For the first time in the Academy of Osseointegration’s 28-year history, the AO Annual Meeting will be held in downtown Phoenix, also known as “Valley of the Sun.” Why haven’t the AO leaders previously elected to hold the meeting in the largest capital city in the United States (1,445,632 people, 2010 U.S. Census)? In a word, because until recently, Phoenix didn’t have a convention center large enough to accommodate the academy’s expanding meeting space needs.

Early settler and former Confederate veteran Jack Swilling, who came west to seek wealth in the 1850s, probably never imagined the growth that was to come to the city he founded and wanted to call Pumpkinville because of the large pumpkins that flourished in the area. Now it attracts more than 13 million visitors each year. As you can imagine, Swilling didn’t get too much support for the Pumpkinville name, so he decided to call his new settlement “Stonewall,” after General Stonewall Jackson. It wasn’t until his good friend, Lord Darrell Duppa, suggested the name Phoenix to describe a city born from the ruins of a former civilization, the Hohokam peoples, that the name was finally accepted.

The leaders of the academy agreed Phoenix (located in the Sonoran Desert) would be a perfect place to hold the AO 27th Annual Meeting, from March 1-3. Its newly expanded Phoenix Convention Center is specifically designed to exhibit the look and feel of the Southwestern culture in a warm winter climate, with daily winter temperatures in the mid-70s. It was agreed that many of the Eastern and Midwestern AO members would certainly appreciate meeting in this subtropical and arid climate, as a relief from harsh winter climates.

A multi-phased $600 million expansion project, which nearly tripled the size of the Phoenix Convention Center, makes it possible to hold the academy’s 2012 meeting there. The design of the convention center features steel canopies that extend over Third Street to create shade. The large glass and stone atrium in the West Building represents the unique angles and light of an Arizona canyon. More than $3.2 million of fine art is on display throughout the convention center. Also, many restaurants are in the food court for all attendees to enjoy.

The entire meeting takes place in the

By Kevin P. Smith, Executive Director Academy of Osseointegration

By David DiGiallorenzo, DMD

Zirconium dioxide has a long history of use in orthopedic and dental applications. Zirconium (Zr) is a metal; however, through a chemical reaction with oxygen, zirconium is converted to zirconia or zirconium dioxide (ZrO2). Currently, there are several manufacturers of zirconia dioxide dental implants.

Z-Systems, a Swiss-manufactured single-piece dental implant, was FDA approved more than four years ago for use in tooth-replacement therapy. Developed in 2001 by Dr. Ulrich Volz, in collaboration with Metoxit, a world leader in the production of ceramic material, the new implants offered a predictable way to produce strong, dimensionally stable, metal-free implants using the isostatic process.

* Continue on Page 14

Fig. 1: The single-stage design eliminates the effects of the microgap and micromotion on the crestal interface of bone and soft tissue.

Photos/Provided by David DiGiallorenzo

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* Continue on Page 2
CAD/CAM innovation: a pathway to better implant restorative dentistry

By Carl Drago, DDS, MS

Functionally and esthetically optimal dental restorations traditionally have been fabricated by restorative clinicians and dental laboratory technicians using impressions, casts, and articulator mountings prior to waxing and casting metal frameworks. Thus, accuracy is labor-intensive, and the accuracy of the casts depends on many factors, including the water/powder ratio, type of dental stone employed, and impression materials and techniques. Each step introduces the potential for human and/or material error. And yet the success of implant prosthodontic treatment depends to a large extent on the accuracy of transferring implant positions intraorally to master casts. Moreover, the traditional impression-making process requires the placement and removal of impression copings from implant restorative platforms. Minimizing the frequency of tissue disruption could prove beneficial in maintaining both peri-implant bone height and peri-implant soft tissue adjacent to implant restorations.

The use of computer-aided design and computer-aided manufacturing (CAD/CAM) technology offers a pathway to reduced tissue disruption and greater framework accuracy. CAD/CAM tools for diagnosis, treatment planning, surgery, prosthetic treatment and laboratory procedures have become an intimate part of implant dentistry.

CAD/CAM abutments and frameworks are now routinely fabricated from commercially pure titanium, titanium alloy and zirconia by various implant companies and milling centers. Such frameworks have proven to be more accurate than traditional cast restorations.

Laser and tactile scanning are enabling better and less invasive diagnostics, and other CAD/CAM tools are making it possible to create restorations that fit more precisely, take less time to fabricate and may result in decreased costs.

