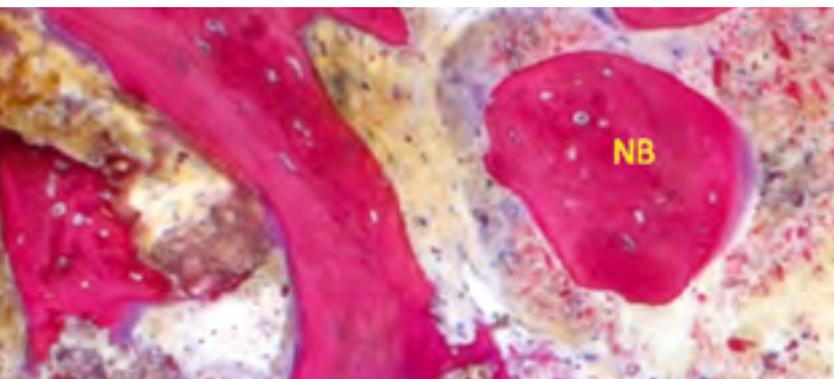
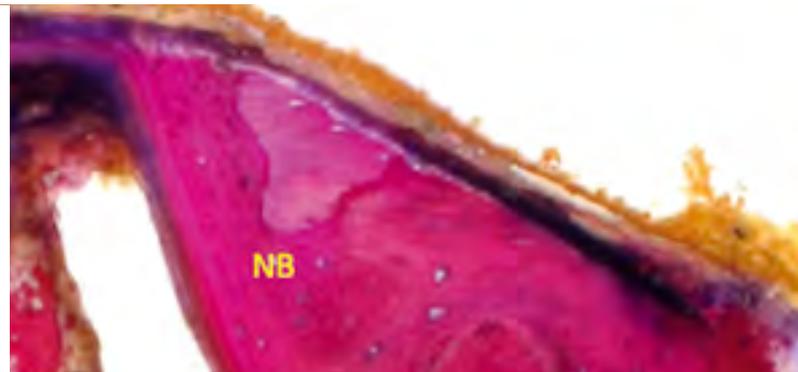
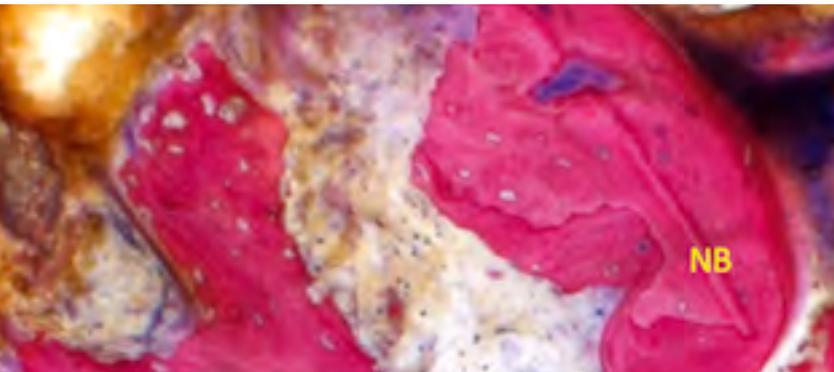


# EDI Journal

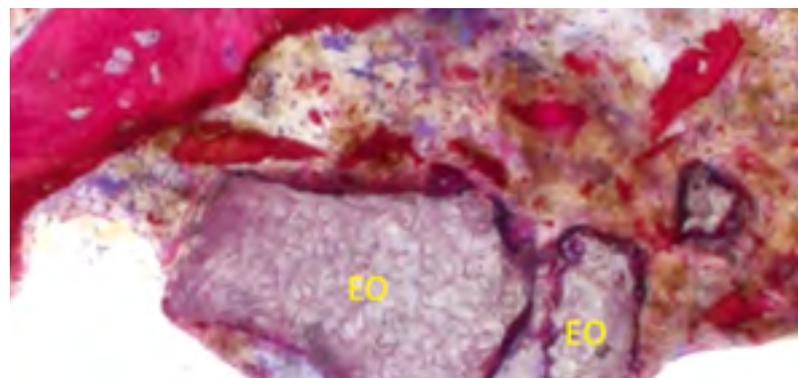
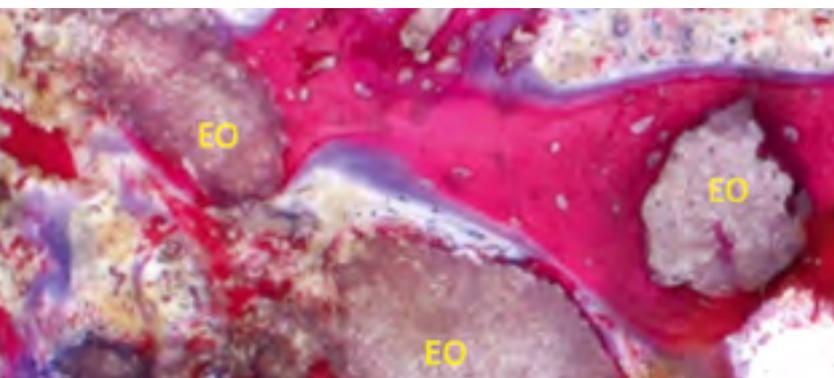
European Journal for Dental Implantologists



TOPIC

## Novel synthetics and traditional xenografts

Concepts on bone regeneration



»EDI News: Annual General Meeting of BDIZ EDI · Interview with Dr Franck Renouard · Career paths in dentistry · New format: Pros and Cons – ceramic implants, an alternative treatment option? »European Law: Dental practices on Facebook should watch out »Clinical Science: Long-term stability of vertical bone grafts »Case Studies: The importance of peri-implant soft tissue



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## More depth

One aspect of matrimony is that you can't always avoid getting into arguments. But that is just as well, because arguments are how you learn from – and about – each other.

Germany's national poet and revered thinker, *Johann Wolfgang von Goethe*, nicely summarized this insight in his novel "Wahlverwandtschaften" in 1809 (translated into English as "Elective Affinities"). And as the curious animals that we are, we are letting *Goethe's* approach guide us in reviving the tradition of the scientific debate. Pros and Cons is a new format that will allow us to present contradictory theses on selected current topics within oral implantology. We pass on the opinion of the disputants without interfering with what they have to say. Our readers – implant dentists, to be more specific – can then make up their own minds about the hypotheses formulated. A small Scientific Advisory Board headed by *Professor Joachim E. Zöller*, Vice President of BDIZ EDI, will decide which topics they would like to see discussed for our readers and which disputants to invite. The première edition of Pros and Cons is about ceramic implants, which have been the subject of controversial discussions among experts. In the eyes of some, it is the treatment alternative of the future; others feel there have not yet been enough reliable studies. Our first Pro advocate is *Adj. Professor Michael Gahlert* (Munich), co-author of a consensus paper on ceramic implants. His Con opponent is *Professor Knut A. Grötz* (Wiesbaden), incoming President of DGI. I can promise you a well-differentiated discussion that also offers interesting insights for non-implantologists.

The "Pros and Cons" format fits in perfectly with the editorial team's quest to expand EDI Journal's service orientation. Reader value is our top priority. The editorial team will take up partial aspects of a topic in order to give them additional depth. The "Three questions for ..." sections in interview mode are a good example of how to present a problem or a dental or scientific topic briefly and concisely. Interviewees have to keep their messages short, giving readers a quick overview of the issue. Of course, we will continue to report in detail on many areas: case presentations in continued professional development or analyses of impending legislation.

All of us – not just dentists – live in an information society that suffers from overstimulation. The internet, social networks and printed communications fill desks, and often also physical as well as virtual wastebaskets. Many new "channels" and online portals have been and are being launched in the dental sector.

This our – your! – professional journal is not a fast medium. This fact presents challenges that we must set out to master anew with every issue. We hope to achieve an extra dimension of depth with our main topics. The current issue of EDI Journal addresses career choices and, by implication, life choices. We have interviewed two young dentists about why they have chosen their particular career path. The bottom line is that despite the obstacles, the love of our profession is still very much a vivid and relevant emotion. In addition, the article on private equity shows what market developments dentists throughout Europe are facing today. Our focal topic covers more than just a single facet among the totality of dental career paths. Much is in flux – and not all of the changes are for the positive.

What is positive, however, is that we can announce a date to be proud of: BDIZ EDI will celebrate its 30th anniversary in 2019. This marks three decades of our valiant association that has worked hard to ensure that implantology is and will stay firmly anchored in dental practices. BDIZ EDI has successfully made the case in court for a formal professional focus on oral implantology. It does not shy away from even the most complex topics: these can be the alternative draft of an anti-corruption law in the health sector, or issues originating in Brussels such as the General Data Protection Regulation (GDPR) or the EU service package. And there is certainly much left to do in the upcoming years as well.

Your editorial team of EDI Journal will stay on top of these issues for you. It's a promise!

Anita Wuttke  
Editor-in-Chief

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Epicrestal implant insertion after removal of osteosynthesis material.



PEEK as a framework material: The areas in direct contact with the gingiva are left unveneered.

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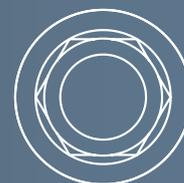
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# Partner Organizations of BDIZ EDI



## Association of Dental Implantology UK (ADI UK)

ADI UK, founded in 1987, is a registered charity committed to improving the standards of implant dentistry by providing continuing education and ensuring scientific research. It is a membership-focused organization dedicated to providing the dental profession with continuing education, and the public with a greater understanding of the benefits of dental implant treatment. Membership of the ADI is open to the whole dental team and industry, and offers a wealth of benefits, education and support for anyone wishing to start out or develop further in the field of dental implantology.



## Ogólnopolskie Stowarzyszenie Implantologii Stomatologicznej (OSIS EDI)

OSIS EDI, founded in 1992, is a university-based organization of Polish scientific implantological associations that joined forces to form OSIS. The mission of OSIS EDI is to increase implant patients' comfort and quality of life by promoting the state of the art and high standards of treatment among dental professionals. OSIS EDI offers a postgraduate education in dental implantology leading to receiving a Certificate of Skills (Certyfikat Umiejętności OSIS), which over 130 dental implantologists have already been awarded.



## Sociedad Espanola de Implantes (SEI)

SEI is the oldest society for oral implantology in Europe. The pioneer work started in 1959 with great expectations. The concept of the founding fathers had been a bold one at the time, although a preliminary form of implantology had existed both in Spain and Italy for some time. Today, what was started by those visionaries has become a centrepiece of dentistry in Spain. SEI is the society of reference for all those who practice implantology in Spain and has been throughout the 50 years, during which the practice has been promoted and defended whereas many other societies had jumped on the bandwagon. In 2009 SEI celebrated its 50th anniversary and the board is still emphasizing the importance of cooperating with other recognized and renowned professional societies and associations throughout Europe.



## Sociedade Portuguesa de Cirurgia Oral (SPCO)

The SPCO's first international activity was the foundation – together with their counterparts in France, Italy, Spain and Germany – of the European Federation of Oral Surgery (EFOOS) in 1999. The Sociedade Portuguesa de Cirurgia Oral's primary objective is the promotion of medical knowledge in the field of oral surgery and the training of its members.



## Udruženje Stomatologa Implantologa Srbije-EDI (USSI EDI)

USSI EDI was founded in 2010 with the desire to enhance dentists' knowledge of dental implants, as well as to provide the highest quality of continuing education in dentistry. The most important aims of the organization are to make postgraduate studies meeting the standards of the European Union available to dentists from Serbia and the region; to raise the level of education in the field of oral implantology; to develop forensic practice in implantology; and to cooperate with countries in the region striving to achieve similar goals.

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## Annual General Meeting of BDIZ EDI in Mainz, Germany

# Supporting implant dentists in their daily practical challenges

The Annual General Meeting of BDIZ EDI in Mainz in June 2018 gave the Board its go-ahead for the upcoming projects. The AGM particularly emphasized the programmes of BDIZ EDI to get young professionals interested in the work of the association, and supported the strategy process the Board started in 2015 to get the association fit for future. BDIZ EDI consists of 3,000 members in Germany and 5,500 members in Europe and beyond.

BDIZ EDI President *Christian Berger* reported on the activities of the BDIZ EDI during the past year. In February 2018, the association had organized the 13th Expert Symposium on patient-oriented treatment concepts in implantology, with international speakers and participants. For the third time, Board member *Dr Jörg Neugebauer* had taken on the role of Scientific Chair and again, he did a formidable job, both hosting the symposium and presenting the working paper on the European Consensus Conference (EuCC), which traditionally accompanies the Expert Symposium. This year, the EuCC focused on patient-oriented treatment concepts in oral implantology and found consensus on this topic. The 2018 guideline will be online by the end of this year.

Quintessence of both, EuCC and Symposium: The experts agreed upon the fact that multiple treatment options are available to restore oral function. Depending on patient motivation, anatomical findings and the level of skill and expertise on the part of the clinician, patients should be offered the best available treatment option. In the light of the many variables involved and described, no general recommendation or any specific treatment option can be made.

### Fit for future

Having recently returned from the congress of the associated partner USSI EDI Serbia in Novi Sad and the joint congress of Ominpress Greece and BDIZ EDI in Athens, *Berger* again emphasized the important role of BDIZ EDI among the implant societies in Germany and Europe to bring together the pan-European implant and dental world – via joint congresses, via the EDI Journal and via the meeting of the European Committee of BDIZ EDI once a year in Cologne. “Dental clinicians must start to realize that they have to make themselves heard and fight for their interests in the political arenas in Brussels and Strasbourg”, he said. *Berger* also gave a glimpse of the status of the BDIZ EDI 2025 project inaugurated by the Board in January 2015. It is important, he said, to run the association in a sustainable way, making BDIZ EDI fit for the future and supporting dental clinicians in facing their daily practical challenges. The association is currently right in the middle of that process. The foundations have been laid down, and the Board has identified multiple possible approaches in terms of orientation. The fact that the association has started early

AGM 2018 in Mainz, Germany, with the board members of BDIZ EDI and Legal Advisor Professor Thomas Ratajczak.



to orient itself towards Europe has proven to be a substantial advantage.

For many years, *Professor Joachim E. Zöller* has served as the Scientific Director of the association. His duties include the search for suitable topics and speakers at the expert symposia, the European Consensus Conferences and the annual symposia. *Zöller*, BDIZ EDI Vice President, initiated the Curriculum Implantology and is responsible for its contents. Curriculum 19 ended in early summer; its successor, Curriculum 20, will start in October and

is fully booked. Secretary-General *Dr Detlef Hildebrand* emphasized that the association endeavors to attract new members among young dentists and that the BDIZ EDI is committed to progress with special programmes for the coming generation.

The next major BDIZ EDI event will be the 14th Expert Symposium, going along with the 14th European Consensus Conference to be held in March 2019 in Cologne. Topic: “Complications during implantological treatment” (see below).

AWU ■

Save the date: 3 March 2019 in Cologne, Germany

# 14th Expert Symposium of BDIZ EDI

For the 14th time, the BDIZ EDI invites to its Expert Symposium in Cologne. The topic “Complications during implantological treatment: avoid, treat, improve result” addresses surgical and prosthetic aspects.

Those interested should remember the date: Sunday, 3 March 2019 – as always in Cologne at the Dorint Hotel am Heumarkt. The one-day CPD event is traditionally held on Carnival Sunday.

Training during daytime and carnival in the evening. With the 14th Expert Symposium, the BDIZ EDI takes a look at possible complications, which mainly occur in unfavourable anatomical conditions and/or in case of reduced bone supply. In these cases, the damaging of adjacent anatomical structures may be involved. An appropriate prosthetic restoration requires adequate preoperative planning under functional aspects. Biological and mechanical limits must be considered. The goal of the 14th Expert Symposium is to identify strategies for avoiding complications in implantology treatment and, if they have already occurred, how to treat them and improve the result. The day before, the 14th European Consensus Conference (EuCC) will prepare a practical guideline on the subject, which will be made available to members free of charge in English and German.

The BDIZ EDI Guidelines published so far date back to the year 2006 and have already been partially revised. Here is a list of the current consensus papers:

- 2018: Patient-oriented treatment concepts in oral implantology
- 2017: Digital workflow in implant dentistry
- 2016: Update on short, angulated and diameter-reduced implants
- 2015: Peri-implant inflammation: prevention – diagnosis – therapy
- 2014: Avoiding implant malpositioning
- 2013: Cologne classification of alveolar ridge defects (CCARD)
- 2012: Cologne ABC risk score for implant treatment

More about the programme will be available shortly on the BDIZ EDI website: [www.bdizedi.org](http://www.bdizedi.org) > Veranstaltungen. All BDIZ EDI Guidelines published so far are also available in digital form – both in German and in English at [www.bdizedi.org](http://www.bdizedi.org) > Zahnärzte > Praxisleitfaden or by clicking on “English” under Professionals > European Consensus Conference.

AWU ■



## Academy of Osseointegration

# Renouard to become the first non-American Programme Chair

Participation in major congresses has changed in recent years. That the annual meetings of the scientific societies should be well attended is no longer taken for granted these days, and some meetings have had to be cancelled because there were not enough registrations. However, the US-based Academy of Osseointegration (AO) has resisted this trend for years. Invitations are now out for its next Annual Meeting in Washington, DC. Dr Jörg Neugebauer, member of the BDIZ EDI Board, has been attending this event for over 20 years now, having been appointed member of the Board of the Academy of Osseointegration three years ago as the first non-native speaker of English serving in this capacity. In this interview with Dr Franck Renouard, a former President of the European Association for Osseointegration (EAO) and now the meeting's first European Programme Chair, Neugebauer makes it clear why these Annual Meetings differ from so many others and continue to attract a broad international audience.

***Neugebauer: You will be the Programme Chair of the Academy of Osseointegration Congress in 2019 to be held in Washington. Can you start by reminding us what this association is?***

*Renouard:* The AO was created in the early 1980s by the meeting of a small group of North American practitioners who discovered the work of *Professor Brånemark*. It is important to understand that while today it is obvious that the dental implant is part of the life of dentists, this was not the case at the time. There was a lot of reluctance and a lot of questions. While the Swedes surprised us by their professional distance and their scientific rigour, the clinical cases they presented were far from being aesthetic. But

some quickly understood the incredible potential of this work and had the intelligence to work together. In the United States the Academy of Osseointegration was born, and a little later the same thing happened in Europe with the EAO (European Association for Osseointegration).

***We have looked at the list of Programme Chairs of these congresses since 1986 and it seems like you are the first non-American to fulfill this function ...***

Yes, I must admit I was very surprised when the request was made by the one who would become the President of the Academy, *Dr James Taylor* of Canada; but above all I am very proud of this position. The globalization of Academy leadership began with *Dr Michael Norton*, who is English, and was the first non-American to serve as President of the Academy. The AO is growing worldwide. They have more than 6,000 members from more than 70 countries. In 2019, Europe will be the guest of the Washington Congress, which is why a Programme Chair from Europe was chosen by *Dr Taylor*. As a Co-Chair at the EAO Congress in Paris in 2016, I had indeed said in my introductory speech that this was my last congress in a Scientific Committee, but *James* had the words to make me change my mind. I thank him for this, as it is a unique opportunity and a huge challenge. I shall endeavour to please.



Dr Franck Renouard



Dr Jörg Neugebauer

***You have been President of the EAO and were involved in the realization of several programmes of this association. Is the dynamic fundamentally different when one works on the other side of the Atlantic?***

If I tell you that North Americans are more pragmatic and the Europeans more “romantic”, I am in the caricature but there must be a seed of truth in this. The shape is perhaps more important in Europe than in North America. There, efficiency is paramount. Let’s say that the Washington Congress will be the result, hopefully, of the positive tension between our two great cultures!

***Let’s talk about the programme of the Washington Congress – and first of all, when will it be held?***

It will take place from 13 to 16 March 2019. And I can tell you that I am very happy with the result of the programme. When I started working on a first draft, some people told me that it would become difficult, that I would not have free rein and would have to fight to impose my vision. I must admit that the opposite has happened. I had carte blanche to draw the outline of the programme and then it was very easy with *James Taylor* and the members of the Scientific Committee. The exchanges were easy and effective. It must be said that *James Taylor* is a former military dentist, currently advising the Minister of Health on oral health. The discussions with him are frank and direct and no time is wasted in long and fruitless discussions. Here we come back to the North American effectiveness I mentioned earlier. But one thing is certain, the ultimate goal for the entire Scientific Committee has always been the high quality of the programme.

***Can you give us some indications?***

Right from the start, the pillars of the programme were: originality, scientific rigor and link with the clinic. I will not describe all the sessions of the congress, there are too many, but I would like to focus on three of them that will give you the tone.

The first is called “Ten years after”. The idea came to me by listening to the record, vinyl moreover, of the live concert of Ten Years After in Frankfurt given in 1973. When I listened to this music at the age of 20, it seemed normal to me. I did not ask myself questions of quality or originality. But when I rediscovered the record a few years ago, I was amazed by the musical quality of this band or others like Led Zepplin, Deep Purple, Procol Harum and so on. And I wondered if in music today, there were really new things or if the apparent musical creativity was actually only a copy of what was done before, adapted to our times. Wasn’t it better in the old days?

***We’ve gotten quite far from dentistry ...***

No, not at all: Based on these considerations we are going to ask experts, not in music but in implantology, to describe what they were doing ten years ago and what they are doing today. They will have to explain if and why they have changed their indications, their techniques or the materials they use. They will have to present failures to justify their change of course, if there has been any. The speakers will cover the field of both surgery and prosthetics. This will help people who do not attend congresses regularly to understand how certain experts have reached their individual stage of reflection. The purpose of the session is to justify the therapeutic options.

***So that was the “Ten years after” session. What is your second example?***

One session is especially close to our hearts. It is called “Treatment of complete edentulism through the ages”. Four speakers will talk about complete edentulous patients under 10, at 30, at 60 and at 90. You understand that although the indication is identical, the context is quite different. Edentulism at 30 is often caused by severe periodontal disease; at 60, it is sometimes iatrogenic and at 90, it often comes with cognitive and motor problems. I can assure you that this will be a great session full of lessons.

***And the third?***

It springs from an idea of *James Taylor*, who would like to reconnect with the very high scientific level that our sessions had more than 15 years ago. So we have asked *Dr John Davies*, a world-renowned scientist, to choose his own speakers. It will be exciting. They will raise the question of the reactions of the bone surrounding titanium and highlight the problem of non-infectious peri-implant pathologies. The clinical consequences of their work will be enormous.

A look at the schedule will show you that the programme is concentrated. We will talk about zirconia and its limits, about peri-implant tissue development, biomechanics, and many other topics. The number of women on the podium is unmatched in the history of this academy, and the geographical origin of the speakers well balanced. There are many sessions in very small groups, there is the possibility of having lunch with some of the speakers, there is a programme for the assistants and hygienists, and a special programme for dental technicians. And finally there is a beautiful social programme in a beautiful city, in short, many very good reasons to join us in Washington.

***Thank you, Franck, for this interview!***



## Career paths in dentistry

# Shadows over the individual practice

Many roads lead to Rome, as the well-known saying goes. This also holds true for the dental profession. Ever fewer graduates decide to set up or take over a practice right after having graduated and acquired the medical license. This is also because there is a growing number of female dentists, who want to juggle a job and a family, and because the investment costs have increased enormously when starting a business. According to the information of the IDZ (Institute of German Dentists), the financial volume for a single dental practice at start-up in 2016 averaged at 528,000 euros – over 100,000 euros more than in 2014.

In this issue, the EDI Journal editorial team introduces two young female dentists and their careers as well as their lives. Both are interested in oral implantology, both have completed the Curriculum Implantology of BDIZ EDI and the University of Cologne, and both are already actively practicing implant dentistry. Yet these are the only similarities, as you will realize when you read the interviews. For young female dentists, life planning is usually equivalent to career planning. Family and work must be compatible. No need to mention that this becomes difficult when setting up or taking over an individual practice. With the rising number of women studying and working, the proportion of women has also increased steadily from 2008 to 2016. In 2016, the statistical yearbook of the German Dental Association (BZÄK) registered 32,050 female dentists in Germany (2008: 26,593) compared to 39,876 male colleagues. Their share is stagnating. If the trend continues, there will be a stalemate in a few years. Today, well over two-thirds of graduates are female. Of course, this also casts a long shadow on the individual practice.

Another shadow is casted by investors. Politics set the framework conditions to make medical and dental care in the countryside attractive. Not all decisions are considered useful by the dentists' organizations. Medical care centres (MVZ), it is said, are not suitable to prevent the rural exodus of doctors and dentists: Because of the higher patient throughput, the operators of such centres seek to establish them in urban areas.

As part of a consultation on the ministerial draft of the law on appointment scheduling service and medical care (TSVG), the German Dental Association has demanded to stop the rapidly increasing

takeover of dental care centres by major investors and private equity funds. In the key topic of this issue, "Career paths", a journalist of the German newsmagazine "Spiegel" also writes about the interest that foreign investors show in the acquisition of dental practices.

## Key topic: Career paths in dentistry

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Perhaps the judgment of the Federal Social Court of Germany (BSG) might pour some oil on the troubled waters. In a recent ruling, the BSG decided that a dentist working as an employee at a medical care centre does not practice as a panel dentist. The conclusion: A panel (dental) doctor must exert a decisive influence.

In October, the FutureDent congress of Deutscher Ärzteverlag will take place in Munich. Students and young professionals will receive abundant information and material to help them find their individual career path. BDIZ EDI is a cooperation partner of the event.

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Interview: Dr Carmen Gottstein MSc, employed dentist

# Don't miss out on your career

What drives young dentists today? What do they want to achieve? In this interview, a young dentist from Cologne provides some insights into her professional life. Dr Carmen Gottstein is Belgian and studied dentistry at the University of Witten/Herdecke, Germany. Today she works in a group practice in Cologne. In June 2018 she completed the 19th Curriculum Implantology of BDIZ EDI and the University of Cologne, both enthusiastically and successfully. Dr Carmen Gottstein in conversation with editor-in-chief Anita Wuttke.

## Why did you study dentistry?

The profession combines in-depth theoretical knowledge with manual dexterity and communication, but the focus is always on the patient. Building a relationship of trust with the patient during the treatment and considering a therapeutic concept together with him gives me renewed motivation every day. Before entering dental school, I completed several internships in dental practices and dental laboratories. I quickly realized that practical work

and manual skills were very important even during academic training. This led me to study at the private University of Witten/Herdecke, where just these very aspects are of high importance.

## Which dental disciplines do you currently practice, and what are your preferred challenges?

In our practice I cover the entire range of dental treatments, with my preferences mainly in the area of prosthetics and now also in implantology. Prior to my Curriculum Implantology, I completed a three-year master's degree in dental prosthetics at the University of Greifswald. Both disciplines are closely related, and I enjoy integrating both areas into my treatment planning. Thus, the prosthetic treatment options become considerably more diverse and I can show the patient more treatment options.

## You have successfully completed the 19th Curriculum Implantology. Are you already actively working in implantology or would you like to focus more on oral implantology in the future?

The practice where I work is full of dental specialists who can guarantee high-quality dental care thanks to the most recent technologies and methods. Implantology is already given high priority in this practice. Thanks to the experience-based support by my employer, *Dr Markus Beckers*, I can directly apply the knowledge I gained at the Curriculum Implantology, in theoretical classes but above all in practical hands-on courses, for which I am very grateful. Digital diagnostics using orthopantomographs and CBCTs and treatment modalities using digital scanners extend our practice horizon and allow us to offer prosthetic and implantological treatments at the highest level.

## Dr Carmen Gottstein MSc

### Personal information

Born in 1981, married, one son

### Academic studies and clinical training

2001 to 2006	Attended the dental school of the University of Witten/Herdecke, with internships at the University of Geneva, Switzerland, René Descartes University, France (Tina Rezwani-Kaminski Foundation) and the Harvard School of Dental Medicine, USA
December 2006	State examination for dentists
March 2007	Dr med. dent., University of Witten/Herdecke
May 2012 to July 2015	Master programme in dental prosthetics at the University of Greifswald
Oct. 2017 to July 2018	Curriculum Implantology (BDIZ EDI) at the University of Cologne

### Professional activities

2007	Start of professional activities after obtaining the state license ("Approbation")
Since 2015	Employed dentist at the Center for Dentistry of Dr Beckers and Colleagues, Cologne



***You are currently working as an employed dentist in a group practice. Does this match your career and life plans?***

Thanks to the ideal working conditions in the group practice that my employers have created – themselves a family with four children – I can optimally reconcile my family life with my professional life. My husband and I both work full time. Thanks to my family-friendly working hours I can still be sure to be able to pick up my five-year-old son at kindergarten on time. Professionally, I don't feel that I'm missing out.

***Which goals do you want to achieve professionally?***

The digital transformation has created new challenges and offers many benefits that I am happy to accommodate. Many technical and practical aspects

of our profession are constantly changing. It is important for me to continuously expand my knowledge through continued professional development and constantly improve my treatment approach.

***From your point of view, does the profession of dentist has good prospects for the future?***

The public's awareness of dental health has increased significantly. At the same time, the average age of the population is rising. Fewer and fewer patients are coming to the practice who need a full denture. This results in new prosthetic and implantological treatment methods. Prophylaxis and tooth-preserving measures become ever more prominent and more important.

*Thank you very much for this interview.* ■

**Mother and daughter in a joint practice**

# “I still have not lost the respect”

The following interview depicts the mother-daughter constellation in the dental practice. Dr Renate Tischer, dental implantologist in Bad Salzungen, founded her practice shortly after the opening of the inner-German border, which she now leads together with daughter Kristin-Theres Tischer. We interviewed the young dentist, herself mother of a daughter, and also included the practice founder.

***Why did you study dentistry?***

*Kristin-Theres Tischer:* Dentistry is a very exciting and multifaceted profession, which requires professional and scientific but also manual skills. And the studies are very diverse, because you do not spend all the time in lecture halls or libraries, but already perform dental treatments and come into contact with patients during the clinical section.

***Which dental disciplines do you currently practice and what are your preferred challenges?***

*Kristin-Theres Tischer:* We cover almost the entire spectrum of modern dentistry in our practice with a specialization in implantology and aesthetics. Implant dentistry is exciting and every successfully placed implant makes me personally proud. However, I am also glad about very good periodontal or conservative treatment results. That's why I can not

speak of special “preferences”. For me, a successful working day is a day with various dental cases and satisfied patients.

***You have successfully completed the Curriculum Implantology of the BDIZ EDI and the University of Cologne. Are you already actively working in implantology or would you like to focus more on oral implantology in the future?***

*Kristin-Theres Tischer:* I have been practicing oral implantology since 2013 and I have already successfully inserted and restored a great number of implants. I have to admit that I still have not lost the respect and excitement of every implant placement until today, but this is also important to stay focussed. Implantology is a major pillar of our joint practice and of course I want to continue this development and further advance my professional skills.

***You are not a long-time practice (co-)owner. How huge is the effort you have to make in terms of hygiene, X-ray and data protection, and would you have imagined that?***

*Kristin-Theres Tischer:* The administrative chores for dentists have increased considerably and are sometimes so complex that it is easy to lose track of things. Actually, one would need an additional trained assistant or practice manager to meet the administrative burden. However, this is not financially viable for smaller practices. Mostly there is a lack of well-trained staff, especially in rural areas. Nowadays, the dentist has to spend as much time at his office desk as at the treatment chair. And no, of course that is not what I had in mind.

***Which goals do you want to achieve professionally?***

*Kristin-Theres Tischer:* First of all, I would like to become a certified “European Expert in Implantology” and further develop my knowledge and skills of implant dentistry. And I could also imagine another specialization, for example in the field of periodontics. In general, of course, I hope that I will lead our practice as successfully as my mother has established it, especially in the field of implantology.

***From your point of view, does the individual dental practice has good prospects for the future?***

*Kristin-Theres Tischer:* That’s what I really hope. An empathic and trusting relationship with my patients is very important to me. In my opinion, this kind of relationship does not exist in dental clinics, medical care centres or large-sized multi-dentist practices. Of course, the profile of requirements, the administrative burden, and the competitive pressure on dentists have increased significantly, which means that being an employed dentist in a multi-dentist practice offers certain conveniences and safety. However, it impairs your personal freedom in terms of medical decisions and activities. My personal ideal of a dental practice is an office with two practitioners who can cover almost the entire spectrum of dentistry. It creates freedom and autonomy, as well as financial security. However, individual specialization is indispensable to withstand the competitive pressure.

*Dr Renate Tischer:* Much of what I struggled to achieve, I can put into the hands of the family: a distinctive practice in a rural area with a secure patient base. Our achievements in the field of implantology have been working for decades and we will continue to work at a high level and according to scientific standards. To pursue this, to feel the gratitude of the patients, is a special, fulfilling moment, which in my opinion is only possible within this form of practice.

***Dr Tischer, how was it for you, as an experienced practice owner, to get your own daughter on board on an equal footing?***

*Dr Renate Tischer:* That was quite a challenge after 25 years of successful work in my own practice. It also meant that I had to work on myself: rethink, cede and learn to let go! It was not a process of a few months, it took years and even required professional support in some respects. My practice was one of the first independent practices in Thuringia; it came out of nothing and in a completely new state system. Almost at the same time, I started with implantology, because I was convinced then and am still convinced now that the future of modern dentistry also lies in implant dentistry. AWU ■

## Kristin-Theres Tischer and Dr Renate Tischer



### **Kristin-Theres Tischer**

2004 – 2010: Studies of dentistry at the Friedrich-Alexander-University Erlangen-Nuremberg

July 2010: State license (“Approbation”) as a dentist

2010 – 2011: Assistant dentist in Roth, Bavaria

2011 – 2013: Assistant dentist and employee dentist in the dental office Dr Renate Tischer, Bad Salzungen

2012 – 2013: Curriculum Implantology (BDIZ EDI) in Cologne

2014 – 2016: Employee dentist in Nuremberg

01.10.2016: Establishment and entry into the joint practice Dr Tischer & Tischer

Since 2017: District chairman of the regional dental authority KZV Thuringia for the district Wartburg

Member of the European Association of Dental Implantologists (BDIZ EDI)

Member of the German Society for Oral Implantology (DGOI)

### **Dr Renate Tischer**

Shortly after the German reunification, Dr Renate Tischer founded her own practice with a focus on implantology. Later on, she founded the Study Group for Implantology of Thuringia in cooperation with the University of Jena and the BDIZ EDI. Since 2001, she has worked on the extended Board of the BDIZ EDI and is committed to preserving implantology for the dental practice.

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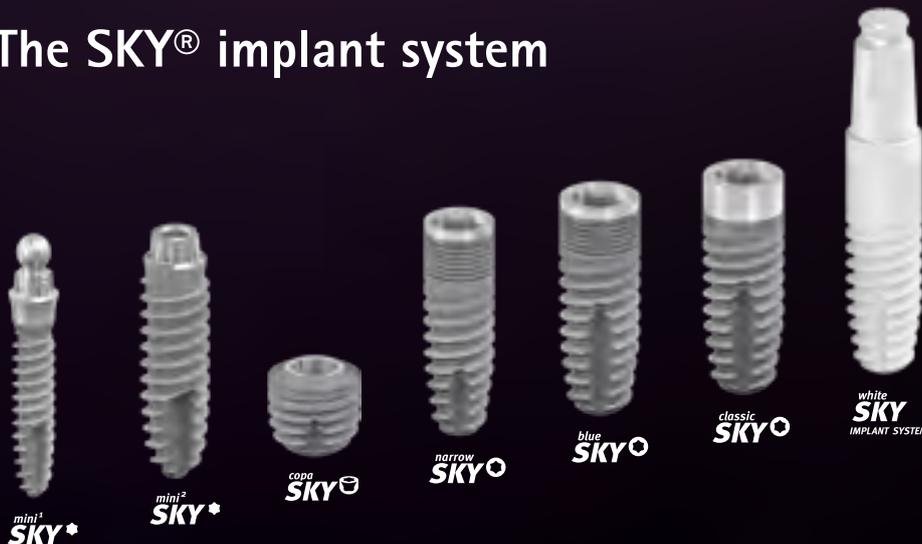


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Rapidly progressing trend within dentistry

# Teeth are big money

Private equity funds as financial investors are buying up dental practices. This means that there will soon be more large practices, chains or groups. In the best of all worlds this may help improve quality – but in the worst case everything will just be about quick and easy money. The following article shows that this trend has gradually built up momentum in Germany since the legal framework was changed. The author is Tanja Wolf, medical journalist for Spiegel online, Germany.

