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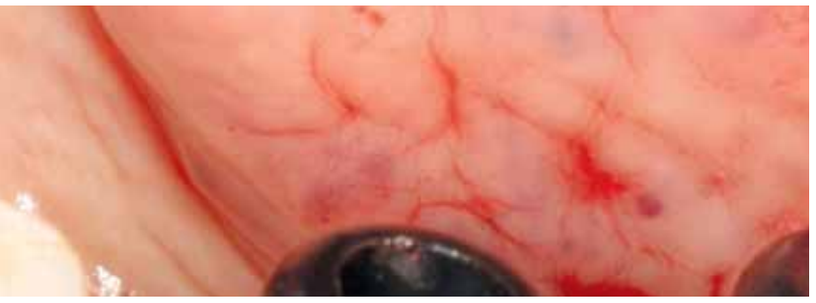
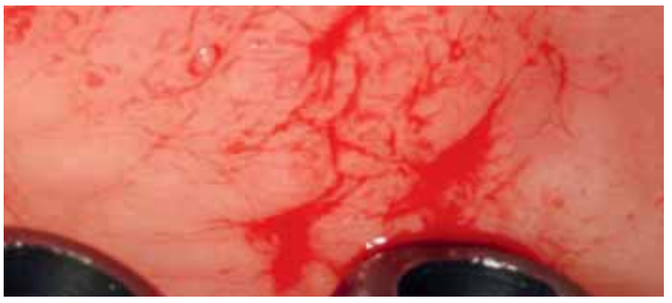
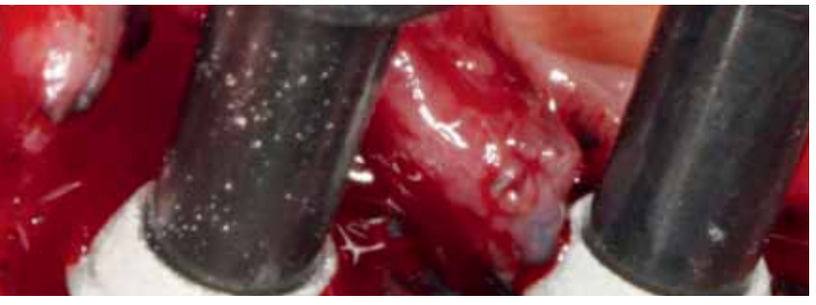
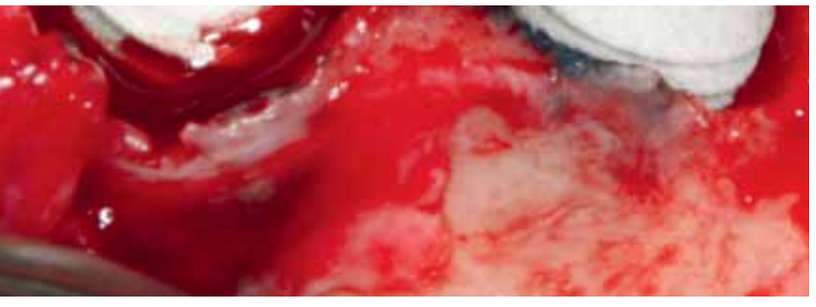
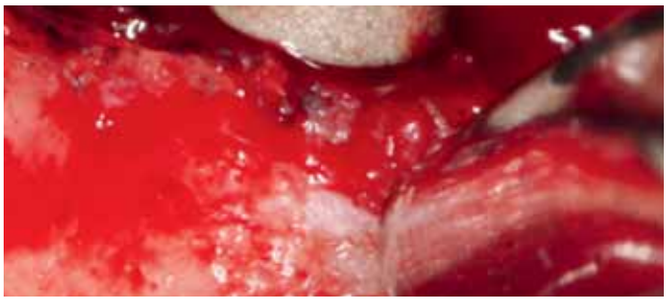
EDI JOURNAL

TOPIC

Minimally invasive procedures with different types of implants

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

»EDI News: 10th European Symposium of BDIZ EDI in Verona · News about amalgam and mercury · Dental implantology in the Netherlands **»European Law:** EU General Court on health claims made on foods **»Clinical Science:** Bone substitute materials in dental implantology · Minimally invasive procedures with different types of implants · Implantation and augmentation XXL **»Case Studies:** Immediate placement and provisionalization of a single anterior implant

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ZEST ANCHORS

Happy birthday, sister!

EDI Journal directs the attention of its readers outwards – focusing on the political climate in European health care and on everything that impacts dental practices in the EU countries, but also on technical and dental issues in the implantological field. In 2015, EDI Journal celebrated its 10th anniversary.

This year, there will be another anniversary: Our publisher, the European Association of Dental Implantologists, can look back on a 20-year success story with BDIZ EDI konkret, the German counterpart of EDI Journal that has accompanied the Association from its beginnings, and of course the emergence of oral implantology as a new discipline within dentistry. Like EDI Journal, BDIZ EDI konkret is not a pure science- and technology-based trade magazine, but provides much practical information.

BDIZ EDI is very active on the European stage. To cite just one example, BDIZ EDI organized two business trips to Brussels jointly with representatives of the partner organizations and the dental industry. At that time, the goal was to understand the mechanisms at work in Brussels and Strasbourg. BDIZ EDI's contact with the Council of European Dentists (CED), the umbrella organisation for dental associations throughout Europe, is close. All these activities are reported and commented on to share results and findings with the readers.

In Germany, BDIZ EDI also intervenes in Berlin. The most recent example is the law on combating corruption in the health-care sector, which took effect in early June 2016. BDIZ EDI had submitted its own alternative bill as a counterpoint to the draft submitted by the German Minister of Justice. The Association, with the support of the major medical and dental associations, at least managed to get some really nonsensical passages deleted from the draft – a success that BDIZ EDI had worked hard for to achieve for the benefit of dentists in Germany. Our Association is the only one that ever got actively involved in this legislative process.

BDIZ EDI was and is a politically active association within health care whose commitment – not only for dental practitioners working with oral implantology – goes beyond the scientific and the technical. Without this commitment, we would not have the two journals for the practical implantologist – BDIZ EDI konkret in German and EDI Journal in English.

But these journals are not merely the mouthpieces of the Association. Both live lives of their own, fully supported by the publisher, the editorial team and the editor-in-chief. By consistently looking beyond the fence and taking in the bigger picture, the two journals have developed into highly reputable journals that are read not only by dentists, but by representatives of dental associations and organizations, politicians and policy-makers.

BDIZ EDI konkret and EDI Journal are among the first to issue early warnings of impending developments in the field of dentistry and health-care policy. Whether it is the "teeth of the future" – renewable, regrowable teeth – or computerisation within dentistry or new approaches in bone grafting, BDIZ EDI konkret and EDI Journal stay on top of events and report in depth. There is a strong focus on the changing conditions in the health-care market with regard to medical devices, professional recognition, TTIP and other laws and regulations that affect dental practitioners.

This is the path we must pursue further as companions of the dental practice, with full support and commitment by the publisher, the editorial team and the editor-in-chief. Happy anniversary, BDIZ EDI konkret!

Sincerely,
Anita Wuttke
Editor-in-Chief

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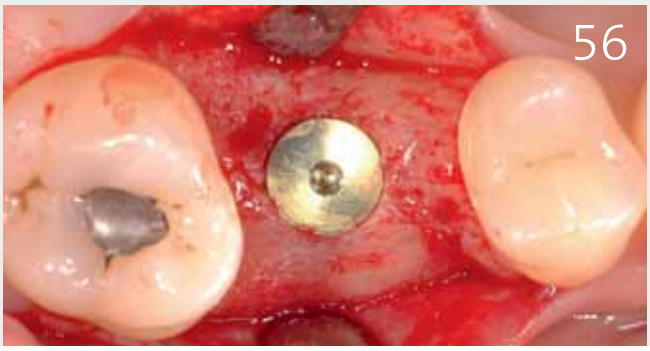
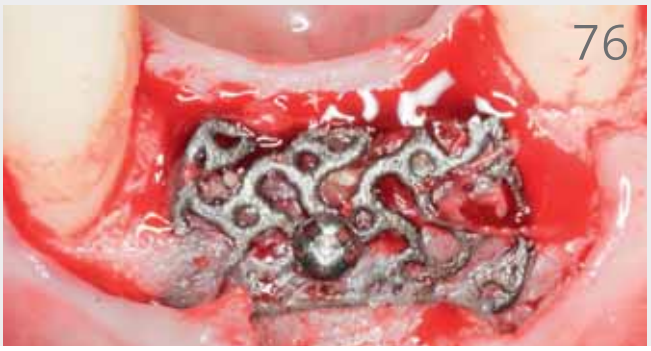


Successful insertion of an implant in an augmented bone: The augmented portion is indistinguishable.



Augmentation with a CAD/CAM titanium lattice structure in the anterior mandible: Osteoblasts migrate through the structure.

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Partner Organizations of BDIZ EDI

Association of Dental Implantology UK (ADI UK)

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

Ogolnopolskie Stowarzyszenie Implantologii Stomatologicznej (OSIS EDI)

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

Sociedad Espanola de Implantes (SEI)

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

Sociedade Portuguesa de Cirurgia Oral (SPCO)

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

Udruženje Stomatologa Implantologa Srbije-EDI (USSI EDI)

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

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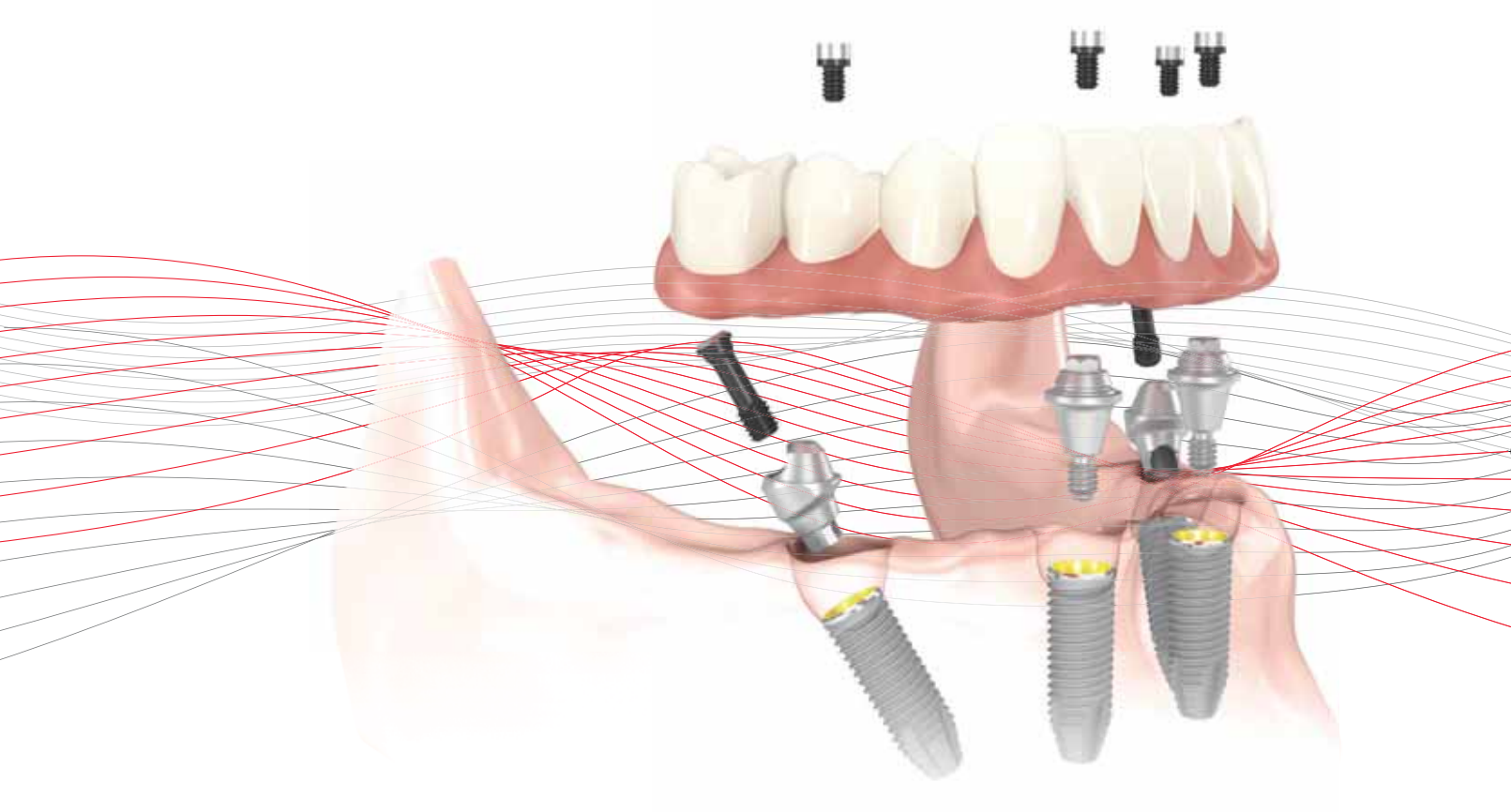

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10th European Symposium of BDIZ EDI in collaboration with Quintessenza Edizioni

State of the art in Verona

The competition was fierce at the time of the 2º Congresso Quintessenza Edizioni held jointly with the 10th European Symposium of BDIZ EDI in Verona. The venue was only a stone's throw away from the historical Verona arena, where famous singer-songwriter Adele performed her only concert in Italy. Nevertheless, the event itself must still be "right". And it was clear that this was the case, because the programme compiled by Dr Tiziano Testori for the 600 participants in the Palazzo della Gran Guardia was excellent in terms of both content and didactics.

The state of the art in maxillofacial and surgical dentistry and, hence, oral implantology were in focus on the three days of the symposium. Scientific Chairman *Tiziano Testori* stated in his foreword that by visiting this congress, dental clinicians would be able to recognize future trends in dentistry that would become a reality in the upcoming years. At the Congress of Young Dentists on Thursday, young and enthusiastic colleagues exchanged views about their profession in three sessions. The main podium was held on Friday and Saturday, with internationally renowned speakers – among them *Christian Berger* and *Dr Jörg Neugebauer* representing the BDIZ EDI part of the congress. *Lauro Dusetti*, Director of Quintessenza Edizioni Italy, an affiliate of Quintessence Publishing, stressed in his welcome address the beautiful setting of the Piazza Bra and the Palazzo della Gran Guardia in the heart of Verona.

Taking a break outside the Palazzo della Gran Guardia: BDIZ EDI-board member Dr Wolfgang Neumann (left) and BDIZ EDI-President Christian Berger.

Immediate loading on short implants

With this article we can only cast a brief glance at the programme with its 54 speakers and chairmen. On Friday, the motto was "Rehabilitation of the edentulous patient", hosted by *Giovanni Zuccelli* and *Giuseppe Luongo*. In the morning, *Tiziano Testori* lectured on "Cawood and Howell Class V and Class VI mandibular atrophies: treatment protocols". He introduced a study in 39 patients with Cawood and Howell Class VI completely edentulous mandibles. The aim of this study was to evaluate the overall survival of 7 to 8.5 mm implants placed in the atrophic mandibles immediately loaded with hybrid fixed dentures. *Testori* showed that of 156 implants inserted, two failed during the osseointegration phase. The overall survival rate was 98.7% after five years, with a prosthetic survival rate of 100%. Immediate loading on short implants in patients with severe mandibular atrophy may represent a valid therapeutic option in total edentulism, he said. The crown-to-implant ratio in his study ranged from 1:2.0 to 1:2.4. The only prosthetic complication was fracture of the aesthetic veneer. *Testori* concluded that immediate loading on short implants in patients with severe mandibular atrophy represents a predictable alternative.

Jörg Neugebauer focused on "Early and late complications in implant dentistry". He referred to the European guideline justifying indications for CBCT: a history of acute or chronic sinusitis, diagnosis prior to a sinus graft, persisting clinical signs or angled implant placement with immediate loading. For severe periodontal defects, he suggested CBCT to deliver further information for the surgical procedure, depending on the peri-implant defect

Arena di Verona – the city's popular landmark.

and the imaging parameters. To determine the possible outcome of additional surgery, *Neugebauer* referred to the need to re-evaluate existing and new risk factors to maintain or remove the infected implant. Most biologic complications are difficult to treat due to reduced vascularization and the microstructured surface of the grafting material and implants. To him, one option to perform effective biofilm management is the antimicrobial photodynamic therapy. This non-invasive method allows disinfection of the various factors disturbing wound healing processes, disinfect hard and soft tissue and micro-structured implant surfaces. After physical and chemical disinfection, peri-implant bone loss can be stabilized by using autologous bone graft, he said. Harvesting can be performed by piezosurgery next to the treated implant site to avoid a second donor site. If the implant cannot be saved, re-implantation may be performed, but this requires advanced grafting techniques. According to *Neugebauer*, the alternative would be a reduced number of implants in an angled position to avoid major grafting. He does not recommend immediate restoration in combination with lateral grafting to ensure optimal regeneration of the graft.

Soft tissue augmentation

Prosthesis on implants and aesthetics was the next session chaired by *Giano Ricci* and *Dino Re*. One of the renowned speakers here was *Ueli Grunder*. He focused on "Implants in the aesthetic zone" and discussed the different methods of soft tissue augmentation. It is well known, he said, that the presence of bone is the key factor for achieving harmonic soft tissue contours around implants, since the thickness of the soft tissue is limited. He recommends augmenting even the soft tissue following bone augmentation in order to improve the aesthetic outcome of implant therapy, using either subepithelial connective tissue or a full-thickness graft. Connective tissue is harvested from the palate, whereas full-thickness graft most often derives from the maxillary tuber region.

He explained that there are several techniques, including different flap techniques, for augmenting soft tissue and that most of them can be very effective if the best procedure is chosen for each particular treatment stage.

Simple to use: ABC system

"The influence of implant positioning for long-term success, avoiding implant malpositioning" was the topic of *Christian Berger*. He introduced two guidelines of the European Consensus Conference (EuCC): the Cologne ABC Risk Score of 2012 and the Cologne Classification of Alveolar Ridge Defects (CCARD) of 2013.

For risk assessment, the EuCC has developed the ABC Risk Score using a simple ABC system, visualizing the three colours of the traffic light to give clinicians the opportunity to rate implant treatment at the planning stage on four subscores: medical history, local findings, surgical findings and restorative findings. Each of these partial scores is calculated by itself, with the results – like the criteria – expressed in terms of the colours green, yellow and orange, corresponding to A, B and C ("Always" – "Between" – "Complex"). If two or more criteria for a partial score are assessed as yellow (for B, medium risk), the entire partial score is deemed to be B (yellow, medium risk). Similarly, four yellow or two orange criteria result in an overall partial score of C (orange, increased risk). According to *Christian Berger,* the ABC classification is defined as follows:

- A = "Always": lowest assessed risk – green area
- B = "Between": medium risk – yellow area
- C = "Complex": increased risk – orange area

Red is reserved for cases where the risk assessment shows that treatment at issue may not be recommended which is not the same as being contra-

The physical well-being was also ensured: Italian delicacies were served in the entrance hall.

indicated, *Berger* said. All green means, the patient case as a whole is assessed as low-risk (A for Always). If at least two of the four partial scores are yellow, the patient case as a whole is assessed as medium-risk (B for Between). If all partial scores are yellow, the patient case is assessed as increased-risks (C for Complex). The same is true if at least two of the four partial scores are orange and yellow.

In the second part of his lecture, *Berger* gave an overview of the CCARD. The Cologne Classification of Alveolar Ridge Defects classifies volume deficiencies of the alveolar process regardless of their aetiology as vertical, horizontal and combined defects (H, V. C), possibly in conjunction with a sinus area defect (+S). It takes into account the extent of the augmentation needed (1: less than 4 mm, 2: 4 to 8 mm, 3: more than 8 mm) and the relation of the graft to the surrounding morphology ("i: internal", inside the ridge contour vs. "e: external" outside the ridge contour) and makes recommendations on possible treatment approaches based on the current literature. These CCARD-recommendations are intended to serve as a general guideline, in cases of healthy soft tissue and a good general condition. *Berger*: "They can be departed from in exceptional cases (e.g., previous surgery, co-morbidity, compromised bone quality, soft-tissue deficiencies) based on the Cologne ABC Risk Score and if the treatment is performed by designated specialists."

Both guidelines can be downloaded from the BDIZ EDI website at www.bdizedi.org > English > Professionals > European Consensus Conference.

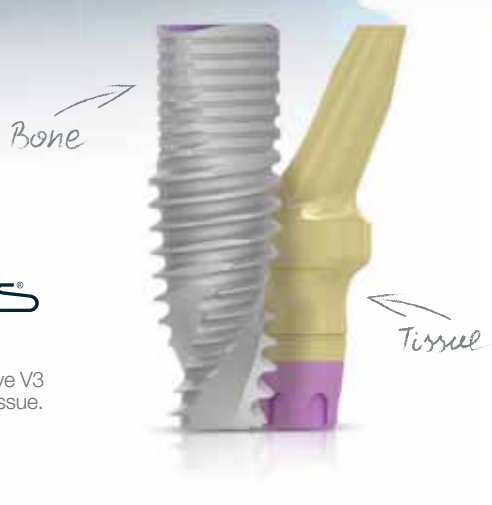
Beautiful setting: the Palazzo della Gran Guardia in the heart of Verona.

Saturday was all about orthodontics, periodontics and aesthetics. The almost last lecture was the one of *Giovanni Zucchelli* on "Peri-implant aesthetic defect treatment". He described the case of a patient whose clinical examination at the Department of Biomedical and Neuromotor Sciences of the University of Bologna showed a disharmonic pattern of the buccal gingival margin and the soft tissue margin of the implant restoration located further apically (5 mm) than the adjacent analogous tooth, which, too, carried a prosthetic crown. Additional findings: thin buccal soft tissue, no loss of interdental attachment at teeth adjacent to the implant. The treatment aim was to improve the anterior aesthetic appearance of the patient and particularly to remove the soft tissue margin discrepancy between the implant-supported restoration and the adjacent central incisor restoration. The secondary aim was to increase the thickness of the buccal soft tissue to prevent implant visibility and to provide implant-supported crown with a correct emerging profile. The surgical treatment was comprised of a coronally advanced trapezoidal flap (CAF), which covered the connective tissue graft (CTG) applied to the buccal surface of the abutment and located at the gingival-margin level of the adjacent tooth. The connective graft was created by extraoral dysepithelialization of a free gingival graft with a scalpel blade. *Zucchelli* described the following stages after surgery: surgically augmented soft tissue maturation; surgically augmented soft tissue conditioning; and the final prosthetic phase with the creation of a customized zirconia abutment with minimally subgingival finish lines for better hygiene control by patient and dental hygienist.

Any attempt to do justice to all the presentations and all the speakers must fail given the space limitations. But overall, the lectures and the panel discussions were of immense value to the approximately 600 participants. This was amply demonstrated by the lively participation of the audience in the ensuing discussions.

AWU

in a place that has no borders, creativity goes unbound...



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At the most recent strategy meeting in Oberstaufen in early May. Dr Freimut Vizethum (left) guides the Board of BDIZ EDI through the process.

The BDIZ EDI Board is defining the strategic process for the association's future

Towards BDIZ EDI 2025

The BDIZ EDI Board had launched a strategy process in 2015, and the association is currently right in the middle of that process. Where will BDIZ EDI stand in 2025? What will the future of the association look like beyond that date? Dr Freimut Vizethum, a dentist and entrepreneur from the Heidelberg region, will be guiding and supporting the board through this process. The foundations have been laid down, and the initial findings are now being analyzed. EDI Journal spoke with him about the intentions behind this effort.

Dr Vizethum, you supported the Board of BDIZ EDI on the way to defining its strategy. How difficult were the preparations and the actual process of working with our leadership team?

Oral rehabilitation using implants has become established as a major treatment mode over the past few decades. The work of BDIZ EDI in the interest of its members has made a significant contribution to this development. On the other hand, we are finding ourselves living at the time of precarious stability, with changes in healthcare policy that create risks and liabilities and that affect, directly or indirectly, the professional environment of any implant surgeon and prosthodontist. In times like this we need an efficient and capable, active and efficient professional organisation with a comprehensive approach to help create more favourable conditions and influence political decisions. Against this background, one major challenge of our strategic review was to systematically identify, without prejudice, current and future influences and environmental factors, as well as internal structures and processes, as potential basis for discussion and analysis. Suitable tools to achieve this are at our disposal today.

This sounds fairly theoretical. Could you narrow this down somewhat?

The term "strategy" is used frequently today, probably much too frequently. From a "well-planned approach" to "tactical rules of conduct", anything can be subsumed under this category. From a practical point of view, a strategy serves the following purposes:

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Spring in the Allgäu region: a scenic setting for the BDIZ EDI Board meeting.

Dr Freimut Vizethum

- **To anticipate future decisions with clearly defined objectives.** A clear and thoughtful strategy (which is then actually implemented) provides clear answers to future questions and helps shorten decision-making processes significantly.
- **To provide guidance for all stakeholders.** A strategy is an important instrument to clarify the future of the organisation and the tasks each of its members is facing. Most people dramatically underestimate the effect that a strategy can have on communication and motivation.
- **To guide the use of resources.** Limited resources are a fact of life. Focus and determination achieve the best results. A strategy provides the draft decisions for the sensible use of resources.

Each strategic process requires intensive preparation and the formulation of a concrete approach in a multistage sequence, an approach that is then discussed, reviewed and supplemented by the participants – in our case, the BDIZ EDI Board. Taking a more distant, sometimes "painfully objective" view of the results of this process will highlight a need for participants to act cooperatively and to adjust their focus. We have succeeded in doing this in a very constructive and cooperative way, which is certainly a good result for all those involved.

Does the association have any potential in terms of its strategic orientation?

Oh yes, lots of it, and we have identified multiple possible approaches. For example, the fact that the European orientation of the association came early has proven to be an advantage.

Against a backdrop of statutory challenges, regulatory requirements and the growing influence of European legislation, BDIZ EDI will continue to provide the organisational and economic framework to support the practice of oral implantology in the offices and clinics of our members.

There is also a desire to extend the secure clinical foundations of oral implantology within a framework of evidence-based dentistry, with a strong practical/clinical point of view, for example by further promoting the annual European Consensus Conference (EuCC).

The dwindling scope for sound business decisions on the part of dentists as they face growing regulatory, legal and organisational pressure and responsibilities provides a clear mandate for BDIZ EDI to get involved, for the benefit of its members as well as their patients. The association will continue to set great store in cooperative and interdisciplinary thought and action.

What was achieved at the strategy session in Oberstaufen: an intermediate result or even something like a final result?

As I said earlier, any strategic process is a multistage process and never actually completed. In Oberstaufen, we consolidated our analyses of the organisation and its environment and examined prerequisites, discussed alternatives and evaluated them in vivid and constructive discussions. Mission and objectives have been reformulated.

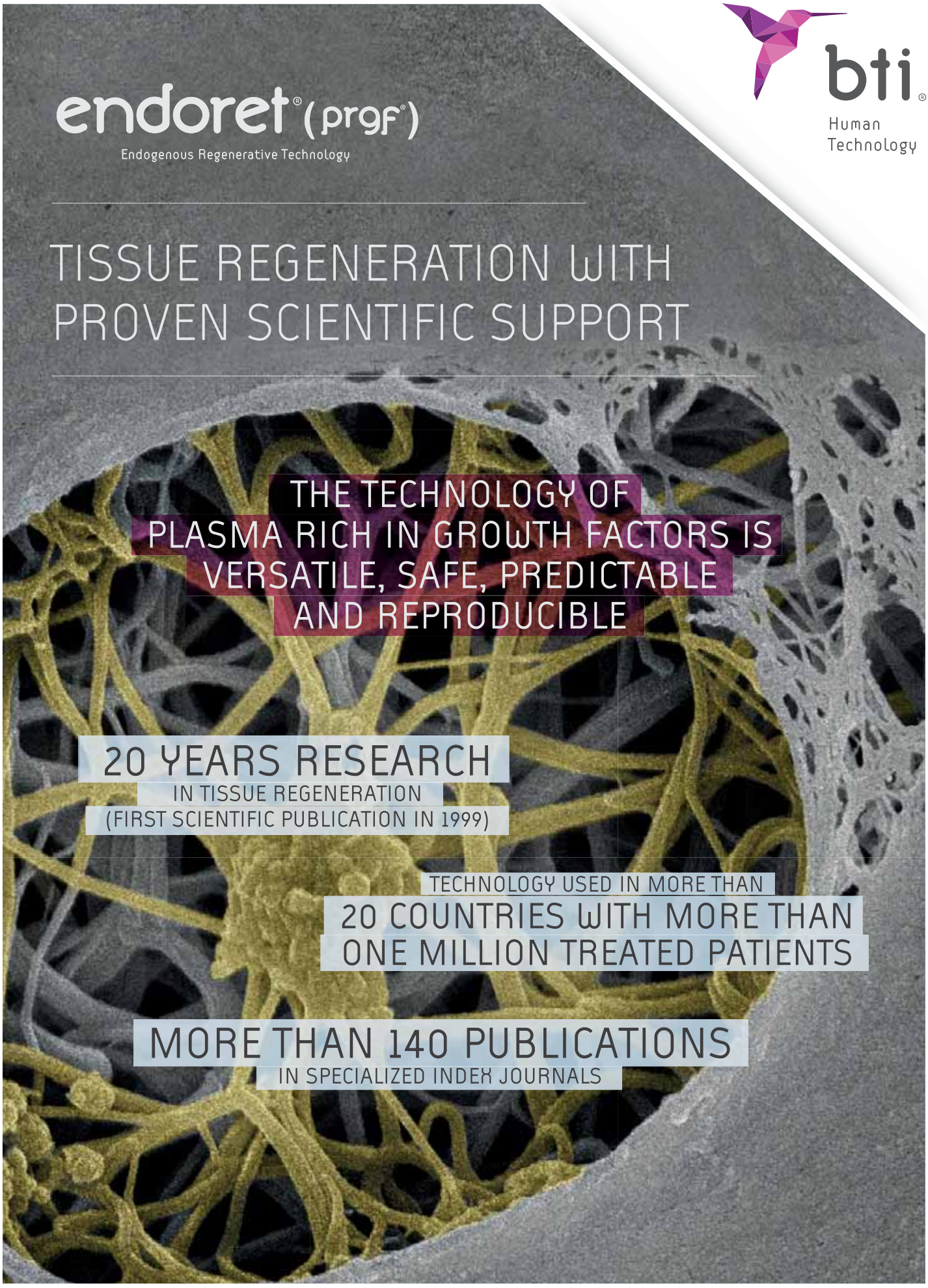
Finally, we analyzed our major strengths and weaknesses in an self-critical workshop; they will form the basis for the next step: the definition of an overall strategy.

What exactly does that next step entail?

Based on the strategic challenges, we will be deriving the measures with which to tackle the practical challenges of the upcoming years. Based on our previous work, we have all the information we need to identify and select appropriate measures. In this way, the future performance of the association can be improved through constructive work by the Board and its team to provide positive, substantive interaction with relevant and influential decision makers, demonstrating openness for cooperation and enlisting suitable partners for joint objectives.

Thank you very much, Dr Vizethum, for this exciting outlook.

The interview was conducted by Anita Wuttke, Editor-in-Chief.



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20 years of BDIZ EDI konkret – sister publication of EDI Journal

Witnessing the growth of oral implantology

20 years ago, BDIZ EDI konkret was founded as the "journal for the implantology practice" in Germany. At that time, the discipline of implantology had just come of age. Its publisher, which then as now was BDIZ EDI – European Association of Dental Implantologists, has been advocating the practice of oral implantology in the dental office from the very beginning.

Today, in the year 2016, BDIZ EDI is more European in outlook, and the battle for the recognition of oral implantology within restorative dentistry has been fought and won. The significant and growing influence of EU institutions in the healthcare sector does not leave dentists unaffected – quite to the contrary. Here BDIZ EDI konkret tries to stay at the cutting edge to provide its readers with first-hand information on developments in the dental field, and of course on the work of BDIZ EDI – always straight from the source and as close to reality as possible.

In 2005, BDIZ EDI konkret received a European sibling, the English-language EDI Journal, which keeps the members of BDIZ EDI's partner associations – and a growing readership beyond – up to date with dental affairs. In 2015, EDI Journal celebrated its tenth anniversary.

But the content of BDIZ EDI konkret, too, has become ever more "European" over the past 20 years. However, the focus was and still is on quality in dental treatment and especially implant dentistry, on practical guidelines and quality-related topics, on accounting as well as legal issues and relevant judicial decisions. Innovative materials and new implantological techniques are also given a forum, just as is the case in EDI Journal. BDIZ EDI President *Christian Berger*, representing the publisher, comments: "BDIZ EDI konkret was never meant to be a science-based journal, but was intended to convey what is important to BDIZ EDI: practical oral implantology and everything of interest for dentists in retaining, developing and growing their practice and their business. Of course, CPD – continuing professional development – has to keep track of the direction the field is taking. BDIZ EDI has therefore always seen the exchange of ideas across Germany's borders as part of its professional focus."

BDIZ EDI konkret has been a witness to development in oral implantology and a companion of dentists working with implant, and it has always reflected the political work of BDIZ EDI.

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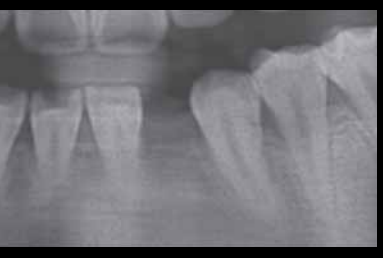
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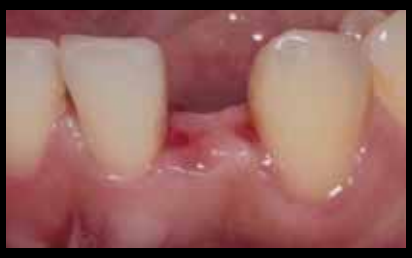

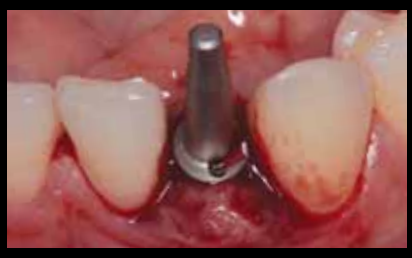
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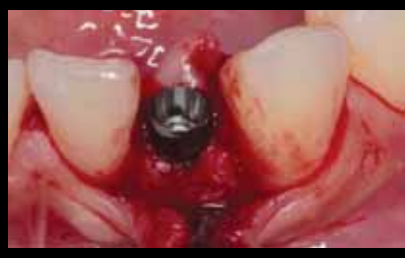
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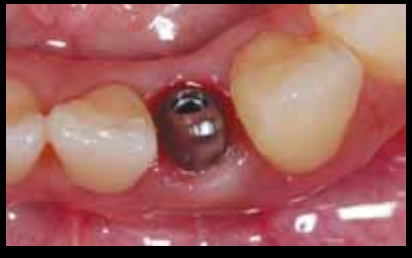
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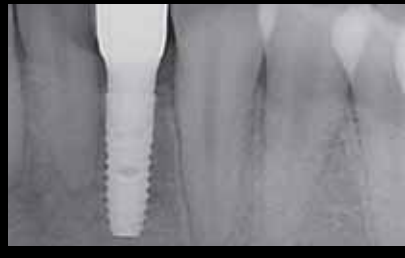
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Attorney Peter Knüpper on the internal market strategy of the European Commission

Who's afraid of the bogeyman?

As children in Germany we used to play a game in the spacious meadow behind my grandmother's house. It was called "Bogeyman". In the middle of the meadow, a catcher would stand and exclaim, "Who's afraid of the bogeyman?" The other players at the edge would shout, "No one!" And the catcher would shout, "And what if he comes?", and we would yell, "Then we'll start running!" – and we would be running to the other side as the bogeyman tried to catch or at least tag us. The winner was the last player not caught or tagged.

Why was I thinking of that game in early June at the 11th European Day of the German Dental Association (BZÄK) – this year held in cooperation with the Federal Association of Liberal Professions (BFB) – when I heard the responsible officer in Brussels say that the focus of the EU Commission was not on the healthcare professions when it comes to deregulation?

Let me explain

In late 2015, the European Commission updated its internal-market strategy, stating that employment, growth and investment in Europe were to be achieved by deepening the internal market across industries and policy areas. As early as 2006, the Commission had adopted the Services Directive, delivering an impulse to facilitate cross-border activities by members of the free professions, with the member states scrutinizing anti-competitive regulations and, in case of doubt, "deregulating".

Focus of the internal-market strategy not on healthcare professions

The healthcare professions are not affected by the Services Directive. For physicians and dentists, the European Professional Qualifications Directive regulates only the quality standard of education and training. And since professional healthcare services are not regarded as "business services", they do not seem relevant to the prognosticated growth in case

Photo: BZÄK / Axentis

of the elimination of alleged obstacles to competition. At least, this is what *Jürgen Tiedje* said. *Tiedje* heads the Services Policy for Consumers unit within the Internal Market Directorate-General of the European Commission.

He was, however, unable to dispel concerns that the European Commission could start deregulating the healthcare professions at any time, based on the principle of freedom to provide services, which is, after all, part of the European treaties. *Evelyne Gebhardt*, a German MEP, was also suspicious. The spokeswoman on internal-market policy for the Social Democrats in the European Parliament questioned the basic premise that deregulation leads to more growth.

European fundamental freedoms

Professor Martin Henssler, director of the European Centre for the Liberal Professions at the University of Cologne, believes that "there won't be a protected domain for healthcare professionals" as the freedom to provide services is further extended. Limiting European fundamental freedoms by national regulations – such as minimum fees or participation constraints for investors – is strictly prohibited. In exceptional cases they can be allowed if these restrictions are "justified".

Especially the healthcare professions, *Henssler* said, had "the best of chances" to present the specifics of their services as justification for regulation to be deemed necessary: "Physicians and dentists more than any others embody the core of the liberal professions." In view of the public health being a protected good, lawmakers should be persuaded that access to and the practice of the profession must remain partially regulated to ensure patient protection.

Henssler doubted that, at least over the long term, minimum fees were necessary and justified for purposes of quality assurance. Since there are other ways of ensuring the quality of professional healthcare services, he wanted to give "no positive prognosis" for the survival of fee schedules in their present form. Rather, he had hoped for "a little more flexibility in the arguments" proffered by professional associations.

"Neither physicians and dentists nor patients are puppets"

Evelyne Gebhardt warned of equating goods with services within the internal-market strategy. In the field of healthcare policy, the aim had to be healthcare services of high quality throughout all member states of the European Union. She called on the EU Commission to change its outlook and to define quality standards rather than kicking off boundless price competition. This was seconded by *Dr Peter Engel*, President of the German Dental Association. A "look behind the scenes" showed that the debate on the internal market strategy was strictly market-driven. "Ultimately, we are talking about a lot of money. From the perspective of economists, healthcare is a growth market. We must ensure that patients and healthcare providers do not become puppets on a string". *Engel* massively criticized the fact that the EU Commission's strategy was no longer in agreement with the basic principles of the liberal professions.

Photo: BZÄK / Axentis

Evelyne Gebhardt, MEP, expressed her doubts that deregulation actually leads to more growth.

Photo: BZÄK / Axentis

On occasion of their "European Day", officials of the German Dental Association (BZÄK) discussed European health policy and other topics.

Competition, he said, was not an end in itself, and competition should not be dominated by price alone: "Competition for professional services should be about quality. If not, this will open the gates to a discount mentality". *Engel*, who is also vice president of the BFB, called for uniform quality standards in Europe. Medicine and dentistry were the very fields that must not cave in to "heterogeneous quality".

Deregulation benefits investors

Discussions within the European Commission to give external investors a say on how law firms, offices or clinics are run served only the interest of the capital side. For this reason, said *Henssler*, the alleged need for deregulation had to be viewed rather critically. When it comes to the expansion of inter-professional cooperation, however, the situation is different. Here, the German Constitutional Court recently ruled that the cooperation of doctors and lawyers must not be restricted by professional regulations. The previous clause in the professional statute that prohibited the formation of medical firms was overturned earlier this year (judgement of 12 January 2016, 1 BvL 6/13). In the case on hand, a lawyer and a doctor and pharmacist (from Bavaria) have appealed the prohibition under professional statute of interprofessional collaboration in the form of a partnership; the plaintiffs won their case.

The attempt on the part of the EU Commission to standardize professional services also meets with criticism. Sitting on the erudite panel of BZÄK's Europe Day, *Heiko Schmelzle* – a member of the German Bundestag's Committee on Health, where he is in charge of European law – pointed out that the involvement of a standards institute organized along private lines, the European Committee for Standardization (CEN), as desired by the EU Commission, violated the "centuries-old standardization principles" in medicine. This initiative competed with existing regulations, e.g., in medical device and food hygiene law and would establish "parallel structures".

No standardization of professional services

Instead, the Commission should let itself be guided by "best practice" models that focus on people and not on the market. That's why it is incomprehensible that the term "consumer protection" is not even found once in the Commission's internal market strategy paper. *Schmelzle* demanded that the EU Commission should respect Article 168 of "Treaty on the Functioning of the European Union", whose paragraph 7 states: "Union action shall respect the responsibilities of the member states for the definition of their health policy and for the organization and delivery of health services and medical care" – a statement to which European Commission officials are bound to by law. *Jürgen Tiedje*, who by his own account doesn't have the healthcare professions on mind when thinking about deregulation, was already on his way back to Brussels, when this provision was cited. And I remembered our bogeyman game in my grandma's meadow.

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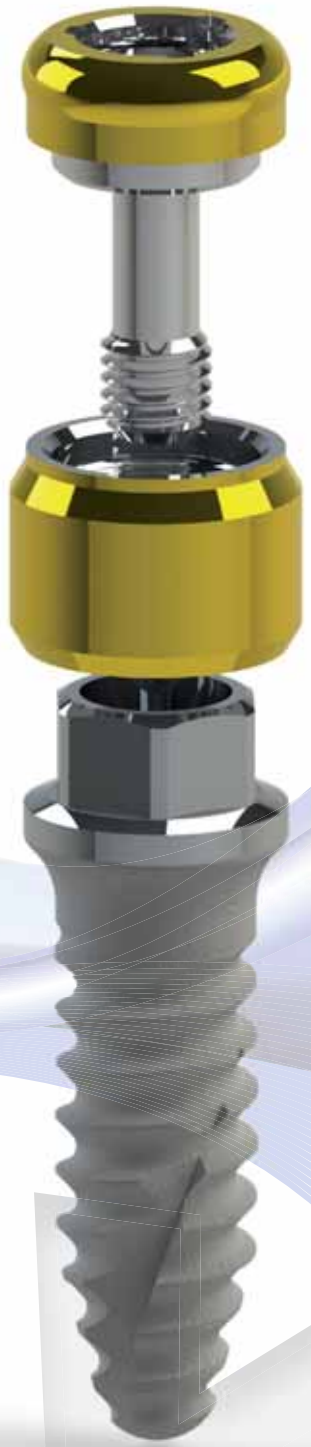

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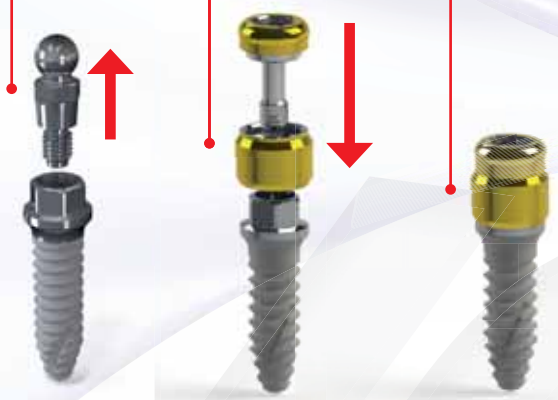

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International Osteology Symposium in Monaco

The Why and How in regenerative therapy

Monaco is always worth a visit – and even more so when the International Osteology Symposium attracts dentists from around the world for three days on the Côte d'Azur. This year's motto "Learning the Why and How in regenerative therapy" addressed the many open questions, that dental clinicians are facing in everyday practice. Almost 2,500 participants from around the world came to learn and exchange their knowledge.

The series of Osteology Symposia sets out to train dentists and maxillofacial surgeons in applying oral regeneration not only at an advanced scientific level, but also with a focus on its practical application. As a result, the series of congresses has garnered international acclaim.

In Monaco too, the scientific evidence was connected to the specific demands of daily clinical routine. Therefore, both Congress Chairmen, *Professor Friedrich Neukam* (Germany) and *Dr Myron Nevins* (USA), as well as President *Professor Mariano Sanz* agreed upon the importance of the questions that were transported with the congress slogan. In presentations, interactive sessions and discussions, international speakers were trying to answer as many of these questions as possible to give practitioners the relevant knowledge for their daily practice. Why are certain procedures necessary, why are results sometimes so difficult to predict? How to treat a certain indication? How does the tissue heal to an optimum?

