issn 1868-3207 Sondernummer • Vol. 7 • Issue 2/2023

2/23

ceramic implants

international magazine of ceramic implant technology

case report
Integrative oral medicine meets aesthetic dentistry: Mission possible

interview
Advocating for the superiority of ceramic systems

events
Discover the EAO annual scientific meeting in Berlin

oemus


AWI
Albus WITAR Implants
www.witar.de

Fifty shades of white?

Dr Dirk U. Duddeck, Germany
Founder and Head of Research
of the CleanImplant Foundation

The advantages of implants fabricated from zirconium dioxide, such as aesthetics and high corrosion resistance, make them an interesting therapeutic alternative. Clinicians must realise, however, that just like implants made of titanium and titanium alloys, not every ceramic implant successfully osseointegrates.

The etiology of complications in implant therapy is not always found in those patients with pre-existing conditions, poor oral hygiene, or placement by those physicians with inadequate training and experience. Some manufacturers assert that these factors are the root cause of failure to osseointegrate, conveniently omitting their role as a result of flaws in the manufacturing and packaging process.

Implant quality is a key factor for successful osseointegration. After unboxing, every implant must be free of foreign particles and contaminants resulting from deficits in the complex chain of production. Sterility does not equate with a clean surface. Even though it is not rocket science, some manufacturers fail to strive for sufficient quality assurance. In particular, micron-sized plastic residues on the implant surface are associated with unwanted biological effects ranging from bone loss to implant failure.

We reached a critical degree of research integrity if a manufacturer in a renowned scientific journal portrays a level of implant cleanliness that technically does not exist—by showing manipulated and “cherry-picked” SEM images of his ceramic implant system.

It is even less supportive in building trust among implantologists if the analysis of another ceramic implant system reveals a cell-toxic biocide on the implant surface in a quality assessment study. After this manufacturer was informed accordingly, the authors of the study were subject to intimidation tactics and threats of legal action in the event of any publication of the scientific findings.

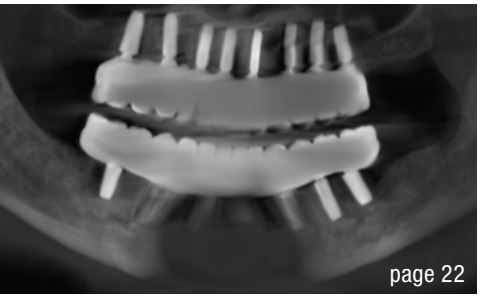
In this way, few manufacturers tarnish the success of the dental industry’s pursuit of enhancing clinical safety in ceramic implantology. Fortunately, there are responsible manufacturers who meet the quality expectations in their products and deliver flawless dental implants.

Ceramic implants deserve the trust of practitioners and patients, provided they are as clean as promised. Trust is like paper. Once it’s crumpled it can never be perfect again.

With respect,
Dr Dirk U. Duddeck

Dr Dirk U. Duddeck


page 14


page 22


page 34

Cover image courtesy of
Z-SYSTEMS
www.zsystems.com

Z-SYSTEMS
ceramic implants

SWISS MADE

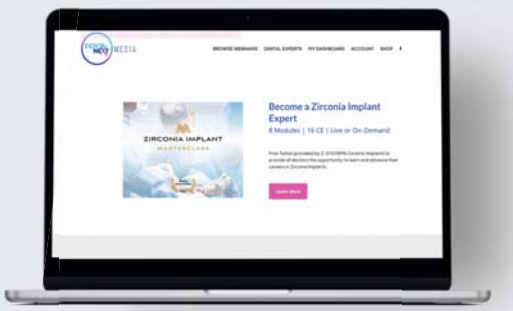
The world's FIRST and ONLY 100% fully-ceramic two-piece, **screw-retained conical connection implants.**

LEARN MORE

- Conical screw connection with internal thread for micro-gap-free connection and prevention of a pump effect.
- Wide range of straight and angled abutments for optimal esthetics and flexible functionality

Z-SYSTEMS provides all doctors the opportunity to **learn and advance their careers in Ceramic Implants!**

- On-Demand Instruction by Zirconia Implant Experts
- Earn Continuing Education Credits!



CONNECT NOW FOR FREE!

sales@zsystems.com
www.zsystems.com/ceramic-dental-implants

Integrative oral medicine meets aesthetic dentistry: Mission possible

Practice

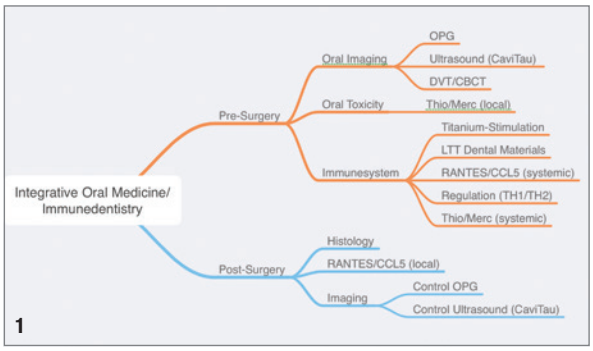
Drs Fabian Schick, Johann Lechner & Florian Notter, Germany

Introduction

Modern dental treatment concepts face a growing number of difficulties. Aesthetics, biocompatibility, and immunological release for the purpose of enhancing health are all factors that are increasingly important in addition to sustainability and functionality.

This article aims to demonstrate how bioinert materials and biological-functional regeneration-based integrative dental treatment concepts are progressively becoming promising superior treatment options that can even exceed the highest aesthetic demands. Sustainable, functional, and immunologically ideal results can all be accomplished simultaneously using minimally invasive and defect-oriented surgical procedures and protocols to optimise healing and regeneration of oral hard and soft tissues.

There is research on whether long-term immunological stress and dysregulation can cause chronic fatigue.[1] But it is not always clear where this persistent dysregulation and immunological stress comes from. Hence, views that chronic diseases also have an oral origin are becoming more frequent:



"We now know that many chronic diseases originate in the oral cavity," says Prof. Zeltner, Chairman WHO, 2022.[2]

Question

This case study demonstrates that the aesthetic restoration of a patient with a high smile line and immunological release by removal of chronic inflammatory lesions in the oral cavity are not at all incompatible.

Can immunologic stress occur in the oral cavity even when there are no acute symptoms? Can a disorder with

Fig. 1: Diagnostic scheme Integrative Oral Medicine/Immunedentistry. **Fig. 2:** Preoperative orthopantomograph (OPG) transalveolar ultrasound sonography.

an unknown etiology like chronic fatigue arise because of this continuous stress and the dysregulation it causes?

Material and methods

A middle-aged patient with a prominent smile line and strong aesthetic expectations comes to see us at the beginning of 2021. She inquires about the clarification of chronic inflammatory lesions in the oral and maxillofacial region as she suffers from chronic fatigue. We perform complete oral imaging, toxicological, and immunological tests in accordance with a standardised diagnostic system, after which we develop an individual treatment plan. The primary goal is to identify osteoimmunological chronic inflammatory lesions in the oral and maxillofacial region. Secondarily, we want to release and stabilise autologous immunological regulation through the removal of chronic stress. An overall health symptom such as chronic fatigue is also to be achieved through immunological release and the interdisciplinary connection can be brought up.

Oral imaging

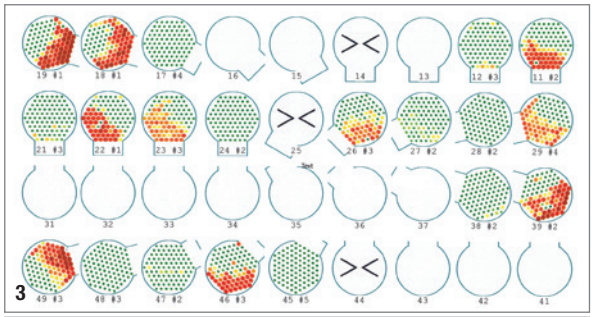
Prosthetically insufficiently restored teeth, metal-containing crowns, endodontically treated teeth 11, 23, 26, missing tooth 22. Possible apical osteolysis 21. No signs of other acute or chronic inflammatory lesions.

Transalveolar ultrasound sonography

Areas of lower bone density (red) and higher bone density (green) were visible using transalveolar bone densitometry and ultrasonography. Red areas surrounding root-treated teeth and in toothless bone areas indicate osteolytic degeneration of the bone, which is expected to have increased RANTES/CCL5 cytokine expression.[3] Hence, red bone areas indicate immunologic stresses such as unformed dental germs, endodontically treated teeth with increased expression of toxins such as thioethers and mercaptans, and improperly healed wounds. A three-dimensional CBCT/DVT is then performed if it is suspected that the relevant areas contain chronic inflammatory lesions.

Numerical evaluation of TAU measurement of bone density in CTU

A quantitative and qualitative evaluation of the osteolytic bone regions is required for individualised treatment planning. For this goal, the authors have created a method to evaluate each odonton's transalveolar ultrasound examination (TAU). The darker levels of each individual sensor field are analysed and evaluated for this purpose; this grade can, for example, support in the therapeutic decision of immediate implantation after removal of the osteolytic areas or delayed implantation. This prevents osteoimmunological stress and results in a problem-free osseointegration. A



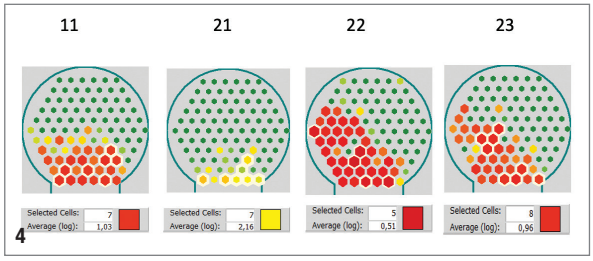


Fig. 3: Preoperative transalveolar bone densitometry (TAU), numerical evaluation of TAU measurement of bone density in CTU. **Fig. 4:** Transalveolar bone densitometry (TAU) for tooth region 11-21.

logarithmic average value (Average [log]) of the absorption intensity and, therefore, of the recorded bone density is computed by selecting the darkest sensor fields of the analysed odonton (area 11, 21, 22, 23 in red; Fig. 4).

A CTU of 0.51 for fatty degenerative osteolysis/osteonecrosis (FDOK/FDOJ) is shown in this instance at site 22. In order to enable an excellent biologic-functional regeneration with high bone quality, it was necessary to pay special attention to a complete removal of the osteolytic bone regions before implant drilling 22, extraction 23, and before implant insertion 22, 23. An implant osseointegration result that is sustainable and inflammation-free can be achieved by inserting the implant in healthy bone.[4]

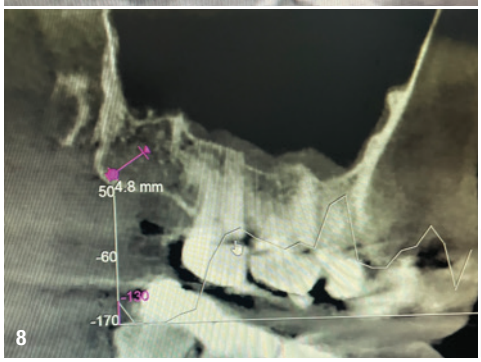
For an overview of CTUs and their interpretation, see the table below:

CTU	Colour	Consistency	Anatomy/ suspicion
0,24	Grey	Hollow Cavity	Fault?
0,23	Dark red	Dissolved/ liquid	Osteolysis
0,62	Light red	Soft/fatty	Osteonecrosis
1,18	Orange	Partially soft	Ostitis
1,68	Yellow-orange	Increasingly soft	Ischemia
1,85	Light yellow	Nerve structure	N. Infraalveolaris
1,96	Light green	Reduced hardness	Healthy Spongiosa
3,98	Green	Dense/solid	Cortical bone/ linea obliqua


5


6


7



8

Three-dimensional radiographic imaging

The findings in ultrasound are validated by significant chronic inflammation apical to the endodontically treated teeth 11, 23, and 26 (post-endodontic inflammation) and decreased Hounsfield values in bone regions with previous extractions.

