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Vol. 5, No. 2



ITI celebrates 30 years World Symposium taking place in April in Switzerland

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AO's 25 anniversary Learn and have fun in Orlando this month at annual meeting

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SurgiGuide by Materialise Drill guides provide link between planning, treatment

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Scientists develop smart coating for implants

By Daniel Zimmerman, DTI Group Editor

Osseointegration remains one of the biggest challenges in implant dentistry. Scientists from North Carolina State University are now reporting to have developed a "smart" coating that could help hip, knee and tooth replacements bond more closely with bone and ward off infections. Their research, which received funding by the U.S. government, could open doors to much safer and functional implants in dentistry.

According to the researchers, the new coating is comprised mainly of hydroxylapatite, a naturally occurring mineral also found in dentin and dental enamel. When applied to an implant it creates an amorphous outer layer touching the surrounding bone. This layer will dissolve over time, releasing calcium and phosphate, and encourage bone growth into the coating.

"We call it a smart coating because we can tailor the rate at which the amorphous layer dissolves to match the bone growth rate of each patient," said Dr. Afsaneh Rabiei, a North Carolina associate professor of mechanical and aerospace engineer-

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Immediate single-tooth replacement, provisionalization

By Dr. Graham Magee

With more than 40 years of clinical evidence, titanium endosseous implants have become an acceptable (evidence-based) form of treatment to replace natural teeth and should be considered as an alternative to either a partial denture or bridge.

Immediate implant placement with simultaneous immediate function or immediate loading has been gaining momentum during recent years and can be a very predictable method in providing implant treatment for our patients.

There have been various timeframes used for the definition of immediate implant placement. Hammerle et al. (2004) suggested that immediate implant placement was when an implant was placed following tooth extraction and as part of the same surgical procedure.

In the same paper, the consensus statements say, "implants should not be placed at the time of tooth extraction if the residual tooth morphology precludes attainment of primary stability."

It also states that, "If buccal plate integrity is lost, implant placement is not recommended at the time of tooth removal. Rather, augmentation therapy is performed."

The implant is then placed after healing, that being 12 to 16 weeks,



Fig. 1: Radiograph of failing upper left central incisor.

or even longer than 16 weeks.

It has also been reported that infection adversely affects immediate implant placement (Rosenquist and Grenthe 1996; Grunder et al. 1999) and is a contraindication for immediate placement of an implant into an extraction socket.



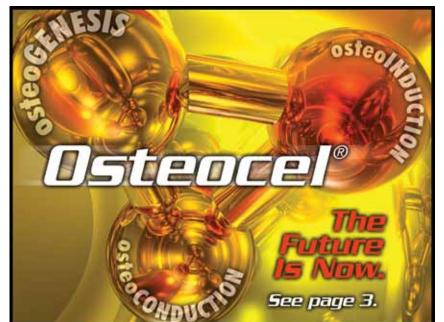


Fig. 2: Pre-operative view of UL1.



Fig. 3: Extraction of UL1.

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ITI World Symposium 2010: 30 years of leadership, credibility

The International Team for Implantology (ITI), a leading academic organization dedicated to the promotion of evidence-based research and education in the field of implant dentistry, is hosting the 11th ITI World Symposium from April 15–17 in Geneva, Switzerland.

At the same time, the organization, which was founded in 1980, is celebrating its 30th anniversary.

Since the first ITI World Symposium in 1998, the meeting has developed into one of the most prestigious implant dentistry events worldwide. Under the heading "30 years of leadership and credibility", a total of 104 experts from 25 countries will present on current themes and developments in the field. The following main areas will be explored at both a theoretical and practical level over the symposium's three days:

- New clinical methods for diagnosis and treatment planning
- New and proven treatment procedures
- Complications in implant dentistry or dealing with reality

There will be simultaneous translation available for all the presentations in the main sessions from English into German, French, Italian, Spanish, Portuguese, Japanese, Korean, Mandarin Chinese, Russian, Turkish and Farsi.

For the first time, the ITI World Symposium is complementing its main sessions with two full-day presymposium courses on April 14 as well as an industry exhibition.

