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EDI JOURNAL

TOPIC

10 years of EDI Journal

BDIZ EDI
Bundesverband der implantologisch tätigen Zahnärzte in Europa e.V.
European Association of Dental Implantologists

»EDI News: Looking back on 10 years of EDI Journal · 10th BDIZ EDI Expert Symposium · New EuCC Guideline for the management of peri-implantitis · Impressions of the 36th IDS 2015 **»European Law:** Is the risk of a product defect itself a product defect? **»Clinical Science:** SEM surface analyses of 120 sterile-packed implants **»Case Studies:** Single narrow-diameter implant restoration in a maxillary molar extraction socket **»Product Studies:** Immediate implant placement in the aesthetic zone · Closing narrow gaps with implant-supported crowns

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TTIP: Keep your hands off health care!

Some issues seem way out of the way of what we usually do in our offices. Issues that slosh over to us from Brussels and Strasbourg will generally remain diffuse for those who only watch such events out of the corner of one eye. For us at BDIZ EDI, however, it is important to recognize regulatory trends, identify changing conditions and examine legal projects at an early stage in order to assess their impact on dental practitioners – and to respond where necessary. This is what happened in the context of the patient rights law, the German anti-corruption law, but also with regard to medical devices, dental amalgam or the attempts by the EU Commission to abolish the self-government of practitioners of the liberal professions, including physicians and dentists, ostensibly to promote competition.

A new term that has been making the rounds in the media for many months now appears to be only of passing interest for health care professionals: TTIP. Officially called the Transatlantic Trade and Investment Partnership, TTIP is a proposed free trade agreement between the European Union and the United States. Negotiations have been going on since July 2013, but the public in Germany took little notice until stories about "chlorine chickens" began making the rounds. (These sparked opposition to a previously little-known processing technique in the US meat industry, the use of chlorine to wash chickens after slaughter, a matter that has become a shibboleth for the entire TTIP discussion.)

TTIP intends to remove trade barriers, promote growth and reduce costs for companies in the EU and the USA. That is one side of the coin. The other side, critics claim, is that legal standards in the fields of environmental protection, consumer protection, health care, labour and social affairs could be classified as trade barriers.

Which brings us to what all this means to us dentists. For some time now, dentists' political representatives have been driven by the EU Commission's deregulation attempts with respect to the liberal professions in Germany. We at BDIZ EDI have repeatedly updated you on these issues; there have been motions and resolutions by the dental profession calling upon the European Commission to stay away from the liberal professions and from self-government in the medical and dental realms. Thanks to the Council of European Dentists (CED), which is monitoring developments in Brussels on dentists' behalf, we are well informed about new projects.

There is imminent danger with regard to the status of health care in the EU. Until now, the health sector in the individual member states had a special status, which is why it is exempt from the regulations of the Services Directive. But not only we at BDIZ EDI are alarmed by the negotiations on TTIP. The Presidents of the German Medical Association and the German Dental Association, the Chairs of the German Federal Association of Contract Physicians and the German Association of Contract Dentists and the President of the German Association of Pharmacists have stated on a joint declaration that the TTIP must not interfere with treatment quality, quick access to health care and the high level of patient protection in the EU. The German health system is guided by the principles of self-government and the liberal professions. The formal bond between private interests and the public interest that characterizes the self-governing bodies of the liberal professions has contributed considerably to high standards of professional ethics.

It is true that dentists in Germany are unhappy with the fee schedule for dentists, which has not been properly updated for decades and which does not reflect medical progress nor economic developments. Nevertheless, such a fee schedule is still characteristic of the liberal professions, whose members – including we dentists – perform personal, responsible and professionally independent intellectual services in the interest of our patients/clients and the general public on the basis of our professional skills. We do not just run a business. We take responsibility for the common good. Our self-governing bodies take on tasks in the area of patient protection and continuing professional development that would otherwise have to be paid for by the state – and ultimately the taxpayers.

There are established and traditional differences between countries in terms of the organization of their health sectors. Therefore, public health must continue to be the sovereign responsibility of each individual member state. So TTIP – keep your hands off health care!

Sincerely,
Christian Berger, Kempten, Germany
President of BDIZ EDI

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10 Years

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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.

Ogolnopolskie 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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10th anniversary of EDI Journal

"European implantology accelerates – the new EDI Journal will accompany the developments", wrote *Dr Helmut B. Engels*, former president of BDIZ EDI, in the very first issue of EDI Journal.

When the first issue of the European implant journal was launched in early 2005, it was obvious that Europe included not merely the grandeur of big politics, but also encompassed the minor things that encompass everyday practical routines. Its core topic was the oral rehabilitation of the partially edentulous patient.

Since then, many issues of EDI Journal have been published and read by a growing audience in Europe and in many other parts of the world. The journal looks through and beyond the vanishing borders of the European Union. It reviews topics ranging from EU politics to new developments in implant dentistry.

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. Since 2005, EDI Journal has frequently updated dental practitioners on EU health politics and on new standards in implant dentistry.

We keep on striving to deliver a high-quality magazine for the benefit of all dental practitioners in Europe and throughout the world.

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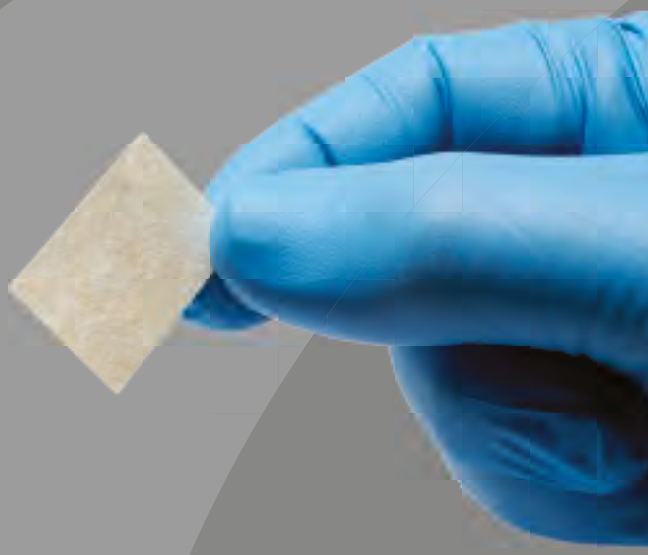

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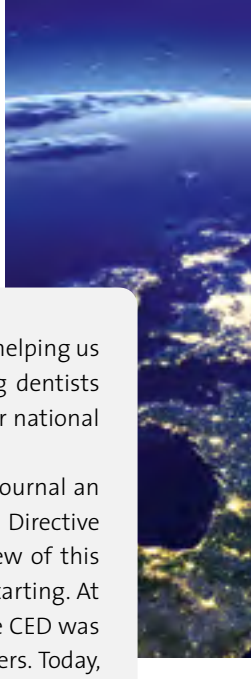

Council of European Dentists (CED)

Dr Wolfgang Doneus

As President of the Council of European Dentists (CED), an association that has represented the interests of practising dentists in the EU since 1961, it is part of my daily work to explain to dentists how they are affected by European legislation and initiatives in all aspects of their daily practice.

The CED works very hard on dentists' behalf on issues such as recognition of professional qualifications, professional competence and education, professional regulation and ethics, workforce planning, dental materials, medical devices, patient safety, infection control and many others. Yet it appears that the average dentist is still not aware of how much of his or her professional life is determined in Brussels.

I can only strongly support publications such as EDI Journal, the official journal of the European Association of Dental Implantologists that informs its members – and other dentists with an interest in dental implantology – about scientific progress in their field but also about European political developments.

I believe all dentists should keep themselves up to date with EU policy and legislation; whether or not we approve they have an impact on much of what we do, and the trend of recent decades shows that this state of affairs is likely to continue. EDI Journal can play an important role in helping us spread this message and in encouraging dentists to get involved in EU affairs through their national and European associations.

I had the honour to contribute to EDI Journal an article on the Professional Qualifications Directive in the spring of 2012 when the last review of this important piece of legislation was just starting. At that time, I wrote about the positions the CED was taking in contacts with EU decision-makers. Today, three years later, I am glad to report that our most important suggestions – ensuring that minimal training requirements for dentists include a basic training of five years and 5,000 hours, that there is a possibility to test migrating dentists' language knowledge and that there can be no "partial access" to the dental profession – have all been "taken on board" and are now part of the legislation.

I look forward to coming opportunities to share the CED's knowledge and news with EDI Journal readers and commend you on your important work during your first ten years.

Dr Wolfgang Doneus
President of the Council of European Dentists
www.eudental.eu

German Dental Association (BZÄK)

Dr Peter Engel

Oral implantology today is a fully established and dynamic discipline within dentistry, always open to new developments. This was not always the case, as the field was regarded with suspicion by many colleagues. Today, however, oral implantology has long since arrived in dental practices in Germany.

It is not least EDI Journal that has helped bring about this state of affairs in its ten years of its appearance in Europe – this is also true for me personally. The journal has assisted in establishing and updating recognized high standards within this discipline, throughout Europe, and to break ground for innovations such as CAD/CAM-based solutions or reduced-diameter implants. As a result, dentists today can offer their patients long-term and reliable treatment therapy alternatives that improve their quality of life in a sustainable manner.

I would like to give praise to EDI Journal for the fact that despite all the innovative and powerful developments in implantology today, it always puts the patient at the centre of attention. Not everything that is possible today in oral implantology also makes sense for every patient.

I am confident that EDI Journal will continue to play an important part in promoting oral implantology among colleagues and among the population at large. I wish the makers of EDI Journal every success and would like to thank them for their excellent work!

Dr Peter Engel
President of the
German Dental Association (BZÄK)
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Anniversary salutations – 10 years of EDI Journal

Photo: Fotolia.com/1xpert

European Dental Association (EDA)

Professor
Johann Müller

Oral implantology, although still relatively young, has developed rapidly and become established as a standard therapy – and continues to grow, in Germany as in other countries. BDIZ EDI has accompanied this successful development from the beginning and actively helped shape its direction.

For ten years now, EDI Journal has been the international, English-language response to the need for a pan-European specialist publication. Building on the strict editorial ethos of BDIZ EDI konkret, EDI Journal has over the years become one of the most prestigious publications in the international field of oral implantology. In many cases, the implant specialists of EDA contributed to this success in their role as authors.

As a long-time partner of BDIZ EDI, I congratulate the current BDIZ EDI President and EDA founding member, *Christian Berger*, as well as the BDIZ EDI board and Editor-in-Chief *Anita Wuttke*, who deserve thanks and praise on the occasion of the tenth anniversary of the EDI Journal.

May our common actions motivate us and generate results in the future as it has in the past. Warm anniversary greetings to you all,

Professor Johann Müller
President of the
European Dental Association (EDA)
www.eda-eu.org

Association of Dental Implantology UK (ADI UK)

Philip J. Friel

The Association of Dental Implantology is delighted to have such a positive relationship with BDIZ EDI, with whom we share similar aims and objectives.

An important part of our collaboration is the distribution of the EDI Journal to all ADI members, and this provides a valued resource for our members and a great way to keep abreast of the latest international developments in implantology. The editorial and production standards of the journal are extremely high, and this is a testament to the dedication and unstinting efforts of all those involved in publishing it – we would particularly like to thank and congratulate *Christian Berger* and *Anita Wuttke* for their highly effective stewardship and development of the journal. The EDI Journal has had a tremendous first ten years and I am sure it will go from strength to strength during the next ten years.

Philip J. Friel
President of the Association of
Dental Implantology UK
www.adi.org.uk

Udruženje Stomatologa Implantologa Srbije-EDI (USSI EDI)

Dr Dušan Vasiljević

Dr Zoran Marjanović

In 2003, the first implantological association was established in former Yugoslavia (Serbia-Montenegro) called UOI-SCG-EDI (Oral Implantology Association of Serbia-Montenegro). From the beginning we received unprecedented support from the publisher of EDI Journal, BDIZ EDI. Without this support, our association would have had little chance to survive. We were proud that we were able to distribute the journal to our members right from the start.

EDI Journal was an important projection medium as we organized the first Mediterranean Congress in Montenegro in 2007, together with BDIZ EDI and the partner association UOI-SCG EDI. This premiere was a great success; the congress has since become a cherished tradition.

With the independence of Montenegro, our association also had to split as a result of political pressure. So in 2011, a new partner association was founded in 2011, the USSI EDI (Serbian Association of Dental Implantologists). EDI Journal has reported on all our congresses since then. Many of our members have also published their technical and professional articles in English in EDI Journal.

EDI Journal is one of the few journals in the discipline of oral implantology written in English – and thus highly welcome in Serbia.

EDI Journal has managed to make us feel a part of the great European implantological family. That gave us the courage and incentive to start training young implantologists. Serbia is a poor country, the training is very expensive and the possibility of training abroad remains a dream for most young dentists. Our association is trying to establish industry-independent education and training.

Even the Serbian Minister of Health has long been aware of EDI Journal. Our work in the European Committee of BDIZ EDI is known to many dentists in former Yugoslavia. At our booth at the annual USSI EDI Congress in Novi Sad, EDI Journal will again have a special place. Without EDI Journal, the meetings of Serbian dentists with the other members of the European implantological family could not take place the way they do.

We wish EDI Journal many more successful years.

Dr Dušan Vasiljević, President of USSI EDI
Dr Zoran Marjanović, Vice President of USSI EDI
www.ussiedi.com

Ogolnopolskie Stowarzyszenie Implantologii Stomatologicznej (OSIS EDI)

Professor
Andrzej Wojtowicz

EDI Journal plays an important role for the Polish Osseointegration Association OSIS and dental clinicians in Poland by providing up-to-date, balanced, evidence-based knowledge.

We particularly appreciate the Consensus Papers published annually following the European Consensus Conferences held by BDIZ EDI in Cologne. We see a great and growing number of dental clinicians in Poland working with implants on a daily basis, and we need clear and easily accessible guidelines to do so safely while meeting increasing patient demands in terms of speed, pain-free procedures and impeccable aesthetic results that will preferably last forever.

Implant dentistry is by far the biggest commercial surgical specialty practiced by the largest number of medical professionals in the world. Dentists have therefore become the targets of dental manufacturers and the dental-education industry that produces a massive and not infrequently misleading information tempest that can lead clinicians to commit inadvertent treatment errors, resulting in serious medical and financial consequences.

All the more reason to truly appreciate the Guidelines provided by BDIZ EDI through its EDI Journal as a reliable reference.

Thank you very much for this! We congratulate EDI Journal and its staff on their prestigious position in the world of dental publications and we hope for another decade of success and further growth for you, as our profession needs it desperately.

Professor Andrzej Wojtowicz
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10 years of EDI Journal

An excellent platform for European dentists

Ten years ago, the first issue of EDI Journal was published – the first European professional journal for implantological practice. Its name goes back to the journal's publisher, the European Association of Dental Implantologists. In an interview with Editor-in-Chief Anita Wuttke, the originators of this journal explain the idea behind its successful concept.

The first edition of EDI Journal appeared in 2005.

In 2005, the first edition of EDI Journal appeared, the first journal targeting implant dentists in private practice in Europe. How did that come about, and how risky did the endeavour feel at the time?

Christian Berger: Publishing a journal dedicated to oral implantology had been long overdue once BDIZ had opened its ranks to Europe in 2002 and changed its Articles of Association accordingly. At the same time, the English name was appended to the association's name: Bundesverband der implantologisch tätigen Zahnärzte in Europa/European Association of Dental Implantologists (internationally, either the second part of the name or the abbreviation BDIZ EDI are in common use). In line with this policy, we wanted to inform dentists in Europe about what is happening in the technical and scientific fields within oral implantology and what the political context defined in Brussels and Strasbourg means for dentists in the individual European countries. With teamwork media we were able to sign on a very prestigious publishing house, and with *Marianne Steinbeck* we were able to enlist an expert on the implant industry that is second to none. For BDIZ EDI, this is an absolute win-win situation from which our successful professional journal benefits today.

Ralf Suckert: A European journal for implantologists was absolutely visionary at the time, and publishing decisions of this magnitude are always risky. But taking calculated risks is also a prerequisite for success in business. In order to make this vision a reality, from a publishing perspective, we needed very good international contacts, a functioning European publishing structure, deep production engi-

neering expertise and rich and elaborate content from multiple countries. For teamwork media, the then still fledgling publishing house, that was a real challenge. But we were able to break fertile ground in our partnership with BDIZ EDI, and we had the good fortune that *Marianne Steinbeck* became enthusiastic about the project and joined us as Advertising Manager. Or in other words: The right people had met at the right time and shown great commitment to the project.

Marianne Steinbeck: Well ... a mere six weeks prior to the IDS that year, BDIZ EDI decided that it was urgent time to expand its activities within professional policy to the European level and to coordinate them across the individual countries. And that the IDS would be the perfect setting for launching a new magazine. Incredibly enough, despite the hectic last-minute preparations for the world's largest dental trade event, surprisingly many industry vendors spontaneously decided to support the new project. The time was apparently ripe for a Europe-wide journal for the profession.

What was and is its thematic focus?

Christian Berger: EDI Journal was never meant to be a science-based journal but was intended to convey what is important to BDIZ EDI: practical oral implantology and everything of interest for dentists in retaining, developing and growing their practice and their business. Of course, CPD – continuing professional development – has to keep track of the direction the field is taking. BDIZ EDI has therefore always seen the exchange of ideas as part of its professional focus. A classic example are the association's European symposia. Humble beginnings and spurious opportunities were consolidated into a comprehensive approach, allowing communities of dentists to transcend national borders and to intensify the exchange of ideas within Europe and showing how dentists active in the field of oral implantology can benefit from each other.

Ralf Suckert: Our goal has been and still is to establish oral implantology throughout Europe – at a high level of achievement, respecting appropriate quality standards, within a free market. Preparing transnational issues in health politics has been one of the challenges of the editorial team of BDIZ EDI. My job was to see to it that the policy issues were supplemented by sophisticated professional contributions. Very soon, BDIZ EDI began to cooperate with prestigious partner associations throughout Europe that substantively influenced the direction the association was taking. To this day, this remains a coherent concept, a European-style approach with immense potential.

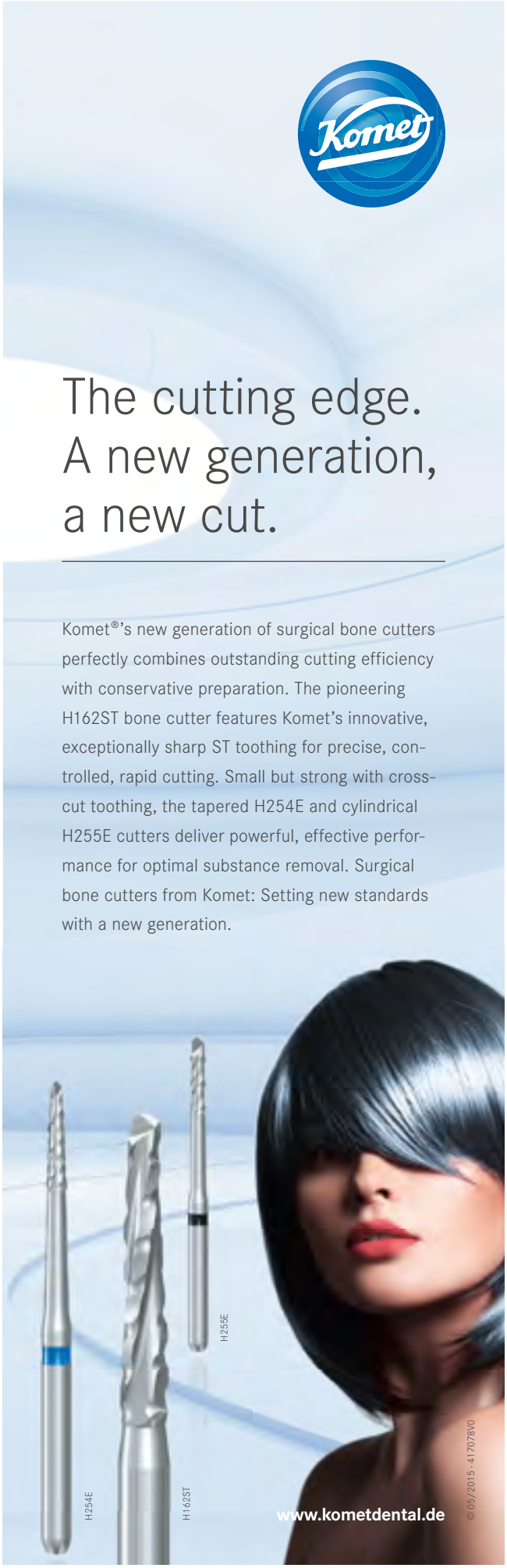

Photo: BIZK

Christian Berger
President of BDIZ EDI as Publisher

Ralf Suckert
Publisher and Editor-in-Chief until 2014

Dieter Adolph
Managing Director of the teamwork media publishing house

Marianne Steinbeck
Project Manager of EDI Journal

What is the importance of EDI Journal today with a view to similar publications on the market as well as the expectations of readers and the dental industry?

Dieter Adolph: BDIZ EDI is deeply committed to sound science within the continued professional development of implant dentists, and it offers information about innovative and successful treatment concepts. With EDI Journal, this commitment to quality is spread beyond Germany's borders and throughout Europe. This ultimately benefits all European clinicians, manufacturers and of course our patients. Ours is a successful international media format with true value for readers, the only one of its kind in Europe.

Marianne Steinbeck: EDI Journal not only has the longest tradition – its actual content constitutes its unique selling point. No other journal devotes so much time and energy to in-depth reporting on the controversial professional policy issues that ultimately determine the growth potential and prosperity of oral implantology as a whole. And who within the industry should not have an interest in this? Being present in EDI Journal not only promotes an advertiser's immediate cause – it simultaneously documents that the industry is closing ranks with the professional interests of oral implantologists in Europe.

What will the future look like given the ever-changing dental market environment and the many implantological innovations?

Marianne Steinbeck: I note with some concern a trend towards ever-larger mergers and towards dental mega-corporations. For despite all our common and interconnected interests – e.g. in the areas of product safety, professional qualifications and training standards – and despite the common health-policy challenges we are facing – an aging society, the daunting task to ensure universal accessibility of services, etc. – I recognize in the various European countries highly specific and very individual market environments; partly as a result of the traditions of university education, of course, but in other respects simply a reflection of different mentalities still differentiating, say, Sicily or Malta from the islands in the Baltic Sea. These differences in mentality must be taken seriously and not doused with some global standard sauce. Right from the beginning, therefore, BDIZ EDI has made it a point to respect the individuality of each member association and country, focussing only on the interests we Europeans have in common. Ten years ago, EDI Journal was well ahead of its time; now and in the future it is the answer to questions of common interest to implant dentists in Europe.

Christian Berger: We as practising dentists face new as well as ongoing practical challenges every day. Undoubtedly, the innovations in implant dentistry have their origins in scientific advances and are implemented in the products that the dental industry has developed. The call by practicing dentists for new products and procedures and improved treatment options has culminated in the variety and the many new applications we are observing on the market today – new approaches in bone grafting, new possibilities in laser technology, chairside CAD/CAM, new materials of all kinds, all the way to the stem-cell research that promises us we can re-grow our teeth within 20 years. EDI Journal provides an excellent platform for presenting new ideas!

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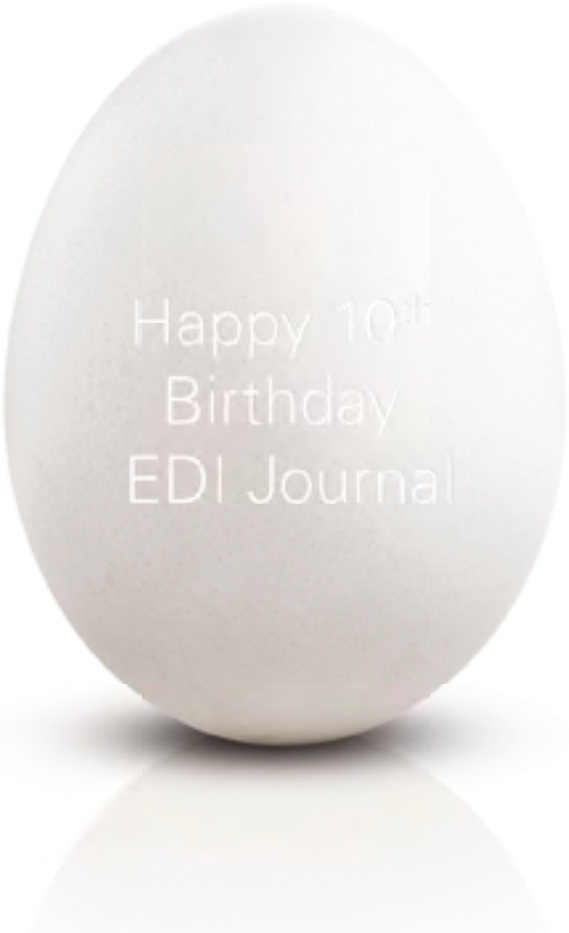

Statements from the dental industry

Photo: Fotolia.com/1xpert

What are your expectations of the EU?

Ten years of EDI Journal means a ten-year partnership with dental research and the dental industry. In particular the implant manufacturers have been faithful companions of our journal. Without them, there would be no innovative treatments, no constantly improving materials – and no case reports, no product trials and no comparative quality studies of BDIZ EDI. Their input is an important part of what this journal thrives on. EDI Journal is a symbiosis of all players in this innovative field within health care. So if we look back today on the track record of ten years, we are also looking back on the success story of all those who have contributed.

EDI Journal was originally conceived as a European journal for oral implantology. Which it of course still is – but today, looking over the fence has become more important than ever in view of a harmonized internal European market and in the light of the negotiations for the American-European free-trade agreement.

We have asked the representatives of the implant industry about their expectations of the EU.

What does your commitment look like in Europe (the European Union), and what do you expect and demand from EU politics?

Paul Note

Innovation is one of the key success factors in the pharmaceutical industry. As a company based in the heart of Europe, Geistlich Pharma demonstrates European values on the world's markets. With deep roots in Switzerland, we work with researchers and specialists from all over Europe. The European continent plays a definitive role in a wide range of collaborations, with partners in Stockholm, Milan, London and Berlin. We value being challenged and inspired in our daily work by dentists, universities and companies. Last but not least, the company's business activities extend across nearly all European countries. We have a particularly strong presence in Germany, France, Italy and the UK through our own subsidiaries. Furthermore, our distribution partners represent us throughout the whole continent. A glance at our company's management reveals unequivocally that Europe is alive and well, with four European nations all pulling together in the same direction!

Has Europe had its day? Absolutely not! I personally, and we as a company, believe in Europe's values and achievements. Returning to the strengths of the old continent and having attractive economic conditions and well-trained employees provide incredible backing. Whoever can pool these resources will win. At Geistlich Pharma, innovation remains what it has been for over 160 years – the driving force behind our success.

Paul Note
CEO Geistlich Pharma

Geistlich
Pharma

Europe is very important to Nobel Biocare as a source of business and an important source of innovation. It is imperative that the region finds solid footing both economically and regarding its shared responsibilities in health care. We are hopeful that more advances can be made especially in the field of oral health, a field of medicine typically underestimated by most governments.

We very actively support education and awareness in our industry – one of the three key areas identified by the "European Platform For Better Oral Health" in which improvements in oral health policy are needed. Training and education is paramount to treatment success for our customers, and proper education and awareness of their patients is vital. We are working on a global initiative to better supply our dental professionals with information and activities that help ensure patients to become aware of all the oral health opportunities available to them – not least dental implants.

Richard Laube
CEO Nobel Biocare

Richard Laube

Standardized approval procedures for medical devices and the high level of user sophistication make the European market very attractive and important to us. It provides stimulating impulses for future innovations to be implemented and products to be manufactured at our company headquarters in Germany. This applies to all fields covered by the Dentaurum group, such as orthodontics, dental technology, dental ceramics and oral implantology, along with all the resulting synergies.

For example, in the European market, oral implantology and prosthodontics increasingly merge as a result of digital technology, allowing us to offer excellent system-oriented solutions for our target groups.

One important challenge in the coming years will be to extend the positive experience with training programmes we have had in some countries to all European countries in order to offer patients the best possible level of oral rehabilitation.

Tobias Grosse
Head of the Implantology Division at Dentaurum

Tobias Grosse

The European implant market has always been a point of focus for Biomet 3i. Patients and practitioners alike are embracing dental implants and related digital technologies to restore healthy, beautiful smiles. Our longtime history in Europe stems back to our first small offices in Spain to the numerous subsidiary business units we support in Germany, France, Spain and the UK. We also work with a number of distributor businesses throughout the EU and continue to see expansion of dental implant acceptance as a viable treatment modality.

The future of implant dentistry continues to excite us, given all of the possibilities that exist. Through advanced surface technologies, implant body design, digital breakthroughs and new regenerative options, higher risk patients are gaining access to technology that allows them to leave the dental chair more quickly. The result of all of this is a return to basic life in an expeditious manner due to the improvements being made to the process itself.

We look forward to continuing to conduct business within the EU and follow through in our primary objective to help patients achieve the smiles they seek in the most efficient and cost-effective manner possible.

Bart Doedens
President Biomet 3i

Bart Doedens

PEOPLE HAVE PRIORITY

W&H

Happy Anniversary!

W&H congratulate the EDI Journal and all contributors for 10 successful years of essential information on implantology and we wish you continued and growing success for the next 10 years! For your own continued personal success in oral and maxillo surgery, we show our best and another reason to celebrate: the W&H Piezomed – minimally invasive, maximally effective.

piezomed

Photo: Fotolia.com/1xpert

Erwin Locher

As Thommen Medical operates in many European markets, we enjoy an excellent relationship with leading academic institutions in the European Union. We sponsor clinical studies and are engaged in continued education programmes in various countries. Highly relevant product ideas and improvements to our implant solutions are based on the experience of dental clinicians practicing throughout the EU.

Our products are made in Switzerland with Swiss craftsmanship but benefit strongly from clinical and scientific studies conducted all over the world and a global open exchange of experiences and ideas. Manufacturers of medical devices depend very much on a stable and reliable legal and regulatory framework. Our company is therefore very grateful for the efforts of BDIZ EDI to influence the political process in the direction of reasonable health care legislation in the European Union.

We congratulate the European Journal of BDIZ EDI on its 10th anniversary and hope it will see many more successful years.

Erwin Locher
CEO Thommen Medical

Björn Delin

It has been three years since the introduction of Dentsply Implants to the implant dentistry market. We have rapidly established our own sales organizations and cooperate with distributors all over the world.

We continue our strong commitment to research and education. In order to stay at the forefront of market trends and customer needs, we continuously collaborate with universities, researchers and dental professionals across Europe.

We have partnered with EDI Journal since the very beginning ten years ago, and the team we have worked with over the last decade has been utterly professional. We are happy to collaborate with a journal that understands the importance of innovation and solutions and of sharing best practice with dental professionals through clinical cases.

Björn Delin
Vice President
Global Platform Implant Systems
Dentsply Implants

Walter Esinger

The European implant market as a whole continues to grow, and it continues to be very attractive for our "Designed and made in Germany" implant system offering. Our position in the field of "fair-price" products made to very high quality standards requires access to media partners such as EDI Journal to efficiently communicate our position in the European market.

From European politics, we expect even greater harmonization and transparency of quality standards, with the aim of making implantological treatments more transparent and more trustworthy for the patients. We welcome the work of BDIZ EDI and the effective influence of this association on European politics.

Bego Implant Systems thanks EDI Journal for many years of partnership and wishes it continued success. We will remain a responsible and loyal partner to EDI Journal even in the next ten years.

Walter Esinger
General Manager Bego Implant Systems

The Osteology Foundation is an internationally acting non-profit organization with more and more projects around the world, but Europe is still the most important region for our activities. Upholding our mission, i.e. the promotion of research and education in the field of regenerative dentistry, we provide funding for researchers in many European countries. We also organize national education events in Europe, such as the National Osteology Symposia in Baden-Baden and Florence or the Research Academy in Lucerne and Kiel this year. For our International Symposia we fully trust on the quality of European organization and attractiveness of European destinations like Monaco for the event in 2016. We also have established collaborations with European associations, such as the EFP or ADEE, in order to benefit from joined efforts.

Even though we are Swiss-based, we strongly depend on an economic and educational environment that is at least partly determined by EU politics. Financially, it is important for us as well as for our donors and sponsors that the financial market normalizes. In terms of education we would appreciate the creation of a European accreditation or quality label for education events and courses. Furthermore, it is important to keep the regulatory framework for non-profit organizations as slim as possible to reduce the amount of overhead costs that are otherwise lost for activities within the actual mission of the Foundation.

Dr Kay Horsch
Executive Director Osteology Foundation

Osteology Foundation

Dr Kay Horsch

Congratulations on the 10th anniversary of EDI Journal, the leading European voice in dental implantology!

As a Swiss company, we have two perspectives of Europe: one from the heart of the continent, as Europeans, and the other from outside the EU and the Eurozone.

With the fragile economic environment in parts of Europe, demand for elective dental treatments has dipped and may continue to lag for some time. As a result, North America and emerging markets like China and Latin America have become the key growth driver. Notwithstanding, Europe makes up more than 40 per cent of the global implant market and generates no less than half of Straumann's sales – so it is tremendously important for us.

Companies in our industry are facing growing scrutiny from regulators and increasing requirements for documentation. The European Medical Device Directive is under review, and the anticipated outcomes include greater surveillance, involvement of competent authorities for higher-class products, longer approval times, access to technical documentation, product tests and unannounced audits.

Since our entry into implantology over 40 years ago, our products have brought smiles to millions of patients. Today, implant dentistry is a routine procedure, and patients have increasing requirements and expectations. As a pioneering innovator and global leader, we are determined to strengthen our position through continued innovation, documented clinical research, differentiated solutions, service excellence, high standards of training and education, and a global network – today and tomorrow.

Happy anniversary, stay tuned!

Marco Gadola
CEO Straumann

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Marco Gadola

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Heikki Kyöstilä

Even though we have grown to be one of the world's largest dental technology companies, we have always believed in the value of European expertise and European professionals. Our headquarters as well as our product development and the main production sites are in Helsinki, Finland.

As a truly international health care technology company, different regulatory processes have a major impact in our operations; we see that the EU can have an important role in advancing the predictability, consistency and efficiency of these processes globally.

We strongly believe in the value of investing in modern digital health care technology, both in education and in public and private health care sectors. Reaping the benefits of the new technologies requires support from the EU and a readiness to change obsolete policies. This is why it is also important to consider the views of product developers and researchers within the industry when defining new policies and standards.

We have achieved a lot in the medical and dental care sectors in Europe, and for the EU to take an active role in promoting these achievements around the world would certainly benefit the patients, as well as health care professionals and the dental industry worldwide.

Heikki Kyöstilä
President and founder Planmeca Group

PLANMECA

Dr René Willi

We have seen a continuing recovery in the economic macro environment in Europe over the last few quarters, which we believe will lead to greater discretionary spending, including a greater propensity to invest in medical procedures such as implant treatments. Nevertheless, considerable uncertainty still prevails, a situation in which EU politics plays a pivotal role for increasing customer confidence.