Teeth for all lifetime?

After the master clinician courses and the practical and theoretical workshops on Thursday, the grand opening started a firework of high-class lectures, some of which will be focused on in this article. The main panel included two so-called clinical forums – one of them about the surgical part of regenerative therapy.

The first session, hosted by *William V. Giannobile* (USA), addressed the question of long-term implant success in regenerated bone. *Daniel Buser* (Switzerland) presented recent findings in the field of barrier membranes in GBR and discussed how they affect the clinical use of membranes and the design of the next generation of barriers. His conclusion: The findings suggest that barrier membranes play a more active role in the healing process and are fundamental for regulation of cell activities within the defect, not only in the vicinity of the barrier but also in the more peripheral parts, as well as interacting with bone substitute materials. The next topic in this forum, hosted by *Christoph Hämmerle* (Switzerland), focused on the clinical decisions for the restoration of the posterior maxilla. Severe jaw defects are and remain a challenge for dental surgeons. *Franck Renouard* (France) answered the question that is currently one of the most important issues in implant dentistry: When to use short implants – with or without bone augmentation? *Renouard*, a great supporter of the use of short implants, introduced reviews of literature and theoretical analysis revealing that the success rate of short implants is comparable to that of long implants and resulting patient morbidity is very low. His suggestion: Short implants are an elegant and efficient solution for patients who are susceptible to periodontal disease.

Forum 2 was hosted by *Nikolaus P. Lang* (Switzerland) and focused on the periodontal aspect. The topic: Teeth for all lifetime. In his lecture, the first speaker, *Myron Nevins,* reevaluated one of the strongest beliefs of dental clinicians: Periodontally compromised teeth can be saved. He made clear that he is optimistic since optimized osseointegration offers a future for cases that are usually considered to be beyond regenerative efforts; however, a strict protocol must be employed to reduce the risk of peri-implantitis, he said. Based on *Nevin's* lecture, *Anton Sculean* (Switzerland) answered the question whether or not regenerative therapy improves tooth prognosis. During the last decades, treatments using bone grafting materials, barrier membranes, enamel matrix derivatives and growth and differentiation factors have been shown to promote periodontal regeneration – through mechanisms such as the formation of cementum, periodontal ligament, alveolar bone and gingiva – to varying extents. According to *Professor Sculean*, longitudinal studies have demonstrated long-term clinical stability of these approaches, indicating their potential for improving tooth prognosis and survival. The last session of the day, hosted by *Wilfried Wagner* (Germany), was dedicated to complications in implant patients. *Tommie van de Velde* (Belgium) lectured on managing soft tissue complications. In his presentation, he focused on the surgical approach and subsequent aesthetic outcome, indicating several procedures that optimize and maintain pink aesthetics. *Van de Velde* stressed the importance of the strict indications of mucogingival therapy and the significance of selecting appropriate techniques. He described several surgical and prosthodontic procedures that aim at preserving or restoring an ideal soft tissue architecture around future implant sites.

BDIZ EDI presented itself during the International Osteology Symposium 2016. President Christian Berger (left) talking to Philippe Bregaint from EAO.

The next day was all on GBR techniques, hosted by *Karl Andreas Schlegel,* and on perii-implantitis, hosted by *David Nisande* (France). The speakers, among them *Marc Nevins* (USA) and *Christer Dahlin* (Sweden), gave an update on biological principles of barrier membranes in GBR and presented an overview on recent minimally invasive approaches to aesthetic implant site development using engineered recombinant human platelet-derived growth factor BB (rhPDGF-BB).

AWU

BDIZ EDI Guidelines 2016

This article contains selected information and does not purport to be complete. In reference to the mentioned lecture on short implants, we refer to the new guidelines of BDIZ EDI which were discussed and finalized in the European Consensus Conference under the auspices of BDIZ EDI in early 2016 in Cologne/ Germany ("Update on short, angulated and diameter-reduced implants"). The Guidelines were published in the previous issue of EDI Journal, 1/2016, which can be downloaded from the website: www.bdizedi.org > English.

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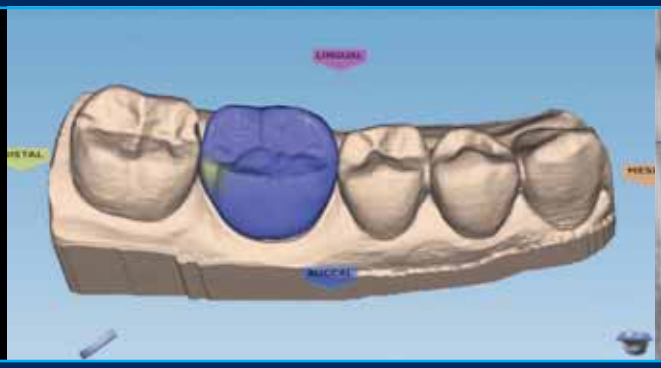

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General Meeting of the Council of European Dentists

The Hague resolutions

Representatives of CED member and observer organisations met in The Hague, the Netherlands, on 20 and 21 May 2016 for the first General Meeting under the chairmanship of CED President Dr Marco Landi. The meeting was hosted by the Royal Dutch Dental Association in the context of the Dutch EU Council Presidency. It started with a welcome address by Dr Hendrike van Drie, acting President of the Royal Dutch Dental Association. Following are the resolutions adopted by the General Meeting.

Specialist Dentists

A dentist is qualified to carry out all acts performed by specialists and must not be forbidden to perform any activities of specialists. This was the statement unanimously adopted by the General Meeting on 20 May. The main difference between a dentist and a specialist is that the specialist is more likely to perform the activities related to the specialty in question on a daily basis.

Sugar

Sugar is a leading cause of tooth decay, particularly among children and the elderly. European dentists are very much concerned with the increasing consumption of sugar by EU citizens and have unanimously adopted a resolution to raise awareness to decision-makers to the pain and suffering caused by this preventable disease. Reducing the frequency and amount of sugar consumption are crucial for the prevention of both dental and systemic diseases. The CED believes that action is required to help EU citizens to improve their food choices.

Photo: fotolia / mije shots

The "Binnenhof", a spacious complex built in the 13th century, houses, among others, the Dutch Prime Minister's office.

New Rules for Dental Amalgam

The impact of the Commission's proposal for a regulation on mercury was also discussed by delegates. The Commission proposes that dental amalgam should be restricted to encapsulated form and the mandatory use of amalgam separators from 1 January 2019. "The proposal takes into account the opinions of both scientific committees SCHER and SCENIHR. I believe that it is well-considered, proportionate and balanced. We would now like to see Member States more engaged in tackling oral diseases, by setting national objectives for dental caries prevention and investing in oral health promotion programmes", says *Dr Susie Sanderson*, Board Member and Chair of CED Working Group on Amalgam & Other Restorative Materials.

Future of Dentistry

European dentists also raised concerns on the future of dentistry. CED President *Dr Marco Landi* explains: "I am concerned with the commercial drivers affecting patients' rights to receive dental healthcare in their best interests. The CED will be dedicating more resources to look into this issue".

The CED also published its annual report for 2015, entitled "Dentistry in Europe: a responsible and accountable profession". The report summarises CED activities, political resolutions and the achievements of CED working groups and task forces in 2015. More on the CED-website: www.cedentists.eu

The Council of European Dentists

The Council of European Dentists (CED) is a European not-for-profit association which represents over 340,000 practising dentists through 32 national dental associations and chambers from 30 European countries. Its key objectives are to promote high standards of oral healthcare and effective patient-safety centred professional practice across Europe, including through regular contacts with other European organisations and EU institutions.

European arm of the FDI elects its top officers

First woman on top of the ERO

The top officers of the European Regional Organisation (ERO) of the World Dental Association (FDI) were elected in Baku, the capital of Azerbaijan, at the end of April 2016. The current President-Elect and former Secretary General, Dr Anna Lella from Poland, will take over as President – the first female one to date.

Dr Anna Lella

Dr Michael Frank

The new President-Elect will be *Dr Michael Frank*, President of the Dental Association of Hesse (LZKH), who was elected with 90 per cent of the vote. Other members of the new board include *Dr Oliver Zeyer* from Switzerland as new Secretary General, *Dr Taner Yücel* from Turkey as Board Member and *Dr Bartolomeo Griffa* as Board Member and Treasurer.

Big challenges in Europe

"For many years, the interests of dentists throughout Europe have been a personal concern of mine and a key aspect of my work in dental politics in my capacity as President of the LZKH, in the European policy bodies of the German Dental Association or in organizations such as the ERO", said *Frank*. "So I am all the more pleased with election results and the position of responsibility that I have been entrusted with. In the upcoming years, we will be facing major challenges and important tasks. I am confident that, as President-Elect of a strong organization, I will be able to help meet the challenges and address the tasks before us", said *Frank* as he commented on the outcome of the elections.

Representing a million dentists

As a sub-organization of the FDI, the ERO pools and represents the interests of almost one million dentists throughout Europe. The members of the ERO are dental organizations from 37 European countries.

Interview with Dr Craig Parker, the new President of the ADI UK

"The hub" to deliver highest standards

The Association of Dental Implantology (ADI UK) is the representative body of implant dentistry in the United Kingdom encompassing clinicians, consultants, oral surgeons, technicians, hygienists, nurses, and individuals from the healthcare sector dedicated to achieving the highest standards in patient care. For years, the ADI UK is partner organization of BDIZ EDI and joins the European Committee meetings of BDIZ EDI regularly. Editor-in-Chief Anita Wuttke of EDI Journal conducted an interview with Dr Craig Parker, the new President of ADI UK.

What originally attracted you to stand for election to the ADI committee?

I love the ethos of the ADI and that, as a registered charity, the organisation is there for everyone who has an interest in dental implantology, yet proudly resists any commercial bias. That really appeals to me, and when a position became available, a friend said I would be right for the job and that I should stand. I never thought I'd be elected!

Portrait of Dr Craig Parker

Dr Parker has been involved in surgical dentistry for over 25 years. He runs a private referral practice in Leeds, UK, where the majority of his work is in implant dentistry.

He has been actively involved in the Faculty of General Dental Practice (UK) at the Royal College of Surgeons where he was on the board of examiners for over ten years; he was also elected to the national board where he served for three years.

Dr Parker has trained with some of the most respected implantologists in the world including Professor Buser at the University of Bern (Switzerland). He is a member, accredited mentor and speaker with the International Team for Implantology (ITI).

Since November 2015, Dr Parker is President of the Association of Dental Implantology (UK) where he has been on the national board for five years.

His special interest is in digital workflow in dental implantology: using ultra-precision digital treatment planning, cone beam CT imaging, digital intra-oral scanning and CAD-CAM restoration to maximize hard and soft tissue aesthetics and functionality. He regularly lectures to various study groups and diploma and MSc programmes in the UK and occasionally at national and international dental congresses.

How long have you been practising implants?

Around ten years; just about long enough to have a handle on the complicated world of dental implantology, but hopefully not so long that I have lost any empathy for the novices in the field and the challenges they are facing.

To specialize in dental implantology was the best decision of my career.

The ADI is the UK's foremost dental implant association. How do you see the organisation moving forward?

The ADI is proactively developing its role as the "go to" organisation for dental implantology in the UK. We have been carefully consulting with and considering the needs of the various relevant groups including patients, dentists and their teams, education providers, students, and the industry. We recognize that the potential benefit of dental implants is very much under-realised in the UK. We are striving to increase public awareness and understanding of dental implantology and we are supporting to facilitate ethical prescribing, so that dental implants become more widely available to the general public. As we do so, we will continue to be "the hub" which helps all the various stakeholders, especially our members, to deliver the very highest standards.

What is the biggest benefit to you of being an ADI member?

There are of course many benefits, but I feel that the most amazing thing that ADI does is to bring its

members together to share their experiences and to provide world class meetings at the same time. The ADI has a fantastic reputation for its face-to-face events including study clubs, masterclasses and national congresses. But more recently it has also introduced the virtual exchange of ideas via the Facebook ADI Members Forum which is already posting very exciting cases and dialogues.

What do you think about the collaboration with the European Association of Dental Implantologists (BDIZ EDI)?

I strongly believe that international collaboration, like the cooperation between the BDIZ EDI and the ADI UK, has the potential to bring massive benefit to the entire dental implantology community and ultimately to our patients. If we can pool our knowledge and experience, our ultimate understanding of this challenging and evolving field will be all the stronger.

If you had three wishes for further improving the situation of implant dentistry, what would they be?

If I had a magic wand for dental implantology, firstly I would introduce a comprehensive mentoring system, which would help us all on our journey through professional development in dental implantology. It would be widely acknowledged as the norm and it would be economically and logistically viable and of enormous benefit to us all.

Next I would find a cure for, or even just a better understanding of, peri-implantitis, the Achilles heel of dental implantology. I don't think we've even started to turn a corner on this one!

Lastly I would accelerate the development of tissue engineering, so that we can more safely and predictably build hard and soft tissues intra-orally in those patients who are unfortunate enough to have defects which preclude or compromise the provision of dental implants. This is my wish that will come true – and hopefully within my practicing lifetime!

Cooperation between BDIZ EDI and the University of Cologne

18th Curriculum Implantology

The 18th Curriculum Implantology of BDIZ EDI in collaboration with the University of Cologne will be launched in Cologne in October 2016. The curriculum consists of different modules that run over a period of one year.

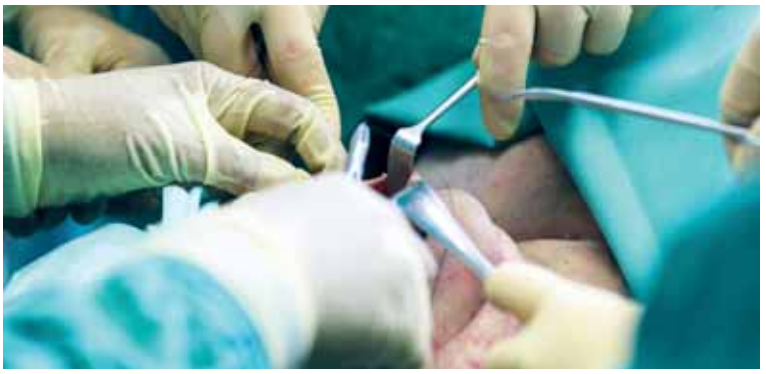
In eight modules, the BDIZ EDI Curriculum Implantology, led by *Professor Joachim E. Zöller*, addresses indications, surgical and restorative procedures as well as complications within oral implantology. The programme includes the latest aspects of minimally invasive surgery (sinus floor elevation, bone splitting, flapless surgery) as well as intensive training in 3D diagnostics and their surgical application using 3D surgical templates, which are becoming increasingly popular in clinical oral implantology.

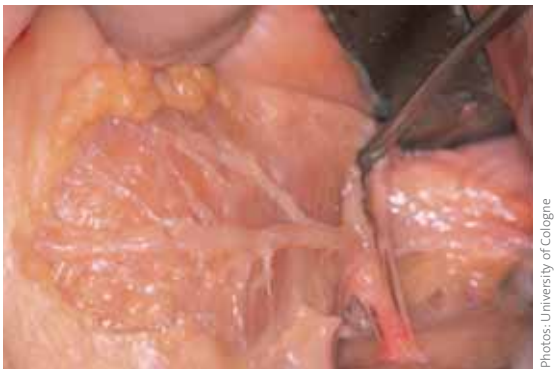
A solid foundation

The BDIZ EDI Curriculum Implantology appeals not only to young dentists and to newcomers to oral implantology. Its modular design makes it particularly interesting to dentists who perform implant surgery only occasionally but want to make sure their treatment rests on solid ground. The curriculum allows its successful graduates to master even difficult indications and to address potential complications successfully. Other special features include the high proportion of practical exercises as well as the fact that training modules not offered by BDIZ EDI can be integrated into the curriculum if they are documented to be scientifically sound.

Current and former attendees particularly appreciate the surgical exercises on human specimens that make for realistic hands-on workshops. These practical units are an integral part of each curriculum module. Human specimens at the Anatomical Institute of the University of Cologne have been prepared to different stages and tissue depths so that not only the tissues' spatial orientation can be studied, but it can also be appreciated which structures should be preserved wherever possible. ››

The Curriculum Implantology of BDIZ EDI includes many practical exercises on animal and human specimens.





Photos: University of Cologne

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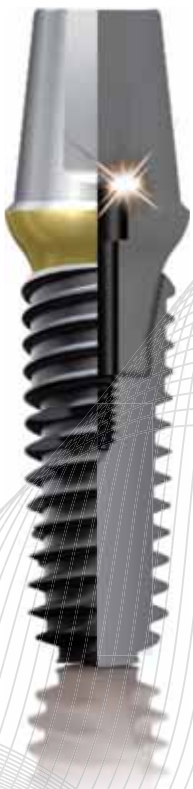

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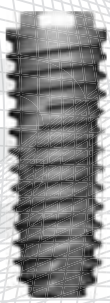

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Teaching methods

One innovation team leader *Dr Hans-Joachim Nickenig* implemented is certainly the "presentation" block. Here, participants will present their own cases to their peer group. This, in addition to intensive discussions and the development of strategies for implant surgery and implant restoration, prepares attendees for their final exam, which has been integrated into the final module. Thus, once the last module has been successfully completed, the candidate can be granted his or her certificate.

Comparative analysis of different implant systems and protocols make it easier for participants to make sound choices in clinical practice. Great emphasis is also placed on the development of a surgical and restorative standard protocol (even for beginners). Members of BDIZ EDI pay a reduced registration fee. If you are interested in this course or would like to come to Cologne for a special basic or advanced course for two to three days, please contact our Bonn office at office-bonn@bdizedi.org.

AWU

Modules of the 18th Curriculum Implantology of BDIZ EDI and the University of Cologne

Module 1, 6–7 October 2016
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

Anatomy (Friday): Studies on human specimens

Module 2, 24–25 November 2016
Treatment planning and diagnosis
- High-risk patients, local anaesthesia, monitoring
- Implant therapy in patients with compromised blood coagulation
- Aesthetic diagnosis
- Case presentations I (*)
- Suturing techniques and incisions
- Surgical protocol

Practical exercises: implant insertion into a plastic jaw, suturing techniques and incisions

(*) For the presentations, participants are encouraged to put their own cases up for discussion.

Module 3, 19–20 January 2017
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: 3D workshop

Module 4, 9–10 February 2017
Implant-supported restorations
- Antibiotic therapy
- Emergencies in the dental practice
- Implant prosthodontics I (single and multiple missing teeth, cantilever situations)
- Comparison of implant systems

Practical exercises: Biological ridge widening; exercises on calf's ribs

Module 5, 9–10 March 2017
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 lamb skulls/pig jaws/ apples/eggs – splitting calf's ribs

Module 6, 4–5 May 2017
Soft-tissue management
- CBCT in implant therapy
- Augmentation with connective tissue and bone substitutes
- Hands-on soft tissue
- Implant prosthodontics II (partially and completely edentulous jaws)
- Case presentations II (*)

Practical exercises: soft tissue (on pig jaws)

(*) For the presentations, participants are encouraged to put their own cases up for discussion. Preparation for the final exam.

Module 7, 18–19 May 2017
Augmentation, part 2 – Remote autologous bone grafts
- Iliac-crest transplants
- Distraction osteogenesis
- An alternative to augmentation: nerve lateralization, angulated implants
- Expert opinions in implantology

Practical exercises: anatomy, block augmentation, sinus floor elevation

Module 8, 29–30 June 2017
Recall and complications
- Implant re-entry, recall and maintenance
- Growth factors in oral implantology
- Peri-implantitis
- Assistance in oral implantology

Friday afternoon: Final examination and certificate award ceremony

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Information for patients on the internet – quick and reliable

Everything you always wanted to know about implants …

There are numerous internet portals that provide information on implants. Some are reliable, others less so. BDIZ EDI supplies, in addition to its information booklets, implant-related information for patients on its website. Go to www.bdizedi.org > English > Patients to get a quick overview of our offerings.

On its web pages directed at patients, BDIZ EDI addresses various aspects related to implants and implant placement. The FAQs and corresponding answers on these pages intend to satisfy patients' initial information needs. Of course, the attending dentist is the one who is responsible for any detailed advice. And another thing should be made completely clear: No prosthetic replacement is ever as good as healthy natural teeth. Therefore, dentists and patients alike are, and must be, primarily interested in the health of the natural dentition.

Since regrowing teeth is still at least a few decades into the future, dental implants continue to be the most advanced and adaptable form of restoration. Nothing comes closer to natural teeth. What many patients do not know is that the "implant" is only the artificial tooth root – not the entire structure complete with the final, visible artificial tooth crown. In addition to this general question, topics discussed include the advantages of implants over conventional dentures, the important issue of oral hygiene and the question what patients should look for when choosing their dentist. The process of implant placement is also described.

Dentists who want to give their patients more information on how to care for their new implant-supported restorations might wish to take a look at the brochure "Implants: Long-lasting implants for long-lasting beauty", published and distributed by BDIZ EDI (see box).

Patient information in English is available online at www.bdizedi.org > English > Patients.

Implant care instruction booklet

The **Implant care instruction booklet** for distribution to patients, available in either English or German, can be ordered from the BDIZ EDI online shop (accessible via the adjoining QR-Code or via the German version of the website) or by e-mail from the BDIZ EDI office (office-bonn@bdizedi.org). It costs 1.50 EUR per copy (member price 1.00 EUR). The minimum order quantity is 10 copies.

Interview with Dr Jan Willem Vaartjes and Dr Jeroen Pepplinkhuizen

Dental implantology in the Netherlands

It is very interesting to look over to the Netherlands – there are a lot of changes going on in matters of implant dentistry. When Jan Willem Vaartjes and Jeroen Pepplinkhuizen joined the European Committee of BDIZ EDI for the first time in Cologne in early February, there was a lot of discussion about the changing situation in the dental field in their country. With their association, both implant clinicians aim at moving forward the process of becoming a partner association of BDIZ EDI.

Dr Vaartjes, Dr Pepplinkhuizen, how interested in dental implants are patients in the Netherlands?

Dr Vaartjes: Dentistry in the Netherlands is performed on a high level with patients who care for their dental health. In general, patients visit their dentist at least once a year. A significant part of the population is interested in fixed prosthodontic solutions. The implantological field also thrives because the Dutch healthcare system provides almost free insurance coverage for implant overdentures for patients with severe resorbed edentulous jaws. But due to cuts in government spending, this type of implantology is currently under pressure.

Are patients well-informed about innovative techniques and treatment options?

Dr Pepplinkhuizen: There is a lot of information available online and in printed form. Young dentists at the university receive quite decent training in the possibilities of implant dentistry. Certified implant dentists are obliged to give lectures about implant dentistry, which helps educate the referring dentists on the latest developments and gets the right information to their patients.

How interested in dental implants are dentists in your country?

Dr Vaartjes: Implantology has gained significant popularity since the beginning of this century. Many dentists followed post-graduation courses in implant dentistry. Last year, the fees for implantology were cut by 19%, which unfortunately will make it difficult for newcomers or dentists to place implants more sporadically in order to practice implant dentistry in their office.

How do dentists view dental implantology – as a welcome challenge or as undesirable?

Dr Vaartjes: Dental implants are now generally considered a viable treatment option. However, a decision must often be taken between a conventional bridge and an implant. If the adjacent teeth are healthy, an implant is generally considered the treatment option of choice for fixed prosthodontics. At this point, the risk of peri-implantitis is receiving more and more attention.

Jan Willem Vaartjes

- 1998 Graduation from dental school in Amsterdam
- 2004 Registered implantologist (NVOI)
- 2005 Associate fellow of the American Association of Implant Dentistry (AAID)
- 2013 Chairman of the Association of Dutch Dentists (ANT)

What type of education or postgraduate training does a dentist (or physician) need in your country to be able to work in dental implantology?

Dr Pepplinkhuizen: Of course there is a variety of possibilities, ranging from post-MSc programmes at universities to courses by scientific associations and by the industry. At the moment, there are no Dutch regulations on this matter. Any procedure can be executed if dentists consider themselves qualified and well-trained in the procedure. We are looking into this and trying to give it a bit more structure. For example, an experienced mentor is advisable when starting in oral implantology.

What is the total number of dentists in your region and in the Netherlands as a whole?

Dr Pepplinkhuizen: More than 12,000 dentists are officially registered in our country, but the number of those who actually practice dentistry is probably around 8,500. This means that there is one dentist for every 2,000 inhabitants. But of course there are great regional differences. The dentist ratio varies from 1 : 1,100 to 1 : 2,650. Our region is somewhere in the middle , and we are very busy because people here are highly dental-minded. An interesting phenomenon is that out of the 440 newly registered dentists each year, approximately 220 are from and have been educated outside the Netherlands.

What percentage of them do you estimate are active in implantology?

Dr Pepplinkhuizen: Around 6% of dentists place implants on a regular base. Around 3% are certified by the scientific association.

Jeroen Pepplinkhuizen

- 1986 Graduation from dental school in Nijmegen
- 1999 Registered implantologist (NVOI), DGZI and ICOI (fellow)
- 2001 Diplomate ICOI
- 2015 Chairman of the Académie BIN, an interest group of (third-party) certified implantologists

Is being an active dental implantologist an attractive proposition in your country? If so, why?

Dr Vaartjes: Being an implantologist is an attractive profession. The possibilities are almost endless, as implantology is a synthesis of oral surgery, prosthodontics and periodontology. You need to be creative, and in many cases you will be the last resort of the patient for a rehabilitation. However, dentistry is fully regulated in our country. The maximum average profit that the (full-time) owner of a dental practice is allowed to make is limited to 128,000 euros. Implantologists generally own big offices and treat many patients, which in 2015 led to a decrease in fees of 19%. The future is uncertain. A few years from now there will be a new official dental-income survey, and chances are that new cuts will be forthcoming.

Are there any specific regulations for dentists offering implantological treatment in their practice?

Dr Vaartjes: Besides the fact that a form of education is obligatory, infection prevention rules of surgical treatments are described in a guideline (W.I.P.). The good thing about this guideline is that it allows implantological treatments in private practice and not only in hospital settings. A normal dental office can reasonably be adapted to meet the requirements.

Dr Pepplinkhuizen: Last year a peculiar new regulation was forced on us. The maximum material costs for an implant that a dentist can charge was set to 284 euros, even in a private setting. As we all know, there are innovative implants (e.g., from zirconia) that cost more and therefore do not reach patients any more.

Who pays for the implantological treatment, and how?

Dr Pepplinkhuizen: Fixed solutions are not covered by the statutory healthcare system. Patients have to pay for the treatment, but can take out private insurance to cover the treatment partially. Around 75% of our patients have private insurance, which normally covers a few hundred euros and sometimes even to a maximum of 1,500 euros. Edentulous patients with severe resorbed ridges are covered by the national healthcare system. In these cases, the government pays for an overdenture on (normally) two implants with a bar or ball attachment.

What percentage of the cost is borne by patients, their (statutory or private) health insurers and/or other institutions or organizations?

Dr Vaartjes: In general, a standard implant (without bone augmentation) costs around 1,800 euros,

from consultation to placing the crown. Private health insurance in most cases contributes around 350 euros, which is 20%. For a bar overdenture in the mandible, the cost is around 3,000 euros. Depending on the situation, the statutory healthcare system covers around 2,750 euros, or more than 90%.

What are the problems implantologists are facing in your country?

Dr Vaartjes: Due to state regulations, it is difficult to invest in new technologies or innovative treatments. High-end care that patients want and are willing to pay for cannot always be delivered due to the fee ceiling.

Since more and more patients receive implant treatment, the prevalence of peri-implantitis is increasing. As implantologists we have the task to reduce this and avoid giving implants a bad reputation.

How do you believe dental implantology in your country will develop – as the ideal solution in prosthodontics or as one concept of many?

Dr Vaartjes: We are sure that implants will keep playing a major role in prosthodontics during the coming decades. At the moment, sustainable dental health and rehabilitation of the total oral environment is coming more and more into focus, rather than simply replacing the missing tooth. Nor should we be blind to the progress made in auto-transplantations and apical surgery. Especially the auto-transplantation of premolars is a very interesting treatment solution for missing front teeth in adolescents.

Please name three topics you would like BDIZ EDI to assign priority to.

Dr Pepplinkhuizen: BDIZ EDI already addresses important topics such as peri-implantitis and short or angulated implants. It might be interesting to seek consensus on the shape of implant-based abutments, connections and restorations. These can influence peri-implant health, but there are no widely accepted or used guidelines on their design.

Other interesting topics could be guidelines on preferred occlusal patterns and the influence of the different cleaning materials and methods for abutments and superstructures to maximize bone preservation around implants.

What are your wishes for dental implantologists in your country?

Dr Pepplinkhuizen: That would definitely be more freedom in the fees to provide the best and innovative treatments to patients.

What would be the significance and the objective of an international professional journal in the field of dental implantology?

Dr Vaartjes: Dental implantology is universal. What works in Germany also works in Spain and also in the Netherlands. Every country has interesting approaches, and we should all learn from each other so we can improve. An international professional journal really helps unite us and look beyond our borders.

On which topics would you appreciate a panel discussion or international symposium?

Dr Pepplinkhuizen: It would be interesting to have a panel discussion on the proper design of superstructures regarding pressure on the bone and connective tissue, on controlling the gingival architecture and on the ability to perform good oral hygiene. Related topics would be screw-retained vs cement-retained restorations and how to avoid implant-abutment disconnection.

Europe Ticker +++

Nine European medical associations assert their position

Fighting standardization

In a joint letter to German Health Minister *Hermann Gröhe* (Christian Democrats), nine European medical associations opposed the development of standards for health services by the private European Committee for Standardization (CEN). The organizations pointed out that since the organization of health services falls within the competence of the member states, the standardization activities of CEN clearly exceeded its own competences.

Any standardization of health services, the letter said, had to be consistent with the current state of medical knowledge, technical skills and medical ethics. It was therefore up to the medical profession to establish the rules for their profession, including standards, guidelines and recommendations. "The creation of non-medical frames of reference violates national competences, resulting in ambiguities, and thereby puts patient safety and the quality of care at risk", as the medical associations warned. The letter has been published on www.bundesaerztekammer.de.

Source: German Medical Association, Deutsche Ärzte-Zeitung (Germany)

EU Commission presents mercury regulation

Dentists also affected

Dental amalgam contains not only copper, silver and tin, but also mercury. The EU Commission presented a new mercury regulation in early February 2016, aiming to help reduce the global consumption of mercury, in the form of a legislative package for the implementation of Minamata Convention of the United Nations, the German Dental Association (BZÄK) reported.

The Commission's proposals include a draft mercury regulation and a draft Council decision formally required under international law for the EU to ratify the Minamata Convention. The draft regulation also addresses the special case of dental amalgam. According to the BZÄK, the European Commission proposes that dental amalgam should be legal to use only in encapsulated form in the EU after 1 January 2019. In addition, all dental facilities will have to be equipped with amalgam separators. The European Commission expects that dental practices in the EU face an additional cost of between 10 and 58 million euros per year for the installation and maintenance of the separators. A complete ban on amalgam is not envisaged by the European Commission. Further information on the draft regulation is available on the European Commission website.

Source: Deutsche Zahnärzte-Woche, German Dental Association

Photo: Fotolia.com / Sebastian Kaulitzki

EU Trade Commissioner Cecilia Malmström

TTIP to come in 2016

Despite fierce criticism from consumer advocates, the EU Commission wants to reach an agreement on the planned free-trade agreement with the USA, TTIP, later this year. "We are working on this as hard as we can", said Trade Commissioner *Cecilia Malmström* at an EU ministerial meeting in Brussels. However, she added, there can be an agreement only if the redlines and priorities of the EU are respected. The TTIP talks were adversely affected recently by the public disclosure of secret negotiating documents. Consumer advocates and environmentalists considered the documents as further evidence that European standards could be lowered by the free-trade agreement.

Source: Der Spiegel, Germany

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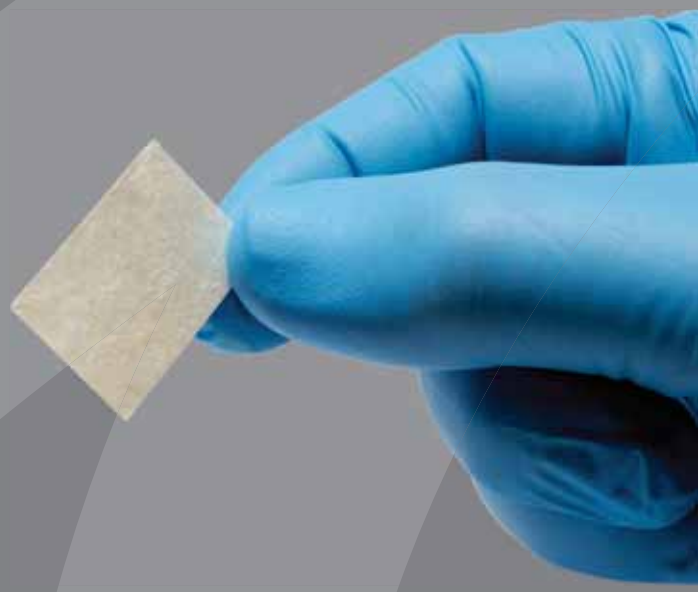

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Europe Ticker +++

Despite the EU's Wildlife Trade Regulations

Ivory for dental research purposes?

The import of ivory into the European Union is governed by Regulation (EC) No. 338/97 on the protection of species; ivory may only be imported under the very strict conditions outlined there. Generally speaking, no unprocessed ivory may be imported into the EU. Importing processed ivory is possible in the case of antiques as defined by the EU Wildlife Trade Regulations or if the specimens were previously lawfully exported from the EU to a third country. What happens to the ivory confiscated by the customs authorities? Within the framework of international regulations, it can be used, under strict conditions, for scientific or educational purposes, such as for education of officials at customs, police or state institutions. The confiscated ivory is also used for research purposes at universities or other institutions, including dental research.

Source: National Geographic, Germany

Photo: Michael Tieck

Gold fillings in dentistry

Lower demand

As shown in Gold Demand Trends published by the World Gold Council, the global demand for gold has increased by 21 per cent, to 1,290 tonnes, in the first quarter of 2016. By contrast, the demand for gold for technological applications declined by 3 per cent, to 80.9 tonnes, over the same period. Of this latter amount, 63.9 tonnes (– 3 per cent) were used in electronics, 4.5 tons (– 4 per cent) in dentistry and 12.4 tonnes (1 per cent) in other industries.

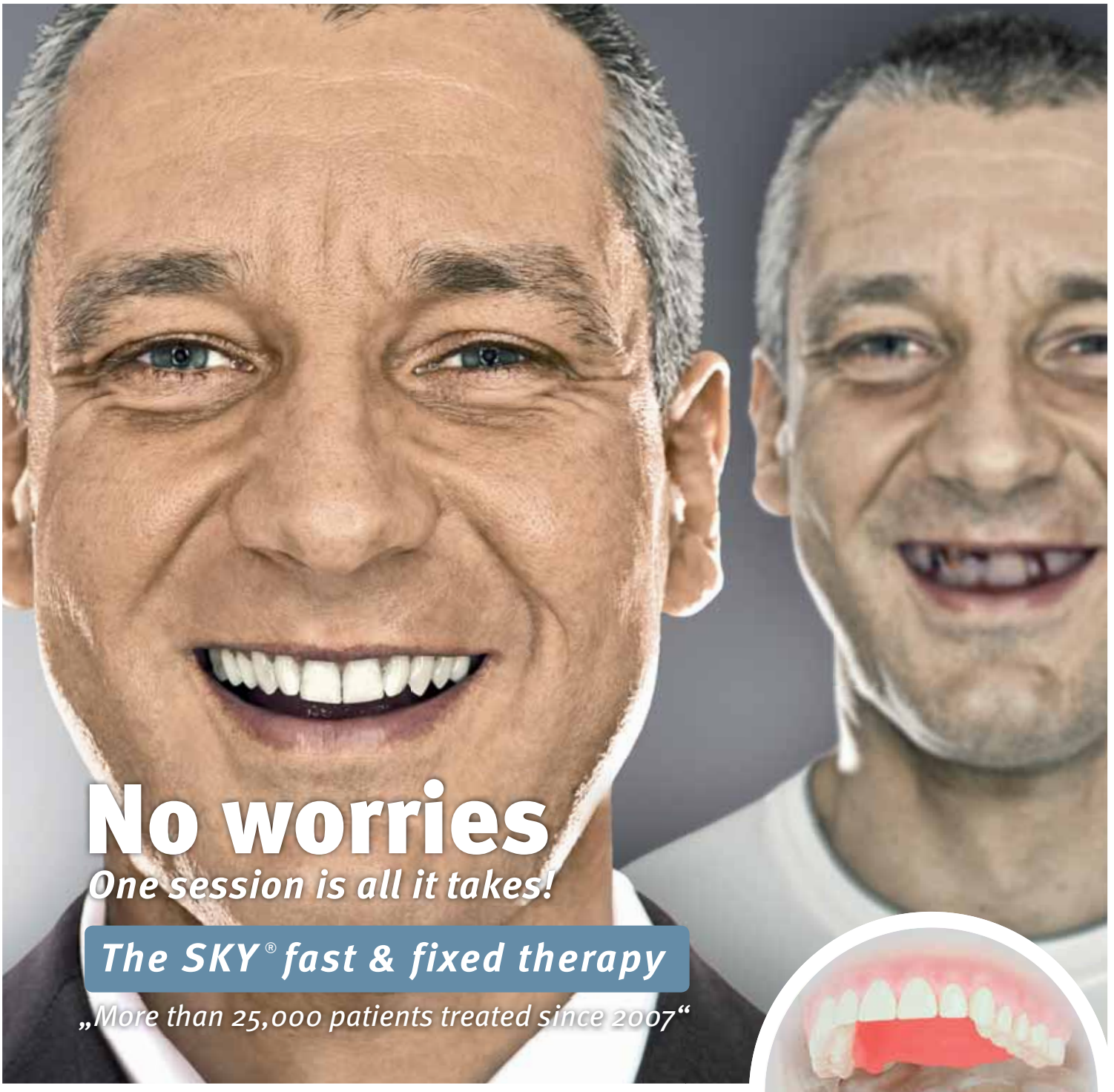
Source: Gold Demand Trends

Dutch dentist sentenced to eight years in prison

Dubbed "the dentist of horror"

A Dutch dentist was sentenced to eight years behind bars in France this April. According to the court, *Jacobus ("Mark") van Nierop* from the Netherlands had inflicted unnecessary pain and cost on dozens of patients, mutilating rather than healing them and defrauding health insurers. He was sentenced to eight years in prison and fined 10,500 euros. In addition, the 51-year-old Dutchman was barred from practicing dentistry for life. The suit had been brought by 120 victims. In handing down the long prison sentence, the court followed the request by prosecutor *Lucile Jaillon-Bru*, who accused the defendant of greed and sadistic inclinations during the trial. His former patients, who had called him a "butcher" and "sadist", were satisfied. In 2008, *van Nierop* had opened his practice in Château-Chinon after receiving subsidies by the Regional Council. As in many rural areas, the shortage of doctors and dentists had prevailed in the 2,400-people village in Burgundy for years. So when a Dutch headhunter recruited the dentist, he was initially welcomed enthusiastically. But the problems soon started. At the trial hearing, it was reported that *van Nierop* had destroyed the pulps of healthy teeth, inserted bridges and crowns incorrectly and provoked infections. A woman had eight teeth extracted in one day, enabling the dentist to bill 8,000 euros. The dentist told the court that he did not remember his patients. Psychologists attested "narcissistic tendencies" and a lack of compassion. According to the regional health insurance fund, *van Nierop* had charged three times as much as other dentists in the region. When complaints about billing irregularities started piling up, the state attorney initiated an investigation in 2013, after which *van Nierop* fled to Canada, where he was arrested in 2014 and extradited to Europe.

Source: Various media



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General Court of the EU on health claims made on foods

It is not the truth that matters

Health claims ascribing a health-promoting effect to a food product are particularly effective in advertising. However, the use of such statements is restricted. In the EU, nutrition and health claims made on foods are admissible only in accordance with Regulation (EC) 1924/2006 of the European Parliament and of the Council of 20 December 2006, the so-called Health Claims Regulation (HCR).

Under Article 10(1) HCR, health claims made on foods are prohibited unless authorized by the European Commission in accordance with the HCR and included in a list of permitted claims. Under Article 13(5) HCR, applications for the authorization of health claims can be submitted by food business operators; all other operators can then refer to that authorization. Applications are submitted to the competent national authority of a member state, which forwards them to the European Food Safety Authority (EFSA) for a scientific assessment, as well as to the Commission and the member states for information. Taking into account the opinion delivered by the EFSA, the Commission then decides on whether to include the health claims in a general EU regulation that is binding on all member states. The rejection of an application is enacted by a similar legally binding instrument: If inclusion in the list for a health claim is applied for but denied, that health claim will be explicitly listed as inadmissible. Article 3 HCR specifically prohibits false, ambiguous or misleading advertising statements.

As the European Commission invariably responds by issuing a regulation, i.e., a "European law", both authorization and non-authorization are binding in their entirety and directly applicable in all member states, and they must be complied with not only by the national courts and authorities but also by business entities. Even correct and scientifically supported statements may be problematic, as was recently confirmed by the General Court of the EU (EGC), based in Luxembourg.

Five scientific options

The decision was based on the following facts: The applicant was a well-known German producer of glucose products in different forms for the German and European markets. On 21 December 2011, the applicant requested authorization from the German Federal Office of Consumer Protection and Food Safety (BVL) to use various health claims for specific target groups, one being the general population, the other being active, healthy, athletic and performance-oriented men and women. The German authorities forwarded the application to the EFSA, which issued five scientific opinions that confirmed the overall accuracy of the health-related advertising claims. In particular, a causal relationship between the uptake of glucose and the contribution to the energy metabolism was asserted. Nevertheless, the European Commission rejected the admissibility of these health claims for glucose and issued Commission Regulation (EU) 2015/8 on the non-authorization of these health claims. It permitted the continued use of the health claims for a maximum transition period of six months.

The European Commission based its denial, inter alia, on the fact that – even in the case of a favourable scientific assessment – the authorization may be legitimately withheld if the health claim was inconsistent with generally accepted nutrition and health principles. According to the EC, the use of the health claim in question conveyed a conflicting and confusing message to consumers, as it encouraged the consumption of sugar even though, on the basis of generally accepted scientific evidence, national and international authorities recommend that the intake of sugar should be reduced.

EGC dismissed the action

Since the Regulation of 6 January 2015 was directed directly against the food business operator who had filed the application for admission of the claims, the company had the right to bring action before the EGC with a view to getting the contested regulation invalidated. The EGC dismissed the action against the European Commission in its judgment of 16 May 2015. The applicant now has the option to appeal to the ECJ on a point of law only.

The applicant had submitted several pleas in law all of which were rejected. The Court noted that the Commission has to decide about health-related information in accordance with Article 18(4) HCR,

while at the same time taking into account, in addition to the EFSA opinion, all relevant provisions of EU law and other legitimate factors relevant to the case. Thus, it is not only the opinion of EFSA that counts, as the EFSA merely verifies whether a health claim is substantiated by scientific evidence. In this case, the EGC based its decision specifically on the intention of the HCR as evidenced by its recitals. The contested regulation had also referred to these recitals and had added its own recitals in support of its decision to reject the application.

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Scientific risk assessments: no complete information

According to the Court, Recital 30 of the HCR, to which the contested regulation refers, implied in particular that in some cases scientific risk assessments by themselves do not provide the complete information on which a risk management decision can be based, meaning that other legitimate factors relevant to the issue under consideration also have to be taken into account. From this the EGC concluded that the Commission had to be given broad discretion, contestable in court proceedings only to a limited extent, namely in terms of examining whether the exercise of that discretion was manifestly flawed, constituted a misuse of power or whether the authority had manifestly overstepped the limits of its discretion. From Recital 14 of the contested decision it followed that the Commission had disallowed the disputed health claims because the claims in question ran contrary to generally accepted nutrition and health principles. The EGC upheld the refusal by the Commission issued on the grounds that the use of the health claim in question would convey a conflicting and confusing message to consumers, because it encouraged their consumption of sugar even though, on the basis of generally accepted scientific evidence, national and international authorities recommend that the intake of sugar should be reduced. Given the aforementioned considerations, the EGC considered the disputed advertising claims to be misleading. The EGC noted in this context that the consumption of a cube consisting of eight tablets of six grams each already provides more than half the daily reference quantity of sugar for an average adult. According to Recitals 1 and 8 of the HCR, one of the main purposes of the HCR is health protection. Furthermore, Recital 38 of the HCR implied that the proper functioning of the internal market for nutrition and health claims must be safeguarded while striving to provide a high level of consumer protection.

