Implant Tribune

The World's Dental Implant Newspaper · U.S. Edition

MARCH 2013 — Vol. 8, No. 3 www.dental-tribune.com

Implants featured at Chicago Midwinter

Dozens of implant companies brought new and innovative products to the Chicago Midwinter meeting in February. Below, Harrison Song, left, and James Lee of Hiossen. Photos/Sierra Rendon, Managing Editor, and Fred Michmershuizen, Dental Tribune

Annual February show is a must for launching new products in the dental implant industry

Hundreds of companies, including a bevy of implant companies, headed to the Chicago Midwinter Meeting to present the latest and greatest in products and technology.

Nearly 30,000 dentists, hygienists, dental students and others attended the 148th annual meeting, presented by the Chicago Dental Society, at the McCormick Place West Building in Chicago.

The next Chicago Midwinter Meeting will take place Feb. 20-22, 2014. Mark your calendars now!

For more photos, see page B8.

Product review

Using SonicPin Rx

Dissolving the need for metal fixation screws in implant site development

By Lewis Cummings, DDS, MS

In this ever evolving age of dental technology, the practice area of implant site development has benefitted from a technologic innovation and a new era of resorbable fixation devices and membranes. Traditionally, various metal fixation screws have been utilized for stabilization with the primary drawback being the need for eventual reentry for removal. Now, the necessitation of fixation device removal has been eliminated with the introduction of the SonicWeld Rx™ system of resorbable fixation devices and membranes.

A 42-year-old male presented with a significant buccal osseous defect resulting from the long-standing loss of the maxillary right first premolar (Fig. 1). A single tooth implant-supported restoration was planned

▸ See SONICPIN, page B2

◂ SONICPIN, Page B1

as the final prosthesis. Given the volume of bone loss in the first premolar site and the desire to minimize post-operative morbidity, an allogenic block bone graft was chosen for defect regeneration.

Though the predictability of allogenic block graft material is well-documented, complete graft immobilization is imperative for success.[1]

The SonicWeld Rx process of onlay block graft fixation utilizes an ultrasonic vibrating handpiece to deliver a polymer pin through the graft and into the host bone. The SonicPin Rx travels into a specially prepared hole with variable diameters, similar to a lag method.

The SonicPin Rx is designed to engage a minimum of 5 mm of host bone at its tip. The final length determination of the pin is an addition of this length plus the graft thickness. Given this consideration, the typical SonicPin Rx clinical length is 9 or 11 mm and the diameter is 2.1 mm (Fig. 3).

Fig. 1a: Pre-operative photo of ridge defect.
Photos/Provided by Dr. Lewis Cummings

Fig. 1b: Without temp.

For bone fixation, a specially designed drill is utilized to prepare an insertion site through the onlay graft and into the host bone.

The SonicPin Rx is then loaded onto the sonic handpiece tip and inserted into the preparation without sonic activation. The pin should advance passively through the graft portion until engaging host bone at the distal aspect of the preparation. This distal portion has a special geometry allowing the tip of the pin to be seated snugly prior to activation of the welder. Once seated, forward orthogonal pressure is placed on the SonicPin Rx and the SonicWelder is activated, initiating sonic vibrations that travel down the shaft of the pin, ultimately creating friction heat against the bone at the site of bone-pin contact. The user translates a consistent level of energy with steady

▸ See SONICPIN, page B6

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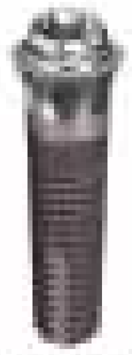

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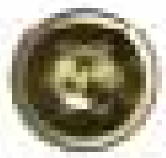

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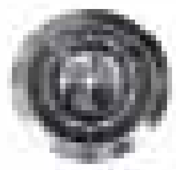

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Nobel Biocare™	$194	$192	$175	$222	$225	$285	$285	$75	$225	$166	N/A	$188	$202

◂ SONICPIN, Page B2

forward pressure on the handpiece before and during the activation.[2]

Within moments of activation, the outer surface of the SonicPin Rx liquefies, leading to a narrowing of the shaft that allows for subsequent insertion into the full depth of the pilot hole. Ultimately, the larger head of the SonicPin Rx partially inserts into the narrower proximal hole, forcing polymer into this external bony wall as well. Once fully seated, the SonicWelder is deactivated and removed from the pin after a brief cooling period.