Centrally but unobtrusively, a sign has been set up in the city where dentist *H.* lives and works. “Colosseum Dental”, it says, a limited liability company “providing services and management guidance for the dental industry”. When *H.* saw the sign for the first time, one thing became immediately clear to him: The big conglomerates are not eyeing the market. They have long since entered it. The Colosseum Dental group is backed by Jacobs Holding AG – a billion-euro legacy of Germany’s well-known coffee empire.

Dentistry in Germany is currently undergoing rapid change. There is a trend towards large practices, chains and groups of practices, a trend already more than evident in Scandinavia, the Netherlands and Great Britain. Fear of financial investors – pejoratively dubbed “locusts” by some – is rampant, as is patient anxiety about losing the dentist they trust, instead seeing a different one at every new visit; one who is less invested in the long-term welfare of his patients.

## One dentist, one practice – soon history?

The traditional rule of one dentist – one practice could soon become a marginal phenomenon. That is exactly what dentist *H.* fears. (He has proactively switched coffee brand.)

At this point there is still no grouping in Germany that comprises more than 30 practice locations, but that could change quickly. Not only Jacobs Holding is actively looking for dental practices. The Swedish mutual fund company Altor Equity Partners, for example, and the Swedish financial investor EQT – both with more than six billion euros in assets under management, are also investing in the German market.

Their concept is as follows: The private equity group buys a hospital to which selected dental practices are connected to form a medical care

centre (called an MVZ based on its German initials), a for-profit form of cooperative of medical professionals first created in 2003 in section 95 of the German Social Code; previously, only individual or joint practices had been possible. The investors first complete due diligence of the targeted practices together with auditors. Of particular interest are practices that are professionally and financially successful, with different minimum requirements in terms of the number of practitioners, minimum gross annual revenues and minimum annual profits. The next goal will then usually be to establish further satellite practices.

The Dutch DentConnect Group, backed by EQT, already has more than 220 dental practices in five countries, with more than 850 dentists serving nearly a million patients. The Colosseum Dental Group comprises more than 230 clinics with around 1,000 dentists in seven countries. Now the group wants to “gain a foothold” in Germany and has “started talking to many dentists”, says *Cornelia Steinmeier* of Colosseum Dental Germany.

The trend seems irreversible. The majority of dental students are female, and a large proportion of young people are reluctant to invest heavily in an individual practice, preferring to work as employees. Medical care centres in the form of large practices or chains or groups of smaller practices are booming. It is true that, according to figures published by the German Federal Association of Contract Dentists (KZBV), 81.9 per cent of the 42,616 dental practices in Germany were still sole proprietorships in 2016. However, the share of MVZs working with employed dentists has been growing at triple-digit rates per quarter since 2016. While their number was still only 25 with 155 employed dentists in 2014, it had grown to 359 MVZs with 1,140 employed dentists by 2017.

### Do all parties really benefit?

This business model can be beneficial for both sides of the deal if managed well: Dentists are relieved from the burgeoning administrative chores involved in running a practice, they can pool their purchasing power and harness marketing synergies, and can engage in continued professional development together. They do not have to worry about finding successors, can maintain their identity even as part of the group and be visible to the public and benefit from mutual professional advice. Patient benefits include better and more specialized equipment, more flexible opening hours, and continuous up-to-date training of dentists; they are always treated by specialists.

According to Colosseum Dental, it is currently in the process of “introducing common structures” in order to “realize” such benefits. The Altor subsidiary KonfiDents promises a quality-centred approach right from the start: “We are explicitly on the lookout for the opinion leaders and the luminaries”, says project manager *Clara Zverina*, who claims to be engaged in negotiations with over 100 practices, dentists, and oral and maxillofacial surgeons alike. The plans include the creation of a medical advisory board, a separate quality assurance unit, and a proprietary training institute. This is of interest not only to younger dentists, but also for patients and health insurance companies.

The German National Association of Statutory Health Insurance Dentists (KZBV), however, fears that this would only promote the creation of chain practices in economically attractive metropolitan areas. *Gregor Bornes*, dental expert and spokesman of the Federal Association of Patient Centres (BAGP), points to the situation in the hospital market: “We see there that such constructions do not automatically mean more quality, but above all more quantity.”

*Kirsten Kappert-Gonther* of the Green Party is also sceptical. She sees “expectations of high returns” among private investors, reinforcing the trend towards a commercialization of dentistry. *Harald Weinberg* of the Left Party warns that patients “will have little chance to distinguish between high-quality facilities and chains streamlined for maximizing sales”.

Dentist *H.* has similar concerns – he fears that quality will be way down. Everything, he is afraid, will be about “maximum throughput”, the employed dentists – the “mercenaries”, as *H.* calls them – hardly being motivated to deliver a patient-oriented service and good treatment. But *Ingo Kock*, managing director of a practice consultancy, believes that MVZs will at any rate not work out without patient-dentist relationships based on personal trust: “In the race for the largest practice, those who are primarily concerned with the health of patients will win. The money will then be flowing in all by itself.”

*Tanja Wolf* ■

Updated version of 8 August 2018. Initial release: “Spiegel Online” 30 May 2018.

## Why dentistry is so attractive to private equity

- In view of persistently low interest rates, money is invested differently today. Dentistry is lucrative: Germany is the largest dental market in Europe. According to the German National Association of Statutory Health Insurance Dentists German (KZBV), Germany’s dental practices generated total revenues of 26 billion euros in 2015.
- Approximately 41 per cent of dentists registered with statutory health insurance and approximately 18 per cent of the dentists employed by them are over 55 years old – and getting older. Practice owners have a hard time finding successors because many younger dentists prefer to work as employees.



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## Pros and Cons

# Ceramic implants – an alternative treatment option?

In this issue we start the format “Pros and Cons”. Two experts comment on a current and controversial topic in oral implantology. This issue is about ceramic implants. Adj. Professor Michael Gahlert represents the pro side, Professor Knut A. Grötz the contra side.

## Do patients specifically ask to be treated with ceramic implants?

### Pro

It has been remarkable to witness how ceramic implants have turned out to be a sought-after treatment option among my Munich patients in recent years. It is not as if I, as a treatment provider, brought up these implants in my discussions with my patients – no, it is the patients themselves who voice the desire to be treated with metal-free options wherever possible. Patients taking responsibility for their own health now habitually seek information on the ubiquitous internet and then ask for the practitioner’s opinion. If the practitioner has the required competence and experience with ceramic implants, patients are more likely to be encouraged to go for this treatment modality, whereas if the practitioner has a negative opinion or

little to no experience, the use of ceramic implants tends to be discouraged. Latest-generation zirconia one-piece ceramic implants have been documented from a variety of different angles in recent years, with manufacturers currently trying to establish reliable two-piece ceramic implants. There are several different reasons for this development.

### Contra

In clinical routine, very few patients ask for ceramic implants on their own initiative. Those who ask have mostly been made aware of by a dentist or a physician who deals with complementary and alternative medicine and worries about focal stress. Incidentally, I take the seriousness of these colleagues for granted.

## What are the scientific arguments for or against ceramic implants?

### Pro

Scientific findings regarding the excellent biocompatibility of zirconia can no longer be dismissed. For example, the risk of peri-implantitis is low; evidence-based data from recent studies shows that peri-implantitis no longer plays a role in long-term investigations of ceramic implants covering several years. Compared to titanium, there is less plaque affinity and no more corrosion. This makes ceramic implants particularly interesting for use in periodontally compromised patients scheduled for implant therapy. It has been my experience that the risk of peri-implantitis in this patient group is higher with the use of titanium implants than with ceramic implants, and I have now found this confirmed, without exception.

### Contra

The use of ceramics is fully justified both as a material and in clinical trials and ensures an innovation boost in implantology.

What speaks against it, is not the implant, but what is made of it – keyword business model: Ceramic implants are often communicated as being a metal-free restoration. But the term “metal-free” stirs up irrational fears. To suggest that a life polluted by metal was an impaired life and a metal-free life was a healthy life, is scientifically dubious. Ceramics are a non-metallic material and non-metallic is a completely different term than metal-free. We need a clean separation here.

The potential of ceramic implants will still have to be proven in clinical trials in the future. At the moment, the routine use is marked with question marks. The point is not that the ceramic implants that existed in the 1980s and 1990s did not stand the test. Rather, the zirconia implants in use today differ categorically from those of the first and second generation from the past 10 to 15 years. There are still no long-term results of the ceramic implants placed today. It is believed and assumed that continuous improvements of the new generation can be

achieved, but this requires the need for the patient to know that there are (still) no reliable long-term data.

Even scientists in favour of ceramic implants say, with reference to study results, that ceramic implants from nine to ten years ago are categorially different from those used today. It is not all about the material, the statement is linked to other characteristics. For example, many modifications and improvements have been made in the last 15 years concerning the

surface roughness of ceramic implants. But the quintessence from the scientific perspective: There are no long-term results on ceramic implants – beyond five or ten years. Nevertheless, the option of placing a ceramic implant exists if a patient actually has a proven intolerance or allergy to a titanium material. However, one cannot say that there is a general paradigm shift from titanium implants to the “healthier” ceramic implants.

## Advantage: Ceramics for use in aesthetically critical situations?

### Pro

Thanks to the very good tissue apposition to zirconia, the results with one-piece ceramic implants have been excellent in the aesthetically prominent anterior region. Regrowth of gingival papillae into so-called black triangles can be expected to continue even months after the delivery of the final prosthesis, provided that the anatomical condition of the bone supporting the gingiva was taken into due account.

### Contra

I am a surgeon, not a prosthodontist, but here I gather my courage and say that there is no advantage at all for aesthetically motivated indications. Of course, a metallic edge is unattractive, but we know from the old Tübingen implants that a visibly exposed white edge in the aesthetically challenging anterior region of the maxilla is just as unpleasant for the patient. And to say, “I have more leeway in surgery” does not apply to the aesthetic zone at all. I have to apply exactly the same basic rules as with titanium implants.

## Conclusion

### Pro

Preconceived opinions regarding the fracture strength of ceramic implants should also be put into perspective. High-tech zirconia has nothing in common with earlier ceramic materials. Its fatigue strength is even higher than that of titanium. It would be highly desirable to eliminate the frequent miscommunication in this area and to emphasize these relatively recent findings. This might encourage ambitious colleagues to muster the courage to integrate this promising new treatment modality within oral implantology into their daily clinical practice as a new therapeutic alternative.

### Contra

I am convinced that today's ceramic implants with their material properties are significantly better than those that were regularly prone to fractures in routine clinical practice. The reason: Today they are stabilized by yttrium. They contain an additional chemical element that prevents a microcrack from extending; it is rather being “patched”. However, it is unknown how stable this yttrium stabilization really is in the long run – over 10, 15 or 20 years. We should make every effort to continue using ceramic implants, but primarily in clinical trials – or if not in clinical trials, then with adequate patient education that it is an implant material without long-term data and that the routine continues to tend to titanium implants as far as safety is concerned.

## Adj. Professor Michael Gahlert

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At the ITI Consensus Conference in Amsterdam in April, Dr Gahlert worked out a consensus statement on ceramic dental implants in cooperation with Dr Röhling and Professor Schlegel. The user recommendation will soon be published internationally.

## Professor Knut A. Grötz

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Professor Grötz is the incoming President of the DGI, whose 32nd Annual Congress will be held in Wiesbaden, Germany, from 29 November to 1 December 2018 under the motto: Personalized Implantology.



# Did you ever know ...

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## ... that the BDIZ EDI will celebrate

... its 30th birthday in 2019? The association was founded in 1989 to enable the dental office to practice the young discipline of oral implantology. "Every dentist, male or female, should be given the opportunity to practice implantology in their own office", said Professor (h.c.) Egon Brinkmann†, the founding father of the BDIZ EDI. In 2002, the BDIZ EDI oriented itself towards Europe and has since been called Bundesverband der implantologisch tätigen Zahnärzte in Europa/European Association of Dental Implantologists.



## ... that the BDIZ EDI regularly invites

... to Brussels so that the representatives of the associated partner organizations as well as the industry partners can find out about the mechanisms of the committees (European Parliament, European Commission, European Council and the respective committees)?



## ... that BDIZ EDI invites

... the representatives of the associated partner organizations to the European Committee meeting once or twice a year in order to discuss the political framework conditions in the different countries and to shed light on the latest trends in oral implantology?

[www.bdizedi.org](http://www.bdizedi.org) > English > BDIZ EDI > Europe

## EDI India invites to Hyderabad

EDI India and Dr Vikas Gowd, introduced in EDI Journal 2/2018, take great honour to invite interested dental clinicians to come to Hyderabad, India. The International College of Dentists Conference and Convocation India will be held from 14 to 16 December 2018.

The conference strives to provide meaningful coverage on current trends in the dynamic interrelationship in dentistry. To this end, this year's conference, titled "New frontiers in dentistry", intends to highlight the growth potential as well as the complex issues still troubling dentistry. The conference intends to explore advanced techniques and technologies in treating challenging cases of the everyday practice for a very predictable and successful outcome, as well as other cornerstones of tomorrow's dentistry. Visitors don't have to be a main podium speaker to participate in the ICD conference 2018 – why not submit a free paper or poster presentation? A "proven training ground" for future and current

main podium speakers and a welcome opportunity to interact with colleagues in a social yet instructive manner. The best presentations will be awarded at the ICD award ceremony. The conference invites free paper presentations and posters from faculties and students. The conference social schedule will include a welcome reception on Saturday evening and a gala dinner on Saturday night with musical entertainment. Speakers from Europe are *Christian Berger*, BDIZ EDI President (Germany) and *Dr Alexandros Manolakis* (Greece), both renowned speakers of BDIZ EDI symposia. *Dr Vikas Gowd*, Hyderabad, will serve as Organizing Secretary. Find out more on [www.bdizedi.org](http://www.bdizedi.org) > English EDI ■

## Implant dentistry in the Balkans

The 7th International USSI EDI and the 9th Congress of Dentists of Vojvodina traditionally took place in NIS Centre in Novi Sad, Serbia, from 17 to 20 May 2018.

Both congresses were sponsored by the Provincial Secretariat for Health, Social Policy and Demography of Vojvodina and supported by the BDIZ EDI. The scientific programme with international speakers from Germany, Portugal, USA, Romania, Russia, Belarus, Croatia, Bosnia, Serbia, and Macedonia focused on dental implantology and modern dentistry. USSI EDI had carefully selected lecturers and topics in order to satisfy the wishes and needs of dental practitioners, and thus raise the level of treatment success. Along with the congress programme, the partner association of BDIZ EDI had organized five hands-on workshops in the fields of implantology, laser therapy, 3D diagnostics and planning, as well as aesthetic dentistry. USSI EDI thanks BDIZ EDI for the support they provided and was honoured to host BDIZ EDI President *Christian Berger* as a representative and excellent lecturer. USSI EDI hopes to have the opportunity to host other members of the organization at future congresses.

*Dr Zoran Marjanović* ■



First work, then pleasure: the speakers of the 7th International USSI EDI and the 9th Congress of Dentists of Vojvodina. First row from left: BDIZ EDI President Christian Berger, Dr Zorica Vidovic, Dr Dušan Vasiljević, Dr Branislav Čukić. Second row from left: Prim Dr Marinel Subu, Dr David Alfaiate, Dr Zoran Marjanović, Professor António Felino, Dr Laura Murcko, Dr Vincent J. Morgan, and Dr Branislav Stefanović.

## Certification as an EDA Expert in Implantology

# Qualification for experienced implantologists

For many years, BDIZ EDI has been catering to experienced and well-versed oral implantologists by offering the certification exam for EDA Expert in Implantology. Jointly with the European Dental Association (EDA), BDIZ EDI regularly invites interested dentists to take the certification exam, which we would like to present in this article.

That quality is of paramount importance to BDIZ EDI is no secret. BDIZ EDI has demonstrated this in many different areas – legal and accounting, materials testing, postgraduate education, the annual Guidelines of the European Consensus Conference (EuCC) on current implantological issues and finally the qualification of court experts. BDIZ EDI also supports dental education with its Curriculum Implantology that introduces aspiring dentists and young implantologists to this dental specialty in eight well-organized modules.

### Admission requirements for the certification exam

Certification as Expert in Implantology requires very good to excellent skills and knowledge. Candidates must meet the following admission requirements:

- 250 EDA-recognized continuing education/training hours in various sub-disciplines of implantology
- Submission of ten documented, independently performed implantological treatment cases
- At least five years of professional activity, primarily in the field of implantology

Specific experience and primary activity in the field of implantology must be documented by at least 400 implants inserted and 150 implants restored within the past five years. Candidates who already obtained qualifications in oral implantology (e.g. from other professional societies) may submit the appropriate credentials with their application for certification as EDA Expert in Implantology.



### The exam

Candidates meeting all the requirements will be admitted to the examination. The examination board of BDIZ EDI and EDA consists of recognized specialists. The exam has a theoretical and a practical part, both of which must be completed successfully.

The procedure is as follows: The theoretical part of the exam will start with a discussion of the documented cases. In addition, candidates are expected to answer questions related to oral implantology and closely associated fields. The theoretical examination usually takes no longer than 60 minutes; it may be administered to candidates in groups. The practical part of the examination covers one or more recognized, state-of-the-art treatment method or methods and/or treatment plans covering some aspect of oral implantology. Candidates will be informed of the respective topic two weeks before the exam date. Candidates are responsible for providing the required materials and instruments on the day of the exam. The examination as a whole is subject to a fee to cover the cost incurred by the examination board.

New EDA Experts in Implantology are nominated by the president or vice president of the EDA certification committee.

### More information

To register for the next certification exam, please go to [www.bdizedi.org](http://www.bdizedi.org) and select English > Professionals > Expert or write to the BDIZ EDI office in Cologne at [office@bdizedi.org](mailto:office@bdizedi.org)





European  
Association of  
Dental  
Implantologists

**Applicant's address:**

Full name \_\_\_\_\_

Full address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

E-mail \_\_\_\_\_

Date \_\_\_\_\_

**Forward by mail or fax to:**

European Association of Dental Implantologists (BDIZ EDI)  
Mühlenstr. 18  
51143 Köln  
Germany

**office@bdizedi.org**  
**Fax: +49 2203 9168822**

## Certification exam: EDA Expert in Implantology Application for accreditation

I hereby apply for the EDA Expert in Implantology certification exam (EDA = European Dental Association).

I am qualified for this exam as defined below:

Member of BDIZ EDI  yes  no

Member of the following Societies/Associations: \_\_\_\_\_

I am:  a dental clinician  an oral surgeon  a maxillofacial surgeon

I meet the training requirement of 250 hours of postgraduate education.  yes  no

**Education and experience:**

**Surgery:**

Inserted implants:  less than 400  more than 400

Sinus lift:  yes  no

Close to nerve:  yes  no

Advanced atrophy of the jaw:  yes  no

Soft-tissue augmentation:  yes  no

Bone augmentation:  yes  no

**Prosthodontics:**

Implant-supported restorations:  less than 150  150 or more

During the exam, I will be able to present documentation for 10 treatment cases.  yes  no

I understand that the examination board will review my qualifications and vote to accept or reject my application. Furthermore, I declare that all images I present are my own and that the implants have been inserted and prosthetically restored by me.

\_\_\_\_\_  
Applicant's signature

\_\_\_\_\_  
Date

Having successfully passed the exam and paid the requisite fee, I will be certified as EDA Expert in Implantology.

The commercial processing of your personal data on this form is based on the EU General Data Protection Regulation (GDPR – Regulation (EU) 2016/679 of 27 April 2016), Article 6 f GDPR by the European Association of Dental Implantologists (BDIZ EDI), Mühlenstr. 18, D-51143 Cologne/Germany. You have the right to obtain information about personal data concerning you (Article 15 of the GDPR). You can also request the correction (rectification) of incorrect data (Article 16 of the GDPR). More information: Privacy Statement on [www.bdizedi.org](http://www.bdizedi.org).

## Resolution by CED on dental practice and third party payers (TPP) in Europe

# TPP must not influence relationship between dentist and patient

The Council of European Dentists (CED) – umbrella organization for European dental chambers – is concerned about the growth of third party payers in the field of provision of dental care and treatment and its implications for oral health policy. The CED has therefore passed a resolution in May 2018 that sets out some important principles and policies which prioritize the welfare of patients and respect the ethical and professional responsibilities and rights of the dental profession.



It is crucial, the CED says, that all stakeholders acknowledge that the primary relationship in the delivery of dental care is between the dentist and the patient, who collaborate to develop strategies to ensure beneficial long term health outcomes. Third party payers must not influence this relationship in any way that diminishes a patient's right to achieve long term optimum oral health.

The growth of third party payers (TPP) is a significant development as regards the provision of dental care and treatment and has implications for oral health policy as well as carrying professional and commercial implications for dentists who are contracted by TPPs to provide professional services, therefore inevitably effecting patients. The CED is concerned that commercial imperatives introduced in a TPP relationship must not diminish the dentist's primary responsibility to provide the highest standard of care to the patient nor should it compromise the professional or ethical responsibilities facing the dental team. It is crucial that the primary relationship in the delivery of dental care remains to be between the dentist and the patient. This paper sets out some important principles and policies to

apply which prioritize the welfare of patients and respect the ethical and professional responsibilities and rights of the dental profession.

A third party payer is any organization, public or private, that pays, contributes or intermediates towards healthcare expenses, on behalf of

beneficiaries, such as employers, insurance companies and public health funding mechanisms. These payments, called third party payments, are distinguished by the separation between the individual receiving the service (the first party), the dentist providing the service (the second party), and the organization paying or intermediating for it (the third party)<sup>1</sup>. A third party is thus an outside body that can influence the relationship between the dentist and the patient. Such organizations include but are not limited to: funding agencies (for example, government departments, agencies and statutory authorities, private health insurances and private health organizations) which have responsibility for the entire fee for service, or part thereof. Rules and regulations governing the existence or non-existence of TPPs, as well as the way they operate, vary between countries. Nevertheless, some common basic guidelines should be established regarding the special characteristics of TPPs, which are in line with public health objectives.

The primary relationship in the delivery of dental care is between the dentist and the patient who collaborate to develop strategies to ensure beneficial long term health outcomes. TPPs must not influence this relationship in any way that diminishes a patient's right to achieve long term optimum oral health. Inappropriate pressures from TPPs, driven by financial or budgetary interests, result in the loss of the health perspective.

### Financial involvement

The financial involvement of TPPs should support appropriate oral healthcare for the patient and

The primary relationship in the delivery of dental care is between the dentist and the patient.



Photo: fotolia.de/Valeriy Velikov

must rely on evidence-based treatment decisions taken by the dentist with the consent of the patient, rather than by any type of benefit protocol. The TPPs should compensate fairly and promptly for treatment provided by the dentist to reduce or eliminate patients' out of pocket expenses. Nevertheless, we recognize that TPPs can have a role to play in healthcare funding, and that they may be involved in healthcare funding where they can provide a solid foundation for a safe and quality-oriented health care system without interfering with the dentist's professional treatment decisions or the patient-dentist relationship.

### Influence

As stated, the primary relationship is between the patient and the dentist. Undoubtedly, third parties should not limit or influence the patient's choice of dental provider or create any kind of discrimination between patients of one provider.

### Transparency

TPPs are responsible to provide patients with clarity and transparency about the scope of coverage of their policy. Complaints resolution mechanisms must be transparent and procedurally fair. Dentists should be afforded appropriate support and assistance where they have concerns about any ethical or professional aspects of their practice.

### Engagement with dentists

All dentists must be treated equally by TPPs, which should not impose any practices or fees that favour any particular dentist. The placing of restrictions on professional privileges of dentists by third parties for their own financial gain is unacceptable. Dentists must not be prevented from meeting their ethical obligations by TPPs.

*Source: Resolution adopted on 26 May 2018 by CED General Assembly*

<sup>1</sup> Barry D. Alexander et al, American Health Lawyers Association, 2011, Fundamentals of Health Law.

## The 19th Curriculum Implantology is completed

The 19th Curriculum Implantology of BDIZ EDI and the University of Cologne ended in June 2018 with a final exam. Beforehand, the prospective oral implant dentists had completed eight modules in the field of oral implantology over a one-year period. At the end, the successful graduates received their graduation certificate after passing the exam at the University of Cologne. Our photo shows the graduates with their "teachers" Professor Joachim E. Zöller and Professor Hans-Joachim Nickenig as well as BDIZ EDI President Christian Berger.



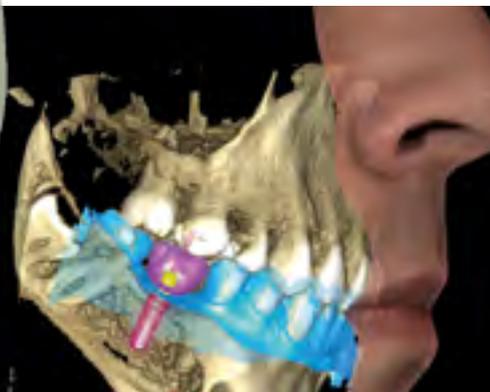
Congratulations! The heads of the programme, Professor Joachim E. Zöller (left), BDIZ EDI President Christian Berger (second from left), and Professor Hans-Joachim Nickenig (right in second row) with the obviously happy graduates.

### More information

More about the contents and modules of the Curriculum Implantology of BDIZ EDI and the University of Cologne can be found online at [www.bdizedi.org/bdiz/web.nsf/id/pa\\_fdi9y1fjp.html](http://www.bdizedi.org/bdiz/web.nsf/id/pa_fdi9y1fjp.html)



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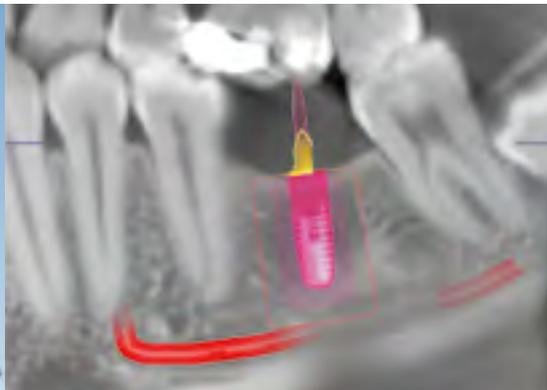
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# PLANMECA



10,000 attended EuroPerio9 in Amsterdam 2018

## Global get-together

EuroPerio9 attracted more than 10,000 visitors to come to RAI Amsterdam, Netherlands, at the end of June this year. The EuroPerio therefore marks one of the biggest dental congresses worldwide. The delegates were a mix of periodontists, implant dentists, hygienists and health professionals from every part of the globe. In total, a staggering 111 countries were represented at the event. EuroPerio9 was organized by the European Federation of Periodontology (EFP), a member organization made up of 29 countries. But honestly, regarding the content not much was new except a new classification for periodontitis and peri-implantitis.

The concept of EuroPerio9 thrilled with a contemporary approach. Social media was well integrated with a “social wall” in the exhibition hall, where Facebook, Twitter, and Instagram posts tagged #EuroPerio9 were displayed. Scientific sessions and social events were covered by a team of 24 people of the European Federation of Periodontology. Three press conferences were held at RAI Amsterdam and streamed live on Facebook. They focused on a mixture of topics of medical and public interest – including antimicrobial resistance, the links between periodontal disease and hypertension, nutrition, sports performance, and oral piercings.

The New York Times (USA), The Times (UK), the Daily Mail (UK) and ABC (Spain) were among the newspapers that ran stories based on the releases and the press conferences, at which authors of the featured research gave brief presentations. The Reuters and ANSA news agencies also provided coverage, as did the Huffington Post, the health websites WebMD, Health Day, Infosalus (EuropaPress) and so on. The most important issue: A video about the new classification of periodontal and peri-implant diseases and conditions, unveiled at a special session at EuroPerio9, has been released by the EFP.

The video features comments from the four EFP co-chairs of the November 2017 joint AAP/EFP World Workshop that drew up the new classification, and from *Maurizio Tonetti*, editor of the *Journal of Clinical Periodontology*.



This QR code gives you direct access to the video.

Congress Chair *Michèle Reners* (Belgium) resumed that the sessions were very realistic and the feedback from the attendees very positive. For the first time ever, a EuroPerio congress attracted a five-figure number of participants, with a total of 10,232 periodontists, oral-health professionals, students, and others present at an event which featured more presentations in its scientific programme (134 in 42 sessions) than any of the previous eight EuroPerios.

With participants coming from 111 countries and 25 per cent of delegates from beyond Europe, this was truly an international event. Both evidence-based research and international co-operation were to the fore at the session on Friday, 22 June



which may well prove to be EuroPerio9's most lasting legacy: the news from the World Workshop session, which presented the new classification of periodontal and peri-implant diseases, agreed by consensus by a joint workshop of the EFP and the American Academy of Periodontology (AAP).

The new session formats at EuroPerio9 – such as Perio Talks, the “nightmare” session, live surgery, debate, the interactive session on treatment planning, and the Perio Contest – proved popular with delegates, who were able to participate actively in some of these sessions by using the voting facility of the special EuroPerio9 app.

*Søren Jepsen*, Scientific Chair, said: “Among the sessions I enjoyed the most I can name the science movie on peri-implantitis and its prevention, where important messages were given using fascinating images. The session on live surgery was quite amazing: More than 4,500 people sitting together in total silence and concentrating on what was going on is something I had never experienced before. I think the session on the new classification of periodontal diseases was also a landmark event.”

In the press conference, EFP President *Anton Sculean* presented key facts and figures about the federation and the key policy messages from the EFP strategic plan. He highlighted the links between periodontal and systemic diseases such as diabetes and issued a call for all European countries to formally recognize the speciality of periodontology. He also outlined one of the priorities of his one-year presidency: focusing on the oral health and well-being of people aged over 60.

*Iain Chapple*, EFP Secretary General, spoke about the general health burden of periodontal disease and its impact on mortality, drawing attention to the Perio Focus paper, a global call to action on the impact of the global burden of periodontal disease on the health, nutrition, and well-being of mankind. He explained the effect of gum disease on general health, outlining a new study on the impact of periodontal disease on chronic kidney disease. The study which monitored nearly 800 patients with moderate to severe kidney disease over ten years, found a very

significant impact of periodontal disease on kidney disease and suggested that periodontal disease contributed to kidney failure through creating oxidative stress in the bloodstream.

The renowned *Tord Berglundh* from the Institute of Odontology, Sahlgrenska Academy, University of Gothenburg, Sweden, shared the news from the World Workshop on classification of critical factors in periodontology with the audience. He introduced the five position paper that characterizes peri-implant health, peri-implant mucositis, peri-implantitis and soft and hard tissue deficiencies, and the new case definitions in day-to-day clinical practice and in epidemiological or disease-surveillance studies.

Visitors to RAI Amsterdam were also able to take advantage of the biggest ever EuroPerio exhibition, with a total of 139 companies exhibiting, including a record number of 26 sponsors, with total space amounting to 3,763 m<sup>2</sup>.



Press conference of the Organizing Committee (from left): Committee Member Bruno G. Loos, EFP President Anton Sculean, Congress Chair Michèle Reners, EFP General Secretary Iain Chapple, and Scientific Chair Søren Jepsen.

### Next stop, Copenhagen

Attention now turns to EuroPerio10, which will take place at the Bella Centre in Copenhagen, Denmark, from 2 to 5 June 2021. The Organizing Committee – chaired by *Phoebus Madianos* (Greece), with *David Herrera* (Spain) as Scientific Chair and *Nicola West* (UK) as Treasurer – was presented during the closing ceremony.

## Outlook on the International Dental Show (IDS) 2019

# Long-term task periodontitis therapy

In dentistry it is about securing patients the longest possible retention of their natural teeth in a healthy, functional, aesthetically acceptable and pain-free state. Periodontology provides the essential prerequisites for this through the maintenance of integral structures of the periodontium. The biggest adversary here is periodontitis. How can it be prevented, stopped, repressed? The visitors will find practice-oriented answers at the International Dental Show (IDS) from 12 to 16 March 2019 in Cologne, Germany.

Photo: Koelnmesse/IDS Cologne/Thomas Klerx



The next IDS will open its gates on 12 March 2019.

Regular follow-up care (UPT, recall) is essential for long-term success. This involves the dentist checking and improving the oral hygiene, regularly measuring the probing depths and filling the pockets where necessary. IDS shows the entire range of cutting-edge tools. These include periodontal probes made of

a wide range of substances (for example plastic, carbon, titanium). There are also pressure-calibrated alternatives among them, so that the load limit (= 20 grammes) is not exceeded. Manual tools, ultrasound and powder jet systems are available for the classic scaling and root-planing – in particular special ergonomic executions. This is therapy-appropriate because marathon-like staying power is required precisely when treating periodontitis.

It should be worthwhile taking a look at the delicate approaches that rely on the strengths of subgingival tools, on low-abrasive powder for the re-instrumentation – and also on current software offers. In this way, if necessary they can document complete periodontal states with probing depths and attachment losses on up to six points per tooth as well as a furcation participation, differentiated according to gradings as well as changes over the time. An interface to the regular allocation of appointments for patients provides a close linking to biofilm and recall management. Because “keeping appointments” and “consistently sticking at it” are the key to success in periodontology.

Furthermore all options for the adjuvant therapy can be assessed at the IDS, for example laser-controlled methods (like photo-dynamic therapy) and

immune modulation (for example probiotic provision) as well as the application of antimicrobial substances (like chlorhexidine, antibiotics). Beyond the minimally invasive methods, surgical operations are of course also interesting (lobe OP, soft tissue transplantations). Depending on the case at hand these cannot be avoided and then special tools are required. Today these can also include lasers for cuts with low trauma (for example 445 nanometre diode laser).

In order to be able to assess the inflammation situation of the affected periodontal pockets more accurately, the visitors of the IDS can examine the exhibited bacteria and DNA tests, among others marker germ tests (for example for porphyromonas gingivalis (PG), tannerella forsythia (TF) and treponema denticola (TD) from the red complex), as well as testing for aggregatibacter actinomycetemcomitans (AA) – in some cases as a chairside method. The risk of genetic-based periodontitis (interleukine-1 $\beta$ -polymorphism test) can also be determined or tissue destruction processes can be assessed (for example testing for matrix metalloproteinases-8 (aMMP-8) in the gingival fluid) to enable an accurate forecast and treatment planning.

The IDS takes place in Cologne, Germany, every two years and is organized by the GFDI Gesellschaft zur Förderung der Dental-Industrie mbH, the commercial enterprise of the Association of German Dental Manufacturers (VDDI). It is staged by the Koelnmesse GmbH, Cologne.

