»EDI News: 8th BDIZ EDI Expert Symposium in Cologne · Meeting Point Implantology – BDIZ EDI at the 35th IDS in Cologne · Coming up: 7th European Symposium on the Dalmatian coast »European Law: ECJ clarifies the concept of "pharmacological action” »Clinical Science: Surface characteristics and quality of implants in sterile packaging »Case Studies: Computer-assisted implementation of a planned emergence profile for a screw-retained anterior crown · Soft- and hard-tissue reconstruction of a severely deficient site prior to implant placement · Risk factors in implant treatment planning
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What can we expect at IDS 2013?

Here we go again! The International Dental Show, IDS, in Cologne – the world’s largest dental exhibition – will open its gates again in March. Looking back on the previous IDS, in 2011, today, there was not all that much in the way of groundbreaking innovations. So this year I am all the more curious to learn what awaits us, especially in digital dentistry.

Other areas such as photography, music and communication have seen a veritable digital revolution happen in recent years. We are also witnessing a deep structural change in the media industry. This change is particularly challenging in that the Internet is not the most favourable framework for independent journalism. Already now the social media have brought about a transformation to part of traditional advertising, while the share of advertising budgets available to journalistic products has fallen. On top of that, there seems to be a lack of public awareness that even in a digital world, the results of intellectual efforts cannot be given away for nothing – and certainly not good journalism, which we cannot and must not do without. But rest assured – the BDIZ EDI board has not failed to recognize the signs. Our EDI Journal is available in an online edition, but we will certainly also take this much-appreciated journal safely into the future as a printed medium! Nevertheless, the legitimate question is: What kind of restructuring trends will we have to face in dentistry?

Currently, almost all manufacturers are attempting, through extensive investment in digital research and development, to achieve positions as technology leaders in this promising market. The focus is on the digital workflow, which will completely revolutionize the traditional way we have been working in dental technology. Digital impression and CAD/CAM milling are in the vanguard of this trend. At the same time, researchers and manufacturers are working on the “transparent mouth”, here we can expect to see significant steps toward data integration. It will soon be possible to create a digital representation of the oral cavity encompassing all of the soft and hard tissues of and around the teeth and bone. We will see the fusion of digital radiographic data – from images to digital occlusion and articulation data. While some of these innovations are not yet ready for “real life”, the digital train is definitely rolling in dentistry now. Yet many dentists and dental technicians find it difficult to define their own roles in this innovation-rich and rapidly developing market.

Even if – as mentioned – some of these new methods still await detailed scrutiny, their benefits for the patient, but also the treatment provider, will be many. Take, for example, access to new restorative methods and more perfect laboratory and chairside procedures. Especially for dental technicians, this will completely change the way they perceive their profession. The digital world will also affect what prices can be charged for dental restorations. We are already witnessing a pronounced price decline. The possibility of easily re-manufacturing a broken denture will result in extended warranty periods.

Restructuring has also been in full swing in oral implantology. The times are long gone when “new” companies offering cheap implants simply disappeared from the market after a few months. On the contrary – some of these companies have experienced amazing growth and now hold respectable market shares; a few of them have had a successful market presence for more than a decade. These companies usually offer the same quality as the incumbents. The vast majority of the latter, in turn, have been very successful in restructuring their operations to respond to the new challenges. This bears witness to the entrepreneurial skills and flexibility of these firms. Unfortunately there are – albeit few – manufacturers who try to force the unwanted competition to their knees by legal means such as infringement claims. I think this is not user-friendly and disregards patients’ needs. We dentists should make clear to the respective companies that we do not approve of their tactics. We are the ones who with the fees we earn guarantee the industry’s sales and profits.

So let us now look forward eagerly to this year’s IDS, where the innovations shown are sure to include a few very positive surprises!

Sincerely,
Professor Joachim E. Zöller
Vice President, BDIZ EDI
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Association of Dental Implantology UK (ADI UK)

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

Ogólnopolskie Stowarzyszenie Implantologii Stomatologicznej (OSIS EDI)

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

Sociedad Española 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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The Expert Symposia of BDIZ EDI are invariably dedicated to hot topics in the field. Despite the undisputed high success rates in oral implantology, many issues have not been supported by reports at a high level of clinical evidence. Some of these issues were addressed at the 8th Expert Symposium in Cologne on “Autologous bone and the alternatives: state of the art in oral augmentation surgery”. Under the scientific direction of Professor Joachim E. Zöller, Vice President of BDIZ EDI, well-known researchers presented the various augmentation techniques.

For many decades, autologous bone has been considered the gold standard in regenerative dentistry, although the harvesting of autologous bone material is associated with a significant burden on the patient’s health. Is the use of biomaterials for hard-tissue regeneration now a general treatment alternative to autologous bone? What biological processes are influenced in what manner, and what is the implication of the various treatment approaches for long-term implantological success? About 200 participants listened to the speakers discussing volume stability, customization, harvesting risks and the use of endogenous growth factors.

Chances and limitations

Stem cell research in Germany, due to legal requirements, must embark on paths different from those in other countries – and does so successfully, as renowned German stem cell researcher Professor Jürgen Hescheler (University of Cologne Institute of Neurophysiology) demonstrated. He introduced new ways of circumventing the problem of embryonic stem cells by using reprogrammed (back-differentiated) pluripotent stem cells, e.g. from skin biopsies. In doing so, he achieved breakthrough results that have been harnessed in cardiology in the form of a differentiation process in cardiac muscle cells.

Stem cell procedures in dentistry – what can be done at chairside, what must be done by the lab? – were presented by Professor Rainer Schmelzeisen (University of Freiburg). He explained that for autologous bone, there is now a choice between performing stem cell-assisted augmentation procedures either by the lab or at chairside. However, the cost is still quite considerable and the pertinent laws are very restrictive.

Dr Arndt Happe (Münster) made the connection to bone substitute material. In his surgery he no longer works with autologous bone only; he has achieved good results with slowly resorbable bone substitutes, as he demonstrated in his presentation. He believes that it is important to include soft-tissue management and defect-related decisions for or against specific therapeutic options.

Along with Professor Joachim E. Zöller, Professor Fouad Khoury (Olsberg) is probably one of the foremost advocates of autologous bone for use in oral
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augmentation surgery. He presented intraoral veneer techniques for autologous bone grafting. Khoury uses no voluminous bone blocks to avoid the risk of non-revitalizing healing. But he has made a for him revolu-
tionary move in the direction of bone substitute materials, surprisingly citing good results in the sinus after using bone substitute as sole grafting material. Dr Bernhard Giesen
hagen (Meihausen) and Dr Orcan Yüksel (Frankfurt) presented their method of simulta-
nous augmentation and implant placement using the ring technique. Giesen
hagen and Yüksel presented an alternative technique that allows bone grafting and implant placement in a single surgical session using prefabricated, sterile-wrapped allogeneic bone rings – even in the case of extensive three-dimension-
al bone defects. Compared to the classic two-stage block augmentation technique, this technique short-
ens the overall treatment time by about five months.

Professor Joachim E. Zöller (University of Cologne) demonstrated extensive reconstructions using iliac
crest grafts and distraction, showing cases of extend-
ed defects and defects with poor soft-tissue conditions
which he treated using distraction osteogenesis with autologous bone taken from the iliac crest and – of
great importance for rapid bone revitalization – an
intraoral veneer technique. Zöller emphasized the
importance of the exposure technique in preventing
resorption. He cited healing times of three to four
months and reported very good results. Zöller con-
tinues to view autologous bone grafts as the gold
standard, but toward the end of his presentation he
admitted that this might no longer be the case ten
years from now due to the promising results of recent
cell research. He also criticized the restrictive
legal situation in Germany, pointing out that much
fewer resources are dedicated to this type of research
in Germany than in other countries.

Dr Ernst Fuchs-Schaller (Zug) presented biological
augmentation using vector distraction, which he calls
garage-door distraction – a technique he has been
using for ten years now. He described in detail the
surgical steps in the distal mandible: The jaw bone is
opened by spreading – similar to a fold-down garage
door mechanism – and filled with bone substitute,
then held open by a distractor. Fuchs-Schaller demon-
strated clinical cases with stable postoperative hard-
and soft-tissue conditions.

The chances and limitations of bone splitting were
addressed by Dr Hans Joachim Nickens. In this tech-
nique, the narrow jaw bone is carefully cleaved by
piezossurgical means. The resulting gap is further
extended with rotary or hand tools to prepare the
bone for implant placement. This technique was pre-
sented as suitable for chairside use, as it can be per-
formed as a one-stage procedure. Nickens left open
the question whether the bone gap requires filling. He
cited the favourable results obtained with membranes
and Bio-Gide in combination. However, the process
requires expanded diagnostics and a solid surgical
protocol, as well as special surgical instruments and
skilful management of anticipated complications.

How to manage small and large defects with bone
substitute material was explained by Dr Daniel
Rothamel (University of Cologne). According to a study
he conducted, there are no significant differences be-
tween the use of bone replacement materials in com-
parison to natural bone in lateral defects and sinus
floor elevation. On the other hand, the sole use of bone
substitute is often fraught with limitations, e.g. in the
case of vertical augmentation, after multiple previous
operations or in the presence of systemic restrictions.
In general, sound soft-tissue management is a good
preparation for complication-free soft-tissue healing.
However, the various bone substitutes showed signifi-
cant differences in terms of remodelling rates, volume
stability and predictability of the results. GBR tech-
nique can improve the results, but there are signifi-
cant differences between the available membrane
with regard to barrier function and biodegradation
patterns. An admixture of autologous bone might
enhance the osteogenic potential of augmentation
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BDIZ EDI at the 35th IDS in Cologne

Meeting Point Implantology 2013

Training and education are top-notch. Like a well-trained avalanche dog, BDIZ EDI tracks down what is missing from the practice of oral implantology in terms of (continuing) education, accounting and the law. First and foremost, this is for the benefit of our members, who are cordially invited to meet the “activists” behind the scenes – at the stand of BDIZ EDI at the IDS 2013 in Cologne (Hall 11.2, Stand O 59).

At the 35th International Dental Show, BDIZ EDI will once again share a stand with the law firm of Ratajczak & Partners. As an expert in medical law, Dr. Thomas Ratajczak has for many years been a competent partner of the BDIZ EDI board and members and a well-versed legal counsel. “Our Meeting Point Implantology is designed to bring together different types of competence and skills and to showcase the support BDIZ EDI can offer oral implantologists”, says BDIZ EDI President Christian Berger. This includes the iCampus programme aimed at young professionals – including the proven Curriculum Implantology, whose individual modules can be combined as needed by dentists interested in implantology.

New: Second implant surface study

A brand-new accomplishment is the second SEM study on the surface characteristics and quality of implants in sterile packaging, conducted jointly by BDIZ EDI and the University of Cologne. Dr. Dirk U. Duddeck, responsible for this study, conducted a second round of qualitative and quantitative elemental analyses covering 54 implants. (The results can be found in the Continuing Education section of this issue.) He will be happy to answer questions about the study and its results at the BDIZ EDI stand. The range of findings that can be visualized only by SEM include sloppily milled threads and implants with residual abrasives and even pervasive organic contaminants. After the first BDIZ EDI publications in this field, some implants had shown significant improvement. The objective of the extensive follow-up study was to obtain an overview of the surface characteristics of, if possible, all implants on the market. For the first time, this research also includes zirconia implants, mini-implants and intermediate structures in the SEM analyses. To find out how “your” implant has fared, visit the BDIZ EDI stand.

New: The Cologne Defect Classification guide

In mid-February, the European Consensus Conference (EuCC) under the auspices of BDIZ EDI met in Cologne on the occasion of the 8th (already!) Expert Symposium. The result: our 8th Guideline for implant surgery. At IDS, the consensus paper on “Autologous bone and the alternatives: state of the art in oral augmentation surgery” will be available hot off the presses; it is available in German and in English. The earlier seven guidelines on immediate loading (2006), ceramics as an implantological material (2007), peri-implantitis (2008), three-dimensional imaging (2009), complications (2010), short and angulated implants (2011) and the Cologne ABC Risk Score for Implant Treatment (2012) can be downloaded from www.bdizedi.org (go to the English version, then select “Professionals”).
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New: Programme for young implantologists and professionals

The iCampus project of BDIZ EDI offers customized programmes specifically tailored for novices to facilitate their entry into the field and to provide reliable guidance. Selected courses are available to students of dentistry in their final clinical semester. Courses range from a free beginners’ workshop held at selected sites close to the university dental schools all the way to the Curriculum Implantology that BDIZ EDI has been successfully implementing in cooperation with the University of Cologne for many years. Find out more at the BDIZ EDI stand!

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Questions? We like to provide answers

Of course, the BDIZ EDI board will be present on-site: Presidents Christian Berger and Professor Joachim E. Zöller, Treasurer Dr Heimo Mangelsdorf, Secretary-General Dr Detlef Hildebrand and Secretary and Managing Director Dr Stefan Liepe as well as the branch manager for Bonn, Dr Dirk U. Duddeck. Whether you have questions about the BDIZ EDI symposia or curricula, the current state of the GOZ (German fee schedule for dentists) or BDIZ EDI’s dental billing insurance – we will try to give you the right answers.

Spin the wheel of fortune

One highlight at the BDIZ EDI stand is the twice-daily spin of the wheel of fortune. If you are lucky you can win great prizes that are ready to go! Watch the BDIZ EDI wheel of fortune spin at 11 am and 3 pm every day.

What do you expect of IDS 2013?

Dr Detlef Hildebrand, Secretary-General of BDIZ EDI, Berlin

From my perspective, we will get to see the impact of a highly competitive implant market: there has been no more market growth during the past two years, and we will certainly see a wide range of affordable and cheap implant systems entering the market. It will be interesting to watch how the market leaders will deal with this situation and what the Big Five (Camlog, Nobel Biocare, Straumann, Dentsply Implants, Biomet) will present at the IDS.

As a member of the BDIZ EDI board, I am happy that I can present the iCampus project to a larger public at the BDIZ EDI stand this year.

Christian Berger, President BDIZ EDI, Kempten

Of course IDS 2013 will offer surprises: new processes and new products. Especially exciting will be the ongoing process of integration of digital workflows into the various dental disciplines. While these disciplines – such as endodontics, restorative dentistry, oral implantology and orthodontics – exhibit ever greater differentiation with each round of new research results, this very progress makes the various treatment steps within each field ever more similar as digital workflows are adopted. The many possible uses of a CBCT image in the diagnosis and treatment of oral diseases by the various disciplines are an obvious example.

Our board members will of course also be on-site. We look forward to meeting you!
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Periodontitis is one of the most important topics for the dental health sector. This is emphasized repeatedly at further education events and congresses, and it is also evident to every dental practice team in their daily work. Periodontitis is also driving the research departments of various manufacturers to ever-new heights of top performance. As a result, the product ranges keep on expanding, and already established products are continually improved. Visitors to the International Dental Show in Cologne will learn which of these innovations help to optimize the everyday routine of dentists’ practices.

New products for use in dental practices are available in all areas of periodontology. These range from diagnostic methods to instruments for surgical procedures, chemical and mechanical supplies for prophylaxis, and biological growth factors for tissue regeneration. Those who wish to keep up with current developments in dental health and is therefore also paying attention to this problem. That’s why the latest techniques and methods for periodontitis prophylaxis and therapy are playing a key role at the sector’s leading trade fair in Cologne.

Early and detailed diagnosis plays a particularly important role where periodontitis is concerned. In addition to the classic probing method, digital volume tomography can provide additional information for the assessment of bone loss if the indications have been correctly evaluated. As a result, this method puts the dentist in a better position for starting the subsequent therapy. The current generations of equipment already demonstrate reduced radiation exposure compared to their predecessors, and new developments in this area could bring about further improvements in this regard.

Chemical aids such as antimicrobial mouthwashes represent another field that is especially wide. Such preparations – in particular those containing chlorhexidine – find application in both professional and domestic prophylaxis. They not only simplify the reduction of biofilms but also use a chemically supported mucous membrane antiseptic that makes it possible to reduce aerosols. This also offers an immediate advantage in terms of safety for the team in the dental practice.

Today, even lasers have uses in periodontal therapy. Depending on the wavelength of the laser, it is possible to decontaminate gum abscesses using the antibacterial effect of the collimated laser light, or to remove calculus by means of laser scaling. In addition, surgical procedures can also be carried out with the help of laser technology, for example cutting or removing oral soft tissue.
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While not everything is digital and conventional techniques are certainly still justified, progress continues to advance at a rapid pace. This momentum is something to be embraced. After all, it’s always a good idea to stay well-informed about the latest developments. That is the only way to determine which innovations are important for one’s own work.

At IDS, dentists will discover how the possibilities of CAD/CAM technologies can optimise daily work in their practices – regardless of whether the practice already uses integrated digital processes or plans to do so in the future. In some cases, dental technicians have been benefiting from change for years. As far as they are concerned, the innovations that will be presented at IDS represent an opportunity to expand the range of services they offer at their own laboratories. Regardless of whether the issue is computer-aided manufacturing processes, new materials or advanced milling machines – high tech is becoming an increasingly important factor in lab work. Planning and preparation processes are becoming more detailed and goal-oriented. The virtual process chain actually starts with the dentist’s chair. First, digital impressions of the patient’s teeth are made using an oral scanner. The data is then transferred, a virtual design is made using CAD planning software and finally a precise visualization of the functional and aesthetic results is displayed. And all this takes place before the first steps in treatment.

Work chances between practice and lab

These techniques not only affect collaboration between the practice and the laboratory but also result in an immediate benefit for the patient. Intraoral scanners, for example, are very popular because they eliminate the need to take impressions using a moulding compound – a process that is rather uncomfortable for some patients. In particular, for patients who are especially anxious, this could be the decisive criteria that enables them to overcome their fear of a visit to the dentist. The intraoral scanner market is diverse. Thanks to different functional principles and different ways of handling the instrument, the no-contact impression technique seems to have enormous potential. In addition to generating patient loyalty, it also makes collaboration between dentists and dental technicians particularly efficient.

