Posterior restorations using the CEREC 3 CAD/CAM hardware unit with 3M Dental’s Paradigm MZ100 block

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The procedure presented here requires 75 minutes of total operatory time and uses a recently released millable resin material. Treatment was completed in one appointment.

Following are step-by-step procedures for completing typical posterior restorations using the CEREC 3 CAD/CAM hardware unit’s Correlation Mode with 3M Dental’s Paradigm MZ100 block. (A release planned for the spring of 2001 will offer the opportunity to construct milled bridges.)

Case presentation
A 35-year-old male presented with a portion of a maxillary left first molar broken off. Intraoral and radiographic exams revealed recurrent caries that undermined the mesio-facial cusp on the tooth, which had previously been restored with a three-surface amalgam restoration (See “Before” photo, above).

1. Prior to preparation and removal of caries, repair the defect with a flowable composite.
2. Check occlusion with articulating paper and refine the anatomy with a multi-fluted carbide bur.
3. Spray the repaired defect with imaging powder and take the “digital optical impression” with the CEREC 3 Acquisition Unit (Fig. 1).
4. Remove all decay and weakened enamel.
5. Because the definitive restoration will be bonded adhesively to the remaining tooth structure, place all margins so that they can be isolated from oral contamination during the luting procedure (Fig. 2).
6. Apply scanning powder to the prepared tooth and the mesial and distal adjacent teeth and again capture the “digital” impression.
7. The restoration is then designed on the CEREC 3 Acquisition Unit using the correlation method. Note: This method uses the dimensional and occlusal information taken prior to cavity preparation and assigns the exterior anatomy. The correlation program

Fig. 1 The digital optical impression.
Fig. 2 Isolate margins to prevent contamination.
Fig. 3 Acid etch enamel and dentin.
Fig. 4 Apply dentin bonding agent.

SELECT 133.
“marries” the pre-operative and prepared optical impressions. The predetermined occlusion and occlusal anatomy that was present in the preoperative condition can be chosen by the clinician as the same occlusion and anatomical features. Any of the definitive restoration’s final elements can be custom designed using the Extrapolation Mode.

**Seating the restoration**

1. Lute the restoration adhesively using accepted dentin bonding methods.
2. Scrub the tooth with Consepsis Scrub (Ultradent) and place 35% phosphoric acid on the enamel and dentin for 15 seconds (Fig. 3).
3. Rinse the area for 10 seconds. Use the high-volume evacuator to remove excess water. *Note: Leave surface of dentin moist.*
4. Apply Single Bond fifth-generation dentin bonding agent (3M Dental) to the enamel and dentin (Fig. 4).
5. Cure the area using a conventional halogen curing light for 20 seconds from all aspects.
6. Apply RelyX ARC dual-/light-cure adhesive (3M Dental) to the internal aspects of the preparation (Fig. 5).
7. Place the silanated definitive restoration into the tooth. Use a bendable brush to clean up excess expressed material (Fig. 6).
8. Floss the interproximal area. Cure the restoration for 20 seconds from all aspects—20 seconds, occlusal; 20 seconds, facial; and 20 seconds, lingual.
9. Continue cleanup.
10. Apply glycerin to surface. Light cure the restoration for 20 seconds to help remove the oxygen-inhibited layer (Fig. 7).
11. Adjust and polish the surface using a multi-fluted carbide bur and abrasive polishing cups and points (Fig. 8).
12. The restoration may be characterized with any of the available composite tints (see “After” photo, previous page).