Prosthodontics is a specialty of dentistry that involves the restoration of damaged teeth and the replacement of missing teeth with artificial substitutes. The prosthodontist is the expert in improving the patient’s smile while restoring function. Prosthodontists receive 3 years of full-time formal education after dental school to become specialists. The prosthodontist uses a variety of materials and methods when restoring and replacing teeth.

Porcelain laminate veneers

Discolored teeth or teeth with minor structural defects can be restored with porcelain laminate veneers. Veneers are very thin restorations that are bonded to the teeth. Well made and well placed veneers can be strikingly beautiful (Fig 1).

Porcelain inlays and onlays

Posterior teeth with large cavities or old defective restorations can be restored with porcelain inlays (restorations that fit within the tooth structure) or onlays (restorations that cover one or more cusps of the teeth). These restorations can be hand-made by a technician or milled with computer-assisted designs/computer assisted machining (CAD/CAM) technology. The inlay or onlay is then bonded to the tooth structure (Fig 2).

Crowns and bridges

There are many systems for making crowns and bridges. A very popular system uses zirconia as a substructure. Zirconia is a very hard and strong ceramic material that is resistant to cracking. The substructure is milled with the use of CAD/CAM technology, and a technician places the esthetic veneering porcelain over the zirconia substructure to develop the final esthetic result (Figs. 3 & 4). All-ceramic crowns and bridges are not as strong as porcelain-fused-to-metal restorations.

Dental implants

Dental implants can be placed in the jaw bone to support artificial teeth. Once the bone heals around the implant (2-4 months), an abutment is attached to the implant and a crown is cemented over the abutment. These implant-supported crowns can be indistinguishable from natural teeth (Fig. 5). Implants can also be used to retain and support removable dentures. The number of implants required depends on the desired support and retention (Figs. 6).

Summary

Prosthodontics is a complex specialty that requires extensive training and education after graduation from dental school. The prosthodontist can rehabilitate a patient’s mouth to enhance esthetics and function by using various materials and techniques. Modern approaches to prosthodontics include CAD/CAM technology and dental implants. At Boston University we provide state-of-the-art prosthodontic care, including porcelain laminate veneers, porcelain inlays and onlays, all-ceramic crowns and bridges, porcelain-fused-to-metal crowns and bridges, and prostheses supported and retained by dental implants.

About the author

Dr. Morgano received his bachelor's degree in Biology from Merrimack College and his DMD degree from Tufts University School of Dental Medicine in Boston and received his specialty certificate in prosthodontics from the Harvard Veterans Affairs Medical Center in the U.S. In addition, he is a diplomat of the American Board of Prosthodontics. Dr. Morgano is Professor of Restorative Sciences and Biomaterials at Boston University Goldman School of Dental Medicine in Boston, and has served as Director of the Division of Postdoctoral Prosthodontics since 1996. He is on a leave of absence from the Goldman School of Dental Medicine to serve as the Chief Academic Officer/Chief Executive Officer and Director of the Postdoctoral Program in Prosthodontics at Boston University Institute of Dental Research & Education -- Dubai. You may contact him at: steven.morgano@budubai.ae

Fig. 1A. Discolored teeth with structural defects.

Fig. 1B. Finished result. Note that the spaces between the teeth have been closed with the veneers.

Fig. 2A. Molar with large cavity prepared for porcelain inlay.

Fig. 2B. Bonded porcelain inlay.

Fig. 2C. Bonded porcelain onlay.
Fig 3A, Teeth before placement of all-ceramic crowns.

Fig 3B, Teeth with all-ceramic crowns in place.

Fig 4A, Teeth before placement of all-ceramic bridge and three all-ceramic crowns.

Fig 4B, Finished result.

Fig 5A, An implant has been placed beneath the gum and in the bone to replace the missing right lateral incisor tooth.

Fig 5B, A zirconia abutment has been attached to the implant with a screw.

Fig 5C, An all-ceramic crown has been cemented over the abutment.

Fig 8A, Bar retained by 4 implants provides retention and support for upper complete denture.

Fig 8B, Denture placed over bar retainer.