Restoring the edentulous arch with BruxZir full-arch implant prosthesis

By Michael McCracken, DDS, PhD, and Jonathan P. Ouellette, DMD

Fixed hybrid dentures have been used to successfully restore fully edentulous patients for decades. Their durability, however, leaves room for improvement. There are three issues that can complicate the long-term success of the traditional fixed hybrid denture: The acrylic teeth tend to wear; the teeth can fracture or dislodge from the acrylic base; and the acrylic base itself can fracture. The BruxZir® Full-Arch Implant Prosthesis (Glidewell Laboratories, Newport Beach, Calif.) eliminates these issues, providing a restoration that is more durable in the long term, while sacrificing nothing when it comes to esthetics.

Milled from a single block of BruxZir Solid Zirconia — an exceptionally fracture-resistant material that exhibits flexural strength up to 1465 MPa — this fixed prosthesis utilizes advanced staining and glazing techniques, coloring the prosthetic teeth to closely mimic natural dentition and the gingival areas to match the shade of the patient’s soft tissue.

Case report

The patient is a 58-year-old male with no contraindications for implant treatment. The patient had a total of 11 BioHorizons® Internal Hex implants (BioHorizons; Birmingham, Ala.) placed, including six in the maxilla and five in the mandible (Figs. 1a, b). The implants integrated for more than six months, and the patient presented for restoration of his edentulous arches.

First, preliminary impressions of the implants were made. After removing the healing abutments, closed-tray impression copings were seated. The impressions were made in stock plastic trays, and the impression copings were placed back into the impressions before the case was sent off to the laboratory.

The laboratory poured casts from the initial impressions and fabricated bite blocks and occlusal rims for the centric jaw relationship (CJR) records. Each bite block contains two screw-retained temporary cylinders that allow the wax rims to be screwed down, producing a very accurate CJR. The contoured rims were returned to the laboratory with the initial casts.

Upon receiving the wax rims and jaw relation records, the laboratory and dentist decided that the patient required four multi-unit abutments in the anterior maxilla to ensure that the screw access openings were within the confines of the planned prosthesis, so at the next appointment, the patient’s healing abutments were removed, and the multi-unit abutments were transferred to the patient’s mouth and torqued into place. Later, wax setups were tried in and evaluated for proper esthetics, phonetics, contours, occlusion and tooth arrangement.

The implant verification jig (IVJ), which precisely captures the depth and angulation of the implants in the final impression, was seated and tightened into place. After bonding the individual sections of the IVJ together, a final impression was made using an open-tray
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impression technique and the custom tray provided by the lab. The lab produced a fixed provisional appliance using precise CAD/CAM technology and effectively preserving the doctor-approved setup. The provisional implant prosthesis afforded the patient a trial period to evaluate the proposed restoration for esthetics and function over an interval of a few weeks (Fig. 2). The final restoration was fabricated using the CAD design that was confirmed during the provisional trial period. The final prostheses were delivered without complication, exhibiting excellent fit, occlusion and esthetics (Fig. 3).

The patient was exceptionally pleased with the function offered by this fixed restoration, which he should be able to enjoy for a great number of years given the extraordinary durability of BruxZir Solid Zirconia.

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DENTSPLY International has donated more than $55,000 in oral care products to National Children’s Oral Health Foundation: America’s ToothFairy® (NCOHF) to support its nonprofit clinical network of oral health programs serving vulnerable children. The donation, which included prophy paste, brush tips, polish and stain removal products, benefitted 25 America’s ToothFairy affiliates — community-based health-care facilities and outreach programs providing vital educational, preventive and restorative services to underserved populations.

“DENTSPLY proudly supports the America’s ToothFairy affiliate network for its smile-saving work helping children in need,” said Robert Size, senior vice president of DENTSPLY International and NCOHF Board member. “As a longtime supporter, we applaud their commitment to helping children receive the pediatric dental care they need to live healthy lives.”

“DENTSPLY’s steadfast underwriting and product support has helped America’s ToothFairy change thousands of young lives,” said Fern Ingber, NCOHF president and CEO. “This generous product contribution from DENTSPLY will support America’s ToothFairy programs that provide vital oral health services for children of our most vulnerable populations.”