»EDI News: Coming up: 8th European Symposium in Barcelona · The tooth of the future: Interview with stem-cell researcher Jürgen Hescheler · iCAMPUS 2014 programme for beginners in oral implantology »European Law: Government planning, the establishment of healthcare providers and EU law »Clinical Science: New tantalum-titanium hybrid implant in the SEM »Case Studies: All-on-Four protocol using special piezoelectric inserts »Product Studies: Aesthetics meets CAD/CAM in the dental surgery · Intraosseous anaesthesia · Sinus floor augmentation using porous titanium granules
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“Huge amounts of money belonging to the insured are lost because of uneconomical, wasteful and dubious practices.” According to estimates provided by experts of the European Healthcare Fraud and Corruption Network, between three and ten per cent of the healthcare budgets throughout Europe are lost in this way. In Germany, corruption and misconduct in healthcare is currently a major political issue. The new centre-left/centre-right coalition government wants to pass an anti-corruption law. Besides, all major implant companies are affected by the so-called Sunshine Act in the US. The Physician Payments Sunshine Act is a new law that requires biopharmaceutical companies to publicly report any transfer of value made to physicians and teaching hospitals. The Sunshine Act impacts all physicians who have an active US medical license, regardless of specialty.

Transparency International believes that all kinds of parties involved take unfair advantage of the intransparency that characterizes the healthcare sector: suppliers of pharmaceuticals and medical devices, service providers of all types, hospitals and rehabilitation facilities, insured patients and their employers. Codes of conduct that are binding on suppliers and service providers could help.

The coalition agreement of the new German government states: “We will include the new offense of bribery and corruption in the healthcare sector in the Criminal Code.” We dentists, too, will be affected by the draft bill, introduced by the states of Hamburg and Mecklenburg-West Pomerania and adopted by the Bundesrat (which represents Germany’s Länder/states at the federal level) on 5 July 2013. It would amend the Penal Code to include a provision intended to combat corruption in the healthcare sector. It seems likely that this draft will soon appear as a law in the Federal Law Gazette. It will affect especially the purchase and sale of materials and, consequently, dentists and the dental industry.

A German dental practice generally purchases four different classes of items:

1. Separately billable items that are resold to patients at purchase prices (e.g. implants)
2. Not separately billable items that cannot be charged to patients (the so-called in-office medical supplies)
3. Dental alloys for restorations, which are billed at the current price on the date of sale
4. Products for dental care, “lifestyle” products, etc.

These classes of materials differ in terms of their ratio of purchase price to sales price. The only class where the dentist’s purchase price does not matter are items that are not separately billable (in-office medical supplies). If dentists get special discounts in this area, this simply reduces their operating costs. When it comes to products for dental care, additional VAT/sales tax issues come into play.

Problems arise if the dentist receives a discount when purchasing separately billable items, as these must be sold to patients at the purchase price, without any mark-up for the dentist. This may result in accounting errors being persecuted as a criminal offense. According to the new legislation, corruption-related issues may arise if the dentist receives some purchase-related benefit that a judge could interpret as giving unfair preference to a competitor, regardless of whether the dentist can actually resell the items.

The proposed new section of the German Penal Code on corruption in healthcare is as follows:

§ 299a Taking and offering bribes in healthcare
(1) Whosoever as a member of a medical profession that requires a government-regulated education for exercising the profession or using a professional designation, in the context of exercising this profession, demands, allows himself to be promised or accepts a benefit for himself or a third person as a consideration for such member of a medical profession’s
1. giving preference to a domestic or foreign competitor or
2. otherwise allowing himself to be influenced in an unfair manner
with regard to the purchase, prescription or dispensing of medical drugs, medical aids or medical devices or with regard to the allocation of patients or examination specimens shall be liable to imprisonment not exceeding three years or a fine. [...]”

In early February, the Health Committee of the German Bundestag (lower house of Parliament) was tasked to draw up a pertinent bill. Given the existing draft passed by the Bundesrat and given the current majority situation in the Bundestag, it is rather obvious what that draft will look like.

Sincerely,
Christian Berger, Kempten/Germany
President of BDIZ EDI
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Belgium Oct 17
Italy Oct 23-25
Spain Oct 30-Nov 1

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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 Espanola de Implantes (SEI)

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

Sociedade Portuguesa de Cirurgia Oral (SPCO)

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

Udruženje Stomatologa Implantologa Srbije-EDI (USSI EDI)

USSI EDI was founded in 2010 with the desire to enhance dentists’ knowledge of dental implants, as well as to provide the highest quality of continuing education in dentistry. The most important aims of the organization are to make postgraduate studies meeting the standards of the European Union available to dentists from Serbia and the region; to raise the level of education in the field of oral implantology; to develop forensic practice in implantology; and to cooperate with countries in the region striving to achieve similar goals.
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26 – 28 June 2014: Aesthetic, restorative and implant dentistry

8th European Symposium in Barcelona

June will be hot. But this prediction has nothing to do with the weather – it refers to the 8th BDIZ EDI European Symposium in Barcelona, held jointly with the 2nd Quintessence International Symposium. For three days, everything in the Palau de Congresos de Catalunya will revolve around dental aesthetics, tooth preservation and implant treatment.

The symposium will be held in English and will feature speakers who have made themselves a name in the context of international dental congresses: Hämmerle, Grunder, Testori, Fickl and others. An interesting conference in a great city promising an interesting exchange of ideas.

Topics

Implant treatment will be in focus from the first day of the symposium. Of course, the controversial debate about when to load implants will be continued here, as will be the interdisciplinary aspects of treatment in the aesthetic zone. The highlights of the day: Dr Stefan Fickl will be discussing problems in the management of extraction sockets and proposing solutions. The presentation by Dr João Caramês and Dr Helena Francisco will focus on the aesthetic aspects of implant treatment – and relate them directly to the issues encountered in daily practice. The host of the scientific part will be Dr Jaime A. Gil.

Friday will be a deep-down day, addressing bone augmentation and endodontics and taking a closer look at tissue stability. Dr Christoph Hämmerle will speak on how to maintain the alveolar crest. Dr Ueli Grunder will look at whether bone augmentation is the perfect solution for long-term soft-tissue stability and whether it can preserve the bone level following extractions in the aesthetic zone. The eternal question – preservation of teeth versus implant
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treatment – will be revisited by Christian Berger, who will be looking at how complications around the implant and the teeth can be avoided. The second day of the symposium will again be hosted by Dr Jaime A. Gil.

The third day of the symposium is dedicated to restorations. Topics will include the limits and possibilities of CAD/CAM and of course the world of digital dentistry – the simplification of complicated edentulous cases as well as all-ceramic restorations and an overview of the state of the art in the field of ceramics. Speakers will include Michael Bergler, Dr John Sorensen and Dr Giovanni Zuchelli. The role of host for the third day of the symposium will also be in the capable hands of Dr Jaime A. Gil.

The BDIZ EDI approach to enlist partners for its European Symposium has been successful for several years now. In 2013, BDIZ EDI was the cooperative partner of the Croatian Dental Chamber in Split, where some 300 participants attended the congress. The year before, BDIZ EDI had partnered with the Sociedad Española de Implantes (SEI) in Valencia. And in 2014 the SEI will again be BDIZ EDI’s partner in Barcelona.

Over the past 20 years, the city of Barcelona has become a hot favourite with travellers and now ranks among the Top Ten of Europe’s most interesting urban destinations. It is full of life – in the streets, in the squares and on the 4.5 km of sandy Mediterranean beaches.

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Partners in Progress
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<th>Thursday, 26 June</th>
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| 8:45–9:00 Opening Christian Haase, Christian Berger | 9:00–9:45 Endo-implant algorithm in aesthetic dentistry  
Dr Borja Zabalegui, Dr Ion Zabalegui |
| 09:00–9:45 Prefabricated root-form subgingival contours: their role in the construction of provisional and definitive implant restorations  
Dr Steve Chu | 9:45–10:30 How to preserve the ridge: a key question in clinical practice  
Dr Christoph Hämerle |
| 9:45–10:30 Immediate, early or delayed implants: controversies and solutions  
Dr Jaime Jiménez | 10:30–11:15 Augmentation: the solution for long-term soft-tissue and bone preservation for compromised extraction sites in the aesthetic zone  
Dr Ueli Grunder |
| 10:30–11:15 Interdisciplinary treatment planning in the aesthetic zone  
Dr Daewon Haam | 11:15–12:00 Coffee break, exhibition hall |
| 11:15–12:00 Coffee break, exhibition hall | 12:00–12:45 Transitioning teeth to implants: 10 determinants of success in the management of the extraction sockets for immediate vs. delayed implant placement  
Dr Homa Zadeh |
| 12:00–13:30 Literature review  
Dr Dennis Tarnow | 12:45–13:30 Tissue aesthetics and stability in implant dentistry: taking control of our treatment outcomes  
Dr Sonia Leziy |
| 13:30–14:00 Discussion  
Moderator Dr Jaime A. Gil | 13:30–14:00 Discussion  
Moderator Dr Jaime A. Gil |
| 14:00–15:30 Lunch, exhibition hall | 14:00–15:30 Lunch, exhibition hall |
| 15:30–16:15 Management of the extraction socket: controversies and solutions  
Dr Stefan Fickl | 15:30–16:15 Immediate loading and post-extraction implants: 3D videos  
Dr Tiziano Testori |
| 16:15–17:00 Clinical guidelines for single-tooth implant rehabilitation in the aesthetic zone  
Dr Francesco Amato | 16:15–17:00 Treatment strategies and techniques for restoring missing teeth in the aesthetic zone  
Dr Nitzan Bichacho |
| 17:00–17:30 Coffee break, exhibition hall | 17:00–17:30 Coffee break, exhibition hall |
| 17:30–18:15 The art and science of immediate implant placement in molars sites  
Dr Jose Manuel Navarro | 17:30–18:15 Risk management in implant dentistry: how to avoid complications associated with implants and with teeth  
Christian Berger |
| 18:15–19:00 Aesthetic implantology without forgetting everyday practice  
Dr João Caramés, Dr Helena Francisco | 18:15–19:00 Digital workflow in implant dentistry  
Dr German Galuzzi |
| 19:00–19:30 Discussion  
Moderator Dr Jaime A. Gil | 19:00–19:30 Discussion  
Moderator Dr Jaime A. Gil |
**Saturday, 28 June**

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<th>Time</th>
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| 9:00–9:45     | Adhesive dentistry: clinical challenges in aesthetic dentistry  
**Dr Sillas Duarte** |
| 9:45–10:30    | CAD/CAM in dental technology: limits and possibilities  
**Michael Bergler** |
| 10:30–11:15   | Clinical success of build-ups and monolithic all-ceramic restorations  
**Dr Robert Winter** |
| 11:15–12:00   | Coffee break, exhibition hall                                                             |
| 12:00–12:45   | Early results with implant supported zirconia restorations  
**Dr Winston Chee** |
| 12:45–13:30   | Dental ceramics: state of the art 2014  
**Dr John Sorensen** |
| 13:30–14:00   | Discussion  
**Moderator Dr. Jaime A. Gil** |
| 14:00–15:30   | Lunch, exhibition hall                                                                     |
| 15:30–16:15   | Restorative implant options applied to interdisciplinary aesthetic dentistry  
**Dr Christian Coachman** |
| 16:15–17:00   | Marginless preparations in teeth and implants  
**Dr Xavier Vela** |
| 17:00–17:30   | Coffee break, exhibition hall                                                             |
| 17:30–18:15   | Simplified treatment of complex edentulous cases  
**Dr Luca Cordaro** |
| 18:15–19:00   | Development of the digital world of dentistry (imaging, diagnostics, radiology)  
**Dr Giovanni Zuchelli** |
| 19:00–19:30   | Discussion  
**Moderator Dr. Jaime A. Gil** |

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18th Annual Symposium – and 25th anniversary of BDIZ EDI

Implantology 3.0

When celebrating a milestone anniversary, we like to look back in time – sometimes with slightly nostalgic overtones. In 2014, BDIZ EDI will celebrate its 25th anniversary and would have any number of reasons to celebrate its own past in oral implantology, especially since it is itself a part of this success story. While the anniversary issues of the BDIZ EDI membership publications will indulge in this topic extensively, under the motto of “Oral Implantology in Transition”, the 18th Annual Symposium of the association in Munich on 19 and 20 September will keep its eyes firmly set on the future: Implantology 3.0.

The successful concept of the Annual Symposium will not be changed in 2014: High-quality continuing education in the sophisticated ambience of a five-star hotel – of course right at the heart of Bavaria’s capital, Munich, and again on the threshold of Oktoberfest 2014. For the first time this year, Oemus Media GmbH will be organizing the two-day event.

Hands-on Health Politics Forum

The Health Politics Forum on Friday will address topics of eminent importance in everyday practice: billing and bookkeeping issues, patients’ rights legislation, treatment documentation, hygiene and medical devices and of course the impending law against corruption in healthcare. How fast BDIZ EDI can react to upcoming legislation has been demonstrated by its recent publication on the purchase of materials. This 16-page brochure lists what dentists will now need to consider when purchasing materials so as not to become guilty of corruption. The Health Politics Forum will again be hosted by BDIZ EDI President Christian Berger. Friday will also be the day for the industry partners’ workshops as well as the courses of the iCAMPUS community for aspiring implantologists.

Scientific programme with four topic areas

The highlight of the 18th Annual Symposium will of course be the scientific programme organized by BDIZ EDI Vice President Professor Joachim E. Zöller. With its ambitious title of “Implantology 3.0” it will be positioning the topics of augmentation, aesthetics and soft-tissue management, CAD/CAM and peri-implantitis for the future. “The time of breathtaking pictures is irrevocably over”, said Zöller. What is important is for us to open our eyes to the problems in oral implantology and to develop concepts for the dental office and surgery. Every year the European Consensus Conference of BDIZ EDI therefore offers a new practical guideline on major issues in oral implantology. In 2014, the guidelines will be addressing implant positions.

Read more on the 18th Annual Symposium/25th anniversary of BDIZ EDI in the next issue of EDI Journal and of course on the web at www.bdizedi.org – always up to date.

Save the date!

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Interview with stem-cell researcher Jürgen Hescheler

The tooth of the future

When can we grow new teeth to replace lost teeth? This is not the pie in the sky, but a technology within reach, says Professor Jürgen Hescheler from the Institute of Neurophysiology at the University of Cologne. Hescheler, a stem-cell researcher, belongs to a team consisting of a hundred internationally recognized experts who regularly get together at the University of Beijing to discuss the viability of different types of stem cells. In Germany, however, he keeps getting the runaround. There are many things he misses – not just popular support. Professor Hescheler was interviewed by Anita Wuttke.

Professor Hescheler, what are you working on right now?

Our focus is on stem-cell research – and that includes a lot of basic research, trying to answer the question of how stem cells develop. Specifically, we are interested in possible uses of stem cells in regenerative medicine. Our primary target here is myocardial infarction. If a heart muscle is damaged by a heart attack, no drug in the world can rebuild it. But we can grow stem cells, at least in animal experiments so far, and introduce them to the infarcted area. We have already shown that the muscle can be rebuilt.