An excellent opportunity for dental laboratory technicians to stay abreast of this rapidly evolving technology will be at AO’s upcoming annual meeting in Phoenix. It will include a special day-long program of technical and scientific-based lectures for dental lab technicians. The AO program will present protocols and instrumentation for using scanned images of the natural dentition (prepared teeth) and implants. Scanning may be accomplished intraorally, thereby eliminating the errors associated with impressions and casts. Vertical gap measurements of scanned wax copings have been reported to be significantly larger than those noted in copings designed virtually in a computer.

About the author

DR. CARL DRAGO, clinical director of EON Clinics in Waukesha, Wis., received his dental degree from Ohio State University College of Dentistry in Columbus, Ohio, and a masters degree from the University of Texas Graduate School of Biomedical Sciences at Houston, Texas. A diplomat of the American Board of Prosthodontics, he has published three textbooks on dental implants.
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Continuing education in dental implantology has traditionally focused on theoretical aspects. However, since 2003, the Trinon Collegium Practicum has organized practice-oriented dental implantology courses based on the model of surgeon training in European hospitals, enabling dentists to have a firmer grasp of implantology.

Entering implantology can be difficult for dentists to achieve successfully. It is not a subject of university education, and with international universities and courses being focused largely on theoretical orientation, it proves a time-consuming endeavor. Furthermore, in international education and training programs, the dentists almost never work on patients or might work on phantom cases, classified as hands-on. This, according to Prof. Rainer Valentin, board member of the German Society for Dental Implantology (DGZ), led to education in implantology placing an increasing emphasis on theoretical training, which then results in a neglect of practical experience and, most importantly, the proof thereof.

This phenomenon is repeated globally and results in dentists often lacking in confidence and developing a fear of complicated cases, which essentially leads to long pauses between individual implants and a limited learning curve.

**Learning by doing**

The Q-Implant Marathon is one reaction to this situation in the continuous education sector. Started in 2003 in Cuba, and since conducted more than 45 times in four countries worldwide, the course is designed to be purely hands-on with a real patient experience under strict supervision from international surgeons and university hospitals. Participants with a strong theoretical foundation in implantology spend five days assisting in and performing surgery, placing approximately 30 implants within this short period.

“One only is confident doing what one knows,” said Dr. Harald Glas from Vienna, summarizing the positive effect of practical education. During the Q-Implant Marathon, Glas worked with international peers and supervisors on several cases a day. Every case is discussed beforehand with the supervising tutor and assisting surgeon. Furthermore, even during the surgery, questions about surgical treatments are addressed.

Patients are prepared and followed-up by the resident team of the university hospital and, in most cases, are immediately provided with long-term temporary restorations so participants can see the result of the treatment and complete their photographic documentation.

The phased approach of the Q-Implant Marathon, which accounts for 45 dental OME points, divides participants in three levels: Beginner, Advanced I, and Advanced II. This gives dental practitioners an opportunity to learn the relevant practical knowledge they require at their home clinics.

Beginners’ courses are working on basic implant cases whereas surgeons with considerable experience can venture into more complicated cases with the knowledge and safety of having a supervisor to discuss the case and assist during surgery.

The concept of hands-on courses has been influenced by surgeon training in European hospitals where emphasis on practical surgical training of young doctors is at the center from day one. The experienced surgeon guides the hand of the assistant physician and gives him the feeling for working on patients while in a safe and controlled environment.

“Learning by doing is the most successful way to gain experience in implantology and that is why we do it that way,” said Dr. Alfredo Valencia, the scientific director of the Q-Implant Marathon program.

**A focus on the United States**

Today, the concept has been rolled out throughout three permanent locations worldwide with one in Dominican Republic and two courses in Asia. In the last eight years, the Trinon Collegium Practicum has seen more than 2,000 dentists participate in the Q-Implant Marathon with more than 12,000 patients treated and more than 30,000 implants placed. The decision to conduct these hands-on courses in Dominican Republic stems from the rising number of dental implantologists in the United States and its surrounding regions, a growing number of patients demanding a high level of care and the overall lack of practice-oriented courses in close proximity to American dentist. The course in Dominican Republic is based in Santo Domingo and has been conducted more than 26 times. This course collaborates with private clinics, where the clinic equipment is comparable to U.S. standards, similarly, the infrastructure is more or less comparable to the situation in the United States. All of the Trinon Collegium Practicum courses have ensured that conditions under which surgeons work have appropriate standards including surgical equipment, professional tooth scaling for patients, digital X-ray equipment and modern dental treatment chairs.