*Based on a press release from Koelnmesse* ■

**More information**  
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## Europe Ticker +++

Medical professionals from the EU

### No longer interested because of Brexit

Around 23,000 physicians and dentists from the EU work for the British National Health Service (NHS). Approximately one-quarter of all medical professionals in the UK hail from overseas, and they are joined by a six-digit number of non-medical health professionals. The plan is for the NHS to have sufficient doctors of its own by 2025. For this purpose, 1,500 additional study places would be created for British students. Experts doubt whether this will work. In the meantime, interest on the part of medical professionals from the EU in working in the UK has subsided considerably.

Source: Various ■

Photo: Maurizio Proccacini et al., Lack of association between celiac disease and dental enamel hypoplasia in a case-control study from an Italian central region. *Head & Face Medicine* 2007, 3:25doi:10.1186/1746-160X-3-25, CC BY 2.0, <https://commons.wikimedia.org/w/index.php?curid=4238878>.



Molar incisor hypomineralization (MIH)

### Germany mobilizes against “chalk teeth”

A few years ago, it was caries. Now the German Society of Dentistry and Oral Medicine (DGZMK) has identified a new disease that is “rampant” in children’s mouths: In molar incisive hypomineralization (MIH), also known as “chalk teeth”, molars and incisors crumble already in childhood, become porous and are very painful. As the DGZMK reports, up to 15 percent of all children in Germany now suffer from the condition. According to the current German Oral Health Study (DMS), roughly one in three 12-year-olds is affected.

“At least one of their teeth is damaged”, explains *Stefan Zimmer*, President of the German Society of Preventive Dentistry, who teaches at the University of Witten/Herdecke. About every twentieth child exhibits severe damage and requires treatment. MIH is a systemic structural anomaly, primarily of the dental enamel, which can be traced back to a lack of mineralization. It occurs on one to all four first permanent molars. These “chalk teeth” are extremely sensitive to pain as well as to heat, cold and brushing.

According to DGZMK, MIH has undergone rapid development. The disease was first described scientifically in 1987. Plasticizers in plastic materials that are ingested with food seem to play a major role in its development. Animal studies have shown a link between bisphenol-A intake and the development of MIH. With appropriate prophylaxis, however, the risk of caries infestation of such teeth can be averted and their preservation ensured.

Other potential causes of MIH include pregnancy-related problems, infectious diseases, antibiotics, chickenpox, dioxin exposure and diseases of the upper respiratory tract. A multifactorial origin is also being discussed. Still, science has failed to identify the precise cause so far. Since the enamel of the first molars and permanent incisors develops between the eighth month of pregnancy and the fourth year of life, the disorder must also originate during this period. Recent research indicates that ingested bisphenol A plays a major role in the aetiology of the disorder.

Source: DGZMK, Germany ■

Lancet Neurology

### Blood test rather than a cranial CT

Traumatic brain injury following injuries to the head can have grave consequences. The diagnosis is usually made by cranial computer tomography. A new blood test can now be used to rule out beforehand that a severe injury has occurred. An international research team in cooperation with the Technical University of Munich (TUM) presents its results in *Lancet Neurology*. >>

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<sup>1</sup> Data on file at RTI Surgical, Inc.

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## Europe Ticker +++

Blood serum from more than 1,900 patients in emergency rooms in the US and Europe was examined for the study. The great majority of patients had no or only slight impairments according to the Glasgow scale. The blood test was performed on all subjects and a CT examination was performed routinely.

For all 671 participants of the study for whom the test result was negative, the negative result was also confirmed in the CT examination: no detectable injuries. The results showed that the test was able to make a reliable prediction for 99.6 per cent of subjects. In addition, all patients who exhibited a more severe injury in their CT also had positive results in the test. The participating physicians additionally suspect that the test is also very sensitive for the detection of smaller injuries and can detect even minimal bleeding not visible even on a CT. From the authors' point of view, this would explain why about two-thirds of subjects in the blood test were positive without visible corroborating CT results.

*Source: Lancet Neurology, Technical University of Munich* ■

The European Commission decided on 17 May to terminate the long-standing infringement proceedings against Austria in connection with the country's restrictions on access to medical and dental studies for students from other member states. On the basis of data provided by the Austrian authorities, the Commission has found that the quota system applicable to medical studies is justified and appropriate to protect the public health system in Austria and may therefore be maintained. However, the Commission urges Austria to continue to closely monitor the situation and to report to the Commission every five years on whether the restrictions should be maintained. On the other hand, the Commission found that the restrictions on studying dentistry were unjustified, as no shortage of dentists is currently predicted.

The infringement procedure will therefore be closed on the understanding that the above restrictions on dental applicants will be lifted in time for the academic year 2019/2020.

*Source: europa.eu* ■

Publication: Jeffrey J. Bazarian, Peter Biberthaler, Robert D. Welch, Lawrence M. Lewis, Pal Barzo, Viktoria Bogner-Flatz, P. Gunnar Brolinson, Andras Büki, James Y. Chen, Robert H. Christenson, Dallas Hack, J. Stephen Huff, Sandeep Johar, J. Dedrick Jordan, Bernd A. Leidel, Tobias Lindner, Elizabeth Ludington, David O. Okonkwo, Joseph Ornato, W. Frank Peacock, Kara Schmidt, Joseph A. Tyndall, Arastoo Vossough, Andy S. Jagoda, Serum GFAP and UCH-L1 for prediction of absence of intracranial injuries on head CT (ALERT-TBI): a multicentre observational study, *Lancet Neurology*, July 24, 2018, DOI: 10.1016/S1474-4422(18)30231-X.

[Austria wants to protect its health care system](#)

### Doing away with the dentistry quota

According to the EU Commission, the quota for medical study places in Austria may stay in place. Austria had restricted the access of foreign students to medical and dental schools in order to protect its own health system. However, the EU Commission is calling on the country to abolish the practice with regard to dentistry.

[Pregnant women and children](#)

### Europe bans amalgam

Stricter rules on the handling of mercury have been in force in medicine and industry since July 2018, as the European Parliament had severely restricted its use. Amalgam is no longer to be used for dental fillings, especially in pregnant or breastfeeding women and in children and adolescents under the age of 15. Industrial uses are also affected. The objective is to significantly reduce the amount of mercury employed overall, for example by outlawing the use of mercury as a catalyst in the production of biodiesel. The pertinent, highly toxic and environmentally harmful liquid waste must also be stabilized in future before its disposal in powder form. In addition, stricter requirements apply to the import and export of mercury. Exports of the substance are only allowed for scientific purposes under the Regulation, while imports are only allowed for the manufacture of authorized products such as energy-saving lamps.

*Source: europa.eu* ■



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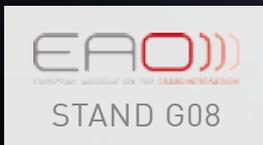
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Dental practices on Facebook should watch out

# Operator of a Facebook fan page responsible for the processing of personal data

The European Court of Justice (ECJ) decided, on 5 June 2018 (Case C-210/16), on the interpretation of Directive 95/46/EC (Data Protection Directive of 25 October 1995), which has since been replaced by EU Regulation 2016/679 (General Data Protection Regulation, GDPR) in force since 25 May 2018. In particular, the question of who is the “controller”, that is, the person responsible for the data, is still relevant under the current legal situation. This does not apply to private individuals, but it does apply to dental practices that present themselves on Facebook as commercial entities.

## Facts of the case

Wirtschaftsakademie Schleswig-Holstein is a private education company based in Germany and organized as a limited liability company (GmbH). In 2011, Wirtschaftsakademie offered educational services by means of a “fan page” hosted on Facebook.

Fan pages are user accounts that can be set up on Facebook by individuals or businesses. Administrators of a fan page can use it to introduce themselves to other Facebook users and to post any kind of statement. Fan pages are set up and driven free of charge and include a function called “Facebook Insights”, a function that lets administrators collect anonymized statistical information about the users of the fan page. This function cannot be turned off. The information is collected from users by means of cookies that a visited website stores on the visitor’s computer by way of the web browser. The next time the user visits the website, the information is sent from the viewer’s computer back to the website. Directive 2009/136/EC dated 19 December 2009 (“Cookie Directive”) added a provision to the Data Protection Directive according to which the user of

a website must consent to the storage of information or to the access to information stored on his terminal device, that is, the use of cookies. In the case of Facebook, cookies are active for two years and contain a unique user code. The user code can be matched with the login data of a user registered on Facebook and collected and processed when the fan page is opened. The cookies are stored when the page is visited, even if the visitor does not have a Facebook account.

## Note about data storage was missing

Neither Wirtschaftsakademie nor Facebook Ireland Ltd., which is solely responsible for the collection and processing of personal data within the EU, informed visitors that the data were stored or processed or how cookies work. The Independent Data Protection Centre for the state of Schleswig-Holstein (Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein, ULD), the competent supervisory authority, ordered Wirtschaftsakademie to deactivate the fan page on penalty of fines if it failed to comply within the prescribed period.

Wirtschaftsakademie brought a complaint against that decision, arguing

essentially that it was not responsible under data protection law for the processing of the data by Facebook or any cookies that Facebook installed.

The ULD dismissed the complaint, stating that, by setting up its fan page, Wirtschaftsakademie had made an active and deliberate contribution to the collection by Facebook of personal data relating to visitors to the fan page, from which it benefited in the form of the statistics it was provided by Facebook.

## Action against fines

Wirtschaftsakademie then brought an action against that decision before the Administrative Court (Verwaltungsgericht), stipulating that the ULD should have acted not against itself but directly against Facebook because the processing of personal data by Facebook could not be attributed to it and that it had not commissioned Facebook to process the data. While the Administrative Court initially annulled the contested decision, essentially on grounds that, since the administrator of a fan page on Facebook is not a responsible entity under data protection law, the Federal Administrative Court (Bundesverwaltungsgericht) >>

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stayed the appeal proceedings and submitted the following question, among others, to the ECJ for a preliminary ruling:

“Is Article 2(d) of Directive 95/46/EC to be interpreted as definitively and exhaustively defining the liability and responsibility for data protection violations, or does scope remain [...] in multi-tiered information provider relationships for the responsibility of a body that does not control the data processing within the meaning of Article 2(d) of Directive 95/46/EC when it chooses the operator of its information offerings?”

### The ECJ’s decision

The ECJ came to the conclusion that the term “controller” contained in Article 2(d) also includes the administrator of a fan page in a social network.

The ECJ first pointed out that the Data Protection Directive aims to ensure a high level of protection of fundamental rights and freedoms, in particular as regards the processing of personal data.

The concept of “controller” in Article 2(d) of the Directive is defined broadly in order to ensure effective and comprehensive protection of data subjects. The wording “alone or jointly with others” indicates that the responsibility may rest with multiple entities, each of which is subject to data protection regulations.

The European Court of Justice is of the opinion that it is primarily the parent company of the group (Facebook Inc., USA) and the branch office responsible for data processing within the group (Facebook Ireland) that decide on the processing of personal data. However, in order to answer the questions referred, it must be examined whether and to what extent the administrator of the fan page contributes to determining the purposes and means of processing the personal data of visitors to the fan page and may therefore also be regarded as a “controller”.

The ECJ assumes that any administrator of a fan page on Facebook concludes a specific contract with Facebook Ireland for the use of that page and thereby subscribes to Facebook’s terms and conditions, including the policy on cookies. The data is then processed mainly by

placing cookies for the purpose of storing information in the web browser. The storage period is two years, unless the user deletes the cookies. Facebook receives the data stored in the cookies and records and processes information. This is especially the case when Facebook services are used. Facebook partners or third parties may use these cookies to provide services.

The processing of personal data is intended to improve Facebook’s system of advertising. In addition, the fan page administrator has the option of receiving statistics from Facebook based on the data collected from users. This is supposed to enable the administrator to adapt content and functions to user needs. This evaluation is possible regardless of whether or not the visitor has a Facebook account.

By creating a fan page, its administrator gives Facebook the opportunity to place cookies on the user’s device. The administrator may also define the settings of the fan page, for example by applying filters. By defining specific criteria – such as age, sex, relationship status, occupational situation, lifestyles, focus of interest, online purchasing behaviour – the administrator influences the act of compiling the statistics, thereby contributing to the processing of the personal data of the fan page visitors. Even if Facebook’s statistics are transmitted to the fan page administrator in an anonymized form, data will still be collected prior to their creation. The administrator of the fan page, by defining parameters, is involved in the processing of personal data. The ECJ therefore considers the administrator to be responsible. Joint responsibility does not necessarily imply equal responsibility; the degree of responsibility can be assessed on a case-by-case basis.

### Conclusion

Caution is advised when setting up and administering a Facebook fan page because the person who administers the fan page is a “controller”, that is, responsible, along with Facebook. Even after the introduction of the General Data Protection Regulation (GDPR), the ECJ

decision is by no means outdated. After all, responsibility must also be taken into account within the framework of the new regulation. The provisions in Art. 4 (7) of the GDPR are largely identical to the previous wording; joint liability is expressly regulated in Art. 26 of the GDPR.

It is therefore essential for Facebook fan page administrators to inform users about data collection and processing in a transparent and comprehensible manner. Of course, this also applies to users who do not have a Facebook account. The user’s consent must be obtained prior to placing cookies. In addition, attention should be paid to whether and to what extent sufficient information has been provided by Facebook. And in general, of course, the provisions of the GDPR must be observed. ■



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## Transplantation of autologous bone

# Long-term stability of vertical bone grafts

DR JÖRG NEUGEBAUER<sup>1,2</sup>, DR FRANK KISTLER<sup>1</sup>, DR STEFFEN KISTLER<sup>1</sup>, PROFESSOR JOACHIM E. ZÖLLER<sup>2</sup>

Several factors are responsible for the long-term success of an implant-supported restoration and a stable peri-implant bone level. In addition to the implant design – with a microtextured implant surface and an ideally reduced abutment profile in the emergence area (platform switching) – the choice of augmentation method is essential. Although the use of autologous bone grafts means increasing the duration of the treatment, it achieves more effective downstream results that may render additional interventions unnecessary.

## Implant insertion in the atrophied jaw

In standard clinical cases, implants are inserted into the local bone and allowed to heal under a mucosal cover. However, this bone bed may be reduced by atrophy, with the peri-implant bone exhibiting insufficient dimensions for a stable long-term outcome [5]. Especially in the posterior mandible, the cortical bone can be very pronounced, providing insufficient vascularization of the peri-implant bone bed; specifically, the thin vestibular bony coverage is quickly absorbed. This will initially lead to increased probing depths with a risk of peri-implant mucositis, which, if untreated, can develop into peri-implantitis with progressive bone loss. Depending on the configuration of the alveolar process, bone loss may stabilize if the bone supply at the base of the implant is sufficiently wide. In most cases, however, the soft tissue will no longer be immobile, so that recurrent inflammation, especially on the lingual side, will occur due to mucosal mobility [1].

## Choice of materials

In the presence of a reduced bone supply, augmentation procedures are recommended either before or in parallel with

implant placement. These procedures differ in terms of surgical technique, but primarily in terms of the material used to fill the void. The use of autologous material usually requires a second surgical site from which the bone graft is harvested. Depending on the anatomical conditions and the extent of the alveolar ridge reconstruction, the material can preferably be extracted from the retromolar region of the mandible – sometimes also from the maxilla or the chin region [7]. While mandibular retromolar tissue harvesting is associated with relatively few complications, harvesting in the chin area may lead to a loss of sensation. The amount of tissue available in the maxilla is very low [7]. For extensive reconstructions, using the iliac crest as a donor site is recommended [16].

To minimize the limitation of mobility and postoperative stress, only monocortical strips should be removed from the inside of the iliac crest [10]. Although reports have been published citing a lower postoperative burden in the case of posterior access, this means repositioning the patient during anaesthesia, which is associated with its own risks [11]. The greatest restriction on the use of

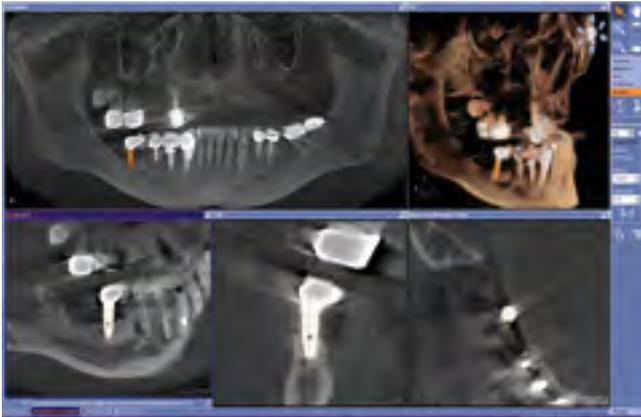
autologous bone from the iliac crest area is the need for surgery itself, which must usually be performed at a hospital under inpatient conditions by a surgeon.

## Biological usefulness

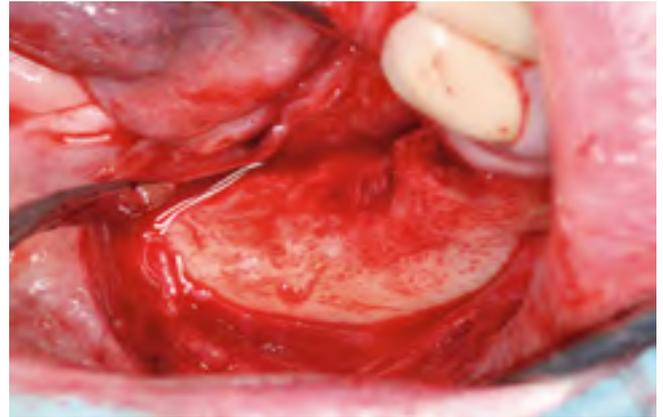
To avoid this surgical effort, the use of various non-autologous materials obtained by processing natural donor material or by synthetic processes has been propagated [3]. But it has been shown that their biological usefulness decreases, the more the materials are deproteinized. Bone regeneration thus depends on the possibility of neoangiogenesis and remodelling, which works better if the material is more intact biologically [6]. On the other hand, however, this is also thought to constitute a risk, since residual protein could increase the risk of disease transmission.

In addition to biological regeneration, the mechanical stability of the material is particularly important for the sufficient reconstruction of ridge alveolar defects, especially in the vertical reconstruction of defects. It has been shown that titanium-reinforced PTFE membranes provide the best combination of bone regeneration and volume stability.

<sup>1</sup>Landsberg am Lech, <sup>2</sup>Cologne



1a | CBCT (Galileos Comfort; Dentsply Sirona, Bensheim, Germany) to determine the mandibular bone level in recurrent peri-implantitis.



1b | Vestibular incision uncovering the mental foramen and the alveolar ridge defect.



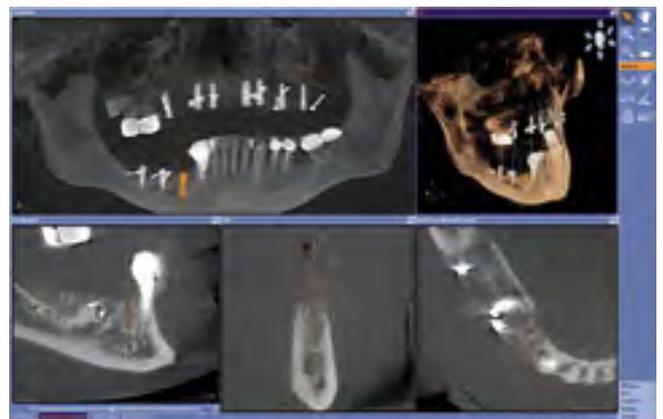
1c | Vertical augmentation with buccal and lingual fixation of two bone plates by osteosynthesis screws (Ustomed, Tuttlingen, Germany).



1d | Filling the voids between the plates with compressed cancellous bone.



1e | Complication-free healing with loss of the reflection fold in a case of vertical augmentation.



1f | CBCT (Galileos Implant; Sicat/Dentsply Sirona, Bonn, Germany) taken to plan the positions of the implants following maxillary and mandibular alveolar ridge reconstruction.

Resorbable membranes, especially those based on lactic acid derivatives, exhibit lower volume regeneration than non-absorbable membranes [9].

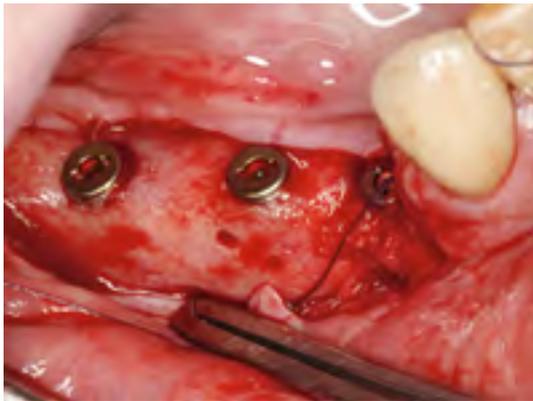
#### Soft-tissue management

The augmentation material inserted requires complete and tension-free

coverage of the soft tissue for complication-free healing and regeneration. This requires an extensive mobilization of the mucoperiosteal flap, especially in vertical augmentation. This is often associated with tissue losses in the mucogingival junction area, associated with aesthetic and functional limitations,

so that further soft-tissue surgery such as connective-tissue grafting or vestibular plastic surgery will become necessary [1].

In periosteal slitting, care must be taken to ensure that only the periosteum and not the blood vessels are severed. Otherwise there is a risk that the



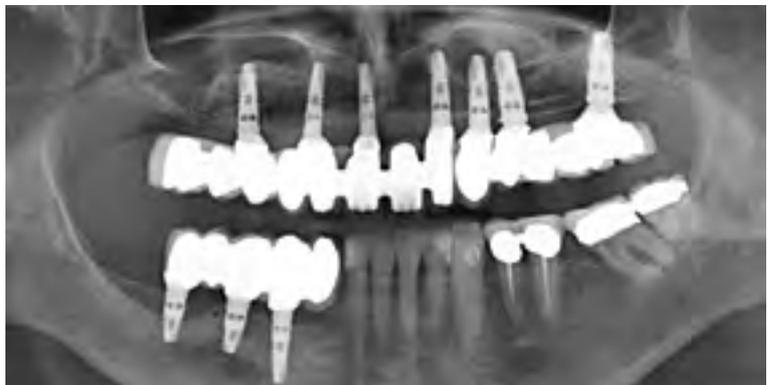
1g | Epicrestal implant insertion after removal of the osteosynthesis material.



1h | Insertion of seven implants (Xive S; Dentsply Sirona, Bensheim, Germany) while preserving the telescoping posts for the provisional restoration.



1i | Prosthetic restoration that compensates for the missing vertical dimension by adding pink ceramic to the bridges.



1j | Prosthetic follow-up one year after implant placement with healed extraction wounds between teeth 16 and 18.



1k | Stable bone level on the crestally micro-structured implants six years after implant placement.

mobilized soft-tissue flap will be insufficiently vascularized, compromising wound healing [6].

This is particularly important in patients with an already strained vascular system, for example due to diabetes or hypercholesterolaemia. The extensive mobilization often causes copious bleeding and oedemas, further impairing the patient's well-being. If perforation nevertheless occurs

and regeneration of the graft is still in its initial phase, the material can easily become infected. This increases the risk of non-absorbable bone-graft substitutes exhibiting only connective-tissue healing. During subsequent implant placement, this tissue will be mechanically strong, but unsuitable for implant osseointegration. Subsequent local infections such as peri-implant mucositis will quickly result

in the presumably rebuilt ridge volume being lost [3].

Alternatively, a vestibular incision and elevation of a mucoperiosteal flap can be recommended to cover a vertical graft [16].

Depending on the desired amount of augmentation, the flap will extend far inside the vestibular soft tissue. This requires a cautious procedure near the



2a | Clinical situation following an infection after augmentation with bone substitute material using the membrane technique in 1997.



2b | Collagen-like structure after removal of the expanded PTFE membrane.



2c | Intraoperative impression for the bite index to prepare for the provisional restoration showing the supposed bone regeneration.



2d | Additional lateral augmentation with xenogeneic material using the membrane technique after implant placement.



2e | Final restoration with ceramic abutment (Cerabase; Dentsply Sirona).



2f | Control radiograph at the time of delivery of the restoration showing insufficient crestal bone regeneration.

exit of the parotid gland duct (in the maxillary posterior region) or the mental nerve (in the mandible) to preserve these anatomical structures. Because, unlike periosteal slitting, this procedure also changes structure of the soft tissue, there will be an excess of soft tissue after implant placement, which must be returned to its location during re-entry (apical displacement flap).

#### Stabilizing the graft

To achieve stable tissue opposition, the material introduced must be stabilized. In the past, attempts have repeatedly been made to achieve vertical augmentation with xenogeneic or allogeneic blocks. Initially, this failed because it was not possible to accurately sculpt the graft individually to fit the local bone, with the result that osseous reconstruction

was not achieved [8]. The subsequent development of patient-specific blocks using CAD/CAM technology and 3D diagnostics using cone-beam computed tomography (CBCT) was also associated with high complication rates [2]. Possible reasons discussed for this included insufficient neoangiogenesis and the necessary reossification of the graft; this technique has not yet been developed



2g | Peri-implantitis surgery with removal of the granulation tissue on the first level of the implants.



2h | Peri-implantitis surgery performed in 2006, supported by antimicrobial photodynamic therapy (aPDT) (Helbo, bredent medical, Senden, Germany).



2i | Augmentation with particulate bone and bone chips for defect reconstruction.



2j | Clinical situation following peri-implant augmentation using a wide-flap design.



2k | Complication-free healing with stable peri-implant soft tissue showing no further signs of inflammation.



2l | Control radiograph one year after defect augmentation showing regeneration of the donor site.

to the point where reproducible vertical augmentation is possible. Alternatively, the method of a CAD/CAM-shaped metal mesh appears promising, as this type of mesh can be precisely adapted to the defect configuration [14]. The authors of that method recommend a mixture of xenogenic and autologous material to achieve the best possible regeneration.

When using autologous material obtained from the anterior iliac crest (in the form of monocortical strips) or from the retromolar region of the mandible, stabilization performing thin plates can be achieved [6]. For this purpose, the adhering cancellous bone is removed from the monocortical strips or at least compressed, and

thin discs or plates are prepared from the solid cortical blocks of the mandible with a diamond disc. The lumens between the plates can be filled with compressed cancellous bone or particulate cortical bone mixed with locally obtained bone chips. The advantage of this is that the alveolar ridge reconstruction is carried out exclusively with



2m | Stable soft tissue without signs of inflammation eleven years after vertical augmentation following peri-implantitis.



2n | Radiologically unchanged bone level compared to defect augmentation after 20 years of prosthetic rehabilitation.

autologous material, with practically no transition from local to augmented area being recognizable following osseous consolidation. However, unlike CAD/CAM-manufactured allogeneic bone blocks, processing autologous material requires a dedicated and time-consuming procedure [13]. The amount of vertical augmentation is determined by the width of the fixed plates. Especially when monocortical strips from the iliac crest are used, these can be easily shaped to make sufficient material available for a comprehensive alveolar ridge reconstruction. However, due to the high availability of the bone material, care must be taken to ensure sufficient soft tissue coverage as already mentioned (Figs. 1a to k).

#### Peri-implantitis – a special case

Augmenting a defect caused by recurrent peri-implantitis is a special form of vertical augmentation. The chronic infection will have restricted the ability of the soft tissue to regenerate. A loss of soft tissue or wound dehiscence are frequently observed already when the flap is elevated. This can be compensated for by a wide preparation of the mucoperiosteal flap.

Furthermore, reosseointegration can only be achieved if the biological usefulness of the material introduced is high and the positional stability of the material introduced is ensured by the presence of sufficient local and vital vertical bone [15]. Augmentation beyond the vertical level of the peri-implant bone

often results in dehiscence, even if the implant was covered with a mobilized mucoperiosteal flap after augmentation (Figs. 2a to n).

#### Discussion

The resorption behaviour in connection with a possible peri-implant bone loss has been extensively discussed in the context of vertical augmentation [3]. The stability of the bone is determined by multiple factors. First of all, sufficient bony consolidation is necessary for a stable bone bed. This can be limited by a material that does not offer sufficient porosity, especially a synthetic material [9]. Stability may also be limited by the resorption behaviour of the material itself. If the expected replacement resorption progresses faster than reossification, there will be no stable bone bed to support an implant [12].

In the case of non-resorbable materials, soft-tissue dehiscence or wound infection can lead to bacterial colonization of the material due to its porous structure. This translates into a chronic focus of infection, meaning that the individual granules may gradually be lost. In addition to the bony reconstruction, the resorption behaviour of the augmented area can also be influenced by the peri-implant soft tissue [1].

High ligaments or a mobile mucous membrane provide a continuous stimulus by functional micromovements, causing resorption to occur. Therefore, soft tissue management is not only important during the augmentation

procedure itself, but there must also be a sufficiently wide zone of attached mucosa around the implant at or after re-entry.

Clinical studies on the influence of implant design on the maintenance of the peri-implant bone level are performed on non-grafted jaws because of the high number of cases required by statistical methods. Frequently, no differences will be discovered. However, a microstructured implant surface with a fine thread structure in the crestal region seems to be advantageous for implant insertion in the augmented jaw [4].

#### Clinical relevance

Vertical augmentation of alveolar ridge defects can be performed by multiple methods, which are influenced by a wide variety of parameters. Particularly innovative concepts require a thorough consideration of these parameters to take advantage of the presumed benefits compared to the good results achieved with the use of autologous transplants. ■

The references are available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)

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## Vestibuloplasty with a three-dimensional collagen matrix: a case study

# The importance of peri-implant soft tissue: widening the zone of attached gingiva

DR JONAS LORENZ, PROFESSOR ROBERT SADER, PROFESSOR SHAHRAM GHANAATI, ALL FRANKFURT AM MAIN, GERMANY

The quality and quantity of the peri-implant soft tissue play a crucial role in achieving stable long-term peri-implant health. Various techniques for achieving a sufficient width of attached gingiva in implant therapy have been described. The present case shows an implant-based rehabilitation of an edentulous mandible following the successful treatment of an oral carcinoma.

### Background

In addition to a sufficient supply of peri-implant bone, the quality and quantity of peri-implant soft tissue play a crucial role in achieving stable long-term peri-implant health. The presence of a sufficient width of attached gingiva is a key factor in oral implantology – certainly in terms of functional and peri-implantitis prevention, but also in terms of aesthetics [1–3].

The width of the existing attached gingiva can be reduced due to advanced atrophy or thin tissue phenotype, but also because of surgical resections. Various techniques for achieving a sufficient width of attached gingiva in the context of implant therapy have been described, such as apical advancement flaps, vestibuloplasty and free mucosal graft with tissue harvested from the palate. However, some of these techniques, such as free mucosal grafts, are associated with increased patient stress, expanded treatment times and not inconsiderable tissue shrinkage [4–12]. Postoperative complications such as bleeding or impaired wound healing may occur, especially in connection with the additional palatal donor site [13].

To minimize these risks, collagen matrices to widen the attached gingiva have been developed and scientifically investigated recently. It could be shown that these matrices can be a reliable alternative to free mucosal grafts if a suitable indication exists and if the materials are used correctly. These matrices serve as a framework for the ingrowth of soft-tissue cells such as fibroblasts and keratinocytes and may therefore accelerate the formation of new attached peri-implant gingiva [12,14–16].

Collagen-based membranes have been widely used in implant dentistry for years. Especially in connection with guided tissue regeneration and guided bone regeneration (GTR/GBR), they serve to separate rapidly proliferating soft tissue from augmented bone or bone replacement material to prevent the premature ingrowth of soft tissue into the augmentation site [17,18].

Collagen is one of the most common proteins in the human body, so its use in biomaterials is considered innocuous. Collagen has angiogenetic potential, promotes the formation of new blood vessels and is enzymatically degraded. Unlike titanium-reinforced membranes,

they do not have to be removed after successful use [19–23].

In recent years, our research group has focused on investigating the tissue response to various collagen membranes and matrices. The general cell response and vascularization as well as potential foreign-body reactions were examined histologically and histomorphometrically following subcutaneous implantation in the small-animal model [14, 24–26]. Different cell responses were found to depend on the source tissue and on the modalities of processing the tissue. The Mucograft three-dimensional collagen matrix (Geistlich Biomaterials, Wolhusen, Switzerland) used in this case study provoked only a mild tissue reaction without signs of premature degradation, rejection or foreign-body reaction [14].

The Mucograft matrix, which has been shown to exhibit tissue-friendly properties in extensive scientific studies, was used in this case to widen the zone of attached peri-implant gingiva.

### Case report

The present case shows an implant-based rehabilitation of an edentulous



1 | Clinical baseline situation before implant placement. The resection of the tumour in the anterior mandible resulted in severely scarred soft tissue with an insufficient amount of attached gingiva.



2 | Preoperative orthopantomograph of the baseline situation.



3 | Preparation of a split-thickness flap at the time of the vestibuloplasty after re-entry. The dotted lines indicate the crestal incision and apical displacement of the mucosa.



4 | Adaptation and suture fixation of the Mucograft three-dimensional collagen matrix in the area of the free wound surface.

mandible following the successful treatment of an oral carcinoma.

In February 2013, a 60-year-old male patient was diagnosed with squamous cell carcinoma of the gingiva in the anterior mandible at the Department of Oral, Cranio-Maxillofacial and Facial Plastic Surgery of the Medical Centre, Goethe University Frankfurt am Main. The neoplasm was successfully treated by resection of the tumour, an advancement flap for defect coverage and bilateral removal of the cervical lymph nodes. In the context of the oncological follow-up, oral rehabilitation was planned after a clinically and radiologically confirmed absence of tumour activity of more than one year. Due to keratinous changes following tumour resection and defect coverage (Figs. 1 and 2), the fabrication of a conventional mandibular restoration

was not possible, which is why oral rehabilitation based on an implant-supported mandibular prosthesis was planned.

In March 2015, four Osseo Speed implants (Astra Tech, Göteborg, Sweden) were placed interforaminally at sites 32, 34, 42 and 44. Following four months of subcrestal healing, re-entry of the implant sites took place in July 2015. At the same time, a vestibuloplasty with the Mucograft three-dimensional collagen matrix was performed to address the severe scarring and insufficient soft-tissue bed. After the implants were exposed and gingiva formers connected, a split-thickness flap was prepared between sites 35 and 45, but without severing the periosteum. The mucosal portion was displaced apically and secured in place with periosteal sutures at the most

apical point, that is the lowest point of the vestibulum (Fig. 3). With the help of these periosteal sutures, the mobility of the apically displaced mucosal flap could be reduced and the height of the vestibulum increased.

The free wound area thus created between the incision line and the newly created apical mucosal line was covered with the Mucograft matrix and secured with sutures to keep the mucosal line as far apically as possible and to avoid recurrence as the new attached gingiva was formed (Fig. 4). Wound healing was uneventful, so the prosthetic rehabilitation could be fabricated after a healing phase of four weeks in the form of a prosthesis retained by telescopic abutments. There was no shrinkage of the attached gingiva during initial wound healing.



5 | Clinical situation at three years. Stable peri-implant soft-tissue conditions with a consistently wide zone of attached gingiva.



6 | Orthopantomograph of the mandibular implants after three years of loading.

After three years of loading, the implants presented stable and free from inflammation (Figs. 5 and 6). No bone loss or signs of peri-implantitis have been reported to date. The peri-implant soft tissue shows a constant wide zone of attached gingiva, which makes the implants easy to clean and prevents exposure of the implants to tension by, for example, ligaments or muscles of the cheek.

