3Shape TRIOS digital impression solution now with implant scanning

TRIOS captures implant positions and soft-tissue emergence profile in unique dual-step workflow

3Shape, a technology leader in 3-D scanning and CAD/CAM software for dental applications, announces its latest breakthrough innovations for implant work. With 3Shape TRIOS, dentists can now capture single implant positions using autoclavable scan bodies supporting a wide range of implant systems.

Implant cases made easy for dentists

For dentists, digital impression-taking with 3Shape TRIOS represents many advantages. The straightforward workflow replaces conventional implant impression-taking which traditionally can be time-consuming, error-prone and cumbersome. Furthermore, with TRIOS digital impressions, dentists can save time and money by skipping the extra steps involving custom tray production, shipping and handling by the lab.

“Scanning with 3Shape TRIOS makes implant cases easy. It allows me to capture not only the implant positions, but also the soft tissue,” said Dr. Simon Kold of Herning Implant Center. “By adding scans of the soft-tissue emergence profile, I can give my lab detailed information that allows it to optimize the fit and esthetic qualities of the customized abutment and final restoration. This is great for clinical and esthetic results while boosting patient satisfaction.”

New implant service opportunities for labs

With TRIOS, labs can receive the digital impression minutes after scanning and can immediately start designing the digital implant model, the customized abutment and the crown. The TRIOS digital implant impression, 3Shape’s Model Builder™ and its Abutment Designer™ software come together in a fully integrated workflow.

3Shape’s Model Builder CAD/CAM software allows labs to design digital models for implant cases. Based on the software’s implant position detection, users can virtually add interfaces for implant analogs, including glue-in analogs, directly in the model design.

3Shape TRIOS is currently available in Europe and is expected to be launched in North America and other selected markets in Q3 2012. TRIOS implant scanning is available with TRIOS software version 1.1.2.0.

About 3Shape A/S

3Shape A/S is a Danish company specializing in the development and marketing of 3-D scanners and CAD/CAM software solutions designed for the creation, processing, analysis and management of high-quality 3-D data for application in complex manufacturing processes. 3Shape envisions the age of the “full digital dental lab,” and its more than 150 developers provide innovation power toward reaching this goal.

3Shape’s flexible solutions empower dental professionals through automation of real workflows, and its systems are applied in thousands of labs in more than 85 countries worldwide, putting 3Shape technologies at the peak of the market in relation to units produced per day by dental technicians. 3Shape boosts its first-line distributor support network with a second-line support force of more than 30 in-house experts placed in five support and service centers strategically placed around the globe. 3Shape is a privately-held company headquartered in Copenhagen, with the market’s largest team dedicated to scanner and software development for the dental segment based in Denmark and Ukraine, production facilities in Poland, and business development and support offices in New Jersey and Asia.

For further information regarding 3Shape, please refer to www.3shapedental.com.
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From intraoral scan to final custom implant restoration

By Perry E. Jones, DDS, FAGD

Introduction

This case demonstrates the optical scanning of Inclusive® Scanning Abutments (Glidewell Laboratories; New Port Beach, Calif.) using the iTero® digital scanning system (Align Technology; San Jose, Calif.) with software version 4.0. Digital data was used with laboratory CAD/CAM planning to fabricate custom all-ceramic implant abutments and a four-unit fixed prosthesis. The abutments and fixed prostheses were fabricated using advanced computer-aided milling technology.

Dental history

The patient was a 52-year-old healthy Hispanic male who sustained a traumatic avulsion and lost his maxillary incisors in an automobile accident. Following healing, a four-tooth transitional removable partial denture was constructed. He was seen by the oral and maxillofacial surgery service of Virginia Commonwealth University for dental implant therapy.

Treatment plan

The patient was informed of the alternatives, benefits and potential complications of various treatment options before deciding to pursue implant restoration of his missing teeth. The treatment plan included placement of two Replace® Select Straight RP 4.3 x 13 mm implants (Nobel Biocare; Yorba Linda, Calif.) with 5 mm healing abutments, followed by a six-month healing period and restoration with all-ceramic custom abutments and a four-unit all-ceramic fixed prosthesis to restore the anterior incisors to form and function.

Surgical procedure

Using local anesthesia, two Replace Select Straight RP implant fixtures were placed in the area of tooth #7 and #10 using standard Nobel implant placement protocol. Placement angulation and depth were verified and deemed satisfactory. Standard RP 5 mm healing abutments were placed, and the fully reflected tissue flap was closed with interrupted sutures.