When will this method be ready for implementation?

Well, that is always the big question. The path from the laboratory to clinical use – a process called translation – is a fairly complex one, and above all very costly. For the cells we produce in the laboratory, we would never get permission to use them in humans. This means we have to take the intermediate step through a GMP – Good Manufacturing Practice – laboratory, that is, we must work under GMP Grade A cleanroom conditions. This is the only place where we can produce the needed cells, which means that all the production steps that work in the laboratory must be re-implemented using cleanroom technology. Building such a cleanroom is extremely expensive. Here in Cologne, there is only one small Grade A cleanroom, at the blood bank – but it is not available for our purposes. We would have to build all that from scratch. We are ready to go in principle, but now we really need the capital investment to take the next step.

Where would that money be coming from – from Germany, from Europe or elsewhere?

I am currently working on this on all possible levels. It would be nice, and in the interest of the patients, if this could be a German investment. But the Ministry of Research is rather reticent at this time. In Germany you get very little research funding. Things are quite different in Japan, where stem-cell research has been identified as a national goal, and billions of euros pour in – and the same is true of the U.S. Just recently we had three billion dollars flowing into California. Things are happening in other countries; but here in Germany we are unfortunately lagging far behind.

Another possibility would be an industrial investor, but they prefer to invest in things where they can be 100 per cent certain to make a profit. A study by an investment bank has called this the investment gap. Basic research is funded quite well by government programmes, and once we get to the clinical stage, it will be a huge business. But right now we are caught somewhere in between. We need some sort of impetus, and we need it now.
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But even if you are now at this intermediate stage financially – when could you reach the application stage, or in other words, how long would the process take?

Well, the process cannot begin until we have the capital investment. That could take five to ten years. Once we have the money and can concentrate on our research, the clinical phase could be just five years off. But that investment has to be sizable.

Do you feel neglected by politicians in Germany?

You could certainly put it that way. We had that extensive public debate about stem cells, which ended in the stem-cell import law that has greatly disadvantaged German scientists. It threw us back several years and made it very, very difficult to catch up. Today we still want to work with human embryonic stem cells, which we actually still have available as a comparative system to induced pluripotent cells – a new technique from Japan. So we have to submit applications. This ties down a lot of manpower; the overall situation is difficult. At the institute where I work, we do not see that large investments are being made or even that large research programmes are being started or acquired. Financially, too, we have been treated like poor relations.

Have other countries come further than Germany?

Oh yes – Israel has, England has, Japan is very strong right now. I have very good contacts in China. Which you visited recently.

I work there as part of a so-called Program of Excellence. China tries to bring in excellent professors from abroad. It is all a bit sad. We could have had all that in Germany instead, but other countries are smarter than we are.

There is more financial support elsewhere – but should not the know-how still be present in Germany?

We can say that, with complete justification – we were the very first. At that time, with Anna Wobus – that was still in East Germany around the time the wall came down, around 1989/90 – we conducted the very first experiments using embryonic stem cells from mice. Human stem cells did not yet exist at that time. We had been considering, and would have been capable of, conducting research with human cells, but were legally prohibited to do so. The Americans came into the game much later, with the human stem-cell research by James Thompson.

Did they benefit from your expertise?

They basically did on humans everything we had done on mice – and we could have done the same, without problems. Establishing human stem-cell lines is no big deal if you already know how to produce stem cells from mice. If we had had the support and encouragement we needed, Germany would still hold the absolute top position. But all those chances were completely squandered due to the political situation. Today, other countries are ahead.

What impact does the EU have?

Our institute is primarily supported by European research funding.

Is that a good thing?

It was our salvation – otherwise I would have had to shut down the institute. I had the opportunity to act as a coordinator in several EU projects. A lot of money has been spent on those. The European funding scheme is especially important for stem-cell research, and one nice thing about it is that it promotes pan-European cooperation.

So this is a transnational effort?

It certainly is. A consortium may include 10 to 20 partners from all over Europe. This brings together the expertise. There are some really great programmes – and Germany does not have anything like it. In this respect, I believe European research funding is exemplary.

How can the results of your research be transferred to dentistry?

I unfortunately do not have any specific data on this, but I know of a group in Japan that has already grown teeth on the basis of stem cells. We know how teeth develop in the embryo. The trick is that you have to bring together two stem cells, an ectodermal stem cell and a mesodermal stem cell, which will lead to
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to the formation of a tooth bud – and if you implant this tooth bud into the jawbone where a tooth used to be, a real tooth will grow. And that, I think, is an intriguing possibility.

How far have we come?
We are at the animal-experiment stage. Everything is done by way of animal experiments. But I am sure, given that this work began in Japan, that they are already busy transferring this to humans. As far as I know, we have not even done any research on this in Germany.

So Germany is already falling behind?
Definitely. But we could still get back in, and if we wanted to, we could also engage in very large programmes.

And what could you do to get back in?
Everything hinges on with the financing bit. Scientists are people, and people need an income. You need the hardware and materials. With the resources we have available for our university institute, we could not embark on such a major endeavour. We could repeat the experiments, including the animal experiments, but if, say, we wanted Germany to lead in stem-cell dentistry, we would have to found a major research institute. With the expertise we have, we could of course embark on such a course. We could also try to attract Japanese scientists. Much could be done – but we would first have to have the will, and then we would have to provide the financial basis.

So why are you still in Germany? You could do your research much more easily elsewhere; I am sure you have had offers.

Actually yes, I had a very good offer from the U.S. ...

... but you want to stay in Germany?
I am no longer completely sure. A few years ago, I still believed things could change in Germany, but I am getting more and more disappointed. If I were to get an offer like that again, I might take it.

When researching your name on the Internet, one quickly sees reports about a run-in with the prosecutor’s office a few years ago because your research allegedly violated the law. There was a lot of noise in the media at the time. Could you give us some background information?
That was an ugly situation. To do research on stem cells, you need a permit. These permits are phrased rather vaguely, and we were convinced that we were on solid legal ground and well within the limits agreed with and established by the Robert Koch Institute. Then there was a change of personnel, and the successor had different ideas. Initially, there was simply a discussion about how the rules should be interpreted. Things got ugly when that discussion got into the media. But the prosecution ultimately closed its investigation.

You must have felt you were treated unfairly.
Certainly. If you look at how hard we work ... we certainly do not have nine-to-five jobs. We work day and night ...

How big is your team?
I have relatively many people on my team, around a hundred, but that includes many students who do their master’s or doctoral research with us, and also very many visiting researchers from abroad who come to us on a scholarship – and in principle they all come to learn something. That may sound like much, but these are not team members that already have a sound foundation and could set out on a major research project, so we are still working within basic research and have to define smaller research projects in order to offer opportunities for, say, doctoral-thesis research. While that will also help us along, it is not the same as having a well-trained staff available.

Getting back to regrowing teeth: When can we expect newly grown teeth to be available on a commercial basis?
According to the Japanese publications, proof of principle exists. It even appears to be the case that, depending on where the tooth bud is implanted, it will become an incisor or a molar. Although I still cannot quite understand why this should be so.

But that has not yet been tested on humans?
No. The Japanese are of course facing the same problems as we are. For human use, one has to take everything to a GMP lab and work under Grade A cleanroom conditions, and this requires capital
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investment, no matter where you are. And once we get into the realm of commercial viability, we no longer get any reports in scientific publications, so I do not know exactly how far that project has come. I can certainly imagine that they are moving forward.

Could you at least give us a ballpark figure? Will we get there in five years? Or in ten?

Generally, those are the simpler things – growing a tooth, or growing muscle tissue after a myocardial infarction; a pumping muscle is a comparatively simple structure, and in a way so is the tooth.

But the bone must already be there.

You can also grow bone from stem cells. Once again: In the case of simple structures, we are talking about a span of five to ten years with intense research. Looking at other organs – the most complex of which is certainly the brain – things are different. Some proclaim that it is possible to treat Alzheimer’s. I am rather sceptical, because the brain is an incredibly complex organ. There are thousands of synapses, and if one introduced some stem cells there is still nothing to say that the synapses would be recreated as needed. There has been no research at all in this area, namely about how stem cells could be implanted into the brain and how they could be incorporated functionally. Here I would say ten to twenty years.

Still, ten to twenty years – that sounds manageable …

… when you look at the progress that has been made in stem-cell research. We are talking about a veritable explosion. We learn more and more, and we can control cell differentiation behaviour better and better. In addition, we are talking about mass cultures – no longer just a thousand cells or so; we can grow hundreds of billions of cells in a single batch today. The basic technology is in place. At the moment, implementation is the weak point: how do I get from the technology to safe clinical application?

What do you wish for in future? Where will research be ten years from now? What would have to change in Germany?

If I were to be a politician, my suggestion would be to engage in a lot more collaborative projects; this is not a research area where a lone wolf can achieve much. Unfortunately, in Germany right now many groups believe they can go it alone. I am convinced that they cannot. We need a network, that is, twenty, thirty groups that work together very closely. Maybe we could assemble the ten top groups in a given area, build an institute for them so they can get the work done together and possibly develop different techniques and different devices that they can share. Similar to the way it was in nuclear physics. Physicists realized that particle physics is not for individual institutes. Central projects would be a good solution, and everyone could participate.

Could not researchers decide on this amongst themselves?

No, for that we would need a decision by the Ministry of Research, which distributes the funds.

What do you want from the government?

I would like to see structures being built that empower research and ultimately provide the necessary financial support. Unfortunately, the thing is that, while we can continue as before with our current resources, we cannot make the clinical leap. We already know that.

If nothing changes, Germany will no longer play a role in the vanguard of research – or have we already lost that ability?

As a matter of fact, we basically have. We will see major hospitals offering regenerative therapies in other countries. Things might change once we have to send all our patients out of the country for treatment. This will also be a high cost factor for health insurers, because the foreign entities will want to recover the cost of their research from the Germans. A treatment that we could offer ourselves for 1,000 euros would then cost us 100,000 euros, and that problem will assume proportions that will bring our health insurance system to the verge of total collapse. Then the politicians will realize that they made a mistake. Unfortunately not before then! We have been warning against this development for at least ten years, and trust me, I mentioned it to each and every politician I have ever met, but still nothing is happening. We knew it would come to this as early as ten years ago. Then later we will be trying to import the technology back to Germany. And that will be immensely expensive.

Professor Hescheler, thank you very much for this interesting interview.

AWU

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There are good reasons for deciding to have a tooth implant: The reconstruction of damaged appearance, and of the speech and chewing functions. However, current technological and digital developments have significantly added to the demands placed on dental prostheses. The informed patient communicates on an equal footing with the dentist. Explanations and patient discussions are no longer a matter of simple information transfer, rather they lead to a dialogue regarding health, social and financial aspects. The ZERAMEX® ceramics implant makes this easy for you, as a natural alternative to a titanium dental prosthesis. It fulfills the need to look good, naturally, and a fair price-performance-ratio.

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iCAMPUS is aimed specifically at young dentists. Participation is free for dental students and for licenced dentists until three years after setting up their own practice. One of the benefits is that the cost of their BDIZ EDI membership will be absorbed by the numerous mentors from the dental industry.

25 per cent discount on over 50 training courses

For 2014 alone, more than 50 attractive training opportunities from all over Germany were included in the calendar on the iCAMPUS website. A special benefit is that all members of the iCAMPUS community are eligible for a discount of at least 25 per cent when signing up for these training courses. And once the two-year financial support period ends, young implant dentists can still enjoy the numerous advantages of the iCAMPUS programme for another two years if they decide to join BDIZ EDI thereafter. This means that young dentists can benefit from their community membership for a total of four years.

In this community, members discuss with experienced colleagues about the basics of diagnosis, surgery and prosthetics. But the discussions also include other topics of increasing importance to young entrepreneurs who are opening their own practice: business management, practice management and communication.

Meeting as equals

Luisa Daniel, a young dentist from Potsdam, coordinates the iCAMPUS events in Germany and other European countries. She is an active member herself and has a very clear opinion of iCAMPUS:

“The iCAMPUS community offers novices like myself a stage where we can meet our more experienced colleagues as equals. We are always free to ask all speakers questions, even after the courses, and get assistance with technical problems at any time. Interesting cases are presented on our website, which promotes dialogue within the community. Many courses offered by leading manufacturers are offered at significantly reduced prices on the iCAMPUS portal. I think that’s wonderful, because young implantologists have to keep an eye on cost. And of course where there’s work there’s also fun. We always organize an
exciting programme of social events at our training courses – from après-ski cabin nights at Grindelwald to a tapas bar night with live music in Bilbao.”

iCAMPUS goes Europe

In addition to the numerous courses by project partners such as Nobel Biocare, Camlog, Bego, BTI, Thommen, botiss, Orange Dental, Sicat, Health AG, BienAir and Osstell, the continuing-education catalogue was extended again to include iCAMPUS special events for 2014. The first of these events is the Implantology Summer Camp in Wimsheim near Stuttgart from 4 to 5 July. Then there will be a trip to London for a two-day surgical and restorative workshop with speakers from Germany and the UK, to be held 29–31 August. With this English-language event, iCAMPUS hopes to attract British colleagues; it will be interesting to see whether the iCAMPUS community will flourish among young implantologists in the UK.

In Munich, on Friday, 19 September 2014 – one day before the 25th Anniversary Congress of BDIZ EDI (which of course the iCAMPUS members can attend at a special rate) – special workshops for young colleagues will be offered. Oktoberfest will follow immediately thereafter – another good reason to save the date in your calendar.

From 23 to 25 October 2014, the members of the iCAMPUS community will meet again in Bilbao, Spain. Many young dentists who attended the course held by Eduardo Anitua last year want to attend again. It is a two-day course that would normally cost well over €1,000 to attend; iCAMPUS members can attend it for less than €400. Dr Magdalena Kimmich, herself an implantological novice, is in charge of public relations for iCAMPUS. She had also been there in Spain last year: “You can learn more in a course like that than you could learn from a whole pile of textbooks. I think it is great when world-renowned speakers are approachable and take time to respond to our many questions. The family atmosphere is one reason why I will definitely continue as an iCAMPUS member. Although I am currently moving to Madrid, I will continue to support the project from there and give it all the power I can muster.” This is very much in keeping with the BDIZ EDI spirit; the iCAMPUS project further underscores the association’s European orientation.

Website shows complete course offerings

Taking a look at the redesigned website of the iCAMPUS project is worthwhile in any case. Here, all the events and the rules that apply are listed in a structured and easy-to-read format. And those who have long since stopped being novices should listen to Secretary General Dr Detlef Hildebrand: “Do let your assistant dentists know about the iCAMPUS programme. Participation in the iCAMPUS programme is free. But the benefits to the next generation are priceless.”

Dr Dirk Duddeck

For more information visit www.icampus.bdizedi.org or contact the BDIZ EDI office at +49 228 93392-44 or icampus@bdizedi.org.
The seminars, which are led by Professor Joachim E. Zöller, address indications, surgical and restorative procedures as well as complications within oral implantology. Members of BDIZ EDI pay a reduced registration fee. If interested please contact our Bonn office at office-bonn@bdizedi.org.