The head instructor for the Q-Implant Marathon in Santo Domingo is Valencia, who studied human medicine at the Oviedo University in Spain and specialized in stomatology, oral-maxillofacial surgery and implantology over the years. Valencia is supported by a team of assisting tutors, whom he personally recruited. Most of these tutors have learned implantology from him.

“So I know them well and it is easy for me to work with them,” Valencia said.

The atmosphere is harmonious: even after 12 hours in the surgery room, the groups still like to meet for an evening meal. Courses in Santo Domingo have developed even further over time with regard to patient care and technical aspects of surgery. One of the most important improvements has been patient selection. The local team is now able to assign patients to suit the ability and the needs of participants.

**Contact information**

The Q-Implant Marathon is conducted six to eight times a year in the Dominican Republic and Asia. To find out more about the Q-Implant Marathon, contact Optimun Solution Group, Mac Kubiak, call (877) 705-1002, e-mail info@implantologycourses.com or see www.implantologycourses.com

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**Trinon Collegium Practicum: practical implantology courses for clinicians**

The Q-Implant Marathon team with participants in Santo Domingo. Photos/Provided by Trinon Collegium Practicum
The ICOI will be holding its Spring Implant Symposium at the Sheraton Centre in downtown Toronto, Canada, from April 27–29.

The Sheraton Centre hotel is located in the heart of Toronto, cheek-by-jowl to the financial and theater districts and sits on top of Toronto’s famous massive underground shopping mall, the PATH.

The Sheraton is conveniently located near museums and Toronto’s professional sports arenas.

The scientific program was designed by Dr. Natalie Wong with assistance by her committee members, Drs. Blake Nicolucci and Yvan Poitras. The full 2 ½-day program is as follows:

**Friday, April 27**

“*When Do We Use Digital Imaging to Enhance Implant Therapy?***

Session host: Dr. Blake Nicolucci

1 to 1:15 p.m.:
- Drs. Ken Judy, Carl Misch and Blake Nicolucci, Opening Ceremony

1:15 to 2:15 p.m.:
- Dr. Michael Pikos, “Cone Beam CT: The Value of Pre- and Post-Graft Scanning for Implant Reconstruction”

2:15 to 3:15 p.m.:
- Dr. George Mandelaris, “Clinical Myths and Realities of Computer-Guided Implant Therapy”

3:15 to 3:45 p.m.:
- Break with exhibitors

3:45 to 4:45 p.m.:
- Dr. Richard Nejat, “Computer-Guided Surgery and CAD/CAM Technology: Computer Generated Surgical Guides with Extractions and Immediate Provisionalization”

4:45 to 5:45 p.m.:
- Dr. Natalie Wong, “Destination … Digital! From Plans, Scans and Now Digital Impressions”

6 to 7:30 p.m.:
- Tabletop and Poster Presentations and Welcome Reception

**Saturday, April 28:**

Morning Session

“*What a Restorative Dentist Should Know About Implant Surgery***

Session host: Dr. Scott Ganz

8:30 to 9:30 a.m.:
- Dr. Bach Le, “Avoiding and Managing Esthetic Complications Associated with Implant Therapy”

9:30 to 10:30 a.m.:
- Dr. Avi Schettrit, “Implant Design: Healing Prosthetic Consequences”

10:30 to 11 a.m.:
- Break with exhibitors

11 a.m. to 12 p.m.:
- Dr. Carl Misch, “Sequence of Treatment for Esthetics in the Pre-maxilla of Implant Prostheses”

12 to 1 p.m.:
- Lunch with exhibitors

**Afternoon Session**

“*What a Surgeon Should Know About Implant Prosthetics***

Session host: Dr. Natalie Wong

1 to 2 p.m.:

2 to 3 p.m.:
- Dr. Joseph Kan, “Prosthetic Driven Esthetic Anterior Implant Surgery”

3 to 3:30 p.m.:
- Break with exhibitors

3:30 to 4:30 p.m.:
- Dr. Barry Goldenberg, “The Ideal Partnership to Successful Implant Prosthodontics: Each One’s Role from Diagnosis to Treatment through Maintenance”