Since its foundation in 1999, Camlog has grown faster than the German market. We see similar opportunities in other European countries and we are determined to extend our commitment. We are also planning to enter markets in which we are not currently present. Thanks to our partnership with local distributors and with Henry Schein, one of the largest players and service organizations in the dental business worldwide, Camlog has a strong basis to build upon and to further drive its expansion.

We also see a trend towards the value segment in Europe. Camlog is well positioned here, and we believe we will be able to outgrow our markets over time. Our compelling product lines provide a very attractive price-performance ratio. iSy is a unique solution that allows our customers to address the more price-sensitive patient segment. We have invested significantly in all product lines and are determined to continue innovating and excelling in service.

With a view to these positive signs, we are confident that our commitment in Europe will continue to be beneficial to Camlog as well as to our customers and their patients.

Dr René Willi
Member & Delegate of the Board of Directors
Camlog

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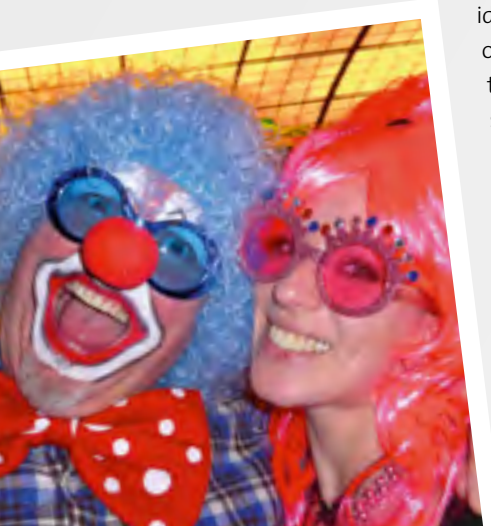
1 I The 10th European Consensus Conference (EuCC) in Cologne. Topic of the new Guideline: Managing biological complications and inflammation around implants. (Left to right:) Dr Peter Fairbairn, Dr Philip Friel (UK), Professor Hakan Özyuvaci (Turkey), Professor Vitomir Konstantinović (Serbia), Professor Tom van Dyke (USA), Dr Jörg Neugebauer (Germany, front row), Professor Pavel Kobler (Croatia), Christian Berger (Germany), Professor Katalin Nagy (Hungary), Professor Andrzej Wojtowicz, Dr Witold Tomkiewicz (Poland), Dr Freimut Vizethum (Germany), Professor Tomas Albrektsson (Sweden) and Dr Hans-Joachim Nickenig (Germany).

10th BDIZ EDI Expert Symposium, Cologne

Impressions of the anniversary

10-year anniversary of the BDIZ EDI Expert Symposium with everything the "Carnival Symposium" has to offer: high-class training, the exciting Carnival in Cologne and an intensive exchange of ideas among participants. In 2015, not only the team of presenters but also the audience were international in scope. Right from the start in 2006, the European Consensus Conference (EuCC) has been an inseparable feature of the symposium, which has once again issued a Guideline – this time about the management of peri-implantitis. Another standard feature of the Expert Symposium since the very beginning has been the European Committee, where representatives of BDIZ EDI's partner associations congregate in Cologne to exchange views and to plan joint action. And for the 10th time, the Sunday session of the "Grosse von 1823" Cologne Carnival Celebrations Committee in Gürzenich Hall was part of the event. The continuing professional development concept has proven its value and manifests itself through the EuCC Consensus Paper. In 2015, the Guideline contains recommendations for implantologists to help identify potential biological complications and to take the necessary therapeutic measures depending on the progression of the disease. Topic: Peri-implantitis: prevention, diagnosis, therapy. The 2015 EuCC Paper complements the 2008 Guideline on peri-implantitis.



AWU

2 I BDIZ EDI Associate Alexandra Papke welcomes participants.

3 I Professional simultaneous interpretation: Martha Bohus.

4 I Dr Jörg Neugebauer, Scientific Chairman.

5 I Professor Tom van Dyke, USA.

6 I Professor Ralf Smeets, Germany.

7 I Professor Tomas Albrektsson, Sweden.

8 I Participant Dr Dusan Ristić with a friend.

9 I All about peri-implantitis: the 10th Expert Symposium.

10 I Celebrating carnival in Cologne: Dr Freimut Vizethum, his wife Ulrike Vizethum and Dr Jörg Neugebauer (from left).

11 I BDIZ EDI President Christian Berger (left) dressed in the robe of a senator of the oldest carnival society in Cologne – with "Braveheart" Dr Freimut Vizethum.

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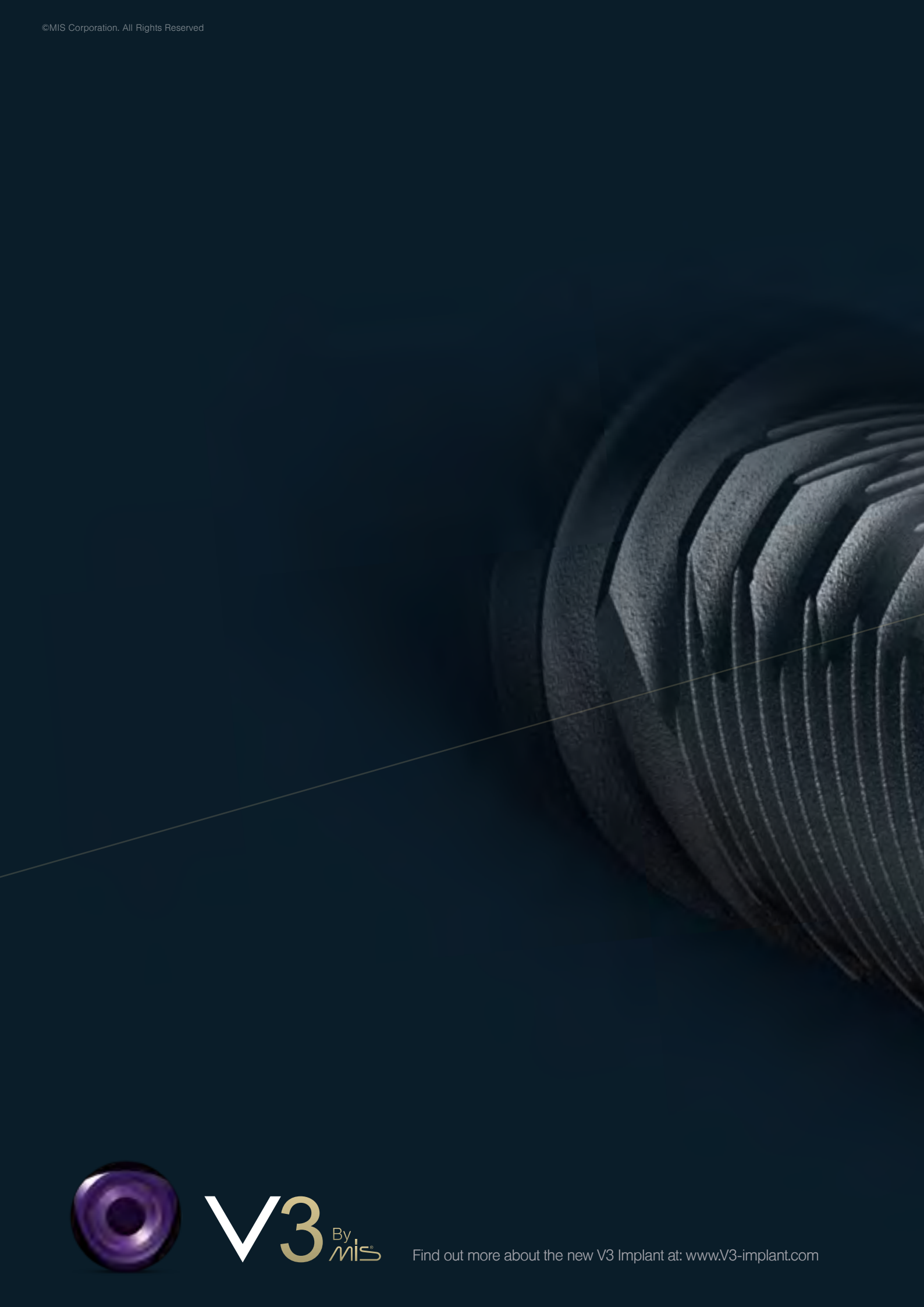

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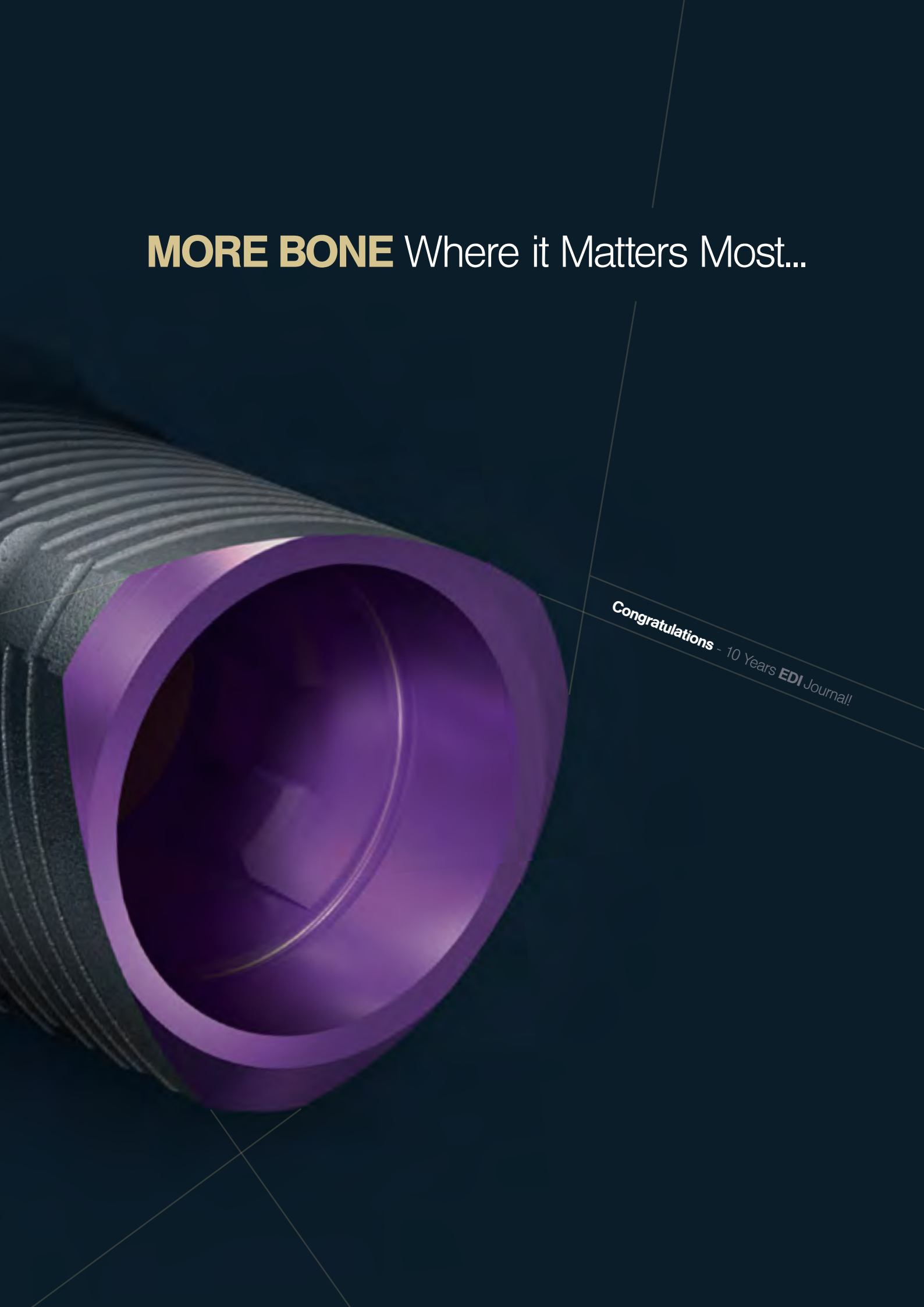

Congratulations - 10 Years **EDI** Journal!

Consensus Paper of the 10th European Consensus Conference (EuCC) published

New EuCC Guideline for the management of peri-implantitis

Based on a working paper of the University of Cologne, the 10th European Consensus Conference (EuCC) under the auspices of BDIZ EDI discussed the management of peri-implant inflammation in Cologne in mid-February. The resulting Guideline was first presented to the public at IDS 2015.

The new EuCC Guideline on the management of peri-implantitis.

When defining peri-implantitis, the panel of experts made a distinction between: (1) initial, reversible mucositis; (2) inflammatory, currently irreversible peri-implantitis; and (3) apical inflammation as a special manifestation following endodontic treatment and/or apical granuloma or burnt-bone syndrome (so-called retrograde peri-implantitis).

The EuCC has no conclusive evidence that the implant design or the surface properties of implants should be responsible for an increased risk of peri-implantitis. What is much more important, according to the expert panel, is the surgical technique. In the event of errors on the part of the surgeon, implant placement may result in damage to the peri-implant tissue, resulting in a predisposition for peri-implantitis. The Guideline cites thermal and mechanical trauma to the bone, poor soft-tissue management and incorrect positioning of the implant. The types of prosthetic restorations with their different treatment processes, as well as possible overload, are also classified as potential risk factors.

When it comes to prevention, the EuCC recommends careful patient selection, an atraumatic procedure and a specific recall schedule. Regarding diagnostics, it calls for radiological documentation following implant placement, osseointegration and prosthetic restoration and for increased patient awareness of possible pathological changes at or around the implant.

"Depending on the findings, closed conservative treatment or surgical treatment – if necessary with defect reconstruction – is recommended. In addition to mechanical debridement, various techniques can be used to decontaminate the infected tissue and disinfect the implant surface; various meta-analyses and RCTs have drawn different conclusions regarding the therapeutic relevance of the procedures."

The EuCC has stated no preference for any of the usual therapeutic procedures:

- "Photodynamic therapy was shown to be as effective as local antibiotic therapy."
- "There is no evidence that laser therapy is effective in initial peri-implantitis."
- "Meta-analysis suggests that systemic antibiotic adjuvant therapy is not indicated."

In the presence of advanced peri-implantitis, the EuCC prefers the surgical method to the closed approach due to the improvement in probing depths and attachment levels and recognizes that the use of membranes could improve the results of defect augmentation. Different methods are used for defect augmentation in addition to autologous bone; however, no clear statement can be made regarding the effectiveness of the materials.

AWU

Bundesverband der implantologisch tätigen Zahnärzte in Europa

European Association of Dental Implantologists

Guideline

Peri-implant inflammation: Prevention – Diagnosis – Therapy

10th European Consensus Conference (EuCC) 2015 in Cologne

14 February 2015

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Dr Peter Fairbairn (United Kingdom)
Dr Philipp Friel (United Kingdom)
Professor Dr Pavel Kobler (Croatia)
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Professor Dr Dr Ralf Smeets (Germany)
Witold Tomkiewicz (Poland)
Dr Freimut Vizethum (Germany)
Professor Dr Andrzej Wojtowicz (Poland)

1. Methods

Purpose
This guideline aims to provide dental and orofacial implantologists with recommendations for recognizing potential biological complications and initiating the treatment required for the respective condition. It is an update of the 2008 guideline.

Introduction
This consensus paper covers only screw-type titanium implants, typically placed in accordance with the indications recommended by the Implantology Consensus Conference (German).
All consensus recommendations in this paper should be considered as guidelines only. The patient's specific situation is always an important consideration and may justify a deviation from the recommendations of this consensus paper.

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Background to consensus development
Biological complications are observed as early or late complications and require diagnostic and therapeutic experience on the part of the treatment provider if a progression of the pathological processes is to be prevented.

Literature search
The Cochrane Library, EMBASE, DIMDI and Medline databases were used in the literature search. The search strategy included selected search terms such as “peri-implantitis”, “peri-implant mucositis” and “biological complication AND dental implant”. The abstracts of the resulting literature were then reviewed. Literature not considered relevant was identified and eliminated at that point.
The full text of all (potentially) relevant citations was obtained if necessary and reviewed. Numerous reviews, but few RCTs (randomized controlled trials) or other systematic clinical trials are available on this topic.

2. Definition

Peri-implantitis is defined as an inflammatory pathological process that affects the soft and/or hard tissue surrounding osseointegrated implants.

Pathogenesis:

- Mucositis is the initial, reversible condition manifesting as inflammation of the soft tissue surrounding the implant, with reddening, hyperplasia and bleeding.
- Peri-implantitis is the advanced, currently irreversible condition with bone resorption, loss of osseointegrated contact area, probable pockets, suppuration and inflammation, which can lead to reduced bone-to-implant contact.
- A special case is apical inflammation in patients with a history of endodontic treatment and/or periapical granuloma or burned bone syndrome, so-called retrograde peri-implantitis **[30, 35]**.

Reports on the prevalence of mucositis or peri-implantitis vary widely (1% to 80%) **[6, 32, 46]**. One meta-analysis revealed prevalence ranges of 19% to 65% for mucositis and 1% to 47% for peri-implantitis **[12]**. Another meta-analysis showed that patients with periodontal disease are at significantly higher risk of peri-implantitis **[37]**.

It can be concluded that the initial stage of mucositis is more frequently reported.

3. Risk factors

3.1 General risk factors for the development of peri-implantitis

- Habits (especially bruxism, poor oral hygiene and smoking) **[29, 33, 44]**.
- Prevalence is higher in patients susceptible to periodontitis than in those in good periodontal health. The placement of implants in patients with active periodontitis is contraindicated **[8, 28, 29, 36, 37, 40, 43]**.
- Systemic diseases and pharmacological interventions (e.g. diabetes mellitus, bisphosphonate therapy, chemotherapy, osteoporosis, immunosuppression, radiotherapy, cardiovascular diseases) **[29, 33, 39, 45]**.

Advanced biological age by itself does not increase the risk of peri-implantitis.

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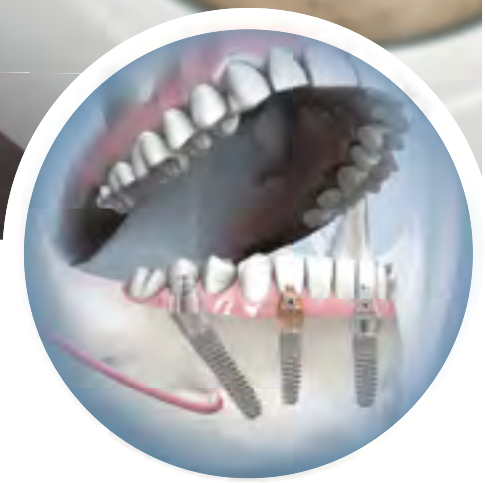

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3.2 Local risk factors

Biological quality of the available bone [1, 6]

- Non-augmented bone is associated with the best prognosis
  - Lower risk in the maxilla than in the mandible
- Bone volume (dimension of buccal plate)
- Bone quality
  - Caution is required in the event of poorly vascularized bone
- Augmentation technique
  - Vascularized augmentation (distraction, bone splitting, LeFort I)
  - Free-flap autologous augmentation (lateral, vertical)
  - Allogeneic and xenogeneic (GBR techniques)

Biological quality of the gingiva [1, 5, 6]

- Availability of keratinized gingiva
- Phenotype of gingiva

Implant design

There is currently no evidence to suggest that tapered implants are associated with a higher risk of peri-implantitis than cylindrical implants. Different studies on platform switching have revealed heterogeneous results; therefore, no conclusions can be drawn as regards the risk of peri-implantitis **[41]**. There is no evidence that the abutment connection has an influence on the peri-implantitis risk.

Implant surface

One study suggested that rough surfaces increase the risk of peri-implantitis when compared with smooth surfaces **[13]**. In general, there is no compelling evidence that moderately rough surfaces have an increased risk of peri-implantitis.

Surgical technique

The surgical implantation procedure may damage the tissue surrounding the implant and predispose the patient to peri-implantitis.

- Thermal injury to bone
- Mechanical trauma (excessive compression of healthy bone)
- Poor soft-tissue management
- Malposition of the implant (vertically, horizontally, axially)

Prosthetics

The type of prosthetic, the various associated treatment procedures and the resulting functional loading are potential risks.

- Malposition of the superstructure relative to the soft-tissue level
- Poor hygienic access
- Poor subgingival cementation technique
- Static stress due to prosthetic misfit
- Micromovement of the abutment and/or superstructure (e.g. screw loosening, cement failure)

Overloading is an additional risk factor for the development of peri-implantitis **[18]**. In general there is no increased risk for either screw or cement retained superstructures **[9].**

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4. Prevention

Careful case selection to avoid inadequate soft and hard tissue and an excess of systemic risk factors **[4]**.
Minimally traumatizing procedures and specific recall schedules.

5. Microbiology

The microbial environment around an implant that exhibits signs of peri-implantitis is similar to that found around teeth with periodontal disease. However, additional bacteria not typically in connection with periodontal disease and with a high affinity for titanium surfaces, such as *Staphylococcus aureus*, can also be found **[21]**.
Peri-implant infections exhibit periodontal pathogens, and a very large number of patients have infections resistant to at least one antibiotic **[38]**. Tetracycline resistance seems more pronounced than resistance to beta-lactam preparations **[26]**.

6. Diagnosis

To assess the peri-implant bone level, radiological documentation is recommended following implant placement, osseointegration and placement of the prosthetic restoration **[27]**.
Evidence of inflammatory mediators in the sulcular fluid of implants with peri-implantitis is considered a biomarker for the condition **[2]**. However, no evidence of biomarker reduction has been found following successful treatment **[48]**.

Patients should be informed of any potential pathological changes around the implant that they can identify themselves, such as bleeding, soft-tissue changes or swelling. Identifying the disease may require a careful clinical examination that follows the principles of periodontology, although precise evidence is lacking:

- Bleeding on probing
- Careful probing of peri-implant pockets on four sides (0.2 N probing force)
- Where signs exist: radiological follow-up using dental X-ray

Due to beam-hardening artefacts, the use of high-resolution CBCT is not indicated for diagnosing peri-implant bone destruction **[11]**. However, defects >0.5 mm have been successfully diagnosed using CBCT **[17, 19]**.

- Analysis and identification of potential causes

7. Treatment

Treatment is aimed at reducing acute symptoms and preventing progression and recurrence. There is no evidence that treatment provides long-term stability or regression of the disease **[22]**.

<u>General recommendations for implants with maintained stability:</u>
Conservative approach for decontaminating the implant surface

- Starting treatment as early as possible is essential, ideally in the **initial** stages
- Mechanical cleaning/smoothing
- Local disinfection
- Reduction of deep pockets and/or hyperplasia
- Augmentation of vertical bone defects in some cases
- Frequent patient recall, 3–4 times a year

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Depending on the findings, closed conservative treatment or surgical treatment – if necessary with defect reconstruction – is recommended. In addition to mechanical debridement, various techniques can be used to decontaminate the infected tissue and disinfect the implant surface; various meta-analyses and RCTs have drawn different conclusions regarding the therapeutic relevance of the procedures listed below.

7.1 Peri-implant mucositis
A recent meta-analysis lists the optimization of oral hygiene and additional disinfection with air polishing, CHX rinses, ultrasonic debridement, periodontal treatment, manual debridement using curettes, manual cleaning plus local delivery of CHX and photodynamic therapy as effective treatments for mucositis **[16, 42, 47]**. There is no evidence that one type of curette-material is superior to another.
Photodynamic therapy was shown to be as effective as local antibiotic therapy **[3]**. Some system modifications available for photodynamic therapy have limited support in the literature for peri-implantitis therapy **[14]**.
There is no evidence that laser therapy is effective in initial peri-implantitis **[25]**.
Meta-analysis suggests that systemic antibiotic adjuvant therapy is not indicated **[20, 23].**

7.2 Surgical treatment
In advanced peri-implantitis, surgical procedures are more likely than closed procedures to improve probing depths and attachment levels **[15]**. The use of membranes when augmenting defects may improve results **[7]**. Various materials are used for defect augmentation in addition to autologous bone. No conclusive statement on the effectiveness of the materials can be made **[24]**.
In surgical treatment approaches, the additional use of laser therapy **[25, 31, 34, 49]** (RCT and meta-analysis) or chlorhexidine applications has not been shown to improve long-term success **[10]**.

8. Therapeutic success

The treatment outcome is considered less predictable in peri-implantitis than in periodontal disease.
Currently, the goal is to reduce the signs and symptoms of inflammation and to avoid progression.
It is important to identify and eliminate all possible causes; in susceptible patients, a close recall scheme is essential.

Cologne, 14 February 2015

Professor Dr Dr Joachim E. Zöller
Vice President

Dr Jörg Neugebauer
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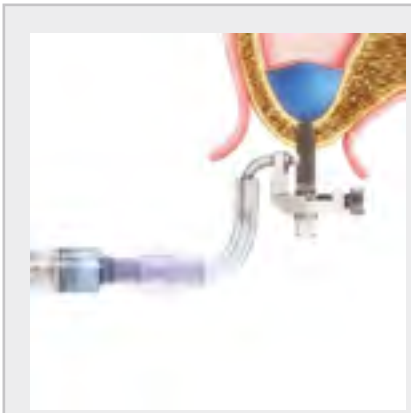
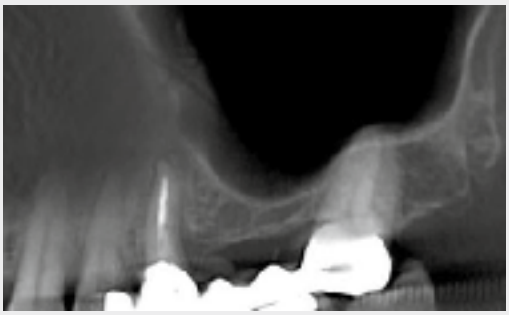


2 Elevate membrane with saline pressure

3 Inject bone graft



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Impressions of the 36th IDS 2015

Implantology and more

To present the association and dental implantology in an extra-attractive light, BDIZ EDI had revamped the appearance of its booth at IDS 2015. The aim was to facilitate better communication with the visitors at the stand. The concept paid off: discussions, information leaflets and other interactions at the booth met with enormous interest on the part of an international trade-fair audience.

BDIZ EDI was able to welcome significantly more visitors than in previous years, thanks to an open stand design, a highly motivated staff and of course to the information available for take-away: the new EuCC Guideline on the management of peri-implantitis, the two journals (BDIZ EDI konkret and EDI Journal), the new study on implant surfaces and information on the iCampus project, which fledg-

Hot spot "Implantology": the stand of BDIZ EDI.

Board members of BDIZ EDI at work. (Left to right:) Dr Wolfgang Neumann and Dr Stefan Liepe with guest.

... and the winner is ... This little boy from Tokyo was drawing the first winner of an iPod within the iCampus tombola.

Dr Tarun Kumar (second from left) from India successfully passed the "Expert in Implantology" exam. The picture shows the jury with Professor Joachim Zöller (left), Christian Berger and Dr Wolfgang Neumann (right).

Christian Berger giving an interview to the TV media.

Indian delegation attending some lectures and hands-on courses at the University of Cologne with Vice President Professor Zöller and President Christian Berger.

ling dentists were particularly interested in. As part of iCampus, BDIZ EDI raffled an iPod each day of the fair. Twice a day, the wheel of fortune spun, with attractive prizes – including tooth-brushing sets, key rings with dental floss, umbrellas, anti-stress teeth for chewing on and more.

Visitors were also greatly interested in BDIZ EDI's continued professional development opportunities: in addition to the iCampus CPD events, many visitors, especially from outside Germany, were interested in the Curriculum Implantology. The BDIZ EDI booth was definitely a hot spot – not only for implantologists.

AWU

Talking about upcoming legislation. (Left to right:) President of the Hessian Dental Association, Dr Michael Frank, Dr Peter Engel, President of the German Dental Association, Christian Berger, Professor Christoph Benz, Vice President of the German Dental Association and the solicitor of BDIZ EDI, Professor Thomas Ratajczak.

The Managing Director of BDIZ EDI, Dr Stefan Liepe (left) in conversation with the President of the German Dental Association, Dr Peter Engel.

New member from Egypt with Stefan Liepe and Christian Berger.

Welcoming a new member from Russia with Professor Zöller and Christian Berger ...

... and new members from Serbia.

iCampus project managers Dr Magdalena Kimmich (left) and Dr Luisa Daniel.

Looking forward to the upcoming joint congress in Berlin: Christian Berger (left) with the President of DGOI, Dr Georg Bayer.

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PRESS RELEASE

Consensus Conference on Oral Implantology presents new definitions of indication classes

On 8 October 2014, the Consensus Conference on Oral Implantology revised the indications for standard rehabilitative treatment in oral implantology, updating them to take account of scientific progress in the field since the previous update. The indication classes were first defined in 1994 and subsequently updated on 5 June 2002.

The Consensus Conference on Oral Implantology, which recruits its members from the European Association of Dental Implantologists (BDIZ EDI), the Professional Association of German Oral Surgeons (BDO), the German Association of Oral Implantology (DGI), the German Association of Dental Implantology (DGZI) and the German Society of Oral and Maxillofacial Surgery (DGMKG), considers the replacement of each tooth with an implant to be the optimal treatment for tooth loss. However, it points out that for anatomical reasons, third molars are generally not replaced, while the need for replacing second molars should be critically evaluated.

Developments in oral implantology are taken up in the new description: “Alternative treatment approaches exist as treatment compromises that provide for implant counts deviating from those noted below, designed especially to facilitate procedures that would avoid a surgical augmentation of existing bone in the respective jaw (e.g. short implants, angulated implants, reduced-diameter implants).”

As scheduled, the Presidency of the Consensus Conference on Oral Implantology has passed from BDIZ EDI to the DGI on 1 January 2015. Under the chairmanship of Christian Berger, President of BDIZ EDI, during the past two years, the indication classes were revised and the appraiser/medical expert lists of the affiliated associations and societies were edited for better patient accessibility. The relaunch of the Consensus Conference on Oral Implantology website was also completed during this time. The address of that website is http://www.konsensuskonferenz-implantologie.eu/

For further information:
Anita Wuttke, Press Officer of BDIZ EDI, presse@bdizedi.org, phone +49 89 72069888.

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– European Association of Dental Implantologists (BDIZ EDI)
– German Association of Oral Implantology (DGI)
– German Association of Dental Implantology (DGZI)
– German Society of Oral and Maxillofacial Surgery (DGMKG)
– Professional Association of German Oral Surgeons (BDO)

– Consensus Conference on Oral Implantology –

Classes of indications for standard rehabilitative treatment in oral implantology

On 8 October 2014, the Consensus Conference on Oral Implantology updated its description of indication classes to take account of scientific progress in the field since the previous update. The indication classes were first defined in 1994 and subsequently updated on 5 June 2002.

Medical indications for oral implants

The ideal treatment of tooth loss is generally to replace each individual tooth by an implant. For anatomical reasons, the third molar of each quadrant does not usually require replacement. The need for replacing second molars should be critically evaluated.

It is not always possible to implement the best conceivable treatment approach for a variety of reasons (especially anatomical, but also economic reasons). To provide a planning aid to implant dentists for standard cases, the following recommendations for standard rehabilitative treatment by private dentists were established. They do not cover indications according to Section 28 (2), sentence 9 of the German Social Code, Book V (SGB V).

The Consensus Conference describes the indication classes in terms of being a gold standard. They have been proven during the past more than two decades. Deviations from this standard in implant numbers are not wrong per se. There are a variety of reasons why a patient might not want to pay for a higher-quality implant-supported restoration or where, conversely, an increase in the number of abutments beyond the standard count is medically necessary.

Alternative treatment approaches exist as treatment compromises that provide for implant counts deviating from those noted below, designed especially to facilitate procedures that would avoid a surgical augmentation of existing bone in the respective jaw (e.g. short implants, angulated implants, reduced-diameter implants).

Indication classes:
Class I: Single-tooth replacement
Class II: Partially edentulous jaw
Class III: Edentulous jaw

Class I Single-tooth replacement

Class Ia Anteriors

If up to four maxillary anterior teeth are missing and the adjacent teeth do not require treatment:
→ 1 implant for each missing tooth

If up to four mandibular anterior teeth are missing and the adjacent teeth do not require treatment:
→ 1 implant to replace two missing teeth

Class Ib Posteriors

If individual teeth are missing from an otherwise complete dental arch and the adjacent teeth do not require treatment, each missing tooth should be replaced by an implant.

Class II Partially edentulous jaw

Principle: When placing implants in partially edentulous jaws, the opposing dentition must be taken into due consideration at the treatment planning stage. The rules of conventional prosthodontics apply.

Class IIa Missing teeth within the dental arch

For a fixed restoration, 8 abutments are required in the maxilla and 6 abutments in the mandible. Natural abutments may be included if they are located in a favourable position from a structural point of view and have a favourable prognosis.

For a removable restoration, 6 abutments are required in the maxilla and 4 abutments in the mandible. Natural abutments may be included if they are located in a favourable position from a structural point of view and have a favourable prognosis.

Class IIb Missing teeth at the end of the dental arch

All three molars missing:	→ Indication for 1–2 implants
Second premolar and all three molars missing:	→ Indication for 2–3 implants
Both premolars and all three molars missing:	→ Indication for 3 implants

Class III Edentulous jaw

Class IIIa Edentulous maxilla

Required to support a fixed restoration in the edentulous maxilla:
→ 8 implants

Required to support a removable restoration in the edentulous maxilla:
→ 6 implants

Class IIIb Edentulous mandible

Required to support a fixed restoration in the edentulous mandible:
→ 6 implants

Required to support a removable restoration in the edentulous mandible:
→ 4 implants

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Member newsletter

Breaking news via e-mail

BDIZ EDI members who have signed up for e-mail information will have noted the newly designed newsletter available since July 2014 – BDIZ EDI NEWS.

It offers snappy headlines and soundbites that the reader can follow in more detail by clicking "more" – regardless of whether the full copy is located in the members-only area or not. This eliminates the somewhat cumbersome detour via the member login on the BDIZ EDI website.

With the e-mail newsletter, BDIZ EDI wants to inform its members quickly of important current events – new guidelines or new publications, or low-cost training and continuing-education events. The current BDIZ EDI NEWS, for instance, contains a link to the member area that also features the current (2015) Guideline: Peri-implant inflammation: Prevention – Diagnosis – Therapy. The third study on potential surface contamination on sterile-packed implants is also available for download. All the newsletter recipient has to do is click on the appropriate link in BDIZ EDI NEWS and to open or download the PDF file.

Readers who have accessed the full article by clicking "more" and would like to get additional information available in the member area can log in with their access data that BDIZ EDI will send out to all members at the end of June. This procedure is designed to protect our restricted area.

The member area on the BDIZ EDI website contains information and downloads available exclusively to members of the association. Once you have logged in successfully, you can also download the complete current issue of EDI Journal.

If you have not yet signed up for BDIZ EDI NEWS and would like to do so, please send an e-mail to the BDIZ EDI office at office-bonn@bdizedi.org.