#### Discussion and conclusions

An adequate width of attached gingiva around implants is one of the basic requirements for long-term peri-implant health. The attached gingiva forms a barrier against microorganisms and pumping movements, contributing significantly to the prevention of peri-implantitis [1–3]. However, especially in anatomically difficult situations such as a severely atrophied mandible or after surgical resections, not enough attached gingiva will often be available.

The present case shows how the peri-implant mucosa can be treated in the presence of pronounced scarring and the absence of attached gingiva. A vestibuloplasty widened the zone of attached peri-implant gingiva, preventing tensile forces originating in the cheeks and lip to affect the implant shoulder and abutment.

The free wound area created by the preparation of the split-thickness flap following vestibuloplasty is generally associated with a risk of recurrence in the

form of a reduction in the width of the attached gingiva achieved postoperatively with increasing loading duration, sometimes all the way back to the preoperative level [27]. To avoid a recurrence, the free wound area can be covered with a free mucosal graft harvested from the palate, which not only accelerates wound healing but also reduces the risk and extent of recurrence [27]. However, harvesting a free mucosal graft from the palate is associated with increased morbidity, postoperative pain and an often inaccurate adaptation of the mucosal graft to the adjacent tissue [28–30].

For this reason, the free wound surface created by the vestibuloplasty was covered with a Mucograft three-dimensional collagen matrix in the present case. The good tissue tolerance and stability of the collagen matrix has been investigated by a large number of clinical studies and found successful for a number of indications, such as vestibuloplasty, widening the zone of keratinized gingiva, treating mucogingival defects, as well as socket preservation [7,8,15,31,32].

In a clinical study comparing the three-dimensional collagen matrix in a vestibuloplasty with a free mucosal graft, the observed shrinkage of the keratinized gingiva over a period of 90 days was comparable (collagen matrix: 32.98 per cent; free mucosal graft: 28.35 per cent) [7]. In addition, the comparison of the three-dimensional collagen matrix with the free mucosal graft showed a better adaptation of the collagen matrix to the sur-

rounding tissue than the mucosal graft, which was still clearly distinguishable from the surrounding tissue [31].

An even lower postoperative shrinkage of 14 per cent after vestibuloplasty using the three-dimensional collagen matrix has been shown in an additional study in which a Mucograft matrix was used for oral rehabilitation of patients after oral tumour treatment. Histological examinations showed that the cancellous layer of the collagen matrix is integrated into the surrounding soft tissue and that its compact layer promotes epithelialization [33].

The present case report thus shows that the widening of the zone of the peri-implant attached gingiva by vestibuloplasty using a Mucograft matrix is a scientifically supported treatment modality that can result in stable long-term healthy soft tissue while keeping stress to the patient at a minimum. ■

The references are available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)

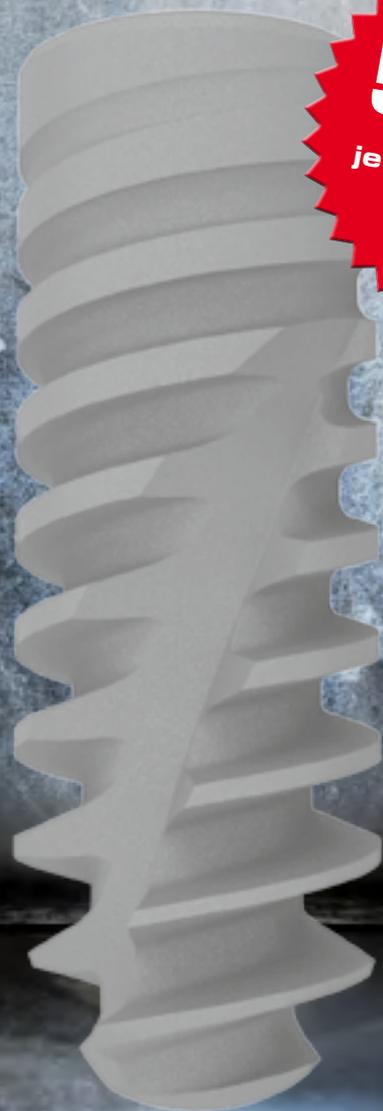
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## Concepts on bone regeneration

# Novel synthetics and traditional xenografts

MINAS LEVENTIS PHD<sup>1,2</sup>, PETER FAIRBAIRN BDS<sup>1,3</sup>, STUART KILNER BDS<sup>1</sup>

As recent medical and dental studies in bone reconstruction are gradually shifting their focus onto bio-degradable and bioactive materials, resorbable synthetic bone substitutes might be a potential alternative to autogenous bone or bovine xenografts in implant bone reconstructive procedures. The purpose of this article is to present the latest concepts on bone regeneration, supplemented with histological and radiological data gathered from the authors' clinical and experimental research background.

In contemporary oral and implant surgery bone grafting procedures are performed for the augmentation of the bone around dental implants, the management of osseous defects of the jaws due to pathological processes or trauma, and the preservation of the alveolar ridge after extractions. Such measures involve the use of a wide variety of bone substitutes, barrier membranes and growth-factor preparations, and several different surgical methods have been proposed [1,2].

Among bone grafts, autogenous bone is still considered to be the gold standard. Autografts possess osteoconductive, osteoinductive and osteogenetic properties, they do not transmit diseases nor trigger immunologic reactions, while they are gradually absorbed and replaced by newly-formed high quality osseous tissue. The disadvantages of using autogenous bone include the restricted availability, the need for additional surgical site, the increased morbidity and the extended operating time [3,4].

As an alternative solution, bone graft substitutes are widely used in bone reconstructive surgeries and the science

of biomaterials has become one of the fastest growing scientific fields in recent years [5]. Bone substitutes can be defined as "a synthetic, inorganic or biologically organic combination which can be inserted for the treatment of a bone defect instead of autogenous or allogeneous bone" [6]. This definition applies to numerous materials which vary in terms of origin, composition and biological mechanism of function regarding graft resorption and new bone formation, thus the selection of biomaterials in clinical practice must be based on their inherent biocompatibility, bioactivity, biodegradability, and mechanical properties, as well as the resulting cell behavior [7–11]. Moreover, parameters like the physicochemical characteristics, molecular weight, and hydrophilicity/hydrophobicity may influence the handling and performance of bone substitutes [12,13]. In general, the ideal grafting material should also act as a substrate for bone ingrowth into the defect, and to be ultimately totally replaced by host bone having an appropriate resorption time in relation to new bone formation for complete regenera-

tion up to the condition of *restitutio ad integrum* [1,14]. In parallel it should be able to maintain the volume stability of the augmented site [1].

Bioactivity is a characteristic of chemical bonding between bone biomaterials and biological tissues. Calcium phosphate ceramics and calcium sulfates are considered bioactive materials as they have the ability to elicit a controlled action and reaction to the host tissue environment with a controlled chemical breakdown and resorption, to ultimately be replaced by regenerating tissue [5,15].

Among bioactive ceramics,  $\beta$ -tricalcium phosphate ( $\beta$ -TCP) and hydroxyapatite [ $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ ] are frequently utilized in dental bone regenerative procedures [13]. They have compositions similar to that of natural bone, exhibit good biocompatibility and osteoconductivity, can osseointegrate with the defect site, and are free of any risk of transmitting infections or diseases by themselves [16–21]. Moreover, the degradation products and released ions can participate in the human metabolism and create an alkaline environment to

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<sup>2</sup> Researcher, Laboratory of Experimental Surgery and Surgical Research "N. S. Christeas", Medical School, University of Athens, Greece

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# IMAGINE

## FASTER HEALING TIMES



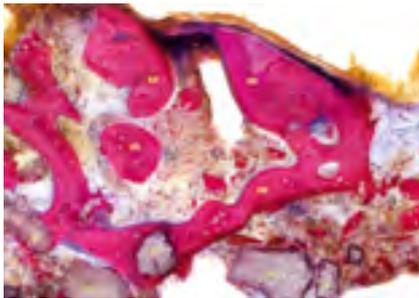
## TRUE BONE REGENERATION

Human biopsies typically show  
EthOss regenerates over 50% new bone within 12 weeks.

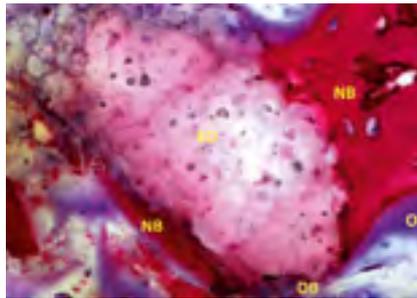
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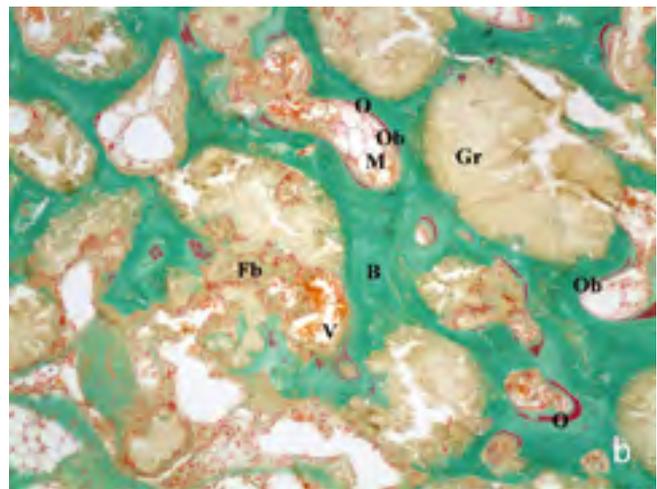
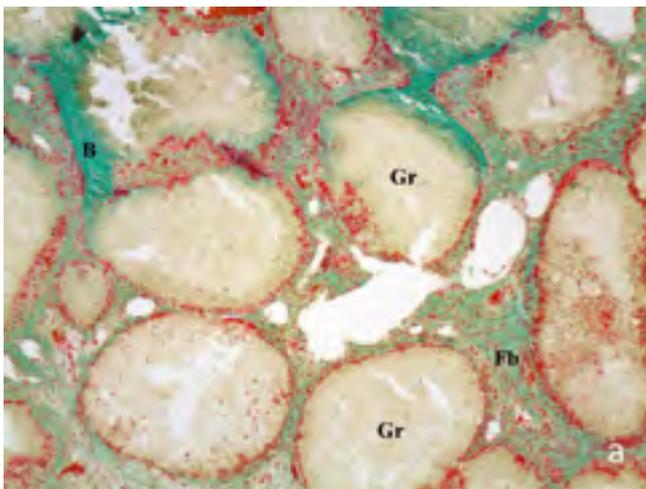
1 | Human bone biopsy after twelve weeks of healing. Socket grafting with  $\beta$ -TCP/CS (EthOss). Newly-formed bone trabeculae (NB) and disintegrating EthOss particles (EO). Histomorphometric analysis of the sample revealed 48.12 per cent newly-formed bone and 8.11 per cent residual EthOss particles. Undecalcified ground sections; azure II / pararosaniline staining. Original magnification x50.



2 | Histological picture showing the breakdown and the reaction of a  $\beta$ -TCP/CS (EthOss) granule (EO) in newly-formed bone formation after ten weeks of healing. The  $\beta$ -TCP/CS particle is partially disintegrated, allowing osteoblasts (OB) to actively form osteoid (O) and add new bone trabeculae (NB) in contact and inside the pores of the bioactive grafting material. Undecalcified ground section; stain azure II / pararosaniline staining, original magnification x400.



3 | Human bone biopsy after ten weeks of healing. Socket grafting with  $\beta$ -TCP/CS (EthOss). Histological picture showing tight integration of  $\beta$ -TCP/CS particles (Gr) in newly-formed bone trabeculae (NB). Van Gieson's staining.



4a and b | Histologic microphotograph of rabbit calvaria defect filled with  $\beta$ -TCP/CS (Fortoss Vital): a) three weeks of healing revealing newly formed mineralized bone (B), remaining graft particles (Gr), and fibrous connective tissue (Fb); b) six weeks of healing revealing newly formed mineralized bone (B), osteoid (O), ream of osteoblasts (Ob), remaining graft particles (Gr), capillary blood vessels (V), marrow (M), and fibrous connective tissue (Fb). A statistically significant material resorption and new bone regeneration was found. Goldner's trichrome staining. Original magnification x10 [33].

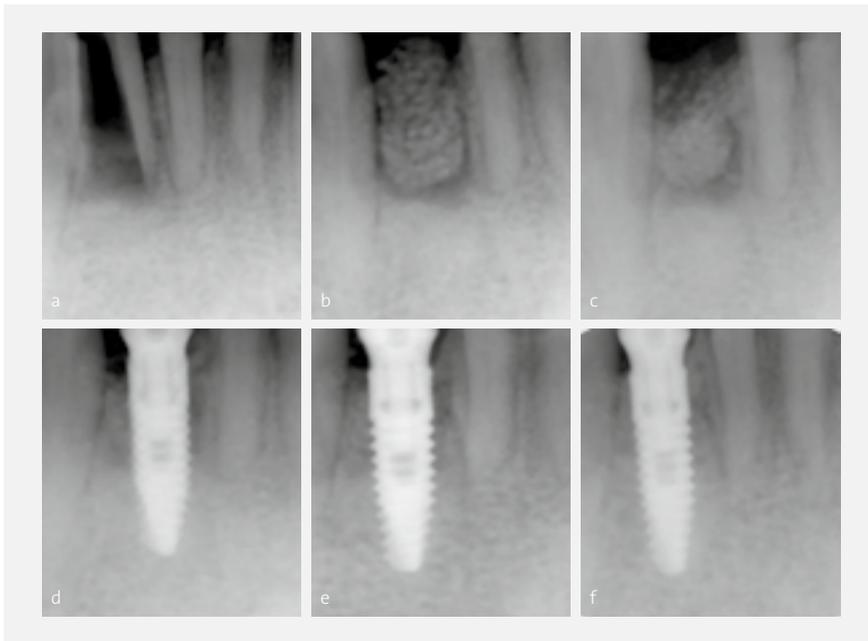
enhance cell activity and accelerate bone repair [13]. Recent *in vitro* and *in vivo* experimental studies have demonstrated that such alloplastic bone substitutes can also stimulate osteogenic differentiation of stem cells, as well as ectopic bone induction [23–27]. It is also important that  $\beta$ -TCP may promote the proliferation and differentiation of endothelial cells, and improve neovascularization in the grafted site, having clear benefits for osteogenic processes [13,28].

The ability of the bacteriostatic calcium sulfate (CS) to set is well

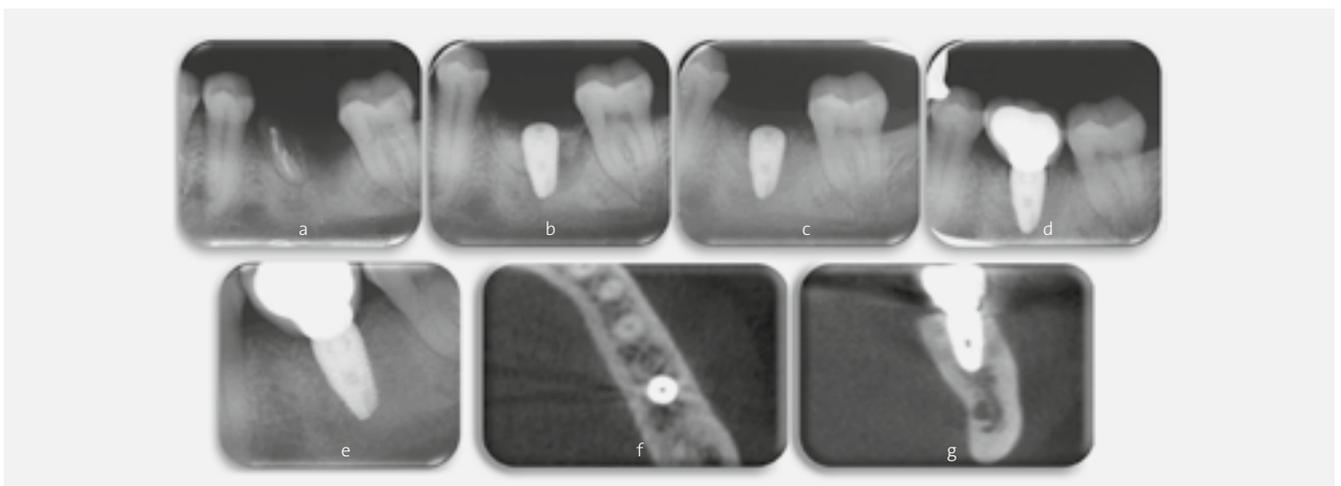
documented. Adding CS to  $\beta$ -TCP produces a compound *in situ* hardening alloplastic biomaterial that binds directly to the host bone, maintains the space and shape of the grafted site, and acts as a stable scaffold [29–35]. As mechanical stability is a crucial factor for bone healing and differentiation of mesenchymal cells to osteoblasts [36], the improved stability throughout the bone graft seems to further improve the quality of the bone that will be regenerated [37,38]. Moreover, the CS element creates a nano-porous cell occlusive

membrane that may prevent the early stage invasion of unwanted soft tissue cells into the graft [39–41].

Both CS and  $\beta$ -TCP are fully resorbable bone substitutes, leading to the regeneration of high quality vital host bone without the long-term presence of residual graft particles (Figs. 1 to 6g). The CS element will resorb over a three to six week period, depending on patient physiology, thus creating a vascular porosity in the  $\beta$ -TCP scaffold for improved vascular ingrowth and angiogenesis, while the  $\beta$ -TCP element will resorb by hydrolysis



5a to f | Socket grafting with  $\beta$ -TCP (Guidor easy-graft Classic) in a 65-year-old patient. Periapical x-rays of the case showing the modeling, ongoing remodeling and gradual resorption of the grafting material: a) initial situation b) immediately post-op c) after four months d) at implant placement e) three months loaded f) four years loaded.



6a to g | Implant placement with simultaneous bone grafting with  $\beta$ -TCP/CS (EthOss) in a 60-year-old patient. Periapical x-rays of the case showing the modeling, ongoing remodeling and gradual resorption of the grafting material: a) initial situation; b) immediately post-op; c) ten weeks post-op; d) twelve weeks post-op; e) one year loaded. Two years loaded (f and g), axial and coronal planes of the CBCT showing the preservation of the dimensions of the regenerated bone [55].

and enzymatic and phagocytic processes, usually over a period of 9 to 16 months. Although it is difficult to evaluate these resorptive mechanisms, it seems that cell-based degradation might be more important than dissolution, and macrophages and osteoclasts may be involved in phagocytosis, again largely dependent on host physiology [22,41–43].

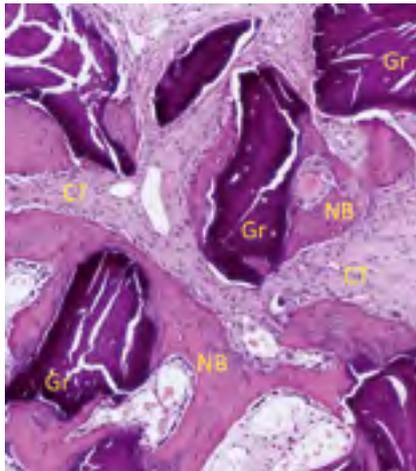
Bovine xenografts have been extensively studied and documented in pre-clinical studies and clinical trials in dentistry, largely owing to their established osteoconductive properties and their

ability to maintain the volume of the augmented site in the long-term (Fig. 7). However, controversy still remains as to whether this graft source is truly resorbable [44–52]. In a histological and histomorphometrical analyses of human biopsies harvested eleven years after sinus floor augmentation with deproteinized bovine and autogenous bone, *Mordenfeld et al.* (2010) found that the xenograft particles were well integrated in lamellar bone, showing no significant changes in particle size with no obvious signs of resorption [53].

Another important issue is that there are still significant concerns that bovine-derived bone grafts may carry a risk of prion transmission to patients. According to *Kim et al.* (2016) the limited ability to screen prions within the animal genome, along with a long latency period to manifestation of bovine spongiform encephalopathy (1 to over 50 years) in infected patients, provides a framework for discussing possible long-term risks of the xenografts that are used so extensively in dentistry. The authors suggest abolishing the use of bovine bone and highlight that

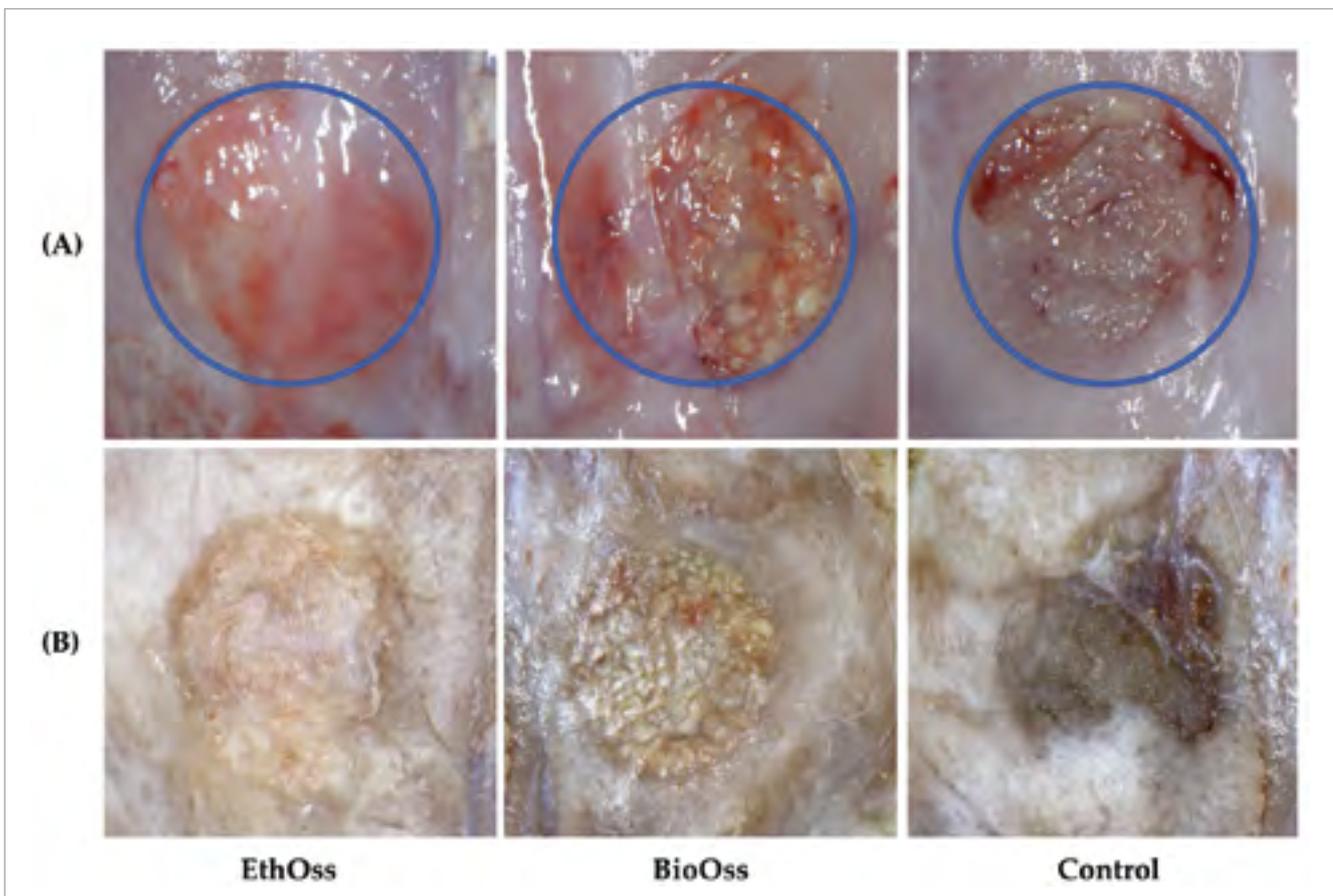
patient counseling should always include a clear description of the origin of the bone grafting materials used [54].

It is without doubt that bone quality is of paramount importance in successful implant therapy. It is doubtful whether an alveolar ridge preservation method should be claimed successful, if it only preserves the external contour of the alveolar ridge, but the newly-formed hard tissue is of inferior quality and quantity (percentage of matured trabecular bone) to what is spontaneously achieved following a tooth extraction. Contemporary literature reports conflicting results with the use of the widely-used xenografts, with changes in the percentage of vital bone ranging from -22 per cent (decrease) to 9.8 per cent (increase), while considerable residual hydroxyapatite and xenogenic particles (15% to 36%) remained at a mean of 5.6 months after socket grafting procedures [7]. Although



7 | Bone biopsy after eight weeks of healing. Rabbit calvaria bone defect filled with xenograft (BioOss). The xenograft particles (Gr) are embedded in well perfused connective tissue (CT) and newly-formed bone (NB), showing the osteoconductive properties of the material. H&E staining.

it remains unknown whether these changes in bone quality will affect implant success and peri-implant tissue long-term stability, *Chan et al. (2013)* state that there is a concern that firstly the long-term presence of residual non-resorbable or slowly resorbable graft particles might interfere with normal bone healing and remodeling, secondly it may reduce the bone-to-implant contacts and thirdly have a negative effect on the overall quality and architecture of the bone that surrounds implants [7]. In a recent systematic review of randomized controlled clinical trials analysing the outcomes of flapless socket grafting, *Jambhekar et al. [10]* reported that after a minimum healing period of twelve weeks, sockets filled with synthetic biomaterials had the maximum amount of vital bone (45.53%) and the least amount of remnant graft material (13.67%) compared to xenografts and allografts.



8 | Gross observations of rabbit calvaria bone defect sites after eight weeks of healing. (A) Freshly harvested rabbit calvaria; (B) after removing the dura mater and fixed in formalin (10%) for 24 hours. Clinical observation reveals the different pattern of healing of the osseous defect between groups resulting in different geometry and architecture of the newly-formed hard tissue (ongoing experimental studies, [56]).

The use of grafting materials to treat bone defects might have an important effect on the amount of the regenerated bone, while the presence of the graft particles may alter the bone geometry and microarchitecture of the newly-formed hard tissue (Figs. 8 and 9). Although the grafting of the bone defects seems to affect the bone healing mechanism and the geometry of the newly-formed tissue, such differences might have an effect on the overall quality of the reconstructed bone. Laboratory studies have demonstrated moderate to strong correlations between trabecular bone volume/architecture and biomechanical properties and the strength of the bone tissue. However, in dental implantology it is unclear how differences in structural parameters of trabecular bone and bone microarchitecture can influence the ability of the bone to resist mechanical loads. The ability of the regenerated bone to

remodel and to adapt to the transmitted occlusal forces depends on the amount of bone, the spatial distribution of the bone mass (shape and microarchitecture), and the intrinsic properties of the materials that comprise the bone. So, the long-term presence of residual non-resorbable or slowly resorbable graft particles, as in the case of using bovine xenografts, might have an unclear effect on the overall strength and quality of the reconstructed bone, the stability of the placed implants, or the bone-to-implant contacts [7].

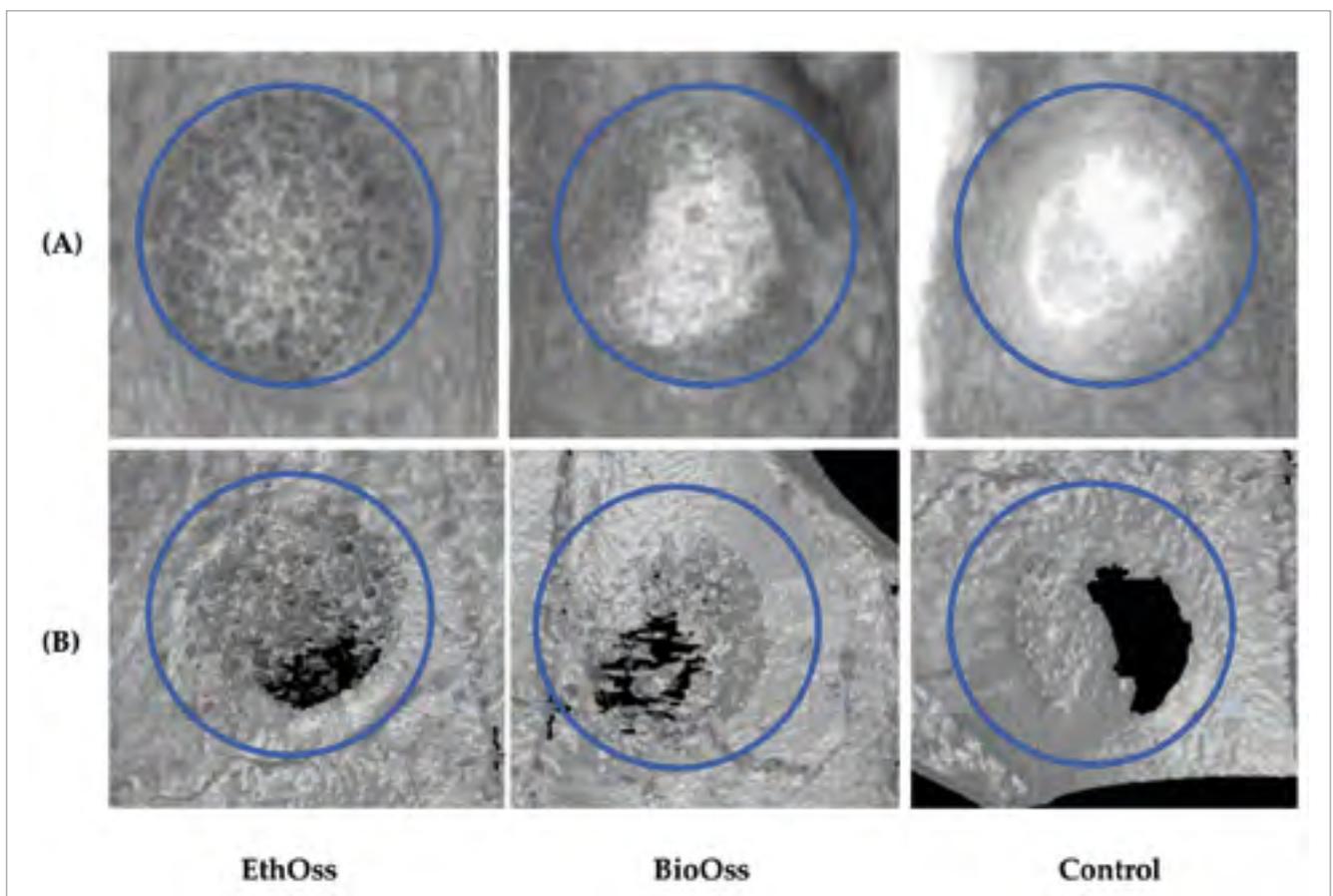
For all the above reasons, when regenerating alveolar bone around implants with the use of bone substitutes, the grafting material should ideally be ultimately replaced by host bone, having an appropriate resorption time in relation to new bone formation. Following such concepts and in line with their published protocol and research [31,33–35,55,56],

the authors have focused on using novel synthetic resorbable materials for the last 16 years. With an in situ hardening  $\beta$ -TCP/CS synthetic bioactive bone substitute like EthOss, the authors feel that they have a material ideally suited to working in a biological way with host healing in order to regenerate quickly and in a predictable way true vital bone around implants in a wide spectrum of everyday clinical cases. ■

The references are available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)

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9 | Rabbit calvaria bone defect sites after eight weeks of healing. (A) Axial sections and (B) reconstructed 3D micro-CT images of the defect sites after eight weeks of healing, revealing the different micro-architecture of the newly-formed hard tissue according to each different group of treatment (ongoing experimental studies, [56]).

## Prospective multicentre study

# Evaluation of the implant stability quotient for early-loaded implants with a new hydrophilic surface

YONG-JIN KIM<sup>1</sup>, GOYANG, SOUTH KOREA; MARCO TALLARICO<sup>2</sup>, ROME, ITALY

Clinical protocols originally suggested a three- to six-month healing period before implant loading [1]. Today, clinical research is focusing on shorter and less invasive procedures. Different placement and loading protocols are currently used to shorten treatment times and decrease the number of surgical interventions, enabling clinicians to choose between a one-stage (non-submerged) and a two-stage (submerged) approach. It has been suggested that the two-stage approach is not a prerequisite for osseointegration [2].

Primary stability depends mainly on the macro- and micro-design of the implant [3–5]. Nevertheless, in the last decade there has been an ongoing effort to improve the interface between bone and implant in order to accelerate and enhance the osseointegration of dental implants, providing novel and practical perspectives for further advancement in implant therapy [6]. These efforts have concentrated on improving this interface chemically (by incorporating inorganic phases on or within the titanium oxide layer) or physically (by increasing the level of roughness) [7]. These techniques may apply additive or subtractive concepts. Long-term studies have shown that additive surfaces are associated with a higher incidence of complications [8]; hence, subtractive surfaces have become more popular with clinicians.

Shorter healing period was introduced in many experimental and clinical studies using sandblasted and acid-etched (SLA)

surfaces [9–11]. Modification of the original implant surfaces can result in earlier and increased bone-to-implant contact, thus reducing the healing period between surgery and restoration even in patients with poorly controlled type 2 diabetes mellitus [12].

The present prospective multicentre study was aimed to evaluate early implant failure, complications and ISQ values of one-stage Hiossen ETIII NH implants (Hiossen Inc., Fairless Hills, PA, USA) with the new hydrophilic surface, loaded four weeks after placement. This trial was reported according to the STROBE statement.

### Materials and methods

This investigation was designed as multicentre single-cohort prospective study conducted according to the principles embodied in the 2008 Helsinki Declaration. Surgical and prosthetic procedures were performed at two centres

in Korea and Italy by the authors, two expert clinicians, between September 2017 and April 2018. All participants were enrolled and treated in the study in consecutive order after being informed about the nature of the study and providing their written consent.

Any healthy patients, aged 18 years or older, who required at least one implant to be restored with a fixed implant-supported restoration using the early-loading protocol, with bleeding and plaque indices throughout the mouth no higher than 25 per cent, with a bone supply sufficient to allow the placement of implants at least 10 mm in length and with a bone width of at least 6 mm for the placement of a regular-platform Hiossen ETIII NH implants (Hiossen Inc.) were included in the study.

The exclusion criteria were: adverse medical conditions (such as stroke, recent cardiac infarction, severe bleeding disorder, uncontrolled diabetes or cancer); >>

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<sup>2</sup> MSc in Dentistry Programme (Implantology and Prosthetic Aspects), Aldent University, Tirana, Albania, and private practice in Rome, Italy



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1 | Pre-clinical situation: lateral view.  
 2 | Implant placement using a one-stage approach.  
 3 | Periapical radiograph at the time of implant placement.

psychiatric therapy; pregnancy or nursing; smoking (more than ten cigarettes per day); insertion torque < 35 Ncm; untreated periodontitis; acute and chronic infections of the adjacent tissues or natural dentition; radiotherapy of the oral and maxillofacial region within the last five years; absence of teeth in the opposing jaw; severe clenching or bruxism; severe maxillomandibular skeletal discrepancy; poor oral hygiene.

Patients were informed about the clinical procedures, the materials to be used, the benefits, potential risks and complications, as well as any follow-up evaluations required for the clinical study. Patients had to sign the informed consent before being included in the study.