As far as the applicant's suggestion to include, as a complement to the health claims, a mandatory reference to the recommendation of international authorities to monitor or reduce sugar consumption – something that in the applicant's view would have upheld the principle of proportionality – in order to prevent misleading the consumer, the court considered the inclusion of such a reference insufficient. The fact that the manufacturer would on one hand recommend the use of their product while on the other hand warning against it was seen by the court as a contradiction in terms. Although the applicant argued that the Commission had approved similar warnings elsewhere, the court recognized no breach of the principle of equal treatment. It remains to be seen whether the food producer will bring an appeal against the EGC decision before the ECJ, given that the appeal is limited to points of law.

The decision by the EGC shows the significant importance of health and consumer protection in Europe. Even correct, well-founded statements based on scientific knowledge may be disallowed in individual cases if they are contrary to the accepted nutrition and health principles. The decision on whether this is the case rests with the European Commission, which in the matter enjoys broad discretion. ■

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Possibilities and limitations of oral implantology following bone augmentation

Implantation and augmentation XXL

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Oral implantology has become an indispensable means of rehabilitating the human dentition. Thanks to intensive research efforts and the resulting surface modifications, the osseointegration of implants may justly be considered a problem that has been solved [2,15,17,49]. But what about the, sometimes extensive, jawbone defects such as those that remain after a tumour has been removed surgically? While these situations still presented an unresolved problem in the beginnings of oral implantology, concepts exist today that allow us to provide a functional and aesthetic rehabilitation even in the case of large defects. This article will present some clinical examples to highlight the current possibilities and limitations of oral implantology following bone augmentation.

Treatment planning

Whether or not an implant is placed in the prosthetically correct position will be the main determinant of functional, aesthetic and prosthetic success. The final treatment outcome must guide, and be envisioned ahead of, any bone augmentation procedures. This approach, called prosthetically guided or backward planning, can be implemented either by way of a conventional wax-up or by using a CAD approach based on CBCT or CT images [50]. What augmentation procedure is chosen will depend on the available residual bone height and width. The first decision is whether to use a single-stage or two-stage procedure for reconstruction. Generally, a two-stage procedure must be carried out when the residual bone does not permit implantation in the correct prosthetic position or if sufficient primary stability cannot be achieved during implant placement. This would rule out techniques such as lateral augmentation with or without a membrane, bone splitting or bone spreading as a singular solution [28,32,35,56].

Socket preservation and augmentation of small defects

After tooth loss, progressive bone atrophy will occur due to the absence of a functional load on the alveolar process via the periodontal ligament. The bone situation at the time of tooth loss and the amount of remodeling during the healing process determine the bone supply available as the basis for implant placement [7]. Early implant placement and the use of socket/ridge preservation techniques (atraumatic extraction, preservation of the buccal plate, use of bone substitute material, membranes and connective-tissue grafts) can limit the amount of bone that is lost [38].

Augmentation of one-walled and two-walled small defects

Autologous bone chips or allogeneic, xenogeneic or alloplastic bone substitute materials can be used to reconstruct small bone defects simultaneously with implant insertion. These materials, usually present in particulate form, are used to compensate for limited bone defects or gaps between the implant and the bone wall, up to about 2 mm [14,19,39]. It is mostly used in combination with membranes to give the material added dimensional stability and to achieve better control of tissue healing in terms of guided bone/tissue regeneration [42].

Another approach consists in the extraction of centrifuged plasma, i.e. platelet-rich plasma from the patient's own blood, which is then further pro-

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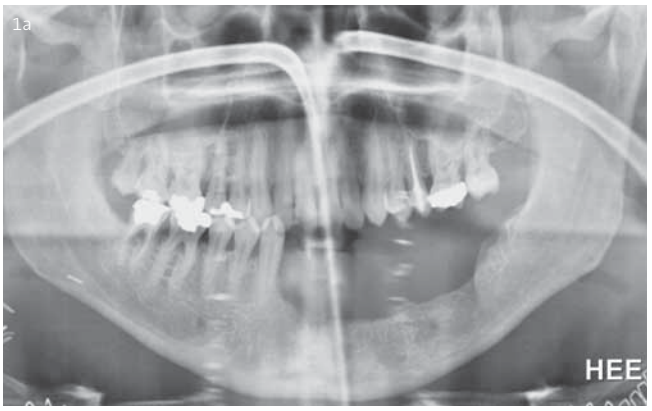
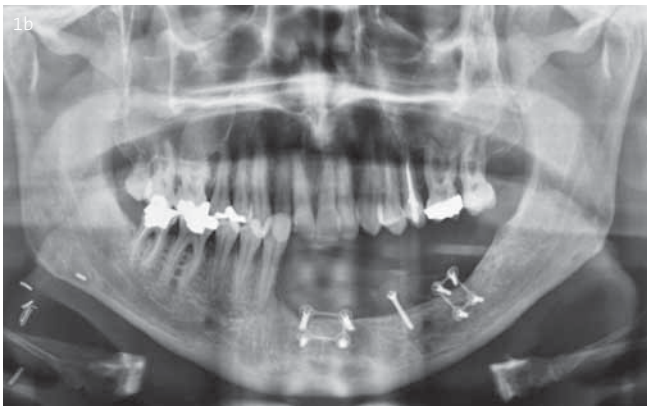
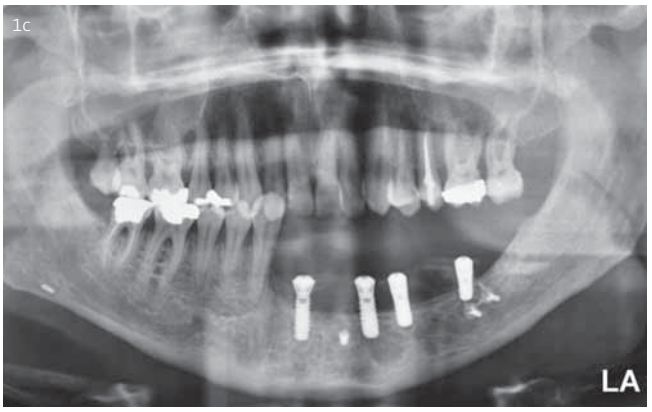
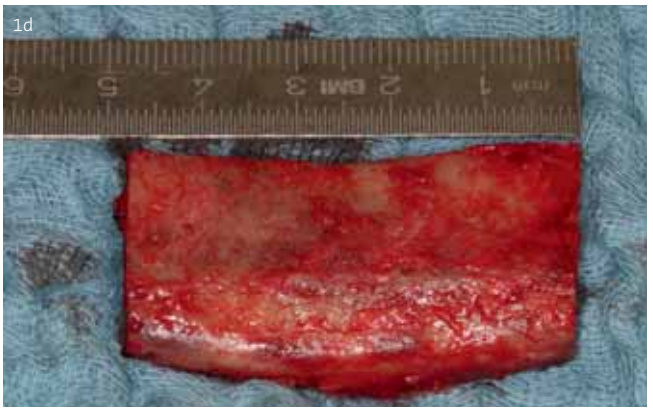
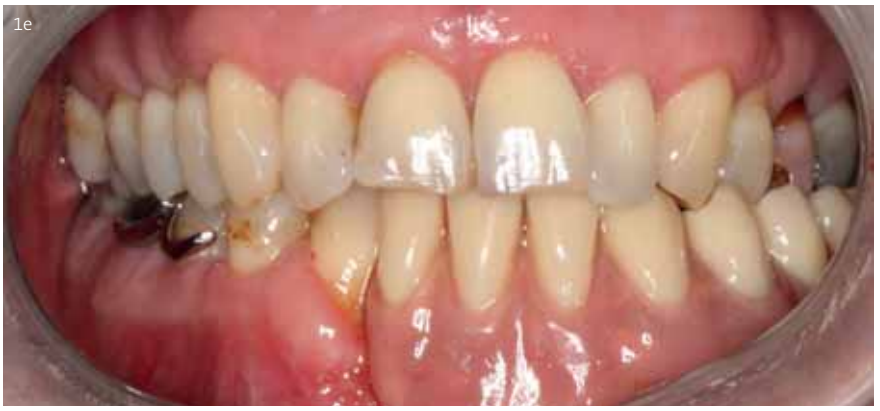










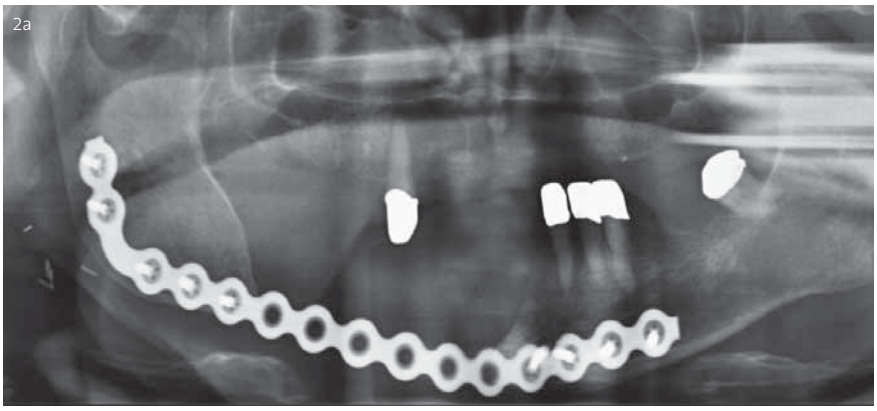
1a to e I Vertical bone apposition in the mandible following tumour-related box resection using graft bone from the iliac crest. Initial situation after tumour resection (a), the position of monocortical bone chips from the iliac crest (b), implant placement (c), the harvested graft (d) and the final restoration on ball abutments plus additional clips (e).

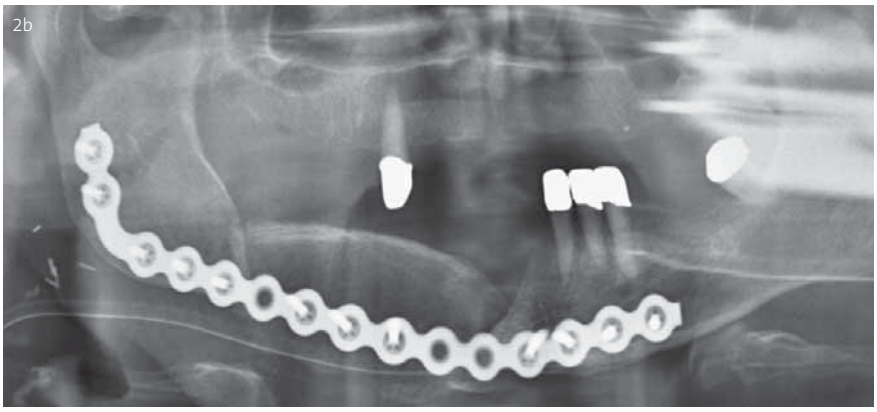
cessed to obtain a membrane-like material. Due to the concentration of coagulation and growth factors present after admixture with the augmentation material, the latter is thought to achieve more biological potential [3,5] and greater stability.

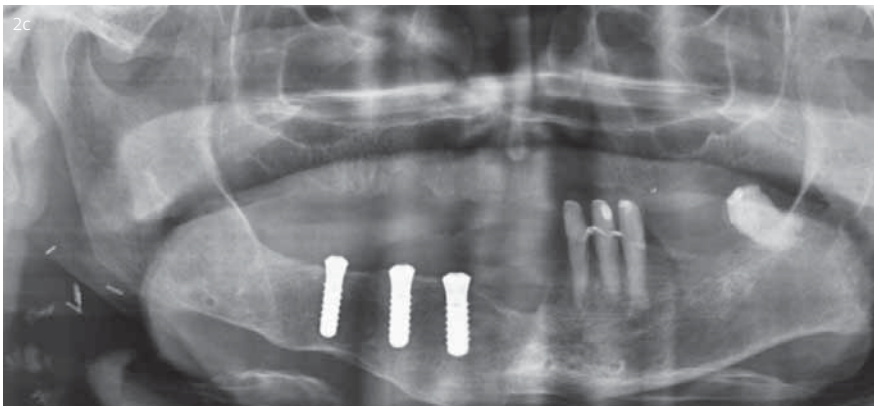
Augmentation of small defects using intraoral bone blocks

In cases of a vertical bone deficit or a narrow alveolar ridge, where primary implant stability is not achievable, it is necessary to perform an onlay augmentation first. The mandibular angle, chin or maxillary tuberosity are possible donor sites for bone blocks or shells, with the mandibular angle having the greatest potential [6,43,45,47]. The proximity of the donor and recipient sites has the advantage of saving time and reducing donor site morbidity [53] compared with more distant sites. Once the recipient site has been accessed and the graft harvested from the donor site, the size and shape of the bone block are adapted to the defect as closely as possible to obtain a large surface for bone apposition and successful revascularization [44,47].

An alternative is the shell technique, where the graft harvested should exceed the defect width in size [54,58]. The shell serves as a highly stable nonresorbable membrane and creates an internal defect [6,58] that is filled with autologous bone chips or bone substitute. This speeds up the ingrowth of vessels. Another alternative is the production of







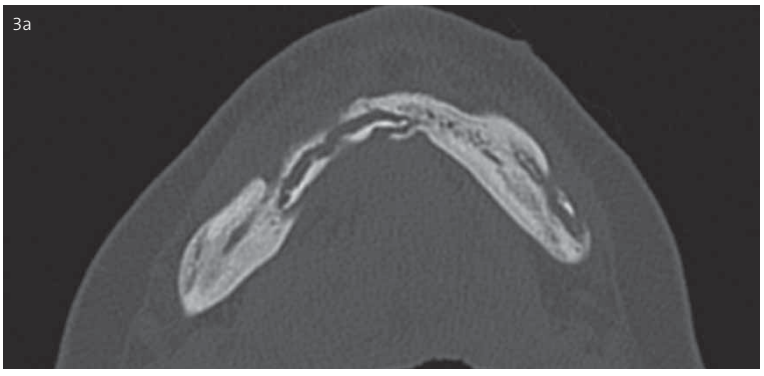
2a to c I Mandibular replacement using a non-vascularized bicortical iliac-crest graft. Initial situation after tumour resection (a), fixation of the iliac crest graft (b), healing and implant placement (c).

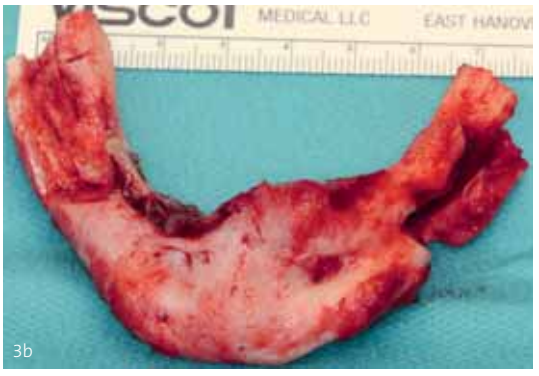
patient-specific xenogeneic or alloplastic blocks. However, these have proven to be less predictable [39,51].

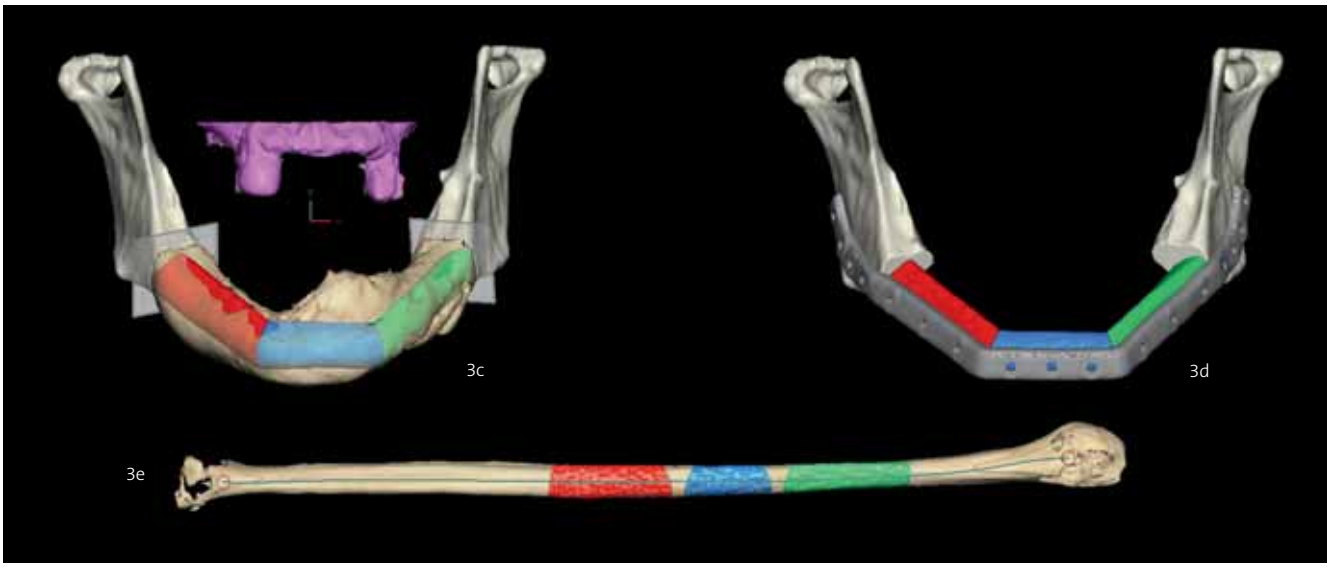
All three techniques require complete immobilization of the graft. Intrinsic mobility of the graft or overloading of the augmented area by temporary restorations will often result in the loss of the graft [6,55]. Tension-free wound closure is mandatory to prevent wound dehiscence and infections [43].

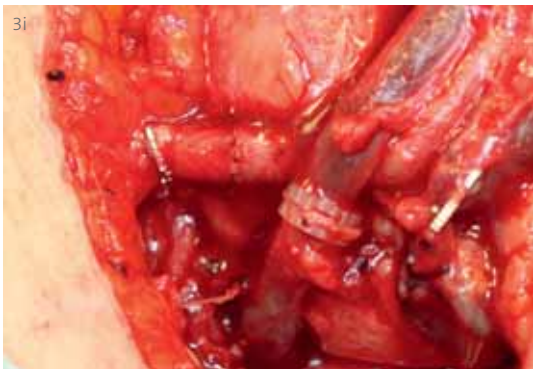
Reconstruction of medium-sized defects using autologous iliac crest grafts

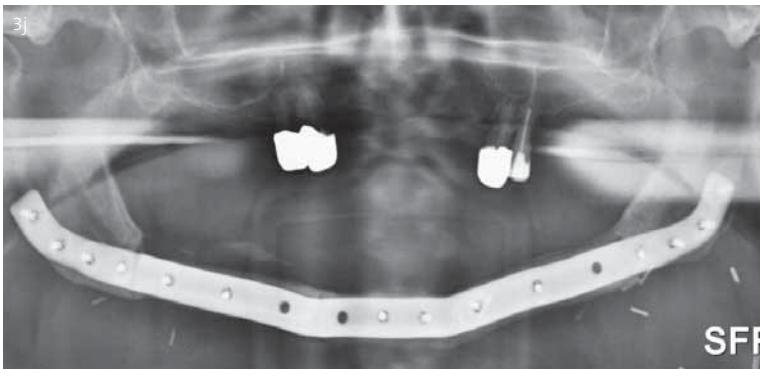
Larger defects with vertical and horizontal tissue deficits, such as those resulting from trauma or tumour resection (box resection or small-dimension continuity resection of the jaw), can be reconstructed by free non-pedicled grafts from the iliac crest (Figs. 1a to 2c). The graft can be harvested as a monocortical or bicortical bone block. The size of the defect to be restored should not exceed 5 to 7 cm [1,25]. The bone block may be of variable design and adapted to the defect. In addition, cancellous bone can be harvested to fill remaining voids or residual cracks. Disadvantages include the additional morbidity at the donor site and the sometimes considerable resorption of the graft (up to 25 per cent of the volume) [26,33,41]. During the postoperative phase, patient mobility will be limited, and oral thromboprophylactic measures should therefore be taken.



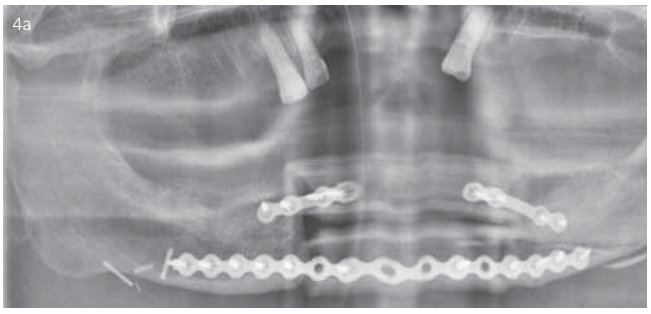


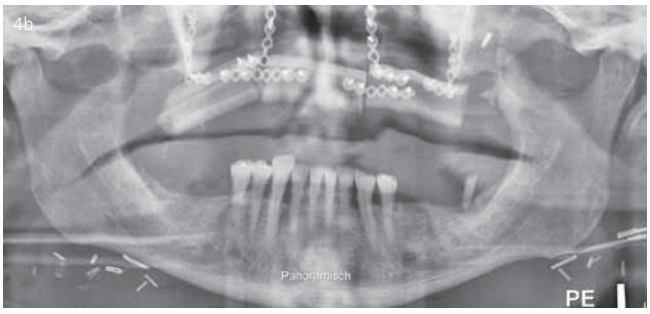


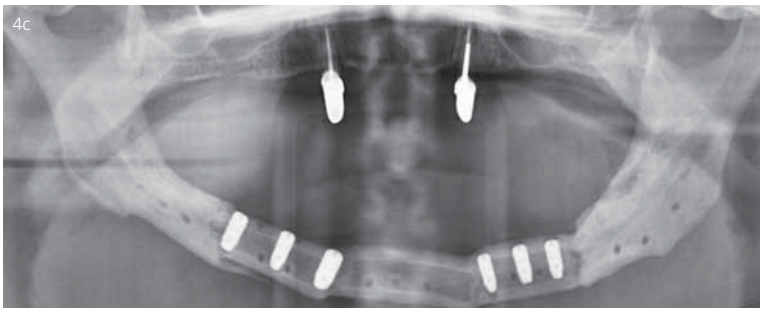




3a to j I Mandibular replacement with a vascularized fibular graft in BRONJ. Initial situation: Sequestration of the mandible after years of intravenous bisphosphonate therapy (a), subtotal mandibular resection (b), virtual planning of the resection and the mandibular replacement with a fibular graft (c), virtual representation of the reconstructed mandible with a custom osteosynthesis plate (d), virtual osteotomy of the fibula in segments (e), intraoperative presentation of fibular graft with cutting guides in place (f), elevated graft with skin island flap (g), fibula with individual reconstruction plate attached (h), vascular connections of the graft (i) and postoperative panoramic radiograph (j).







4a to c I Variants of fibular grafts. Doubling down of fibular grafts for mandibular replacement (a), maxillary reconstruction with fibular graft (b) and healed fibula with implants inserted (c).

Reconstruction of extensive defects using microvascular grafts

In case of large jaw defects following extensive continuity resections due to tumours, osteomyelitis or osteonecrosis of the jaw, patients can usually be rehabilitated only with the help of microvascular reanastomized bone grafts [18]. The grafts used are harvested from the fibula, iliac crest or scapula [57]. Both purely osseous and combined bone/soft-tissue defects can be treated in this way.

The reconstruction of extensive defects of the maxilla and mandible by means of osteocutaneous fibular grafts (Figs. 3a to j) is a proven and versatile method [30]. This method has been improved by preoperative computerized (virtual) planning and the subsequent fabrication of osteosynthesis plates and cutting guides. These techniques facilitate accuracy of fit and a dimensionally correct reconstruction of the jaw as an ideal preparation for implant placement [8,48].

Implantological procedure

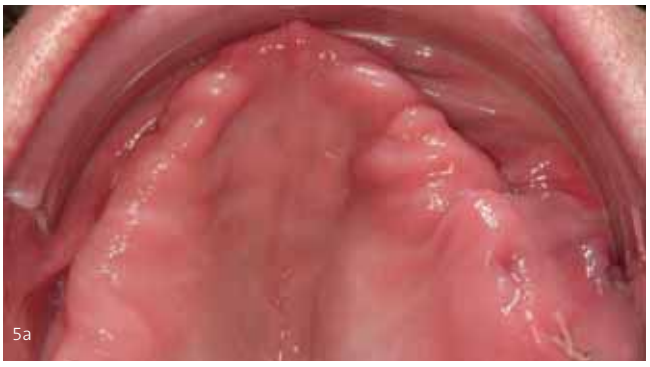
Implant insertion in fibular grafts has been extensively studied and the results are predictable [11]. Despite the relatively low bone height, a relatively hard bone structure with a thick cortical bone layer provides good stability. In addition, using fibular grafts can improve vertical bone height by doubling up the graft using the so-called double-barrel technique [31]. This method (Figs. 4a to c) can be used to augment the maxilla as well as the mandible [9]. The grafts exhibit good dimensional stability and relatively low absorption (8 to 17 per cent) due to immediate vascularization [40].

After a healing period of three to five months, the implant can be inserted in the reconstructed area. At that time, bony reconstruction through contouring – especially on the contact surfaces of the local bone and the fibula or its cutting surfaces – will have taken place. The preimplantological prosthetic planning including the implant positions determined should be transferred to the intraoperative situation using surgical guides [23,60]. At the time of re-entry, the flap will frequently be thinned and the soft tissue contoured. Tubed flaps can be used to improve the soft-tissue situation. Apical advancement flaps can ensure a more favourable position of the mucogingival junction or connective-tissue grafts to establish a zone of attached gingiva ahead of the prosthetic phase [22].

No impression can be taken until at least two weeks later. The deployment of an undersized temporary crown in the presence of reduced loads on the bone can provide “bone training” for optimal osseointegration in addition to shaping an optimized emergence profile. The definitive restoration is often supported by custom abutments [10,21].

Obturator prosthesis

If in the case of maxillary defect, reconstruction is not desired or impossible for medical reasons, there is still the option of providing an implant-supported obturator prosthesis. Provided its fit is impeccable, such a prosthesis will facilitate mastication, articulation and a tight seal of the nasal and maxillary sinuses while still achieving good aesthetic results. However, correct impression-taking and the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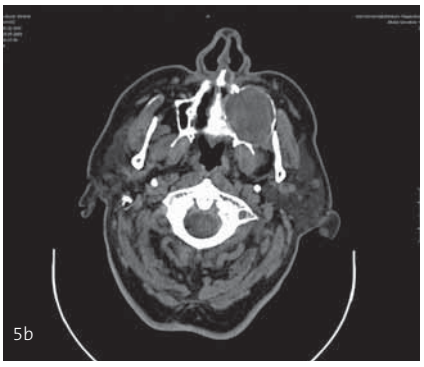
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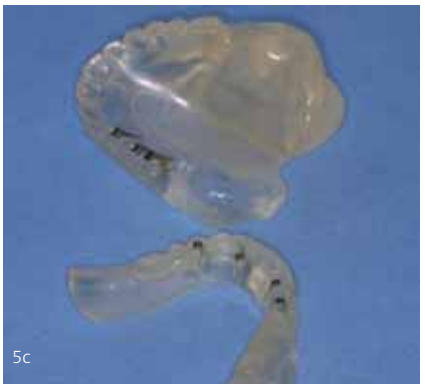
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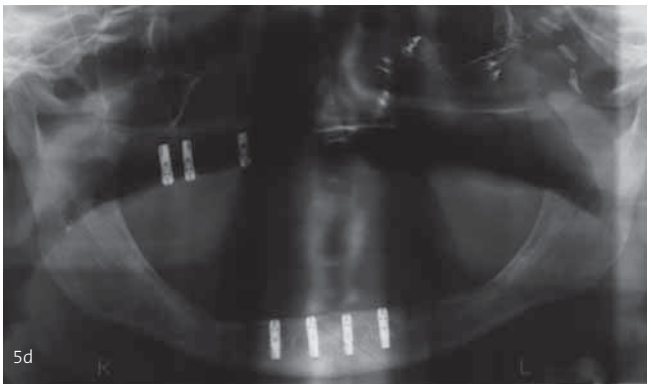
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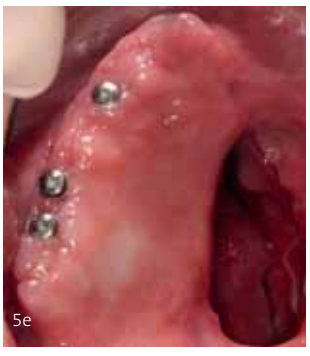
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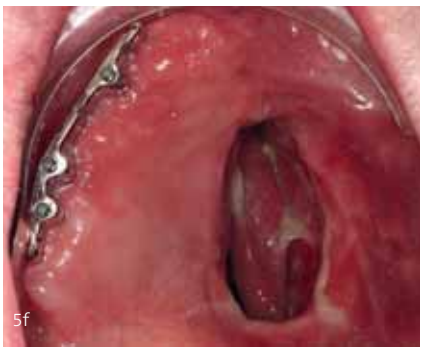
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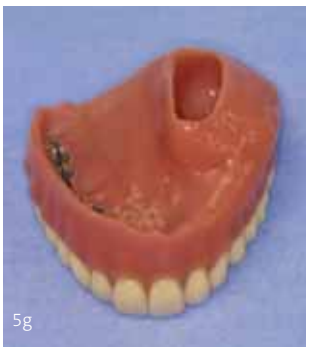
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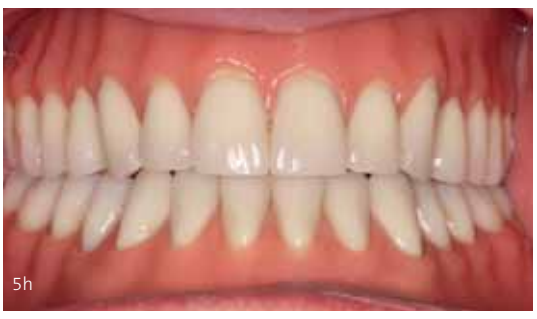
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5a to h I Mandibular obturator prosthesis retained by implants. Initial finding of an ameloblastoma of the left maxilla (a), representation of the tumour on a CT scan (b), drilling templates for implant insertion after resection (c), situation after implant placement in the maxilla and mandible (d), implants healed in situ (e), inserted milled bar (f), finished obturator prosthesis (g) and definitive prosthetic rehabilitation (h).

fabrication of the prosthesis in the laboratory require profound knowledge and experience in the field of defect prosthetics (Figs. 5a to h).

General medical conditions and patient medication

A number of external factors and systemic diseases such as smoking, diabetes mellitus or cardiovascular diseases may adversely affect the implantological outcome. The same is true of systemic drugs.

Implants and anti-resorptive therapy

Bisphosphonates are now among the most commonly prescribed drugs used to treat osteoporosis [25,29]. Furthermore, bisphosphonates and anti-resorptive drugs are used e.g. in the treatment of bone metastases of breast or prostate cancer, in order to prevent fractures. Due to the increasing use of these drugs, practically all dentists have had to familiarize themselves with bisphosphonate-related (BRONJ, cf. Fig. 3a) or medication-related (MRONJ) osteonecrosis of the jaw. Unfortunately, these diseases often prove refractory to treatment. Dental surgical procedures such as implant placement will be associated with increased complication levels and trigger necrosis due to the reduced level of bone remodelling [4] and compromised soft-tissue healing [52]. At present there are only vague expert-based recommendations for implant therapy in patients under anti-resorptive medication. Based on

published study results, the risk profile for implant placement under oral bisphosphonate therapy with a benign underlying disease (osteoporosis) can be considered relatively low [34], while if the drug is given intravenously and the underlying disease is malignant, the risk is greatly increased [36,59] and the placement of implants and bone augmentation in particular are not recommended [36].

An exception to this are vascularized grafts that can be used in advanced stages of MRONJ following repeated failure of local surgical procedures to reconstruct the jaw. Placing implants in these vascularized grafts under anti-resorptive therapy have been described and successfully performed several times by the authors. However, no studies at a higher level of evidence exist at this time.

Implants and anticoagulation therapy

Treatment with anticoagulants is no contraindication to the placement of implants. However, the situation requires a strict indication, a good perioperative management and close cooperation with the general medical practitioner or internal medical specialist. Haemorrhaging and vascular lesions in the floor of the mouth may lead to acute bleeding and swelling with airway obstruction [46]. Oral anticoagulation therapy with coumarins should be continued during the insertion of isolated implants, similar to the recommendation for tooth extractions [16], and not be substituted by heparin [37]. In consultation with the attending physician, careful preoperative adjustment to the INR in the upper therapeutic range must be performed preoperatively. More extensive implant surgery as well as augmentations and osteotomies should be performed in an in-patient setting. Treatment with platelet aggregation inhibitors (such as acetylsalicylic acid or clopidogrel) or the new direct oral anticoagulants (such as dabigatran, rivaroxaban) also mandates close cooperation with the attending physician. Treatment in patients with congenital coagulation disorders (such as haemophilia, von Willebrand's syndrome) should be performed in close cooperation with a supervising haemostaseologist in an in-patient setting.

Implants and irradiation treatment

In the irradiated jawbone, the activity of the osteoblasts, and thus the capacity for remodelling and osseoregeneration, is reduced [20]. Lower long-term survival rates of implants in the irradiated jaw have been described frequently [27]. Recent studies, however, have shown that osseointegration can be observed in the irradiated jaw and that good and stable long-term results are possible [13].

In addition, given the xerostomia usually present in irradiated patients, implants are often the only viable option for a rehabilitation that restores masticatory function. After irradiation, a recovery period of at least six months should be observed for the jawbone or reconstructed bone before implants are inserted [12].

Implant placement should be combined with perioperative antibiotic therapy; bone augmentation should be avoided. Tension-free soft-tissue coverage and submerged implant healing are both required. Following re-entry, it should be attempted to provide a thin and well-fixated peri-implant soft-tissue cuff to ensure a tight seal around the implant and protect the jawbone from infection. Regular follow-up appointments and good oral hygiene are essential.

Conclusions

Autologous bone grafts represent the gold standard in the reconstruction of small and medium-sized defects. More extensive jaw defects can be reconstructed with dimensionally accurate and stable vascularized grafts. Preoperative virtual planning makes augmentation/reconstruction procedures predictable and help optimize the result. This type of planning a further step in the direction of extended backward planning to achieve the best possible implant positions for the subsequent prosthetic treatment.

Anti-resorptive drugs present a challenge. If these drugs are administered intravenously, implants must currently be considered contraindicated, the risk profile seems be reasonable if the drugs are administered orally. When patients on anti-resorptive medication and for irradiated patients are to be treated with implants, the dentist must insist on excellent oral hygiene on the part of the patients at risk. Regular close follow-up appointments and an optimal oral hygiene management are obligatory. ■

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An overview of synthetic and non-synthetic materials

Bone substitute materials in dental implantology

DR KAI FISCHER, THOMAS PIERCHALLA, DR MATTHIAS BECKER, WITTEN, GERMANY

In addition to autologous bone, various bone substitute materials (BSM) have been described for augmentative surgery in the context of oral implant treatment. Here we must differentiate between synthetic and non-synthetic (allogeneic, xenogeneic) materials. The introduced material is primarily used for stabilizing the blood clot, as a placeholder for ingrowing vessels and as a lead structure for the newly formed bone. BSMs should not cause inflammation or infection, and their volume should be stable until the bone has regenerated. The present article examines the existing requirements of materials used for bone augmentation and discusses advantages and disadvantages based on the study results currently available.

Situations where an insufficient bone volume makes it difficult to perform the planned treatment are a recurring challenge in oral implantology. There are many possible causes of bone deficiencies, including bone resorption after tooth loss/extraction, attachment loss due to periodontal disease or pneumatic expansion of the maxillary sinus. In response to the demand of patients for fixed restorations and the conservation of intact tooth structures, as well as better denture retention, dentistry has successfully offered implant-supported solutions for many years now. A prerequisite for implant placement is sufficient bone volume, both vertically and horizontally. Advanced atrophy of the alveolar ridge may render implant placement impossible unless preceded by, or performed concurrently with, bone augmentation. To restore the lost hard tissue, many techniques increasingly resort to bone substitute materials (BSM) as an alternative to autologous bone.

In oral surgery, and hence in oral implantology, autologous bone is still considered as the gold standard [3,9]. Autologous bone, in addition to its osteoconductive capacity, has an osteoinductive effect; as its structure is the body's own, it provides an ideal matrix for the formation of new bone. An advantage of this approach is that collagen, proteins such as growth factors (the so-called bone morphogenetic proteins, BMP) and vital osteoblasts are transferred to the target site during the grafting process. However, the number of surviving cells depends on factors such as the duration of the procedure, the harvesting technique and the quality of the bone itself [14]. Other advantages of bone augmentation using autologous bone include the absence of an immunological foreign-body reaction and the fact that no exogenous pathogens are introduced. Basically, autologous bone can be harvested either lateral to the surgical site or in a number of other regions (such as the retromolar region of the lower jaw, the chin or the iliac crest). However, this would necessitate a surgical intervention area at a different site, which can be associated with intra- or postoperative risks and complications, such as damage to anatomical structures, hematomas, infections and increased patient morbidity [16]. To avoid these problems, an increasing number of bone substitute materials with various properties have appeared on the market in recent years.

The requirements of an ideal bone substitute are:

- Osteoinduction
- Osteoconduction
- Biocompatibility
- Porosity
- Stability under load
- Resorbability

- Malleability
- Sterility
- Stable long-term integration of implants
- Availability

The currently available BSMs meet these requirements to varying degrees; an osteoinductive effect has not yet been shown in any of them. Because the long-term goal is complete bone regeneration, the BSM should remain dimensionally stable and serve as a lead structure while a matrix of autologous bone is formed at the defect site that ensures an adequate hard-tissue volume [4]. After its introduction, the BSM mixes with blood and stabilizes the subsequently formed blood clot within the defect [6,8]. In order to ensure adequate permeation of the material with blood, a high level of porosity and the presence of interstices in the augmentation tissue are advantageous. These interstices can then be invaded by blood vessels and bone-forming cells that initiate the formation of new bone. Resorption of the BSM is not desirable until after the woven bone has formed, to obtain the highest possible percentage of the body's own bone. In the event of early resorption and inadequate bone formation, a loss of volume and infiltration with connective tissue rather than hard tissue may occur. The resorption time of bone replacement materials varies greatly and is reported in the literature as taking a few to many months. Some of the BSMs are only resorbed slowly or not at all and are therefore still histologically detectable after years [2,12,18,20].

Bone substitute materials come in two different forms of presentation:

- Particles of different sizes
- Bone blocks

Particulate material is used, for example, in the context of guided tissue/bone regeneration (GTR/GBR) to fill defects and to support a membrane. Indications include small to large defects, depending on the membrane used (resorbable vs non-resorbable/titanium-reinforced) and on the defect morphology. Bone blocks are mainly used for larger defects or vertical augmentation, but they have not yet been thoroughly investigated scientifically. The blocks themselves provide better volume stability; they can therefore be used for defects that are not self-sustaining. Augmentation with bone blocks is very technique-sensitive, requiring a high level of experience on the part of the surgeon. In addition to prefabricated blocks, customized CAD/CAM bone blocks of allogeneic origin have been offered for some time now.

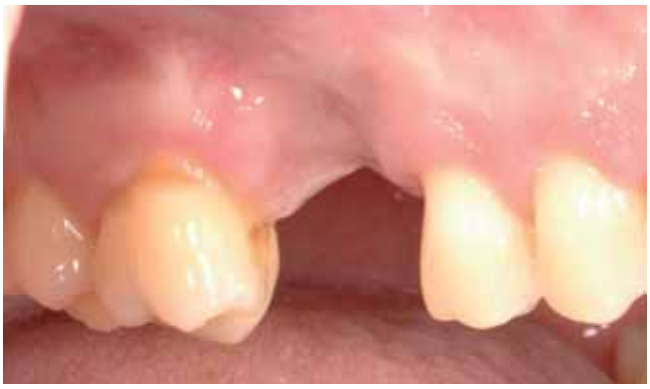
Allogeneic BSM

Allogeneic materials consist of donor bone of human origin (of deceased or living donors; e.g., Puros, Zimmer Biomet). The donor bone may for example be obtained in the course of an endoprosthetic procedure. The harvested tissue is treated and prepared chemically, physically and thermally using a number of different processes and then terminally irradiated. After several stages, the bone obtained will be clean, preserved and sterilized. According to the manufacturers' claims, the transmission of infections is practically excluded, but there is always a residual risk. Foreign-body reactions are rare due to the high genetic similarity to the tissue at the receiving site [24]. *Wang* and coworkers showed that filling an extraction socket with an allograft and simultaneous coverage with a resorbable membrane produced stable results with no evidence of an inflammatory response [24]. *Minichetti* and coworkers reported on the use of allogeneic material in a case presentation [13]. Five months after augmentation, they found a structure "hard as bone" without free particles, which was well vascularized. Histological examination showed regenerated bone without foreign-body reaction. Allogeneic materials are well integrated into the new bone or resorbed. The proportion of newly formed vital bone is higher when using allogeneic BSMs than when using xenogeneic materials (61% ± 9% and 26% ± 20%, respectively) [23]. The advantages of high metabolic and bone-formation rates must be weighed against the disadvantage of a possible reduction in volume stability, depending on the clinical indication.

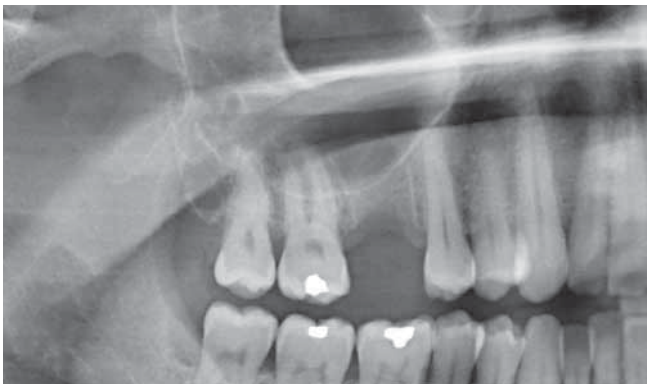
Xenogeneic BSM

- Bovine: from cattle
  (BioOss, Geistlich Biomaterials; CopiOs, Zimmer Biomet; Endobon, Zimmer Biomet)
- Porcine: from pigs
  (mp3, American Dental Systems)
- Equine: from horses
  (mp3, American Dental Systems)
- Phycogene: from algae (Frios, Dentsply Implants)

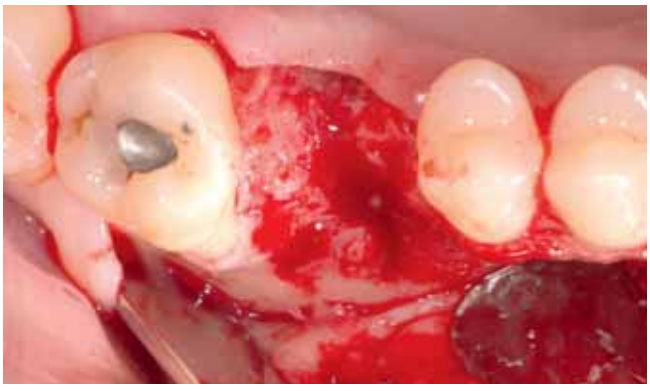
Xenogeneic materials are bone substitute material of animal origin. These BSMs are cleansed in different thermal and chemical processes, purified and possibly irradiated to prevent contamination with pathogens. Depending on the manufacturer, this process takes place at high and in some cases very high temperatures. This changes some of the physical properties of the BSM. The materials are available in particle sizes ranging from 250 to 2000 µm and as bone blocks, and sometimes with a collagen content of up to 20%.



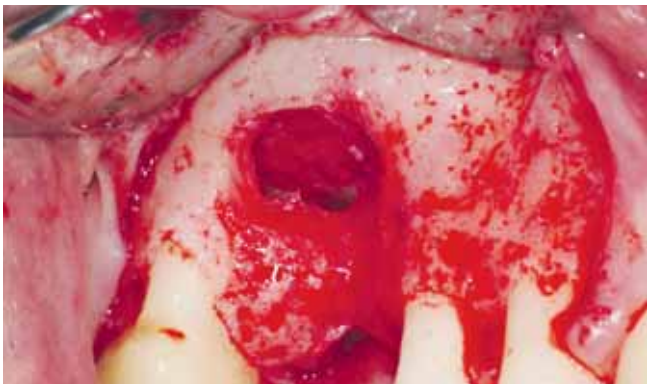
1 I Clinical baseline situation: Vertical and horizontal bone deficit after the removal of deeply decayed tooth 16.



