Palatal impression template for a fully edentulous arch during stage I implant placement

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It is often desirable to insert a fixed provisional resin restoration at stage II surgery when the implants are uncovered. It satisfies the patient's esthetics, phonetics, and functional demands and helps create a good emergence profile for the healing gingival tissue. This article presents a procedure that enables the clinician to fabricate a full-arch maxillary provisional restoration for a fully edentulous patient, which can be delivered at second-stage surgery at the time of uncovering the implants.(J Prosthet Dent 1997;77:630-2.)

The esthetics of an implant-supported fixed restoration partially depends on the presence of an ideal soft tissue environment. One of the goals of a restoration is to maintain a healthy interdental papillae and a natural cervical line. The provisional phase is extremely important in achieving this goal.[1]

For complete healing and maturation of the newly constituted tissue formed at the surgical site, a waiting period of 2 to 3 months is recommended.[2-4] This healing process should not be physically or mechanically disturbed although some authors suggest that 7 days are sufficient for an impression to be made at stage II (uncovering) surgery.[5] If the patient must continue his personal, work, and social life with a healing abutment in place for as long as 8 to 12 weeks before the final impression is made, the patient commonly wears a removable overdenture prosthesis. Wearing a removable denture always requires adaptation, not only on a functional but also on an emotional level. Hogenius et al.[6] in a psychologic study reviewed 473 patients for treatment with osseointegrated implants because of problems with removable prostheses. The group was found to be more depressed than average and to have external health locus of control orientation. Impression procedure during stage I has many advantages, all important issues that must be considered whenever possible so that during the healing period the patient's life is not affected physically or psychologically.

Kent and others[1,7] described the importance of esthetics on social and psychologic aspects for osseointegrated implant patients. This prosthetic procedure causes the least amount of discomfort, psychologic inconvenience, cost, and chair time and also allows more time for progressive loading.[8] Esthetically, the final results will be more predictable because this procedure allows for the creation of an ideal provisional design to build a healthy periimplant soft tissue environment.

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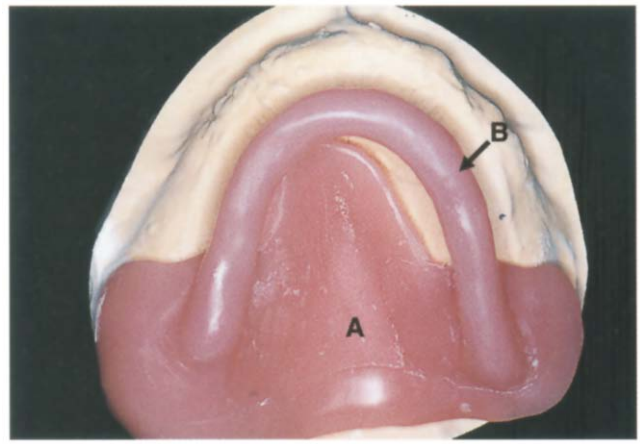

Fig. 1. Master cast with palatal impression template. *A,* Trial base; *B,* elevated curved arm made of triad material.

Several methods of fabricating the impression template during stage I implant placement are available.[9] However, these procedures are most applicable to the partially edentulous patient when the arch being restored has remaining teeth and the template fits over or around enough teeth to stabilize and position the impression template.

This article describes a procedure that introduces palatal impression template design that can be used during stage I multiple implant placement to obtain a relationship for fabrication of a provisional resin restoration for an edentulous patient.

