



European Association of Dental Implantologists

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# EDI JOURNAL

European Journal for Dental Implantologists



## DIGITAL WORKFLOW in the implantological practice

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# Impending referendum on political direction

Between 6 and 9 June 2024, the citizens of the 27 EU Member States will be called upon to elect the European Parliament for a new five-year term. In the past, European elections have often been dominated by national issues and served as a means of “political reckoning” with the incumbent government.

This year is different. The 2024 European elections are a referendum on political direction at a time of ongoing crises that affect all EU Member States and have created uncertainty among voters across borders. The EU’s role in addressing these crises is under increasing scrutiny—not without consequences.

Eurosceptic forces are gaining ground in many EU countries. Recent polls show that this is likely to be reflected in the election results. If the forecasts are correct, the majority in the European Parliament will change significantly from June.

The centre-left parties, especially the Greens, could perform worse than ever before, while the two far-right parties are expected to make significant gains. This would make it even more difficult to reach a consensus between the political groups—an already formidable task. Such an upheaval could be all the more momentous as the European Union faces significant external and internal challenges that will need to be addressed in the coming years. Externally, these include the impact of climate change, Russia’s war of aggression against Ukraine and the management of growing migration. Internally, the EU must find answers to the pressing questions of whether there will be any institutional reforms in the EU in the near future and what economic and sociopolitical course the EU should take in the future. In addition, there are continuing enormous tasks associated with the digital transformation.

In any case, the election result will have an impact on the policies of the European Commission, which depends on majorities in the European Parliament to push through its legislative proposals. The man-

date of the European Commission under the leadership of Ursula von der Leyen ends with the current legislative period of the European Parliament. It remains to be seen which top candidates the parties will put forward. Although not formally enshrined in the EU treaties, the “Spitzenkandidaten” principle applies, according to which the candidate from the political group that wins the most seats in the European Parliament becomes President of the Commission. Observers in Brussels are speculating that Ursula von der Leyen will remain Commission President for another five years, representing the European People’s Party, which is leading in the polls.

Notwithstanding these major political challenges, which have been the focus of media attention, it should be noted that the importance of the European Union for the dental profession has continued to grow significantly over the past five years since the last European elections. Even today, many issues of importance to the dental profession are no longer decided at the national level, but in Brussels and Strasbourg. EU legislation such as the Medical Devices Regulation, the emerging European Health Data Space, the Patients’ Rights Directive or the EU Mercury Regulation with its provisions on the use of dental amalgam directly affect the day-to-day running of dental practices. The self-regulation of dentists is also significantly affected by the requirements of the EU internal market, such as the Directive on a mandatory proportionality test prior

to the adoption of any new professional law. Although EU Member States are formally responsible for the organisation and financing of their health systems under Article 168 of the Treaty on the Functioning of the European Union, the COVID-19 pandemic has catapulted the topic of health—a niche issue not so long ago—to the centre of attention in Brussels.

Numerous laws have been passed at EU level in recent years under the banner of the Health Union. Moreover, the political call for a transfer of more health policy competences from the national to the EU level cannot be ignored. This is clearly illustrated by the results of the Conference on the Future of Europe, which ended in 2022 and is seen as a blueprint for future changes to the EU Treaties. For example, the conference participants called for the establishment of common minimum standards for healthcare at the EU level.

In recent months, the political parties have adopted their election programmes for the European elections. All parties have included their own chapters with health policy demands, some of which differ. Most of the parties are in favour of further developing existing EU policy in the area of health and are building on existing issues. While the parties on the more left-wing spectrum can envisage more EU competences in health policy—including the adoption of common minimum standards of care—this tends to be rejected by the more right-wing parties.

Dr Alfred Büttner

## About the author



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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 organisation dedicated to providing the dental profession with continuing education, and the public with a greater understanding of the benefits of dental implant treatment. Membership of the ADI is open to the whole dental team and industry, and offers a wealth of benefits, education and support for anyone wishing to start out or develop further in the field of dental implantology.



## Ogólnopolskie Stowarzyszenie Implantologii i Stomatologii (OSIS EDI)

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



## Sociedad Española de Implantes (SEI)

SEI is the oldest society for oral implantology in Europe. The pioneer work started in 1959 with great expectations. The concept of the founding fathers had been a bold one at the time, although a preliminary form of implantology had existed both in Spain and Italy for some time. Today, what was started by those visionaries has become a centrepiece of dentistry in Spain. SEI is the society of reference for all those who practice implantology in Spain and has been throughout the 50 years, during which the practice has been promoted and defended whereas many other societies had jumped on the bandwagon. In 2009 SEI celebrated its 50<sup>th</sup> anniversary and the board is still emphasizing the importance of cooperating with other recognised 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 organisation 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 co-operate with countries in the region striving to achieve similar goals.



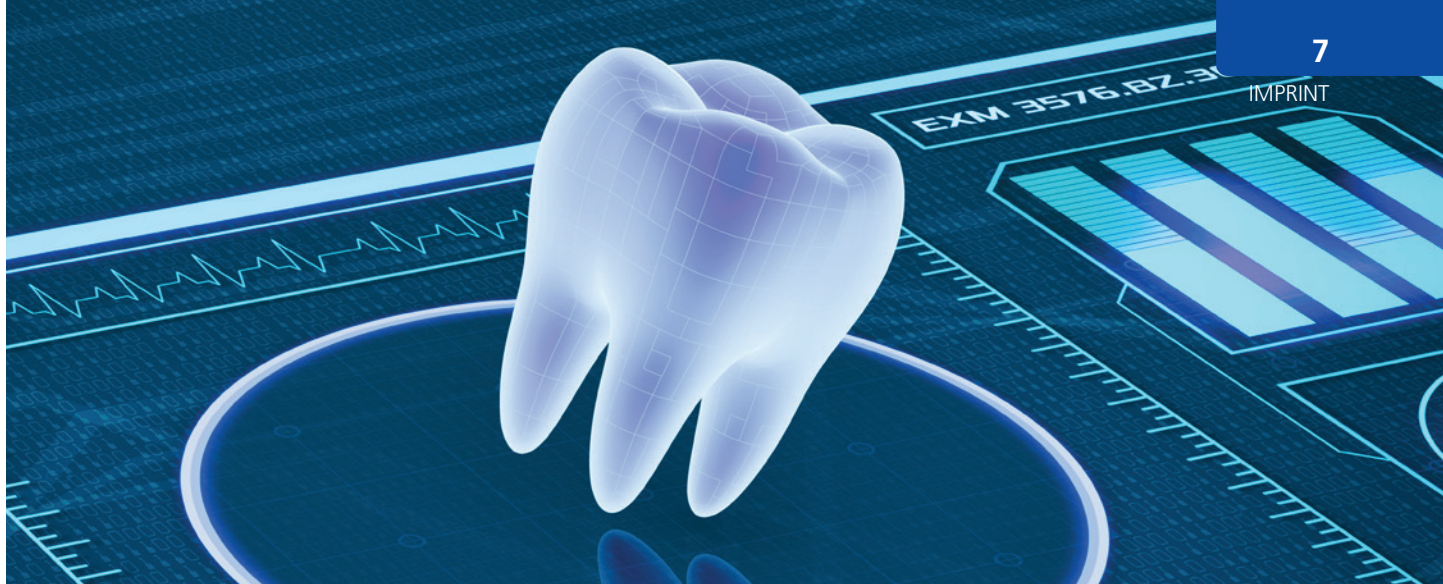
## EDI of Macedonia

The Association is Albanian Implantology Association of Macedonia—AIAM was founded in 2013 as a branch of Albanian Dental Society of Macedonia. The association was created to advance education in the field of dental implantology for the benefit of the population. The objectives of the association are:

- To promote the progress of education, research and development of dental implantology in Macedonia
- To encourage postgraduate education, study and research in dental implantology through:
  - Appointment of meetings, lectures, seminars and courses either individually or with others
  - Encouraging the publication of dental implantology articles!
  - To cooperate and make agreements with relevant, national, local, foreign and different institutions.

In 2017, AIAM & MAOS (Macedonian Association of Oral Surgeons) became EDI of Macedonia and signed a Cooperation Agreement with BDIZ EDI to cooperate in dental implantology!





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Legal marathon in the healthcare system...and still:

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# Will Lauterbach's revolution be cancelled?

The ongoing legal challenges in Germany's healthcare system reflect doubts about whether Minister of Health Karl Lauterbach's proposed reforms will materialise. Time is pressing for Lauterbach, notably for his hospital reform, which he considers the centrepiece of his agenda and ambitiously labels a "revolution". However, federal-state constitutional dynamics might stifle these changes before they start, as states have ultimate control over hospital planning. The consensus among expert observers is that Lauterbach has less than two months to draft a bill that will convince all sides and turn a hyperactive Minister into a reformer.

It is almost impossible to keep track of the many laws announced and partially implemented by Lauterbach and to understand their systemic impact and significance unless you work with the subject on a daily basis, especially as the Minister labels almost all proposals, laws and regulations with his favourite word "reform".

The following is therefore a brief summary of the legislative oeuvre of the Federal Ministry of Health to date and the reform agenda planned for 2024—which, however, is quite a legislative challenge.

## 2022—the first shock wave

The number of new laws in 2022 was still manageable, including updates related to the COVID-19 pandemic, measles protection legislation, and an increase in the

minimum wage in the care sector. The first shock wave was the Statutory Health Insurance (SHI) Financial Stabilisation Act, which aims to cover an expected €17 billion funding gap for 2023 and 2024. Healthcare professionals, especially dentists, were significantly affected, as the Minister imposed a "strict" budget limit for 2023 and 2024, based on the 2022 annual budget. Almost as an aside, commitments to fund the increased costs of the newly introduced preventive perio course were withdrawn. The detrimental impact on the dental sector, particularly in relation to perio treatment, is well known.

## 2023—Lauterbach's reforms take off

7 – 20 – 30 – 94 – 468 – 93 ... what reads like the winning numbers in a lottery are

in fact the published "performance data" of the Federal Ministry of Health for the year 2023. There is no denying the diligence of the staff of the Federal Ministry of Health: seven laws, 20 ordinances (ministerial decrees that do not require a parliamentary vote), 30 reports and 655 answers to short, written and oral questions in the Bundestag have been compiled. These seven laws are now in force:

- Digital Act
- Health Data Use Act
- Nursing Care Support and Relief Act
- Nursing Education Strengthening Act
- Drug Shortage Control and Supply Improvement Act
- Hospital Transparency Act
- Act on the Establishment of a Foundation for Independent Patient Counselling in Germany





As a result, the Ministry of Health's employees have already earned the title "hard-working". At the same time, however, the Ministry's staff have to manage the drafting and political "preparation" of a further 13 legislative projects already announced for 2024. Under these circumstances, I would like to know whether and how Lauterbach keeps his staff motivated and in good spirits...

### 2024—grand finale or fiasco

The success of Lauterbach's reform agenda—and the success of his 20 years of healthcare policy efforts—depends on crucially whether the hospital reform that he has identified as the core of his agenda is actually passed into law this year—and on time. It should also be borne in mind that the hospital reform, if implemented as proposed, will have considerable structural consequences for outpatient care due to the introduction of level 1i and 1n "hospitals".

In view of the Herculean task of financially restructuring the inpatient sector and putting it on a stable footing for the future, the length of Federal Ministry of Health's to-do list is more than remarkable. As of the beginning of March 2024, thirteen legislative proposals targeting various aspects of health care were in the planning stage in Germany, as follows:

- Cannabis Act
- Hospital reform
- Emergency care reform

- Emergency services reform
- Health Care I—SHI Strengthening Act (GVSG)
- Health Care II
- Digital agency
- Federal Institute for Prevention and Education in Medicine
- Medical research
- Pharmacy reform
- Bill on patients' rights
- Nursing competence
- Bill on bureaucracy reduction<sup>1</sup>

All of this not only looks like a lot of extra work for the 1,078 employees of the Federal Ministry of Health (Statista 2023) but also holds considerable potential for getting bogged down. Quite apart from the fact that political decision-making processes can rarely be tamed by a strict timetable.

### Three legislative proposals stand out

Three legislative proposals stand out among the tasks on the agenda: hospital reform, emergency care reform, and, to some extent, the SHI Strengthening Act (GVSG) due to their complexity and significant alterations to the current healthcare system. The still-debated Cannabis Act was passed by the Bundestag on 23 February, yet it remains on the agenda as it must clear the final hurdle in the Bundesrat, where the state governments are represented, on 22 March. Its approval by the Bundesrat is highly uncertain.

### Crisis summit, GVSG and etiquette

The year 2024 began with notable activity in professional politics, particularly for physicians. In the second week of January, they convened with Minister of Health Lauterbach for a crisis summit focusing on outpatient care, primarily concerning the de-budgeting of general practitioners. Subsequently, Lauterbach publicly declared the cessation of SHI reimbursement for homeopathy, citing "no medical benefit".

Both initiatives are encompassed in the second draft of the GVSG. However, according to *ÄrzteZeitung*, this draft allegedly dates back to December, leading to questions regarding the necessity of a crisis summit to declare the positive news about the planned de-budgeting of general practitioner services. This brings us to the orchestration of a crisis summit, to which, notably, dentists were not invited; nor were dental issues discussed, but this approach seems to lack propriety.

### Lauterbach plans genuine de-budgeting

In the second draft, the de-budgeting of general practitioner care is further defined under the new term "general practitioner service demand". However—and this marks a fundamental change—any increase in service volume must be compensated through additional SHI payments at EBM (Uniform Evaluation Standard) rates. This would end the freedom of SHI to allocate payments to providers based on the overall health and morbidity (disease prevalence) of the insured population. This change also ensures that specialist care does not suffer from unfair disadvantages. This is positive news, but there is still no explanation on how SHI is supposed to manage this budget uncertainty.

### The end of homeopathy is not enough

The cessation of homeopathy at the expense of SHI, widely proclaimed by Lauterbach across the country, and the

associated insurance marketing, will not compensate for expected additional costs. In view of the parsimony of the Minister of Finance, who, in the face of a dramatically increasing burden on the contributors, is not even afraid of leaving non-insurance services unpaid to the tune of almost €7 billion, the question arises as to where savings are to be made in the system. Unless, of course, Lauterbach finds money in the outpatient system. The dual specialist track has been a thorn in his side for more than twenty years. But that would require the success of the hospital reform, which we will discuss later.

So much for the updates from the second draft of the GVSG. Now, briefly, the main initiatives of the first draft of the GVSG in the summer of 2023: the creation of health kiosks (74.5 % funded by SHI, 5.5 % by private health insurance [PHI] and 20 % by the municipalities); the development of health regions to improve local healthcare provision (creation of networks of regional providers such as surgeries, medical networks, clinics, nursing services, etc.); simplifying the establishment of medical care centres (MCCs) in the form of limited liability companies; representation of the federal states on medical licensing committees; changes to the structural fund to promote the establishment of medical centres (funds to be made available even if there is no technical proof of any undersupply of medical services); and other regulations, in particular those relating the Federal Joint Committee on Social Security Policy (G-BA).

So far, there has been considerable activity on the part of physicians, but virtually none on the part of dentists. But who knows what else will come out of the Ministry. After all, the GVSG is planned as an omnibus bill, and further amendments have already been announced.

## Lauterbach's revolution

Among the many reforms announced by the Federal Minister of Health for this legislative period, one stands out: Lauterbach's great revolution, namely the hospital reform. In addition to the necessary

financial consolidation of the inpatient sector, this reform is central to a new organisational structure of the healthcare system. Intricately linked to this is the emergency care reform, which, without the hospital reform, would require considerable additional structural efforts.

However, the emergency reform is not Karl Lauterbach's invention. Hermann Gröhe, Federal Minister of Health in Germany's centre-left/centre-right coalition from 2013 to 2017, aimed to implement an emergency care reform through the Hospital Structure Act, which was designed to interlink outpatient and inpatient care. During this period, so-called portal practices were introduced. At the time, the G-BA decided to classify hospitals according to their emergency care capabilities. However, 600 of the 1,800 clinics examined at the time did not even meet the basic criteria. This classification was included in the statements of the Government Commission on Modern and Needs-Oriented Hospital Care. Now, two legislative periods later, we are back at hospital reform, which, because of Germany's federal structure, is like trying to square the circle.