Restorative procedure

Following six months of healing post-implant placement, intraoral photos were taken to record and confirm the healthy remaining dentition. Osseous integration was confirmed with a panoramic X-ray; followed by resonance frequency analysis (RFA) using an Osstell® ISQ implant stability meter with SmartPeg™ attachment (Osstell Inc., Linthicum, Md.), which displayed an implant stability quotient (ISQ) of 78 on a minimum-to-maximum scale of 1–100. Counter rotation with a torque wrench confirmed no rotation to 35 Ncm. The implant fixtures were considered acceptable for restoration.

The 5 mm healing abutments were removed. Inclusive Scanning Abutments were placed on the implants and the accompanying titanium screws were tightened (Fig. 3). Using the iTero scanner with updated software (version 4.0), a full maxillary arch scan, full mandibular arch scan and centric bite in maximum intercuspsation were completed. A three-dimensional digital record of the patient's anatomy was created from these scans and electronically submitted to Glidewell Laboratories to be used in the CAD/CAM restoration process.

At Glidewell Laboratories, the virtual scan was registered to the scanning abutments, providing the dental technicians with the implant system, size, axis, position relative to the adjacent anatomy and locking feature orientation. A virtual zirconia abutment was designed using 3Shape's DentalDesign™ software (3Shape Inc., New Providence, N.J.) and the Glidewell Digital Abutment Library (Fig. 2).

From this, the corresponding physical Inclusive All-Zirconia Custom Abutments (Glidewell Laboratories) were milled similarly. A BruxZir® Solid Zirconia four-unit fixed bridge (Glidewell Laboratories) was designed and milled using state-of-the-art CAD/CAM technology. The custom zirconia abutments were trial-fitted in the patient's mouth with some slight tissue blanching noted (Fig. 3).

In the same visit, the final four-unit all-ceramic milled BruxZir Solid Zirconia bridge was tried-in and examined for proper occlusion. There was "tight" anterior coupling for this case as evidenced by the history of provisional denture fracture. The occlusion was checked and presented as so precise that no adjustment was required.

The anterior view of the final prosthesis demonstrates optimal mesial-distal width proportion, incisal edge proportion, pontic-tissue contact and excellent shade/esthetics (Fig. 4). Further, the occlusal view demonstrates an optimal incisal edge arch form. The soft-tissue lip position and speech phonetics appeared to be optimal.

Following the trial seating, the fixed bridge was removed, the zirconia abutment retention screws torqued to 35 Ncm, the abutment screws covered with cotton/Cavit™ Temporary Filling Material (3M™ ESPE™; St. Paul, Minn.) and the prosthesis cemented with GC Fuji PLUS™ (GC America, Alsip, Ill.).

NOTE: Cadent Inc. (Carlstadt, N.J.) was acquired by Align Technology (San Jose, Calif.) in May 2011.

References available upon request from the publisher.

About the author

DR. PERRY JONES received his DDS from Virginia Commonwealth University School of Dentistry, where he has held adjunct faculty positions since 1976. He maintains a private practice in Richmond, Va.
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First used in 2000 and granted FDA approval in 2004 for long-term use as determined by health-care providers, the 1.8, 2.2 and 2.4 mm diameter ANEW implants from Dentatus have met the most precise implantology standards having undergone rigorous testing, research and clinical use by the profession. ANEW Implants are widely recognized by clinicians and universities worldwide. These narrow-body implants provide effective remedy for many because they are ideal for patients who have limited inter-dental spaces, insufficient bone or require provisionalization during augmentation procedures. Nearly 25 percent of patients who come in for implant treatment will not have enough bone to place a conventional diameter implant, Dentatus said. ANEW Implants should also be considered when financial constraints might delay or prevent treatment. Every practitioner placing implants should consider including ANEW in his or her armamentarium so that all patients might take advantage of the benefits that implants afford.

ANEW Implants are the only one-piece narrow-body implants that have restorative options for screw-retained prosthesis, Dentatus said. ANEW boasts a number of features that set it apart from other implants, including a short-threaded external connector that tolerates substantial abutment angulation without stress. ANEW’s prosthetic components provide patients with a cosmetic, fixed chair-side restoration at the time of placement so they never have to go without teeth. There are a variety of platforms available for restorative ease, presenting flexibility for optimal esthetic solutions.

For instances of single-tooth replacement in narrow spaces, the availability of ANEW implants provides patients who might have to proceed with a fixed or resin-bonded bridge the luxury of dental implants without preparation and/or reduction of the adjacent natural dentition. Another advantage to this modality is the maintenance of alveolar bone, which is documented to undergo resorption with other restorative options.