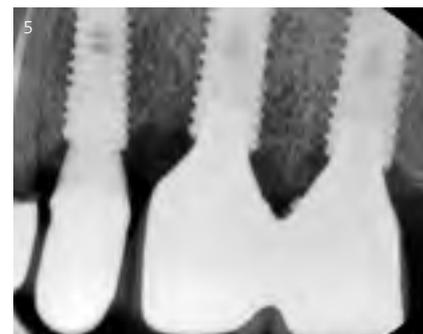
#### Surgical and prosthetic protocol

A single dose of antibiotic (2 g of amoxicillin and clavulanic acid, or 600 mg of

clindamycin if patients were allergic to penicillin) was administered prophylactically one hour prior to surgery. Patients rinsed with 0.2% chlorhexidine for one minute. Local anaesthesia was induced by using a 4% articaine solution with epinephrine 1:100 000 (Ubistesin; 3M Italia, Milan, Italy).

Implants were placed at the planned anatomic sites by using a flapless or a miniflap approach. Implant sites were prepared according to the drilling protocol recommended by the manufacturer. Sandblasted and acid-etched surface implants (SA) with a newly developed bioabsorbable apatite nanocoating (Hiossen Inc.) were placed according to a one-stage protocol after implant site preparation (Figs. 1 to 3). After implant placement, a smart peg (Type 47, code 100478; Osstell, Goteborg, Sweden) was connected to the implants, and

the implant stability quotient (ISQ) was measured and recorded using the Osstell Mentor device (Osstell, Goteborg, Sweden) at the time of implant placement and every week up to four weeks after implant placement. Post-surgical analgesic treatment was performed with 600 mg of ibuprofen, administered twice a day for two days after the surgery and continuing if required. A provisional restoration was delivered four weeks after implant placement (initial loading). To avoid any static and dynamic contacts, all implants received a “non-occluding” temporary restoration. To reduce the flexibility of the acrylic resin, the multiple implant-supported temporary restorations were metal-reinforced. Patients were instructed to stick to a soft diet during the first eight weeks. Sutures, if present, were removed eight days after implant placement.



4 | Delivery of the definitive crowns.

5 | Periapical radiograph at the time of definitive loading.

Three months after implant placement, the definitive restorations were delivered (Fig. 4). Periapical radiographs were taken with a customized holder at the time of implant placement, on initial loading and then at yearly intervals (Fig. 5).

Outcome parameters were implant survival rates, any biological or mechanical complications, ISQ values. The implant success rates and ISQ values were evaluated by an independent assessor. Complications were evaluated and resolved by the same operators.

- An implant was considered a failure if it presented with mobility, assessed after the osseointegration period by tapping or rocking the implant head with the metallic handles of two instruments, progressive marginal bone loss or infection, or any mechanical complications rendering the implant unusable, although still mechanically stable in the bone.
- Complications: Any biological complications (pain, swelling, suppuration, etc.) or mechanical complications (screw loosening, fracture of the framework or the veneering material, etc.) that occurred during the follow-up period.
- Implant stability quotient (ISQ) values were recorded each week up to four weeks after implant placement using resonance-frequency analysis (Osstell Mentor device; Osstell), according to a previously published study [12].

### Statistical analysis

Patient data were entered in an Excel spreadsheet (Microsoft; Redmond, Washington, USA) that reflected the parameters in the patient records. The data were exported to SPSS software for Mac OS X (version 22.0; SPSS, Chicago, IL, USA) for the statistical analysis. Descriptive analysis was performed for numeric parameters using means and standard deviations (95 % confidence interval, CI). Comparison during follow-up was made by paired t-tests to detect any changes during osseointegration. Complications and failures were compared using Fisher's exact test. All statistical comparisons were two-tailed and conducted at the 0.05 level of significance. The patient was used as the statistical unit of analysis.

### Results

A total of 36 Hiossen ETIII NH implants were placed in 29 patients (24 female, 5 male; mean age: 53.9 years). All patients were treated according to the study protocol; no patient dropped out. No implants failed, and no complications occurred. There were 10 maxillary implants in 9 patients and 26 mandibular implants in 20 patients.

At implant placement, the ISQ value was  $78.3 \pm 6.6$  (95 % CI: 77.8–82.2). Throughout the osseointegration period, the mean ISQ value improved with no stability drop. At the end of the study period, four weeks after implant placement, the mean ISQ value was  $81.4 \pm 5.3$

(95 % CI: 80.8–84.2). The difference was statistically significant ( $p = 0.0000$ ). In the maxilla, the mean ISQ value improved from  $75.1 \pm 6.2$  (95 % CI: 71.1–78.9) at implant placement to  $78.4 \pm 5.3$  (95 % CI: 74.0–80.5) four weeks later ( $p = 0.0000$ ). In the mandible, the mean ISQ value improved from  $79.5 \pm 6.6$  (95 % CI: 78.5–83.5) at implant placement to  $82.6 \pm 4.8$  (95 % CI: 81.6–85.4) four weeks later ( $p = 0.0000$ ). All data are reported in Table 1 and Figure 6 on the following page.

### Discussion

This multicentre prospective study was conducted with the aim to evaluate changes in the implant stability quotient during osseointegration for early-loaded Hiossen ETIII NH implants with a new hydrophilic surface.

To the best of our knowledge, there were no published randomized controlled trials at the time of writing, evaluating the performance of this newly developed hydrophilic surface. Looking at the “grey” literature, the same authors reported that, although statistically significant differences were not encountered, high ISQ values were found for Hiossen ETIII NH implants compared to the SA surface, as they avoid the drop in ISQ during the remodelling phase [13]. In fact, at two weeks after implant placement, two implants with SA surface showed discontinuous measurements, versus none for the Hiossen ETIII NH

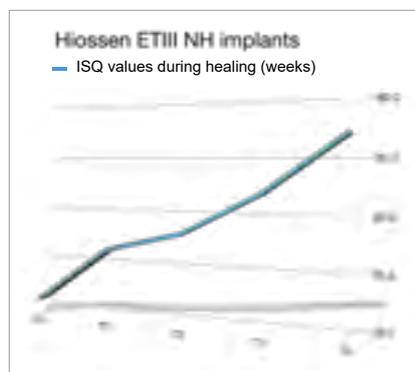
ISQ values during the study period						
	Implant placement	Week 1	Week 2	Week 3	Week 4	P-value (implant placement and week 4)
Maxilla	75.1 ± 6.2 [71.1–78.9]	76.2 ± 5.6 [71.8–78.9]	76.9 ± 4.8 [72.8–78.7]	77.1 ± 5.1 [73.1–79.4]	78.4 ± 5.3 [74.0–80.5]	0.0000
Mandible	79.5 ± 6.4 [78.5–83.5]	80.5 ± 6.3 [79.8–84.7]	80.7 ± 6.4 [80.3–85.2]	81.7 ± 5.2 [81.0–85.0]	82.6 ± 4.8 [81.6–85.4]	0.0000
Total	78.3 ± 6.6 [77.8–82.2]	79.3 ± 6.3 [79.9–84.1]	79.7 ± 6.2 [80.0–84.0]	80.4 ± 5.5 [81.2–84.8]	81.4 ± 5.3 [80.8–84.2]	0.0000

Table 1 | ISQ values during the study period.

group [14]. There are possible benefits in cases of immediate loading, poor bone quality, smoking, immuno-suppression, or controlled type 2 diabetes.

It is well known that roughness improves implant osseointegration, and several implant types are sandblasted and acid-etched to increase their surface and alter its texture [15]. Nevertheless, surfaces coated with hydroxyapatite (HA) were reported to have a higher incidence of complications [8], even if the evidence for implant surface characteristics as an indicator for the peri-implantitis risk is very limited [20]. Commonly, implant surface roughness is divided into macro-, micro- and nanoroughness. Typically, these different types of roughness are related to distinct effects during wound healing and osseointegration [18]. Nanostructures have been created on titanium using different approaches, such as oxidative nanopatterning by acid-etching in mixtures of sulphuric acid and hydrogen peroxide, by exposing titanium samples to a synthetic air flow, electrochemically by anodic oxidation, by processing samples after acid-etching under protective gas and storing them in saline, by plasma etching or by physical vapour deposition techniques [19].

Nanoroughness plays an important role in the adsorption of proteins, the adhesion of osteoblastic cells and thus the rate of osseointegration [21]. In fact, deposition by dipcoating a titanium substrate with a nanocomposite (HA-ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>) showed the greatest adhesion strength compared to the HA coatings [22]. Furthermore,



6 | Graph showing the ISQ values during the first four weeks of healing. No stability drop was experienced.

Schwarz et al. showed that angiogenesis was enhanced on hydrophilic surfaces during the early stages of osseointegration [23].

Fast vascularization seems to be beneficial for bone formation because osteogenic cells have been observed to arise from pericytes adjacent to small blood vessels [14, 25].

In the present study, the implants with the hydrophilic surface seemed to avoid the drop in ISQ during the remodelling phase. The Hiossen ETIII NH offered the same clinical performance as sandblasted, acid-etched (SLA) surfaces. The bio-absorbable nanoapatite and hydrophilic coating improved osseointegration and decreased the healing period by over 30 per cent. The new hydrophilic surface improved wettability, significantly increasing blood adhesion. During the remodelling phase, the nanoapatite coating was absorbed and newly formed

bone is integrated into the SLA surface.

The main limitation of the present study was that no a-priori sample size calculation was performed; the limited power of the analysis due to the small number of participants could have hidden some differences between groups. This can only be resolved by conducting more similar trials with larger sample sizes based on the present preliminary result.

### Conclusions

The results of the present research demonstrated that Hiossen ETIII NH implants with a new surface can be restored after four weeks of healing with highly predictable success rates, as they seem to avoid the ISQ drop during the remodelling phase. High ISQ values were found in both maxilla and mandible. Further randomized controlled trials with larger sample sizes and longer follow-ups are needed to confirm this preliminary result. ■

Conflict of interest statement: Hiossen Inc. donated the implants. However, the data belong to the authors alone; at no time did the company attempt to influence the conduct of the trial or the publication of its results.

The references are available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)

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Unfilled PEEK used as framework material for twelve-unit bridges

# Metal-free implant-supported restorations in the edentulous jaw

DR BERND SIEWERT, MADRID, SPAIN

Successful metal-free implant-supported restorations in the edentulous or nearly edentulous jaw were long considered elusive. The availability of semi-crystalline thermoplastic materials from the PAEK material group, such as PEEK, has filled the void. Over the past few years, the author has delivered a large number of implant-supported circular bridges using PEEK as framework material. The present case study illustrates the author's treatment concept. Special features in this case are the monolithic zirconia veneer and the possibility of making the bridge fixed or removable.

Rehabilitating the edentulous jaw with screw-retained implant-supported restorations has become very popular in recent years [1, 10]. Implantological concepts such as All-on-4 are relatively simple but have proven to be clinically viable. Metal frameworks (for example non-precious alloys, titanium) or – more recently – zirconia frameworks have mainly been used for the prosthetic restoration [12]. Both material groups feature a high modulus of elasticity and therefore result in relatively rigid splinting. Overloading of the implants, screw loosening or fractures of the prosthetic restoration may be the result of this rigid

connection [2]. Patients often report an unphysiological chewing sensation. In addition, it was long considered impossible to make completely metal-free implant-prosthetic restorations for the edentulous or nearly edentulous jaw. Especially in the light of increasing patient awareness of holistic treatment modalities and an ongoing trend towards metal-free dental restorations, this significantly limits the dentist's options.

## Prosthetic rehabilitation using ceramic implants

Over the past 15 years, ceramic implants have been successfully used in

everyday clinical practice. However, screw-retained restorations on ceramic implants do not yet represent the state of the art. Consequently, the prosthetic restoration should be completely metal-free when ceramic implants are used; this is also true of fixed rehabilitations of the edentulous jaw. The proven concept of providing retrievable (screw-retained) restorations on titanium implants should also be applicable to ceramic implants.

## PEEK in implant prosthodontics

High-performance polymers of the PAEK (polyaryl ether ketone) class of materials offer an alternative to conventional



1a | Situation at the time of the initial consultation in the author's practice in 2003.



1b | Situation following the insertion with titanium implants and delivery of a new circular maxillary bridge in 2004.

framework materials. The PAEK family includes PEEK (polyether ether ketone) and PEKK (polyether ketone ketone). The author has been using PEEK as a framework material for more than ten years – primarily for restoring titanium implants – and was able to gain extensive experience, particularly in the field of implant prosthodontics. Advantages of PEEK over metal alloys and zirconia include its low specific mass, relatively easy processing and resistance to corrosion [5].

The weight of the restoration as a whole is a frequently underestimated issue. In the edentulous jaw, implants are often placed beyond the area of the tooth roots (in basal bone). As a result, the prosthetic restorations sometimes exhibit an exceptionally high vertical dimension, resulting in massive frameworks. The low specific mass of PEEK is promising in this respect. Another advantage of PEEK (modulus of elasticity: 4 GPa) is the limited transfer of masticatory forces to the bone or peri-implant tissue. Overloading, often encountered with rigid materials such as titanium (modulus of elasticity: 110 GPa) or zirconia (modulus of elasticity: 210 GPa), can thus be avoided. The excellent physical and chemical properties of PEEK and its excellent biological compatibility are also promising when it comes to its use in implant prosthodontics [4,6,7,11,13]. PEEK has very low water absorption and therefore remains odourless even after prolonged wear.

PEEK is often the material of choice for sensitive patients with intolerances or allergies. Unlike with polymethyl methacrylate (PMMA), there is no residual monomer that could trigger allergic reactions [3]. Moreover, PEEK does not develop any corrosion products the way, for example, metal alloys do, causing incompatibilities [8].

### Processing PEEK

PEEK can be processed in the dental laboratory in various ways. It is available in the form of blanks for CAD/CAM production (for example YuDent; Yunyi Medical, Beijing, China) as well as pellets or granules for pressing. Blanks for CAD/CAM production are industrially prefabricated

under standardized conditions (temperature, pressure), generally of uniformly high quality [9, 11].

Indications for PEEK include removable (for example clasps, double crowns, bars) and fixed dentures (crowns, bridges). Due to the high opacity and the greyish-beige colour of PEEK, veneering is usually indispensable in the aesthetic zone. In direct contact with the mucous membrane, the author prefers the pure, unblended material. The surface of 100 per cent pure PEEK is easy to polish and characterized by its low plaque affinity. Direct gingival contact does not cause any significant irritation, even if oral hygiene is not optimal.

Some manufacturers modify the pure PEEK material, for example in order to adapt the shade to prosthetic requirements. Inorganic dyes are used for colouring, for example titanium dioxide (approximately 10 per cent), which must be viewed critically not least from the perspective of holistic dentistry. Whether titanium dioxide particles dissolve during their time in service has not yet been investigated. The author therefore favours unfilled PEEK, which is also used in general medicine (for example for hip prostheses or intervertebral bodies). YuDent (Yunyi Medical), the material used in this case study, is a high-purity material without any additives or admixtures.

### Veneering PEEK

Various veneering methods are available to mask the inherent shade of pure PEEK in aesthetically relevant areas. For example, veneers can be individually built up in composite resin, produced using PMMA veneers, or implemented as adhesively connected zirconia crowns (see case study). All three methods have been used in my own practice in recent years.

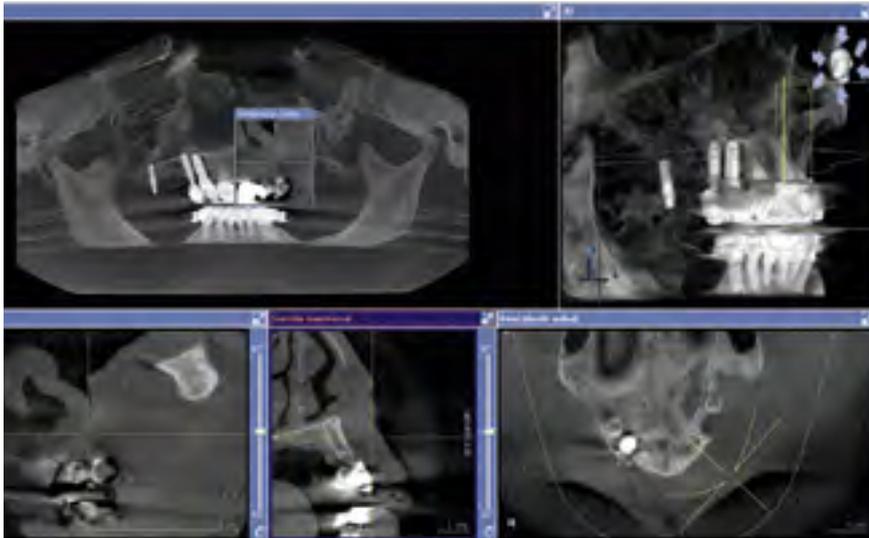
1. If the PEEK framework is produced by pressing, veneers are an efficient option that had been used in the laboratory for a long time. Within the CAD/CAM workflow, prefabricated PMMA veneers are technically difficult to use for veneering frameworks. Another disadvantage is the high susceptibility of the PMMA veneers to abrasion during the time in service.

2. Experience with manual composite resin build-ups has been very positive. To achieve an optimum bond, the PEEK framework is sandblasted with alumina, conditioned with a bonder (visio.link; bredent, Senden, Germany) and then built up with composite resin. The thickness of the build-up corresponds to that of a metal-ceramic restoration; the work is performed on a framework with reduced anatomic contours. One disadvantage is the comparatively high amount of time required; moreover, the work is carried out in a semi-digital process.

3. Custom-made monolithic zirconia restorations used to veneer the framework are shown in the following case study. It uses a highly translucent zirconia (dd cube X2; Dental Direkt GmbH, Spenge, Germany), which is available as a multilayer material with a smooth shade gradient (from dentin to incisal). From the authors point of view, digital veneering with monolithic zirconia is the ideal solution. By adhesively connecting zirconia single crowns, the elasticity of the PEEK framework can be maintained to the greatest extent possible. Over the past four years the author has provided several restorations made in this way. The results are stable. No fractures have been observed, nor have there been any signs of wear (abrasion).

### Case study

The patient, who is 71 years old at the time of this writing, suffers from an intolerance to titanium documented in 2015. At the first presentation in 2003, the bone had collapsed due to peri-implantitis around all implants (Fig. 1a). Peri-implantitis was not as clearly defined a condition then as it is today. After healing, the bilateral distal edentulous region in the mandible was treated with a combination restoration, which is still in function today. One implant was removed in the maxilla and two titanium implants were inserted after extraction of the non-salvageable teeth 13 and 26, and a cemented metal-ceramic bridge was delivered after healing (Fig. 1b).



2a and b | Planning the implant positions with the help of a CBCT scan. The reduced bone level in the upper left quadrant is clearly visible.



2c | Situation following the insertion of four one-piece ceramic implants.

Her intolerance to titanium had triggered distinct tissue reactions in the form of serious peri-implantitis and severe bone loss. Despite extensive treatment attempts, the implants could not be preserved and were ultimately lost. The bridge was removed, and the patient was provided with a complete denture as a temporary solution. Once her jaw had completely healed, we discussed the further procedure. I recommended the placement of four ceramic implants and a completely metal-free dental prosthesis based on a PEEK framework. The patient agreed to this proposal. She wanted a fixed denture, but one that she could remove herself if necessary, for example for cleaning.

#### Implantological treatment

After appropriate pre-treatment, four one-piece ceramic implants (Pure Ceramic; Straumann, Basel, Switzerland) were planned to be placed in the maxilla. Especially in the case of one-piece implants, thorough preoperative planning of the implant positions is crucial for achieving a prosthetically satisfactory solution. In this case, the status of the bone supply was unfavourable due to the previous pathology. Based on a CBCT scan, the implant position was planned to utilize the existing bone supply in the best possible way (Figs. 2a and b). The four one-piece ceramic implants were inserted according to protocol. This was followed by a four-month load-free healing phase (Fig. 2c). The two prepared teeth in the anterior region were prepared for conventional crowns and protected by provisional restorations.

#### Primary copings: zirconia

Once the implants had osseointegrated, a gingivectomy was performed in the vicinity of the implants, followed by a final impression using special impression copings (Fig. 3a). Exact placement of the copings on the implant is signalled by an audible clicking sound. Next, the implant analogues were inserted into the copings retained by the silicone impression, with proper seating again verified by an audible clicking sound. Around the implants, the material for the gingival



3a | Preparing for the final impression following a gingivectomy around subgingival aspects of the implants.



3b | Returning the implant analogues to the impression copings of the final impression.



4a and b | CAD design of the primary copings.



4c | Zirconia primary copings on the cast.



5a and b | CAD design of the primary framework.



mask was added and the master cast was created (Fig. 3b). To obtain a uniform path of insertion, six primary zirconia telescopes were initially made. They were designed in the form of primary crowns in the CAD software (0°) and milled from zirconia (Figs. 4a to c). The finished zirconia telescopes were tried in intraorally, followed by the final impression. The zirconia copings could then be reworked and polished in the paralleling device with a uniform path

of insertion. To design the secondary PEEK framework, the model was digitized with the primary copings.

#### Secondary framework: PEEK

The framework was designed by CAD in the form of a bridge whose gingival and basal aspects as well as the palatal framework reinforcement (scallops) were designed to full anatomic contour to obtain the final shape in this area without veneering (Figs. 5a and b),

unlike the teeth, which were to be veneered. An unfilled PEEK material (YuDent; Yunyi Medical) was used for the secondary framework. Especially in patients with documented material incompatibility issues, it is the dentist's responsibility to use pure materials without additives such as metal oxides for staining the PEEK. The PEEK material used is available in the form of a circular blank suitable for all popular milling machines.



6 | Milling the secondary framework from unfilled PEEK (YuDent; Yunyi Medical).

In the present case, milling was performed in a compact five-axis desktop milling unit (Organical Desktop 8; R + K CAD/CAM, Berlin, Germany) that operates quickly and accurately (Fig. 6). The fit, or friction, of the primary copings in the secondary framework was checked before the blank was retrieved from the milling unit. If necessary, the framework can be adjusted in some areas (for example inside the secondary copings) to gradually achieve an optimized fit. PEEK and zirconia can work in perfect harmony, for example when used together in a double-crown-supported restoration. Its soft sliding properties and firm hold ensure maximum wearing comfort. Finishing the PEEK framework after CAD/CAM milling was limited to a few simple measures.

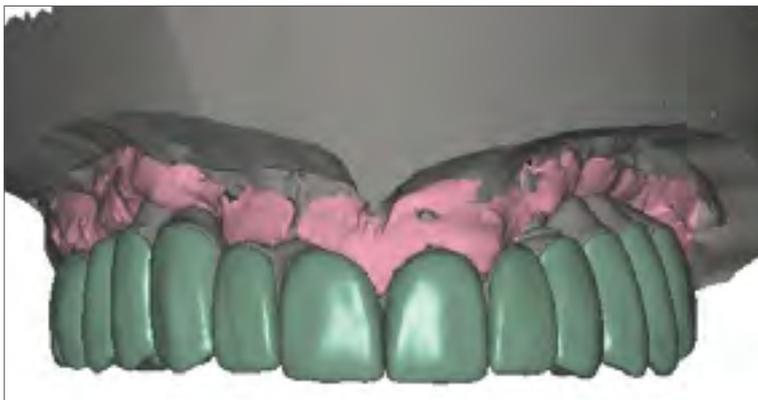
#### Veneer: monolithic zirconia

For the next step, the cast and the framework were rescanned and the veneer designed in the form of single crowns (Figs. 7a and b). Static and dynamic function as well as tooth shape and morphology were taken into account. The digital CAD veneer was monolithically milled from a highly translucent zirconia material (dd cube X2; Dental Direkt) and completed in only a few steps. The zirconia surface was designed with a high polish, especially where in contact with the antagonist. If at all possible, single crowns or small blocks of splinted crowns are designed for the digital veneering to maintain the flexibility of the PEEK framework. The framework was sandblasted with alumina (50  $\mu\text{m}$ ) and covered with a primer (visio.link, bredent) and an extremely thin

layer of opaque. The zirconia crowns were cemented with a dual-curing adhesive. In visible areas, the gingival aspects were imitated with composite (Gradia; GC, Bad Homburg, Germany) and the restoration was finished (Figs. 8 and 9).

#### Delivery

The patient was pleasantly surprised by the low weight of the restoration. The bridge (PEEK framework with zirconia veneer) was inserted over the zirconia primary copings cemented on the implants (Figs. 10 and 11). The fit was excellent. The sliding properties of PEEK on a zirconia framework are reminiscent of the soft glide of double crowns made of a gold alloy. The friction and retention are perfect. There are no signs of wear similar to those seen in connection with



7a and b | CAD design of the veneer.



8 and 9 | The monolithically milled zirconia restorations (single crowns) as cemented on the PEEK framework.



10 | Finished restoration (bridge), intaglio side. PEEK framework with a zirconia veneer.



11 | Clinical situation before delivery of the implant-supported bridge.



12 and 13 | The restoration is completely metal-free. The PEEK bridge with its zirconia veneer is firmly anchored but can be removed by the patient herself at any time if desired.

gold alloys or electroplated copings, either on the PEEK framework or on the zirconia primary copings.

The patient rated the chewing comfort as optimal, which is in line with the author's experience with this prosthetic concept. Despite the comparatively high material hardness of the zirconia veneers, patients report pleasant wearing properties and high chewing comfort. The PEEK framework seems to dampen the impact of chewing forces well.

#### Removable or fixed

The bridge is designed in such a way that the patient can decide for herself whether the dentures are removed only at recall appointments or on a regular basis for domestic oral hygiene. The restoration can be cleaned like a screw-retained restoration (Figs. 12 and 13).

#### Summary

An attempt is generally made to use as few different materials as possible in a

prosthetic restoration. This approach is particularly important in patients with high sensitivity to specific materials. Not only metallic materials should be avoided – the risks and benefits of material combinations (PEEK, PMMA, composite resins, multi-component materials, ceramics) should be thoroughly considered and the materials used in small quantities. The presented implant-prosthetic treatment approach is characterized by a completely digital



14 | The framework areas in direct contact with the gingiva are left unveneered in pure PEEK.



15 | Post-delivery radiograph.



16 and 17 | Follow-up after at four months in situ. The patient did not remove the bridge for domestic oral hygiene. The first time the bridge was removed was for the follow-up.

workflow, metal-free restorations and a short list of materials as well as the restoration being both removable and fixed. The list of materials is short and simple:

- Unfilled PEEK (YuDent, Yunyi Medical) – framework
- Translucent zirconia (dd cube X2, Dental Direkt) – veneering
- Bondar (visio.link, bredent), opaque (Gradia) and dual cement (G-CEM LinkACE, both GC Europe) – bonding of zirconia crowns to framework
- Glass-ionomer cement – cementation of the primary copings on the one-piece implants.

In the case shown here, gingiva-coloured composite resin is additionally used for the gingival aspects of the restoration, a step mandated by the severe bone loss. If possible, the PEEK is left unveneered in the soft-tissue region (Fig. 14). The metal-free concept and basal design of the bridge – with proper oral hygiene – result in well-adapted soft tissue with no signs of inflammation (Figs. 15 to 17).

My experience regarding any discoloration during the time in service has been good so far. PEEK does not appear to be susceptible to plaque retention and discoloration if it has been professionally polished and good patient compliance is ensured. Any discoloration that does occur – for example as a consequence of inadequate oral hygiene – can be easily removed. Basically, plaque seems to be less aggressive on a PEEK framework than on a metal framework, where corrosion can lead to destructive changes to the gingiva.

#### Conclusion

PEEK offers the dentist a metal-free restorative treatment option that is particularly well suited for complex implant-supported restorations in edentulous or nearly edentulous jaws. Ideally, the PEEK frameworks are fabricated using CAD/CAM. CAD/CAM blanks are industrially prefabricated under standardized conditions (temperature, pressure), generally of uniformly high quality [9,11]. Due to the material properties, masticatory

forces are transferred to the bone or peri-implant tissue in attenuated form, protecting the bony structures around the implant. The restoration is also very comfortable to wear.

Ultimately, the excellent chemical properties of PEEK and its excellent biocompatibility make it a highly promising material for use in implant prosthodontics [4,6,7,11,13]. PEEK is the material of choice especially for sensitive patients. Unfilled PEEK materials such as YuDent meet the requirement of high biocompatibility, as no additives such as metal oxides are present. ■

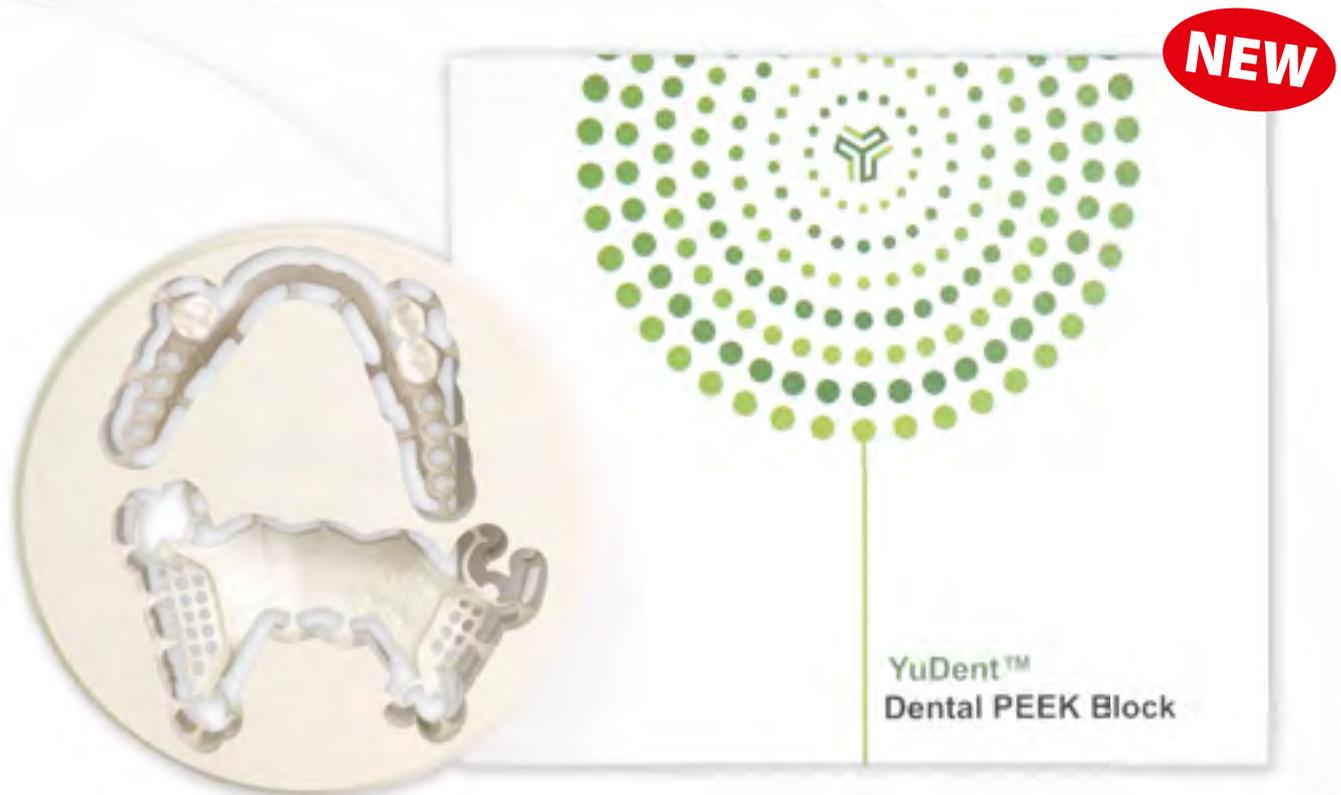
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## Concept and clinical case

# A new immediate loading concept using a multitrough implant and a transepithelial abutment

EDUARDO ANITUA, DDS, MD, PHD<sup>1,2</sup>, VITORIA, SPAIN

Immediate loading has become almost routine in oral implantology, reducing the time needed to provide an implant-supported rehabilitation and improving aesthetics and function [1,2]. While immediate-loading protocols are well established and professionals who adopt them are quite familiar with them, establishing a proper seal and a passive fit for immediately loaded single crowns continues to be a major challenge [3–5].

To resolve this problem, post abutments have been used as mesostructures for provisional crowns – generally cemented ones – to achieve the desired seal and fit at the level of the implant/restoration interface. The seal established for the post abutment at the gingival level sometimes has to be broken when taking impressions for the definitive prosthesis. In addition, the manipulation of the soft

tissue 24 to 48 hours after surgery for the insertion of the micro-milled or cast post abutment means that this option is not ideal in many cases.

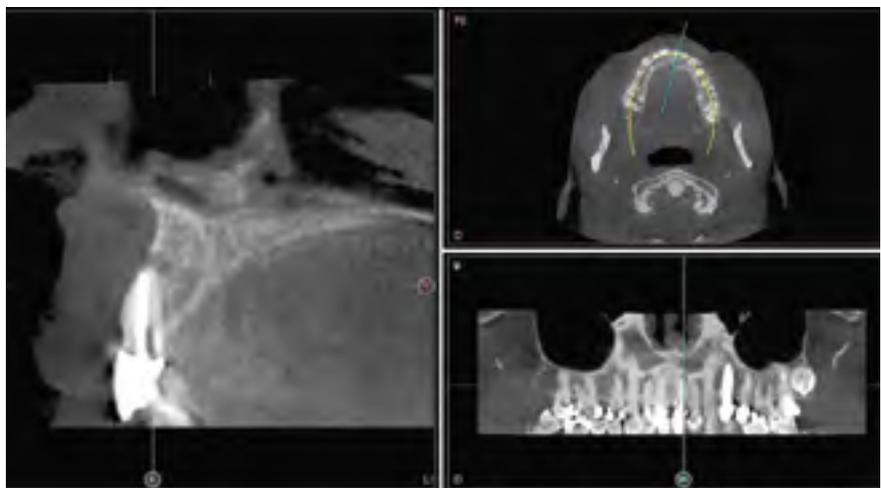
A systematic review with a meta-analysis of the immediate-loading protocol depending on the type of restoration did not find any statistically significant differences between the various types of prosthesis used (stationary,

removable, provisional and definitive). However, there were greater increases in ISQ values in the follow-up of immediate-loading patients when the prostheses were definitive, which appears to indicate that not removing the prosthesis improves not only the seal and behaviour of the soft tissue but also the integration of the immediately loaded implant [6].



1 | Initial intraoral image of the patient. Inflammation at the gingival level at tooth 21 and a probing depth of 12 mm.

2 | The CT scan also shows a complete loss of the vestibular plate and an active granuloma in the apical area of tooth 21, consistent with a diagnosis of vertical fracture.



<sup>1</sup> Private practice in oral implantology, Eduardo Anitua Clinic, Vitoria, Spain

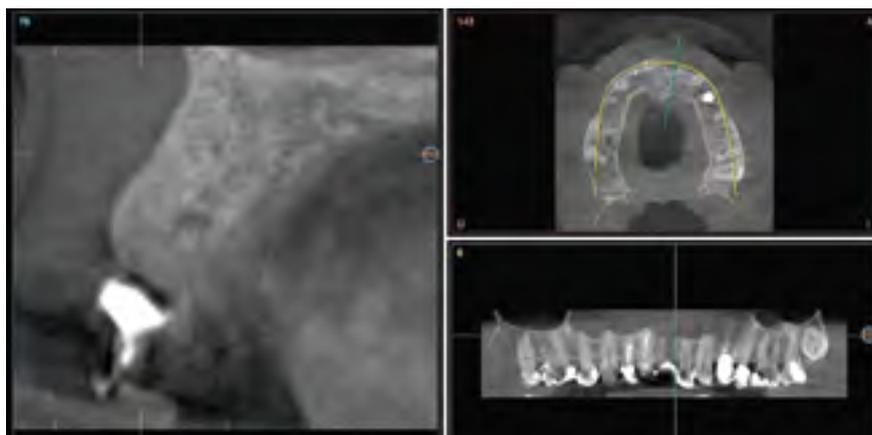
<sup>2</sup> Clinical researcher, Eduardo Anitua Foundation, Vitoria, Spain

This review raises the question whether, in addition to the presence of a provisional or definitive prosthesis affecting the integration of the immediately loaded implant, a specific design of the implant and prosthesis based on different surfaces adapted to the various tissues with which they interact could improve the success rate of our immediate-loading protocol. This concept, called BioBlock (different surfaces adapted to different tissues; BTI Biotechnology Institute, Vitoria-Gasteiz, Spain), was crucial to success in our recent investigations, as it increased the predictability of our implant treatments, including those with immediate loading.