Toxicological examination

Increased local expression of the toxicologically active bacterial metabolite thioether/mercaptan, which originates from remaining bacteria in endodontically treated teeth and is detected locally on the tooth using paper points that colours a particular test liquid more or less intensely depending on its exposure time.[5]

Immunological examination

Following blood samples showed, that the protein metabolites thioether and mercaptan that are toxicologically active were immunologically sensitised. And therefore, the clinical necessity for the surgical revision of the incompletely healed bone wounds with elevated cytokine expression (FDOK/FDOJ) and removal of the endodontically treated teeth was given.

Clinical image/aesthetic planning

Special consideration was also necessary in this case because the patient was also dissatisfied with her smile aesthetics. The aesthetic reconstruction has to include the different length and shade relationships as well as the additional high smile line. Immediate ceramic implants were designed for aesthetic purposes in addition to immunological benefits in order to reliably and sustainably avoid the appearance of metallic margins and to protect as much bone volume as possible.[6] In order to extend the clinical crowns aesthetically and create a harmonious appearance, a minimally invasive gum lift was also planned.

Surgical reconstruction

All chronic inflammatory lesions in the upper jaw were to be surgically removed using minimally invasive and defect-focused techniques especially in the aesthetically critical regions. The periapical ostitides and the chronically inflamed teeth 11, 22, and 23 were carefully removed. Fatty degenerated osteolysis (FDOJ/FDOK) in surrounding bone regions was checked for and carefully removed. The toothless jaw areas underwent the same process. Tissue samples were collected to confirm increased RANTES/CCL5 cytokine expression. When compared to healthy bone tissue, cytokine expressions were found to be 14 times higher.[7]

Clinical Immunology

Reactivity Mercaptans/Thioether			
INFg-stimulated	< 0.1	pg/ml	< 0.2
IL10-stimulated	66.6	pg/ml	< 10

9

Fig. 5: Periradicular osteolysis tooth 11. **Fig. 6:** Periradicular osteolysis tooth 23. **Fig. 7:** Periradicular osteolysis tooth 26. **Fig. 8:** Bone density (HU) measurement in region 18/19. **Fig. 9:** Immunological sensitisation to thioethers/mercaptans.

WE CAN WORK IT OUT.

These implant systems were awarded the CleanImplant “Trusted Quality” seal after an unbiased and peer-reviewed quality assessment.
See what’s new:

TRUSTED QUALITY
CLEAN IMPLANT
CERTIFIED • PEER-REVIEWED

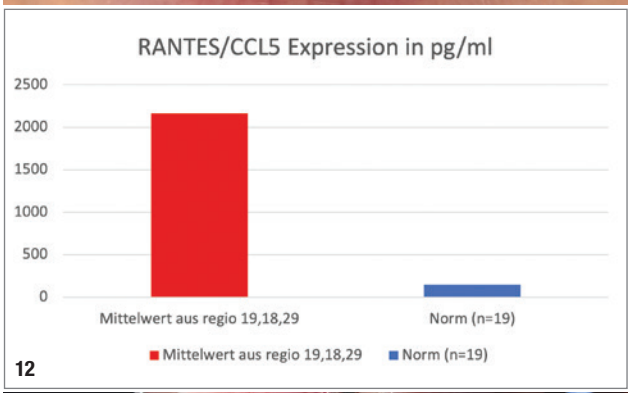
- SuperLine **DENTIUM**
- Astra Tech EV **DENTSPLY SIRONA**
- In-Kone **GLOBAL D**
- Inverta **SOUTHERN IMPLANTS**
- UnicCa **BTI**
- Patent **CHAMPIONS IMPLANTS**
- AnyRidge **MEGAGEN**
- Kontact S **BIOTECH DENTAL**
- ICX-Premium **MEDENTIS MEDICAL**
- Prama **SWEDEN & MARTINA**
- SDS 1.2 **SWISS DENTAL SOLUTIONS**
- whiteSKY **BREDENT MEDICAL**
- (R)Evolution **CHAMPIONS IMPLANTS**
- SDS 2.2 **SWISS DENTAL SOLUTIONS**
- T6 **NUCLEOSS**
- BlueDiamond **MEGAGEN**

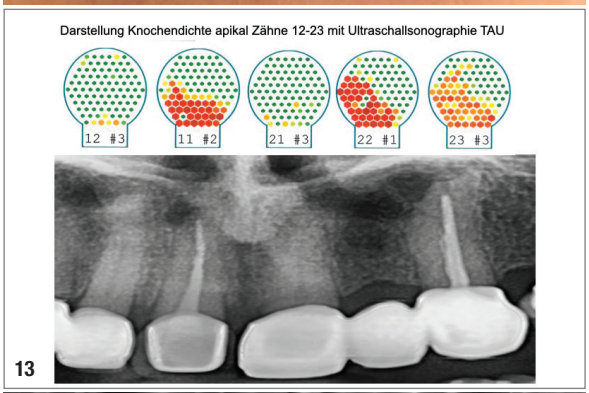
- Find out more. Join in and support the charitable initiative.
- Receive quality information about your implant in use.
- Provide more safety for your patients and avoid negligence claims.
- Win new patients as a CleanImplant Certified Dentist.

Visit us at
EAO BERLIN!
Booth C 06

More information about this non-profit initiative:
www.cleanimplant.com/dentists

CLEAN IMPLANT FOUNDATION





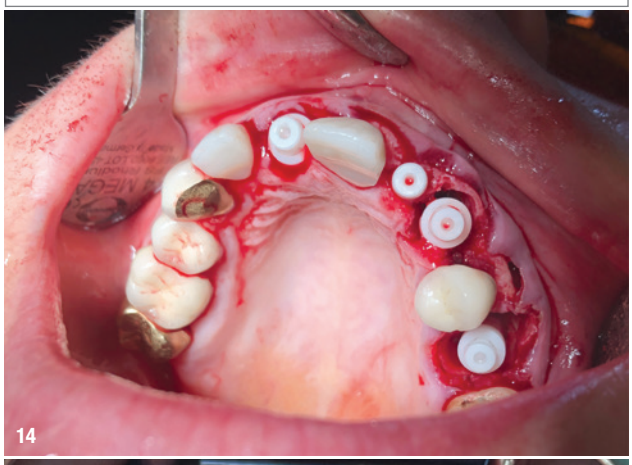


Fig. 10: Initial clinical situation upper jaw front for aesthetic planning. **Fig. 11:** Aesthetic planning of ideal tooth proportions. **Fig. 12:** Postoperative quantification of RANTES/CCL5 from intraoperatively collected tissue sample and comparison with healthy bone tissue.[7] **Fig. 13:** Bone density visualisation apical teeth 12-23 with ultrasound sonography TAU. **Fig. 14:** Intraoperative imaging after implantation 11, 22, 23, 26. **Fig. 15:** Postoperative control image (OPG). **Fig. 16:** Intraoperative image after healing of the implants, removal of metal restorations and preparation for metal-free, ceramic restorations. **Fig. 17:** Metal-free, ceramic restorations.

Biological-functional regeneration

Ozone gas was used to properly clean the bone, which was by this point healthy and free of inflammation.[8] The cavities created after curettage of the osteolytic areas apical to the endodontically treated teeth were filled with autologous blood concentrates (A-PRF), acting as "healing chambers" after disinfection and before implant placement.

It was possible to insert immediate ceramic implants in regions 11, 23, and 26 plus a late implant at site 22 following the removal of fatty degeneration (FDOK) in the correct prosthetic and aesthetic positions. This method enabled a one-stage treatment and preserving the soft tissue and bone that are essential for aesthetic reasons. In position 26, the aggressive, self-tapping thread was compactly anchored in the opposite compacta, enabling the primary stable insertion of the immediate ceramic implant. In order to create closed healing chambers, only autologous blood concentrates (PRF) were put into the gaps and the internal sinus lift.[9–11] To ensure the best possible regeneration of healthy local bone without provoking further immunological foreign body reactions to various bone substitute materials, the flaps on the implant are minimally invasively sutured in the sense of a tentpole approach. After that, liquid blood concentrate (I-PRF) was injected to all wound areas to deliver a significant quantity and concentration of growth factors at the start of the healing process.

Moreover, perioperative care was made to guarantee sufficient vitamin D levels for ideal bone metabolism and recovery.[12]

Prosthetic restoration

A stability check (periotest) was performed to evaluate the osseointegration following a three-month healing period. In order to improve the aesthetic outcome prior to the final prosthetic restoration, an electrosurgical gum lift of 1 to 2 mm was also performed in the maxillary anterior region. The inadequate metal-containing restorations were taken out four weeks after, and the final full-ceramic crowns were prepared. For the restorations, only full-ceramic materials were used. To prevent any immunological-allergological stress caused on by composite components, a conventional cement was used for cementation. In to achieve bilateral stability, implants 22 and 23 were connected to one another. Of course, there was no prosthetic connection between implants and teeth. Impressive features of the metal-free ceramic implants are their excellent soft-tissue compatibility and bacterial-sealing closure that creates inflammation-free soft tissues.

Immunological-health development

The patient's chronic fatigue was improved by removing immunological stress. Vitality has increased after the surgical and prosthetic intervention, and the patient is really happy with the aesthetic outcome.

Fig. 18: Upper anterior after healing and preparations of the implants for metal-free, ceramic restorations. **Fig. 19:** All-ceramic prosthetic restoration. **Fig. 20:** Aesthetic situation before treatment. **Fig. 21:** Aesthetic situation after treatment.

22

Fig. 22: Control image after prosthetic restoration and complete healing of the ceramic implants.

Discussion

In order to achieve immunological release and stabilise autologous immune regulation, integrative oral medicine attempts to eliminate chronic stress and chronic inflammatory lesions from the body, even in subacute states. When chronic stress can be seen as a root cause for chronic diseases,[1,13] the question arises whether this chronic stress can also originate in the oral cavity. But, even in the absence of pain or other symptoms, how can chronic stress in the oral and maxillary region be detected and identified? Can materials that are incompatible with the patient, endodontically treated teeth, and fatty degenerative bone regions (FDOJ/FDOK) cause immunological stress in the oral and maxillary region? In a previous article, the authors attempted to clarify these relationships using a systematic diagnostic approach.[14] Despite the use of advanced techniques, endodontic treatments frequently result in residual bacteria in the root canals.[15–18]

An immunological sensitisation to bacterial metabolites thioethers/mercaptans was detected and these were also measured in increased concentrations locally on the tooth. These toxic sulfur compounds might also block ATP from being generated at the mitochondrial membrane.[5] Furthermore, fatty degenerative osteolytic bone areas (FDOJ/FDOK) were detected, which included significant quantities of the proinflammatory cytokine RANTES/CCL5, by transalveolar bone densitometry with ultrasound (TAU). They are also hypothesised to be the origin of systemic endogenous regulatory issues.[7,14,19] Both, it has been able to improve the aesthetic problem using a minimally invasive technique and a defect-oriented approach.

As a conclusion, ceramic implants are highly recommended in terms of aesthetic and integrative immunological treatment concepts. So, rather from being seen as in conflict to established, well-researched therapy concepts, the treatment concepts of integrative oral medicine as they are presented here should be seen as a development and further evolution of those philosophies.

Summary

This case study demonstrates how to identify and treat chronic stress in the oral cavity of a patient suffering from chronic fatigue as well as how to recover and regenerate the affected areas in an aesthetic and functional way. By using minimally invasive techniques and biological-functional regeneration, the patient's condition could be drastically improved on both an immunological and an aesthetic level. Hence, integrative-complementary techniques can be con-sidered as a development and addition to well-established and efficient therapy methods in immunological and aesthetic regeneration. Since chronic stress is thought to be the root cause of chronic autoimmune diseases,[1,13,14] the elimination of immunological stress generating dysregulation from the oral and maxillofacial region may be related to chronic disorders.

Chronic fatigue in a patient has reportedly been remarkably improved by removing immunologic stress. To gather evidence, additional large-scale research on chronic fatigue needs to be done with parameters that could be consistently replicated. Hence, a suggestion for general therapy for chronic fatigue should not be made here. Immunological considerations and prosthetic-aesthetic requirements should be more closely combined in this context.

Literature

contact

Dr Fabian Schick
Specialist for Biological Dentistry and Ceramic Implants (ISMI/IAOCI)
drfabischick@outlook.de
www.dr-lechner.de

Dr Fabian Schick

CaviTAU®
TRANSALVEOLAR ULTRASOUND SONOGRAPHY

State-of-the-art ultrasound technology without radiation exposure.

