

# IMPLANTS



## SmartSteps<sup>SM</sup> to immediate implant impressions

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The clinical use of dental implants to replace lost natural teeth will continue to expand as increasing numbers of general dentists become more comfortable in implementing implant therapy into their practices. While most implant systems provide abutments to meet a variety of restorative applications, the components are often incompatible from one system to another, due to the unique mechanical requirements of each implant design. Within a given system, restorative dentists may also be confronted by substantial differences in abutment diameters, emergence profiles, cuff heights, angulations, pre-machined margins and materials. Aesthetic restorations also generally require a variety of healing collars and transfers that match the emergence profiles of the selected abutments. The resulting complexity often creates the need for special training to help clinicians properly select and utilize the components, which can add time, expense, inventory and stress to implant restorations. In addition, the long period of time from traditional implant placement to delivery of the provisional prosthesis, difficulty in achieving optimum soft tissue contours during maturation and additional costs associated with recalling the patient and purchasing a separate impression post (as well as a separate fixture mount, in some systems) may be further obstacles to

implementing implants into an already busy practice.

SmartSteps<sup>SM</sup> are innovative time- and cost-saving features designed to simplify restorative procedures and shorten treatment time with Sulzer Dental's implants (Sulzer Dental Inc., Carlsbad, CA, USA). This paper will introduce the SmartSteps to immediate implant impressions utilizing Sulzer Dental's Fixture Mount/Transfer implant packaging. This technique enables delivery of the provisional prosthesis at the second-stage surgical uncovering appointment.

The Fixture Mount/Transfer is a multifunctional post that is preattached to the implant by the manufacturer. Initially, the component is used to deliver the implant to the osteotomy and functions as a fixture mount to thread the implant into place. After the implant is fully seated, the Fixture Mount/Transfer functions as an impression post for an immediate, aseptic impression that is made directly over the exposed bone prior to suturing. The component is then removed from the implant, attached to an implant analog, and reinserted into the impression to complete the transfer. A surgical cover screw for a traditional, two-stage surgical protocol, or a titanium healing collar for a one-stage surgical protocol, is attached to the implant, and the site is sutured. During the implant's submerged or nonsubmerged healing period, a definitive abutment and coping, along with a

provisional crown, may be fabricated in the laboratory for delivery when the implant is osseointegrated. This technique shortens treatment time and enables the soft tissue to heal in the optimal anatomical dimensions. Alternatively, the Fixture Mount/Transfer may be removed after seating the implant, and then used as an impression post and transfer after soft tissue maturation following the second-stage surgery.

### Clinical Procedures

1. The sterile implant and surgical cover screw are packaged on separate carriers inside a plastic storage vial [Fig. 1]. Instruct the non-sterile surgical assistant to cut the safety seal and remove the outer cap of the implant storage vial, and to pour the contents of the vial onto a sterile field: the surgical cover screw is located in a white plastic carrier and the implant is suspended in a second vial by a multifunctional Fixture Mount/Transfer that is colour-coded to correspond with the implant's diameter [Fig. 2].
2. Attach a ratchet or slow-speed handpiece to the Fixture Mount/Transfer [Fig. 3], or grasp it with powder-free, sterile-gloved fingers. Carefully turn and pull to remove the assembly from the vial.
3. Deliver the implant to the receptor site and carefully initiate it into the osteotomy by gently rotating the Fixture



Fig 1: Double-vial implant packaging. Note that the sterile implant is preattached to the Fixture Mount/Transfer inside the storage vial.



Fig 2: Fixture Mount/Transfers are colour-coded to indicate the diameter of the implant.



Fig 3: Removing the implant by the Fixture Mount/Transfer from its storage vial.

# IMPLANTS



*Fig 4: Seating the implant into the osteotomy.*



*Fig 5: Making an immediate impression.*



*Fig 6: Removing the Fixture Mount/Transfer from the implant.*

Mount/Transfer in a clockwise direction until the implant's threads engage the bone. Stabilize the fixture mount with powder-free, sterile-gloved fingers and momentarily remove the insertion instrument from the implant assembly, if used. While continuing to manually stabilize the implant assembly, insert a 1.25mmD Hex Tool into the top of the fixture mount, then loosen and retighten the screw holding the implant in place. Attach the ratchet or slow-speed handpiece to the Fixture Mount/Transfer and slowly rotate the assembly clockwise to screw the implant into place [Fig. 4].