In other words: the federal government, represented by Minister of Health Karl Lauterbach, cannot implement any hospital reform, no matter how sensible, without the approval of the federal states, who ultimately control hospital planning. This fact is well known—except to Lauterbach, whose top-down approach has met with resistance from the State Ministers of Health. As a result, the Federal Ministry of Health's website still states: "The commission provided for in the coalition agreement was set up in May 2022 to deal with the necessary reforms in the hospital sector. It is expected to make recommendations and formulate goals for hospital planning based on performance groups and levels of care, guided by criteria such as accessibility and demographic development".<sup>2</sup>

## Unfit as a revolutionary

This is where the Hospital Transparency Act comes in, further alienating the State

Ministers of Health. According to the Federal Ministry of Health, "the federal government supports the planned hospital reform with this law. It forms the basis for the planned publication of structural and performance data on hospitals in Germany. Patients should be able to identify which hospital in their area offers which services and how these hospitals rank in terms of quality and medical and nursing staffing".<sup>3</sup>

This essentially amounts to the backdoor introduction of the service levels 1i to 3 for hospitals proposed in the hospital reform. This manoeuvre has already cost Lauterbach half a year—time he sorely now needs to implement his revolution. And the law has still not been passed, as it still has to go through the Bundesrat's mediation committee on 22 March.

Nevertheless, Lauterbach remains optimistic and aims to have a draft bill for the hospital reform bill before the Cabinet by 24 April at the latest. But getting there is one thing—getting the approval of the State Ministers of Health is another. Why is this so crucial? This date is considered the last chance to publish a law in the Federal Law Gazette that requires the approval of the states in this legislative period. So, despite Lauterbach's confidence, time is of the essence. The danger is that, by the end of the legislative period, Lauterbach's efforts will prove to be neither revolutionary nor reformative for the healthcare system.

## What does any of this have to do with dentistry?

It does not seem to be related to dental care. What does dentistry have to do with hospital reform? On the surface, it appears to be unaffected, but the question remains: what position does the policy envisage for dentistry?

Although the reorganisation of health care has not yet been fully defined—particularly in relation to specialist outpatient care—the future levels are already clearly visible. The restructuring of the inpatient sector plays a central role, based largely on the proposals of the Government Commission on Modern and Needs-Oriented



Hospital Care from December 2022.<sup>4</sup> These proposals form the basis of the hospital reform policy paper agreed upon by the federal and state governments in the summer of 2023.<sup>5</sup> A key feature is the classification of hospitals into so-called levels 1n, 1i, 2 and 3.

According to the legislative proposals, care could be structured into six or seven levels, depending on the future role of specialist outpatient care:

- Basic/occasional care—health kiosks, community health nurses, etc.
- Primary care—similar to general practitioner-centred care provided by law
- Hybrid care between sectors (level 1i clinics, outpatient care/hybrid diagnostic-related groups, outpatient surgery and other procedures)
- Basic emergency medical care (hybrid between outpatient and inpatient sectors in integrated emergency centres, level 1n hospitals)
- Basic and specialist inpatient care (level 2 hospitals)
- Specialised, maximum and university medical care<sup>6</sup>

The electronic patient record is intended to act as a link between these levels. However, key legislation to implement the above scenario is still lacking, in particular the Hospital Transparency Act.

Time is pressing, not only because of the need to get this legislation through the Bundestag and Bundesrat during this legislative period, but also because of the increasingly precarious financial situation of clinics—a key term is “decommercialisation”.

It remains to be seen whether dentistry will have to fit into this scenario or whether it will remain in its own orbit due to its unique aspects (primary care provider; no clinical back-up comparable to general medicine; no division into general and specialist dentists except for orthodontists; strong prevention orientation; highly technologised practices; different billing systems). Given the unresolved issues in Lauterbach’s agenda, it is unlikely that this issue

will be raised in this legislative period. Ultimately, this is good news, because the development of viable and sensible alternative scenarios takes time and will not happen overnight.

However, the year 2025 and the end of budgeting under the SHI Financial Stabilisation Act are not as far away politically as a glance at the calendar might suggest. By the end of the year, the Minister must have clearly defined the budget for dental care for SHI patients in 2025. However, in the current reform context, this is low on the Minister’s to-do list. And therein lies the danger because many of his legislative measures will mean significant additional expenditure. Given the current

economic situation, it is unlikely that SHI revenues will continue to grow. Moreover, the health budget for 2025 is now the second smallest in the federal budget. If the Minister does manage to push through his hospital reform at the last minute, this will result in billions in additional costs from the transformation fund—Lauterbach mentioned €50 billion—of which €25 billion will go to the SHI system and, after the end of the budgeting period, will probably further limit the dentists’ room for manoeuvre under the SHI Financial Stabilisation Act.

However, this is no cause for panic, but rather an opportunity to reshape our own playing field.

#### Sources:

<sup>1</sup> [observer-mis.de/data/exchange/Monitor\\_Chro/BMG/Bilanz\\_2023\\_V4.pdf](https://observer-mis.de/data/exchange/Monitor_Chro/BMG/Bilanz_2023_V4.pdf)

<sup>2</sup> <https://www.bundesgesundheitsministerium.de/presse/pressemitteilungen/regierungskommission-legt-krankenhauskonzept-vor>

<sup>4</sup> <https://www.bundesgesundheitsministerium.de/themen/krankenhaus/regierungskommission-krankenhausversorgung>

<sup>5</sup> <https://www.bundesgesundheitsministerium.de/themen/krankenhaus/krankenhausreform.html>

<sup>6</sup> nach Dr. Albrecht Kloepper, ix-media vom 29. Januar 2024, Seite 3

<sup>7</sup> <https://www.bundesgesundheitsministerium.de/service/gesetze-und-verordnungen/detail/krankenhaustransparenzgesetz.html>

## Science—always, but only if the results fit



### Uwe Axel Richter, MD

Uwe Axel Richter studied medicine in Cologne and Hamburg. He began his career in the media world at the regional newspaper *Hamburger Abendblatt* before moving on to the trade press. He gained his journalistic experience in all journalistic positions and also as an editor, publisher and managing director at various media companies. A former editor-in-chief of *Zahnärztliche Mitteilungen* in Berlin, he follows developments in the German healthcare system with his customary critical eye.

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19<sup>th</sup> BDIZ EDI Expert Symposium, Cologne, Part 1

# Start of the BDIZ EDI training year: Digital dentistry

At the 19<sup>th</sup> BDIZ EDI Expert Symposium, the focus was on digital dentistry—the current possibilities and limits of digital treatment therapy. Controversial expert discussions met with a highly motivated professional audience.

The symposium was hosted by BDIZ EDI President Christian Berger, Prof. Jörg Neugebauer and Prof. Hans-Joachim Nickenig from the University of Cologne. The different approaches—from AI in medicine and dentistry to digital procedures in periodontology and implant surgery, navigated implantology, and the state of the art of dental 3D printing in the practice and laboratory—highlighted the present and future of the digital workflow. The scientific director of the symposium was Prof. Joachim Zöller.

Part 1 of this summary covers the first five presentations; The remaining presentations will be covered in the 2/2024 issue of the *EDI Journal*.



## Jörg Neugebauer, Prof. Dr med. dent.:

### Digital planning and diagnostics: where do we stand today?

Prof. Jörg Neugebauer (Landsberg am Lech, Germany), Secretary General of BDIZ EDI, provided an insight into current and future developments in treatment planning and diagnostics. When do I use the CBCT? According to Neugebauer, CBCT is a highly invasive diagnostic procedure because of the ionising radiation it produces. However, there is no need to do without CBCT, as the radiation exposure can be significantly reduced depending on the indication. Neugebauer, who

is Professor of Digital Dentistry at Steinbeis University, made it clear that CBCT, in combination with surface scans, can significantly improve the results of the diagnostic process. Much more can be expected in the future—especially for prosthodontists, where CBCT could open up new possibilities in the area of implant preparation.

AI can be expected to improve the effectiveness of treatment quality. Neugebauer criticised the AWMF guidelines on



digital planning and diagnostics as not reflecting the current state of the art. Alternative techniques such as magnetic resonance imaging (MRI) do not use radiation at all, but only the more benign influence

of a magnetic field. The tube into which patients are placed no longer has to be as claustrophobically narrow. Soft-tissue structures—especially the alveolar canal—can sometimes be visualised better than

with a CBCT. The use of MRI in treatment planning is also a possibility. Based on the developments of the past few years, Neugebauer has lofty expectations for the future.

### **Klaus Ständer, Dr med. Dr med. dent.: Fundamentals of AI in medicine and dentistry**

The first presentation on the basics of AI in medicine and dentistry was given by Dr Klaus Ständer (Traunreut, Germany). Ständer introduced the sub-disciplines—pattern recognition (e.g. speech and handwriting recognition), knowledge modelling, expert systems (e.g. question-and-answer sessions, chatbots), machine learning, artificial neural networks and deep learning, computer vision, robotics and universal game programs.

He affirmed that he believes AI has the potential to improve patient care and meet

the challenges of an ever-increasing flood of information and data in dentistry and medicine at a time of limited human resources.

At the same time, he called for a critical and responsible reflection on the limitations and risks of AI applications. In addition to scientific transparency, he also sees the strengthening of medical expertise as an important basis for this reflection. “AI makes mistakes, and we need to control it. But AI also learns from its mistakes!”



### **Volker Knorr, Dr med. dent.: AI in dentistry—a curse or a blessing?**

Dr Volker Knorr (Eislingen, Germany) began by recalling that eight years previously he had been working on implant robots with the aim of replacing human surgeons. “Today we know that we still need human power!” But there are other forms of AI, he said, such as apps that allow patients to upload selfies on their mobile phones to find out about the state of their dental health. The automotive industry has shown the way—not only in car design but also by putting all those sensors in their cars. In dentistry, for example, some electric toothbrushes have sensors that monitor the pressure applied to the teeth. He described CNNs (convolutional neural networks) in deep-learning systems as a complex technology, inspired by biology.

Anything that is not physiological—including pathologies—is recognised by specific filters. In Knorr’s estimation, the detection of various orthodontic fixture with radiological analysis programs means faster processing and lower as the “data

rush” in dentistry has begun. The creation of surgical templates with intercuspal models that match the maxilla and mandible eliminates the need for tra-

ditional bite registration. His credo when it comes to artificial intelligence: “Don’t rely blindly on AI. Data matching is the most important issue!”



## Falk Schwendicke, Prof. Dr med. dent., participated remotely with his presentation on “Artificial intelligence in dentistry: opportunity or folly?”

Prof. Falk Schwendicke (Berlin, Germany) began by recalling that AI has been around since 1943 and has continued to evolve, with the *New York Times* describing what AI was already capable of in 1958: “[The Perceptron] is the embryo of a computer that [...] will be able to walk, talk, see, write, reproduce itself and be conscious of its existence.” But we also experienced various “AI winters”, period of reduced funding and interest in AI research, because we had neither the hardware nor the software and could not develop a coded language with rule-based systems. It is only in the last 15 years that AI has achieved success in self-learning. This has a lot to do with other algorithms, with neural networks and with today’s vast amounts of digital data: video, speech, photorealistic representations of people, which never existed before. So-called prompting (key-wording)—which drives ChatGPT inter-

actions to elicit responses or images—has begun to eliminate the need for video dubbing and language interpretation. As an example, he cited the EAO congresses, which use AI to provide synchronous interpretation in different languages. Meanwhile, AI systems have also appeared in dentistry: take a picture, send it to the cloud to detect periodontal bone loss, carious lesions, distances between the lower molars and the alveolar nerve, and much more. The results of the detection can then be evaluated accordingly. The accuracy is currently around 90 per cent. “That’s why it’s so important to check the results”, advised Schwendicke. The bottom line is that AI is nothing more than mathematics, a technology for processing massive amounts of data, and can be seen as a “learning” system. Today’s AI systems achieve results similar to those of well-versed practitioners but can provide



massive support for communication and documentation. They already have an advantage in certain indications and can be used for diagnostic purposes: “AI systems are constantly improving, while we dentists are not necessarily improving.” However, according to Schwendicke, P4 dentistry by AI—predictive, preventive, personalised, participatory—is still a long way off.

## Gerhard Werling, Dr med. dent.: Dental printing in the laboratory and practice

Do you need a dental 3D printer in your practice? Dr Gerhard Werling (Bellheim, Germany) answered his own initial question with a resounding “yes”. In his presentation, Werling provided an overview of current 3D printing landscape and highlighted practical aspects, including the integration of 3D printing technologies into prosthetic manufacturing processes, the production of surgical guides for implant planning and the manufacture of patient-specific models, splints and even definitive 3D-printed restorations. A 3D printer takes care of the printing, washing and post-curing steps. The workflow is simple—you scan the impression and either create the design yourself or outsource it via cloud services. Then comes the printing phase and finally the post-curing phase. Werling’s logical conclusion: “Anyone who has an oral scanner will also get a 3D printer.”

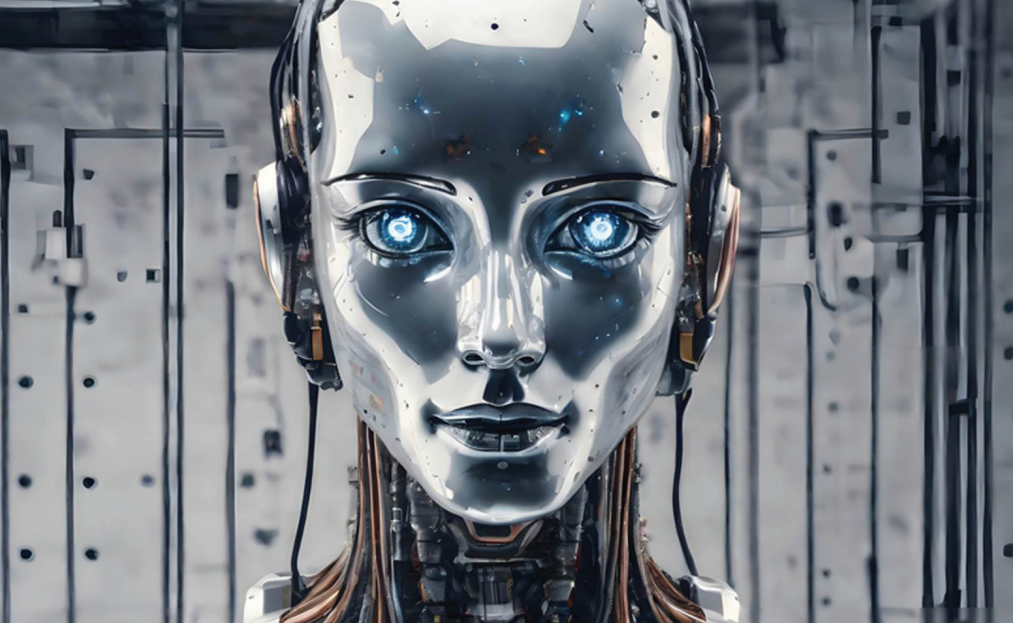
He was unable to give a clear answer to the question of whether additive 3D printing will be largely replaced by subtractive grinding and milling in three years’ time. But he did say that 3D printing has specific advantages: while milling has advantages in the crown/bridge technique, in terms of aesthetics, strength and, above all, the many extant clinical studies, Werling contrasts this with the advantages of 3D printing, which include low material and processing costs, almost no geometric limitations, time savings and many indications, including at chairside. He declined to answer the question of whether there milling machines will have disappeared three years from now. Werling also believes that the combination of innovative materials, specific dental workflows and AI-based software, as well as increasing cost pressures, will make 3D printing indispensable for dental practices and laboratories.