The latest planning tools also contribute to successful dentist/technician cooperation. With these tools, a virtual preview of the planned dental prosthesis can be created. In other words, an important decision-making aid is now in the hands of the patient. After all, it is easier to convince someone of the benefits of a particular treatment, if they have the desired results before their eyes. The appropriate software can thus provide valuable assistance during consultations, which is an advantage for both the dentist and the technician.

CAD/CAM technology in the spotlight

Digital developments on show

Since the 1980s, digital technology has been finding its way into dental medicine more and more. In the beginning, computer-assisted methods were used to manufacture glass-ceramic inlays and crowns. Later, stereolithography was used to make guides for navigated implantation. Today, advances in the development of CAD/CAM have reached just about every aspect of dentistry and in some cases caused significant changes. The state of the art in CAD/CAM will be on display at the International Dental Show in Cologne.
Innovations and new techniques at the IDS

Teamwork: implantology and prosthetics

Dentists and dental technicians have to work together very closely so that prosthetics and implantology can be successfully combined. A steady stream of new developments in all areas of these two disciplines supports such combined dental surgery-lab teams. Examples of this include enhanced software, innovative materials and improved interfaces. The cooperation between dentists and dental technicians on the topics implantology and prosthetics is a focal topic at IDS 2013.

For some time now, there has been a strong trend towards digitisation, involving planning software, drill templates made with the aid of computers and CAD/CAM-produced implant superstructures. Today, these techniques greatly simplify processes during implantological and prosthetic surgery and also allow dentists to increasingly involve patients in the planning process. All of this ultimately leads to high-quality results in line with the patient’s wishes and financial means.

Backward planning and navigation

Navigated implantology and backward planning are the key buzzwords when preparing to insert implants. Key manufacturing techniques can often be used today for prosthetics that are directly screwed onto implants. What’s more, their cost efficiency has recently been improved further. Bridges and bridge superstructures, for example, can now be created on the basis of a single dataset. Following consultation with the responsible dental technician, specialized planning or cutting centres can supply labs with precise shapes that serve as an ideal basis for creating aesthetically perfect implants.

If a patient wants to have aesthetically outstanding dental crowns and bridges, many dental technicians like to use zirconium oxide, particularly since this material ensures a high level of flexibility. Zirconium oxide’s versatility enables dental technicians to offer price-coordinated solutions. Depending on the patient’s financial means, dental technicians can either create fully anatomical solutions or dental work with full or partial veneers. The large number of variants also helps to win over new target groups for prosthetic implants.

Every two years, the current state of the art is presented at the world’s biggest and most important trade fair for the sector: IDS in Cologne.
“Update – Case management” will be the title of the one-day conference in Split. The roster of speakers will be just as international as the expected audience. Presenters will be coming from all over Europe – including of course those from BDIZ EDI. The language of the symposium will be English.

Split – then and now

Split is the economic and cultural centre of Dalmatia and can look back on a rich past. Split was made famous by the Roman emperor Diocletian, who had his retirement palace built here around the year 300. Diocletian’s palace is today one of the most impressive monuments of Roman architecture outside Rome. The turbulent history of the city that emerged around the imperial palace had promising beginnings. During the 10th and 11th centuries, the municipality of Split became and stayed autonomous for 300 years. Later rulers included the Venetians, the Kingdom of Bosnia, the Republic of Venice and the Austro-Hungarian Empire. With the breakup of Yugoslavia, Croatia became independent. Today Split is a popular tourist destination famous for its rich past, its prime location on the Adriatic Sea and its scenic beauty.

For the seventh year now, BDIZ EDI will continue its proven concept of holding continuing education courses outside Germany. This concept helps promote the exchange of ideas within Europe. The professional implementation of the event is ensured by a partner association of BDIZ EDI, the Croatian Dental Chamber. The foundations for this cooperative effort were laid as early as in autumn 2012, at the 16th BDIZ EDI Symposium. A delegation led by the President of the Croatian Dental Chamber, Dr Hrvoje Pezo, had travelled to Munich specifically to discuss related issues and their implementation.

The programme will soon be available online at www.bdizedi.org and will also be presented by BDIZ EDI at IDS 2013 in Cologne.
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SCAN  DESIGN  MILL
Every day we face new challenges in our offices. Recent innovation within oral implantology has been driven in large part by scientific progress and is embodied by the products developed by the dental industry. Prompted by an ever-increasing demand by dental clinicians and their patients, new products, new processes and improved therapeutic methods have been brought to market for many indications – from new approaches to bone augmentation and novel procedures in laser technology to newer materials, not least the now already familiar zirconia. Coming from a high level of achievement and extremely high success rates compared with other medical procedures, ever better results and shorter treatment times are not easy to attain. There are limits to what nature will allow us to do. In the light of this realization, it is all the more important for oral implantologists to avail themselves of opportunities for continuing education – to keep up with technical innovations and new materials, for the benefit of the patients and their own.

Training and education must keep up with progress. This is why the European Association of Dental Implantologists (BDIZ EDI) is keen on the exchange of ideas within Europe. For the seventh time now, BDIZ EDI is holding its European Symposium – and for the first time we are holding it in Croatia. With the strong support of Dr Hvoje Pezo (President of the Croatian Dental Chamber) and his team, we can offer a one-day symposium with top-notch international speakers. “Small opportunities are often the beginning of great enterprises”, said Demosthenes (384–322 BCE). This quote has been characteristic of the still recent history of the BDIZ EDI European Symposia. Humble beginnings and spurious opportunities have been consolidated into a comprehensive approach allowing communities of dental clinicians to transcend national borders and to intensify the exchange of ideas within Europe. The 7th European Symposium in Split will certainly be a prime example of this, showing how oral implantologists throughout Europe can learn from each other and benefit from each other’s knowledge.

Christian Berger
President BDIZ EDI

Why European Symposium?

The 7th European Symposium of BDIZ EDI will be held in Split on the Dalmatian coast at the Le Meridien Lav hotel.
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PARASORB® Cone Genta
- rapid and safe haemostasis
- reduction of alveolar ridge atrophy
- optionally comes with a antimicrobial protection for high-risk patients (e.g. diabetics, smokers, immune-suppressed patients)

PARASORB® Cone
- rapid and safe haemostasis
- reduction of alveolar ridge atrophy
- optionally comes with a antimicrobial protection for high-risk patients (e.g. diabetics, smokers, immune-suppressed patients)
Peri-implantitis has been defined as follows: Peri-implant inflammation is induced by a pathogenic biofilm. Peri-implantitis is an inflammatory, usually irreversible process in the tissue environment of a functional osseointegrated implant that leads to the loss of supporting bone. Peri-implant mucositis is a precursor of peri-implantitis, causing reversible inflammatory changes in the peri-implant soft tissue but without bone loss.

Preventive measures prior to implant placement: Prerequisites and risk assessment

Good oral hygiene is considered a prerequisite for implant treatment. At the time of placement, periodontal disease has to be excluded or treated successfully “Before implantation, the oral situation as such must be healthy.”

For the risk assessment, the Coalition’s position paper recommends the use of the Cologne ABC Risk Score presented at the 7th European Consensus Conference of BDIZ EDI. A simple ABC system, appealingly visualized in various colours, allows dentists to evaluate the risk associated with the planned implant treatment.

The score has four partial scores or subscores: 1. Anamnestic, 2. Local, 3. Surgical and 4. Restorative. Each partial score is given a summary rating. The Cologne ABC Risk Score allows the following summary assessment of each patient case: If all four partial scores are Green, the overall risk assessment for the patient case is Always or “low risk.” If at least two of the four partial scores are Yellow, the overall

BDIZ EDI partner of the Healthy Implant Coalition

Structured follow-up concept for implant patients

The Healthy Implant Coalition („Aktionsbündnis gesundes Implantat“) includes organizations in the field of dentistry, scientists and publishers working for the prevention of peri-implant mucositis and peri-implantitis. The aim is to promote preventive care through a structured follow-up concept for implant patients, as stated in a position paper issued by the Coalition that recommends the Cologne ABC Risk Score of the 7th European Consensus Conference (EuCC) of BDIZ EDI for use in risk assessment. BDIZ EDI is a partner of the Coalition and co-author of the position paper and will make this paper and a patient brochure available at its stand at IDS 2013 in Cologne.

Contributors to this position paper:
- Professor Johannes Einwag
- Dr Dirk Ziebolz
- Christian Berger
- Sylvia Fresmann
- Professor Reiner Mengel
- Professor Marcel Wainwright
- Dr Björn Eggert
- Dr Christian Rath
- Torsten Flemery
- Dr Brigitte Bartelt
- Uliike Vizethum
- Kristin Jahn
- Jan-Philipp Schmidt
risk assessment for the patient case is Between or “medium risk”. If all four partial scores are Yellow, the overall risk assessment for the patient case is Complex or “high risk”, i.e. a particularly demanding case. The same is true if at least two of the partial scores are Orange and Yellow. The Cologne ABC Risk Score can be determined as a total score for findings and treatment planning or separately for the different partial scores.

Prevention through patient education

The position paper further states that the patient should receive preoperative instructions in proper oral hygiene. Before any implant therapy, potential implant patients must receive detailed information about the associated possibilities, risks and benefits. That includes, in addition to information about a possibly reduced life expectancy of the implant due to inflammation, information about the extent of future oral maintenance required of the patient. “Patients must be willing, depending on their individual risk, to return for follow-up examinations and prophylactic treatment at intervals specified by the dentist.” The anticipated costs for postoperative care and maintenance must be stated clearly.

Patients at increased risk for peri-implant diseases (such as smokers and patients who had previously been treated for periodontitis) should be informed of this increased risk. Patient information may include the brochure “Implantate brauchen Pflege” (“Implants need maintenance”) issued by the Healthy Implant Coalition. BDIZ EDI, too, offers a detailed brochure on maintenance: “Implantate – lange haltbar, lange schön” (“Implants – more durable, more beautiful”).

Outlook

The Healthy Implant Coalition has formulated its positions on the assumption that preventive concepts in periodontology are basically transferable to the prevention of peri-implantitis. First results of the prospective multicentre trial on the prevention of peri-implant disease (a joint proj-
The various modules, developed under the direction of Professor Joachim E. Zöller and implemented by Dr Hans-Joachim Nickenig, address indications, surgical and restorative procedures as well as complications within oral implantology. The programme was amended in 2011 to include the latest aspects of minimally invasive surgery (sinus floor elevation, bone splitting, flapless surgery) as well as intensive training in 3D diagnostics and their surgical application using 3D surgical templates, which are becoming increasingly popular in clinical oral implantology.

**Special features**

"Why is the Cologne Curriculum so popular?" Nobody can answer this question better than Professor Zöller: "Because this Curriculum takes place in a single physical location and includes many practical exercises on human specimens." At this time, only Cologne offers this option, says Zöller. The BDIZ EDI Curriculum Implantology appeals not only to young dentists and to newcomers to oral implantology, but the modular design of the Curriculum makes it particularly interesting to dentists who perform implant surgery only occasionally but want to make sure their treatment rests on solid ground. The Curriculum allows its successful graduates to master even difficult indications and to address potential complications successfully. Other special features include the high proportion of practical exercises as well as the fact that training modules not offered by BDIZ EDI can be integrated into the Curriculum if they are documented to be scientifically sound. This is what sets BDIZ EDI’s concept apart from many other approaches. Open education and appropriately designed curricula provide an alternative to the “closed-shop policy” of some other providers.

Current and former attendees of the Cologne Curriculum particularly appreciate the realistic hands-on workshops.

**Teaching methods**

One innovation is certainly the “presentation” block. Here, participants will present their own cases to their peer group. This, in addition to intensive discussions and the development of strategies for implant surgery and implant restoration, prepares attendees for their final exam, which has been integrated into the final module. Thus, when the last module has been successfully completed, the candidate can be granted his or her certificate.

The 15th Curriculum Implantology, jointly arranged by BDIZ EDI and the University of Cologne, is scheduled to start in April this year. The participants of the ongoing 14th Curriculum will conclude their eighteen-month training with the eighth module and a final exam in March 2013. At this point we would like to present one more time the successful Curriculum Implantology concept that the BDIZ EDI implements in cooperation with the University of Cologne. We would like to encourage you to spread this knowledge to your assistants or young dentists around you.
Quality in Motion.

Discover it now on the IDS – Hall 10.1, Stand E10 / F11.
Comparative analysis of different implant systems and protocols makes it easier for participants to make sound choices in clinical practice. Great emphasis is also placed on the development of a surgical and restorative standard protocol (even for beginners).

Concept strengths

A much-heralded strength of the concept are of course the hospital-related (referrer) concepts such as iliac-crest grafts that enrich the broad spectrum of procedures presented within the Curriculum. Incidentally, the low price of the Curriculum is unbeatable, something that the graduates rarely fail to point out. Excellent surgical exercises and the Cologne venue were also crucial for the participants.

Graduates of Curriculum 13

- Dr S. Jannet Akcicek, Cologne
- Dr Milia Abou Tara, Kiel
- Mathias Augustin, Soest
- Marc Baier, Düsseldorf
- Yasmin Barth, Cologne
- Kathrin Berndsen, Düsseldorf
- Dr Mark Branschofsky, Düsseldorf
- Oliver Claßen, Mechernich
- Menderes Fakir, Hanau
- Armin Gollnow, Bochum
- Christopher Herrmanns, Munich
- Daniel Tobias Hoyer, Bonn
- Niklas Janßen, Neuss
- Dr Alexander Langenbach, Cologne

- Philipp Nagel, Grientsch
- Sara Parastar, Cologne
- Oliver Peter Jan Penz, Soest
- Dr Lutz Ritter, Cologne
- Dr Thilo Saul, Friedrichsdorf
- Dr Kerstin Schuh, Bochum
- Dr Dusan Spac, Stuttgart
- Maximilian von Kleinsorgen, Cologne
- Dr Christina Winkel, Sankt Augustin
- Claudia Pastaschek, Aachen
- Dr Kathrin Bongartz, Heinsberg
- Adjmal Sheerzoi, Wesseling
- Dr Bettina Poll, Düsseldorf
- Tanja Lubas-Wiethüchter, Bergisch Gladbach
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Module 1
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- Anatomy and histology of the stomatognathic system
- Biology of the bone and osseointegration
- General diagnostics in oral implantology
- Patient education in oral implantology
Practical exercises: anatomical views

Module 2
Treatment planning and diagnosis
- High-risk patients, local anaesthesia
- Implant therapy in patients with compromised blood coagulation
- Aesthetic diagnosis
- Case presentations I (*)
- Surgical protocol
Practical exercises: implant insertion into a plastic jaw
(*) For the presentations, participants are encouraged to put their own cases up for discussion.

Module 3
Surgical techniques
- State-of-the-art tooth extraction
- Limits and options of socket preservation
- 3D diagnostics and guided implant surgery
- Comparison of 3D guiding stent systems
Practical exercises: anatomy, soft-tissue techniques
Alternatively from Curriculum 14: planning workshop using 3D software

Module 4
Implant-supported restorations
- Antibiotic therapy
- Emergencies in the dental practice
- Implant prosthodontics I (single and multiple missing teeth, cantilever situations)
- Comparison of implant systems
Practical exercises: implant insertion into a plastic jaw

Module 5
Augmentation, part 1 – Regional bone augmentation
- Unfavourable biomechanics vs. augmentation
- Autologous bone and bone substitutes
- Membrane technique
- Immediate implant placement
- Sinus floor elevation
Practical exercises: sinus lift exercises on apples/eggs/lamb skulls – splitting calf ribs

Module 6
Soft-tissue management
- CBCT in implant therapy
- Suturing techniques and incisions
- Hands-on soft tissue
- Implant prosthodontics II (partially and completely edentulous jaws)
- Case presentations II (*)
Practical exercises: soft tissue (on pig jaws)
(*) For the presentations, participants are encouraged to put their own cases up for discussion. Preparation for the final exam.

Module 7
Augmentation, part 2 – Remote autologous bone grafts
- Iliac crest transplants
- Distraction osteogenesis and nerve lateralization
- Expert opinions in implantology
Practical exercises: anatomy, block augmentation, sinus floor elevation

Module 8
Recall and complications
- Recall and maintenance
- Growth factors in oral implantology
- peri-implantitis
- Assistance in oral implantology

Curriculum Implantology schedules are available online at www.bdizedi.org/training.
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That quality is of paramount importance to BDIZ EDI is no secret. BDIZ EDI has demonstrated this in many different areas – legal and accounting, material testing, postgraduate education, annual practical guidelines of the European Consensus Conference (EuCC) on current implantological issues and finally the qualification of court experts.

BDIZ EDI also supports dental education with its iCampus project and with its Curriculum Implantology that introduces aspiring dentists and young implantologists to this dental specialty in eight well-organized modules.

Admission requirements for the certification exam

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

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

Specific experience and primary activity in the field of implantology must be documented by at least 400 implants inserted and 150 implants restored within the past five years.

Candidates who have obtained the prior qualification in oral implantology may submit the appropriate credentials with their application for certification as Expert in Implantology. Eligible credentials include oral implantology as "focus of professional activities" – a German concept denoting a practical specialization – as offered through BDIZ EDI’s TSP certification or a comparable certification by other professional associations. However, only those candidates who pass the exam before the examination board will receive certification.

The exam

Candidates meeting all the requirements are admitted to the examination. The examination board of BDIZ EDI and EDA consists of experienced specialists. The exam has a theoretical and a practical part, both of which must be completed successfully. This procedure is as follows: The theoretical part of the exam will start with a discussion of the documented cases. In addition, candidates are expected to be able to field questions related to oral implantology and closely associated fields. The theoretical examination usually takes no longer than 60 minutes; it may be administered to candidates in groups. The practical part of the examination covers a recognized, state-of-the-art treatment method or methods and/or treatment plans covering some aspect of oral implantology. Candidates will be informed of the respective topic two weeks before the exam date. Candidates are responsible for providing the requisite materials and instruments on the day of the exam. The examination as a whole is subject to a fee to cover the cost incurred by the examination board.

