

THE DENTAL ADVISORTM

"Improving Patient Care Through Research & Education"

EDITORS

John W. Farah, D.D.S., Ph.D.
John M. Powers, Ph.D.

ADVISORY BOARD

John O. Burgess, D.D.S., M.S.
Karl F. Leinfelder, D.D.S., M.S.
John A. Molinari, Ph.D.
Frederick A. Rueggeberg, D.D.S., M.S.
Edward J. Swift, Jr., D.M.D., M.S.
Charles W. Wakefield, D.D.S.

EXECUTIVE TEAM

Stephanie D. Farquhar, B.S.
Annette M. Frederick
Jennifer Kalasz
Jennifer Lill
Tricia G. Price
Rhonda L. Tucker
Mary E. Yakas, B.A., CMC
Ron Yapp, M.S.

PUBLISHER

Dental Consultants, Inc.
Please send inquiries and address changes to:
THE DENTAL ADVISOR,
3110 West Liberty, Ann Arbor, MI 48103
Call: 800.347.1330 • 734.665.2020
Fax: 734.665.1648
Email: info@dentaladvisor.com
Website: www.dentaladvisor.com

Copyright ©2008, Dental Consultants, Inc. All rights reserved.
Printed in the U.S.A.
(ISSN 0748-4666)

NUMBER 2 • NOVEMBER 2008

CEREC 3D Onlay - Treating the Fractured Tooth Santine Anderson, D.D.S. Enspire Dental, Ann Arbor, MI, USA

Introduction

CEREC 3D (Sirona) is a CAD/CAM system designed for in-office scanning and milling of porcelain and composite restorations. A variety of porcelain blocks can be used in the **MCXL** mill. **CEREC** was introduced over 20 years ago and has proven its ability to produce accurate restorations. THE DENTAL ADVISOR evaluated one of the first **CEREC** systems and has begun a long-term evaluation of the new **CEREC 3D** and **MCXL**. A one-year report on **CEREC 3D** and **MCXL** using feldspathic ceramic **CEREC Blocs** (Sirona) will be featured in an upcoming issue of THE DENTAL ADVISOR.

The following case report offers a simple technique for completing a CAD/CAM restoration on a fractured tooth. A core build-up of the fractured tooth structure before powdering and scanning offers a rapid approach to restoring ideal preoperative occlusion and anatomy.

Treatment

A 45-year-old woman presented in September 2008 with a chief complaint of a fractured upper left molar (#15). She was interested in repairing the tooth with a long-term restoration and expressed concern about loss of additional tooth structure.

A clinical exam revealed a fractured distobuccal cusp and occlusal amalgam restoration on tooth #15. A radiograph revealed decay on the mesial of #15. There was no evidence of fracture in the remaining tooth structure or bruxism in the remaining dentition. A treatment plan for an MODB onlay was presented and accepted as a conservative, long-term treatment option.





1. Anesthesia was administered and preoperative photos taken. A composite build-up of the missing tooth structure was placed and the occlusion adjusted.
2. Teeth #14 and #15, as well as a small amount of adjacent soft tissue, were powdered using the **Powder-Pro** (Advanced Dental Instruments, L.L.C). Three occlusal images were captured: one of #15, one slightly posterior to #15 and one of #14. **CEREC 3D** software provided an initial model of the teeth before preparation.



3. Once the patient achieved profound anesthesia treatment progressed rapidly. The amalgam and decay were removed, and an MODB preparation was completed. Careful consideration was given to ensure rounded internal angles and smooth walls to eliminate natural undercuts, minimize internal stresses and provide adequate reduction.
4. The **Odyssey 2.45 Diode Laser** (Ivoclar Vivadent) was used to recontour the tissue at the mesial & distal margins of the preparation. Due to the nature of the fracture and decay, these margins were subgingival. The laser conservatively and gently removed the inflamed tissue and allowed clear visualization of the margins. Complete tissue healing occurred in approximately three days.



5. Teeth #14 and #15, as well as a small amount of adjacent soft tissue, were powdered using the **Powder-Pro**. Three occlusal images were captured: one of #15, one slightly posterior to #15 and one of #14. **CEREC 3D** software provided a model of the prepared tooth and the surrounding hard and soft structures.
6. Using the **CEREC 3D** software, the virtual die was trimmed, margins outlined and a final restoration configured using a database containing measurements of several thousand natural teeth. The mesial contact was adjusted and occlusal table reduced to reflect the height of the original tooth structure. The presence of adequate porcelain thickness was confirmed. A **CEREC Bloc 52-M** Size #10 was selected and the restoration was milled in less than ten minutes using the **MCXL**.



7. The sprue was removed from the distal surface of the restoration. The onlay was carefully placed on the tooth and the contact and margins checked. The restoration was etched using 9.6% hydrofluoric acid gel for five minutes and silanated using **Monobond-S** (Ivoclar Vivadent). The restoration was cemented using **MultiLink Primer A/B** and **MultiLink Automix** (Ivoclar Vivadent).
8. The occlusion was checked and adjusted as needed. The **NTI Ceraglaze System** (Axis Dental Corp.) was used to finish and polish the restoration.

Clinical Results

During presentation of the treatment plan, the patient was pleased with the option of a conservative, long-term restoration provided in one appointment. The images of the original tooth structure and prepared tooth were easily captured and the **CEREC 3D** software allowed rapid design of the final restoration. The duration of time needed to mill the restoration was excellent. The contacts and margins of the final restoration were accurate. The occlusion required adjustment after cementation, eliminating some of the original anatomy found in the milled restoration. The patient was very pleased with the esthetics and smooth surface of the final restoration.

Conclusions

CEREC 3D, the **MCXL** mill, and the **CERC Bloc** provided an excellent treatment option for a patient seeking conservative long-term porcelain restorations in a single visit. The software was easy to use and the fit of the final restoration was clinically acceptable and accurate.