Ensuring your implant success and the health of your patients.

The feeling when the implant is in place and my patient is happy: INCREDIBLE!

- Gentle and safe examination method
- Precise measurement of jawbone density
- Localisation of chronic inflammation in the jawbone

MORE INFORMATION:
www.cavitau.de

CONTACT:
info@cavitau.de

Order under:
shop.cavitau.de

MADE IN GERMANY

Single-tooth restoration with a two-piece Patent™ Implant

Immediate implant placement and loading in the aesthetic zone

Dr Harald Fahrenholz, Austria

Introduction

Today, practitioners have to meet growing patient demand for aesthetic tooth replacements that remain healthy in the long term, often involving immediate implant placement and loading. In the following article, a case is presented in which the patient's aesthetic zone was restored using a two-piece zirconia implant system which has been an integral part of the author's clinical armamentarium for over fifteen years. In clinical studies, this implant system has shown high survival rates, stable marginal bone levels and a favourable soft-tissue reaction.[1,2] Additionally, in an independent nine-year study—the first long-term study on two-piece zirconia implants—it demonstrated healthy and stable hard and soft tissue, excellent aesthetics with a visible increase in keratinised gingiva volume around all implants investigated, no fractures, and no peri-implantitis.[3] It is therefore ideally suited for the indication described.

Initial situation

The 41-year-old female patient presented to the author's practice in October 2021. Owing to a failing post and core restoration of an endodontically treated tooth #11, she expressed the desire for a fixed tooth replacement solution (Figs. 1a & b). The radiographic evaluation by means of CBCT revealed that there was sufficient bone volume in the site for the planned implant placement (Fig. 1c).

Treatment planning

As part of the surgical procedure, it was planned to remove the failing restoration, extract the remaining tooth root and immediately insert a two-piece zirconia implant (Patent™ Dental Implant System, Zircon Medical Management) into the extraction socket. Furthermore, it was planned to prepare the glass fiber post and core assembly, which serves as the prosthetic build-up of the implant system used, chairside in the same treatment session, to

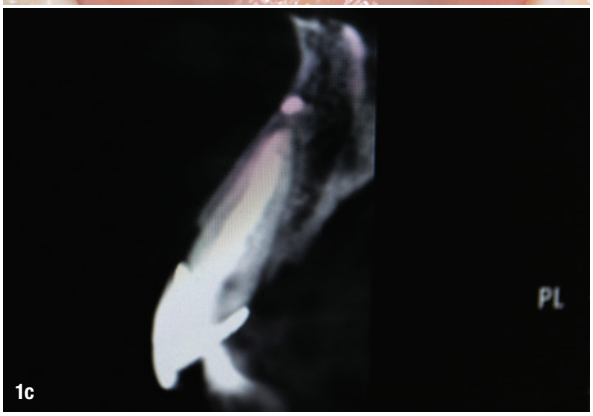


Fig. 1: Frontal **(a)**, occlusal **(b)** and radiographic **(c)** views of the initial situation.

Fig. 2: Root extraction. **Fig. 3:** Thorough curettage of the extraction socket. **Fig. 4:** Osteotomy preparation according to the drilling protocol of the manufacturer. **Fig. 5:** Ozone therapy of the implant bed.

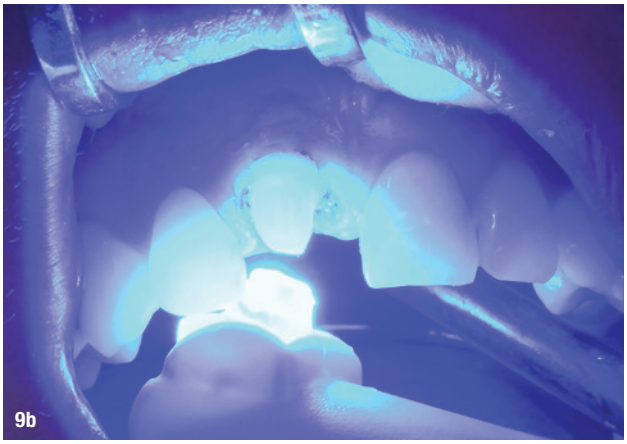
adhesively cement it on to the implant and to restore it with a provisional crown so that the patient could leave the dental practice after surgery without a missing tooth.

Surgical procedure

After local anaesthesia had been administered, a labial incision was made in the region of tooth #11 to facilitate the removal of the failing tooth. After the old restoration had been removed (Fig. 2), the underlying tooth root was extracted, and the extraction socket was carefully curetted to completely remove any fibrous tissue (Fig. 3). The osteotomy was prepared according to the drilling protocol of the implant manufacturer and under water cooling (Fig. 4). Once prepared, the osteotomy was treated with ozone to disinfect and sterilise the implant bed (Fig. 5). Thereafter, the two-piece zirconia implant with a diameter of 4.5 mm and a length of 13.0 mm was removed from the implant sleeve using an insertion tool and inserted into the osteotomy (Fig. 6). The implant was screwed into the bone using the torque wrench provided by the implant manufacturer (Fig. 7), up to a maximum torque of 35 Ncm. High primary stability of the inserted implant was achieved (Fig. 8).

Prosthetic restoration and healing

Immediately after implant insertion, the prefabricated glass fiber post was prepared extra-orally using a diamond bur and fitted into the 3C platform of the placed implant for try-in. The final preparation of the post was carried out intra-orally (Fig. 9a). After try-in of the provisional crown, which was fitted on to the prepared glass fiber post, both the post and provisional crown were removed again. The 3C platform of the implant was filled with a dual-polymerising cement (RelyX Unicem 2, 3M ESPE), and the prepared glass fiber post was inserted into it. Excess cement was removed and the glass fiber post was light-polymerised (Fig. 9b). The glass fiber post was isolated with Vaseline oil, and the provisional crown was subsequently cemented using a temporary cement mixture (Figs. 10a & b).



One week after surgery, the patient presented to the author's dental office for a follow-up appointment. Already at this time, an extremely beneficial and healthy soft-tissue reaction around the neck of the inserted implant was evident. After successful osseointegration and an uneventful healing period of three months, the definitive crown was delivered (Figs. 11a & b). At the 12-month follow-up, the soft-tissue conditions were considered healthy and stable, and the treatment result was deemed satisfactory from an aesthetic point of view (Fig. 12).

Discussion

The two-piece zirconia implant system used for the clinical case described is routinely and almost exclusively used in the author's practice. Thanks to its very rough endosteal surface, reliable bone healing is to be expected.[4] One of the main challenges in cases of immediate implant placement in the anterior region, like that described here, is the preservation of the alveolar bone (and the buccal plate in particular) during extraction. Also, correct positioning of the planned implant and the direction of insertion are of great importance to prevent the implant from penetrating the buccal bone. For this reason, it is necessary to drill slightly more palatally from the alveolar direction. Also, having a soft-tissue-level design, the implant used is placed at the equigingival level, which means that its crown margin is clearly visible and accessible during the entirety of the prosthetic procedure. For the same reason, excess cement can be easily and completely removed after cementation of the glass fiber post. As a result, the risk of cementitis due to subgingival cement remnants is virtually nonexistent.

Moreover, as a result of implant positioning equigingivally, and to the proper depth, too high a compression on the cortical bone is avoided, which would otherwise adversely impact marginal bone stability.[5] Furthermore, the glass fiber post used for the core build-up of the two-piece im-

Fig. 6: Insertion of the implant into the osteotomy. **Fig. 7:** Insertion of the implant using the torque wrench of the manufacturer. **Fig. 8:** Inserted implant after achieving high primary stability. **Fig. 9:** Intra-oral preparation of the glass fiber post after try-in **(a)** and light polymerisation of the cement **(b)**.

Fig. 10: Frontal **(a)** and occlusal **(b)** views of the clinical situation after delivery of the provisional restoration. **Fig. 11:** Frontal **(a)** and radiographic **(b)** views of the clinical situation after delivery of the definitive restoration after three months of healing. **Fig. 12:** Frontal clinical view of the final result after 12 months.

plant system used, offers added value regarding stability: Having a dentine-like modulus of elasticity, the glass fiber post attenuates masticatory forces transferred from the superstructure to the implant, minimising the fracture risk of the implant components as a result. Post preparation by means of a diamond bur is done in the same way a natural tooth or a post and core in endodontic dentistry would be prepared.

Conclusion

With the two-piece zirconia implant system used in the clinical case described, aesthetic restorations in the anterior area can be realised thanks to its natural-looking shade and its beneficial soft-tissue response. Also, thanks to its soft-tissue level design, which avoids a microgap at bone level, and the tissue-friendly and plaque-resistant implant material, zirconia, long-term successful treatment outcomes with minimal risk of biological late-term complications like peri-implantitis can be expected. The author has not experienced a single case of peri-implantitis in the more than fifteen years for which he has been using this implant system.

Literature

about the author

Born in Königssee, Bavaria, dental implant specialist **Dr Harald Fahrenholz** graduated from the Paul-Gerhardt-Gymnasium in Laubach in Germany before studying dentistry at the Johannes Gutenberg University in Mainz. In 1974, Dr Fahrenholz was granted his license to practice dentistry. He worked as an assistant dentist in Neumarkt-Sankt Veit and Munich between 1974 and 1978. Between 1978 and 2005, Dr Fahrenholz led his own practice in Grünwald near Munich. From 2001 to 2007, he served as deputy director of the CMF Institute in Vienna. In 2001 he obtained the certification “Tätigkeitsschwerpunkt Implantologie” of the BDIZ. Since June 2007, Dr Fahrenholz has headed the Vienna Center for Dental Aesthetics and since January 2017 the practices Zahnästhetik am Kohlmarkt in Vienna and Zahnästhetik in Stetten.

contact

Dr Harald Fahrenholz
Zahnästhetik am Kohlmarkt
Kohlmarkt 7/1/4/34
1010 Vienna, Austria
+43 1 8905947
www.zahnaesthetik-wien.at

Dr Harald Fahrenholz

Restoring anterior aesthetics with two-piece zirconia implants

Dr Saurabh Gupta, India

Zirconia implants are one of the newest and most exciting developments in dental implantology. Multiple studies have proved that zirconia implants induce little to no peri-implant tissue inflammation and allow for high levels of epithelial attachment. Additionally, these implants look more natural; hence, they provide improved aesthetics. Furthermore, they do not have metal components, which makes them ideal for people with metal sensitivities and patients who would prefer their implants to be metal-free.[1–3]

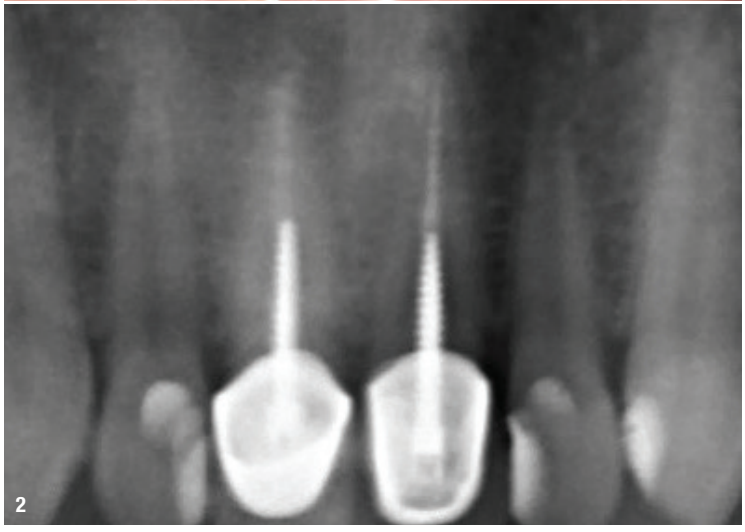


Fig. 1: Initial situation. **Fig. 2:** Initial radiograph.