4:30 to 5:30 p.m.:
- Dr. Ken Hebel, “Effective Comprehensive Treatment Planning and Consultation for Restorative and Implant Dentistry”

6 to 7 p.m.: Awards ceremony

**Sunday, April 29:**

Morning Session

“*Emerging Surgical Techniques to Enhance Treatment Outcomes***

Session host: Dr. Yvan Poitras

8:30 to 9:30 a.m.:
- Dr. Blake Nicolucci, “Pre-implant Bone Manipulation”

9:30 to 10:30 a.m.:
- Dr. Yvan Poitras, “Alternate Treatment Plans and Their Prognosis in Implant Dentistry”

10:30 to 11 a.m.:
- Break with exhibitors

11 a.m. to 12 p.m.:
- Dr. Stephen Wallace, “Changing Paradigms in Maxillary Sinus Elevation”

12 to 1 p.m.: Lunch with exhibitors

**Afternoon Session**

“*Emerging Prosthetic Techniques/Procedures to Augment Implant Outcomes***

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On Friday morning, April 27, Nobel Biocare and the Misch Institute will give pre-symposium workshops. Details of these two workshops appear below.

**Nobel Biocare course**

**Time/day:** 8 a.m. to noon Friday  
**Course fee:** Free  
**Attendance is limited. First come, first served.**

**Dr. Anastasia Cholakis:** “Delayed Implant Treatment Complications — Prevention and Treatment”  
This seminar will review some delayed implant treatment complications such as hard- and soft-tissue loss. Peri-implant mucositis, soft tissue recession or dehiscences and peri-implantitis will be discussed as well as preventive measures and treatment modalities. An in-office implant maintenance protocol will be outlined to assist in the monitoring of the peri-implant tissues. At the end of this seminar the participant should be able to:  
- Identify soft- and hard-tissue complications  
- Adopt preventive strategies  
- Have an understanding of some current treatment modalities  
- Implement an in-office peri-implant maintenance program

**Misch Implant Institute course**

**Time/day:** 9 a.m. to noon Friday  
**Course fee:** $195  
**Attendance is limited. First come, first served.**

**Dr. Carl E. Misch:** “Key Implant Position and Implant Number for Fixed Prostheses”  
In every treatment plan for missing multiple teeth there are key implant positions, which are more important, related to biomechanics. There are four guidelines to determine these positions:  
- No cantilevers  
- No 3-adjacent pontics  
- No multi-bridge foundations  
- The canine and first molar rules  

Cantilevers are force magnifiers. Three adjacent pontics not only overload the adjacent abutment, the flexure of the metal is 27 times the flexure of a 1-pontic prosthesis. The canine and first molar are key positions for an arch and, whenever missing, should be replaced with an implant (rather than a pontic). Arch dynamics (especially for maxillae) require the structure to be considered as a 3-sided open pentagon. At least one implant in each section is required for each edentulous segment. Once these key positions are determined, the additional implants required to restore the patient are considered based upon patient force factors and the bone density in the edentulous sites.

Delegates to this symposium should take advantage of these pre-symposium courses for additional C.E. credits.

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Session host: Dr. Dwayne Karateew  
1 to 2 p.m. Dr. Murray Arlin: “Surgical Risk Factors and Complications — How to Treat and How to Avoid Them”  
2 to 3 p.m. Dr. Jamie Lozada: “Benefits of Provisional Restorations for Immediate Loading Protocols”  
3 to 4 p.m. Dr. Dwayne Karateew: “Prosthetic Strategies to Enhance Peri-Implant Soft Tissue Esthetics”

**ADIA program**

ICOI’s component society, the Association of Dental Implant Auxiliaries (ADIA), will be holding a 1½-day program for hygienists, dental assistants and front office staff members. In addition to the Friday afternoon programs, the ADIA will on Saturday give certification courses for these three areas of the dental practice. The program is as follows:

**Friday, April 27**

1:00 to 1:15 p.m. Introductions  
1:15 to 2:35 p.m. Carla Frey, “Transforming and Growing Your Dental Team”  
2:35 to 3:15 p.m. Gisèle Choquette, “Successful Lifelong Oral Hygiene with iTOP Technique”  
3:15 to 3:45 p.m. Break  
3:45 to 4:45 p.m. Yva Khalil, “Aesthetics Perceptions”  
4:45 to 5:45 p.m. Audree Beaudin, “Understanding Biomaterials”

**Certification programs**

**Saturday, April 28**  
(Please choose one program.)  
Programs are conducted simultaneously in three different rooms.  
8 a.m. to 6 p.m. Vavi Bohbot and Carla Frey, “Dental Assisting Implant Certification Program” (DAICP)  
- Includes: terminology and definitions; classification and definitions of dental implants; contraindications; implant/tissue interfaces; assessment, diagnosis and treatment planning; implant surgical and prosthetic procedures; maintenance and evaluation procedures; management of implant complications and failures.