To be continued

AWU





## Impressions of the 19<sup>th</sup> BDIZ EDI Expert Symposium

Exciting days around an exciting topic in Cologne: Digital dentistry—current possibilities and limits of digital treatment. The BDIZ EDI European Consensus Conference, which produced a consensus paper on the digital workflow, met on the sidelines. The BDIZ EDI European Committee also met, and the BDIZ EDI Board set the course for its work in 2024 and beyond.

Vice President Prof. Joachim Zöller awarded this year's "Grosse von 1823" medal to the hard-working helpers of BDIZ EDI. The dentists from India, Nepal and Albania who had attended the Consensus Conference, were in for a real surprise at the crowning finale, the Sunday carnival session in Gürzenich Hall!

AWU





19<sup>th</sup> European Consensus Conference updates 2017 Guideline

# 2024 Guideline: The digital workflow in oral implantology

The 19<sup>th</sup> European Consensus Conference (EuCC) under the auspices of BDIZ EDI has produced the second update of its Guideline on the digital workflow. The new 12-page Guideline is intended as a recommendation for implant dentists to help them assess the indications and limitations of the digital workflow. Statements on artificial intelligence (AI) have been added.

The 19 international experts of the European Consensus Conference, chaired by Prof. Jörg Neugebauer, highlighted the different steps of complex implant-prosthetic treatments that can be carried out with the support of digital technology. They examined the various digital procedures for diagnosis, surgical preparation, digital implant planning and prosthetic rehabilitation. Aspects covered included:

- Digital diagnosis
- Digital impression-taking and imaging
- CAD/CAM-assisted grafting techniques
- Digitally guided implant positioning
- Digital laboratory procedures
- Artificial intelligence (AI) in oral implantology

Conclusions of the EuCC: Digital technologies in implant dentistry are improving, with good clinical results and better patient-related outcomes (PROMs). The specific parameters for each procedure must be taken into account by the clinician.



## Ordering the Guideline

The 12-page 2024 Guideline brochure with its comprehensive bibliography can be ordered from the BDIZ EDI online shop, in German or English, at the price of €4.50 (including VAT, plus shipping).



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## **Guideline 2024**

### **Update digital workflow in implant dentistry**

#### **19th European Consensus Conference (EuCC) 2024 in Cologne**

29 January 2024 – 6:30 p.m.–8:30 p.m. online

Authors: Jörg Neugebauer, PhD, DMD  
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Chairman: Professor Dr J. Neugebauer (Germany)  
Participants: Ch. Berger (Germany)  
Dr E. Çerekja (Albania)  
Professor Dr D. Edelhoff (Germany)  
Dr Vikas Gowd (India)  
Dr F. Kasapi (Macedonia)  
Dr. V. Knorr (Germany)  
Professor Dr P. Kobler (Croatia)  
Professor Dr Dr V. Konstantinović (Serbia)  
Professor Dr K. Krasny (Poland)  
Dr. S. Liepe (Germany)  
Dr. W. Neumann (Germany)  
Professor Dr H.J. Nickenig (Germany)  
Professor Dr H. Özyuvacı (Turkey)  
Dr B. Singh (Nepal)  
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Dr Dr M. Tröltzsch (Germany)  
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## Guideline 2024

### Update digital workflow in implant dentistry

#### 1 Methods

##### 1.1 Objective

The purpose of this guideline is to offer recommendations for clinicians engaging in implant dentistry, enabling them to correctly assess potential indications (and any limitations) for a digital workflow.

##### 1.2 Introduction

This consensus guideline covers the various digital procedures for diagnosis, surgical preparation, digital implant planning and prosthetic rehabilitation typically used in accordance with the indications recommended by the European Consensus Conference on implantology (EuCC, Cologne, Germany, February 10th, 2024).

All consensus recommendations in this paper should be considered as guidelines only. The patient's specific situation is always an important consideration and may justify a deviation from the recommendations of this consensus paper.

##### 1.3 Background

Digital procedures to improve or simplify the implant prosthetic workflow are presented for various treatment steps. To ensure an acceptable treatment outcome, the selection of the appropriate digital procedure for each indication is necessary.

##### 1.4 Literature search

The Cochrane Library, EMBASE, DIMDI and Medline literature databases were used to conduct a systematic search of recent published data on digital workflows and directly related topics. Selective search criteria were used, including terms such as *digital*, *implant*, *cad/cam*, *grafting*, *guided surgery*, *abutment*, *superstructure*, *surgical guide*, *printing*, *AI*. The publications identified by the search were screened by reading their abstracts; those irrelevant to the subject were identified and excluded. Articles found to be potentially relevant were obtained in full-text form. Multiple review papers with meta-analyses and randomized controlled trials (RCTs) as well as other prospective or retrospective systematic clinical studies proved to be available on the subject.

##### 1.5 Procedure for developing the Consensus Conference guidelines

A preliminary version on which the EuCC based its deliberations was prepared and authored by Jörg Neugebauer, Steinbeis University, Magdeburg and Interdisciplinary Department for Oral Surgery and Implantology and Department of Oral and Maxillofacial Plastic Surgery at the University of Cologne, Germany. The preliminary report was then reviewed and discussed by the sitting committee members in five steps as follows:

- Reviewing the preliminary draft
- Collecting alternative proposals
- Voting on recommendations and levels of recommendation
- Discussing non-consensual issues
- Final voting





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### Update digital workflow in implant dentistry

#### 2 Problem

Complex implant/prosthetic treatment can be performed in various stages with the support of digital technology. Today the aim in selected cases has been to improve the treatment efficiency and outcome by using a fully digital workflow[27, 28]. Various concepts are in use, but the innovation cycles and outcomes should be considered for complication-free use in daily practice.

#### 3 Digital diagnosis

##### 3.1 Introduction

Routine implantological diagnosis is still based on panoramic imaging, which has limitations in terms of measurement accuracy and the possibility to determine the available bone supply, especially in the posterior maxilla[21, 62]. Due to the invasiveness of ionizing radiation, 3D diagnosis should be decided by individual basis[36].

##### 3.2 Cone-beam CT

The adjunctive use of 3D data based on cone-beam technology provides more information to help avoid problems and perform a more detailed diagnosis[16]. Various indication for immediate implant placement, control of grafting procedures and anatomical evaluation are proven[52]. Scanning parameters such as voxel size vary depending on the device used and result in discrepancies at the subclinical level, which might influence the subsequent process chain[69]. State-of-the-art devices with a low-dose protocol allow implant planning with reduced radiation doses without decreasing the accuracy of guided implant placement[53].

#### 4 Digital impression and imaging

Digital information other than x-ray can contribute to the overall prosthetic diagnosis based on function and aesthetics.

##### 4.1 Definition

Digital impressions are taken as chairside scans to generate the data to fabricate surgical guides, master casts and implant superstructures.

##### 4.2 Current observations

Digital impressions and CAD/CAM procedures save time and provide stable and predictable outcomes[78]. There is no difference in terms of clinical outcomes between conventional and digital impressions, even in full-arch cases[20, 41]. The accuracy of full-arch scanning by IOS differs based on clinical scenarios such as scanning strategies[40, 75].

Digital scanning was found to be more time-efficient and convenient than conventional impression-taking for implant-supported restorations[43]. No significant differences were found in radiographic marginal bone loss between treatments performed with digital scans and conventional impressions[60].

New technologies like spectrophotogrammetry might have a great potential to improve the workflow for full mouth or multiple implants cases[55].

##### 4.3 Prevention of complications

- Precise scanning of full arches requires specific scanning strategies.
- The transfer of the occlusal situation and the articulation is still not established on a routine basis.
- Significant accuracy differences were found between the IOS, which requires individual selection for the various treatment protocols[75].



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### Update digital workflow in implant dentistry

## 5 CAD/CAM-supported grafting techniques

### 5.1 Introduction

To reduce donor-site morbidity, various kind of allogeneic or xenogeneic block grafts were presented in the past[32]. There has been controversy regarding the evidence for their outcomes[7, 9]. Alternatively, a titanium mesh is used to stabilize the graft, but this requires intensive intraoperative adaptation to the defect. Custom dental implants made by copy-milling and segmented CBCT data were presented in the past but have not become established as routine clinical procedures[34, 59, 64].

### 5.2 Custom-made bone block and implants

To improve outcomes and simplify workflows, the use of CAD/CAM technology and cone-beam volumetric data for custom-made bone blocks and the shaping of titanium-meshes and implants are recommended[12, 13, 38, 66].

To improve the outcome various techniques of 3D-printed scaffolds with the option of the use of stem-cells or BMP are under scientific evaluation[10].

### 5.3 Current observations

Reports on the clinical outcomes are still controversial[19, 33].

The exposure rate for CAD/CAM titanium mesh is lower than for conventional shaping, but a high exposure rate of 31% was still observed[24, 81].

### 5.4 Prevention of complications

- Specific soft-tissue management is necessary for 3D-printed titanium meshes.

## 6 Digitally driven implant placement

### 6.1 Introduction

Various systems for guided surgery are available, using static guided surgery and dynamic guided surgery[15, 48]. The accuracy of surgical guides shows no significant difference to dynamic guided surgery[3, 44]. Moreover, computer-guided surgery can effectuate accurate implant placement and less post-surgical discomfort.[78]. By using surgical guides, more reproducible and more accurate results can be achieved in comparison to free-hand placement[29, 49, 50, 70].

### 6.2 Current observations

Discrepancies between planned and actual implant positions can be up to about 1 mm crestally and around 2 mm in the apical region, with an angular deviation of about 5 degrees[15, 68]. These results have been confirmed by RCTs[74].

- Surgical guides strictly supported by soft tissue in the edentulous jaw are not inferior[73].
- Bone-supported surgical guides exhibit lower accuracy[15].
- No difference was observed for GS or FH in respect of MBL changes[76, 79].

Flap and flapless approaches provided similar implant survival rates, but the flap technique provided a slightly better MBL than the flapless approach[72].

Further evidence regarding more clinically relevant outcomes of efficacy (implant survival and success, prosthetically and biologically correct positioning), long-term prognosis and cost is currently scarce[63]. Flapless procedures show less buccal bone resorption in immediate-implant cases[42, 54].



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New technologies with augmented reality-supported navigation could provide better accuracy than conventional navigation and free-hand procedures[76, 79].

#### 6.3 Prevention of complications

- There are greater deviations with longer implants and shorter sleeves[67].
- Conventional guides or guides based on optical scans are more accurate than guides designed based on CBCT data[61].
- For completely edentulous jaws, fixation with mini-implants or anchor screws increases accuracy[15].
- Keyless systems seem to offer greater precision than key systems[23].
- Case selection for type of guided surgery requires previous experience in conventional procedures in order to be able to switch if required.
- Minimally invasive therapies such as flapless surgery require specific training to achieve an optimal outcome[46, 73].
- Greater deviations may occur in individual operator and patient situations, depending on the fixation and the type of edentulism[11, 23, 57].
- Learning curve for guided surgery should be done with simple cases.

## 7 Digital lab procedures

### 7.1 Digital printing

#### 7.1.1 Introduction

Various printing techniques are available for manufacturing surgical implant guides, implant analogue models, metallic primary frameworks, secondary ceramic or polymer superstructures[56].

#### 7.1.2 Current observations

For clinically acceptable accuracy of implant analogue casts, various technical parameters must be considered[26]. Depending on the printer technology, accuracy may change under light exposure[80].

### 7.2 CAD/CAM abutments

#### 7.2.1 Definition

Custom CAD/CAM abutments can be produced by chairside procedures with prefabricated inserts or by milling centres on the original or on a copy of the implant interface[30]. No information is available regarding the precision and quality of the two procedures[37]. Pre-milled interface show higher accuracy than individual processed designs[4].

#### 7.2.2 Current observations

Custom CAD/CAM abutments offer many options for ideal design in terms of biomechanical and material parameters. The use of custom CAD/CAM abutments does not guarantee that subgingival cement residue is avoided, although a reduction in cement residue has been shown after crown cementation[77].

The use of custom CAD/CAM abutments showed advantages in soft-tissue stability in a multicentre prospective clinical trial after a two-year follow-up[39]. Controversial data indicate no improvement in clinical performance or patient satisfaction compared to the use of stock zirconia abutments[58, 65].

Special emphasis should be placed on the precision of the implant/abutment interface. Initial research in vitro has demonstrated no difference in terms of implant adaptation of stock vs. one-piece CAD/CAM abutments[8].





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#### 7.2.3 Prevention of complications

- Care must still be taken to always carefully remove cement residue after intraoral cementation.
- The use of resin-based luting agents in combination with air-abrasion of titanium inserts and zirconia copings provided stable retention of two-piece CAD/CAM abutments[22].
- Screw-retained crown abutments might be favourable from a biological point of view, with a risk of mechanical complications.

### 7.3 CAD/CAM superstructures

#### 7.3.1 Definition

Various CAD/CAM fabrication procedures such as milling or selective laser melting are available[30, 35]; they require the validation of workflows. Studies on the precision of screw-retained CAD/CAM superstructures showed improved accuracy in comparison to conventional or copy-milled superstructures, with no relevant differences between the materials used[1, 17, 18, 31].

The marginal fit of implant-supported frameworks manufactured by AM or SM methods is in the clinically acceptable range[47, 71].

#### 7.3.2 Current observations

The available data indicate promising results for CAD/CAM-fabricated implant-supported restorations; nonetheless, current evidence is limited due to the quality of available studies and the paucity of data on long-term clinical outcomes of five years or more[25, 51].

#### 7.3.3 Prevention of complications

- When using CAD/CAM technology, it is recommended to follow a validated workflow.
- If one step in the workflow is changed, it is recommended to revalidate the complete workflow.
- Due to the flexibility of the mandible, non-precious metal frameworks should be used for full-arch reconstruction. For ceramic veneering high elasticity alloy should be used.

## 8 AI in implant dentistry

### 8.1 Introduction

A growing number of studies employ deep learning in implant dentistry, mainly in digital imaging with radiographs[6]. AI models using panoramic and periapical radiographs can accurately identify and categorize dental implant systems or detect changes in marginal bone levels[5, 14]. Segmentation procedures of anatomical structures are improved by AI support[2].

### 8.2 Current observations

New algorithms may determine critical structures like the IAN canal and the available bone for AI implant planning[6]. The benefits compared with conventional approaches is not proven[45].



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## Guideline 2024

### Update digital workflow in implant dentistry

#### 9 Conclusion

Digital technologies are improving in implant dentistry with good clinical outcomes and improvements in PROMs. Specific parameters for individual workflows must be considered by the healthcare provider.

Cologne, 10 February 2024

Professor Dr Dr Joachim E. Zöller  
Vice President

Professor Dr Jörg Neugebauer  
Chairman of EuCC

#### 10 Literature

The literature list can be obtained from the following website:  
[www.bdizedi.org/en/professionals](http://www.bdizedi.org/en/professionals)

Statement by Johann Müller, Prof. Dr med. Dr med. dent., Munich

# CMD: Does occlusion really no longer play a role internationally?

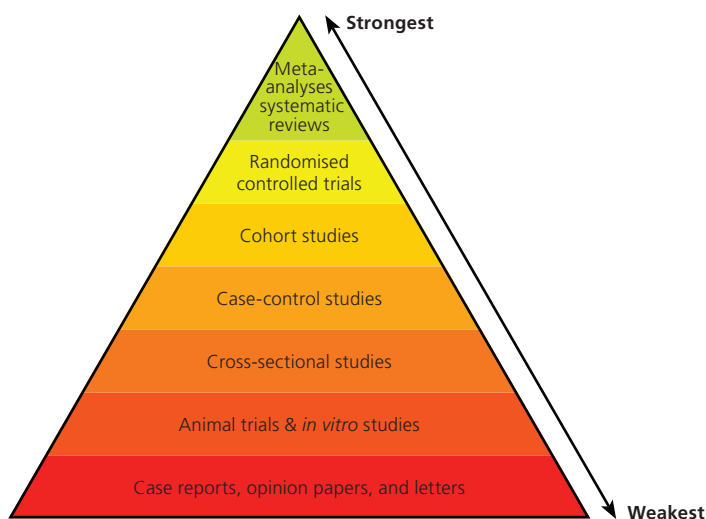
At the 2022 Bavarian Dentists' Congress, which was organised in cooperation with the German Society of Craniomandibular Function and Disorders in the DGZMK (DGFDT), DGFDT Vice President Dr Bruno Imhoff (Cologne), said that "internationally, occlusion has long ceased to play a role in CMD".