Cooperation between BDIZ EDI and the University of Cologne

16th Curriculum Implantology

The 16th Curriculum Implantology of BDIZ EDI in collaboration with the University of Cologne will be launched in Cologne on 10–11 April 2014. The curriculum consists of eight modules that run over a period of one year.

The seminars, which are led by Professor Joachim E. Zöller, address indications, surgical and restorative procedures as well as complications within oral implantology. Members of BDIZ EDI pay a reduced registration fee. If interested please contact our Bonn office at office-bonn@bdizedi.org.

Modules of the Curriculum Implantology of BDIZ EDI and the University of Cologne

Module 1, 10–11 April 2014
Fundamentals of oral implantology
- 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, 5–6 June 2014
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, 24–25 July 2014
Surgical techniques and advanced diagnostics
- 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, 9–10 October 2014
Implant-supported restorations
- Antibiotic therapy
- Emergencies in the dental practice
- Implant prosthetics I (single and multiple missing teeth, cantilever situations)
- Comparison of implant systems
Practical exercises: implant insertion into a plastic jaw

Module 5, 20–21 November 2014
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, 29–30 January 2015
Soft-tissue management
- CBCT in implant therapy
- Suturing techniques and incisions
- Hands-on soft tissue
- Implant prosthetics 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.

Module 7, 19–20 March 2015
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, 23–24 April 2015
Recall and complications
- Recall and maintenance
- Growth factors in oral implantology
- Peri-implantitis
- Assistance in oral implantology
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While following the guidelines laid down in the curriculum of the Consensus Conference on Oral Implantology, the concept implemented with the help of BDIZ EDI, the University of Cologne and Dr Peter Ehrl (Berlin), who is a member of the BDIZ EDI board, takes into account the specifics of the Greek environment. The 30 graduates received their certificates in a ceremony in Berlin. However, the successful conclusion of the seventh Curriculum of this series by no means indicates the end of this Greek-German joint venture.

During this time, the Greek dentists completed 124 hours of training (April 2013 to February 2014). Within the framework of the individual continuing-education modules, the participants also visited the clinic of Dr Ehrl in Berlin to sit in on a live operation performed by the lecturers. The Greek dental publisher Omnipress is in charge of Curriculum organization and implementation in Athens. Here, a number of proven lecturers, many of them from the University of Athens, will ensure the continued success of this series: Christos Angelopoulos, Peter A. Ehrl, Ioannis Fakitsas, George Goumenos, Detlef Hildebrand, Spyros Karatzas, Nick Krompas, Susanne Nahles, Dimitrios Papadimitriou, Stratis Papazoglou, Stavros Pelekanos, Ilia Roussou, Uwe Sander and Dietmar Weng.

This Curriculum group has been the largest of all Greek groups so far and has obtained the best results. The commitment on the part of the young dentists was enormous, something that was also reflected by their ratings of the speakers and presenters, which were positive throughout. Eight live presentations and two hands-on workshops were held in Berlin. The students will keep in touch with the presenters even beyond the end of the Curriculum, by way of a Facebook group.

Curriculum 7 completed successfully

The seventh Curriculum Implantology, jointly arranged by BDIZ EDI and the University of Cologne, was successfully concluded in Berlin in February this year.

The graduates of the Greek-German Curriculum Implantology in Berlin.
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2nd USSI EDI International Congress in Novi Sad

Serbia – right in the middle

The Second International Congress of USSI EDI – Serbian Association of Dental Implantologists EDI – in collaboration with the 4th Congress of Dentists of Vojvodina was held in May 2013 in the main office building of NIS (Oil Industry of Serbia) in Novi Sad. For the second time, politicians, representatives of the medical and dental faculties of Balkan universities and, of course, more than 1,000 dental clinicians and members of USSI EDI followed the invitation.

This international congress in south-eastern Europe was again organized by the USSI EDI in collaboration with the Dental Section of the Society of Physicians of Vojvodina – Serbian Medical Society under the patronage of the Government of Vojvodina, Provincial Secretariat for Health, Social Policy and Demography. In addition to the presenter sessions with 30 invited speakers, 25 poster presentations were offered. The topic was 3D-guided surgery.

Participants gained an overview of dental developments in Europe, demonstrating that the field of dental implantology has become firmly established in the Balkans. The invited speakers were from the region and from Macedonia, Romania, Hungary, Ukraine, Belarus, Italy and Germany. As in former years, Germany was represented by BDIZ EDI president Christian Berger. From the European Committee meeting of BDIZ EDI, Dr Guido Schiroli (Genoa, Italy) and Dr Dušan Vasiljević (Friedeburg, Germany, president of USSI EDI) were among the presenters.

Dr Branislav Kardashev from Novi Sad focused on the Cologne ABC Risk Score in implant therapy that the European Consensus Conference of BDIZ EDI published in 2012. Dr Dušan Vasiljević spoke about modern implantology in private practice, and Dr Zoran Marjanović (Novi Sad, Serbia) discussed the risks of implant therapy. Professor Giorgio Lombardo (Verona, Italy) presented information on implant treatment in extended mandibular bone atrophy.

Christian Berger (Kempten, Germany) spoke about the choice between keeping a tooth or placing an implant. Dr Bernd Giesenlager (Kassel, Germany) presented single-stage autologous bone graft and implant placement. Dr Guido Schiroli (Genoa, Italy) talked about image-guided implantology, and Uli Hausschild (San Remo, Italy) added an aesthetic angle to the topic.

The common goal within USSI EDI will be the implementation of the Curriculum Implantology on a high quality level with the help of BDIZ EDI.

Dr Zoran Marjanović
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Visitors to www.bdizedi.org > English can expect optimized information and service offerings. Patients who want to learn about dental implants will not have to look very far. The “Patients” menu item addresses various essential questions related to implants and implant placement.

Professionals

Implant dentists will find practical guidelines under the “Professionals” menu item. Since 2006, the European Consensus Conference (EuCC) under the auspices of BDIZ EDI has been publishing practical guidelines on eminent topics within oral implantology: Immediate restoration and immediate loading (2006), ceramics (2007), peri-implantitis (2008), 3D imaging (2009), managing surgical complications (2010), short and angulated implants (2011), the ABC Risk Score for Implant Therapy (2012) and CCARD – Cologne Classification of Alveolar Ridge Defects (2013). Malfunctions of dental implants will be the topic in 2014, a practical guideline to be presented in the next issue of the EDI Journal.

Of equally great importance for the quality of implant treatment are the Quality Guidelines of BDIZ EDI. The key objective of the quality guidelines is to give implantologists a benchmark that enables them to evaluate their own work. Quality guidelines are intended for self-assessment and self-evaluation. Practitioners are the ones who know most about the work executed and the specifics of each patient case. Only the practitioners themselves are able to assess whether or not the basic conditions for medical treatment have influenced the treatment results in a positive or negative direction.

“BDIZ EDI” menu option

“BDIZ EDI” presents the current Board and the core objectives of the association, which has existed since 1989 (which means that it will be celebrating its 25th anniversary this year) and included European activities in its statues in 1994. Its current President is Christian Berger, an oral surgeon from Kempten, Germany. Its Vice President is Professor Joachim E. Zöller, who is Director of the Department for Oral and Maxillofacial Plastic Surgery as well as Director of the
Interdisciplinary Outpatient Department of Oral Surgery and Implantology at the University of Cologne. Collaboration with the University of Cologne is therefore close. Together with the University of Cologne, BDIZ EDI offers the Curriculum Implantology, which is aimed at young professionals.

European issues are important aspects of the association’s work and will be represented more extensively on the Internet in the future, especially the work of the European Committee, which meets twice a year to discuss joint projects and to plan events. Members of the European Committee include all representatives of partners associations of BDIZ EDI from the UK, Spain, Portugal, Serbia and Montenegro, Poland, France, Italy and Croatia.

BDIZ EDI has now become even more visible on the Internet and keeps a growing community of fans updated on Facebook.

BDIZ EDI on the Internet
www.bdizedi.org > English
www.facebook.com > BDIZ EDI

The “Patients” menu item addresses various essential questions related to implants and implant placement.
Obituary

In memoriam

Professor Bernhard Broos

Professor Bernhard Broos was a member of BDIZ EDI and for many years a member of the European Committee of the association. On 12 December 2013, Professor Broos died in Munich after a short illness at the age of 62.

Born in Transylvania in 1951, the young Bernhard Broos attended the German-speaking Bruckenthal High School in Sibiu, Romania. After graduating in 1970, he studied law and administrative sciences at Babes-Bolyai University in Sibiu, graduated in 1975 as a Licentiate of Law. He emigrated to Munich to be reunited with his family. In Germany, he studied dentistry in Munich and Würzburg, receiving his doctoral degree at Ludwig Maximilian University in Munich.

He opened a private dental practice together with his wife Dr Verena Broos. In 2001, the family moved to Villach, Austria where they founded a community practice and worked together until their return to Munich in 2013.

Broos had been active as an implant dentist since 1989, right from the very beginning, and gained extensive knowledge with a focus on implantology, periodontics, prosthetics and functional dentistry through continuing education and clinical practice. In these fields, he also worked as a court-certified expert. He published in numerous professional journals, was a frequent speaker and disseminated prosthetic and clinical knowledge as co-author of the book “Metallkeramik” (published by Verlag Neuer Merkur, Munich).

Broos was a committed professional with a broad interest in his field. He brought his knowledge to the development of an implant system and taught and trained students. From 2006, he was Professor of Implantology and Periodontology at Lucian Blaga University in Sibiu, Romania. In 2006, he helped found the Federation of Implant Dentists in Austria (BVIÖ) and thus became a member of the European Committee of BDIZ EDI, which assembles, twice a year, representatives of partner associations in Europe to engage in developing joint projects.

Cross-border cooperation was always important to him, and he fought passionately independence of dentists in Austria, and the establishment of a separate representation of dentists – taking his battle all the way to the European Court of Justice (ECJ). He fought hard for this goal and stood by his opinion. Diplomacy was not for him – he always represented his views openly and straightforwardly.

Professor Bernhard Broos had been full of energy in every phase of his life, and he had many ideas he still wanted to realize. We will very much miss his sparkling vitality and his good-natured friendliness. He will be sorely missed in the European Committee of BDIZ EDI!

Christian Berger, President, BDIZ EDI on behalf of the European partner organizations of BDIZ EDI
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* iChiropro application compatible with iPad and iPad Air.
With this award, the Bavarian association honours outstanding personalities of contemporary life whose work and activities embody the values of the liberal professions and who define themselves in terms of a tight symbiosis between the person and the profession. Between 2006 and 2013, Nagano was General Music Director of the Bavarian State Opera in Munich.

The ultimate representative of the liberal professions

In the presence of representatives of politics, business and the liberal professions in Bavaria, VFB President Dr Fritz Kempter characterized the American conductor as the “ultimate representative of the liberal professions” working with the greatest precision, realizing grand ideas and claiming for himself the greatest possible freedom of interpretation.

In his laudation speech, Professor Dieter Borchmeyer, former president of the Bavarian Academy of Fine Arts, gave a detailed picture of the Californian with Japanese roots, whose work is characterized by his bond with nature (Nagano grew up on the family farm in Morro Bay, on the West Coast of the United States). However meticulous Nagano appears during his orchestra rehearsals – bringing spirituality to the music requires a high degree of spontaneity. The conductor insists on maintaining a certain “improvisation reserve” at all times, and in doing so has brought seven wonderful years of music to the audience in Munich.

A Californian in Europe

In his acceptance speech held in German, Kent Nagano, who will become General Music Director of the Hamburg State Opera in the autumn of 2015, pledged allegiance to the European tradition in poetry and music. He said that he had always been in search of balance, even during his years in Lyon, Paris and London, but that he had found his balance, and a home, in Germany. “This is where we share values”, he said, referring in particular to his time in the Bavarian capital. Nagano had been the Artistic Director of the German Symphony Orchestra in Berlin before receiving the call to Munich. Yet his credo, “To get things done, we must provoke”, did not sound like a threat. Rather, his words and the straightforward presentation of the stages of his career underscored Professor Borchmeyer’s assessment of the star conductor, who had testified to Nagano’s authenticity and naturalness.

The Honour Award of the Association of Liberal Professions in Bavaria, which in its physical incarnation is a heavy sculpture made of stainless steel, had previously been received by artist and architect Ernst Maria Lang (2006) and German politician Hildegard Hamm-Brücher (2007).

Another view of the liberal professions: Kent Nagano receives Honour Award in Munich

Always looking for balance

Munich’s loss is Hamburg’s gain. Kent Nagano, the world-renowned conductor who in 2013 had left the Munich State Opera, received the Honour Award of the Association of Liberal Professions in Bavaria (VFB) in late January. In 2015, Nagano will become General Music Director of the Hamburg State Opera.
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EU member states: Foreign patients welcome

Foreign patients are being targeted in more and more EU countries. “Many institutions in other EU countries have long since started accommodating German patients”, said Dr Caroline Wagner, an economist at the Scientific Institute for Value and Efficiency in Healthcare (WINEG) of Techniker Krankenkasse (TK), a major German health insurer, as she presented the results of a recent survey in Berlin. Only nine per cent of the treatments were in the respective local language; three per cent were in English. The WINEG has conducted studies on treatments administered to TK policyholders in other EU countries since 2008. The central question of the current study was: How satisfied are TK members with the physicians and dentists in other EU countries and with the treatment results? The study included only responses from TK members who had purposefully visited medical facilities in other EU countries in 2010. The majority of the TK members gave the doctors in other EU countries top marks. Thus, 78 per cent were very satisfied with their medical expertise, 74 per cent with the thoroughness in examination and treatment, 73 per cent with the clarity of the information they received and 65 per cent with the explanations of available treatment options complete with the attendant risks and benefits.

The respondents were extremely positive regarding the treatment results – across all medical disciplines: Dentists and orthodontists in other EU countries received a “very satisfied” rating from 85 per cent of respondents. 79 per cent were as positive about their treatment at a general practitioner’s office, and 78 per cent were happy with the specialist treatment they had received. Wagner pointed out that while TK does not actively promote treatment in other EU countries, it has negotiated cooperation agreements with a number of hospitals and health facilities in other EU countries. Treatments at hospitals or health resorts as well as dental treatments abroad require prior approval by the health insurer. For outpatient treatment, the insurer pays the costs up to the amount that would be covered in Germany.

Source: Deutsche Ärzte-Zeitung

University of Liverpool: New findings in endodontics

Pulpitis is usually treated by removing the inflamed dental pulp, followed by endodontic treatment and restoration of the tooth with a filling or crown. But this time-consuming procedure may soon be a thing of the past. British researchers at the University of Liverpool have found that the dental pulp regenerates itself by controlled bleeding. In a preparatory
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session, the pulp is exposed and disinfected with an antibiotic gel. In the second session, multiple small incisions are made in the nerve, which triggers bleeding. The blood coagulates, forming small blood clots, which contain high concentrations of oxygen and nutrients that are thought to help the pulp to self-heal by way of revascularization. The scientists at Liverpool have already used this method successfully; their next step will be to investigate, in a comparative study with 30 patients, how effective this treatment can be.