The attractive and historic city of Geneva at the heart of Europe is the ideal location for the event. The city's excellent infrastructure in combination with the Palexpo Congress Center offers both exhibitors and participants excellent conditions.

For detailed information and to register, go to www.iti.org.

About the ITI

The International Team for Implantology (ITI) unites professionals around the world from every field of implant dentistry and related tissue regeneration. As an independent academic association, it actively

promotes networking and exchange among its membership. ITI fellows and members, who now number more than 7,000 in total, regularly share their knowledge and expertise from research and clinical practice at meetings, courses and congresses with the objective of continuously improving treatment methods and outcomes to the benefit of their patients.

The ITI is active in three principal areas: research, development and education. In 30 years, the ITI has built a reputation for scientific rigor combined with concern for the welfare of patients. The organization focuses on the development of well-documented treatment guidelines backed by extensive clinical testing and the compilation of long-term results.

The ITI funds research as well as scholarships for young clinicians, organizes congresses and continuing-education events and also publishes reference books such as the ITI Treatment Guide series. For more information, see www.iti.org.

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ing and co-author of a paper describing the research. "This is important because people have very different rates of bone growth."

He added that his team also incorporated silver nanoparticles

throughout the coating to act as antimicrobial agents as the amorphous layer dissolves. This will not only limit the amount of antibiotics patients will need following surgery, but provide protection from infection at the implant site for the life of the implant, Rabiei said.

Current coating processes, involv-

ing hydroxyapatite and other forms of calcium phosphate, have shown several disadvantages and limited flexibility in controlling coating crystallinity.

Earlier studies also found that hydroxylapatite may not resorb quickly enough and may block the space for new bone tissue to grow.

Tell us what you think!

Do you have general comments or criticism you would like to share? Is there a particular topic you would like to see more articles about? Let us know by e-mailing us at *feedback@dental-tribune.com*. If you would like to make any change to your subscription (name, address or to opt out) please send us an e-mail at *database@dental-tribune.com* and be sure to include which publication you are referring to. Also, please note that subscription changes can take up to 6 weeks to process.

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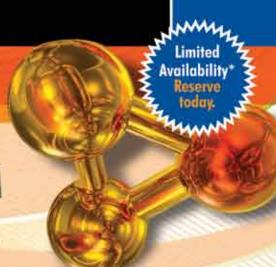
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The 25th Annual Academy of Osseointegration Meeting

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STEM CELL APPLICATIONS for Implant Site Preparation and for Around Natural Teeth

presented by Bradley S. McAllister, DDS, PhD



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Predicatable treatment concept

Immediate implant placement and provisionalization is a predictable treatment concept (De Rouck et al. 2008). The success rate is at least com-

parable to data published for singletooth implant placement using standard protocols in healed sites.

This happens providing careful appropriate patient selection is used and the surgeon is familiar with the techniques that differ from the standard two-stage protocol for implant

placement.

For the patient, the main advantage for immediate replacement and provisionalization is fewer surgical visits as well as providing immediate esthetics that are virtually indistinguishable to the original tooth. Sometimes, if the tooth being replaced is discolored due to non-vitality, the esthetics will provide an immediate improvement.

For the clinician, immediate replacement allows for minimal disruption of the soft tissue providing immediate peri-implant support through careful manufacture and design of the provisional restoration. This helps to maintain the stability of the gingival marginal tissues, which is necessary for a successful esthetic outcome.

Root-filling failure

The following is a case study of a 50-year-old female with a history of

a failing root-filled, upper-left central incisor. The root filling had been present for approximately 25 years and this had been apicected approximately 13 months before the tooth became problematic (Fig. 1).

The patient did not want another apicectomy and requested that the tooth should be extracted. The various options for restorations were discussed and as the neighboring central incisor was root filled and restored with a post crown, the lateral incisor was restored with a veneer due to microdontia, a bridge was not a viable option. The patient was adamant that she did not want a partial denture.