Aesthetics around natural teeth can be challenging under normal circumstances. When teeth are to be replaced with implants, especially in the aesthetic zone, gingival tissue can complicate the desired results. In a patient with a thin gingival biotype, the grey of a titanium implant will show through, leading to a darker gingiva overlying that area and decreasing the aesthetics of the patient's smile. A patient who has had a missing anterior tooth for a period, resulting in resorption of the facial plate even with a thicker gingival biotype, will have less bone over the implant on the facial aspect of the ridge. The result, like with a thin gingival biotype, will be a shadow over the underlying implant that hampers the aesthetic result and does not blend with the adjacent tissue around the natural teeth.[4–7] In the following, a clinical case is described to demonstrate the use of two-piece ceramic implants in the anterior aesthetic zone to avoid this difficulty.

Case presentation

A 44-year-old male patient presented to our office to learn about options for replacement of his failing maxillary central incisors after undergoing partial root canal therapy. He also complained of greyish gingiva around the endodontically treated teeth and desired a metal-free solution (Figs. 1 & 2). Photographs of his teeth when smiling were taken to assess the overall aesthetic risk of the case. Treatment options were then discussed with the patient. After reviewing the options, the patient chose to have the endodontically treated teeth extracted and replaced with two-piece zirconia implants and metal-free crowns.

Surgical procedure

The guidelines for zirconia implant placement in the anterior zone and the drilling protocol specified by the manufacturer (Zeramex XT, Dentalpoint) were followed. It is important to note that implant sites must be prepared adequately to prevent excessive implant insertion torque and that the use of a bone tap is necessary. Both the

ISMI | INT. SOCIETY OF METAL FREE IMPLANTOLOGY

The innovative specialist society for modern metal-free implantology

Become a member now!

Benefits

Effective public relations

Benefit from a strong community that elevates the marketing of your practice through effective public relations strategies.

Personal online member profile

ISMI provides a personal profile of all active members on their website—free of charge. In addition, the ISMI patient platform provides important information for patients and features a search tool with which patients can find their perfect dentist.

Discount on congress fees

Come and join us! Attent the Annual Meeting of ISMI in Hamburg on 3 and 4 May 2024 and benefit from first-rate continuing education. ISMI members receive a special discount on the participation fee.

Online archive for specialists

Get exclusive access to ISMI's extensive online archive. Discuss all relevant questions regarding metal-free implantology with experts and colleagues from around the world and enjoy free access to the online archive where you will find informative training videos and clinical case reports.

Newsletter

The ISMI newsletter keeps you up to date with the latest scientific trends, products, and events on a regular basis. It also features user reports as well as a wide range of information and tips on the subject of metal-free implantology.

Specialist magazine

As a member of ISMI, your membership fee includes a subscription of the independently published English language magazine *ceramic implants—international magazine of ceramic implant technology.* Published three times per year, the magazine offers specialist articles and event reports as well as industry- and science-related news from the international world of metal-free implantology. In addition, *ceramic implants* provides information about manufacturers and their latest products.

ISMI e.V. Office Leipzig
Holbeinstraße 29 | 04229 Leipzig | Germany
Phone: +49 800 4764-000 | Fax: +49 800 4764-100
office@ismi.me | www.ismi.me

Become a member of ISMI now!

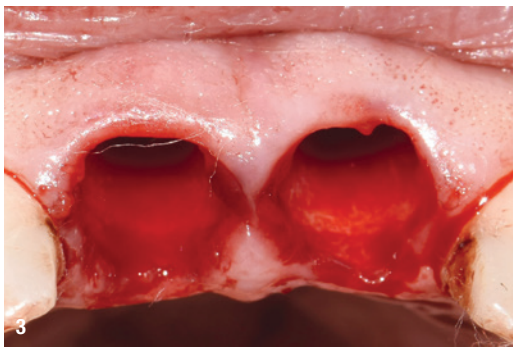
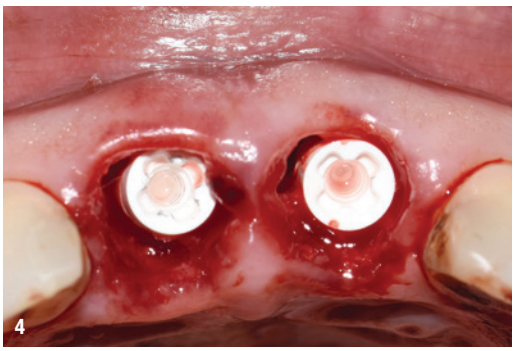




Fig. 3: After atraumatic extraction of teeth #11 and 21. **Fig. 4:** Immediate placement of Zeramex XT implants. **Fig. 5:** PMMA temporary crowns placed one week after surgery.

vertical and transverse insertion depth of the zirconia implant are important for prosthetic success. The implant can be placed between 1.6 and 0.6 mm supra-crestally because the neck section (0.6 mm) is smooth. The insertion depth is determined by the height of the gingiva and the existing bone around the adjacent teeth.

After atraumatic extractions and laser curettage, two-piece zirconia implants (4.2 × 12.0 mm) were placed in sites #11 and 21 under local anaesthesia, cover screws were placed and the sites closed to allow for healing (Figs. 3 & 4). After 72 hours, the PMMA temporary crowns were inserted (Fig. 5).

After a four-month healing period, the second-stage surgery was performed with a 940 nm diode laser, the cover screws were removed and healing abutments were placed for a period of two weeks. Reduced inflammation of the peri-implant soft tissue was noted, demonstrating excellent biocompatibility and host response (Fig. 6).

Angulated abutments (15°), also made of alumina-toughened zirconia like the implants, were placed on the implants with Zeramex XT VICARBO screws (Figs. 7–9). This screw, which is made of longitudinal carbon fibre strands and moulded slightly larger than the internal aspect of the implant, allows absorption of the forces of mastica-




Fig. 8: Angulated zirconia abutments in position. **Fig. 9:** Four-month post-op radiograph. **Fig. 10:** Zirconia crowns *in situ*, lateral view. **Fig. 11:** Zirconia crowns *in situ*, frontal view.

Fig. 6: Healing after four months. **Fig. 7:** Example of a Zeramex XT implant, abutment and VICARBO screw (metal-free solution).

tion and provides a hermetically sealed connection. A digital impression was taken for the fabrication of the final crowns (Fig. 10). Zirconia crowns were cemented to the abutment heads with glass ionomer cement to provide natural aesthetics. Instructions were given for maintenance and periodic recall (Figs. 10–12).

Discussion

Owing to rising complications observed in some clinical situations involving the use of titanium dental implants and the growing incidence of peri-implant mucositis and peri-implantitis affecting both the short- and long-term survival rates of titanium dental implants, the development of alternative materials to address these has been pursued. Zirconia has been shown to have similar osseointegration success to titanium, offer a soft-tissue response that is superior to that of titanium and have less of an affinity for plaque collection compared with titanium surfaces.

Also, the peri-implant soft tissue around titanium and zirconia abutments has been shown to have colour differences compared with the soft tissue around natural teeth, and the peri-implant soft tissue around zirconia has been demonstrated to have a better colour match to the soft tissue than titanium. This can be extrapolated to the aesthetics of the colour of the implant itself. Zirconia implants can be used in aesthetic situations, the white shade of the implant eliminating any potential for darkening of the gingival tissue and providing a more natural final aesthetic result than is possible with titanium implants. Long-term studies are necessary to continue to evaluate the effectiveness and success rates of two-piece zirconia implants.

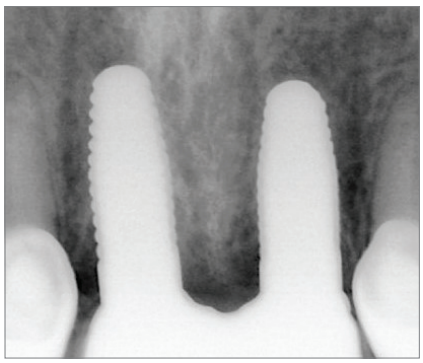


Fig. 12: Radiograph of implants and final crowns.

contact

Dr Saurabh Gupta
+91 9916 203455
saurabh@iaoci.com

Dr Saurabh Gupta

Literature

Stability ensured

Advancing implant dentistry with Z-SYSTEMS bone level ceramic implants

In an interesting case performed by Dr Paul S. Petrungaro, Z-SYSTEMS bone level ceramic implants showcased their exceptional capabilities in a challenging scenario. The case involved a 100% fully-ceramic dental implant reconstruction utilising Z-SYSTEMS' bone level implants within an All-on-X fully digital workflow technique. The patient, a survivor of throat and tongue cancer, presented unique challenges that demanded a sophisticated approach, and Z-SYSTEMS' innovative ceramic implants proved their efficacy.

Fig. 1: Pre-treatment smile.

Patient background and challenge

The patient's history of throat and tongue cancer presented complexities that required a comprehensive strategy. The use of radiation and chemotherapy treatments for cancer patients create a high risk for wound healing complications. Selecting the appropriate implant material was crucial. Z-SYSTEMS' bone level ceramic implants emerged as the preferred solution due to their exceptional biocompatibility and tissue-friendly nature, which were paramount for patients with compromised healing abilities.

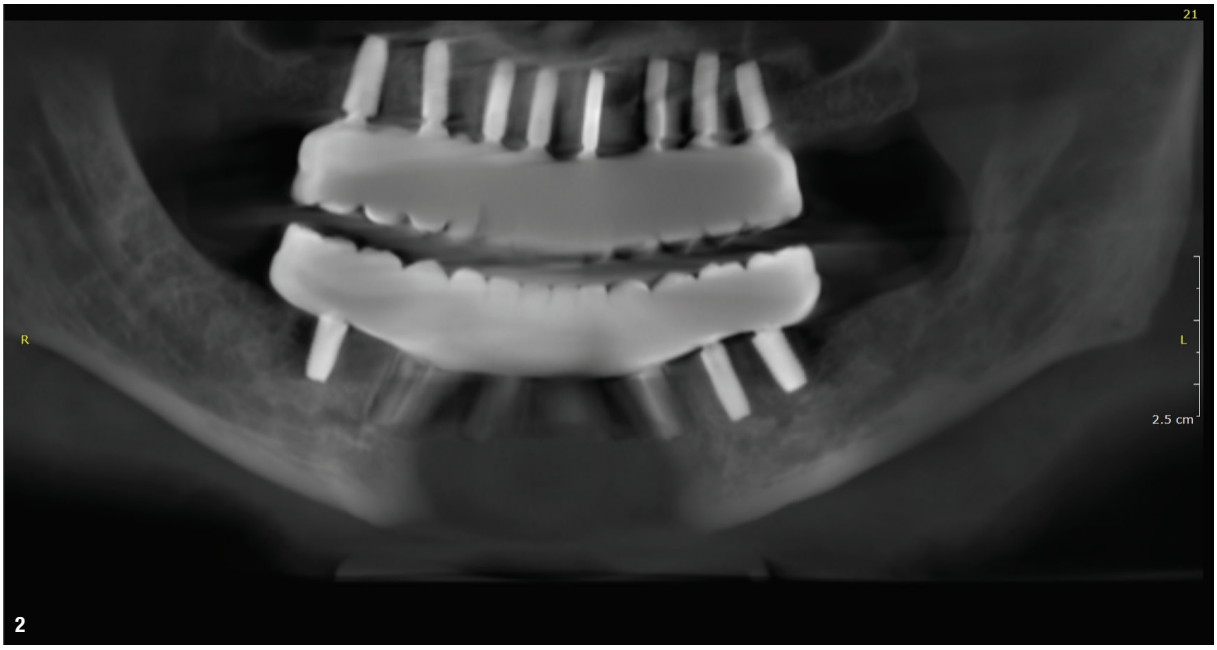


Fig. 2: Immediate postoperative CT scan panoramic view.

Fig. 3: Case complete milled monolithic zirconia All-on-X upper and lower definitive prosthesis.

The preferred choice

Dr Petrungaro highlighted, “In intricate cases such as this, where optimal healing and patient well-being are paramount, choosing an implant solution that ensures stability and promotes healthy tissue integration is crucial. Z-SYSTEMS’ bone level ceramic implants proved to be the natural choice. Their biocompatibility, absence of metallic ions, and tissue-friendly properties significantly mitigate the risks associated with compromised healing, making them the ideal option for our patient’s complex needs.”