Source: www.dailymail.co.uk

From 28 December 2013:
Professional Qualifications Directive in force

In 2014, the Professional Qualifications Directive of the European Union entered into force and must be implemented into national law by the member states by January 2016. One of the innovations is the introduction of the (optional) European professional card. A system of automatic recognition based on common guidelines for the duration of dental training and its content applies todentists. Member states are called upon to review the slate of their regulated professions by 2016 – including physicians, dentists and architects, i.e., the liberal professions.

Source: CED

EU Presidency:
Greece at the helm

On 1 January, Greece took over the rotating six-month presidency of the European Union for the first half of 2014. The overarching objective of the Greeks is to stimulate economic growth and employment in the EU. At the same time, the Greek presidency wants to address the consequences of illegal migration, from which Greece, on the external border of the EU, is suffering. Regarding healthcare policy, Greece above all aims to achieve a political agreement at the level of EU member states on the revision of the legal framework for medical devices. Regarding the internal market, Greece wants to make specific contributions to the evaluation of the Services Directive, and in this context promote discussions about a review of the controversial directive. More information on the Greek EU presidency is available at http://gr2014.eu.

Source: Klartext (information service of the German Dental Association)

Council of European Dentists:
Croatia now a member

At the General Assembly of the Council of European Dentists (CED), the European umbrella association of dentists in Brussels, the association unanimously welcomed the Croatian Dental Chamber as a full member. Croatia joined the EU effective on 1 July 2013 and has thereby become the most recent member state of the European Union. Topics at the CED meet-

ing included the development of the EU healthcare and single-market policies as well as the revision of the EU regulatory framework for medical devices, the revision of the Professional Qualifications Directive and the handling of amalgam at European level.

Source: CED
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Government planning, the establishment of healthcare providers and EU law

European law often argues for defending the freedom of establishment or the freedom to provide services against government interference when it comes to the utilization of health services – as witness its decisions since the Kohll and Decker cases (ECJ decisions of 28 April 1998, C-158/96 and C-120/95). In these and in numerous subsequent decisions, the ECJ argued in favour of the right of patients to use outpatient medical services in other EU member states without prior authorization by their national health insurance, with few exceptions. The ECJ also developed a tiered authorization system for the utilization of inpatient medical services in other member states.

As a counterpart to this more liberal stance in favour of patients’ rights to utilize health services, the ECJ also dealt with the question to what extent EU member states are allowed to issue national regulations that restrict the freedom of establishment for healthcare providers such as physicians, dentists or pharmacists, for example by authorizing establishment only in locations with a documented need. Ruling on the territorial distribution of opticians’ shops in Italy, the ECJ once again addressed a related question in its recent decision of 26 September 2013 (C 539/11), having previously handed down a decision on government planning regarding pharmacies in Spain (2010; C-570/07 and C-571/07).

The case

An Italian regional law includes provisions for the granting of permission to establish opticians’ shops. In granting or denying permission, account is to be taken of the ratio of inhabitants to opticians’ shops, in order – as the law states – to secure a rational distribution of services throughout the affected region. The law establishes a ratio of one optician’s shop per 8,000 residents. In addition, the minimum distance between one optician’s shop and another is 300 metres. Where a documented local demand exists, the competent authorities may deviate from these strict rules.

In the main proceedings in Italy, an optician was granted permission to establish a shop even though it complied neither with the minimum distance of 300 metres from the next optician’s shop nor with the limits relating to population density. An already established local optician contested this decision. The action was dismissed in first instance; the case is pending in appeal. The competent court was uncertain whether the relevant provisions of the Italian regional law on government planning policies related to opticians were compatible with the fundamental EU freedom of establishment and referred the question to the ECJ for a preliminary ruling.

The judgement

The ECJ, in its decision of 26 September 2013, examined the question of whether these Italian regulations on planning policy related to opticians are compatible with the freedom of establishment, on the basis of the TFEU, as the healthcare sector is excluded from the scope of Directive 2006/123/EC on services in the internal market. The ECJ considers the activity of opticians as understood in Italy to be a regulated profession, as opticians conduct eye tests, measure visual acuity, define and check the ocular correction needed or treat defects of vision. These activities are therefore covered by the exception provision of the Services Directive 2006/123/EC.

The ECJ examined, based on Articles 49 and 52 of the TFEU, whether the Italian regional law constitutes a restriction on the freedom of establishment, which may be justified by overriding reasons relating to the general interest. The ECJ noted that, in accordance with Article 168 (7) TFEU, European Union law does not detract from the power of the member states to adopt provisions aimed at organizing their health services. In exercising that power, however, they must comply with European Union law, including its provisions on the freedom to provide services. National and European legislative competences therefore interact.
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The ECJ classified the Italian regional law unequivocally as a restriction on the freedom of establishment, as the law makes the establishment as an optician conditional on prior authorization, which is linked to the economic and social need for the optician’s services. This rule aims at limiting the number of service providers. Regulations on government planning policies undoubtedly constitute restrictions on the freedom of establishment.

However, Article 52 (1) TFEU states that restrictions on the freedom of establishment may be justified if e.g. overriding reasons relating to the public interest mandate such restrictions. So if the Italian regional law targets the protection of public health, the restriction on the freedom of establishment embodied in the regional law may well be justified and thus be in line with European law. The ECJ had already ruled in its above-named decision of 2010 on the territorial distribution of pharmacies in Spain that the protection of public health can be achieved, e.g., by striving for a uniform distribution of healthcare providers throughout the national territory. Therefore, service providers such as pharmacies and opticians may be subject to government planning if this planning proves indispensable for filling in possible gaps in access to healthcare services, for avoiding the duplication of structures and to support the needs of geographically isolated regions.

The ECJ holds that the Italian regional law meets these requirements, as the authorization to establish an optician’s shop is contingent on a given certain population density and a minimum distance from other opticians’ shops, promoting services to otherwise disadvantaged regions. Thus, the ECJ considers the law to be appropriate for ensuring an even distribution of opticians’ shops throughout the national territory and rapid access to such establishments, achieving the overall objective of protecting public health.

For the exception stipulated by the Italian regional law, the ECJ additionally requires transparent and objective criteria with a view to attaining the objective of the law, namely to distribute opticians’ shops evenly, in a coherent and systematic manner. Here, the Court hinted at the risk for abuse inherent in the exception, but it also made clear that it is for the national court to determine whether the regional law meets its requirements.

Conclusion

As previously (2010) in its decision on the territorial distribution of pharmacies, the ECJ, in its decision of September 2013, held government planning of opticians’ establishments in Italy compatible with the European primary law in the TFEU, even though this clearly constitutes a restriction on the freedom of establishment for opticians. This limitation has to be accepted in the light of the fact that public health is to be protected by a uniform distribution of healthcare providers across the national territory. Its aforementioned decisions and others that the ECJ refers to in these make it clear that the Court grants the member states a wide berth when it comes to organizing services within the healthcare sector, as it provides only very limited checks as to whether government planning is necessary. In contrast to the liberalization of the utilization of health services, the ECJ accepts government planning aimed at controlling the establishment of healthcare providers.

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New tantalum-titanium hybrid implant in the SEM

Dr Dirk Duddeck, Schaghajegh Iranpour, Dr Hassan Maghaireh, Dr Jörg Neugebauer and Professor Joachim E. Zöller

For many years, the Quality and Research (Q+R) Committee of BDIZ EDI has conducted material studies on dental implants. The focus has been mainly on mechanical precision and the quality or specific characteristics of the implant surfaces. In 2008, BDIZ EDI had commissioned its first study on the topic, examining the surfaces of 25 sterile-wrapped implants from nine countries in a scanning electron microscope and subjected 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 [7]. Additional comparative studies were conducted from 2010 to 2012, covering 58 different implants by 45 manufacturers. Not only implants made of titanium and its alloys, but also implants made of zirconia and, for the first time, a tantalum-titanium hybrid were included in the study.

Since Per-Ingvar Brånemark treated the first patient with an implant-supported restoration in 1965, dental implant surfaces have been continuously improved to achieve better and faster integration into the bone. It has long been known that the surface configuration of a dental implant significantly determines the initial phase of the biological response to the implant after insertion and therefore has a great influence on its integration into the surrounding tissues [5,6].

The tantalum-titanium hybrid implant exhibits a novel surface topography with a porous central segment made of tantalum, while the implant shoulder and the apical region feature a hydroxyapatite-abraded titanium surface (Figs. 1 and 2).

Tantalum, which is biocompatible and corrosion-resistant [13] and has a long history of use in orthopaedics, is the basis for a highly porous three-dimensional trabecular structure (Figs. 3 to 6). This material introduces a completely new surface structure in dental implantology, a surface that is designed to allow ingrowth of bone cells into the depth of the structure [21]. The term “osseoincorporation” was introduced in the literature in an attempt to add a third dimension to Brånemark’s definition of osseointegration [2,19].

Fig. 1 Tantalum-titanium hybrid implant (Trabecular Metal implant, Zimmer).

Fig. 2 Transition area between the titanium (left) and tantalum (right) (x50).
The present study obtained high-resolution images of the surface topography using a scanning electron microscope. A so-called material contrast image allowed conclusions to be drawn as to (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. Thus, remnants of the corundum abrasive (Al₂O₃) (Fig. 7) as well as organic contaminants (Fig. 8) present as dark particles that penetrate the titanium or as dark superficial stripes.

Indeed, the central segment of the hybrid implant, which its manufacturer Zimmer calls “Trabecular Metal”, has a porous structure not unlike that of cancellous bone. The foundation of this three-dimensional structure is a glassy carbon structure completely coated with tantalum.

In the industrial production of implants, the different treatments of the titanium material not only affect the surface properties of the implant, but may also leave organic or inorganic residues on the surfaces.

Fig. 3 Three-dimensional tantalum structure (x50).
Fig. 4 Tantalum, x250.
Fig. 5 Tantalum, x500.
Fig. 6 Tantalum, x1500.
Fig. 7 Abrasive residue on up to 20 per cent of the surface (sandblasted/etched implant) (x250).
Fig. 8 Organic contamination on an etched implant (x50).
This was confirmed by the EDS analysis of both the HA-abraded titanium areas (implant shoulder and apex) and the central tantalum segment. Thus, only the alloying elements titanium, aluminium and vanadium plus oxygen, all of them typical of grade 5 titanium (Ti6Al4V), were found in the qualitative and quantitative elemental analysis of the titanium aspect of the implant (Figs. 11 and 12).

The central segment of the implant exhibited only tantalum in the EDS analysis (Figs. 13 and 14). The minimum carbon peak might be attributed to back-scattered electrons from the underlying framework.

The hybrid implant made of titanium alloy (grade 5 titanium) and tantalum presented evidence of a mechanically precise manufacturing process in the SEM even at higher magnifications. The material contrast image exhibited no undesirable residue from the production process (Figs. 9 and 10).

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. The EDS analysis identifies the elements found (qualitative analysis) and provides information on the respective concentration (quantitative analysis). This means that individual spots as well as planar areas can be analyzed.
supports and accelerates the process of osseointegration [5,9]. The use of porous tantalum in implants could increase this effect. From a material perspective, the Trabecular Metal implant by Zimmer presented as that as which it was billed: a precisely manufactured and residue-free dental implant with a novel combination of two biocompatible and corrosion-resistant materials. Clinically, tantalum has long been part of the standard repertory in orthopaedics, especially in knee and hip prostheses [14]. The results to date on the clinical use of these implant materials in the oral cavity show that a combination of tantalum and titanium might become established as an alternative to implants made of titanium and its alloys or to zirconia implants in the longer term [2,11,19].

The study was conducted by the University of Cologne in the context of its cooperation with the Q+R Committee of BDIZ EDI.
Unilateral or bilateral partial distal edentulism is often a precursor of complete edentulism. The need for prosthetic rehabilitation in this region is deeply felt by most patients. The anatomical limits, however, will in most cases preclude the use of traditional implant solutions if bone resorption is severe. The clinician should therefore opt for removable restorations.

Today’s immediate-loading protocols with implant-supported prostheses are predictable procedures with very high success rates [1,2]. However, they cannot be followed in severe bone loss. The challenge presented by overcoming the anatomical limitations (the inferior alveolar nerve in the mandible, the maxillary sinus in the maxilla) while at the same time cutting costs has led to the development of surgical techniques that call for the use of four implants of which two are disto mesially tilted. These techniques are now well documented, highly predictable and have simple protocols [3,4].

In 2000, Krekmanov [5] was one of the first to use tilted implants to reduce the distal cantilever in severe bone loss, which would otherwise have required invasive procedures for inferior alveolar nerve transposition (mandible) or bone grafts (maxilla). About 36 implants with an angle between 25° and 35° with a follow-up of about 40 months resulted in an implant survival rate of 100 per cent, with a reduction of the distal cantilever of about 6.5 mm. The development of these protocols has been encouraged by excellent loading results [6-8]. These implant-prosthetic solutions were reinforced by a metal bar and had no cantilever.

In 2003, Maló described a simplified technique for immediate loading with a permanent rehabilitation in edentulous patients. Using only four implants, Maló developed a protocol called “All-on-Four”, that supports a fixed full-arch prosthesis. With this simplified surgical protocol, 44 patients received 176 implants, of which those in the distal position were tilted and which were inserted between the mental foramina. The implant success rate in this retrospective study was 97.1 per cent with a prosthetic success rate of 100 per cent.

Immediate loading with tilted implants, which has shown encouraging results in the mandible, has also been used successfully in the maxilla [3,4,9,10]. All of the studies reported no significant difference between survival rates and peri-implant bone resorption of orthogonal implants and tilted implants. Respecting anatomical limits through these clinical stratagems reduced postoperative morbidity in the surgically most challenging situations. An advantageous posterior emergence profile of the implant improved the cross-arch load distribution, obtaining an ideal quadrilateral support for the prosthetic rehabilitation [7] as well a reduction of distal cantilever measuring up to 1 cm.

Conventional rotary instruments have always been used for implant-site preparation in these immediate-loading procedures. Although the removal of the soft tissue on the vestibular side permits a direct view of the mental nerve emergence and facilitates the correct placement of the tilted distal implants, the risk of nerve injury was still always present in the event of accidental contact with the traditional burs.

The purpose of this paper is to present an innovative immediate-loading protocol on four implants in the mandible using the All-on-Four technique and
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special piezoelectric inserts for implant-site preparation instead of rotating burs, reducing the risk of accidental nerve injury.

**Materials and methods**

This study was performed in accordance with the Declaration of Helsinki.