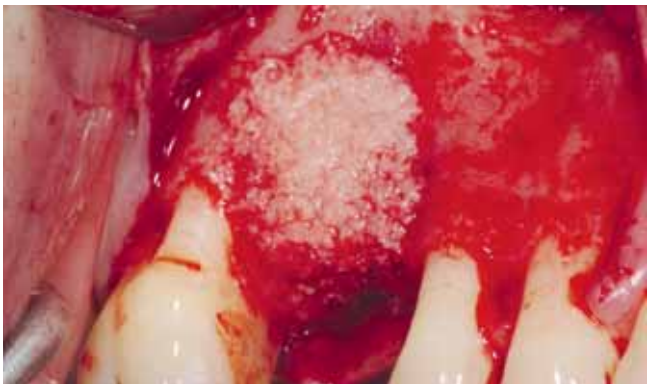
2 I Panoramic radiograph before augmentation: Insufficient residual bone height towards the maxillary sinus.



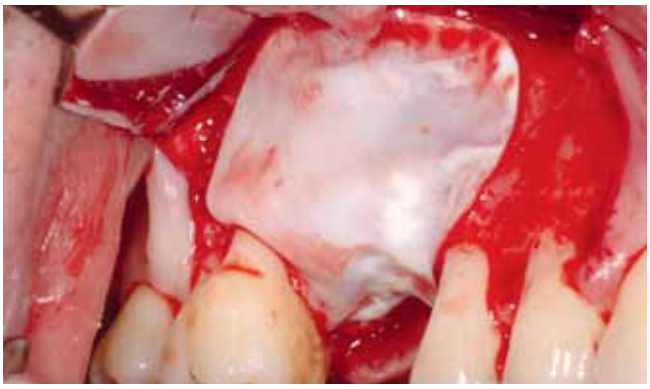
3 I Horizontal bone deficit up to the line connecting the longitudinal fissures of the adjacent teeth.



4 I Intraoperative view of the maxillary sinus with intact sinus membrane.

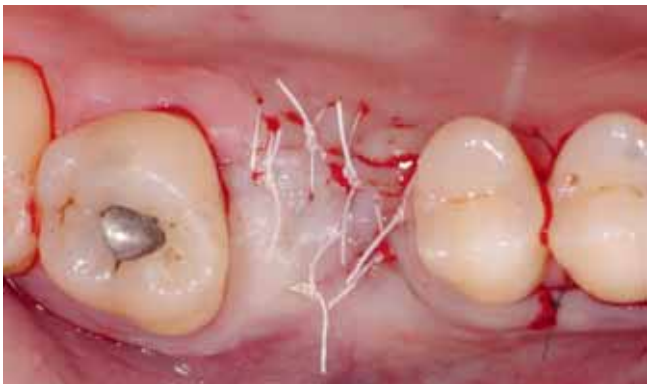


5 I A particulate xenogeneic bone substitute material (CopiOs) is applied to the defect.

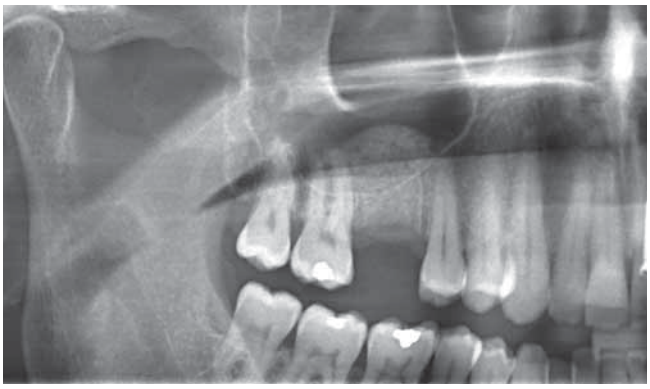


6 I Covering the augmentation material with a xenogeneic pericardial membrane (CopiOs).

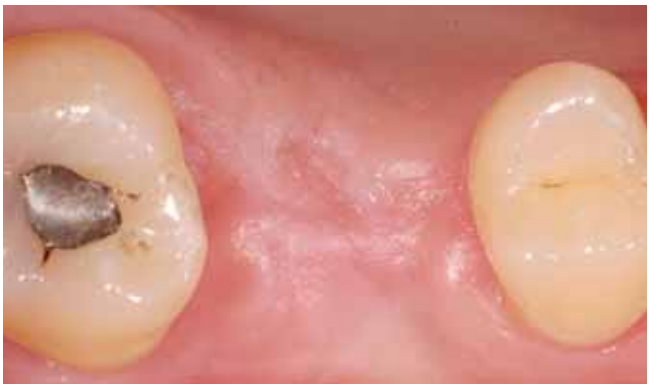
Generally, the proportion of particles that are not resorbed tends to be higher in a xenograft than in an allograft [23]. This extended volume stability at the expense of a low metabolic rate – up to non-resorbability – maybe an advantage in augmentation and regeneration, depending on the indication. *Urban* and coworkers used a native membrane, pins for stabilization and a mixture of autologous bone/bovine BSM (BioOss) on challenging defect morphologies, and achieved an average horizontal bone gain of nearly 6 mm [22]. Conversely, it was shown that the application of a high-temperature bovine BSM in socket preservation resulted in the coronal portion of the particles introduced being encapsulated in fibrous connective tissue. This in turn led to delayed, incomplete bony regeneration in the extraction socket [11]. While no significant difference between the augmented and non-augmented extraction sockets was seen in terms of vertical height, the horizontal dimension can be better preserved



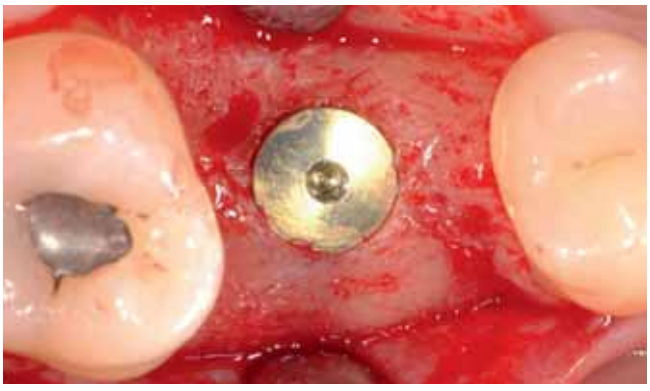
7 I Multilayer wound closure using horizontal mattress sutures and double-sling sutures.



8 I Postoperative control radiograph after augmentation: Significant increase in bone height.



9 I Clinical situation six months after the sinus floor elevation/GBR: Significant reduction of the horizontal volume deficit.



10 I Successful insertion of an implant (Zimmer Biomet T3 tapered, 5 × 10 mm) in the augmented bone: The augmented portion is indistinguishable from the local bone.

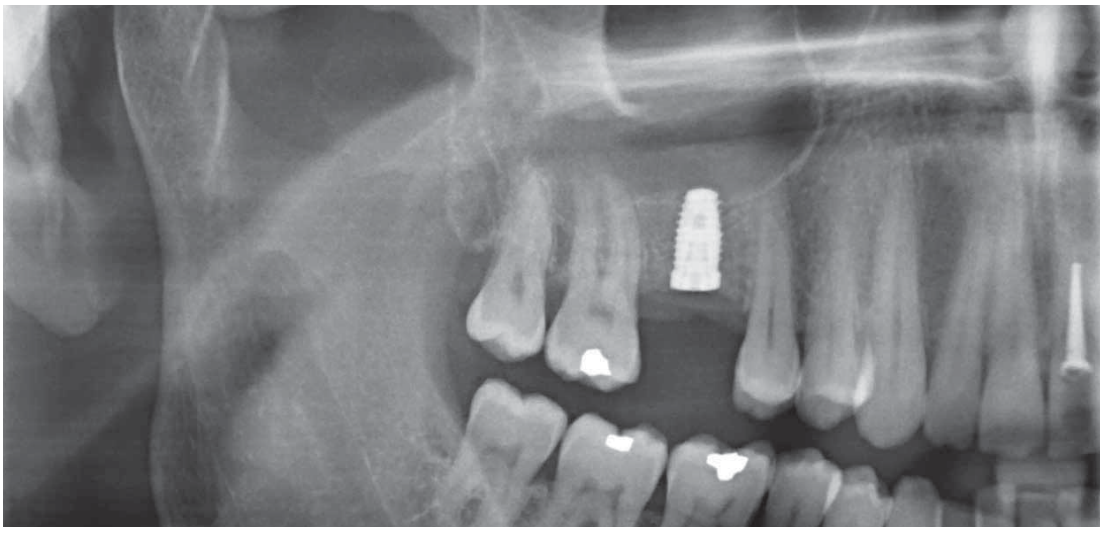
by a xenograft [7]. In a case series covering 20 patients with residual bone heights of 3 mm, *Bassil* and coworkers [2,8] showed that after nine months of healing, 17.6% of newly formed bone was grown in close contact with the remaining 29.9% of the bovine bone particles (BioOss). Furthermore, 49 implants with a success rate of 100% were inserted in augmented bone in this study. Another case series covering 15 patients – also targeting sinus floor elevation – highlighted the biocompatibility, resorbability and osteoconductivity of a porcine biomaterial (mp3) [10,17].

Figures 1 to 12 show the procedure for sinus elevation/GBR. Following the extraction of tooth 16, the remaining bone, with a bone height that was insufficient for implant placement, was augmented with a particulate xenogeneic BSM (CopiOs) and covered with a xenogeneic pericardial membrane. A significant reduction of the horizontal volume deficit was found after six months. The control radiograph after implant insertion at site 16 showed resorption of the BSM and the presence of clearly recognizable cortical bone towards the maxillary sinus.

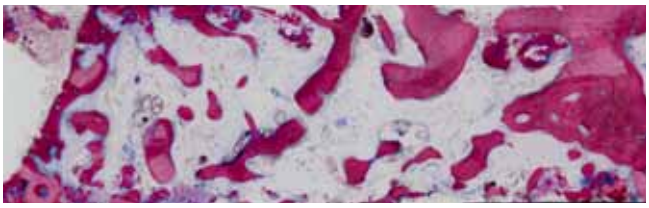
Synthetic BSM

- HA – hydroxyapatite
- β -TCP – β-tricalcium phosphate

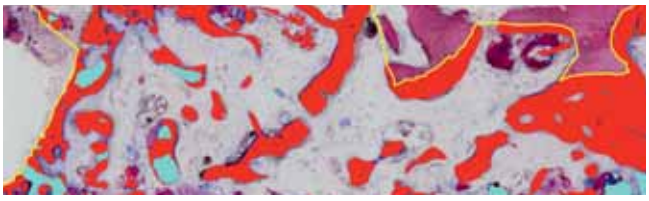
These bone substitutes are of synthetic origin, meaning that they are available in practically unlimited quantities. A transfer of possible pathogens or diseases can be ruled out. Examples of alloplastic BSM consist completely of hydroxyapatite (HA) or β-tricalcium phosphate (β-TCP) or a mixture of both materials (e.g., BoneCeramic by Straumann or Cerasorb by TriMedicales). HA is a natural mineral component of human bone. It is poorly soluble at a physiological pH and therefore very well tolerated. However, studies show that HA is not resorbed and has a questionable osteoconductive effect [19]. In contrast, β-TCP is resorbed faster and has a higher osteoconductive effect [15]. The insoluble HA serves to stabilize the volume, while the β-TCP is resorbed and replaced by newly formed bone. There are studies showing that synthetic and xenogeneic BSM are comparable when it comes to the potential of new bone formation [5,25].



11 I Control radiograph after implant insertion at site 16 showing resorption of the BSM and the presence of clearly recognizable cortical bone towards the maxillary sinus.



12a I Trephine biopsy: Newly formed bone is stained in dark magenta, while non-vital bone material and older local bone appears in light magenta and connective tissue in blue (stained with azure II/pararosaniline; × 50 magnification).



12b I Histomorphometric marking: Newly formed bone (red, 32.2%), non-vital bone/BSM particles (light blue, 5%), connective tissue/bone marrow (light grey, 62.8%).

Summary

In our opinion, there are currently two different trends in the field of bone substitutes:

- Non- or slow-resorbing BSM swith high volume stability
- BSM swith a higher substitution rate and possibly lower volume stability

For socket preservation, the use of a resorbable material is recommended, since it is not encased in connective-tissue particles in the augmented area after the healing phase. Based on the existing literature, the use of allogeneic BSM seems to be a good choice here. In the context of external sinus floor elevation, we should distinguish between single-stage and two-stage procedures. The BSM selected must be adapted to the volume to be rebuilt. It can be useful to use a combination of two materials or an admixture of autologous bone. The same or similar applies to guided bone regeneration, with the proviso that the properties of the membrane used or the possibility of defect stabilization (pins, titanium-reinforced membranes) must be taken into account as well.

Conclusion

Unfortunately, due to the current data situation – extensive comparative studies of multiple materials are lacking – no clear recommendation can be made for a product for all indications. The growing number of available materials provides a broad range of grain sizes, resorption times, application form and origins, so that products of the same origin may well yield different results in different situations. In general, it must be noted that only few materials are well researched and documented. In order to obtain clarity about the suitability of bone substitute materials in the future, more clinically controlled and randomized studies over a longer observation period are required.

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INTERNATIONAL DENTAL CONFERENCE

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A huge thank you!

To all of the speakers for their top-class, interesting talks.

To the participants, more than 300 in number, who experienced three unforgettable days with us in Berlin from 22 to 24 April 2016.

Thank you to all of you for being there!

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Clinical implications of BDIZ EDI's 11th European Consensus Conference

Minimally invasive procedures with different types of implants

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The use of implants to retain complete dentures, to stabilize fixed partial dentures or to replace individual teeth has emerged as a standard and routine treatment option within the field of implant-supported dental restorations in recent years [15]. However, a number of absolute or relative contraindications exist, to the effect that implants can be placed only subsequent to or concurrently with bone augmentation procedures in patients with a limited bone supply. This limits the practitioner's implantological options especially in patients with pre-existing medical conditions and an associated increased surgical risk [7,36]. In addition, these augmentation techniques require a high degree of specialization and training on the part of the practitioner. The communication of failures has reduced the acceptance of implant therapy in certain patients.

The use of short, angulated and diameter-reduced implants has evolved as an alternative to classic treatment strategies [4,20,25,35]. They help avoid bone augmentation, and the use of implants with reduced dimensions allows the existing bone supply to be utilized optimally [3]. However, since a reduced bone supply is always associated with restrictions, the number of implants and their dimensions must take this fact into account to ensure an acceptable treatment outcome. Other important aspects are the type of insertion and the options available for prosthetic restoration. The group of minimally invasive techniques can thus be subdivided into three types:

- Use of short implants
- Use of angulated implants
- Use of diameter-reduced implants.

	Short implants	Angulated implants	Diameter-reduced implants	Mini-implants
Indication	Restoration of the support zone	Fixed multi-unit restoration	All indications	Stabilization of dentures
Anatomical limitations	Vertical bone supply	Extended sinus, posterior atrophy	Reduced horizontal bone supply, narrow gaps	Reduced horizontal bone supply
Immediate restoration	Rare	Common	Case-dependent	Almost always

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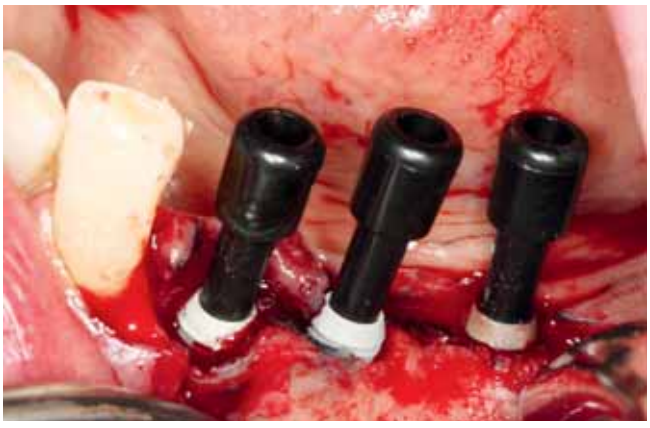
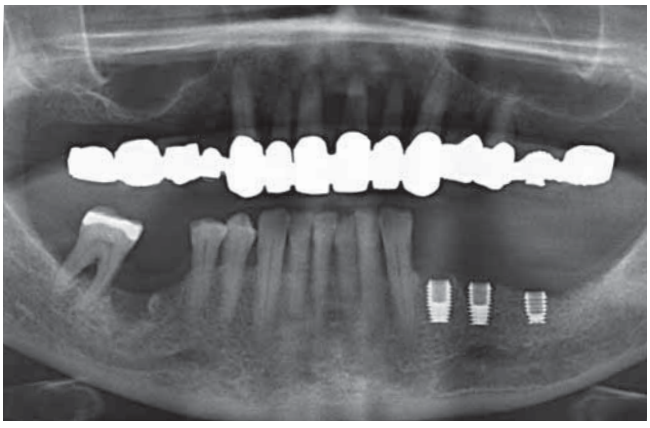
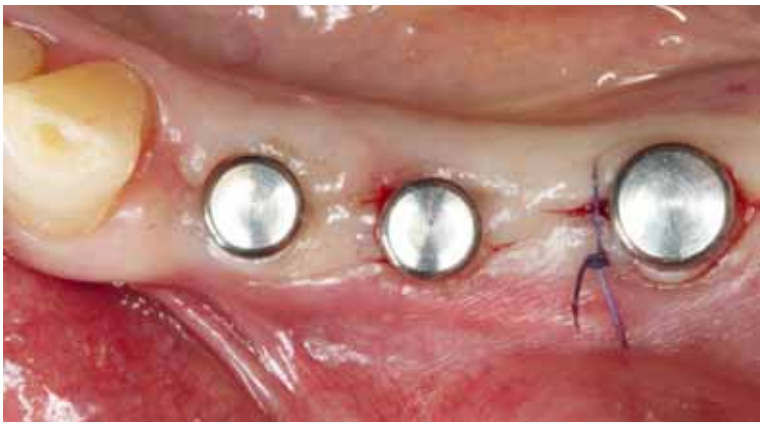
[2] Interdisciplinary Policlinic for Oral Surgery and Implantology and Department of Oral and Maxillofacial Plastic Surgery, University of Cologne, Germany



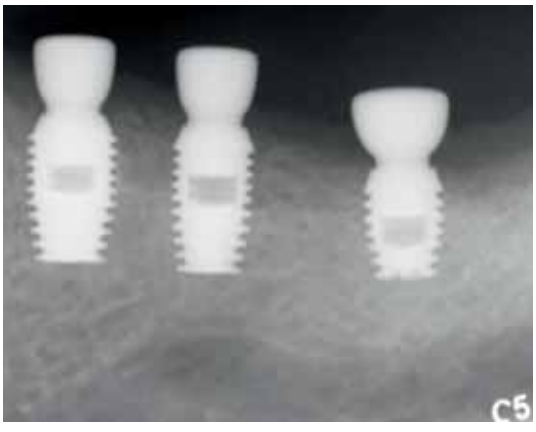
1a I Insertion of three short implants in the left mandible.



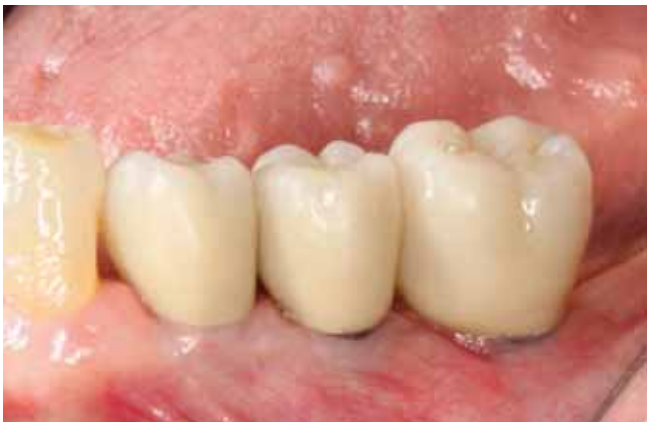
1b I Panoramic radiograph after insertion of short implants (Bicon, 8 and 6 mm).



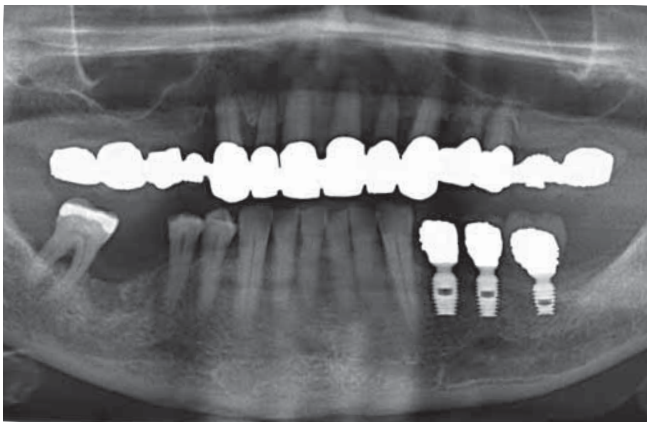
1c I Minimally invasive re-entry by paracentesis.



1d I Control radiograph after re-entry with bone apposition to the implant shoulder.



1e I Multiple single-tooth restoration with stable soft tissue.



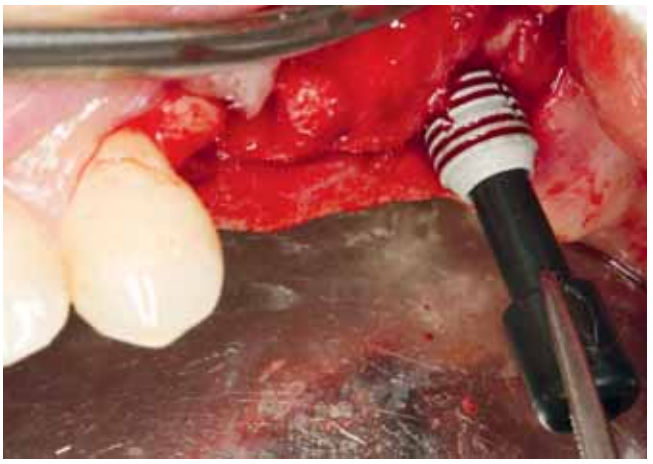
1f I Control radiograph showing the large crown-to-implant ratio, especially for implant 36.

Use of short implants

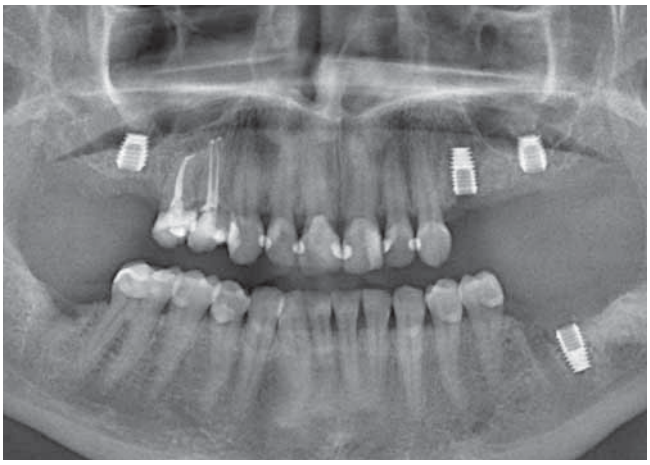
Implants are now usually referred to as short if the implant body measures ≤ 8 mm with diameters ≥ of 3.75 mm [33,38]. A variant of these are the ultra-short implants with an intraosseous implant length of less than 6 mm [12]. Short implants are used especially in the posterior region of the maxilla and mandible. These regions are often characterized by a reduced vertical bone supply, while bone width may be adequate and suitable for the insertion of short implants.

In this indication, it is essentially the support zones that are restored in partially edentulous patients. However, it is also possible to use short implants to retain overdentures or to replace individual or multiple anterior teeth as an alternative to bone augmentation [38,39] (Figs. 1a to 1f).

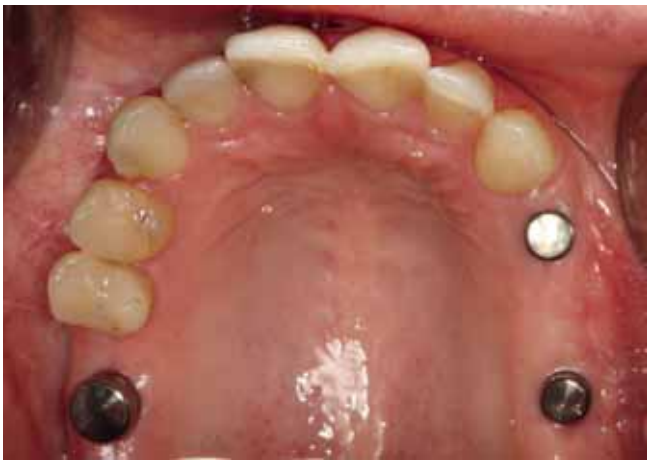
2a I An osteotome is used to prepare the implant bed for an internal sinus lift.



2b I A 5 mm wide and 6 mm long implant is inserted accompanied by an internal sinus lift.



2c I Control radiograph to check the implant placement showing diffuse bone structure after the internal sinus lift at sites 16 and 26.



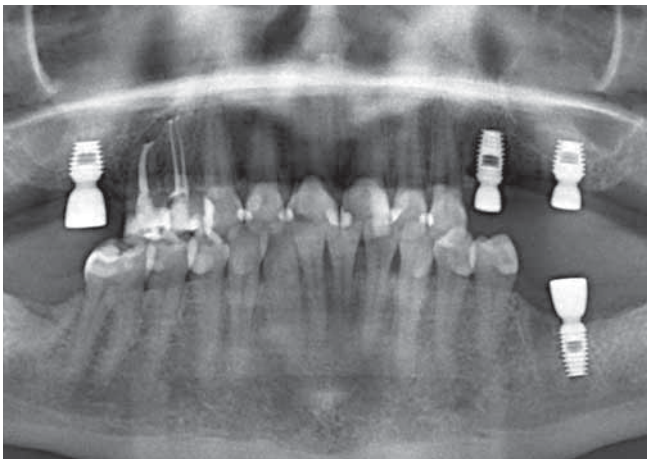
2d I The implants are exposed after three months.

Compared to the use of standard implants, less favourable loading conditions on the implant and the implant bed must be expected with the use of short implants [18]. This insight is based primarily on biomechanical considerations such as the crown-to-implant ratio, and on clinical experience gained from classic standard implants.

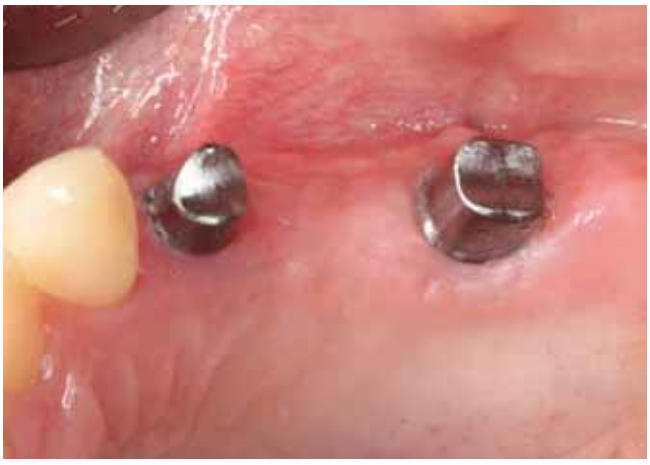
One frequently discussed aspect is that the crestal bone loss typically observed with standard implants could lead to early implant failure. When using short implants, the treatment risk is minimized through the right choice of implant designs and surfaces, as well as through special treatment methods such as internal sinus lift (Figs. 2a to 2h).

For short implants between 6 and 8 mm in length there are now a number of prospective clinical trials that describe the treatment risks and survival rates for long implants in combination with sinus floor elevation on the one hand and for short implants without sinus floor elevation on the other [43]. No significant differences were found for short and medium observation times between complex surgical interventions including sinus floor elevation and the simpler approach with short implants and without extensive augmentation [14, 40]. In addition, prospective studies have shown that the results with short implants in the mandible were not inferior to those with vertical augmentation [14,16,22].

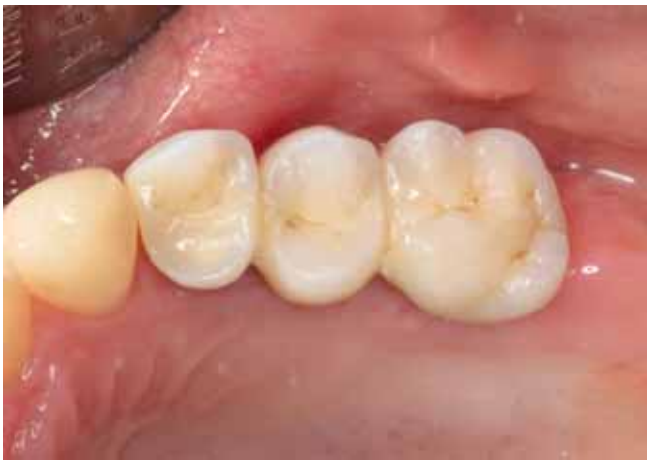
Especially when it comes to short implants, there are some modifications to the system that do not correspond to the classic titanium screw implant. For example, long-term data are available for implants with a sintered porous surface over observation periods of more than 20 years, showing good results [13]. Particularly for biomechanically optimized loading, implant configurations with a deep and wide thread profile are recommended. This facilitates extensive bone apposition and optimizes power transmission by way of the wide bone



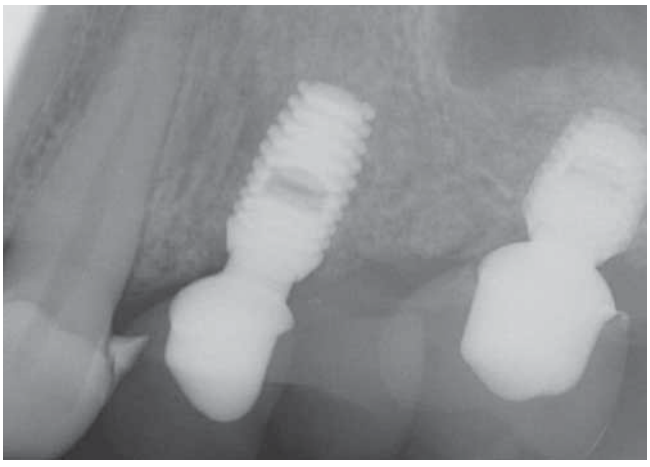
2e I The bone structure in the sinus region is consolidated.



2f I Custom abutments are connected to support a bridge.



2g I Inserted three-unit resin bridge ...



2h I ... with stable peri-implant bony conditions.

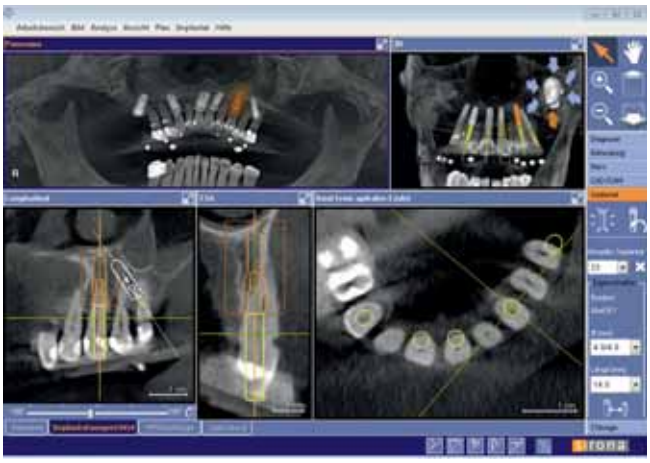
ledge [29]. In addition, the conical retention mechanism of these implants creates a tapered implant shoulder. This means that – following the principle of platform switching – peri-implant bone can also rest on the upper edge of the implant [27]. Since most short implants feature a conical abutment connector, the implant should be inserted level with or slightly below the bone margin, according to the principles of platform switching.

In order to avoid the augmentation procedures required for the introduction of standard implants and to resolve a case using short or ultra-short implants for appropriate indications, the implants used should have a microstructured surface [29]. Since the force is introduced via a smaller connector area, the use of these implants is recommended only in situations where the bone quality is favourable [39]. The type of prosthetic restoration depends on the design of the respective implants. The authors describing tapped implants with a clamping cone at the implant-abutment connection recommend restoration by single crowns, while the users of short screw implants recommend primary splinting [2,23,30,31,39,43]. From a prosthetic point of view, it is particularly important to avoid guiding planes in lateral movements [9].

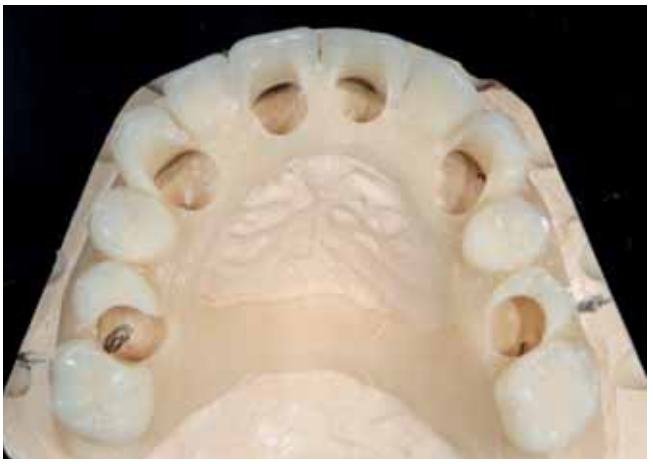
When using helical implants, sufficient primary stability is invariably required in immediate-restoration cases. No pertinent data are available for this indication and short implants, so that no definitive recommendation can be made.

Use of angulated implants

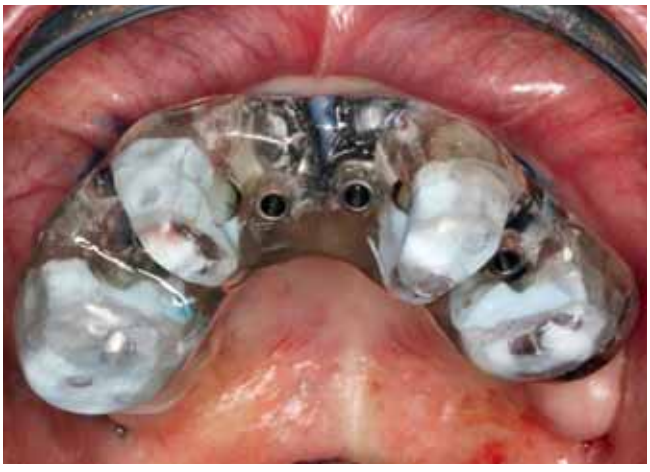
Implants inserted at a non-vertical angle are used in groups for the rehabilitation of the edentulous jaw. They are an alternative to extensive hard-tissue augmentation procedures in limited vertical bone height in the maxillary and mandibular posterior regions. In addition, they are generally recommended for supporting full-arch bridges or complete dentures [9].



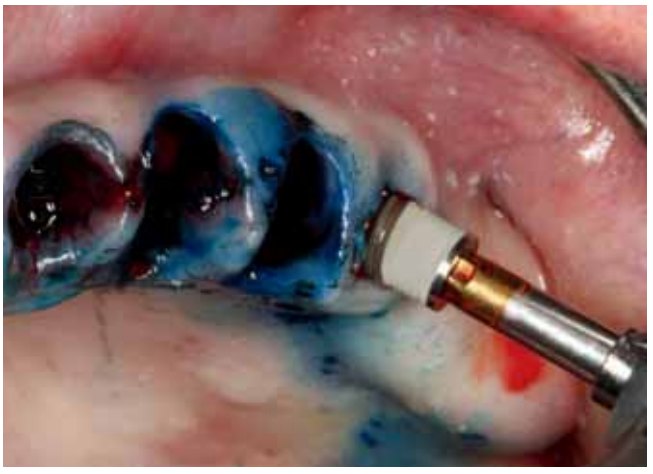
3a I CBCT and implant planning for a patient with chronic periodontal disease to produce a 3D template (Galileos Comfort; Dentsply Sirona).



3b I Prepared provisional with bores to accommodate the titanium sleeves.



3c I Minimally invasive pilot hole for angulated implant insertion drilled using the 3D template (Classic-Guide, Sicat).



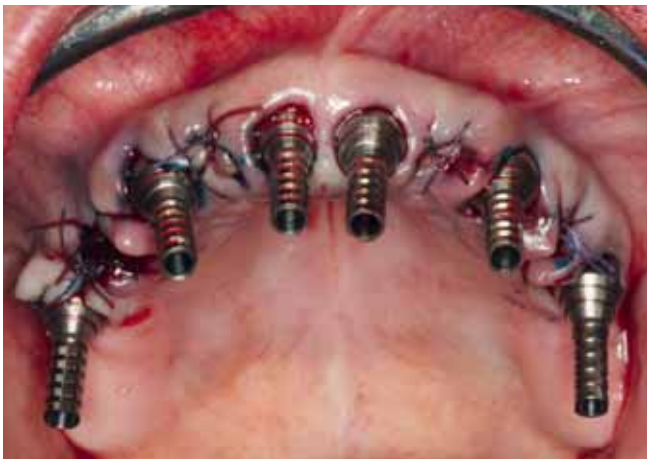
3d I Following disinfection of the extraction sockets by antimicrobial photodynamic therapy (Helbo; Bredent Medical), the implants are inserted.

If the primary stability is sufficient for immediate loading, it can then be realized. This indication often coincides with our periodontally compromised dentition, so that the hopeless teeth are removed and the implants are placed as immediate implants [11] (Figs. 3a to 3h).

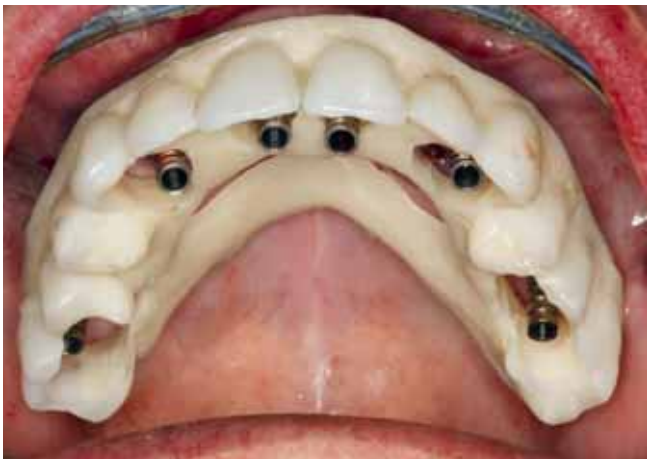
Oblique placement of the implants maximally exploits the residual bone in close proximity to adjacent structures, such as the mental foramen in the mandible or the maxillary sinus in the maxilla. In addition, broader prosthetic support area is achieved by the divergent implant axes [9], even permitting the use of full-arch screw-retained cantilever bridges. This treatment concept has been described for about ten years and uses four to six implants in the maxilla or mandible for a full-arch rehabilitation [5,6,17,21,26]. This resulted in favourable survival rates during maximum observation periods of 6.5 years [28]. The various meta-analyses have not demonstrated any difference in success rate or bone loss when restoring the edentulous jaw with four-arch bridges and angulated implants over short to medium observation periods. Especially the distalmost implants do not exhibit increased bone resorption on their distal aspects [9].

A number of available systems now include specific prosthetic components for angulated implants. The respective angles of the selected angulated abutments must be taken into account here, as they may diverge by 17.5° to 40°, depending on the system.

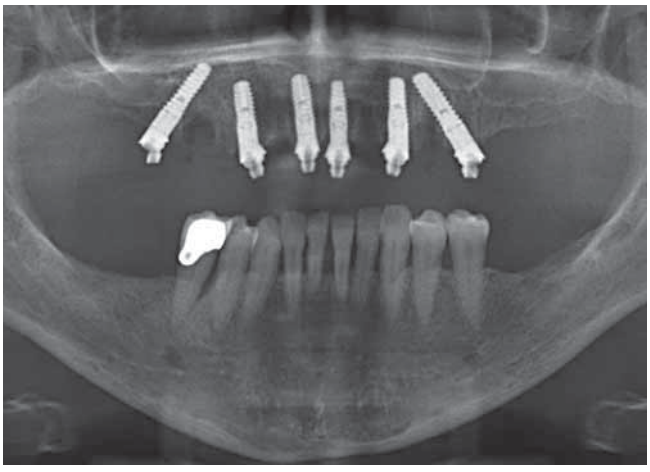
It has also been shown that the shortened arch and the lack of posterior support does not increase the prevalence of oromandibular malfunction [37]. To avoid complications, sufficient primary stability should be provided for immediately restored angulated implants. Three-dimensional diagnostics is recommended to insert implants in an anatomically and prosthetically correct way [26].



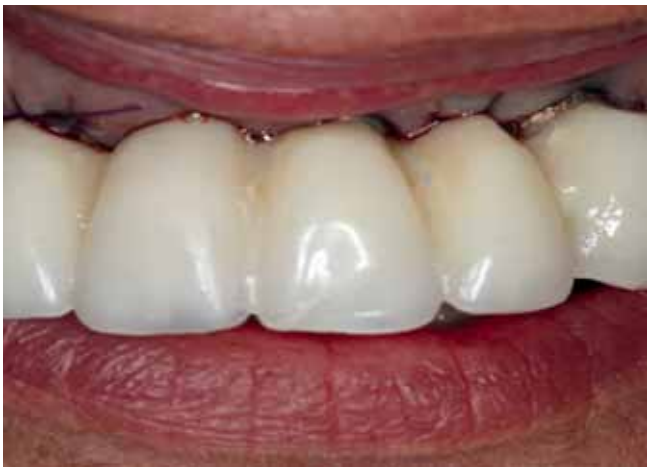
3e I Parallelized titanium sleeves on angulated abutments on obliquely inserted implants.



3f I The titanium sleeves are adhesively attached to the prepared provisional, supported by the palatal bar.



3g I Control radiograph of the implants and abutments taken while finishing the provisional (SKY fast & fixed; Bredent Medical).



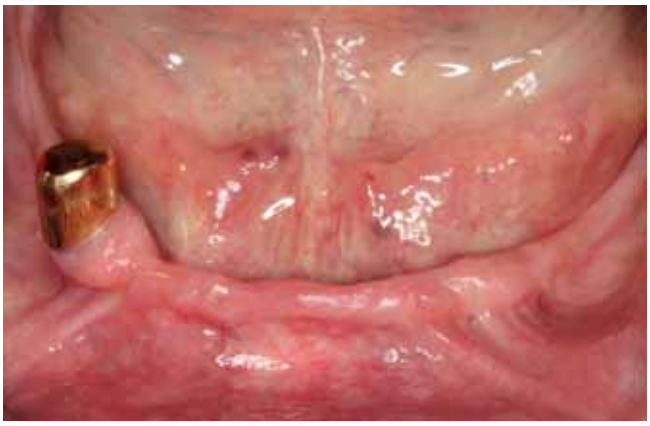
3h I Provisional in situ immediately after surgery.

Use of diameter-reduced implants

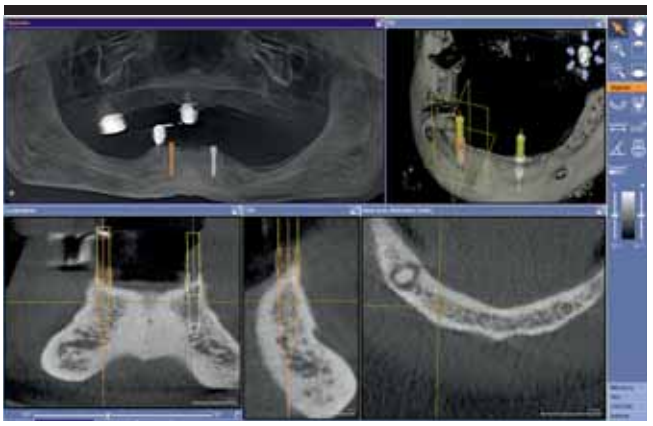
It is difficult to proffer definitions for the use of diameter-reduced implants. Diameter-reduced implants ("reduced" as compared to standard-diameter implants) have been described as those with diameters smaller than 3.5 mm [38]. This group also includes the so-called "mini-implants" with diameters of less than 2.7 mm [19,41].

Diameter-reduced implants are usually part of a standard implant "diameter family". They are used in the presence of reduced mesiodistal space, for example in narrow gaps in patients with congenitally missing teeth, as well as in patients with a narrow ridge, in order to avoid extensive lateral augmentation. Depending on the design of these implants, their application may be approved for any indication or limited to the anterior mandible to exclude higher biomechanical loads. With the proviso of careful patient selection and a proper evaluation of bone density, high survival rates have been reported for these implants [24,25,38,42]. Even in the posterior region, which is subject to high masticatory loads, high success rates for diameter-reduced implants have been reported [25].