Z-SYSTEMS’ bone level ceramic implants offer a host of unparalleled benefits, particularly in challenging cases:

- Optimal biocompatibility: The absence of metallic ions in Z-SYSTEMS’ ceramic implants ensures reduced complications, enhancing the healing process, and safeguarding patient well-being.
- Tissue-friendly properties: Z-SYSTEMS’ bone level implants promote superior tissue integration, crucial for high-risk patients with compromised healing abilities.
- Structural integrity: The screw-retained conical connection and ceramic composition provides robust stability and strength, ensuring the long-term success of the dental reconstruction.
- Aesthetic excellence: The natural appearance of ceramic implants ensures a seamless blend with the patient’s natural dentition, enhancing aesthetics and self-confidence.

Dr Paul S. Petrungaro’s case exemplifies the transformative potential of ZSYSTEMS’ bone level ceramic implants in intricate and high-risk scenarios.

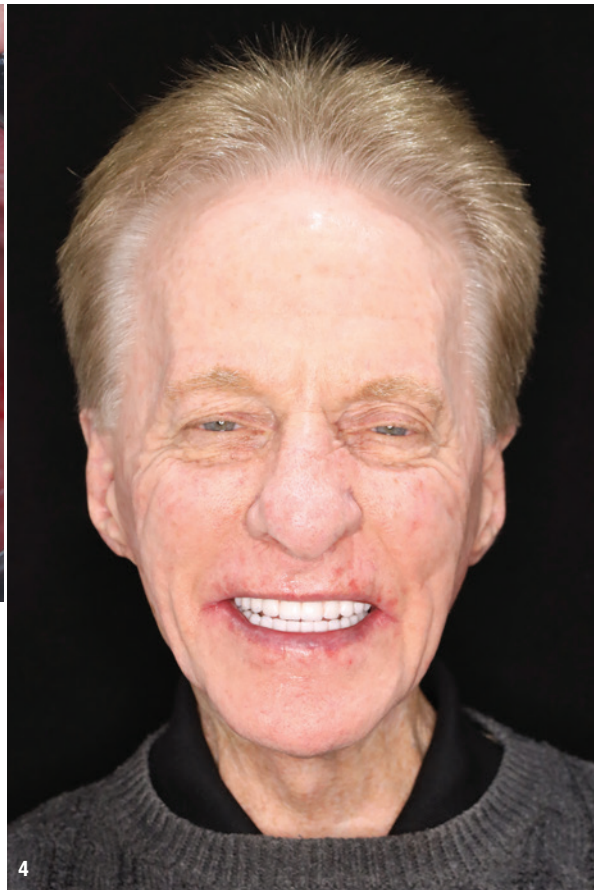


Fig. 4: Case complete smile.

This testimonial is a tribute to Z-SYSTEMS’ pioneering approach to advancing implant dentistry, catering to unique patient requirements, and ensuring their oral health and satisfaction.

Dr Paul S. Petrungaro is a committed user of the Z-SYSTEMS’ implants.

contact

Z-SYSTEMS
www.zsystems.com

CleanImplant Foundation Trusted Quality seal: More manufacturers prove the production quality of their implant systems

CleanImplant Foundation provides dentists and patients with guidance for clean dental implant systems of titanium and zirconia

After the "Astra Tech EV" by Dentsply Sirona was awarded this March, the coveted seal for Trusted Quality has now been given to two other implant systems: The renowned implants, "SuperLine" by Dentium and "INVERTA" by Southern Implants are now welcomed into the family of certified clean implants. The scientifically based seal of quality, which underlines the first-class surface purity of dental implants, is only awarded by the CleanImplant Foundation's Scientific Advisory Board after a rigorous peer-reviewed analysis and testing process.

"This award is an objectively transparent proof that colleagues are using a residue-free medical device for their patients by manufacturers who implemented the highest quality standards," explains Dr Dirk U. Duddeck, Founder and Head of Research at CleanImplant. To obtain this valid, objective proof, a so-called "five step approach" was established in cooperation with the eight-member Scientific Advisory Board:

CleanImplant Trusted Quality seal | Five step approach

STEP 1	**Neutral sampling of five implants**	Batch-spanning random sampling: Three implants are ordered ex-factory, and two implants of the same type are provided via mystery shopping from practices.
STEP 2	**Unpacking and scanning under clean room conditions**	All five collected samples are carefully unboxed, mounted, and scanned in a clean room environment according to Class 100 US Fed. 209, Class 5 DIN EN ISO 14644-1.
STEP 3	**Externally audited process of analysis**	SEM imaging and elemental analysis (EDS) are performed according to DIN EN ISO/IEC 17025 accreditation process (competence of testing and calibration laboratories) with external audits and multi-annual re-assessments.
STEP 4	**Full-size and high-resolution SEM images**	A special full-size, high-resolution SEM image—digitally composed of more than 360 single SEM images in a magnification of 500x—always shows the implant surface from shoulder to apex.
STEP 5	**Peer-review process**	Two members of the Scientific Advisory Board independently review the comprehensive report of analysis and sufficient clinical documentation or multi-annual PMCF studies (Post-Marketing Clinical Follow-Up) of the analysed implant type showing survival rates of more than 95% for the device or device family.

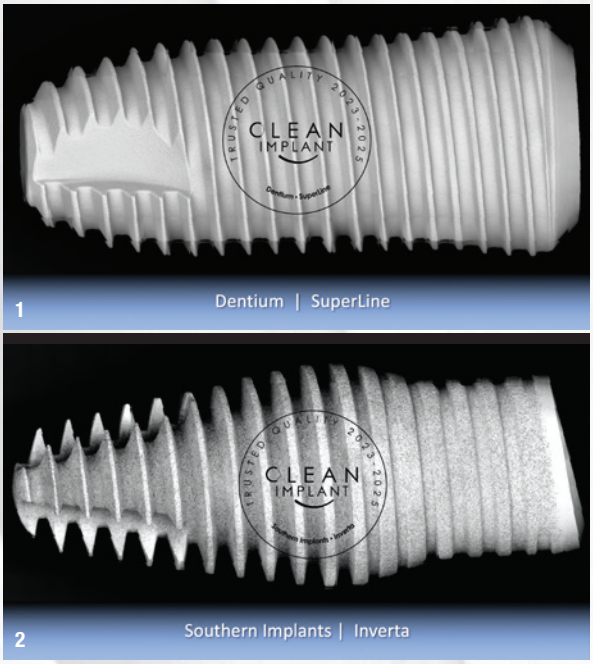


Fig. 1: SEM image SuperLine implant—Dentium. **Fig. 2:** SEM image INVERTA implant—Southern Implants.

Every quality certification is valid only for two years and has to be renewed after this period. Other titanium-made implant systems that have been awarded the Trusted Quality seal are: Kontact S (Biotech Dental), UnicCa (BTI Biotechnology Institute), (R)evolution (Champions-Implants), In-Kone (Global D), ICX-Premium (medentis medical), AnyRidge and BLUEDIAMOND (MegaGen), T6 (NucleOSS), Prama (Sweden & Martina). Other testing and analysis results are pending.

Selected ceramic implant systems also carry the "Trusted Quality" seal such as whiteSKY (bredent group), Patent/BioWin! (Champions-Implants), and SDS 1.2 and SDS 2.2 (Swiss Dental Solutions). Moreover, CleanImplant "Certified Production Quality" awards were received by the CeramTec Group and Komet Custom Made as contract manufacturers of ceramic implants.

Fig. 3: Dr Dirk U. Duddeck placing an implant on the sample holder of the scanning electron microscope.

After five consecutive quality assessment studies on dental implants, the Foundation has SEM data and test results of more than 300 different implant types on file. All tests have been performed exclusively by officially accredited testing laboratories. Dentists can request reliable information on the cleanliness of their preferred dental implant system. With 150,000 subscriptions from dental professionals, the CleanImplant Foundation has become a grassroots movement on social media. More and more dentists are actively supporting the CleanImplant Foundation. Certified as "CleanImplant Certified Dentists", they pass on the trust they gained in the products to their patients and referring dentists.

The independent **CleanImplant Foundation** was founded as a non-profit organisation in Berlin in 2016. In cooperation with renowned universities, the foundation regularly coordinates worldwide quality assessment studies of dental implants and awards the "Trusted Quality" seal to particularly clean implant types following a strict peer-review process to generate independent and meaningful data concerning the cleanliness/contamination of implant surfaces of sterile-packaged implants. All samples are tested exclusively in specialised testing laboratories officially accredited according to DIN EN ISO/IEC 17025:2018. CleanImplant also certifies implantologists as well as dental centers, thus increasing the confidence of referring clinicians, dentists and patients. More information: www.cleanimplant.org

Dentium has provided best products to dentists for 22 years since its establishment, operated a production plant in the United States for the first time in the domestic industry in 2004, and has obtained the certificate by MFDS of major overseas countries, including the US FDA. Based on world-class technology and reliable products, it is Korea's representative implant that is exported to more than 70 countries around the world. More information: www.dentium.co.kr

Southern Implants is a leading provider of innovative oral reconstruction products. The company focuses on providing site-specific, dental implant treatment solutions to advanced professional users who want more choices. Southern's expertise in research, development and precision manufacturing positions it to efficiently commercialise innovative treatment solutions that reduce treatment times and improve patient outcomes. Established in 1987 and privately owned, Southern Implants is headquartered in South Africa with a global distribution network. More information: https://southernimplants.com

contact

CleanImplant Foundation
Berlin, Germany
+49 30 200030190 · info@cleanimplant.org · www.cleanimplant.org

Advocating for the superiority of ceramic systems

An interview with John Sheehy, President of Z-SYSTEMS USA, director of global sales of Z-SYSTEMS ceramic implants, USA

Since Z-SYSTEMS was founded in 2004, tens of thousands of its implants have been successfully placed worldwide. This attests to the company's reputation as a pioneer with technical expertise, high product quality and ongoing development. The company's newest release is the first two-piece bone level implant made of ceramic. OEMUS MEDIA's Dr Alina Ion spoke with John Sheehy, President of Z-SYSTEMS USA and director of global sales of Z-SYSTEMS ceramic implants, about how the company established itself, its recent products and the future of the company.

Z-SYSTEMS is a world leader in metal-free zirconia implants. What path did the company follow to achieve this?
The global team at Z-SYSTEMS is understandably very proud of our history in pioneering the use of zirconia for dental implantology. We were one of the original manufacturers of ceramic implants for commercial sale, and we achieved this independently, from sourcing the zirconia material, then engineering the design of the implants to manufacturing the products in our own factory in Switzerland. Today, we still manufacture entirely ourselves and never outsource.

We also never compromised on convenience or quality when faced with challenges that could have more quickly or cheaply been solved with metal or plastic components, as some other ceramic brands have done. Instead, we continued innovating—from our heritage one- and two-piece implants to our most recent developments, the bone level and tissue level implants. We continue to drive the industry forward by holding firm to that high standard of quality.

The dental implant market, especially the ceramic implant market, is highly competitive. How have you maintained your position as a world leader?
Our success has come from three focus areas. Firstly, we offer the most versatile, highest-quality products in the market, free of plastic and metal, produced using the strongest ceramic material on the market.

Secondly, our pace of innovation is set not only by our own engineering but also by responding to our custom-

ers, including many of the world's leading practitioners of ceramic implantology. Our new product lines are constantly evolving to provide the broadest range of restorative solutions. We were the first to offer a one-piece tapered implant and are the only brand to offer a conical connection.

Thirdly, we seek to provide our customers with the best training, education and ongoing practitioner support. We have full-time in-house technical assistance as well as a global network of industry leaders whom we retain to guide customers in the adoption and use of ceramic implants in their practice. We have also built up a comprehensive suite of resources, such as our online courses and continuing education modules developed with our media partner, Dentanext Media, which ensure customer success.

What are the most recent innovations introduced by Z-SYSTEMS?
Our newest offerings are the two-piece bone level and tissue level implants with a conical connection—the first of their kind in the world! These are truly revolutionary products that advance implantology.

What is the focus of the company's development?
On the product side, we are focused on expanding the adoption of the bone level and tissue level line and will soon release our next product launch, Tapered NEO. Much of our energy is focused on successful adoption of ceramic implants, expanding their use in implantology. The key to this is educating practitioners.