As the tooth was not infected and investigation had shown that the buccal plate was still intact, it was decided that the tooth could be extracted and immediately replaced with an implant fixture. This was to be utilized to support a Nobel Biocare immediate temporary abutment and a provisional crown

What the treatment involved

Under local anaesthesia, a crevicular incision was used and no flap reflection. The upper left central incisor was extracted using a very careful (atraumatic) technique with a periotome to preserve the buccal plate of bone and careful manipulation of the gingival tissues

Once the tooth was removed, the socket walls were curetted to remove any remnants of periodontal fibres or granulation tissue. The socket was inspected to ensure that the buccal plate was still intact (Fig. 3).

Using the standard protocol, the bone was first prepared by penetrating the palatal wall at the apical third. Great care needs to be taken in the osteotomy preparation as the palatal wall of the extraction socket is commonly very dense and difficult to prepare, which can cause "run-off" of the drill tip.

To achieve the initial perforation, the drill is held at an angle of approximately 45 degrees to the palatal wall. Once the drill has penetrated the pala-

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Fig. 4: Immediate provisional abutment (IPA).



Fig. 5: Provisional crown being manufactured on IPA.





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tal wall, the angle is changed to then run more-or-less parallel to the angle produced by the buccal plate.

In the anterior maxilla, implant placement is typically toward the palatal aspect of the socket. Ideally, there should be a space of 0.5 mm to 1 mm between the buccal plate and the anterior surface of the fixture. The site was further prepared using the standard drill sequence.

A Nobel Speedy Replace regular platform fixture (4 mm x 15 mm) was then placed, which stopped at a torque

value of 35 Ncm. It is recommended that if a torque value of 35 Ncm cannot be achieved, the implant should not be brought into immediate function.

A cover screw should be used and the implant submerged; therefore, some other temporary measure such as a Maryland Bridge should be used. In these conditions, the root could even be sectioned from the extracted tooth and the crown bonded to the adjacent tooth.

Primary stability is very important in this procedure as the bone support needs to be strong enough to support the fixture and prevent micromotion from exceeding the threshold above which fibrous encapsulation prevails over osseointegration (Szmukler-Moncler et al. 1998).

An immediate provisional abutment (IPA) (Fig. 4) was fitted to the implant and fastened down to 20 Ncm.

The abutment is non-engaging, screwretained and inserted using a multiunit abutment driver.

The abutment has a 1.5 mm depth of shoulder and comes with a plastic coating, which can be used with acrylic provisional materials. I find, however, that when using composite materials it is better to discard the coping and cement the composite to the IPA.

A provisional composite crown was pre-manufactured by the laboratory. A small amount of Tetric Flow composite (any flowable composite would also work) was placed in the provisional crown. A sufficient amount was used to engage with the metal of the IPA, but not spill out and touch the tissues. This was then light cured whilst the provisional was supported in the correct position.

The provisional was than removed and placed on another IPA connected to a protection analogue. The voids were then filled with more Tetric Flow.

The margins were then shaped and polished to ensure a smooth shoulder with no ledges or deficiencies against the IPA (Figs. 5, 6). The provisional crown was then cemented to the IPA with a very small amount of Tempbond, ensuring that no cement extruded into the tissues.

Adjusting the provisional crown

It is important at this stage to ensure that the provisional crown is adjusted to ensure that there is no contact with the lower teeth in centric occlusion (Fig. 7) and no contact in any protrusive or excursive movements (for example, not immediate loading).

The patient was advised to try to avoid the provisional crown and not to apply any forces while eating for the first four weeks.

The provisional crown was left in situ for six months (it is recommended that an absolute minimum of three months should be allowed for osseointegration before disturbing the immediately placed implant). The





Fig. 6: Internal hex that has been created by curing flowable composite over the IPA.



Fig. 7: Immediate provisional abutment (IPA).





About the author

Dr. Graham Magee qualified at Liv-

erpool University in 1978 and in

1993 he created the Chester Dental

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provisional crown was removed and a fixture-head impression taken of the implant.

The adjacent post crown (upper right central incisor) was also prepared for a new crown to ensure a good match for both central incisors.

A Procera zirconium abutment was connected to the fixture (Fig. 8). The abutment screw was fastened down at the recommended torque of 35 Ncm. Procera porcelain crowns were fitted to both central incisors (Fig. 9).