8 a.m. to 6 p.m. Karen Young, “Practice Management Implant Certification Program” (PMICP)  
- Includes: terminology and definitions; case presentation and handling objections; commonly asked questions and appropriate responses; fee presentation, financial options and arrangements; risk management, documentation and record keeping, practice plans and marketing, referrals, intra/interoffice communications.

C.E. credits will be given to both the doctors and auxiliary attendees.

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**Dr. Murray Arlin: “Surgical Risk Factors and Complications — How to Treat and How to Avoid Them”**

Dr. Murray Arlin: “Surgical Risk Factors and Complications — How to Treat and How to Avoid Them”  
Attendance is limited. First come, first served.

Dr. Carl E. Misch: “Key Implant Position and Implant Number for Fixed Prostheses”  
Attendance is limited. First come, first served.

Dr. Dwayne Karateew: “Prosthetic Strategies to Enhance Peri-Implant Soft Tissue Esthetics”  
Attendance is limited. First come, first served.

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**Dr. Jamie Lozada, “Benefits of Provisional Restorations for Immediate Loading Protocols”**

Dr. Jamie Lozada, “Benefits of Provisional Restorations for Immediate Loading Protocols”  
Attendance is limited. First come, first served.

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**Friday, April 27**

8 a.m. to 6 p.m. Vavi Bohbot and Carla Frey, “Dental Assisting Implant Certification Program” (DAICP)  
- Includes: terminology and definitions; classification and definitions of dental implants; indications and contraindications; biomaterials and measuring; implant/tissue interfaces; client evaluation, assessment and preparation; surgical procedures and infection control; surgical procedures; restorative procedures; provisional prostheses; and fabrication of temporary and laboratory considerations.

8 a.m. to 6 p.m. Karen Young, “Practice Management Implant Certification Program” (PMICP)  
- Includes: terminology and definitions; case presentation and handling objections; commonly asked questions and appropriate responses; fee presentation, financial options and arrangements; risk management, documentation and record keeping, practice plans and marketing, referrals, intra/interoffice communications.

C.E. credits will be given to both the doctors and auxiliary attendees.
Osteogenics to host 2012 Global Bone Grafting Symposium

Osteogenics Biomedical announces its 2012 Global Bone Grafting Symposium, unique for its focus on dental bone grafting and treatment planning, will be held April 19–21 at The Westin La Cantera Resort in San Antonio, Texas. The symposium will feature presentations by world-renowned speakers, interactive treatment-planning sessions with an expert panel and optional hands-on workshops. Speakers include Dr. Stephen Caldwell, Dr. Sascha Jovanovic, Dr. Bradley McAllister, Dr. Alvaro Ordonez, Dr. Michael Pikos, Dr. Istvan Urban, Dr. Howard Lay Wang and Dr. Thomas Wilson.

"After 30 years of attending a wide variety of C.E. courses, this symposium is at the top of my list," said Dr. Catherine Hebert about the 2011 symposium. "Fabulous speakers sharing an in-depth knowledge of the art and science of bone grafting... I will be back for more like this!"

On April 20 and 21, the symposium will feature 90-minute main podium lectures, question-and-answer sessions and interactive treatment planning sessions. Optional hands-on workshops will be offered the afternoon of Thursday, April 19. Workshop topics include: vertical and horizontal ridge augmentation techniques, ridge sculpting using tenting screws and acellular membranes and socket augmentation techniques to minimize buccal bone resorption and improve implant esthetics.

"This symposium is unique in that it offers a broad scope in treatment perspectives and protocols from several of the more prominent clinicians and researchers in our field," said Dr. Philip Bird. "I would recommend it to anyone treating patients in the field of implant and regenerative dentistry."

The Westin La Cantera Resort is an ideal location for attendees to learn. The resort features 36 holes of championship golf and views of Texas Hill Country.

