Pick-up Impression of Complete Arch Implant-Supported Interim Prosthesis

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INTRODUCTION

The use of implant-supported interim or provisional prostheses is a vital component in achieving predictable restorative outcomes for both partially and completely edentulous patients.1-4 Interim prostheses provide valuable information regarding the esthetics and function prior to the fabrication of the definitive prostheses.2

The form, size, contours, and alignment of the teeth can be confirmed clinically in dynamic and static conditions. Likewise, the assessment of phonetics and occlusion can also be clinically confirmed in such conditions.2-5 Interim prostheses can be used to shape the peri-implant soft tissues to develop the most esthetic soft tissue architecture and provide hygiene access.1, 3, 4, 6 Modifications and corrections can easily be made to interim prostheses to meet the specific functional and esthetic requirements.2, 4 Furthermore, interim prostheses are excellent communication tools that can be used to transfer all the necessary details and information to the laboratory for the fabrication of the definitive prostheses, and to effectively communicate with the patient, to meet expectations and address specific concerns.2, 4, 6

The success of implant-supported prostheses depends on the precise reproduction of the hard and soft tissues, and the implant position to the laboratory.3, 7 Definitive impression is a critical step in this reproduction process and plays a significant role in the outcome of the prosthesis and long-term success.8-11 The 2 main categories for implant impressions include the pickup (also known as direct or open-tray impression), and the transfer (also known as indirect or closed-tray impression).10, 12 For situations involving multiple implants in a complete edentulous arch, it is well-established that a splinted pickup impression technique provides higher levels of accuracy than other conventional techniques.8-11

The definitive model used for the fabrication of the definitive prosthesis needs to accurately replicate the soft tissue contours established by the emergence profile of the interim prostheses.3, 4 Customized impression copings using autopolymerizing acrylic resin or light-cured composite resin have been advocated to capture the exact emergence profile.13, 14 The interim prosthesis itself can also be used as impression copings, while other techniques can be used to modify the gingival mask on the definitive model using the interim prosthesis.1, 3, 6, 15-17 The current report describes a definitive impression procedure for a complete arch implant-supported prosthesis achieved by making a pickup impression with a complete arch implant-supported interim prosthesis. This procedure uses cotton applicators, which have numerous adjunctive uses in implant dentistry, to maintain patency of screw channels.12, 18, 19

CASE DESCRIPTION

Interim prostheses can be fabricated on implant or abutment level models, or by converting a complete denture into an implant-supported interim prosthesis intraorally.4 Regardless of fabrication technique, the complete seating of the interim prosthesis must be confirmed radiographically and the passivity must also be confirmed clinically prior to impression making.

Using the diagnostic wax-up or a primary impression of the interim prosthesis, a custom tray with screw channel openings for the interim prosthesis was fabricated. Extensions were attached to the screw channels of the interim prosthesis to ensure patency after the impression procedure. In this case, handles of cotton applicators (Cotton Tipped Applicator; Crosstex International Inc, Sharon, Pa) were sectioned to create wooden extensions. Utility wax can be used to stabilize extensions in place (Figure 1).

Light viscosity impression material (Identium Medium; Kettenbach GmbH & Co KG, Eschenburg, Germany) was injected around the mucosal margin and the cervical aspect of the interim prosthesis. Medium viscosity impression material (Identium Medium; Kettenbach) was loaded in the tray, then seated in the patient’s mouth over the interim prosthesis (Figure 2). After complete setting of the impression material, all wooden extensions were removed and the interim prosthesis was unscrewed.

The tray was removed from the patient’s mouth with the interim prosthesis retained in the impression (Figure 3). Corresponding implant replicas were attached to the interim prosthesis, and gingival mask material was injected around the replicas (Gingitech; Ivoclar Vivadent, Amherst, NY). Attachment of the implant replica and injection of the gingival mask follows previously reported recommendations.6, 17

The impression was poured in Type IV dental stone

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(ResinRock; Whip Mix Corp, Louisville, Ky) according to manufacturer instructions. The interim prosthesis screws were removed, the model was separated from the impression, and then it was trimmed (Figure 4). The interim prosthesis was retrieved from the impression and reseated on the model (Figure 5). With the prosthesis attached, the newly fabricated model can be mounted on the articulator using previously made facebow and centric relation records (Figure 6).

**DISCUSSION**

The use of interim prostheses as impression copings has been previously described; however, this mostly involved single-unit prostheses.\(^1,15\) A complete arch interim prosthesis pickup technique has been previously reported, but involved the use of long guide pins instead of the screws, which may not be readily available.\(^17\) In addition, this previously described technique preferred the use of Alginate impression, which...
requires prompt laboratory support that is capable of immediately pouring the impression. Another complete arch interim prosthesis pickup technique has also been reported, involving several other clinical and laboratory procedures that may not be as efficient. Furthermore, the interim prosthesis was mainly used for the fabrication of the gingival mask.

The described technique offers advantages that can improve the efficiency of the workflow. By using the interim prosthesis as an impression coping, the need and cost of purchasing the impression copings is eliminated. Clinical chair time spent customizing impression copings or splinting the impression copings is saved, as the interim prosthesis will replicate the soft tissue contours in the impression and act as a splint during impression making. Previous reports have described the use of cotton applicators for various purposes in implant dentistry including screw retrieval, cleaning of the internal chamber of the implant, and as a screw channel extension for impression making. Using wooden extensions to ensure patency of the screw channels during impression making is a convenient alternative to guide pins and other specialized armamentarium that may not be readily available. Furthermore, the use of elastomeric impression materials as described in this technique allows for additional time between the impression making process and impression pouring.

As the choice of material for fabricating a verification jig has no significant effect on its accuracy, it is possible for an interim prosthesis with confirmed passivity to serve as a verification jig. For this technique, the making and pouring of the full-arch impression were both done using the interim prosthesis, which has the potential for eliminating the need for model verification. However, further research is needed to verify the accuracy. With the functional and esthetic demands already established, using the interim prosthesis to make the definitive model also allows the clinician to subsequently mount it on an articulator and articulate it with the opposing model, provided that facebow and centric relation records we made in advance prior to the impression procedure. This eliminates the need for a jaw relations and records appointment, which can save a significant amount of time.

For patients with limited mouth opening, this technique may not be very easily executed, as the access to the screw channels can be very difficult. Alternatively, a transfer version of this technique can be done. This can be achieved by taking a conventional impression of the interim prosthesis after blocking out the screw channels, and then transferring the prosthesis into the impression. This version may result in a less accurate impression as studies have shown that pickup impressions are more accurate than transfer impressions, particularly with 4 or more implants. The patient will also have to spend some time without the interim prosthesis as the impression is poured and the model mounted. An alternative prosthesis such as an existing removable denture could also be used in transition. Despite these minor limitations, the described technique is simple, and has the potential to efficiently produce accurate models. Additional clinical studies are still needed to confirm and validate this procedure.

**Note**

No potential conflict of interest relevant to this article was reported.

**References**