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Europe Ticker +++

Dutch neurologist again in court

Misdiagnoses are part of the job

A former Dutch neurologist, *Ernst Jansen*, is central to the presumably largest medical criminal trial in Dutch history. The now 69-year-old physician has misdiagnosed dozens of patients by delivering verdicts that were tantamount to death sentences, such as Alzheimer's or multiple sclerosis. One woman committed suicide soon thereafter. A criminal court sentenced the neurologist to three years in prison without parole in 2014. But whether or not he actually has to serve the time will be decided in the appeals process currently before the appeals court in Arnhem. The fact that the physician has caused dozens of patients untold suffering at the hospital of Enschede from the mid-1990s to 2003 is not under dispute, as the German daily Rheinische Post reported. This deserves much harsher punishment, considers the prosecutor, who had demanded a prison sentence of six years in the original trial. Nine exemplary cases had been selected for the trial. According to the newspaper report, most of the more than 200 afflicted patients had settled out of court and received compensation. Until early 2013, *Jansen* had also worked at several German hospitals including Heilbronn. No cases of misdiagnoses have become known from his time in Germany. *Jansen* himself does not deny the allegations but speaks of regrettable errors. "Misdiagnoses are, unfortunately, an inseparable part of medical practice", he had declared in court last year, while expressing his regrets. "But I would do the same thing again today." The defense has now adopted a new tactic, asking for the accused to be declared legally incompetent based on a medical expert opinion. "That opinion was simply swept aside in the first trial", says renowned defense attorney *Peter Plasman*. The judges, however, followed another expert who had diagnosed *Jansen* with a narcissistic personality disorder. The court of appeal has ordered a new psychological and neurological opinion to clarify whether *Jansen* has suffered brain damage.

Source: Rheinische Post, Germany

Photo: Paul Hill

Borates banned in the EU

Prohibited for tooth whitening

The Council of European Dentists has warned the public about the dangers of borate products. Products of the borate family are frequently used in beauty salons for the purpose of tooth whitening. Furthermore, to safeguard public health, the Council of European Dentists urges the National Authorities in the member states to take initiative to ensure that no such cancerogenic products are used for tooth whitening nor available on the market. Sodium perborate and perboric acid have been banned in cosmetic products by EU legislation and no exception to the ban has been granted. These substances have been classified as carcinogenic, mutagenic, or toxic for reproduction (CMR), category 1B of Regulation (EC) 790/2009 amending Regulation 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP Regulation), as a result of being included in Part 3 of Annex VI of the CLP Regulation. This classification has been applied since 1 December 2010. Once a substance is classified as CMR 1B, independently from its concentration, its use in cosmetic products is prohibited (Article 15(2) of the Cosmetics Regulation 1223/2009). It is an automatic ban for which no implementing measures (such as amending Annexes to the Cosmetics Regulation) are needed. Exceptions may, however, be granted if the conditions laid down in Article 15(2) of the Cosmetics Regulation are met. As the conditions to authorize the use of these substances in cosmetic products were not met, the Commission did not grant an exception. Consequently, sodium perborate and perboric acid have been banned in the EU since 1 December 2010.

Source: Council of European Dentists (CED)

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Europe Ticker +++

German dentists and physicians on the TTIP free-trade agreement with the USA

Health care is taboo

The controversial TTIP free-trade agreement between the EU and the USA could also affect health systems. This is what the two presidents of the German Dental Association and the German Medical Association, among others, are concerned about. "Free-trade agreements must not impair the quality of care, rapid access to health care and the high level of patient protection in Germany and the EU", according to a public statement. *Dr Peter Engel* and *Professor Frank Ulrich Montgomery* refer to Article 168(7) of the Treaty on the Functioning of the European Union (TFEU), which states that "Union action shall respect the responsibilities of the member states for the definition of their health policy and for the organization and delivery of health services and medical care." The resulting diversity benefits the patients. Furthermore, the European Union has recognized the special status of the health system. Health services are particularly sensitive, related to the common good and worth protecting. "We expect the negotiators of the European Union to respect these principles in the negotiations and to protect our successful health systems", the statement continues. Patients' rights and the liberal-professions status of physicians, dentists, psychotherapists and pharmacists as well as the competencies of their self-governing bodies must be neither restricted nor abolished. "The member states of the European Union must keep their sovereignty in matters of health policy and the development of their health systems. We therefore call for a positive list that makes it clear that the TTIP does not apply to health services and the health professions." The statement signatories make clear that financial interests must not influence medical decisions. The statement was issued in response to ECJ decisions to the effect that an overriding public interest may justify restrictions on the freedom to provide services. Overriding reasons of public interest include ensuring patient protection. The negotiators for the European Union would have to ensure that patient protection and the high quality of medical care do not fall victim to liberalization drives based on a free-market ideology. "We therefore demand that health services be excluded from the scope of free-trade agreements. FTA must not lower our standards."

Source: Statement by the German Medical Association, German Dental Association et al.

Fluoride overdose

Creeping fluorosis?

How dangerous are fluorides in the body? The American hormone expert *Naveen Kakumanu* of the Henry Ford Hospital in Detroit, Michigan has published in the New England Journal of Medicine (NEJM) the case of a 47-year-old woman who suffered from unexplained pain in her back, arms and legs. Her teeth, too, were giving her trouble; they gradually crumbed away one after one, without apparent cause. On radiographs, *Kakumanu* recognized calcium deposits in the connective tissue between the radius and ulna in both the patient's lower arms as well as signs of increased bone density at the edge of her vertebrae. The solution: For 17 years, the patient had prepared for herself a pot of black tea – using 100 to 150 tea bags each time. She had suffered from a severe fluorosis, poisoning by fluorides, as *Kakumanu* reported in NEJM; this was confirmed by blood tests. The patient's blood contained 0.43 milligrams of fluoride per litre; in healthy people, the value is less than 0.1 milligrams. In order to achieve optimum protection against caries without at the same time running the risk of a fluoride overdose, the European Food Safety Authority (EFSA) recommended in a 2013 statement covering children and adults, as well as pregnant and lactating mothers, not to exceed a daily fluoride intake of 0.05 milligrams per kilogram of body weight – that would be 3.5 milligrams in a 70-kilogram man. Especially in infants and young children, pediatricians and dentists have been arguing for years about which form of fluoridation is more appropriate – the intake of fluoride tablets or the use of fluoride toothpaste. There are as yet no reputable studies extant that would demonstrate an increased risk of cancer, thyroid problems or mental illness caused by fluorides.

Source: European Food Safety Authority

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European Court of Justice tightens the rules for product liability for medical devices

Is the risk of a product defect itself a product defect?

Manufacturers of medical devices are liable to the end users, regardless of fault, in the event that a defective product causes damage to their health. This is a requirement of Council Directive 85/374/EEC dated 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the member states concerning liability for defective products, which was implemented in German national law in the form of the Law on liability for defective products.

New case law of the ECJ on the liability of medical-device manufacturers

The starting point for a liability case has always been the victim's claim to have suffered a health impairment due to a defective product. Without a specifically identified product defect, liability was excluded.

In its judgement of 5 March 2015 in two joined cases (C-503/13 and C-504/13), the European Court of Justice (ECJ) extended the notion of defectiveness to products for which no specific defect has been detected but which show an elevated risk of failure. This expanded producer liability significantly strengthens the patients' positions. Whether the cost of the surgical replacement must be reimbursed will depend on whether the replacement was the only way to restore appropriate product safety.

Cases brought by two statutory health insurers

The ECJ's decision was based on two cases, both dealing with products made by the same manufacturer. In both cases, patients covered by statutory health insurance had been implanted medical devices that subsequently had to be surgically replaced following a recommendation by the producer. The legal proceedings concerned the cost of the replacement, with the plaintiffs in each case being the respective statutory health insurance to which the claim had devolved by law.

First case: two pacemakers

The first case concerned two pacemakers that had been implanted in patients covered by the later plaintiffs (the health insurance companies). The producer later informed that a component used in the device to obtain a hermetic seal might be subject to gradual decline and recommend replacing the device, a recommendation that was subsequently followed. The health insurance companies then sought a pro-rata reimbursement of the cost of the primary implantations, taking into account the remaining life expectancy of the original device. After the local court (Amtsgericht) and the regional court (Landgericht) of Stendal upheld the claim, the producer appealed to the German Federal Court of Justice (Bundesgerichtshof, BGH) (IV ZR 284/12).

Second case: an implantable cardioverter-defibrillator

The second case was similar. The device affected was an implantable cardioverter-defibrillator (ICD) with a possibly malfunctioning magnetic switch. The manufacturer did not recommend an exchange but only to deactivate the magnetic switch. Nevertheless, the product was surgically removed and replaced. Similar to the first case, the regional court and the higher regional court (Oberlandesgericht) of Düsseldorf upheld the claim, whereupon the manufacturer appealed to the BGH (IV ZR 327/12).

Questions referred by the BGH

In both cases, the BGH had to answer the question whether the mere fact that a risk of harm exists for an implantable medical device based on experience with other products in the same category is sufficient to assert a product defect. The BGH also considered the question whether the cost of the replacement operation must be reimbursed. Since the German Law on liability for defective products goes back to Council Directive 85/374/EEC and the ECJ has the power of interpretation with regard to European Community law, the BGH referred these questions to the European Court of Justice for a preliminary ruling.

The ECJ judgement

In its judgement dated 5 March 2015, the ECJ issued the preliminary ruling procedure for the two joined cases, answering the two questions in the affirmative. The BGH will now have to decide the two appeals based on the ECJ's rulings.

Increased risk of failure is a product defect

As part of the first question referred, the BGH wanted to know if a human-

implantable medical device is defective if devices in the same product group have a significantly increased risk of failure but a defect has not been detected in the actually implanted device. The ECJ held that the increased risk of failure constitutes sufficient grounds in terms of product liability if a product, in the light of its function and its objective features and properties, as well as the peculiarities of the intended user group, does not meet the generally accepted safety requirements. For the medical devices under consideration, in the light of their function and the particularly vulnerable situation of patients using such devices, the safety requirements the patients are entitled to expect are particularly high. The potential lack of safety arises from the abnormal risk for damage those products might cause to the person concerned. Accordingly, if products belonging to the same group or series carry an elevated risk of failure, one would classify as defective all the products in that group or series, with no need to show that the product in question is actually defective. This is consistent with the aim of a fair apportionment of the risks inherent in modern technological production between the injured person and the producer.

Cost of replacing an implanted medical device may be reimbursable damage

The BGH also wanted to know whether the cost of replacement legally constitutes damage caused by personal injury. This question, too, was answered in the affirmative by the ECJ, referring to its previous case law that requires that full and proper compensation must be assured. In the interest of consumer health and safety, the notion of "damage" must be given a broad interpretation. Compensation for damage relates to everything necessary to eliminate consequences of the damage and to restore the level of safety that a person is entitled to expect.

To the extent that the producer had recommended the replacement of the pacemakers concerned, it was stated that the costs associated with the replacement, including the cost of the surgical operations, were part of the damage for which the producer was liable. Given the specific recommendation, the fact that action was necessary was not under dispute.

Concerning the case where the producer had only recommended disabling the magnetic switch of the implantable cardioverter-defibrillator, the Federal Court will still have to determine whether this measure would have been sufficient to meet the level of protection required and to eliminate the product defect or whether replacement of the product was mandated.

Summary

In its decision of 5 March 2015, the ECJ extends the notion of damage in product liability, which from the point of view of patients and consumers is a welcome step forward. If a medical device carries a significantly increased risk of failure as evidenced by experience with other products in the same category, the patient does not have to wait until the damage has actually occurred. The risk in itself is sufficient to trigger producer liability, which may also include the cost of an operation if this is the only way to avoid the damage. If manufacturers themselves recommend the measure, they must bear the cost.

Thus, it also becomes clear that such interventions must be paid for by the statutory health insurers. The latter then have a matching claim for reimbursement against the producer, and they carry the risk of producer insolvency.

Manufacturers of implantable medical devices are well advised to check their maximum product liability coverage. ■

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Final report of the BDIZ EDI implant study 2014/15

SEM surface analyses of 120 sterile-packed implants

DR DIRK DUDDECK[1,2], DR HASSAN MAGHAIREH[3], DR FRANZ-JOSEF FABER[4] AND DR JÖRG NEUGEBAUER[1,5]

EDI Journal 1/2015 contained an interim report presenting the results for 65 implant systems from the 2014/15 BDIZ EDI implant study. This interim report had focused on notable analytical results for titanium implants and on the presentation of various surface structures of popular implant systems in titanium and its alloys [1]. The present report now also presents implants made of zirconia, tantalum and PEEK. Now that this study has been completed, a total of 120 different systems from 83 suppliers in 16 countries have been examined by scanning electron microscopy, doubling the number of implant systems analyzed by the BDIZ EDI Quality and Research Committee since the first study in 2008 [2,3]. In cooperation with the University of Cologne, extensive material contrast images were obtained and qualitative and quantitative elemental analyses performed on each of the implants examined, using the same study protocol.

Dental implants are an integral part of the therapeutic armamentarium of contemporary dental practices. With their excellent success rates, they have become the globally established treatment alternative to purely prosthetic solutions for tooth loss. And with the variety of implant systems offered, it has become ever more difficult for the dentist to choose just the right system for his or her practice and patients. Specific surface topographies, material properties that promote osseointegration or surface treatments are often emphasized in advertising as significant advantages to distinguish a given system from its many competitors. According to the Association of German Dental Manufacturers (VDDI), more than 1,300 different implant systems are currently available worldwide. Northern Italy alone probably has a hundred micro-enterprises that manufacture implants, primarily for regional dentists. But even though only a fraction, namely 120, of all the implant systems available in Europe could be included in this study, these represent the most important brands or major suppliers of implants.

Background and objectives

There is commonly a significant discrepancy between the responsibility treatment providers must assume for the materials they use vis-a-vis their patients and their knowledge regarding the quality of these materials as confirmed by neutral and scientific sources. As stated in the interim report in the

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OK to use in patients – but apparently not always OK to take a closer look

The great majority of manufacturers responded positively to the requests by the University of Cologne. Nevertheless, some manufacturers declared that they had no interest in this study. Not even the proclaimed fact that the present study did not primarily emphasize the producers' interests but rather those of the users caused them to reconsider. In a few cases, orders for implants to be used for the purposes of this study were not filled and delivery was refused – even though these implants are used by several hundred practitioners throughout Europe (see box "Appeal to readers"). Especially noteworthy was the response from one manufacturer stating that one could not remember ever having received requests from users for SEM images or EDX results. Dentists, the statement continued, assumed that these results were good as a matter of course. Or else they were not interested in this information. And even if they were, they would not know how to interpret the data correctly anyway. Less favourable results could be surpassed by the competition; and even good results were no "seller", because they were not properly understood by the reader. Thus, the risk of misinterpretation far outweighed any benefits of the study. All relevant information and a variety of studies on the requested implant system, they concluded, could be downloaded from the company's website. In fact, the website offered no evidence on the safety of the chromium-nickel-steel particles that were found en masse in this study on an implant by that manufacturer. Unsurprisingly, therefore, the sterile-packed implant analyzed in this study was not provided by the manufacturer.

Another manufacturer explicitly did not want to participate in the study, but had then decided to fill the order for a sample implant and not to participate in any boycott. However, the shipment contained an invoice and an explicit note to the effect that the implant was not to be named in any publication related to the present study. We acknowledged that desire, but we did not want to deprive our implantological colleagues of the results. Because if the implants are good enough to be used in patients, they should be good enough to present in an SEM image.

Are we implantologists really not interested in the quality of the systems we use? Are we unable to evaluate the results of this study? Do some manufacturers have to "protect" us from scientific studies because we cannot interpret them correctly anyway? Users will be able to answer these questions readily after reading this report.

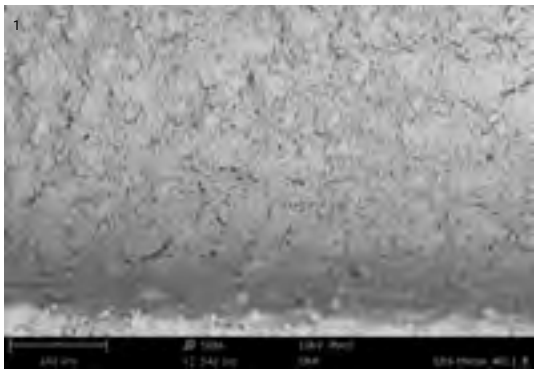
previous issue, CE marks do not protect the market, or rather the patient, from substandard quality in medical devices [4]. An international group headed by the University of Geneva School of Dental Medicine has embarked on the highly commendable quest to characterize, classify and code dental implants starting in 2010 – the so-called Implant Surface Identification Standard (ISIS) that might facilitate the future introduction of a possible ISO standard for dental implants [5,6].

The surface quality of implants depends on a number of different factors. Once the titanium implant blank has been CNC-machined, it is further processed using different techniques that ultimately result in the product's specific surface structure. The various processes used for titanium implants were discussed in the first part of the report. Various production processes ultimately contribute to product quality: the production itself, the cleaning steps, post-production handling (i.e., quality control), packaging and sterilization processes and the packaging itself.

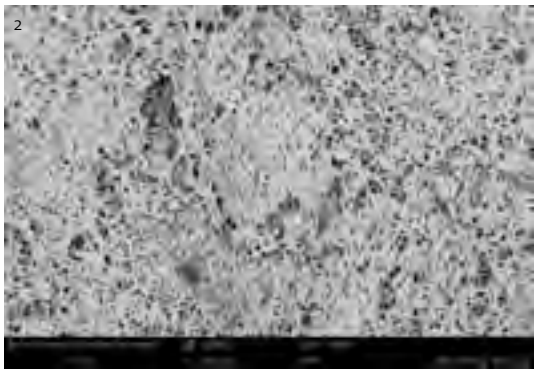
A striking feature of this study has been the many different types of sterile packaging that sometimes go to considerable lengths to prevent any kind of contact of the implant with the packaging. In fact, several implants in the study that did not feature contact-free packaging but were delivered in soft sealed polyethylene bags exhibited various amounts of organic contaminants or plastic residue, depending on their surface roughness.

As described in the interim report, even a well-structured implant surface proven in clinical practice for many years may accumulate not insignificant amounts of organic contaminants or plastic particles through abrasion, unless the implant was delivered in non-contact packaging. There have been reports in the literature that these organic contaminants are associated with early implant loss or with peri-implantitis [7]. The documented amounts of carbon in the regions that are already obvious on the material contrast images are considerably higher than the minor amounts of carbon adsorbed from ambient carbon dioxide as present on any titanium implant. The more or less sophisticated technical implementation of the sterile packaging has no direct relation to the price of the implants. But how far can we let manufacturers go in their drive to save cost if the result is sharp-edged cover screws that damage, and thereby breach, the simple sterile packaging even before they are used (see the text box on sterile packaging on page 75)?

1 | SDS – Metoxit (x 500).



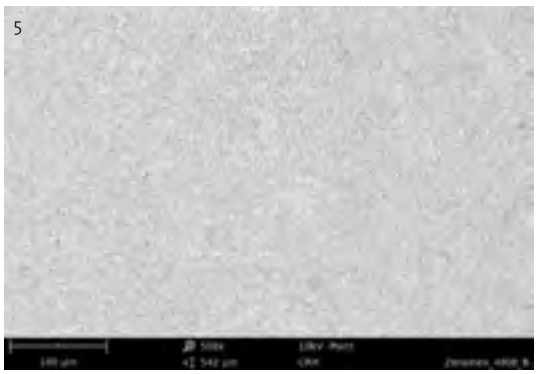
2 | SDS – Metoxit (x 2,500).



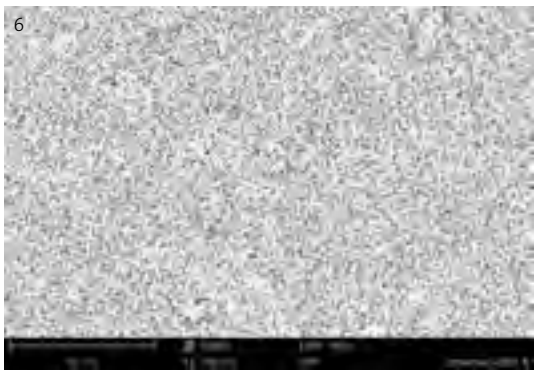
3 | vitaclinical (x 500).

4 | vitaclinical (x 2,500).

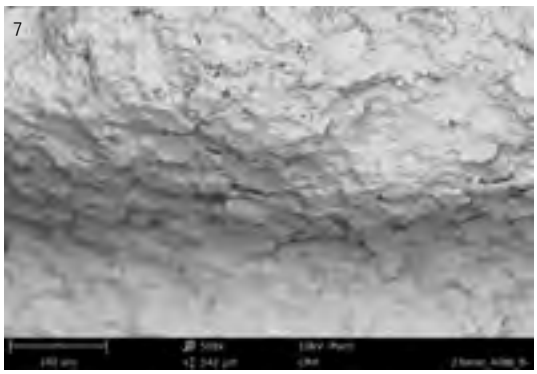
5 | Dentalpoint – Zeramex (x 500).



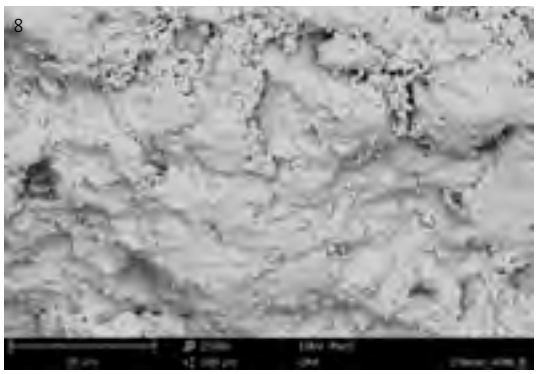
6 | Dentalpoint – Zeramex (x 2,500).



7 | Zibone – Coho (x 500).



8 | Zibone – Coho (x 2,500).

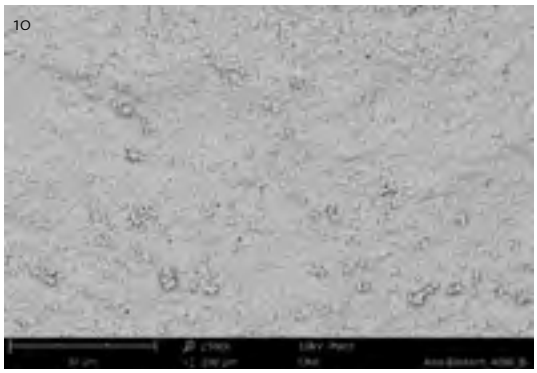


In addition to the previously presented implant systems made of titanium and titanium alloys, implants made of zirconia, tantalum and polyether ether ketone (PEEK) were also studied.

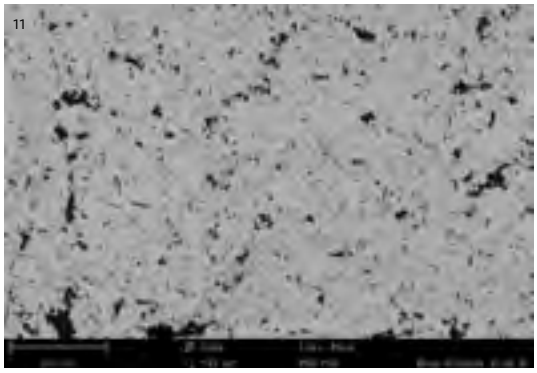
Zirconia as an implant material has been proven for many years. It is probably in no way inferior to titanium or titanium oxide in terms of its osseointegration potential [8]. The surfaces exhibit different levels of roughness (Figs. 1 to 16).

The specific removal torques – the forces necessary to split up the bone-implant interface by unscrewing the implant once osseointegration has taken place – do not differ between zirconia implants and titanium implants of similar rough-

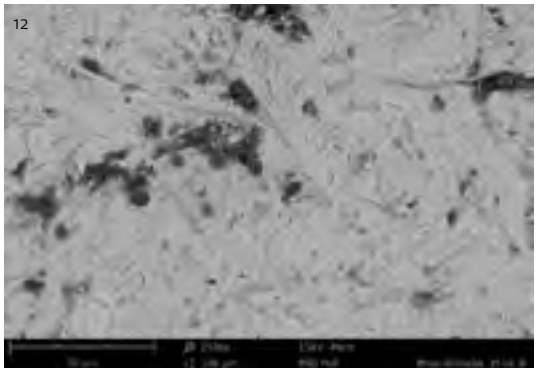
9 I
Axis – biodental (x 500).



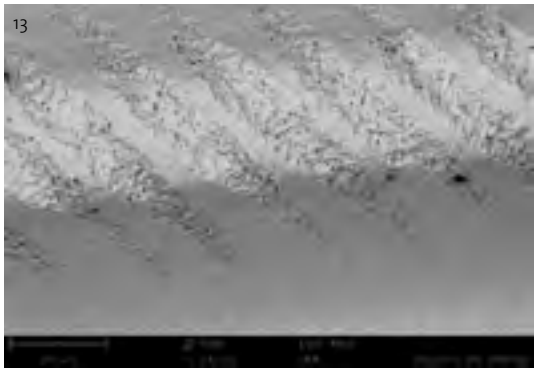
10 I
Axis – biodental (x 2,500).



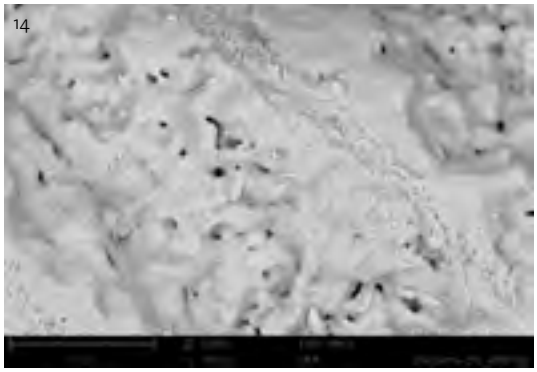
11 I
Bredent – WhiteSky (x 500).



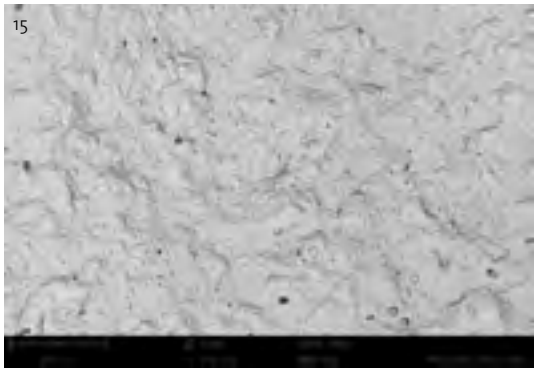
12 I
Bredent – WhiteSky (x 2,500).



13 I
Z-Systems – Zirkolith (x 500).



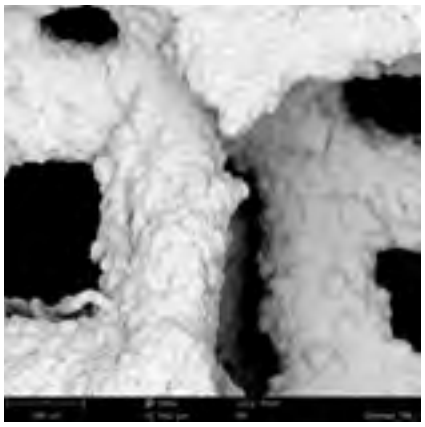
14 I
Z-Systems – Zirkolith (x 2,500).



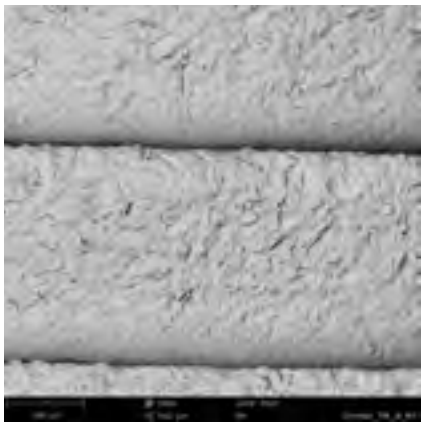
15 I
Natural Dental Implants – root-analogue replicate made entirely of zirconia (x 500).

16 I
Natural Dental Implants – root-analogue replicate made entirely of zirconia (x 2,500).

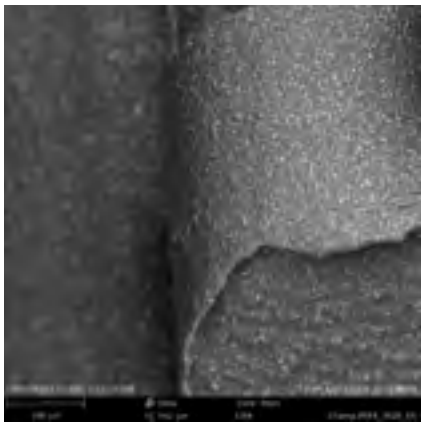
ness [9]. Occasionally observed cases of lost zirconia implants may not be solely due to the surface properties of these implants. One possible cause of early implant loss may be the low thermal conductivity of zirconia. Thus, the thermal conductivity of yttrium-stabilized zirconia, at approximately 2.2 $Wm^{-1}K^{-1}$, is nearly ten times lower than that of grade 4 titanium (22 $Wm^{-1}K^{-1}$) and three times lower than that of grade 5 titanium (Ti-6Al-4V) at 6.7 $Wm^{-1}K^{-1}$. Inserting zirconia implants at the torques commonly used for titanium implants might result in temperature peaks, especially in high-density bone, that could cause thermal bone damage. In-vitro studies have shown that elevated



17 I Trabecular midsection made of tantalum (Zimmer Trabecular Metal implant, ×500).



18 I The shoulder and apex of the same implant are made of titanium (Zimmer Trabecular Metal implant, ×500).

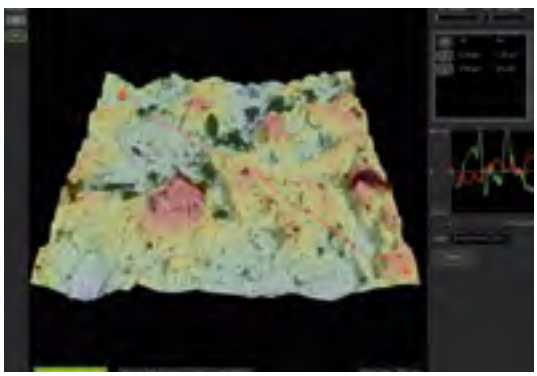


19 I Implant made of polyether ether ketone (Champions WIN! PEEK implant, ×500).

insertion torques lead to a significant temperature increase, especially in the first few millimetres of the prepared implant site [10].

One tantalum-titanium hybrid implant in this study exhibited a rather particular surface topography. While the titanium surface of the implant shoulder and its apical region had been blasted with hydroxyapatite, the middle segment of the implant, marketed by the manufacturer as "trabecular metal", had a porous structure not unlike cancellous bone. This three-dimensional structure is based on a glassy carbon framework completely coated with tantalum. The corrosion-resistant tantalum [11] has been successfully used as an orthopaedic implant material for many years. Now also used in dental implants, the special surface texture is designed to allow the ingrowth of bone cells into the depth of the structure [12,13]. The term "osseoincorporation" has been coined in the literature in an attempt to add a third dimension to *Brånemark's* definition of osseointegration [14]. Prospective multicentre studies at 22 locations in five European countries have shown that the clinical success rates of hybrid implants made of titanium and tantalum were similar to those of pure titanium implants [15]. The only representative of this class of materials in the current study was the tantalum-titanium hybrid implant by Zimmer (Figs. 17 and 18).

Polyether ether ketone (PEEK) has more recently been used as a new material for dental implants (Fig. 19). As the material has only been used for dental implants for a rather short time, only few reports are extant. In-vitro trials suggest that the mechanical properties of PEEK might optimize the distribution of masticatory forces through the implant's surroundings [16,17]. Here we will have to wait for long-term clinical results. Only one implant made of PEEK was included in the study; a second manufacturer had not responded to our enquiries.



20 I 3D roughness reconstruction (Bredent WhiteSKY, ×2,500).

Materials and methods

A total of 120 different implant systems from 83 manufacturers and 16 countries were analyzed by scanning electron microscopy (Table 1). The SEM device used for the acquisition of the surface topography (Phenom proX, Phenom-World, Eindhoven, Netherlands) has a highly sensitive detector for backscattered electrons (BSE) that facilitates inferences about the composition of the examined material as the so-called material contrast image emerges. Elements with a low atomic number, i.e. with fewer electrons, such as carbon or aluminium are shown as relatively dark areas, while elements with high atomic numbers such as titanium or zirconium appear relatively bright.

For testing, the implants were taken out of their packaging using a sterile forceps and attached to the sample holder before being introduced into the vacuum chamber. Because zirconia implants are more easily electrically charged than titanium implants, a so-called charge-reduction sample holder was used that largely attenuates this charging phenomenon, which would otherwise lead to artefacts.

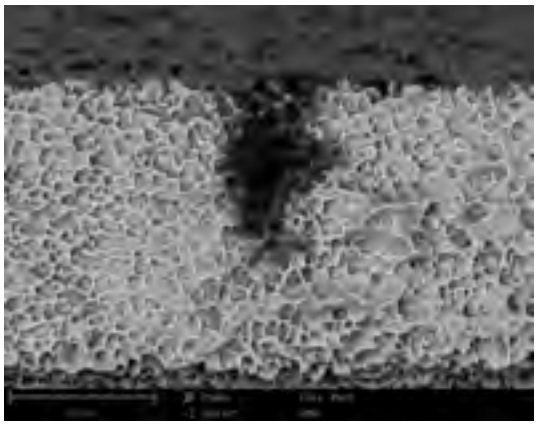
Table 1: List of implant manufacturers participating in the 2014/15 implant study (as per 30 April 2015)

Manufacturer	Country
AB	Israel
3M Espe	Germany/USA
Adin	Israel
AGS Implance	Turkey
Alpha-Bio Tec	Israel
Alpha Dent	United Kingdom
Alphatech (Henry Schein)	Germany
Anthogyr	France
Argon Medical	Germany
Avinent	Spain
Axis biodental	Switzerland
Bego	Germany
Bio3	Germany
Biodenta	Switzerland
Biohorizons	USA
Biomet 3i	USA
Biotek BTK	Italy
BlueSkyBio	USA
Bredent	Germany
BTI	Spain
C-Tech	Italy
Camlog	Germany/ Switzerland
Champions	Germany
Clinical House	Switzerland
Cortex	Israel
Cumdente	Germany
DENTAL RATIO	Germany
Dentalpoint	Switzerland
Dentatus – Loser	Sweden
Dentaurum	Germany
Dentegris	Germany
Dentium	Korea
Dentsply Implants	Sweden/Germany
Dio	Korea
FairImplant	Germany
General Implants	Germany
Glidewell	USA
Hi-Tec	Israel
IDI	France
Implant Direct	Switzerland
ImplantSwiss	Switzerland
JDental Care	Italy
JMP	Germany
Keystone	USA
Klockner	Andorra
KSI Bauer	Germany
Lasak	Czechia
m+k	Germany
Medentika	Germany
Medentis	Germany
Medical Instinct	Germany
Megagen	Korea
MIS	Israel
Natural Dental Implants	Germany
Nature Implants	Germany
NBM	Switzerland
Neoss	United Kingdom
Nobel Biocare	Sweden
Nucleoss	Turkey
OCO Biomedical	USA
Osstem	Korea
OT medical	Germany
Paltop	Israel
Phibo	Spain
Phoenix	Germany
Prowital	Germany
Schütz	Germany
SDS/Metoxit	Switzerland
SGS	Hungary
SIC	Switzerland
Southern	South Africa
Straumann	Switzerland
Sweden Martina	Italy
TA-Dental	Germany
Thommen	Switzerland
TRI	Switzerland
Trinon	Germany
VI-STOM	Italy
vitaclinical	Germany
Z-Systems	Switzerland
Zibone/Coho	Taiwan
Zimmer	USA
ZL-Microdent	Germany

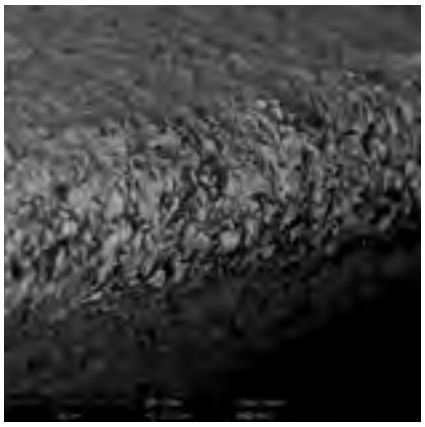
An updated list of all investigated implants and comprehensive reports on individual implants (up to three reports per request) are available to BDIZ EDI members by contacting the association office (office@bdizedi.org).

