PracticalPROCEDURES No. 1
PROVIDING SOLUTIONS FOR CLINICAL CHALLENGES

Material Selection for the CAD/CAM Fabrication of Aesthetic Restorations

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In today's aesthetic practice, clinicians can select from various materials and techniques to provide optimal restorative care. Due to the function, aesthetics (ie, shade, luster, light reflection and refraction), and longevity of ceramic restorations, they represent a proven option for clinicians seeking to deliver the highest level of care for their patients. The CAD/CAM method of fabricating ceramic restorations enables more durable aesthetic materials (leucite-based, zirconia-based, alumina-based, etc) to be used in the definitive inlay/onlay, crown, or bridge. Selecting among the appropriate ceramic materials and restorative techniques is thus critical to the success of the proposed treatment plan.

FIGURE 1

FIGURE 1. Patient presented for replacement of amalgam restorations on teeth #2 through #5 and improvement of the buccal corridors.

FIGURE 2

FIGURE 2. Using the Correlation Record function of the CEREC system, a quadrant image was captured for use in the full-quadrant occlusal design.

FIGURE 3

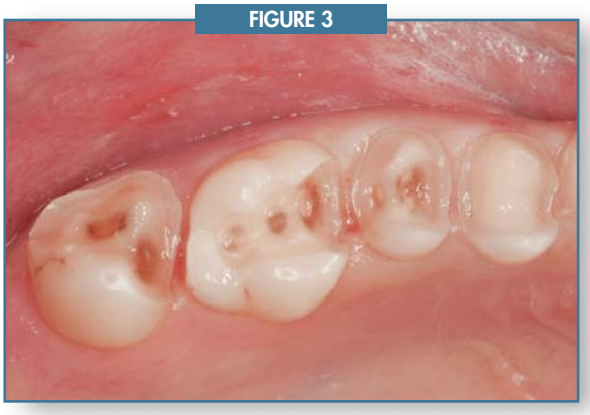

FIGURE 3. Conservative preparations were achieved for each tooth in the posterior segment, leaving maximum amount of sound tooth structure.

FIGURE 4

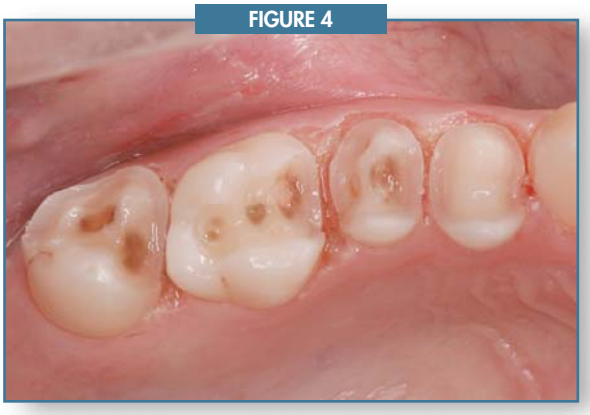

FIGURE 4. To retract the soft tissues in the quadrant, a diode laser was used for contouring.

† CEREC 3D is a registered trademark of Sirona Dental Systems, Charlotte, NC.

* Private practice, Santa Rosa, CA.

CAD for Fine-Particle Feldspar Restorations

The CEREC 3D system supports a range of material options and enables the user to deliver aesthetic inlays/onlays, crowns, and veneers in a single patient visit. The flexibility of the system can be particularly advantageous when patients require minimally invasive, durable all-ceramic restorations of varying indications. When selecting a ceramic material such as a VITA TriLuxe Bloc‡ for the CEREC 3D, the clinician must consider numerous requirements:

- The ability of the material to replicate natural light dynamics
- Occlusal stresses anticipated for the restoration
- Optical characteristics (eg, fluorescence, translucency, hue, chroma, value) of the milled ceramic block
- Proven durability of the fine-particle feldspar block
- Enamel wear characteristics

FIGURE 5

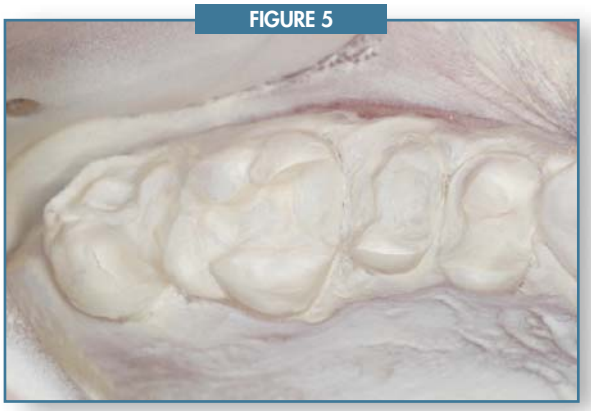

FIGURE 5. To obtain a suitable optical impression for the CEREC 3D† system, titanium dioxide spray was applied to the arch, and the image was recorded.