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

If you would like to register for the next certification exam, you can receive the requisite information and registration documents from the BDIZ EDI office in Bonn: office-bonn@bdizedi.org or at www.bdizedi.org (select English and click Education).
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Cooperation between BDIZ EDI and the Global Institute for Dental Education (gIDE)

Access to the gIDE online library at special member rates

As of now, BDIZ EDI members can benefit from the new cooperation agreement between their association and the Global Institute for Dental Education (gIDE). In addition to getting free access to some on-demand lectures and clinical videos, members will be able to access the entire gIDE online library at a special member rate.

This cooperation has been made possible by the good personal contact between BDIZ EDI President Christian Berger and gIDE founder Dr. Sascha A. Jovanovic. Jovanovic, known as a speaker and consultant on periodontological and implantological topics, founded the Institute in Los Angeles in 2003. Today it is one of the most distinctive private training institutions in dentistry worldwide, offering both Master trainings in Los Angeles and, increasingly, online training units. gIDE online (www.gidedental.com) currently comprises more than 250 lectures by top speakers and over 50 clinical videos covering all dental disciplines from aesthetics and implantology to dental technology. gIDE currently offers one of the most comprehensive online training libraries in the dental field.

BDIZ EDI members can reach the gIDE homepage directly from the members-only section of www.bdizedi.org. You will be asked for the five-digit BDIZ EDI membership number, which you will find on your BDIZ EDI membership card. Once on the gIDE homepage, you will be able to view two lectures and two clinical videos that are samples of the education material from the gIDE library. From this page, you will also be able to take the offer of gIDE online membership for the special fee of US$349 annually instead of the regular US$995 initial annual fee.

As of now, BDIZ EDI members can benefit from the new cooperation agreement between their association and the Global Institute for Dental Education (gIDE).
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Franck Renourd’s and Jean-Gabriel Charrier’s book introduces the human factor

The search for the weakest link

This is a book every dental clinician will appreciate – not only the implantologist. The Search for the Weakest Link covers a variety of different and unexpected answers to the question on how to improve working practices. Both authors – dentist Dr Franck Renoud and pilot and flight instructor Jean-Gabriel Charrier – have drawn on their professional experiences to describe and analyze their own errors with a view to developing a range of appropriate solutions.

The writing is clear and direct, with terms properly focusing on the human factor. “There are obvious similarities between piloting an airplane and carrying out a surgical procedure. In both cases, you are to manage the pressure of working to a precise schedule: you can’t simply put your work aside to take it up another day, when you’re feeling better, or when you’ve finished reading up about it”, explains Airbus Chief Test Pilot Jacques Rosay in his preface to the book.

A lot has already been written about human factors, and especially the stress of being a pilot and responsible for the safe journey of thousands of people on their plane. Less has been written about the human factor in dentistry or dental surgery. “Around 80 per cent of aviation accidents are due to pilot error”, says Rosay. Which brings us to the point. The world of medicine, especially the field of dentistry, continues to consider complications from a purely technical standpoint. It is extremely rare for human behaviour and the impact of stress upon individuals to be identified as a factor in the chain of events that leads to failure. But human input will always be fallible.

In his prologue, Dr Franck Renouard, former president of the European Association for Osseointegration (EAO) and author of numerous scientific articles, recalls how he became interested in human factors following the crash of a helicopter he was piloting in 1995. In his first reaction, he wanted to blame the helicopter. Of course there is a difference between crashing a helicopter and breaking a dental implant.

The helicopter had been carefully inspected, and it was in perfect working order when it took off. So the next task was to examine the role of the pilot. Of course there is a difference between crashing a helicopter and breaking a dental implant.

In Chapter 1, the authors define human factors: “The concept of human factors has developed out of the study of the interactions between an individual and their working environment, comprising other people (liveware), technology (hardware), documentation (software) and the surrounding environment.”

In Chapter 1, the authors define human factors: “The concept of human factors has developed out of the study of the interactions between an individual and their working environment, comprising other people (liveware), technology (hardware), documentation (software) and the surrounding environment.”

The chapter also asks a provocative question: Why does the medical world remain unconvinced by the concept of human factors?

The book is all about this very delicate issue. Renouard focuses on the argument that “in the medical field, it is virtually unknown, or at least very difficult, for someone to even admit mistakes can be made”. One reason, he finds, is “the reluctance of the medical profession to take human factors into account”. In his perspective this could be explained by the fact that, unlike medical research into new, cutting-edge technology, sponsors cannot be found to fund research into human factors. There are no direct profits to be expected, because the application of a human factor-centred approach does not involve medical practitioners making specific purchases.
No matter how you look at it, our system fits!
One of the key issues is the ETTO principle – the efficiency-thoroughness trade-off, which is based on decisions people have to make day by day. They have to choose between efficiency (profitability) and thoroughness (quality), because it is rarely possible to be both thorough and efficient. ETTO-style compromises exist on a larger scale in all large organizations, where the contradiction between the explicitly articulated message of “safety first” and the organization’s implicit policy of prioritizing productivity is particularly flagrant. The authors also openly admit something we all know: absolute safety is an unattainable goal.

Chapter 2 focuses on the stress factor. Here is an abstract that may equally apply to dental surgery. “There is always the chance you won’t make the best decision. This uncertainty may generate stress, which may disrupt or even entirely block your thought processes. The schemas that you consult may be linked to or associated with unpleasant events. This creates tension between the process of reasoning and memory, which in turn generates stress.” Seven key lessons to learn about stress are given: Stress occurs when the individual feels that there is a lack in capacity to cope with the situation but also when different individuals experience different levels of stress – even when subjected to the same situation.

Chapters 3 and 4 give advice on how to manage risks and hazards. Errors must be considered an integral part of a professional activity. It is impossible to eliminate all errors. Crews and companies (and teams!) must learn to accept errors. “This new strategy revolves around avoiding errors when possible, detecting those that have been committed and, lastly, limiting the consequences of errors by learning how to manage them” – based on the TEM-concept (Threat and Error Management) of the aviation industry. The concept of TEM is the logical extension of the hunt for errors in the cockpit. Crews now need to extend the scope of their analysis, adopting a methodical approach to looking at the plane’s environment in order to anticipate flight situations that could lead to errors.

Chapter 5 contains checklists that could be helpful to avoid errors. The authors bridge the gap – if there is one – between the application of learning in the aviation industry and in the medical specialties. Renouard outlines another provocative argument. To date, the treatment or prevention of complications has always been approached from a technical angle. Companies have tried to outdo each other in terms of inventiveness, producing ever more effective implants and more sophisticated prosthetic systems. However, more than 40 years after the emergence of the discipline of implantology, there is no hiding from the fact that developments in implant treatments in general have not kept pace with the incredibly rapid technological advances of the past few years. Conference speakers may be increasingly persuasive, with presentations showcasing ever more impressive outcomes, but the private practitioner still has to deal with the same concerns, setbacks and complications. Faced with this reality and the fact that many practitioners feel unable to keep up with such complex technological developments, special protocols such as “graftless” procedures or “minimally-invasive surgery” have been put forward as alternatives, while emphasis remained on the technologically advanced nature of these techniques.

In conclusion, the authors offer some key points to remember. Here is one: “Providing feedback/experience-sharing may bruise our pride, but it can help the whole community to progress.” Slowly but surely, we see some light at the end of the tunnel, and we all hope that the time when conference speakers only show breathtaking pictures of their successful cases is over.

This book is far from being the last word on this subject, but it should help stimulate debate on human factors in dental surgery. With its personal accounts, based on real-life events, it makes for very interesting and easy reading.

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Regulatory approval of medical devices: CE-Med – a new seal of quality?

The governments of the EU member states are currently negotiating a revision of the European Medical Devices Directive (MDD). A year ago, the scandal surrounding faulty breast implants made by the French manufacturer PIP made the rounds and triggered a heated discussion on the security of high-risk products introduced into the human body, such as endoprostheses, stents and, as in the case at hand, silicone pads.

There are 80 Notified Bodies that are authorized to approve medical devices in the EU. In future they will be obliged to make unannounced checks of medical devices in production plants, warehouses, clinics and practitioners’ offices to ensure that the products in use conform to the products as approved.

The European committees are tasked to work for the introduction of a new quality label. Replacing the well-known CE label, a new CE-Med label will be created for medical devices. Many EU governments also demand the establishment of European implant registries and a global identification system for long-term monitoring of product quality and to ensure the traceability of implants to the hospital or physician. In addition, there should be mandatory patient information concerning the life expectancy of implants.

Source: Deutsche Ärzte-Zeitung

EU research project: Dentist survey

The Technical University of Berlin is currently surveying interested dentists for an EU research project on cross-border healthcare services. As the researchers explained, the ECAB project (Evaluating Care Across Borders) will examine both cross-border healthcare issues and country-specific issues. The project is part of the 7th EU Research Framework Programme and is coordinated by the London School of Economics. Part of the project is dedicated to cross-border dental care. “Simply put, we want to examine the question whether the quality of care within the EU suffers when patients are treated in a country other than that in which they live”, explained Professor Reinhard Busse, Head of the Department of Health Care Management, which is in charge of the project at the Technical University of Berlin. For the dental sub-project, patients and dentists from Austria, Estonia, Finland, Germany and Hungary will be interviewed. Specifically, the questions revolve around personal experience with treatment abroad and post-treatment care in the home country after the patient’s return.

Source: Zahnärztliche Mitteilungen, Germany

Agreement between 140 countries: Restricting the use of mercury and dental amalgam

The United Nations Environment Programme (UNEP) finally reported success last January. Following four years of intense debate and negotiations in Geneva, 140 states have agreed on a convention that will restrict the use and release of mercury, a toxic heavy metal often used in dental fillings. The convention, known as the Minamata Convention on Mercury, came into force in 2013. It requires signatories to phase out the use of mercury in dental amalgam by 2030. The convention aims to protect the health of individuals and ecosystems from the harmful effects of mercury exposure. The signing countries include many developed and developing nations, as well as several key players in the dental and medical communities.

Source: UNEP
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metal, significantly reducing the mercury burden on humans and the environment. The “Minamata Convention” – named after the Japanese city of Minamata, where serious health damage occurred as a result of mercury pollution in the 1950s – should be available in October for signature and ratification and will be legally binding once 50 countries have ratified it.

After 2020, the use of mercury in e.g. batteries, certain types of compact fluorescent lamps, electronic components, soaps and cosmetics will be prohibited, as will be all trade in these products. Certain kinds of non-electronic medical devices such as thermometers and blood-pressure devices are also included for phase-out by 2020.

The convention marks the beginning phase-down of the use of dental fillings using mercury amalgam. On a statement on the Minamata Convention, the International Dental Federation (FDI) declared that the agreement would make sure that both oral health and the environment are protected. The FDI had strongly advocated reducing the use of amalgam rather than prohibiting it entirely, as dental amalgam is still the key material for filling cavities in the fight against the globally endemic disease, dental caries. In the meantime, dental prevention and health education should be strengthened, and research into and the development of alternatives to amalgam and better ways to manage mercury waste should be intensified. The convention recognizes the need for prevention programmes.

“We are very pleased that the agreement recognizes the need for national programmes for the prevention of oral diseases, and for more research into the development of new, alternative materials”, said FDI President Dr Orlando Monteiro da Silva (Portugal). The FDI supports a gradual phase-down of amalgam, based on prevention, research into new restorative materials and the use of effective waste management practices.

Especially in Scandinavian countries, the use of mercury amalgam has long been strictly regulated or banned altogether, as in Sweden and Norway. In Germany, too, the use of amalgam as a filling material has been declining for years, although no exact statistics exist. After decades of successful clinical performance and given the long life of amalgam fillings and their affordable price, dental amalgam is still considered the classical “insurance-standard” filling in the posterior region. Patients who want tooth-coloured restorations in this region will have to pay at least the extra cost out of pocket, health insurers will reimburse them only in a few exceptional cases. Nevertheless, “black” fillings are no longer accepted by many patients, although dentists have reported a more lively demand for copayment-free fillings in economically troubled times.

There is currently no real alternative to amalgam. Adhesively bonded filling materials usually require more effort, the fillings are more technique-sensitive and more expensive, and their long-term stability in many cases cannot match that of dental amalgam. Reinforced glass-ionomer cements have limited indications; German federal and regional Dental Associations view their use as standard “amalgam replacement” critically because long-term evidence is still unavailable. For almost all resin-based restorative materials there also remains the problem of residual monomers and the much-criticized bisphenol A, which can be a health burden on patients and, due to extensive contact, on dentists and their teams.

Source: Various media
Advanced implant planning made easy

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The European Court of Justice (ECJ), in its judgment of 6 September 2012 (case C-308/11), has ruled on the question of the pharmacological action of a mouthwash solution by a German company.

The judgment resulted from a dispute between two competing companies that both sell the Paroex 0.12% chlorhexidine mouthwash solution in Germany. The company, which had obtained regulatory approval under medical device law, had applied for an injunction to prevent its competitor from selling the mouthwash solution as a cosmetic product, i.e. without regulatory approval under medical device law. The complainant based its case on the assertion that the pharmacological action of this mouthwash solution made it a medicinal product pursuant to Section 2(1) of the German Medicinal Products Act, namely a substance or preparation made from substances which “can be used in or on the human or animal body or can be administered to a human being or an animal, either to restore, correct or to influence the physiological functions through a pharmacological, immunological or metabolic effect, or to make a medical diagnosis.”

According to the complaint, chlorhexidine reduces salivary bacteria and thereby has a therapeutic effect in cases of gingivitis. Therefore, the mouthwash solution must not be marketed as a mere cosmetic product.

The Regional Court (Landgericht), Frankfurt am Main (Judgment 2/6 O 554/06 dated 11 April 2007), and the Higher Regional Court (Oberlandesgericht), Frankfurt am Main (Judgment 6 U 109/07 dated 29 April 2008), dismissed the action on the grounds that Paroex 0.12% did not exert a pharmacological action. Both courts based their judgments on German judicial precedent and on a guidance document on medical devices adopted by the European Commission (“Medical devices: Guidance document – Borderline products, drug-delivery products and medical devices incorporating, as an integral part, an ancillary medicinal substance or an ancillary human blood derivative”). It is apparent from that document, the two courts stated, that for a substance to be recognized as exerting a pharmacological action, there must be an interaction between the molecules of the substance in question and a cellular constituent of the user’s body, which is not the case for the mouthwash solution at issue.

The Federal Court of Justice (Bundesgerichtshof) overturned the judgment of the Higher Regional Court, Frankfurt am Main, and referred the case back to it for a fresh decision. The Federal Court of Justice also based its decision on the same guidance document, but interpreted it differently. In its view, it is sufficient to establish that the molecules of the substance in question interact in any way whatsoever with a cellular constituent, i.e. not necessarily with a cellular constituent of the user’s body. As chlorhexidine reacts with constituents of the bacterial cells in the user’s mouth, the existence of a pharmacological action cannot be precluded from the outset.

To clarify the meaning of the term “pharmacological action” in the relevant European directives and guideline documents, the Higher Regional Court, Frankfurt am Main, decided to refer the issue to the European Court of Justice for a preliminary ruling.

The ECJ first pointed out that for the purpose of defining the term “pharmacological action” within the meaning of Article 15(b) of Directive 2001/83, account should be taken of the definition of the term in a different directive than that previously cited. The relevant document is the Guidance Document on the demarcation between the Cosmetic Products Directive 76/768 and the Medicinal Products Directive 2001/83 (“Demarcation Guidance”).

The ECJ further specified it is not apparent either from Directive 2001/83 or from the Demarcation Guidance that “pharmacological action” can be assumed to exist only if the molecules of the substance in question interact with a human cellular constituent.

In the court’s view, a substance whose molecules do not interact with a human cellular constituent may nevertheless interact with other cellular constituents present within the user’s organism, such as bacteria, viruses or parasites. This interaction can cause physiological functions in the human body to be restored, corrected or modified. The possibility thus cannot be ruled out that a substance such as...
chlorhexidine, while not interacting with a cellular constituent of the human body, in fact interacts with the bacteria present in the saliva and therefore can be a medicinal product with the meaning of Article 1(2)(b) of Directive 2001/83.

Contrary to initial reactions to the decision of the ECJ, it cannot be inferred from this interpretation that a substance that interacts with cellular components automatically acquires medicinal product status. The ECJ explicitly states that the pharmacological properties of a product are not sufficient grounds to assert this. Rather, the product in question must, with regard to its composition and intended use, be capable of significantly influencing physiological functions in human beings, which Section 21) of the German Medicinal Products Act also requires. The ECJ concluded by pointing out that the status of each individual product must be assessed by the competent administration.

Therefore, the Higher Regional Court (Oberlandesgericht), Frankfurt am Main, will have to decide in a fresh hearing of the present case whether a 0.12% chlorhexidine mouthwash can significantly influence the physiological function of the human body. No such decision had been handed down at the time of this writing.

The ECJ decision confirms the case law laid down by the Federal Court of Justice and to some extend clarifies the meaning of the term “pharmacological action”. It is henceforth considered sufficient that an interaction exists between the substance in question and any cellular component existing in the human body (including bacteria, viruses or parasites). If a product meets this requirement and also significantly influences a physiological function of the human body, it is to be classified as a medicinal product and therefore requires regulatory approval.

Even though the Demarcation Guideline is not formally binding, its importance should not be underestimated. From now on, the regulators and the courts will be able to refer to the ECJ in placing greater weight on the Demarcation Guideline and citing its interpretation of the term “pharmacological action”. The decision might thus well have consequences for products heretofore sold as medicinal products and cosmetic products.
On behalf of BDIZ EDI, an extensive follow-up study was conducted from 2010 to 2012, examining and comparing 57 different implants by 44 manufacturers in 13 countries (Table 1). Not only implants made of titanium and its alloys, but also implants made of zirconia and tantalum as well as temporary implants were studied. Compared to the previous study, the current analysis showed significantly fewer implants with systematic organic impurities originating in the manufacturing and/or packaging process, and some manufacturers have made significant improvements in reducing abrasive residues (aluminium oxide) on the sterile implants. What role do these residues play clinically? And how can oral implantologists be sure that their implants of choice have been subjected to an adequate quality control? These are the questions this paper strives to answer.