Qualitative and quantitative elemental analysis of the implant surfaces was performed using energy-dispersive X-ray spectroscopy (EDX). Here, the electron beam causes the primary electrons emitted to interact with the atoms of the specimen surface, releasing electrons of the inner shell as "secondary electrons". The resulting gaps are immediately filled by electrons from a higher orbital. The difference in energy is emitted as an X-ray quantum and detected by a thermoelectrically cooled detector, measuring both the elemental compositions and their concentrations. An areal analysis and one or more spot analyses (in case of irregularities) were performed for each implant.

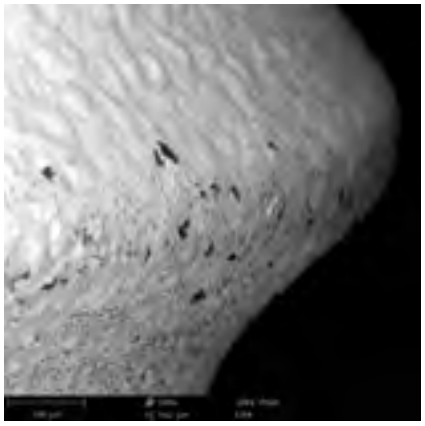
To document the surface roughness of each of the investigated implant systems, a so-called 3D roughness reconstruction was performed that allows a visual comparison of the respective surface structures. During the imaging process, the three-dimensional shape of the object is calculated from the brightness distribution in the grid of the four quadrants of the backscattered electron detector (Fig. 20).



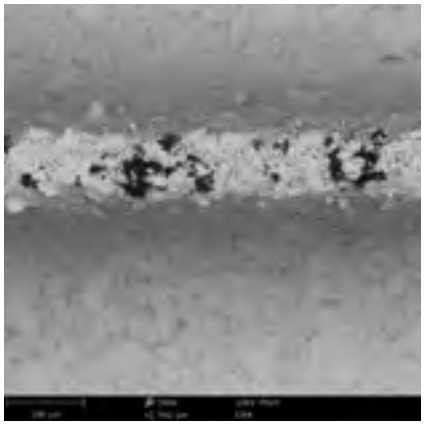
21 I "Single spot", individual organic contaminant (×2,500).



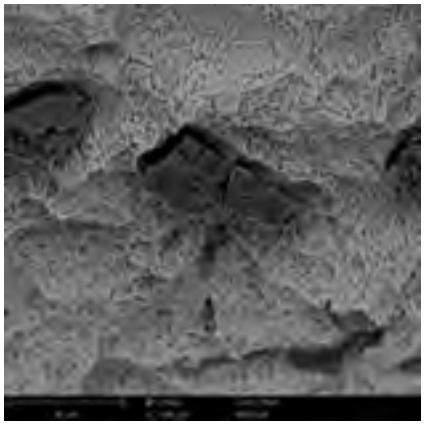
22 I Circumferential organic residue on a titanium implant (×500).



23 I Organic residue on the outer thread structures (zirconia, ×500).



24 I Superficial organic particles (zirconia, ×500).



25 I Individual inclusions of sandblasting material (titanium, ×2,500).

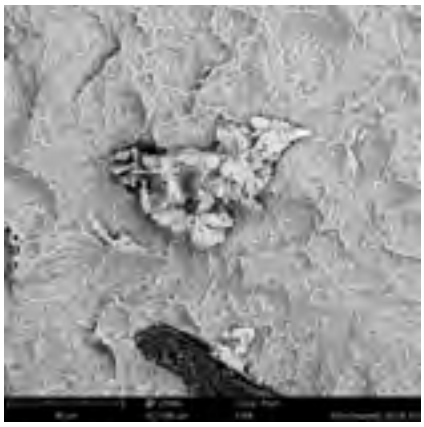
Results

Minor amounts of carbonaceous residue remaining on the implant after the cleaning process are a not infrequent finding. Organic residue appears darker in the material contrast image than titanium or zirconia because carbon atoms have fewer electrons and therefore create fewer backscattered electrons in a SEM than atoms of higher atomic numbers. Soft, sometimes jagged edges are typical of organic contaminants. If there are only a few isolated spots like that, they will make up only a very small part of the total area, being of little consequence and no clinical relevance (Fig. 21). The figure shows a single organic impurity 10 to 20 µm in size on an otherwise largely residue-free implant. More conspicuous were systematically distributed organic residues on several implants that are in contact with their outer packaging. These typically featured circumferential organic contamination occurring only at the outer edge of the thread (Figs. 22 to 24), which suggests that contact with the packaging could be responsible.

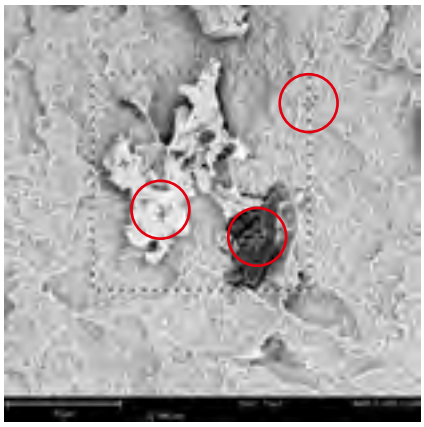
Some isolated implants exhibited inorganic residue from the sandblasting process, namely alumina particles 20 to 30 µm in size (Fig. 25), but in quantities of presumably limited clinical relevance.

Unexpected inorganic residue findings included, in addition to the iron-copper-chromium particles described in the first part of the report, larger areas with intermittent chromium-nickel-steel particles 4 to 30 µm in size on one of the implants studied. The material contrast image had already presented them as strikingly bright and well-defined structures. These metallic particles might have originated as impurities within the blasting material or as abrasion residue from the CNC cutting tools that were subsequently embedded in the implant surface to the point where cleaning could not remove them (Figs. 26 and 27). Three spot analyses were carried out as part of the qualitative and quantitative elemental

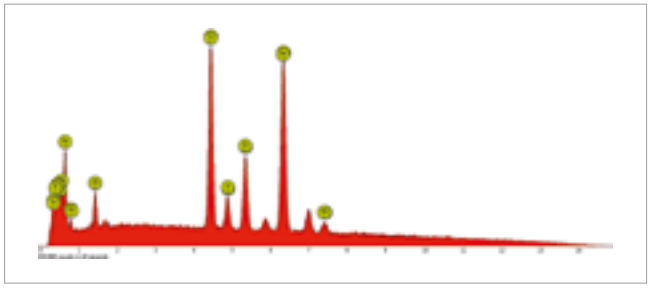
26 I Implant surface (Adin Touareg) with notable light and dark particles (x500).



27 I Same implant surface (Adin Touareg): bright chromium-nickel-iron particle, dark aluminium oxide particle (x2,500).



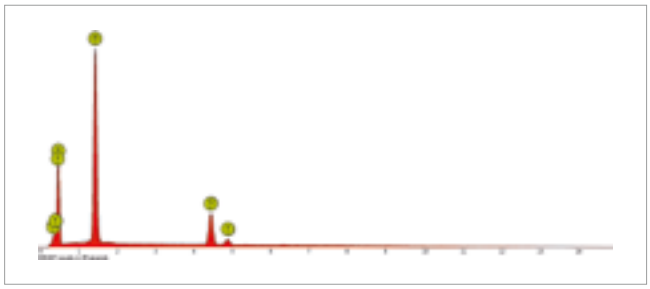
28 I Marks for EDX spot analysis and EDX mapping area (Adin Touareg; x2,500).



29 I Qualitative elemental analysis, spot no. 2 (bright chromium-nickel-iron particle).

	Atomic percentage	Certainty
Fe	49.8%	0.99
Ti	24.5%	0.99
Cr	13.6%	0.99
Al	5.6%	0.97
Ni	5.2%	0.96
V	1.3%	0.94

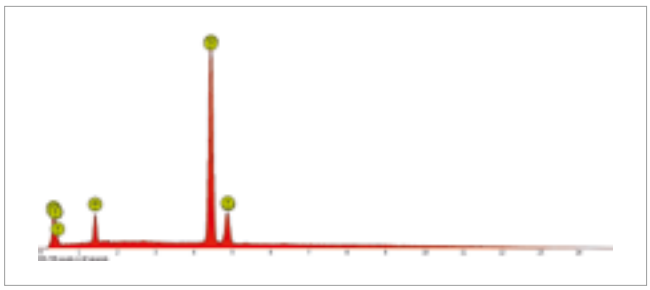
Table 2 I Quantitative elemental analysis – Element distribution, spot no. 2.



30 I Qualitative elemental analysis, spot no. 3 (bright aluminium oxide particle; sandblasting residue).

	Atomic percentage	Certainty
O	68.2%	0.99
Al	25.3%	1.00
Ti	6.1%	0.99
V	0.4%	0.93

Table 3 I Quantitative elemental analysis – Element distribution, spot no. 3.

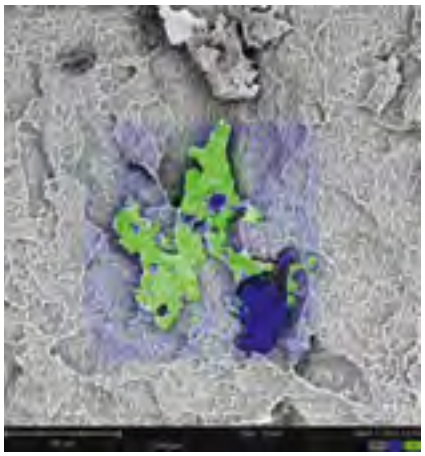


31 I Qualitative elemental analysis, spot no. 4 (particle-free implant surface, grade 5 titanium).

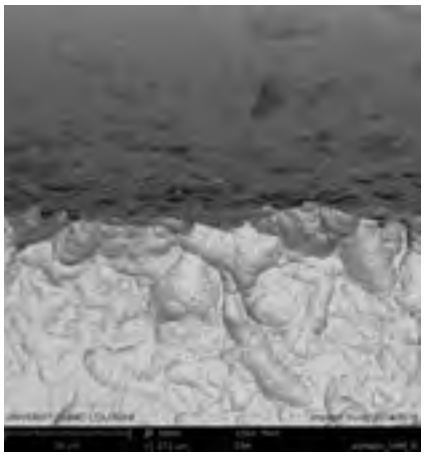
	Atomic percentage	Certainty
Ti	85.7%	1.00
Al	11.5%	0.99
V	2.8%	0.94

Table 4 I Quantitative elemental analysis – Element distribution, spot no. 4.

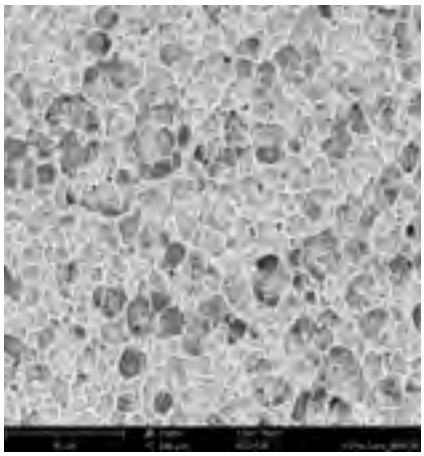
analysis (Fig. 28). The analysis of the chromium-nickel-steel particle (spot no. 2) has typical "fingerprints" for the elements iron, nickel and chromium (Fig. 29 and Table 2). As expected, the dark particle turns out to be alumina (Fig. 30 and Table 3), while the control area outside the two particles (spot no. 4) shows only the typical signs for grade 5 titanium (titanium, aluminium and vanadium) (Fig. 31 and Table 4).



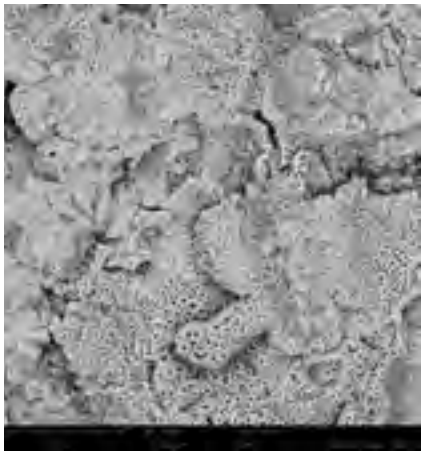
32 I Example of EDX mapping: green = chrome; blue = aluminium (Adin Touareg; x 2,500).



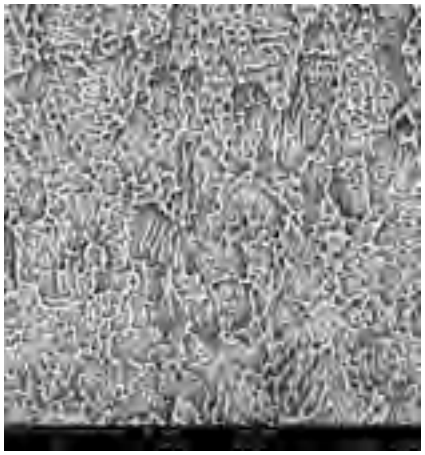
33 I AlphaBio – SPI Spiral Implant (x 2,500).



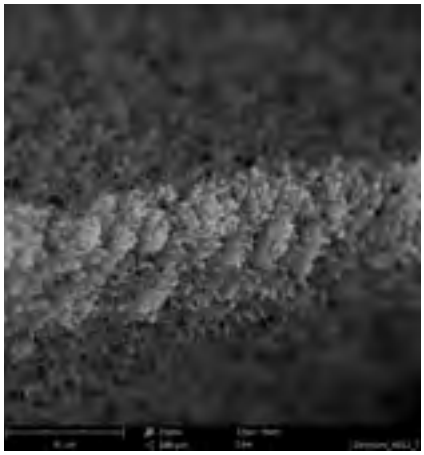
34 I Argon Medical – K3Pro Sure (x 2,500).



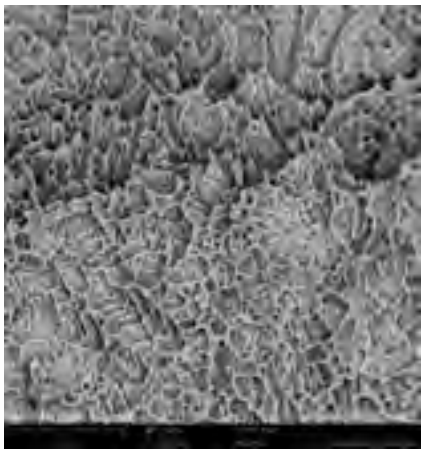
35 I Avinent – Ocean (x 2,500).



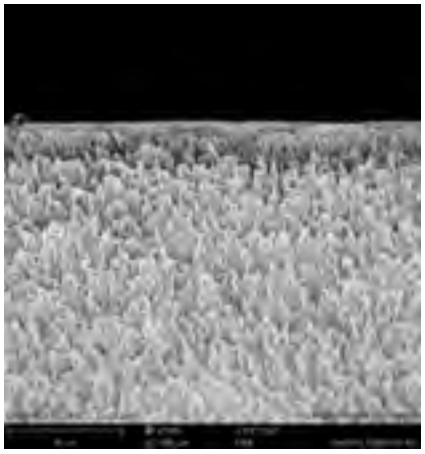
36 I C-Tech – Esthetic Line (x 2,500).



37 I Dentium – Superline (x 2,500).



38 I Nucleoss – T4 Implant (x 2,500).



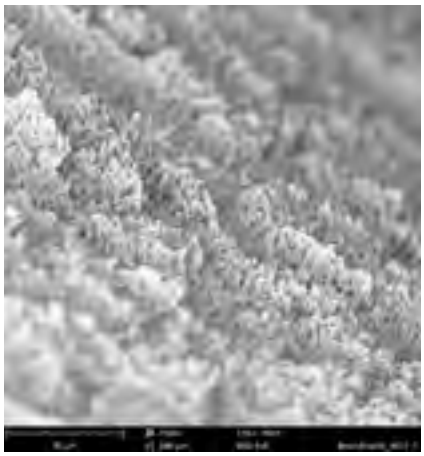
39 I Osstem – TS III (x 2,500).

40 I Phibo – Aurea (x 2,500).

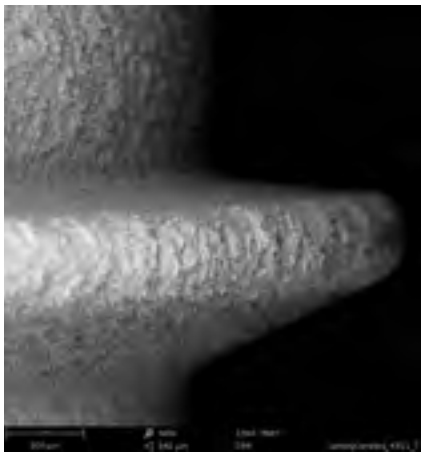
The so-called EDX mapping assigns each elemental signal its own colour, which can then be superimposed on the SEM image as a coloured overlay. Figure 32 shows the detected chromium in green and aluminium in blue.

Fortunately, the vast majority of the studied implants exhibited no significant contamination. By way of example, the surfaces of titanium implants by some manufacturers (Alpha-Bio, Argon Medical, Avinent, C-Tech, Dentium, Nucleoss, Osstem, Phibo,

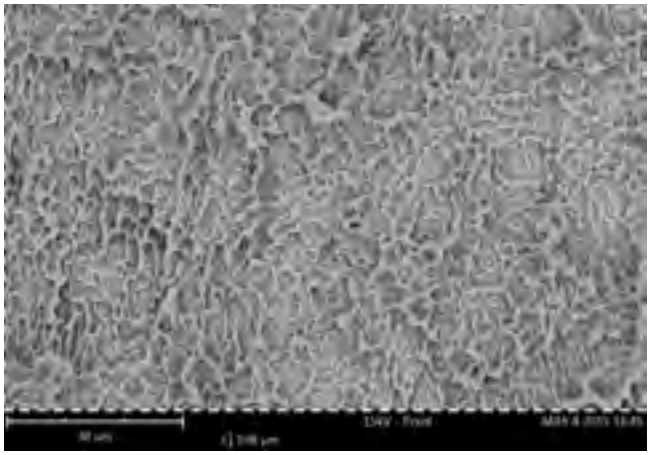
41 I SGS – Pi (x 2,500).



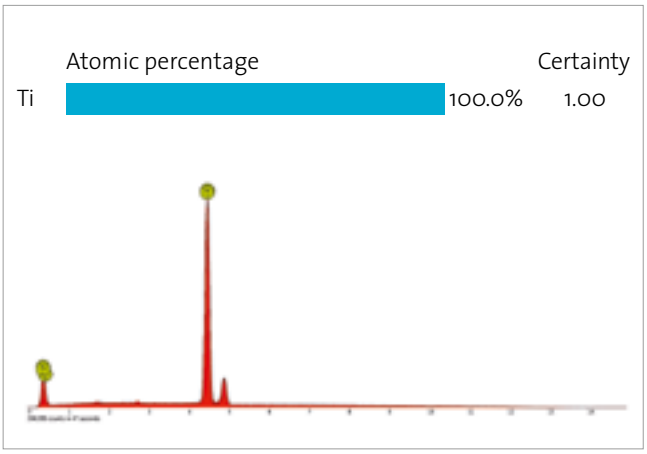
42 I Bredent – BlueSky (x 2,500).



43 I Camlog – Conelog (x 500).



44 I Camlog – Conelog, EDX area analysis (x 2,500).



45 I Quantitative and qualitative elemental analysis of the Camlog Conelog implant surface (pure titanium).

SGS and Bredent) are presented at comparable magnification in Figures 33 to 42. The continuous improvement process in Camlog implants deserves special mention. While the samples analyzed in 2008 showed residues of blasting material on up to ten per cent of the total surface, the figure for 2011 was less than three per cent for the same implant type. In the current study, all three implant models (Camlog, Conelog and iSy) exhibited completely residue-free surfaces in the elemental analysis. Thus, the spectrum of the EDX analysis of the Conelog implant surface indicates only titanium (Figs. 43 to 45).

Discussion

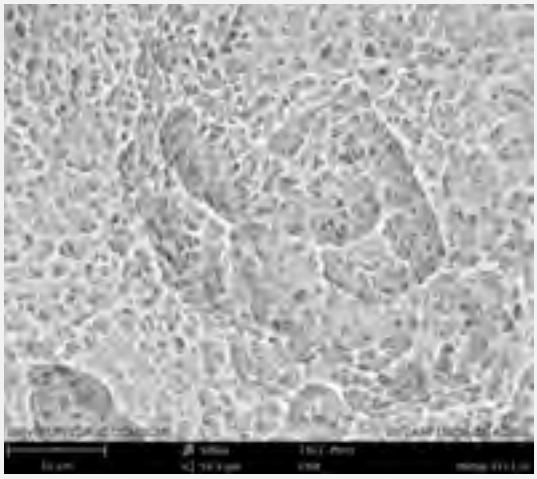
The clinical relevance of minuscule particles and contaminants on dental implants is a matter of debate. Even the manufacturers of implants on whose implants more or less large amounts of organic or inorganic contaminants were found in tests have reported statistical success rates that are not different from those of other implants, proving their point with specially conducted studies.

Up to a point, biocompatible aluminium oxide residues are unlikely to affect the bone-implant contact (BIC) [18,19]. But how does the human body handle polyethylene or chromium-nickel-steel particles? Even if these particles are relatively firmly attached to the implant surface, they are likely to become detached by the resulting frictional forces in the bone bed as the implants are inserted at torques in the double digits to achieve the desired level of primary stability.

Particles with a diameter of less than 10 µm are susceptible to uptake by macrophages through phagocytosis [20], so that questions related to the clinical relevance of such impurities cannot simply be brushed aside. From orthopaedics it is known that particle-induced macrophage activation is associated with an increased osteoclastogenesis and may therefore cause increased bone resorption [21].

Limitations of SEM resolution – Or: How clean would you like it?

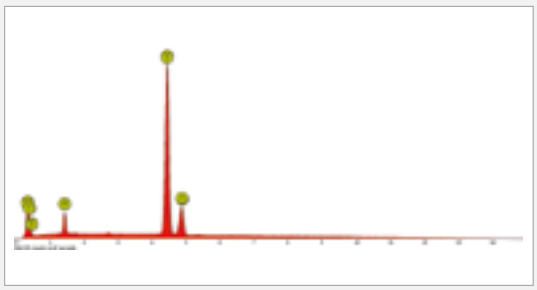
46 I Paltop Advanced Dental Implant (x 500).



47 I Paltop Advanced Dental Implant (x 5,000).

The scope of elemental analysis by energy-dispersive X-ray spectroscopy (EDX) as used in this study is limited because it does not detect superficial contaminations on the nanoscale. As the electron beam impacts the implant, it is scattered in the sample, so that the emitted X-rays form a pear-shaped volume having a diameter of 0.1 to 2 µm. Thus, signals originating in the top few nanometres of an implant surface are extinguished by deeper signals.

Only X-ray photoelectron spectroscopy (XPS) can produce such sensitive evidence in layers 5 to 10 nm in thickness. The kinetic energy of the photoelectrons of an atom is measured to determine its binding energy, which is characteristic of the atom from which the electron emanates. This can be used to determine whether the cleaning process after acid etching of the implant surface has left traces of acid or if the water used for the cleaning itself was clean enough. An Israeli manufacturer (Paltop) has decided to consistently clean their products with ultra-pure water (UPW), which is rather expensive to produce compared to regular demineralized water and is otherwise mostly employed by the semiconductor industry. XPS analyses of the implant surfaces thus cleaned show no traces of sulphur, silicon, zinc or chlorine, inorganic impurities not infrequently found in the XPS analyses of the sandblasted and acid-etched surfaces of implants by other manufacturers investigated in 2014 as the corresponding ISIS identification cards were prepared [22]. The material contrast image showed no residue on the Ti-6AL-4V ELI implant (Figs. 46 and 47). The corresponding EDX analysis shows only the typical elements for grade 5 titanium (Fig. 48 and Table 5).



48 I EDX spectrum for the Paltop implant.

	Atomic percentage	Certainty
Ti	65.6%	1.00
O	24.4%	0.96
Al	7.3%	0.99
V	2.7%	0.96

Table 5 I Quantitative elemental analysis of the Ti-6Al-4V ELI implant surface (Paltop).

One point of criticism that has been repeatedly expressed by some manufacturers in the context of the present study has already been responded to in the published report on the 2011/12 implant trial.

The criticism goes roughly like this: The implant specimen used in this study patterns are only random samples. A scientific study requires at least five to seven implants of each implant type to make statistically valid statements about a quality standard.

But the reply can only be that those implants are medical devices where – unlike with general technical goods – defects cannot be remedied or "repaired"

Sterile packaging – bedchamber of implants: from simple and non-sterile to elaborately protected

While a limited number of technologies has now taken over the manufacturing of implants, the ingenuity of manufacturers in packaging their implants apparently knows no limits. The studied implants represented a wide variety of designs, where aspects such as ease of use, safe transport, contamination-free storage and production costs appeared to be in competition.

On the one hand, there are uncompromising elaborate constructions that offer safe handling and are sure to eat into the manufacturer's profit margin (Fig. 49). The illustration shows a complex packaging design where the implant is inserted in a separate sleeve made of the same material (grade 5 titanium) as the implant itself to reduce the influence of other materials to a minimum.

On the other hand, there are simple packaging solutions where the implant is simply sealed in a double plastic bag and the manufacturer seems to have deemed even a stabilizing outer wrapper such as a blister pack to be too costly. Figure 50 shows a sterile package compromised by a sharp-edged cover screw.

49 I Example of elaborate sterile packaging, longitudinal section (Paltop).

50 I Sterile packaging compromised by a sharp-edged cover screw (BlueSkyBio).

once inserted. Each of the implants examined was sterile-packed and intended for use in patients.

One might therefore counter by asking why the manufacturers' quality management is obviously subject to daily fluctuations and why implants are released which yield suboptimal results in individual testing.

Each day we are tasked with winning the trust of our patients, and each time we perform an implantological treatment we are trying to prove worthy of this trust. For individual manufacturers to reject studies like the present one or to allege image manipulation is not particularly helpful in this endeavour. But the vast majority of the studied implants presents an encouraging picture. By far most manufacturers are aware of their responsibility and provide implantologists in Europe with solidly made systems.

To find the list of references visit the web (www.teamwork-media.de). Follow the link "Literaturverzeichnis" in the left sidebar.

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Appeal to readers

We would have liked to be able to present results for implants by the following manufacturers:

· Ihde Dental (Switzerland)
· MozoGrau (Spain)
· SHINHUNG (Korea)
· Etgar Implants (Israel)
· Signo Vinces (Portugal/Brazil)

Despite several reminders or placement of a regular order, these implants could not be analyzed.

If you are a user of implants by these manufacturers and as interested as we are in the results, please mail us at duddeck@bdizedi.org.

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The inherent problem that frequently arises with titanium implants is an esthetic one. Patients with thin, translucent gums or those who are prone to gum recession (as are many aging people) may end up with gray gums or titanium showing around the margin of the crown [4, 12]. The term corrosion is defined as the process of interaction between a solid material and its chemical environment, which leads to a loss of substance from material, a change in its structural characteristics, or loss of structural integrity [12]. Since zirconia is non-metallic and white, it is much more natural looking than titanium. It's a perfect base color that closely mimics what nature created in the first place. [4, 12].

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Single narrow-diameter implant restoration in a maxillary molar extraction socket

Predictable success with immediate implant placement

LUIZ GUSTAVO N. MELO, DDS, PHD, GOIÂNIA, GO, BRAZIL

In the replacement of missing teeth, a paradigm shift has occurred regarding immediate implant placement and/or restoration in the aesthetic zone. In molar sites, however, anatomical, occlusal, and biomechanical considerations remain principal factors influencing the outcome of this treatment paradigm. The aim of this clinical case report is to evaluate immediate placement and immediate restoration of a narrow-diameter implant in a fresh maxillary molar extraction socket.

The early Brånemark protocol prescribed a healing period of six to eight months between tooth extraction and implant placement. It was believed that this was necessary to avoid infection and allow for better primary stability at implant placement [1].

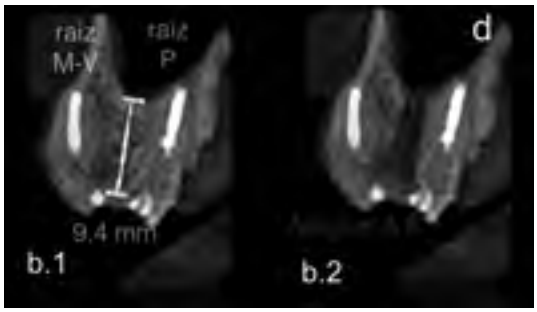
1 | Extensive loss of coronal tooth material – buccal view.

2 | Extensive loss of coronal tooth material – occlusal view.

The need for fewer surgical interventions and shorter implant treatment times has led to the development of revised placement and loading protocols [2]. Recently, growing interest in and application of immediate/early placement protocols has made this an acceptable treatment approach, particularly in the aesthetic zone [3]. In addition to the considerable advantages that immediate protocols offer over conventional ones, immediate implant placement in fresh extraction sockets may limit the extent of bone remodeling and make augmentation procedures unnecessary [2,4,5].

While immediate implants in the anterior zone serve patients' aesthetic, masticatory, and phonetic needs, immediate replacement of molars also offers the advantage of maintaining a proper arch form and occlusal scheme [2]. However, it has been observed that clinicians and researchers commonly avoid implant placement in molar extraction sockets or loading implants immediately after placement in the posterior regions of the upper jaw [2]. Additional risk factors include the higher occlusal forces there, as well as the limited vertical bone quantity caused by the presence of the maxillary sinus.

Although some authors have demonstrated benefits from using wide-diameter implants in molar sockets, placing such implants immediately into maxillary molar sockets poses an extra challenge for the clinician because of the difficulty in positioning the implant, due to the residual interradicular bone.



3 I Cone beam scans to evaluate the bony vertical dimensions.

However, the use of narrow implants could represent an alternative to offset the limitations created by the inter-radicular bone. Recently, some authors have observed high success rates for narrow-diameter implants installed in the posterior region [6,7].

In the following clinical case, the clinical and radiographic behavior of a narrow-diameter implant placed in a maxillary molar extraction socket and immediately restored was evaluated.

Clinical case

The indication for tooth extraction and immediate implant placement was extensive loss of coronal tooth material, preventing conventional prosthetic treatment. The immediate placement approach was considered because the buccal socket wall was intact and the periodontal biotype was medium to thick (Figs. 1 and 2). Cone beam computed tomographic (CBCT) scans were performed to evaluate the bony vertical dimensions (Fig. 3).

On the day of implant surgery, antimicrobial prophylaxis was obtained by giving a single oral dose of appropriate antibiotic (2 g amoxicillin) one hour prior to surgery. Before the surgical procedure, the patient was instructed to rinse twice for one minute with 0.2% chlorhexidine gluconate. Local anaesthesia (mepivacaine hydrochloride 2% with adrenaline 1:100,000) was administered before the surgical procedure.

As immediate implant placement depends critically on the preservation of the bony walls of the socket, the extraction was carried out by sectioning the tooth to allow for removal of the roots individually and avoid potential fracture of any of the associated bony elements, especially the buccal plate. To minimize the surgical trauma as much as possible and avoid damaging the buccal bony plate and surrounding bone margins of the alveolus, fine luxators were used. Flap elevation was avoided, the roots were carefully sectioned, and the inter-radicular bone within the socket was used to manipulate the roots, which were then elevated without removing any bone (Figs. 4 to 6).

4 I Sectioning of the roots – buccal view.

5 I Sectioning of the roots – occlusal view.

6 I Extracted roots.

7 I Socket after extraction – buccal view.

8 I Socket after extraction – occlusal view.

9 I Preparation of the inter-radicular bone.

10 I Implant placement into the center of the socket.

11 I Implant placed slightly subcrestally.

Once all the roots were removed successfully, the bony socket walls were inspected to confirm the presence of four intact outer walls and the absence of any pathology or fenestrations. All visible soft-tissue fragments were removed by curette, and the socket was meticulously cleaned of any infected debris (Figs. 7 and 8).

12 I Standard Ankylos abutment straight.

Preparation of the inter-radicular bone was then initiated. A round bur was positioned onto the inter-radicular septum, placing the drill in the center of the socket and in relation to the desired axis of the implant placement. A suitable tapered osteotomy site was created to receive a 3.5 mm diameter Ankylos A8 implant (3.5 x 8 mm) (Fig. 9).

After site preparation, the implant was installed at low speed using the implant surgical unit (Fig. 10). It was primarily seated at 50 Ncm with the implant surgical unit and then finally seated by hand with an implant insertion wrench until the implant platform ended 1.0 mm subcrestally (Fig. 11).

After implant installation, a standard Ankylos b/3.0/4.0 prosthetic abutment was installed with 25 Ncm of torque, and an acrylic provisional crown

13 I
Torque screw driver for abutment placement.

14 I
Standard abutment placed – buccal view.

15 I
Standard abutment placed – occlusal view.

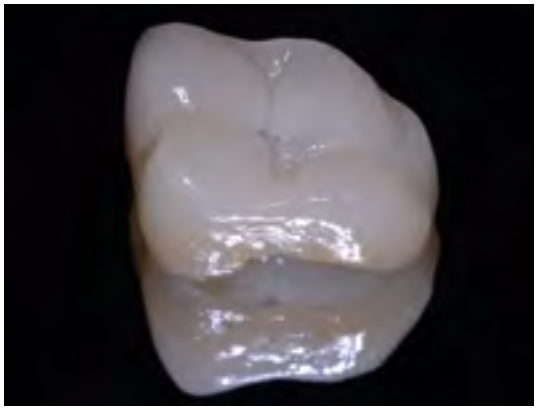
16 I
Temporary resin cap – buccal view.

17 I
Temporary resin cap – occlusal view.

was made (Figs. 12 to 18). To compensate for the natural bone resorption occurring after tooth extraction, a bovine-derived xenograft (Bio-Oss, Geistlich) was used (Figs. 19 and 20). After that, the provisional restoration was successively re-placed onto the implant (Figs. 21 and 22).

The patient was instructed not to use a toothbrush in the area for three days, and a postoperative examination was performed one week later. One- and three-month follow-up visits were carried out.