When questioned by the author, Dr Imhoff clarified that this statement referred to the aetiology of functional disorders in the masticatory organ and thus has serious implications for the principles of dental therapy. This is reflected in the scientific statement of the DGFDT on "Therapy of craniomandibular dysfunctions (CMD)", which Dr Imhoff presented at the conference.

This is particularly irritating because, in contrast to this statement from December 2022, the S2k guideline on jaw relation recordings, also published by the DGFDT in July 2022, cites dozens of literature references that prove a causal relationship between occlusion and CMD. Consequently, (other) dental treatment suggestions are derived from this S2k guideline.

This current S2k guideline on jaw relation recordings states:

## Hierarchy of Scientific Evidence



"Oxford pyramid" of evidence-based medicine (EBM).

On closer examination of this statement by the DGFDT, i.e. its current board, it becomes clear that high-quality literature references (in accordance with the Oxford Guidelines of Evidence-Based Medicine [EBM]), which show an aetiological connection between occlusion and CMD, have not been taken into account (see appendix).

### Consequences of uneven interocclusal contact

In patients with *fixed dentures*, uneven occlusal contact may lead to nonspecific complaints such as: [30,66,78,124,139,162,188,242–244,247,279,293,323,351,379,393,394,409,535].

- Pain,
- Muscle fatigue, myoarthropathy, craniomandibular dysfunction,

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### S2k Guideline: "Instrumental Functional Analysis and Jaw Relation Recording in Dentistry" (Extended Version)

Status: July 2022

- Searching for mandibular position ("control contacts"), motor restlessness of the mandible (patient "does not know where to position the jaw"),
- Tooth loosening,
- Triangulation, bone loss,
- Increased abrasion,
- Implant screw loosening.

In addition to affecting effects on the patient's tolerance, failure to achieve the goal of a simultaneous and uniform occlusal contact with *removable dentures* has the following consequences [116,117,134,349,350]:

But how did Dr Imhoff and the current DGFDT board arrive at this statement that is incorrect not only from a clinical but also from a scientific point of view?

1 As already mentioned above, the current scientific statement of the DGFDT on "Therapy of craniomandibular dysfunctions (CMD)" contains a very selective and, from a scientific point of view, extremely questionable selection of cited literature references.



2 The second main reason is the purely economic allocation of the treatment of CMD disorders to pain clinics in the USA—based on a consensus conference in the early 1990s. This conference was attended by seven directors of pain clinics and one dentist (Dr Terry Tanaka). In the following years, based on the exclusive treatment of patients with CMD symptoms in the pain clinics, diagnostic criteria were developed by these clinics that did not include any occlusal findings (so-called RDC/TMD findings, which were renamed DC/TMD in 2015 (DC = diagnostic criteria; TMD = temporomandibular [joint] disorder).

3 Misleading terms or inconsistent nomenclature: in the USA, only the term “TMD” is used, but not the term “CMD”, which is commonly used in Germany. In addition, it should be noted that in Europe the term “TMD”, which is also commonly used in the literature, also considers occlusion as an aetiological factor, based on different diagnostic criteria—in contrast to the English-language literature (see appendix: Studies by the group of Professor Kirveskari, Turku, Finland, among others, which are predominantly assigned to the second highest level of the EBM criteria). In the current scientific statement of the DGFDT on the “Therapy of craniomandibular dysfunctions (CMD)”, this essential difference is negated and leads to the seriously incorrect statement that “internationally, occlusion has long ceased to play a role in CMD”.

4 In this context, another important aspect should be noted: the modification of the definition by the DGFDT in its declarations in 2011 and 2016:

#### 4.1

While the terms “CMD”, “TMD” and (the term frequently used in German for decades) “myoarthropathy” (MAP) were still equated in the DGFDT’s 2011 statement on nomenclature, the DGFDT made a distinction in 2016.

#### 4.2

In 2018, the Universities of Heidelberg and Leipzig also translated or adopted the diagnostic criteria of the American pain clinics into German, thus causing further diagnostic confusion or “irritation” between TMD and CMD (so-called “Axis I” and “Axis II” criteria” without any recording of occlusal findings).

5 Other fundamental methodological difficulties and peculiarities of studies on the aetiology of CMD remain unnoticed:

#### 5.1

Lack of comparison groups: Different diagnostic criteria and terminology (see above) and heterogeneous groups make it impossible to compare results. A particularly valuable study by Alanen et al. in 2012 (“Methodological problems in studies on the aetiology of TMD: Are the current options based on

## Definitions

### **Functional disorder, dysfunction, craniomandibular dysfunction (CMD), myoarthropathy of the masticatory system (MAP)**

A. Hugger, M. Lange, H. J. Schindler, J. C. Türp  
Last update 01/2016

### **Craniomandibular dysfunction (CMD)**

Comprises pain and/or dysfunction:

*Pain* occurs in the form of masticatory muscle and/or the temporomandibular joint pain and (para)functionally related toothache.

*Dysfunction* can take the form of

- Painful or non-painful restriction (limitation) of movement, hypermobility or coordination disorder (aspect targeting mandibular movements),
- Painful or non-painful intraarticular disorder (aspect targeting the temporomandibular joint)
- Premature contact and obstruction of gliding movements that interfere with function (aspect targeting occlusion)

### **Myoarthropathy of the masticatory system (MAP)**

Is a subset of craniomandibular dysfunction:

Complaints and findings involving the masticatory muscles, the temporomandibular joints or related tissue structures; this does not include consideration of the occlusion.

### **Temporomandibular joint disorder (TMD, English synonym: MAP)**

is a subset of craniomandibular dysfunction:

Complaints and findings involving the masticatory muscles, the temporomandibular joints or related tissue structures; this does not include consideration of the occlusion.

evidence?“) discusses this problem in detail and concludes: “It is not fair to simply list studies on the aetiology of CMD in reviews and meta-analyses without taking into account their methodological differences in study design. The currently prevailing view that occlusion is at best an insignificant causal factor in CMD is not supported by the evidence.”

## 5.2

Different technical and practical results (even) with the same initial clinical findings: Dr D. Reusch, a colleague who has been clinically active for over 50 years, explained this very aptly in a letter to the DGFD board in 2023: “Basically, I see it as follows: in dentistry, it is very difficult to carry out studies for certain procedures and treatment concepts because it is hardly possible to set up appropriate comparison groups. In addition, the results obtained are highly dependent on the technique used. If a less experienced practitioner with little in the way of practical routine—and possibly lacking the appropriate manual dexterity—performs a complex, demanding procedure, the result will usually be that his attempts are not successful and cannot be exactly replicated. This is then quoted as the conclusion. In reality, however, the conclusion must be that the procedure performed by an untalented, inexperienced

practitioner does not produce the desired result, but the same procedure performed by a practitioner with the appropriate skill, routine and knowledge produces good results.

A lack of scientific evidence should not lead to a method being rejected or even declared ineffective, especially when positive clinical results are achieved by experienced practitioners. It is not acceptable to simply negate clinical evidence!”

To summarise:

1. Occlusion is a significant and often dominant aetiological factor in CMD. Dental treatment alone leads to permanent, causal treatment success.
2. The current widespread view that occlusion is at best an insignificant causal factor in CMD is not based on scientific evidence.
3. It is unscientific for a scientific society to negate clinical evidence and contradict itself in the selection of literature for statements and guidelines within the narrow time frame of only six months.
4. Due to the high occlusal tactile sensitivity, sustained treatment success (also) requires technical excellence in the clinical application of scientifically based and clinically successful treatment concepts that have been tried and tested over the decades.

Johann Müller, Prof. Dr med. Dr med. dent., Munich



Literature sources showing a causal relationship between occlusion and CMD.



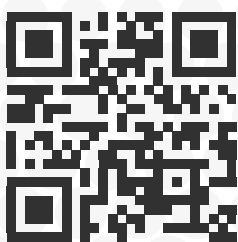
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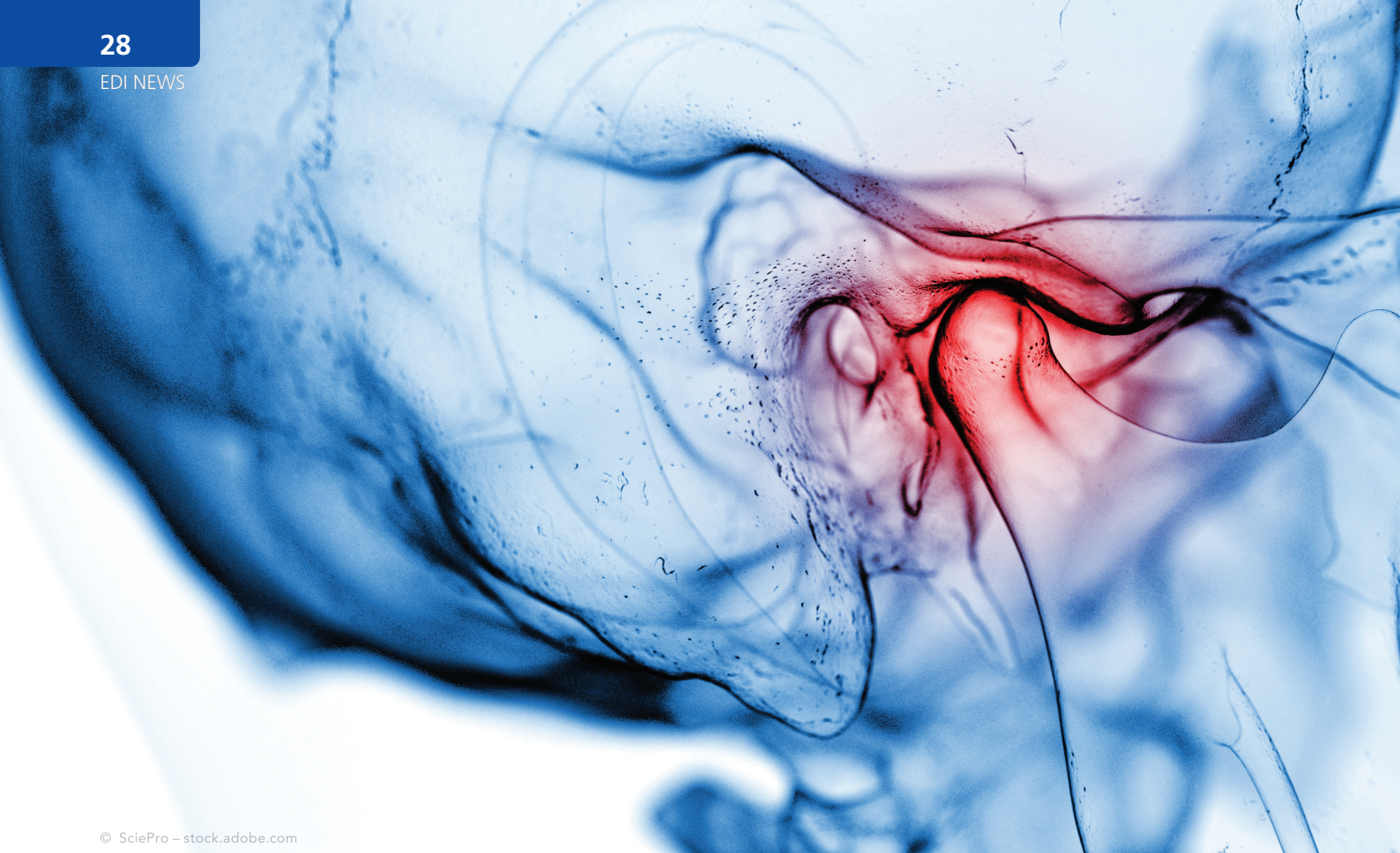
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**A detailed commentary by Dr Diether Reusch (Westerburger Kontakte)**

# The significance of occlusion in patients with CMD

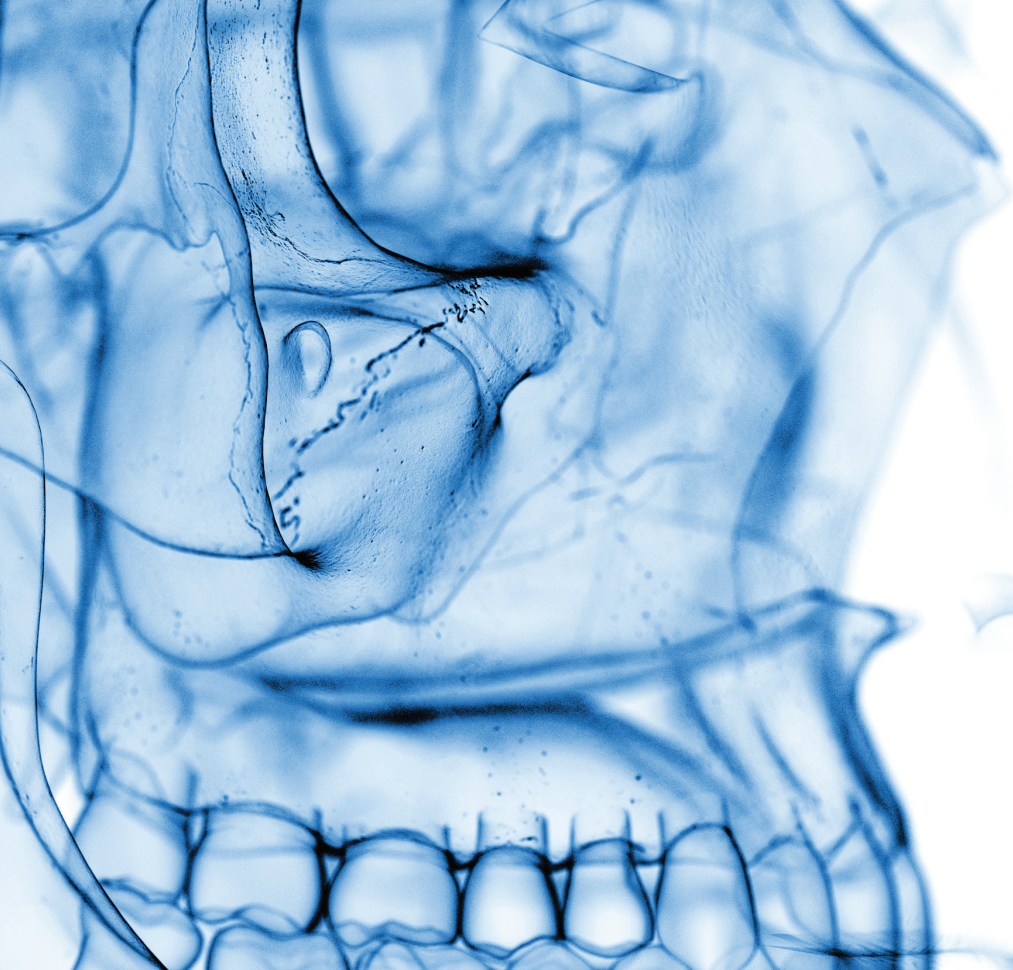
A scientific debate is currently making waves, sparked by an article in the *Journal of Craniomandibular Function* 2023; 15 (2):119–27 by Türp JC. and Greene CS. on the so-called phase 1/phase 2 strategy for the treatment of patients with craniomandibular dysfunction. Prof. Türp accuses all colleagues working in the field of occlusion and/or craniomandibular dysfunction (CMD) of following a so-called phase 1/phase 2 strategy, based on a website analysis he carried out.

Behind this strategy is a two-phase concept for treating patients with (usually painful) CMD symptoms. Following “relaxation” or “deprogramming” of the mandibular muscles, the result is said to be a permanent change in the position of the mandible relative to the maxilla and thus a “therapeutically” induced malocclusion. To restore maximum intercuspation in this mandibular position, the second phase involves occlusal adjustments, restorative/prosthetic measures and/or orthodontic/maxillofacial surgery.

