

# TECHNIQUES AND TECHNOLOGIES

## Fabrication of Acrylic Resin Copings for CeraOne Provisional Restorations

Thomas J. Balshi, DDS,<sup>1</sup> and Glenn J. Wolfinger, DMD<sup>1,2</sup>

**A technique is described for fabricating autopolymerizing acrylic resin copings for CeraOne provisional restorations. This method has the advantage of providing a chemical bond rather than only a bond between the mechanical coping and the relined provisional crown, as is the case when using the provisional components supplied by the manufacturer. The technique describes provision-alization at the time of stage II surgery. This type of coping can also be used after a period of soft tissue healing when a healing abutment is employed. The benefits of the procedure include increased patient satisfaction and reduced chair time for repairs.**

*J Prosthodont* 1997;6:66-69. Copyright © 1997 by The American College of Prosthodontists.

**INDEX WORDS:** single tooth replacement, dental implant, CeraOne abutment, stage II surgery, provisional crown.

**T**HE CERAONE ABUTMENT (Nobel Biocare USA Inc, Westmont, IL) is the most commonly used abutment in the Brånemark system for single tooth implant-supported restorations. It is designed to be placed at the time of stage II surgery or after a period of soft tissue healing following the use of a healing abutment. The manufacturer provides components for fabricating a single tooth provisional restoration. It is intended to be constructed on either the CeraOne healing coping or the newer CeraOne provisional coping.<sup>1</sup>

The CeraOne healing coping is made of santopren, a polyolefin rubber, unlike the CeraOne provisional coping, which is made of a polyester resin. Other clinicians have documented the procedures for fabricating a CeraOne provisional restoration using the manufacturer's plastic provisional components.<sup>2,3</sup> When used according to the manufacturer's directions, the healing coping should be modified to enhance the mechanical retention to the relined provisional crown.<sup>1</sup>

In addition to a mechanical bond,<sup>4</sup> the provisional coping is supposed to provide a chemical bonding capacity similar to autopolymerized acrylic resin. However, clinical experience has not proven this to

be the case. Mechanical retention is not always enough to prevent separation of the coping from the provisional crown. This becomes evident when it is necessary to heavily reduce the provisional coping (Fig 1).

As a solution, autopolymerized acrylic resin copings can be fabricated to precisely fit an implant abutment. The following details the steps for fabricating an acrylic resin coping for a CeraOne abutment.

### Procedure

A CeraOne abutment is fastened to either a brass implant analogue or an actual implant that serves as a handle. The screw access hole on top of the abutment is blocked out with wax. The abutment is lubricated with a very thin coating of vaseline petroleum jelly (Cheesebrough Pond USA Co, Greenwich, CT). Jet acrylic resin (Lang Dental Mfg Co, Chicago, IL) is flowed onto the abutment (Fig 2) and manually adapted to the abutment as it polymerizes (Fig 3). After the acrylic resin polymerizes, the coping is gently removed and trimmed with an acrylic cutting bur in a slow-speed handpiece. The lateral walls of the acrylic resin coping should be parallel to the abutment and no wider than the cervical flange of the implant. The margins are then smoothed and polished using a rag wheel and pumice (Fig 4).

Immediately following the abutment connection, or after a period of soft tissue healing, the acrylic resin coping can be seated on the abutment (Fig 5), and a polycarbonate resin provisional tooth form (Ion; 3M Dental Products, St. Paul, MN) relined to

<sup>1</sup>Private practice, Prosthodontics Intermedica, Fort Washington, PA.

<sup>2</sup>Staff Prosthodontist, Veterans Affairs Medical Center, Philadelphia, PA. Accepted December 11, 1996.

Correspondence to: Glenn J. Wolfinger, DMD, Prosthodontics Intermedica, 467 Pennsylvania Avenue #201, Fort Washington, PA 19034.