FIGURE 6

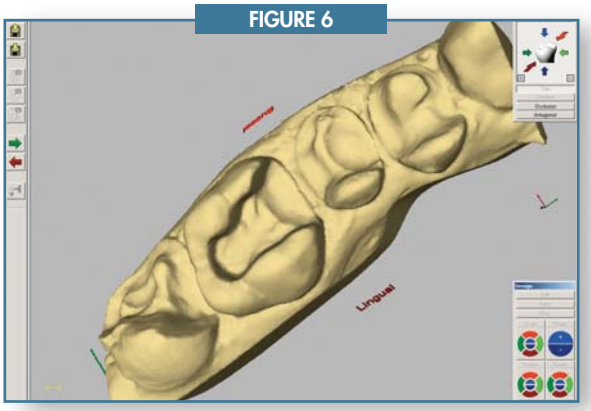

FIGURE 6. The design tools of the in-office CAD/CAM system enabled the virtual die of the quadrant to be refined.

FIGURE 7

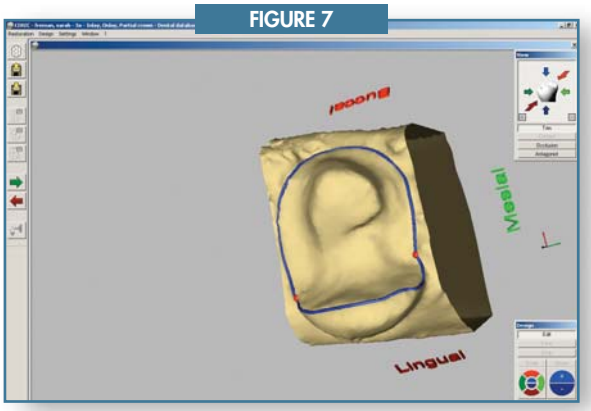

FIGURE 7. Beginning with the first premolar, margins are outlined for restoration design.

FIGURE 8

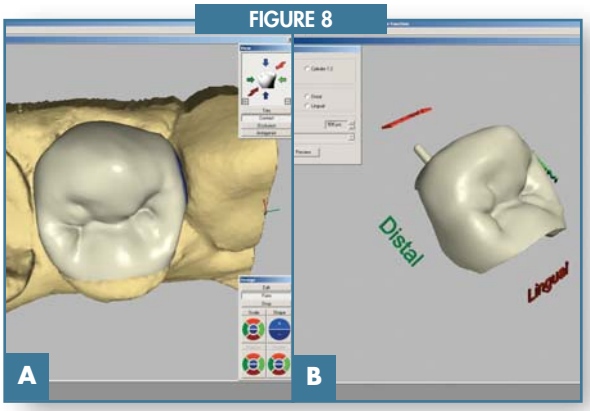

FIGURE 8A. Occlusal view of the completed restoration design. **8B.** Virtual onlay ready for milling from a VITA TriLuxe bloc of ceramic.

‡ VITA TriLuxe block, Vident, Brea, CA.

Single-Visit Aesthetic Restorations

Using CEREC 3D, quadrant dentistry can be performed with success and predictability in a single patient visit. The involved CAD/CAM process enables the operator to design the intended restoration as well as its occlusal contacts from an expansive database and clinical record for ideal tooth morphology, thus ensuring an accurate prosthetic result upon milling of the ceramic block. Benefits of this restorative approach include the following:

- Precise-fitting restorations
- Simple CAD process performed chairside
- Increased practice profitability
- Predictable tooth morphology
- Refined occlusal contact control
- Aesthetics and seamless integration with natural teeth

FIGURE 9

FIGURE 9. After milling of the VITA TriLuxe restorations, they were custom stained and glazed to achieve aesthetic expectations.

