common method of recording the cast orientation is to tripod or score the cast base to indicate the determined path of placement. However, an error may occur when the cast orientation needs to be reproduced on the adjustable table of a surveyor because of the different positions of the analyzing rod and viewing angle. The reproducibility of tripoding or scoring method relies on the relationship of the cast base to the adjustable table of a surveyor. However, the relationship of the base to the table may vary with different mechanisms of cast attachment and possible alteration of the base. Several methods have been introduced to avoid the problems associated with the inconsistent relationship of the base to the table by orienting the cast as reference to the vertical arm of a surveyor. However, these methods require laboratory procedures to fabricate additional devices with adjustable arms and metal pins and sleeves, inclinometers, and magnetic devices.

This article describes a straightforward and accurate method of recording and reproducing the cast orientation by using an implant impression coping and an implant analog. This method allows the cast to be oriented as reference to the vertical arm of a surveyor and eliminates the uncertainty related to tripoding or scoring the base of the cast. In addition, the orientation of the original definitive cast can be transferred to a duplicate cast with the direct impression transfer coping replaced by an indirect impression transfer coping while making a duplicate impression.

### TECHNIQUE

1. Mount the definitive RPD cast on the adjustable table of a surveyor (Ney surveyor parallometer; Dentsply Sirona) to orient the occlusal plane of the cast parallel to the platform.
2. Secure the adjustable table of a surveyor (Ney Surveyor Parallometer; Dentsply Sirona), after determining the most desirable path of placement by tilting the table in the anterior-posterior or lateral direction and by taking into consideration the guide plane, retention, interference, and esthetics.
3. Use a tungsten carbide bur (Tungsten carbide cutter; NTI-Kahla GmbH) to create a vertical groove

---

**ABSTRACT**

For the fabrication of a removable partial denture, the orientation of a definitive cast should be recorded and reproduced to indicate the most desirable path of placement and undercut areas. This article describes a straightforward and accurate method of recording and reproducing the cast orientation by using an implant impression coping and an implant analog. (J Prosthet Dent 2018;119:33-35)
(approximately 10 mm in depth and 20 mm in length) in the posterior aspect of the base (Fig. 1).

4. Connect a short, direct impression coping (Dentium Corp) to an implant analog (Dentium Corp) by means of a long retaining screw (Dentium Corp) (Fig. 2) and secure the coping-analog assembly to the vertical arm of a surveyor (Ney Surveyor Parallometer; Dentsply Sirona).

5. Position the coping-analog assembly in the vertical groove of the cast and attach it to the cast with a thermoplastic adhesive material (Hot melt stick; Okong Corp) (Figs. 3, 4) in an electric heat gun (Gluegun G-250; Okong Corp).

6. Replace the direct transfer impression coping with an indirect transfer impression coping (Dentium Corp) to transfer the orientation of the original definitive cast to a duplicate cast (Fig. 5).

7. Make an impression of the definitive cast with a polyvinyl siloxane duplicating material (PolyPour; GC Corp) to duplicate the cast and separate the impression from the cast. Unscrew the indirect transfer coping from the implant analog attached to the original definitive cast and connect it to another implant analog (Dentium Corp) and reseat the coping-analog assembly in the duplicate impression (Fig. 6).

8. Pour the duplicate impression in Type IV dental stone (Fujirock EP; GC Corp) to fabricate a duplicate cast and transfer the orientation of the original master cast to the duplicate cast by means of the coping-analog assembly reseated in the impression. Replace the indirect transfer coping with a direct transfer coping to indicate the orientation of the original definitive cast by means of an extension of the retaining screw.

**DISCUSSION**

This method of recording the cast orientation for the fabrication of an RPD requires a laboratory procedure to attach an implant analog to the cast. The implant analog is located in the posterior aspect of the cast base to avoid...
interference with the design of a maxillary major connector. In particular, for a palatal plate, major connector extended to the junction of hard and soft palates.9 The analog is secured to the stone cast with a thermoplastic adhesive material to expedite the attachment and separation procedures for reusing the analog. The impression coping should be short enough to allow the retaining screw to extend above the coping. The retaining screw should also be sufficient in diameter to be inserted into and engaged by the vertical arm of a surveyor. The retaining screw can be directly connected to the implant analog without using the impression coping to indicate the cast orientation when adequate sizes of the impression coping and retaining screw are unavailable.

The impression transfer coping is unscrewed from the implant analog when the cast is articulated against the opposing cast and is reconnected to the analog in the laboratory to indicate the cast orientation determined by the dentist. The direct impression transfer coping is replaced with an indirect transfer coping to transfer the orientation of the original definitive cast while making an impression to duplicate the cast. This procedure keeps the original definitive cast unaltered for future use, and the duplicate cast used for waxing of the RPD metal framework.

This procedure is straightforward and ensures an accurate orientation of the cast without the elimination of errors resulting from a positional relation of the cast to the adjustable table of a surveyor. In addition, the imprint impression transfer copings and analogs are commonly available and can be used repeatedly. However, care should be taken to avoid a dislodgement of the implant analog from the cast and to have a sufficient extension of the retaining screw above the impression coping for secure connection to the vertical arm of a surveyor.

**SUMMARY**

This method of recording and reproducing the cast orientation by using an implant impression coping and an implant analog eliminates the uncertainty related to tripoding or scoring the cast base and allows the orientation of the original definitive cast to be transferred to a duplicate cast while keeping the original definitive cast unaltered for future use. However, care needs be taken to avoid dislodgement of the implant analog from the cast and to present a sufficient extension of the retaining screw above the impression transfer coping for secure connection to the vertical arm of a surveyor.

**REFERENCES**


**Corresponding author:**
Dr Jae-Min Seo
Department of Prosthodontics and Institute of Oral Bioscience Chonbuk National University School of Dentistry 20, Geonjiro Deokjin-gu, Jeonju-si, Jeollabuk-do, 54907 Republic of Korea Email: jmseo@jbnu.ac.kr