The SonicWeld Rx process is based on the effect of vibratory frictional heat on the thermoplastic polymer shaft of the SonicPin Rx, leading to pin liquefication. This transformation allows for the subsequent engagement of the liquefying pin into the ever-narrowing recipient preparation. A minimal elevation in temperature is created, but only for very short periods of time where the two hard surfaces are in contact.

Though the friction of the ultrasonic vibration translated to the SonicPin Rx

▸ See SONICPIN, page B8

Fig. 1c: Occlusal view of buccal ridge defect.

Fig. 2: Site preparation for block graft placement.

Fig. 3: SonicPin Rx 2.1 x 11 mm.

Fig. 4: Graft fixation with two 2.1 x 11 mm SonicPin Rxs.

Fig. 5: Acellular dermal matrix placement over graft site for particulate graft containment and soft-tissue augmentation.

Fig. 6: Closure with 6.0 polypropylene and 4.0 PTFE suture.

Fig. 7: Four-month healing.

Fig. 8: Four-month healing.

Fig. 9: Minimal flap reflection to allow for implant placement.

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Scenes from the Chicago Midwinter

1) Dr. Todd Shatkin of Shatkin F.I.R.S.T. presents an educational presentation at the company's booth at the Chicago Midwinter.

2) PhotoMed's Sean Chappell helps an attendee at the company's booth.

3) Josh Gall and Jaclyn Belida talk to an attendee at the Glidewell booth.

4) E4D's Christopher Binion shows attendees the benefits of the E4D System at the Chicago Midwinter.

5) Jody Carleton, a DEXIS instructor, explains the process of the technology to an attendee at the company's booth.

◂ SONICPIN, Page B6

is adequate to melt the outer polymeric core, histologic evaluation has shown no damage to the receiving bony structures.[3]

For this case, local anesthetic was administered and removal of the temporary prosthesis was performed to allow access to the site through a traditional full-thickness mucoperiosteal flap on the buccal. Using rotary instruments, an aggressive slot preparation was created in the deficient first premolar site for reception of the allogenic-bone block graft (Fig. 2).

Following rehydration of the graft and application of platelet-rich plasma, the graft was inserted into the recipient preparation. To eliminate micromovement of the graft during integration, dual-point fixation was utilized from the graft into the host bone. Two 2.1 x 11 mm SonicPin Rxs were placed using the SonicWeld Rx protocol (Fig. 4).

Once the block graft was stabilized, particulated allogenic bone, rehydrated with platelet-rich plasma, was compacted around the periphery of the site and the entire area was covered with an acellular dermal-matrix graft (Fig. 5).

The dermal matrix, rehydrated with platelet-rich plasma, was utilized for graft containment and augmentation of the overlying gingiva. Complete and passive site closure was obtained using a combination of 4.0 PTFE and 6.0 polypropylene sutures (Fig. 6). A traditional post-surgical protocol was followed for seven days consisting of anti-inflammatory and antibacterial agents, with the patient being instructed not to masticate in the area.

Fig. 10: 3.8 x 12 mm BioHorizons Internal Hex Laser-Lok implant in place with cover screw.

Following four months of uneventful healing (Fig. 7, 8), the site was re-entered for implant placement. At this time, the block bone graft was clinically well-integrated with the host bone and no signs of mobility were detected (Fig. 9). Minimal access was necessary at the re-entry as the fixation pins did not have to be removed.[4] An implant osteotomy was prepared to receive a 3.8 x 12 mm BioHorizons® Tapered Internal Hex Implant with the Laser-Lok® surface (Fig. 10). Following insertion, the cover screw was placed, the site was closed with absorbable suture, and the temporary restoration was replaced.

After an additional four months to allow for proper implant integration, the healing abutment was placed, and the final restoration was fabricated. The SonicPin Rx system was chosen for fixation in the case to eliminate the need for a subsequent site reentry for screw retrieval. It stays strong while the bone heals, then it loses strength and resorbs, which results in less risk and more benefit for both the patient and the dentist.

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About the author

Lewis Cummings, DDS, MS, received his dental degree from the University of Texas Health Science Center at San Antonio. He did his residency at the University of Nebraska Medical Center in Lincoln, where he completed a master's degree in oral biology and received his certificate in periodontics. While in Lincoln, Cummings began to research tissue engineering and has since lectured internationally on the topic. Currently, he holds associate professor positions with both the University of Texas Dental School at Houston and the University of Nebraska Medical Center in Lincoln, teaching soft-tissue grafting and dental implants in the post-graduate programs. He is also an instructor with the Center for Advanced Dental Education in Dallas and the Rocky Mountain Dental Institute in Denver.