**Inclusion criteria**

To be eligible for this treatment, patients had to meet the following conditions:

- Good general health and a good hygienic status
- Few dental elements in the maxilla that could not be recovered
- A wish for fixed restorations
- Bone loss to the point where short implants could not be used distally of the point of emergence of the mental nerve
- Sufficient residual bone for four implants between the point of emergence of the mental nerve
- No limitations in terms of minimum or maximum implant length
- Written consent

**Exclusion criteria**

- Problematic medical history
- Bruxism
- Smoking (more than ten cigarettes a day)
- Bisphosphonate medication

**Surgical treatment**

Two patients were treated with the same procedure by an experienced surgeon. Four implants were positioned for each patient, with mesial implants positioned axially and distal implants tilted distomesially, using the same procedure for both patients. All implants were placed in a one-stage procedure. Both patients were given local anaesthesia (Septanest with epinephrine 1 : 100,000, Septodont), antibiotic therapy with 3 g of amoxicillin plus clavulanic acid (Augmentin 875 mg + 125 mg, GlaxoSmithKline) one hour before surgery, 1.5 g that same night and 1 g twice daily for five days. 100 mg of nimesulide (Aulin, Helsinn Healthcare) was given twice daily on the first and second days for postoperative pain control. For clinical plaque control, patients were instructed to rinse with chlorhexidine digluconate 0.12% twice daily for two weeks.

**Patient 1**

The first patient was a 62-year-old woman. She wore a removable prosthesis anchored to natural teeth 32, 33, 42 and 43 (Fig. 1).

The residual teeth were extracted, and after determining the points of emergence of the mental nerve by reflecting a flap, an accurate ridge osteoplasty was performed using the piezoelectric insert OP3 (Piezosurgery, mectron).

*Fig. 1  Pre-operative radiograph, patient 1.*
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After the insertion of a surgical guide for the control of the correct angle, a piezoelectric preparation of the distal implant tunnel was initiated on the left side with IM1 insert at a distomesial angle of about 30°. After a radiographic check of the angle using a positioning pin (Figs. 2a to f), the distal implant tunnel was prepared piezoelectrically with custom-made IM2P and IM3P inserts that were longer than the regular ones (Figs. 3a to 4). After completing the preparation of the implant site, the
first distomesially tilted implant was inserted (Nobel Speedy Groovy RP 4 x 15 mm, Nobel Biocare) (Fig. 5).

All steps were repeated on the right side with the insertion of a second distomesially tilted implant (Nobel Speedy Groovy RP 4 x 15 mm). Their inclinations were subsequently corrected with 30° pre-angled abutments (Figs. 6a to f).
After a similar piezoelectric site preparation completed with the use of traditional burs, the two mesial axial implants were inserted (Nobel Speedy Groovy RP 4 x 15 mm), and straight abutments were connected (Figs. 7 to 9).

After implant placement and after splinting the impression copings with an orthodontic wire and resin composite, the impression for the temporary restoration was taken in a sterile material (polyvinyl siloxane, Elite Implant medium, Zhermack) (Figs. 10a and b). The healing abutments were then inserted.

**Patient 2**

The second patient was a 66-year-old woman with a fixed lower conventional bridge from tooth 33 to 37 and natural teeth from 32 to 45 which were considered unsalvageable (Fig. 11).

The procedure used for patient 1 was repeated for patient 2. After extracting the residual teeth, a full-thickness mucoperiosteal flap was elevated to expose the emergence point of the mental nerve. Using the IM1 insert and positioning pin, the correct angle of the implant site was checked. With the special long inserts IM2P and IM3P, the right distal tunnel was prepared as in patient 1. The first tilted implant was inserted this way (Nobel Speedy Groovy RP 4 x 15 mm).

The same procedure was followed for the left side (Figs. 12a to c) and the second tilted implant was inserted (Nobel Speedy Groovy RP 4 x 15 mm). As for patient 1 the two mesial implants were inserted (Nobel Speedy Groovy RP 4 x 15 mm), surmounted by straight abutments. The angulation of the distal implants was corrected with two 30° pre-angled abutments (Fig. 13).

With implant placement completed, the impression for the temporary restoration was taken in the same way as for patient 1, followed by connection of the healing abutments.
Figs. 10a and b
Impression for the temporary restoration.

Fig. 11
Pre-operative radiograph, patient 2.

Figs. 12a to c
Implant bed preparation for distal tilted implant.

Fig. 13  Implants placed, patient 2.
Prosthodontic procedures

Three days after surgery, good primary soft-tissue healing was seen. A temporary prosthesis with acrylic teeth stabilized with a laser-welded titanium bar was delivered to both patients at a torque of 20 Ncm. The radiographic image showed an accurate fit between the abutment and titanium bar (Figs. 14a to d). The aesthetic and phonetic tests indicated satisfactory accuracy. A small cantilever was provided for patient 2.

Results

The patients were recalled after four months of loading. They did not report any problems or discomfort with the restorations. The implants were stable and in function. There were no signs of peri-implantitis. The prostheses were not removed at the follow-up visit to check individual implant stability. By using paralleling technique, intraoral digital radiographs were taken (Figs. 15a to d). The WixWin visualization software (Gendex Dental Systems) was used to compare the different X-rays.

Discussion

The scientific community is interested in prosthetically rehabilitating partially or totally compromised dental arches within a very short time, so as to cause the patient as little discomfort as possible. In the past, two or more surgical interventions normally had to be performed.

Today’s knowledge of bone biodynamics, materials and load distribution in the oral cavity allows us to use immediate-loading protocols predictably even for extended edentulous spaces. The patient is saved chair time, reducing discomfort and cutting costs.

The major limitation to this method had been the impossibility of placing implants in the correct position while respecting the prosthetic tetragon, due to the obvious anatomical limitations posed by the inferior alveolar nerve and maxillary sinus. In these situations, a cantilever solution had to be used, but this solution is undesirable because it adds leverage in an area where loads are already very high. For this reason, techniques involving the use of distal tilted implants were introduced.

This clinical stratagem in the mandible had always required the use of traditional burs after locating the point of emergence of the inferior alveolar nerve to correctly place the distalmost implant at the right angle. The use of rotating burs can lead to accidental contact with the inferior alveolar nerve in all of the implantological procedures at the level of the mandible. This is especially true of immediate-loading protocols that require placing the distal
Implants at an angle, close to the point of emergence of the nerve.

This paper illustrates a method for functional immediate loading of four implants, of which the distal two are tilted, without the use of rotating burs for preparing the distal implant beds. The piezoelectric inserts and the radiographic pins permit locating the point of emergence of the nerve through repeated X-ray controls and applying the correct angle. At the same time, the piezoelectric preparation of the implant site increases clinician confidence, which is likely to reduce the danger of inferior alveolar nerve injury.

Conclusion

Both patients received a long-term temporary prosthesis, to be replaced with a definitive restoration with a metal framework and with a slightly extended distal cantilever about one year after loading. Screw retention was chosen to allow revision in the event of an implant failing to osseointegrate in the critical period two to four weeks after the first surgery, but the situation did not occur. The provisional prosthesis was delivered three days after surgery because we wanted a metal substructure with non-adhesive, laser-welded components. The patients benefited by not having to wait for the prosthesis to be delivered later the same day, which is a source of great discomfort.

The simplicity of this technique with its reduced invasiveness facilitates immediate-loading protocols with minimal discomfort to the patient.

Conflict of interests

The authors declare no conflict of interests and have not received any financial support for this study.

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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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New state-of-the-art options for implant-supported restorations

Aesthetics meets CAD/CAM in the dental surgery

Dr Mathias Siegmund, M.Sc., Regensburg, Germany

Thanks to the new Sub-Tec CAD/CAM TiBase L by Bego Implant Systems, Bego implants can now be restored with custom abutments using the Sirona CAD/CAM system. These abutments can be designed either to reduced anatomical contour, to be veneered directly by the dental technician, or as custom abutments for subsequent restoration with conventional all-zirconia crowns or bridges. Two examples are presented here to illustrate the procedure and its aesthetic results.

Expectations with regard to biocompatibility and aesthetics are constantly on the rise. Since the introduction of the CAD/CAM technology, high-performance dental ceramics such as zirconia or lithium disilicate have become highly popular in prosthodontics thanks to their favourable mechanical properties. Zirconia in particular has an enormous potential as a framework material for fixed restorations [1].

Next to aesthetics, the most important demand of implant-supported dental restorations is an effective biological gingival margin and minimal plaque adhesion to the abutment material [2].

Peri-implantitis and a resulting progressive loss of hard and soft tissue can be caused by insufficient or missing soft-tissue apposition to the implant superstructure [3].

Therefore, implant abutments should meet the following requirements:
• Minimal plaque accumulation
• Sound gingival attachment
• Easy plaque removal

Studies have shown a 40 per cent reduction in bacterial adhesion to zirconia abutments from titanium abutments with comparable roughness values [4,5], significantly reducing the risk of peri-implant inflammation [6].

The new Sub-Tec CAD/CAM TiBase L now allows custom abutments to be produced with the Sirona CAD/CAM system in an in-office laboratory, providing new state-of-the-art options for implant-supported restorations that meet the above requirements.

Case 1

Patient history and treatment planning

A 52-year-old woman presented at our office with pain at site 25. The clinical examination showed gingival inflammation in the mesial area of the tooth. A single-tooth radiograph of the endodontically treated tooth showed a periapical radiolucency (Fig. 1). The pocket probing depth was about 10 mm. A longitudinal fracture of the tooth was suspected.

Tooth 26 had been restored with an adequate zirconia crown, and tooth 24 was without pathological findings. Both the radiograph and an intraoral measurement showed a sufficient gap width at the base of about 8 mm. The distance to the sinus floor was approximately 10 mm. An implant-supported solution was recommended rather than a bridge restoration. To meet the high aesthetic expectations of the patient, a directly veneered CAD/CAM custom abutment was planned, to be directly screw-retained on the implant.

Fig 1 Radiograph of the endodontically treated tooth.
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Prosthodontic procedures

After a healing period of three months, the implant was exposed by retracting a split-thickness flap. Following an additional ten days of healing, an open-tray impression was taken (Fig. 3). A master cast with a removable gingival mask was produced at the in-office lab (Fig. 4).

The appropriate TiBase L was screwed onto the lab analogue. The laser-engraved designation on the TiBase L facilitates the assignment to the appropriate implant (Fig. 5).

The Sirona scanbody was then placed on the TiBase L (Fig. 6). It is important to ensure that the notch in the scanbody exactly aligns with the groove of TiBase L and that a gap-free fit is obtained.

Implant placement

The original plan had called for immediate implant placement. However, the apical inflammatory process was not clearly demarcated, with a purulent exudate evident on extraction. The tooth exhibited a clearly visible longitudinal fracture (Fig. 2). After a healing period of ten weeks, a Bego Semados implant with a diameter of 3.75 mm and a length of 11.5 mm was placed. To achieve added stability, an internal sinus lift was carried out. A deep holding suture (5-0) and interrupted sutures (6-0) were used to secure the papillae perfectly in place.
Today patients want good looking teeth and they want them sooner rather than later. More patients are asking for early and immediate loading of their implants and patients who in the past might not have been candidates for implants are also asking to be treated.

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Abutment design using the Sirona InLab SW 4.0 software

In the Sirona InLab SW 4.0 software, the Abutment Biogeneric design mode was selected to design an abutment to reduced anatomic crown contours. The master cast with the scanbody as well as the gingival mask and opposing cast were scanned and then related using a buccal registration (Fig. 7).

In the next step, the desired emergence profile was delineated on the gingiva. This profile determines the basal form of the abutment crown as it passes through the gingiva (Fig. 8). This step also determined how far below the gingiva the margin of the veneer will be located. Next, the restoration axis was defined. The software simultaneously shows the axis of the screw access canal, which is very helpful (Fig. 9). This view can help determine whether it is indeed possible to screw the abutment crown directly onto the implant or whether it would have been necessary to use a two-piece abutment and crown design.

Then the designed abutment was milled from a prefabricated Sirona Meso block using a Sirona MCXL milling unit. After grinding, the white zirconia blank was separated from the block, subjected to a cleaning cycle in the furnace and then placed in the sintering furnace. After a sintering time of about seven hours, the reduced abutment crown with its prefabricated adhesive surface in the Meso block for the TiBase L was ready. The dental technician polished the edges to a high lustre (Fig. 10). The abutment crown with its reduced anatomical contour received a custom built-up veneer made of Vita V9 ceramics (Figs. 11 to 13).
After checking the contact situation and aesthetic aspects, the TiBase L and the abutment crown was returned to the in-office lab for adhesive connection using Panavia F 2.0.

Finally, the abutment was screwed onto the implant at a torque of 30 Ncm, the proximal contacts were checked one more time and the screw canal sealed with a dentine resin after etching with hydrofluoric acid, silanization and application of a bonding agent.

The photographs of the clinical outcome show a crown aesthetically well matched to the adjacent teeth with an optimal gingival transition (Figs. 17 to 19).
Implant placement

Approximately twelve weeks after tooth extraction, the sockets were completely ossified. First, a fenestration osteotomy was prepared for the sinus lift and the Schneiderian membrane elevated, followed by preparation of the implant bed. After bone substitute had been applied to the medial wall of the maxillary sinus, the implants were placed and the sinus filled from the lateral aspect (Fig. 22). The fenestration was covered with a membrane, and the wound was closed with a fixation suture (monofilament thread, 5-0) and interrupted sutures (monofilament thread, 6-0). Finally, a postsurgical control OPG was taken (Fig. 23).

Case 2

Patient history and treatment planning

A 49-year-old male patient presented with pain in the upper right quadrant. The radiograph showed a distinct apical radiolucency at tooth 15 and at the mesial root of tooth 16 (Fig. 20). An apical resection was performed (Fig. 21). After three months, the patient returned with a fistula on teeth 15 and 16 and occlusal pain on tooth 17.

The recommendation was for teeth 15 to 17 to be extracted, with implants to be placed at sites 17 and 15 and restoration with a bridge. As only about 4 mm of vertical bone were present at site 17, an augmentation of the sinus with bovine Bego OSS simultaneously with implant placement was proposed.
Prosthodontic procedures
After a healing period of six months, the implants were exposed by retracting split-thickness flaps. Parts of the attached gingiva were relocated buccally to ensure that the implants were surrounded by attached keratinized gingiva (Fig. 24).

After an open-tray impression (Fig. 25), a master cast with a removable gingival mask was produced in the in-office lab (Fig. 26).

The lab analogues were provided with matching titanium bases for receiving the scanbodies, and the gingiva was covered with powder lest the reflexion interfere with the scan. Subsequently, the cast model was scanned with the InEos Blue scanner.

Abutment design using the Sirona InLab SW 4.0 software
In this case, the custom abutments were designed first by selecting the Abutment/Framework design mode. To obtain an optimal emergence profile, the profile was drawn in the software on the gingival mask (Fig. 27). Once both abutments had been designed, with a six-degree angle, the insertion path (axis) for the bridge was determined (Fig. 28). The two abutments can be parallelized automatically by the software.

The abutments were milled from prefabricated in-Coris Z1 meso blocks by Sirona and then sintered. The lab technician checked the path of insertion on the
The aspects of the abutments in contact with the gingiva were polished (Fig. 29). The cast with the custom abutments was covered with powder (Fig. 30), re-scanned with the InEos Blue scanner, and a bridge was designed in Biogeneric mode. The fully contoured bridge was reduced evenly by about 2 mm by the software for subsequent veneering by the dental technician (Fig. 31).