Z-SYSTEMS has a new website. How does this serve the company's mission better?
We will always be a Swiss company, and the stringent standards for quality that our heritage conveys are core to our identity and an attribute that we are always quite proud of. We also want to communicate our continued commitment to technological innovation. Our new website more fully foregrounds our dedication to educating and supporting our customers, through our live events and training, our educational modules, our technical support teams and our industry leader network. You can visit our newest landing page at www.zsystems.com/ceramic-dental-implants.

You also offer webinars. How have these been received?
The webinar series, which was launched about five years ago with Dentanext Media, has been extremely well received, and we continue to expand these offerings as much as we can. This accelerated during the pandemic, when continuing education was still required of practitioners but travel and in-person contact was limited. While live training and in-person education are always preferable, our webinars and other online training modules offer our customers convenience and a quick, easy reference for optimum adoption of and success with our ceramic implant system.

What does the future of Z-SYSTEMS look like?
Every day, our global team applies itself to maintaining the momentum of our successes. We are actively seeking to refine our technology to invent useful products and to bring our customers along with us in the adoption of ceramic implant options. We have aligned our success with theirs, by not merely engaging in a sale transaction, but offering customers and their practices ample support for each case and education to maintain and improve their skills in working with ceramic implants. We continue to focus on the work of advocating for the superiority of ceramic implant systems over conventional metal implants and bringing that message to new markets.

about the interviewee

For over two decades, John Sheehy has been a leader in the world of biomedical sales and marketing and, in the last ten years, has been a significant ambassador for the ceramic dental implant industry, pioneering the adoption of ceramic implants in the US, Europe, the Middle East and elsewhere around the globe. He joined Z-SYSTEMS in 2014 and became President of the brand's US division in 2017. Sheehy is also the founder and President of Dentanext Media (www.dentanextmedia.com), a premier media platform for advanced dentistry education and livestreaming of events.

Neodent, a Straumann Group brand

A global player in dental solutions that restore smiles and confidence

Neodent is ready to celebrate what it does best: creating new smiles every day. This year marks the 30th anniversary of the brand, which has been providing immediate treatment protocols and changing lives of patients with millions of smiles worldwide since 1993. Founded by a dentist, for dentists, Neodent is now present in 90 countries, thanks to its commitment to maximising predictability and enabling long-lasting results through its unique features designed based on key biological principles. To celebrate this milestone, Neodent is hosting the 30 Year World Tour in the five regions where it has a presence. These inperson events will bring together customers and experts to strengthen relationships.

The 30 Year World Tour is featuring Neodent founder Dr Geninho Thomé and CEO Matthias Schupp, who are celebrating the brand's history and philosophy and promote its innovative portfolio. "I am proud to see how much we have grown over time since our foundation, in 1993, until our first ceramic implant system, in 2022. I just see reasons to smile. In 2015, with the full acquisition by the Straumann Group, we started to spread our philosophy around the world and the gratitude to see Neodent present in 90 countries with great results makes me happy and excited for the next 30 years. I would like to thank everybody who has been part of our history until now and I invite you to celebrate with us the evolution of implantology, technology, the dentistry market, aesthetics, patients and Neodent," said Dr Thomé on Neodent's momentous achievement.

"In 2015 […] we started to spread our philosophy around the world and the gratitude to see Neodent present in 90 countries with great results makes me happy and excited for the next 30 years."

Throughout its 30-year history, Neodent has learned that celebrating is a choice, and as long as it exists, it will choose to bring smiles to people's lives. The manufacturer provides direct, progressive and affordable dental solutions that bring innovative and reliable solutions to the community.

Zi ceramic implant system

In 2022, Neodent launched its first ceramic implant system, Zi, which uses advanced technology and ceramic material for a more natural and aesthetically pleasing look. The solution was developed in response to the demands of dentists and new market trends. The global launch was guided by the latest technology and featured, in a digital symposium, global experts and a live surgery performed by Dr Thomé. The Zi Virtual Symposium was attended by viewers from 92 countries and was presented in five languages, providing an interactive online experience that immersed the audience in the world of Zi. The event featured presentations by in-

Fig. 1: Dr Geninho Thomé, founder of Neodent.

Fig. 2: In 2022, Neodent launched its first ceramic implant system, Zi, which uses advanced technology and ceramic material for a more natural and aesthetically pleasing look.

ternational guest speakers, who shared the latest consumer trends and their impact on the industry, among other topics. Prominent physicians also shared their experiences with the Zi ceramic implant system.

"Over six years ago, we started dreaming: we decided to create not just a new ceramic implant; we decided to do something innovative and completely different," said Schupp at the opening of the event.

Zi combines flexibility, stability and aesthetics. The two-piece solution provides flexibility with a longer screw that ensures a reliable fit between the implant and the ceramic abutment. This also optimises the performance of the ceramic and distributes force along the ZiLock connection. The connection has six lobes and six points, allowing the precise positioning of the abutment and protecting against rotation. Stability is enabled by the naturally tapered implant design, engineered for predictable immediacy in all bone types.

Zi implants are available in diameters of 3.75 and 4.30 mm and in lengths of 10.0, 11.5 and 13.0 mm. The prosthetic portfolio, also made of ceramic, provides both cement-retained and screw-retained solutions for single-unit cases. Zi offers options for conventional and digital workflows. Digital treatment planning for Zi cases supports more efficient and precise treatment for better clinical outcomes.

With a strong focus on research and development, Neodent is constantly pushing the boundaries of what is possible in dental technology. Its products are backed by rigorous clinical testing and real-world results, and the company has a proven track record of success in helping dental professionals deliver high-quality, affordable dental care. With its commitment to innovation, quality and customer satisfaction, Neodent pursues the best possible care for patients. The company's mission is simple: to improve lives through better oral health. Join Neodent's mission to change the world, one smile at a time.

contact

Neodent (Straumann Group brand)
+55 800 7072526
www.straumann.com/neodent

Neodent

Zirconia implant: An evolution or a revolution?

3rd EACim CONGRESS in Paris

On 10 June 2023, the European Academy of Ceramic Implantology successfully held its annual congress at Les Salons Hoche in Paris, France. This prestigious event brought together more than 200 healthcare professionals and experts in the field of integrative and complementary medicine from ten countries around the world. During this exciting day, fifteen partners from the industry were also able to present their latest developments.

The aim of the congress was to promote dialogue, collaboration, and knowledge exchange, thereby advancing the field of ceramic implantology. Through lectures and panel discussions, the attendees had the opportunity to learn about the latest research findings, emerging trends, and innovative practices in this field.

In addition to the educational sessions, the congress also offered participants the opportunity to exchange ideas with like-minded professionals, make new contacts and discover potential partnerships. The event also featured an exhibition area where companies and organisations could showcase their products, services, and innovations in the field of ceramic implantology.

The 3rd EACim CONGRESS was an enriching and inspiring experience for expert practitioners, researchers, students or simply those interested in ceramic implant dentistry, providing valuable insights and networking opportunities.

EACim cordially invites to its 4th annual congress which will take place in 2025 in Spain. The congress topic will be “Evolution through ceramic thinking”. For more information about the congress, the programme, speakers, and registration, please visit the EACim website.

contact

European Academy of Ceramic Implantology (EACim)
+33 4 91530105
contact@eacim-ceramic-implantology.com
www.eacim-ceramic-implantology.com

EACim website

Are you a writer?

Do you have clinical cases and a profound knowledge about a special treatment method? Then become part of **ceramic implants—international magazine of ceramic implant technology**. Share your experience and knowledge and benefit from a global reach and high level of awareness.

We are always on the lookout for new faces to increase our clinical and scientific network.

Submission checklist

Send us a text with length of 10,000 to 15,000 characters. We do not want to limit you in terms of article length, so please use the word count as a general guideline!

Numbered images in TIF or JPEG format, in a printable quality of at least 300 dpi.

Most important: we would like to introduce you/the mind behind the article. So please send us also your portrait photo with a short biography about your professional career and your contact information.

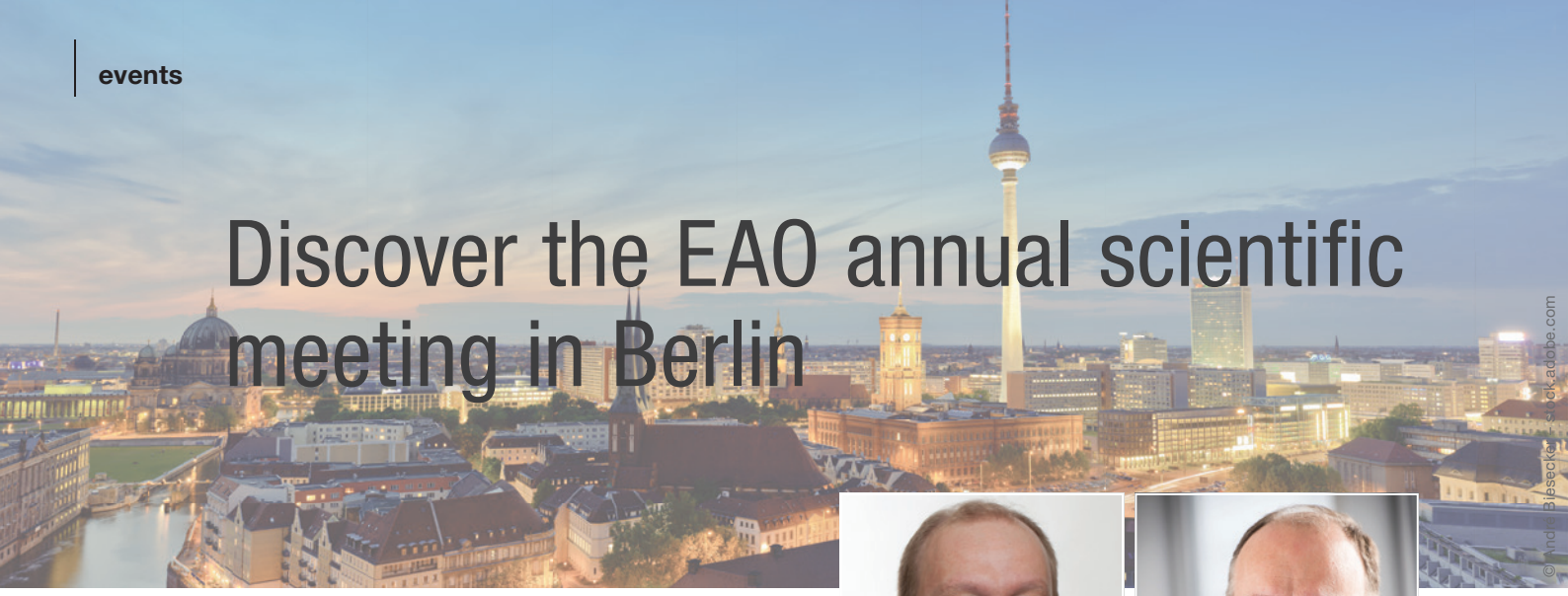
Timo Krause
Editorial Manager

t.krause@oemus-media.de
+49 341 48474-220

OEMUS MEDIA AG

Holbeinstraße 29 · 04229 Leipzig · Germany
Phone: +49 341 48474-0 · info@oemus-media.de

Discover the EAO annual scientific meeting in Berlin

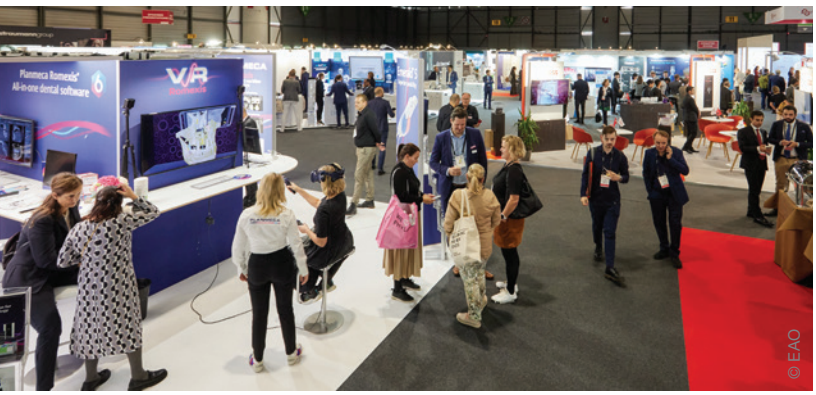


Ceramic Implants caught up with Prof. Florian Beuer and Prof. Henning Schliephake, co-chairs of the EAO's forthcoming congress in Berlin, to find out what's in store for delegates at the event.

