A METHOD FOR MAKING THE IMPLANT-SUPPORTED RECORD BASES

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A method for fabrication of record bases which is used in implant dentistry has been described. This method is cost effective because it does not need extra equipment for making the maxillomandibular relations. This technique involves the application of plastic sprues that fit on the top of implants to hold the record bases and allows for easy recording of maxillomandibular relations with an implant-supported record base.

Key Words: dental prosthesis, implant-supported, denture bases, jaw relation record/instrumentation, jaw relation record/methods

INTRODUCTION

The prosthodontics protocol for the treatment of fully edentulous patients who receive osseointegrated implants follows the principles of fabricating conventional complete dentures. After an accurate impression is made, a record base and occlusion rim is needed to establish the level of the occlusal plane, the arch form, and the maxillomandibular relations record. The correct transfer of the maxillomandibular relations is essential for providing proper design of prosthesis and ideal occlusion, and usually the third appointment is scheduled for this purpose. The record base can be screwed into the implants during the interocclusal record procedure and the trial denture placement. Healing abutments, gold cylinders, and impression copings have been used for securing the record bases. Some manufacturers have introduced special components for this purpose. This article describes a method for making an implant-supported record base. This technique is applicable for complete or partial edentulous patients. Similar products have been manufactured, but the following method is more cost effective because it does not require extra components. Although only one implant system is presented here, this technique can be used with other implant systems as well.

TECHNIQUE

1. Remove the cover screws (048.371, ITI Dental Implant System, Straumann AG, Waldenburg, Switzerland) from the implants and insert the impression copings (048.090, ITI Dental Implant System, Straumann AG).

2. Make an impression with a custom or stock tray modified for the open tray technique and elastomeric impression material (Impregum F, 3M ESPE, St Paul, Minn). Insert the interim restorations.

3. Screw implant analogs (048.124, ITI Dental Implant System, Straumann AG) onto impression copings embedded in the impression.

4. Inject a mix of polyvinyl siloxane soft tissue simulating material (Gi-Mask, Coltene/Whaledent Inc, Mahwah, NJ) around the implant analogs in the impression and allow the material to polymerize. Pour a mix of type V dental stone (Prima Rock, Whip Mix Corp, Louisville, Ky) into the impression to make a cast.

5. Cut 14 gauge plastic sprue (Williams Dental, Buffalo, NY), and warm it over a flame. Put the warm sprues into the implant analogs embedded in the stone cast to form the octagon of the inner part of the implants.
6. Connect the sprues with pieces of the same plastic sprue (Williams Dental) and reinforce them with autopolymerizing acrylic resin (Pattern Resin, GC America, Alsip, Ill) (Figures 1 and 2). The implants must be placed near parallel to allow complete seat of the connected plastic sprues. Separating the record base to small pieces to accommodate this problem can lead to unstable record bases.

7. Smooth the periphery of the record base and build an occlusion rim on it (Figure 3).

8. During the third appointment, verify the vertical relation of the patient.

9. Place the record bases and occlusion rims in the patient’s mouth, inject a mix of polyvinyl siloxane material (Futar D, Kettenbach, Eschenburg, Germany) on occlusal surface of the mandibular occlusion rim, guide the patient into centric relation, and allow the material to polymerize (Figure 4).

10. Attach the bite fork of the face-bow unit (Denar Corporation, Anaheim, Calif) to the maxillary occlusion rim and make a face-bow transfer of the maxillary cast to the upper bow of the articulator (Denar Mark II; Denar Corp).

11. Put the mandibular record base on the mandibular definitive cast and place the assembly on the maxillary cast mounted in the articulator, and mount the mandibular cast on the articulator.

12. Arrange artificial teeth (SR Vivodent / Orthosit PE, Ivoclar Vivadent AG, Schaan, Liechtenstein) on the record bases (Figure 5) and try the arranged teeth in the patient’s mouth. Make a matrix of the arranged teeth using putty-type vinyl polysiloxane impression material (Speedex, Coltene AG, Alesstatten, Switzerland) (Figure 6).

13. Make the metal framework accordingly, using the matrix as a guide.
14. Evaluate the fit and occlusion of definitive restoration and lute the definitive restoration (Panavia 21, J Morita Inc, Irvine, Calif) (Figure 7).

**DISCUSSION**

One of the important steps for making an implant-supported prosthesis is recording the jaw relations. The dentist is responsible for proper articulation of opposing casts. Often, it is advisable to schedule a separate appointment for recording the maxillomandibular relations with an appropriate record base. The stability of record bases can be improved considerably by attaching them to the gold cylinders, healing abutments, and impression copings. This article describes a cost-effective technique for recording maxillomandibular relationships. Stable record bases that were used in this technique can be easily seated and removed, making the maxillomandibular relation recording procedure more comfortable for both clinician and patient. There is no displacement of record base and soft tissue during the interocclusal recording procedure. These record bases can also be used for teeth arrangement and try in. They have relatively good stability and retention because they fit on the connection mechanism of several implants. Breaking off parts of plastic sprues into internally threaded implant fixtures is a rare problem, and these parts can be easily removed by a warm explorer because they are not too deep in the implant fixtures.

**REFERENCES**