Delivery
A try-in was performed to ensure passive seating of the bridge on the implants. The titanium bases had previously been adhesively connected with the custom abutments in the lab using Panavia F 2.0. Once a perfect fit had been demonstrated by a soft test, a new bite registration was taken intraorally. The bridge framework was then veneered by the technician using Vita VM 9 veneering ceramics. Figures 32 and 33 show the finished abutments and the restoration in the laboratory.

At chairside, the abutments were first screwed in and tightened to 30 Ncm according to the prosthetic protocol (Figs. 34 and 35). The bridge was then tried in to check the proximal contacts and the occlusion. After silanization of the abutments and the bridge, the latter was cemented with RelyX Unicem cement by 3M Espe.

Figures 36 to 39 show the definitive restoration in situ. Minimal gingival retraction had taken place between impression-taking and delivery, so a minimal portion of the abutment was visible at the gingival
margin. In the future, we will dye the abutment surfaces to circumvent this aesthetic problem.

**Conclusion**

The new CAD/CAM TiBase L by Bego allows Cerec users to produce custom-designed abutments for the Bego Semados S/RI line of implants in their in-office laboratories. The interface of the TiBase L and the abutment in the inCoris ZI meso block is prefabricated, which makes for an excellent fit. For a smooth procedure, an in-office laboratory run by a dental technician is recommended.

In early 2013, Sirona introduced autoclavable scan posts that can be scanned intraorally. With the new lithium disilicate blocks by Ivoclar Vivadent (IPS e.max CAD A14 and A16), it will be possible to realize the production of CAD/CAM abutment crowns entirely without conventional dental casts.

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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Benefits and risks in implantology and oral surgery

Intraosseous anaesthesia with Anesto

Dr Dr Manfred Nilius, MSc, Dortmund, Germany

Anesto is an intraosseous anaesthesia system (IO for short) for use in dentistry and oral surgery. The anaesthetic is injected directly into the periodontal bone in a minimally invasive procedure. Its analgetic effect is based on the intraosseous spread of small amounts of the anaesthetic in a profound, well-timed and well-targeted manner. This saves time and is particularly advantageous for high-risk patients. This article summarizes the findings of a field study (conducted 2009–2013) on the use of Anesto in implant procedures and provides guidelines on the clinical use in oral surgery. The test results suggest that IO is advantageous not only for “hot-tooth” (pulpitis) treatments but also as a means for broadening and deepening the effect of local anaesthesia, especially in implantology and bone surgery.

Introduction

Primary intraosseous anaesthesia has been known for a long time; it was described as early as in the middle of the 20th century, by Magnes (1968) and Bourke (1974). To prove its effectiveness, Nikolai Novikov, director of the Clinic of Orthopaedics and Traumatology in Kiev, drove a needle into his leg bone with a steel hammer to “experience what a patient felt”. Spectacularly, during that procedure – with Novikov treating his own meniscus tear – he gave doctors and medical students a lesson in applied surgery (Der Spiegel 16/1991, pp 270–274). The intraosseous method for dental anaesthesia was developed to avoid regional anaesthesia completely or to achieve profound anaesthesia of a single tooth and adjacent teeth in the same quadrant when other local anaesthetic techniques have failed or where only brief and localized pain relief is needed.

The Anesto system

Anesto is a drilling system for penetrating the cortical bone to inject a local anaesthetic into the cancellous bone. The cortical bone is penetrated within approximately one second in a minimally invasive procedure, by a needle rotating in a handpiece at a fixed speed. The anaesthetic is then instilled without pressure through the needle, directly into the cancellous jawbone. In the maxilla, the immediate anaesthetic spreads distally and mesially from the injection site; in the mandible, mesially from the injection site. This method preserves the periodontal ligament and periodontal tissue and is suitable for dentate as well as edentulous jaws. Provided at least one millimetre of cancellous bone is available, IO can be used in restorative and prosthetic therapy, endodontic treatments and oral surgery. Care must be taken to identify and avoid the nerves in the mandibular canal, the roots of the adjacent teeth and the maxillary sinus. Prior to penetration, the use of a topical anaesthetic is recommended, such as a spray of 2% lidocaine. The penetration site and the direction of the needle depend on the type of surgery intended. In our study, the intersection of the buccal or labial horizontal line with the interdental vertical line was selected as the site of injection in the dentate mandible; this location is about 2 mm above the mucogingival junction in the attached gingiva. In case of gingival attachment loss, the injection site was moved to the mucous membranes.

For oral surgery in partially or completely edentulous patients, the cortical bone was perforated in a submentovertical or transcristal direction, depending on transverse and horizontal anatomy of the bone. In general, the perforation site corresponded to the surgical site. Accordingly, the perforation
was made and the anaesthetic instilled parallel to the implant axis in implantological procedures (Figs. 1 to 4).

Contraindications

IO is not suitable for patients with insufficient cancellous bone or root anomalies, with a risk of endocarditis or whose tooth and jaw growth is incomplete (for example, children and adolescents). Similarly, IO directly in highly inflamed tissue is contraindicated. There does not seem to be any clear-cut limit for the relative contraindication to the use of IO in the posterior region through callus in the absence of the required anatomical conditions, but penetration at sites 17/18, 27/28, 37/38 or 47/48 should still not be considered.

Notes on cortical perforation

The difference between tooth and bone tissue is easy to determine by palpation. The “breakthrough sensation” depends on the thickness of the buccal cortical bone and the gingival tissue. If there is no typical “breakthrough” feeling or if significant resistance is felt during IO, the injection site should be moved. Possible causes typically include a pronounced bony callus surrounding the cortical bone, a blunt needle (especially after repeated use), or – in dentate patients – attempted penetration of the tooth root. The risk of rotationally induced mucosal damage is significantly reduced by the protective cap of the Anesto system, but a certain risk of epiperiosteal or submucosal hematomas with subsequent wound infection cannot be completely ruled out.
Object of investigation

During an observation period of four years (1/2009 to 12/2013), the effectiveness of IO as a primary technique or in combination with infiltration anaesthesia or regional anaesthesia in dental and oral surgery or dental implant procedures was investigated at our clinic, at the same time examining the handling characteristics of the Anesto handpiece in clinical practice (Figs. 5 to 9).

Materials and methods

A total of 306 patients (144 men, 162 women) aged 19 to 65 years (mean, 44 years) suffering from different conditions were included in the study. Of these, 258 patients were treated surgically and anaesthetized by intraosseous anaesthesia; in some patients, multiple regions were affected. For oral and maxillofacial surgical procedures, regional anaesthesia usually preceded IO in the mandible, while infiltration anaesthesia preceded IO in the maxilla. The anaesthetic used was Ultracain DS Forte (1 : 100,000 epinephrine, Sanofi Aventis, Frankfurt, Germany) in 1.7-milliliter cartridges. The surgical procedures performed included 20 surgical periodontal treatments, 40 tooth extractions, 38 osteotomies, 36 apical resections and 102 implant placements. The target was a general assessment of the method (recommended/not recommended). Any supplementary local anaesthesia was also documented. The review of the anaesthetic effect and the perioperative documentation was performed by way of questionnaires (Visual Analogue Scale, VAS).

Test results for implant procedures and osteotomies

In patients undergoing implant surgery, IO in addition to regional or infiltration anaesthesia was seen as 100% positive by a majority of respondents. IO for anaesthesia of the lower incisor area was favoured slightly (70% over 30%).

A similarly positive picture emerged for osteotomies; here, too, IO in addition to regional or infiltration anaesthesia was seen as 100% positive by a majority of respondents. IO for anaesthesia of the upper molar area was also favoured slightly (70% over 30%). No IO had been performed in the lower incisor area.

Discussion of the results for IO in oral implantology

Gingival width varies considerably in edentulous patients. Depending on the prosthetic treatment and the extent of vertical and transverse bone atrophy, there may also be a narrowing of the medullary cavity. This means that only a small amount of the anaesthetic can be injected, significantly limiting the time frame for procedures with exclusively intraosseous anaesthesia. However, this can also be an advantage for the patient, namely if the surgical intervention is small and circumscribed, as in navigated implant placement. With IO, thanks to the possibility of exact three-dimensional planning, a minimally invasive implant procedure can also use minimal anaesthesia. If there is enough bone available and with appropriate treatment planning, this approach offers three additional advantages.
1. The intraosseous instillation itself (“breakthrough”) gives some indication of the thickness of the cortical bone and helps the surgeon decide whether the use of crestal burs or taps will be necessary further into the implant procedure.

2. The amount of the injected anaesthetic gives an indication of the volume of the medullary cavity and – if not previously defined – may assist in the selection of the right implant type (tapered, straight, self-cutting tip, etc.).

3. Depending on the use of adrenergic additives in the anaesthetic (typically epinephrine 1 : 100,000 to 1 : 200,000) local vasoconstriction can be effected. This relative constriction needs some getting used to for the experienced surgeon, but allows the intervention to proceed with less bleeding. Attention must be paid, however, to possible systemic side effects.

The IO technique as a supplementary tool for pain elimination

The IO technique was studied as a supplementary tool for pain elimination by Pearce (1976). The present results using the Anesto method confirm his results in terms of profound anaesthesia, improving the elimination of pain in about 90% of cases in the lower molar region (Nilius, 2012). The results of an experimental study by Dunbar and co-workers (1992) in which the combination of IO and regional anaesthesia was used were also considered predictably good, with no anaesthetic failure. There are as yet no conclusive comparative studies of IO as the only mode of anaesthesia, especially not for the edentulous jaw. Since the validity of IO with concomitant conventional anaesthesia is limited, the focus was on patient satisfaction. For osteotomies and implant procedures combined, approval of the IO was at 97.2 %, which correlated with the extent of the surgical intervention. The test results suggest that the painfulness of the procedure most patients fear is significantly reduced with an adjunctive IO and that an IO administered to extend and deepen the local anaesthesia is advantageous especially in bone surgery. It is worth noting that the anaesthetic acts in the jaw in a highly targeted manner, so that only small amounts of the anaesthetic are needed, which is particularly beneficial in high-risk patients. Nonetheless, the use of IO requires special knowledge over and above that required when using local anaesthetics in general, especially with regard to the patient’s individual anatomical details. It is therefore essential to take a radiograph before the treatment. The decision whether IO is suitable or beneficial for the patient for a given intervention, taking into account all possible risks, will ultimately always be made based on the surgeon’s expertise and skill.

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A retrospective study in patients with limited residual alveolar bone

Sinus floor augmentation using porous titanium granules

Dr Helmut G. Steveling, Gernsbach, and Dr Christian Mertens, Heidelberg, Germany

Tooth loss is followed by alveolar bone resorption, resulting in atrophy of the alveolar process. A reduced bone height may restrict implant placement in the posterior areas of the maxilla. When the residual bone height is less than 5 mm, augmentation of the sinus is often performed to increase the stability of the inserted implant. Bone grafts and different bone graft substitutes are commonly used within the sinus to increase the bone volume in conjunction to implant placement. A broad variety of different grafting materials including autologous bone, allografts, xenografts and alloplasts have been used. The use of autologous bone may, however, be restricted due to donor site morbidity and graft resorption (Dasmah et al., 2012).

In a recent publication comparing a demineralized bovine bone matrix and an autologous bone graft in simultaneous implant placement, no differences apart from chair time were observed (Merli et al., 2013). Although deproteinized bovine bone (DBB) is less prone to resorption than autologous bone, a 20 per cent reduction of the graft volume has been reported two years following sinus floor augmentation (Umanjec-Korac et al., 2013).

An ideal bone-grafting material for the maxillary sinus should provide biologic stability, ensure volume maintenance and allow the occurrence of new bone infiltration and bone remodelling. It may therefore be an advantage to use a non-resorbable material. Porous titanium granules (PTG) (Tigran Technologies, Malmö, Sweden) consist of irregular and porous granules of commercially pure titanium that function as an osteoinductive matrix. PTG have been used in sinus lift procedures (Bystedt and Rasmusson, 2009) and treatment of peri-implantitis (Wohlfahrt et al., 2012).

Clinical and histological studies have demonstrated bone formation in and around the granules (Verket et al., 2013). The aim of the present retrospective study was to evaluate the effect of sinus floor augmentation using PTG in patients with limited residual alveolar bone.

Material and methods

Patients who had been referred for sinus lift surgery between March 2010 and March 2011 and who attended a follow-up visit 24 to 36 months after surgery were included in this retrospective analysis. All patients had been treated in a standardized way: Before the intervention, a medical and dental history was obtained. Periodontal health was controlled and the patients received oral-hygiene instructions. Clinical photographs of the implant site (Fig. 1) were taken, as well as an orthopantomogram. If the radiographic examination revealed a bone height of between 1 and 8 mm and a need for sinus floor augmentation (Fig. 2),
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this procedure was performed in the same session
the implants were placed. Before the surgical proce-
dure, the patients received a single preoperative dose
of antibiotics (2 g amoxicillin or, in the case of allergy
to penicillin, 600 mg clindamycin) one hour before
the surgery. A horizontal incision was made in the
mucosa at the top of the alveolar crest and a full-
thickness flap was raised. The lateral antral wall of
the maxillary sinus was exposed. A bone window
was outlined using a 3.2 mm round diamond bur, and
the Schneiderian membrane was exposed. The mem-
brane was carefully detached from the walls of the
maxillary antrum, allowing for augmentation of the
sinus. The implants were placed, and the PTG grafting
material was applied around the implants in their
cavities. The deflected flap was replaced to close the
sinus window. The flaps were sutured using 4.0 silk
sutures. Postoperative control and suture removal was
performed five to seven days after the surgery.

The time of completion of the surgical procedure
was regarded as baseline. At 4.2 months (range, three
to seven months), all 18 implants were stable; abut-
ment connection was performed followed by restora-
tive therapy. The superstructure was permanently
cemented within a month from abutment connection.

The patients were recalled yearly. For this paper,
data from the baseline and the clinical and radio-
graphic control at 24 to 39 months (mean, 29.6
months) were used; patient data was coded to
ensure that no data could be linked to any specific
individuals.

Results

Twelve patients (eleven women, one man) with a mean
age of 57 years (range, 47 to 72 years) were included in
this retrospective study. Three patients were augment-
ed in both sides of the maxilla, resulting in 15 aug-
mentation procedures evaluated. 18 implants were
placed in the PTG-augmented areas. Three individuals
were current smokers. They smoked 10 to 20 cigarettes
per day and the mean number of pack years was 38.
At baseline, the average bone height was 2.8 mm
(range, 1–8 mm). In eight cases, the height of the
residual bone wall was up to 2 mm (in five cases, only
1 mm). At the time the restorations were delivered
(4.2 months after the surgical procedure), the total
vertical bone plus PTG height was 9.4 mm, with a
range of 8 to 12 mm. At the mean follow-up time of
29.6 months after surgery (range, 24 to 39 months),
the average bone plus PTG height was 9.3 mm.

At the final exam, no clinical pathology was observed
around any of the implants (Figs. 3 and 4). The mean
probing depth around the implants was 2 mm (range,
1–4 mm).

