Achieving a balance between implant-supported restoration esthetics and maintaining periodontal health is important in an overall successful outcome of the prosthesis. The goal is to create an emergence profile design that allows for minimal tissue displacement while achieving optimal cervical contours for esthetics. It is important in the design to allow access for proper cleaning by the patient and clinician (Fig. 1).

There are two types of implant restoration designs commonly used in single-tooth replacement prosthetics. They are a screw-retained crown or a two-piece abutment and cement-retained crown. The screw-retained crown design is the technique more commonly used in Europe. Whereas, the cement retained crown prosthesis is more frequently used in the United States.

The screw-retained restorations contain a small chimney access hole where the screw retaining the restoration is inserted. The crown is screwed directly into the implant and the access chimney is typically closed with a tooth-colored resin (Sarmont, 2009). There are two main advantages of this restoration design. First, since cement is not used in this method, the opportunity for subgingival residual excess cement to remain on the prosthesis cannot occur. When excess cement is left, it can create the opportunity for inflammation and peri-implantitis to develop in the implant sulcus site. Second, the screw can be easily removed from the restoration, allowing for crown removal if necessary during any maintenance procedures.

The two-piece abutment and cement-retained crown restoration has an abutment that is designed to provide the subgingival emergence profile and allows the crown to be cemented onto the abutment (Fig. 2). The emergence profile refers to the subgingival contours that lie between the implant platform and the emerging abutment and crown (Sarmont, 2009). Using a custom designed abutment provides greater flexibility in determining the proper shape of the emergence profile compared with pre-fabricated standard abutment design.

To obtain a pleasing restoration, the subgingival contours must start at the small circle of the implant head and emerge from the tissue with an anatomical profile (Sarmont, 2009). The result should be an emergence profile that allows for minimal displacement of the surrounding tissue while creating an esthetically pleasing appearance (Fig. 3). This design allows for easy access into the implant sulcus area so cleaning and maintaining can be easily achieved by both the patient and the clinician. Over or under contouring of the abutment and/or restoration can result in biofilm retention and peri-implantitis. It is important for the emergence profile to resemble that of a natural tooth so the patient and the clinician can easily maintain the implant prosthesis. (Photos/Provided by G P Mora, CDT)
of a natural tooth. Often the adjacent teeth can be used as a guide to determine the proper contours.

The protocol for margin location of a standard implant restoration is still under debate. As the location of the crown abutment margin is placed deeper subgingival, the ability to access and maintain the site become more difficult (Linkevicius, 2012). What does this all mean for the clinician and patient in the maintenance of the implant prosthetic?

Access to the subgingival area of the implant restoration for proper maintenance is vital to the health and success rate of the prosthetic. As margin location and emergence profiles extend farther subgingival, the ability to maintain these sites becomes more challenging.

Evidence has shown that power scalers with non-metallic tips can be beneficial in maintaining the implant prosthetic (Sato, 2004). Several manufacturers offer tip designs that will accommodate the different types of power scalers. DENTSPLY Professional has an insert whose unique design allows a polymer sleeve to be assembled to the active tip area of this ultrasonic implant insert (Fig. 4). When fully assembled, the Cavitron® SofTip™ Ultrasonic Implant Insert can easily be incorporated into a clinicians’ implant maintenance procedure.

Incorporating ultrasonics scaling into the implant maintenance protocol may have several benefits. Combining mechanical movement and lavage can aid in the removal of biofilm and other debris in the implant prosthesis sulcus. Wilkins wrote in 2012: “Studies indicate cavitation is capable of destroying surface bacteria and can remove endotoxin from the root surface.” And: “Oscillation of the ultrasonic tip causes hydrodynamic waves to surround the tip. This acoustic turbulence is believed to have a disruptive effect on surface bacteria” (Wilkins, 2012). Multiple in vitro studies have discussed that cavitation may have the potential to disrupt the cell wall of the bacteria, and acoustic turbulence is believed to have disruptive effect on the surface bacteria (Baehni, 1992; McNees, 1993; Walmsley, 1990). However, further in vivo studies need to be conducted to determine if the same outcomes are achieved in the sulcus.

Another benefit to incorporating power scaling into the maintenance procedure is the ability to adapt the active tip area into the implant sulcus. Incorporating vertical adaptation of the active tip, at a zero- to 15-degree angle, to the implant restoration can allow for significant subgingival surface contact for efficient deposit removal. When the emergence profile follows the anatomical shape of a natural tooth, this instrumentation technique can be an effective method of maintaining the site.

Finally, easy access for the patient is extremely important in the success of the implant prosthetic. There are a variety of interdental brushes, cleaners, and floss options available to the patient. It is important that the cleaners be easy to use, not cause tissue trauma in the implant sulcus, or surface damage to the esthetic materials in the restoration.

Dental implants are increasing in demand in part by their high success rates and the improved esthetics they provide the patient. A key to this success is having the proper design incorporated into the restoration. When designed properly, the implant restoration can be easily maintained by both the patient and clinician.

**_about the authors_**

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