At the six-week post-operative visit, a subsequent bone-level impression of the implant using additional silicon impression material (Virtual, Ivoclar Vivadent) was made for the fabrication of the definitive all-ceramic crown. A densely sintered zirconia abutment made of HIP yttrium-stabilized zirconium oxide was used. The abutment was prepared for ceramic veneer, and after eight weeks of provisionalization, the ceramic crown was cemented to the implant in occlusion (Fig. 23). A periapical digital film was taken to verify radiographic healing at one year after implant treatment (Fig. 24).



18 I
Provisional crown.

19 | Bovine derived xenograft.

20 | Graft material placed into socket.

21 | Provisional restoration – buccal view.

22 | Provisional restoration – occlusal view.

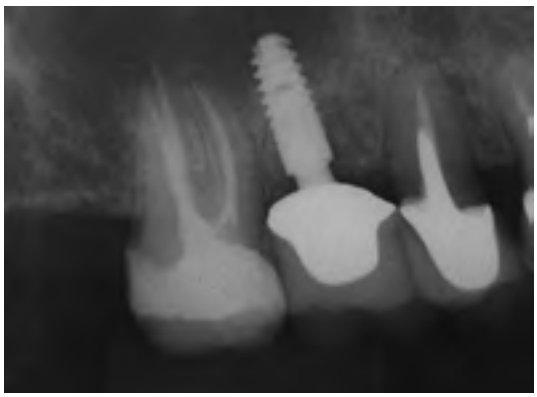
23 | Final restoration cemented to the implant.

Conclusion

To achieve predictable success with immediate placement of implants into fresh posterior extraction sockets, critical clinical keys that must be respected are:

1) atraumatic tooth removal without flap elevation and

24 | Radiographic follow-up one year after implant placement.



2) placement of a bone graft into the bone and tissue zones in the residual gap around an immediate fresh-socket implant, with a provisional restoration acting as a prosthetic socket-sealing device [8,9]. These clinical steps are helpful to limit the amount of buccal contour change of the extraction site ridge. They may potentially enhance the thickness of the peri-implant soft tissues coronal to the implant/abutment interface. ■

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Immediate implant placement following minimally invasive extraction of a deeply fractured maxillary incisor

Immediate implant placement in the aesthetic zone

DR HAN VAN DIJK, DDS, MSC, AND DR JOOST BROUWERS, DDS, MSC, AMERSFOORT, THE NETHERLANDS

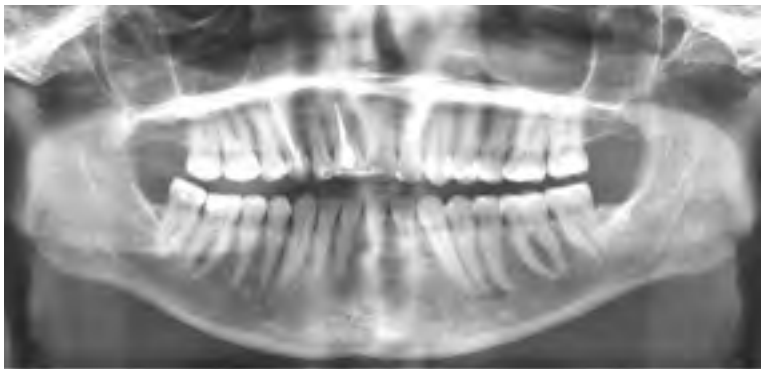
The present case report describes an immediate implant procedure following the extraction of an endodontically treated maxillary right central incisor and insertion of a Bego Semados RSX implant. The extracted tooth, which had suffered trauma, could not be saved because the fracture line of the clinical crown was located well below the crestal bone level. The extraction was performed using the Benex extraction system to protect the hard and soft tissues. The implant bed was prepared immediately following the extraction. It was relocated palatally to preserve the labial bone lamella and to obtain a good aesthetic result. The definitive prosthetic restoration was delivered after four months of non-submerged healing without functional loading. The treatment was successful and the aesthetic result was good.

Introduction

Implant placement in the aesthetic zone is a demanding surgical procedure. It is often difficult to achieve attractive red-white aesthetics – and even more so if the soft-tissue situation is less than optimal. Extensive soft-tissue and hard-tissue augmentation can be avoided by placing an implant immediately after tooth removal. Delayed implant placement, too, is considered a safe approach that maintains the existing soft and hard tissues and achieves appealing clinical results.

However, researcher opinions vary when it comes to differences in clinical outcomes in cases of delayed vs immediate implant placement. According to a current systematic review, delayed implant placement seems to help preserve the peri-implant soft and hard tissues, especially in the presence of a thin vestibular mucosa [9]. Other authors of systematic reviews, however, report that during the first twelve months, crestal bone loss can be expected to be less after immediate placement than after delayed placement [10,11].

A low-trauma extraction regime to preserve the walls of the extraction socket, followed by immediate placement of an endosseous implant, is a good prerequisite for complication-free healing and a



1 | Conservatively treated dentition, free of caries; no significant findings at site 11. The stabilizing composite splint on teeth 12 and 21 is clearly visible.

2 | The dental film revealed a thin, barely perceptible horizontal fracture line about 2 mm below the level of the alveolar bone crest.

favourable clinical outcome. A well-preserved and adequately dimensioned buccal bone wall will increase the chances for the successful osseointegration of an implant while at the same time protecting the peri-implant soft tissues and achieving an aesthetic treatment result [12]. This case report presents the results of an immediate placement procedure in the aesthetic zone following minimally invasive extraction of a maxillary right central incisor and additional augmentative measures after four months of non-submerged healing without functional loading.

Case report and surgical procedure

A 38-year-old patient presented for rehabilitation of a traumatized, endodontically pre-treated maxillary right central incisor (tooth 11). Endodontically treated teeth are associated with an increased fracture risk due to their higher brittleness compared to vital teeth, especially in the presence of shear forces [5]. Adhesive endodontic posts made of fibreglass provide better stability than conventional cemented endodontic posts or no endodontic post [6]. In the present case, the tooth had not received an endodontic post. The trauma tooth 11 had been exposed to had resulted in fracture in the upper third of the root. The afflicted tooth had been temporarily connected to teeth 12 and 21 alio loco using composite resin combined with an acid-etch technique to stabilize the clinical crown. The gingival margin had shifted about 5 mm compared to the contralateral tooth 21, whereas the positions of the two papillae had remained unchanged thanks to the well-preserved interproximal bone septa.

The radiograph obtained during the same treatment session showed no significant findings (Fig. 1). The dental film that was subsequently created showed a thin horizontal fracture line across the entire width of the root, located about 2 mm below the crestal bone (Fig. 2). The radiograph showed no evidence of apical inflammation.

Preparing a circular enclosure of the tooth structure at least 2 mm in width to ensure a successful prosthetic rehabilitation with an endodontic post and a single crown (ferrule effect) would have required either surgical root lengthening or orthodontic extrusion [7]. However, with a root fracture as deep as in the present case, surgical tooth lengthening was not an option. Given the need to preserve the biologic width, alternative therapeutic options were restricted either to orthodontic extrusion or the removal of the tooth and its replacement by a bridge or an implant-supported restoration. Prosthetic gap closure by means of a fixed anterior bridge from tooth 12 to tooth 21 was not considered, as the two potential abutments were free of caries and restorations. It was therefore agreed with the patient to remove the fractured tooth and replace it with an implant in the same session.

After intensive consultations with the patient, and given the well-preserved papillae and bony walls of the alveolus, we decided to remove the fractured tooth and immediately place a Bego Semados RSX implant (Bego Implant Systems, Bremen, Germany) to benefit from a favourable baseline situation to shape the peri-implant sulcus. The radiograph showed no indications of apical periodontitis, so the risk of retrograde peri-implantitis was considered to be low [8].

The medical history revealed no systemic disease, with the exception of a mild case of well-managed multiple sclerosis. As this underlying systemic disease was not very pronounced, the patient was classified as ASA 2 (patient with mild systemic disease) according to the classification of the American Society of Anesthesiologists [1].

In a first step, the clinical crown of tooth 11 was removed with a periotome under local anaesthesia (Fig. 3). This exposed the deep subgingival crown/root fracture (Fig. 4). Due to the small but still visible recession of the marginal gingiva on

3 I Mobilization and careful removal of the coronal part of tooth 11 by periotome.

4 I Deep crown/root fracture leaving no chance to preserve the tooth.

5 I Using the Benex Extractor to gently remove the remaining parts of the root from the socket.

6 I Visual inspection of the extraction socket revealed an intact vestibular bone lamella.

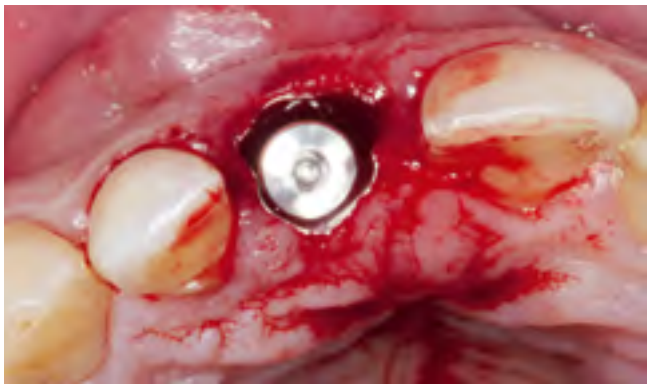
7 I Preparing the implant bed with the Bego Semados RSX drill set.

8 I Inserting the Bego Semados RSX implant.

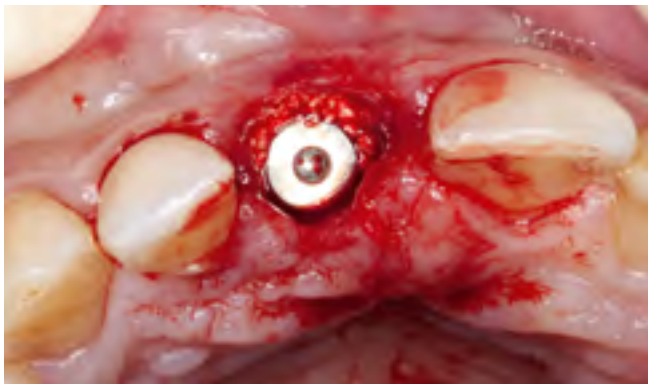
the affected tooth, a gradual atraumatic extraction could have been performed by means of an orthodontic extrusion of the root [13,14]. This method is particularly suitable in cases where the biologic width is to be restored [15]. In the present case, there was no loss of biologic width, and the orthodontic procedure may take up to six weeks [14]. We therefore performed an atraumatic vertical extraction using the Benex system (Benex, Lucerne, Switzerland), a proven, very effective and gentle clinical procedure [2,16] (Fig. 5). Visual inspection of the extraction socket showed that the vestibular bone wall had remained intact, thanks to the careful extraction (Fig. 6). The implant bed was prepared with the Bego Semados drill set without the use of a drilling template and without reflecting a mucoperiosteal flap. The implant bed was displaced slightly palatally to preserve the vestibular bone lamella and to prevent vestibular perforation (Fig. 7).

9 I Control radiograph prior to implant placement.

10 I Measuring the primary stability using the Osstell ISQ meter.

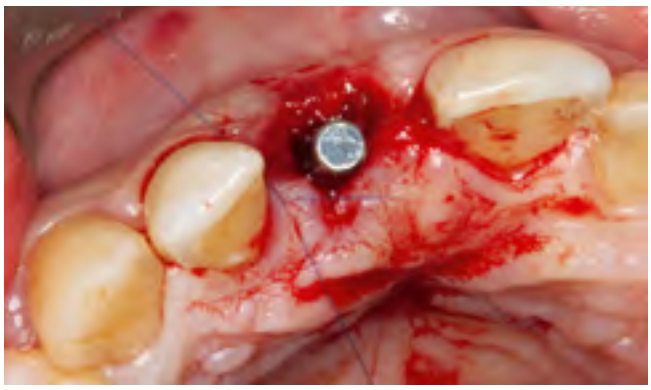


11 I Vestibular gap between the bone lamella and the implant, caused by palatal repositioning.



12 I The vestibular gap was filled with bovine bone substitute (Bego Oss).

13 I In addition, a porcine collagen matrix was placed to support the thin vestibular mucosa (Bego Fleece).



14 I Securing the bone substitute and collagen fleece in place using a lasso suture.

The implant with a diameter of 4.1 mm and a length of 15.0 mm was inserted with a torque of 50 Ncm (Fig. 8). The final implant position was re-checked on a control radiograph prior to implant placement (Fig. 9). The primary stability of the implant was measured by resonance frequency analysis (RFA) using the Osstell ISQ meter (Osstell, Göteborg, Sweden). The Implant Stability Quotient (ISQ) was 71 and therefore above the recommended threshold of 60 (Fig. 10). At ISQ values below this threshold it is assumed that provisional immediate restoration and immediate loading would adversely affect implant stability and the implant survival rate [3,4].

The vestibular gap created by the palatal repositioning of the implant (Fig. 11) was filled with a bovine bone substitute (Bego Oss; Bego Implant Systems) to help prevent crestal bone resorption (Fig. 12). In addition, a porcine collagen fleece (Bego Fleece; Bego Implant Systems) was applied on the labial side to ensure adequate support for the soft tissues and to provide additional support for the regeneration of the bone (Fig. 13). The collagen fleece and the bone substitute were secured in place using a lasso suture (Ethicon 6.0 monocrylic suture; Johnson & Johnson, New Brunswick, New Jersey, USA) in the area near the gingival margin (Fig. 14). As the anatomical conditions were less than optimal, we opted for non-submerged healing without functional loading of the implant.

To achieve the best possible emergence profile, a custom-made temporary crown was attached to an immediate temporary abutment made of titanium (Bego Implant Systems) (Fig. 15). An excellent surface finish and polish was needed to avoid irrita-

15 I A custom provisional on the immediate temporary abutment for an optimized emergence profile.

16 I The provisional crown in situ.

17 I Six weeks after provisionalization and the beginning of non-submerged healing.

18 I Control radiograph immediately after delivery of the final restoration.

19 I Definitive all-ceramic crown. No further recession has occurred on the vestibular side. The situation of the papillae is also unchanged.

20 I Control radiograph one year after delivery of the final restoration.

tion of the mucous membrane. The custom-shaped tissue side of the temporary restoration provided sufficient soft-tissue support around the gingival margin (Fig. 16).

Six weeks after provisionalization and non-submerged healing, the peri-implant tissues were clinically healthy (Fig. 17). Four months after implant placement, the definitive prosthetic restoration, an all-ceramic single crown (IPS e.max; Ivoclar Vivadent, Schaan, Liechtenstein), was cemented on a custom abutment made of zirconia. Care was taken to ensure that no excess cement persisted in the peri-implant sulcus. The control radiograph taken immediately after delivery of the final restoration showed no signs of crestal bone resorption in the augmented area (Fig. 18). Despite the initial recession and the thin gingival biotype, a stable and aesthetically pleasing situation had been achieved. Nor were any clinical soft-tissue changes (Fig. 19) or any radiographic crestal bone loss (Fig. 20) found at the one-year follow-up.

Discussion

A thin gingival biotype as in the present case does not increase the risk of implant failure in itself [17]. Nevertheless, recession of the vestibular mucosa may occur within the first three months after implant surgery – even with the most careful extraction and implant procedures. Such a recession may adversely affect the Pink Esthetic Score (PES) [18-20]. In the present case, further recession of the mucosa could be prevented by providing an immediate temporary restoration and by contouring the emergence profile using a custom provisional abutment. The preservation of the vestibular bone lamella by a gentle extraction technique, a slight palatal relocation of the implant and augmentation using a bovine bone substitute were other significant factors

that contributed to the preservation of the crestal bone level [21-23]. A flapless approach was chosen as it reduces bone resorption by avoiding the more extensive surgical trauma of a mucoperiosteal flap [23]. The palatal relocation of the prepared implant bed was intended to further reduce the risk of perforation or fracture of the vestibular bone lamella.

Based on the currently available scientific evidence, the major share of bone remodelling occurs within the first year post-surgery [24-26]. The fact that no crestal bone loss was evident at one year can be taken as an indication of a successful therapeutic approach. Another important success factor was the avoidance of excess cement in the peri-implant sulcus, which would have increased the risk of mucositis and peri-implantitis [27,28]. The key to long-term treatment success, however, still lies in good oral hygiene on the part of the patient [29]. How well the patient can continue performing adequate oral hygiene over the long run remains to be seen. Regular recall appointments at close intervals will be necessary to ensure the long-term success of this implant treatment.

Conclusion

The follow-ups at six weeks and one year showed an aesthetically pleasing and clinically stable result of the implant treatment despite less-than-optimal anatomical conditions. Important success factors included the minimally invasive extraction method, the measures taken to achieve hard- and soft-tissue augmentation and the provisional immediate restoration with a custom abutment. Another contributing factor was the apically tapered, root-shaped implant design that increased the primary stability and minimized the pressure effect on the vestibular bone lamella, reducing the risk of apical perforation of the labial bone wall.

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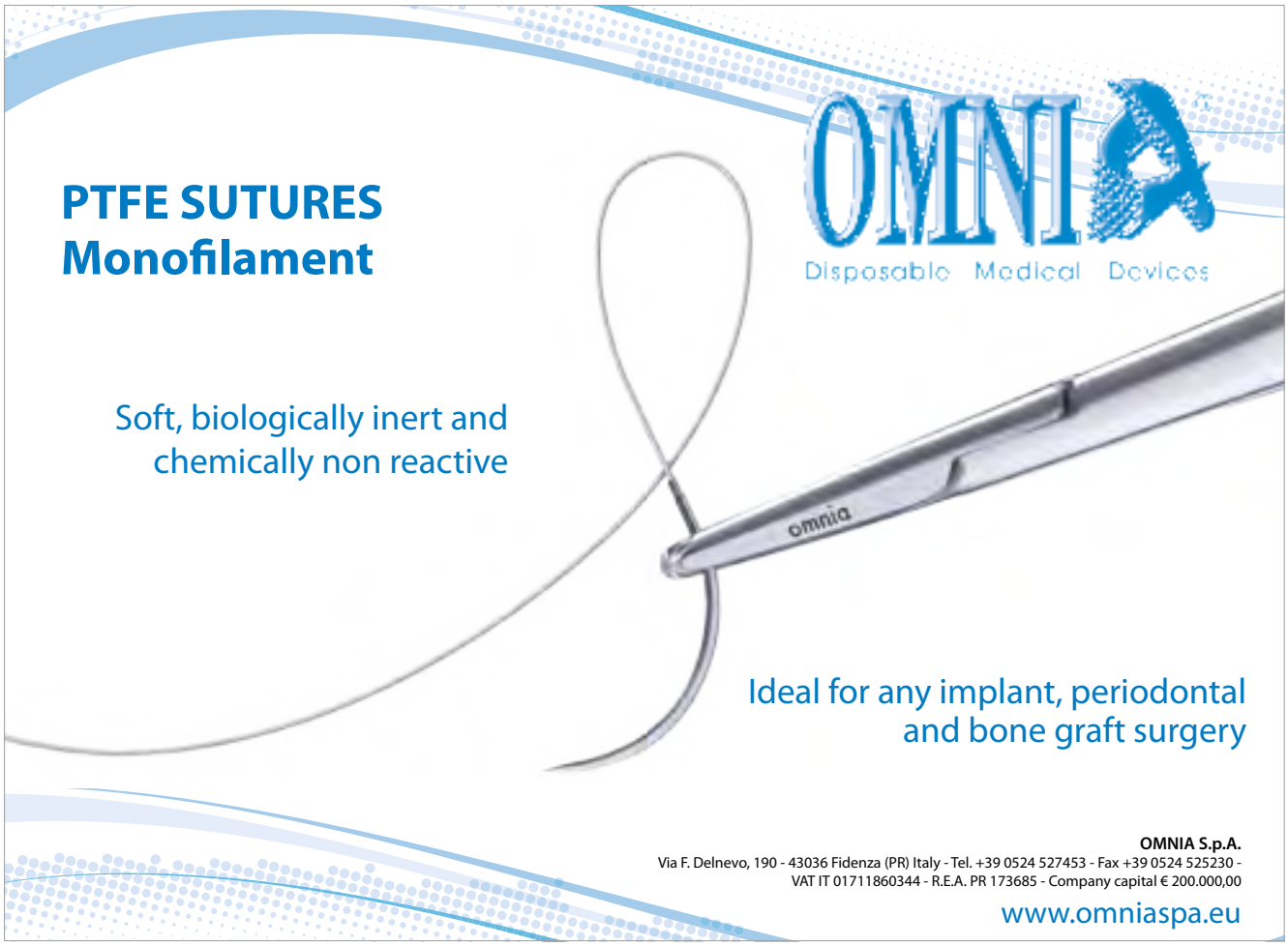

The SKY fast & fixed application after eight years of clinical experience

A reliable approach

DR JÖRG NEUGEBAUER[1,4], DR FRANK KISTLER[1], DR STEFFEN KISTLER[1], STEPHAN ADLER[2], HERBERT SONTHEIMER[3] AND DR GEORG BAYER[1]

Many augmentation procedures have become established for the reconstruction of different defect morphologies in order to rebuild the reduced bone bed after tooth loss to facilitate implant treatment. But these are often rejected – by clinicians because of their complexity or by patients because of the expected postoperative stress [4]. One consequence of this could be to dispense with implants altogether in order to avoid any potential risk in the first place. Owing to the necessary consolidation phases in two-stage ridge reconstructions and the extended healing times in augmentation cases, the period of edentulism will be relatively long; also, immediate-restoration options will be limited. Alternatively, minimally invasive techniques have been established to reduce the extent to which augmentations are required at or prior to implant placement as much as possible and to facilitate early – if temporary – restoration after implant placement [5].

The first reports on the use of angulated implants were case reports and biomechanical evaluation studies published 15 years ago [1,15]. Numerous accounts of experimental applications were published at the time [16]. By inserting the posterior implants at an angle of 30° to 40° to the occlusal plane, the existing bone can be exploited better without encroaching on the maxillary sinus or the mandibular canal [12,18]. Yet not only the surgical procedure itself but also the prosthetic treatment was subject to limitations, as the required system components were not available for use in routine procedures. Angulated insertion required a modification of implant bodies, with a microstructure surface extending to the upper edge so as to avoid increased peri-implant bone loss [8]. The first-generation prosthetic components were larger in size based on experimental clinical evidence using the standard components available at that time. The rationale was that the superstructures should obtain stable support from a reduced number of implants; this required high mechanical stability on the part of the framework.

1a | CBCT and implant planning for a patient with chronic periodontal disease to produce a 3D template (Galileo Comfort; Sirona Dental, Bensheim, Germany).

Application of 3D diagnostics

Over the past eight years, the technical and clinical application of 3D diagnostics has been continuously improved. The number of patients who are nearly or completely edentulous at the start of treatment

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[4] Interdisciplinary Policlinic for Oral Surgery and Implantology and Department of Oral and Maxillofacial Plastic Surgery, University of Cologne, Germany

1b | 3D drilling template with cut-back teeth for angulated implant insertion (Classic guide; Sicat, Bonn, Germany).

1c | Prepared provisional with bores to accommodate the titanium sleeves.

is shrinking. On the other hand, more patients are treated whose chronic periodontal disease is so far advanced that a large number of teeth must be removed surgically and replaced by an immediate restoration. This often requires very meticulous treatment planning, which is greatly assisted by – now more widely available – 3D diagnostics (Figs. 1a to k). In addition to presenting a very detailed image of ongoing osteolytic processes, 3D data can be used to create a drilling template [21,26]. The drilling template is first used by the dental technician to prepare, to the extent possible, the provisional restoration ahead of surgery [19]. This allows a beneficial modification of the procedure, as the dentist already has the provisionals available at the beginning of the surgical step. Impressions – which implies a longer postoperative waiting period until the definitive restoration is made – thus become

1d | Disinfection of the extraction sockets by antimicrobial photodynamic therapy (Helbo 3D Pocket Probe; bredent medical, Senden, Germany).

1e | Inserting the 3D template and sleeves for pilot drilling.

1f | Angulated implant placement following minimally invasive implant site preparation without a mucoperiosteal flap (blueSky; bredent medical, Senden, Germany).

1g | Wound closure after delivering the abutments and securing the titanium sleeves (SKY fast & fixed; bredent medical, Senden, Germany).

1h I Bonding the titanium sleeves in the pre-fabricated provisional with a supporting palatal bar.

1i I Control radiograph of the implants and abutments taken while finishing the provisional.

1j I Finished provisional before delivery.

1k I Provisional in situ immediately after surgery.

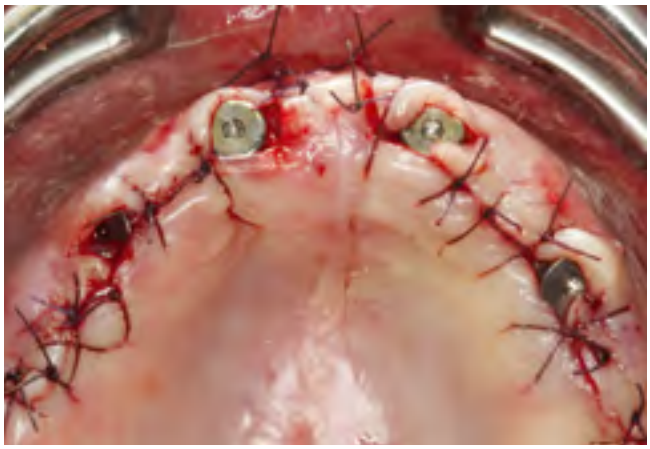
unnecessary. Especially in patients with relatively many remaining teeth, after an intermittent extraction, the drilling template can be adapted precisely to those teeth that are not to be replaced by implants. Next, the tooth or teeth are extracted and the implant bed(s) prepared. By placing the implants with the help of a drilling template, flaps will be partly or completely unnecessary in selected cases, reducing postoperative morbidity but not lowering the success rates [22].

Extended indications

The standard protocol of immediate placement and immediate restoration requires compliance with strict parameters not present in every patient. Thus, the maxillary sinus may extend far anteriorly, preventing the placement of six implants in the anterior maxilla at a sufficient interimplant distance. Alternatively, it is possible to initially place and immediately restore four implants, while inserting ultra-short implants in the posterior region or performing a sinus-floor elevation. The posterior implants will first be allowed to heal for two to three months; once osseointegrated, they will be used along with the immediately loaded implants to support a full-arch fixed restoration.

The previously defined indication classes for standardized procedures following the principles of the Consensus Conference on Oral Implantology require a greater number of implants to support fixed dental restorations [6]. Clinical observation over the past eight years has shown that using a reduced number of implants is a highly reliable approach, so that fewer cases were treated with more implants (such as eight in the maxilla or six in the mandible). It was also shown that the placement of four implants in a smaller maxilla yields a highly functional result.

Because many patients will have been edentulous for a long time, immediate restoration will not always be a necessity. Especially when only four implants are placed in the maxilla, these tend to be placed in two phases, further reducing the cost (Figs. 2a to e).



2a I Two maxillary implants with healing abutments connected.

2b I Control radiograph after insertion of the angulated abutments.

2c I CAD/CAM framework, ready for attaching the veneers.

2d I Finished bridge on four implants with resin veneers (visio.lign; bredent medical, Senden, Germany).

2e I Inserted maxillary restoration with some pink resin as soft-tissue replacement.

3a I Monolithic zirconia CAD/CAM bridge (Zirkonzahn, Gais, Italy).

3b I Maxillary CAD/CAM bridge in situ, retained by axial screws.

Ongoing prosthetic developments

In the early years, superstructures were often individually cast and inserted adhesively to avoid stress. However, rapid developments in CAD/CAM technology have superseded this approach, as milled restorations now also achieve excellent mechanical stability. The occlusal surfaces are now often executed in acrylic resin on a titanium framework, replacing veneered zirconia frameworks as the former are easier to repair and less prone to chipping. On the other hand, the same CAD/CAM technology now allows the fabrication of monolithic (full-contour) zirconia frameworks whose base shade is matched but which are no longer completely veneered (Figs. 3a and b).

A metal framework can be fabricated using CAD/CAM. Alternatively, the framework may be produced from a highly elastic resin (PEEK) [13,14]. High-performance polymers are processed by pressing – no elaborate CAD/CAM design programmes or milling procedures are required. By adding a ceramic filler, the material achieves high strength and a modulus of elasticity similar to that of natural bone, which practically eliminates framework fractures [23].

4a I Finished resin framework for the definitive mandibular restoration (BioHPP; bredent medical, Senden, Germany).

4b I Securing the veneers on the resin framework (novo.lign; bredent medical, Senden, Germany).

4c I Bridges in situ, replacing missing aspects of the alveolar ridge with pink resin (crea.lign; bredent medical, Senden, Germany).

4d I Control radiograph of the restoration with typically radiolucent high-performance polymer (HPP) frameworks.

Compared to zirconia frameworks, these resin frameworks are significantly lighter, which patients perceived as comfortable during insertion because the foreign-body sensation is reduced. Since the material also has a very dense structure, water absorption is low. Surface changes associated with soft-tissue irritation or the inclusion of particles that cause discolouration are therefore unlikely. On the basal aspect, the definitive framework may be left in continuous contact with the mucosa, as the high-performance polymer exhibits a very favourable soft-tissue reaction [10,25]. It should be noted, however, that the PEEK surface is susceptible to mechanical roughening by prophylactic measures. Therefore, the framework should be completely encased with the same resin as that used for veneering in all regions not in direct contact with the mucosa (Figs. 4a to d).

Reduced-diameter implants

In addition to stable support, the configuration of the abutments is important for the framework design. At the centre of masticatory activity, it is therefore advisable to use wide abutments, rendering the contact surfaces of the superstructure almost identical to the buccolingual width of the dental arch. However, this can lead to problems, especially in the anterior mandible, because the patients perceive an encroachment on their tongue space following the loss of their mandibular anterior teeth. Reduced-diameter implants and abutments have the advantage that they ensure a stable support of the superstructure while being relatively slender in shape [11] (Figs. 5a to c).

Results

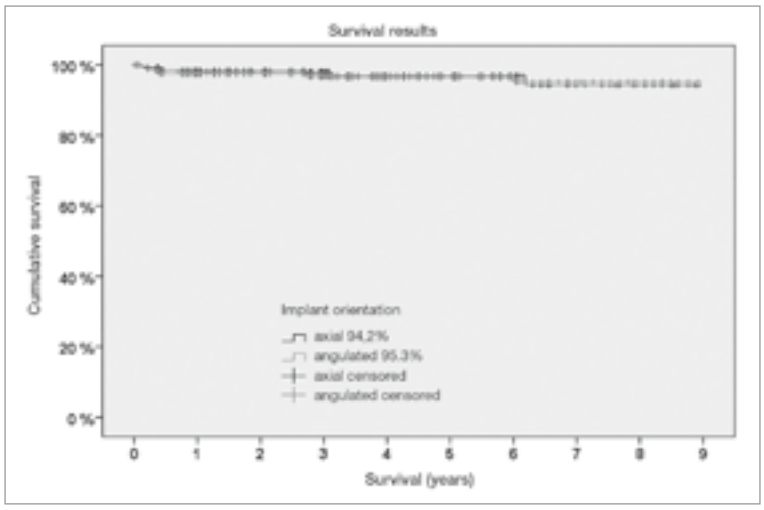
From June 2006 to April 2015, 323 patients received implants placed at an angle to avoid sinus-floor elevation procedures in the maxilla or vertical augmentation in the mandible, respectively. The patients had a mean age of 61.2 ± 14.1 years, with the youngest patient 41.2 and the oldest patient 88.5 years old.

Of these, 98 patients received maxillary restorations on an average of 5.9 implants, 32 patients received maxillary and mandibular restorations and another 193 patients received mandibular restorations on an average of 4.04 implants. Of the 32 patients with maxillary and mandibular restorations, 28 received six maxillary implants while

5a I Healthy and non-inflamed soft tissue, particularly around the abutments of the reduced-diameter implants (narrowSKY 3.5N; bredent medical, Senden, Germany).

5b I Only a minor part of the alveolar ridge had to be restored with resin thanks to the periodontally involved teeth having been treated early.

5c I Control radiograph after immediate placement and restoration in the mandible (SKY fast & fixed; bredent medical, Senden, Germany).



6 I Kaplan-Meier survival rates, shown separately for angulated and axial implants.

four received only four maxillary implants. These 32 patients each received four mandibular implants. Thus, a total of 1685 implants were placed, of which 47 were lost during the observation period, yielding a Kaplan-Meier survival rate in the overall population of 95.0 per cent. The survival rate for the angulated implants was therefore 95.3 per cent compared to 94.2 per cent for the axial implants (Fig. 6). The implants' mean time in situ was 3.6 ± 1.8 years. In the patients with implant failure, one patient lost all mandibular implants during the healing phase, and a two-stage approach was chosen for re-implantation. In the event of early implant losses in the maxilla, the angulated implants placed were invariably replaced. In the event of losses following prosthetic restoration, the angulated implants were replaced and re-incorporated into the existing superstructure. Lost axial implants were not replaced.

Implant failures most commonly affected smokers or patients with previous medical conditions. Regardless of the orientation of the implants, signs of peri-implantitis appeared where the bone supply had already been reduced at the time of insertion and where bone augmentation including bone substitutes and membrane techniques had been performed in addition to re-inserting the bone chips obtained during site preparation. Generally, the risk of peri-implantitis was lower in patients with angled implants, as fewer implants were placed in these cases on average.

Discussion

Immediate implant placement continues to be controversial among oral implantologists. Retrograde peri-implantitis may be the result, especially in combination with modern-type implant surfaces. However, it has been shown that antimicrobial photodynamic therapy (aPDT) can reduce this risk significantly. This requires extra time during the operation, but the time can be reduced by additional surgical treatment steps [20]. This is especially true of the incubation time of the photosensitizer. A second surgical assistant may be placed in charge of the irradiation, so that the total treatment time increases only marginally. However, the extra intraoperative effort is negligible compared to the time it takes to remove sequesters, insert replacement implants or treat peri-implantitis [2].

The long-term stability of angulated implants is judged not only by the success rate of the osseointegrated implants [17]. The classic treatment protocols require axial insertion to achieve physiological loading of the bone. One major factor is the peri-implant bone level. The assumption of increased bone loss in implants with angled abutments has not been confirmed for single implants and the treatment protocol described here [7-9].

That implant therapy is now widely accepted among patients has generally raised expectations of the definitive prosthetic treatment, especially in terms of phonetics, function and aesthetics. Patients assume that the situation prior to their tooth loss can be restored [3].

A choice between fixed or removable restorations must be made based on the vertical dimension and the extent of the reconstruction of atrophied hard and soft tissues, but must also consider the patient's speech and proper support of the perioral soft tissues. It may be necessary to prevent speech irregularities – especially in the formation of sibilants (S-like sounds) – by sealing the restoration against the alveolar ridge with a removable bridge [24], improving sound formation by providing more extensive ridge contact. This factor should be addressed and resolved by the provisional restoration to promote patient satisfaction with the planned definitive restoration. Not until we know to what extent the patient's speech is affected by the restoration can we begin to approach the definitive treatment. This is particularly important in patients who had been wearing partial dentures before receiving their implant-supported provisionals. ■

To find the list of references visit the web (www.teamwork-media.de). Follow the link "Literaturverzeichnis" in the left sidebar.