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Figs. 3 and 4. Clinical photographs of the implant site at the final examination.
Fig. 5. Radiograph taken at the final examination.
On the radiographs taken at the final examination, 24 to 36 months after graft placement (Fig. 5), no migration or loss of titanium granules were seen. Furthermore, no implants were lost or found to be unstable up to 36 months following implantation. In all cases, the grafted sinus floor was at or above the implant apex.

Discussion

This study assessed retrospectively the performance of porous titanium granules in one-stage sinus augmentation with simultaneous implant placement in patients with 1–8 mm of residual bone height prior to sinus grafting. All implants were stable after augmentation. PTG seems to be a suitable bone substitute in sinus lift procedures in cases with minimal residual bone. Primary stability has been shown to be a determinant factor for implants survival (Friberg et al., 1991). In this study, all implants were stable both baseline and at the final exam. The implant survival rate in this retrospective study was 100 per cent.

The single-step procedure has been reported to be feasible even for patients with as little as 3 mm of primary alveolar bone height (Peleg et al., 1999). The most important advantages of a one-stage procedure are the reduction of surgical procedures and the time needed. A recent report concluded that no statistically significant differences were observed between implants placed according to one- or two-stage sinus lift procedures (Felece et al., 2013). That study, however, suggested that there might be a slightly higher risk of implant failure using a one-stage lateral sinus lift procedure in patients having a residual bone height between 1 and 3 mm below the maxillary sinus. In the present retrospective study, 67 per cent of cases exhibited a bone level up to 3 mm; still the results of this retrospective study demonstrate that porous titanium granules, in a one-stage procedure, and in cases with only a minimum of residual bone height (up to 2 mm), produce adequate bone quality for predictable simultaneous implant placement. A material such as PTG is non-resorbable and therefore maintains volume. In the present study, only minor changes in bone height (0.1 mm) were seen between the delivery of the restoration and the final examination at 29.6 months. This suggests that the titanium granules act as an osteoinductive material. In a recent paper on sinus augmentation using PTG (Verket et al., 2013), the formation of new bone around and within the granules was confirmed in histological examination of biopsies.

To conclude, titanium granules are a suitable material for one-stage sinus lift procedures.

Visit the web to find the list of references (www.teamwork-media.de). Follow the link “Literaturverzeichnis” in the left sidebar.
5th International Camlog Congress: Interview with Professor Fernando Guerra and Professor Mariano Sanz

“The Ever-Evolving World of Implant Dentistry”

Could there be a better place for an international congress of implant dentistry than a place like the Palau de les Arts (“Palace of the Arts”) in Valencia, the City of the Arts and Sciences? It was built by Santiago Calatrava, world-famous architect, engineer and artist and renowned for reconciling scientific, technical and architectural needs with a very sensitive feeling for the arts and for aesthetics. Similarly, state-of-the-art implant dentistry is a perfect combination of scientific evidence, the artistic skills of the practitioner and the beauty of aesthetic results. No better venue could have been selected for the 5th International Congress of the Camlog Foundation, at which over 1,000 participants are expected. EDI Journal was able to talk to the two Congress Presidents representing different parts of the Iberian Peninsula: Professor Fernando Guerra (Coimbra, Portugal) and Professor Mariano Sanz (Madrid, Spain).

What is the point of scientific conferences and post-graduate trainings and workshops if the world of implant dentistry is “ever-evolving”? Learned today, gone tomorrow?

Professor Sanz: We are all healthcare providers and we must serve our patients’ needs to the best of our knowledge and ability. As part of this ethical responsibility, we must keep abreast of current knowledge and technologies. The ongoing changes in implant dentistry force us to keep up. Scientific conferences and congresses offer us a perfect opportunity to gather a lot of new information in a short span of time. We cannot afford to just sit back and be satisfied with what we are doing in our practices, since the speed of progress is so great in the world of implant dentistry that we would soon be left behind should we insist on continuing precisely as we have before.

The Camlog Foundation supports a number of research projects. Does this mean the congress will focus on new borders and future options?

Professor Guerra: We will certainly be offering a cutting-edge programme and providing a place to discuss new achievements and challenges, but always with a focus on improvements in daily practice. The Camlog Foundation has supported around 100 projects, from fundamental and translational research to scholarships, always aiming for innovation and development in implant dentistry – and we are proud of this strategy and of the results. Indeed, the Camlog Foundation has always focused on the application of science on the behalf of patients. Keeping this in mind, we have gathered a group of international experts over the last two years to work on consensus statements and recommendations on the best treatment options. This will be one of the major themes of the congress.

What will the workshops of the pre-congress programme be about? Will there be trainings with Camlog products only?

Guerra: As with our last congress in Lucerne 2012, we are again very enthusiastic about our interesting and versatile pre-congress programme. Of course, in addition to our congress partners and their products in the fields of surgery, treatment planning and biomaterials, the implant systems used at the workshops will be Camlog, Conelog or iSy. However, the focus will clearly be on more general themes such as sinus grafting, microsurgical techniques, 3D planning and practical treatment concepts. Participants will be able to incorporate what they have learnt directly into their daily work. In addition, we will have three theoretical workshops in German, where experts will share their experience and knowledge.

Spanish and Portuguese practitioners do not often attend international congresses outside of the Iberian Peninsula – was that one of the reasons to select Valencia as the venue this time, and are there any special offers for resident visitors?

Sanz: Valencia was chosen for many reasons. First of all, the Palau de les Arts in the futuristic City of the Arts
MD 11 and MD 30, the new generation of Motorsystems for Implantology
and Sciences is the perfect setting for demonstrating “the Ever-Evolving World of Implant Dentistry”. Valencia is a beautiful city with plenty of tourist attractions that, combined with the sunny June weather, will offer many opportunities to make this congress a family event. An interesting scientific programme with an appealing venue and attractive social events always make for a perfect blend, a successful congress, and I strongly believe we have this perfect combination in Valencia. For our Iberian colleagues we have also prepared an Iberian Symposium on Thursday, before the main congress. It is especially geared toward young and enthusiastic dentists, enabling them to speak and present their clinical and research material with the hope of soon being able to take part in the main programme. And then there is the “fiesta” on Friday, organized in a typical Spanish hacienda, where participants will have the opportunity to share our Iberian way of life and enjoyment; we hope to live up to the high standards of previous Camlog family parties.

Which of the many topics do you consider especially vital at the main congress on Friday and Saturday?

Sanz: The scientific committee really tried to keep a common thread running through all of the congress offerings. After an introductory session on multifactorial decision-making, the surgical and prosthetic concepts and recommendations will be presented. These are based on the Camlog Consensus Reports, established by a team of experts from 18 countries.

On Saturday, we will focus on controversial topics that concern any practitioner who treats a wide variety of patients. For young scientists we have planned two important highlights: one will be the possibility for them to present selected research projects, the other will be a platform for the winner of the 2012/2013 Camlog Foundation Research Award to present the project. Finally, as a brand-new concept in order to round off the congress, we will have an expert discussion where members of the audience can sign up to join the panel discussion on stage. The participants selected will be able to confront and challenge the experts directly. We hope that many people will take this opportunity, and we are very much looking forward to a lively discussion.

Thank you very much, Professor Guerra, Professor Sanz, for taking time for this interview.

Now available for Mac

Multimedia iBook for implantologists

The first book of the topographical implantology series, “The sinus lift operation – implant therapy in the lateral maxilla”, is now available for iPad and Mac. Apple’s new operating system OS X Mavericks, presented at the end of 2013, includes the free iBook software. This means the multimedia textbook for implantologists can also be viewed and saved on Mac computers.

Up until now, iBook was only available for the iPad.

The multimedia iBook by Dr Joachim Hoffmann from Jena, Germany deals extensively – on more than 100 pages (with 40 videos in HD quality with explanations by the author, 170 images, various animations and links) – with surgical techniques for the lateral maxilla. The iBook is divided into twelve chapters. The anatomical basics are covered by Dr Gudrun Stoya of the Anatomical Institute of Friedrich Schiller University, Jena using demonstration videos and preparations from the institute’s collection with detailed descriptions. The chapters on clinical and radiological diagnostics, surgical procedures and solutions for complications are covered by Dr Hoffmann using video material from the extensive film collection of the Implantarium.

The training tool is available in German and English and can be downloaded from iTunes or as iBook for the iPad or Mac.

More information and reading sample

YouTube: http://www.youtube.com/watch?v=BY8SoXKaozE
Implantarium: http://implantarium.de/aktuelles.html

The first multimedia iBook for oral implantologists illustrates sinus floor elevations.
XXVI
ENTRA EN EL CÍRCULO

CONEGRESO NACIONAL
& XX CONGRESO INTERNACIONAL

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13-15 NOV 2014 - MADRID
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http://www.seimadrid2014.es
Interview with Professor David Cochran, President of ITI

Knowledge is key

In late April, the ITI World Symposium will convene the best speakers from different fields of implant dentistry in Geneva to share their expertise and experience, with more than 5,000 participants expected from all over the world. EDI Journal had the opportunity to speak with ITI President and Scientific Chairman of this year’s symposium, Professor David Cochran of San Antonio, Texas.

“Knowledge is key” is the theme of this year’s ITI Symposium. But what exactly does that mean?

We chose “Knowledge is key” as the theme of the ITI World Symposium 2014 to underline the importance of evidence-based knowledge for application in daily clinical practice. Over the last 34 years, the ITI has built a strong reputation for rigorous science and examination of new methods and technologies. These comprehensive knowledge assets are made available to the field by a multitude of means. The ITI publishes treatment recommendations and guidelines, such as the proceedings of our regular consensus conferences, and reference books, such as the ITI Treatment Guide series. We run approximately 650 ITI Study Clubs around the world and we organize congresses at a national, regional and global level, to name just a few of our activities. At the ITI World Symposium, we will also showcase our newest and probably most significant educational project for the future, the ITI Online Academy, a unique e-learning offering that draws on the collective knowledge and experience of the ITI’s Fellows.

Critics fear that this powerful scientific display is designed to ban general practitioners from implant dentistry.

No, far from it. Today, implant therapy has achieved excellent acceptance and is regarded as a viable treatment alternative to conventional options. Many colleagues have started to use dental implants, and the ITI is very active in providing structured knowledge to ensure that dental implants are placed safely. The reputation of implant therapy is currently very good, but there is a risk that the work of less qualified colleagues might lead to a rise in failure rates and an ensuing loss of reputation. The ITI aims to by-pass such a scenario by making solid clinical knowledge and scientific documentation available to all practitioners and also by drawing attention to the risks attached to each treatment option.

The programme of the ITI World Symposium 2014 has been carefully designed to provide specialists and general practitioners alike with the latest facts about treatment methods and approaches that help to avoid failures because they are based on scientific evidence and backed by long-term results. Attendees will take home useful information that they can use with confidence in daily practice.

Which specific subjects will the ITI Symposium cover in detail – is there any specific focus?

The ITI World Symposium offers its participants three days of stimulating presentations to provoke, interest and inspire! Each day will focus on a particular topic: Digital implant dentistry, prevention and management of biological and technical complications and new approaches, challenges and limitations in aesthetics.

Why would you personally urge our readers to make room for the 2014 ITI Symposium in their calendar?

My personal reason to attend the ITI World Symposium 2014 is to become a better implant dentist and to provide the best implant therapy possible to my patients. As dentists, our patients have trust in each of us to do the very best we can for them. The ITI World Symposium will provide the latest evidence-based approaches to implant therapy and as a responsible dentist, I want to be there to learn. In addition, for a global organization of volunteers with more than 15,000 members, this is a perfect opportunity to speak to, and associate with, many of the very best implant dentists in the world. This meeting is only held once every three years, so this is a rare opportunity to meet with key opinion leaders and friends in implant dentistry. I am excited about this meeting and am confident that the ITI World Symposium 2014 will be a memorable experience and arguably the most important event in the implant dentistry calendar for 2014.

Thank you very much, Professor Cochran, for taking the time for this interview.
7th Annual Dentium Seoul Symposium, Seoul, South Korea, 26 – 28 April 2014

Various facets of dental-implant surgery

Dentium will be holding its 7th Annual Dentium Seoul Symposium at the COEX Conference Center in Seoul, South Korea from 26 to 28 April 2014. This three-day dental-implant symposium will be comprised of three segments: a pre-congress, the main symposium, and a live-surgery presentation.

The pre-congress session will be held on the opening day of the symposium. Here, interested attendees may take advantage of the opportunity to experience Dentium’s dental kits: the RS Kit, the Dentium Advanced Sinus Kit (DASK) and the Implant Guide Kit.

All attendees can participate in the main symposium, where 16 expert and renowned speakers such as Dr Myron Nevins of Harvard University will be presenting lectures targeting various facets of dental-implant surgery. Topics include immediate implant placement, guided bone regeneration, soft-tissue management and digital dentistry. To make this event even more educational and meaningful, there will be a case presentation session where selected clinicians will share real-life clinical cases.

The symposium will be concluded with a live-surgery presentation.

More information and registration

Dentium
www.dentium.com or www.facebook.com/Dentium.Implant
27th National Congress and 20th International Congress of the Spanish Society of Implants (SEI), Madrid, Spain, 13 – 15 November 2014

New scientific insights

Madrid will be hosting the 27th National Congress and 20th International Congress of the Spanish Society of Implants (SEI) from 13 to 15 November 2014, as part of the 1st Implantology Week to be held the week before.

The congress will be held at the Circle of Fine Arts of Madrid, one of the most important cultural centres in all of Europe, characterized by its openness for unusual and innovative artistic and cultural trends. This location offers great communications and easy access, with its 15,000 m² of halls and congress facilities and a wide range of hotels of all categories close by – definitely a very good choice for the upcoming SEI congress.

Dr Araceli Morales, President of the Organizing Committee, and Dr Fidel San Roman, President of the Scientific Committee, have put together a high-quality scientific programme that will offer a range of significant innovations compared to earlier congresses.

The 1st Implantology Week will come loaded with scientific, cultural and social events, among them the Audiovisual Festival: “Implants ... and short implants?” as well as NGO activities on side and much more. Attendance is expected to exceed 700 professionals from the world of oral implantology in addition to 30 industry exhibitors, as well as national and international top-level speakers, promising scientific insights interwoven with recreational elements.

More information and registration

Sociedad Española de Implantes (SEI)
www.seimadrid2014.es
Multi-day BioHorizons continuing education, 7 – 9 May 2014

International Symposium in Dubai

This year, BioHorizons will once again organize international symposia with speakers of rank such as Edward P. Allen, Marius Steigmann and Carl Misch. True to the BioHorizons cont-ed philosophy, the May event in Dubai will not only address purely technical aspects, but it will also be held in a classy place with an exotic atmosphere.

With Dubai 2014, BioHorizons CEO Steve Boggan aims to offer an invaluable learning experience in combination with free time shared with colleagues in a relaxing atmosphere – the hotel has a private beach and overlooks the famous sail-shaped Burj Al Arab hotel.

Covering topics from the fields of immediate placement, aesthetics, bone grafting with biological materials and concepts for dealing with complications during and after surgery, the range of lectures covers many current topics and issues within oral implantology and tissue regeneration.