Implant surface affects biologic response

The surface of a dental implant significantly determines the initial phase of the biological response to the inserted implant and therefore has a great influence on its integration into the surrounding tissues [6]. Osteoblast proliferation and osteoblast differentiation on the implant surface depend critically on the microstructure of that surface [10]. Rough implant surfaces can therefore greatly support the process of osseointegration, particularly in the context of concomitant augmentation measures. In recent years, many research groups and implant manufacturers have developed techniques to improve the micromorphological structure of implant surfaces with the aim of further increasing success rates or facilitating earlier loading of the inserted implants [2,8,12,14,16].

Background and objectives

Surface enlargement in titanium implants can be achieved by additive or subtractive methods. Sandblasted implant surfaces (Figs. 1 and 2), etched implant surfaces (Figs. 3 and 4) or the so-called SLA surfaces (sandblasted with large-grit particles and then acid-etched; Figs. 5 and 6) have also been established as state-of-the-art techniques, just like anodic oxidation (Figs. 7 and 8). The abrasive agents used were mainly corundum (aluminium oxide), calcium phosphate compounds or titanium oxide. Sintered implant surfaces (Figs. 9 and 10) have the advantage of significantly increasing the surface area, but they are found only on continuous level surfaces, i.e. not on the microstructure of that surface [10]. Rough implant surfaces can therefore greatly support the process of osseointegration, particularly in the context of concomitant augmentation measures.

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SEM examination and qualitative and quantitative elemental analysis of 54 implants

Surface characteristics and quality of implants in sterile packaging

Dr Dirk Duddeck1, Schaghajegh Iranpour1, Mehmet Ali Derman1, Dr Jörg Neugebauer1 and Professor Joachim E. Zöller1

As a part of the activities of the Qualification and Registration Committee – Scientific Research of the BDIZ EDI (Quality and Research Committee), the material of numerous failed implants had been examined over many years. But equally interesting is the question of the process quality of implants in sterile packaging. In 2008, BDIZ EDI had commissioned its first study on this topic, examining the surfaces of 23 sterile-wrapped implants from nine countries with a scanning electron microscope and subjecting them to a qualitative and quantitative elemental analysis. That study had yielded unexpected results such as significant residue of the aluminium oxide abrasive as well as organic contaminants and imprecise thread structures on the implants of certain manufacturers [2].

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Sandblasted = with Al₂O₃ (unless otherwise noted)  
BCP = Biphasic calcium phosphate (BCP), 60% hydroxyapatite (HA) and 40% tricalcium phosphate (TCP)  
CaP = Calcium phosphate  
HA = Hydroxyapatite  
* = Manufacturer reports using “special” titanium (grade 4) with better mechanical properties than regular grade 4 titanium
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<td>TBI</td>
<td>Sandblasted/etched</td>
<td>Grade 4 titanium</td>
</tr>
<tr>
<td>Straumann</td>
<td>Switzerland</td>
<td>SLActive Xirod</td>
<td>Sandblasted/etched</td>
<td>Grade 4 titanium</td>
</tr>
<tr>
<td>Sybron (Innova)</td>
<td>Canada</td>
<td>Endopore</td>
<td>Sintered</td>
<td>Grade 5 titanium</td>
</tr>
<tr>
<td>Thommen</td>
<td>Switzerland</td>
<td>SPI Element</td>
<td>Sandblasted/etched</td>
<td>Grade 4 titanium</td>
</tr>
<tr>
<td>TRI Dental Implants</td>
<td>Switzerland</td>
<td>TRI Vent Implant</td>
<td>Sandblasted (Zr)</td>
<td>Grade 5 titanium</td>
</tr>
<tr>
<td>Zimmer</td>
<td>Switzerland</td>
<td>Tapered screw vent</td>
<td>Sandblasted (HA)</td>
<td>Grade 5 titanium</td>
</tr>
<tr>
<td>Zimmer</td>
<td>Switzerland</td>
<td>Trabecular Metal</td>
<td>Shoulder and tip: sandblasted (HA) / intermediate region porous 3D material</td>
<td>Grade 5 titanium</td>
</tr>
<tr>
<td>ZL Microdent</td>
<td>Germany</td>
<td>Duraplant</td>
<td>Anodized</td>
<td>Grade 4 titanium</td>
</tr>
</tbody>
</table>

Sandblasted, etched = With Al2O3 (unless otherwise noted)
CaP = Calcium phosphate
HA = Hydroxyapatite
** = Manufacturer reports using special titanium alloy Ti-6Al-4V ELI (Grade 23) with a reduced oxygen content of less than 0.13%

Table 1, part 2: Implants examined, 2010–2012.
Fig. 1  Sandblasted implant Astra OsseoSpeed, SE x250.

Fig. 2  Sandblasted implant Astra OsseoSpeed, SE x1000.

Fig. 3  Etched implant BTI Interna, SE x250.

Fig. 4  Etched implant BTI Interna, SE x1000.

Fig. 5  Sandblasted/etched implant Camlog Conelog, SE x250.

Fig. 6  Sandblasted/etched implant Camlog Conelog, SE x1000.

Fig. 7  Anodically oxidized implant NobelActive, SE x250.

Fig. 8  Anodically oxidized implant NobelActive, SE x1000.
screw-type implants. Additive processes such as coating with titanium plasma spray (Figs. 11 and 12) are now used only rarely. By contrast, recent years have seen an increase in the number of implant systems made of zirconia (Figs. 13 and 14), which have significant benefits in terms of aesthetics as well as for soft-tissue apposition. But compared to titanium implants, there are still relatively few long-term studies on zirconia implants. Two-piece zirconia implants today allow submerged healing. Implants made of alloys of titanium and zirconia (Figs. 15 and 16) as well as new hybrid implants consisting of titanium with a central part made of tantalum (Figs. 17 and 18) add to the variety of available systems.

Different surface treatments for titanium performed during the industrial implant production process not only influence the surface characteristics of the implants but also may leave residues on the implants themselves. Since the early 1990s, implants have been tested for residue [11] originat-
ing both in the actual production process and in the subsequent sterilization and packaging process [1]. The objective of the present follow-up study was to detect and identify process-related residue and handling-specific contamination on various implant systems and to compare the results with those of the previous study. In doing so, generalized residue distributed across the entire implant surface was distinguished from random local contamination; in either case, the findings were to be subjected to subsequent measurements and qualitative and quantitative elemental analysis.

Materials and methods

In the current study, conducted from 2010 to 2012, a total of 54 different implant systems by 44 implant manufacturers were examined by scanning electron microscopy. The study protocol called for three distinct study phases:

- The SEM material contrast image allowed conclusions to be drawn on (1) the chemical nature of the target material and (2) the distribution of different materials across the depicted surface. Elements with an atomic number lower than that of titanium (and, hence, less electron backscatter) appear darker in the material contrast image.
- The qualitative and quantitative analysis of the implant surfaces, the so-called energy-dispersive x-ray spectroscopy (EDS), uses the x-rays emitted by a sample to determine its elemental composition. An areal analysis and one or more spot analyses were performed for each implant.
- In the third and final phase of the study protocol, those implants exhibiting interesting findings on the material contrast image that were not only local but also distributed across most of the implant surface were topographically surveyed to identify the average area affected as a percentage of the total area.
Results

Like its predecessor study in 2008, this study also found topographic irregularities, contaminants and residue on some implants.

Topographic irregularities

As in 2008, one machined implant had residual titanium filings on the thread surface (Figs. 19 and 20). One implant had irregularly threaded outer thread edges (Fig. 21), but the vast majority of the implants analyzed were precisely threaded (Fig. 22). In one implant the anodized boundary layer was incomplete (Figs. 23 and 24).

Localized organic contamination

16 implants exhibited localized areas of dot-shaped organic impurities (carbon), which were analyzed quantitatively and qualitatively (for examples see Figs. 25 to 28, Tables 2 and 3).
Table 2
Southern IBi, quantitative elemental analysis.

Table 3
Southern IBi, quantitative elemental analysis, spot.

Fig. 25 Southern IBi, BSE x50.
Fig. 26 Southern IBi, BSE x500.

Fig. 27 Southern EDX, qualitative elemental analysis, implant surface.

Fig. 28 Southern EDX, qualitative elemental analysis, spot analysis.
Generalized inorganic residue from the manufacturing process

Generalized inorganic residue from the manufacturing process as well as carbon appeared in the SEM material contrast image as dark light elements in seven implants (for examples see Figs. 29 and 30). Up to 17.2 per cent by area of aluminium oxide residue from sandblasting was found on some surfaces (Figs. 31 to 33).

Comparing the results of the current study with those of 2008, some manufacturers have been able to significantly reduce the aluminium oxide residue. In the case of Bego, the manufacturing process was substantively changed from a purely sandblasted to a sandblasted and etched surface (Figs. 34 and 35).

In the case of Camlog, the average amount of aluminium oxide residue was reduced from 10 per cent in 2008 to 2 per cent in the present study while retaining the same general manufacturing process (Figs. 36 and 37).

The implant of the Korean manufacturer Osstem (Osstem GS II) had shown a significant thread deformation in 2008 as a result of sandblasting with hydroxyapatite (Fig. 38). The current implant by the same manufacturer (Osstem TS III SA) no longer exhibits any such deformation (Fig. 39).

Discussion

The significance of the Al₂O₃ residue found in more than half of the sandblasted and etched implants examined has been the subject of controversy. For example, Piatelli and Degidi (2003) showed in an in vivo study that traces of aluminium oxide have no statistically significant effect on osseointegration [13]. Ruger and Censor (2010) came to the opposite conclusion, namely that reducing the aluminium oxide residue on hip implants made of titanium to below 4 per cent resulted in significantly higher...
bone-to-implant contact (BIC) and, hence, more bone apposition [15]. This was confirmed by a study of Canabarro and coworkers (2008), who showed that high concentrations of Al2O3 on the titanium surface impeded mineralization of the extracellular matrix [3]. The fact remains that it is technically feasible to reduce the amount of Al2O3 on sandblasted implants and that this is likely to benefit the osseointegration result.

Unlike its predecessor in 2008, the present study did not show any significant, systematically occurring organic contaminants covering extended surfaces. For the more common selectively occurring spots of organic contaminants, such as might be taken up by macrophages immediately after insertion of the implant, there are currently no studies that show any effect of this on osseointegration. Further studies are needed.
Can we trust the CE mark on implants?

If you ask our dental colleagues what the CE mark (Fig. 40) means, an overwhelming majority believes that this mark implies that the quality of the respective medical device has been verified.

The manufacturer of a medical device must demonstrate, in the so-called EC Declaration of Conformity Process, that the product to be marketed is safe and that its medical and technical performance matches the medical indication claims in the product’s labelling and advertising. External certified proof of the safety and performance of medical devices by a so-called “Notified Body” is required for manufacturers to be authorized to affix the CE mark to their products.

But the external Notified Bodies are the weak links in this chain. In general, these institutions possess high levels of professional competence in carrying out their duties. Reputable manufacturers are required to submit complete and diligently prepared documentation for the certification, which is created at considerable expense before launching a product. A report published in the British Medical Journal in October 2012, however, raises the question whether this system can protect the European market against grey imports [4]. Medical journalists applied for the CE mark for a fictional hip implant by an equally fictional Chinese manufacturer, which according to the (fictitious) documentation submitted releases toxic metal ions and causes fractures of the acetabulum, where the hip joint rests. The proceedings were filmed with hidden camera (viewable at the BMJ website: www.bmj.com/content/345/bmj.e7163). The result: On payment of the stipulated fee, that highly questionable implant received the coveted CE mark as a ticket for entry into the European market – from five Notified Bodies. The question remains: Quis custodiet ipsos custodes? Who watches the guards? Who audits the auditors?

We will gladly assume that the reputable manufacturers on the large European market have submitted reliable documents for the CE mark. But the procedure itself provides no protection against manipulation or criminal activity. Reason enough to consider a possible BDIZ EDI certificate for dental implants, to protect both patients and honest manufacturers from unsafe, carelessly produced grey imports on the market.

Summary

Many studies have confirmed that the treatment of implants to increase the biologically active surface supports and accelerates the process of osseointegration [5,9]. However, the manufacturing of implants requires an adequate system of quality controls. Although some manufacturers have made substantial improvements since our first survey in 2008, the current study again singles out a few implants with larger areas of surface blasting residue and selective organic impurities. BDIZ EDI will continue to examine the implants available on the European market at regular intervals.

Visit the web to find the list of references (www.teamwork-media.de) and follow the link “Literaturverzeichnis” in the left sidebar.

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Computer-assisted implementation of a planned emergence profile for a screw-retained anterior crown

Harmonious integration

Dr Peter Randelzhofer, Dr Claudio Cacaci, Munich, and MDT Hans-Joachim Lotz, Weikersheim, Germany

A host of different approaches have proven to be viable and successful in oral implantology in recent years. Many different yet functional surgical and restorative concepts were developed for all conceivable indications. In the case presented here, a central incisor had to be replaced following traumatic injury incurred several years previously. The authors opted for a single-phase, palataly screw-retained reconstruction using a Camlog CAD/CAM titanium base and zirconia ceramics. The emergence profile of the definitive restoration was ideally conditioned in an extensive process using a multiply modified temporary restoration.

Case description

A female patient presented at our surgery. Despite her youth, she had been through quite an ordeal: At 17, she had suffered a dental trauma in the anterior region with resulting loss of tooth 11. The patient had worn a resin-bonded bridge from tooth 12 to tooth 21 for many years (Figs. 1 and 2).

The appearance of this bridge had deteriorated over the years, with a substantial reduction in the patient’s quality of life as a result, so she opted for an implant-supported restoration at age 23.

Surgical procedures

After removing the resin-bonded bridge, the following surgical procedures were performed:

- Palatal incision to position the tension-free suture of the full-thickness and split-thickness flaps to be elevated outside the augmentation site.
- Mesial and distal expansion of the flap by means of a pure sulcular incision without vertical relief.
- Careful removal of the residual root fragment to preserve the bony structure of the socket. The root fragment proved to be an optimal socket preservation medium (Fig. 3).
Palatally directed insertion of a Camlog Screw-Line implant (4.3 x 13 mm). A minimum distance of 12 mm from the buccal bone plate had to be maintained (Fig. 4). The surgical approach was based on the desire to preserve the bone structure, as far as possible, by way of a minimally invasive procedure and by choosing an implant with a relatively small diameter (Fig. 5).

Augmentation of the remaining bone defect with a mixture of autologous bone (retromolar donor site) and Bio-Oss (Geistlich Biomaterials) (Fig. 6). Coverage of the grafted socket with a Bio-Gide collagen membrane (Geistlich Biomaterials) (Figs. 7 and 8).

Tension-free wound closure (Fig. 9).
Re-entry, impression and initial soft-tissue shaping

The implant was left to heal for four months, concluding with re-entry (Fig. 10), in which a small mucosal flap was pushed labially. The first step in shaping the emergence profile used a Camlog bottleneck healing cap (Fig. 11).

An impression of the implant was taken two weeks later, at which time the bottleneck healing cap was replaced by a wide-body healing cap.

Provisional restoration and soft-tissue conditioning

Meanwhile, a temporary crown had been fabricated in the laboratory. In this particular case a single-phase temporary structure was indicated that was screw-retained on the palatal/occlusal side. That basis was a provisional abutment (PEEK), which had been provided with retentions for the composite veneer and conditioned accordingly. The technical implementation of this prototype focused on obtaining the ideal distal eccentric sulcus line and the exact length of the crown. The corresponding lines of tooth 21 were used for reference – the new tooth was to be a mirror image. The subgingival aspect was to be made as concave as possible in order not to exert too much pressure on the tissue (Fig. 12).

The emergence profile was built up to its definitive design in two steps lasting one week each. On the sulcus, a tiny pontic was retained to render this area in aesthetically optimized form (Fig. 12). After successful conditioning of the soft tissue, i.e. once the ideally shaped and stable emergence profile had been obtained for the future crown, the final restoration could be fabricated.

Planning the final restoration:
Technical consideration

After careful consideration, we decided to use a single-phase, palatally screw-retained design for the definitive restoration as well.
The reason: Persisting cement is currently a widely discussed and highly controversial issue. A study by Wilson [1] found cement in the peri-implant sulci of 80 of 100 patients with peri-implantitis. Of the 80 patients with peri-implantitis and cement residues in their soft tissue, 56 (70%) showed spontaneous healing once the cement had been removed. Examinations conducted with endoscopes demonstrated a correlation between peri-implantitis and cement residues. Not least as a result of this study [1] it was clear to us that all our future patients would have to be rehabilitated – circumstances permitting – with single-phase, screw-retained restorations and not with cemented restorations.

Technical implementations of the final restoration

The basis of the single-phase screw-retained restoration was a Camlog CAD/CAM titanium base. Since the abutment geometry is stored in the CAD computer software library (DentalDesigner, 3Shape), designing the framework for this restoration proved very convenient.

First, a model scan (D700, 3Shape) was created (Fig. 13). In this scan, the Camlog scan body was used to document the position of the implant analogue on the cast representing the implant within the jaw (Fig. 14). Next, a wax-up of the restoration was scanned (Fig. 15).
Veneering technique on implants

From this wax-up, the part of the restoration to be made of zirconia had to be subtracted digitally. Figure 16 shows that only the buccal portion of the restoration was to be veneered. The palatal aspect was to be left in zirconia. The prepared framework resembled a natural abutment prepared for a veneer (Figs. 17 and 18).

Try-in and delivery

The restoration was fabricated in zirconia and tried in introrally. At this appointment, the most important task was to re-take the exact shade and to verify the intended emergence profile (Fig. 19).