*Quote Prof. Türp:*

“The reluctance to abandon the phase 1/phase 2 strategy may be due to the continued strong belief in the validity of this disproven therapeutic approach, or it may be financially motivated. For the patients concerned, this therapeutic approach involves many dental appointments, unnecessary and sometimes harmful interventions and high costs. At the same time, dental professional organisations have their hands tied if some dentists continue to exploit the freedom of therapeutic choice and the lack of a regulatory guideline to their advantage. This phenomenon affects dentistry not only in Germany but is found worldwide.”





### In short:

We dentists continue to believe in a “disproved treatment approach” or we generate many unnecessary appointments for our patients for financial gain, i.e.:

- We take time away from our patients.
- We harm our patients with our interventions.
- We make our patients pay a lot of money for an inappropriate treatment for which there is no need, i.e. in plain language, we “cheat our patients”.
- All this is only possible because there are no regulatory requirements!

### So much for a condensed version of the author’s statements.

Regulatory requirements are laws and regulations that a company or clinic must comply with. Can this be the purpose of a guideline? As I was personally only familiar with a phase 1/phase 2 strategy in orthodontics, we did some internet research using Google and ChatGPT. Apart from Prof. Türp’s article itself, the search yielded no hits.

A phase 1/phase 2 strategy is not generally known. A survey of many dentists and scientists I know came up with the same result: “not known”. A scientific colleague, head of a prosthetics department, replied: “Dear Diether Reusch—yes, this is a very unusual and strange article. I cannot remember ever reading anything like it in a dental journal.” This 2-phase therapy, the way it was described, was completely unknown to me until now. Instead, a multi-phase approach is always essential whenever a patient is due for a complex restorative treatment for completely different reasons, but the patient also suffers from CMD or has a history of CMD. In these cases, the restorative treatment should follow an overall concept with the aim of biomechanical optimisation, including functional pretreatment and testing of the expected result using splints, wax-ups, mock-ups, etc. This is where a multi-phase approach makes sense.

Somehow, I could not shake off the impression that the authors had overinterpreted the selected websites. Such websites always focus on the main capabilities of the clinic or practice and never give any information about the evidence-based nature of the therapeutic procedure in in-

dividual cases. If you want to find out whether someone can provide evidence-based treatment, you will have to ask the dentists in question or present them with case vignettes in order to find out something about their treatment planning in individual cases. The approach taken in the article did not seem valid to me.

The next step was that I commissioned an agency to carry out a completely neutral Google analysis of 50 dental websites on the subject of “CMD—craniomandibular dysfunction” on behalf of the DGÄZ. No influence was exerted on the persons entrusted with this task, which can be substantiated by an affidavit.

1. None of the websites mentioned a so-called phase 1/phase 2 concept.
2. Nine websites mentioned that corrections to existing dentures may occur. I explicitly agree with this. ~20%
3. Two websites state that temporary bite corrections can be made. ~1%
4. Seven sites stated that prosthetic measures may need to be considered. ~14%
5. Four sites mentioned the need to consult an orthodontist. This evaluation implies that the basis of Prof. Türp’s analysis, which he also published in *Deutsche Zahnärztliche Zeitschrift*, is questionable. Türp’s analysis of 30 “randomly” selected websites shows a completely different picture:

- In 50 per cent of the cases, prosthetic measures were mentioned as a follow-up treatment to splinting therapy.
- Orthodontic treatment was mentioned in one third of the cases after the first phase of splint treatment and was often described as therapeutically useful in conjunction with prosthetic reconstructions. This makes a total of 80 per cent prosthetic follow-up procedures.

So this is the basis for suspecting his colleagues of using treatment methods that harm their patients in order to enrich themselves? What prompted this article? Türp writes that he was asked at an expert



conference to comment on the above strategy and the problems associated with this therapy.

*Quote Prof. Türp:*

"The aim of this article is therefore to fill the existing gap. In doing so, many text excerpts from original papers are deliberately reproduced verbatim—something that is otherwise rather unusual in articles—because, particularly for reviewers who have to prepare expert reports for insurance or court cases, such quotations are usually more helpful than paraphrased descriptions." This means: On the basis of these misrepresentations, expert reports may be written, followed by legal proceedings which, depending on the outcome, may deny patients necessary treatment and thus impair their health!

The 4/2023 issue of the *JCMF* contains a letter to the editor by Prof. Ralf J. Radlanski, which is well worth reading, as he comments from the perspective of both the treating physician and the scientist. The response of Professors Türp and Greene published in the same issue provides a deep insight into the mindset of the two gentlemen. (Jens C. Türp's and Charles S. Greene's reply to Prof. Ralf J. Radlanski's letter to the editor. *JCMF*. 2023; 15(4): 351–60.)

*Quote Prof. Türp:*

"Science thrives on the exchange of opinions; traditionally, this also includes academic disputes."

Prof. Türp is absolutely right. However, an exchange of opinions does not include portraying colleagues as deliberately treat-

ing patients with harmful therapies for financial reasons, based on a survey that appears to be more than dubious.

Now follows an explanation from Türp as to why all the excitement arose after his article was published.

*Quote Prof. Türp:*

"[...] that it was first written in English and then translated into German, [...] in the German translation, we had not considered that the German term "kranio-mandibuläre Dysfunktion" (craniomandibular dysfunction; CMD [...]) is not identical to the English term. "TMD" corresponds in German to the term "Myoarthropathie" ("myoarthropathy"; MAP) [...] therefore, functionally interfering premature tooth contacts and occlusal interferences, as well as desmodontal pain, were not the subject of our consideration. However, this should have been clear to the attentive reader of our article [...]"

Holy science! Those stupid dentists have once again failed to understand anything! I would like to emphasise another point: Türp wrote in the article that he wanted to help court or insurance experts in particular with these quotations. On page 358 of his reply to Prof. Radlanski's letter to the editor, however, he tries to explain at length that this was not his intention. At the same time, however, he states that it is inevitable that his article will be misinterpreted or even misused by patients or payers and lawyers to discredit indicated total dental restorations. This statement alone makes it necessary for the DGFDT to provide clarification to insurance companies and experts. On the last page of his reply, Türp again cannot resist claiming that dentists deliberately provide expensive therapies that are detrimental to their patients in order to enrich themselves!

The diagnosis and treatment of occlusal disorders and the establishment of functionally adequate prosthetic rehabilitations require not only a high level of scientific knowledge of the functions of the masticatory organ, but also a high degree of dexterity and manual skill in the treatment of patients.

One background may be the establishment of orofacial pain specialists in the USA who, based on their psychosocial models, treat as many TMDs as possible with their standard procedures (with medication, splints and psychiatrists). There is a lot of money at stake. Greene and Manfredini claim that any successful occlusal treatment is based only on chance or on a placebo effect and therefore all occlusal CMD treatment should be regarded overtreatment. Articles like this appear almost every month.

They are all opinionated statements based on no or very weak scientific evidence.

### What does the reality look like?

- Phase 1/phase 2 therapy as described by Türp is not a known entity.
- The indication for comprehensive prosthetic rehabilitation is rarely based on a diagnosis of CMD.
- Of course, many comprehensive rehabilitations—based on other indications—require functional pretreatment.
- Once CMD treatment has been successfully completed, most patients continue to use their splints and return to the practice for regular check-ups, i.e. there is no comprehensive prosthetic rehabilitation unless there are important diagnoses derived from other specialties.

Dr med. dent. Diether Reusch

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## BDIZ EDI website relaunched

# Clear and well-structured

BDIZ EDI has updated its website. It now has a clearer, more contemporary look and is much more service-oriented. In the new BDIZ EDI shop you can book events and order publications very easily—and pay conveniently online!

www.bdizedi.org aims to meet the needs of its visitors and target groups, integrating the social networks used by BDIZ EDI to create synergy effects. The clean home page and navigation menu also make it easier to present the association's objectives.

### Improved user experience

To improve the site's user-friendliness, Hanover-based agency Domanetzki & Partner, Design, commissioned by BDIZ EDI, has made targeted improvements to optimise the user experience. From a more logical arrangement of elements to more responsive features, the aim was to make interaction with the site as smooth and intuitive as possible.

### Updated look

The new design is fresh and contemporary to make navigating the site even more enjoyable. The structure of the site has been revised to ensure more consistent and logical navigation. It is now easier and quicker to find what you are looking for.

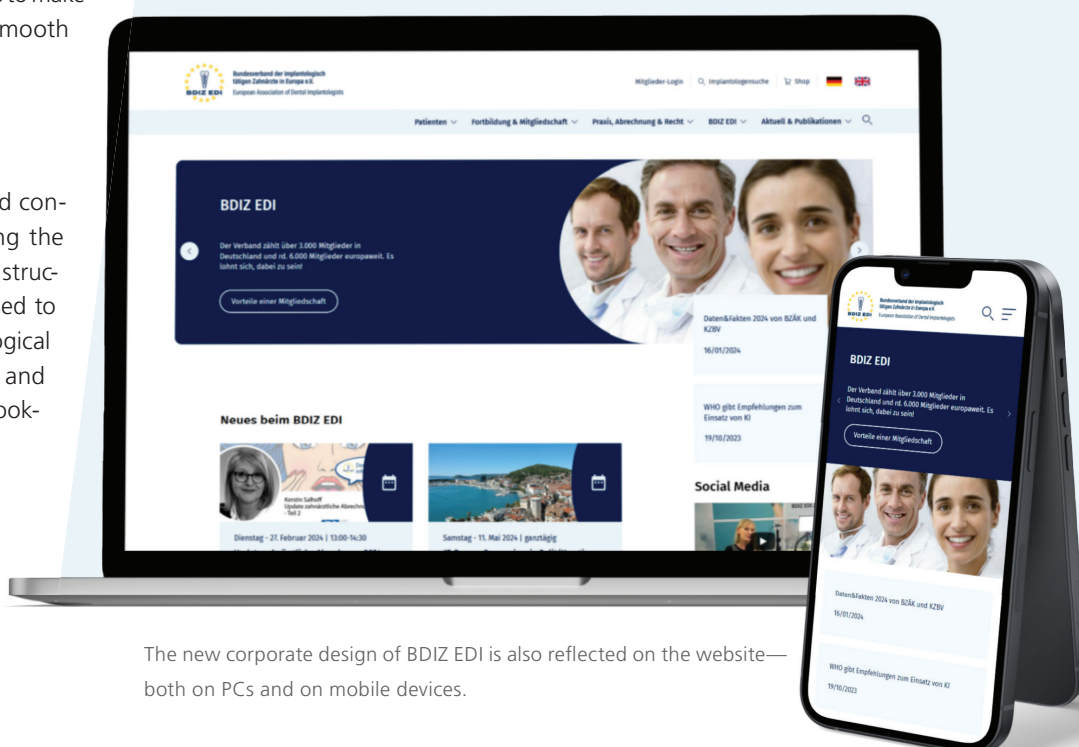
### Expanded shop

The shop area has been expanded to include not only products but also training and events—all in one place.

### PayPal as a payment method

PayPal has been added as a payment method to give users more flexibility and security when shopping. There are also plans to add more payment options in the future.

AWU



The new corporate design of BDIZ EDI is also reflected on the website—both on PCs and on mobile devices.





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Bundesverband der implantologisch  
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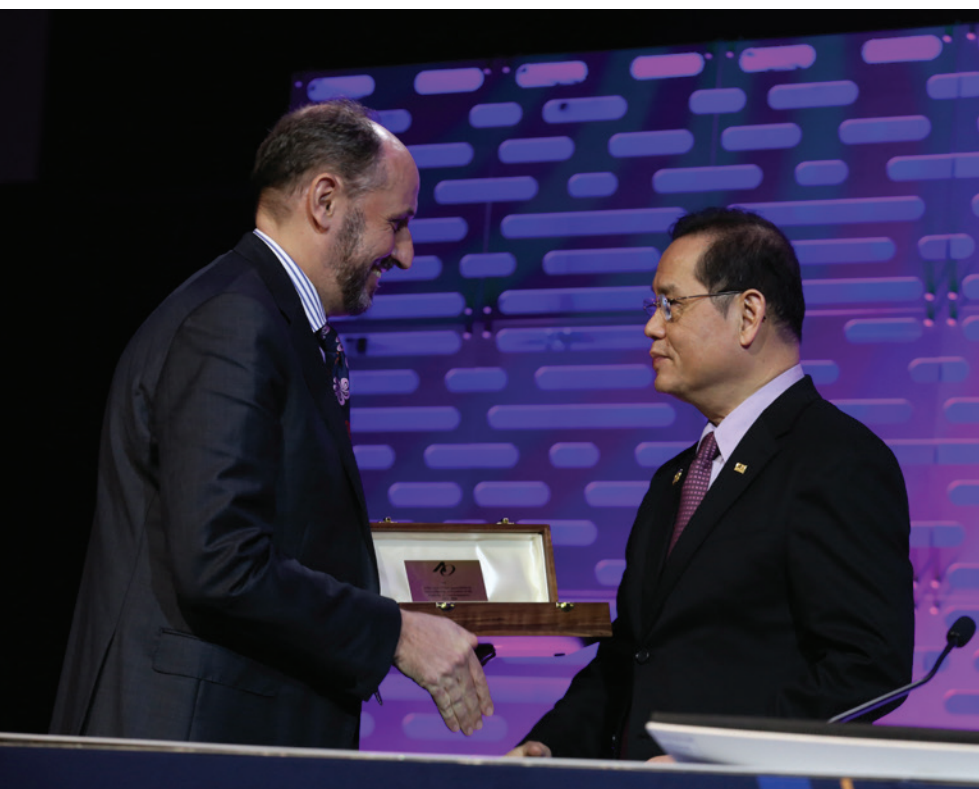
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## IN COLOGNE

## Personalia

# Prof. Jörg Neugebauer is AO President

Prof. Jörg Neugebauer, DDS, PhD, Secretary General of BDIZ EDI, was elected President of the Academy of Osseointegration (AO) at this year's Annual Meeting in Charlotte, North Carolina. This is the first time that a German dentist has led the prestigious international academy, which is based in North America. The BDIZ EDI warmly congratulates its long-standing board member.



Handover of the Presidency from Prof. Hom-Lay Wang to Prof. Jörg Neugebauer.

With this honorary position, Neugebauer crowns his dedicated work in the AO (which has more than 4,000 members in 70 countries) since 1995. It is considered one of the leading international associations in the field of oral implantology with a high degree of practical relevance.

Neugebauer initially presented his scientific findings at the Annual Meetings. In 2002, he was awarded the prize for the

best poster presentation. Since beginning his work at the University of Cologne, he has served on various AO committees and was appointed head of the Clinical Innovations Committee, which plays an important role at the Annual Meetings. He was also actively involved in the organisation of one of the international AO Summits, which take place every four years. Succeeding Prof. Hom-Lay Wang, Prof.

Neugebauer will play a key role in shaping the content of the next Annual Meeting in Seattle, Washington in 2025.

## Fostering exchange between Germany, Europe and America

The dentist and oral surgeon from Landsberg am Lech in Southern Germany has set himself ambitious goals. For example, he wants to promote the further expansion of the "OsseoAlliance", an association of specialist scientific societies operating globally, to exchange scientific findings to improve patient care in practice. This will involve not only promoting exchanges between Germany, Europe and North and South America, but also continuing the activities in Asia that were intensified by his predecessor. His honorary position as Secretary General of BDIZ EDI and his membership of various professional associations such as the EAO also serve him well. For the AO's Annual Meetings, he is planning a much more practical approach, with the aim of involving the younger generation and placing much more emphasis on digital knowledge transfer.

Neugebauer has also been heavily involved in BDIZ EDI for many years: as chairman of the Scientific Advisory Board, which is responsible for the specialist articles in *BDIZ EDI konkret* and *EDI Journal*; as moderator of the European Consensus Conference (EuCC) under the auspices of BDIZ EDI, which produces an annual



guideline for implant dentistry; and as chairman of the Quality Committee, which deals with material testing.