FIGURE 10

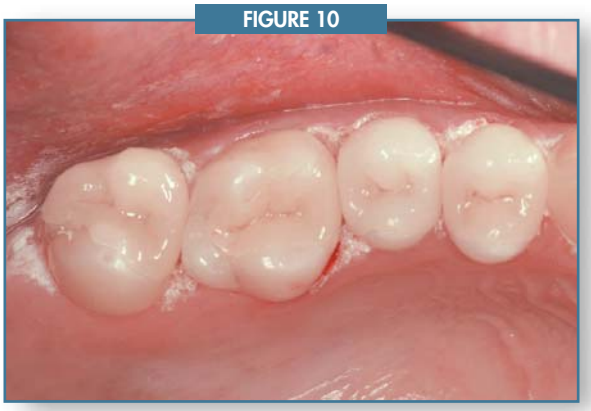

FIGURE 10. Try-in of the ceramic restorations prior to seating. Note the accuracy of the dry restoration fit.

FIGURE 11

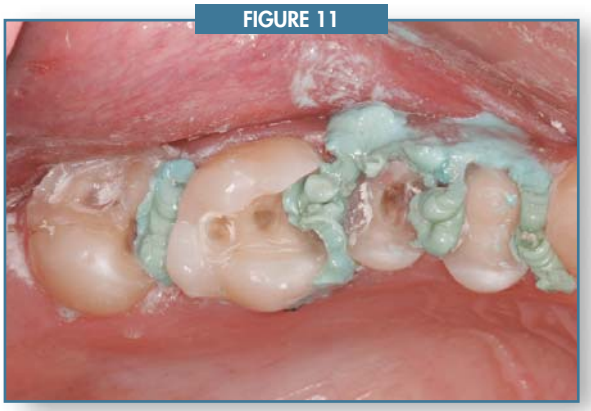

FIGURE 11. A gingival retraction paste was used to achieve proper tissue control for restoration bonding.

FIGURE 12

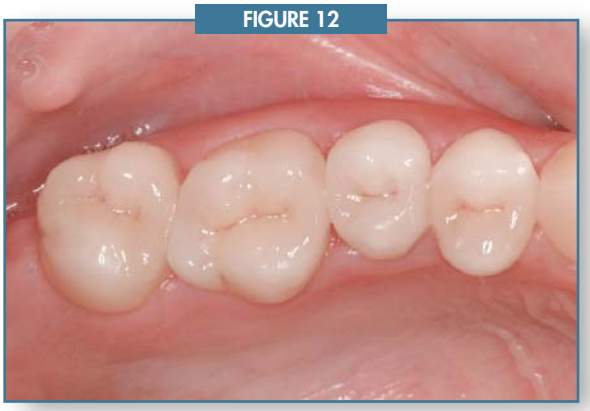

FIGURE 12. Occlusal view of the definitive metal-free restorations at 1 week demonstrates the integration and aesthetics throughout the quadrant.

Guess Who's Been Milling Around for 20 Years?

At VITA®, we're proud to have been with CEREC® from the start

Sirona and VITA have been CAD/CAM partners for 20 years. The relationship began on September 25, 1985 with the first treatment of a patient with the Sirona system using Vitablocs®. Since the birth of CEREC, millions of successful restorations have been placed worldwide and CEREC and VITA have been proven as the CAD/CAM system and material of choice for precise, predictable, esthetic results.

1987 CEREC 1 introduced (chief indication: single and dual-surface inlays; material: VITABLOCS®)

1988 VITA introduces CEREC VITABLOCS®

1989 VITA partners with MIT to develop VITABLOCS Mark II

1990 International CEREC Symposium at University of Zurich

1991 Hydraulic machining drive replaced with electronically controlled motor

1992 VITA introduces first CAD/CAM specific bloc, CEREC VITA-BLOCS Mark II at IDS in Cologne

1993 VITA introduces glazing furnace for CEREC

1994 CEREC 2 introduced

1995 VITA develops nano-technology for wear-kind porcelains

1996 VITA AKZENT STAINS with ultra-fine grain size for enhanced esthetics

1997 CROWN 1.0 program for full-ceramic posterior crowns

VITA introduces In-Ceram Alumina and Spinell blanks

1998 CROWN 1.1 program for posterior and anterior restorations

VITA introduces Esthetic Line VITABLOCS

1999 VITA In-Ceram Zirconia blanks for crowns

2000 CEREC 3 introduced

2001 VITA In-Ceram Alumina and Zirconia blanks for bridges

2002 More than 2,500 CEREC users in USA, over 5,000,000 CEREC restorations worldwide

2003 VITABLOCS TriLuxe tri-shaded milling blocs

CEREC 3D introduced

2004 9,000,000 restorations and counting

2005 Over 5,000 CEREC users in USA

Vident introduces inVizion™

2006 CEREC CELEBRATES 20 YEARS! Bally's, Las Vegas Oct. 13-15, 2006

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