

Improving Implant Prosthetic Trial Bases Stability with the Aid of Impression Copings

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ABSTRACT

A technique has been described for improving the stability and retention of trial bases when treating edentulous patients with dental implants. Impression copings for the open-tray technique has been used with a simple modification for the fabrication of trial bases. The presented technique is cost effective as only used components are required while providing good retention.

Keywords: Dental implant, Maxillomandibular relationship, Trial base.

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BACKGROUND

Record bases and trial dentures are required when restoring edentulous jaws with dental implants. They are required, regardless of treatment options of fixed or removable prostheses, for analysis of vertical dimension of occlusion (VDO), recording maxillomandibular relationship, and examining function and esthetic aspects of denture teeth. When implants are placed in the mouth, achieving trial bases with sufficient stability can be challenging in many circumstances, such as for patients with atrophic jaw bones or when augmented with bone grafts that end in an unusual vestibular form of reduced depth.¹

Several techniques have been reported to improve the stability of trial bases over implants.^{2,3} Recently Nimmo and Nimmo suggested the use of impression copings in direct connection of record bases to two implants.⁴ However, the height of impression copings may interfere with the closure path of the jaw in some clinical situations. A simple technique in which open tray impression copings are modified to use for stabilizing trial bases is described.

TECHNIQUE

A 24-year-old female patient presented with edentulous maxilla and partial edentulous mandible. She had a bone graft and received seven bone-level implants in the maxilla (Implantium, Dentium, Seoul, South Korea) (Fig. 1). After evaluating the osseointegration, she was prepared for the impression. Healing screws were removed, and six open tray impression copings (impression coping/pick-up, implantium, dentium) were screwed into the implants and the impression made with a polysiloxane impression material (Monopren, Kettanbach GmbH & Co., Eschenburg, Germany) with the aid of a custom tray. The impression copings were removed from the mouth and implant analog were attached to them. The impression was poured with a type IV die stone (Fuji Rock, GC Corp., Tokyo, Japan) and a silicone based gingival mask material (Gi-Mask, Coltene/Whaledent AG, Cuyahoga Falls, Ohio, USA). The VDO was initially estimated by subtracting 3 mm from the remaining occlusal position of mandible, and the amount of crown height space (CHS) was roughly measured. Impression copings were then retrieved from the impression, and two impression copings were cut 1–2 mm shorter than the measured CHS. Cutting compromised the access for screw holes and the original implant screw driver could

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not be used for screwing and unscrewing the impression coping pin. Therefore, a horizontal groove (slot) was prepared on the cut surface of transfer pin so that a small short-handled flat-ended screwdriver could be used for securing the shortened impression copings into the corresponding implants (Figs 2 to 4). The wax rim was fabricated incorporating two shortened impression copings and VDO, and the centric relation were registered for an accurate mounting of casts on the articulator. The same record base was used to try in the denture teeth arrangement (Figs 4 and 5).



Fig. 1: Frontal view of implants

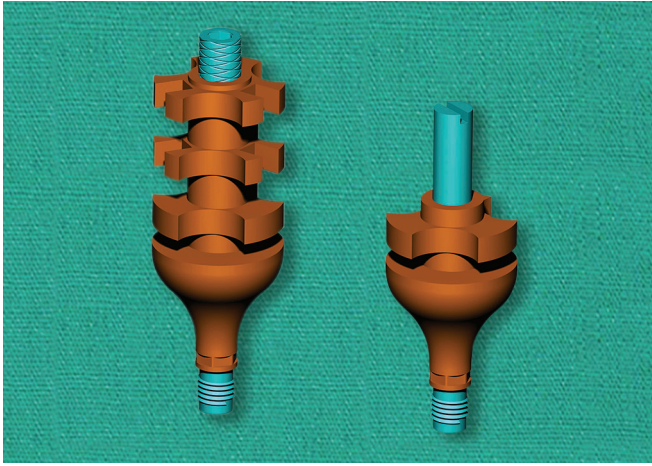


Fig. 2: Typical impression coping before sectioning (right) and after sectioning with slot cut on the transfer pin head (left)



Fig. 3: Two modified impression copings were incorporated in the trial base



Fig. 4: Transfer pin head is shown after cutting, securing the modified impression coping



Fig. 5: Trial base with artificial teeth and two modified impression copings in the mouth

DISCUSSION

Open-tray impression copings for implant impression could be used to stabilize trial bases with occlusion rims and/or trial bases with artificial teeth.

Two or three impression copings are sufficient to provide retention for stabilizing the trial denture bases.⁴ Consequently, the occurrence of accidental trauma to the soft tissue or implant site during insertion of trial bases is reduced. Times for detachment and further adjustments are reasonable. Besides, impression copings offer better retention in the acrylic resin of denture bases due to their configuration when compared to healing abutments described by Rungcharassaeng.³

Although the technique was described with the aid of a specific implant brand, it is equally applicable to a wide range of implant systems that incorporate open impression copings with a transfer pin.

CONCLUSION

Stable trial bases are key to the successful recording of the maxillomandibular relationship and for artificial teeth try-in when

treating patients with a removable implant supported prosthesis. The transfer pin of an impression coping for the open-tray technique can be modified in order to retain the trial bases.

CLINICAL SIGNIFICANCE

Using impression copings to stabilize record bases during jaw relation records and artificial teeth could save time and provide patients and clinicians with comfort and accuracy.

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