Jörg Neugebauer has been Professor of Digitalisation in Dentistry at Steinbeis University in Magdeburg since 2021. He is also a lecturer at the Department of Oral, Maxillofacial and Plastic Facial Surgery, Polyclinic for Oral Surgery and Implantology, Plastic, Reconstructive and Aesthetic Surgery, University of Cologne, Germany.

AWU

Inaugural speech of the new President  
in Charlotte.



## Three questions for Professor Neugebauer



***You have just become the 38<sup>th</sup> President of the Academy of Osseointegration (AO). How do you feel about taking the helm of the AO?***

When I first had the opportunity to attend an AO Annual Meeting in 1994, I was highly impressed by the professionalism of the event and the immense amount of knowledge that was presented. It never occurred to me at the time that I would be responsible for all this in the future and that I would be able to shape the direction of the Academy.

***Can you share your vision for the coming year with us?***

Over the past four decades, the AO has accumulated a great deal of knowledge at a high scientific level. My goal—not only for the 40<sup>th</sup> Annual Meeting in Seattle—is to disseminate this knowledge as well as possible and as widely as possible to practising dentists. To en-

sure that patients receive the best possible implant treatment and that those patients for whom implant therapy would be the best treatment option actually receive it. Unfortunately, many patients are still denied implant therapy because their family dentist often does not have sufficient knowledge to provide the best possible treatment.

***The AO Annual Meeting will be held in Seattle in 2025. Can you talk about the highlights of the meeting?***

Although a lot of knowledge has been gained in recent years, dentists have many, sometimes controversial, treatment options at their disposal. It is not always easy to find the right treatment in a given situation. That is why the topic is Controversies in Implant Dentistry—how to make it easy.

***Thank you very much for your insights into the AO.***



### 3<sup>rd</sup> Congress for Oral Surgery and Implantology in Skopje

# The profession first

Modern aspects in oral/implant surgery and facial aesthetics will be the topic of the 3<sup>rd</sup> Congress for Oral Surgery and Implantology with international participation to be held from 3 to 5 October 2024 in Skopje, North Macedonia.

The congress is organised by the Association of Specialists in Oral Surgery, the Albanian Implantology Associationen AIAM and the EDI of Macedonia with the working title "Modern aspects in oral/implant surgery and facial aesthetics" and the motto: the profession first.

Eminent professors from the country and abroad, professional and scientific experts from the field of oral implantology and aesthetic dentistry have been invited to the congress with international participation.

The congress is expected to be attended by more than 400 participants, specialists in oral surgery, implantologists, dentists from other dental specialties as well as other general dentists.

BDIZ EDI is associated partner of the EDI of Macedonia. Host will be Dr Fisnik Kasapi, President of AIAM and EDI of Macedonia (BDIZ EDI) and Dr Daniela Veleska-Stevkovska, President of the Association of Specialists in Oral Surgery.



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**Stephen Jacobs Obituary**

# Heartfelt farewell to a respected dentist

It is with deep sadness for the BDIZ EDI to announce that Dr Stephen L. Jacobs from Glasgow, Scotland and former President of the ADI UK passed away on 11 March 2024.

Outside his life as clinical director of Dental Fx, Dr Jacobs was perhaps best known for his pivotal role in developing implant dentistry.

His was a career defined in many ways by dental implants. From his first involvement with the modality in 1991, he swiftly came to be known as a trusted voice in the field, working as an esteemed clinician, mentor and educator over more than 30 years.

A staunch advocate of ethical care and uncompromising clinical standards, Dr Jacob's blend of compassion and honesty set him out from his peers.

His championing of standards within implant dentistry saw him work extensively with the Association of Dental Implantology (ADI) setting up committees and shaping the direction of the organisation. Dr Jacobs was president of the ADI between 2009 and 2011, but his involvement ran deep even beyond this as a near-constant presence on committees over several decades.

So passionate was Dr Jacobs that this was a theme beyond the UK as well, seeing him extensively with the renowned Academy of Osseointegration (AO).

## Highly respected

In 2016 the Academy of Osseointegration named him as a fellow—the second-ever UK clinician to receive this accolade. The AO would continue to heap praise on him, following up with an Outstanding Service Award a few short years later.

A statement from the ADI hailed Dr Jacobs as “an exceptional human being who made a positive impact on all those he met”.

It read: “Not only was Stephen a highly respected, highly regarded and celebrated colleague but also a dear friend to many at the ADI and the wider dental community. His presence brightened our lives. His kindness, dedication and smile touched us all, leaving an indelible mark in our minds and hearts”.

“A consummate professional, Stephen embodied everything the ADI stands for. His humour and endearing smile will be sorely missed. We were lucky to have him with us”.

Source: ADI UK





## Dental political New Year's reception

## Protect democracy—outlaw racism

The New Year's reception of the German Dental Association (BZÄK) and the German Federal Association of Statutory Health Insurance Dentists (KZBV) took place on 30 January at the Museum of Natural History in Berlin.



The boards of the KZBV and the BZÄK (left to right): Dr Karl-Georg Pochhammer, Dr Ute Maier, Martin Hendges, Prof. Christoph Benz, Dr Romy Ermler and Konstantin von Laffert.



BZÄK President Christoph Benz delivering his New Year's address to invited guests from the world politics and dentistry at the Berlin Museum of Natural History.

In his welcoming speech, BZÄK President Prof. Christoph Benz called for confidence in democracy. He expressed his shock at the right-wing extremist meeting that had taken place in Potsdam in November. He pointed out that our health system would be unthinkable without the great commitment of staff with an immigrant background.

He also called on federal politicians to finally tackle the many problems in outpatient care. Currently, the underfunding of periodontitis treatment in particular is jeopardising local care. If the Federal Ministry of Health wants to improve the prevention and treatment of cardiovascular diseases, it is important to finally enter into a discussion with the dental profession, as there are interactions be-

tween periodontitis and cardiovascular diseases. There is also an urgent need to restore the former attractiveness of dentistry in private practice and make it fit for the future. This requires an effective strengthening of dental and medical practices.

The BZÄK has already put forward ideas in its Warnemünde Declaration. In addition, the regulation announced by the Federal Minister of Health at the end of 2022 to effectively control outside capital and ownership in the health system must finally be tackled and excessive bureaucracy reduced. The BZÄK has submitted various proposals to this end and is open to discussion at any time.

Dr Kirsten Kappert-Gonther (Member of the Bundestag, Green Party), emphasised

that democrats must stand up for democracy together and make their voices heard. She congratulated dentistry for putting prevention at the forefront of its activities. Others, she said, could take a leaf out of its book. The treatment of periodontitis should and will be discussed.

Martin Hendges, Chairman of the Board of the KZBV, called for the budgeting system—reintroduced by the Statutory Health Insurance Financial Stabilisation Act—to be abolished once and for all. In view of the alarming situation in dental care, periodontal treatment should be immediately exempted from budget restrictions.

Source: *klartext* 1/2024, BZÄK

## Europe Ticker +++



After negotiations  
collapsed in 2021

## Switzerland and the EU resume negotiations

The European Union and Switzerland are seeking to reach a new agreement on their bilateral relations. Bern made its negotiating mandate public in mid-March, and the EU Council subsequently gave the green light. Talks are set to begin already in March. Switzerland broke off the negotiations for a framework agreement in 2021. The Swiss press is by no means in agreement on whether the new initiative is a good idea. The *Neue Zürcher Zeitung* commented: "... A close, but not too close relationship with the EU remains the most promising way forward. A pure free trade agreement along the lines of the British model is not an alternative for a country with 16 cantons bordering the EU. The status quo is being questioned in Switzerland and abroad, and relying on it is risky."

Source: Eurotopics

### EU Health Data Space

## Citizens can object to data sharing

The European Health Data Space has been adopted. Anyone who does not want their data to be included can object, with a few exceptions. In March, the European Parliament and the Council agreed to create a European Health Data Space (EHDS). The aim is to provide citizens with a digital patient file that can be accessed throughout the EU and is intended to improve care across national borders, making it easier to access prescriptions, images, laboratory tests and other data. It also provides for an opt-out from data sharing "[...] except for the secondary use of data for public interest, policy-making, statistical and research purposes." The agreement still needs to be formally adopted by both institutions before it can enter into force. "The European Health Data Space will put citizens in control of their personal health data by providing a secure framework for storing and accessing their data, which can be accessed anywhere in the EU, thus improving healthcare at national and cross-border level", said Tomislav Sokol, co-rapporteur of the Environment Committee (ENVI). "We have managed [...] to include significant additions to the protection of sensitive personal data, in particular with the possibility for patients to opt in to both primary and secondary use of their health data", said Annalisa Tardino, co-rapporteur of the Civil Liberties Committee (LIBE).

Source: heise online

### European Union

## Belgium takes over the presidency

On 1 January 2024, Belgium took over the rotating presidency of the Council of the European Union from the Czech Republic for the next six months. The motto of this event is: "Protect, strengthen, prepare". The Belgians intend to pursue the following six priorities: defending rule of law, democracy, and unity; strengthening the EU's competitiveness; pursuing a green and just transition; reinforcing the EU's social and health agenda; protecting people and borders; promoting a global Europe. Health remains an important policy area under the Belgian presidency. In particular, the Belgians want to strengthen the EU's resilience to future health threats by optimising existing crisis management tools, supporting national health systems and improving the safety of the supply of medicines. In this context, the creation of a European Health Data Space (EHDS) is to be completed and the revision of EU pharmaceutical legislation is to be continued—the two main ongoing legislative initiatives. In addition, the Belgian Presidency intends to address the shortage of healthcare professionals and to combat the shortage of medicines.

Source: European Union

6–9 June 2024 in 27 Member States

## European elections



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From 6 to 9 June 2024, some 373 million EU citizens will vote for the 720 members of the next European Parliament. The European Elections Act stipulates that elections to the European Parliament take place every five years from Thursday to Sunday. The 2024 European elections will be held in all 27 Member States from Thursday, 6 June to Sunday, 9 June. Some Member States have not yet officially announced their election dates. Preliminary results will be announced on Sunday evening. The European elections are organised according to the rules of each Member State. However, the Member States must comply with certain common provisions laid down in EU law. Among other things, the election must be based on the proportional representation system. The voting age is also set by the Member States. In most EU countries, voters can vote from the age of 18—except in Greece, where the age limit is 17, and in Belgium, Germany, Malta and Austria, where it is 16. The minimum age for standing as a candidate in the European elections is between 18 and 25. The European Parliament is the only EU institution that is directly elected by its citizens. It is therefore also the only institution that is directly accountable to the people. It can also hold the other EU institutions to account.

Source: European Parliament/EU

Evidence-based oral hygiene recommendations

## What the FDI recommends for tooth-brushing

The FDI World Dental Federation has worked with international experts to formulate evidence-based recommendations on toothbrushing methods and related behaviours for the general population. The use of electric versus manual toothbrushes, toothpastes, dental care for children and aids for interdental cleaning devices were evaluated. Where evidence was insufficient, a consensus involving FDI Standing Committees and the Council was reached to make recommendations based on best practice rather than evidence alone. The findings were published in the *International Dental Journal*.

The aim of this work was to achieve a professional consensus on toothbrushing methods and the associated oral-hygiene behaviours and to develop evidence-informed recommendations. The FDI consists of 200 national dental associations and specialty groups in more than 130 countries and is the principal representative body of more than 1 million dentists worldwide.

The consensus was that teeth should be brushed twice a day for about two minutes with a toothpaste containing fluoride, especially at bedtime. Parents should complete brushing their children's teeth until they are skilled enough to brush on their own. It is good practice to simply spit out excess toothpaste after brushing and not to rinse with water to maintain fluoride concentration levels. If a mouth rinse is used, it should be used at a time other than immediately after brushing. The effectiveness of both manual and power toothbrushes is influenced by user technique.

Regarding interdental cleaning, the data were unclear, and the panel had different opinions. It was agreed that interdental brushes, single-tuft brushes and dental floss are all options for cleaning and should be selected based on interproximal size and effectiveness within the space following professional advice.

The FDI recommends fluoridated toothpaste with an age-appropriate concentration (1,000 to 1,500 ppm for adults). The study also reflected the international variations in product availability. Higher fluoride concentrations (up to 5,000 ppm) may be useful for some patient groups (e.g. during treatment with fixed orthodontic appliances) as a supplement to home oral hygiene, according to the manufacturer's instructions.

However, for some fluoride formulations, no clear statement could be made about the caries-preventive effect because the evidence was insufficient.

Sources: [zm-online.de](https://www.zm-online.de), FDI

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Czech Republic, Bavaria, Saxony and Austria

# 3<sup>rd</sup> International Day of the Four Dental Chambers

The now 3<sup>rd</sup> International Day of the Four Dental Chambers from the Czech Republic, Bavaria, Saxony and Austria will take place on Friday, 31 May 2024, in the Bohemian town of Český Krumlov. The one-day event will take place at the venerable Hotel Růže.

The event is organised by the Czech Chamber of Dentists with President doc. MUDr. Roman Šmucler from Prague. It starts at 9 o'clock with the ceremonial opening of the presidents of the Dental Chambers. BDIZ EDI supports this event from the very beginning.

Subsequently, the one-day training programme begins with:

- MDDr. Patrik Pauliška:  
The renaissance of vertical preparation in fixed prosthetics
- MDDr. Martin Košťál:  
Back to the roots: rational pre-endodontic preparation
- Prof. Dr Karl Glockner:  
Ban on amalgam from 2025
- Christian Berger:  
Digital workflow in oral implantology according to prosthetic concepts
- Mgr. Alexandra Košťálová:  
Nutritional problems at school meals
- MUDr. Pavel Hyšpler:  
15 years of experience with L-PRF (leukocytes and platelet-rich fibrin) in the context of hard-tissue augmentation
- doc. MUDr. Roman Šmucler, CSC:  
Realistic applications of AI in dentistry
- Mgr. Ondřej Lee Stolička, Ph.D.:

The last Rosenbergs and the life of a nobleman in the Renaissance

In addition to the four Dental Chambers, the BDIZ EDI supports this event from the very beginning. The language of the congress is Czech with simultaneous translation into German. Participation fee: €340, 8 continuing education credits.

## Český Krumlov

Český Krumlov is a town in South Bohemia (Czech Republic). The bend of the Vltava River, in which the town was founded, is also reflected in its name—Chrumbenowe (krumben ouwe means crooked course or crooked peninsula). The historic old town is listed as a cultural monument on the UNESCO World Heritage List. The town was declared an urban monument reserve in 1963.

Even in prehistoric times, a traffic route coming from the Linz hilltop settlement of Gründberg led past here to the oppidum Třísov and along the Vltava River further north. Since 900 at the latest, the precious salt has been transported from the loading stations on the Danube through the Haselgraben to saltless Bohemia on

the Linzer Steig, crossing the Vltava at Český Krumlov.

As the residence of the Lords of Rožmberk, Krumlov was already a cultural and educational centre in the 14<sup>th</sup> century. In addition to the Rosenberg court, its sponsors included the Minorite and Poor Clares monastery and, since the middle of the 14<sup>th</sup> century, the town school, which had its headquarters in the Stöckl building near the parish church. Even before 1350 there were charitable institutions in Krumlov.

AWU

## At a glance

3<sup>rd</sup> International Day of the Four Dental Chambers  
Friday, 31 May 2024, from 9 o'clock  
Hotel Růže, Horní 154  
in Český Krumlov  
Participation fee €340

More information and registration:





## 7<sup>th</sup> Annual World Congress of Oral & Dental Medicine (CODM)-2024

# CODM-2024 in Budapest

The 7<sup>th</sup> Annual World Congress of Oral & Dental Medicine (CODM)-2024 will be held during 12–14 June 2024 in Budapest, Hungary. BDIZ EDI will be supporting organisation of the congress.

The congress will offer the chance to meet and hear the latest from the most prestigious researchers in the field. The scientific programme will cover a wide variety of subjects in the field of basic research, advanced technology and clinical application, providing a platform for all experts to discuss latest researches and achievements. Oral specialists, pathologists, dentists, dermatologists, dental hygienists, are all welcomed to share their common interests and passion about oral health.