Copyright © 1997 by The American College of Prosthodontists  
1059-941X/97/0601-0011\$5.00/0



**Figure 1.** Single tooth provisional restoration fabricated on plastic CeraOne provisional coping, which separated between the coping and relined acrylic resin.

connect it to the coping (Fig 6). The external surface of the acrylic resin coping should be either painted with the acrylic resin monomer<sup>5</sup> or Lang's acrylic primer (Lang Dental Mfg. Co)<sup>6</sup> to aid in the formation of a chemical bond between the acrylic resin coping and the relining acrylic resin. A chemical union has been previously noted between the polycarbonate resin and the relining acrylic resin.<sup>7</sup>

Excess relined acrylic resin should be removed with an explorer or other dental instrument from the undercut areas before initial polymerization to permit unobstructed removal. The CeraOne provisional crown can then be resealed on a laboratory abutment to protect the mating surface during finishing and polishing (Fig 7). The CeraOne provisional crown with ideal root and crown contours can then be delivered using a provisional-type cement (Fig 8). All excess cement is then removed and the surgical site is flushed with sterile saline before suturing the soft tissue against the provisional restoration. Creating provisional restorations in this manner, with ideal



**Figure 2.** Acrylic resin flowing onto a CeraOne laboratory abutment.



**Figure 3.** CeraOne laboratory abutment with acrylic resin added.

emergence profiles, permits optimal mucosal healing following stage II or abutment connection surgery.<sup>8,9</sup>

### Discussion

The technique illustrated involves placement of a CeraOne prosthetic abutment and fabrication and delivery of a provisional crown at the time of stage II surgery. Performing this procedure at the time of



**Figure 4.** Acrylic resin coping after trimming and polishing.



**Figure 5.** Acrylic resin coping on CeraOne abutment intraorally at the time of stage II surgery with the gingival flap retracted.

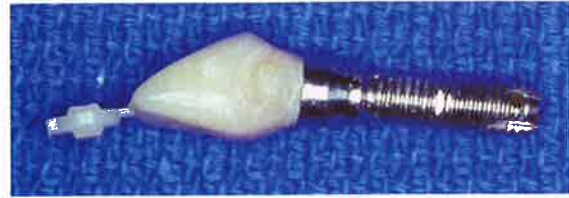
stage II surgery provides improved function and esthetics, as well as ideal emergence profiles. This technique can also be used after a healing abutment has been employed for soft tissue maturation.

The acrylic resin copings have the potential to bond chemically to the relined acrylic resin and the provisional crown forms to provide a solid single tooth provisional crown. Hollow ground acrylic resin denture teeth, heat-processed acrylic resin provisional crowns, and polycarbonate resin crowns can be used with equal success for this technique.

Multiple copings can be fabricated and stored with other implant components until needed. Custom copings can be fabricated for other implant abutments using the same technique. This technique may be useful in situations in which provisional copings are not available, such as in the case with the 3-mm diameter Brånemark implant (Nobel Biocare).



**Figure 6.** Reline of polycarbonate crown form using autopolymerizing acrylic resin to connect the crown form to the coping.



**Figure 7.** CeraOne provisional crown refitted to CeraOne laboratory abutment to finish and confirm marginal adaptation.

## Conclusion

A method for fabricating acrylic resin copings for CeraOne implant abutments has been described. This technique achieves a chemical bond between the coping and the relined provisional crown, which is not as susceptible to separation as is often the case when using the provisional components supplied by the manufacturer. Other benefits include increased



**Figure 8.** Finished CeraOne provisional crown before separation of crown form tab.

patient satisfaction and reduced chair time for repairs.

### Acknowledgments

The authors thank the staff of Prosthodontics Intermedica, Dr H. S. Zhang, Daryl Weiss, and Pat Martin, for coping fabrication, and Liz Kirk for manuscript preparation.

### References

1. CeraOne abutment esthetical single tooth replacement. Nobelpharma AB, 1991:6-10
2. Parel SM: The SmiLine System. Dallas, TX, Taylor Publishing Co, 1991, p 90
3. Balshi TJ: Osseointegration and orthodontics: Modern treatment for congenitally missing teeth. *Int J Periodont Rest Dent* 1993;13:495-505
4. Temporary solutions manual for Brånemark System rehabilitation Nobelpharma AB, 1993
5. Craig RG: Restorative Dental Materials, ed 10. St Louis MO, CV Mosby, 1985, pp 492-495
6. Zinner ID, Trachtenberg DI, Miller RD: Provisional restorations in fixed partial prosthodontics. *Dent Clin North Am* 1989;33:355-377
7. King CJ, Young FA, Cleveland JL: Polycarbonate resin and its use in the matrix technique for temporary coverage. *J Prosthet Dent* 1973;30:789-794
8. Holloway JA, McGlumphy EA: Soft tissue contours for aesthetic single-tooth implant restorations. *Pract Period Aesthet Dent* 1993;5:41-48
9. Parel SM, Sullivan DY: Esthetics and Osseointegration. Dallas, TX, Taylor Publishing Co, 1989, p 97