What are the unique features of the 2023 EAO-DGI joint meeting?
Florian Beuer (FB): One of the things that's unique about this year's congress is that we've planned it twice, as it was originally supposed to take place in 2020. That's why we've called it "Berlin reloaded". It's a joint meeting with the DGI, so it will bring together Europe's biggest implant dentistry organisation and biggest national association.

Henning Schliephake (HS): A new feature this year is the table clinics, which means speakers and the audience around the table can interact directly. We've also refined the Battle of Concepts session to make it even more impactful.

What are the main focuses of the congress this year?
HS: The first focus is advances in digital technology, which is something that's being talked about more and more. AI is creeping into many areas of medicine, particularly diagnostics. The second topic is the frail patient. Patients are getting older and older, with comorbidities and their associated risk factors. We have to be aware of that and identify frail patients early on so we can respond with appropriate planning.



FB: The third focus of this year's congress is peri-implantitis, which is a topic we still don't know enough about. There are many treatment approaches and associated questions. Exciting new discoveries are emerging that should help identify patients who are at risk in the future.

What should delegates expect from this year's Battle of Concepts?
HS: The Battle of Concepts will explore the three approaches to treating peri-implantitis: non-surgical treatment, the resective approach, and the regenerative approach. All three have their indications, along with pros, cons and limitations. These will be discussed alongside footage of three surgical procedures.

FB: Delegates can really expect to hear some different thoughts about peri-implantitis during this session, which will look at the role of the immune response in peri-implantitis, plus associated factors caused by the shape of the prosthesis and the material it's made from.

We're hearing a lot about big data and AI at the moment. How is this relevant to dentistry?
HS: As with many advanced technologies, you probably won't be using big data or AI in your office immediately, but it's coming and will be a reality soon. One of the speakers taking part in the plenary on big data and AI will be looking at data protection and some of the other issues we need to consider when talking about personalised medical data.

FB: This part of the programme will provide some really interesting insights into how AI works and how it will be used in the future. We're very proud to have some of the leading experts in the field on the programme and to be

kicking off the congress by discussing this important topic.

Are the congress sessions available in alternative languages?
HS: This year we're excited to be piloting live translation using AI, which will mean delegates can experience the congress live in 26 languages. Breaking down language barriers and helping people who aren't fluent in English to participate is very important.

FB: This is a great opportunity for people from all over the world to hear the presentations in their native language. If you want to, you can go to the German sessions and hear them in a completely different language, such as Mandarin. So as well as visiting a city that's as exciting and historic as Berlin, almost all our delegates should be able to enjoy hearing the sessions in their language of choice.

Many thanks for the interview.

More details and information about the EAO congress in Berlin as well as application information are to find at EAO's website www.congress.eao.org.

EAO website

EAO EUROPEAN ASSOCIATION FOR OSSEOINTEGRATION
JOINT MEETING
DGI German Association of Oral Implantology

Photo gallery

“Ceramic Implants meets Aesthetics”: 7th Annual Meeting of ISMI successful in Munich

With a multi-faceted and high-calibre programme, the congress in sunny Munich was once again able to inspire numerous participants for the trendy topic of ceramic implants.

The 7th Annual Meeting of the International Society of Metal Free Implantology (ISMI) took place in Munich on 5 and 6 May 2023 under the guiding theme “Ceramic Implants meets Aesthetics”. Under the scientific direction of Dr Karl Ulrich Volz/Kreuzlingen (CH) and Dr Dominik Nischwitz/Tübingen (DE), the congress offered participants an enormously multi-layered, varied and top-class programme on the topic of ceramic implants and also highlighted biological aspects of metal-free implantology. For the first time ever, the ISMI Annual Meeting was held as a joint venture with the German Society for Cosmetic Dentistry (DGKZ) and thus offered ample opportunity for interdisciplinary exchange.

The first day of the congress was opened under the motto “Zirconium dioxide in general dentistry and implantology—where do we stand and what are the prospects?” by ISMI President Dr Volz, Vice President Dr Nischwitz and DGKZ Board Member Dr Martin Jörgens/Düsseldorf (DE). After Dr Alessandro Alan Porporati/Plochingen (DE) presented the basics, material and technology of zirconium vs metal-ceramics in his lecture, Priv.-Doz. Dr Kristian Kniha/Munich (DE) vividly explained the aesthetic potential of ceramic implants. Dr Johann Lechner/Munich (DE) then spoke about osteo-immunology and implant success with ceramics in comparison with titanium.

© OEMUS MEDIA AG

After the lunch break, which was used extensively for a visit to the accompanying industrial exhibition and collegial discussions, the pre-congress symposium including a surgical tutorial continued directly. Dr Volz explained in detail how the error rate in the use of ceramic implants can be reduced and gave an overview of what ceramics can do, where the limits lie and what good complication management looks like.

(From left:) Dr Dominik Nischwitz (Vice President), Dr Karl Ulrich Volz (President) and Dr Tobias Wilck (Member of the Board of Directors).

Afterwards, the participants had ample opportunity to discuss various special topics in implantology and aesthetic dentistry with proven experts and to look beyond their own horizons at the popular Table Clinics. At the same time, a workshop on the collection and preparation of autologous blood concentrates with Prof. Dr Dr Dr Shahram Ghanaati/Frankfurt am Main (DE) offered dental practice teams the opportunity to get fit for this increasingly important topic and to gain practical experience in the hands-on part.

The first day of the congress was brought to a successful close with a get-together in the industrial exhibition, where all participants were able to end the evening in a relaxed atmosphere with wine, music and, of course, lively discussions.

More interesting lectures on Saturday

Prof. Ghanaati opened the main congress on Saturday with his lecture on biologisation in implantology and oral surgery and gave an overview of the current state of affairs. “1-piece versus 2-piece ceramic implants—which to choose?”—this question was addressed by Prof. Dr Curd Bollen/Roosteren (NL) and he explained their differences as well as advantages and disadvantages. Dr Alexander Sobiegalla/Hemsbach (DE) then showed how to design the digital workflow with both systems. The following lectures of the high-calibre podium with Prof. Dr Dr Ralf Smeets/Hamburg (DE), Dr Ralf Masur/Bad Wörishofen (DE) and Dr Tobias Wilck/Hamburg (DE) also dealt with various aspects of metal-free implantology and at the same time raised critical questions about the topic. In addition, ISMI Vice President Dr Nischwitz also spoke about the fusion of high-tech dentistry with functional medicine and health optimisation as “Biological Dentistry 2.0”. Basically, according to the tenor of Dr Wilck’s closing lecture, ceramic implants are an important building block for health optimisation in the case of tooth loss.

The 7th Annual Meeting of ISMI ended with a final discussion and sent the numerous enthusiastic participants off into the sunny Saturday afternoon. Once again, the professional society underlined its relevance in the world of implantology despite its comparatively young age.

After the congress is before the congress: The 8th Annual Meeting of ISMI will take place in Hamburg on 4 and 5 May 2024. Interested parties should already note the date in their calendars and can pre-register for the programme at event@oemus-media.de.

contact

OEMUS MEDIA AG
Holbeinstraße 29 · 04229 Leipzig · Germany
+49 341 48474-308
Fax: +49 341 48474-290
event@oemus-media.de
www.oemus.com
www.ismi-meeting.com

Zircon Medical | Patent™

The only two-piece zirconia implant with long-term studies

Minimum risk of fracture and predictable osseointegration—the Patent™ Dental Implant System has solved the challenges of conventional zirconia implants. Only its patented production process creates the surface roughness needed for fast and predictable osseointegration. In the last step of this revolutionary manufacturing method, process-induced microcracks are eliminated, maximising the Patent™ implant's overall strength and hardness. That the Patent™ approach works is substantiated by scientific research: In a preclinical study, Patent™ implants achieved bone–implant contact (BIC) of over 70% after just four weeks of healing, outperforming all other dental implants investigated in similar studies. An independent long-term study over nine years found no implant fractures for any of the two-piece Patent™ implants investigated, as well as healthy and aesthetic soft tissue, stable marginal bone levels and no peri-implantitis. Patent™ proves that long-term implant success is a reality. Learn more at www.mypatent.com.

Zircon Medical Management AG
Switzerland
+41 44 5528454
www.mypatent.com

bredent medical

High primary stability and aesthetic appearance

The whiteSKY implant system from bredent is among the best-documented zirconia implant systems worldwide. It has not only demonstrated excellent osseointegration and longevity in numerous studies but has also proven its efficacy in practice. In fact, the longevity of whiteSKY implants is comparable to that of titanium implants. The whiteSKY implant system offers two different implant types: the whiteSKY Tissue Line and the whiteSKY Alveo Line. The narrow whiteSKY Tissue Line implant provides sufficient space for both the hard and soft tissue and ensures an aesthetically pleasing appearance with its slightly tapered shape in the sulcus area, transitioning from the gingiva to the implant crown. The whiteSKY Alveo Line, on the other hand, is ideal for immediate loading as it fills the extraction socket. At the same time, it provides the treating doctor with the possibility to individualise the implant according to the specific requirements of the clinical case.

Optimal conditions for soft-tissue attachment and high mechanical stability

Both the Alveo and Tissue Line implants of the whiteSKY system offer optimal conditions for soft-tissue attachment due to their specially designed sulcus surface. The whiteSKY implants are made of hardened zirconia and are one-piece, which gives them particularly high mechanical stability. Thanks to the improved thread design and bone-quality-oriented surgical protocol, the whiteSKY implants achieve high primary stability, making them ideal for immediate loading. Studies have shown that immediate implant placement can improve the bone–implant contact by more than 50 per cent.

bredent medical GmbH & Co. KG, Germany
info@bredent.com · www.bredent-implants.com

Premiumpartner: straumanngroup

52ND INTERNATIONAL ANNUAL CONGRESS OF DGZI

IMPLANTOLOGY IN TEAM

IMPLANTOLOGY IS TEAM

REGISTER NOW!

www.dgzi-jahreskongress.de/en

6TH/7TH OCTOBER 2023
HAMBURG

DGZI
Deutsche Gesellschaft für Zahnärztliche Implantologie e.V.

WITAR

Ideal solution for all indications

AWI ceramic implants from WITAR offer superior aesthetics, stability, accuracy and healthy osseointegration. A sophisticated design combined with modern materials make for an ideal solution for all bone classes and indications. Made of zirconium dioxide, AWI dental implants are metal-free and thus fully biocompatible. The cemented zirconia abutment allows an individual design. The transgingival shoulder has an ideal surface for interacting with soft tissue for any type of indication. The conical micro-thread allows great primary stability and axial loading. Studies have shown that the thread roughness of 1.7 µm leads to optimal osseointegration. Also, the surface is coated with a bioactive BIOVERIT I nano-coating. This surface-thread combination enables superior osseointegration for all bone classes. The self-tapping implant tip provides space for bone chips and low-compression insertion. AWI ceramic implants are now available in gingiva colour too, which leads to even better aesthetics and optimised risk areas.

WITAR Consulting GmbH, Germany
www.witar.de

Z-SYSTEMS

Breakthrough technology in dental implantology

Z-SYSTEMS ceramic implants, a pioneer and leading innovator in dental implant technology, proudly announces the official relaunch of its highly anticipated bone level and tissue level 100% ceramic, screw-retained conical connection implants. Leveraging over 15 years of research, development, and clinical expertise, Z-SYSTEMS has revolutionised the field of implant dentistry with this groundbreaking solution.
Designed to provide unparalleled aesthetics, durability, and biocompatibility, Z-SYSTEMS' bone level and tissue level ceramic implants offer a transformative alternative to traditional metal implants. These state-of-the-art implants combine the advantages of zirconia ceramics with an innovative two-piece conical connection, resulting in outstanding stability and long-term success rates.