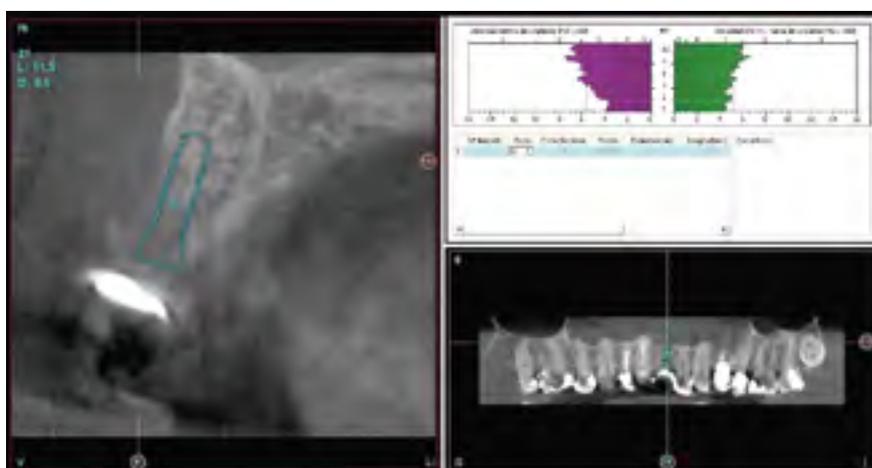
The Unit abutment (BTI Biotechnology Institute, Vitoria-Gasteiz, Spain) was conceived to meet these key issues, as well as others related to a good seal and passive fit of single-tooth restorations. It consists of an antirotational transepithelial post for screw-retained single-crown cases that achieves passive fit and a tight seal in a definitive restoration right from the start of the surgery, simplifying the manufacture of the immediately loaded prosthesis. In addition, this abutment is part of the BioBlock concept mentioned above, connecting the adapted surface (UnicCa with multirough surfaces: reduced roughness at the neck to aid bone stability and minimize bacterial colonization, moderate roughness with pores on the thread to improve the stability of the implant, and moderate roughness on the body to aid osseointegration without risking the mechanical properties of the implant) and a Ti Golden surface while maintaining the passive fit and tight seal at the implant/restorative interface that ensures the correct behaviour of the assembly and improves the success rate.

#### Clinical case

A 63-year-old patient presented with a vertical fracture of tooth 21 with complete loss of the vestibular plate and related symptoms (Figs. 1 and 2). The tooth was extracted and the socket regenerated with PRGF-Endoret (BTI Biotechnology Institute, Vitoria-Gasteiz, Spain). A provisional was cemented onto the adjacent teeth that had been prepared



3 | Bone status in the post-extraction socket area regenerated with PRGF-Endoret after twelve weeks.



4 | Planning for implant 21.



5 | Insertion of implant 21. Vestibular placement of a small amount of a particulate bone graft obtained from drilling together with PRGF-Endoret activated fraction 2.



6 | Membrane of PRGF-Endoret activated and retracted fraction 1 completely covering the surgical site.

for later restoration together with the implant to be inserted at site 21.

The CT scan at twelve weeks post-extraction showed complete regeneration of the defect, allowing implantological planning to proceed (Figs. 3 and 4).

The implant bed was prepared using a low-speed drilling protocol and the

implant inserted. The resulting bone chips were mixed with PRGF-Endoret and used as particulate bone graft in the vestibular area to fill a slight dehiscence that had formed due to uneven healing of the vestibular plate (Figs. 5 and 6). The site was covered with a fibrin membrane (PRGF-Endoret, fraction 1 activated and



7 | Radiograph of the provisional seated on the Unit abutment interface.



8 | Soft tissue on suture removal at two weeks.



9 | Diagnostic wax-up levelling the gingival margins.



10 | Details of the planned restorations: ceramic crowns on 11 and 12, a new screw-retained crown on Unit for implant 21 and a feldspar ceramic veneer on tooth 22.



11 | Intraoral try-in of the wax-up.



12 | First step: working model with replica of the Unit abutment.

retracted). A Unit abutment was connected to the implant for immediate loading, as shown on the intraoperative radiograph (Fig. 7).

The abutment was immediately loaded at 48 hours with a titanium cylinder and a provisional crown on top, seated at the interface of the Unit abutment (Fig. 8).

Following soft-tissue healing and removal of the sutures at two weeks, the gingiva had adapted nicely to the provisional (Fig. 9).

Three months later, when the implant had integrated and the soft tissue had matured, the site was prepared for the definitive crown and for the restoration of the adjacent teeth (which were discoloured following a previous endodontic treatment). A diagnostic wax-up was produced and tried intraorally. As shown in Figures 10 to 12, all-ceramic crowns were planned for sites 11 and 12

in addition to the cemented crown 21 on the Unit abutment, preserving the seal and attachment of the soft tissue achieved during the first stage of immediate loading. In addition, a veneer was made for tooth 12 to give it the same shade tone as the other anteriors as well as to reposition the gingival margin at a more aesthetic level for the smile line.

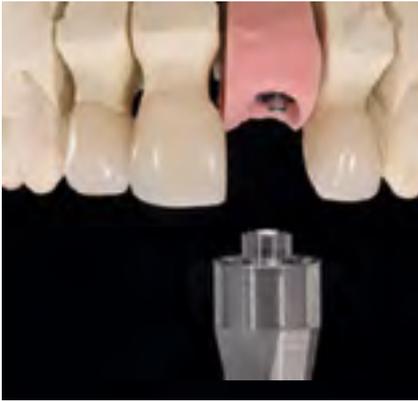
Figures 13 to 17 show the next steps: An abutment was made from the cap inserted over the interface of the Unit abutment, followed by a ceramized custom post abutment (mesostructure) and finally a screw-retained crown. This design respects the connection of the hemidesmosomes at the gingival level created during the initial immediate-loading phase, which is maintained by this design without in any way compromising aesthetics in this highly sensitive region. Once the customized post abut-

ment and crown were ready, the restorations of the adjacent teeth were also completed (Fig. 18).

At delivery, the crown was cemented and achieved excellent aesthetics (Fig. 19). The seal achieved and the BioBlock-shaping of the soft tissue that had been going on from the initial phase of implant insertion to the definitive insertion were successfully preserved. The orthopantomograph (Fig. 20) documents the treatment and the stable condition of the restoration and the bone.

### Conclusion

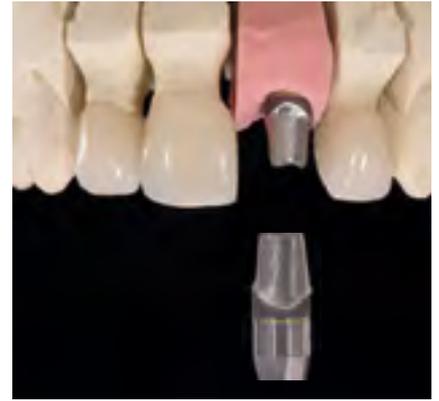
The BioBlock concept ensures the “decent behaviour” of all the tissues in contact with its specifically designed surfaces, something that is even more critical in immediate-loading situations. The versatility provided by the abutment enables the restoration to be adapted to



13 | Interface of the Unit abutment on the laboratory replica.



14 | Abutment manufactured from the coping inserted over the interface of the Unit abutment, ready for ceramization.



15 | Ceramized post abutment showing the edges of the emergence profile that will be in ceramics for improved aesthetics. At this point, the post abutment is cemented on the interface to make it one solid component.



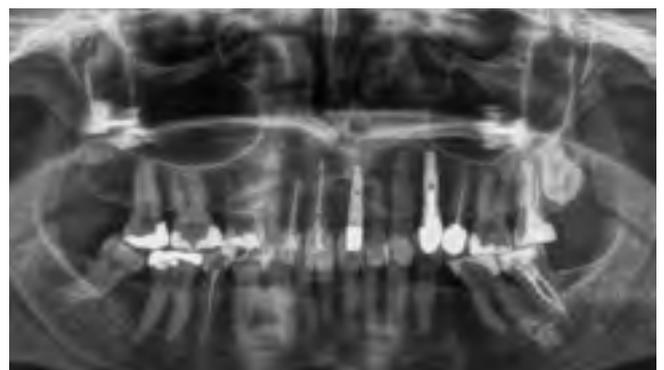
16 | Ceramic crown ready to be cemented onto the ceramized post abutment made on the interface of the Unit abutment.



17 and 18 | Completed restorations.



19 | The cemented restorations in situ.



20 | Final orthopantomograph.

the various steps of the process without compromising the interface between the implant and the bone.

The Unit abutment makes it easier to achieve these goals and provides prosthetic versatility, making it possible to perform various restorations that

guarantee good aesthetic results without disturbing the gingival seal achieved in the first phase of the procedure. ■

The references are available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)

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The ability of translating scientific findings in ingenious clinical concepts

Vice President Implant Systems and Research Stefan Holst, President Hans Geiselhöringer, and Vice President Multi-brand Strategy Sandro Matter (from left) at Nobel Biocare's press conference in Amsterdam.

## Exciting news from Nobel Biocare at EuroPerio9

A new ceramic implant as well as an innovative device for long-term implant care and maintenance were among the highlights Nobel Biocare presented during a press conference at EuroPerio9 in Amsterdam in June.

With the 100 per cent metal-free NobelPearl implant system, dental professionals have everything they need for a successful start in ceramic implantology. Developed as an alternative to titanium implants and for an increasing number of patients who prefer metal-free solutions for the look and feel of natural teeth, this new two-piece ceramic implant was designed for excellent soft-tissue attachment and low inflammatory response. Its cement-free internal connection boasting a screw made of carbon fibre reinforced PEEK supports a natural soft-tissue appearance and helps to avoid the risks often associated with excess cement during intraoral cementation.

NobelPearl is available for a broad range of indications, from single to multiple unit, and follows established workflows for two-piece implants. It will also be integrated into Nobel Biocare's digital workflow that includes treatment planning with the NobelClinician Software and guided implant surgery with NobelGuide pilot drilling. Additionally,

clinicians will be able to offer patients the NobelPearl Ceramic Base CAD/CAM solution using DTX Studio design software later this year.

In partnership with GalvoSurge Dental AG, a Swiss-based manufacturer of dental devices, Nobel Biocare further intends to bring to market an innovative cleaning system for long-term implant maintenance on all major implant brands. The GalvoSurge Dental Implant Cleaning System provides a unique protocol for decontamination of dental implants by removing the bacterial biofilm attachment directly from the implant surface.

The technology is based on an electrolytic process that activates the production of hydrogen, which lifts off the bacterial film. The groundbreaking process aims to be atraumatic and pain-free, only takes two to three minutes per implant and maintains the implant surface integrity. Available in 2019, the GalvoSurge Dental Implant Cleaning System will be distributed exclusively worldwide by Nobel Biocare. ■

### More information

[www.nobelbiocare.com](http://www.nobelbiocare.com)



The innovative GalvoSurge Dental Implant Cleaning System will be available in 2019.



On stage: Dr Paul Weigl, the Scientific Chairman and charming moderator.



From left to right: Björn Delin, Vice President Global Platform Implant Systems; Dominique Legros, Senior Vice President Technologies and Equipment Segment; Dr Marco Degidi, Oral Surgeon; Don Casey, CEO; Dr Karsten Wagner, Global Director Platform Implant Systems Ankylos/Xive; and Johan Falk, Senior Project Manager Research & Development during the press conference of Ankylos Congress.

### Focus on implant dentistry at the International Congress on Ankylos in Berlin, Germany

# Experience and excellence

After its successful first edition in 2016, the second International Congress on Ankylos, which took place in Berlin on 29 and 30 July in Berlin, attracted an even bigger audience. About 1,000 visitors from close to 50 countries participated in the splendid event. The professional audience experienced how implant dentistry and a dedicated dental community with focus on the digital future can create optimal results for patients.

Under the motto “Trust experience. Discover excellence”, the congress was devoted to the Ankylos Implant System and its TissueCare concept which have been standing for long term hard and soft tissue stability, high performance and convincing aesthetic results for more than thirty years. *Don Casey*, the new CEO of Dentsply Sirona, took the opportunity of his first congress visit in Germany to present the company’s success record and philosophy: “To truly improve oral health, dental professionals need more than just great products and services – they need solutions that make their dental procedures better, safer and faster, solutions that have clear patient and practice benefits. Our portfolio, our strong clinical expertise and our global reach and presence allow us to design solutions that make a real difference.”

*Dr Paul Weigl*, Frankfurt, Scientific Chairman and committed speaker in one person, welcomed the participants warmly and kicked off the congress with his presentation on “Implant therapy and the virtual patient”. *Weigl* is convinced that the work-

flow based on a simulated treatment at a virtual patient is a real breakthrough in implant dentistry and will be its future. He admits, however, that a widespread adoption of the complete digital workflow implies that its application becomes as easy and intuitive as the use of a smartphone or a tablet.

The first plenary session was dedicated to the state of the art of implant design. Based on his clinical results, *Professor Ye Lin* (Peking University, China) discussed the clinical importance of a tapered implant body and a progressive thread, while *Professor Valdir Muglia* (Ribeirão Preto-University of São Paulo, Brazil) compared the crestal and subcrestal placement of Ankylos implants. *Muglia* prefers a subcrestal placement of around 2–3 mm to keep the peri-implant bone above the level of the implant platform. *Dr Barry Goldenberg* (St. Louis, MO, USA) dedicated his presentation to the final torque of the abutment screw. His conclusion: “The trend is moving towards lower insertion torques. The morse taper connection and a 15 Ncm abutment screw offer the best chance for success with a low PIT.”

Johan Falk, Senior Project Manager Research & Development, explains the new Acuris concept to EDI Journal Project Manager My To.



### A new dimension in implant dentistry

*Professor Marco Degidi* (University of Bologna, Italy) then initialized the congress highlight. His journey through the development of the conometric concept preceded the presentation of Acuris, the new concept that uses friction instead of a screw or cement to secure the crown and the cap to the abutment in the final prosthetic part of the implant treatment. The new solution saves time, improves predictability, and ensures high-quality end results in the clinic, while improving the workflow in the lab. In addition, there is a reduced risk of complications like cementitis due to the cement-free solution, which, in turn, increases patient satisfaction. With its characteristics, Acuris represents the best of both worlds: a retention that is removable for the dentist but fixed for the patient (see interview with *Professor Degidi* on page 92).

### Information and inspiration

Informed patients, young patients, elderly patients, and – in the future – virtual patients: The second plenary session accounted for the fact that every implant dentist is confronted with many different patients with many different personal circumstances and different needs. Moderated by *Dr Peter Gehrke* (Luwigshafen, Germany), *Dr Sven Rinke* (Hanau,

Germany), *Dr Alberto Maria Albiero* (Udine, Italy), *Adj. Professor Ernest Cholakis* (Manitoba School of Dentistry, Canada) and *Dr Martin Wanendeya* (Clapham, UK) discussed during their “Inspiration Talks” how to adopt a patient perspective and practice patient-focused implant dentistry. In the subsequent discussion, most of the questions from the audience revolved around digital topics, from data protection to the risks of Artificial Intelligence to the question, which human skills are still most important in the digital age. *Cholakis’* answer: “Honesty and trustworthiness – a perception that the patient is constantly scanning.”

### The multiple facets of modern implant dentistry

The second day saw a continuation of the congress’ objective to illuminate modern implant dentistry from different perspectives, spread over three extensive plenary sessions and a whole range of instructive focus sessions featuring hands-on exercises and lectures.

Plenary session 3 discussed the handling of the peri-implant tissue, a key for peri-implant bone maintenance. *Dr Georgia Trimpou* (University Frankfurt, Germany) proved, supported by clinical studies, that a concave profile at the transmucosal level leads to a thickening of the connective tissue by a regenerative and non-surgical method, comparable to a localized connective tissue graft. “The users of Ankylos feel like being part of a family”, confirmed *Dr Pablo Hess* (Kelsterbach, Germany) at the beginning of his lecture. Ankylos users are and will remain enthusiastic about “their” implant system – and for good reasons: “Ankylos implants can be placed in nearly every situation, regardless of the bone quality”, *Hess* explained, and continued, “For a better primary stability, the Smart Ankylos Drill protocol offers different protocols depending on bone quality and quantity.” In his presentation on recession prevention by minimally invasive soft tissue

## A question on the sidelines

*Dr Paul Weigl is the Head of Department of Postgraduate Education at the Faculty of Oral and Dental Medicine at Goethe-University Frankfurt am Main. In Berlin, he served as Scientific Chairman and opening speaker at the International Congress on Ankylos 2018.*

### **Dr Weigl, what is your personal conclusion of the congress?**

My résumé is that all speakers took a lot of effort to create specific and convincing presentations on their particular topic, and they all did thorough research to present the newest scientific results. For that reason,

the audience really got a great update on what is going on in implantology, especially on the topics of tissue, osteotomy protocols, osteoporosis and a lot of other issues which are highly interesting for the daily practice. Of course, we don’t yet have so much literature on the digital workflow – we will have to learn more and more about it and how to integrate it in the office. Which means that there are lots of topics left for future congresses. MT

surgery, *Dr Greg Chen* compared flapless, minimal flap or full-flap surgical protocols, depending on the quantity of bone and keratinized mucosa. *Professor Natasha Ihan Hren* (University of Ljubljana, Slovenia) put the treatment of patients with osteoporosis in the focus of her comprehensive presentation. Her conclusion: "Osteoporosis is not a contraindication for oral implant therapy, but patients must be informed about the risks of implant failure or bisphosphonate-related osteonecrosis of the jaw." *Hren* also emphasized that long-term studies were still inconsistent and that additional randomized controlled clinical trials were still needed.

Plenary session 4 saw three experienced clinicians, namely *Adj. Professor Dietmar Weng* (Starnberg, Germany), *Dr Thomas Hanser* (Olsberg, Germany) and *Dr Thierry Rouach* (Paris, France) discuss the decision-making process and failure prevention when opting for tissue augmentation or minimally invasive protocols in the aesthetic zone.

How to achieve excellence in the dental implant clinic of today and in the future? A question that was answered in the fifth and last plenary session. *Dr Marek Adwent* (Będzin, Poland) explained the advantages of a close teamwork between all interested parties. "Working together towards a common goal benefits the surgeon, the referral, and last

but not least the patient", *Adwent* summarized. In her vivid speech, *Dr Liza Chernovol* (St. Petersburg, Russia) transferred the mechanisms of networking into the dental world while *Dr Marcus Dagnelid* (Goteborg, Sweden) convincingly explained how to combine practice management and business with customer-oriented approaches. "Be involved, because your involvement leads to engagement by your customers. And never forget the soft skills towards your patients", *Dagnelid* reminded the audience. The final speaker, *Dr Anne Benhamou* (Paris, France) also advocated the patients' needs and presented a corresponding minimally invasive surgical concept.

*Ass. Professor Mark Ludlow* (Medical University of South Carolina, USA) concluded the programme with a lecture on his special passion: the development and integration of digital technology in the practice of everyday dentistry.

The eclectic scientific programme was rounded off by numerous opportunities for personal encounters and inspiring professional exchanges in the centrally located Inspiration Hub as well as during the easy-going evening event. A congress on implant dentistry with a focus on a proven implant system: a concept that has again proven successful.

IL ■

## What an intelligent design can achieve

Thommen Medical, a platin sponsor at EuroPerio9 in Amsterdam, topped off its presence at this major international event with the Thommen workshop on Friday afternoon. Seven leading experts delivered profound lectures and subsequently engaged in an open discussion with the audience.

The workshop of Thommen Medical and its entire congress participation revolved around the question of how an intelligent implant design can limit infectious risks after implant placement. The clinical experts shared their extensive professional experience and presented a large number of clinical cases. The workshop, chaired and introduced by *Professor Jean-Louis Giovannoli* (France), one of the founders of EFP, addressed three major design features: the connection, the transmucosal part and the possibility for screw-retained restorations. *Professor Jörg Meyle* (Germany) and *Dr Kurt Meyenberg* (Switzerland) discussed the requirements on the implant-abutment connection, while *Dr David*

*Nisand* (France) and *Dr Otto Zuhr* (Germany) focussed on peri-implant soft tissue management. *Professor Stefan Renvert* (Sweden) and *Dr Sjoerd Smeekens* (Netherlands) concluded the workshop with their elaborate presentations on the danger of cement-associated peri-implantitis and the advantages of screw-retained solutions. More than 300 international participants proved that the Thommen workshop was one of the highlights of EuroPerio9.



This QR code gives you direct access to a video summary of Thommen's presence at EuroPerio9.

More information

[www.thommenmedical.com](http://www.thommenmedical.com)

6th International Z-Systems Congress in Valencia, Spain

# Ceramic implants: longtime experience – strong solutions



With this claim, more than 120 participants met in Valencia for this year's knowledge transfer. The Spanish port city with its international flair was the ideal meeting place for inquisitive users of ceramic implants from all over the world. With high-quality lectures and workshops with speakers from eleven countries, Z-Systems was able to prove its innovative power and pioneering spirit.

Under the scientific direction of *Professor Sami Sandhaus* from Lausanne (Switzerland), the congress gathered more than 130 participants in the centrally located congress hotel Primus Valencia. Despite the large number of participants, the family atmosphere not only offered many opportunities to foster professional exchanges, but also to establish or renew personal contacts and friendships.

After the get-together on Thursday evening, the congress started with two hands-on workshops on Friday morning. *Dr Holger Scholz* from Konstanz (Germany) presented his practice concept of biological dentistry. His main concern is to avoid iatrogenic stimuli on the organism. Based on his many years of experience with over 2,300 inserted ceramic implants, he explained that healing can be effectively supported by selecting appropriate materials.

*Barbara Tretter* (Roth, Germany) supplemented the workshop with her remarks on the current demand for health services and the associated challenge to the practice and the practice team. She outlined the collective change of values and health awareness, which means that more and more patients want to be treated minimally invasive, tissue-conserving and biocompatible.

The main programme started after lunch with the welcome by Z-Systems' CEO *Rubino Di Girolamo*. *Professor Sandhaus*, the pioneer of ceramic implantology and keynote speaker of the congress, gave a comprehensive overview of 50 years of bioceramic implantology and its scientific foundations. The further course of the congress was divided into three specific topics of equal interest.

## Long-term experience

*Dr Luise Krüger* from Landsberg together with *MDT Norbert Wichnalek* from Augsburg (both Germany) started with their impressive presentation on how the cooperation in complex surgical-prosthetic cases works on a very high level with digital dental technology and ceramic implants. *Dr Simon Tordjman* from Paris (France) outlined the key benefits of one-piece zirconia implants without mucosal flap formation as a structured, time- and cost-saving procedure. His compatriot and colleague *Dr Giancarlo Bianca* from Marseille (France) then reported on his long-term success with monobloc implants in surgical techniques with and without flap formation. The long-standing Z-Systems speaker *Dr Ted Fields*, who had travelled from the USA, spoke about the properties and use of the two-piece cemented Z-Systems implant Z5c Zirkolith. Based on numerous clinical cases and



The speakers' team: Dr Stefan Röhling, Dr Luise Krüger, Dr Siegmund Döttelmeyer, Dr Curd Bollen, MDT Norbert Wichnalek, Dr Dirk Duddeck, Dr Franco Giancola, Dr Ralf Lüttmann, Professor Sami Sandhaus, Dr Holger Scholz, Dr Jochen Mellinghoff, Dr Giancarlo Bianca, Dr María Judith Gelfo Flores, Dr Pascal Eppe. Missing at the sunny photo shoot were Dr Simon Tordjman, Dr Ted Fields, and Barbara Tretter.

a richly illustrated presentation, he demonstrated his many years of practical experience. The fact that *Dr Fields* is convinced of the advantages of two-part implants in terms of insertion and flexibility of the prosthetic restoration was proved by the many practical tips that he shared with the audience. The first day ended with a visit of Oceanogràfic, Europe's largest marine aquarium, followed by aperitif and dinner at the same location.

#### News from the world of ceramic implants

The second session started on Saturday with *Dr Ralph Lüttmann* from Eckernförde (Germany), who explained the functionality of the new Z5 BL, a bone-level implant with a conical screw connection, and presented the new corresponding surgical set. *Dr Jochen Mellinghoff* from Ulm (Germany) contributed his experiences with these bone-level implants with screw-retained abutments and crowns. The dental and technical workflow presented in detail left no questions unanswered and represents a new level of ceramic implantology for almost all indications. The very important question of the safety of ceramic implants was considered by *Dr Dirk Duddeck* (Berlin, Germany) from the perspective of surface texture. He reported on his work with the Clean Implant Foundation, which has set its sight on examining implant surfaces for contamination. *Dr Stefan Röhling* from the University of Basel (Switzerland) was invited to underpin the ceramic implantology from a scientific perspective. In his individual and fact-based manner of presentation with excellent didactics, *Dr Röhling* led the attendees through a wealth of literature, so that many colleagues who have been working with ceramic implants for a long time felt encouraged in their positive assessment.

#### My ceramic implant concept

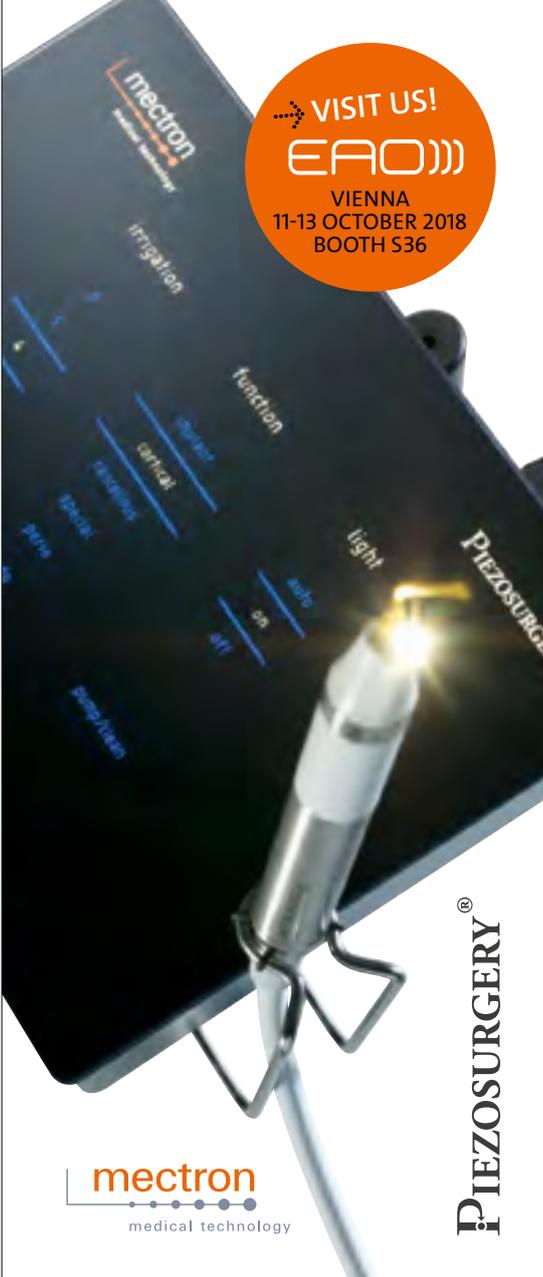
Under this heading, various personal practice concepts were presented in the third part of the programme on Saturday afternoon. Based on many examples from the natural sciences, *Dr Pascal Eppe* from Etalle (Belgium) explained why the biocompatibility of dental materials is so important for the health of the human organism. This fact is his crucial motivation for the course of action he takes in implant treatment. In his dynamic and witty speech, a colleague from the Netherlands, *Dr Curd Bollen* (Roosteren), created the connection between quality change management and his personal experiences during the transition from titanium to ceramic implants. The final speaker, *Dr Siegmund Döttelmeyer* from Bad Aussee (Austria) reported on his ten years of practical experience and emphasized that he has never observed any peri-implantitis in ceramic implants and that hard and soft tissues showed a very good affinity for this material.

*Rubino Di Girolamo* said goodbye to the participants with a very positive conclusion: "For the sixth time, our congress created space for international exchange in science and practice. The enthusiasm of our participants from many countries and their lively, collegial communication is a challenge and an incentive for us to continue our work and to do our best." EDI ■

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Women's Implantology Network: second annual network meeting in Amsterdam, Netherlands

# From a dream to changing the world of implant dentistry

WIN is a global network of dental professionals committed to embody, embrace and harness the power of gender diversity. With a majority of women graduating from dental schools, but only a minority of them becoming active in implantology, patient access to implant therapy is at risk. The mission of WIN is to engage women in implant dentistry and to empower them to achieve their ambitions.

"In WIN you get inspired by other women's stories", says Dr Donna Y. Lee from the USA (centre). To her right, Charlotte Stilwell from London, UK, member of WIN's core group, who is "keen to see proportionate representation of women dentist in implant dentistry."

Only two years after its foundation, the WIN initiative has been extended to an international level with over 350 members from all over the world bringing positive change to implant dentistry. In June 2018, the second annual network meeting was held in Amsterdam during EuroPerio9. The WIN initiative is steered by a core team with rotating members. As drivers of the initiative, they met in Amsterdam to further shape and define the next actions to achieve WIN's mission: to bring together inspiring women in the field of implant dentistry. The evening started with a cocktail to meet and connect with each other, followed by a combination of seminar and workshop. "Each single woman I met in WIN is fascinating, each story worth hearing", states *Virginia Hochstetter*, who coordinates the initiative at global level from Straumann's side.

## Why workshop in Digital Marketing?

The WIN events offer skill-building workshops enabling women to advance in their career. The WIN community is given the option to vote for the topic in advance. So far, presentation & communication skills, clinical photography and moderation on stage have been offered. The winning topic in Amsterdam: Digital marketing for the dental practice.

To self-promote and draw attention to their own accomplishments still seems to be a major challenge for many women, preventing them from moving up the ladder. To be successful in today's digital age, women need to build their personal brand in the digital world. But how? *Dominik Schneider*, expert in digital marketing, moderated a very interactive and insightful workshop. As a guest speaker, the audience had the opportunity of hearing how *Dr Hugo Madeira* implements it in his clinic. *Dr Madeira* is a practice owner and specialist in implantology, whose clinic – and himself – have a very strong and established digital marketing strategy.

After the presentations, the participants teamed up in groups in a workshop format to define the individual action plans and translate the learnings into actionable ideas. At the end of the evening, all attendees agreed that the second WIN global network meeting with its combination of seminar, workshop and social event proved to be a resounding success. ■

**More information**

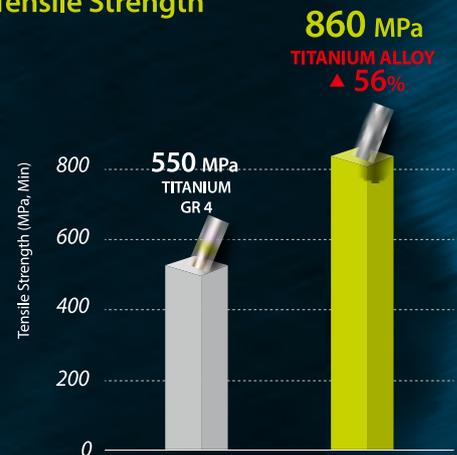
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# STRONGER

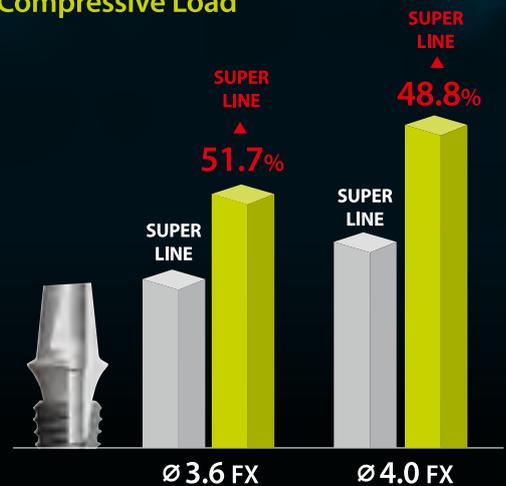
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## MIS Makeathon

# An unforgettable experience

Makeathons and hackathons are becoming more and more popular, and they are also starting to enter the dental world. For the first time ever, MIS opened its doors and held a Makeathon – a two day brainstorming event for young engineers, doctors, students, and thinkers in general.

After an introduction by MIS CEO *Idan Kleifeld*, familiarizing the participants with the mission and vision of the company, the first day continued with several fascinating and eye-opening lectures by different key speakers, both from the dental world and from outside of it.

First up was *Dr Ohad Sharon*, speaking to the group about all the latest innovations and changing trends in the dental world.

Next was a fast paced and riveting presentation by *Dr Eyal Doron*, a renowned lecturer, researcher and author. *Dr Doron* inspired the Makeathoners with his tips and insights on the changing world of technology and how to think in new ways in order to come up with new and relevant ideas.

The final speaker of the first day was *Dr Mirella Feraru*, an expert in complicated perio-prosthetic cases, who laid out what has already been achieved

in the dental world, but what is yet still missing and needed. This provided the participants with a clear idea of what the patient experience may be lacking of and what dentists are looking for in their arsenal of tools.

After a tour of the production facilities, the participants were divided into groups and started to formulate their ideas, and to work on their presentations. Throughout the entire process, the esteemed Makeathon mentors were there to offer advice, extensive personal experience and knowledge on what will work best according to the requirements and limitations.

At the end of the first day, everyone got together for a relaxed evening at a local pub, including some inspiring talks by *Doron Peretz*, founder of MIS, as well as *Dr Yoav Medan*, an expert in digital medicine and entrepreneur.

The second day of the Makeathon continued until the late afternoon hours, with all groups working diligently and intensively on their ideas and presentations. After each group had presented their ideas to the panel of judges, with the panel raising some very tough and interesting questions for each group, it was time to vote for the winners. The high-level competition resulted in a third place winner and two teams who tied for first place.

