



MICHAEL DAVID SCHERER, DMD, MS, FACP

Dr. Scherer is an Assistant Clinical Professor at Loma Linda University, a Clinical Instructor at University of Nevada – Las Vegas, and maintains a practice limited to prosthodontics and implant dentistry in Sonora, CA. He has published articles, DVD training series, and full-online courses related to implant dentistry, clinical prosthodontics, and digital technology with a special emphasis on implant overdentures (www.learn3d.com). Dr. Scherer also maintains 5 YouTube channels: "LearnLOCATOR," "LearnLODI," "LearnSATURNQ," "LearnLOCATOR F-Tx," and "The 3D Dentist." Visit michaelschererdm.com.

CASE PRESENTATION

Digital Design and Milling of a Maxillary Overdenture

A healthy 55-year-old edentulous male presented with an existing maxillary interim denture and implants with healing abutments placed. He requested a palate-less maxillary denture that would snap onto his implants. The healing abutments were removed and overdenture abutments placed (LOCATOR R-Tx, Zest Dental Solutions). Denture housings (LOCATOR R-Tx Denture Attachment Housing, Zest Dental Solutions) were placed and a digital impression of the edentulous surface and housings was made using an intraoral scanner (TRIOS, 3Shape).

Using anatomical landmarks, measurements of centric and occlusal vertical dimensions were taken and a virtual centric record was created. These scans were sent to laboratory planning software (3Shape Dental System, 3Shape) for planning of his removable restoration. After importing the intraoral scans into the laboratory planning software, the files were uploaded to a digital design center (FullContour) for the design of a maxillary palatal framework. The designed framework was completed and imported into a CAD/CAM milling unit (K5, VHF) for milling of the framework design using a fiber-reinforced composite polymer (TRINIA, Bicon Dental).

While the milling process of the polymer framework was being conducted, the digital files were used to design the patient's overdenture restoration. Using the Removable Partial Design software module of the 3Shape Dental System, commercially available denture teeth were

selected (Pala Mondial, Kulzer), and the maxillary overdenture was virtually designed. The design left sufficient pocketing space for the available denture teeth to easily snap into place on the final milled prosthesis.

The final base design was completed in the planning software and the designed overdenture base was imported into the CAD/CAM K5 milling unit. A milled base of high-impact denture resin (Lucitone 199 Original, Dentsply Sirona) was completed. The milled framework and base were removed from the discs and polished. The framework was luted to the intaglio of the milled denture base and the denture teeth were luted to the prepared pockets of the milled arch.

The patient returned for placement of the final prosthesis. The maxillary prosthesis was adapted to the edentulous arch to confirm full tissue adaptation, vertical dimension, and occlusion. Block-out rings (Block-out Spacers, Zest Dental Solutions) and LOCATOR R-Tx overdenture housings were placed onto each abutment. Composite resin (CHAIRSIDE Attachment Processing Material, Zest Dental Solutions) was placed into the intaglio of the denture, and the denture was seated onto the edentulous ridge. After complete polymerization, the denture was removed, excess resin was cleared away, and definitive nylon inserts placed into each housing.

The patient received instructions on how to care for his new prosthesis and was very satisfied with the retention and stability.



Figure 1—A patient presented with an existing maxillary interim denture and implants, and overdenture abutments (LOCATOR R-Tx, Zest Dental Solutions) placed for the purpose of a palate-less maxillary overdenture prosthesis.



Figure 2—Housings (LOCATOR R-Tx Denture Attachment Housings, Zest Dental Solutions) were placed onto each abutment and a digital impression was made using an intraoral scanner (TRIOS, 3Shape).

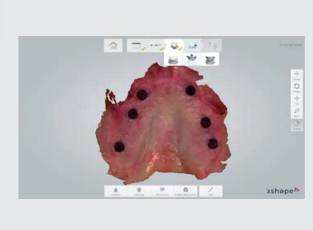


Figure 3—The edentulous digital impression was inspected for thoroughness, ensuring sufficient borders and landmarks for the overdenture were properly captured.

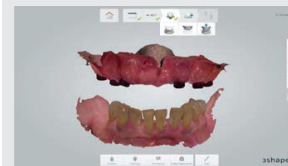


Figure 4—Measurements of centric and occlusal vertical dimension were made using extraoral landmarks and the patient was guided into the proper centric position. A virtual centric record was made using the intraoral scanner. The scan files were uploaded to the laboratory.



Figure 5—The design of a maxillary overdenture framework was outsourced to a design center (FullContour), placed into a CAD/CAM milling system (K5, VHF) and milled using a fiber-reinforced composite polymer (TRINIA, Bicon Dental).

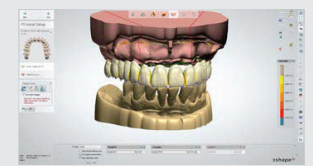


Figure 6—The digital design files were imported into a laboratory removables planning software (Dental System Removables, 3Shape) and planned, designing glued-in teeth with manual reduction designed cameo surface.



Figure 7—Pockets were milled in the denture base to allow for commercially available denture teeth (Pala Mondial, Kulzer) to easily snap into place.



Figure 8—The framework and teeth were luted to the base. The patient returned for placement of the prosthesis.



Figure 9—The housings were attached using dual-cured resin (CHAIRSIDE Attachment Processing Material, Zest Dental Solutions). The processing inserts were removed and nylon inserts placed, confirming complete adaptation of the denture.

GO-TO PRODUCTS USED IN THIS CASE