### About CODM

The Annual World Congress of Oral & Dental Medicine (CODM) has been successfully organised six times in the previous years and has attracted more than 500 participants from over 30 countries and regions. It is an international event focusing on the basic research, advanced technology and clinical application, providing a platform for all experts to discuss latest researches and achievements.

### The congress

In the keynote forum on day one of the congress BDIZ EDI president Christian Berger will be lecturing on digital work-

flow in the implant practice. Day two is dedicated to the frontiers in dentistry and oral medicine and in the afternoon sessions it's all about dental implantology and oral and maxillofacial surgery. Day three will focus orthodontics and prosthodontics.

Members of the BDIZ EDI will enjoy a reduced participation fee. Hosting organisation is the World High Tech Society. Venue will be the Radisson Blu Beke Hotel, Budapest. Address: Terez Korut 43, Budapest, 1067, Hungary

### Walking from the hotel

Cultural attractions like the famous Andrassy Street and the historical castle district are within walking distance of this Budapest hotel's location. Because the hotel is close to transport options, guests can easily also explore farther afield. While you're here, don't miss a performance at the Hungarian State Opera House, about ten minutes away by foot. Or, mingle with the locals on Margaret Island, a scenic park in the middle of the Danube. Check out some of suggestions for nearby attractions below.

### At a glance

7<sup>th</sup> Annual World Congress  
of Oral & Dental Medicine

CODM-2024 in Budapest  
12–14 June 2024  
Venue: Radisson  
Blu Beke Hotel

More information:



AWU



# Did you ever know...

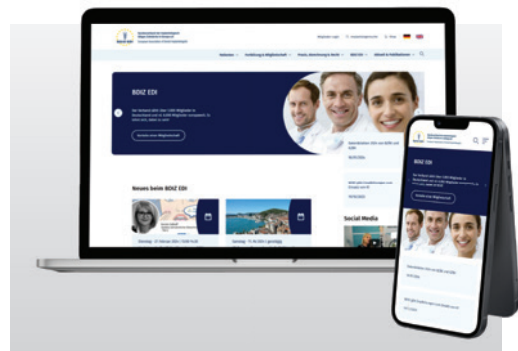
## ...that BDIZ EDI has revised its logo?

The aim was to refresh and modernise rather than to eliminate the most characteristic features. The most significant change is to the lettering, which had been criticised, often quite vociferously, because the "old" lettering got blurred to the point of illegibility when the logo was rendered at a smaller size. Members can order the logo free of charge from the BDIZ EDI shop on our website for use on their practice website or for their practice sign from the BDIZ EDI online shop. The new logo is available in an English and a German version.



## ...that BDIZ EDI has redesigned its website at [www.bdizedi.org](http://www.bdizedi.org)?

The new design is fresh and contemporary to make navigating the website even more enjoyable. The structure of the website has been revised to ensure more consistent and logical navigation. It is now easier and quicker to find what you are looking for. Both publications and events can now be booked in the BDIZ EDI Shop. PayPal has been integrated as an additional payment method to offer users more flexibility and security when shopping. There are also plans to add more payment options in the future.



## ...that BDIZ EDI will hold its 17<sup>th</sup> European Symposium in Split, Croatia?

The title this time is: "Today's implantology—what is new, what is reliable?" The symposium, which will be preceded by a workshop, will be held on 10 and 11 May 2024 at the Hotel Ambassador in Split. For the seventeenth year now, BDIZ EDI will continue its proven concept of holding training courses outside of Germany. This concept contributes to the exchange of ideas within Europe. The programme is available online at [www.bdizedi.org](http://www.bdizedi.org).

Register online now for the 17<sup>th</sup> European Symposium!





# CERAMIC IMPLANTS STATE OF THE ART

8<sup>TH</sup> ANNUAL MEETING OF

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**3-4 MAY 2024  
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17<sup>th</sup> European Symposium in Split, Croatia, 10–11 May 2024

# Implantology under the Mediterranean sun

The 17<sup>th</sup> BDIZ EDI European Symposium will be held in Croatia, in the beautiful Mediterranean setting of Split on the Dalmatian coast. BDIZ EDI will once again organise the European Symposium in the historic city on the Croatian Mediterranean coast, this time at the Hotel Ambassador, close to the harbour.

For the 17<sup>th</sup> year running since the European Symposium was founded, BDIZ EDI is continuing its proven concept of offering training courses abroad at fair prices. This concept contributes to the exchange of ideas within Europe. The programme is available below or online at [www.bdizedi.org](http://www.bdizedi.org). Training courses can now also be booked quickly and easily online.

## Topic

The list of speakers is just as international as the expected audience. There will be speakers from Germany, Croatia and the Czech Republic. The symposium will be held in English. Topic: "Today's implantology—what is new, what is reliable?"

## Programme

Friday will begin with the workshop by BDIZ EDI board member Dr Markus Tröltzsch: "Digital workflow in implant dentistry". The symposium on Saturday, 11 May 2024, will focus on digital surgical support, artificial intelligence in medicine and dentistry, prosthetic solutions on implants, immediate implant placement in the anterior region, reliable bone grafting, digital augmentation techniques.

## Speakers

The President of BDIZ EDI and a representative of the Croatian Dental Association will welcome the participants to the one-day congress. Renowned speakers will participate: Dr Markus Tröltzsch (Ansbach, Germany), Dr Erion Çerekja (Tirana, Albania), Prof. Roman Šmucler (Prague; President of the Czech Dental Association), Dr Juraj Brozović (Split, Croatia), Dr Hrvoje Starčević (Zagreb, Croatia) and Dr Amely Hartmann (Filderstadt, Germany).

## Procedure

The symposium will be accompanied by a dental exhibition, and of course there will be an opportunity for discussion with the speakers after each presentation. Two coffee breaks and lunch will be provided. A get-together with all participants, speakers and dental exhibitors will take place after the event.

## The venue—Mediterranean and historic

The Hotel Ambassador was only completed in 2023 and offers a pleasant atmosphere for hotel guests and event participants. It is located by the Split harbour, right in the centre of the city.



Many of the city's attractions are within walking distance. A stroll through the old town of Split will certainly be a highlight of this May weekend for the participants of the 17<sup>th</sup> European Symposium.

The workshop and symposium can be booked separately or in combination at a very reasonable price. A total of 12 CE points will be awarded for both events. The hotel has reserved a limited number of rooms for participants. Single rooms are €230, double rooms are €250. Breakfast is included. Rooms should be booked directly with the hotel by e-mail, quoting "BDIZ EDI":  
srdjana.donadic@ambassadorsplit.com

### Interested in exhibiting?

Dental companies interested in exhibiting at the dental exhibition are still welcome to register. The contact person is Anita Wuttke, e-mail: [office-munich@bdizedi.org](mailto:office-munich@bdizedi.org)

## Register now

### 17<sup>th</sup> European Symposium

Today's implantology—  
what is new, what is reliable?

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

10–11 May 2024

Hotel Ambassador, Split

The symposium will be held  
in English.

12 CE points

### WORKSHOP

on 10<sup>th</sup> May 2024

3 to 6 p.m.

Digital workflow in implant dentistry

Dr Dr Markus Tröltzsch 4 CME points

### SYMPOSIUM

on 11<sup>th</sup> May 2024

9 a.m. to 6.30 p.m.

Today's implantology - what is new, what is reliable?

Congress language: English 8 CME points

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but NLT 10 April 2024

to Email: [srdjana.donadic@ambassadorsplit.com](mailto:srdjana.donadic@ambassadorsplit.com)



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### FRIDAY, 10 May

3.00 – 6.00 p.m. **Digital workflow in implant dentistry**  
Dr Dr Markus Tröltzsch

### SATURDAY, 11 May

09.00 – 09.15 a.m. **Opening ceremony**  
Christian Berger | President BDIZ EDI  
Dr Hvroje Pezo | President of CDC

09.15 – 10.00 a.m. **Digital assisted surgery -  
where are we now?**  
Dr Dr Markus Tröltzsch | Ansbach/Germany

10.00 – 10.45 a.m. **Prosthetic solutions on dental implants**  
Dr Erion Cerekja | Tirana/Albania

10.45 – 11.00 a.m. Discussion  
11.00 – 11.30 a.m. Coffee break / Dental exhibition

11.30 a.m. – 12.15 p.m. **Artificial Intelligence in medicine  
and dentistry**  
Professor Dr Roman Smucler | Prague/Czech Republic

12.15 – 12.30 p.m. Discussion  
12.30 – 01.45 p.m. Lunch break / Dental exhibition

01.45 – 02.30 p.m. **Immediate implants  
in the frontal region**  
Dr Hrvoje Starcevic | Zagreb/Croatia

02.30 – 02.45 p.m. Discussion  
02.45 – 03.15 p.m. Coffee break / Dental exhibition

03.15 – 04.00 p.m. **Reliable bone transplantation  
in dental implantology**  
Dr Juraj Brozović | Split/Croatia

04.00 – 04.45 p.m. **Digital augmentation procedures**  
Dr Amely Hartmann | Filderstadt/Germany

04.45 – 05.00 p.m. Discussion and conclusion  
05.00 – 06.30 p.m. Get-together





### European Court of Justice in Case C-606/21—Doctipharma

# Distance selling of medicinal products without a prescription

The ECJ clarified the conditions under which a Member State may prohibit a service connecting pharmacists and customers for the online sale of medicinal products.

Until 2016, Doctipharma operated a website on which it was possible to purchase pharmaceutical products and medicinal products not subject to prescription from pharmacy websites. In practical terms, the Doctipharma website made products available via a pre-registered catalogue. Customers selected the medicinal products and their order was then sent to the pharmacies whose websites were hosted by Doctipharma.

## Not qualified pharmacists

Payment of the purchase price was made via a single payment system common to all pharmacies, using a dedicated account. The Union des groupements de pharmaciens d'officine (Union of Pharmacy Groups, "UDGPO") challenged the legality of that website: in its view, the service provided by Doctipharma via its website involved the latter in the e-commerce of medicinal

products and was therefore contrary to national legislation prohibiting the sale of medicinal products by persons not qualified as pharmacists.

The Court of Appeal, Paris (France) asks the Court of Justice, first, whether Doctipharma's activity is an information society service and, secondly, whether EU law allows Member States to prohibit the provision of such a service, which consists in connecting, by means of a website,



vice of connecting dispensing pharmacists and potential patients for the sale of medicinal products falls within the concept of an "information society service" within the meaning of EU law.

In its judgement, the Court holds as follows:

- Where the service provider who is not a pharmacist is considered to be selling medicinal products not subject to prescription itself, the Member State in whose territory it is established may prohibit the provision of that service.
- By contrast, where the service provider concerned merely connects sellers and customers by means of a service that is specific to and distinct from the sale, Member States may not prohibit that service on the grounds that the company concerned is involved in e-commerce for the sale of medicinal products without having the status of pharmacist.

While the Member States alone are competent to define the persons authorised or entitled to sell medicinal products not subject to medical prescription to the general public at a distance by means of information society services, they must

also ensure that medicinal products are offered for sale to the general public at a distance by means of information society services and cannot therefore prohibit such a service for medicinal products not subject to prescription.

#### Note

A reference for a preliminary ruling allows the courts and tribunals of the Member States, in disputes which have been brought before them, to refer questions to the Court of Justice about the interpretation of European Union law or the validity of a European Union act. The Court of Justice does not decide the dispute itself. It is for the national court or tribunal to dispose of the case in accordance with the Court's decision, which is similarly binding on other national courts or tribunals before which a similar issue is raised.

Source: Press release of the ECJ  
on 29 February 2024

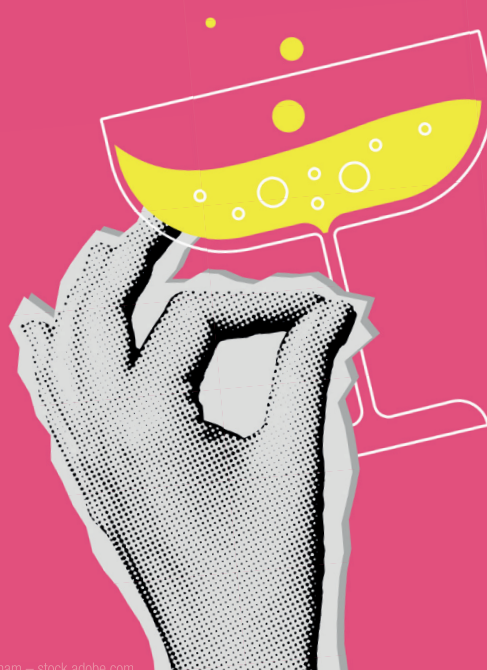
pharmacists and customers for the sale, via the websites of pharmacies that have subscribed to the service, of medicinal products not subject to prescription. In that regard, the Court states that the ser-

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# Guided immediate implant placement in the anterior zone

Dr Gian Battista Greco, Italy

Implant surgery with post-extraction positioning and immediate loading represents a reliable and desirable treatment in relation to comfort and a reduction of the number of surgical procedures.



**Fig. 1:** Initial situation. **Fig. 2:** Situation after prosthesis removal—vestibular view. **Fig. 3:** Situation after prosthesis removal—occlusal view.

On the other hand, the possibility of maintaining dental elements is always preferred, especially in younger patients and in patients with a poor systemic clinical condition. In some cases the evaluation of the cost-benefit ratio, the prognosis and the clinical condition of the patient allows a multidisciplinary approach (e.g. orthodontic-surgical)<sup>1</sup> which can guarantee a significant improvement in the prognosis of the prosthetic treatment by giving new life to dental elements partially compromised.

In other cases, a careful assessment of the patient's clinical and functional condition, combined with their wishes, can push the clinician and the patient to prefer this type of implant rehabilitation in total safety.

The use of guided surgery in the aesthetic sector reduces the margin of error in implant placement and allows the clinician to focus more on the reconstructive procedures that are often associated with this type of treatment.<sup>2</sup>

## Patient history

A non-smoker and systemically healthy 72-year-old female came to our clinic complaining of pain and swelling in correspondence with the tooth #12 and mobility of the four-unit bridge 12–22 (Fig. 1).

After removing the prosthesis, a pathological condition of the three roots appeared, with caries and coronal fractures (#12 and #21). Site 11 was edentulous and volumetrically resorbed (Figs. 2 & 3).



## Treatment plan

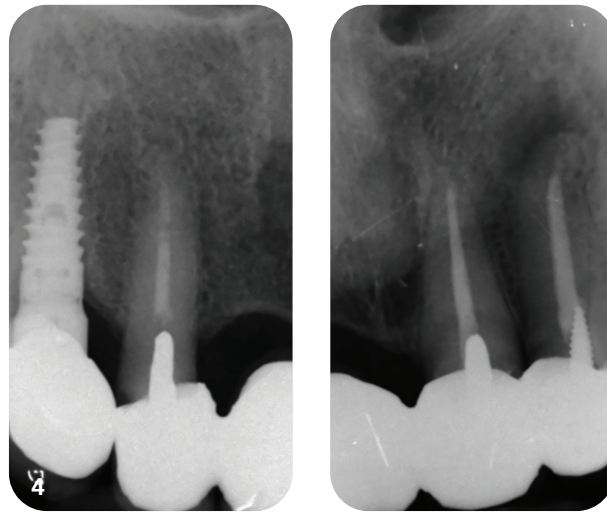
After performing periapical radiographs and a cone beam CT (Fig. 4), two treatment hypotheses were formulated. The first involved the maintenance of the three roots through a multidisciplinary orthodontic and surgical approach, aiming to obtain a conservative restoration.

The second treatment plan involved the extraction of the three roots and post-extraction guided implant insertion with immediate loading to support a new four-unit bridge.

After considering the orthodontist's opinion and evaluating all aspects, especially with regard to prognosis, the patient chose the immediate implant treatment.