PROCEDURE

1. Make accurate impressions and casts of both arches and mount them in an articulator with a facebow transfer at an established vertical dimension of occlusion. Save the impressions for use later in this procedure. (Although most any kind of impression material may be used for this purpose, elastomeric materials are easier to use in step 13.)
2. Make a rigid and stable trial base on the maxillary master cast but avoid the site(s) of surgery where

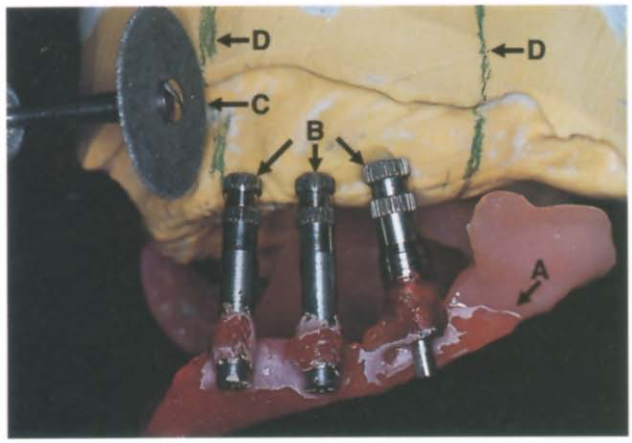

Fig. 2. Close-up view of one section of master cast with palatal impression assembly lightly positioned on it. *A,* Palatal impression template with *(B)* implant analogs screwed to impression copings and luted to elevated curved arm of template; *C,* cutoff disk; *D,* lines drawn on cast as guide of section to be cut from cast.

Fig. 3. Sectioned cast with palatal impression assembly being held in place on it while gypsum mix is syringed into cut made in cast. *A,* Palatal impression assembly; *B,* sectioned cast; *C,* gypsum being extruded from plastic syringe.

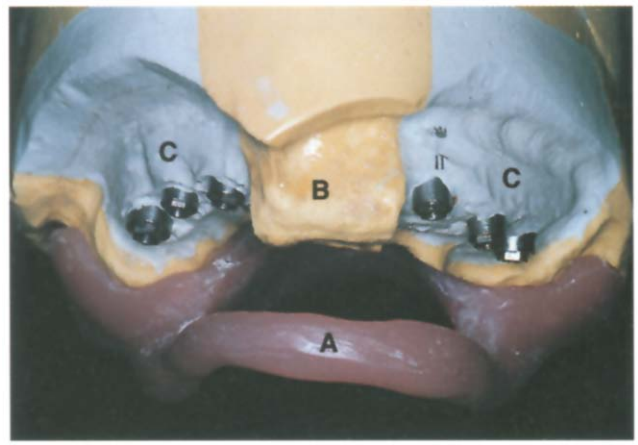

Fig. 4. Palatal impression template, without implant analogs, seated on altered master cast to show relative vertical distance between elevated curved arm and implants, portion of master cast that is not cut and surgical sites on cast after gypsum has been placed to hold implant analogs in altered cast. Added gypsum does not fill space completely to allow space for elastomeric retrofill. *A,* Elevated curved arm of palatal impression template; *B,* part of master cast between surgical sites that has not been cut away; *C,* master cast cut away at surgical sites and refilled partially with gypsum to hold implant analogs in altered master cast.

the implants will be placed. Make certain that the trial base fits the cast the same way it fits the patient's mouth.

3. Use Triad resin (Dentsply International Inc., York, Pa.) to make an elevated curved arm 3 mm in diameter, extending from one end of the trial base on one side around to the end on the other side. It should run parallel to the ridge and just lingual to the future implant sites (Fig. 1). The elevated curved arm should approximate the height of the impression copings (approximately 9 mm) when seated in the mouth (Figs. 2 through 4) because the ends of the impression copings will be luted to it later in the procedure. (This trial base-elevated arm assembly is called a palatal impression template.)
4. After the implants have been implanted in the mouth, attach an impression coping securely to each implant.
5. Place the palatal impression template in the mouth and hold it firmly in place against the hard palate for a point of reference.
6. While holding the palatal impression template firmly in place, lute the occlusal ends of the impression copings to the elevated curved arm of the palatal impression template with an autopolymerizing resin such as GC Pattern Resin (GC Corp., Chicago, Ill.) (Figs. 2 and 3).
7. After polymerization, undo the screws holding the impression copings that are now fastened to the palatal impression template and remove the assembly from the mouth.
8. Screw the implant analogs onto the impression copings and place the assembly lightly on the master cast. The assembly will not seat completely on the master cast until it is altered; however, it will seat enough to permit marking the extent of the necessary cuts to be made on the master cast (Fig. 2).
9. With the assembly held lightly in its approximate position on the master cast, mark the cast with a pencil to indicate the amount to be cut away (Fig. 2).
10. Cut away enough of the master cast to permit the assembly to seat completely on the cast (Fig. 3). The implant analogs and copings should not touch the cast when the assembly is completely seated.

