

An implant impression technique using a plaster splinting index combined with a silicone impression

Nicolas Eid, DDS, PhD^a

Department of Prosthodontics, Faculty of Odontology, Rene Descartes University, Montrouge, Paris, France

This article describes a technique for making implant impressions designed to reduce framework misfit. The 2-stage impression technique combines the use of plaster and a silicone impression material. The method can be used for either completely or partially edentulous patients. (J Prosthet Dent 2004;92:575-7.)

To reduce the risk of prosthetic complications when restoring implants, passive fit of the framework is recommended.¹ With increasing misfit of the framework, the external preload is magnified when prosthetic screws are torqued to specifications and static stresses raise the risk of prosthetic complications.² Wee et al³ described various methods of improving the framework fit. Among these, the use of a dimensionally accurate impression material was reported to be the most critical factor, particularly when it is not possible to achieve fit of the framework by a sectioning and soldering procedure.

The importance of using a method of splinting transfer during the impression has been described.⁴ The use of plaster as an index material for implant impression has been described for partially edentulous patients.⁵ For such techniques, an initial impression is necessary to make a custom tray. This article describes a 2-stage impression technique using an elastomeric impression material and impression plaster. This technique uses a stock impression tray that allows for a 1-appointment impression procedure. Although this procedure can be used for completely or partially edentulous patients, the situation presented is for a completely edentulous mandible (Fig. 1). The last 2 figures briefly illustrate a partial edentulous situation.

TECHNIQUE

1. Make a vinyl polysiloxane impression (Aquasil Soft Putty; Dentsply Caulk, Milford, Del), using a stock plastic impression tray (Master Tray; Teledyne Waterpik, Ft. Collins, Colo). At this stage, cover prosthetic abutments with healing caps (no. 29064; Branemark system, Nobel Biocare Norden AB, Goteborg, Sweden) (Fig. 2).
2. Evaluate the impression and remove the silicone around the implant area and the top of the impression tray (Fig. 3).
3. Screw the impression copings (no. 29089 Branemark system; Nobel Biocare Norden AB) in position with a guide pin that exits above the tray when the tray



Fig. 1. Implant abutments are in place for fixed complete denture supported by 6 implants.



Fig. 2. Vinyl polysiloxane impression made in stock tray.

- is placed intraorally. Ensure that sufficient space around the copings and access to the guide pins exists prior to proceeding to the next step (Fig. 4).
4. Hold the tray with the polymerized impression in position during the plaster splinting index procedure. Inject impression plaster (Snow-White plaster no. 2; Kerr, Romulus, Mich) around the impression copings with a 5-cc plastic disposable syringe (Syringes Plastic Disposable; Harry J Bosworth Co, Skokie, Ill) level with the top of the guide pins. Leave the screw heads uncovered (Fig. 5).

^aAssistant Professor.

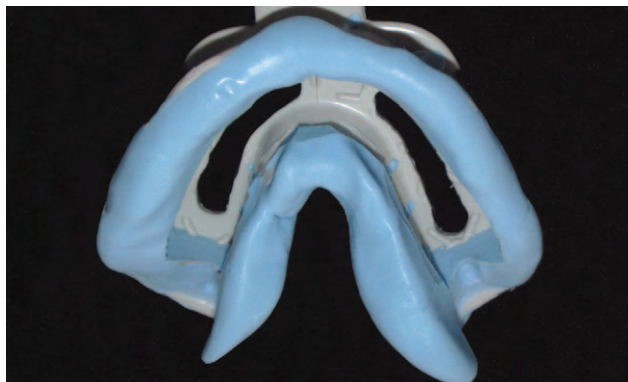


Fig. 3. Impression material and top of plastic tray are removed.



Fig. 4. Intraoral evaluation of space around impression copings and access to guide pins.



Fig. 5. Plaster index.



Fig. 6. Definitive impression.



Fig. 7. Implant impression coping is in place for 3-unit metal-ceramic fixed partial denture supported by 2 implants.

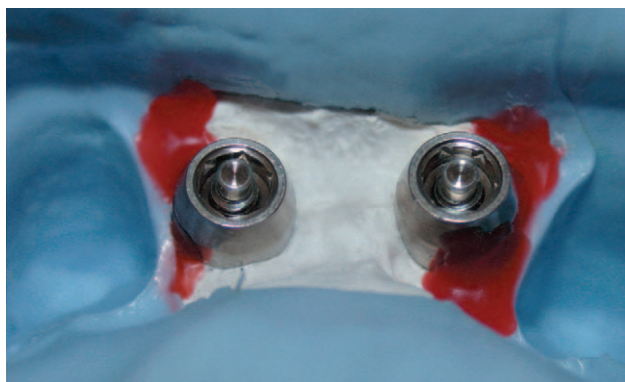


Fig. 8. Definitive impression. Small voids corrected with wax.

