

CROWNING ACHIEVEMENTS

Placing an implant is just the beginning for implant therapy. What comes next is what the patient and the world see — the prosthetic crown that's attached. Will that crown be cemented or screwed into place? What other considerations come into play? Here's a primer for sales pros

By Kim Mohr

The use of implants as an esthetic restorative option has become a popular choice among clinicians and patients. Once the decision is made to undergo implant therapy, the patient and clinician set out on a course of treatment that is multifaceted. Here, we'll look at what happens after implant fixtures and abutments are placed — the creation of a prosthetic crown.



In this detailed look at implant-retained crowns, we explore the glue-vs.-screw debate and tackle special considerations that may come into play in these types of procedures. An understanding of this process could prove lucrative for sales reps aiming to cement their position with customers.

THE FUTURE OF IMPLANTOLOGY

Savvy salespeople should be well versed in what lies ahead for implant therapy. The possibilities are vast. And digital dentistry seems to be at the heart of what's to come.

"In the short term, we can expect better placed implants, kinder surgical procedures and reduced chairtime" thanks to advancements, says Frank Tuminelli, DMD, FACP, president of the American College of Prosthodontists and an implant specialist who practices in Great Neck, New York.

Digital impressions also will continue to play a role. Such impressions allow for an accurate representation every time, taking out the guesswork for the surgeon.

But Tuminelli has big dreams beyond that. "Looking down the road, with the mapping of the human genome now completed, and our ability to grow hard and soft tissue, I envision a day not too far away when we will re-implant a tooth that was grown from the information in one's DNA."

Until that time, sales professionals can prove their value as a partner to clinicians by keeping up with the latest advancements.



HOLDING ON

Implants are used to replace missing root structure. The implant — which is made of titanium, titanium alloy or zirconium — is surgically placed below the gumline into bone. There, it osseointegrates with surrounding bone and tissue. But that isn't the end of the story. While the implant does its job below the surface, what the world and the patient see is what goes on top: the crown or bridge.

The prosthesis made for the implant can be either screwed into place or cemented on. Which method is best is up for debate among clinicians. And this isn't a simple decision like should you get takeout or eat leftovers — the choice here has a lot more bite. For those who prefer to screw the restoration into the abutment, the choice is clear.

"I prefer screw-retained," says Frank Tuminelli, DMD, FACP, president of the American College of Prosthodontists and an implant specialist who practices in Great Neck, New York. "The most important advantage of screw retention is retrievability — the ability to remove the restoration if the need arises," he says. Reasons for removing the restoration could include a number of problems, such as issues with soft tissue, occlusion, esthetics and more, Tuminelli says. "This is a great luxury we have in implant restoration, one that should not be minimized," he adds.

While it is his go-to method, Tuminelli acknowledges there are some drawbacks to screw retention. "The disadvantage is the visualization of the access 'hole.' But with the materials we have today, it is very easy to mask the access opening and yield an esthetic restoration that is also retrievable."

Other clinicians argue that cementing a restoration is the only way to go. The No. 1 advantage? Esthetics. "The greatest plus may be superior esthetics," says Michael Sonick, DMD, a periodontist and implant surgeon in Fairfield, Connecticut. Cementing the restoration into place eliminates the need for screw access holes. Our experts point out that cementing can provide a passive fit, reduce mechanical fatigue and lessen the chance for occlusal fractures.

In addition, Sonick says, "Often, it is not easy to perform a screw-retained restoration due to the position of the implant. If the screw access holes emerge in a nonesthetic area such as the labial aspect of the crown, doing a screw-retained restoration is difficult."

But there is a reason that some prefer the screw-retained approach. "There is a tendency today to have crowns that are screw-retained instead of cemented. Initially, implant crowns were screw-retained because that was the protocol developed by the early implant pioneers," Sonick says. "However, as techniques have evolved and implants became more mainstream, techniques were developed to cement the implant crowns to make this procedure seem more like 'regular dentistry.'" This way, it is more familiar to the clinician.

So if implant prostheses placed with cement arguably look better, why wouldn't all clinicians prefer cement? It's not as cut and dried as what looks best. The use of cement can cause major problems that patients and clinicians alike would prefer to avoid. Part of the problem is that dental cements traditionally were designed to attach prostheses to natural teeth — but implants are not real teeth. In turn, some manufacturers created new cements with superior adhesive characteristics. However, these stronger

cements contribute to the primary problem — removal of excess cement.

"Implant manufacturers made cementable components so that it would be more familiar to dentists, making it user friendly," Tuminelli says. "But implant therapy is biomechanics, not dentistry."