Key features and benefits of Z-SYSTEMS bone level and tissue level ceramic implants include:

- Two-piece, screw-retained conical connection: This design ensures a micro-gap-free fit and eliminates the risk of a pump effect, delivering optimal long-term performance.
- Superior aesthetics: The tooth-coloured zirconia material closely resembles natural teeth, creating seamless and lifelike restorations.
- Enhanced biocompatibility: Z-SYSTEMS' zirconia implants biocompatible material with excellent tissue acceptance, ensuring healthy osseointegration and long-term success of the implant.
- Outstanding durability: Zirconia's exceptional strength and fracture resistance make Z-SYSTEMS' implants as durable as it and suitable for a wide range of clinical cases.

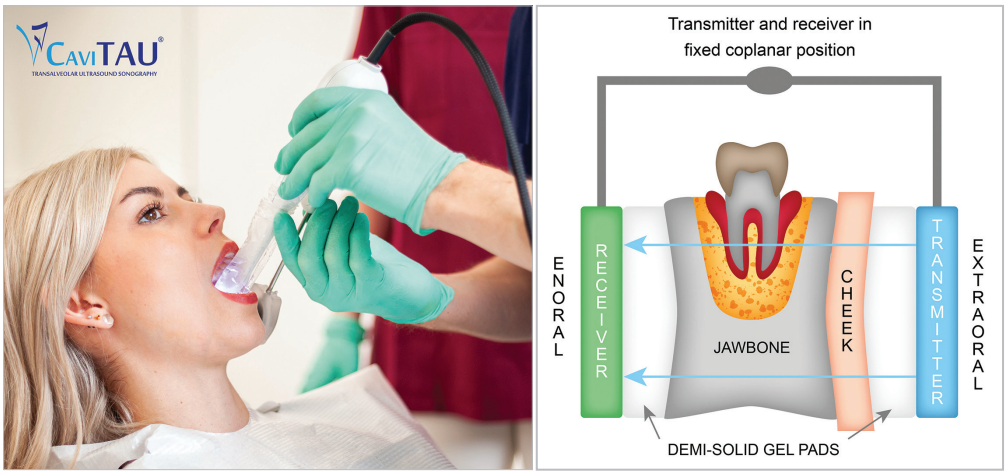
To celebrate the relaunch, Z-SYSTEMS will be hosting live surgical training sessions and other educational courses for dental professionals worldwide through the end of this year and throughout 2024. The comprehensive training programme will equip practitioners with the necessary knowledge and skills to integrate Z-SYSTEMS' ceramic implants into their practice successfully. Z-SYSTEMS will kick off the series of live surgical training courses hosted in Chicago, Los Angeles, New York City and abroad, with their first training session in November 2024. Interested participants can e-mail sales@zsystems.com for details.

Z-SYSTEMS AG
Switzerland
www.zsystems.com

CaviTAU

Unknown cause of chronic diseases discovered!

Why do more and more people suffer from chronic diseases? Is the cause due to an undiagnosed disease? Is a "silent inflammation of the jaw bone" possibly responsible? Many questions, one modern answer: the digital quality determination of bone density through ultrasound sonography-diagnosis. In this way, the dentist localises chronic and pathogenic inflammatory patterns, cleanses them in "Jawbone detox steps" and thus turns from a dentist into a systemic-immunologically oriented and integrative oral medicine specialist.



CaviTAU® application with LED gel pad and schematic representation of transalveolar sonography.

With the newest version of the english book *Cavitational osteonecrosis in jawbone* by Dr Johann Lechner, you will be guided in over 390 pages, with 120 illustrations and over 200 literature citations through all the science behind ultrasound sonography-diagnosis. The book can be ordered online at the website www.icosim.de.

CaviTAU
+49 89 244154460 · www.cavitau.de

Dentalpoint

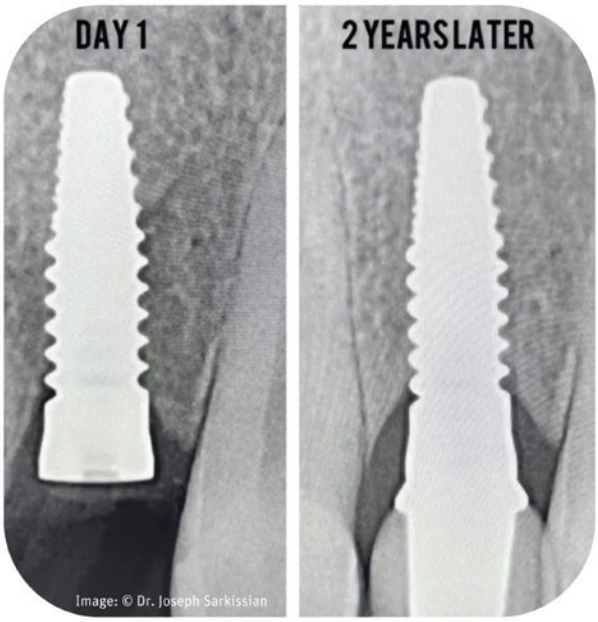
Zeramex XT—Two years follow-up proves success of the two-piece system

Zirconia, the dental material of the future, the two-piece design of the implant, the unique carbon fiber reinforced implant–abutment connection, the conventional and digital workflow as well as the outstanding clinical results are the pillars of success of the Swiss ceramic implant system Zeramex XT.

The heart of the implant–abutment connection is the VICARBO screw made of carbon re-inforced high-performance PEEK. The principle: the implant made of zirconium dioxide absorbs the compressive forces, while the VICARBO screw counteracts tensile and bending forces. The design of the external thread ensures high primary stability and the microrough and hydrophilic Zerafil surface demonstrates convincing osseointegration with a success rate of 98%.

"…Astounding bone structure after remodel revealing hard cortical bone with absolutely no bone loss from around the implant (Zeramex XT 3.5 mm placed in the anterior region) … The gum response was amazing…," points out Dr. Joseph Sarkissian who has been using Zeramex XT for several years.

Studies confirm that two-piece zirconia implants show a similar bone integration compared to the titanium implants or demonstrate a significantly reduced inflammation and bone loss compared to the titanium implants.



Dentalpoint AG, Switzerland
www.zeramex.com

ZiBone

ZiBone zirconia medical device: revolutionising dental implants for straight smiles

With our state-of-the-art products, we aim to equip dentists with the tools they need to create beautiful, natural-looking smiles for their patients. We will delve into the key features and benefits of our products, and how they can enhance your practice and patient outcomes.

ZiBone zirconia implants represent the pinnacle of dental implant technology. Crafted with precision and passion, our implants boast superior biocompatibility, promoting seamless integration with the jawbone. The aesthetic appeal of zirconia perfectly complements the natural dentition, creating a lifelike appearance that leaves patients with renewed confidence in their smiles. ZiBone zirconia implants are engineered to offer outstanding mechanical properties, ensuring lasting durability and stability, setting new standards for implant success rates.

- Biocompatibility: Zirconia's biocompatibility reduces the risk of allergic reactions and inflammation, fostering a healthy healing process.
- Optimal osseointegration: The advanced design of ZiBone zirconia implants with Ra 0.6 µm surface treatment, facilitates reliable osseointegration, promoting stable and successful implant placements.
- Versatility: Our products cater to a wide range of dental cases, enabling you to provide personalised solutions for each patient's unique needs. Implant dimension 3.6/4.0/5.0 with different length 8/10/11.5/13/14.5.

Join us in revolutionising dental implantology—together, we create smiles that inspire confidence!

COHO BIOMEDICAL TECHNOLOGY CO., LTD.
Taiwan
+886 3311 2203
info@zibone.com
www.zibone.com

SUBSCRIBE NOW!

ceramic implants—international magazine of ceramic implant technology

Interdisciplinary, transparent & market orientated

ONLINE
SUBSCRIPTION HERE

www.oemus-shop.de

Read the following topics in our latest issue:

case report
Integrative oral medicine meets aesthetic dentistry: Mission possible

interview
Advocating for the superiority of ceramic systems

events
Discover the EAO annual scientific meeting in Berlin

Fax: +49 341 48474-290

I would like to subscribe for the following journals:

☐ ceramic implants—international magazine of ceramic implant technology — 3 issues p.a. 40,– €*

☐ implants—international magazine of oral implantology — 4 x issues p.a. 44,– €*

* All prices include VAT, shipping and handling.

Terms & Conditions: The subscription may be cancelled in written form without due justifi cation within 14 days of order by contacting OEMUS MEDIA AG, Holbeinstraße 29, 04229 Leipzig, Germany. Dispatching notification in good time will suffice. The subscription is automatically extended by another 12 months if it is not cancelled in written form 6 weeks prior to the end of the reference period.

Last Name, First Name

Company

Street

ZIP, City, Country

E-mail

Signature

Credit Card Number Expiration Date Security Code

OEMUS MEDIA AG

Holbeinstraße 29 · 04229 Leipzig · Germany · Phone: +49 341 48474-0 · info@oemus-media.de

Congresses, courses and symposia

EUROPEAN ASSOCIATION FOR OSSEOINTEGRATION

German Association of Oral Implantology

30th EAO annual scientific meeting I 37th DGI annual congress

28–30 September 2023
Berlin, Germany
congress.eao.org

DGZI
Deutsche Gesellschaft für Zahnärztliche Implantologie e.V.

52nd International Annual Meeting of DGZI

6–7 October 2023
Hamburg, Germany
dgzi-jahreskongress.de/en

3rd JOINT CONGRESS for CERAMIC IMPLANTOLOGY

13–14 October 2023
Kreuzlingen, Switzerland
joint-congress.com

ITI International Team for Implantology

ITI World Symposium 2024

9–11 May 2024
Singapore
worldsymposium.iti.org

ceramic implants

international magazine of ceramic implant technology

Imprint

Publisher
Torsten R. Oemus
oemus@oemus-media.de

CEO
Ingolf Döbbecke
doebbecke@oemus-media.de

Member of the Board
Lutz V. Hiller
hiller@oemus-media.de

Chairman Science & BD
Jürgen Isbaner
isbaner@oemus-media.de

Editorial Council
Dr Michael Gahlert (Germany)
Dr Sofia Karapataki (Greece)
Dr Franz-Jochen Mellinghoff (Germany)

Editorial Management
Timo Krause
t.krause@oemus-media.de

Dr Alina Ion
a.ion@oemus-media.de

Executive Producer
Gernot Meyer
meyer@oemus-media.de

Product Manager
Timo Krause
t.krause@oemus-media.de

Art Director
Alexander Jahn
a.jahn@oemus-media.de

Designer
Aniko Holzer
a.holzer@oemus-media.de

Customer Service
Marius Mezger
m.mezger@oemus-media.de

Published by
OEMUS MEDIA AG
Holbeinstraße 29
04229 Leipzig, Germany
Phone: +49 341 48474-0
Fax: +49 341 48474-290
kontakt@oemus-media.de

Printed by
Silber Druck oHG
Otto-Hahn-Straße 25
34253 Lohfelden, Germany

www.oemus.com

ZIBONE Being Natural
Being Beautiful

IMPLANT SYSTEM

COHO BIOMEDICAL TECHNOLOGY CO.,LTD.

www.zibone.com

Patent

The ONLY two-piece zirconia implant with long-term studies

Independent 9-year study (University of Düsseldorf)[1]

Only we achieve this

- **No peri-implantitis[1]**
- **No implant fractures[1]**
- **Predictable osseointegration[2]**
  (Over 70% BIC after 4 weeks)

[1] Brunello G, Rauch N, Becker K, Hakimi AR, Schwarz F, Becker J. Two-piece zirconia implants in the posterior mandible and maxilla: A cohort study with a follow-up period of 9 years. Clin Oral Implants Res. 2022 Dec;33(12):1233-1244. doi: 10.1111/clr.14005. Epub 2022 Oct 31. PMID: 36184914.

[2] Glauser, R., Schupbach, P. Early bone formation around immediately placed two-piece tissue-level zirconia implants with a modified surface: an experimental study in the miniature pig mandible. Int J Implant Dent 8, 37 (2022). https://doi.org/10.1186/s40729-022-00437-z

The New Standard

Long-term oral health: Patent™ redefines success in the first long-term study on two-piece zirconia implants. Learn more: www.mypatent.com/scientific-studies

MDR CERTIFIED

Zircon Medical Management AG | Switzerland | +41 44 552 84 54