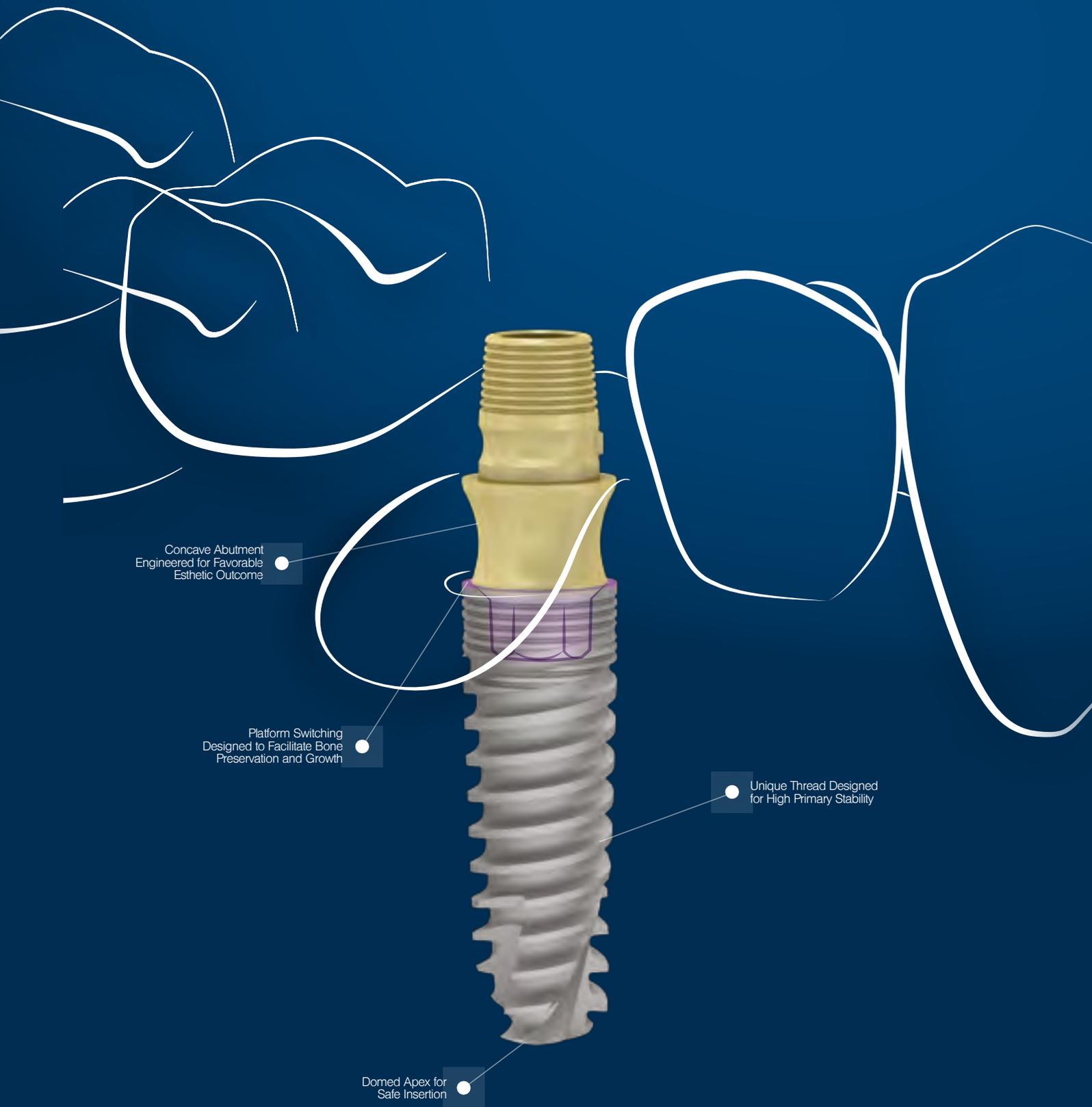
*Tali Jacoby*, product manager and lead organizer of this event, was extremely pleased with the outcome: "MIS is proud that we can support young doctors, engineers, and students in order to come up with new and fascinating ideas together. Just imagine that one of these innovative ideas can turn into an actual product which serves a real purpose for doctors. This is a fantastic platform for introducing new technologies which are still unknown to clinics." ■



The goal of a Makeathon is based on the process of making things together within a limited time frame – an objective that was certainly reached at the first MIS Makeathon.

## More information

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Interview with Dr Rino Burkhardt, Zurich, Switzerland

# For competence in periodontics

SwissPerio, founded by a group of periodontists, is a training institution and think tank for basic and advanced education in periodontics and related domains. All courses and events aim for the prevention and therapy of periodontal and peri-implant diseases. EDI Journal Project Manager My To talked to Dr Rino Burkhardt, member of the advisory board, about the institution and its upcoming education week.



Dr Rino Burkhardt

## ***Dr Burkhardt, what was the motivation for the foundation of SwissPerio?***

SwissPerio originates from the perception that undergraduate education or postgraduate training are not enough to obtain true clinical expertise. There still are performance gaps, and surgeons who complete courses outside the formal training, usually just fill their backpack with additional factual knowledge. SwissPerio promotes the improvement of standards in periodontal and implant practice not only through the development of domain knowledge, but through factors such as skills, attitude and behaviour.

We realized that the competencies of the individual doctors vary substantially, that's why our spectrum of courses is set up very broadly – from classes for beginners/general dental practitioners to programmes for experts and specialist in periodontics. The limited number of participants allows a personal interaction and individual training to bring each trainee to the required proficiency level.

## ***On which pillars is true expertise based in your perception?***

In procedural dentistry, the first pillar of expertise is simply practical, manual skills. In clinical practice, success ultimately depends on the precise and delicate execution of a given intervention. But once a dentist has taken his final exam, there is no more extrinsic feedback and no supervisory authority that might verify how he handles the scalpel or adapts a flap. For that reason, training of psychomotor skills and visual-spatial ability are key aspects in our hands-on courses.

In addition, there are no objective evaluation criteria in periodontal and implant surgery which allows us to differentiate between proficiency and non-proficiency. That's why we newly designed our practical trainings based on well-defined metrics, another key issue in the development of our courses. In suturing, for example, we already have the possibility to record

the procedure and evaluate the results by a specifically designed software. Over time, we want to extend this approach to all clinical interventions, to make them measurable and define the level of proficiency – a transparent, objective and fair procedure.

Non-technical skills such as a decision-making and critical thinking represent the second pillar of true expertise. This is where behavioural psychology comes into play. Clinical decisions for treatment planning are taken by critical analysis which requires domain knowledge and statistical thinking. On the other hand, during a surgical intervention, there is only limited time available for decision-making and the human brain just has limited capacity to evaluate and process information. So clinical choices during surgeries might be more intuition-based than analytically driven, a well-described strategy of the human brain which must not be mixed with irrationality. To promote both of these systems (intuition and analysis) and to sharpen the awareness of the clinicians, we always include relevant practical exercises in our courses.

Factual knowledge is the bottommost pillar of expertise and also requires critical thinking to separate relevant findings that have the potential to improve patient health from all the scientific rubbish.

## ***Let's talk about the SwissPerio Education Week. What is its USP, compared to other CPD courses?***

The first SwissPerio Week, which will take place in November, is a full week of periodontics, giving participants in a very condensed form the essentials they need to establish a soundly based system in their own practice. It is not about presenting some "fancy" surgical techniques that can attract people easily, as with other trainings. Our speakers, among others, luminaries such as professors *Niklaus Lang*, *Jan Lindhe* and *Sandro Cortellini*, teach the tools of perio from A to Z: from the anatomy of the periodontal tissues to diagnosis, to evidence-based concepts of non-

surgical therapy – an unpopular but very important topic – to up to date know-how in periodontal and periodontal plastic surgery. We want to encourage participants not to run things by the rule book but, for example, to decide on the basis of the site- and patient-specific situations, illustrated by videos and case discussions. Finally, the course covers the regenerative procedures as well as implants with their specific peri-implant problems. Another distinctive feature: The SwissPerio Education Week provides time for discussions and interactions with all the speakers beyond their lectures as most of them stay more than just one day with the course. Detailed information on our philosophy and programme can be found on our website [swissperio.com](http://swissperio.com).

*Thank you very much for sharing your thoughts with our readers, Dr Burkhardt.*

MT ■

## Feedback by course participant Dr Christoph Wenninger

“A great, dense course in a small group on a high theoretical and practical level – high above Zurich overlooking the lake. Very professional technical equipment of the workplace and a wonderful, nice and personal course coaching by Dr Burkhardt and Ms Idoia Felis. For me, the CPD highlight of the year.”

## New chairman and new board members

At the Oral Reconstruction Global Symposium 2018 in Rotterdam, Netherlands, the OR Foundation announced its new chairman, which the Foundation likes to introduce now.

The Oral Reconstruction Foundation is honored to welcome new Chairman *Professor Robert Sader*, Director and Chair of Oral, Cranio-Maxillofacial and Facial Plastic Surgery at Goethe University Frankfurt, Dean for clinical student affairs and Medical Director of the University Dental Institute Carolinum. Additionally *Oscar Battegay*, Partner at Battegay Dürr Attorneys at Law and Notaries Public in Basel, Switzerland, also joined the Board of Directors, and *Professor Irena Sailer*, Head Division of Fixed Prosthodontics and Biomaterials at the University of Geneva, completes the Scientific Board. The new board will discuss progressive ideas in regards to the creation and dissemination of knowledge by funding research projects and advanced education, as well as sponsoring young scientific talents and will remain faithful to its commitment to “Teaming up science and education to serve the patient”.

*Professor Sader* and *Professor Sailer* will support the Foundation with ideas in regards to education and scientific aspects, whereas *Oscar Battegay* supplies his knowledge as specialist in national and international corporate law in addition to legal and strategic support. All new board members are selected for a four-year term. The OR Foundation thanks the past-president *Professor Jürgen Becker*, Düsseldorf, and past-member *Professor Frank Schwarz*, Frankfurt, for their support.

The new members will join the existing board of *Professor Fernando Guerra* (Portugal), *Professor Thomas Taylor* (USA), *Dr Alex Schär* (Switzerland), *Professor Mariano Sanz* (Spain) and *Professor Wilfried Wagner* (Germany).

### More information

[www.orfoundation.org](http://www.orfoundation.org)



The new OR Foundation Chairman amidst the newly composed Board (from left): Fernando Guerra\*, Oscar Battegay\*, Chairman Robert Sader\*, Irena Sailer, Thomas Taylor, Alex Schär\*, and Mariano Sanz. Missing on the picture is Wilfried Wagner.

\*Member of the Board of Directors

## Interview with Professor Marco Degidi, Bologna, Italy

# “I am absolutely sure that this is the future”

Dr Marco Degidi is a renowned oral surgeon, keynote speaker, university professor, and researcher whose work focuses on the development of innovative techniques for implant placement and immediate loading. He is the inventor of the WeldOne Concept for intraoral welding and of the Conometric Concept for cementless fixed restorations, the basic principle for the new Acuris retentions system. EDI Journal Project Manager My To talked to Dr Degidi during the Ankylos Congress in Berlin, Germany.

During the Ankylos Congress in Berlin, Dr Marco Degidi and EDI Journal Project Manager My To talked about the new Acuris retention system.



***Dr Degidi, you have developed the Conometric Concept. What is the principle of this concept and what are its main advantages?***

The principle of the concept is that you have a matrix that is engaging in a matrix only by friction. In our case, the matrix is a prefabricate component – a cap – that is engaging in the implant abutment. One big advantage of the concept is that the connection is achieved without cement and without screws. It is basically gap-free and very precise. There is no tolerance between the between the abutment and the cap in the crown where bacteria could penetrate.

Another big advantage is the simplicity, which really saves you a lot of time. This is an invaluable benefit for both the dentist and the patient. Not some time – a lot of time! I made a practical comparison in my own practice with two patients whose restorations needed to be removed for inspection respectively a certain kind of professional maintenance;

one of them screw-retained and the other one with the conometric system. It took 45 minutes to take out the screw-retained restorations and put them back in again. And guess how much time it took with the conometric retention: not much more than one minute!

***Under the name of Acuris, your concept has taken the next step. What is the special feature of Acuris?***

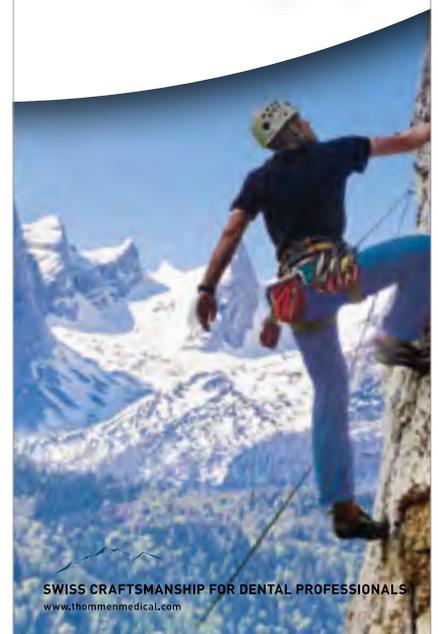
The new thing is that both the abutment and the cap, which is cemented to the crown outside of the mouth, come with an index. To engage the friction, the practitioner just has to find the index and apply a certain amount of force with the patented fixation tool that comes with the system. The procedure is very simple because you can put in and take out the crown in a matter of seconds. At the same time, it is a very safe workflow because you cannot be misled: If the crown is not completely seated, you have no retention at all. If the crown is not moving, you can be sure that is seated correctly.

***Which were the developmental steps from your Conometric Concept to Acuris?***

The idea arose from the fact that we did not really like the existing retention systems because of their respective disadvantages, for example the increased risk of peri-implantitis due to cement residues or the increased risk of fractures of the porcelain occlusal surface due to the screw holes. At the beginning, we just started to develop things in-house. After a while, we began to discuss the issue with Dentsply Sirona and they loved the concept, so we initiated a cooperation. For many years, the cap had only been developed for the WeldOne concept,

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that's why all the caps had a stem for welding and no index, since you weld on multiple abutments and indexing in this case would have been a limitation. The problem that we had was with single tooth restorations in the aesthetic zone of the maxilla. Due to the missing index, the cap would rotate and sometimes it would flip out. In such cases, we had to put cement or a screw, which left the patient and us dissatisfied and disappointed.

So we talked to Dentsply Sirona again and decided to set up a working group for further research. This task force then worked for nearly two more years and we completely redesigned the concept, adding new components and, obviously, the missing indexed conometric abutments; this restyling involved both the matrix and the patrix. The result is a new standard abutment that, to make it simple, has kind of a triangle on the top and a cap that has another triangle inside. Which is basically the whole thing: You put the cap on top of the abutment, you find the triangle, you match it, you apply a bit of impact force with the dedicated instrument, and then you get the friction. That is what makes the difference and what we have been looking for for many years. It is the impact force that gives you a lifetime retention. Please note that the retention is neither too strong – which would make it difficult for the dentist to remove the restoration should the need arise – nor too weak to ensure that it will not come loose unexpectedly. It is a really perfectly balanced result and the engineers who achieved this task deserve greatest appreciation.

#### ***What are the requirements for the use of Acuris?***

Although we are working on very tiny abutments, there is no limitation to the conometric system – under one condition: The cap has to be fully seated. With this concept, you cannot simply have “some” retention, like you may have with some ill-fitting cement- or screw-retained restorations. Either the cap is completely seated or you have no retention at all. This somehow obliges the dentist to pay more attention to every little detail. But isn't that what our profession is all about, after all?

Another great advantage is that you do not need a lot of training to apply the concept. Every dental practitioner will be able to use Acuris within two hours because it is so easy and safe. Even though Acuris is a new system, and all new systems have a learning curve, a half day session will be enough to understand the concept and to learn the full workflow from clinic to lab and back. It is probably the easiest prosthetic procedure to train.

#### ***When will we see the official launch of Acuris?***

The official launch in Europe for single crown restorations with the Ankylos Implant System will be at the EAO in Vienna in October. For all other Dentsply Sirona implant brands, Acuris will be introduced in 2019 – at the IDS in Cologne for Europe and at the AO in Washington DC for the US.

#### ***What developments are you expecting for the next years?***

I think that the conometric system with index for single tooth restorations is only the beginning. I am convinced it is a milestone of a development that is not going to stop. The most attractive part is still to come: partial restorations and bridges, and finally full arch restorations as a last step. And all these solutions will be even more unbeatable in combination with CAD/CAM, inhouse or lab-fabricated, milled, printed, in combination with any material: It's really going to be a prosthetic revolution.

***Thank you very much, Dr Degidi, for your time and the interesting interview.***

## Galvosurge: new procedure for peri-implant therapy

# “We are very convinced of the effectiveness”

In the near future, a new procedure for long-term maintenance and care of implants will be available which removes the biofilm from implants without manipulating the surface. The technique was developed by GalvoSurge AG from Switzerland, and will find its way into medical practices and clinics next year through a cooperation with Nobel Biocare. Together with the development team – engineer Holger Zipprich, Dr Urs Brodbeck and Adj. Professor Markus Schlee – the company previewed Galvosurge at the EuroPerio9 in Amsterdam. Editor-in-Chief Natascha Brand of teamwork media asked Schlee and Brodbeck about the new procedure.



Adj. Professor Markus Schlee (left) and Dr Urs Brodbeck

***Dr Schlee, you are known for your consistent concept of explantation in case of periimplantitis. With the presentation of Galvosurge, a paradigm shift seems to be emerging. How exactly does Galvosurge work?***

*Dr Markus Schlee:* Previous methods to treat peri-implantitis, such as the use of air-powder-water jets, cotton pellets and NaCl, titanium brushes, laser treatment or polishing the surfaces are extremely sobering, because they do not succeed in removing the biofilm in a quality that allows reosseointegration and long-term stability of the affected implants. Although the bone sometimes comes back, it usually does not grow onto the implant surface; instead, a pocket is formed between the implant and the bone and the implant gets reinfected, as shown by scientific data. That's why we were looking for a different therapeutic approach.

***What sets Galvosurge apart from other peri-implantitis therapies?***

*Schlee:* Currently, we need to remove the prosthetic restoration, raise a flap and remove the granulation tissue in order to get access to the infected implant surface. With these measures, however, only the bacterial concentration can be reduced. With Galvosurge, the biofilm is not removed mechanically, but the implant is negatively charged via a shower head and, in conjunction with a sprayed saline solution, sodium ions penetrate the biofilm. As a result, atomic hydrogen is created, which ultimately pushes the biofilm outward through its blistering on the implant surface. Another benefit is that Galvosurge creates a hydrophilic surface that promotes osseointegration of the implant.

***... and then there is no more accumulation of biofilm?***

*Schlee:* This is precisely the problem with the current methods: Biofilm colonizes the implant surface again and again because the cleaning is not sufficient and no bone can re-grow on the implant surface. Without re-osseointegration, you will fail in the long term. However, when using Galvosurge, we achieve a surface that is re-osseointegrable. Once bone has formed on the implant surface, no bacteria can colonize. We are very convinced of the effectiveness of this procedure.

***The technique works with electricity. Is it suitable for all patients?***

*Dr Urs Brodbeck:* Only a maximum of four volts reaches the patient. The procedure can be applied

to all implant patients; even several implants can be cleaned one after the other in one session.

***In which treatment concept is the successful therapy with Galvosurge embedded? Which steps do you need before and after the cleaning process?***

*Brodbeck:* Hard-to-clean prosthetic restorations and excess cement are among the most common causes of peri-implantitis. That means that in many cases the restoration has to be modified before it can be reintegrated, otherwise there is a major risk that pathogenic biofilm will re-attach and re-implement peri-implantitis. The restorations must be easy to handle so that the patient can easily clean it at home, and the dental hygienist must be able to perform a professional cleaning at the regular recall, too. The implementation of the method itself is quite simple. What remains challenging is the surgical part because it requires experience in dealing with augmentation techniques and materials as well as the handling of membranes. You must be able to mobilize a flap and perform a secure wound closure. These are crucial factors that contribute to the success of a peri-implantitis therapy with Galvosurge.

***Nobel Biocare is the cooperation partner for the distribution, training and marketing. Is Galvosurge restricted to Nobel Biocare implants?***

*Brodbeck:* The technique is open to all implant systems. With the Galvosurge procedure, all titanium surfaces can be cleaned.

*Schlee:* It was precisely this aspect that was important to us, the development team as well as Nobel Biocare. We do not pursue any industrial policy and no manufacturer or implant system will be excluded.

***When will Galvosurge be available and what components will it be made of?***

*Schlee:* We have already gone through all pre-clinical phases. The data of the clinical monocentric study is still missing. We have now received a positive ethics vote and the approval/CE marking from the German Federal Institute for Drugs and Medical Devices, so we are confident that Galvosurge will be available in a few months. The practitioner only needs a control unit, rinsing fluid and a hose set per patient.

***Thank you, Dr Schlee and Dr Brodbeck, for your time and the interesting conversation.*** NB ■

## Russ Bonafede new CEO of Keystone Dental Inc.

Keystone Dental has announced the appointment of Russ Bonafede as their new CEO. Russ Bonafede assumed responsibilities on 14 August 2018 and will succeed Michael Kehoe, who has stepped down but will remain in a consulting capacity for the next six months.

*Russ Bonafede* has nearly 30 years of experience predominantly focused in the implantable medical device industry. He served as President of Zest Dental Solutions prior to joining Keystone Dental. Previously, *Russ Bonafede* served as President of Henry Schein Orthodontics, a top five player in the fixed orthodontic market, and as Vice-President of Global Marketing for both Zimmer Dental and Biomet 3i before those organizations merged. He holds a BS degree in marketing from SUNY Plattsburgh where he graduated cum laude and earned an MBA from San Diego State University.

“Keystone Dental has a significant legacy in the implant market and remains one of the larger independent companies in the sector. I look forward to accelerating Keystone’s position through a com-

bination of organic and new business development initiatives”, noted *Russ Bonafede*.

Keystone Dental is an oral healthcare company dedicated to the delivery of innovative dental surgical and prosthetic technology. Headquartered in Burlington, MA, USA, with manufacturing and distribution facilities in Irvine, CA, Keystone markets its products worldwide. The company’s product portfolio includes proprietary offerings such as the Genesis Biomimetic Implant System, Tilobemaxx, the PrimaConnex and Prima Plus Implant Systems, DynaMatrix Extracellular Membrane, as well as DynaBlast and DynaGraft bone graft substitutes. ■

■ **More information**

[www.keystonedental.com](http://www.keystonedental.com)

Interview with Dr Philippe Khayat, Paris, France

# Rough or smooth? Hybrid!

At EuroPerio9 in Amsterdam, Dr Philippe Khayat from Paris, France, a dental surgeon with a focus on implant dentistry and more than 30 years of practical experience, dedicated the Implant Direct Sponsor Session to the question of whether a change in the implant surface could be part of the solution when fighting peri-implantitis. EDI Journal Project Manager My To talked to Dr Khayat after his presentation.



Dr Philippe Khayat and EDI Project Manager My To during their interview at EuroPerio9 in Amsterdam.

***Dr Khayat, you have placed your first implant 32 years ago. Which trend have you been observing with regard to peri-implantitis during this time?***

In the 1980s, when I started my career, we used mainly machined implants with a smooth surface. In those days, we occasionally had to deal with bone loss, but the number of peri-implantitis cases seemed to be way lower. Around the year 2000, the standard of care turned to rough implants because they show a better osseointegration, but a few years later, the prevalence of peri-implant diseases rose considerably. Reliable data now speak of about 20 per cent of the patients being affected after five to ten years.

***What does scientific literature reveal?***

The debate on whether the implant surface is one of the triggers of peri-implantitis is very active and current scientific studies do not indicate a consensus. I have reviewed the literature and found that eleven prospective studies did not reveal any differences while seven retrospective studies saw a connection between rough surfaces and peri-implantitis.

Prospective studies are very powerful scientifically, but they usually include a very strict maintenance programme and, by definition, very compliant patients. That is, in my opinion, the reason why we see less peri-implantitis in these studies, and why it is difficult to actually compare the two surfaces.

In retrospective studies, you are not necessarily dealing with compliant patients. You do a cross-sectional evaluation of how healthy your patients are, which means that you are just registering parameters at a given point in time. And that is a truer picture, it reflects the reality of our clinical practices much better.

***What is your own experience and your personal treatment protocol?***

Many cases that we have treated in our clinic with long-term follow-up have shown considerable improvements after we performed an implantoplasty and transformed a rough implant surface into a smooth one. With the implantoplasty, I create a healthier environment. Of course I remove the infected tissue, but I also remove all the surface on which plaque and biofilm can adhere. At this stage I don't place any graft material because I want to see what the body can regenerate and how much bone we can get with just the implantoplasty. And it is impressive what we get.

***Your solution is a new hybrid implant with a rough apical surface and a smooth surface in the upper half. Is that a completely new design?***

No, the hybrid surface is not new at all. It was proposed by *Dennis Tarnow* in 1993. He was the first author to publish on a hybrid design. It was a good idea, but it came too soon because we did not have a lot of peri-implantitis in those days. *Tarnow* said that if you are considering a rough surface, you should leave it in the apical third or two thirds of the implant. A trend-setting idea at the time, and we are reviving it now.

***What do you tell a patient if he asks about the life expectancy of implants?***

That's a common question from the patients. And even if they don't ask the question, they like to think that the implant will last for the rest of their lives. Of course, we cannot tell them that it is for life. We tell them that if they are compliant, we can shoot for a 15 years success, which would be very good. But I always stress the importance of good oral hygiene and regular recalls as an indispensable prerequisite.

***Thank you very much for your time and the interview, Dr Khayat.***

MT ■

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Interview with Professor Arthur B. Novaes jr., University São Paulo, Brazil

# A way to fight antibiotic resistance

The research of Professor Arthur B. Novaes jr. from the University of São Paulo, School of Dentistry of Ribeirão Preto, Brazil, focusses on the possible effects of the aPDT (antimicrobial photodynamic therapy) in the decontamination of periodontally infected post-extraction sockets before immediate implant placement. The aim of his studies is to reduce the systemic use of antibiotics in the context of the treatment of peri-implant diseases. EDI Journal Project Manager My To talked to Professor Novaes at the EuroPerio9 in Amsterdam, Netherlands, where he also presented a poster on this topic.



Professor Arthur B. Novaes jr. talked to EDI Project Manager My To about aPDT.

## **What is the aim of your research?**

I have been working with aPDT for more than ten years in perio and in implant dentistry. The goal of our research is to eliminate certain situations in which systemic antibiotics are routinely prescribed. We have a global epidemic of resistant bacteria – we just had some interesting lectures on that issue and the associated danger here at EuroPerio. That is why we see the need for an alternative and we think that aPDT can, in certain cases, replace systemic antibiotics because it can also eliminate bacteria, but does not show any side effects.

## **How did the course of your studies evolve?**

We carried out studies on aggressive periodontitis and after a while reached a successful protocol where we can use aPDT instead of antibiotics in patients with periodontal disease and diabetes. So next step was to work with animals in a very challenging healing situation: an infected socket. We wanted to test if aPDT could disinfect or decontaminate that socket before putting an implant, without systemic use of antibiotics.

We induced periodontal disease, periodontitis, in the animals and after twelve weeks, they had established periodontal disease: The teeth were loose, there was bone loss, bleeding, suppuration – all the signs of infection on both sides of the jaw. Then we extracted the teeth and on one side we performed a mechanical debridement with saline solution irrigation, the usual protocol of decontamination, and then put the implants. On the opposite side, we completed this protocol with an aPDT before putting the implants. After twelve weeks of healing, the animals were euthanized and the specimens were separated and prepared for bucco-lingual analysis of the peri-

implant tissues through computed microtomography and histomorphometric analysis. What we found was that the side where we just did the mechanical debridement and rinsed, the implants healed with disease already, and on the side where we used the aPDT, they healed normally, perfectly, with no sign of infection, inflammation or bone loss.

## **Which conclusions do you draw from this outcome?**

Our recent study shows that the decontamination of a socket with the usual protocol associated with aPDT might lead to superior results without antibiotics. If you have a patient with periodontal disease and you want to extract the teeth and proceed to immediate implant placement, the application of aPDT will ensure that you can put the implants safely and forgo the use of systemic antibiotics.

## **Is the aPDT only applicable in this situation or could you also use it for other indications?**

It is a work in progress, but so far, in the ten years we have been working on it, we have reached several protocols where aPDT could be very useful in the future. One indication we can think of is the treatment of periodontal disease, like aggressive periodontitis, in risk patients, for example diabetics or smokers, where aPDT could replace systemic antibiotics.

We can also imagine aPDT as a maintenance treatment for certain patients in recall; for example in patients with refractory periodontitis where aPDT, together with the mechanical debridement, could give you a better chance of maintaining the case.

**Thank you for the insightful interview, Professor Novaes.**

MT ■

Interview with Dr Andrea Pandolfi, Aprilia, Italy

# “Patients want more information”

Dr Andrea Pandolfi is a dentist with a private practice in Aprilia, Italy, who specialized mainly in perio-implantology and oral surgery, focussing on minimally invasive procedures. In this interview, the lecturer, teacher and trainer in implantology and biomaterials at universities in Italy and Austria talks to EDI Journal Project Manager My To about various aspects of current implant treatment.

## **One bone substitute for all indications – do you consider this approach to be appropriate?**

In my opinion, the use of only one bone substitute is not appropriate for all indications and cases. We have to consider the patient, the oral environment, the teeth, the site. Some patients refuse xenograft granules because they are vegans or do not tolerate animal-based materials for other reasons. In this cases, we have to choose a synthetic substitute. For different site defects we must select different biomaterials depending on the indication.

## **Allograft and xenograft: When do you use which material?**

If the patient accepts the use of biomaterials, we can choose xenografts to maintain the volume or if we need a slow resorption, for example in the case of a non-contentitive defect. In a partially contentitive defect, we can use allografts to keep the resorption pattern under control.

When we know that only the clot is not sufficient for a regenerative approach, we can enhance the regenerative potential of the site with different biomaterials based on the defect characteristics.

Finally, to avoid a second surgery, we can opt for a three-dimensional membrane like mucoderm instead of harvesting connective tissue.

## **How have patient expectations changed in the past?**

Compared to ten years ago, the modern patient wants more information about the therapy. With the help of digital dentistry, we can put the patient on a high level of understanding because we can visualize the final outcome on the screen. And with more detailed clinical information, the practitioner is more accurate in therapy. Today, clinicians can improve their performance by using a software like coDiagnostiX to support their choice of the right implant or the best surgical technique. Finally, products

like Emdogain allow us to speed up healing. Today, we can give our patients minimally invasive treatment with better and faster clinical results – and that is in fact what they expect from us.

## **Why would you recommend to add Emdogain to a scaling and root planing procedure?**

Emdogain is a gel of enamel matrix derivate proteins and has been well documented over the last 20 years. The benefit of EMD is its powerful biological effect, and histological studies have detected the formation of new periodontal tissue. When applied in the periodontal pocket, Emdogain helps to improve the clinical attachment level [1]. The principle characteristic is to improve and speed up the wound healing. When we perform a scaling and root planing procedure, the aim is to make the root surface smooth and ready to accept a new attachment of the tissue. Emdogain supports this biological process. This is valid for surgical flap procedures, especially for minimally invasive periodontal surgery [2,3], as well as for non-surgical procedures without flap.

## **You have done some research with Emdogain flapless. What are your results so far?**

Yes, I have been working on the topic in collaboration with *Professor Fabrizio Guerra* and Sapienza University. We are following a research entitled “Non-surgical treatment of periodontal pockets in combination with enamel matrix”. Furthermore we are studying the healing speed of soft tissue after surgery. First data show that the application of Emdogain on a surgical wound accelerates the healing by two weeks, which is a considerable improvement for the patient.

References available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)

**Thank you for the interesting interview, Dr Pandolfi.**

MT ■



EDI Journal Project Manager My To and Dr Andrea Pandolfi



## Osteology Barcelona 2019

# Welcome to the next “regeneration”

The upcoming International Osteology Symposium will take place from Thursday 25 to Saturday 27 April 2019 in Barcelona, Spain. The well-established symposium focusing on oral regeneration therapies not only has a new location but will also feature new topics, new formats and new speakers – all under the new title “The next **regeneration**”.

The chairmen of Osteology Barcelona 2019 are *Christoph Hämmerle*, Switzerland, and *Maurício Araújo*, Brazil. The Scientific Programme Committee also includes *Pamela K. McClain*, USA, *Mariano Sanz*, Spain, and *Istvan Urban*, Hungary.

In their welcome letter the chairmen explain, “The title ‘The next **regeneration**’ combines the key aspects of the symposium in Barcelona: on the one hand, the next generation of regenerative therapies, for example the latest developments in techniques and technologies; and on the other hand, the next generation of dentists, not only as attendees of the programme, but also featuring upcoming experts in the field of oral tissue regeneration.”

Accordingly, the Scientific Programme Committee has planned specific sessions with young dentists presenting oral tissue regeneration in a nutshell, and also special sessions for researchers. Furthermore, innovative concepts and formats, such as the Osteology Case Session, will also be part of the

programme, allowing more clinicians to actively participate.

“But despite all the new aspects, one thing has definitely not changed”, the chairmen further explain. “In April 2019, the International Osteology Symposium is again the place to be for all oral and maxillofacial surgeons, periodontists and oral health professionals interested in implant dentistry and regenerative therapies, where internationally renowned experts will present the current state of knowledge and research, and link science with practice in oral regeneration.”

For three days, the participants at Osteology Barcelona 2019 will have the possibility of delving intensively into the current state of knowledge and research in oral tissue regeneration, and also getting a glimpse into the future, with novel techniques and materials.

The International Osteology Symposium will be held at the CCIB (Barcelona International Convention Centre) which is an integral part of Diagonal Mar, the newest section of Barcelona’s seafront. The CCIB is situated in the heart of the technology and business district. The modern building directly at the seafront with its high-level facilities is an excellent venue for a unique event.

The Osteology Foundation is looking forward to welcoming its international guests in Barcelona in April 2019.

Dr Heike Fania ■



**More information**

[www.osteology-barcelona.org](http://www.osteology-barcelona.org)

## Understanding ISQ diagnostics

Welcome to the 10th Annual Osstell Scientific Symposium at EAO 2018 in Vienna, Austria. The symposium will take place on 11 October 2018 from 10.30 to 12.30 am. Under the headline “Confidence and predictability in implant treatments and empowering new treatment techniques”, four well-known experts will show how Resonance Frequency Analysis (RFA) guides and facilitates clinical decision making in dental implantology.



The attendees will get important information on advanced surgical techniques and how Osstell facilitates their development. The speakers will demonstrate why Osstell is an objective method of determining implant stability in all treatment phases, based on more than 20 years of clinical experience and 900 scientific articles published. Specific cases will be presented, accompanied by live polls of the audience. A focus will also be put on educational models and online platforms empowering clinicians to be more successful in their treatments.

The speakers are *Dr Marcus Dagnelid* from Sweden, who also serves as moderator, *Assoc. Professor Ulrike Kuchler* from Austria, *Dr Paul S. Rosen* from the USA and *Dr Francisco Teixeira Barbosa* from Spain.

The symposium is free and open to all EAO attendants on a first come first served basis. Reservations for a seat at the symposium can be made by registering on the Osstell website. ■

### More information and registration

[www.osstell.com/eao2018/](http://www.osstell.com/eao2018/)

## A world of expert knowledge

Geistlich Biomaterials, Switzerland, has launched a new website, [www.regeneration-expert.com](http://www.regeneration-expert.com). The novel blog is a wealth of knowledge for anyone who is interested in guided bone and tissue regeneration and a repository of stories about the “miracle of regeneration” in nature, medicine and dentistry.

The blog is aimed at clinicians – and maintained by clinicians. Most articles are written by leading international dentists or researchers, and the questions, controversies and developments discussed in the blog are also topics at the most recent dental congresses.

Peri-implantitis, minor bone augmentation, major bone augmentation, the planning and diagnostics of regenerative therapies, alveolar ridge preservation after tooth extraction, risks and complications, minimally-invasive approaches and soft tissue regeneration are some of the topics debated on [www.regeneration-expert.com](http://www.regeneration-expert.com).

Expertise made accessible: Practitioners who want to learn about the key steps in planning prior to immediate implant placement, wonder what to take into account when treating a patient on

bisphosphonates or how to proceed after extracting a tooth will find answers on the website and are welcome to join the discussion. ■

### More information

[www.regeneration-expert.com](http://www.regeneration-expert.com)





Nobel Biocare invites to 2019 Global Symposium in Las Vegas

Photo: fotolia/lucky-photo

# “Knowledge changes everything”

Dental professionals should mark their calendars for the 2019 Nobel Biocare Global Symposium which will take place in Las Vegas under the theme “Knowledge changes everything”. Featuring a change of location, programme and venue, the potent combination of expert knowledge alongside new innovations to be revealed will mark a true transformation in implant treatment care.