In 2012, Dr. Francois Fissler and Dr. Carlos Munoz from the New York University Department of Implant Dentistry presented the following findings about papilla regeneration at the Academy of Osseointegration’s 27th annual meeting:

“In this case series, nine patients received 10 [ANEW Narrow Diameter Implants (NDIs)], which were loaded for periods of six months to 10 years post-insertion. No implants or prosthesis had to be removed or replaced during the follow-up period. Neither a surgical or prosthetic complication was seen on any of the 10 NDIs.

“The average mesial [Papilla Index Score (PIS)] was 2.4 and the average distal PIS was 2.7, indicating that the NDIs regenerated at least 50 percent of the papilla in all cases (20/20 papilla).”

The non-hygroscopic screwcap allows for retrievability, so that during the healing period the restoration contours can be easily modified to the tissue architecture, thereby eliminating a final “black triangle” result, Dentatus said.

See ANEW, page 16
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Their effective adaptation and integration in bone has been shown to be on par with conventional implant fixtures and provide excellent support and retention. In 2007, Dr. Stuart Froum and his colleagues published a study in the International Journal of Periodontics and Restorative Dentistry stating “40 ANew Implants in patients for one to five years post-loading. No implant failures were reported, yielding a 100 percent survival rating.”

In 2005, the Journal of Oral and Maxillofacial Implants published Dr. Michael Rohrer’s histology study on Dentatus implants. Rohrer determined that the percentage of bone in contact with the body of Dentatus implants is in “the same range and sometimes higher than what is usually seen with conventional implants.” The recommended surgical techniques allow for minimally invasive flapless placement and immediate loading. This eliminates most postoperative challenges and dramatically reduces the total time in treatment.

These implants solve the problems of time, money and perceived pain for most patients who otherwise do not proceed with care, Dentatus said. Other indications for use:

**Atrophic and thin ridges**
For patients with atrophic and thin ridges who cannot or do not want to undergo lengthy augmentation procedures based on age, systemic disease or inadequate volume of bone, ANew Implants are an economical and viable long-term solution.

**Emergency repairs**
One of the most difficult situations for the practitioner is the emergency intraoral repair of a broken bridge. With ANEW Implants on hand, those difficulties are a thing of the past, Dentatus said. Once the bridge is removed, the implant can be placed in the interceptal bone, stabilizing the bridge, returning the patient to a dentate state while a long-term treatment plan is determined.

**Bone augmentation**
Many implant treatment plans include some type of bone augmentation procedure. It may involve a sinus lift, replacement of the bicuspid plate and/or widening or heightening a ridge. Selling an implant case involves overcoming a patient’s concerns; one of the major roadblocks is the patient’s perception of a long, drawn out treatment period. ANew implants will give patients teeth during the entire treatment and avoids transmucosal loading of the graft while the patient is able to function with a fixed restoration.

For more information and to see other areas of use, visit www.DentatusUSA.com.

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**ANEW, Page 14**

Attractive and powerful are two words that describe the new W&H Implantmed, the company says. The new drive unit excels by virtue of its ease of operation, a powerful motor and a motorized thread cutter function. It offers safety and maximum precision for oral surgery in the fields of implantology and also maxillo-facial surgery.

**The advantages in detail:**
- **Easy to use:** The new Implantmed has an intuitive operating concept. All programs can be easily set up in just one user level, either with the foot control or by pressing the buttons on the unit. The settings are clearly visible on the large display. The clinician can concentrate on the essential factor: the patient.
- **Powerful motor:** Even difficult procedures no longer demand great strength when using Implantmed. Implantmed is powerful enough for all operations with a motor torque of 5.5 Ncm and a motor speed range of 300 to 40,000 rpm. The automatic torque control for rotary instruments, which can be set between 5 and 70 Ncm, ensures that the instrument is safe.
- **Fatigue-free operation:** The lightweight motor and the ergonomically shaped W&H contra-angle handpieces are perfectly balanced in the user’s hand. The advantage for the implantologist: ability to work for long periods without fatigue or the hand cramping.
- **Automatic thread-cutting function:** The integrated automatic thread-cutting function supports the implantologist in placing implants in hard bone. Cutting a thread before screwing in the implant prevents excessive compression of the bone and promotes stress-free healing of the implant.

For more information, visit www.wh.com.

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**For daily use:**

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