More information and registration
Biohorizons
www.biohorizons.com/symposiumseriesdubai.aspx

Omnia Education Program

Turin, Italy - 2014
4th – 5th July

Dr. Daniele Cardaropoli, DDS

For more information please contact: oep@omniaspa.eu

Periodontal Plastic Surgery

The course is held in Turin by Dr. Daniele Cardaropoli. The lecture session will be followed by a live surgery and a hands-on session on animal jaws.

Only a restricted number of participants is admitted (from 12 to 20) to offer the due attention and support to each of them.

Time will be also devoted to teambuilding activities.

OMNIA S.p.A.
Via F. Delnevo, 190
43036 Fidenza (PR) Italy
Tel. +39 0524 527453
Geistlich Mucograft Seal by Geistlich Biomaterials

Good soft-tissue outcomes

Geistlich Mucograft Seal is a new circular collagen matrix developed by Geistlich Biomaterials. It is used to seal the extraction socket in the context of a ridge preservation procedure. In combination with a bone substitute, it provides good hard- and soft-tissue conditions.

Aesthetic treatment results are extremely important to patients. A key factor for success is the condition of the soft tissue. Many dentists take the opportunity to optimize the soft tissue immediately after an extraction by sewing a tissue punch from the palate into the new socket. However, graft removal from the palate is painful and creates a second wound.

No painful removal of soft tissue from the palate

By using a Geistlich Mucograft Seal collagen matrix instead of autologous soft tissue, the dentist saves the patient pain and time. The 8-mm disk is made of the same proven material as the Geistlich Mucograft collagen matrix and displays the same properties. It protects the graft and creates soft tissue that matches the colour and texture of its surroundings.

Geistlich Mucograft Seal is sewn in place over an extraction socket filled with Geistlich Bio-Oss Collagen during ridge-preservation procedures. An undamaged buccal bone plate is a prerequisite.

Expert panel supports the approach

An international advisory board, under the direction of Professor Mariano Sanz, Spain, has assessed the new product and found that a combination treatment with Geistlich Bio-Oss Collagen and Geistlich Mucograft Seal prepared the soft tissue well for different therapeutic options, from early implant placement eight to ten weeks after tooth extraction to late implant placement or bridge reconstruction.

The benefits of Geistlich Mucograft Seal

- Ideal complement to Geistlich Bio-Oss Collagen for ridge preservation, particularly in the anterior region
- Creates good conditions for ensuring soft-tissue aesthetics
- Simple handling and shorter operation times
- Good adaptation in terms of colour and texture of the new tissues
- No removal of tissue from the palate
- Geistlich Mucograft material has been documented in more than 300 long-term case studies, numerous scientific studies and more than 20 expert roundtables

More information

Geistlich Pharma AG
Bahnhofstrasse 40 · 6110 Wolhusen · Switzerland
www.geistlich.ch

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

New resorbable collagen membrane

creos xeno.protect by Nobel Biocare is a new collagen membrane that will be part of a larger regenerative product line under the brand name “creos”. Additional products will follow in 2014.

The creos xeno.protect resorbable porcine membrane for guided bone and guided tissue regeneration procedures has been designed to be very straightforward and practical in everyday clinical use. Clinical studies and early results from clinicians after an extensive prelaunch period confirm it possesses good handling qualities, maintains its size when hydrated and is extremely tear-resistant. This means fewer problems when folding and unfolding, easier positioning without graft displacement and less risk of damaging – and therefore wasting – the membrane. It comes in three practical sizes (15 x 20 mm, 25 x 30 mm, and 30 x 40 mm) to handle larger bone augmentations or smaller periodontal defects. The optimal fit can be found without extensive trimming which limits waste and minimizes costs for both clinicians and patients.

Extended barrier function

The creos xeno.protect membrane has an extended barrier function that does not compromise on the established high industry standards for biocompatibility or vascularization behavior. It resorbs slowly, providing stable protection of the graft during the required healing period. As it is produced without any chemical crosslinking, creos xeno.protect offers excellent tissue compatibility for fast and predictable healing.
**Nobel Biocare** New angulated screw channel concept and tooling

The innovative combination of the NobelProcera Angulated Screw Channel (ASC) abutment and Nobel Biocare’s new Omnigrip tooling solves two typical challenges clinicians often face: buccal screw access holes that limit restorative options in the anterior and difficult access in the posterior region from lack of vertical space.

Available in zirconia for Nobel Biocare implants with conical connection, the abutment can be designed with an angulated screw channel of up to 25 degrees from the axis of the implant. Clinicians using the Omnigrip friction-based pick-up function gain peace of mind as the screwdriver easily grips the screw at any angle within the available range. The intense grip keeps the screw in position making it less likely to drop while adjusting the insertion angle and finding the first threads for fixation.

**Products:** NobelProcera Angulated Screw Channel (ASC) abutment with Omnigrip tooling

**Indication:** Restorative situations where angulated screw access is required

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

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**3Shape** Splint Designer

3Shape has released a CAD software tool that enables labs to provide common dental appliances as a new service. The 3Shape Splint Designer is an add-on module to 3Shape Dental System. It offers a cost-efficient getting-started tool and opens new business opportunities for dental labs and their dentist clients. These are some 3Shape Splint Designer features:

- CAD design of splints, night guards, protectors and similar dental appliances
- Splints and appliances available directly using the Dental System order form
- Intuitive workflow to guide users through the design steps
- Optional engraving of ID tags in the appliance for patient identification or lab branding
- Available free of charge with all 3Shape Dental System Premium subscriptions

The new module is a “light” version of the Appliance Designer, which is 3Shape’s complete CAD toolbox for all types of dental and orthodontic appliances. 3Shape offers this tool to Dental System Premium subscribers for free. The Splint Designer module is available with Dental System 2014 through 3Shape resellers. Availability to end-users depends on their specific system configuration.

**Product:** Splint Designer

**Indication:** Digital dentistry

**Distribution:** 3Shape A/S
Holmens Kanal 7, 4.
1060 Copenhagen K
Denmark
info@3shape.com
www.3shape.com
Day 1 is presented jointly with the Columbia University College of Dental Medicine and the “Dennis Tarnow Alumni”. The congress is supported by an educational grant from Biomet 3i.

Speakers: more than 25 leading experts from all over the world. The program: presentation and discussion of the latest technological advances in esthetic, restorative and implant dentistry. Audience: over 1,000 specialists taking part in an event set out to be a landmark in these ever evolving fields of dentistry. Location: Barcelona, the city that combines history, contemporary life, nature… and cutting-edge trends. Venue: the Palau de Congressos de Catalunya, opposite the Hotel Rey Juan Carlos I.
3Shape Dental System 2014

Dental System 2014 introduces new dental indications, a new user interface, and optimized workflows for Trios digital impressions. Additional enhancements include more automation, faster design workflows, powerful CAD validation tools, and tighter integration with CAM software. These are some of the new features in Dental System 2014:

- Auto-crown functionality for increasing productivity
- New powerful user experience
- Easily determined margin lines using Trios HD photos
- New Splint Designer module with new service options
- Implant Studio for implant planning and surgical guides

In addition, Dental System 2014 includes optimized workflows for digital impressions, enhanced scanning speed and accuracy, framework design with mamelon structures, and more. It will be available through 3Shape resellers. Availability to end-users depends on their specific system configuration.

Kohler Trinovo

Trinovo plastic profile handles made of PEEK (polyether ether ketone) provide low weight and stability. The special Trinovo handle design makes work less tiring, while the PEEK high-performance plastic, which has been employed in medical technology for decades, is characterized by its excellent resistance to cleaning products and disinfectants. For this reason, Trinovo plastic profile handles offer an ergonomic design combined with a long life expectancy and reliability.

BTI New Endoret (PRGF) kit

BTI Biotechnology Institute has introduced the KMU17 Kit, specifically designed for the biological treatment of the post-extraction socket to reduce surgery/treatment times. This new kit has obtained the CE health certificate awarded by TÜV for its specific application in soft and hard tissue regeneration in oral surgery. Several clinical trials have documented that the Endoret (PRGF) KMU17 Kit improves and accelerates the healing of soft tissue, increases the density and volume of the regenerated bone, reduces the risk of complications such as dry socket or osteonecrosis of the maxillae related to treatment with bisphosphonates and also promotes post-operative recovery by reducing pain, inflammation and the risk of infection (bactericidal effect).
The impulse
to the perfect composite restoration

ZA Ulf Krueger-Janson

**3D Composites**
*Natural Shading & Shaping*

Dentist Ulf Krueger-Janson is considered one of the foremost global experts on functional and aesthetic chairside composite techniques. In his book he presents the practical instruction for perfect composite restorations.

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Dentsply Implants introduces the next step in the continuous EVolution of the Astra Tech Implant System. The Astra Tech Implant System EV is designed with a site-specific, crown-down approach based on the natural dentition for increased surgical simplicity and flexibility and restorative ease – without compromising the special Astra Tech Implant System BioManagement Complex. The foundation of this evolutionary step is the Astra Tech Implant System BioManagement Complex, well documented for its long-term marginal bone maintenance and esthetic results provided by the combination of the key features: the OsseoSpeed surface, MicroThread, Conical Seal Design and Connective Contour. The main objective of the new system is to further improve system logic, robustness and user-friendliness. Simplicity without compromise has permeated the evolution of the Astra Tech Implant System EV. The new system is a result of the collaborative input and insights from dental professionals throughout the global dental industry. Dr Lyndon Cooper, USA, and Dr Clark Stanford, USA, are clinician scientists with broad dental implant experiences that include recent clinical activities using the Astra Tech Implant System EV. With a select group of international peers, they have shared their perspectives acknowledging these goals. The Astra Tech Implant System EV will be launched globally beginning in March 2014 and continuing throughout the year.

Nano Bridging Molecules SurfLink Dental

The novel Frost & Sullivan award-winning surface treatment SurfLink Dental by Nano Bridging Molecules results in a bone-like implant surface. This treatment is easy to apply to any implant at chairside right before insertion. The SurfLink surface is highly hydrophilic and stable. Due to its phosphorous-rich nature, the SurfLink surface is biocompatible and perceived as bone-like by the body. In a study with induced fractures, these fractures occurred away from the bone-to-implant interface. This demonstrates that the bond between the bone and the implant is stronger than the bone itself. Dental clinical results collected over five years show that SurfLink-treated implants maintain marginal bone levels one year after loading, while control implants lose a significant amount of marginal bone height. The long-term reliability and predictable clinical outcomes of SurfLink Dental-treated implants have the potential to reduce intervention costs and improve patient satisfaction.
mectron Piezosurgery explantation kit

Product: Piezosurgery explantation kit

Indication: Explantations

Distribution: mectron s.p.a.
Via Loreto, 15/A
16042 Carasco (GE)
Italy
mectron@mectron.com
www.mectron.com

mectron has recently launched a new Piezosurgery surgical kit dedicated to explantation technique, consisting of four different inserts whose shapes were specifically developed for this procedure: EXP3-R, EXP3-L, EXP4-R and EXP4-L. Their right- and left-curved shapes allow the surgeon to follow the implant surface more closely, assuring greater alveolar bone saving and maximum precision of cut compared with traditional rotary instruments or trephine drills.

EXP inserts have three or four “teeth” to better manage cylindrical and tapered implants. They can be used for eight extractions with maximum cutting precision. Furthermore, post-operative progress is better and morbidity is reduced thanks to the beneficial effect of ultrasound on bone healing. Impressive results have been published by the University of Turin that emphasized that bone healing occurred up to three times faster in implant sites prepared by Piezosurgery than in sites prepared by twist drills.

The new mectron EXP inserts are available as single inserts or as a Piezosurgery explantation kit that includes all four inserts in a practical, fully autoclavable stainless-steel tray.

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Individuialitas Naturae Dentis
by Knut Miller

This valuable workbook supports and inspires dentists in their quest to consciously replicate the individual shapes of the natural tooth.

139 pages, 154 pictures

154,– € plus shipping

Past << Future: Envision 77 Heart Beats
by Naoki Hayashi

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

320 pages with excellent four color photographs

349,– € plus shipping
MEMBERSHIP REGISTRATION FORM

I hereby apply for a membership in the BDIZ EDI (European Association of Dental Implantologists)

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Date of Birth: .........................................................................

Practicing implantology since: …...........................................

Member of other Societies:

☐ ICOI  ☐ BDO  ☐ DGI  ☐ DGZI  ☐ DGMKG  ☐ EAO

Continuing education Courses: ................................................

...................................................................................................

Fellowship status / diplomate status in implantology

☐ Yes  ☐ No  ☐ Organization …………………..

Entry in BDIZ EDI Directory:  ☐ Yes  ☐ No

(For information on BDIZ EDI Directory of Implant Dentists see overleaf)

The annual membership fee for:

FULL MEMBERSHIP

☐ Full member - clinical  345,00 Euro

☐ Assistant dentist / young professional (up to 5 years after graduation) 172,50 Euro

☐ Second membership / family member 172,50 Euro

EXTRAORDINARY MEMBERSHIP

☐ Co-operative Member (Professionals without practice and dental technicians) 165,00 Euro

☐ Students non-contributory

☐ Supporting Membership (Companies etc.) 530,00 Euro

Payment:

Membership cannot be confirmed until payment is processed. Method of payment is by bank transfer. Please use the following banking account.

Commerzbank Bonn

Account Number: 310 144 100

Bank Code: 380 400 07

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Membership cards will be sent upon receipt of the annual subscription fee.

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EDI Journal is the first and only European professional journal of its kind, written for all clinicians with distinct interest in dental implantology. This publication aims at uniting European dentistry in a common effort, to establish appropriate standards and to help open up new markets. The specific dental section of this periodical offers a wealth of original work, case reports, scientific research and other articles presented by authors from countries all over Europe, all helping to make this top-quality platform a truly international voice in the dental profession. Product innovations are covered in depth. And for the first time ever, dental implantologists are offered exhaustive information on important ancillary themes such as European standards, quality guidelines, legal issues, questions of remuneration and professional specialization.

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**CALENDAR OF EVENTS**

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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

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Submissions should include the following:

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- 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.

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Each article should contain a minimum of 20 and a maximum of 50 original color slides (35 mm) or digital photos, except in unusual circumstances. The slides will be returned to the author after publication. Slides should be numbered on the mount in the sequential numerical order in which they appear in the text (Fig. 1, Fig. 2, etc.).

Radiographs, charts, graphs, and drawn figures are also accepted. Figure legends should be brief one or two-line descriptions of each figure, typed on a separate sheet following the references. Legends should be numbered in the same numerical order as the figures. Tables should be typed on separate sheets and numbered consecutively, according to citation in the text. The title of the table and its caption should be on the same sheet as the table itself.

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There are 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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\(^1\) Jung R. E. et al., JCP 2013
\(^2\) Geistlich Mucograft\textsuperscript{®} Seal Advisory Board Report, 2013.
\(^3\) Data on file, Geistlich Pharma AG, Wolhusen, Switzerland
\(^4\) Thoma D. et al., JCP 2012