4. When the implant is fully seated, remove the ratchet or slow-speed handpiece from the Fixture Mount/Transfer. Place light body elastomeric impression material around the Fixture Mount/Transfer [Fig. 5], which now functions as an implant-level impression post, then make a full-arch impression of the Fix-

ture Mount/Transfer and adjacent dentition with standard body elastomeric material. Remove the impression after it fully sets. Alternatively, the Fixture Mount/Transfer can be removed and used as a conventional impression post and transfer after the stage-2 surgical uncovering.

5. Unthread the Fixture Mount/Transfer with a Hex Tool and remove it from the implant [Fig. 6]. Locate the surgical cover screw in its plastic carrier. Unthread the surgical cover screw with a Hex Tool and thread it into the implant [Fig. 7]. Suture the mucosa over the implant for a conventional, two-stage surgical procedure [Fig. 8].

6. Thread the Fixture Mount/Transfer into a corresponding Implant Replica [Fig. 9]. Insert the assembly into its corresponding impression hole [Fig. 10]. Pour the impression in dental stone, and separate the working cast after it sets [Fig. 11].

7. Unthread the Fixture Mount/Transfer from the working cast. Insert a Hex-Lock Abutment into the Implant Replica, which is now incorporated in the working cast [Fig. 13], and tighten the abutment screw with the Hex Tool.

8. Prepare the abutment to receive cement-retained provisional prosthesis [Fig. 13]. Use the prepared abutment as a removable die in the working cast to fabricate the provisional restoration [Fig. 14]. Alternatively, the provisional prosthesis may be fabricated with a metal coping that may also be used for the final restoration.

9. After verification of osseointegration at the stage-2 surgical uncovering appointment, thread the prepared abutment into the implant [Fig. 15] and tighten the abutment screw to 30 Ncm with a properly calibrated torque wrench.



*Fig 7: Attaching the surgical cover screw for a two-stage surgical protocol.*



*Fig 8: The implant is submerged beneath the soft tissue until osseointegrated.*



*Fig 9: Attaching the Fixture Mount/Transfer to the Implant Replica.*

# IMPLANTS



Fig 10: Completing the transfer with the Fixture Mount/Transfer and Implant Replica assembly.



Fig 11: The Implant Replica is embedded in dental stone after pouring the transfer impression.



Fig 12: Attaching the Hex-Lock Abutment to the Implant Replica in the working cast.

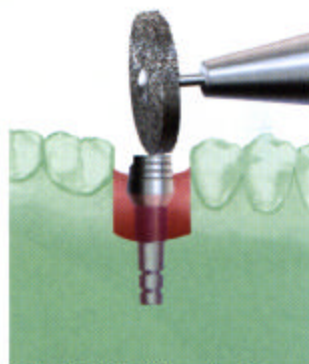


Fig 13: Modifying the Hex-Lock Abutment.

10. Use soft cement to attach the provisional prosthesis to the prepared abutment in the patient's mouth [Fig. 16].

11. To fabricate the final restoration, remove the provisional prosthesis from the implant and follow routine clinical procedures for fabricating a fixed partial denture restoration. If a metal coping was fabricated, retrieve it from the provisional prosthesis, place it back onto the prepared abutment, and pick it up in a transfer impression for use in fabricating the final prosthesis on a second master cast.

Fixture Mount/Transfer packaging is currently available with Sulzer Dental's patented internal hexagon (Screw-Vent, Tapered Screw-Vent, Micro-Vent2, Bio-Vent) and tapered external hexagon (Taper-Lock) implant lines. In the near future, this packaging will be expanded to include the company's spline (Spline Cylinder, Spline Twist, Spline Twist Max) implant lines. Sulzer Dental's newest line of SwissPlus one-stage implants features a unique Fixture Mount/Transfer that can also be prepared and

used as a straight abutment for fixed partial denture restorations.

SmartSteps for immediate impressions enable surgical specialists to return a patient to the referring dentist with a provisional restoration in place. To complete the restoration after soft tissue maturation, the referring dentist simply removes the provisional prosthesis, and completes routine crown and bridge procedures to restore the abutment in the same manner as a prepared natural tooth. This technique eliminates confusion and chair time for the referring dentist, and may help to facilitate case acceptance by the patient, whose appearance, confidence and self-esteem may be more quickly restored. For the surgical specialist, offering such a high level of service to the restorative dentist can ultimately increase implant caseloads through additional referrals.

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Fig 14: Fabricating the provisional prosthesis.



Fig 15: Delivering the definitive abutment at the second-stage uncovering.



Fig 16: Delivering the provisional prosthesis at the second-stage uncovering.

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