Fabrication of an aesthetic single-tooth restoration

Patients’ needs and desires for highly aesthetic tooth restorations are increasing in demand. In the aesthetic zone, the ability to place life-like restorations that have durability and strength are critical. New CAD/CAM technology has provided the optimal substructure for the highly aesthetic restorative materials needed to fabricate these restorations.

To this end, BIOMET 3i has recently added a zirconia abutment option to the Encode Complete Restorative System. The clinical case to follow demonstrates treatment that met the patient’s demand for an immediate aesthetic result.

A 58-year-old female patient presented with external root resorption of the maxillary right lateral incisor, which had previous endodontic treatment. Since the patient desired a fixed restoration for her hopeless tooth, the treatment plan included tooth extraction, immediate implant placement and immediate provisionalization. Following tooth extraction, the socket was debrided and the site was prepared for placement of a Nano-Tite™ Tapered Implant (BIOMET 3i, Palm Beach Gardens, Fla.). The implant was confirmed to have high primary stability. A PrePerformance® Post (BIOMET 3i) was placed and adjusted for occlusal clearance followed by the fabrication of a fixed provisional restoration.

Three months later, the patient was available for evaluation. Healing was uneventful with a minimal amount of interdental soft-tissue recession. The provisional restoration was removed and an Encode® Healing Abutment (BIOMET 3i) was placed into the internal interface of the implant (Fig. 1). An impression was made of the Encode Healing Abutment and of the opposing arch. The two impressions, a shade selection and an occlusal registration were sent to the dental laboratory, and the provisional restoration was replaced.

In the laboratory, the impressions were poured (Fig. 2), mounted and articulated on Adepto Split Plates (Stratos Articulator, Ivoclar Vivadent, Inc.). An Encode Complete Laboratory Work Order Form was completed and sent along with both casts to the BIOMET 3i PSR Department for fabrication of an Encode Zirconia Abutment.

After scanning the master cast (Fig. 2), the abutment was designed virtually and milled from a blank of zirconia. Using the same data, an implant analog was placed into the cast with a computer-driven robotic arm to create a Robocast Master Cast. The Encode Zirconia Abutment and Robocast Master Cast were returned to the dental laboratory for fabrication of an all-ceramic crown.

The provisional restoration and PrePerformance Post were removed and the definitive Encode Zirconia Abutment was placed (Fig. 5). A Gold-Tite® Abutment Screw was placed to secure the abutment. A verification radiograph was taken to ensure complete seating. Once confirmed, the abutment screw was tightened to 20 Ncm. The all-ceramic crown was tried-in and the aesthetics of the restoration were evaluated. The definitive restoration is shown in figure 4. A post-restorative periapical radiograph was taken and the patient was given oral hygiene instructions.

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About the author

Robert G. Ritter, DMD, received his dental degree from The Medical University of South Carolina College of Dental Medicine in Charleston. He is a member of the American Dental Association, the Academy of Cosmetic Dentistry and is on the board of The Florida Academy of Cosmetic Dentistry. Dr. Ritter lectures nationally, as well as internationally, on cosmetic dentistry, new materials and joint-based dentistry. He has published many articles on adhesive and cosmetic dentistry and is on the editorial board of Practical Periodontics and Aesthetics Dentistry and Reality. Dr. Ritter maintains a private practice, with a focus on adhesive aesthetic dentistry, in Jupiter, Fla.