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The Westin La Cantera in San Antonio, Texas, the site of Osteogenics 2012 Global Bone Grafting Symposium, features 36 holes of championship golf and views of Texas Hill Country. Photo/The Westin La Cantera
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The resort features 36 holes of championship golf, a world-class spa, six swimming pools and nature trails. The resort offers complimentary shuttle service to The Shops at La Cantera, an upscale shopping experience with a variety of dining options and Six Flags Fiesta Texas. Perched on top of 300 acres, the resort has views of the Texas Hill Country. Within driving distance are a number of top entertainment attractions including the San Antonio Riverwalk, The Alamo and SeaWorld.

Tuition for the main symposium on April 20 and April 21 is $795, offering up to 14 C.E. credits. Assistants and office personnel are welcome for $350. Clinicians can participate in one hands-on workshop of their choice on April 19 and earn four C.E. credits for an additional $695.

For more information on Osteogenics’ 2012 Global Bone Grafting Symposium, visit www.osteogenics.com/courses, or call Laura Wood at (806) 796-1923.

About Osteogenics Biomedical
Headquartered in Lubbock, Texas, Osteogenics Biomedical is a leader in the development of innovative dental bone grafting products serving periodontists, oral and maxillofacial surgeons and clinicians involved in regenerative and implant dentistry throughout the world. Osteogenics offers a complete line of bone grafting products including eNc® Combination and Mineralized Allografts, Cytoplast PTFE™ membranes, Cytoplast™ collagen membranes, Vitala™ porcine collagen membranes, Cytoplast PTFE suture and the Profix™ Precision Fixation System.

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The entire Legacy system includes seven implant diameters (3.2, 3.7, 4.2, 4.7, 5.2, 5.7, 7.0mm) & six implant lengths (6, 8, 10, 11.5, 13, 16mm)

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Not all zirconia is created equal. Currently, worldwide it is estimated that 3 percent of patients may be sensitive to titanium.\(^1\)\(^-\)\(^7\)

In addition, the systemic toxicity associated with titanium nanotechnology is still unknown.\(^4\) However, it does appear there is peripheral organ accumulation of metal ions in certain clinical situations.\(^1\)\(^\text{a}\)\(^-\)\(^\text{e}\)

How this affects overall health is still unknown. With increasing frequency, patients are requesting metal-free biologic implants and restorative solutions. Many holistic and esthetically oriented doctors and patients are looking for a metal-free esthetic option in tooth replacement therapy.

Zirconia biocompatibility has been successfully documented in animal studies and human studies. These studies have found zirconia to be biologically compatible with osseointegration. Specifically, they have reported cellular responses similar to titanium, similar healing times, similar biomechanical strength and similar soft-tissue biologic width, and similar removal torque values.\(^1\)\(^1\)\(^-\)\(^2\)\(^5\)

Additionally, several studies have shown less inflammatory infiltrate at the implant abutment junction and less bacterial colonization in this region, which may have clinical significance regarding short- and long-term biofilm accumulation and susceptibility.\(^2\)\(^6\)\(^-\)\(^3\)\(^0\)

The only human clinical retrospective study to date in the literature on human success rates of zirconia reported a 92 percent success for smooth surface zirconia and 97 percent for rough surface zirconia over five years and 831 subjects.\(^3\)\(^1\)

Diagnosis and treatment planning

The author has been selectively placing zirconium Implants during the last three years. The following considerations should be strictly adhered to when considering diagnosis and placement: Consider guided surgery for optimal alignment from a top(crown)-down approach. The abutment can be prepped up to 20 degrees. Any misalignment beyond 20 degrees will cause restorative complications. Snap Caps and Analogs are available for impressions and lab processes (Figs. 3-5).

Only place the implant in healthy patients with no systemic and local risk factors such as smoking, diabetes, poor bone quality and metabolic deficiencies. Type 1-2 host bone is ideal for successful integration.

Zirconia tends to lag four weeks behind in cellular biologic fixation, according to animal studies. In sites with native bone, I will allow implants to remain undisturbed for four months on the lower and six months on the upper.

Limiting any micromotion at the bone-

\(^*\)From Page 1
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to implant interface is crucial. An essex appliance is recommended during healing. Because grafted sites still contain areas of devitalized bone, longer healing times are important.