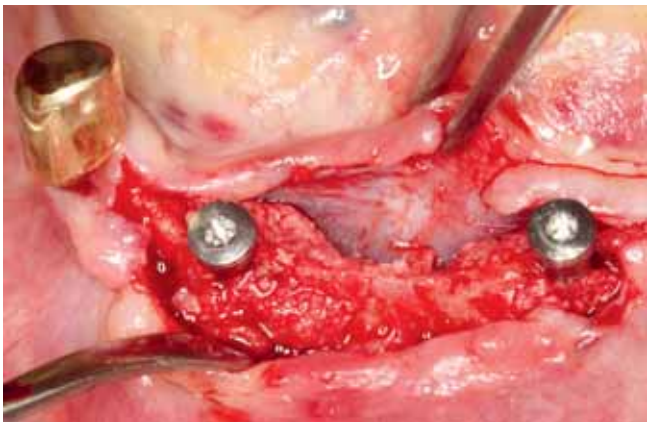
There are no prospective randomized studies with long-term results on mini-implants. The various retrospective studies available offer a mixed picture about the reliability of mini-implants, which are used primarily for the retention of complete dentures [8,25,34]. These studies and meta-analyses sometimes report very positive results, but they also show that there may be an increased risk of implant loss, depending on the systems and treatment protocols used. An increased failure rate has been observed in the maxilla in areas with a reduced or low-quality bone supply. Especially shorter implants are lost more frequently than longer ones. Therefore, short mini-implants should not be used here [42]. When selecting a system, those that show the most favourable results at least in



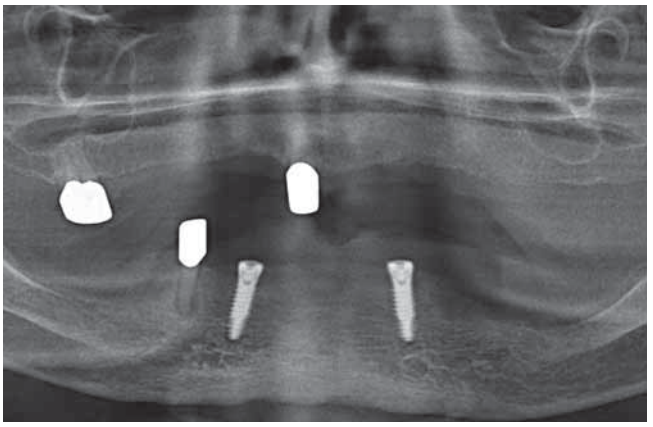
4a I Atrophic ridge with a precarious tooth 45.



4b I CBCT for implant planning in the anterior mandible to obtain information whether a flap will be necessary.



4c I The two-part mini-implants are inserted for subsequent accommodation of two Locator attachments (mini²-Sky; Bredent Medical).



4d I Postoperative panoramic radiograph to check the implant position.

the retrospective studies should be favoured. In addition to their microstructured surface, which provides a high bone-implant contact surface for high-quality osseointegration, flexural strength is also relevant in order to prevent implant fracture (Figs. 4a to 4g).

Discussion

Although augmentation procedures are now routinely applied and recommended, they can lead to complications due to patient-specific risk factors or the practitioner's lack of experience. These complications can adversely affect the patient's postoperative quality of life, and insufficient augmentation results may reduce the long-term stability of implants [1,3]. Since mandibular vertical ridge reconstructions are in particular associated with increased failure rates, short implants are increasingly recommended as a treatment alternative.

However, the various minimally invasive treatment options mandate strict observation of a number of specific parameters for a reliable treatment option; this should be compared to the potential risk involved in the use of standard implants with standard diameters combined with augmentation procedures [32]. There has been some evidence in the literature that increased failure rates of up to 10% after three to five years must be expected when implants with both reduced diameter and reduced length are used [10]. It is therefore necessary for implant surgeons and restorative dentists to undergo appropriate training in these minimally invasive treatment modalities in order to be able to determine the best possible treatment for each patient. This also means that the use of standard implants can be avoided in patients with atrophy of the alveolar ridge or a lowered maxillary sinus. Subjects to discuss with the patient as part of the treatment planning and patient education process should not be limited to the advantage of reduced surgical invasiveness but should also include possibly higher laboratory expenses, aesthetic expectations and the more difficult situation for oral hygiene.

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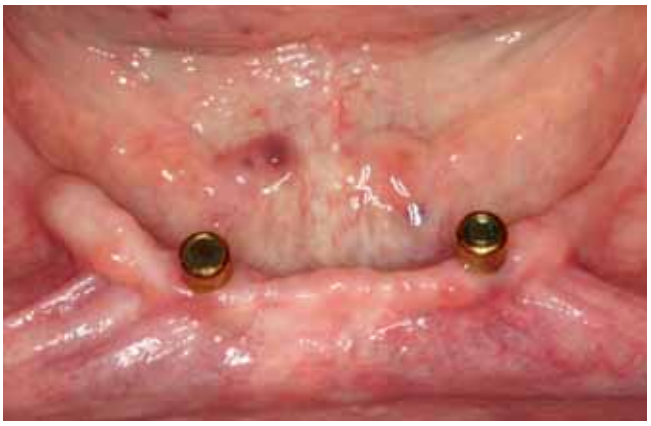
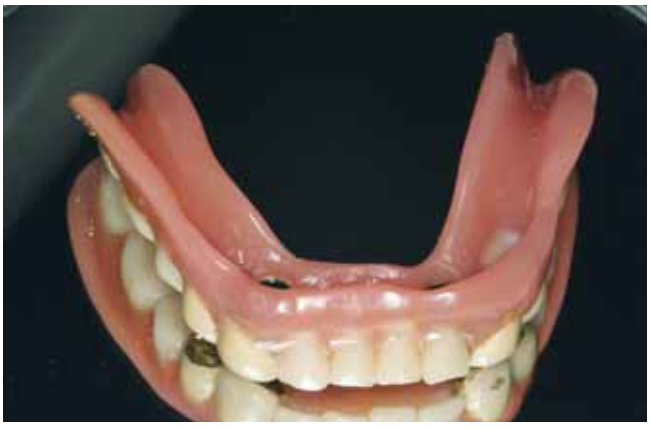
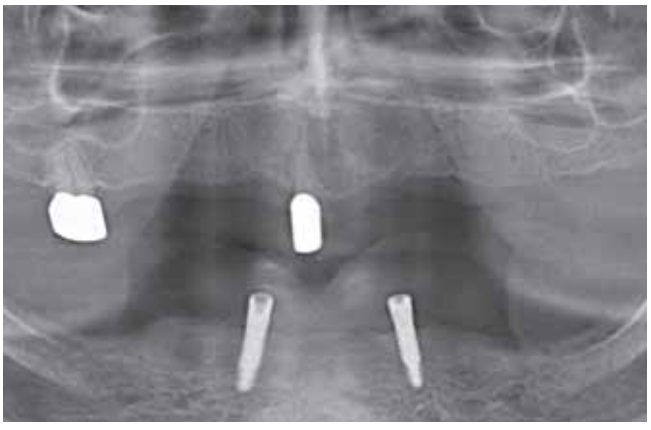


4e I Additional clinical check two years after connecting the Locator attachments and extraction of tooth 45.



4f I The attachment elements are integrated into the existing telescopic prosthesis.



4g I Bone level check two years after definitive prosthetic loading.

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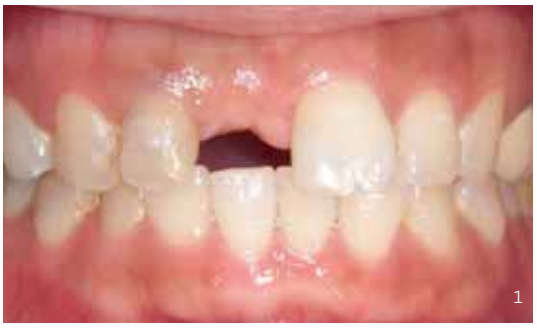
The various steps for achieving an aesthetic anterior implant-supported restoration

Immediate placement and provisionalization of a single anterior implant

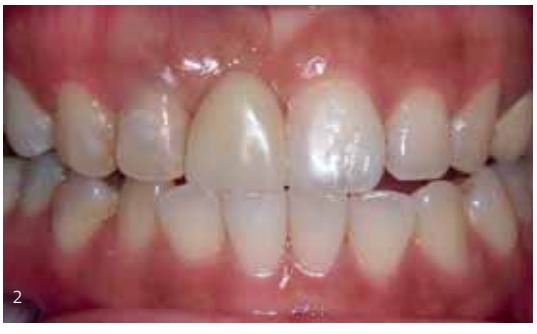
DR PERLIN LOKE, BDSC, FRACDS, AFAAID, KUALA LUMPUR, MALAYSIA

Achieving an aesthetic result when replacing a single anterior tooth with a dental implant is often challenging. Careful management of the soft and hard tissues and a prudent selection of prosthetic components and restorative designs, taking into account the existing occlusion, are prerequisites for long-term success. The present case report illustrates this.

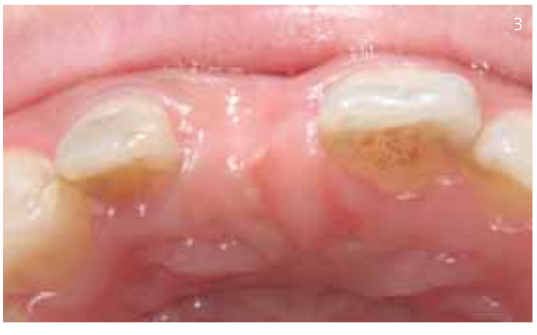
A female IT executive in her twenties presented with an upper right central incisor (tooth 11) that had been missing for more than five years. She wore a removable upper denture but found it uncomfortable. She was healthy and had no known medical condition that might have complicated dental implant therapy. A clinical examination revealed that the missing tooth 11 was accompanied by mild bone resorption on the buccal aspect of the ridge. The cone-beam CT scan of the area indicated a buccal-to-lingual bone width of 5 mm and a bone height of 18 mm. The interdental papillary height was a class 1 (Nordland and Tarnow classification [2]). The root positions and angulations of the neighbouring teeth were favourable (Figs. 1 to 4).



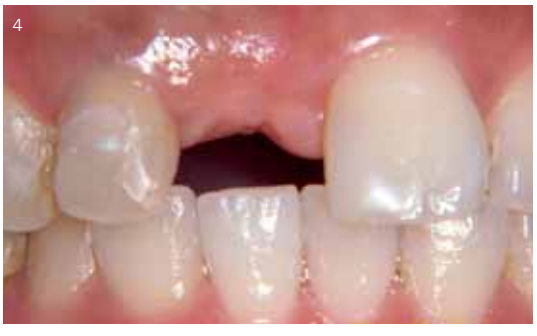
1 I Missing 11 for more than five years.



2 I Patient wears a removable partial denture.



3 I Mild resorption from buccal aspect of edentulous ridge.



4 I Interdental papilla height is class 1 (Nordland and Tarnow classification).

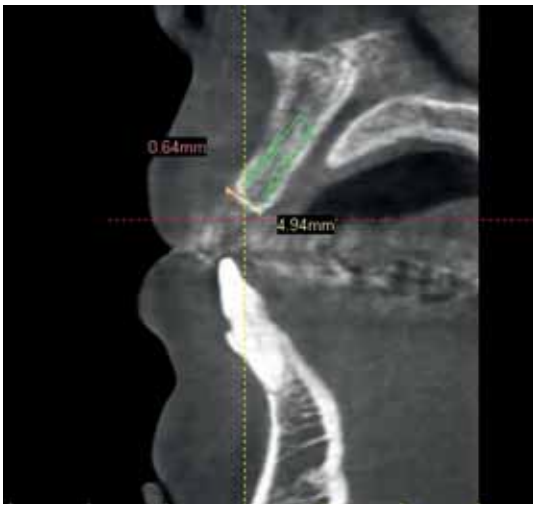
Diagnosis and treatment plan

Soft-tissue deficiency and augmentation

The goal of soft-tissue augmentation is to increase the interdental papillary height and labial thickness of the attached keratinized gingival for a natural and aesthetic outcome. A connective-tissue graft was to be harvested from the lateral palate.

Hard-tissue deficiency

The resorption on the buccal aspect of the alveolar ridge was marginal. There was adequate bone for primary implant stability but not enough to stabilize the soft tissue, which would have required 2 mm of bone labial to the dental implant [3]. To achieve the required dimension, hard tissue can be predictably augmented by a guided bone regeneration (GBR) procedure using a barrier membrane and bone-graft material. Alternatively, bone manipulation by ridge expansion (RE) with an osteotome or expansion screw can achieve the same result [4]. Primary stability achieved is often superior with RE compared to GBR, but it is more sensitive to operator's skill and technique (Fig. 5).



5 I Cross section view of the implant site 11 showing minimal buccal plate thickness for implant stability following osteotomy.

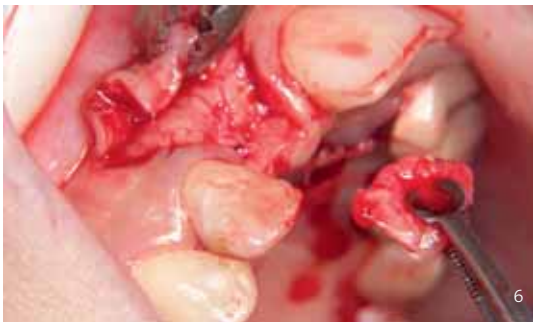
Immediate provisionalization

High primary stability is a prerequisite for immediate provisionalization. Immediate loading has the advantage that the peri-implant soft tissue will be conditioned to the emergence profile of the abutment.

Treatment

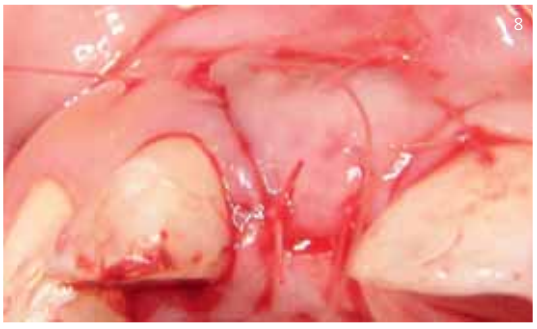
Soft-tissue augmentation

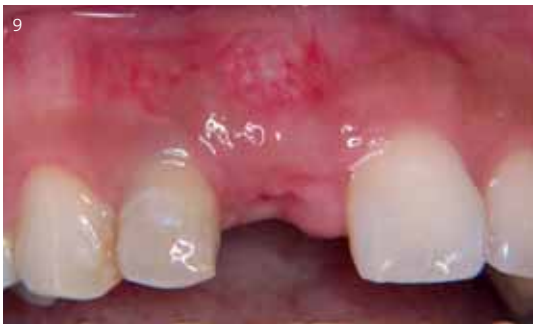
A local anaesthetic (articaine 4% with adrenaline 1:100,000) was administered and a partial-thickness flap raised at the alveolar ridge to expose to host bed. A subepithelial connective-tissue graft was harvested from the left lateral palate. The graft was anchored to the periosteum at the host site using 5-0 PGA sutures (Vicryl; Johnson & Johnson). The buccal flap was positioned over the connective-tissue graft so that tension-free primary closure was achieved. The graft was left to heal and mature for three months. There were no significant findings at the review appointment at two weeks (Figs. 6 to 9).



6 I Connective tissue graft donated from left lateral palate was harvested.

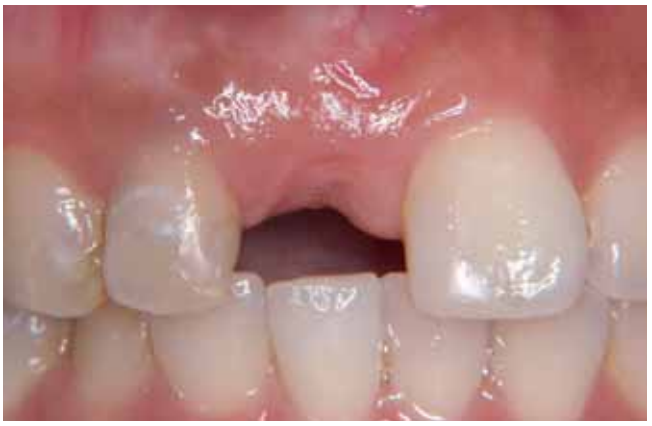
7 I Connective tissue graft was inserted and threaded into mucosal pouch with suture.



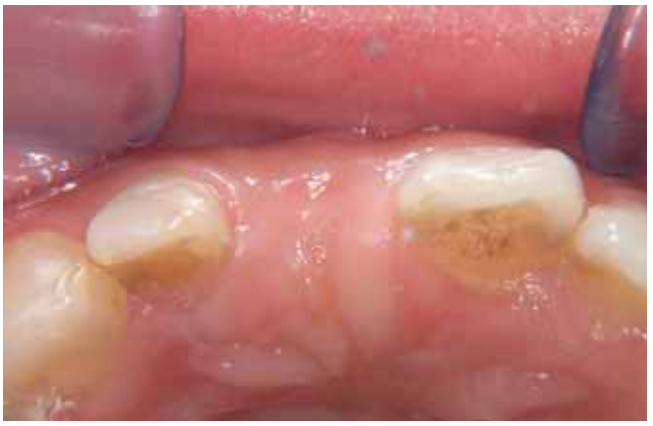


8 I Buccal flap was replaced over the connective tissue graft and sutured.

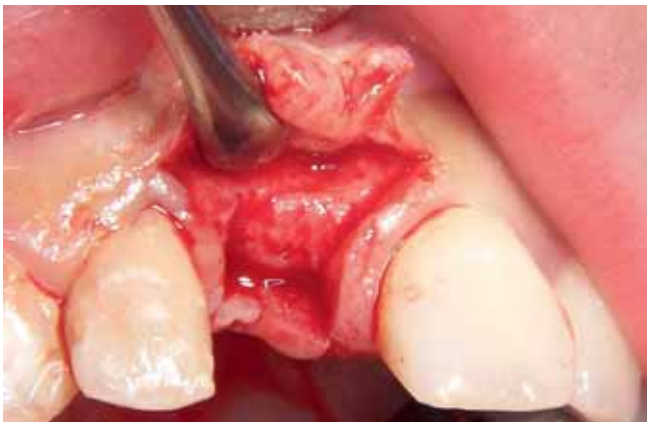
9 I Twelve days after soft tissue augmentation with uneventful healing.



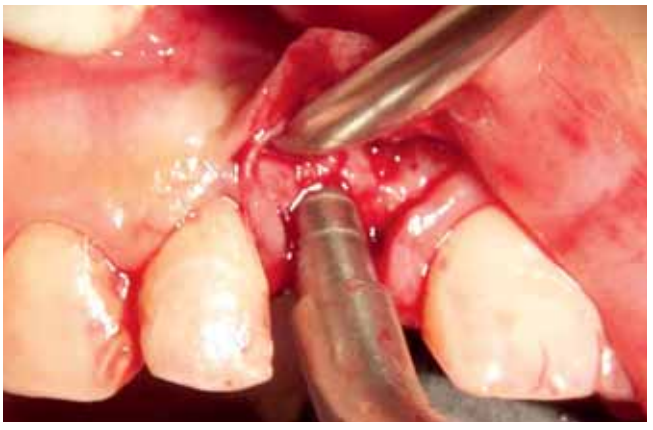
10 I Three months after soft tissue augmentation showing matured tissue.



11 I Three months post-operation showing increase in tissue thickness buccally.

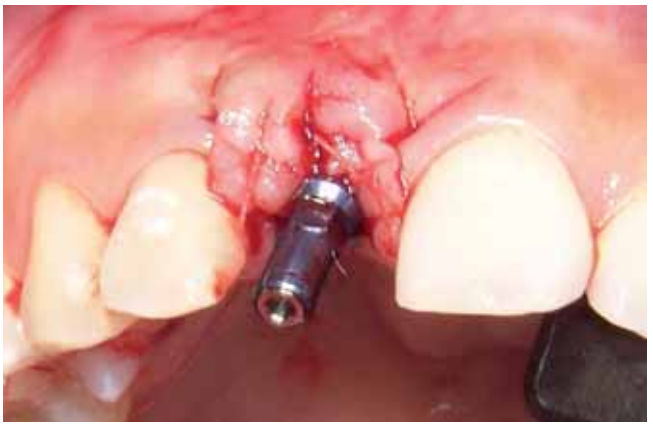


12 I Papilla sparing crestal full thickness flap was raised to exposed bony ridge.



13 I Following initial pilot drill, the osteotomy was enlarged progressively with condensing osteotome.

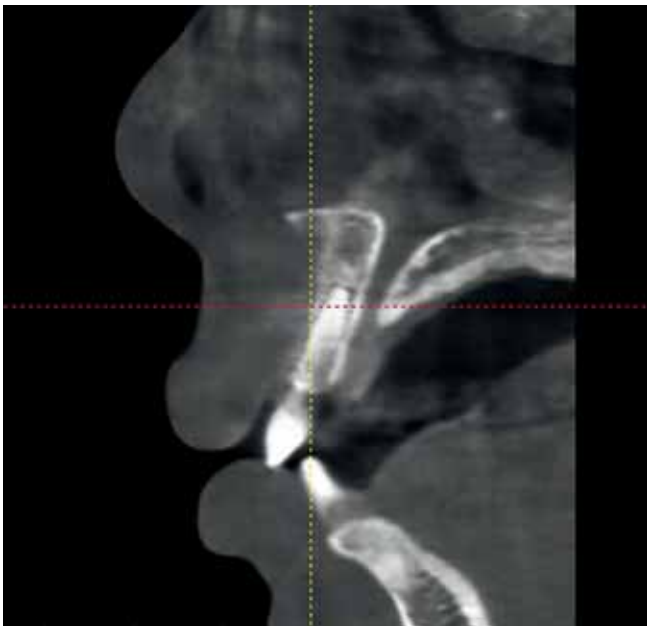
14 I Bone expansion preserved bone thickness on the buccal aspect of the implant.



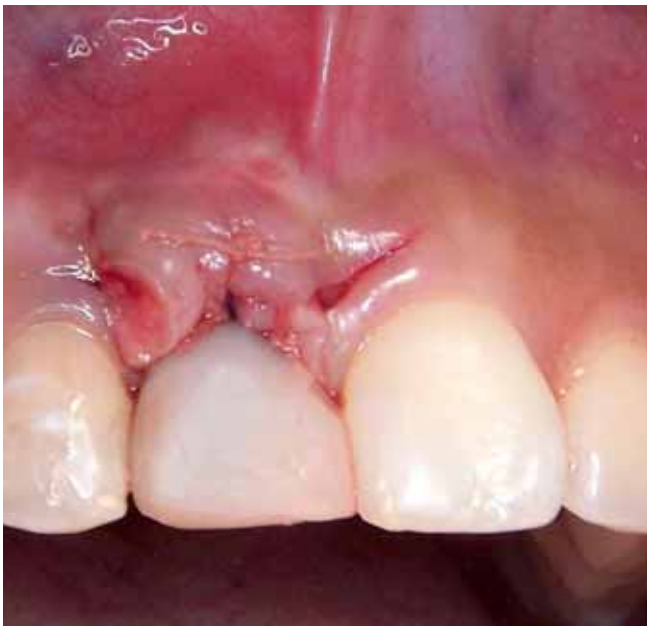
15 I Papilla augmentation was achieved by split finger flap over deepithelialised papilla.

Implant placement

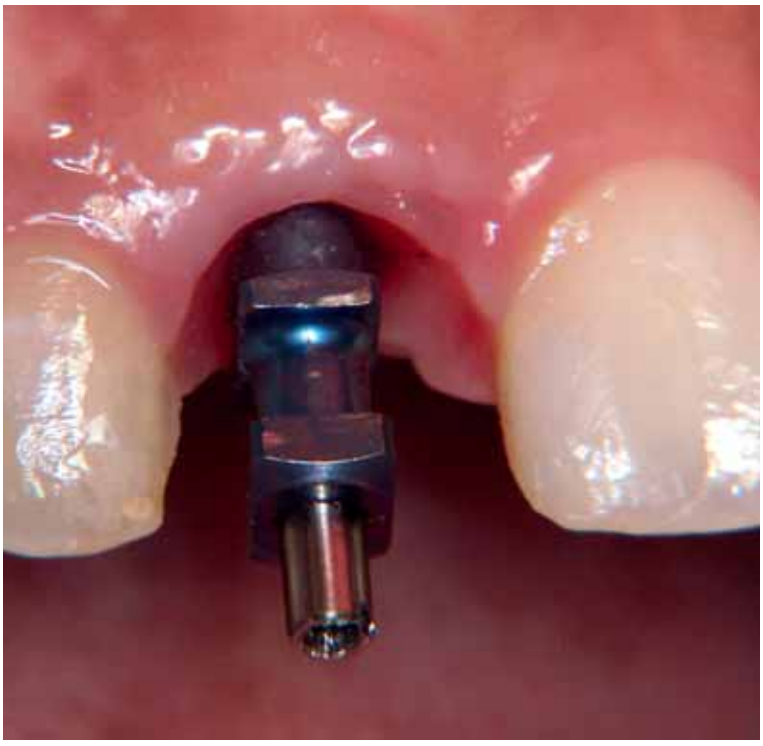
The review three months after soft-tissue augmentation revealed adequate tissue thickness. A local anaesthetic was administered by infiltration and a full-thickness flap raised. The thickness of the ridge was determined by periodontal probe and found to be 4–5 mm. A vacuum-formed surgical guide was used to determine the location of the implant. The initial osteotomy at the centre of the crest was performed with a pilot drill, a very sharp lance drill (RS/RSX-Line Tray; Bego Implant Systems). This resulted in a smooth osteotomy that was progressively enlarged with condensing osteotome (Frialit 2.0/3.0/3.8 mm; Dentsply) to a depth of 11 mm from the crest. The osteotomy was then further prepared using a RS 3.75 bone tapper at 15 rpm (Figs. 10 to 16).



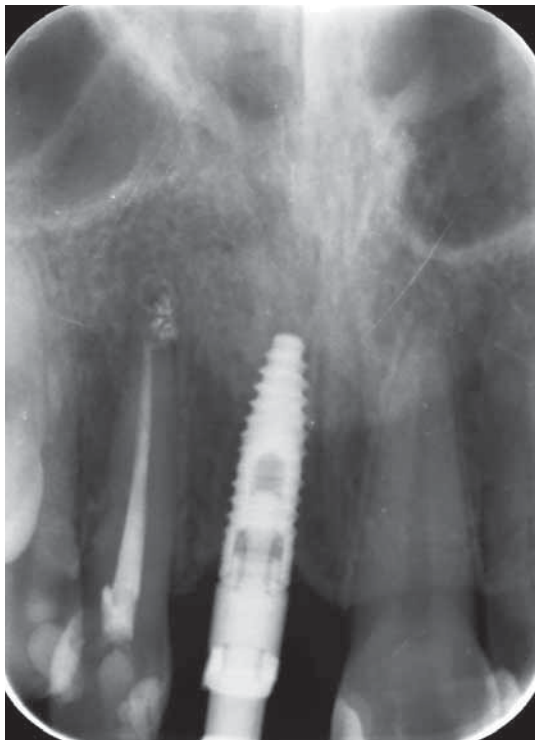
16 I Cross section view of implant position of 11 as verified with CBCT.



17 I Immediate provisional restoration supported by implant was placed using fixture mount.



18 I After five months of healing, emergence profile of 11 was shaped by provisional restoration. An impression was taken for fabrication of final prosthesis.



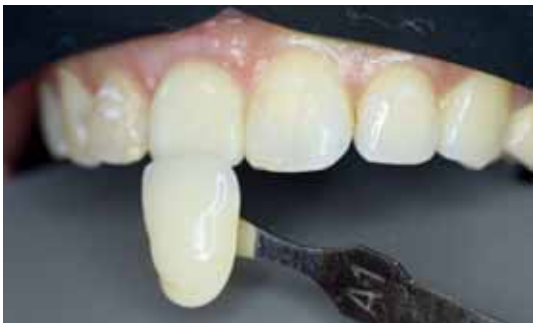
19 I Periapical radiograph taken to verify seating of impression coping.

Immediate provisional restoration

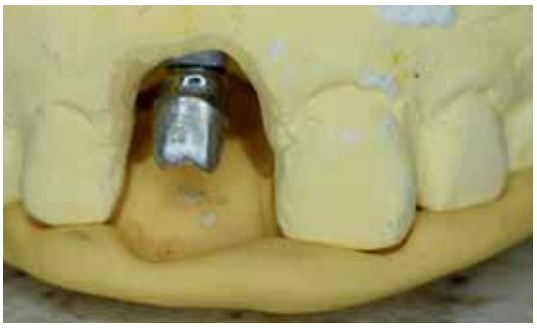
To augment the dental papilla, the buccal flap was split into mesial and distal halves, similar to a split-finger flap as described by *Misch* and coworkers [1]. The existing papilla was deepithelialized before the split finger was replaced. The laterally displaced half fingers can be supported by a provisional prosthesis made from self-curing BIS-GMA (Protemp; 3M) (Fig. 17).

Impression

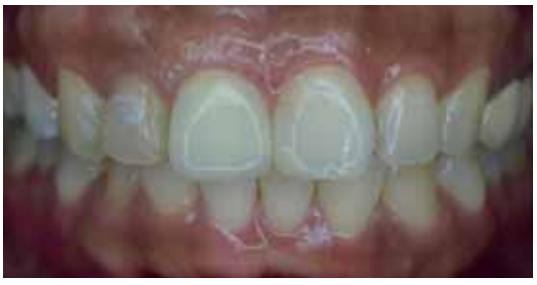
After five months of healing, the provisional restoration was removed for impression-taking. The dental papilla had matured. For the direct impression, a 3.75 mm impression post (PS OTI) and PVS impression material (DMG) were used. The position of the impression post was verified on a periapical radiograph (Figs. 18 and 19).



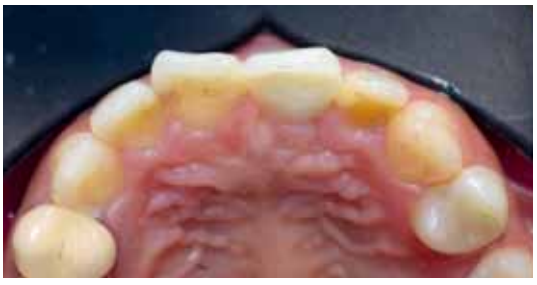
20 I Shade matching for colour of final prosthesis.



21 I Incisal edge position was recorded with silicon index of the approved provisional restoration.



22 I Frontal view of the final restoration showing symmetry in form and character.



23 I Occlusal view of the restoration 11 fabricated with customized abutment and Zirconia coping layered with feldspathic porcelain.

Definitive prosthesis

For the fabrication of the definitive prosthesis, a clinical photograph with a shade tab was taken and sent to the lab technician. The shape of the provisional prosthesis was approved by the patient and recorded with a silicone index for the position of the incised edge and macro morphology. The custom abutment was fabricated using the Universal abutment (PS UNI) in non-precious metal. The definitive crown had a zirconia coping veneered with feldspathic ceramics. The crown was tried in for aesthetics and phonetics. Once approved, it was cemented with zinc phosphate cement. The patient was very happy with the result (Figs. 20 to 24).

24 I The patient was very happy with the final result.

Conclusion

This case report illustrates the various steps for achieving an aesthetic anterior implant-supported restoration. Soft-tissue augmentation using a connective-tissue graft harvested from the lateral palate improved the quality and quantity of the keratinised gingiva around implant 11. The high primary stability of this self-threading implant allowed its immediate provisionalization. Platform-switching abutments preserve crestal bone and improve aesthetics in the anterior region.

Special thanks to *Mr Daniel* from Genlab, Kuala Lumpur, Malaysia.

Please visit www.teamwork-media.de/literatur for a list of references.

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Augmentation with a CAD/CAM titanium lattice structure in the anterior mandible

Promoting regeneration

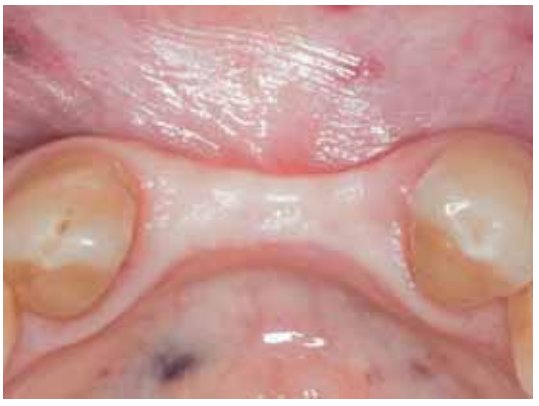
DR MARCUS SEILER, DR MICHAEL PEETZ, DR AMELY HARTMANN, FILDERSTADT, GERMANY

Horizontal or vertical ridge augmentation and three-dimensional defects still represent a major challenge in oral surgery. A new method now allows the use of a custom CAD/CAM titanium lattice structure with an autologous bone graft and a particulate bone substitute to fill and stabilize extensive defects.

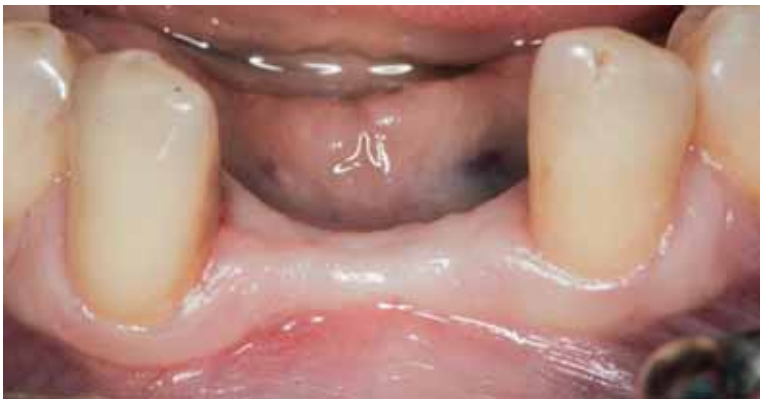
The new procedure offers great potential in terms of fast and stable defect regeneration. It starts out with a custom CAD/CAM titanium lattice structure being planned digitally based on preoperative CBCTs. The framework is then fabricated based on the transmitted DICOM data using CAD/CAM technology in an interactive workflow in collaboration with the oral surgeon. The titanium lattice structure (Yxoss CBR) is inserted above the bone defect for volume support and to control the shape of the newly formed bone. The lattice structure serves as a mechanical protection during the bone-healing process and eliminates competitive wound healing. The augmentation material is a mixture of autologous bone and osteoconductive bone substitute (Bio-Oss) mixed at a 1:1 ratio to protect against resorption. The lattice structure is secured above this mixture in a stable position, connecting it to the local bone with a fixating screw. A collagen membrane may be applied over the lattice structure to enhance the guided bone regeneration and soft tissue healing process [1-6]. The implant can be placed simultaneously or, in the case of large defects, in a two-step procedure, where the second step follows vascularization of the graft. Yxoss CBR is explanted after a bone healing period of approximately four to six months. Other indications of the material include immediate or delayed augmentation in extraction sockets, reconstruction of the alveolar ridge or the obturation of general bone defects in the maxillofacial region [7].

Case report

The patient initially presented at our office in February 2014 and requested implantological rehabilitation of his anterior mandible (sites 32 to 42). His medical history was non-contributory. The dental clinical examination revealed an edentulous area in



1 I Baseline situation, occlusal view. Clearly recognizable deficit of the buccal contour. Without bone augmentation, the ridge is too narrow to accommodate even reduced-diameter implants.



2 I The same applies to the vertical dimension. The vestibulum is compressed with a wide zone of mobile gingiva and a correspondingly narrower keratinized gingiva. Given the lack of available space, the future prosthetic restoration is planned to include only one central pontic and two implants at sites 31 and 41.

the anterior mandible with a visible osseous and soft-tissue defect. The original cause of the defect and the time of the tooth loss could no longer be ascertained. The family dentist had provided a removable temporary denture. The neighbouring teeth were vital and showed no periodontal affliction (Figs. 1 and 2). The baseline radiological examination ruled out any entrapped foreign matter or apical osteitis in the edentulous area or in the region of the adjacent teeth. The patient wanted an aesthetic, fixed, implant-supported rehabilitation without prosthetic inclusion of the adjacent healthy and restoration-free teeth.

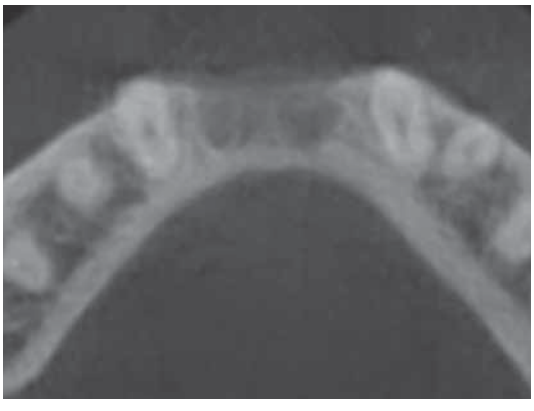
Treatment planning

The basis for the subsequent implantological treatment steps was a model analysis using a diagnostic set-up of the mandibular edentulous space. The limited available space was sufficient to accommodate teeth 42, 31 and 32 only, leaving out a potential right central incisor. The buccal bone defect was found to be three-dimensional, meaning that a transversal and vertical augmentation had to be performed. A radiological stent, subsequently to be re-used as a surgical template, was fabricated on the diagnostic cast for three-dimensional precision planning, based on the previous set-up.

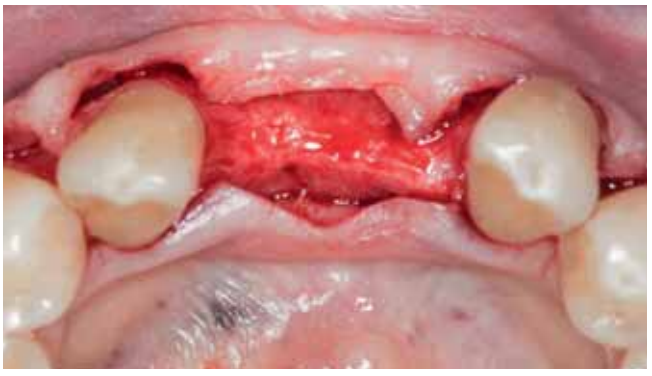
To compensate for the combined vertical and horizontal bone loss, three-dimensional planning for the Yxoss CBR titanium lattice structure was based on the CBCT (Fig. 3) and implemented in close consultation with the oral surgeon. The defect was built up with autologous bone (harvested in the caudal chin region) and with bone substitute (Bio-Oss, Geistlich) to protect against resorption and to capitalize on its osteoconductive properties. The implantation was to be carried out simultaneously with the augmentation, with the implants placed paracrestally at the level of the cementoenamel junctions of the adjacent teeth.

Soft-tissue coverage of the Yxoss CBR is an essential part of the treatment success. Plastic coverage can be achieved via a suitable periosteal separation or with specific techniques for soft-tissue augmentation. A possible increase in volume and scarring from previous surgery with aggravated mobilization of the flap must be factored in.

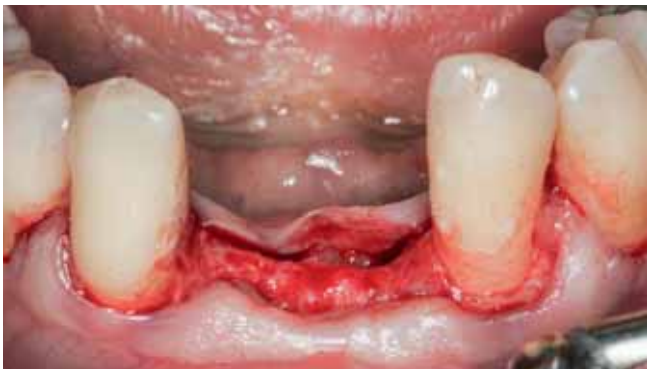
Yxoss CBR is supplied in double-peel bags. It is non-sterile and must be sterilized before being used on patients. The sterile titanium lattice structure can then be removed from the sterilization bag and used directly for the operation. The usual provisos of oral surgery and implant hygiene also apply to Yxoss CBR and to the medication prescribed for the patient.



3 I Anterior partial representation of the CBCT data for preoperative planning.



4 I To facilitate the subsequent aesthetic closure of the wound without scarring in the lower mandibular aesthetic zone, no relief incision was made, and the main incision was strictly marginal, ranging from site 34 to site 44.



5 I The defect situation at site 32 to 42 after the mobilization of the mucoperiosteal flap.

6 I Paralleling posts in situ to verify the subsequent implant position.

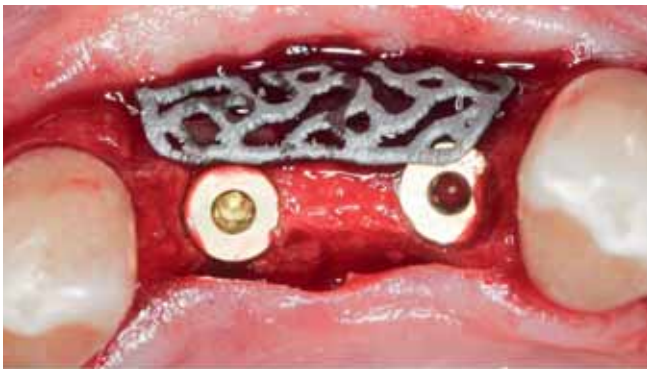
7 I The implants (Camlog Screw Line) are inserted at sites 32 and 42. Each was 3.3 mm in diameter and 13 mm in length.

8 I The implants are positioned parallel to each other. The implant shoulder is placed at the expected level of the alveolar limb as reconstructed by the mesh and the cementoenamel junctions of the respective neighbouring tooth.

9 I Placement of the prefabricated, accurately fitting titanium lattice structure results in a passive tension-free fit on the residual bone. The biological precautions for the use of membranes (1.5 mm distance from the adjacent teeth) were respected.

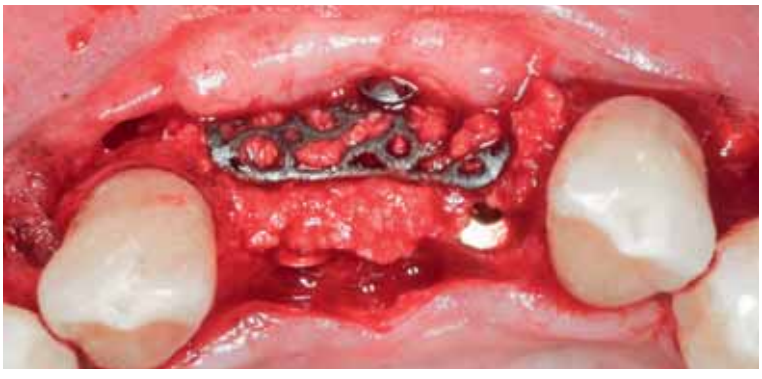
Surgical technique

Under local anaesthesia, a marginal incision along the linea alba was made from site 34 to site 44 without a vestibular relief incision (Figs. 4 and 5). This was followed by the preparation of a mucoperiosteal flap, the debridement of the scar tissue and the exposure of the defect. The implants (both Camlog, Screw-Line) were aligned in parallel using the positioning rail at sites 32 (diameter 3.3 mm, length 13 mm) and 42 (diameter 3.3 mm, length 13 mm). They exhibited primary stability in the course of the procedure (D2 bone density according to *Misch*). Special attention was given to the correct three-dimensional positioning of the implant shoulder, which was placed at the level of the cementoenamel junction of the respective adjacent tooth in the crestal area of the intended augmented volume (Figs. 6 to 8). Placement of the prefabricated, accurately fitting Yxoss CBR titanium lattice structure resulted in a passive tension-free fit. In addition, the precautionary biological distance of



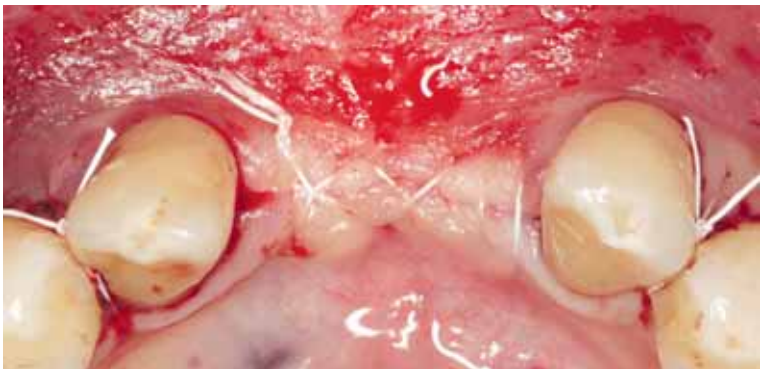
10 I Occlusal view of the lattice structure with the cover screws of the inserted implants in place.