LEFTOVERS

Excess cement is the enemy of successful implant therapy. Why? It can cause disease and lead to implant failure. "Over time, we have found problems with implant crowns that were cemented due to the cement being left under the gingival tissues to the abutment. The cement has become a nidus for infection and in many cases leads to peri-implantitis," Sonick says.

He continues: "Leftover cement stimulates a foreign-body reaction, inciting destruction of the connective tissue attachment as well as circumferential bone loss." In fact, one study found that 81% of implant patients with signs of peri-implant disease exhibited excess cement, Sonick notes.

According to the American Academy of Periodontology (AAP), peri-implant diseases are inflammatory conditions affecting the soft and hard gum tissue around dental implants. Similar to a natural tooth, bacteria can build up on the base of the implant, below the gumline. Over time, the bacteria irritate the gum tissue, causing it to become inflamed, damaging the tissue. There are two types of peri-implant disease. In peri-implant mucositis, gum inflammation is found only around the soft tissues of the dental implant, with no signs of bone loss. With peri-implantitis, gum inflammation is found around the soft tissue and there is deterioration in the bone supporting the dental implant. Peri-implantitis usually requires surgical treatment, the AAP says.

Cement removal can be tricky — as cement is often hard to see. Some cements are clear or pink, making them difficult to distinguish from natural tissue in the mouth. In addition, cements exhibit different levels of radiopacity (or ability to be seen in an X-ray). Experts say finding a cement that has good radiopacity is important. Cements made with zinc tend to have the most radiopacity, while resin cements come in at the other end of the spectrum. And diligence in removing cement is critical. "The literature points to cement on implant surfaces as a contributor to late implant failure (two to five years after insertion of the restoration)," Tuminelli says.

Fortunately, there are steps that can be taken to combat the problems that cement creates. For one, when it comes to the retrievability issue, implant experts recommend using a temporary or semipermanent cement. This can be of utmost importance, particularly in the case of a multiunit prosthesis that needs to be monitored more closely. "Temporary cement is excellent," Sonick says. "Its retentive abilities do not appear to differ significantly from permanent luting agents, yet

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retrieval is much easier. Additionally, any excess cement falls away cleanly and quickly."

Sales reps should be aware of the properties of various cements so that recommendations can be made. Another helpful tip: Resin composites seem to be the most retentive. In addition, multiunit and cross-arch restorations benefit most from temporary cement, Sonick advises.

To combat the damaging effects of excess cement, Tuminelli and Sonick both recommend taking cement materials for a test drive. "There are techniques that allow for trial application of cement on a refractory die, removal of the excess, then placement in the mouth. This will minimize the amount extruded and thus help in cleanup post insertion," Tuminelli says. Sonick echoes those sentiments: "After it's fit intraorally, the prosthesis should be cemented chairside on a lightly lubricated die-cast model of the abutment. The excess can then be wiped away and the cement-lined crown can be transferred to the intraoral abutment."

FURTHER CONSIDERATIONS

After the glue-or-screw debate is resolved in any given case, other factors come into play when placing a prosthesis. Facial esthetics, not just oral esthetics, for the patient is one such consideration. "Many implant restorations are placed when there has been significant loss of soft and hard tissue. As a prosthodontist, I seek to utilize a prosthesis that will meet all of a patient's demands," Tuminelli says.

Another factor is repair of the prosthesis. The approach to a repair depends on the type of restoration used with the implant, Tuminelli adds. "If the restoration is acrylic based with denture teeth, the dentist can often accomplish the repair in the office," he says. This is also true of composite-based material, he adds. But that's not always the case. If the metal component of the restoration fractured, it would have to be removed and sent to a lab. Again, retrievability comes into play. "Things can get complicated," Tuminelli warns. Restorations made of metal ceramic, zirconia, lithium disilicate or a combination of these materials also require the involvement of a lab.

PLANTING THE SEEDS

No matter what technique a clinician chooses, it's up to the sales rep to offer information on the latest products to aid in the implant process. Whether it's offering advice on cements or suggesting intraoral scanners that can aid in digital impressioning, the sales rep is a main player in ensuring that such procedures are a crowning achievement for clinicians and patients alike. 

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TERMS TO KNOW

Osseointegration: The attachment of bone tissue to the implant

Peri-implant diseases: Inflammatory conditions affecting the soft and/or hard gum tissues around dental implants.

Passive fit: An ideal fit of a restoration

Retrievability: How easy or difficult it is for a restoration to be removed

Radiopacity: The ability of a material to be seen during radiography (X-rays)