The following healing times are suggested for grafted sites. Allow grafted bone in extraction sockets on the maxillary arch to heal a minimum of six months, even when using bioactive modifiers; sinus grafts a minimum of eight months; and lateral ridge augmentations on the upper and lower arch eight months prior to implant placement.

Consider undersizing the osteotomy to develop optimal primary stability. Progressive long-term loading in provisionals is highly recommended to begin the accommodative physiologic bone response at the cellular level. There is no replacement for experience, and the success of zirconia implant therapy is directly related to the operators’ surgical and prosthetic skills and experience.

The biology

The primary means of surface modification to enhance surface microtexture on zirconia include acid etching, laser etching and sandblasting. These processes will enhance the hosts’ cellular response and secondary fixation. However, remember zirconia’s secondary fixation occurs about four weeks slower than titanium. Therefore, not only is protected healing required, but longer healing times are beneficial.

Crestal biologic bone response will always include accommodative bone resorption to the first thread. As a result of the implant design, 2 mm of bone loss will occur upon placement to provide room for biologic width (Fig. 6).

A two-piece design with a medialized offset will eventually provide the opportunity to preserve crestal bone, while providing optimal restorative interface options. Immediate loading and implants

* From Page 14

* Continue on Page 18

Fig. 6: As a result of the implant design, 2 mm of bone loss will occur upon placement to provide room for biologic width.

Fig. 7: Soft-tissue response is remarkable with crestal creeping soft-tissue attachment over time.

Fig. 8: The bone to implant contact and removal torque analysis for zirconium and titanium is the same.

Fig. 9: The esthetic benefits of zirconia prevent the grey show-through associated with many titanium implants, particularly in the thin biotypes.

Fig. 10: A 55-year-old man with remarkable health had lost #8 five years prior. The area was never grafted. Zirconia success is optimal in host bone.

Fig. 11: A 4.0 by 13 Z-Look was secured under 50 ncm of torque.

Fig. 12: An essex appliance was placed for the duration of the four-month healing interval.
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placed into extraction sockets is not recommended at this time, as there is not enough clinical information or literature to support this approach.

Soft-tissue response is remarkable with crestal creeping soft-tissue attachment over time (Fig. 7). It has been shown fibroblasts migrate extremely well on zirconia surfaces. As well, biofilm development is retarding as result of the surface biomechanics. To date, I have not reported any biomechanical failures including fracture, nor have any been reported in the literature. It appears from the literature that at the 12-week point in animal studies, the bone to implant contact and removal torque analysis for zirconium and titanium is the same (Fig 8).

Stress distribution for zirconia and titanium is the same. The esthetic benefits of zirconia prevent the grey show-through associated with many titanium implants, particularly in the thin biotypes (Fig. 9).

A case study

A 55-year-old man with remarkable health had lost #8 five years prior. The area was never grafted. Zirconia success is optimal in host bone (Fig. 10). A 4.0 by 13 Z–Look was secured under 50 ncm of torque (Fig. 11). An essex appliance was placed for the duration of the four-month healing interval (Fig. 12). A four-week post-op revealed dynamic soft-tissue health and composition. A provisional was placed at four months and progressively loaded over the next two months (Fig. 13).

A final all-zirconium crown was placed at six months. X-ray and cone beam at the one-year mark reveal crestal bone loss to the first thread. However, they also show excellent tissue stability and esthetics (Figs. 14-18).

Editor’s note: References are available upon request from the publisher.

About the author

DAVID DIGIALLORENZO, DMD, received his training at the University of Pennsylvania in the department of periodontics and periodontal prosthesis in the early 1990s. His training included prosthodontics, orthodontics, periodontics and advanced oral reconstructive techniques including oral implantology. He is currently in private practice in two locations in Pennsylvania, focused on laser esthetic and reconstructive periodontics, dental implantology, advanced reconstructive case management, advanced teeth-in-a-day and TMJ. DiGiallorenzo works with more than 60 referring doctors in the country and treats patients from every state. He is a past clinical instructor at the University of Pennsylvania, Department of Periodontics. He lectures both nationally and internationally at local and national meetings. He is a key opinion leader and consultant for DENTSPLY, Synthase, Keystone, Z–Look (Zirconium Metal Free Implants) and Orapharma. DiGiallorenzo runs a holistic wellness center attached to his practice offering acupuncture, facial plastics, relexology, cranial sacral therapy, laser therapy, medical detoxification for heavy metal overload, infrared sauna therapy and nutrition.
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