Back at the laboratory, the implant-supported veneer preparation was custom-veneered with ceramic. After another aesthetic try-in, the restoration could be completed (Figs. 20 and 21).
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  - Frictional carrier engages internal square, eliminating need for counter torque on removal

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Fig. 22 and 23
The bonded and polished single-phase reconstruction.

Fig. 24
The aim had been to integrate the restoration as perfectly as possible into the surrounding soft tissue, especially in the sensitive transition region between pink and white aesthetics.

Figs. 25 and 26
Function and aesthetics were successfully restored.

Fig. 27
The satisfied patient after treatment.

Fig. 28
Control radiograph six months after delivery of the final restoration, ten months after first implant loading.
On completion of the treatment, our young patient was completely satisfied with her new tooth (Figs. 25 to 28). The treatment team is certain to be on the right track by supplying a cement-free single-phase reconstruction.

Visit the web to find the list of references (www.teamwork-media.de).

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On completion of the treatment, our young patient was completely satisfied with her new tooth (Figs. 25 to 28). The treatment team is certain to be on the right track by supplying a cement-free single-phase reconstruction.

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To achieve a perfect copy of nature in both shape and shade, the patient already enters treatment with this self-evident expectation in mind. A measure of real success is certainly a harmonious integration of the restoration into the surrounding soft tissue (Fig. 24). This is what we had planned for in advance by means of a temporary restoration, which was ultimately translated into the definitive crown made from an aesthetic ceramic material.

The last laboratory step was uniting the single-phase restoration with the Camlog CAD/CAM titanium base. In the present case, Multilink Implant (Ivoclar Vivadent) was employed for this purpose. The joined and polished restoration is shown in figures 22 and 23.

Conclusion

Any reconstructive effort aims to achieve a perfect copy of nature in both shape and shade. Of course, the patient already enters treatment with this self-evident expectation in mind. A measure of real success is certainly a harmonious integration of the restoration into the surrounding soft tissue (Fig. 24). This is what we had planned for in advance by means of a temporary restoration, which was ultimately translated into the definitive crown made from an aesthetic ceramic material.

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Management of a complex case

Younes Khosroshahy, DDS, MFDS RCS (Eng), Dip Imp Dent RCSEd, Blue Bell Hill, England

Restoration of a single missing tooth with an implant-supported prosthesis can be a challenge where severe hard- and soft-tissue loss is present. These severely deficient cases often require bone and soft-tissue reconstruction, in multiple stages, prior to implant placement to achieve an optimum clinical outcome. This case report describes how the severely deficient site of an upper left first molar was reconstructed using biomaterials and soft-tissue grafting prior to the restoration of the area with an implant-supported crown.

The predictability of implant treatment and also the long-term stability of the implants in function depend on the quality and quantity of the available bone. Augmentation of the alveolar ridge is often a prerequisite before implant placement due to unfavourable local conditions caused by previous infections, periodontal conditions, surgical trauma or atrophy – especially in order to place the endosseous implants in their optimum prosthetic position.

Case report

A fit and healthy 42-year-old male patient presented at our clinic to have his missing upper left first molar (tooth 26) replaced with a fixed restoration. His dentition was heavily restored but well maintained, with good oral hygiene. His occlusion was stable.

Having suffered few bouts of pain, infection and swelling, he had this tooth removed by his general dental practitioner a year earlier. The baseline radiograph, taken by the dentist, showed a heavily restored molar with endodontic treatment and two prefabricated posts in its palatal and distobuccal roots (Fig. 1). Deep root caries and bone loss at the furcation was obvious. The patient explained that the extraction had been complicated by root fractures and subsequent sinus exposure; therefore, the dentist referred the patient to a local oral surgeon who then closed the area by a buccal advancement flap. The area healed up without further complications. The dentist had taken a digital pantomograph a few months after the extraction, which revealed highly compromised bone (Fig. 2).

On our clinical examination one year after the surgical extraction, we realized that the soft-tissue architecture was also severely compromised subsequent to the buccal advancement flap (Fig. 3). As is obvious in this image, the buccal frenulum had been repositioned and was very close to the gingival margin of tooth 25, which might have caused further gingival recession and discomfort at this tooth later on. Furthermore, the buccal mucosa was extended almost to the midcrestal of the site of the missing tooth 26. A CBCT was taken to assess the bone morphology of this area in detail (Fig. 4). It was obvious from the scan that the sinus floor had been perforated at the bottom of the socket, but with the membrane still intact. The tip of the distobuccal root was also evident just above the sinus membrane. The palatal bone was also thin and highly compromised.

After explaining the existing complex problem to the patient and discussing different treatment options, he decided to have this missing tooth replaced with an implant-supported restoration. He was informed that there was a complex bone and soft-tissue deficiency at that site and that, to restore the area with an implant-supported restoration successfully with a predictable long-term prognosis, the lost alveolar bone would have to be reconstructed and the soft-tissue profile improved around the future implant site. The patient agreed to the proposed treatment plan, which was carried out in stages as follow:

During the first treatment phase, a full mucoperiosteal flap was raised after a supracrestal incision and mesial and distal releasing incisions incorporating teeth 25 and 27. There was virtually no alveolar bone at site 26. The cavity had mesial, distal and palatal walls. The membrane was exposed at the bottom of the defect (Fig. 5). A sinus lift procedure was performed through the floor of the defect after
extending the existent bone perforation. This space and the alveolar defect were filled and reconstructed with Regenaform (Exactech Dental Biologics). The whole of the augmented area was covered with a resorbable membrane, Bio-Gide (Geistlich Biomaterials). The flap was replaced after periosteal release, and the surgical site was sutured and closed primarily without any tension. The area healed without complication, and a periapical radiograph six months postoperatively confirmed an optimum outcome (Fig. 6).

During the second treatment phase, six months after the first phase, a free gingival graft was harvested from the left side of the palate and grafted to site 26 after raising a full mucoperiosteal flap incorporating the buccal frenulum and repositioning it apically. Upon reentry, the grafted alveolar ridge was found to be completely transformed to a solid mass. The donor and recipient sites had healed uneventfully. Figures 7 and 8 show these areas two months postoperatively.
During the third treatment phase, two months afterwards, a 13-mm wide-platform Nobel Replace Tapered implant (Nobel Biocare) was placed in the healed site after raising a minimal full-thickness flap. Figures 9 and 10 show the healed site with a healing abutment in place. Three months after implant placement (Fig. 11), a head-of-fixture impression was taken and a cement-retained ceramic-bonded crown was fabricated (Figs. 12 and 13). Periapical radiographs confirmed the correct fit of the abutment and crown (Figs. 14 and 15) and showed the integrated implant with a good bone level. Figure 16 shows the fitted crown on the same day. The soft tissue around the implant-supported crown appeared healthy at the
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review appointment one year after crown delivery (Fig. 17) and a periapical radiograph also showed a stable bone level around the implant (Fig. 18).

Discussion

Severe local bone deficiency together with an altered gingival contour presented a real challenge in restoration of the area with an implant-supported prosthesis. Destruction of the bone due to previous and ongoing infections and subsequent bone loss after tooth extraction and sinus-floor remodelling were extensive.

Clinical evidence supports vertical and lateral ridge augmentation procedures to enable implant placement [1,2] with autogenous grafts widely considered to be the gold standard for the predictable correction of severe localized ridge deformities [3]. However, there are a few limitations, including constraints related to the available donor-tissue volume and morbidity secondary to graft harvesting. Nerve injury, soft-tissue injury, wound dehiscence and infection are some of the possible complications associated with cortico-cancellous block grafts harvested from intraoral sites [4,5]. Increased cost and total treatment time are some of the other drawbacks.

In this case, however, using a bone block to reconstruct the alveolar bone was very difficult, as there was no bone wall to readily secure and stabilize the graft against, using fixation screws. On the other hand, further increases in bone height would probably have required sinus augmentation prior to block grafting.

The posterior maxilla with pneumatized sinuses often requires sinus augmentation before implant placement [6]. Boyne and James published a technique for augmenting the maxillary sinus in 1980, using autogenous bone [7]. Since then, many different techniques have been developed [8-10]. In this patient, sinus augmentation was carried out using a Piezotome (Satelec), extending the existing defect at the bottom of the cavity; consequently, bone removal and further damage to the site was kept to a minimum.

With this technique, sinus augmentation and alveolar reconstruction were performed simultaneously using Regenaform, a single-donor allograft paste. Due to its inert biological carrier matrix [11], Regenaform is easily mouldable to any shape and turns into a resilient solid at body temperature. It contains an optimum concentration of demineralized bone matrix (DBM) for osteoinduction, which provides for the formation and development of bone tissue [12]. The osteogenic properties of DBM were demonstrated in 1965 [13]. Regenaform also contains cortico-cancellous bone chips, which provide osteoconductivity. Cortico-cancellous bone chips have been used in surgery since 1947 [14]. The inert biological carrier matrix of Regenaform also facilitates rapid vascularization [15].

The grafted site was covered with Bio-Gide to avoid immediate connective-tissue proliferation and infiltration into the grafted area. The resorbable membrane was shown to be effective in stabilizing graft particles and preventing soft-tissue infiltration [16]. Nearly all of the attached gingiva had been lost in
this area subsequent to the buccal advancement flap, and the buccal frenulum was displaced close to the gingival margin of tooth 25. This new position of the frenulum would probably have resulted in gingival recession, inflammation and root sensitivity in the future. On the other hand, there is a relation between the width of keratinized tissue and the health of the peri-implant tissue. Bleeding on probing and mean alveolar bone loss are increased for implants surrounded by less than 2 mm of keratinized mucosa than for implants with a wider zone of keratinized mucosa [17]. Both these issues were addressed and corrected by gingival grafting in the second phase of the treatment.

Conclusion

Successful management of this complex case with a predictable outcome required multiple surgical interventions. This obviously took rather a long time to accomplish. Although autogenous bone is the material of choice in bone grafting, other bone substitutes may also be reliably used. This is less invasive to the patients with fewer complications; therefore, it may be more acceptable to them.

I would like to draw the reader’s attention to an article which was published recently in the European Journal for Dental Implantologists (EDI Journal 2/2012, p. 56f.) [18]. A very similar situation was handled with a different technique, which makes the article interesting reading.

Visit the web to find the list of references (www.teamwork-media.de). Follow the link “Literaturverzeichnis” in the left sidebar.

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younes_kh@hotmail.com
Implant success can be evaluated by reference to duration of function and aesthetic outcome. Failure can be considered as either early/before abutment connection or late/after occlusal loading. Early failures can be associated with disruptions in the healing phase due to a number of factors that are intricably linked [2]. Late failures can be the result of a combination of factors including the microbial environment and prosthetic rehabilitation.

Factors that influence dental implant success have been considered by Alsaadi and coworkers [3,4]. These can be divided into local and systemic risk factors, which may influence the early or late phase of implant therapy, and therefore can be considered relative or absolute contraindications to treatment. A local risk factor is any situation that could pose a risk to successful osseointegration and the restoration of a dental implant. Systemic diseases may affect oral tissues by increasing their susceptibility to other diseases or by interfering with healing. Also systemic conditions may be treated with medications that can affect the implant and peri-implant tissues. Buser and coworkers proposed subdividing systemic risk factors into two groups (Table 1).

**Case study**

An otherwise healthy 57-year-old woman presented with failing asymptomatic teeth 41 and 42. She has a history of dental trauma 40 years previously and both teeth had been successfully endodontically treated.

It is important in implant treatment planning to consider any contraindications as well as systemic and local risk factors that could influence success. Dental contraindications to implant therapy [5] include:

- Active periodontal disease
- Caries
- Buried or convergent roots
- Diseased mucous membrane
- Inadequate bone height and width
- Inadequate bone quality/density
- Inadequate space for reconstruction. Interincisal or interocclusal clearance should be a minimum of 7 mm.

Diagnostic indicators can be used in the form of a diagnostic wax-up. The Diagnostic T, for example, is an excellent aid in treatment planning.

**Table 1: Systemic risk factors.**

<table>
<thead>
<tr>
<th>Patients at risk</th>
<th>Group 2 – Significant risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with serious systemic disease, e.g. rheumatoid arthritis</td>
<td>Patients with irradiated bone</td>
</tr>
<tr>
<td>Immuno-compromised patients, e.g. HIV</td>
<td>Severe diabetes, especially of type 1</td>
</tr>
<tr>
<td>Drug abusers, e.g. alcohol</td>
<td>Bleeding disorders</td>
</tr>
<tr>
<td>Non-compliant patients, e.g. psychiatric patients</td>
<td>Smoking</td>
</tr>
</tbody>
</table>
HAVERSIAN BONE
BICON
Plateau Design

Bicon’s plateau or fin design offers at least 30% more surface area than a screw implant of the same dimensions and allows for the callus formation of mature, cortical-like, haversian bone between the fins of the implant.

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Over a 12-month period, following root resorption, tooth 41 and then 42 decoronated. As an interim measure, in both instances, the missing teeth were immediately restored with direct composite crowns splinted to adjacent teeth, as shown in Figure 1. The splint was removed to aid treatment planning (Fig. 2) and the missing teeth were replaced with a provisional removable partial denture (RPD). Whilst the patient has good posterior occlusal support, the prognosis chart (Table 2) indicated a high fracture risk, which had to be considered in the treatment planning.

Table 2
Prognostic chart of the patient’s maxilla.

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Presenting condition</th>
<th>Previous dental history</th>
<th>Prognosis</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Missing</td>
<td>Extracted due to fracture/periodontitis</td>
<td>Not treated at Hall Street Dental Care</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Large sound 4-surface amalgam filling</td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Porcelain fused to metal crown</td>
<td></td>
<td>Good</td>
<td>Root filled</td>
</tr>
<tr>
<td>14</td>
<td>Large mesial occlusal composite</td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Excellent</td>
<td>Abfraction/erosion on labial, sensitivity</td>
</tr>
<tr>
<td>24</td>
<td>Heavily restored, 3-surface composite</td>
<td></td>
<td>Fair</td>
<td>High fracture risk, sensitivity, radiograph, pinned restoration, mesial caries, horizontal bone loss</td>
</tr>
<tr>
<td>25</td>
<td>Heavily restored, 3-surface composite</td>
<td></td>
<td>Fair</td>
<td>High fracture risk, sensitivity, horizontal bone loss</td>
</tr>
<tr>
<td>26</td>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Sound, defect-free, good perio status</td>
<td></td>
<td>Good</td>
<td>Horizontal bone loss</td>
</tr>
<tr>
<td>28</td>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Asymptomatic root-filled apices were left in situ to retain alveolar bone prior to a definitive treatment plan. The radiograph (Fig. 3) showed ankylosed root tips that were difficult to extract. This presented a local risk factor to successful implant treatment, of which the patient was informed. Definitive treatment options were discussed as follows:

1. Removable partial denture
2. Fixed or adhesive bridgework
3. Two implant-supported crowns
4. A cantilever bridge supported by a single implant with either a mesial or distal pontic

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Presenting condition</th>
<th>Previous dental history</th>
<th>Prognosis</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>Missing</td>
<td></td>
<td></td>
<td>Fracture risk, check mesial</td>
</tr>
<tr>
<td>47</td>
<td>Large mesial occlusal amalgam filling, sound</td>
<td></td>
<td>Good</td>
<td>Fracture risk, check mesial</td>
</tr>
<tr>
<td>48</td>
<td>Implant-supported crown, Protracted treatment, failed endo and difficult extraction, Astra Tech Implant</td>
<td>Good</td>
<td>Cement-retained</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>2-surface composite, sound</td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Defect-free, sound</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Defect-free, sound</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Missing pontic, composite splint</td>
<td>Trauma, external resorption, root fracture</td>
<td>Hopeless, treatment plan, elective extraction, RPD plan fixed</td>
<td>Retained root tip</td>
</tr>
<tr>
<td>54</td>
<td>Missing pontic, composite splint</td>
<td>Trauma, external resorption, root fracture, composite splint</td>
<td>Hopeless, treatment plan, elective extraction, RPD plan fixed</td>
<td>Retained root tip</td>
</tr>
<tr>
<td>55</td>
<td>Grade I 2° occlusal trauma, Bridge abutment, composite splint</td>
<td>Fair</td>
<td>Horizontal bone loss</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Defect-free, sound</td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Defect-free, sound</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Defect-free, sound</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Large medial occlusal distal composite, sound</td>
<td>Fair</td>
<td>Heavily restored, inadequate root filling, sensitivity</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Large distal occlusal buccal amalgam filling, sound</td>
<td>Good</td>
<td>Buccal abfraction, sensitivity</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Defect-free, sound</td>
<td></td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following provision of a RPD as shown in Figure 4 and lengthy discussions, the patient requested implant treatment to replace the missing incisors. Her expectations for a fixed reconstruction were met by previous replacement of a lower molar with an implant-supported crown. However, the risks and benefits of all treatment options, including their longevity and predictability, should always be discussed. Costs will vary, and treatment may need to be staged. These factors may disqualify certain treatment approaches.

Therefore evidence from the following studies should be included in any discussions on the prognosis of fixed tooth-supported bridgework:

- According to 10-year survival surveys of fixed prostheses on natural teeth, decay is the most frequent reason for replacement: survival rates are approximately 75 per cent [6].
- When considering treatment options, the patient should be informed that approximately 18 per cent of teeth prepared for full coverage restorations may lose their vitality by five years [7,8].
- Edelhoff and Sorensen [9] have shown in vitro that 63–72 per cent of the tooth hard tissue is removed during the preparation for an anterior full-coverage crown to be used as a bridge abutment. This would affect the longevity of fixed bridgework, especially in bruxists, as the fracture risk would increase.
- In partially edentulous patients, independent teeth replaced by implants may preserve intact adjacent natural teeth as abutments, further limiting complications such as decay or ceramic fracture and poorer aesthetics, which are the most common causes of failure in fixed prosthodontics [6].

Factors affecting the choice of fixed reconstructions include the available bone volume, smile line, aesthetics, access for hygiene, phonetics and cost. All of these are essential parts of a demonstrable consent procedure that should involve the patient in the decision-making processes. The excessive occlusal loads that can result from the patient’s bruxism must be noted as a risk factor.