5. After the plaster has set (3 to 5 minutes for the exothermic reaction), unscrew the guide pins. Remove the tray with the plaster index and the copings. Evaluate the plaster index for fractures or shifting (Fig. 6). If the plaster breaks, remove the plaster and begin again.
6. Screw the implant analogs (no. 29110 Branemark system; Nobel Biocare Norden AB) in place. Apply

a thin coat of separator (Super-Sep Dental Stone Separating Agent; Kerr) on the plaster. Pour the impression with a type IV plaster (Suprastone; Kerr) to obtain the definitive cast.

7. For partially edentulous situations (Fig. 7), preserve the silicone material in the interdental spaces before the second stage and fill small voids with wax (Boxing wax; Kerr) (Fig. 8).

SUMMARY

This article describes an implant impression technique in which silicone impression material and impression plaster were used sequentially with a stock impression tray. The technique combines the flexibility of an elastomeric impression material for capturing the undercut intraoral topography with the splinting effect of impression plaster to improve the accuracy of fit of the prosthetic components.

The author thanks Anne Longuet for reviewing the English language of this manuscript.

REFERENCES

1. Kallus T, Bessing C. Loose gold screws frequently occur in full-arch fixed prostheses supported by osseointegrated implants after 5 years. *Int J Oral Maxillofac Implants* 1994;9:169-78.
2. Kunavisarut C, Lang LA, Stoner BR, Felton DA. Finite element analysis on dental implant-supported prostheses without passive fit. *J Prosthodont* 2002;11:30-40.
3. Wee AG, Aquilino SA, Schneider RL. Strategies to achieve fit in implant prosthodontics: a review of the literature. *Int J Prosthodont* 1999;12:167-78.
4. Assif D, Nissan J, Varsano I, Singer A. Accuracy of implant impression splinted techniques: effect of splinting material. *Int J Oral Maxillofac Implants* 1999;14:885-8.
5. Nissan J, Barnea E, Krauze E, Assif D. Impression technique for partially edentulous patients. *J Prosthet Dent* 2002;88:103-4.

Reprint requests to:

DR NICOLAS EID
DEPARTMENT OF PROSTHODONTICS
RENE DESCARTES UNIVERSITY
1, RUE MAURICE ARNOUX
92120, MONTRouGE
FRANCE
FAX: 330-1-58-07-6899
E-MAIL: nicolas.eid@univ-paris5.fr

0022-3913/\$30.00

Copyright © 2004 by The Editorial Council of *The Journal of Prosthetic Dentistry*

doi:10.1016/j.prosdent.2004.09.013

Noteworthy Abstracts of the Current Literature

Conventional visual vs spectrophotometric shade taking for porcelain-fused-to-metal crowns: a clinical comparison

Paul SJ, Peter A, Rodoni L, Pietrobon N. *Int J Periodontics Restorative Dent* 2004;24:222-31.

This study tested the shade match of single porcelain-fused-to-metal restorations with the adjacent dentition when the restorations were fabricated according to data from conventional visual shade matching or from a new spectrophotometric system. The samples of a Vita Classic shade guide were measured with the spectrophotometer to determine the CIE L*a*b* color parameters. Three clinicians independently selected the best match to a maxillary right or left incisor needing a restoration in 10 patients. The 10 incisors were then measured using a reflectance spectrophotometer. CIE L*a*b* coordinates were directly recorded on the spectrophotometer's detector area using a standard light source. Resulting conventional and spectrophotometric restorations were tested intraorally for best match with the adjacent incisor using conventional shade matching versus spectrophotometric measuring. Total color difference was calculated, and all groups were statistically analyzed. Initial shade evaluation matched for all three visual shade selections in two cases. In six cases only two evaluators matched, and in the remaining two cases all three visual selections differed. In contrast, in nine of 10 cases all three spectrophotometric shade selections matched. Additionally, in nine of 10 cases delta E values of visually assessed tooth shades were higher than spectrophotometrically assessed delta E values. Resulting delta E values for conventional crowns compared to spectrophotometric crowns were significantly higher. Finally, in nine of 10 cases spectrophotometric crowns were preferred over conventional crowns for definitive cementation when evaluated visually. Spectrophotometric shade analysis and communication can be used efficiently for fabrication of porcelain-fused-to-metal restorations.—
Reprinted with permission of Quintessence Publishing.