11 I Autologous particulate material harvested in the caudal chin region is located at the 12 o'clock position, while the Bio-Oss is found at the 2 o'clock position (0.5 to 1 mm) and the Yxoss CBR is located basally.

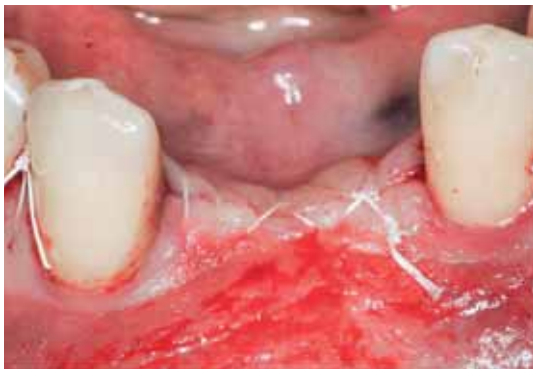


12 I The lattice structure with the slightly compressed augmentation material in situ, secured with a fixation screw in the median position (CorticoFix; Camlog).

13 I Augmented volume, frontal view.



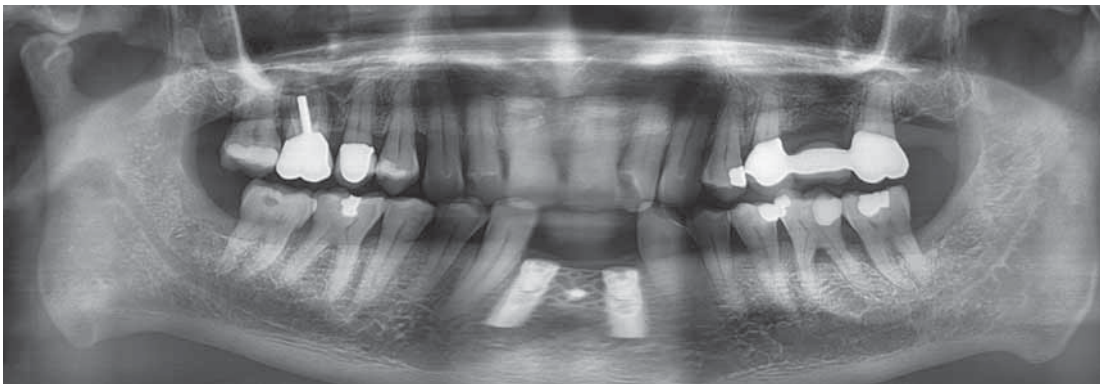
14 I The wound is close so the suture is free of tension and sealed against saliva. For better defect coverage, a periosteum separation is additionally performed.



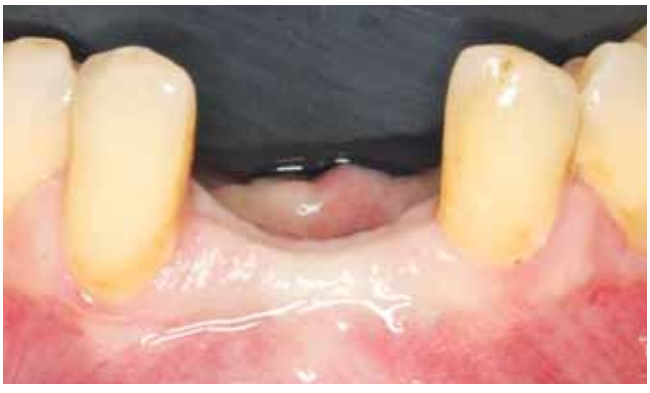
15 I Occlusal view.

1.5 mm (Figs. 9 and 10) from the adjacent teeth was maintained. Bone was removed from the caudal chin bone in particulate form using a Safescraper tool (Fig. 11). The lattice structure was then filled with the augmentation material (autologous bone mixed with Bio-Oss 0.5 to 1 mm) (Figs. 12 and 13). The lattice structure was secured in place in a stable position on the existing residual bone using an osteosynthesis screw (Medicon) following the principle of mechanical rest as known from membranes and from the lag screw concept. The titanium screw can be generally introduced through any opening of the titanium lattice structure, depending on its intended position. The edges of the titanium lattice structure rested on the underlying bone tissue.

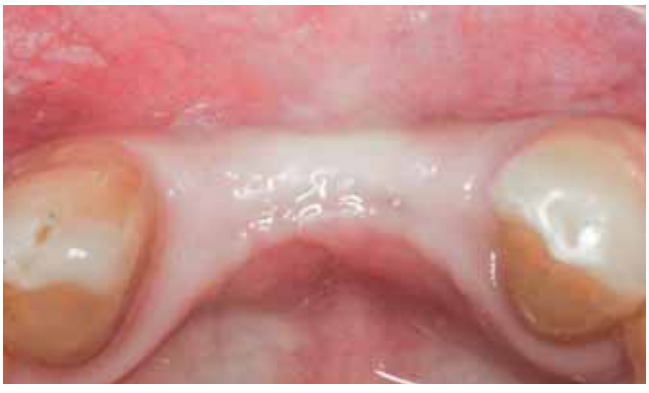
During wound closure, the mucoperiosteal flap was sutured tight and tension free over the Yxoss CBR lattice structure with single interrupted and deep mattress sutures (Cytoplast PTFE EP2; Osteogenics Biomedical) (Figs. 14 and 15).



16 I Postoperative radiograph showing the correct positioning of the implants.

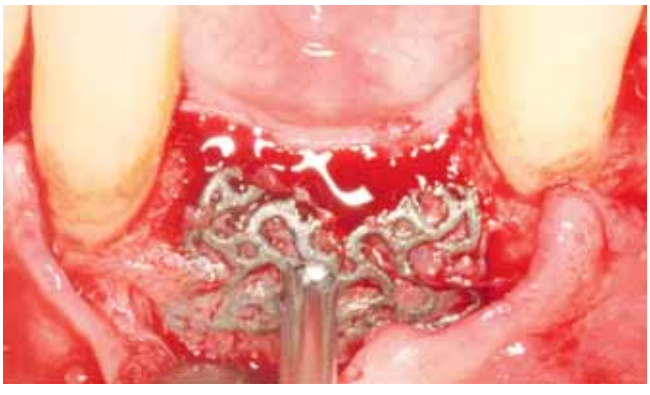


17 I Situation four months postoperatively at implant re-entry: clinical view of non-irritated soft tissue without dehiscences.



18 I In comparison to Fig. 1, there is a clearly recognizable augmented buccal volume; the keratinized gingiva presents stable and free of scars. The same marginal incision is used as for implant placement to avoid scarring.

19 I The osteoblasts migrate through the lattice structure. The augmented area is well vascularized.



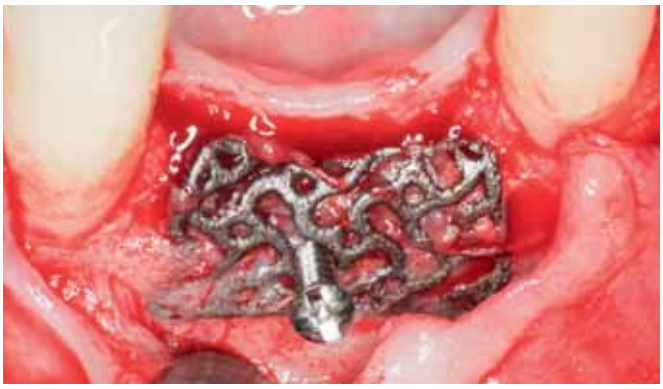
20 I The fixation screw is released and the lattice structure removed.

Re-entry and removal of the lattice structure

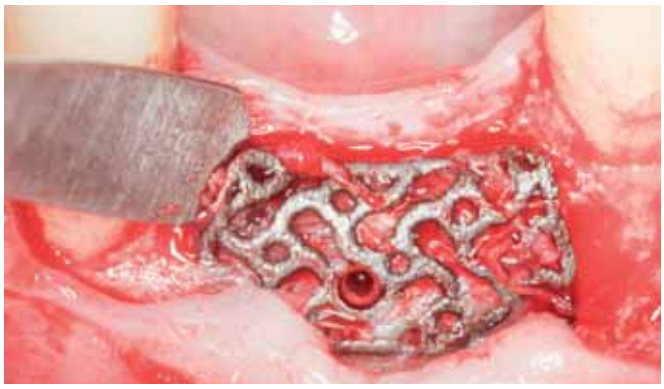
After suture removal and a four-months healing period, a control radiograph of the implants and the augmented tissue showed stable vertical bone levels (Fig. 16). The soft-tissue was free of irritation, scars or dehiscences, and the augmented volume on the buccal side was clearly recognizable (Figs. 17 and 18).

To expose the implants (August 2014) and to remove the mash, the same marginal incision technique was selected as for implant placement.

After preparation of the mucoperiosteal flap, ingrowth of osteoblasts was visible through the lattice structure structure (Fig. 19). After removing the fixation screw (CorticoFix; Camlog), the lattice structure was carefully removed by lateral extrusion

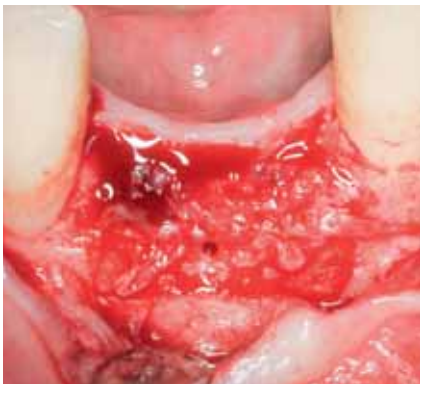


21 I The lattice structure is stripped carefully but completely with slight extrusive movements.

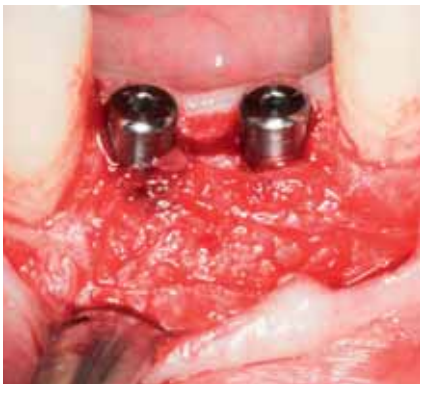


22 I The augmented volume is unaffected by the removal of the lattice structure.

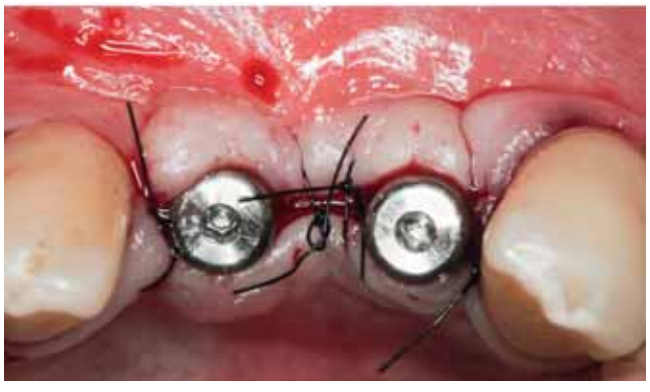
23 I The removed lattice structure.



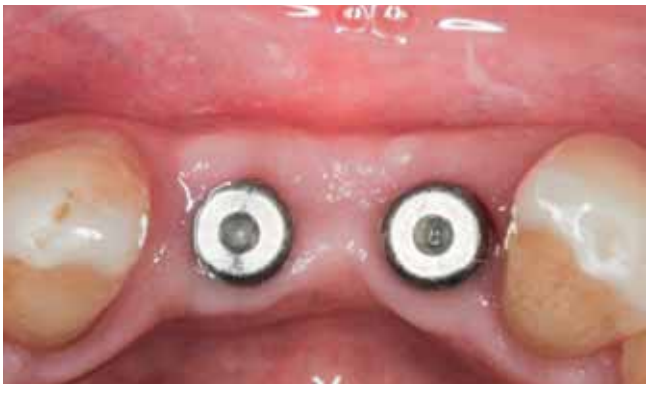
24 I The implants show complete osseointegration with good vascularization of the surrounding bone, firmly connected to the substrate.



25 I The inserted healing caps in situ.

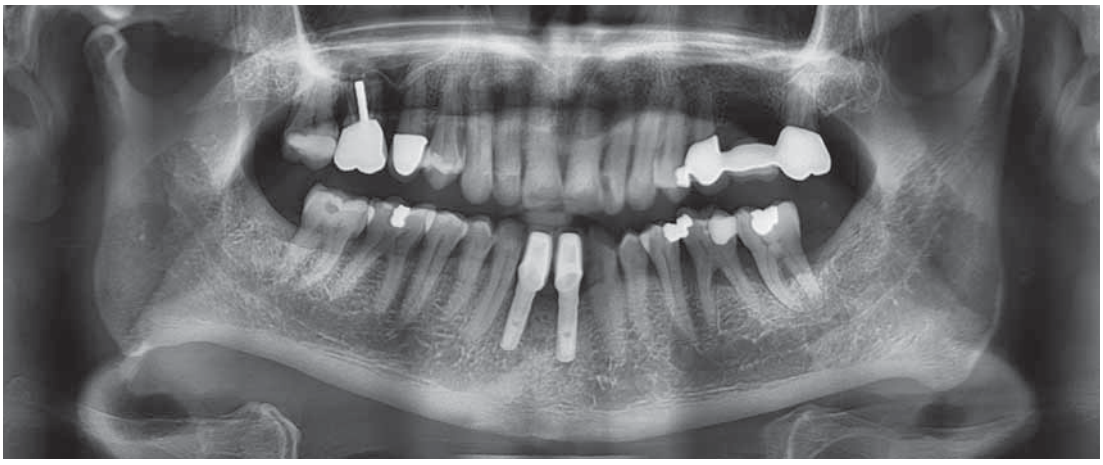


26 I A tension-free suture is placed around the implants.

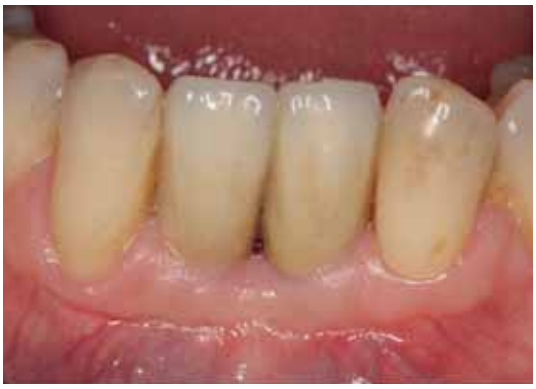


27 I The treatment objectives was attained: a soft-tissue situation showing no irritation and a stable keratinized gingiva around the osseointegrated implants and a successfully restored ridge contour.

movements (Figs. 20 to 23). Since the Yxoss CBR was designed as a temporary cover in this case, it lacked the usual predetermined breaking point. The implants exhibited complete osseointegration with good vascularization of the surrounding bone, firmly connected to the augmentation volume (Fig. 24). Once the cover screws had been exposed and removed, healing abutments were connected to condition the soft tissue and to form a natural emergence profile (Fig. 25). Subsequent Periotest measurements yielded results of –7.5 at site 32 and –6.8 at site 42, indicative of stable osseointegration. Tension-free wound closure was combined with a mucosal graft in order to increase the amount of keratinized gingiva (Fig. 26). The sutures were removed one week later (Fig. 27).



28 I The panoramic radiograph taken at 1.5 years shows stable vertical osseous conditions around the implants. The patient has been placed on a schedule of regular periodontal recalls.



29 I At 18 months after restoration, an irritation-free and stable gingival situation still prevails, with the exception of significant tea stains.

Restorative treatment

To avoid a counterproductive compression of the augmentation tissue with graft loss as a possible result, rigorous relief of the temporary restoration is recommended. Alternatively, the prosthetic treatment may be delayed in the absence of sufficient patient compliance.

The restorative treatment was carried out by the referring dentist, observing the usual precautions. The follow-up after 1.5 years in January 2016 showed stable bone levels with no signs of clinical soft-tissue irritation. The keratinized gingiva was widened around the osseointegrated implants, and the contour of the alveolar ridge was reconstructed (Figs. 28 and 29).

Even in Yxoss CBR cases, periodic monitoring of implants and the augmented area is recommended, preferably during the six-months dental routine examinations. Radiological evaluations should be performed according to the standard recommendations of the respective dental societies. Evidence supports the use of routine professional tooth cleaning to prevent peri-implantitis, as well as the dependence of implant survival on patient compliance, oral hygiene, genetic factors, smoking behaviour and the exclusion of pre-existing periodontal disease.

Conclusion

Following a CBCT-based analysis of the defect, a custom-made Yxoss CBR titanium lattice structure was produced and customized bone regeneration was performed. Conventional augmentation with simultaneous implantation would have exceeded the limitations of the conventional GBR technique and resulted in a questionable treatment outcome. A consecutive two-step procedure would have significantly extended the treatment period and implied greater comorbidity. Implant placement at the prosthodontically ideal position – as determined by backward planning – was possible immediately.

The use of the custom lattice structure significantly shortened the procedure and ensured a predictable result. Consulting with the surgeon in the planning and fabrication phases facilitates a design that is adapted to the specific clinical situation and provides a good fit, as the case described here has shown.

Please visit www.teamwork-media.de/literatur for a list of references.

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Immediate extraction and implantation

The single-tooth solution for anterior aesthetics

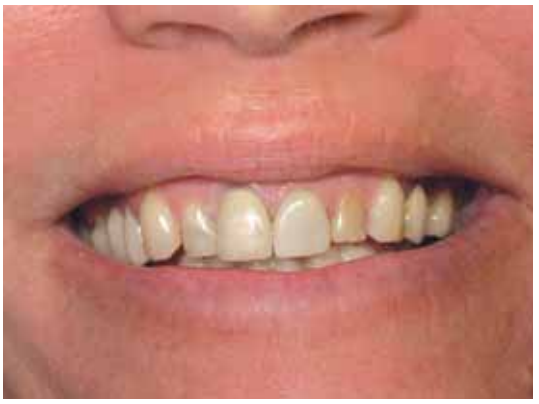
PARESH B. PATEL, DDS, MOORESVILLE, N.C., USA

Although single-unit cases tend to be the most straightforward implant restorations, tooth replacement in the anterior presents a unique array of challenges, with patient anatomy and the critical importance of aesthetics in the smile zone chief among them. This has led many clinicians to adopt a conservative approach to treatment or refer such cases to a more experienced practitioner. As implant design, CAD/CAM dentistry and treatment protocols have advanced, however, achieving a desirable outcome in the anterior has become a less complex undertaking.

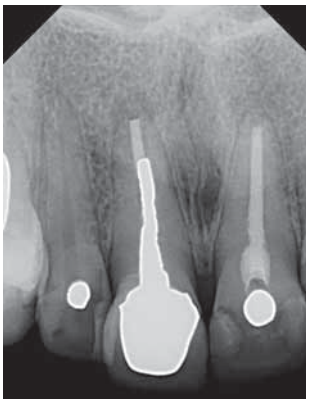
The traditional approach to single tooth replacement has involved leaving the extraction site to heal prior to implantation and allowing the implant to fully osseointegrate prior to loading. Even clinicians who have opted for immediate implant placement have often been hesitant to load the implant before the healing phase is complete. But with a better understanding of the benefits of immediate implantation and provisionalization, including preservation of the hard and soft tissue that are so fundamental to an aesthetic outcome, there is substantial incentive to follow a more progressive protocol when indicated [1].

The progression toward more predictable results in the anterior has been aided by the advent of the tapered dental implant, which has simplified implant positioning in situations where there is limited anatomical space or bone volume. The Hahn Tapered Implant (Glidewell Direct) takes the proven concept of an anatomically correct body shape and combines it with a pronounced thread design, which helps the clinician both situate the implant in the ideal labial-lingual position and achieve the primary stability needed for an optimal outcome. This design is ideal for immediate implantation procedures, as maintaining the proper distance from the facial plate is of paramount importance.

There are numerous advantages to immediately placing the implant following tooth extraction, including preservation of the alveolar ridge, soft tissue and interdental papillae [2]. This is crucial for cases in the anterior, where patients are more attuned to



1 | Preoperative condition of the patient, whose post-and-core crown for tooth 8 had debonded after years of function and was deemed non-restorable. The patient's tooth was temporarily cemented to serve the patient until implant treatment could be performed.



2 | Radiographic evaluation revealed plenty of bone apical, mesial and distal to the non-restorable tooth. Note how the post connecting the crown to the root canal had broken in half.

gingival contours and margins due to the visibility of soft tissue in the aesthetic zone. Once the implant has been placed in the extraction site, delivering a healing abutment prevents the soft tissue from collapsing, maintaining the patient's natural gingival architecture [3]. When the primary stability of the implant is sufficient, provisionalization affords additional benefits by training the gingiva around the shape of a temporary crown, establishing more natural-looking aesthetics while the tissue heals.

Immediate implantation also provides the bone with the continued stimulation it needs to mitigate the resorption that occurs in the absence of the natural tooth [4]. By maintaining a maximum amount of stability and bone volume for the eventual implant restoration, this helps support an outcome that is both functional and aesthetic.

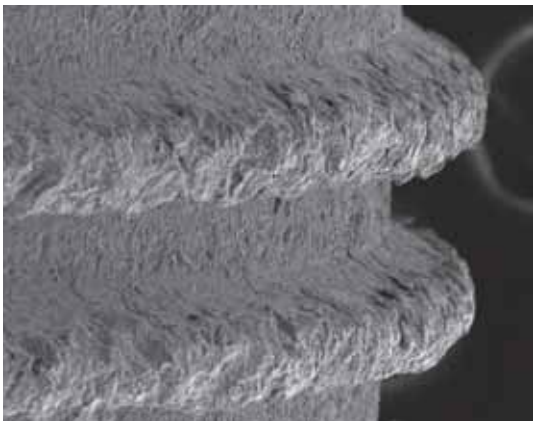
The following case presentation featuring the Hahn Tapered Implant will demonstrate how immediate extraction, implantation and provisionalization can produce a predictable, highly aesthetic result in the anterior. Techniques for achieving maximum primary stability, proper labial-lingual positioning and a natural emergence profile will be described. By following some essential guidelines, practitioners can confidently address the challenges of single tooth replacement in the aesthetic zone.

Case report

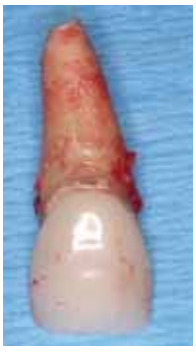
A 45-year-old female presented with a failed post-and-core crown restoration that had separated from the root of tooth 8 (Fig. 1). An endodontist had assessed the tooth, which was stricken by recurrent decay, and provided an unfavorable prognosis for further endodontic treatment. Intraoral and radiographic evaluation indicated that the patient was an excellent candidate for immediate extraction, implantation and temporization (Fig. 2).

The patient, who did not want a conventional bridge, accepted a treatment plan for immediate tooth replacement after being presented with the restorative options. The patient found this mode of treatment appealing because it would maintain her gingival tissue and underlying bone while providing the potential for immediate provisionalization. The maxillary incisors surrounding tooth 8 also exhibited significant decay and would be prepared and restored with conventional crowns following completion of implant treatment per the patient's desire to have single-unit restorations spanning teeth 7 to 10.

The Hahn Tapered Implant was selected for the procedure to ensure a maximum amount of initial stability, ease placement toward the palatal aspect of the alveolar ridge, and increase the likelihood of immediate provisionalization. The thread design of the implant is pronounced enough to thoroughly engage the bone of the extraction site, but not so pronounced that it compromises thin bone during placement or is difficult to fully seat in denser bone (Figs. 3a and b). The tapered design of the implant would provide flexibility in positioning the implant within the available amount of bone.



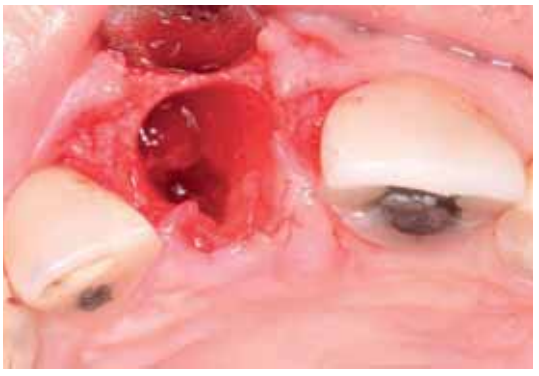
3a and b I The buttress thread design of the Hahn Tapered Implant achieves optimal initial stability in all types of bone, making it ideal for immediate implantation procedures.



4a and b I The tooth was extracted atraumatically, preserving the hard and soft tissue that would be essential to an aesthetic outcome.

5 I The osteotomy was created immediately following tooth extraction.

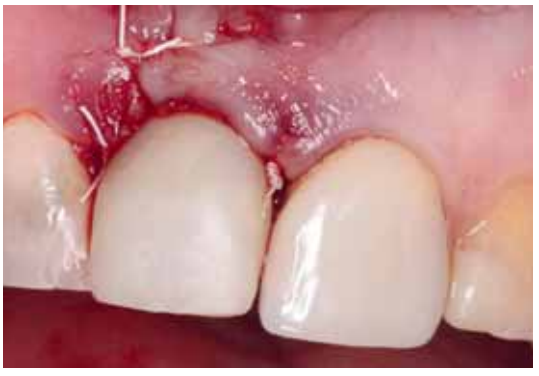
At the surgical appointment, the tooth was extracted without causing any trauma to the socket site, which is crucial in this type of case, as immediate implant placement is typically contraindicated if the periodontium is compromised (Figs. 4a and b). Next, the implant osteotomy was created following a simplified surgical protocol (Fig. 5).



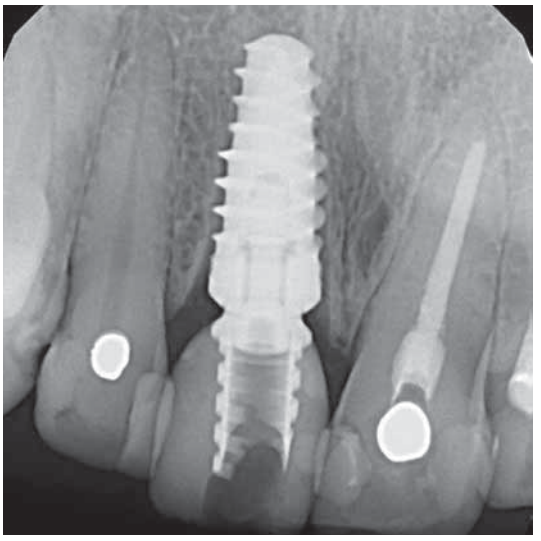
6 I The osteotomy was positioned slightly to the lingual of the socket left by the natural tooth root.

7 I After confirming sufficient primary stability, a temporary cylinder was seated and trimmed to support a temporary crown.

8 I The screw-retained provisional crown was fabricated chairside by shaping bis-acrylic material over the temporary cylinder.



9a and b I The surgical site was sutured and the temporary crown was placed.



10 I Postoperative X-ray illustrates engagement of the implant's threads with the bone of the socket site, slightly subcrestal positioning of the platform, and full seating of the temporary restoration.

11 I After three months of healing and removal of the screw-retained temporary crown, healthy tissue was observed, including the development of an aesthetic, physiologically correct emergence profile.

Care was taken to create an osteotomy that would situate the implant approximately 1.5 mm from the adjacent teeth and 2 mm from the facial plate, with the platform 2 mm below the adjacent CEJ (Fig. 6). A 5.0 mm x 11.5 mm Hahn Tapered Implant was then threaded into place — first with an Aseptico handpiece (Aseptico International) and then with a torque wrench. The implant firmly engaged the lingual wall

12 I
An impression post was attached to the implant so the final impression could be taken.

13 I
Dental CAD software was used to produce an Inclusive zirconia custom abutment (Glidewell Europe; Frankfurt am Main, Germany) with titanium base and a BruxZir anterior crown to optimize aesthetics.

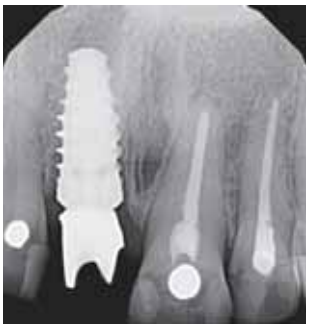
of the socket site, helping maintain a position that was both a safe distance from the facial plate and in the ideal location for an aesthetic outcome.

The implant achieved excellent primary stability, allowing for the chairside fabrication and immediate delivery of a screw-retained provisional crown. A temporary cylinder was seated and trimmed to a height that would help keep the provisional crown out of occlusion (Fig. 7). Then, a provisional crown was fabricated with light interproximal contacts and an incisal edge approximately 1 mm out of occlusion in order to minimize the occlusal and lateral forces applied to the implant (Fig. 8). The provisional restoration was then placed and would provide support for the soft tissue in the manner of a natural tooth throughout healing, helping contour the gingiva for an ideal outcome (Figs. 9a and b). Postoperative radiography exhibited excellent integration of the implant with the bone of the socket site (Fig. 10).

Following three months of healing, the patient returned so the progress of healing and osseointegration could be assessed. The screw-retained provisional was removed, revealing excellent gingival color and contours (Fig. 11). Immediate provisionalization was crucial in maintaining an emergence profile that mimics that of a natural tooth. The stability of the implant was excellent. Thus, a transfer coping was seated, and final impressions were taken (Fig. 12).

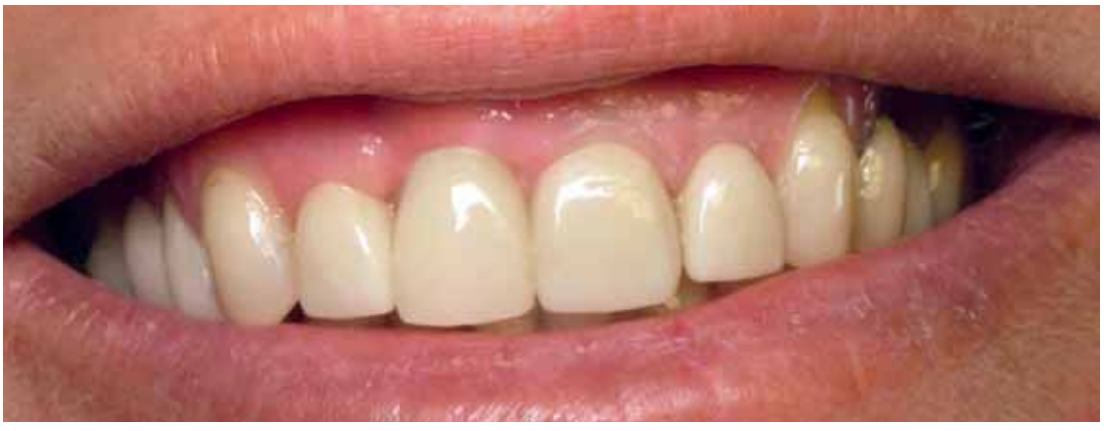
The lab produced master casts from the final impressions, which were scanned so they could serve as the basis for the CAD-designed custom abutment and final crown. A zirconia custom abutment with a titanium base was fabricated, and the final crown was milled from BruxZir Anterior Solid Zirconia (Glidewell Europe GmbH; Frankfurt am Main, Germany) (Fig. 13). This combination would produce ideal aesthetics for the smile zone, including incisal translucency and the appearance of underlying dentin.

14a and b I Following milling, the custom abutment and final crown were verified on the master cast before being sent out for delivery.



15 I A radiograph was taken to verify complete seating and proper fit of the custom zirconia hybrid abutment. Note the robust integration of the implant with the surrounding bone.

16 I The Inclusive custom abutment provided optimal support for the soft tissue and was essential in establishing a natural emergence profile for the final restoration.



17 I The final restoration of tooth 8 exhibited ideal gingival margins and improved upon the aesthetics with which the patient had presented for treatment. The natural-looking restoration surpassed the expectations of the patient.

Following milling, the custom abutment and final crown were seated on the model to verify the prosthetic designs (Figs. 14a and b).

After receiving the case from the lab, the patient was called in for delivery of the final restoration. The custom abutment was tried in and tightened into place according to manufacturer specifications (Fig. 15). The contours of the digitally designed custom abutment conformed precisely to the margins and sulcus form of the implant site (Fig. 16). Lastly, the final crown was tried in and cemented into place, creating a very natural-looking restoration (Fig. 17).

Conclusion

Immediate extraction and implantation offers a predictable approach to tooth replacement in the aesthetic zone. The restorative outcome can be further enhanced by immediate provisionalization, which supports and contours the gingiva in preparation for the final crown. And because this approach reduces the total number of appointments, in addition to providing patients with an aesthetic outcome, clinicians can reap the benefits of having more chair time available to see other patients.

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Description of a new method

Piezoelectrically actuated subperiosteal preparation

PROFESSOR CONSTANTIN VON SEE, KREMS, AUSTRIA, AND DR MARCUS STOETZER, HANNOVER, GERMANY

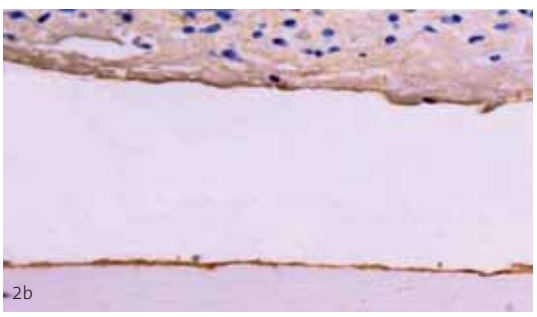
The preparation of the periosteum is a routine surgical procedure. In dentoalveolar surgery osteotomies, dental implantology and augmentation before implant surgery are the most common indications for the subperiosteal preparation of the periosteum.

The cells in the periosteum primarily ensure the supply to the bone from the outside. The specific construction of the periosteum enables ongoing bone remodelling, such as the regeneration of bone fractures, after iatrogenic exposures under dental surgical procedures or bone grafting. The superiority of the blood vessels in the periosteum (70% to 80% of the arterial supply and 90% to 100% of the venous return) as compared to a central vessel in the bone supports the need for an intact periosteum for remodelling processes. A fixed attachment of the periosteum to the bone is ensured by collagen fibres, which are anchored in the bone matrix and guaranteed via hemidesmosomes. In the context of surgery, especially when operating directly on the bone, the osteogenic potency in the periosteum is often affected by the detachment from the bone. The subperiosteal preparation of the periosteum is thus a routine surgical procedure.


1a


1b


2a

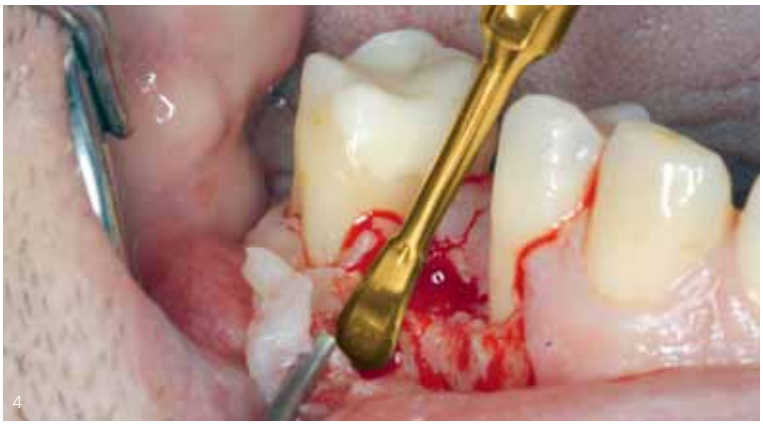

2b

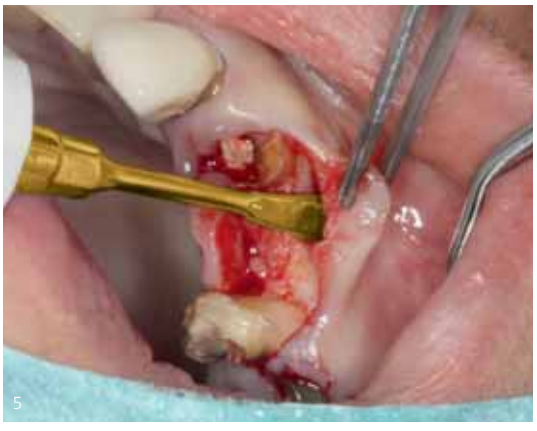
1a to 2b I Histological view of the periosteum after preparation with a periosteal elevator (a) and after preparation with a new piezoelectric instrument (b).

The usual instrument for preparing the periosteum is the periosteal elevator. With this instrument, the periosteum is detached manually from the bone with a pushing and lifting movement. With this instrument, the morphological uniformity of the periosteum is damaged, especially the cells in the stratum osteogenicum, and no longer functions as a unit, or is only partially available. In addition, a preparation of the intact periosteum strictly between the bone and the stratum osteogenicum is currently not possible. By means of the periosteal elevator, integrity is destroyed and the periosteum mainly mechanically torn off the bone. The disruption of the bone/periosteal connection damages the regenerative cells of the periosteum (Fig. 1a to 2b), which are available only to a limited extent with their osteogenic potency. Although it is known that after a subperiosteal dissection with the periosteal elevator, the local microcirculation is significantly reduced for at least four days, in the literature there are scarcely any study models for analysis of perfusion in the periosteum in the subperiosteal dissection.

The micro-vibrations of the instrument attachment in piezoelectric ultrasonic surgery are between 20 and 200 microns at a frequency of 24,000 to 36,000 Hz. The main difference compared to conven-

3 I Instruments PR1 (4 mm) and PR2 (5 mm) – new tools for piezoelectric periosteal preparation with Piezosurgery.





4 and 5 I Atraumatic detachment of the periosteum with the instrument PR1.

tional preparation instruments is that piezo-driven instruments work in a tissue specific way. Through the specific selection of a defined frequency range, the cutting can take place tissue-specific, while sparing adjacent tissue. Thus, trauma of the soft tissue adjacent to the bone (e.g. nerves) occurs only when vibrations exceed 50,000 Hz. Furthermore, the necessary contact pressure compared to conventional subperiosteal dissection instruments is significantly reduced.

From clinical experience, it is known that, for example, using piezodriven instruments, the preparation of the Schneiderian membrane in the context of an external sinus lift leads to lower perforation rates and better healing. Here, too, a selective detachment of the bone from the overlying soft tissue is performed. As a consequence, a new preparation instrument was designed (Fig. 3), which allows subperiosteal preparation with lower mechanical trauma and almost complete preservation of the local microcirculation (Figs. 4 and 5).

It could be demonstrated in an animal model that both local microcirculation and blood flow to the periosteum were significantly higher in subperiosteal dissection with the piezoelectric periosteal elevator (PR1) compared to conventional preparation with a periosteal elevator.

From the point of view that piezosurgery has been proven in several studies to be a very gentle and atraumatic method for the tissue, this could be confirmed for the subperiosteal dissection. One possible explanation could be that fewer microthrombi form in the subperiosteal dissection with the piezo instrument compared to preparation with a periosteal elevator. In repetitive examinations on an animal model for an extended period after bisphosphonate therapy, this results in significantly less wound dehiscence and wound infections after bone modelling interventions. Likewise, the mechanical contact pressure which is required for the subperiosteal dissection could be significantly reduced.

In the literature, thermal effects in the context of the application of piezoelectric instruments are discussed critically. This is of great importance in the context of the undermining preparation such as the tunnel technique in bone augmentation. Therefore, double cooling was developed for the piezoelectric periosteal elevator in which coolant flows around the instrument. In the first trials it could be demonstrated in vitro that with proper adjustment of the amount of coolant, according to the manufacturer's instructions, a temperature of +28 °C has not been exceeded in the preparation instrument.

The complete clinical application range especially in patients with a compromised general medical situation is currently under investigation and will very likely extend the application scope of the instrument in the future. ■

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Press conference of the EFP

Call for global action against periodontal disease

The European Federation of Periodontology (EFP) is the European umbrella organization for periodontology. In 2016, it celebrates its 25th anniversary with a call for global action against periodontal disease and for improvements in periodontal health. At a press conference in Frankfurt, the EFP's representatives presented current results on the link between periodontal and systemic diseases and announced global and interdisciplinary networked action.

Professor Søren Jepsen (Bonn, Germany), physician and dentist and President of the EFP, opened the press conference with the crucial observation that receding or bleeding gums were not the only issue by far. Severe periodontal disease is the sixth most common disease worldwide, with about 10 to 12 per cent of the world population affected – which certainly illustrates the magnitude of the problem. This can be accompanied not only by tooth loss, functional disorders and the social isolation of the patient, but additionally by a variety of systemic diseases that further drive up the cost of healthcare already strapped for resources. The key message today is that periodontitis can be successfully prevented, and if detected in time, it is just as successfully treatable. Communication is a key factor, according to *Jepsen*, since many patients – but also some clinicians – are unfamiliar with the extensive interactions and associated risks. This is why 12 May had been designated "European Periodontology Day". *Jepsen* presented a study according to which the timely treatment of periodontitis could reduce follow-up costs for afflictions such as coronary heart disease and diabetes by more than 40 per cent. Therefore, the EFP had suggested that the World Health Organization (WHO) should promote – in addition to good nutrition, quitting smoking, exercise and weight control – good oral hygiene as an important factor of general health.

EFP General Secretary *Professor Iain Chapple* (Birmingham, Great Britain) continued the discussion with his presentation on periodontal disease, public

Speakers at the EFP press conference: (left to right:) Professor Peter Eickholz, Dr David Cavan, Professor Iain Chapple, Professor Søren Jepsen, Professor Juan Blanco.

health and chronic diseases. Severe periodontitis has been shown to be connected with cardiovascular disease, diabetes and – according to a recent study – kidney disease, which often produce comorbidities that significantly reduce patients' life expectancy. For example, a successful periodontal treatment was able to lower glucose levels in diabetes by an amount comparable to the administration of an extra blood glucose-lowering medication. Disquietingly enough, the relationship is bidirectional: Poorly controlled diabetes also has a negative impact on established periodontal disease. "Unlike general practitioners, who often do not see patients until they have a serious problem, we as dentists often meet our patients when they are still in a good general state of health, facilitating early preventative action", said *Chapple*.

Dr David Cavan is Director of Policy and Programmes at the International Diabetes Federation in Brussels. He explained the differences between type I and II diabetes mellitus and the associated, often severe health problems. Today, one out of eleven people in the world has diabetes, and in some regions of the world the number of cases is expected to double over the next few years. Experts have estimated the extent of underreporting of still undiagnosed, hence untreated patients at a dramatic 40 per cent. About 90 per cent of cases are affected by type II diabetes, which is a direct consequence of an unhealthy lifestyle: mostly sedentary activities, a general lack of exercise, excessive amounts of sugar in foods and beverages and too much processed food. All of these are in principle easily controllable by making appropriate changes in lifestyle. *Cavan* pointed out that "once your teeth have loosened and your gums hurt, you will also have problems with healthy foods such as fresh fruit, nuts and raw food" and once again called for early intervention.

Professor Peter Eickholz (University of Frankfurt, Germany), President of the German Society of Periodontology, a constituent association of the EFP, called periodontitis a "silent disease". Even when the gums still appear healthy, especially to the patients themselves, probing depths of more than 5 mm may be found, indicating severe, advanced periodontitis. Diagnosis and treatment of periodontal disease cannot remain the sole domain of the periodontological specialist, but requires a commitment on the part of the general dentist.

As incoming President of the EFP, *Professor Juan Blanco* (Santiago de Compostela, Spain) put periodontal health close to the top of the global health agenda, announcing further campaigns on part of the EFP both in clinical and scientific circles and among the general public, including interdisciplinary efforts with cardiologists, diabetologists, gynaecologists and other medical specialists.

Professors Jepsen, Eickholz and Blanco opened the debate about periodontitis as a common disease and its impact on the general health and elaborated on strategies for its long-term prevention and treatment.

Professor Peter Eickholz

Professor Juan Blanco

In the lively final discussion, *Chapple* considered the fact that dentistry is basically characterized by a "repair-shop" mentality rather than making the possible concerted preventative effort. This is also evidenced by the comparatively low fees that prophylactic measures command. The public must demand better information and put more pressure on practitioners and political decision-makers to generate a much higher demand for preventative periodontal examinations. The call for better training for general dentists was another demand directed to politicians and public authorities, who do not realize or deliberately ignore the dramatic yet so obvious and easily avoidable follow-up costs. However, there were promising approaches in the form of exchanges with other medical societies. The impressive film "The Sound of Periodontitis" was screened to conclude the event. This film with its startling patient examples can be downloaded from the websites of many national periodontal societies and is also available on YouTube. It is an excellent tool for patient communication. ■

More information

www.efp.org

Annual General Meeting in Chicago

The ITI realigns its strategy

At its recent Annual General Meeting in Chicago, the International Team for Implantology (ITI) announced important changes to its structure to position the organization for the future.