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Indication for reduced-diameter Nobel Biocare implants

Closing narrow gaps with implant-supported crowns

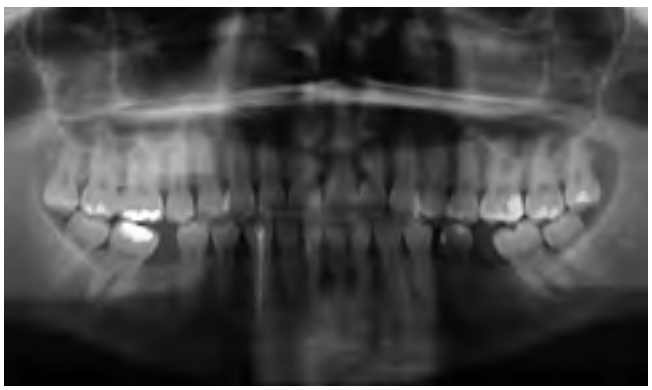
DR STEFAN HÜMMEKE AND DR MAREN KAHLE, OSNABRÜCK, GERMANY

The implant/prosthetic rehabilitation of very narrow single-tooth gaps is a challenge in several respects. It is inherently difficult, sometimes virtually impossible, to comply with the normally required minimum distances between the implant and the adjacent teeth. Positioning the implants requires particular precision in terms of insertion sites and angulation to avoid considerable difficulties during the prosthetic phase, especially during impression taking. To resolve these problems – and facilitate implant placement in the first place – reduced-diameter implants are a good option. These implants must safely withstand the expected mechanical stress despite their smaller dimensions.

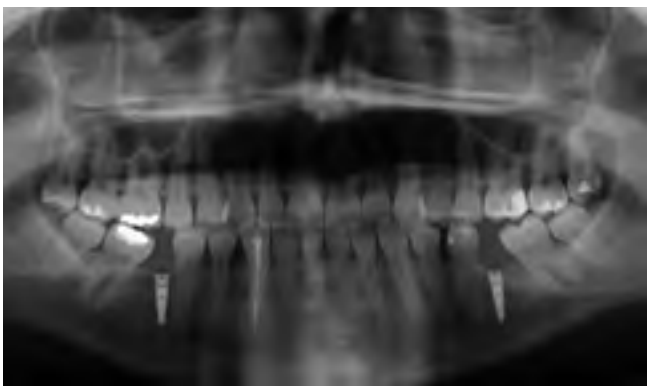
A 31-year-old woman presented with narrow gaps at sites 36 and 46 following tooth extraction and incomplete orthodontic compensation (Fig. 1). While the second premolars were orthograde, the second molars were tilted mesially, so that the gaps – already very narrow at the level of the alveolar ridge – became even narrower towards the coronal aspect due to the angulation of the second molars.

Exact measurements of the gap widths yielded a clear indication for reduced-diameter implants, especially since transverse bone supply was also greatly reduced. With its three-millimetre diameter, the NobelActive 3.0 implant used is one of the narrowest commercially available two-piece implants. Its intraosseous aspect exhibits the typical configuration of the NobelActive implants, with a conical implant body and a wide, "aggressive" thread pattern, resulting in a clinically relevant osteotome effect that allows undersized implant site preparation and reliable, very high primary stability.

The surgical procedure was conventional, with a minimally invasive crestal incision without a releasing incision or exposure of the mental foramen, as the vertical bone supply was good. Particular attention was paid to a prosthetically guided central position of the implants and their orthoaxial insertion, parallel to the orthograde second premolars (Fig. 2).



1 I Enlargement of the preoperative OPG showing incomplete orthodontic space closure at sites 36 and 46.



2 I Postoperative radiographic control of implant positions and angles.

3 I
Lateral view of site 36 with healing abutment.

4 I
Lateral view of site 46 with healing abutment.

5 I
Radiological control with open-tray impression post at site 36.

6 I
Radiological control with open-tray impression post at site 46.

7 I
Custom Procera titanium abutment.

8 I
Ceramo-metal crown on a custom titanium abutment.

Even minor axial deviations in very narrow gaps result in considerable problems during impression taking, as the adjacent teeth will get in the way of the impression posts. Central positioning at bone level with a mesial angulation paralleling that of the mesially inclined second molars would inevitably have led to problems with the impression and subsequent restoration.

Although immediate provisionalization of the implants would have been possible at the level of primary stability achieved, this provisionalization was not performed at the patient's request. After an osseointegration period of three months, the sites were re-entered and the implants restored. The cramped conditions are easy to see in Figures 3 and 4 with healing abutments in situ (3.2 mm in diameter).

Restorative treatment

For greater precision, the impression was taken in the pick-up technique with a custom-made open tray. The correct seating of the NobelActive 3.0 implant impression posts is easy to detect to the touch, but a radiological control is nevertheless recommended at this point to check whether the impression posts are correctly seated and the implants are fully and correctly osseointegrated (Figs. 5 and 6).

The very limited available space ruled out our normally favoured approach, the transocclusally screw-retained crown, as the perforation of the occlusal surface this requires would have unduly compromised the aesthetics of the restoration. Instead, the restorations were designed as cemented ceramo-metal crowns on custom titanium abutments made using the Procera technique (Figs. 7 and 8).

9 I Note: The maximum insertion torque of the abutment screws is 15 Ncm.

10 I Lateral view of tooth 36: Crown prior to the removal of excess cement.

11 I Lateral view of tooth 46: Crown prior to the removal of excess cement.

Zirconia abutments cannot be used in such confined spaces for reasons of stability. The positions of the abutments are determined using positioning keys custom-made from pattern resin at the laboratory; anything else would make the positioning of the abutments very difficult due to their small dimensions and the limited space available. It should be noted that the abutment screws must be tightened with the calibrated torque wrench to a maximum of 15 Ncm (Fig. 9). A eugenol cement based on acrylic/urethane has proven favourable. The excess (still visible in Figs. 10 and 11) is easily and safely removed with an ordinary probe due to the elastic consistency of the material after curing.

The control radiographs taken after delivery show a gap-free fit of the crowns on the abutments and unchanged bone levels (Figs. 12 and 13). At the first clinical follow-up after about three weeks, at which the occlusion and articulation and – importantly – the hygiene situation were checked, no gingival irritation was found around either implant-supported crown (Figs. 14 and 15).

Summary

The implant-based rehabilitation of very narrow tooth gaps is possible thanks to two-piece reduced-diameter implants using the same procedures as with regular-diameter implants. Special surgical and restorative challenges arise from the required extra-high precision and the difficult handling. The CAD/CAM technology has made possible the highly precise custom abutments and accurately fitting crowns – even at small diameters – that are required to achieve lasting stability, allowing for a safe and aesthetic rehabilitation.

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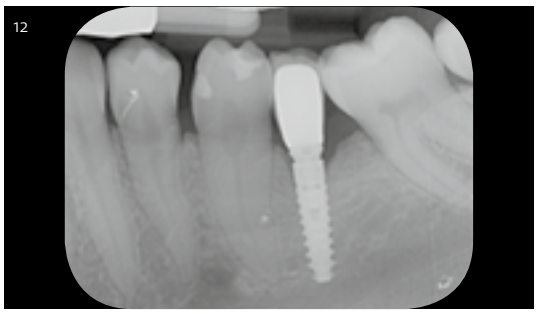
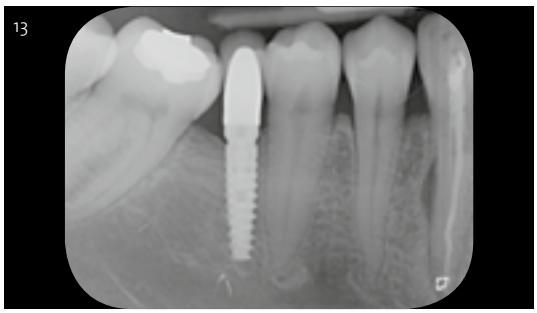


12 I Radiological control of the crown at site 36 after delivery of the restoration.



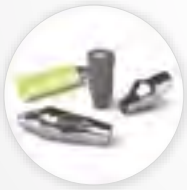
13 I Radiological control of the crown at site 46 after delivery of the restoration.

14 I No gingival irritation at site 36 at the clinical follow-up about three weeks after delivery.

15 I No gingival irritation at site 46 at the clinical follow-up about three weeks after delivery.

Simple & Predictable

10 Years of Clinical Evidence



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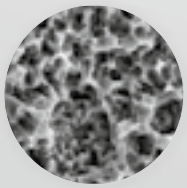

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EuroPerio8 in London

Call for greater awareness of periodontitis and peri-implantitis

The first full afternoon of scientific activity at EuroPerio8 in London began with an EFP press conference calling for greater awareness of both the prevalence and personal impact of periodontal and peri-implant diseases.

EFP experts led by *Francis Hughes*, the Chairman of the EuroPerio8 Committee, carefully outlined the key issues in periodontology today to members of the world's dental press, highlighting statistics that show that in most countries, severe periodontitis affects over ten per cent of the population. EFP President *Søren Jepsen* invited dental journalists to sign and promote the EFP Manifesto on Periodontal and General Health, while EFP General Secretary-Elect *Iain Chapple* explained the current evidence linking periodontal diseases to systemic conditions.

Stefan Renvert, EFP General Secretary and world authority on the subject, voiced concern over the rise of peri-implant disease. *Renvert* presented basic statistics and explained some of the difficulties involved in its diagnosis and treatment. *Mariano Sanz*, the Scientific Chairman of EuroPerio8 and Chairman of the EFP's annual scientific consensus meetings (the European Workshop in Periodontology) delivered a summary of recent surgical advances in hard and soft tissue management.

"The Sound of Periodontitis"

Meanwhile, having freshly arrived from the world premiere at EuroPerio8 on Wednesday of a film on patient perspectives of periodontitis – "The Sound of Periodontitis" – the leader of this project, *Ian Needleman*, stressed the level of physical, psychological and social damage to sufferers of periodontal conditions.

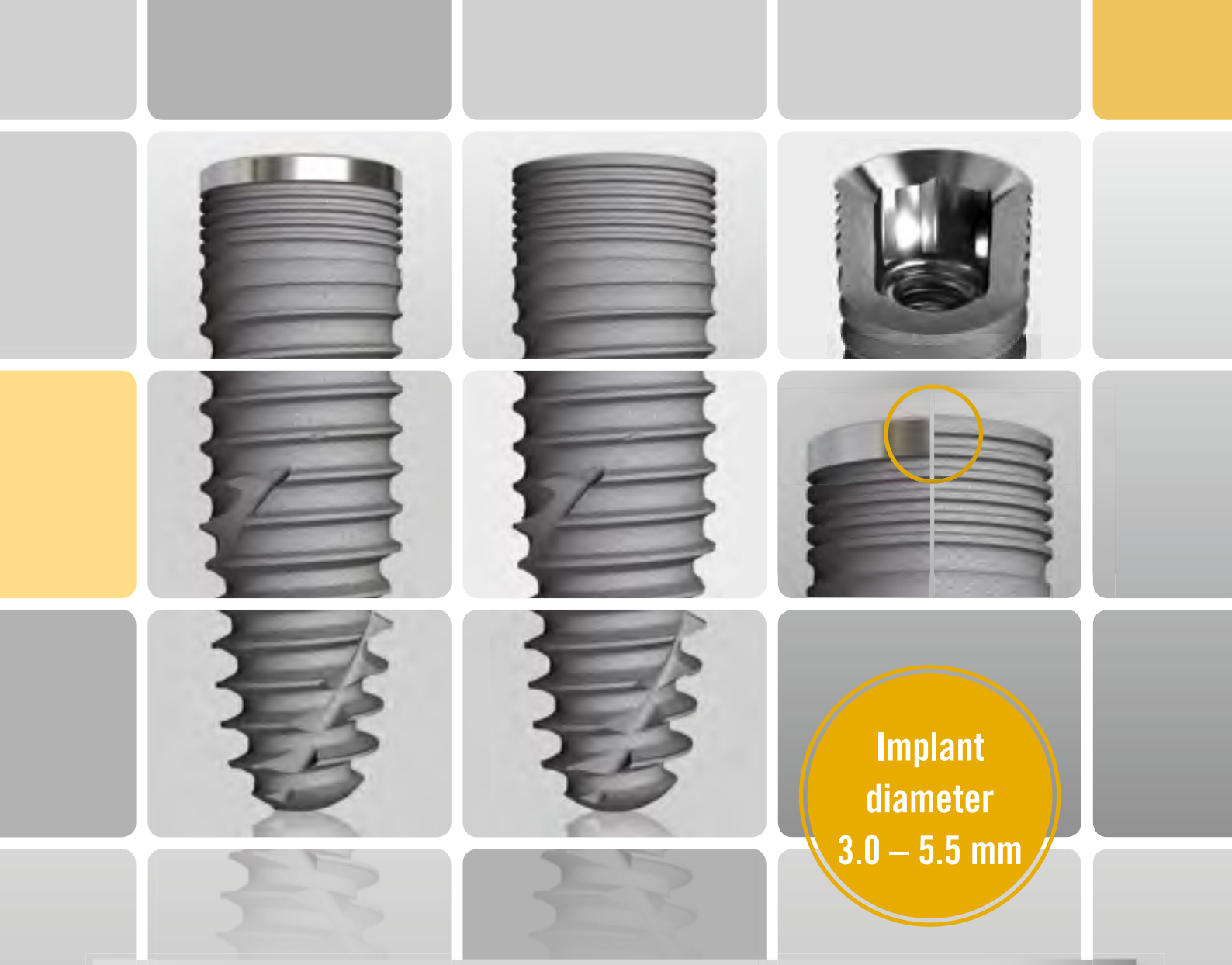
A landmark of EuroPerio8 in London was that for the first time ever, patients got their own say at the event. The 10-minute film "The Sound of Periodontitis" follows four patients who talk about their experience of periodontitis, peri-implantitis and periodontal treatment. Filmed at locations across the UK, it tells highly personal stories in the patients' own voices and from their own perspectives, covering the effect of the condition and diagnosis, the experience of treatment and the beneficial impact of treatment on health and well-being.

After the film's screening at the ExCeL London conference centre, three of the four patients took to the stage to participate in a lively discussion and a questions-and-answers session with the audience chaired by *Simon Denegri*, an international leader in public engagement in health care and research, *Julie Rosse*, Past President of the British Society for Dental Hygienists and Therapists, and *Professor Ian Needleman*, who chaired the video project's working group and who will become president of the British Society of Periodontology in 2017.

"The film explores what it is like to live with the condition and the treatment journey", said *Needleman*. "The aim of the film is to deliver fresh insights into the substantial negative effects of periodontal disease and the beneficial, life-changing effects of treatment." He added that these insights would help enhance both more effective communication with patients and lobbying in Europe to promote the prioritization of periodontal health.

The documentary's title is not a homage to a well-known 1960s musical film starring *Julie Andrews* but rather expresses the desire to challenge the notion that periodontitis is a "silent" disease. The documentary – available with and without English subtitles – represents a leap forward in EFP's communications, and the inclusion of the patient perspective is a significant innovation. "The Sound of Periodontitis" will be made available through the EFP to the national societies and also, via the EFP's YouTube channel, to the public at large.

Logo and photo in the background: EFP



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ITI 2015 in Dresden a resounding success with around 1,200 participants

Open your doors! Open your hearts! Open your eyes!

Visitors to Dresden generally look forward to seeing Dresden's Old Town and its many attractions. Once arrived, they are met by the striking sight of the Semperoper opera house, which presents the current slogan of the city: "Open your doors! Open your hearts! Open your eyes! For a cosmopolitan Dresden!" And anyone who had travelled to Dresden to attend the ITI Congress in mid-April will have had the feeling that the motto of this congress could have been exactly the same. For the first time, the ITI had left its traditional venue in Cologne and moved the 8th ITI Congress to the Saxon metropolis on the River Elbe. Their courage to embrace change was well rewarded: With nearly 1,200 visitors and a thematically dense and internationally oriented CPD programme at the highest professional level, ITI Germany marked another milestone in its history.

The ITI – International Team for Implantology – and its more than 17,000 members all over the globe have set themselves the goal of promoting research and training in oral implantology. They are increasingly concerned with examining the avalanche of innovations in techniques and materials for their practical relevance and with providing oral implantologists in private practice with reliable treatment protocols and guidelines.

It was not surprising, therefore, that the congress programme – developed under the leadership of *Professor Gerhard Wahl*, Congress President and Past President of ITI Germany – had an enormous bandwidth. Under the motto of "Implantological treatment concepts: modern, practical and evidence-based", more than 20 experienced and highly qualified speakers from Germany and other countries presented proven and reliable concepts in implant surgery and implant prosthodontics.

Even ITI World President *Professor David Cochran* did not want to miss the opportunity and personally arrived from Texas not only to present the André Schroeder Research Prize to *Dr Wah Ching Tan* from Singapore but also to contribute an impressive presentation on the influence of implant design on hard- and soft-tissue stability to the scientific programme. According to *Cochran*, major contributory factors include not only the design of the implant itself but also its surface texture and the level of the implant coating relative to the bone level. Platform switching, he said, was "the best available compromise". The conclusion of *Tan's* research on systemic antibiotics in implant treatment was that antibiotics could be dispensed with in smaller, uncomplicated implant procedures in healthy patients with and without bone augmentation.

ITI Past President *Professor Daniel Buser* seamlessly continued *Cochran's* train of thought with his remarks on reliable concepts of implant placement and load timing, delivering a whole arsenal of reliable scientific data and case reports derived

Presentation of the André Schroeder Research Prize to Dr Wah Ching Tan from Singapore by ITI World President Professor David Cochran.

ITI Germany President Professor Johannes Kleinheinz (2nd from right) in an animated discussion with several speakers.

from his long-standing scientific achievements. *Professor Guido Heydecke* pointed out the strong link between chewing efficiency and quality of life. Unequivocally rejecting those once so popular combination bridges, he spoke out clearly in favour of implant-supported restorations.

"Local hero" *Dr Arne Boeckler* from Halle criticized the fact that implant-prosthodontic connectors generally received too little attention. Some in the audience may have been surprised to hear that in patients with poor compliance and inadequate oral hygiene, the supporting retentive magnetic abutments under complete dentures can corrode.

"Short and narrow implants vs augmentation" was the next topic discussed by *Professors Stefan Wolfart* and *Henrik Terheyden*. The confrontational attitude characterizing proponents of augmentation on the one hand and minimally invasive methods on the other increasingly appears to soften in favour of a patient-centric approach, thanks to the availability of reliable hardware supported by clinical evidence.

With *Dr Tim Joda*, *Dr Julia Wittneben*, *Professor Sven Reich* and *Professor Petra Gierthmühlen*, a group of "digital natives" next took to the lectern. Their impressive case presentations showed how deeply digital dentistry has become ingrained in modern treatment concepts. However, the availability of hard clinical data remains limited; "fully digital" still appears to be restricted to smaller restorations, while the conventional approach should be preferred for larger, including removable, restorations.

Dr Michael Gahlert from Munich was instrumental in the development of the ceramic implant range of ITI's industry partner, Straumann, refuting with profound insights and aesthetically demanding case studies many still popular misconceptions. If the peculiarities of the materials are duly taken into account at the insertion and osseointegration stages, ceramic implants are now equivalent to titanium implants in terms of safety and success rates.

Eagerly expected was the "Fellows block" with presentations by ITI Fellows *Dr Andres Stricker*, *Dr Andreas Hentschel*, *Dr Anton Friedmann*, *Dr Georg Bach*, *Professor Heinz Kniha* and *Dr Kay Vietor*, who are primarily active in private practice. They touched on a number of hot implantological issues and left plenty of take-home messages for the audience to implement once back in their offices.

"Soft-tissue level vs bone level" was the topic of a dynamic debate between *MDT Andreas Kunz*, *Dr Andreas Hentschel* and *Professors Dieter Weingart*, *Petra Gierthmühlen* and *Andreas Schlegel*, but the panellists' goal was not so much to exclude anything as to work out the pros and cons of each treatment philosophy.

Established for the first time at an ITI event and now adapted by several other congresses, the cooperation of dentists and dental technicians was strengthened in Dresden by offering an independent block of sessions for dental technicians, reaffirming the clear commitment to stringent coordination between the dental surgery and the laboratory, with an early onset of the joint planning effort.

Congenial and visibly sparkling with enthusiasm and ideas, the newly elected Section Chair *Professor Johannes Kleinheinz* from Münster presented the Online Academy established last year at the ITI World Congress, which now has a loyal user community that benefits from its manifold options.

The avid attendees also frequented the integrated industry exhibition in great numbers during the session breaks. Friday saw a hot night at "Funky Town" with performances by well-known German comedians *Carolin Kebekus* and especially *Kaya Yanar* with his irreverent views of the "national minorities" present. In the end, everyone was agreed that the trip to Dresden had well been worth it.

Camlog expansion on track

The future is international

The Camlog group looks into the future with healthy optimism. This is based on the fact that the company has established itself as one of the leading suppliers of integrated systems and products for dental implantology as well as for implant-supported restorations and continues to grow. Even in the economically uncertain times of recent years, Camlog managed to maintain its position, create further jobs and now employs over 400 staff. The product pipeline is promising and the users can look forward to innovative concepts and reliable products from Camlog.

Besides defending leading market positions in Germany, Austria and Hungary, Camlog continues to grow and has further worldwide distribution partners in its sights. In April, the starting signal was given in China, a huge potential market. In addition to new markets, Camlog systematically pursues strategic objectives and exploits synergies with Henry Schein especially in international markets like the US and also in the expanding field of CAD/CAM.

Proven Camlog implant systems

The Camlog implant systems are characterized by an ideal number of system components, as well as easy and efficient application. Camlog has also remained true to these principles in the Conelog Implant System with the conical implant/abutment connection. The high precision and reliability of the Conelog Implant System is confirmed by a number of studies, some of which are still ongoing. They show positive results in relation to hard- and soft-tissue preservation. The stable implant/abutment connection with self-locking taper is a contributory factor. Just like Camlog, the Conelog Implant System is straightforward and easy to handle. The developers have minimized the height offset which is an inherent feature of all tapered implant systems. The abutments with the three cams are easy to position and insert without a transfer key. In 2014, the Conelog Implants were implemented in the Guide System and thus made accessible for guided implant insertion.

New products for the iSy Implant System

As of July 2015, the prosthetic portfolio of the iSy Implant System will be extended by several prefabricated components. The new iSy Esthomic Abutments allow esthetically cemented reconstructions. Screw-retained healing caps adapted to the emergence profiles of the Esthomic Abutments will become available in a variety of profile diameters and heights and it will be possible to connect the final restoration directly to the implant base. This offers the clinician a cost-effective restoration option and even greater flexibility in the course of treatment.

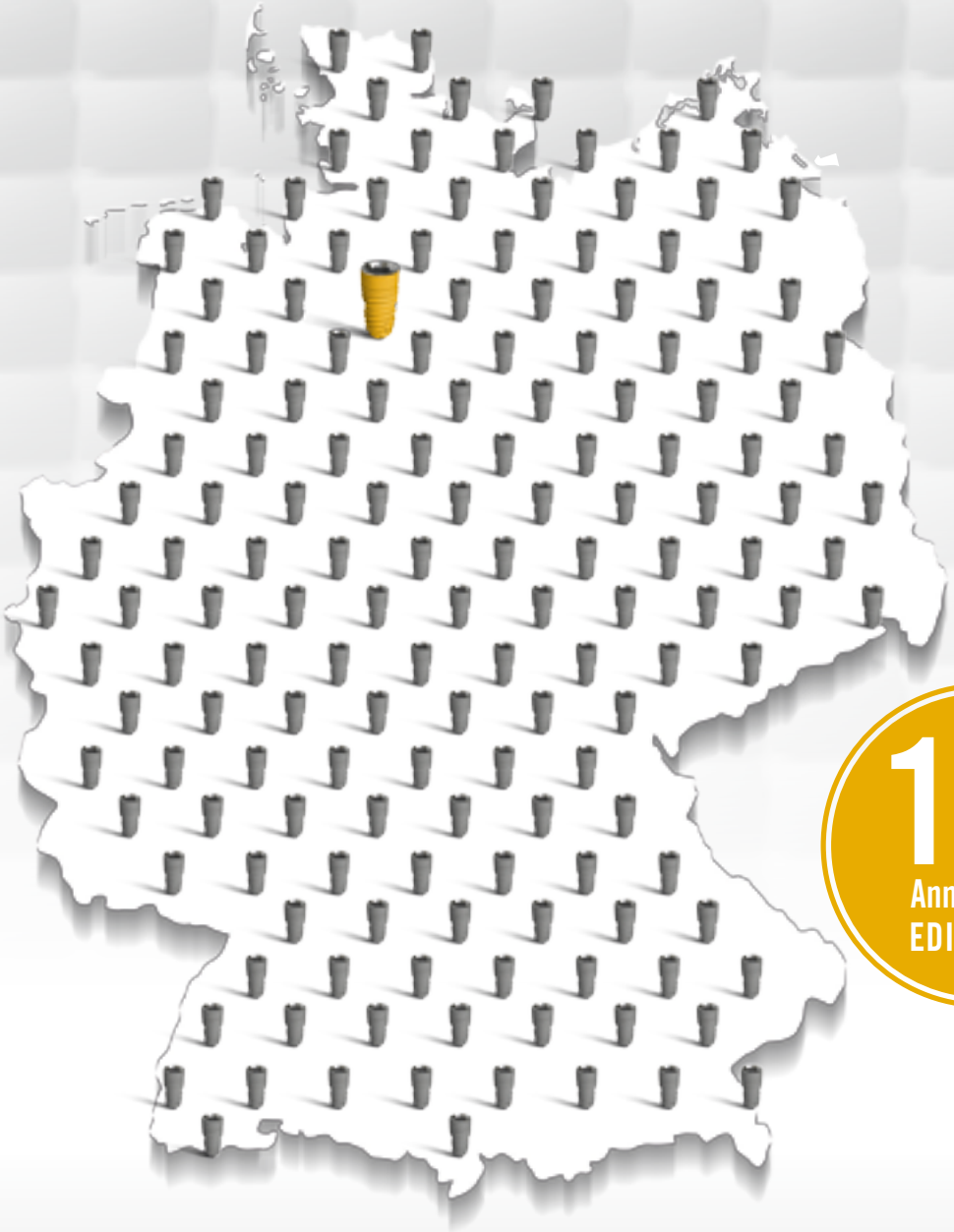
6th International Camlog Congress in Krakow, Poland

The 6th International Camlog Congress, which will take place in Krakow, Poland from 9 – 11 June 2016, has the motto “Tackling everyday challenges” and combines practical with scientific aspects for immediate implementation in daily practice. *Professor Frank Schwarz* (Germany) and *Professor Piotr Majewski* (Poland) will act as Co-presidents of an eminent Scientific Committee.

The 6th International Camlog Congress will take place at the brand-new Krakow Congress Center.

More information

Camlog Biotechnologies AG
www.camlog.com



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Wide-ranging guidelines on the effective prevention of periodontal and peri-implant diseases

XI European Workshop in Periodontology

Advocating the use of interdental brushing rather than inefficacious flossing is one of the key recommendations for oral health professionals arising from an authoritative analysis of research on the prevention of gum disease. The analysis was released in April in the Journal of Clinical Periodontology (JCP), the science publication of the European Federation of Periodontology (EFP).

The public preview of the workshop guidelines took place at the SIdP's (Italian Society for Periodontology and Implantology) 17th annual congress in Rimini. From left to right: Phoebus Madianos, EFP president; Mario Aimetti, SIdP vice president; Luca Landi, SIdP treasurer; Claudio Gatti, SIdP president-elect; Maurizio Tonetti, SIdP president; and Filippo Graziani, SIdP secretary.

Reinforcing the need for professionals to give correct instructions to patients on self-performed hygiene actions, the conclusions of the XI European Workshop in Periodontology also call for public campaigns to warn about gum bleeding as a symptom of disease. In addition, the workshop presented statistics which show a big increase in peri-implantitis cases and warned of "an emerging public health issue".

The evidence reviewed in this major research analysis includes plaque-removal methods, hygiene products, lifestyle factors, and other decisive elements with a bearing on the effective prevention of periodontal and peri-implant diseases. It was drawn from worldwide research studies going back several years. More than 70 leading global periodontal and medical researchers reached a group consensus on this work last November, during four intense days in La Granja de San Ildefonso, Segovia, Spain, where the workshop was held. Among the most significant conclusions, which were published in a special supplement of the JCP, are:

- The daily use of interdental brushes (IDBs) has proven efficacy in maintaining gum health and is preferable to flossing wherever possible. The majority of available studies fail to demonstrate that – despite being widely advocated – flossing is generally effective in plaque removal and in reducing gingival inflammation. Flossing cannot be recommended other than for sites of gingival and periodontal health, where IDBs will not pass through the interproximal area without trauma.
- Peri-implantitis is an emerging public health issue. The increased use of dental implants to replace missing teeth has created a new disease burden in the form of peri-implant diseases, with contemporary research estimating a 43 per cent prevalence of peri-implant mucositis and a 22 per cent prevalence of peri-implantitis. Such a high burden of disease and its oral, systemic, and social consequences are compelling reasons for individuals, professionals, and public health officials to pay increased attention to prevention.
- Call for public campaigns to warn about gum bleeding. Public health campaigns, professional information, and the labelling of oral healthcare products should encourage professional diagnosis whenever gingival bleeding is present and persistent.
- Gum health requires professional advice and treatment – self-performed hygiene may not be sufficient for prevention. Regular disruption and periodic removal of accumulating bacterial

deposits at and below the gum margin is a key part of preventing plaque-induced periodontal diseases. Given that individuals are often unable to accomplish this, professional intervention is required.
- Tongue-resident bacteria and periodontal disease are the two main causes of bad breath. Short-term studies show that tongue cleaning has an effect in reducing intraoral halitosis caused by tongue coating, while mouth rinses and dentifrices with active ingredients have a significantly beneficial effect.

Mariano Sanz, who chaired the XI European Workshop, said: "The results of this workshop provide new insights and opportunities to re-organise preventive services and enhance their effectiveness in a variety of healthcare settings."

That view was echoed by *Maurizio Tonetti*, XI Workshop working-group chair and editor-in-chief of the JCP, who said: "This workshop offers us the chance to re-group, re-think, and to put things in a new perspective. We hope to achieve a better level of impact in the European population."

Further conclusions

Another of the workshop's conclusions likely to have an impact in the dental community is that power brushes (rechargeable devices) have been shown to be more effective than manual brushing in studies of plaque removal.

Evidence also showed that certain ingredients in some toothpastes reduce pain in patients with dentine hypersensitivity, while toothpastes and mouth rinses were shown to lower gum inflammation and prevent plaque accumulation when used in addition to mechanical brushing.

In terms of prevention, lifestyle factors are fundamental to oral health, and the workshop's conclusions call on professionals to do more to support mindset and behavioural change in patients, especially with regard to smoking.

More information

European Federation of Periodontology
www.efp.org

Interview with Sicat CEOs Dr Joachim Hey and Jochen Kusch on their 3D solutions

Ten years ahead of its time

Ten years ago, Jochen Kusch and Dr Joachim Hey founded the software company Sicat for three-dimensional imaging and treatment planning as a joint venture with Sirona. At that time it was sometimes still argued that those who used three-dimensional diagnosis – let alone navigated implantology – had best keep their hands off implant dentistry entirely. Meanwhile, the aesthetic and functional requirements in oral implantology have expanded to the point where clinicians need to venture into areas where any bit of pre-diagnostic assistance is precious. CAD/CAM production of restorations and intra-oral scanning are further links within the all-digital chain. Marianne Steinbeck, project manager of EDI Journal, spoke with the two CEOs of Sicat on the occasion of their company's tenth anniversary.

How massive were the obstacles you had to overcome when working with 3D planning during the first few years of the 21st century?

Hey: In terms of the technology, the more substantial problems such as integrating the entire clinical workflow, adapting the equipment to dental requirements and guaranteeing precision were en route to being solved. All the technical components were already present, but they had not been optimized for dental requirements and were not combined in a meaningful manner.

›››

Dr Joachim Hey

Jochen Kusch

Kusch: Unfortunately, some dentists were confused by overly optimistic statements regarding certain precursor systems and had returned to freehanded implantation after a number of disappointments. There were also enormous misunderstandings regarding image quality and the relationship between patient radiation dose to background noise and soft-tissue resolution.

What were the milestones of your development in these ten years?

Hey: Our launch of Galileos in 2007 had laid the foundation for our success. Our philosophy is that we want to prepare the data for a specific application to facilitate a simple diagnosis, followed by intuitive treatment planning. Another major milestone was the integration of Cerec imaging and treatment planning in 2009. Since we both originally came from Siemens, we were well aware that large companies not infrequently have problems integrating their own technology. In this respect – and because Sirona is the former dental division of Siemens – Sirona was our ideal partner.

Kusch: From the beginning, our goal has been to provide value for the patient, for the dentist, for Sirona and of course also for ourselves by deploying further optimized 3D applications. For us, Sirona was like IBM – and we wanted to be Microsoft, except we were actually the ones who developed Galileos, the prototype of the PC, for Sirona.

Ten years ago, you were ahead of your time. I am sure you have other innovative ideas driving you today. Can you tell us what is cooking in the kitchen?

Hey: When speaking with experts worldwide, we always come to the same conclusion at some point: All dentists, like all dental technicians are meticulous and accurate in their work. Yet dentists are the only profession I know that still works with what is essentially carbon paper. A high-precision product with perfect surfaces made by a dental technician is inserted in the patient's mouth – and then destroyed using carbon paper and a cutter. That makes precious little sense from a workflow point of view, yet it is understandable when one compares live masticatory movements with the movements of an articulator. Dentists and dental technicians have become the victims of an ersatz process that became the gold standard, with all reason – at the time, that is. Using Sicat Function it is now possible to import real patient movement data to Cerec and use them in the prosthetic design process. After treatment with Optimotion, dentists can now design and produce definitive appliances for temporomandibular joint problems, such as onlays or tabletops, directly in Cerec.

Kusch: CBCT imaging is still in its infancy, but its potential is considerable if this technology is used judiciously and ethically. For us this means that the quality of care must be increased without at the same time exacerbating the risks to the patient. Looking more closely at what these risks consist of, you will find radiation-related issues on the one hand and diagnostic quality on the other. Diagnostic quality in dentistry is in turn defined mainly by spatial resolution and overlays. If we assume that a CBCT recording uses the same radiation dose for representing the volume of a panoramic image, with the added benefit that we can view the periodontal ligament and the root canal at this resolution, isn't a CBCT a more ethical basis for an endodontic treatment than a panoramic image in combination with a dental film?

Or consider orthodontic treatments, where a panoramic image and a cephalometric recording are used today. At the same dose and given the ability to calculate a cephalograph, I would certainly consider CBCT the way to go. Now if we could additionally take into account the patient's actual movement patterns, the result would be something like functional orthodontics.

Now it is not up to us to define what is and what is not ethically justified. There are wiser heads that can ponder this question and who will develop the right framework for the use of CBCT. However, we are developing our solutions for global markets, and we see that the trend towards CBCT appears unstoppable in the environment outlined. We are definitely enthusiastic to help shape this market.

