

## A simple, esthetic and inexpensive technique for a custom implant abutment

By John M. Highsmith, DDS, AACD, DICOI

In implant reconstruction, the dimension from the implant platform to the crest of tissue, especially in esthetically critical areas, is often more than 2 mm.

Many implant manufacturers supply a straight abutment for cement with the implant, which significantly can reduce the cost to the dentist. However, these abutments tend to have a margin about 1 mm tall, which limits their use to relatively thin tissue.

The problem with using a short margin abutment with thick tissue is that the margin ends up in an area where it can be impossible to clean up all the excess cement, leading to periodontal infection ("cementoma"). There are several options available currently:

- Purchase an abutment with a taller machined margin, which the dentist can prep to the desired height and contour. This can work, but there is the additional expense of the abutment and the possibility of the metal abutment showing through thin tissue.

- Zirconia abutments, which can be either prepared or custom milled, such as the Atlantis abutment. These work well but add expense to the case. The zirconia is also always a white color.

- A third option is herein described, where the straight abutment is modified with porcelain to



Fig. 1: Preoperative appearance.

create a custom abutment at minimal cost and improves esthetics.

This patient desired a dental implant to replace tooth #8. She was referred by another general dentist for this treatment, and she was not interested in other cosmetic treatment of her other teeth (Fig. 1).

The tooth had a split root that rendered it unrestorable (Fig. 2). The tooth was removed and a denture tooth bonded to place as a temporary. Eight weeks after extraction, a flap was raised and the implant placed (Fig. 3) (13 x 3.7 mm ScrewPlant, Implant Direct).

Due to the buccal bone loss, some grafting was required over the implant. A core of autogenous bone was harvested (Fig. 4) past

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### SPECIAL EVENT PREVIEW

## AO's meeting showcases presentation innovations

The Academy of Osseointegration's 2009 Annual Meeting will introduce presentation innovations, designed to enhance the value of the Feb. 26-28 event for attendees at the San Diego Convention Center.

"High-definition projection will be featured again this year in the main ballrooms on a 20-foot by 60-foot screen; the largest transportable seamless screen available for the convention center," said AO Executive Director Kevin P. Smith.

Innovations introduced this year include electronic signage and live presentation of sessions from the main ballrooms from a special viewing area in the exhibit hall. Four electronic digital signs will be located in strategic places throughout the convention center.

"These new electronic signs will enhance the communication features of the annual meeting,



The San Diego Convention Center. (Photo courtesy of stock.xchng.)

giving attendees up-to-date information on last-minute program or meeting changes and reminders about social gatherings and other special events," Smith said.

Signs located in the meeting section of the convention center will display information about the current and upcoming plenary session programs. Announcements will be posted throughout

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the apex of the implant site, which was crushed and combined with MinerOss (BioHorizons) (Fig. 5). A membrane (Pericardium, Zimmer) was tacked into place to cover the graft (Fig. 6).

After six months of healing (Fig. 7), a screw-retained temporary was placed to aid in forming the soft tissue without any cement lines (Fig. 8). After two months of healing, the temporary was removed and an impression taken to capture the implant position as well as the soft tissue profile (Fig. 9).

The ceramist took the straight abutment that came with the implant and contoured it for clearance with the opposing dentition. The margin of this abutment would be too far apical for adequate cement clearance, so he modified it with porcelain specifically developed for titanium (Vita Titanium Porcelain, Vident).

Emergence profile can be developed as needed for the soft tissue profile, as well as adding a pink color to blend in with the gingival tissue (Figs. 10, 11).

That can help in the esthetics if there is any tissue recession in future years, as well as maintaining the gingival color. A porcelain to metal crown was fabricated with a porcelain butt margin.

In this case, on the day of delivery/try-in, the screw had loosened, resulting in some tissue irritation and bleeding, preventing delivery that day (Fig. 12). Photographs were taken for slight color modifications. The temporary crown was replaced to allow tissue healing for final cementation.



Fig. 2: Split root fiber extraction.



Fig. 3: Implant in place.



Fig. 5: Bone graft in place over implant.



Fig. 4: Harvesting a core of bone.



Fig. 6: Temporary bonded to adjacent teeth.

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Fig. 7: Screw-retained temporary.



Fig. 8: Impression post in place.



Fig. 9: Custom abutment on model.



Fig. 10: Porcelain baked to titanium abutment.

Fig. 11: Custom abutment in place, inflamed tissue due to loose temporary.



Fig. 12: Final crown in place.



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After two weeks, the final crown was delivered (Fig. 13). A small amount of composite (Durafill, 3M) was placed on the adjacent teeth to reduce the black triangle and aid in symmetry.

The modified abutment was placed into the healthy site and torqued to place. The screw hole in the abutment was filled with Fermit (Ivoclar) and light cured. The crown was cemented with RelyX luting cement (3M) and final photographs taken.

The use of titanium porcelain on the abutment allowed the ceramist to control emergence profile, bring the margin to a cleansable level, color the subgingival material for the best esthetics, all at a cost less than a milled zirconia abutment, because the abutment came with the implant.

*Thanks to Mr. Kent Decker, CDT, for his artistry and help in developing this technique.*

#### II About the author



Dr. Highsmith received his dental degree from the University of North Carolina School of Dentistry in 1984, after which he completed a general practice residency at the Veterans Administration Medical Center in Baltimore, Md. He has been in private practice in Clyde, N.C., since 1985. He is an accredited member of the AACD, a clinical instructor at LVI, a diplomate of the ICOD, and a fellow of the Misch Implant Institute. He takes more than 200 hours of continuing education annually, and considers his mentors Orvar Reed, Bill Strupp, John Koiz, Frank Spear, Bill Dickerson, Clayton Chan, Paul Sletten, Mark Hyman, Darryl Nabors, Steve Burch, Bill Dorrh and Carl Misch.