Professor
Thomas D. Taylor

The current professional and industry environment is characterized by change, with corporate consolidations across the industry, the emergence of implant dentistry dental chains, the introduction of new treatment approaches as well as changes in the way practitioners meet the demands of continuing education. In order to define how the ITI should adapt to meet these changing needs and redefine the scope of its focus, the ITI Board of Directors held a strategy meeting in December 2015. All resulting proposals were met with approval by the General Assembly.

"I am extremely pleased with the trust demonstrated by the General Assembly", said ITI President *David Cochran*. "Strategically we are now better positioned for the future in terms of our focus as well as our ability to respond to change. We also have a leaner structure that can react with greater speed to events as they develop."

While maintaining a focus on education and research funding, along with the identification of gaps in implant dentistry research, the ITI Committees were restructured to enable a strategic approach to their various tasks. The reorganization provides, among others, a greater focus on promoting and supporting leadership within the organization and the field as a whole as well as a basis for the implementation of the ITI's overarching strategy within its 27 national and regional sections. The ITI Study Club Committee was dissolved and responsibility for Study Club matters passed on to the ITI Education Committee. In order to respond more flexibly on a project-by-project basis, the Board and the Committees will now be able to form task forces made up of individuals with specific expertise. This is currently particularly important for projects run by the ITI Education Committee in connection with the new ITI curriculum that is in development.

ITI Honorary Fellowship for Professor Thomas D. Taylor

Since 1980, 14 ITI Fellows have been distinguished with Honorary Fellowship of the ITI – the ITI's highest award that recognizes a Fellow's extraordinary contribution not only to the organization but also to the field of implant dentistry as a whole. This year, *Thomas D. Taylor*, Professor and Head of the Department of Reconstructive Services at the University of Connecticut, USA, was singled out for this honour in recognition of his many years of service to the ITI and his contribution to the field through voluntary work on behalf of patients as well as in leading positions in prosthodontic organizations. *Thomas Taylor's* professional life has been dictated by a passion for prosthodontics and teaching. With 27 years, he is the longest serving Departmental Chair in the US, was one of the first US members of the ITI, went on to become the first ITI President from the US and served on the Board of the ITI for more than 15 years. He has received many awards during his career and each recognizes his exceptional commitment to prosthodontics.

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Osteology Monaco 2016

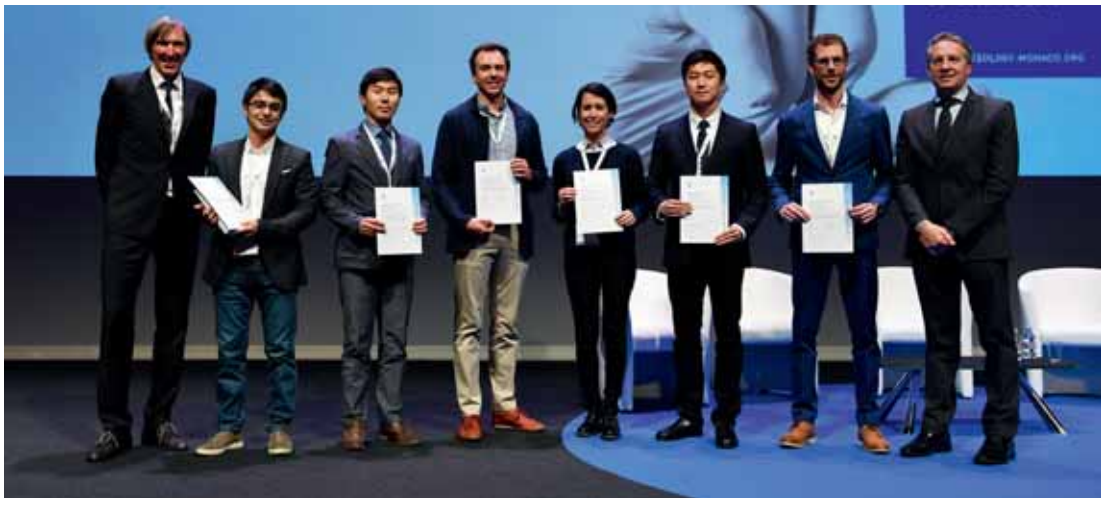
People came from all over the world

Osteology Monaco 2016 was a great success. 2311 participants from 67 countries from all over the world attended the International Osteology Symposium, which takes place every three years. The launch of the novel online platform "The Box" created a lot of attention and many participants immediately signed up.

Together with the Foundation's Education Committee, the two Chairmen of the symposium, *Friedrich W. Neukam,* Germany, and *Myron Nevins*, USA, had put together a programme addressing the many open questions that practitioners still face in everyday work in the practice.

Under the motto "Learning the WHY and the HOW in regenerative therapies", scientists and practitioners from all over the world attended lectures, workshops and courses. Almost all workshops were fully booked, as were the Master Clinician Courses, which were held for the first time and attracted large crowds.

During the symposium in Monaco, *Neukam* explained: "The treatment schemes and concepts, which have been applied and advocated, have to be



Winners of Osteology Research Prizes and Audience Award with Kristian Tersar (Osteology Foundation, far left) and William Giannobile (Science Committee Chairman, far right): Rustam Aghazada, Hyun-Chang Lim, Fabian Duttenhöfer, Vanessa Sousa, Jung-Ju Kim, Ernest Rojo (from left to right, Thomas De Bruyckere is missing).

scrutinised again and again, since knowledge – particularly in the field of regenerative therapy – has changed and will continue to do so rapidly. That's why we continuously need to discuss the open questions."

And *Nevins* added: "In presentations, interactive sessions and discussions, we try to answer as many questions as possible with the aim to give practitioners the relevant knowledge for their daily practice, and the confidence to provide their patients with the best possible treatment."

The two Scientific Chairmen as well as the President of the Osteology Foundation, *Professor Mariano Sanz*, were very pleased with the symposium, the perfect organisation, the number of participants, and also the quality of the scientific programme, the research forum and the poster exhibition with 163 posters. The two Scientific Chairmen thanked the founding and gold partners of Osteology Monaco 2016 as well as the exhibitors and publishing partners at the symposium. "Without their support, such an event would not be possible", they said. With 49 exhibitors in total, a record number was achieved and places in the exhibition hall were sold out well before the event. But the participants not only enjoyed the scientific programme and the workshops. Many visitors underlined how much they appreciate the special atmosphere which is characteristic for the International Osteology Symposium, and always makes it worth attending the event.

Arousing vivid interest: "The Box" on site.

Learning by doing: participants in one of numerous hands-on workshops.

Opening "The Box"

The Box, the new Global Osteology Community Platform, which was launched in Monaco, attracted a lot of attention. Many people signed up during the congress and could already use special tools and functions such as online submission of questions to the experts or browsing through the programme, the abstracts and the poster exhibition. 1780 users from 83 different countries have signed up for The Box until now, and many more are expected to sign up in the next weeks. *Hector Rios*, the project leader of the online platform project, explained that in addition to information and tools for scientists and practitioners, The Box provides great networking possibilities. He said: "It was the goal of the project team to create "the one place to go" in oral regeneration, connecting everybody in this field, and providing new and unique benefits for scientists and practitioners."

Research Awards

A key task of the Osteology Foundation is the promotion of research, as well as the transfer of the results to practice. This is why research also played an important role at the International Symposium in Monaco. The Osteology Research Prizes were awarded to *Fabian Duttenhöfer*, Germany (1st), *Vanessa Sousa*, UK (2nd), and *Jung-Ju Kim*, South Korea (3rd) for Basic Research, and to *Ernest Rojo*, Spain (1st), *Hyun-Chang Lim*, South Korea (2nd), and *Thomas De Bruyckere*, Belgium (3rd) for Clinical Research. *Rustam Aghazada*, Italy, received the Audience Poster Award. This prize was awarded for the first time, based on an online voting on the new platform.

Next Osteology Symposium 2019

The Osteology Foundation is already looking forward to welcoming everybody interested in oral regenerative therapies at the next International Osteology Symposium in 2019. The venue and the exact date will be communicated as soon as confirmed. ■

More information

www.osteology.org

MIS Global Conference 2016 in Barcelona

360° Implantology – innovations in style

They simply know how to do it. Even the accompanying documents in the conference backpack for the 3rd MIS Global Conference 2016 were of excellent quality and something special: refined and stylish, with lots of haptic effects that recreated the vivid tactile experience for the new V3 implant with all its elements, made from high-quality materials, never cluttered, always very elegant ... These details illustrate that the Israeli implant manufacturer, active since 1995, is not playing in the low-cost or generic segments. The company let off a veritable firework in Barcelona, not only literally in the sky at the opening dinner in the middle of the FC Barcelona stadium, but also figuratively in terms of innovative concepts in implant dentistry and prosthodontics.

"This conference is all about innovation", said *Doron Peretz*, Senior Vice President for Marketing and Product Development at MIS, as he welcomed the delegates – accompanied by a video showing a stunning Icelandic landscape that demonstrated, without making many words, how monitoring and adapting to nature and its ways can affect the design of technical inventions and biocompatible performance. "I do not think that dentists are primarily interested in mere discounts at the cost of innovation and performance. They are interested in quality across the board", said *Peretz*, adding that MIS was ideally positioned not only in the value segment but also in the "value-plus" segment.

Photo: Tanya Gontmacher, MIS

On hallowed ground: opening dinner at the FC Barcelona stadium.

V3: Innovation meets aesthetics and performance.

The Scientific Committee consisting of *Professor Mariano Sanz* (Spain), *Dr Eric van Dooren* (Belgium), *Professor Lior Shapira* and *Professor Nitzan Bichacho* (both Israel), had put together a program packed with exciting and innovative topics. *Sanz*, the MIS Global Conference's Scientific Director, greeted the 2,500 delegates with unconcealed pride. Cultivate curiosity, think scientifically and be creative – that was *Leonardo da Vinci's* motto, and the same way of thinking was guiding MIS, said *Professor Lior Shapira*, who opened the technical part of his presentation on the V-Concept, a digital concept that he said was apt to take implant dentistry to new dimensions. At the same time, MIS had remained loyal to its motto of "Make it Simple".

Dr Mirela Feraru-Bichacho and *Professor Nitzan Bichacho* presented some highly appealing case studies showing substantial gains in bone and soft-tissue volume. The most convincing aspect about the V-concept is the absolute predictability of outstanding aesthetic results even in quite complex rehabilitations. "I work in his clinic", said *Professor Mariano Sanz,* as he introduced his son *Dr Ignacio Sanz Martín* (Spain), who already looks back on a long career as a successful researcher. The two reviewed randomized histological and volumetric animal studies of V3 implant designs against a standard (cylindrical) design. These studies clearly showed that the new triangular coronal design resulted in measurably and significantly faster and better bone apposition, a significantly reduced loss in vertical height

and a significantly thicker coronal buccal bone wall, both after immediate and delayed implant placement. As a consequence, the soft tissue and biologic width were visibly better preserved. "Of course we are mainly interested in the buccolingual aspects", concluded *Mariano Sanz*, but the volumetric micro-CT measurements by *Ignacio Sanz Martín* showed, true to the conference motto, improved bone attachment 360° around the implant.

The morning was concluded by *Professor Carlo Marinello* (Switzerland) and *Dr Yuval Jacoby* (Israel), presenting decision criteria for ideal implant position and detailed comments on the V3 system. The afternoon sessions under the scientific direction of *Professor Eli Machtei* (Israel) were dedicated to the current state of knowledge about bone remodelling around implants. The lively presentation by *Professor France Lambert* (Belgium) demonstrated an integrative approach to single-tooth restorations in the posterior region, including digital procedures, against which the conventional procedure shown for comparison in a split-screen technique looked rather quirky and old-fashioned. *Dr Eric van Dooren* (Belgium) and *Dr Nuno Sousa Dias* (Portugal) presented a combined orthodontic treatment and eruption of an impacted anterior tooth with a dental implant treatment to improve the compromised growth-related anterior aesthetics. The V3 implant system and its versatile use in the functional as well as in the aesthetic field was also the topic addressed by *Professor Stefan Koubi* and *Hilal Kuday* (both France). The day concluded with *Professor Mithridade Davarpanah* and *Dr Philippe Rajzbaum* (both France), *Dr Tommie van de Velde*, *Dr Alexander Declerck* (Belgium) and *Dr Anas Aloum* (United Arab Emirates) speaking about immediate loading in edentulous patients, the state of the art in guided surgery and the importance of careful preoperative planning.

The following conference day hold ready another three thrilling topics, first of which was the novel B+ implant surface. B+ is a bioresistant monomolecular multiphosphonate coating treatment that gives the implant a largely bone-like surface, which dramatically improves the bone-to-implant contact. This was demonstrated in the histological, biochemical and clinical presentations by *Dr Björn-Owe Aronsson* (Switzerland), *Professor Marco Esposito* (Italy) and *Dr Ilan Kallei* (Israel).

Professor Moshe Goldstein (Israel), *Dr Arndt Happe* (Germany), *Dr Stavros Pelekanos* (Greece) and *Professor Federico Hernández-Alfaro* (Spain) then focussed on clinical controversies in contemporary implant dentistry, treating important issues like implants in problematic aesthetic situations or the role of prosthodontics in preservation of soft and hard tissue around implants.

Elad Ginat, Product Manager, Idan Kleifeld, CEO, and Doron Peretz, Senior Vice President for Marketing and Product Development (left to right).

MIS Product Manager *Elad Ginat* reported that the company had asked dentists all over the world what kept them from using the efficient guided surgery concept and had identified two main reasons, which were eliminated during the development of the MGuide concept: a lack of time for planning, which MIS addressed with its special planning service offered at the MCenters, and the reduced field of view, which had disturbed many dentists and which MIS resolved by an open stent design.

Professor Guillermo Pradies Ramiro (Spain), *Professor Galip Gürel* (Turkey), *Vincent Fehmer MDT* (Switzerland) and *Dr Christian Coachman* (Brazil) held exciting presentations outlining the state of the art in digital treatment planning and processes, from treatment planning all the way to a closed digital workflow. Equally exciting was the new bone substitute material 4Matrix, presented in Barcelona for the first time, that combines the favourable biological properties of resorbable calcium phosphate with the spacer properties and mechanical stability of hydroxyapatite. A final firework blast – to stay within the metaphor – was fired off in the final presentation by *Professor Nardi Casap* (Israel). Looking at the complex issue of vertical bone increase, he ventured the statement that instead of bone augmentation we would be able to talk about true bone growth in the future.

On the pre-congress day, participants had an opportunity to receive practical training in workshops. Parallel to those, a Young Clinicians Session and a Master Clinician Session had dentists present their own interesting cases.

At the end of this great event hosted by what is now the world's fifth largest implant manufacturer, the question seems justified if there can possibly be any room left for improvement in terms of dense scientific content, practical learning outcomes and emotionally enticing social events. *STE*

TRI Dental Implants travels around the world

Committed to the patient

TRI Dental Implants, a dynamic, owner-operated dental company, decided to use this off-IDS year to meet its customers all over the world directly: In a World Tour encompassing events around the globe, TRI brings renowned international speakers such as Professor Hom-Lay Wang (United States), Dr Marius Steigmann (Germany), Professor Ali Tahmaseb (Netherlands) and Dr Dan Brener (Australia) to its customers – from Paris and Amsterdam via Istanbul, Tehran and Moscow to Mumbai, Sydney and Bogotá. EDI Journal attended an event in Barcelona, one of the venue highlights on the European continent, at the beginning of May 2016.

In times of increasing corporate concentration and globalization, TRI Dental Implants with *Tobias Richter*, its founder, CEO and long-time oral implantology insider, is a company that has been standing out in the market for years with its highly innovative and unconventional way of thinking. "Our global event series is designed to give our customers in 35 countries yet another personal experience, and we are going to raise enthusiasm for our new products", *Richter* said.

Sandro Venanzoni, Chief Technology Officer, presented the clinically proven details of the TRI implant system and a study by *Professor Ronald Jung* of the University of Zurich according to which the gingiva-coloured implant necks of the TRI implant types have an aesthetic effect comparable to that of zirconia. In addition, a completely revised surgical kit with new insertion tools and redesigned drills without silicone sleeves is now available from TRI (see interview on p. 125).

In good mood with a great event: the Spanish and Swiss team of TRI Implants.

Dr Marius Steigmann (Heidelberg, Germany) presented the most current techniques for successful soft-tissue management and gave an update on recent scientific findings. *Dr Luis Bessa* (Porto, Portugal) continued with a strategic selection of appropriate implant types and 3D implant planning modes. *Dr Achim Sieper* (Münster, Germany) shared his wealth of experience in sinus-floor elevation techniques, which are made substantially easier by the macro design of the TRI implants. *Dr Torsten Kamm* (Baden-Baden, Germany) presented the advantages of immediate implant placement for pink aesthetics. *Kamm* offered valuable tools for making decisions about loading times as well as extraction and augmentation techniques, and presented a number of successfully resolved cases. *Dr Marius Steigmann* continued with his "Golden Rules for the aesthetic zone". Rather than socket preservation, some situations required "socket transformation" to be able to place the implant in the correct position. The lecture on "Peri-implantitis – diagnosis, therapy and prevention" by *Professor Ralf Smeets* (Hamburg, Germany) concluded the dense packed day of presentations. *Smeets* gave an overview of current treatment approaches, but cautioned against excessive expectations of a complete standstill, let alone a true reversal of peri-implantitis.

Once again, limiting the number of participants proved to be an advantage that became manifest in the intense, vivid and highly relevant discussions – more like a training course in nature – that concluded the day. *STE*

More information and registration
www.tri-implants.swiss

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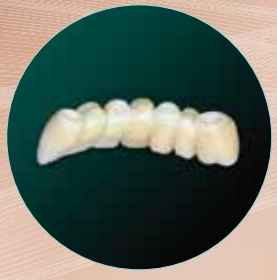
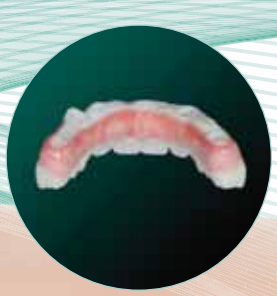

Bridges


Fixed Prostheses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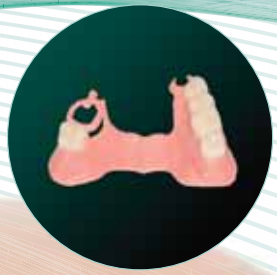

Partial Dentures

www.trinia.com

Inauguration of the new headquarters of Champions Implants

The Champions have their own square

An honour not usually bestowed on celebrities until many years after their death has become yet another highlight in the successful ten-year-plus history of Champions Implants and its founder Dr Armin Nedjat. The new corporate headquarters now houses the various company divisions under one roof. Honourably and quite befittingly, its street address is Champions Platz 1 ("1 Champions Square") in Flonheim, 60 kilometres southwest of Frankfurt am Main, Germany.

State-of-the-art building and catchy address: the new headquarters of Champions Implants on "1 Champions Square" (left).

Flonheim's mayor Ute Beiser-Hübner presents Dr Armin Nedjat with a "Trullo" and the best wishes for a safe and successful future (right).

"For a decade now we have been stirring up the dental market with our ambitious, unusual and innovative company philosophy", said *Nedjat* in his welcoming speech. This was owed, he continued, not only to a favourable pricing policy and a great service team of dedicated staff members, but also to the company's "Made in Germany" product quality, its minimally invasive surgical protocol and the practical training it offers to interested users, who hail from more than 60 countries at the new location. Although the Mimi Flapless technique, which received an award for medical innovation in 2013, is a dedicated patient-oriented, minimally invasive approach that dispenses with cutting in favour of drilling, some special training is still highly useful. As the name suggests, the implant is placed in the surgical phase without reflecting a flap – and it follows that the prosthetic restoration is consistently provided without re-entry surgery. "Any kind of freehand drilling will be gentler on the bone than navigated implantology", explained *Nedjat*.

Champions was also one of the pioneers in the use of PEEK, a high-performance polymer that *Nedjat* considers an up-and-coming alternative to titanium and ceramics because the elasticity of the material corresponds ideally to that of the natural dentition and because there are no known biological incompatibility reactions. *Jörg Schlegel*, sales manager at Juvora, the manufacturing company, presented some interesting facts related to the origin and chemical composition of the material and expressed his belief that the future of dentistry will

The operating room is technically equipped to allow live broadcasting.

be metal-free. *MDT Norbert Bomba*, CEO of Champions Implants and a long-time friend and business companion of *Armin Nedjat*, took a look back at how the new building came about. The subsequent live implant surgery was the litmus test for the building and its technical equipment. It was followed directly by an interested audience from the United States, China, the Middle East, Japan and France, using 3D broadcasting technology and simultaneous interpreting. Flonheim's mayor *Ute Beiser-Hübner* presented *Armin Nedjat* with a "Trullo", a vineyard hut that once protected Apulian grape pickers from the weather and that is now the hallmark of the city of Flonheim. Thus, the new training centre will be able to whether storms and guide the Champions safely into the next successful decade of their history.

More information

www.championsimplants.com

Press conference of Zest Anchors in Frankfurt/Main, Germany

A “golden” product: the new Locator R-Tx

For about fifteen years now, the Locator has been a leading attachment system for implant-supported removable overdentures, offering reliable retention to the great satisfaction of implant manufacturers, clinicians and patients. Zest Anchors from California, a developer and manufacturer with a 40-year heritage of innovative attachment technology, has listened to present-day clinical needs. In March, the company presented the Locator R-Tx, the next generation of its successful overdenture attachment system, highlighting its performance for dentists and dental technicians.

Following a welcoming address by *Professor Andrei M. Kielbassa* of Danube Private University (Krems, Austria), *Russ Bonafede* of Zest Anchors presented the technical details of the new Locator generation, pointing out in passing that Zest Anchors has been active in this field for an impressive four decades now. Founded by dental technician *Max Zuest* in 1977, the company has consistently had its focus on the – fast-growing – population of edentulous patients. As fixed restorations remain beyond the financial means of many segments of society, we are likely to see a rising demand for removable prosthetic solutions – an independent market research firm expects an increase of more than 40 per cent by 2020. The Locator, which has been on the market for 15 years now, is considered the gold standard in overdenture attachment technology. The next generation of this product, the Locator R-Tx (for “removable treatment”), is now being introduced. It will be complemented at a later date by a F-Tx concept for fixed restorations. The development of the R-Tx is based on direct input by dentists and patients. Proven details were retained, while other sought-after features, such as that for an ability to compensate for greater divergences, were newly added. An outstanding improvement is the newly developed titanium carbon nitride coating, which gives the outer shell 30 per cent extra hardness, significantly reducing the amount of wear that had sometimes been criticized in the past. Its pinkish tone blends in very harmoniously with the soft tissue, which is psychologically pleasant for the patient during cleaning. While Zest Anchors is best known to most users for its Locator products, it has developed a considerably broader product portfolio in recent years, including diameter-reduced implants, impression materials, cover screws and a number of other dental products and components.

Russ Bonafede of Zest Anchors, Dr Karl-Ludwig Ackermann and MDT Gerhard Stachulla (left to right) are excited about the new Locator generation.

Dr Karl-Ludwig Ackermann (Filderstadt, Germany) can look back on 38 years of experience in implant dentistry. Rehabilitating the edentulous jaw, he said, had always presented one of the greater challenges. The Locator can compensate for even the most advanced degrees of atrophy. *Ackermann* presented an implant-supported denture on four implants using the new Locator R-Tx, praising the economic benefits of this concept – not only for patients but also for dentists and laboratories – and its particularly

Professor Ralf Rössler: "Caregivers often treat the oral cavity as taboo."

good accessibility for oral hygiene, especially in patients with somewhat or highly restricted capabilities of self-care. "Find the right patient for the right restoration, and the right restoration for the right patient!" The Locator technology opens up a wide range of attractive alternative options.

"A golden product" is what *MDT Gerhard Stachulla* (Augsburg, Germany), who for many decades has been advocating close cooperation between the dentist and the lab technician, called the new Locator generation. The first step of every treatment, he said, must be a comprehensive interdisciplinary diagnosis. "Incidentally, to me, implant-supported restorations are invariably fixed", said *Stachulla* in an attempt to set the terminology straight, "even though some of them can actually be taken out of the mouth for cleaning." Ball attachments, in his experience, cannot balance the horizontal forces in the typical flat-shaped jaws of elderly patients, which is why he prefers the Locator. Especially because of its significantly better oral hygiene options, the Locator is invariably his preferred option for older patients with limited manual dexterity. The new Locator features a 50 per cent increase in pivoting capability to 60° between implants and a standardized 1.25 mm hex drive geometry instead of the former Trilobe. The titanium surface of the earlier Locators would tend to become worn, whereas the new surface promises significantly improved durability. The Locator is a very important aspect of *Stachulla's* credo: "Oral implantology is actually prosthodontics with a surgical component." At the same time, patient acceptance is immense: "Despite the reasonable cost, patients feel that something has been made individually for just them."

The perfect interdisciplinary complement was offered by periodontist *Professor Ralf Rössler* (Ludwigshafen, Germany), who defined the objectives of pre-insertion therapy, namely the prevention of inflammatory risk factors that should start in the diagnostic stage. Even completely edentulous patients present the same microflora in the peri-implant sulcus that had characterized their teeth. "Cleaning

Professor Andrej M. Kielbassa summarizes the technical details.

up an infected site does not automatically mean a healthy implant." While the incidence of caries is decreasing, that of periodontal disease is increasing significantly. Removable restorations and solutions using the Locator are therefore recommended in view of the age pyramid, both in terms of oral hygiene and professional dental prophylaxis. "Caregivers often treat the oral cavity as taboo." Solutions such as the Locator attachment are therefore positively helpful in these patients, who additionally enjoy the ease of handling even with declining motor skills. In the ensuing lively discussion, a further decisive advantage was depicted: the option to repair screw-retained restorations more easily or possibly even to modify them.

Kielbassa concluded the session by summarizing the technical benefits of the system in detail. The new Locator generation is already available for use with leading implant systems. The company's website provides up-to-date information of additional abutments that will be added throughout the year. The proven Locator product line will continue to be available in addition to the innovative R-Tx, complete with matching spare parts and restorative solutions. "The use of the new Locator and the new Locator R-Tx is a small step for the practitioner, but for the patient it can be a giant leap toward a better quality of life", *Kielbassa* concluded.

More information

www.zestanchors.com

Dentaurum Implants' International Dental Conference in Berlin attracts more than 300 participants

We are family

The faces of the more than 300 participants from 19 countries unmistakably expressed how satisfied they were with the offerings of this conference – the presentations, the conference hotel and the evening event at the waterworks. The spirit of partnership that characterizes this family-owned enterprise, based near Pforzheim in South West Germany, set the tone for the entire conference.

What began with a dental laboratory 130 years ago has developed into an international group of companies with 650 employees working in the fields of dental technology, orthodontics and implantology.

The workshops on Friday, the first day of the conference, showed that for Dentaurum Implants, modern oral implantology always also means "looking beyond the fence". Following a brief welcome by *Tobias Grosse*, head of implantology at Dentaurum Implants, and *Dr Friedhelm Heinemann* (Morsbach), *Dr Dieter Lazik* (Potsdam) held a presentation on unknown interactions between the muscular and skeletal systems on the one hand and the masticatory system on the other. *Dr Friedhelm Heinemann* and *Professor Christoph Bourauel* (Bonn) addressed the creation of additional implantological abutments using mini-implants, as well as the various options offered by combination bridges as a potentially viable alternative to full-arch implant-supported rehabilitations. *Dr Daniel Schulz* (Henstedt-Ulzburg) shared numerous tips for optimizing the soft tissue using flaps and grafting techniques. As the final speaker of the day, *Dr Sigmar Schnutenhaus* (Hilzingen) explained the concept of the angulated placement of distal implants.

On Saturday, *Professor Bourauel* and *Dr Heinemann* cited numerous own and third-party studies to discuss clinical and scientific aspects of immediate implant loading. Finite-element studies allowed the conclusion that accelerated secondary stability is achieved in soft bone with one or two additional implants. The smallest amount of bone loss, in turn, could be realized with a minimally invasive procedure without periosteal flaps and using splinted implants. *Dr Schnutenhaus* recognized three main advantages of digital implant prosthodontics: (1) custom components such as abutments; (2) better patient safety achieved by using surgical guides and by avoiding augmentation/making optimal use of the existing bone; and (3) inexpensive restorations in monolithic materials.

Dr Gudrun Stoya (University of Jena) elaborated on different types of anatomical and surgical risks in the posterior mandible: lingual concavities; location of the mental foramen; anterior loop of the mental nerve; accessory, bifid or trifid mandibular canals. CBCT scans would allow up to 40 per cent of such cases to be detected early, thus avoiding risks during surgery. *Dr Joachim Hoffmann* (Jena) explained various surgical techniques used to control the risks enumerated by *Stoya*. *Dr Torsten Mundt* (University of Greifswald) discussed the scientific evidence of short (< 10 mm) implants on the basis of recent publications. His quintessential recommendations: rough surface, no immediate loading, no cantilever bridges, a greater number of implants and anterior/canine guidance. Added risks included, in addition to limited indications, reduced bone-implant contact, higher stress loads on the surrounding bone and limited primary stability. Benefits included the

More than 300 participants attended the workshops and lectures.

Tobias Grosse (right) and Dr Friedhelm Heinemann are welcoming the guests.

possibility to avoid augmentation as well as a reduction in risk levels, postoperative symptoms and cost. *Professor Werner Götz* (University of Bonn) studied the healing and resorption of various bone-replacement materials in the jawbone. While the biological principles of healing are similar, they are subject to factors that complicate predictability. The different biological behaviour of individual bone substitutes requires a differentiated indication. *Professor Mohamed Al-Shahat* (Mansoura University, Egypt) enumerated the most important considerations in favour of immediate implant placement: extraction indications; condition of the extraction socket; risk assessments; need to augment the hard or soft tissue; the macroscopic and microscopic implant design; and the skills and competence of the implant surgeon. His credo: Keep it simple and safe!

Dr Stefan Möller (Göttingen) demonstrated cortical satellite implants as an interesting variant on temporary stabilization of implants, resulting in an increase in primary stability. A very different type of risk was addressed by emergency physician *Dr Peter Schablin* (Bonn). He made it abundantly clear how difficult a differential diagnosis – from hyperventilation and cardiac arrhythmia to cerebral ischemia and cardiac arrest – can be in acute cases. He recommended calling in an emergency specialist once too often rather than not often enough. *Dr Klaus Roth* (University of Hamburg) explained that the risk of peri-implantitis could be reduced by regular recall appointments, excellent oral hygiene, occlusally screw-retained structures and the adjuvant application of antimicrobial photodynamic therapy. *Professor Kai-Olaf Henkel* (Military Hospital Hamburg), drawing on his experience as an expert witness, listed a number of possible errors before, during and after implant placement. Nevertheless, it will be a forensically safe procedure if the patient is sufficiently informed, the procedure is documented manually and the treatment is carried out "by the book".

In conclusion, mental trainer *Herbert Prange* (Mallorca, Spain) afforded the audience some humorous yet startling insights into emotional and rational processes and recommended all participants to take a "daily dopamine shower". In this sense and in many others, the participants left Dentaurum Implants' International Dental Conference in Berlin "freshly showered" and full of new ideas for their daily work.

Michael Mitteregger

More information

www.dentaurum-implants.com

Dr Henriette Lerner and part of the speakers of the 4th International Implantalogy Days.

4th International Implantology Days

The future starts now!

From 8 to 10 April 2016, interested dentists met in Baden-Baden for the International Implantology Days – an event of the Seattle Study Club – for the fourth time. The Congress, organized by the HL-Dentclinic & Academy of Dr Henriette Lerner, attracted 40 speakers and 300 participants from 20 countries and offered solutions and possible development paths for the future of dentistry.

One of the messages was that digital medicine and especially digital dentistry is the number-one future trend. Digital technology allows us to compare different options prior to comprehensive treatments to achieve predictable planning and perfect implementation. A recent example of innovative digital methods was presented on the basis of the Baltic Denture System. It demonstrated what enormous time savings can be realized with modern CAD/CAM methods. Digital methods in oral surgery have been known for some time and are used, inter alia, for bone blocks tailor-made for the defect. An interesting new approach in the field of distraction osteogenesis was also presented. Scientific studies on the topic have shown promising initial results.

In prosthetics, the digital measurement of force vectors for the correct occlusion in the context of implant-supported restorations is important in order to avoid overload in the rehabilitation phase. These vector measurements can be useful in the natural dentition as well, for instance to monitor and control peak masticatory forces and prevent tooth overloading with ensuing stress on the TMJ. New techniques used during implant placement move further to the fore. While it is initially still possible to use a socket preservation technique following the extraction of teeth to successfully prevent atrophy at least during the early years, problems caused by serious bone shrinkage are not infrequently observed in the years that follow. This type of atrophy can be reduced by retaining portions of the root of the extracted tooth within the socket or on the buccal alveolar wall. The socket-shield technique is only one of the ways to achieve this. Long-term scientific data on this technique indicate that it promises to be a successful concept. The marginal migration concept was presented as another way to preserve the local tissue. Digitization also extends to the design of root-analogue implants. Once a CBCT or CT has been obtained, it is possible to customize implants to match exactly the anatomy of the tooth earmarked for extraction and to insert the one-piece implant directly after the extraction has been performed.

In addition to the many interesting presentations by international speakers, the event also focused on “humanity in dentistry”. *Professor Robert Sader* presented the Team Nicaplast, which works in Nicaragua, one of the poorest countries in the world, under the most difficult hygienic conditions; their aim is to give children with cheilognathopalatoschisis a better quality of life by providing aesthetic plastic surgery. The surgical team works locally, always accompanied by local doctors to train them for this type of surgery.

More information

www.hl-dentclinic.de
www.nicaplast.de

Photo: Fotolia.com / TTstudio

bredent group days 2016 in Barcelona

The high-road approach to oral implantology

Experiencing practical applications of holistic therapeutic approaches, especially in the field of immediate restorations. Experiencing the possibilities and innovations in the application of physiological materials and their functional and aesthetic benefits in the various processing modalities. All this and more will be offered at the bredent group days in Barcelona in 2016. So: "Save the date!"

"Let's meet in Barcelona." This year's bredent group days will be held jointly by the German parent company and its Spanish subsidiary, in Barcelona, the second largest city in Spain. Dentists and dental technicians are invited to attend the event, which will be held on 23 and 24 September 2016. The 28 speakers will present an exciting programme with informative lectures and insightful workshops on both days. True to the company's motto of "Leading in immediate restorations powered by physiological prosthetics", the meeting will be all about immediate single-tooth and four-arch restorations and physiological prosthetics. Other focal issues include bone regeneration and the digital workflow, with the interaction of dentistry and dental technology at the centre of attention.

The main panel will also be characterized by a mix of both fields. In addition to lectures on purely medical dental aspects, there will be parallel sessions on prosthetics, and the same is true of the workshops. Prosthetic specialists will have their own "Round Table" for the first time, with several speakers presenting different topics as participants rotate between the individual presentations without temporal constraints.

The venue will be the newly renovated Barceló Sants hotel in the heart of Barcelona, which presents itself in a modern and futuristic style. The evening will see a gala party with a Flying Dinner featuring local culinary specialties as well as a live musical act.

More information and registration

www.bredent-group-days.com

Dentsply Sirona: Merger creates the Dental Solutions Company

Innovative solutions and superior customer support

On 29 February 2016, Dentsply Sirona Inc. announced the successful merger of equals between Dentsply International, Inc. and Sirona Dental Systems, Inc. The merger of Dentsply, a market leader in dental consumables and Sirona, a market leader in dental technology and equipment, creates one of the world's largest and most diversified manufacturers of professional dental products and technologies.

Jeffrey T. Slovin, Chief Executive Officer (l.), and Bret Wise, Executive Chairman of Dentsply Sirona (r.).

Dentsply Sirona will have leading positions and some of the most well-established brands across consumables, equipment, technology, and specialty products to address the needs of dental professionals, specialists and dental labs. With its large Research & Development platform, Dentsply Sirona will develop and support innovative end-to-end clinical solutions that advance patient care.

Total Solution Provider

By combining Dentsply's consumables platform with Sirona's technology and equipment, the new company will be able to offer more products and integrated solutions than ever. Dentsply Sirona's wide array of products for dental professionals and labs enables the treatment of general and special procedures including implantology, endodontics, and orthodontics. With its broad clinical education platform, the company is driving the adoption of new and approved technologies and integrated solutions for more efficient workflows. Customer service and satisfaction will remain a key value to the new company and will be supported by the large sales and service infrastructure comprised of direct sales and leading distributors.

Enhanced commitment to innovation

The merger unites two leading innovators in dental, each with over 100 years of experience. Combined, Dentsply Sirona will have a very large and strong R&D platform with over 600 experienced scientists and engineers to foster the development of better, safer and faster dental care. With its enhanced commitment to innovation, the company will advance patient care, improve patient experience and reduce chair time for procedures. *Jeffrey T. Slovin*, Chief Executive Officer of Dentsply Sirona, comments: "With our merger complete, Dentsply Sirona can now focus its efforts on empowering dental professionals to provide better, safer and faster dental care. As The Dental Solutions Company, we will drive long-term growth by being uniquely positioned to deliver innovative solutions and to support our customers. Dentsply Sirona will continue to be at the forefront of the digitization of dentistry, single visit dentistry and improving clinical outcomes for patients around the world." ■

More information

www.dentsplysirona.com

11th International Conference of the DGÄZ

America meets Europe

In times of the Internet and "Epub ahead of print" as sported by the English-language journals now relevant and vital to all scientific publication activities, direct cooperation should be intensely cultivated at an international level. The German Academy of Esthetic Dentistry (DGÄZ), the German Association of Oral Implantology (DGI), the Italian Academy of Prosthetic Dentistry (AIOP) and the Seattle Study Club (SSC) have teamed up in order to welcome, from 6 to 8 October 2016, dentists from around the world to beautiful Lake Tegernsee. EDI Journal spoke with Dr Siegfried Marquardt, head of the Scientific Committee for the conference.

2008 was the year DGÄZ wrote history in continuing professional development (CPD) for dentists with its "America meets Europe" format. What prompted your return to this format this year?

To this very day, participants as well as speakers of that event stop to talk to me about the legendary congress, of which fond memories have remained: rarely encountered clarity in the transmission of practical knowledge, in combination with open and critical discussions. This format was unique, and by the time of the grandiose IFED World Congress in Munich in 2013 with which the DGÄZ had realized another congress milestone, the desire became overwhelming to revive "America meets Europe". Meanwhile, a new generation of Team America has grown up. While in 2008, *Vince Kokich, Sr.*, *Frank Spear* and *David Mathews* were the pioneers and patriarchs of structured treatment planning, their students *Vince Kokich, Jr.*, *Gregg Kinzer* and *Jim Janakievski* will present innovative and evolving concepts in 2016. Team Europe has also been rearranged and now includes members such as *Mauro Fradeani*, *Renato Cocconi* and *Mirko Raffaini*, who are excellently prepared to meet the challenges involved in presenting scientific and clinical arguments for their state-of-the-art treatment concepts.

What topics do you want to address, and what presentation formats will be available to the speakers?

The highly topical field of digital dentistry will be represented by two specialists, *Professor German O. Gallucci* from Harvard University (USA) and *Professor Daniel Wismeijer* from the University of Amsterdam (Netherlands). The relevance of orthodontics within dentistry is presented in practical terms by the renowned experts *Vince Kokich, Jr.* (Seattle, USA) and *Raffaele Spina* (Naples, Italy). Options shown and compared will range from strictly conservative corrections to orthognathic surgery. Questions about innovative developments in the field of periodontology and implantology will be answered by *Jim Janakievski* (Seattle, USA) and *Gerd Körner* (Bielefeld, Germany). The focus will be on the causes of periodontitis and peri-implantitis – a field that is entering a time of intense structural change.

Dr Siegfried Marquardt, head of the Scientific Committee.

Each speaker will be presented with a list of well-targeted questions drawn up by the Scientific Committee in advance, which they can answer to in short presentations of 30 minutes. This will be followed by a broad discussion between the speakers and the participants, led by a presenter who is

a recognized expert in the respective field. Our experience from the year 2008 has shown that this format is most efficient in terms of participant learning and provides the most surprising and eye-opening effects.

What do you think are the most relevant questions that inform your conference?

The presentations on the digital workflow will certainly be exciting – is it all just hype, or will this topic be essential for the future? Peri-implantitis is important, too, of course. How do implant surgeons and prosthodontists master what is arguably the greatest challenge, and which are the actual causes of peri-implantitis? Is it a question of bacterial infection – similar to periodontitis – or might the problems be "home-made"? Autoimmune processes must also be considered as a possibility. Or maybe it makes sense to primarily discuss the preservation of teeth and consider implants only as a means of last resort.

What cultural, educational or patient-specific differences between the USA and Europe will be discussed?

We used to think that the Americans are the radical ones and the Europeans are the conservative ones. But transitions are gradual. The intercontinental exchange is more intense than ever. But of course it is in the nature of things that you cannot simply ignore differences in culture, mentality and training concepts, which are here to stay. This is one of the very things that make this exchange so exciting. And even if the infamous "Hollywood smile" is no longer as popular in the USA as it used to be, Americans still continue to be more demanding in terms of aesthetics and visual harmony. So let us look forward to learning what the differences are and what scientific research and clinical practice have to say.

Thank you very much for this interesting interview.

More information and registration
www.america-meets-europe.com

Interview with Professor Emanuel Adrian Bratu on the new W&H piezosurgical instruments

"The effectiveness of the saws is impressive"

Professor Emanuel Bratu, maxillofacial surgeon, oral surgeon and prostheticist, is head of the implantology departments at two Romanian universities. He runs a renowned private hospital in Timisoara and is an internationally known researcher. In the interview, Bratu explains why he considers that the W&H Piezomed piezosurgical device, and particularly two patented saws, have become essential for bone surgery.

Professor Bratu, what is your experience with the new B6/B7 saws for the W&H Piezomed?

These saws feel completely different from previously available piezosurgical instruments. They are really very effective. We noticed immediately that the Piezomed B6/B7 work much faster and are easier to guide in bone, particularly in thick bone layers. According to W&H, this is due to the high power output of the surgical unit combined with the very fine teeth and the small diameter of the saw blades of only 0.25 mm.

But don't you think that rotary instruments or microsaws are still more effective?

Most dentists and oral surgeons have much more experience with rotary instruments. But piezosurgical instruments with their special micro-oscillation cut more precisely and are easier to manage. They are now at least as effective as rotary instruments. In addition, the bone loss is inferior compared to rotary saws or milling cutters. Another very important factor is the improved overview: The coolant is set in motion by the ultrashort oscillations of the

instruments. This causes a microcoagulation effect at the surgical site and thus reduces bleeding. Furthermore, the quadruple LED ring of the Piezomed provides a very bright lighting.

For what indications do you use the saws?

We routinely use the instruments for harvesting bone blocks and splitting alveolar ridges. We also use the Piezomed B6/B7 for the osteotomy of impacted teeth and for removing failed implants. All indications that require deep, clean cuts.

Is overheating of bone a factor to be considered with deep preparations?

Yes, this problem can not be ignored. In other systems, the coolant comes out of the handpiece of the instrument, but is relatively distant from the surgical site. In the hands of inexperienced clinicians, overheating can result, particularly during deep cuts. In contrast, the coolant outlet of the Piezomed is close to the instrument tip. In my experience, this improves safety and gives better results.

Professor Emanuel Bratu

Could you briefly describe your procedure for mobilizing bone blocks for transplantation?

We prefer to harvest bone from the external oblique ridge of the posterior mandible, not from the interforaminal region. After the soft-tissue incision, we use the new saws to define the amount of bone to harvest. With this approach, we also use them for the entire preparation in almost 80 per cent of all cases. We may also use other piezo instruments and then at the end a chisel to mobilize the block. We find this a very effective surgical technique.

Could you give us a few surgical tips and tricks from your hospital?

We like to use the sandwich technique for augmentation in the lateral mandible. A bone cover is prepared with the piezo saw and the crestal fragment is fixed with microscrews. We place a mixture of autologous bone and xenogenic bone replacement material in between. This works very reliably. You should always ensure sufficiently dimensioned vertical cuts when splitting the alveolar ridge in the mandible. Otherwise the bone may fracture easily.

What do you consider to be the advantages of piezo surgery in relation to oral tissue?