The implant-retained crown was cemented with Tempbond. It is recommended that the definitive restorations on implants should be cemented with temporary cement as this allows access to the implant, if necessary.

Immediate implant placement is gaining momentum. Clinicians should be aware, however, that this is a higher-risk procedure and should only be attempted by those surgeons with experience in dental implant surgery particularly when dealing with the esthetic zone. III

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Fig. 8: Provisional crown being manufactured on IPA.



Fig. 9: Internal hex, which has been created by curing flowable composite over the IPA.



Fig. 10: Final restorations 18 months after fitting.

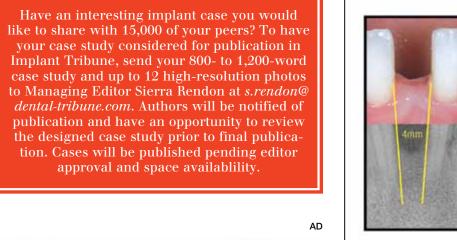
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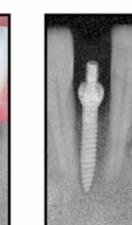
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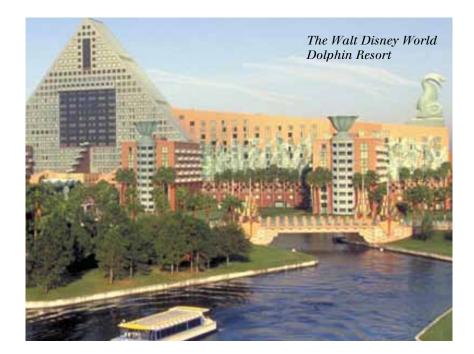
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AO celebrates 25 years by 'going to Disney World'

Various approaches, complications among meeting highlights

Different approaches to implant therapy and solutions to unexpected complications are among the highlights of the Academy of Osseointegration's 25th Anniversary Annual Meeting, March 4-6, at the Walt Disney World Dolphin Resort in Orlando.

"Treatment Approaches: Controversies in Implant Dentistry," to be held Friday, March 5, and Saturday's "Unexpected Complications: Complications and Solutions," are key pillars of the meeting's overall theme, "The Formula for Predictable Implant Success."

"The 2010 meeting will serve as a celebration of everything we have learned in the past 25 years, and how that knowledge is applied for the benefit of our patients today," Annual Meeting Committee Chair Dr. Stuart Froum, New York, N.Y., explains.

Approaches, controversies

Friday's implant therapy program gathers an international roster of experts to review the latest treatments and materials through an evidencebased approach. Saturday's session on complications will explore why problems occur, how to treat them and what we can do to prevent them.

The 25th anniversary annual meeting will kick off Thursday, March 4, with the opening symposium, "A Quarter Century of Experience: The Formula for Predictable Implant Success in the Esthetic Zone."

Other AO Annual Meeting highlights

Hands-on workshop: This premeeting, daylong series of sessions will explore how 3-D imaging and navigation technology helps providers fabricate surgical templates, generate final prosthesis and place implants more effectively as part of the "team approach" concept.

AO Corporate Forum: AO's 2010 Corporate Forum features 36 manufacturer-hosted educational sessions that showcase the latest research, products and developments.

"Two-Track" scientific program: The surgical track will explore "Surgical Procedures to Enhance Implant Success in the Esthetic Zone." The restorative track, "Where, When, Why and How," will cover prosthetic considerations for restoring angled or tilted implants; endodontics vs. implants; and early predictors for biological and technical complications.

Round table clinics: Twelve separate sessions offer attendees the opportunity to discuss diverse topics.

Limited attendance lectures: Increase interaction between annual meeting attendees and world-class clinicians on a wide range of topics.

Allied staff program: The annual meeting's allied staff program offers concurrent sessions designed for dental lab technicians and hygienists.

For more information, see the 2010 annual meeting at the academy's Web site, www.osseo.org.



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- Soft tissue separation (flap operation)
- Apicoectomy preparation (removal of infected root apex & destructed osseous tissue)
- Adherent cyst separation from the bone
- Cleaning deep socket after extraction of the tooth

BUGLE (TRUMPET) TIP

- Sinus membrane separation
- Artificial bone filling
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