The RPD can be used to evaluate tooth position, size and symmetry, smile line, lip support and the need for hard- and soft-tissue replacement.

The placement of dental implants adjacent to natural teeth necessitates a careful survey of the restorative space and proximal root positions. Figure 2 shows the clinical picture prior to root removal. Placement of a dental implant into an edentulous site that encroaches on the adjacent periodontium or root surfaces could lead to complications affecting the peri-implant hard and soft tissue, the dental implant or the tooth, resulting in aesthetic compromise or even the loss of an implant or adjacent tooth [10].

Careful consideration of the available bone relative to implant dimensions and 3D positions is therefore needed to prevent iatrogenic incidents. Furthermore, if the implant-retained fixed prosthesis is to be cemented, the implant should be placed to match the incisal aspects of the adjacent teeth, whilst a screw-retained implant is ideally placed further lingually so that the screw access is in the cingulum. A surgical stent will aid 3D implant placement.

The dental papilla has a more favourable shape around a pontic than around an implant [10], so in this case teeth 41 and 42 should be replaced with a fixed implant-supported cantilever bridge rather than as two separate implant-supported crowns. The span is only 11 mm, which would make the use of two implants difficult from a restorative aspect. Ideally, a cantilever should extend mesially rather than distally to reduce the amount of occlusal force on the abutment [11]. However, cantilevers in fixed prostheses result in torque loads on the abutments and can lead to complications such as debonding or fracture. With these considerations, the proposed bridge is best designed as a mesial pontic at site 41, supported by the abutment at site 42.

Surgical factors affecting success include following an aseptic protocol and adequate use of sterile saline as a coolant whilst preparing the osteotomy. Bone is very susceptible to heat, Erkison [17] demonstrated in rabbits that the bone temperature should not exceed
47°C to prevent necrosis. Consequently, temperatures above this level have been strongly linked to early implant failure.

Also, the floor of the mouth is a highly vascularized area. It is supplied by the sublingual branch of the lingual artery that anastomoses with the submental artery, a branch of the facial artery, and the incisive arteries which are branches of the inferior alveolar artery [18].

Significant haemorrhage could occur if the lingual cortex was perforated when placing an endosseous implant of the wrong size and orientation [19]. It may be prudent to use a narrow implant if the bone width is less than optimal. Otherwise, grafts may be indicated in a staged approach.

Gingival biotype is an important factor when considering the aesthetic zone and tissue response to surgery. This patient had a thin gingival biotype with scar tissue from previous apicectomies of teeth 41 and 42, which can have a negative impact on aesthetics and result in an elongated clinical crown or black triangles.

The presence of an adequate zone of keratinised mucosa has also been discussed as an essential requirement for aesthetic success and long-term survival of dental implants [20].

Conclusion

The replacement of a missing tooth or teeth should be predictable and treatment options should be discussed to involve the patient as part of an informed consent procedure. The patient should understand the consequences of hard- and soft-tissue defects resulting from tooth loss and the rationale for a recommended treatment approach. As a clinician, understanding the risks of implant treatment by careful history, examination and treatment planning that is effectively communicated will ensure the patient’s expectations are met. However, it is important that the patient realises that there is no panacea for tooth loss and no treatment is without risk.

In summary, there are patient, operator and procedure factors that need to be considered to optimise the success of dental implant treatment.

Visit the web to find the list of references (www.teamwork-media.de). Follow the link “Literaturverzeichnis” in the left sidebar.

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The naturally occurring pneumatization and atrophy of the alveolar ridge are potential obstacles to successful implant placement in the posterior maxilla. The natural healing process does not allow implant placement – other than in immediate-placement cases – until six to eight weeks after the extraction. A conservative approach would provide for implant insertion five to six months after tooth removal. Generally speaking, two proven surgical procedures are currently available, to be used depending on the residual height of the alveolar ridge, that have yielded predictable results for many years. One of them is elevation of the maxillary sinus by way of a lateral fenestration according to Tatum [1]; the other is the osteotome technique according to Summers [2].

Over the years, many variants have been developed for these two highly successful standard surgical techniques [3], which differ in complexity, the time required and the use of materials.

Several different materials can be used to achieve relative augmentation of the alveolar ridge, from the patient’s own bone used as an autologous graft [3-8] and the various biomaterials available on the market today in combination with autologous bone [9-14] to simple controlled haemorrhaging into the sinus [15-17]. Building on the idea of obtaining new bone from a blood clot located under the maxillary sinus membrane [15], different working groups have tried to demonstrate successful implant insertion into the posterior maxilla without introducing any extrinsic augmentation material. A one-stage procedure with implants inserted to support the lifted sinus membrane is a basic prerequisite. A primate model has demonstrated the complete bony enclosure of implants with exposed threaded apical tips protruding 2 to 3 mm into the sinus. For greater things, partial enclosure of the implant surface has been observed [16]. A corresponding study on human subjects found a success rate of more than 90 per cent after five years, following implant placement into adequate, non-augmented bone, taking into account the principles of guided tissue regeneration [17,18].

The SFE technique according to Summers that we use is generally successful without having to introduce foreign particulate matter in the presence of residual bone heights of up to 4 mm.

Studies have shown that this procedure can result in the formation of new bone in the amount of 3 to 4 mm [19]. More recent data, however, have shown that new bone is apparently only formed in the anterior and distal implant area. These results qualify the reported benefits of lower surgical effort and lower cost associated with this method as well as the survival rate of the implants [20].

An alternative treatment method is the technique according to Tatum [1], where the Schneiderian membrane is raised and the blood clot stabilized with collagen. For this we use Parasorb (Resorba), as it already includes the portion of the membrane required to seal the access to the maxillary sinus. In the case of open sinus lift according to Tatum [1], we use an access hole in the bone, approximately 5 to 7 mm in size, which is readily created within a few moments using a round bur without perforating...
the Schneiderian membrane. To elevate the antral mucosa, we use two soft-tissue elevators, each of which covers a different working area. Specialized bone cutters are now offered as an alternative to the round bur, which allow predictable preparation of the cavity and partial elevation of the mucous membrane in a simple step. However, their use is anatomically limited by the need to work with an angled handpiece. The decision to perform an open SFE is usually made when the residual bone height is between 1 and 4 mm. The membrane cone can be safely used up to a residual bone height of 4 mm, with no loss of the implant or regression of the sinus floor elevation. The following case examples illustrate both our approach and the usefulness of this promising therapy.

**Case 1 (Figs. 1 to 4)**

Radiographic examination of the 52-year-old woman in 2010 had shown that tooth 26 was not worth preserving and had to be extracted. After eight months, we inserted an implant at site 26, which was stabilized by collagen (Parasorb Sombrero, Resorba).
Case 2 (Figs. 5 to 9)

The patient in our second case is 54 years old and male. We had extracted tooth 26 because of an apical osteitis. Six months later, an implant was inserted using the Paracosr Sombrero membrane cone. One effect of this cone is that it stabilizes the volume of the alveolar process.
The patient in our third case study was 56 years old and male and presented with a cantilever situation at sites 17/18 and 27/28. CBCT-supported treatment planning was followed by the insertion of implants at sites 17 and 27 using the membrane cone. The radiograph taken at reentry clearly shows the formation of new bone around the implants.
Case 4 (Figs. 15 to 19)

The patient in our fourth case was 37 years old and male. The missing tooth 26, bilaterally abutted by natural teeth, was to be replaced. CBCT-supported treatment planning was followed by implant insertion at site 26, about three months after the patient had first presented at our office. Here, too, the membrane cone was successfully used. The CBCT at reentry documents bone growth around the implant.

Summary

All 20 patients for whom we have documentation up to and including reentry presented with uncomplicated implant healing, and all implants were restored. The postoperative CBCT image at reentry showed the formation of new bone around the Astra implants in all cases. In addition, the use of collagen instead of the classic bone replacement materials seems to be a promising treatment mode, especially in cases where the maxillary sinus presents with chronic residual inflammation. It is true that the method has to be further monitored for reliability. In our practice, however, we consider it a successful method characterized by low failure rates, low cost to the patient and minimal postoperative complaints.

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“Since its foundation in 2001 as the Iberic Symposium, this meeting has been recognized as an excellent continuing-education opportunity – and now, with worldwide attendance from over 23 countries, it hosts the European Symposium”, said Dr Carsten Blecker, Vice President Europe, Middle East and Africa of Biomet 3i. “Implant dentistry is changing rapidly. Both clinicians and patients want to achieve optimal aesthetic restorations as quickly as possible. We have learned during the past decades that sustaining aesthetic results over time requires both knowledge and commitment. Bone and soft tissue around implants must be managed expertly at the time of surgery and during the restorative and maintenance phases. This must be accomplished against the backdrop of patients’ natural and growing desire to avoid protracted and time-consuming treatment protocols”, said the Scientific Chairmen of the symposium, Dr Richard Lazzara and Professor P. O. Östman.

The main programme was kicked off by Professor Tomas Albrektsson (Sweden), who also acted as moderator the first day. Talking about implant surfaces, he reported that animal studies had verified that so-called moderately rough surfaces (characterized by Sa levels of between 1 and 2 μm) showed the strongest bone response. Clinical data supported the use of moderately rough surfaces rather than smoother or rougher ones.

Professor Markus Hürzeler (Germany) focused on the clinical effects of implant surface topographies and discussed their clinical aspects and ideal biologic ranges, particularly in compromised bone situations. Dr Bruno Negri (Spain) and Dr Stavros Pelekatos (Greece) spoke about immediate implants and on achieving optimal peri-implant architectures as well as on accelerated treatment concepts for implants in the aesthetic zone.

The evolution in the private implant practice – a perspective based on 25 years of experience – was the topic of the practice team session with Dr Oriol Llena, Dr Jaume Llena and August Bruguera (Spain). The highly interesting afternoon programme started with Dr Nicola De Angelis (Italy), speaking on the selection of augmentation materials – “it does matter”. He quoted a wide range of documents, from guidelines to decision-making aids, and included long-term clinical and histological results for various bone substitutes and collagen membranes in his reviews.

Dental implant professionals from all over the world descended upon Madrid to attend the 2nd Annual Biomet 3i European Symposium/12º Simposio Ibérico. The symposium, held January 11/12, took place at the Hotel Auditorium Madrid and Congress Centre Príncipe Felipe.

2nd Annual Biomet 3i European Symposium

Global event with worldwide attendance

Dental implant professionals from all over the world descended upon Madrid to attend the 2nd Annual Biomet 3i European Symposium/12º Simposio Ibérico. The symposium, held January 11/12, took place at the Hotel Auditorium Madrid and Congress Centre Príncipe Felipe.
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Dr Stefan Fickl (Germany) had changed the focus of his presentation from crestal bone remodelling towards platform switching, which he said could limit crestal bone loss around dental implants, with mid-face recession becoming a major factor. He concluded that while platform switching might be complicated, it had a lot of potential in crestal bone remodelling.

The final speaker of the first day, Justo Rubio (Spain), focused on digital dentistry, where clinicians, combining imagination with new digital diagnostic and planning tools, could achieve great results for their patients.

The “entertaining highlight” of the day was the presentation by Professor Hugo De Bruyn (Belgium) on “Does size matter?” and the question of sinus floor elevation versus short wide-body implants. He argued that there was growing evidence that sinus floor elevation could sometimes be avoided by placing short implants without jeopardizing the treatment outcome. The combination short/wide, he said, might provide an alternative to grafting procedures with less morbidity and complications.

Dr Andreas Bindi (Switzerland) spoke on extended indications of intraoral scanning. In recent years, indications had been expanded beyond standard crown and bridge prosthodontics to include restorations on implant abutments. In this context, healing abutment impressions through intraoral scanning integrated the best of both worlds, helping clinicians to avoid the soft- and hard-tissue recession associated with the component swapping inherent to restoring implant cases, replacing it with the ease of use and patient appeal of intraoral optical impressions.

Dr Ueli Grunder (Switzerland) opened the second day by presenting some aesthetic results of different implant-abutment connection designs, focusing on their capacity to prevent unfavourable bone remodelling around the implant collar.

Also heard on Saturday: Dr Nuno Braz de Oliveira (Portugal) spoke about a multidisciplinary approach to implant dentistry. Professor Tiziano Testori (Italy) presented a 3D journey through immediate placement and the provisional restoration of implants. Dr Jacobo Somoza (Spain) introduced new techniques and technologies in guided surgery. Professor Robert Haas (Austria) focused on immediate implant placement and immediate restoration for better aesthetic results. Dr Ronnie Goené (The Netherlands) explained mastering aesthetics in post-extraction sites. Dr Tommie Van de Velde (Belgium) described the indications and limitations of digital dentistry in the context of implant-guided surgery and restoration. Dr Yasukazu Miyamoto (Japan) lectured on the foundation for aesthetic success in preserving anterior maxillary labial bone.

There were many more speakers than can be listed in this short report. Biomet 3i seized the occasion to introduce its new 3i T3 implant, a contemporary hybrid implant with a new multi-surface topography. “This global event exceeded all of our expectations”, said Biomet 3i President Maggie Anderson. “It was wonderful to share the latest dental innovations and clinical breakthroughs with such a large audience from all over the world.”
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The Osteology Foundation will be celebrating its 10th anniversary at the International Symposium in Monaco under the motto of "Linking Science with Practice in Regeneration". Why is "linking" so important? Research ultimately sets out to affect everyday practice. But there is no seamless transition from one to the other. At the Osteology Foundation we aim to shrink the gap between research and clinical practice in our field. We want to bring the two "sides" closer together. We primarily want to see knowledge gained from research being translated into clinical concepts.

From a practitioner's perspective: What is the Foundation's most important output?
The Osteology Foundation organizes symposia on oral tissue regeneration at a national and international level; this is what the Foundation is best known for among practitioners. In recent years, the congress series has consolidated its brand on virtually every continent.

What sets the series of congresses apart?
The symposia present the entire multi-dimensional field of oral tissue regeneration. They cover topics such as horizontal and vertical ridge augmentation, the treatment of periodontally compromised teeth, peri-implantitis treatment or the improvement of soft-tissue aesthetics.

There are, on the one hand, many lectures that clearly focus on scientific evidence. On the other hand, we organize comprehensive practical training. This balance is key. Attendees also really appreciate the chance to enter into dialogue with experts – in the discussions, the interactive sessions or in the breaks.

Does research play a part in the symposia, too?
Yes, in many respects. The lectures always deal with the current state of research. We also organize a poster exhibition, a research forum presenting current studies and special workshops for researchers. All this raises the appeal of the congress to scientists. You can see what impact your own research has and whether it is relevant to topics other people are researching. An International Osteology Symposium provides a very good picture of what research is currently being performed in the field of tissue regeneration.

Besides organizing training initiatives, sponsoring research is a key objective of the Osteology Foundation. What is in the Foundation for researchers?
Anyone planning a study in the field of oral tissue regeneration can request funding from the Osteology Foundation. We have designed the application procedure so as to make it as streamlined as possible for applicants. Initially, they only need to submit a brief description of their project; a detailed application does not follow until they are invited into the main round. This can save applicants a great deal of time.

The Osteology Foundation has thus far sponsored 40 studies from 13 countries. What now?
We are not only concerned with funding specific projects – we also wish to help improve the quality of research in oral regeneration.

We set up the Osteology Research Academy in 2011 for this reason. This is a one-week intensive course in research methodology, which is held in Lucerne each September. The idea for this course arose because there is otherwise virtually no structured introduc-
Preserving periodontally compromised teeth
- Soft-tissue aesthetics and surgery
- GBR and sinus floor augmentation
- Future trends in oral tissue regeneration
- Peri-implantitis
- Oral regeneration for high-risk patients

Looking back on ten years as President of the Osteology Foundation, what gives you the greatest pride?

I enjoy seeing researchers funded by the Osteology Foundation winning prizes. This shows that we support essential research. But I also take pride in the development of the Foundation as a whole. It has developed into an institution in regenerative dentistry with world-wide rapport. We have been intent on high quality and integrity from the outset, and that is also how our output is perceived by others. Many dedicated experts that stand for what they are doing and want to benefit the field have made crucial contributions here. We are going to celebrate this at the congress.

Looking ahead – what do you see as the Foundation’s key objectives in the next five years?

We want to continue both training initiatives and research funding. However, we would like to spread our message to more people, and not just within our events and funding initiatives. Digital media will increasingly play a role in this.

Thank you very much for this interview.

Verena Vermeulen

iRaise

The Sinus Lift Implant

iRaise™, The Sinus Lift Implant: A Minimally Invasive Solution For Sinus Lift Procedures

The iRase features a channel, used to inject fluids beneath the Schneiderian membrane. The dentist first injects saline to elevate the membrane hydraulically, and then inserts bone graft in a gel formulation. After implantation, the unique l-shape design isolates the channel from the oral cavity.

For dentists, the iRase procedure offers an easy, accessible technique which can be performed by experienced implantologists after minimal training. The procedure reduces chair time significantly by eliminating several surgical steps, and reduces complications and post-operative care.

For patients, iRase offers vastly reduced surgical trauma and discomfort as compared to the open sinus lift. It prevents swelling and bruising, shortens recuperation, and eliminates lost work days.

Seeking exclusive distributors: come and share the iRase success

perform sinus lift procedures with confidence and ease
dramatically improve your patients’ experience and quality of life

www.maxillent.com

Visit us at IDS Cologne, Hall 4.1 stand C-067 e-mail: info@maxillent.com
Today, oral implant rehabilitation has been proven to be a safe and predictable therapy option to meet the needs of edentulous patients. Aimed at a complete restitutio ad integrum, an implant therapy should follow not only functional requirements, but also aesthetic expectations. Here, reliable and innovative augmentation procedures of the hard and soft tissue are necessary, enabling perfect implant positioning with long-term success rates. For this, knowledge of different hard-tissue augmentation treatment options as well as soft-tissue management techniques, including suturing modulations, are of great importance to achieve optimal scientific and clinical results.