Thank you, Dr Hey, Mr Kusch, for your time and for this interview.

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Osteology press conference in London

Many new things for scientists and practitioners

The Osteology Foundation revealed numerous innovations and plans at a press conference held as part of the 8th EuroPerio Congress in London. The announcement of the scientific programme for the International Osteology Symposium 2016 in Monaco was one of the highlights. Of particular interest to scientists undertaking research on oral regeneration are the Foundation's new Large Clinical Grants, officially unveiled for the first time in London. The changes at the top of the Osteology Foundation were another focal point and provided an ideal opportunity for reviewing the recent years, but also for looking forward to the future and to the Foundation's strategic advancement.

Professor Christoph Hämmerle

Professor Mariano Sanz

The Osteology Foundation, founded in 2003 by *Dr Peter Geistlich* and Geistlich Pharma AG in Switzerland, has developed continuously and grown significantly since its inception. "Under the motto of 'Linking Science and Practice in Oral Regeneration', the Foundation now essentially comprises four key areas of activity", *Professor Christoph Hämmerle* explained in London: "Support for researchers, education for practitioners, training for scientists and best practice in science."

Hämmerle had been President of the Foundation since its establishment twelve years ago; his term ended in May 2015. His successor, *Professor Mariano Sanz*, took office in June 2015 – "the Foundation will be in excellent hands", as *Hämmerle* pointed out.

Sanz emphasized that under *Hämmerle's* tenure the Foundation had become known for top quality in science as well as in clinical practice. "I don't intend to change anything, but I will continue to pursue the set course and work to raise the profile of the Foundation and drive forward its geographical expansion", *Sanz* announced. It will be important, he explained, to focus more on new technologies and media to assure further sustainable growth and continuous development.

Along with the change at the top there have been other personnel changes at the Osteology Foundation: *Myron Nevins*, *Friedrich Neukam* and *Massimo Simion* will step down from the Foundation Board when their terms of office end. Their successors will be *Pamela McClain*, *Frank Schwarz* and *István Urbán*.

International Symposium in Monaco 2016

In his role as Chair of the Education Committee, *Mariano Sanz* introduced the scientific programme for the International Osteology Symposium 2016 in Monaco. Over 2,500 participants from 60 countries are expected to attend the event, which is held every three years. The Scientific Chairmen are *Friedrich Neukam* and *Myron Nevins*. "No fewer than 85 internationally renowned speakers will discuss the most important topics surrounding oral regeneration and the latest insights from science for use in practice", *Sanz* explained. The programme will be supplemented by a large poster exhibition, practical and theoretical workshops and the Master Clinician Courses, which will be held for the first time. Abstracts for posters and the Research Forum are welcome from 1 July 2015.

New for research groups: Large Clinical Grants

Also when it comes to promoting science there was news to report, which is probably mainly of interest to the established research groups. *Professor William Giannobile*, Chair of the Scientific Committee of the Foundation, introduced the Large Clinical Grants, which scientists can apply for in 2015 for the first time. The Large Clinical Grants are worth up to 350,000 Swiss francs for a maximum project duration of three years. The application deadline is 1 December 2015.

More information

Osteology Foundation
www.osteology.org

Oded Ben-Shabat

Interview with Oded Ben-Shabat, CEO of TAV Medical

"We think zirconia"

TAV Dental, a division of TAV Medical, is a family-owned company with four decades of experience in product design, mould fabrication and injection-moulding of medical products. TAV Dental focuses on the manufacturing of dental zirconia products, using the advanced CIM (Ceramic Injection Moulding) technology. Compared to conventional machining processes, the CIM technology offers far greater possibilities in terms of parts design, complexity, thread accuracy, repeatability etc. to be produced in efficient and cost-effective volume production. At IDS 2015, EDI Journal spoke with TAV Medical's CEO Oded Ben-Shabat.

What made you enter the complex field of zirconia implants to begin with?

We had begun with prosthetic parts. After having accumulated vast experience with this material, we felt confident to introduce a zirconia implant into the market. Our experience with the injection-moulding technology goes back several decades; we started supplying medical products to leading global medical companies nearly 30 years ago. Our company has gained worldwide recognition as a leading supplier in the medical industry. The CIM technology offers enormous advantages in terms of design, mechanical properties and manufacturing capabilities.

Which kind of standard design do your zirconia implants offer?

We have both a one-piece and a two-piece design. When designing a zirconia implant, we think different – we think zirconia, and all the product characteristics must be defined to meet the needs of this material. We developed a two-piece implant with an internal hex for a screw-retained restoration. Our vision is to take the dental industry a major step into the future. The metal-free option together with reliable osseointegration, superior mechanical properties, biocompatibility and highly aesthetic results has now become reality. This two-piece design no longer targets a niche market – this premium implant is now a viable alternative to standard titanium implants. TAV Dental's greatest advantage is that we manufacture our own products, in-house and all under one roof.

What are the special characteristics of TAV Dental?

The company's core values have always been precision, passion and partnership. We are very passionate about what we are doing on a day-by-day basis. We believe that people with passion can change things and make a difference. Our inspiration when marketing our zirconia implant comes from *Steve Jobs'* words: "Every once in a while, a revolutionary product comes along that changes everything."

Does TAV Dental cater to the final user, to the dental practitioner or rather to implant manufacturers that want to extend their line of products by a ceramic implant?

We are selling our zirconia products under our brand, but we also provide them to other implant companies to sell under their label. However, this new implant will be an exclusive product of TAV Dental. We believe it will be the flagship product of the company. Our vision for this new implant is to redefine the quality of zirconia dental implants and their performance. With this vision, we are committed to leading the dental market into a new era of high-quality, high-precision aesthetic products and to make these premium implants a common product all over the world.

Thank you very much for your time and this interview.

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Interview with Dr Pedro Peña Martínez, President of the 3rd Implant Direct Symposium

A new path in implant dentistry

"A new path in implant dentistry" – this is the promise made by Implant Direct, Europe's largest online supplier of dental implants, with regard to its long-awaited 3rd Implant Direct Symposium. Its attractive venue will be the Mediterranean island of Mallorca, in late October. The symposium aims to provide not only top-notch scientific and clinical contents but also a last glimpse of summer and Mediterranean glow before the long winter months. EDI Journal talked to Dr Pedro Peña Martínez, well-known implantological specialist from Madrid and President of the symposium.

Dr Pedro Peña Martínez

That is quite an ambitious motto you have chosen for the 3rd Implant Direct Symposium – what do you consider a new path in implant dentistry?

The new digital era – and the latest scientific and clinical advances – are probably best exemplified by the complete digital workflow. This will also be a focus at the hands-on workshops. Topics such as tissue management, aesthetic treatment techniques and the management of peri-implantitis will be discussed in detail, following the "simply smarter" approach that has guided Implant Direct ever since its foundation.

Any special reason to choose Mallorca, apart from the pleasant climate and surroundings?

Palma de Mallorca was chosen for its attractiveness as a tourist destination, as well as for the excellent facilities it offers, together with a magnificent climate and easy access for everyone – "everything in one place", so to speak. We also hope that many practitioners from the islands themselves and from the Iberian Peninsula will join us for this important event.

How many participants do you expect, and from which countries?

We expect a large number of participants from the same countries as our speakers – well-known specialists from the USA, France, Spain, Germany, the UK, Turkey, Italy, Portugal and Poland ... *Maurice Salama*, *Philippe Khayat*, *John Cavallaro*, *Joseph Choukroun*, *Achim Schmidt*, to mention only a few names ... delegations from Turkey and Russia, Germany, Spain, Portugal France, the UK ... a truly international meeting. The main congress language will be English, with simultaneous interpretation into most attendees' languages.

Are there still any early-bird benefits to be had before the summer break?

We are making readers of EDI Journal a special offer: The first 100 registrants writing to marketing@implantdirect.eu will have their fee reduced from 450 to 400 euros.

Dr Peña Martínez, thank you for this interview.

STE

3rd IMPLANT DIRECT SYMPOSIUM

3rd Implant Direct Symposium on Mallorca

Sunshine, education and science

For the third time now, Implant Direct will be holding a professional symposium for oral implantologists, oral surgeons and dentists working in implantology, on Mallorca, 23 to 25 October 2015.

This year's motto – "A new path in implant dentistry" – will guide presentations by dentists of high scientific repute from around the world, including *Dr Maurice Salama* from the US and *Dr Philippe Khayat* from France. They will familiarize attendees with the latest scientific and practical results in oral implantology and make them accessible in various hands-on workshops.

"The participants of the 3rd Implant Direct Symposium may again look forward to two days with international high-profile implant specialists reporting on their scientific insights and presenting clinical cases. In four different workshops they will pass on their theoretical and practical knowledge, ranging from digital photography to guided surgery", said *Stephan Weber*, General Manager of Implant Direct. "In addition, we will offer case and poster presentations. More information can be found on our new website."

Another highlight of the two days in Mallorca will be the gala dinner in an exclusive finca, offering a chance to exchange scientific views with experts and participants in a Mediterranean ambience.

Photo: fotolia/lunamarina

Mallorca will again be the venue of the 3rd Implant Direct Symposium.

More information and registration

Implant Direct
www.implantdirect.eu/october-symposium

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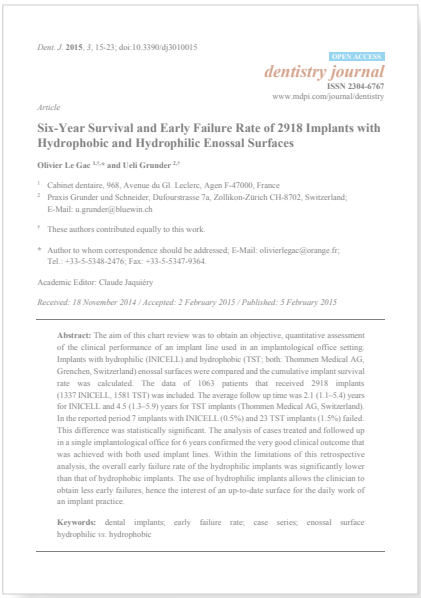

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Article

Six-Year Survival and Early Failure Rate of 2918 Implants with Hydrophobic and Hydrophilic Enossal Surfaces

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Abstract: The aim of this chart review was to obtain an objective, quantitative assessment of the clinical performance of an implant line used in an implantological office setting. Implants with hydrophilic (INICELL) and hydrophobic (TST; both: Thommen Medical AG, Grenchen, Switzerland) enossal surfaces were compared and the cumulative implant survival rate was calculated. The data of 1063 patients that received 2918 implants (1337 INICELL, 1581 TST) was included. The average follow up time was 2.1 (1.1–5.4) years for INICELL and 4.5 (1.3–5.9) years for TST implants (Thommen Medical AG, Switzerland). In the reported period 7 implants with INICELL (0.5%) and 23 TST implants (1.5%) failed. This difference was statistically significant. The analysis of cases treated and followed up in a single implantological office for 6 years confirmed the very good clinical outcome that was achieved with both used implant lines. Within the limitations of this retrospective analysis, the overall early failure rate of the hydrophilic implants was significantly lower than that of hydrophobic implants. The use of hydrophilic implants allows the clinician to obtain less early failures, hence the interest of an up-to-date surface for the daily work of an implant practice.

Keywords: dental implants; early failure rate; case series; enossal surface hydrophilic vs. hydrophobic

In a recent study by Le Gac and Grunder published in the Dentistry Journal, almost 3,000 Thommen Element Implants were placed and surveyed over a test period of up to six years.

A study of almost 3,000 Thommen Implants placed in patients showed an early failure rate of only 0.5 per cent and a late failure rate of 0 per cent[1]. These results exceed not only the average retrospective outcomes recently published in an analysis by the Swedish National Register[2], but also those of the implant model with the lowest failure rates in this study. In a comparison of the survival rates of implants with two different implant surfaces[1] (hydrophobic and superhydrophilic), implants with the superhydrophilic Inicell surface performed statistically significantly better and illustrated the reliability of the Inicell surface in the early healing phase.

In a recent study by *Le Gac* and *Grunder* published in the Dentistry Journal (No. 3, 2015, 15-23), almost 3,000 Thommen Element Implants were placed and surveyed over a test period of up to six years. Two different surfaces were featured in the study, one hydrophobic (TST) and one superhydrophilic (Inicell), on identical implant designs. At the conclusion, no failures occurred after occlusal loading in any of the implants; this corresponds to a 0 per cent late failure rate. However, an early failure rate of 1.5 per cent was established for the hydrophobic implants. This early failure rate is statistically significantly higher than the outcomes of 0.5 per cent with the superhydrophilic implants. The superhydrophilic surface was obtained by conditioning with Inicell by Thommen Medical.

These outcomes appear only a few months after the publication of a retrospective study by the Swedish National Register, in which the results of implants placed in 2,765 patients were surveyed over a test period of nine years. On average, the implants in the study achieved an early failure rate of 4.4 per cent and an average late failure rate of 4.2 per cent. Notably, the implant model in the study that was described as being the "best in their class" reported an early failure rate of 0.7 per cent and late failure rate of 0.5 per cent, a higher failure rate than with the Thommen Implants. Therefore, the results clearly illustrate the superior performance by Thommen implants over the other implant models in the Swedish National Register study.

The results achieved with the superhydrophilic Inicell surface (0.5 per cent, or 0 per cent) prove the reliability of Thommen Inicell Implants. Superior performance in the early healing phase and long-term advantages can be achieved when using the Inicell surface in everyday practice.

More information

Thommen Medical AG
www.thommenmedical.com

[1] O. Le Gac and U. Grunder. Six year survival and early failure rate of 2,918 implants with hydrophobic and hydrophilic enossal surfaces. Dentistry Journal 2015, 3, 15-23, doi:10.3390/dj30x000x – http://www.mdpi.com/2304-6767/3/1/15.

[2] Derks et al. Effectiveness of implant therapy analyzed in a Swedish population: Early and late implant loss. J Dent Res 2014, Dez 11 – http://www.ncbi.nlm.nih.gov/pubmed/25503901.

IADR/Straumann Award in Regenerative Periodontal Medicine presented to Mariano Sanz

Grand achievements

At the General Session of the International Association for Dental Research (IADR) in Boston, MS, USA, the 2015 IADR/ Straumann Award in Regenerative Periodontal Medicine was presented to Professor Mariano Sanz in recognition of his remarkable achievements in the field – both in basic and in clinical periodontal research.

Professor Sanz

The focus of *Professor Sanz'* research in the area of regenerative therapies has been on the use of periodontal stem cells and cementoblasts in experimental models and in clinical trials. He has authored over 200 scientific articles in peer-reviewed scientific journals in periodontology and implant dentistry.

Worth USD 5,000, the IADR/Straumann Award was created to honor significant contributions in basic and/or clinical research in regenerative periodontal or peri-implant medicine. This year's award was presented by *Professor Evanthia Lalla*, President of the IADR Periodontal Research Group and Professor of Dental Medicine at Columbia University College of Dental Medicine. At the ceremony, *Professor Lalla* commended *Mariano Sanz* as "an internationally renowned researcher in periodontology, whose work and remarkable achievements over many years are widely recognized". "He has led cutting-edge clinical trials evaluating various approaches to hard- and soft-tissue regeneration around teeth and dental implants, and assessing different protocols in implant surgery and the treatment of peri-implant infections. This prestigious award is a further testament to his long-standing contributions to periodontal research and his support to the IADR and its mission", she added.

Mariano Sanz is Professor of Periodontics and Director of the ETEP (Etiology and Therapy of Periodontal Diseases) Research Group at the University Complutense of Madrid, Spain. He is past President of the Pan European Region of the IADR, the European Federation of Periodontology, the Spanish Society of Periodontology, and the Association for Dental Education in Europe. *Professor Sanz* is a member of the editorial board of ten international dental journals and serves as an Associate Editor for the Journal of Clinical Periodontology and the Journal of Evidence-Based Dental Practice.

More information

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Interview with Claudia Lindemann and Thomas Fiekens, OT medical

Innovative precision – made in Germany

Not only IDS 2015 could boast a record number of visitors. OT medical also set its own new attendance record. Not only the design of their very attractive booth was widely praised, but the same was true of their product innovations that consistently complement the company's portfolio and ensured a steady stream of visitors on all days of the fair. In Cologne, EDI Journal spoke with sales manager Claudia Lindemann and CEO Thomas Fiekens.

Claudia Lindemann and Thomas Fiekens

Had you kept your powder dry to present as many innovations as possible at IDS?

Fiekens: Of course we had a few new things to show at IDS. In particular, the new OT-F3 tray is a real milestone and has met with great interest. This tray guides the practitioner through the drilling protocol in an intuitive manner. It makes implant placement not only easier, but also much faster and more secure. Our customers know that we continuously improve our implant systems, and they are ultimately the ones to give the impulses for development. Constant dialogue is not only dear to us, it is an integral part of our development work. For our research and development activities we can draw on a large international network, including universities. So there are always some interesting projects going on, not only in preparation for an IDS.

In addition to medical or technical innovations, supporting our customers in everyday practice – especially in dental practice marketing – is an important issue. We therefore presented at IDS our new and exclusive Take Care patient sets to be handed directly to the patient after implant insertion. This little gift gives patients the safe feeling that they are important and that they are in good hands with their treatment provider, and it will encourage them to recommend a practice – a competitive advantage that benefits both the practitioner and OT medical. We are well advised to preserve this valuable partnership with our customers and to always put it at the focus of our work.

Lindemann: Of course, despite all innovations, we also make sure to keep our portfolio slim and well organized. But our close dialogue with our users sometimes results in additional requests, which we of course attempt to meet, for example with the current expansion of our biomaterial offerings.

For maximum flexibility in treatment protocols, OT medical customers can now choose between a bovine (Biovin) and a synthetic bone substitute (OToss), which is available not only in particulate form, as granules, but also as an injectable paste. Add to this the porcine Biovin collagen membrane, and you get a complete range of products for GBR and GTR – all from a single source!

Why do you not limit yourself to one type of augmentation material?

Fiekens: Biomaterials complement our product portfolio very well. But we do not want to determine the right therapy for either the dentist or the patient. What counts for us is that implantologists using our sets are in a good starting position and can confer with their patients to select the right treatment approach. For dentists as entrepreneurs,

I think it is important that they can accommodate individual patients' wishes without having to sacrifice even a bit of product quality.

The compatible implant systems OT-F2 and OT-F3 are ultimately also based on this philosophy. The short OT-F3 implant is of course a niche product, but it allows practitioners to offer a speedy, minimally invasive and cost-effective treatment. This implant may help them convince patients who without the OT-F3 implant might have decided not to assent to implant therapy.

Digital dentistry was again the main topic of this IDS – was this true of OT medical as well?

Fiekens: Digital technology in oral implantology certainly is an important issue for us. We have developed good solutions for CAD/CAM and guided surgery and will continue to work on them. For us it was crucial that the digital workflow should work reliably in actual practice, providing accurate, predictable results without compromising processing safety. Our components ensure that, and OT medical guarantees it.

Lindemann: With the brand-new CAD/CAM scanbodies and preforms we now offer users auxiliary parts for the electronic acquisition of implant positions and for manufacturing custom CAD/CAM superstructures. This increases the range of possible applications of the OT-F2 and OT-F3 implant systems, which are compatible amongst themselves. For guided implant placement we will shortly offer special guided-surgery extensions that can be used in combination with the current OT-F2 and OT-F3 drills and placement instruments.

Fiekens: As always when we expand our range, we focus very closely on the needs of our users. Practicality and treatment economy on a scientific basis are our goals and our points of reference. Our goal even with the standard tray was to help implantologists work with templates. True to our claim of "Innovative precision – made in Germany", we are – as far as I know – the only manufacturer offering this option. You see, it is always worthwhile to visit OT medical.

Thank you for your time and for this interview.

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Interview with Dr Vincent Morgan and Professor Mauro Marincola, Bicon

30 years of success

The Bicon implant system has been used successfully and continuously by clinicians to serve their patients' aesthetic and functional needs since 1985. Bicon's proven design has provided clinicians and patients with unmatched clinical capabilities, such as subcrestal implant placement with 360-degree universal abutment positioning. This 1.5-degree locking-taper, bacterially sealed abutment connection frequently produces bone gains in as little as four months. Most importantly, Bicon's design provides 5.0-mm short implants, rendering bone-grafting procedures unnecessary in most clinical situations. On Bicon's 30th anniversary, EDI Journal was fortunate enough to have the opportunity to interview the company's CEO, Dr Vincent Morgan, and its head of research, Professor Mauro Marincola. The following is an excerpt from that interview.

First, please allow me to congratulate you on 30 years of success: implant companies with a sterling record such as yours are few and far between.

Morgan: Thank you! We're all very excited about our 30th anniversary. Although our implant design has remained virtually the same, implant dentistry has changed considerably.

Speaking of which, could you tell me a little about the history of Bicon?

Marincola: Well, if you want the full story we should probably start in Germany in 1892, when *Julius Wolff* observed that bone changes its shape and internal architecture in response to external forces. For his concept really serves as the basis behind the Bicon design. ›››

Morgan: To give you an overview of more recent events, the Bicon system originated in 1968 as the United States Army funded *Thomas Driskell's* development of a free-standing single-tooth replacement. In 1981, *Driskell* introduced a surgical-grade titanium-alloy implant, Titanodont. The current Bicon implant was introduced in 1985. All the components and instrumentation manufactured in 1985 are fully compatible with implants, components and instruments manufactured today!

Tell me, what is it about the Bicon implant that makes it special?

Morgan: Apart from its unique design? The people responsible for research, manufacturing, education and for selling the implant. Their focus is on the patient's well-being and on telling the truth as they know it. Innovation is embraced, which has allowed Bicon to be a leader and not a follower in implant dentistry, as any objective historian of dental implantology knows.

Marincola: Apart from the implant design, we must not forget Bicon's slow-drilling technique without irrigation, which appears eminently logical to anyone knowledgeable about bone physiology.

Morgan: Of course, slow drilling preserves bone at the osteotomy site and eliminates the need for irrigation. The hemispherical base assists in bone growth and supports the growth of a natural-looking papilla. You can see that there are numerous reasons why the Bicon implant is special.

The Bicon implant design was and is revolutionary; why have there been no substantial changes other than shorter and shorter implants over time?

Marincola: Why change a winning concept? Most implant companies are only now beginning to focus on the implant characteristics that Bicon is famous for and has incorporated successfully for decades. For example: our unique sloping shoulder has provided for platform switching at the crestal level, and our use of the hemispherical base at the abutment level, long before the term was coined. Just look at the current literature and marketing efforts. Many implant companies have begun using the time-proven features of the Bicon design.

Morgan: Often imitated, never duplicated. Our basic design has remained unchanged because it has worked so well for 30 years! Bicon had the answers back in 1985 for many of the problems facing implant dentistry today. As a result, many of the innovative features that Bicon pioneered are now becoming commonplace, especially with regard to aesthetics and implant size. Sadly, many implant sites are still septic reservoirs with ubiquitous odour and peri-implantitis.

I am glad you brought up the topic of implant size. There is still controversy regarding the implant-to-crown ratio of short implants; can you speak to this controversy?

Marincola: This issue is no longer a concern for informed clinicians. Nor is it a concern for any clinician when you call their attention to the fact that an implant is ankylosed. For they all know that an ankylosed tooth can support a long crown for decades with only a short root.

If we are to believe that Bicon implants are as advantageous in regard to design as you claim, don't these advantages come at the expense of prosthetic limitations?

Morgan: Ah, but therein lies the brilliance of the system: it has both brains and beauty! No other implant system possesses the restorative flexibility of the Bicon implant system; it is, without exception, the most forgiving system on the market in terms of restorative flexibility. The locking-taper design with its 360° abutment positioning allows for easy chairside adjustments, intraoral bonding and extraoral cementation. Furthermore, the abutment angles we offer – 0, 10, 15 and 25 degrees – make paralleling abutments with non-parallel implants incredibly easy. Clinicians often take me aside to tell me how easy and more productive their lives have become after implementing the Bicon system, especially if they have used the new fibre-reinforced CAD/CAM resin material, which is going to replace metal in dentistry.

Well, you have certainly convinced me! Thank you very much for talking with me about the Bicon dental implant. I wish you a happy anniversary!

Professor Mauro Marincola and Dr Vincent Morgan

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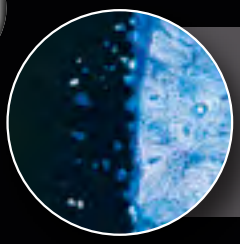

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Straumann increases ownership of Neodent to 100 per cent

Strengthened position in the value segment

Straumann has signed an agreement to increase its ownership of Neodent, Latin America's leading dental implant company, from 49 per cent to 100 per cent in 2015, three years earlier than foreseen in a previous option agreement. The purchase price for the outstanding 51 per cent is paid in cash to the company's founding shareholders, Dr Clemilda de Paula Thomé and Dr Geninho Thomé. The acquisition makes Straumann a substantial contender in the global value segment.

Neodent specializes primarily in the design, development, and manufacture of dental implants and related prosthetic components. Under the entrepreneurial leadership of its founders, the company has expanded rapidly over the past 22 years and has a leading share of the world's second largest market for implant dentistry, Brazil. This success has been achieved through a philosophy of making tested implant solutions more affordable to a broader population. In 2014, the company achieved revenues of BRL 258 million, generated predominantly in its domestic market, where revenue grew 8 per cent. Neodent is highly profitable and the acquisition will be accretive to Straumann's reported EBIT margin from 2016.

Straumann acquired 49 per cent of Neodent in 2012 for BRL 549 million, with an option to increase to 75 per cent in 2015 and up to 100 per cent by 2018. This option has been renegotiated to enable a full acquisition in 2015.

Merged activities to unlock synergies and market potential

The initial acquisition marked Straumann's first step into the value segment of the tooth replacement market. In the meantime the group has established an international value platform (Instradent), which has launched Neodent in the US, Iberia and Italy, with further markets to follow.

The two companies will be able to achieve considerable synergies by merging certain activities. For instance, Straumann's country organization in Brazil will move to the Neodent facilities in Curitiba and the two organizations will collaborate to unlock the full potential of the Latin American region. Elsewhere, Straumann will continue to drive the international expansion of Neodent through its Instradent platform.

Dr Geninho Thomé, the co-founder and former CEO of Neodent will continue with the company as Scientific President & President of the Board of Neodent. He will hand over his current operational responsibilities to the new CEO, *Matthias Schupp*, who will continue to head Straumann's LATAM region.

Marco Gadola, CEO of Straumann, commented: "Neodent is highly successful and expects to sell roughly a million implants this year, underlining its attractive value proposition, solid reputation and strong commitment to the well-being of patients. The company's success has been driven largely by the entrepreneurial acumen, clinical expertise and creative vision of *Dr Geninho Thomé*, and we are both grateful and excited that he has agreed to continue with us to share his knowledge and experience as we develop new markets, products and solutions."

Dr Geninho Thomé noted: "Straumann's investment speaks for the quality of our company, our people and all that we have achieved together. It is an honor for me personally and everyone at Neodent to be part of the Straumann Group, which we see as the pioneering global leader in implant dentistry. Together we will contribute significantly to the standard of affordable patient care in Latin America and beyond."

More information

Straumann Holding AG
www.straumann.com

Gregor Siebert made Head of Marketing and Sales

curasan realigns its sales strategy

curasan AG announced a strategically important change in HR within the group. Gregor Siebert, a manager with global experience in the pharmaceutical industry, will be Head of Marketing and Sales with immediate effect.

Gregor Siebert

Siebert began his career in the pharmaceutical industry in 1985 at Abbott Germany, where he was responsible for the segments of hospital products and medical nutrition, having held various positions in marketing and sales in his role as Divisional Manager. After successfully promoting the expansion of the commercial organisation and the introduction of product innovations in managerial positions at Hikma Pharmaceuticals from 2004, he was Vice President of Hospital Europe at Pfizer responsible for the optimisation of the value adding processes that began with effect from 2010 in the European hospital business and for generic products. Finally, he managed the global pharmaceutical business at GL Pharma, Austria as Head of Marketing and Sales since 2014.

Michael Schlenk, the new CEO of curasan AG since the end of 2014, sees major opportunities in this appointment for a paradigm shift within the group: "With *Gregor Siebert*, we are making significant gains in marketing and sales skills on a global level in the healthcare market. With the restructuring that has just begun at curasan, a key role is being assigned to the Marketing & Sales Division. The aim is to expand our sales network and to refocus on our marketing with a view to offering a wider platform to the indisputably pioneering products of curasan for the next spurt of growth."

The new Head of Marketing and Sales also expects an exciting set-up: "curasan has been active in the market for almost thirty years and has a wide range of approved high-tech innovations and a number of patents to its name. I am very happy and look forward to the opportunity of charting out new paths of success at curasan with my many years of experience and through working closely together with the new management team."

More information

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Interview with Dr Stavros Pelekanos

"Piezo surgery is the method of choice"

Dr Stavros Pelekanos from the University of Athens, Greece has been using piezo surgery for more than ten years. In EDI Journal, he talks about the advantages and the use of piezotechnology and explains why he sees a paradigm shift in dental surgery.

Dr Stavros Pelekanos

Why do you use a piezosurgical device?

The decisive advantage of piezotechnology is that the soft tissue is preserved. Bone removal, in contrast, is particularly atraumatic. Patients experience less postoperative swelling and consequently better healing [1,2].

Can you illustrate that with figures?

For example, the risk of damaging the Schneiderian membrane during an external sinus lift is reduced from 30 per cent when using rotary instruments to just 7 per cent when working with piezo [3]. Generally speaking, the atraumatic approach causes the patients virtually no problems at all. Young colleagues in particular display great interest in piezo surgery at training events, and I really expect to see a paradigm shift in the near future.

Does this "gentle" surgery not come at the expense of lower efficacy?

Patients want shorter operations. The first time I operated with piezo ten years ago, I admit that I was a little disappointed by the efficacy. Now, however, the new devices such as Piezomed by W&H are just as powerful as rotary instruments. In addition, the micro-oscillations allow much more precise working than is possible with the directly acting rotary drive. In addition, the cavitation effect causes less bleeding in the working field. That offers a better view and saves time, too.

Your favourite indication is the external sinus lift. Could you please take us through the procedure?

In my opinion, external augmentation of the sinus floor (or a sinus lift) is an ideal indication for piezo surgery. The most common complication with this surgery is damage to the Schneiderian membrane [4] – why should I put my patient at risk unnecessarily? Following preparation of the mucoperiosteal flap, I use a saw (B1 or B6/B7) to define the bone window. These instruments boast very fine toothing and for the same reason can be used more slowly than instruments with fewer teeth if necessary. Then I change to a diamond-coated sinus instrument (S1) until the bluish, glistening membrane comes into view. If you want to be extra careful, you can round off the edges of the bone cover with the spherical, diamond-coated piezo instrument S2.

[1] Wallace SS, et al. The journal of evidence-based dental practice 2012;12:161-171.
[2] Delilbasi C, Gurler G. Implant Dent 2013; 22:662-665.
[3] Wallace SS, et al. Int J Periodontics Restorative Dent 2007;27:413-419.
[4] Schwartz-Arad D, et al. J Periodontol 2004;75:511-516.

The use of a piezo saw (B1) makes it possible to define the bone window particularly precisely in external sinus lifts. Thanks to the fine toothing, bone loss is minimal.

Following raising of the bone cover, any remaining bone is ablated gently. With the elephant foot instrument (S3), a film of coolant ejected from three spray openings protects the Schneiderian membrane.

Photos: Dr Stavros Pelekanos

Is it not easier to make finer incisions with rotary saws? Why do you use the rounded, diamond-coated instrument for expansion?

If I use micro-saws, I can't tell if I have damaged the membrane. Gently rounding off the bone cover with the S2 prevents it from being perforated by sharp edges. Experienced surgeons may feel comfortable skipping this step. The next stage is to raise the bone cover carefully and then to use the elephant foot (S3) to smooth out any remaining bone.

So you don't remove the bone cover completely with the elephant foot?

No, I like to recycle the ground bone as augmentation material. In addition, the erosive ablation takes too long. For the same reason, I prefer to detach the membrane with a Kramer curette (SKRA 36, Hu-Friedy). It is essential to proceed extremely cautiously now, as the membrane can rupture very easily in some patients. Alternatively, the piezo instruments are also ideal (first S3, then S4 or S5).

And what about the automatic instrument detection?

Automatic instrument detection is a technology patented by W&H which is unique in the piezo industry. The device detects the instruments and selects the optimal power settings automatically. It is convenient, saves time and is not least beneficial to the patients and instruments alike.

Your practice is specialized in aesthetic restorations and implantology. What indications do you use your Piezomed for?

Due to the thin buccal bone lamellae, extreme caution is required when removing the upper front teeth. We like to employ the instruments EX1 and EX2 for this. In my clinic we also harvest bone blocks from the oblique line of the mandible and create crown extensions for prosthetics. In this case, for example, the sharp chisel B4 or the diamond-coated sphere S2 are ideal for careful shortening of the alveolar limbus. However, there are also ideally angled, effective instruments for periodontal debridement.

So piezosurgical devices are not just for oral surgeons?

Anyone who works as a general dentist and performs surgery is sure to benefit enormously from devices such as Piezomed. Whether it's for prosthetics, periodontology, endodontics, minor or even major surgery: Piezo surgery is extremely versatile. However, the most important aspect is the atraumatic and yet effective approach: Patients appreciate the difference and come back to your practice.

Thank you, Dr Pelekanos, for this interview.

New five-year data confirm maintained bone levels and biological sustainability with OsseoSpeed implants

Predictable and aesthetic results

New five-year data on OsseoSpeed implants (Astra Tech Implant System, Dentsply Implants) show stable soft tissue and maintained bone levels from implant placement and implant loading, confirming an average bone level reduction of only 0.3 mm.

Recent data from 17 scientific articles show that the average bone level reduction from implant placement to five years is 0.3 mm, whereas the accepted standard norm is currently at 1.5 mm. In addition, data from 62 scientific articles confirm the 0.3 mm average bone level reduction one year after implant loading, with remained stability for five years.

For dental professionals and their patients, it is important that implant treatment not only restores function, but also results in natural-looking aesthetics. To fulfill this promise, a prerequisite is biological sustainability, i.e. the harmony of marginal bone and surrounding soft tissue over time. A key factor in delivering biological sustainability is the Astra Tech Implant System BioManagement Complex. This combination of interdependent features ensures reliable, predictable and aesthetic results.

More information

Dentsply Implants · www.dentsplyimplants.com

MIS innovation launch in the most innovative ambiance

"Fireworks display" of scientific and clinical evidence

When you enter the famous Science Museum in London, you can make your way through the Innovations Gallery, which features many groundbreaking inventions in human history, into the Future Gallery that tries to answer questions like "Will we be able to live in space one day?". These were the surroundings MIS had chosen for the big launch of its new V3 Implant concept, to answer the question "How can we get more bone where we need it?" broadcasted live over the internet.

The Future Gallery opened onto a MIS blue-lit reception area, and after some refreshments, on into the museum's theatre. *Galit Gerstel*, MIS Marketing and Branding Manager, and *Michal Malka*, MIS Research Coordinator and one of the organizers of the big event, introduced MIS CEO *Idan Kleifeld*, who pointed out the company's organic growth that has made it Number 5 worldwide, with sales in more than 65 countries. *Doron Peretz*, MIS Senior VP Marketing and Product Development, explained how a new product is developed with a video presentation in no way second to famous lifestyle trailers created by international directors.