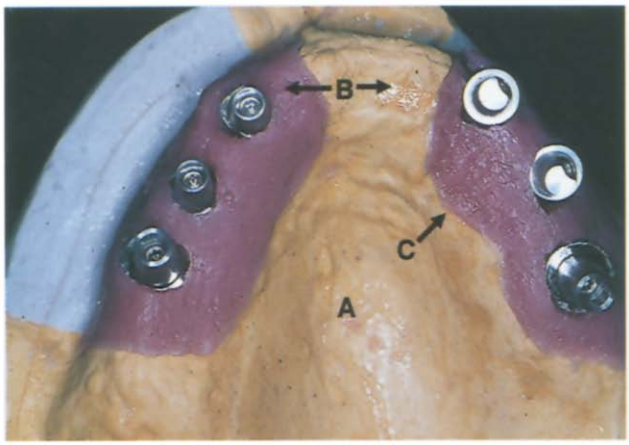

Fig. 5. Soft tissue portion of altered master cast made by retrofilling original elastomeric impression from which master cast was made. *A*, Palatal portion of original master cast; *B*, selected abutments attached to implant analogs; *C*, retrofilled elastomeric impression material reproducing soft tissue.

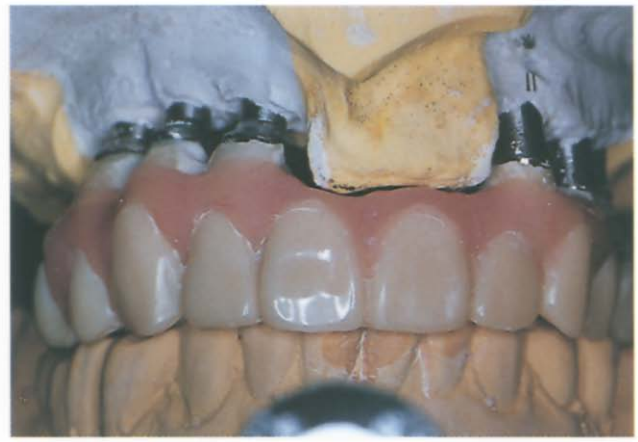

Fig. 6. Completed provisional restoration shown mounted on articulator, with opposing cast, ready for patient at stage II surgery.

When more than one surgical site is prepared, each surgical site must be cut away from the master cast to permit seating the assembly, but if the sites are not continuous the portion of the cast between the sites should not be cut away (Fig. 4).

11. Wet the master cast, seat the assembly on the cast and fill the cut portion of the cast with dental stone or plaster. A plastic syringe works well for this purpose (Fig. 3). This procedure produces an altered master cast with the analogs incorporated in it (Fig. 4).
12. When the stone/plaster in the altered cast has set, loosen the screws holding the implant analogs to the impression copings and remove the remaining part of the assembly from the altered cast (Fig. 4).
13. Use the original impression from which the master model was made in step 1 and place it on the altered cast after back-filling it with an elastomeric material of your choice to make a completed master cast with the soft tissue intact (Fig. 5).
14. Mount this cast on the articulator in place of the original master cast, select the appropriate abutments and, fabricate a provisional restoration for insertion at the stage II uncovering (Fig. 6).

SUMMARY

This procedure may also be used in the mandible when the trial base can be stabilized sufficiently. This procedure permits the fabrication of a processed new provisional restoration so that it is ready for the patient to wear at the time of stage II surgery. As a result, the patient is able to carry on normal activity during the 8- to 12-week period before impressions for a definitive prosthesis can be made. It is done without the risk of disturbing the healing process and creates an ideal provisional design to help form healthy periimplant soft tissues.

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