Groundbreaking solutions, ranging from smarter implant designs and the next evolution in site preparation to everything dental professionals need to further enhance the patient treatment journey with new digital solutions, will be available for them to discover and experience live.

Confirming the increased demand for more skill-enhancing training and education, the event has expanded in size and is planned to attract up to 3,500 participants from around the globe. Steered by a Scientific Committee composed of *Dr Sascha Jovanovic*, *Professor Jill Helms*, *Professor Joseph Kan*, and *Dr Jay Malmquist* (all USA), *Dr Lin Yeh* (China), *Ass. Professor France Lambert* (Belgium), *Dr James Chow* (Hong Kong), *Professor Paulo Malo* (Portugal), *MDT Luc Rutten* and *Professor Eric Rompen* (both Belgium) and chaired by *Dr Peter Wöhrle*, USA, the programme will feature most renowned experts in implant dentistry and oral rehabilitation. Overall, it will bring together more than 100 speakers consisting of researchers, clinicians and laboratory technicians and offer innovative podium lectures in addition to master classes and engaging hands-on courses.

Participants will have the opportunity to follow different educational streams or create their own learning programme suited for their own individual treatment goals.

*Hans Geiselhöringer*, President, Nobel Biocare said, “Next year’s Nobel Biocare Global Symposium is fueled by the power of knowledge and the positive impact it can have on dentists’ skills, daily practice and their patients, through new solutions that will change the course of innovation forever.”

The 2019 Nobel Biocare Global Symposium will take place from 27 to 29 June 2019 at the Mandalay Bay Hotel and Convention Center in Las Vegas, USA. To sign up for updates, visit the correspondig web-site using the below QR code.



**More information**

[www.nobelbiocare.com/global-symposium-2019](http://www.nobelbiocare.com/global-symposium-2019)

Campus Anthogyr in Sallanches, France

# A state-of-the-art training centre at the foot of Mont-Blanc

Situated at Anthogyr's headquarters in Sallanches, in the vicinity of Chamonix, Mont-Blanc and Megève, Campus Anthogyr is dedicated to the training of dentists, prosthetists and dental assistants. Its main objective is to develop the expertise and practical skills of dental professionals and their practices towards even more specialization.

Every year, more than 850 practitioners from all over the world are trained by Anthogyr's team of about 50 recognized professionals in France and worldwide. The centre with its first-class infrastructure as well as a reception and relaxation area with catering facilities.

The training programme at Campus Anthogyr is built around three levels:

- "Organize and develop" focusses on management and strategic organization tools which help to develop the dental practice. It also addresses the training of implantology dental assistants.
- "Improve" offers trainings aimed at improving the practitioner's knowledge in specific subjects (first sinus lifts, soft tissue management, and alike).
- "Confirm" addresses dentists practicing implant dentistry and seeking to learn about more advanced techniques such as "All-on-6" or "All-on-4", immediate placement, immediate loading, and so on.

For practitioners from around the world who are just starting to work with Anthogyr, numerous seminars are held in Sallanches. Each one starts with a one-day introduction to the company and includes a visit to the production site, followed by hands-on work using Anthogyr's products. The course continues with a clinic day under the guidance of an implantologist.

*Anne Bernard*, Training Manager and Director of Campus Anthogyr, describes the company's motivation and experiences: "The objective is for each participant to be able to implement the techniques they have learnt as soon as they finish the training course. And it works! Many participants tell us that they have made changes to their processes and revitalized their surgeries after finishing the course." Implantology instructor *Dr Bernard Lazaroo* considers: "More than the technical tools or the equipment we use, it is the dentist who affects whether implant surgery succeeds or fails. Hands-on experience is required to control movements accurately and to advance towards greater specialisation and success. This occurs naturally through peer-to-peer learning."

## More information

[www.anthogyr.com](http://www.anthogyr.com)

Course participants watching a surgery live and close-up on screen.



## W&H Dentalwerk launches own Instagram account

# @whdentalwerk: moving with the times

Instagram is all about capturing and sharing authentic, relevant and cutting-edge content. Today, the video and photo platform has more than 800 million users worldwide, including many dentists and dental assistants, which accounts for the surprising levels of interest in images from the dental industry. W&H seizes the chance to connect with its professional dental customers via this new communication channel by launching its very own innovative and cutting-edge Instagram account.



W&H Marketing  
Director Anita  
Thallinger

More and more dentists and dental practices are using social media to help attract new customers and build trust in their services. In fact, there are now more than three million posts online with the hashtag #dentist. As a specialist in dental solutions, W&H is now getting involved in this conversation and reaches out to dentists and dental practices with its Instagram account @whdentalwerk. The primary aim is to improve awareness of the brand among younger target groups.

The new Instagram account forms part of a cross-media campaign, which also incorporates the company's existing social media activities on Facebook,

YouTube, LinkedIn and W&H's very own video channel. Hashtags such as #whdentalwerk, #whdental and #patient2fan will be used to increase interaction and get users involved in W&H campaigns.

### User-generated content

"Our Instagram account will promote the unique corporate culture of our modern family company through our slogan 'People have priority'. As well as sharing our own messages, we also want to encourage our customers to produce their own content", explains *Anita Thallinger*, W&H Marketing Director. "Examples could include before-and-after photos or snapshots from their everyday work, which showcase close and trusting relationships between dentist and patient."

### Social media are popular among the dental community

Social media influencers play a key role in shaping users opinions. As with any industry, there are numerous experts and advisers from the dental community whose online contributions are very highly regarded. It is not rare to find dental practices and even dentists with more than 200,000 followers.

"Collaboration with these key opinion leaders is a key component of W&H's digital strategy. This is the only way to develop a reputation as a genuine contributor, and ultimately generate popularity and trust among users", explains *Anita Thallinger*. ■



[More information](#)

[www.wh.com](http://www.wh.com)

## Planmeca Romexis software

# Better care through software

As the world has shifted to a more software-centred approach, dentistry has followed suit – leading to expanded possibilities, increased efficiency and improved levels of care.

From televisions to mobile phones and even cars, software has disrupted several industries, as its role has become significantly more important.

Dentistry is no different. With high-tech hardware as a solid foundation to build on, pioneering dental companies have turned to software in an effort to elevate usability to new levels and to make sure users receive extended returns on their investments. The entire experience of working in dentistry is increasingly defined by software.

Users today expect – and deserve – more than ever before. Dental equipment has a long life expectancy, as it is usually used for several years or even for over a decade. This means that equipment users strongly rely on software updates and upgrades to get the latest features, to enjoy optimal diagnostic quality and to ensure patient safety.

Planmeca has been leading the charge ever since the late 1990s – first with Planmeca Dimaxis and in the 2000s with the Planmeca Romexis software platform. The company's visionary approach foresaw the changing climate in the world of technology and has allowed them to really focus on providing premium usability. Planmeca continually introduces new products that work together seamlessly and meet the growing needs of today's dental professionals.

One could even say that Romexis is the brain behind Planmeca's equipment. The software offers several key benefits that competitors cannot easily match and which help to make daily work more efficient and enjoyable for users around the world.

Typically, clinicians need to rely on several completely different software programs for different purposes – they will have one software for panoramic imaging, another one for CBCT imaging and a third one for CAD/CAM dentistry, for example. Switching between different software programs can be inefficient, disrupt the workflow and reduce time for patient care.

Fortunately, unlike other software programs, Romexis allows working on all imaging and CAD/CAM data in the same software. It also provides a wide array of tools to match all types of specialist needs.

Planmeca calls Romexis an all-in-one software, because it truly is a singular solution for all needs:

- All imaging – support for open file formats ensures smooth importing and exporting
- All specialities – characterized by a wide variety of tools and features for specific tasks
- All clinic sizes – a single centralized database allows easy access to clinical data
- All operating systems – runs on Windows and Mac with applications for iOS and Android also available.

Romexis offers a completely integrated digital workflow that covers all treatment steps – from scanning and diagnosing to planning and creating. Manufacturing can be done either by 3D printing or by milling. Equipped with extensive specialist tools, secure communication options and seamless integration with Planmeca equipment, the software allows users to either complete the entire workflow directly at their clinic or to flexibly outsource any part of it. The choice is entirely up to them. ■

### More information

[www.planmeca.com](http://www.planmeca.com)



The Romexis software provides a wide array of tools to match all types of specialist needs.

## Modern instrument management with the Aesculap Tray System

# Instrument reprocessing made easy

Strict legal requirements concerning reprocessing of medical devices are often criticized with regard to cost. However, in the medium term, complying with legal guidelines and laws for hygiene does not necessarily mean higher cost while establishing a modern process organization. Quite the contrary: Modern instrument management with a tray system helps to save costs in the dental practice.



The protection of valuable instruments is only one of the many advantages of Aesculap's modular system of dental containers.

Imagine a reprocessing which fulfills the following requirements: high safety for your staff and patients against infections, efficiency by avoiding too many work steps and disposable packaging, legal security by standardized and documented processes, fast and comfortable supply of the instruments at the dentist's chair, less instruments (in bigger practices) due to a balancing of capacities, better protection of instruments, reduction of detergents and disinfectants, and last but not least a relaxed workflow. Meanwhile, a gold standard has been established in many dental practices: 1. mechanical cleaning and disinfection in validated cleaning and disinfection devices ("cleaning and disinfection unit" or washer-disinfector) and subsequent sterilization in a vacuum autoclave; 2. organizational processes in standardized patient- or indication-related trays and sterile container systems. Instrument trays are preferably no longer stored in treatment rooms but in a centrally located cabinet. This allows the capacity in the different treatment rooms to be balanced and thus the number of trays to be reduced. In addition, this system provides an overview of the available stock of instruments in the practice.

The sterile container is brought to the doctor's office and opened on the desk. The indication related tray is taken from the container under sterile conditions, put onto the sterile instrument placement area and opened. With just a few hand movements, all instruments are ready for treatment. After the treatment, the instruments are thoroughly stored in the tray after removal of coarse impurities, such as cement residues. The closed tray is safely brought back to a reprocessing room and can be put into the washer-disinfector immediately. Preliminary cleaning or disinfecting is not necessary if the procedure is started within four hours. The practice team is

not exposed to the danger of stab wounds or contamination in the reprocessing room.

The instruments, especially probes, periodontal instruments, scissors and needle holders, are well protected as they are fixed in the tray. This leads to a longer lifespan of the instruments. A further important condition is the use of appropriate trays, which are designed in an open way to make sure that no areas are left uncleaned.

After cleaning, disinfection and visual control the dried tray is packed into the sterile container. While an alternative foil or fleece packing is seen as a sterile barrier system which only allows an unprotected storage for 48 hours, a container serves as a protective package and thereby fulfills the demands of a packaging system, which means that the sterile storage time can be expanded to up to twelve months. Compared to fleece wrapping, the purchase price of a daily used container is paid off in less than 1.5 years – without any cost for disposal of used packaging or maintenance. The container can be sterilized in the autoclave and is then stored again in the central storage cabinet, waiting for its next usage.

Containers can be equipped with sterilization labels or with barcodes. With an additional software, a documentation of the entire sterilization process of every single instrument is possible with just one scan, referring even to the individual patient. All procedures are simple, easy, safe and economic. A "light" version of the described approach can be applied on semi-critical products or common diagnostic instruments. The description of the standardized procedures in the quality handbook is considerably simplified compared to the manual reprocessing of instruments. ■

**More information**

[www.aesculap.de](http://www.aesculap.de)

Osstell Beacon

# The next leap in implant diagnostic instrumentation

Osstell, the developer of the ISQ diagnostic technology (implant stability quotient), now presents the next leap in the evolution of implant diagnostic instrumentation: the Osstell Beacon, an innovative and highly intuitive tool designed to guide implant treatments for more predictable results.

The dental implant market has changed over the past few years. There are now more dentists with less experience within implantology and a generation shift with different expectations is coming. Clinicians are facing more complex decisions as there is an increase in patients with risk factors as well as increasing demands for shorter treatment times. Digital planning and workflows are redefining protocols and techniques. There is thus a need for objective tools to increase efficiency, and to guide and optimize the implant treatment for both complex and more straight-forward cases, making ISQ diagnostics a necessary and objective key value to help improve outcomes and quality.

“We have listened to our users who need easy to use and intuitive tools to assess implant stability. Accordingly, we have developed a complement to the more comprehensive Osstell IDx to meet the needs from both large university clinics and small private practices. Although advanced on the inside, we believe that the Osstell Beacon will be appreciated for its ease of use and making the

stability measurement very intuitive. Having the ISQ data presented with a coloured stability guidance, which is a result of the clinical evidence from using our ISQ scale, will be especially valuable for clinicians that are new to our technology”, says *Stefan Horn*, VP Product Development of Osstell.

The Osstell Beacon was announced and presented at the EuroPerio 9 event in Amsterdam in June. Initially, it will be available in the EU and the US upon regulatory approval. Additional markets will follow pending regulatory approval processes. ■



## More information

[www.osstell.com/beacon/](http://www.osstell.com/beacon/)

## teamwork bookshop

### 3D Composites – Natural Shading & Shaping

by Ulf Krueger-Janson



Contains an instruction sheet for an uncomplicated layer construction as well as hints for the correct handling of the appropriate materials and tools.

Hardcover  
264 pages, 1300 pictures

**178,- €** plus shipping

### Past << Future:

### Envision 77 Heart Beats

by Naoki Hayashi



Master ceramist Naoki Hayashi presents a portfolio of beautiful restorations in a unique book reflecting his high quality work and unique style.

Hardcover in slipcase  
320 pages with excellent four color photographs

**359,- €** plus shipping

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☎ +49 8243 9692-16

📠 +49 8243 9692-22

TEAM  
WORK  
MEDIA

dental publishing

## MIS launches enhanced Seven Implant System

# Backed by years of research and supporting data

This past June, at the EuroPerio9 congress in Amsterdam, Netherlands, MIS launched the enhanced Seven Implant System. Several key features have been added, making the novel internal hex implant even better. The biological stability and predictable aesthetics of the Seven, combined with the extensive R & D process which has led to these improvements, have given the Seven a potential advantage in soft tissue preservation and growth as well as an array of restorative benefits.

In a survey conducted pre-release, more than a dozen doctors were given the enhanced prototype for testing on close to 100 cases. The overwhelming majority reported excellent results in terms of insertion control, handling and initial stability. One of them was *Dr Alon Schifter*, who provided feedback, stating that “the Seven implant brings the best of all worlds: a very gentle drilling protocol, a relatively easy, almost intuitive insertion process, a very conservative insertion torque of 40–45 Ncm and a very good primary stability at the same time.” Other feedback included *Dr Burak Hasar* who confirmed that “the controllable smooth insertion is perfect”.

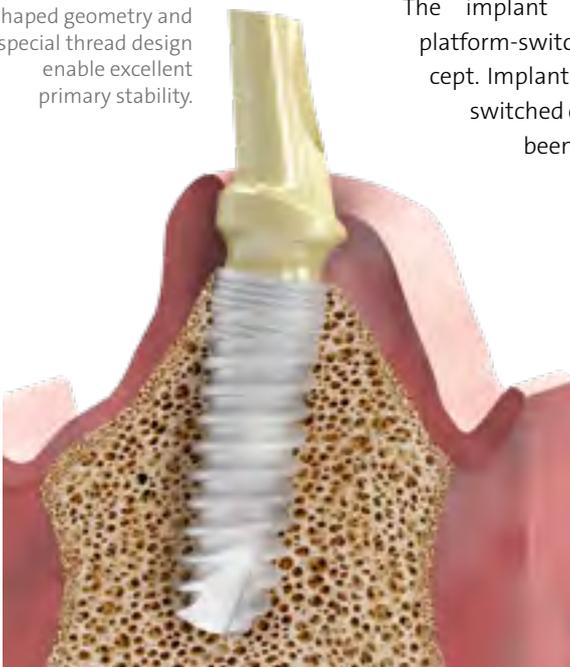
The implant incorporates the platform-switching design concept. Implants with a platform-switched configuration have been shown to exhibit

less bone loss when compared to non-platform-switched implants, which may lead to soft tissue preservation and growth. *Tali Jacoby*, product manager at MIS, states that “the key principles at MIS are the critical clinical parameters which are important for the practitioner. This is the reason why we have added features which meet the needs of the market to improve the daily use of the implant for both dentist and patient.”

The Seven’s root-shaped geometry and special thread design enable excellent primary stability, offering the right choice for a wide range of clinical cases and allowing for a simpler and faster implant placement. With a new, comprehensive concept for enhanced aesthetics and better bone preservation in mind, and in order to support the advanced new features of the Seven Implant System, an additional line of concave abutments has also been added. The concave emergence profile was designed for a larger gingival volume, and along with its gold shading, offers better aesthetic results.

Seven implants are available in 3.30, 3.75, 4.20, 5.0 and 6.0 mm diameter and 6, 8, 10, 11.5, 13, and 16 mm length. Every Seven implant is packed and supplied with a sterile, single-use, stainless-steel final drill. The drill is custom-made, in accordance with the specific geometry and design of the Seven implant, achieving an osteotomy that allows the best possible positioning of the implant. ■

The Seven’s root-shaped geometry and special thread design enable excellent primary stability.



[More information](#)

[www.mis-implants.com](http://www.mis-implants.com)

Immediacy Solution by TRI

# Immediate stability – strong as a rock

During EuroPerio9 in Amsterdam, the Swiss dental implants solutions provider TRI presented its innovative TRI Immediacy Solution that provides the experienced clinician with state-of-the-art treatment options.

With the innovative TRI BoneAdapt Technology, TRI offers a smart and aggressive implant design that challenges existing industry standards in terms of primary stability (based on in vitro bench testing in collaboration with the University Center for Dental Medicine, Basel, Switzerland). The implant body was designed to provide maximum bone adaptation across the different bone regions along the implant. This allows for innovative treatment techniques in immediate loading.

## All-on-TRI treatment

The most prominent example for immediate loading indications is the proprietary All-on-TRI Solution. It provides a fast and reliable restoration for fully edentulous patients with limited bone volume on only four implants in combination with the innovative TRI angled screw-retained abutment. The benefit for clinicians and patients is a proven treatment option with immediate stability, resulting in instant satisfaction and a higher quality of life on the very day of surgery.



The new pink anodized Multi-unit Ti-Base.

The angled screw-retained abutment features the consistent and proven TRI Soft Tissue Concept. Via the TRI+ Digital open interface, All-on-TRI cases can easily be planned, placed and restored with leading technology partners in digital dentistry.

The new pink anodized Multi-unit Ti-Base can be polymerized in the existing prosthesis to serve as an immediate screw-retained long-term temporary restoration. To create the final restoration, the Multi-unit Ti-Base can be customized in four predefined lengths, both physically by the technician and virtually in the respective CAD software.

## Digital compatibility across all platforms

All offered TRI Solutions are supported by TRI+ Digital Solutions, which guarantees a universal implant open interface to leading technology partners in digital dentistry. Newly added partners are Planmeca, Exoplan, Nemetec and BlueskyBio. In contrast to numerous closed digital systems, TRI helps to create more transparency and to eliminate all barriers for the respective treatment. Linked with the lean and intelligent dental implant system of TRI, treatments from simple to complex have never been easier.

## New prosthetic kit

During EuroPerio9, TRI also presented a new version of its prosthetic kit that contains all the necessary tools to handle healing components and to place provisional or final restorations. Just as the TRI Surgical Kit, the new prosthetic kit features the proven retention system without grommets, validated for automated cleaning in washer-disinfectors. The workflow has been streamlined, and the improved versions of the prosthetic drivers are now also included in the prosthetic kit. An additional flexible compartment allows for storing and sterilization of any components for the individual needs of the dental practitioner. ■

## More information

[www.tri.swiss](http://www.tri.swiss)



The TRI Prosthetic Kit contains all tools necessary for prosthetic restorations.



## Bego Implant Systems

## Osteotome Set

**Product**  
Osteotome Set

**Indication**  
Bone preparation

**Distribution**  
Bego Implant Systems  
GmbH & Co. KG  
Wilhelm-Herbst-Straße 1  
28359 Bremen  
Germany  
www.bego.com

The Osteotome Set for Bego Semados implants is now provided by Ustomed\* and is of high quality and easy to handle. The instruments of the Osteotome Set are used for the condensing preparation of the local bone in case of soft bone conditions (D3/D4, according to *Lekholm and Zarb*) to achieve a sufficient primary stability upon the insertion of the implants. They preserve the bone, that would be removed during an implant bed preparation with rotating tools. The osteotomes are also used to lift the maxillary sinus floor. The depth marks, which are adjusted to the implant lengths, enable a safe preparation



of the cavity. To order the Osteotome Set, visit the Ustomed\* website at [www.ustomed.de/en](http://www.ustomed.de/en) under Bego\_RS RSX\_Set and Bego\_SC SCX\_Set. ■

\* Commercial name/registered trademark of a business that does not belong to the Bego Group.

## Geistlich Fibro-Gide

**Product**  
Collagen matrix

**Indication**  
Soft-tissue regeneration

**Distribution**  
Geistlich Pharma AG  
Bahnhofstrasse 40  
6110 Wolhusen  
Switzerland  
www.geistlich-pharma.com

Geistlich Pharma AG continues to drive the development of collagen-based products tailor-made for specific dental procedures. The latest innovation is the collagen matrix Geistlich Fibro-Gide, a porcine, resorbable, and volume-stable collagen matrix intended for soft tissue regeneration at the alveolar ridge [1]. It is designed for thickening soft tissue around implants and for recession coverage without the need for a second surgical site. A smart cross-linking of the reconstituted collagen provides the volume stability [1,2]. The porous network allows blood clot stabilization and the ingrowth of host cells [2,3]. Besides, it supports angiogenesis,

formation of new connective tissue, and stability of the collagen network in submerged healing situations [4,5]. Animal models have also shown good integration of Geistlich Fibro-Gide into the surrounding soft tissue while maintaining stability [3].

Clinical data demonstrate that Geistlich Fibro-Gide shows non-inferior results to connective tissue grafts in terms of change in soft tissue volume over time [4,6,7]. Thus, Geistlich Fibro-Gide has proven to be the alternative connective tissue graft, providing stable augmented soft tissue in terms of quality and quantity, plus no need for a second surgical site, and a lower perception of pain [4,6,7].

Geistlich Fibro-Gide is the result of more than 1,000 prototypes and ten years of research. Geistlich Pharma AG has drawn from its vast experience in researching collagen-based products and scientific network. The close collaboration with leading clinicians guarantees that Geistlich Pharma AG will carry on with clinical and experimental research, thus offering a product that really meets the clinical demand. ■

References available at [www.teamwork-media.de/literatur](http://www.teamwork-media.de/literatur)



## Thommen Medical Novaloc Retentive System

A modern treatment option for edentulous patients who utilize implant-retained removable prosthetics. The exacting expectations for removable prosthetic restorations require well thought-out solutions. The Novaloc Retentive System is characterized by many remarkable features:

- Simple application
- Innovative materials
- Improved wear resistance
- Increased patient comfort

Due to the innovative carbon-based ADLC-coating (amorphous diamond-like carbon), an extremely smooth surface is created. The combination of ADLC and PEEK significantly reduces the loss of retention when compared to other combinations. These features allow the Novaloc Retentive System to satisfy the highest requirements for wear resistance and long-term reliability of a hybrid denture.

The Novaloc abutments developed for Thommen Medical implants and the easy-to-use tools also facilitate prosthodontic and dental applications.

A multitude of implant related clinical situations can be resolved using the Novaloc Retentive System with its comprehensive selection of abutments. ■

**Product**  
Retentive system

**Indication**  
Implant-retained prosthetic restorations

**Distribution**  
Thommen Medical AG  
Neckarsulmstrasse 28  
2540 Grenchen  
Switzerland  
[www.thommenmedical.com](http://www.thommenmedical.com)



## Medentika MedentiGuide system

Since the first quarter of 2018, Medentika has been offering drill sleeves for guided implant surgery. Thus, the last pillar for a complete digitized workflow is now available – starting with the planning to the implant insertion to the final restoration. The MedentiGuide system is a very precise but easy to handle sleeve-in-sleeve system. The sleeves are connected by a bayonet catch and are therefore se-

curely fixed during use, but can still be exchanged easily and quickly during the surgical procedure. As a first step, they are available for the Medentika implant lines Microcone and Quattrocone. ■

**Product**  
Drill sleeves

**Indication**  
Guided implant surgery

**Distribution**  
Medentika GmbH  
Hammweg 8–10  
76549 Hügelsheim  
Germany  
[www.medentika.com](http://www.medentika.com)





# MEMBERSHIP REGISTRATION FORM

I hereby apply for a membership in the BDIZ EDI  
(European Association of Dental Implantologists)

Name: .....

First Name: .....

Country: .....

Zip code / City: .....

Street: .....

Phone: .....

Fax: .....

E-Mail: ..... @ .....

Homepage: .....

Date of Birth: .....

Practicing implantology since: .....

Member of other Societies:

ICOI  BDO  DGI  DGZI  DGMKG  EAO

Continuing education Courses: .....

Fellowship status / diplomate status in implantology

Yes  No  Organization .....

Entry in BDIZ EDI Directory:  Yes  No  
(For information on BDIZ EDI Directory of Implant Dentists see overleaf)

The annual membership fee for:

## FULL MEMBERSHIP

- |   |             |
|---|-------------|
| <input type="checkbox"/> Full member - clinical   | 345,00 Euro |
| <input type="checkbox"/> Assistant dentist / young professional<br>(up to 5 years after graduation) | 172,50 Euro |
| <input type="checkbox"/> Second membership / family member  | 172,50 Euro |

## EXTRAORDINARY MEMBERSHIP

- |  |                  |
|--|------------------|
| <input type="checkbox"/> Co-operative Member<br>(Professionals without practice<br>and dental technicians) | 165,00 Euro      |
| <input type="checkbox"/> Students  | non-contributory |
| <input type="checkbox"/> Supporting Membership<br>(Companies etc.)   | 530,00 Euro      |

## Payment

Membership cannot be confirmed until payment is processed. Method of payment is by bank transfer. Please use the following banking account.

Commerzbank Bonn

Account Number: 310 144 100  
Bank Code: 380 400 07  
IBAN: DE96 3804 0007 0310 1441 00  
BIC: COBADEFFXXX

Membership cards will be sent upon receipt of the annual subscription fee.

City / Date : .....

Seal / Signature: .....

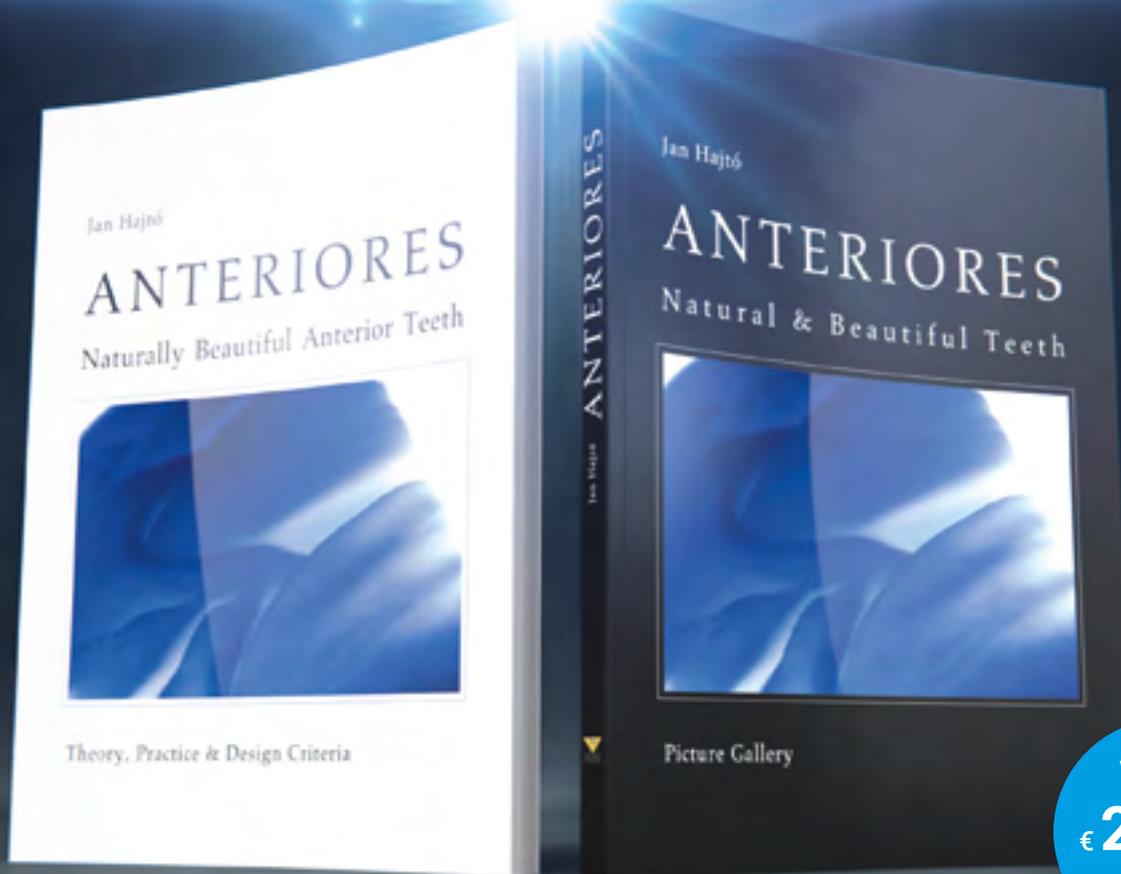
Please return the completed registration form to:

European Association of Dental Implantologists e. V.  
Mühlenstr. 18 • D-51143 Köln  
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## Calendar of Events

	Event	Location	Date	Details/Registration
10/2018	ITI Congress Greece & Cyprus	Athens Greece	5 – 6 October 2018	International Team for Implantology <a href="http://www.iti.org/congressgreece-cyprus/">www.iti.org/congressgreece-cyprus/</a>
	EAO Annual Scientific Congress	Vienna Austria	11 – 13 October 2018	EAO European Association for Osseointegration <a href="http://www.eao.org/eao-congress">www.eao.org/eao-congress</a>
	Geneva Concept Week	Geneva Switzerland	15 – 19 October 2018	University of Geneva <a href="http://thegenaconcept.com">thegenaconcept.com</a>
11/2018 12/2018	SwissPerio Education Week	Zurich Switzerland	3 – 9 November 2018	Swissperio Education <a href="http://swissperio.com/course/swissperio-education-week/">swissperio.com/course/swissperio-education-week/</a>
	ADF French Dental Association Annual Meeting	Paris France	27 November – 1 December 2018	Association Dentaire Française <a href="http://www.adf.asso.fr">www.adf.asso.fr</a>
2/2019	23rd UAE International Dental Conference & Arab Dental Exhibition	Dubai VAE	5 – 7 February 2019	Index Conferences& Exhibitions <a href="http://www.aeedc.com">www.aeedc.com</a>
3/2019	14th BDIZ EDI Expert Symposium	Cologne Germany	3 March 2019	BDIZ EDI <a href="http://www.bdizedi.org">www.bdizedi.org</a>
	IDS 2019 38th International Dental Show	Cologne Germany	12 – 16 March 2019	Koelnmesse GmbH <a href="http://www.ids-cologne.de">www.ids-cologne.de</a>
	ITI Congress Iberia	Porto Portugal	22 – 23 March 2019	International Team for Implantology <a href="http://www.iti.org/congressiberia/">www.iti.org/congressiberia/</a>
4/2019	International Osteology Symposium	Barcelona Spain	25 – 27 April 2019	Osteology Foundation <a href="http://www.osteology.org">www.osteology.org</a>
6/2019	Nobel Biocare Global Symposium	Las Vegas USA	27 – 29 June 2019	Nobel Biocare <a href="http://www.nobelbiocare.com">www.nobelbiocare.com</a>

## EDI Journal – Information for authors

**EDI Journal** – the interdisciplinary journal for prosthetic dental implantology is aimed at dentists and technicians interested in prosthetics implantology. All contributions submitted should be focused on this aspect in content and form. Suggested contributions may include:

- Original scientific research
- Case studies
- Product studies
- Overviews

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Pages should be numbered consecutively, starting with the cover page. The cover page should include the title of the manuscript and the name and degree for all authors. Also included should be the full postal address, telephone number, and e-mail address of the contact author.

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Each article should contain a minimum of 20 and a maximum of 50 pictures, except in unusual circumstances. Our publishing house attaches great importance to high quality illustrations. All illustrations should be numbered, have a caption and be mentioned in the text.

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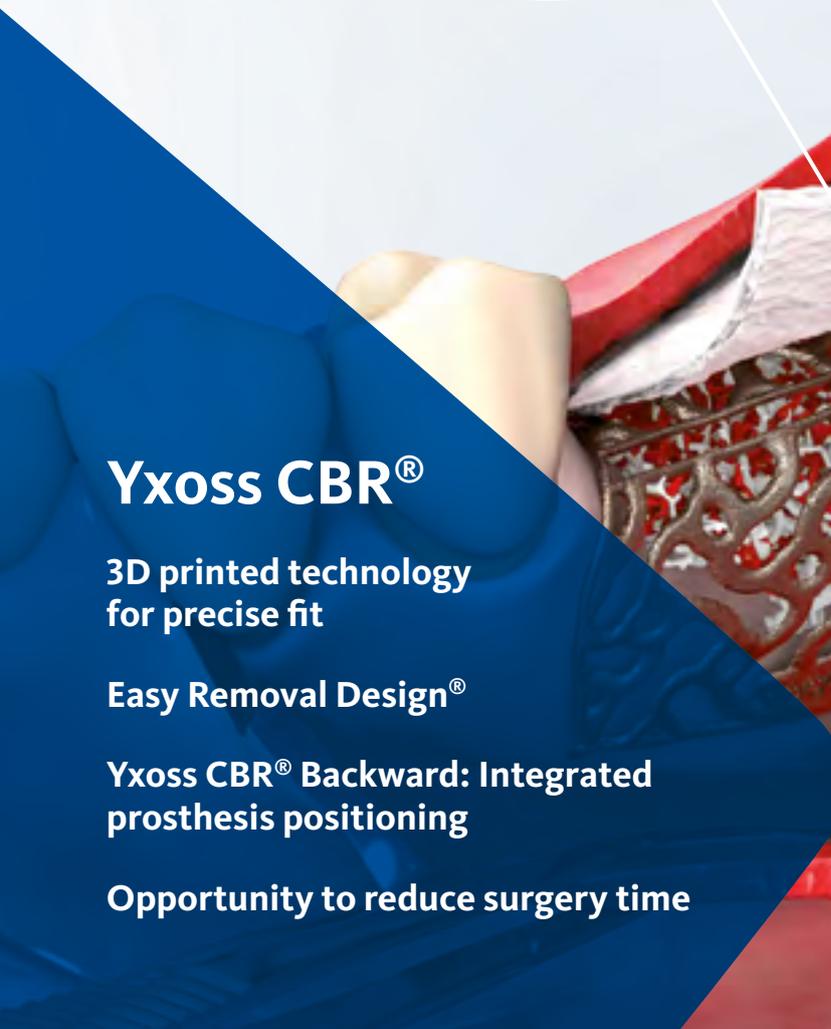
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