Details and advantages of the evolutionary V3 implant system were presented by MIS Product Manager *Elad Ginat*. This system promises immediate biological benefits, especially in the anterior jaw and in other regions with minimal space or bone and a need for great aesthetic results.

The scientific part of the event was heralded in by the inventors behind the new design: *Professor Nitzan Bichacho* and *Dr Yuval Jacoby* (Israel) and *Dr Eric Van Dooren* (Belgium). This was followed by a scientific presentation by *Professor Hakan Özyuvaci* (Turkey) and *Professor Mariano Sanz* and *Dr Jose Luís Calvo Guirdado* (Spain) and a clinical presentation by *Professor Salvatore D'Amato* (Italy), *Dr Tommie van de Velde* (Belgium), *Dr David-García Baeza* (Spain) and *Alon Schifter* (Israel) and finally a simultaneous panel discussion led by *Professor Moshe Goldstein* (Israel). The development of V3 took two years. It will be available to clinicians worldwide in the upcoming months.

V3 fashion show at the Victoria and Albert Museum

To recover from this "fireworks display" of scientific and clinical evidence, MIS invited the more than 350 participants to the stylish rooms of the nearby Victoria and Albert Museum where the eventful evening came to a relaxed end but still with many enthusiastic discussions among the attendees. The evening included a gala dinner with a beautifully staged V3 fashion show.

Throughout EuroPerio8, visitors were able to attend the Sponsor Session Lectures presented by the V3 developers and join the hands-on sessions, placing V3 implants at the MIS stand. The climax of the V3 launch was on Friday night with an exciting party at the posh London DSTRKT Club.

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V3 Dental Implant by MIS Implants

Immediate biological benefits

Implant design can have a profound influence on the success of the osseointegration process that joins the bone to an implant surface. The special triangular shape of the new V3 Implant's coronal portion has been designed to encourage bone regeneration and provide more bone volume to support a stable soft-tissue situation for more aesthetic restorations.

"It's all in the shape", says *Elad Ginat*, Product Manager at MIS Implants. "The unique triangular shape of the coronal aspect of the new V3 Implant produces significant gains of bone and soft tissue where it matters most – so less titanium is needed."

The triangular neck of the V3 provides solid anchorage at three points in the crestal zone while forming three compression-free gaps at the sides: between the implant and the osteotomy. This design aims at high primary stability and at reducing bone compression and crestal bone resorption, promoting osseointegration.

The compression-free gaps at the neck of the V3 encourage the formation of a blood clot at the bone-implant interface, which promotes the initial scaffold-building process imperative for bone growth. The gaps provide more space for blood pooling and the establishment of a stable blood clot. Greater bone and soft-tissue volume are achieved at the onset of implant placement.

The new V3 Implant is the result of two years of intensive R&D process by MIS, along with their development partners: *Professor Nitzan Bichacho*, *Dr Eric Van Dooren* and *Dr Yuval Jacoby*. Additional design features beyond the triangular neck shape include a high-performance conical connection with platform switching, a variable thread and self-tapping capability, micro-rings, a concave inter-thread for maximum BIC, and a flat apex supporting immediate-placement engagement.

"Doctors can enjoy all these impressive V3 design benefits without having to learn new protocols", says *Ginat*, adding that V3 protocols are the same as those most oral implantologists are familiar with and that a dedicated V3 surgical kit makes procedures especially simple, safe and accurate, resulting in ease of placement for the dentist and shorter recovery times for patients.

MIS describes the V3 as a multi-use implant, suitable for a wide range of surgical scenarios and ideal for use in the anterior region or wherever else space and bone may be limited and a good aesthetic outcome is essential. The new V3 design aims to provide optimum flexibly in implant planning and implant placement for a restoratively driven approach.

"MIS is immensely proud of its innovative position in the global implants industry, which has led to the development of the V3 Implant system," concludes *Ginat*. "It is a widely anticipated next evolutionary step in dental implant performance, designed for the benefit of dentists and their patients the world over." ■

The new V3 is a multi-use implant, suitable for a wide range of surgical scenarios.

More information

MIS Implants Technologies Ltd.
www.mis-implants.com

The product information produced here editorially is based on information provided by the manufacturer and has not been checked for accuracy by the editor.

Enhanced product portfolio by Nobel Biocare

New complete, cement-free posterior solution

At the International Dental Show (IDS), Nobel Biocare unveiled a new complete, cement-free treatment concept developed to address the most common challenges faced when restoring molar teeth. The solution features a choice of new wide-platform implants and restorative options designed specifically for the posterior region. Also launched at IDS was an entire new parallel-walled implant system, NobelParallel Conical Connection (CC).

The new NobelProcera FCZ Implant Crown is the key restorative component in the new complete posterior solution.

Nobel Biocare's new complete posterior solution incorporates new Ø5.5 mm wide-platform (WP) implant options. Clinicians can choose from the NobelParallel CC WP and new NobelActive WP, both designed for optimized emergence profiles for large molar crowns. Each is intended to shorten time-to-teeth by enabling immediate function whenever possible. With the new WP option, both NobelActive and NobelParallel CC are now available in a shorter 7 mm length to avoid anatomical structures such as nerves.

The new NobelProcera FCZ (full-contour zirconia) Implant Crown is the key restorative component in the new complete posterior solution. Screw-retained, made in monolithic zirconia, and with the option to angulate the screw channel, it combines strength with restorative flexibility.

As a completely cement-free solution, the FCZ Implant Crown avoids the risks associated with cement excess. Even the titanium adapter is mechanically retained. Its strength ensures predictability even under the high occlusal forces of the posterior, which makes it ideal for use in the molar region. As no veneering is required, it also eliminates the risk of veneer chipping. Improved access with an angulated screw channel (ASC) combined with the pick-up function offered by the Omnigrip tooling makes it easier to restore in the posterior region. The FCZ Implant Crown comes in eight shades, with each color applied throughout the material.

Furthermore, Nobel Biocare has also launched new PEEK Healing and PEEK Temporary Abutments that are anatomically shaped to match the molar contours. As the PEEK abutments come ready-shaped for an optimized emergence profile, fewer adjustments are needed. This can simplify treatment and reduce costly chair time.

New parallel-walled implant system

The new NobelParallel CC benefits from 50 years of research and innovation at Nobel Biocare and represents an evolution of the features of the successful Brånemark and NobelSpeedy implant systems. NobelParallel CC combines a parallel-walled implant body with an advanced internal conical connection and offers extraordinary flexibility. It is engineered for use in all bone qualities and for a broad range of indications. (The wide-platform version is part of Nobel Biocare's new complete posterior solution.) Both experienced clinicians and those new to implantology will appreciate the straightforward surgical protocol.

More information

Nobel Biocare Services AG
P.O. Box · 8058 Zurich-Airport · Switzerland
info@nobelbiocare.com · www.nobelbiocare.com

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Two new bone cutters by Komet

Enhanced surgical range

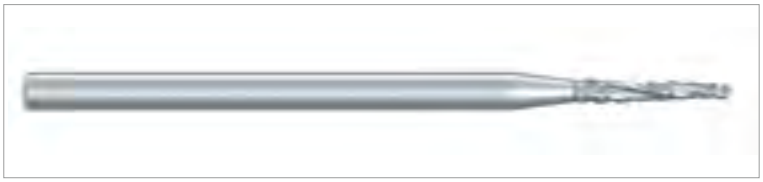
When used in connection with bone cutters, there is always a specific technical background behind terms like “cutting performance”, “tactility”, “efficiency” and “tissue-friendly procedure”. Dentists should be aware of this background, so that they can gain a better understanding of a newly introduced product – that’s why we are presenting some background information on the H162ST and H255E, the two “new additions” to Komet’s surgical range.

H162ST: Sharp like the teeth of a sabre-tooth tiger

Komet has a medical division, and this gave rise to the idea to take a closer look at the instruments used for cranial surgery. For the project “dental bone cutter with cranial toothing” the cranial blade geometry was adapted to the comparatively small dimensions of a dental bone cutter: the so-called ST toothing was born. ST stands for sabre-tooth tiger – a synonym for outstanding sharpness. Its properties, such as exceptional tactility and perceivable effectiveness, make the H162ST ideally suited for bone cutting during osteotomies, osteoplasty, the preparation of bones and bone lids, apicectomies, hemisections, axial perforation of bones and the surgical removal of retained teeth. Thanks to the sharpness of this bur, the user can save precious time. A cutting test was performed in the Komet laboratory to compare the H162ST to other commercially available instruments. The result confirmed that the H162ST cuts artificial bone 30 per cent faster than its competitors. The time required for cutting artificial bone (the instruments were tested under identical conditions) is therefore considerably shorter.

H255E: Small, but powerful

Any dentist will notice the extremely fine dimensions of this instrument at first glance. After all, the H255E has a diameter of merely 1.2 mm and is only 6 mm long. Despite its small size, the cutting performance of this instrument is surprisingly powerful. The H255E owes its properties to its special cross-cut toothing with large chip spaces and long cutting edges along its cylindrical working part. A bit of background information: The fine, tapered combination instrument H254A is already in use in many practices that perform surgical interventions. The cutting speed at the front of the H254E’s tapered working part is slower than that of the cylindrical H255E. This means that the instrument is a little less powerful at the tip. In some cases this can be advantageous, for example when working on small areas. In contrast, the cylindrical H255E cuts with constant power along its entire working length. Bone and dental tissue are removed evenly, making the instrument very efficient. Dentists have confirmed the durability of the H255E. Its indications include linear bone cuts, hemisections, axial perforation of the bone, crestal opening of the alveolar ridge and apicectomies.



Tests in Komet’s laboratory have shown that the H162ST cuts artificial bone 30 per cent faster than its competitors.

The cylindrical H255E: high cutting speed, even in the front region of its working part.

More information

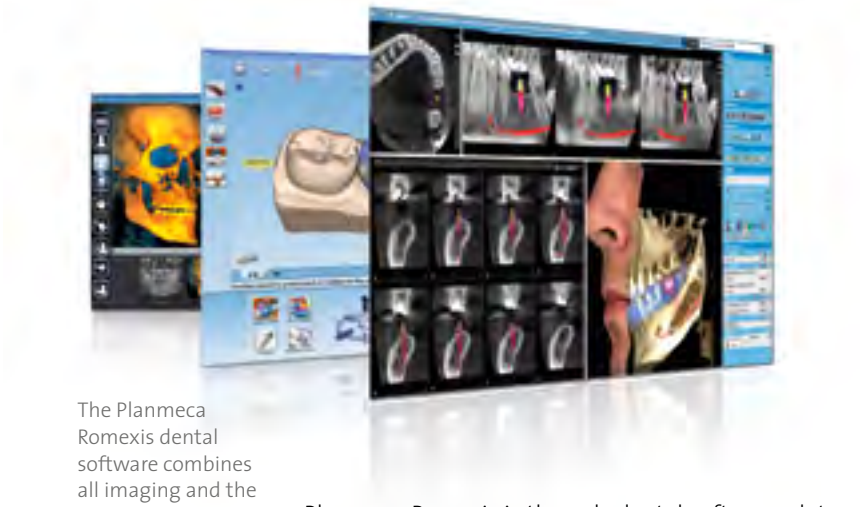
Gebr. Brasseler GmbH & Co. KG
Trophagener Weg 25 · 32657 Lemgo · Germany
info@kometdental.de · www.kometdental.de

The product information produced here editorially is based on information provided by the manufacturer and has not been checked for accuracy by the editor.

CAD/CAM work and 3D CBCT data in one software

The winning combination

The field of digital dentistry is rapidly evolving, with new dental technologies emerging as part of a more efficient and comprehensive workflow. By pairing Planmeca CAD/CAM solutions with X-ray units in the Planmeca ProMax 3D family, dental professionals can bring together a wide range of detailed information for treatment planning and diagnostic purposes. This seamless combination of CAD/CAM and 3D CBCT technology has opened new doors in creating a new standard of care for patients – offering high-quality features for different specialities, all available through one software interface.



The Planmeca Romexis dental software combines all imaging and the complete CAD/CAM workflow.

Planmeca Romexis is the only dental software platform to combine all imaging and the complete CAD/CAM workflow. This solution is at the heart of the Planmeca ecosystem, as it provides dental professionals with the ability to acquire more detailed data sets than ever before. Planmeca Romexis includes advanced tools for all specialities, such as implant planning and other restorative treatments. The software presents dental clinics with a superior way to increase their patient flow and improve the level of care offered.

Seeing more than ever before

Bringing together CBCT data and CAD/CAM work provides a comprehensive level of clarity. Planmeca ProMax 3D imaging units reveal intricate information on soft- and hard-tissue structures, including the mandibular nerve canal, while the Planmeca PlanScan intraoral scanner captures precise data above the gum line. The combination of these data ensures a complete understanding of any case and makes 3D prosthetic designing quick, accurate and easy. Clinics are able to operate more flexibly, as restorations can either be milled at a clinic with the Planmeca PlanMill 40 milling unit, or easily sent to a dental lab in an open STL data format.

The rise of same-day dentistry

A more active role in the manufacturing of restorations opens up avenues for dental clinics to significantly increase their patient volume and grow their business. A streamlined digital workflow ensures the full utilisation of resources, leading to a more efficient treatment environment. Same-day dentistry is as beneficial for patients as it is for clinics. Instead of two visits, patients can be treated in one hour – with no temporary crowns or physical dental models required.

Open architecture for maximised efficiency

Standardised data is the driving force behind many of the latest developments in digital dentistry, as it guarantees the interoperability of images and dental data across different hardware platforms – reducing costs, increasing predictability and enhancing patient safety. Bringing Planmeca's CBCT and CAD/CAM systems together through the Planmeca Romexis software platform makes effective chairside dentistry a reality and presents dentists with a streamlined opportunity to substantially grow their practice. ■

More information

Planmeca Oy
Asentajankatu 6 · 00880 Helsinki · Finland
info@planmeca.com · www.planmeca.com

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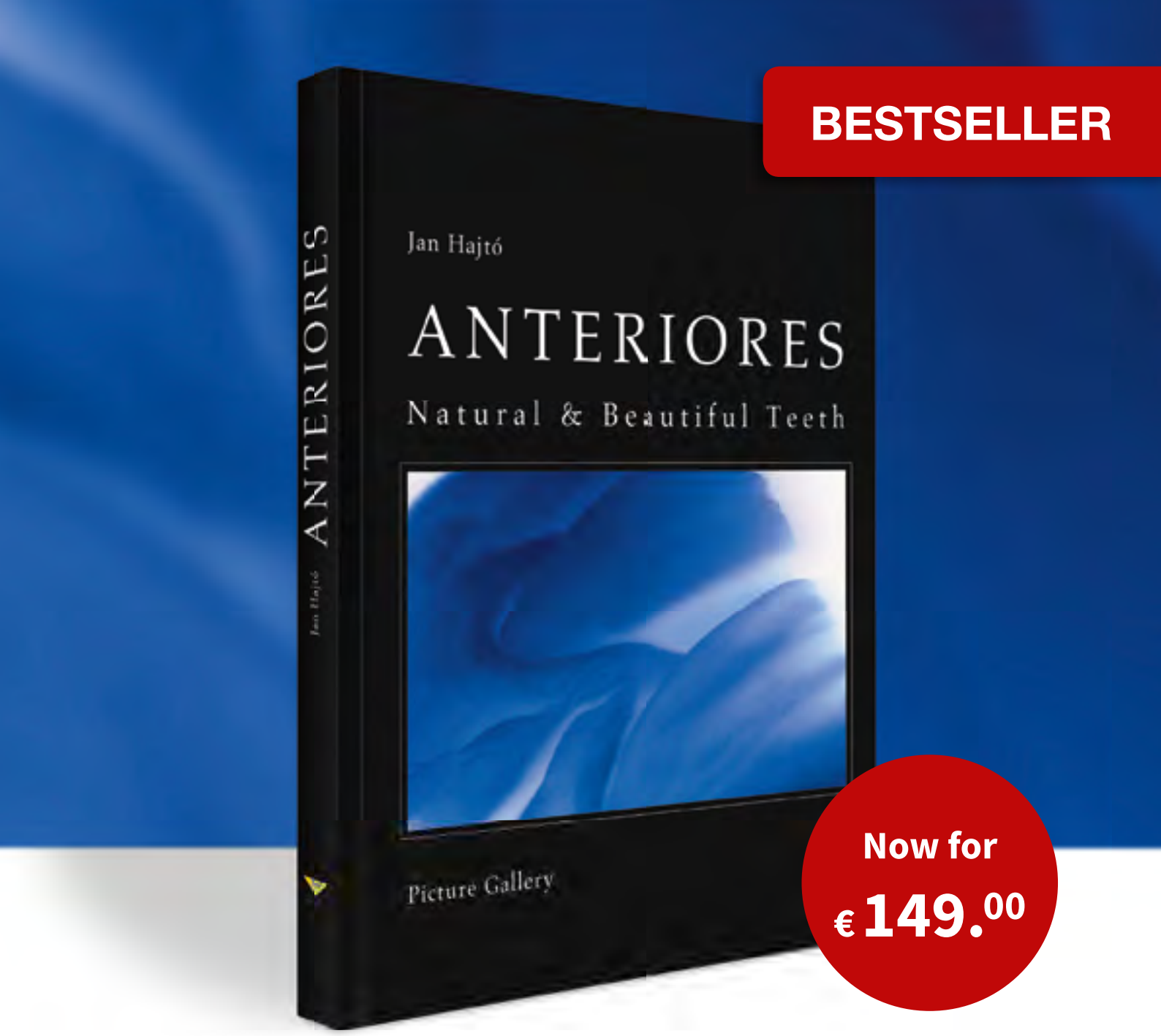


ANTERIORES – Natural & Beautiful Teeth

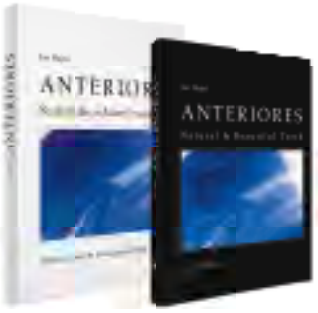
by Dr Jan Hajtó

Picture Gallery

This book aims to be highly visual and inspiring. A selection of naturally beautiful anterior teeth is presented in the form of a coloured atlas. The cases are systematically arranged according to gender and an approximate classification of the regularity of the dentition. This collection will become indispensable as your manual for the aesthetic planning and production of anterior restorations or as an aid to communication between dentist, patient and dental technician.

270 pages, 950 high-gloss illustrations

ISBN: 978-3-932599-19-4
REF 9019



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THE DENTAL PUBLISHERS

Multiple new products by Straumann

One step closer to being a total solution provider

At the International Dental Show (IDS), Straumann presented a number of new products and solutions, which – together with new partnerships – bring the group closer to its goal of becoming a total solution provider.

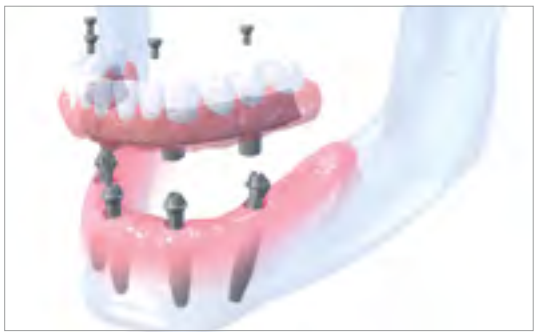
The new Bone Level Tapered (BLT) Implants offer high surgical flexibility and primary stability.

Since the IDS 2013, Straumann has launched its fully ceramic implant (Straumann Pure) and has successfully upgraded the majority of its surgical customers to the high performance implant material Roxolid, which has been extended throughout the Straumann implant range. Thanks to its biocompatibility and greater strength than pure titanium, Roxolid makes it possible to use smaller implants, which in turn can avoid the need for bone augmentation, reducing treatment invasiveness.

Roxolid is a key feature of Straumann's new Bone Level Tapered (BLT) Implant, which offers high surgical flexibility and primary stability. Having completed a controlled market release, the new implant is now available in various endosteal diameters (3.3, 4.1 and 4.8 mm) and lengths (8 to 16 mm), and offers a broad range of prosthetic options. Its design offers high primary stability for immediate or early loading and, with Straumann's SLActive surface to enhance osseointegration, implant healing time is significantly reduced – making this a new generation bone level tapered implant.

Straumann Pro Arch – a comprehensive combination

The BLT Implant is an important component in Straumann's new Pro Arch solution. It is a comprehensive combination of implants, abutments, CAD/CAM frameworks, auxiliary components and educational support that enable clinicians and dental labs to provide accelerated, fixed, full-arch tooth replacement. This approach reduces the number of treatment sessions and thus minimizes disruption to patients' daily lives. Most importantly, it offers fixed full-arch replacements rather than removable dentures, which many patients view as artificial and inconvenient.



Straumann's new Pro Arch solution enables clinicians and dental labs to provide accelerated, fixed, full-arch tooth replacement.

The Pro Arch solution includes a selection of sleek new abutments and auxiliary components that offer a wide range of prosthetic options for screw-retained restorations. The low abutment profile, varied angulations (17° and 30°) and gingiva heights give dentists the flexibility to provide individual solutions including tilted posterior implants.

Straumann Patient Pro – a new tool to provide comprehensive information

Research suggests that every other patient consults the internet before, after and sometimes even during the consultation. Their choice of treatment and/or dental professional is based on the information found. Straumann Patient Pro is a new comprehensive platform that provides dental professionals with digital information to educate patients and to promote their practices. It supports them with materials and tools for the internet and social media as well as for use in their dental practices.

More information

Straumann Holding AG
Peter Merian-Weg 12 · 4002 Basel · Switzerland
info@straumann.com · www.straumann.com

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Innovative solutions by Anthogyr

Sixty-eight years of experience in dentistry

Innovation, industrial expertise and individual commitment constitute Anthogyr's DNA. For 68 years, the French company has designed, manufactured and distributed a complete range of implants and instruments to support dental health professionals in treating millions of patients across the world.

Axiom Concept –
one solution for all clinical indications

The Axiom Concept is composed of three implant systems to cover all clinical indications. They benefit from common characteristics: conical connection, platform-switching, bone stimulation, grade V medical titanium and a 100 per cent biocompatible BCP surface treatment. They have common surgical and prosthetic kits and a full range of prosthetic parts. Axiom REG is designed for most clinical indications, Axiom PX for the indications of immediate post-extraction implant placement and low-density bone, and Axiom 2.8 for single restorations of the incisor region in cases presenting a restricted mesiodistal space.

Simeda – custom digital solutions

Simeda is the Anthogyr CAD/CAM solution for any type of implants or tooth-supported restoration. It is a manufacturing and design centre at the forefront of innovation with high-end 5-axis machines dedicated to each material. The technical support staff is comprised of seven highly specialized dental technicians with the mission to support users of open CAD software. Simeda offers customers an extensive library with more than 200 implant platforms. This Simedatheque is continuously updated and dedicated to design implant abutments and screw-retained structures of all major brands. It can be downloaded from the website. Milling a wide choice of materials, Simeda has opted for in-house production of its zirconia to keep full control over the quality of its products.

Equipment of a wide range
for implantology and dentistry

Since 1947, Anthogyr has been engineering and manufacturing a complete range of instruments, including the Implanteo LED surgery motor with a large touch screen, the Mont-Blanc contra-angles, handpieces, the Torq Control dynamometric wrench, the Aspeo bone collector and the Osteo Safe, the first automatic osteotome on the market.

Quality control: three-dimensional measurement of a CAD/CAM bar.

Support and service

Anthogyr is present in more than 100 countries worldwide and offers different kinds of support to dental practitioners and technicians: the Anthogyr Implants Institute for training courses, the Serenity warranty programme (Europe and Brazil only) and the Anthogyr patient education programme. ■

More information

Anthogyr SAS
2237, avenue André-Lasquin
74700 Sallanches · France
www.anthogyr.com

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Osstell Osstell IDx and Osstell Connect

Products
Osstell IDx and
Osstell Connect

Indication
Objective implant
stability assessment

Distribution
Osstell AB
Stampgatan 14
411 01 Göteborg
Sweden
info@osstell.com
www.osstell.com

The Osstell IDx is a completely new and improved platform with a novel, intuitive user interface and functional design. It is combined with the new Osstell Connect – a set of online services for automatic ISQ data storage, sharing and analysis of implant stability data.

Osstell now takes the next leap in the evolution of implant diagnostics with the introduction of the Osstell IDx. It displays the ISQ measurements in an intuitive and easily interpreted way. It is easier than ever to assess implant stability and the degree of osseointegration, ensuring that implants are stable enough for final restoration. It also facilitates the communication with patients or the restorative dentists concerning the treatment plans.

Furthermore, with the Osstell IDx the company introduced the associated online service Osstell Connect. Implant stability data and results are automatically stored directly in the device and in the Osstell Connect service. It makes collaborations with colleagues easier, enables data backup, remote service and support, and allows the user to analyze implant and treatment data through various platforms. ■

Keystone Dental OCS-B bone graft material

Product
OCS-B bone graft material

Indication
Bone grafting

Distribution
Keystone Dental SpA
Via Fleming 19
37135 Verona
Italy
info.europe@keystonedental.com
www.keystonedental.eu

The OCS-B bone graft material is used in xenograft. It consists of pure cancellous hydroxyapatite derived from bovine bone by a special chemical and thermal process. The selection of source material is highly controlled and the processing standards allow predictable results.

The OCS-B bone graft material is biocompatible. Its osteoconductive properties provide consistent bone regeneration similar to human bone. It has a larger surface area for cell adhesion and for the generation of new bone around the graft. ■

curasan Osbone

Product
Osbone

Indication
Bone augmentation

Distribution
curasan AG
Lindigstraße 4
63801 Kleinostheim
Germany
info@curasan.de
www.curasan.de

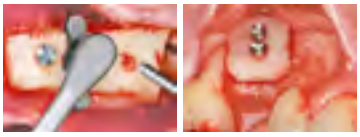
Osbone, a synthetic open-cell porous material, has been on the market for several years now. Its synthetic origin excludes the risk of allergies or infections while guaranteeing constant and reproducible product quality.

With a phase purity of ≥ 95 per cent, Osbone exhibits slow and homogenous resorption kinetics. In combination with an interconnecting pore structure, it supports the healing of bone defects and results in a stable implant bed with a constant volume.

Cell cultures of up to 28 days demonstrated a favourable proliferation of cells and pronounced expansion and clustering of osteoblasts on Osbone. A comparative study of the resorption kinetics and biocompatibility of different bone substitutes in an ovine model showed excellent results for Osbone. No foreign-body or inflammatory reactions were detected at any time during the up to 18-month examination period.

Since its introduction, Osbone has been clinically proven internationally. Several publications document successful results within dentistry and oral and maxillofacial surgery (OMS). Osbone was used for different indications in an open prospective multicentre study in 32 dental and OMS practices including 190 patients. A full 98.7 per cent of the sites augmented to facilitate implantation were considered suitable for placing an implant. In the same study, Osbone showed excellent biocompatibility and osseointegration, particularly in cases requiring increased mechanical stability, extra volume and delayed resorption kinetics.

Aesculap® Dental
Bone Fixation



Easy Handling – Excellent Results

Bone Fixation Forceps:
- Delicate and adaptable working tips
- Universal application ➟ upper and lower jaw

Screws:
- Highest stability
- Smallest possible screw head
- Biocompatible
- Easy removal of residues

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Phone +49 7461 95-2496 | Fax +49 7461 78980
eMail dental@aesculap.de | www.aesculap-dental.com

Omnia PTFE sutures

Product
PTFE sutures

Indication
Implant, periodontal and bone-graft procedures

Distribution
Omnia SpA
Via F. Delnevo, 190
43036 Fidenza (PR)
Italy
info@omniaspa.eu
www.omniaspa.eu

Omnia expands its range of surgical sutures by introducing the new generation of surgical sutures: PTFE sutures. This supplements the company's traditional portfolio of surgical sutures made of silk, polyester and absorbable PGA.

Omnia PTFE sutures are soft, biologically inert and chemically non-reactive. The main advantages of PTFE sutures are the great ease of tying, strong knot security and stable long-term suture quality. Compared to other synthetic monofilament sutures, this material is well tolerated in the oral cavity. Furthermore, PTFE sutures are ideal when it comes to limiting inflammation, bleeding and other collateral effects that may occur during soft-tissue approximation.

Characteristics:
- Monofilament
- Resistant
- Great ease of tying
- Excellent biocompatibility
- Biologically inert to contain inflammation along the suturing borders
- Comfortable and soft for the patient

These sutures are available in different diameter/length combinations with different types of needles. Omnia PTFE sutures are ideal for any implant, periodontal and bone-graft procedure where the use of a monofilament suture with low bacterial wicking is recommended. The product is available in convenient boxes of twelve sutures.

Kohler Lucas surgical curette

Product
Lucas surgical curette

Indication
Cleaning of the alveolar socket after a tooth extraction

Distribution
Kohler
Medizintechnik GmbH & Co. KG
Bodenseeallee 14–16
78333 Stockach · Germany
info@kohler-medizintechnik.de
www.kohler-medizintechnik.de

The new Lucas surgical curettes with serrated tips are used to clean the alveolar socket after a tooth extraction before placing an immediate implant. To facilitate implant success, the socket walls must be one hundred per cent clean. This is not guaranteed when using a standard curette – therefore the surgeon generally uses a high-speed handpiece to debride the floor of the socket and its bony walls.

Bony cysts are treated by the oral surgeon by removing them from the bony walls. This is often difficult to achieve with standard instruments.

Calendar of Events

	Event	Location	Date	Details/Registration
9/2015	**FDI Annual World Dental Congress**	Bangkok Thailand	22–25 September 2015	FDI World Dental Federation www.fdi2015bangkok.org
	EAO Annual Scientific Congress	Stockholm Sweden	24–26 September 2015	European Association for Osseointegration www.eao-congress.com
	Dental-Expo 2015	Moscow Russia	28 September– 1 October 2015	Crocus Expo IEC www.dental-expo.com
10/2015	**Pragodent 2015**	Prague Czech Republic	8–10 October 2015	Incheba Praha www.pragodent.eu
	19th Annual Symposium of BDIZ EDI	Berlin Germany	15–17 October 2015	BDIZ EDI www.bdizedi.org
	BDIA Dental Showcase 2015	Birmingham England	22–24 October 2015	British Dental Industry Association www.dentalshowcase.com
	3rd Implant Direct Symposium	Palma Mallorca	23–25 October 2015	Implant Direct www.implantdirect.eu/ october-symposium
11/2015	**Swedental 2015**	Göteborg Sweden	12–14 November 2015	Stockholmsmässan www.swedental.org
	ADF Annual Dental Meeting	Paris France	24–28 November 2015	Association Dentaire Française www.adfcongres.com
2/2016	**Chicago Dental Society Midwinter Meeting**	Chicago USA	25–27 February 2016	Chicago Dental Society (CDS) www.cds.org
4/2016	**International Osteology Symposium 2016**	Monaco	21–23 April 2016	Osteology Foundation www.osteology-monaco.org

EDI – Information for authors

EDI – 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:
· Case studies
· Original scientific research
· Overviews

Manuscript submission
Submissions should include the following:
· two hard copies of the manuscript
· a disk copy of the manuscript
· a complete set of illustrations
Original articles will be considered for publication only on the condition that they have not been published elsewhere in part or in whole and are not simultaneously under consideration elsewhere.

Manuscripts
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, fax number, and electronic mail address of the contact author. The second page should contain an abstract that summarizes the article in approximately 100 words.
Manuscripts can be organized in a manner that best fits the specific goals of the article, but should always include an introductory section, the body of the article and a conclusion.

Figures and tables
Each article should contain a minimum of 20 and a maximum of 50 original color slides (35 mm) or digital photos, except in unusual circumstances. The slides will be returned to the author after publication. Slides should be numbered on the mount in the sequential numerical order in which they appear in the text (Fig. 1, Fig. 2, etc.). Radiographs, charts, graphs, and drawn figures are also accepted. Figure legends should be brief one or two-line descriptions of each figure, typed on a separate sheet following the references. Legends should be numbered in the same numerical order as the figures. Tables should be typed on separate sheets and numbered consecutively, according to citation in the text. The title of the table and its caption should be on the same sheet as the table itself.

References
Each article should contain a minimum of ten and a maximum of 30 references, except in unusual circumstances. Citations in the body of the text should be made in numerical order. The reference list should be typed on a separate sheet and should provide complete bibliographical information in the format exemplified below:
[1] Albrektsson, T.: A multicenter report on osseointegrated oral implants. J Prosthet Dent 1988; 60, 75-82.
[2] Hildebrand, H. F., Veron, Chr., Martin, P.: Nickel, chromium, cobalt dental alloys and allergic reactions: an overview. Biomaterials 10, 545-548, (1989).
[3] Johanson, B., Lucas, L., Lemons, J.: Corrosion of copper, nickel and gold dental alloys: an in vitro and in vivo study. J Biomed Mater Res 23, 349, (1989).

Review process
Manuscripts will be reviewed by three members of the editorial board. Authors are not informed of the identity of the reviewers and reviewers are not provided with the identity of the author. The review cycle will be completed within 60 days. Publication is expected within nine months.

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service@teamwork-media.de

LOCATOR®

THE MAKING OF A GOLD STANDARD

ZEST's LOCATOR® Attachment represents a rare occurrence in the implant field. Never before has the implant industry, clinicians, and patients come together to universally recognize the merits of a restorative solution. It has allowed LOCATOR to become the most globally recognized and trusted brand for overdenture restorations.

INDUSTRY WIDE SOLUTION

ZEST recognizes, and is honored by, the commitment implant companies have made to make the LOCATOR Attachment compatible with their dental implants. In fact, the dental implant companies that collectively make up over 90% of the global implant market supply, partner with ZEST Anchors. Each has chosen the LOCATOR to be a part of the solutions they provide to you, their customer, and your patients.

CLINICIAN **PREFERENCE**

LOCATOR's unique low profile design, pivoting technology, durability, and ease-of-use has propelled it to be the preferred choice of clinicians worldwide for tissue supported, implant-retained overdentures. Clinicians have validated LOCATOR's Gold Standard status with over 4 million units purchased - no other product can match its extensive clinical documentation, design accolades or number of satisfied patients.

PATIENT **SATISFACTION**

Every day new patients begin a journey of being able to eat, laugh and speak with confidence again. Today, nearly two million patients are enjoying an improved quality of life by trusting their clinician to secure their restoration with LOCATOR.

TOGETHER WE CAN MAKE TOMORROW EVEN BETTER

The trust and confidence placed in ZEST since its inception in 1972 is not taken lightly. It enhances our company's commitment to our implant company partners, clinicians, and your patients. Together we will continue to provide more options for the treatment of patients who suffer from the real-life problems associated with edentulisim.

Stay close to ZEST for soon-to-be released innovations that can improve and expand the clinical solutions available within the LOCATOR Portfolio of products.

To experience for yourself how LOCATOR became the Gold Standard of resilient attachment systems, and for a listing of ZEST LOCATOR Partners, please visit zestlocator.com/11 or call 800-262-2310.

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