The Implantology Days 2013, consisting of theoretical modules and practical workshops, will assist the participants in improving their overall dental implantology skills. Three different workshops will be run simultaneously and each delegate will participate in all three workshops on a rotational basis. The number of participants is limited to 20 persons per workshop. Registrations are considered on a first-come, first-served basis.

The Aesculap Academy enjoys a world-wide reputation for medical training of physicians, senior nursing staff and staff in OR, anesthesia, ward and hospital management. The courses are of premium quality and accredited by the respective medical societies and international medical associations.

Practical workshops will assist the participants in improving their dental implantology skills.

More information and registration
Aesculap Akademie GmbH
Am Aesculap-Platz
78532 Tuttlingen · Germany
marie.abdo@aesculap-akademie.de
www.aesculap-akademie.de

The International Implantology Days will take place in the Aesculapium in Tuttlingen, Germany.
MD 30 and MD 11, our new generation of Implantology Motorsystems
Better, faster, more efficient

The industry is currently undergoing a transition – how is Nobel Biocare positioned in the face of mergers between implantological giants and an increasing number of discount suppliers?

Our industry is spending far too much time watching itself. We at Nobel Biocare do not align with other companies but with the patients and with dentists active in implant surgery and prosthodontics. We want to help these dentists offer their patients better, faster and more efficient yet safe treatment. We do observe a consolidation of the market and thus a return to values that have always been the strength of Nobel Biocare. Discount offerings can hardly irritate us, because we are not discussing individual implants but complex, integrated treatment approaches. How to treat a patient effectively and safely with predictable long-term success plays a much larger role than the price of a screw.

Do you feel that your efforts in science and research are being fully appreciated by your customers?

Science and research are not art for art's sake. Science is indeed in focus, but we are looking for direct and close collaboration with our customers to develop, together and based on their input, products that are useful to the dentist and dental technician. To this end we have set up an innovation programme where research and development are closely interlinked, and an “idea screening board” composed of dentists and dental technicians who check incoming ideas for their suitability and potential for further development.

Implant manufacturer or system provider – how does Nobel Biocare see itself today and in the future?

Clearly, as I said, as a provider of complete treatment approaches and also as an organization that explicitly addresses dental surgeons, prosthodontists and dental technicians alike without prejudice.

Some oral implantologists have criticized your enormous product portfolio – does it really take so many different types of implants?

We are just going with the times. What was a landmark achievement in the 1980s would no longer be accepted by patients today. The procedures we have mastered today venture into areas of which you could not even dream 20 or 30 years ago. Our task is to track the patient's expectations and to provide to our customers, in a timely manner, the products and solutions that enable dentists and dental technicians to meet current needs and expectations.

If you had a wish, what would you ask of our readers?

I wish dentists would do more to educate their patients more comprehensively about the many options offered by implant dentistry. More than...
INTERNATIONAL SYMPOSIUM

OSTEONELOGY

MONACO

MAY 2–4, 2013

Language
English
Simultaneous translation into French, German and Italian (Scientific Programme)

Venue
Grimaldi Forum, Monaco

Organisation
Osteology Foundation
Landenbergstrasse 35
6002 Lucerne, Switzerland
phone +41 41 368 44 44 | info@osteology.org

www.osteology-monaco.org

DECISION MAKING WITH ORAL TISSUE REGENERATION

Speakers / Moderators
Ackermann Karl-Ludwig | Antoun Hadi | Araújo Maurício | Aroca Sofia | Becker Jürgen | Beretta Mario | Berglundh Tord | Boschhardt Marcus S. | Bornstein Michael | Bosshardt Dieter | Bouchard Philippe
Burkhart Rino | Buser Daniel | Chen Stephan | Colin Philippe | Cooper Lyndon F. | Cordaro Luca | Cortellini Pierpaolo | Dahlín Christer | Donos Nikas | Dulger Eva | Fickl Stefan | Gambarena Itaki
Giannobile William V. | Giovannoli Jean-Louis | Gruber Reinhard
Gruner Ueli | Hagglöf Franck | Hanisch Oliver | Hämmerle Christoph
Heitz-Mayfield Lisa | Ighaout Gerhard | Jovanovic Sascha | Jung Ronald E. | Katsuyama Hideaki | Klinge Björn | Lang Nikolaus P.
Lindhe Jan | Maiorana Carlo | Marin Pierre | Maschera Emilio
Ponte Alessandro | Ramel Christian | Rocchetta Isabella | Schuino Giovanni | Sanz Mariano | Scheyer Todd | Schlage Karl Andreas

Scientific Chairmen
Niklaus P. Lang, Switzerland | Massimo Simien, Italy

Registration
at www.osteology-monaco.org

Challenging the dogma

On 19 June 2013, Shaping Faces and the North West London Hospitals NHS Trust are staging a one-day didactic and interactive course for general dentists, specialist dentists and surgeons practicing dental implantology on “Bone Augmentation for Dental Implant Placement” in London. It is delivered by two consultant surgeons, Manolis Heliotis and Carlo Ferretti, who have a 40-year portfolio between them in bone regeneration.

The burgeoning dental implant market has created a large secondary industry providing all sorts of regenerative technologies to purportedly meet clinical needs. Many of these applications complicate rather than simplify oral implantology and provide dubious benefits that have not been scientifically verified. In an already cost-conscious environment, treatment strategies should be adopted only if they demonstrate significant benefits for patients, not to satisfy the pedantic needs of clinicians.

This course will commence with an essential overview of the clinically relevant scientific fundamentals of bone graft healing and regeneration. An approach to clinical cases and the regenerative scientific principles behind these will be demonstrated. An explicit aim of the course is to impart a rational bone augmentation strategy, for the delivery of a first class dental implant service.

Dogmas that will be challenged are the use of membranes, commonly used non-autologous materials, appropriate use of autologous bone, socket preservation strategies and recombinant human growth factors such as BMP-2, BMP-7 and other growth factors with seemingly excellent results in humans. Both Manolis Heliotis and Carlo Ferretti have landmark research publications in BMPs and other growth factors, so they are well placed to inform the participants of the application or otherwise of the latest technologies in dental practice, rather than industry. The presenters have no vested interest in any company or product relating to this field. They will present everything, as it is, both good and bad.

Delegates are welcome to bring their own cases along. Time allowing, these can be presented for discussion with the audience and the presenters.

More information and registration

Shaping Faces
Phone: +44 161 408 1758
enquiries@shaping-faces.com
www.shaping-faces.com

70 million people in developed countries are edentulous. But only 125,000 of them have been treated with implants even though the patient acceptance and quality-of-life improvements with a technology such as our All-on-4 treatment concept are tremendous. It would be highly desirable if dentists spent more time on such promising concepts and to discover their enormous potential for their own patient population.

As the name suggests, this is an international congress, and the New York location is attractive to visitors from around the world. Our slate of top-notch speakers shows that there is no US bias. But not only are the world’s nationalities represented – the scientific approach can also be described as global. You will rarely find an event in which the entire spectrum of modern oral implantology, from surgery to prosthodontics and on to dental technology, from biology to medical technology, is represented so completely.

Thank you, Mr Laube, for this interview.

Manolis Heliotis
Carlo Ferretti
BTI solutions
An integrated approach to atrophic maxilla treatment

Problems of cross atrophy?
Tiny implants and expanders:
BTI offers a wide range of narrow implants, both transitional (2.5 mm. through 3.0 mm. diameter) and definitive (2.5 mm. through 3.75 mm. diameter) to promote crest expansion and to win bone volume when facing very reabsorbed ridges avoiding non predictable surgical techniques.

Problems of vertical atrophy?
Short and extra-short implants:
BTI offers short length implants (4.5 mm. through 8.5 mm.) all along its prosthetic platforms, to allow predictable surgical treatments when dealing with compromised bone height maxilla. These implants avoid the risk of interfering anatomic structures linked to more invasive and less predictable surgical alternative techniques.

NOW WITHIN YOUR REACH...
All the necessary for the treatment of severely resorbed atrophic maxillae.
Scan this BIDI code for more information.

BTI Biotechnology Institute
Jacinto Quincoces, 39
01007 Vitoria-Gasteiz, Álava | Spain
Tel (+34) 945 160 652 | Fax (+34) 945 150 934
export@bti-implant.es | www.bti-biotechnologyinstitute.com
“Make it Simple”? Until now we had considered MIS Implants a science-based supplier. Are you now trying to establish an “implants for everyone” routine?

Actually, being a science-based company and offering “implants for everyone” is not a contradiction. MIS as a major international dental-implants supplier is committed to innovative approaches and continuing development efforts. We have always validated our products scientifically and conducted research all around the globe. We also try to simplify our products, making them easy to use for dentists – and not only specialists. Our goal is to “make it simple”.

Will the conference programme focus on implants only?

In addition to the theoretical lectures, MIS will be offering:

- Workshops led by the staff of our training centres
- Experiential bike rides in the Riviera landscape (all proceeds will be donated to “Operation Smile”)
- MIS product and service exhibition
- Two evening events – a cocktail reception in the Palais des Festivals, where all participants can walk on the famous red carpet, and a dancing party as an introduction to nightlife in Cannes.

In fifty words or less – tell us why our readers should join you in Cannes.

The MIS Global Conference will offer them a venue where they can stay updated on our research results and innovative products and to share knowledge – combined with a unique and pleasurable experience, an opportunity to enjoy the French Riviera at its best.

Thank you, Mr Peretz, for this interview.
Resonance Frequency Analysis as a technique to measure implant stability and osseointegration is fast becoming a global diagnostic standard. With more than 500 articles published in scientific journals it is a proven scientific method as a guide to predictable surgical and restorative protocols.

Manage implants at risk - You’ll find Osstell ISQ especially valuable for achieving more predictable outcomes when treating higher risk patients and implants at risk for failure due to poor integration. Osstell gives you an early warning, as a decreased ISQ value, if osseointegration isn’t progressing as expected. It can help you avoid costs of an implant failure or redoing a crown due to premature loading. Osstell can also assist you in being more confident about treating patients with risk factors, more predictably.

Reduce treatment time - If the initial mechanical stability is high enough a one-stage approach is often used together with immediate- or early loading. By measuring again before the final restoration, and comparing that value to the baseline value taken at placement, the decision whether to proceed or not is made quick and easy.

With Osstell as a part of your quality assurance system it’s also easier to explain treatment planning and healing time to your patients and colleagues. Now Osstell brings you and your patient new certainty.

www.osstell.com
Dentaurum – from the root up to the crown

From idea to IDS

An independent family-owned company with a 126-year tradition and a wide product range creates value for the dentist. Dentaurum has developed from a small dental laboratory into a company that is globally active in more than 137 countries. Marianne Steinbeck, project manager of EDI Journal, spoke with Claudia Stöhrle, Head of International Sales; Joachim Krause, Head of Product Management, Customer Support and Marketing Services; Dr Christoph Schippers, Technical Director; Dr Thomas Wiest, Technical Manager Chemistry; Wolfgang Schindler, Director of Marketing and Sales; and Mark Stephen Pace, Managing Director and CEO, about the past and the future of the company.

The secret of Dentaurum’s long-term success, a company that survived two world wars and several economic crises, lies in its emphasis on close contact with its clients and its willingness to pave the way for the development of new products. With orthodontics, prosthetics and implantology, the company covers a broad segment of the dental field. With the intimacy of a medium-sized, independent family-owned company, Dentaurum has succeeded in integrating the various business units so that developments interact and impulses are transferred from one area to the next. Ideas emanating from international markets are taken in and analyzed thoroughly; in the past they have frequently influenced and enhanced product development on the national level. – Now this is the kind of description you could find in any marketing brochures. It is far more interesting to take a peek behind the scenes.

What would Dentaurum, a large and established company, like to stand for in the minds of its customers?

Mark Stephen Pace: Well, for us, Dentaurum stands for innovation, expertise and quality, and has done so for 126 years. To this day, openness, curiosity, a high level of technical expertise and an ongoing dialogue with science and research are the basis for progress, growth and the success of our business. We want our children and future generations to inherit a financially strong company in a healthy environment. This is the basic tenet on which all our products rest – from the idea to the final production.

How do you create a product idea? Where is it generated and who ensures that it will be taken note of and makes its way into the company?

Wolfgang Schindler: A company like Dentaurum, with its own research, development, production and sales facilities and a product portfolio of more than 10,000 items, continuously requires new input if it wants to be a part of today’s rapid technological change. With our long and fruitful collaboration with experts in dentistry and dental technology throughout the world, we provide the basis for continuous innovation.

Claudia Stöhrle: We see ourselves as a so-called market-driven company that focuses on the needs of a particular market and the customers on that market. Close contact with our customers is therefore essential. Through a globally established and professional CRM and customer panels in private practices, universities and dental laboratories, we generate, channel and filter those ideas that are relevant to us.

Let us assume that an idea has found its way into Dentaurum and pops up on the desk or drawing board of an ambitious employee. Does this employee have all the relevant answers?

Joachim Krause: Product management is the information hub of every company. The respective product lines are supported by specialized product managers, who get comments, suggestions and ideas from the sales department or from direct contacts within the market. New ideas are evaluated in a constant dialogue with the internal research and development departments. Customer benefit is the core of any development effort. Product development cycles, from idea to launch, are getting ever shorter. Nevertheless, we take our responsibility to our customers very seriously, introducing only products that are tested and ready for the market.

Dr Christoph Schippers: The Dentaurum products traditionally meet the highest quality standards. This keeps presenting great challenges to the develop-
ment and manufacture of our premium products. Through continuous training of our staff in all the departments of the company and continuous investment in innovative manufacturing technologies and production processes we ensure consistently high product quality.

**Developing a new product in this way takes much time and is expensive. Does Dentaurum have products out where external input has been especially profitable?**

Dr Thomas Wiest: The development of non-precious alloys as well as ceramic materials has a long tradition in our company. It is especially here that we have fed our customers’ expertise and ideas into the development of our ceramic line. You will discover one of the exciting results at IDS! The Remanium brand stands for a premium alloy for all manufacturing processes, available in the form of casting alloys, milling blanks and powders. Our ceramic line is specifically and optimally adapted to the alloy. Our customers receive the best in process reliability – all from a single source!

**Thanks to all of you for this informative interview.**

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**Announcement**

EDI Journal will be visiting Dentaurum at IDS and inspect its diverse offerings. Read our report in our 2/2013 issue!
Bego expands in Turkey

Additional sales offices opened

Bego Türkei has opened two sales offices in Ankara and Adana in addition to its head office in Istanbul and is pushing to expand its branches in Turkey.

Bego Türkei reported rapid growth last year and has already become one of the top eight implant providers in Turkey. The company’s business model rests on two pillars – the sales of Bego implant systems, prosthetic components and biomaterials via local depots on the one hand and regional direct marketing, focusing mainly on larger urban centres in Turkey, on the other.

“Further sales offices are planned. In view of our rapid expansion, they are vital to ensure that we continue to be close to Bego’s customers in Turkey”, says Hakan Görgün, managing partner of Bego Türkei.

New Director of International Sales and Business Development

Oliver Klein complements Bego Implant Systems’ management team

Since January, Oliver Klein has been the new Director of International Sales and Business Development, strengthening the management team of Bego Implant Systems. His main tasks include providing training and continuing education to Bego’s sales partners, managing product launches and identifying new markets. He is supported in his duties by an experienced international sales and partner support team.

Oliver Klein most recently served as General Manager at Implant Direct Europe AG (Danaher Group). Previously he had worked as Regional Sales Manager for North Germany at Nobel Biocare Deutschland, before becoming Country Manager for Germany and Austria at Kerr GmbH (also Danaher Group).

“In Oliver Klein we have found a connoisseur of the global implantology scene. He will greatly help with the further internationalization of our company”, as Walter Esinger, Managing Director of Bego Implant Systems, is pleased to report.
**Advanced Dental Practice Management Programme**

**INTRODUCTION**

Increased competition and the current economic crisis have brought about an unfavorable business climate for dental practices, but also have had a positive effect on the wider social consciousness concerning dental hygiene and health issues, the development of dental insurance policies and new developments in the sector, among others.

In this complex environment it has become more and more necessary for dental practice managers and partners to be open and receptive to identifying new opportunities in the market, and to know how to carry out activities which capitalize on bringing value to the patient and the development of sustainable advantages in the face of competition.

**OBJECTIVES AND TARGETS**

It is addressed to dental practices partners and managers who wish to improve their management skills and capabilities, and for all those who wish to grow their business with resource innovation and optimization.

**Methodology**

Learning by doing approach: active participation, exercises and case discussion.

The methodology is soundly practical, working with case studies and in parallel developing a solid conceptual framework.

- "The reality of the Star Smile Dental Clinic" case
- "Motivating the team of Star Smile Dental Clinic" case
- "Investing in Star Smile Dental Clinic" case

In addition to the case method, which encourages participation and reflection by "learning by doing", there will be the following types of activities in each session:

- Testimonials that employ "best practices" in the development and execution of the topics touched on during the sessions.
- Workshops developed using these best practices.
- Seminar on Management skills.