I consider piezo surgery a great leap forward in oral surgery. The technique makes bone preparation safer and easier. Little bone is lost, for example in extractions. This is very important in the aesthetic zone, particularly if immediate implantation is planned. Piezo surgery is also safer for the soft tissue: Injuries to membranes in the sinus are basically history, as are nerve injuries when bone blocks are being harvested. Data indicating reduced postoperative swelling and pain are also available. Piezo surgery is also ideal for the preparation of sinus septa. And last but not least, our patients benefit from the atraumatic nature of this technology.

Your hospital in Timisoara offers oral surgery and prosthetic reconstruction with a focus on implantology. Do you also use your Piezomed device for other indications?

We also use piezo for surgical crown extensions and in periodontal surgery.

In conclusion, a few words about another special feature of the Piezomed: What are the benefits of the automatic instrument detection?

This is certainly a useful feature. It saves time and ensures that we always work with the correct power settings and cooling, especially in difficult and complex operations.

Thank you very much for the interesting interview, Professor Bratu.

The interview was conducted by Dr Jan Hermann Koch.

More information
www.wh.com

Interview with Dr Christian Coachman

"DSD is a working philosophy"

DSD – Digital Smile Design – has hit the market as a new multipurpose concept and protocol in prosthodontics. It involves patients in the restorative or "smile enhancement" process, making them co-designers of their own treatment by letting them share objectives and express desires and expectations with the restorative team consisting of surgeon, prosthodontist and dental technician. Once the technical restorative requirements have been established and are calibrated against the desires and emotional needs of the patient, great results will be achieved. EDI Journal spoke with Dr Christian Coachman from São Paulo, Brazil, now with his own clinic in Madrid, Spain, and with certified clinics following his DSD concept all over the world.

Dr Christian Coachman

Dr Coachman, form follows function – or the other way round? Is your concept mostly aesthetically driven or also functionally?

In my understanding, form should follow function. Form without function does not make much sense and is usually not instinctively interpreted by our brain as something beautiful. Our goal in interdisciplinary restorative dentistry should be to have a clear understanding of beauty and facial harmony and to develop projects with ideal function and health that are as beautiful as possible. The DSD concept is not about aesthetics or function. DSD is just a good way to try to combine all principles of modern dentistry: aesthetics, function, biology, structure, minimally invasive technique, face-driven design, morphopsychological integration and interdisciplinary planning and execution.

Could you give us a rough idea of the procedure?

DSD is not a procedure, it is a working philosophy. Several interconnected protocols, enhanced by technology, help dentists, technicians, specialists and patients to perform the best treatment possible. The DSD concept basically helps us to become better facial analyzers, smile designers, interdisciplinary thinkers, better communicators, and finally deliver more predictable results through the utilization of a complete digital workflow. Making the final result more similar to the initial design proposal is one of the major benefits of digital dentistry.

Where does the patient come in, and why would a practitioner want to let the patient as a decided non-specialist have a big influence on the treatment?

"Make your patient a co-author of his/her own smile." This is a very attractive way of explaining it to patients. Patients are uncomfortable with having to trust a dentist unless they have a clear vision of the final outcome or how we can benefit from each procedure. In my opinion, the professional success as a dentist is more related to communication skills than to clinical skills. Delivering high-quality dentistry is our obligation – but succeeding as a professional goes way beyond that. Dentists will always guide patients through the decision-making process, but improving our communication skills will make patients more comfortable and confident to enter the adventure of rehabilitating their smiles.

How great is the precision of the transfer from digital diagnostics to the final prosthetic solution?

Great question. This was always a challenge and a nightmare for me as a technician/ceramist: creating final restorations that look like the initial project, usually a diagnostic wax-up. I think that the only way to achieve predictability in this process is through the digital workflow. Today it is possible to develop an initial digital 2D sketch that will be precisely transformed into a 3D project that can in turn be transformed into mockups and provisionals and finally be overlaid for final preps and implants to design final monolithic restorations with the same shape, aesthetics, vertical dimension and occlusion. This is beautiful! It is like a dream coming true.

Thanks a lot, Dr Coachman, for your time and for this interview.

My pleasure, and thank you for allowing me to share some of our thoughts with your readers.

STE

Reduced risk of complications and pain after surgery

Emdogain launched in new indication

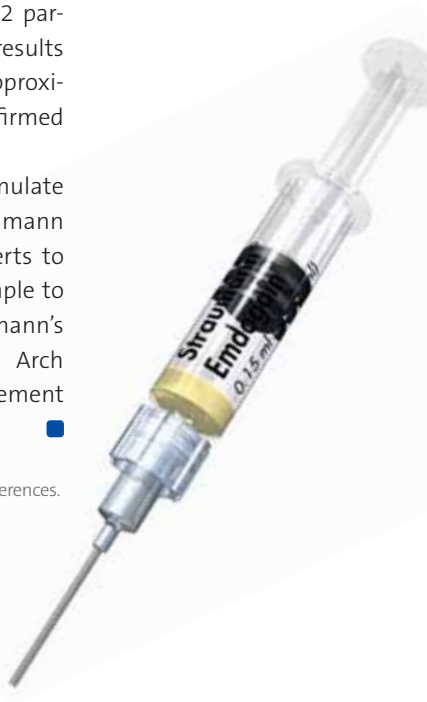
Straumann announced the launch of its oral-tissue regeneration product Emdogain in the new indication of soft-tissue wound healing as part of oral surgical procedures and dental implantation procedures in general.

The benefits of enhanced wound healing include reduced risk of post-surgical complications, reduced post-surgical pain, swelling and discomfort, improved aesthetic outcomes and greater patient satisfaction. The company is launching Emdogain in the new indication in Europe with other regional markets to follow pending regulatory clearances.

Straumann Emdogain is one of the most established and widely-studied dental treatments and, having been used to treat more than two million patients over the past 20 years, it has become a standard for periodontal regeneration. Since its discovery, researchers have acknowledged that the proteins in enamel matrix derivatives (EMD), the product's active principle, have a broad biologic function including the stimulation and modulation of healing in general. 150 scientific publications and reviews have described the effect on wound healing. Research has led to the establishment of EMD in treating hard-to-heal wounds like diabetic foot ulcers with excellent clinical results. Recent scientific publications [1,2,3] demonstrate the potential of Straumann Emdogain to induce faster re-epithelialization, faster wound closure, faster resolution of inflammation and faster extended blood-vessel formation. Excellent clinical outcomes regarding the quality of oral soft-tissue wound healing have been reported in an international survey with 112 participants in the US, Germany and Italy. The results were remarkably consistent, showing that approximately 85 per cent of Emdogain users confirmed that it improves soft-tissue wound healing.

While the potential of Emdogain to stimulate wound healing is clearly documented, Straumann is committed to working with clinical experts to establish its use in key indications, for example to support or enhance treatment with Straumann's new Bone Level Tapered Implant or Pro Arch solution in aesthetic and immediate replacement procedures.

Please visit www.teamwork-media.de/literatur for a list of references.



More information

Straumann Holding AG
www.straumann.com

Interview with Shahram Ghanaati, MD, DMD, PhD

Using natural regeneration

The hype surrounding the use of platelet-rich plasma in the 1990s had been immense – only to be followed by a period of resounding silence. A silence that was not quite justified, because even if some of the initial promises were a bit overblown, the advantages of this method are not to be dismissed out of hand. EDI Journal spoke with Dr Shahram Ghanaati, who currently teaches the still fairly new PRF (platelet-rich fibrin) method at the University of Frankfurt/Main, Germany.

Shahram Ghanaati, MD, DMD, PhD

Dr Ghanaati, how do A-PRF and I-PRF differ from previous PRP applications?

A-PRF and I-PRF allow us, for the first time, to obtain both a solid matrix (A-PRF, for "advanced") and a liquid matrix (I-PRF, for "injectable") from the collected peripheral blood without having to add anticoagulants to the blood concentrate. Thus, both matrices can be prepared in a single centrifugation process. This makes the PRF method unique for preparing blood concentrates in a "closed" system, i.e., without adding substances and therefore without manipulation by the treating physician.

To what biological processes do you primarily attribute the observed improved regeneration?

In the PRF method, physiological coagulation serves to prepare platelet-rich and leukocyte-rich matrices that support the inflammatory response at the surgical site and exploit the concentrated growth factors from those cells to shorten the healing period and to increase the regenerative potential of the biomaterials used. A-PRF and I-PRF "accelerate" cell-to-cell communication, and thereby tissue regeneration, at the surgical site.

What do we have in the way of scientific studies related to your observations?

For the past five years now, our laboratory (the FORM-lab, for "Frankfurt Orofacial Regenerative Medicine") at the Department of Oral and Maxillofacial Plastic Surgery in Frankfurt has conducted intensive basic research with PRF to learn more about this type of cell-to-cell communication as a function of the duration and the applied force of the centrifugation. Our lab is the development laboratory for PRF, and we are in close contact with *Dr Joseph Choukroun*, who is a Research Fellow at our lab. While *Choukroun*'s focus is on clinical applications, we at the FORM-lab are investigating the biological principles behind PRF. At this point, ten scientific employees at FORM-lab are working on widening our understanding of the cellular and molecular mechanisms of PRF. In addition, we have launched the PRF Academy, designed to conduct clinical observational studies with PRF users worldwide. These studies target our knowledge of the effect of PRF on soft and bone tissues, especially in terms of the communication between the inflammatory cells and the bone and soft-tissue cells. It is known that tissue regeneration occurs only on the basis of the physiological inflammation. The concept of physiological inflammation should not be confused with the processes that occur during infection. When an infection occurs, the body tries to fight the invading noxious substances

such as bacteria and viruses by way of the immune response (such as immune cells and proteins). In physiological inflammation, by contrast, the body contributes to the integration of skin and bone replacement materials in the implant region with substances from the blood and tissues and, however, also with the same immune cells and proteins. The extent of the reaction pattern is different in the two scenarios, but in any case, the body needs the cells and proteins of the immune response.

Are there any specific requirements of the production process to ensure that standardized results are achieved?

There are only few such requirements in PRF applications. However, those that do exist are very important: The centrifuge must be placed on a very stable surface. Irritations caused by centrifuging on an unstable surface adversely affect the quality of the PRF. Since no anticoagulants are used, the time lapse between blood collection and centrifugation should be minimal. The procedure should not be rushed but it should be executed deliberately and expeditiously. The respective tubes for I-PRF and A-PRF should be filled to the max (10 or 9 ml, respectively). Inadequate filling affects the quality of the PRF. The tubes with the blood samples must be placed opposite to each other in the centrifuge to ensure that the forces they are subjected to are distributed in the same way. That's why we always work with pairs of tubes and, if necessary, add a water-filled tube to obtain an even number of tubes in the centrifuge.

Thank you very much, Dr Ghanaati, for this insightful interview.

It was my pleasure!

STE

Interview with Professor Adrian Kasaj, University of Mainz (Germany)

Early intervention better than cure

Scientists and clinicians agree that the risk of peri-implantitis in patients with previous periodontal disease is disproportionately high. Unfortunately, most people still lose their teeth to chronic periodontitis, and these patients constitute the bulk of those who desire implant-supported restorations. Comprehensive periodontal treatment before the implants are inserted will, if not eliminate, at least significantly reduce the risk. Marianne Steinbeck, Project Manager at EDI Journal, discussed the issue with Professor Adrian Kasaj of the Department of Operative Dentistry and Periodontology at the University of Mainz.

Professor Adrian Kasaj

In a patient with existing periodontal disease, should the implant treatment option be rejected out of hand in favour of other prosthetic solutions?

No. Even in periodontally damaged teeth, implants are now an appropriate and attractive therapeutic option. However, it is essential to consider a number of relevant factors. For example, a higher rate of implant loss and an increased peri-implantitis risk must be expected in periodontally compromised patients compared to periodontally healthy patients. The final prosthetic reconstruction should generally be planned only after completion of active periodontal therapy. This is to ensure that no further attachment loss occurs and that the periodontal situation is stable (no inflammation and no increased bleeding on probing) after completion of the periodontal treatment. In addition, patients should be alerted to the importance and necessity of periodontal maintenance.

What are currently the therapies and procedures of choice for a periodontal treatment ahead of implants?

Mechanical disintegration of the supragingival and subgingival biofilm continues to be the focus of periodontal therapy. This is traditionally achieved using manual, sonic and ultrasonic instruments, all of which yield comparable clinical and microbiological results. Newer therapeutic approaches in the context of non-surgical periodontal therapy include the use of the Er:YAG laser, antimicrobial photodynamic therapy (aPDT) and low-abrasion powder jet technology. But these approaches have so far offered no advantages over the conventional methods (i.e., manual, sonic and ultrasound instruments). Also, in terms of full-mouth treatment, there seems to be no clinically relevant advantage compared to conventional procedures performed in multiple sessions. In certain cases, adjuvant antimicrobial therapy can support a course of non-surgical therapy.

What do you feel are the particular benefits of treatment with a high-concentration chlorhexidine chip compared with conventional chlorhexidine rinses?

High-concentration chlorhexidine chips have an advantage over conventional chlorhexidine in that the active ingredient is released continuously over a period of seven to ten days. This means that higher concentrations of the drug can be attained while at the same time lowering overall systemic exposure. The chlorhexidine chip is primarily used today in support of a non-surgical anti-infective therapy and for the re-instrumentation within a supportive periodontal therapy (SPT).

What recall intervals do you recommend, and from what point in time onward would you recommend implant treatment?

Periodontal recall intervals are determined based on an assessment of the patient's individual risk profile. This individual risk analysis takes into account different patient-related, dentally related and local factors. Depending on the risk profile, the recall intervals will either be three, six or twelve months. Implant treatment may be considered following successful stabilization of the periodontal situation. In general, the relevant assessment is made three to six months after the active periodontal treatment has been completed. At this time, there should be no active residual pockets if at all possible. Risk factors such as smoking, uncontrolled diabetes mellitus or poor oral hygiene should be checked and addressed and/or eliminated. Ahead of implant therapy, the periodontally compromised patient should be advised of an increased risk of peri-implant disease and possibe implant failures as well as the importance of a stringent follow-up.

Could a matrix chip containing chlorhexidine be an option for containing and treating incipient peri-implant inflammation?

A recently published study by *Machtei* and co-workers (2012) has indeed shown promising results regarding the use of chlorhexidine chips in the treatment of peri-implant infection. The intensive treatment protocol described called for multiple applications of a chlorhexidine chip over a period of 18 weeks. The results were significantly better than the current results of non-surgical peri-implantitis treatment.

Thank you very much, Professor Kasaj, for this interesting interview. *STE*

Inicell implant surface successful in study

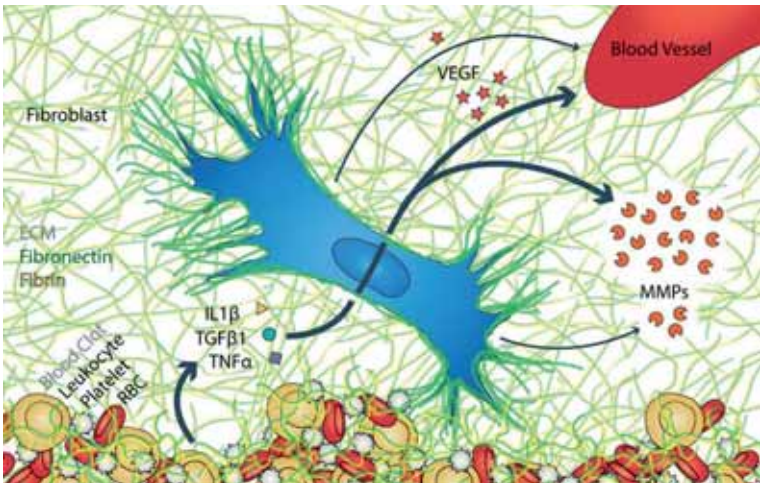
Great potential for improved implant integration

A recent study performed at the ETH Zürich and published in Nature Scientific Reports demonstrates that Inicell, Thommen Medical's implant surface, upregulates the secretion of major factors associated with fast healing.

Such factors include matrix metalloproteinases (MMPs), which break down the extracellular matrix, and the growth factor VEGF, which is known for its angiogenic potential. Angiogenesis is the physiological process through which new blood vessels form from pre-existing vessels – a normal and vital process in wound healing. Sufficient blood supply is the precondition for new bone formation, which is in turn the precondition for fast osseointegration of implants. These research results demonstrate the great potential of the Inicell implant surface for rapid and sustained integration of implants in bone.

More information

Thommen Medical AG
www.thommenmedical.com



Illustrated representation of how fibroblasts and a Ti surface-adhering blood clot synergistically upregulate remodelling capacity and angiogenic potential (Ti surface = Inicell).

Interview with Russ Bonafede, Chief Commercial Officer at Zest Anchors

“The Locator R-Tx continues our success story”

In keeping with its innovative spirit, Zest Anchors has continued to refine and even reimagine the proven Locator attachment system. Starting by listening to influential specialists, clinicians, and manufacturers, Zest Anchors’ engineers put those ideas to the test and into real application. We talked to Russ Bonafede, CCO at Zest Anchors, about the new system.

Russ Bonafede, Chief Commercial Officer at Zest Anchors

Mr Bonafede, the Locator is a proven attachment system for implant-supported removable dentures and has become established as a leading system in the field. What prompted Zest Anchors to present a successor, the Locator R-Tx?

Zest can look back on more than 40 years of experience in the field of dental attachment technologies, and we see it as our mission to improve our products continuously. Since its launch in 2001, the Locator has experienced a considerable level of demand and has become a leader in implant-supported attachment systems. During this time, we received and acted upon feedback from clinical users and cooperating implant manufacturers to make the next Locator generation even simpler, stronger and better. While the general restorative concept has been retained, the Locator R-Tx offers numerous functional improvements over the original design. The result is an improved, more durable solution that provides more patient satisfaction by simplifying the use of the product, enhancing user confidence. And happy patients mean fewer unexpected appointments.

Can you explain how the Locator R-Tx differs from the original Locator?

Mentioning all the improvements goes beyond what we can do in this interview, but here is a look at the main features: The Locator secret lies in the pivoted retention inserts within the attachment housing. They create a robust system that allows patients to insert and remove their dentures without damaging delicate components – even in the case of divergent/convergent implant axes. The modifications to the attachment housing of the Locator R-Tx now support pivoting of up to 30 degrees per implant, for a maximum divergence or convergence between implants of 60 degrees. The existing and new retention inserts are easily distinguished in daily practice: The Locator R-Tx can be recognized by the double curvature that fits neatly over the abutment. The retention levels are zero (grey), low (blue), medium (pink) and high (transparent), comparable with the proven Locator but not linked to a specific amount of force, making the right choice easier. Thanks to the special abutment design and the new ability to accommodate pivoting by up to 60 degrees between two implants, the previous distinction between standard and extended retention inserts is no longer required. Another elementary feature is the DuraTec multi-coating that increases hardness and wear resistance and has an even lower coefficient of friction than Zest’s titanium nitride coating.

That sounds promising – but what are the practical benefits?

The improved material properties of the new coating ensure a longer abutment life; the improved pivoting technology makes angulated abutments – which require lengthy and expensive extra treatment steps – unnecessary. In addition, the abut-

ment now has a characteristic pink shade to mimic more closely the aesthetics of the gingiva. The attachment housing, too, is executed in an anodized pink shade, which is particularly advantageous in the thinner areas of a denture. The new abutment with dual retention and a narrower crown shape that provides a cone-like effect not only ensures a better retention but also makes it easier for the patient to insert and remove the denture. This in turn results in less wear and tear on the edge of the retention insert, a longer life of the restoration and fewer office visits. The system uses a standard hex drive mechanism, reducing the area where food debris and plaque can adhere and facilitating a better oral hygiene.

For which implant systems is the new Locator R-Tx currently available?

The Locator R-Tx is now available for the systems of all leading implant suppliers. We are collaborating closely with manufacturers to develop the new product line and to include other implant systems. Zest Anchors will introduce new abutments during the year – regular visits to our website are recommended to identify newly available implant systems. Besides the new Locator R-Tx, we will still offer the traditional Locator product line and provide components and prosthetic solutions. Zest Anchors thus continues to support its clinical users and millions of Locator patients.

Why are you so sure that the Locator R-Tx will be as successful as its predecessor?

This product is the logical continuation of a product line that has been used successfully around the globe for many years and earned the trust of implant manufacturers, clinical users and patients alike. We are convinced that the Locator R-Tx is a welcome replacement of the original Locator thanks to its functional improvements. Zest carries innovation in its DNA and has always focused on improving the quality of life of edentulous patients. The Locator R-Tx is a further step in this direction. We are proud to supply dentists worldwide with high-quality products that give their patients the certainty that they can eat, laugh and smile again, hoping that their improved quality of life is maintained well into old age.

Thank you very much for this interview.

Dentsply Sirona Implants' documented solutions

Meeting clinical needs in limited bone situations

The daily clinical challenges of limited bone situations and marginal bone level maintenance are met with clinically proven and documented treatment solutions from Dentsply Sirona Implants.

Dr Björn Delin

"We know that clinicians struggle every day with compromised cases where there is a lack of bone for successful implant treatment. With our solutions, clinicians are able to solve these various challenges and, as a result, can deliver long-term function and aesthetics to their patients," says *Dr Björn Delin*, Vice President Global Platform Implant Systems at Dentsply Sirona Implants.

If the height of a jaw bone is insufficient, bone augmentation is often required before implant placement. The short Ankylos 6.6 mm implant can be used to minimize the need for bone augmentation procedures. In addition, in posterior regions of the maxilla and mandible, using longer implants can be a challenge due to a lack of bone volume. In such situations, the use of short implants could be a means to avoid different bone grafting treatments. In three randomized controlled clinical studies it was shown that 6 mm OsseoSpeed implants (Astra Tech Implant System) were equally successful when compared with 11 mm long implants with respect to implant survival and marginal bone level maintenance [1-4].

To achieve excellent aesthetic results, marginal bone preservation is an important factor. However, it is a clinical reality that crestal bone resorbs after tooth extraction or tooth loss. This resorption is often more pronounced on the buccal side, resulting in a lingual-to-buccal sloped ridge. The OsseoSpeed Profile EV implant is placed level with both buccal and lingual marginal bone, where the design supports the soft tissue by preserving marginal bone 360 degrees around the implant. In addition, it may reduce the need for bone augmentation.

In clinical cases where patients lack bone quantities for stable implant placement, bone graft material can help to create new bone or to remodel existing ridges. Bone formation and stability are

advanced with two products in the Symbios regenerative solutions portfolio: the Symbios Biphasic Bone Graft Material and the Symbios Collagen Membrane SR (slow resorbable). From plant origin, Symbios Biphasic Bone Graft Material is a composition of 20% hydroxyapatite and 80% ß-tricalciumphosphate, resorbing significantly faster than pure hydroxyapatite. The material is used for reconstruction of bony defects in maxillofacial surgery and augmentations. The Symbios Collagen Membrane SR is a slow resorbable collagen membrane, designed to be absorbed in order to eliminate the need for surgical removal.

With the SmartFix concept for Ankylos and Xive implant systems, the need for bone grafting may be avoided as augmentation and critical anatomical areas can be largely circumvented by using implants placed in an angled position.

Please visit www.teamwork-media.de/literatur for a list of references.

More information

www.dentsplysirona.com

Interview with Alexandra Flatscher, Product Management Hygiene at W&H

Complying with hygiene rules

The efficient sterilization of dental instruments and a streamlined workflow are the hallmarks of an infection control concept that is not only litigation-safe, but also time- and cost-effective at once. Increasing shortages of skilled workers as well as cost issues require highly automated processes – but there is still no room for compromise in terms of safe function or documentation. Marianne Steinbeck, project manager of EDI Journal, spoke with Alexandra Flatscher, Product Management Hygiene at W&H, about today's requirements and solutions.

At a recent CPD event, a well-known implant dentist impressively demonstrated that truly comprehensive compliance with all hygiene regulations would cost him and his team as much as 90 minutes out of every single working day. Is that a bit of an overstatement or plain everyday madness?

We can relate to that more than well, and unfortunately this is everyday reality in many dental offices and clinics. However, there is always the potential to optimize processes, thereby shortening procedures. State-of-the-art reprocessing equipment can of course simplify many procedures or even take them over completely. The dental office should therefore strive to automate as many processes as possible to save time and money. The new Lisa, for instance, is an enormous help, not least thanks to the ease of handling offered by the Lisa Mobile App.

Are there any special considerations in terms of infection-control needs in dental surgeries whose declared focus of activity is on implant dentistry?

They will of course use and process considerably more critical instruments than practices without this focus. The risk of infection will be correspondingly higher. So it is all the more important for infection-control processes to be largely automated to achieve safe and reproducible results.

Haven't you and other manufacturers taken advantage pretty much of the latest hygiene regulations, e.g. in Germany? And wouldn't manual instrument reprocessing actually be quite sufficient?

To render manual reprocessing fit for validation is an extremely complex and demanding task. Using that method would also mean an enormous amount of time to be wasted in the dental office, especially for the employee in charge of reprocessing. With manual reprocessing, the risk for error is significantly higher than with automated reprocessing. One of the main objectives of W&H has always been, and will remain, the intention to support dental offices and clinics in the best possible way when it comes to infection control and reprocessing. We seek to achieve this objective by saving employees' time so they can spend it on tasks that are part of their core competency, and to make instrument reprocessing as easy as possible by providing appropriate equipment. In particular, the Assistina 3x3 maintenance systems and Lisa sterilizers are the validated backbones for compliant reprocessing of instruments in many practices.

Alexandra Flatscher

As manufacturers, do you guarantee absolute legal certainty?

Of course, all the products we manufacture carry the CE mark. Our solutions make it easy for the operator of reprocessing equipment to deliver an uninterrupted, traceable and compliant hygiene protocol.

Thank you very much for this interview.

STE

The new Lisa from W&H.

FDA and CE approval for 4Matrix

Composed of pure biphasic calcium sulfate and hydroxyapatite and characterized by a predetermined setting time and resorption rate, 4Matrix is one of the preferred augmentation products for a wide variety of dental bone grafting procedures.

This all-in-one innovative product was developed to simplify dental bone grafting procedures for dental prosthetic solutions and implants. It is supplied in a brand-new smart syringe for easy handling and placement. The syringe packaging allows the mixture to be directly injected into the defect site for ease of use and optimal results regardless of the patient's individual dental implant needs.

4Matrix's novel engineering process produces a composite graft material with rapid bone regeneration and very good space maintaining properties. It is biocompatible and enables fast infiltration of blood and growth factors, as well as angiogenesis and cell proliferation. Upon activation of the 4Matrix cement, the premixed powder is hydrated with sterile saline, ensuring complete wetting of the sterile mix and a three minute working time. Due to its cementing properties, it can be used with or without membrane coverage, reducing working time and costs. The 4Matrix is a part of MIS continuing efforts to expand the range of its regenerative solutions.

More information

www.mis-implants.com

Lifetime Plus guarantee for Roxolid implants

Straumann sets a new benchmark: The company has extended the lifetime guarantee on all its Roxolid implants to include a monetary contribution to the follow-up treatment costs in the case of implant fracture. The amount varies depending on local dental charges in the different countries.

Until now, the treatment costs for replacing an implant in the event of breakage had to be carried by the dentist and/or the patient. Straumann is setting a new benchmark in the industry by offering a lifetime warranty covering the product and a contribution to the treatment costs. Because Roxolid is stronger than pure titanium and has excellent osseointegration capabilities, implant fractures are very rare and success rates high. This is supported by extensive data from mechanical strength and durability tests and clinical trials. Publications from the initial clinical research program cover 922 implants, 607 patients and 57 clinical centers with up to 3-years' follow-up.

More information

www.straumann.com

The standard guarantee on all Straumann implants applies for the lifetime of the patient and covers the implant in case of breakage – irrespective of the implant material. The Lifetime Plus guarantee is available for Roxolid only, for the moment in Europe and North America, but with other regions to follow depending on legal and organizational constraints.

TRI Implants presents the “Handling Revolution”

To touch it is to love it

At the TRI World Tour events in Barcelona and Istanbul, Swiss implant maker TRI Dental Implants presented its new and revolutionary handling concept, the TRI Pod, for the first time. The TRI Pod allows implant dentists to directly remove the implant from its packaging in a single step. Sandro Venanzoni, Chief Technology Officer at TRI, reveals more in this interview.

Which new products will you be presenting during the TRI World Tour?

The highlight of the tour is our TRI Pod packaging concept, which makes it possible to use the surgical handpiece to remove the implant straight from the packaging in a single step, thereby ensuring that the TRI SBA surface remains untouched. The implant can be inserted in three ways: with a ratchet, with the surgical handpiece or by hand. Our goal is to simplify the treatment process while improving the performance of the product in the hands of the practitioner. For the TRI Pod, we are convinced: To touch it is to love it!

The idea of simplification is also reflected in our new TRI implant surgical kit which has undergone a complete redesign and can be used for all TRI product lines. We have greatly simplified the drilling protocol, reduced the number of components and optimized the use of instruments through colour-coding. Our insertion tool features a spring-loaded ruby to ensure consistent retention. Furthermore, we are one of the first companies to produce a surgical kit that can be put right into the thermal desinfector without first removing the instruments from the kit.

TRI is represented in more than 35 markets and continues to grow. What is the secret of your success?

TRI scores extra points for its unique and unconventional philosophy and its Swiss quality. The TRI Performance Concept is valued worldwide by dental implant specialists and oral surgeons. In addition to consistent soft-tissue management and long-lasting aesthetics, TRI Friction guarantees a long-term success for prosthetic connections. We ensure a high level of primary stability thanks to our tapered implant body with the self-tapping thread and a quick and reliable osseointegration due to the TRI SBA surface. These elements are integral to our design concept. Every individual component of the TRI Performance Concept guarantees maximum performance and lang-lasting quality for the patient.

Sandro Venanzoni, Chief Technology Officer at TRI.

What are your highlights for this year?

The focus of our activities will definitely be on the TRI World Tour 2016 with kick-offs in Barcelona and Istanbul. We will be hosting exclusive presentations on our innovations in our partner countries. You can also meet us at leading events such as the EAO Congress in Paris or the DGI Congress in Hamburg.

TRI Pod – Handling reinvented

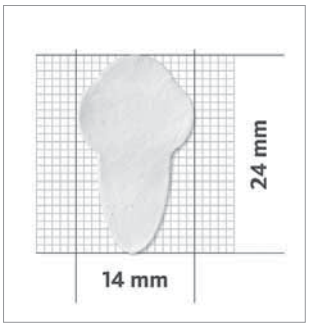
More information

www.tri-implants.swiss

Geistlich Bio-Gide Shape

Minimally invasive ridge preservation

Geistlich Bio-Gide Shape is a new pre-shaped membrane manufactured by Geistlich Pharma for ridge preservation in the case of buccal bone wall defects. It is especially adapted for minimally invasive procedures without raising a flap.



Dimensions of the membrane.

A membrane especially designed for ridge preservation.

Geistlich Pharma AG is launching a collagen membrane, Geistlich Bio-Gide Shape, which is specially designed to meet the requirements of flapless ridge preservation. The apically tapered flap enables it to shield the bone graft substitute in an extraction socket against soft tissue on the buccal side, whilst promoting unimpeded bone regeneration despite a defective bone lamella. The coronal "cloverleaf" screens the augmentation material from the oral cavity.

How Geistlich Bio-Gide Shape works

Geistlich Bio-Gide Shape is based on Geistlich Bio-Gide Perio technology. Its increased rigidity makes it easier to position. The membrane's apically tapered flap can be placed on the buccal bone wall of the socket from the inside, or from the outside by creating a mucosal pocket. The coronal "cloverleaf" is then folded over the augmentation material. Its three small lobes can be inserted comfortably under the surrounding soft tissue in order to stabilise the membrane. It can be fixed into the surrounding soft tissue by a cross-suture.

Geistlich Bio-Gide Shape's apically tapered flap can be placed on the buccal bone wall of the socket. The coronal "cloverleaf" is folded over the augmentation material.

Ridge preservation avoids intricate GBR procedures

Ridge preservation is an established procedure which retains approximately 90 per cent of ridge volume following dental extraction [1]. In comparison: An average of up to 50 per cent of volume is lost during spontaneous healing without additional measures [2,3]. Two current publications point out that the frequency of subsequent GBR procedures can be reduced fifteen-fold by using ridge preservation [4,5]. Furthermore, additional restoration work can usually be performed by minimally invasive means.

Product range rounded off

There are now more than 70 studies documenting the implementation of ridge preservation with Geistlich biomaterials [6]. Geistlich Bio-Gide Shape is the latest product for this indication in the company's range. Geistlich Bio-Gide Shape and Geistlich Bio-Oss Collagen are a valuable combination for simple and minimally invasive ridge preservation in the presence of bone wall defects. ■

Please visit www.teamwork-media.de/literatur for a list of references.

More information

www.geistlich-biomaterials.com

Thommen Medical VarioTemp and VarioFlex

VarioTemp Abutment set

VarioFlex Abutment set

Thommen Medical recently announced VarioTemp and VarioFlex, two new abutment sets for the temporary and final prosthetic restoration of single tooth or bridge restorations. VarioTemp and VarioFlex abutments provide a perfect solution to a variety of clinical requirements by utilizing a single abutment design. To maximize restorative choice, these two abutments were developed for restorations using plastic, pressed ceramic and non-precious metal alloys. The length of the individual abutment can be shortened to adjust to the clinical situation and the material specific requirements. Additional features to the VarioTemp and VarioFlex abutments include greater mechanical retention, more anti-rotation protection as well as restorative ease for long, high superstructures.

Product
VarioTemp and VarioFlex

Indication
Dental implantology

Distribution
Thommen Medical AG
Neckarsulmstrasse 28
2540 Grenchen
Switzerland
info@thommenmedical.com
www.thommenmedical.com

MIS Implants MGuide Surgical Kit

The new Conical Connection MGuide Surgical Kit includes all the drills and tools necessary for a simpler surgical procedure. The kit's clear layout and color-coded design is marked with the relevant dimensions, enabling dentists and their staff immediate recognition of the correct drill or tool required at any point in the process. This new kit is compatible with both C1 and V3 conical connection implants and completes the existing line of MGuide surgical kits. MIS is a leader in this revolutionary field and provides a comprehensive answer to the critical question of how dental professionals can leverage digitally guided surgery to minimize risk of failure and ensure absolute precision and optimal aesthetic results. All steps of the MIS workflow – from planning to printing personalized surgical templates and customized bridges and abutments – are handled by one source. MIS MCenters around the world take the patient information sent to them and transform it into all that is necessary for the dental practitioners to perform implant surgery and provide patients with a "full smile solution". The "top down design" – starting from the desired aesthetic result and drilling down to every detail involved in planning a safer, more accurate surgical procedure – means less chair time and fewer adjustments or repairs at the end of the process. All MGuide surgical sets have been FDA and CE approved.

Product
MGuide Surgical Kit

Indication
Dental Implantology

Distribution
MCenter – MIS Germany GmbH
Kaiserin-Augusta-Allee 112
10553 Berlin
Germany
service@mis-implants.de
www.mis-implants.com

Bioimplon Hypro-Oss

Product
Hypro-Oss

Indication
Bone grafting

Distribution
Bioimplon GmbH
Friedrich-List-Str. 27
35398 Gießen
Germany
info@bioimplon.de
www.bioimplon.de

Hypro-Oss is an innovative lyophilized natural bovine bone graft with integrated atelocollagen type I. It is the result of six years of research and development with a prime concept: to create an ideal bone graft material. Each single granule of Hypro-Oss is a composite of 30% atelocollagen type I and 70% hydroxyapatite of bovine origin. Thanks to the patented atelopeptidation technology, Bioimplon produces a modified collagen in which the immunogenic telopeptides have been biochemically eliminated. This ensures maximum biocompatibility and safety. The process of freeze-drying instead of standard heating technologies preserves the native bio-elements of collagen. Furthermore, the powerful hydrophilic and haemostatic properties of atelocollagen promote cell adhesion and avert haematoma formation. During the bone formation process, Hypro-Oss is not simply integrated but completely remodeled into the patient's own new bone. The material is sterile and 100% BSE-free.

Mectron Piezosurgery perio inserts

Product
Piezosurgery inserts

Indication
Periodontal osseous surgery

Distribution
Mectron S.P.A.
Via Loreto, 15/A
16042 Carasco (GE)
Italy
mectron@mectron.com
www.mectron.com

Mectron has recently launched five new Piezosurgery inserts for osteotomy and osteoplasty procedures during periodontal osseous resective surgery, developed in collaboration with *Professor Leonardo Trombelli* and the University of Ferrara, Italy. The combination of inserts with specific shapes and dimensions allows to perform controlled bone contouring and minimizes the risk of excessively removing bone or damaging teeth or other delicate anatomical structures. The spherical inserts (OT 13 and OT 14) facilitate bone surgery procedures in easily accessible areas, whereas the file-shaped inserts (OP 8 and OP 9) allow for effective interproximal and interradicular bone remodeling. The lanceolate-shaped insert (OP 5A) is used for refining the bone contour. The precision and minimum invasiveness guaranteed by these piezoelectric instruments make this kit a valuable addition to the surgical equipment for both novice and expert surgeons. Optimal benefit is achieved in the most delicate phases of bone architecture remodeling during periodontal surgical procedures aimed at

- eliminating/reducing periodontal supraosseous pockets, improving the fit of the flap to the underlying bone profile;
- eliminating/reducing intraosseous pockets of mild severity, restoring a more physiological morphology to the supporting alveolar bone and
- crown lengthening, restoring the biological width in the most apical position.

The inserts will be available separately as well as in a kit with all five inserts dedicated to periodontal osseous resective surgery.

MEMBERSHIP REGISTRATION FORM

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

Name: .....

First Name: .....

Country: .....

Zip code / City: .....

Street: .....

Phone: .....

Fax: .....

E-Mail: ..... @ .....

Homepage: .....

Date of Birth: .....

Practicing implantology since: .....

Member of other Societies:

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

Continuing education Courses: .....

.....

Fellowship status / diplomate status in implantology

☐ Yes ☐ No ☐ Organization .....

Entry in BDIZ EDI Directory: ☐ Yes ☐ No
(For information on BDIZ EDI Directory of Implant Dentists see overleaf)

The annual membership fee for:

FULL MEMBERSHIP

☐	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
IBAN:	DE96 3804 0007 0310 1441 00
BIC:	COBADEFFXXX

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

City / Date : .....

Seal / Signature: .....

Please return the completed registration form to:

European Association of Dental Implantologists e. V.
An der Esche 2 ▪ D - 53111 Bonn
Fon: + 49 (0) 228-93592-44
Fax: + 49 (0) 228-93592-46
E-Mail: office-bonn@bdizedi.org
Homepage: www.bdizedi.org

Calendar of Events

	Event	Location	Date	Details/Registration
9/2016	**FDI Annual World Dental Congress**	Poznan Poland	7 – 10 September 2016	FDI World Dental Federation www.fdiworldental.org
	bone & tissue days	Berlin Germany	8 – 10 September 2016	Botiss Biomaterials www.boneandtissue.com
	bredent group days	Barcelona Spain	23 –24 September 2016	bredent www.bredent-medical.com
	EAO Annual Scientific Congress	Paris France	29 September – 1 October 2016	European Association for Osseointegration www.eao.org/eao-congress
10/2016	**11th International Conference of the DGÄZ**	Tegernsee Germany	6 – 8 October 2016	DGÄZ www.america-meets-europe.com
	Dentex Dental Trade Fair	Brussels Belgium	6 – 8 October 2016	Dentex www.dentex.be
	Pragodent 2016	Prague Czech Republic	6 – 8 October 2016	Incheba Praha www.pragodent.eu
12/2016	**20th Annual Symposium of BDIZ EDI**	Berlin Germany	9 –10 December 2016	BDIZ EDI www.bdizedi.org
2/2017	**World Summit Tour 2017**	Tokyo Japan	18 – 19 February 2017	Dentsply Implants www.dentsplyimplants.com
	Chicago Dental Society Midwinter Meeting	Chicago USA	23 – 25 February 2017	Chicago Dental Society (CDS) www.cds.org
5/2017	**Global Symposium 2017**	Miami USA	4 – 6 May 2017	BioHorizons www.biohorizons.com

EDI – Information for authors

EDI – the interdisciplinary journal for prosthetic dental implantology is aimed at dentists (and technicians) interested in prosthetics implantology. All contributions submitted should be focused on this aspect in content and form. Suggested contributions may include:
· Case studies
· Original scientific research
· Overviews

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

Manuscripts
Pages should be numbered consecutively, starting with the cover page. The cover page should include the title of the manuscript and the name and degree for all authors. Also included should be the full postal address, telephone number, fax number, and electronic mail address of the contact author. The second page should contain an abstract that summarizes the article in approximately 100 words.
Manuscripts can be organized in a manner that best fits the specific goals of the article, but should always include an introductory section, the body of the article and a conclusion.

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

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

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

Page charges and reprints
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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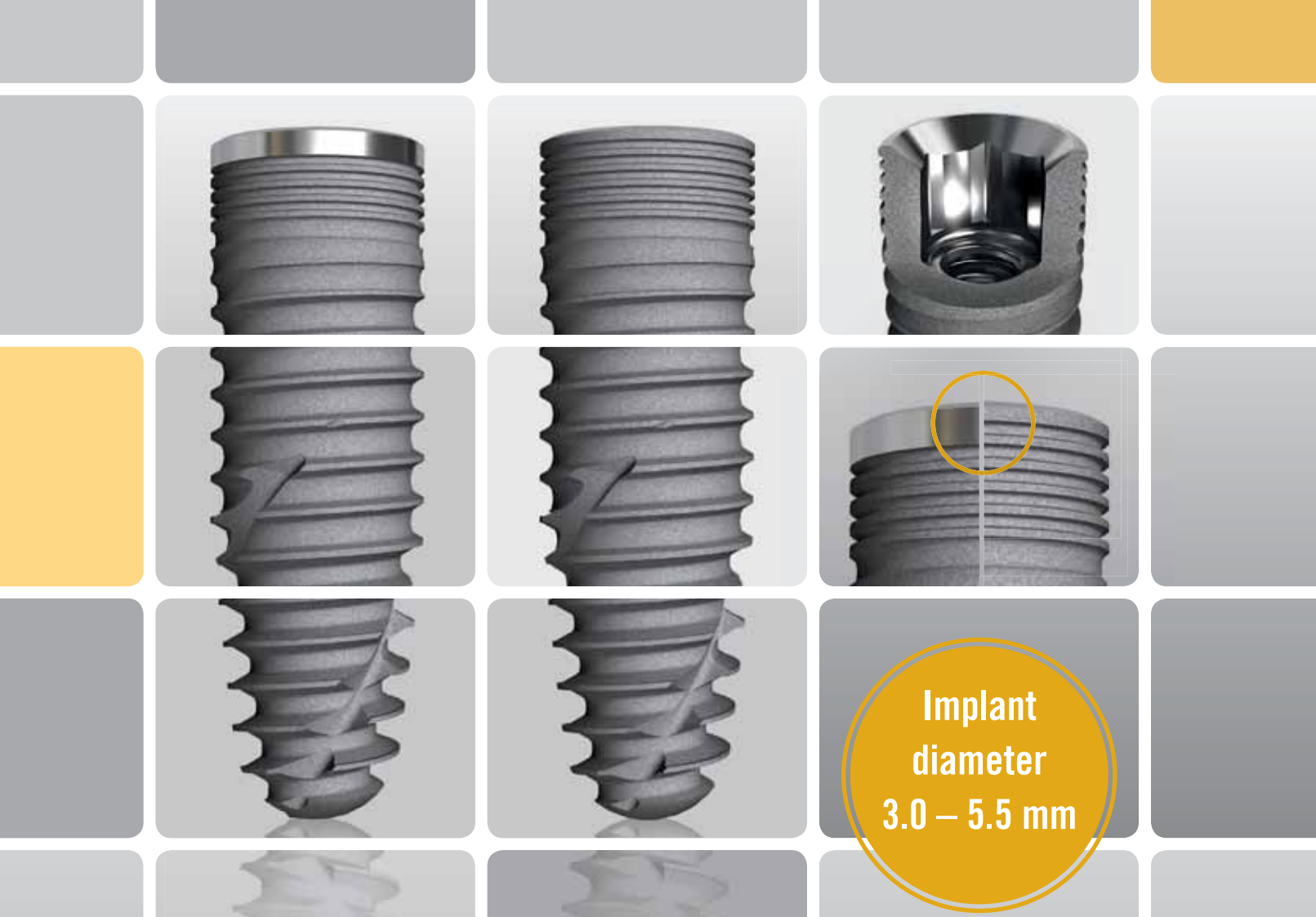

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