<table>
<thead>
<tr>
<th>DAY 1: &quot;COMPETITIVE STRATEGIES&quot;</th>
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<tr>
<td>This session will help the participant understand how to compete. Some of the topics covered are:</td>
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<tr>
<td>• Competitive environment analysis.</td>
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<td>• &quot;The dental product&quot;.</td>
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<td>• &quot;Service concept&quot;.</td>
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<td>• Price and financial aspects of the service.</td>
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<td>• Communication with patients and dental practice stakeholders.</td>
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<td>• Dental practice positioning strategies.</td>
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<tr>
<th>DAY 2: &quot;MARKETING STRATEGIES&quot;</th>
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<td>In this session the marketing options, both strategic and operational, will be analyzed. Some of the topics covered are:</td>
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<tr>
<td>• &quot;The reality of the Star Smile Dental Clinic&quot; case</td>
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<td>• &quot;Motivating the team of Star Smile Dental Clinic&quot; case</td>
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<thead>
<tr>
<th>DAY 3: &quot;MANAGING THE DENTAL PRACTICE&quot;</th>
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<td>In this session the participants will learn how to work out several aspects of the dental practices management. Some of the topics covered are:</td>
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<td>• How to present the treatment to the patient.</td>
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<td>• How to manage and plan the appointment book.</td>
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<td>• How to manage patient’s complaints.</td>
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<td>• Patients loyalty.</td>
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<td>• Interaction between clinical and non-clinical units of the office.</td>
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<tr>
<th>DAY 4: &quot;FINANCIAL MANAGEMENT&quot;</th>
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<td>This session will deal with the economics and financial aspects of the dental practices. Some of the topics covered are:</td>
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<td>• Income statement, treasury management and balance sheet.</td>
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<td>• Static and dynamic balance sheets analysis.</td>
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<td>• Economic and financial ratios.</td>
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<td>• Investment decisions and breakeven point.</td>
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<th>DAY 5: &quot;LEADERSHIP &amp; HUMAN RESOURCES MANAGEMENT&quot;</th>
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<td>The motivation, capability and aptitude of the office team have a strong impact on patient perception and satisfaction. For this reason, people management is one of the most complex and this same time, relevant tasks of the dental practice leader. Some of the topics covered in this session are:</td>
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<td>• Leadership styles.</td>
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<td>• How to get the best out of the team.</td>
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<td>• Nearing salaries.</td>
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<td>• Staff evaluations.</td>
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<td>• Team management.</td>
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<td>• Team motivation.</td>
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<td>• Managing office conflicts.</td>
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<td>• Roles, functions and profiles definitions.</td>
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<th>DAY 6: &quot;STRATEGIC &amp; OPERATIONAL PLANNING OF THE DENTAL PRACTICE&quot;</th>
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<td>In this session the participants will learn (and practice) how to prepare long- and short-term plans which will help the dental practice to decide what to do in the coming years in order to growth and be profitable. Some of the topics covered are:</td>
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<td>• External analysis.</td>
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<td>• Internal analysis.</td>
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<td>• Strengths, weaknesses, opportunities &amp; threats (SWOT) analysis.</td>
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<td>• Vision &amp; strategic objectives.</td>
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<td>• Implications.</td>
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<td>• Implementation planning &amp; monitoring.</td>
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OT medical at IDS 2013

Continuing on the road to success

Two years after their first presence as exhibitor at the IDS, OT medical have established themselves on the international dental market.

This year’s IDS presentation by OT medical reflects this positive trend: a new concept of exhibition stand with an enlarged space will offer a pleasant atmosphere for presenting to customers and other interested visitors from all over the world the current innovations of the OT line of medical products, the latest improvements – and not least attractive offers. The generous and spacious design of the exhibition booth in Hall 3.2 (C40/D49) will be an oasis of relaxation amidst a hectic trade fair, and it will offer a communication platform for national and international users where they can exchange professional views and experiences.

With quality “Made in Germany” and an expanded team of staff members, OT medical has embraced a situation where production safety, creating and preserving jobs, protecting the environment and providing fair working conditions are as important as sales criteria as are implant design, price and customer service.

Large clinical study of dental implants

Impressive 10-year outcomes

New research findings have recently been published from one of the largest long-term clinical studies on the survival and success of dental implants.

The study, which was conducted at the University of Bern in Switzerland, assessed the outcome of 517 Straumann SLA tissue-level implants in 303 patients over ten years.

Its authors concluded: “The present retrospective analysis resulted in a 10-year implant survival rate of 98.8 per cent and a success rate of 97.0 per cent. In addition, the prevalence of peri-implantitis in this large cohort of orally healthy patients was low with 1.8 per cent during the 10-year period.” No implant fracture was noted.

The importance of this study lies not only in the impressive long-term outcomes but also in the fact that it is one of the first large 10-year clinical studies to document a dental implant of this kind that is still on the market.

JUNE 20–23, WALDORF ASTORIA NEW YORK.

Gain further insights on how to treat more patients better.

Experience the best in implant dentistry.

Learn from over 100 world-renowned experts.

Enjoy the fascinating city of New York.

Designing for Life: Today and in the future. Join the leading experts in implant dentistry at the event not to be missed in 2013. This exciting four-day Nobel Biocare Global Symposium 2013 in New York is your number one opportunity to gain the full 360-degree perspective on how you can treat more patients better. Benefit from an innovative and insightful program format designed to maximize your learning experience. Update yourself on the key factors for successful oral rehabilitation such as diagnostics and treatment planning, surgical and restorative treatments and patient follow-up. Understand how to effectively restore missing single teeth, multiple teeth and edentulous jaws. Learn more about important clinical themes such as minimally invasive, graftless solutions, immediate replacement and function, soft tissue health and esthetics. Find out how you can utilize this knowledge to achieve even better results. Register now!

nobelbiocare.com/newyork2013

Official Partners:
Clean lines, a sleek design and a user interface with intuitive features characterize this new communication tool by Camlog. Numerous applications can be controlled via the Apple-typical handling and let the users easily navigate through the application. The focus of the app lies entirely on the products and all the necessary information for their use.

The tap on the product range provides a clear view on all important aspects of the implant lines Camlog and Conelog and brings it to the point: Two implant lines – one surgical solution! An extensive library with numerous documents covering the area of application of the Camlog/Conelog implants and prosthetic components comprehensively sums up the app content. Numerous features and direct access to other interesting sites turn the app into a practical and diverse tool that can be used in either German or English. iPad users can download the app for free via their Apple account from the iTunes store.

At the start of the new year, Camlog presented its first app. It offers Camlog customers access to all relevant information about the company, its products and the numerous service and training benefits on a mobile user interface. Developed based on iOS, the app is supported by the iPad 2 and all subsequent models, including the iPad mini.

Camlog App now available

Tap-by-tap always well-informed

Camlog Biotechnologies AG
Marguerithenstrasse 38
4005 Basel
Switzerland
www.camlog.com

More information
20 years of Bego Semados S implants

Bego celebrates top-selling implant

Since its launch, the Bego Semados S implant has been continuously improved and incrementally adapted to changing clinician and patient needs. An important milestone in product development was the revision of the implant surface in 2008, resulting in today’s high-purity, ultra-homogeneous TiPurePlus surface. The prosthetic components portfolio has also been expanded steadily. In addition to various latest-generation temporary abutments and angled abutments in different gingival heights, customized CAD/CAM abutments are now available from Bego Medical.

In 2011, the MultiPlus system for restoring four to six Bego Semados S/RI implants (fixed prosthetics on four implants) was added to the product portfolio. The drills and insertion instruments were revised in 2012. The new instruments are now presented in a well-organized, reduced-size metal tray. Silicone instrument-fixing inserts were abandoned for reasons of hygiene.

To make the application even easier and more user-friendly, Bego also reduced the number of rotary instruments significantly. The optimized drill geometry ensures very smooth cutting performance, with distinct depth markings on the drills providing for safe instrument operation. Depth stops from the separately available TrayPlus drill-stop tray round off the system.

For a limited time, interested users can benefit from special sales conditions available from Bego’s global distribution partners.

Bego Implant Systems GmbH & Co. KG
Technologiepark Universität
Wilhelm-Herbst-Str. 1
28359 Bremen
Germany
www.bego-implantology.com

More information
3Shape  Dental System 2013

3Shape’s Dental System 2013 introduces new major indications, a variety of powerful design tools, optimized order creation, stronger scan and design workflows, and a new and highly intuitive user interface. New features include:

- New user interface for maximum ease-of-use and simplified design workflows
- Advanced implant bridges with gingiva ("Prettau style")
- Innovative Post and Core design software
- New Abutment Designer workflow for screw-retained crowns and anatomical abutments
- Novel Digital Denture Design
- Trios Inbox – labs can connect to any open Trios digital impression system in the world

All Dental System subscriptions include 3Shape LABcare – 3Shape’s customer-centric business model that offers users new technologies through annual releases such as this Dental System 2013 software. In addition to upgrades, 3Shape LABcare gives labs access to an efficient support network with multiple language assistance, and access to training and learning channels such as webinars, videos, etc.

Osstem  Instruments for GBR

Guided Bone Regeneration (GBR) can replace lost bone. The original status of the jaw can be restored with the aid of AutoBone Collector and Smartbuilder, creating a sufficient bone bed so important for the placement of implants. The AutoBone Collector is an instrument that collects autologous bone by forming bone chips with a thickness appropriate to GBR. Its two-blade configuration ensures excellent cutting action. The protruding tip prevents vibrations and slipping during initial drilling. The thin blade makes irrigation easy.

Keeping the bone material in place and in the right shape, the Smartbuilder is a good solution for bone regeneration. It is made of a non-resorbable custom titanium material. Bone augmentation at the defect site is supported after the grafting procedure while the material is protected against collapse. The three-dimensional, preconfigured shape without sharp edges prevents the exposition of soft tissue, as no bending or folding is necessary. The Smartbuilder can be used for vertical as well as horizontal bone augmentation. Pores in the membrane ensure regular blood circulation around the augmentation site, greatly promoting bone regeneration.

Experience the Osstem products live at the IDS 2013 in Cologne (Hall 4.1, Stand A 10).
Tav Dental | Zirconia dental products

At IDS 2013, Tav Dental (Hall 4.1, Stand E 11) will be presenting its sophisticated wide range of zirconia dental products, including zirconia implants, abutments, healing caps, drills, etc. All products are manufactured in-house using the advanced Ceramic Injection Molding (CIM) technology, which is based on almost 40 years of experience in product design, mold fabrication and injection molding of medical products.

The company's vision is to redefine the quality of zirconia dental products and their performances. In addition to the zirconia dental line, Tav Dental also offers common titanium implants, restorative and other surgical products.

Tigran Technologies AB | Medeon Science Park | Sweden
www.tigran.se | +46 40 693 92 70 | info@tigran.se

Tigran™ PeriBrush™
A titanium brush for debridement of dental implants

Tigran Technologies AB | Medeon Science Park | Sweden
www.tigran.se | +46 40 693 92 70 | info@tigran.se
Dentaurum Implants  **AngleFix concept**

The AngleFix concept provides the tioLogic implant system with yet another indication – edentulous patients can now be provided with immediate restorations such as screw-retained bridges or bar-supported dentures in the maxilla or mandible.

The system consists of various fully interoperable prosthetic components that allow the tioLogic implants to be inserted at an angle, avoiding augmentation procedures in the posterior region and enabling particularly cautious treatment in anatomically critical areas. The prosthetic supporting surface is displaced in a distal direction, giving the prosthesis additional support and putting the local bone substance to the best possible use.

The AngleFix abutments are available for the S, M and L implant lines, either straight (0°) or angled at 18° and 32°. The angled abutments can be positioned exactly using the integrated Penta-Stop. The abutment design facilitates relative implant axis deviations of up to 44°. Closure screws, impression copings, laboratory analogues and acrylic and titanium copings are available for extensive prosthetic restorations.

Materialise Dental  **New digital solutions**

Materialise Dental presents new digital solutions at IDS 2013 (Hall 11.2, Stand K 31).

- SimPlant for the modern dental lab: This guided implant system makes CAD/CAM work harder and smarter so users can offer a wider range of services. This new workflow solution provides a total system with all-digital connections to create one’s own digital work routine with true prosthetically-driven implant planning, quality guides and Immediate Smile prosthetics. This CAD/CAM-ready open system delivers digital precision prosthetics, tight knit dentist-to-lab collaboration and satisfying patient results.
- Faster and smoother SurgiGuide delivery makes for a better customer experience: Through technological developments and leaner production principles, Materialise Dental has made the design and production of guides faster. Clinicians can log in from their iPhone, iPad or any other smartphone or tablet and will be automatically connected to a website that gives a status overview for all their cases.

- SimPlant GO, easy implantology software: SimPlant GO makes surgery accurate and predictable and gives clinicians a level of confidence that they and their patients will enjoy. Combined with SurgiGuide drill guides, SimPlant GO navigates dentists safely through computer-guided implantology.

- SimPlant, SurgiGuide and SimPlant GO

**Distribution:**
Materialise Dental NV
Technologielaan 15
3001 Leuven · Belgium
simplant@materialise.be
www.materialisedental.com
Until now, choosing a narrow diameter implant often meant a sacrifice in attachment performance and ultimately patient satisfaction. Zest Anchors responds to that need by introducing the Locator Overdenture Implant System (LODI), featuring a new narrow diameter implant combined with the Locator Attachment, providing clinicians with solutions to the attachment limitations often found with O-ball mini implants.

The Zest Anchors Locator Overdenture Implant System features critical elements that optimize patient satisfaction. The Locator Attachment is seated after the implant is placed making case planning, implant surgery and restoration easier. In addition, its two-piece design allows for attachment replacement should wear occur throughout time.

LODI is available in narrow diameters of 2.4 and 2.9 mm and is ideal for those patients with very narrow ridges who refuse the additional appointments and the cost often associated with grafting procedures. Made from the strongest titanium available, LODI features a proven RBM surface and is designed to provide primary stability when immediate loading is indicated.

The implant system is packaged with the Locator Attachment so it incorporates all of Locator’s features including its patented pivoting technology and customizable levels of retention, all while maintaining a dramatically reduced vertical height as compared to O-ball mini implant designs.
Kohler Basic implantology set

The Basic implantology set by Kohler consists of the most important instruments for implant surgery and professional assistance. The instruments (14 in total) are well-organized in a sterilization cassette.

Product: Basic implantology set
Indication: Dental implantology
Distribution: Kohler Medizintechnik GmbH & Co. KG, Bodenseallee 14-16, 78333 Stockach · Germany, info@kohler-medizintechnik.de, www.kohler-medizintechnik.de

The global dental community will remember IDS 2013 as a significant landmark in the establishing of CORTEX as a major innovative player in the international dental implants market. Founded and run by leading maxillofacial experts, the ambitious high tech company aims high. Extremely creative R&D backed up with a super modern manufacturing facility and strict quality control is responsible for an impressive line-up of patent-pending innovations:

• The anti-rotational slot patent, designed to avoid damages in prosthetic works
• Saturn - the only implant in the world, suitable for post extraction immediate loading and the ultimate implant for bone type D-5
• The implant premium set, offering smart sterile packaging with range of parts supporting all types of implantation procedures

Add this to CORTEX’s FDA / CE approvals, to its worldwide distribution in 30 countries and to several innovative products yet to be launched during 2013, and the picture is crystal clear: CORTEX is the future of dental implants

www.cortex-dental.com
25th Anniversary
Team Congress
1-3 May 2013, Manchester

Something for the whole implant team...
with a Plenary, Technicians' and Team programme

- Implant-focused trade exhibition
- Pre-Congress sessions
- ADI Oscars Evening: 3-course meal and entertainment

How long do implants last?
Complications, risk management and prognosis

SPEAKERS INCLUDE:
Tomas Albrektsson SWEDEN
Urs Braegger SWITZERLAND
Christian Coachman BRAZIL
Andrew Dawood UK
Nikos Demos UK
German Gallucci USA
Nikos Mardas UK
Peter Moylan
Zeer Omriavker ISRAEL
Franck Renouard FRANCE
Tara Renton UK
Maria Retziuk UK
Ashok Sethi UK
Jon Suzuki USA
Hom-Lay Wang USA

CONGRESS FEES FROM:
£555 for member Clinicians
£305 for member Technicians
£175 for member Hygienists, Therapists, Nurses, Practice Managers, Students and additional member Technicians
(Non-member rates available)

These fees will increase after the 28 February 2013

To book, visit: www.adi.org.uk/congress2013
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<td>2013</td>
<td>35th International Dental Show</td>
<td>Cologne, Germany</td>
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<td>Koelnmesse GmbH <a href="http://www.ids-cologne.de">www.ids-cologne.de</a></td>
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<td>Dental Salon 2013</td>
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<td>May</td>
<td>International Osteology Symposium</td>
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<td>June</td>
<td>MIS Global Conference</td>
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<td>12th BDIZ EDI Symposium</td>
<td>Augsburg, Germany</td>
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<td>7th European Symposium of BDIZ EDI</td>
<td>Split, Croatia</td>
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<td>October</td>
<td>FDI World Dental Congress 2013</td>
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<td>EAD Annual Scientific Congress</td>
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<td>BOTA Dental Showcase 2013</td>
<td>Birmingham, England</td>
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<td>British Dental Trade Association <a href="http://www.dentalshowcase.com">www.dentalshowcase.com</a></td>
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<td>3rd Osstem Europe Meeting</td>
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**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. Radiographs, charts, graphs, and drawn figures are also accepted. Typical middle-class illustrations should be 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:


**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. Page charges and reprints have no page charges. The publisher will cover all costs of production and provide the primary author with five free copies of the journal issue in which the article appears.

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Phone: +49 8243 9692-0; Fax: +49 8243 9692-22; service@teamwork-media.de
It’s not only the innovative engineering
It’s not only the inspiring design
It’s not only the world class experts and vast knowledge
It’s not even the high-end production facilities

It’s the combination that makes CORTEX
the future of dental implants

SATURN
The ultimate implant
For bone type D-5

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DENTSPLY Implants – the new powerhouse in implant dentistry

DENTSPLY Implants is the union of two successful and innovative dental implant businesses: DENTSPLY Friadent and Astra Tech Dental*

DENTSPLY Implants offers a comprehensive line of implants, including ANKYLOS®, ASTRA TECH Implant System™, and Xive®, digital technologies such as ATLANTIS™ patient-specific CAD/CAM solutions, regenerative bone products and professional development programs. DENTSPLY Implants is built upon the fundamental values of open-mindedness, a thorough scientific approach, a dedication to long-term clinical evidence and a strong customer focus. Our current DENTSPLY Friadent and Astra Tech Dental customers can rest assured knowing that the world-class products they know will continue to be supported.

We are confident that dental professionals around the globe will come to recognize DENTSPLY Implants as their new partner of choice for integrated implant solutions, dedicated support and better patient care.

We invite you to join our journey to redefine implant dentistry.

* DENTSPLY Implants was launched in North America April 2012. Transition to the new business in other geographical locations around the globe will follow.