## Surgical procedures

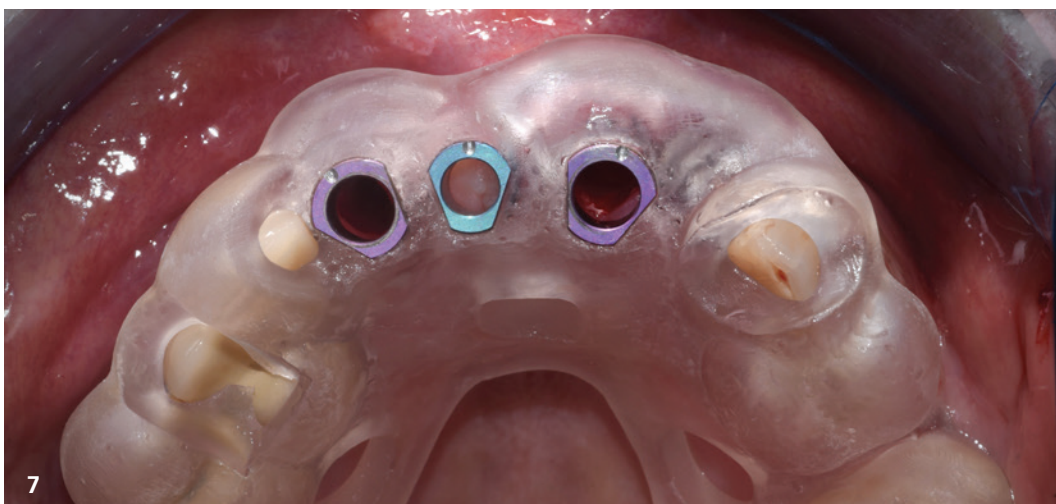
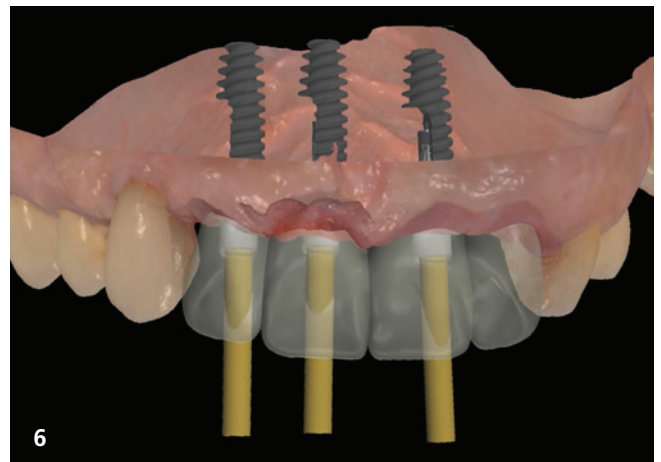
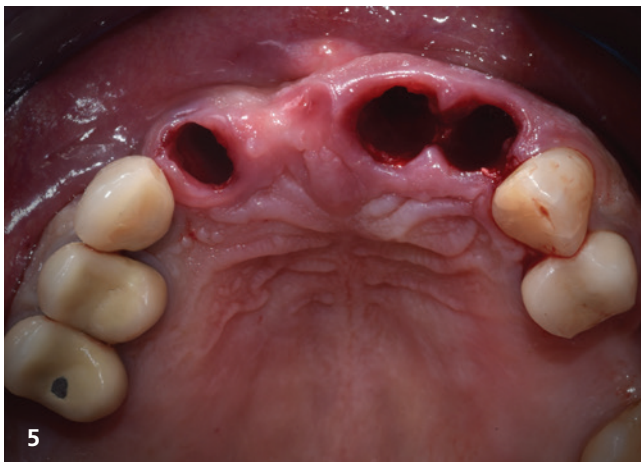
The surgery performed under local anaesthesia began with the atraumatic avul-



**Fig. 4:** Preoperative periapical X-ray.

sion of the three incisors (Fig. 5) and the application of the dental-supported surgical guide (Fig. 7; INTEGRAL, Anthogyr). The planned positions were #12 (post-extraction), #11 (healed and resorbed bone crest) and #21 (post-extraction; Fig. 6).

It was decided not to place the implant in position #22 as it was not necessary for the prognosis and for the presence of an endodontic lesion that made the alveolus even deeper: the possibility of obtaining a sufficient implant stability was doubtful.

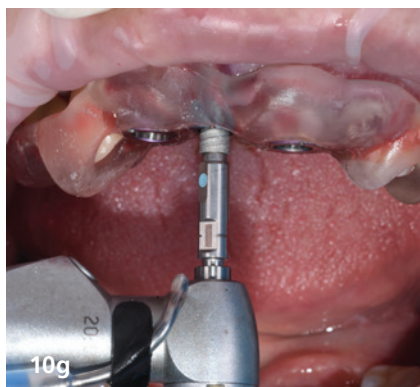
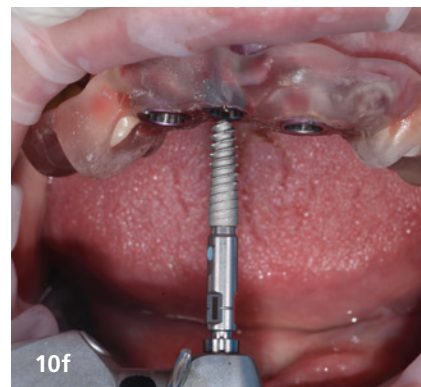
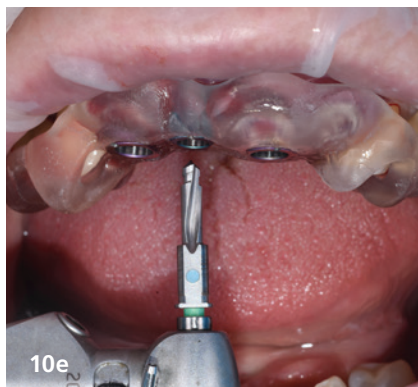
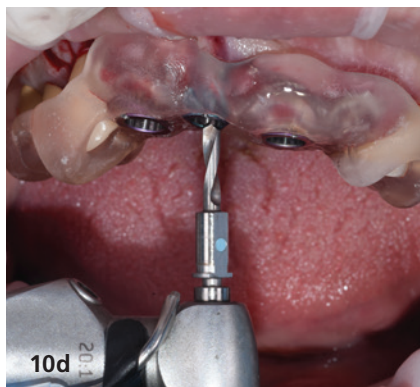
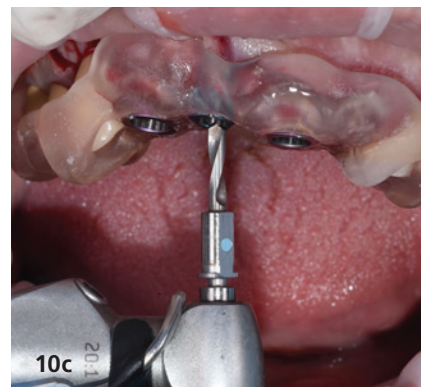
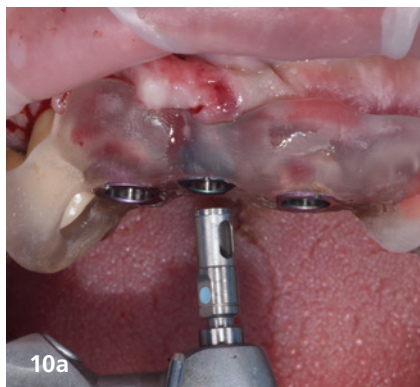
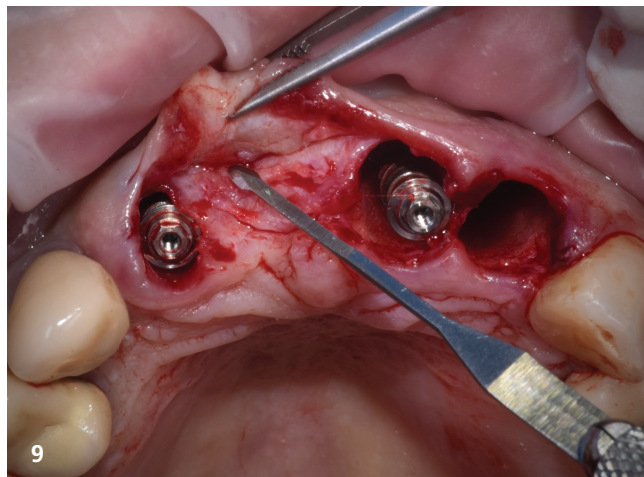
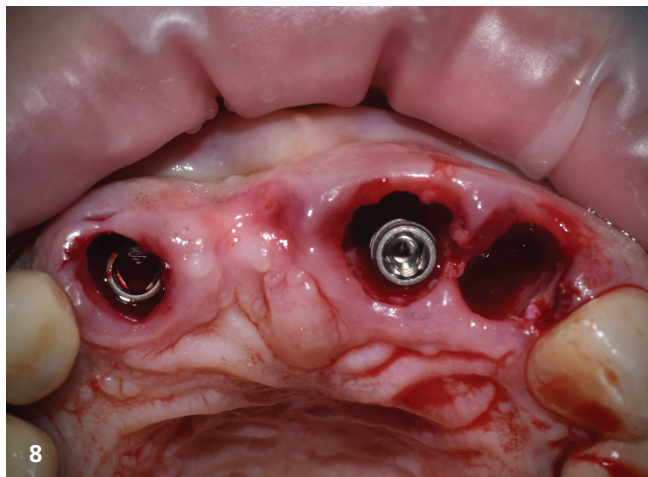


**Fig. 5:** Occlusal view of the extraction sockets.

**Fig. 6:** Implants planification.

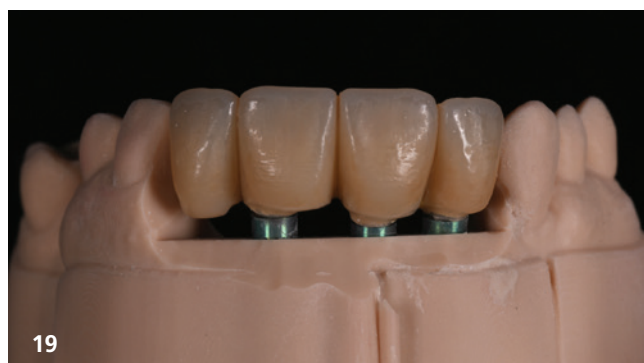
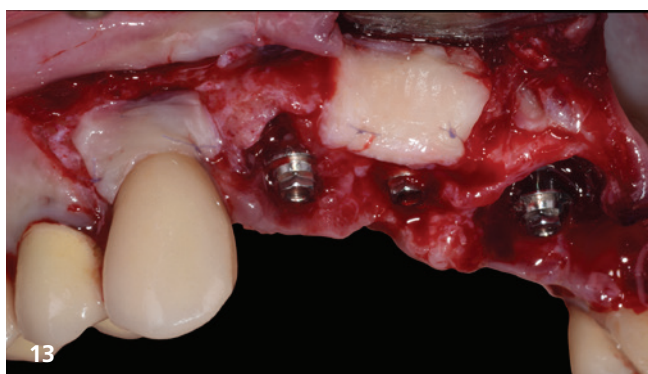
**Fig. 7:** Integral guide, occlusal view.





**Fig. 8:** Occlusal view of the two 4 x 14 mm implants in sites. **Fig. 9:** Flap elevation. **Figs. 10a–g:** Integral drilling protocol for a 3.4 mm diameter implant: (a) Tissue punch, (b) bone mill, (c) initial drill, (d, e) step drills, (f, g) implant placement. **Fig. 11:** Easy handling of the multi-unit abutment with its specific holder. **Fig. 12:** Tightening of the multi-unit abutments.





The chosen implant was Axiom X3®, a bone-level implant with conical connection, and self-tapping (Fig. 10f). The osteotomies of the two post-extraction sites (#12 and #21) were performed in a flapless approach; two implants with diameter 4 and length 14 were inserted into two purple sleeves. The bone density in the two sites, diagnosed by the cone beam CT and perceived during the osteotomies, was D4 for site #12 and D3/D2 for site #21.

According to the Axiom X3® insertion protocol, an undersized osteotomy was adopted: the last drill used for site #12 was the 2–2.4 mm (green) and for site #21 the 2.4–3 mm (red), respectively obtaining a torque of insertion of 45 Ncm and 52 Ncm (Fig. 8).

A half-thickness flap from #13 to #21 was then elevated (Fig. 9): the surgical guide was reapplied, an implant with diameter 3.4 and length 12 was inserted in site #11 into a blue sleeve (Ø 3.6 mm). The perceived bone density was D3/D2 and the last drill used was therefore the 2–2.4 mm (green); the torque obtained was 55 Ncm (Figs. 10a–g). The INTEGRAL guided surgery system is very comfortable to use, as no spoon or wrench are necessary to guide

**Fig. 13:** Connective tissue grafts sutured to the buccal periosteum.

**Fig. 14:** Digital impression. **Fig. 15:** Provisional prosthesis delivered in 24h. **Fig. 16:** First provisional prosthesis in mouth. **Fig. 17:** Emergence profiles four months after surgery.

**Fig. 18:** Optimised provisional prosthesis *in situ*. **Fig. 19:** Optimised provisional prosthesis on the model.



the drills and it allows single-handed procedures.

Once connected, the multi-unit abutments (0°, platform diameter 4 mm) were tightened to 25 Ncm using the Anthogyr dynamometrical wrench to obtain the conical coupling (Figs. 11 & 12).

We then proceeded with the grafting of the jumping distance of sites 12 and 21 and of socket #22: hemocollagen (Septodont) apically and Xenograft (Straumann) coronally (Fig.13). Thanks to a bilaminar grafting technique by palatal removal of de-epithelialised epithelial-connective tissue, the volume deficit was then corrected in the vestibular #11 and apical to the prosthetic crown #13 (pre-existing implant)<sup>3,4</sup> finally the flap was advanced coronally.

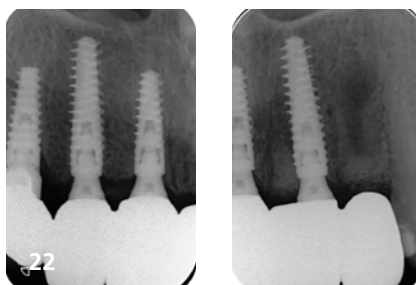
After the surgery was completed, an intra-oral scan (3Shape) was performed for the construction of a provisional which was delivered to the patient within 24 hours (Figs. 14–16).

After four months, the emergence profiles were optimised with small additions of flowable composite (Fig. 17) and at five months the optimised provisional (Figs. 18 & 19) was screwed onto the initial working model, once the false gingiva was removed and scanned to duplicate the shape and emergence profiles. A four-unit bridge screwed in zirconia was then created (vestibular ceramic veneering, cemented on stock abutment for MUA; Figs. 20–24).

## Conclusion

The treatment plan performed was carried out without any surgical or prosthetic complications.

The accuracy of implant placement<sup>4</sup> and the achievement of an adequate stability in the absence of excessive stress on the bone tissue are two very important factors for this type of treatment: the guided surgery system used (INTEGRAL, Anthogyr) associated with an implant with a modern and performing design (Axiom X3®, Anthogyr) facilitated the achievement of a satisfactory result for the team and for the patient.



**Fig. 20:** Final zirconia restoration. **Fig. 21:** Final zirconia restoration *in situ*. **Fig. 22:** Periapical X-rays five months after surgery. **Fig. 23:** Final smile. **Fig. 24:** Before/after situation.

### Author details



### References



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+39 02 4452754

info@dentalnarco.com

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## Customised, digitally manufactured subperiosteal implant for the treatment of a completely edentulous atrophic maxilla

# A case report on a new minimally invasive SP4 implant design

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The rehabilitation of atrophic jaws with implant-supported fixed restorations and immediate loading is still a challenge today. The aim of this clinical case is to present an innovative protocol for the treatment of advanced atrophic jaws with a new generation of subperiosteal implants manufactured using modern digital technology.

A case of extreme bone atrophy in the maxilla due to failure of the osseointegrated implant was treated. This article focuses on illustrating the use of a new minimally invasive subperiosteal implant design (3Dfast). All phases of the protocol from CBCT scan to immediate loading are described in detail. This case supports the use of fully customised subperiosteal implants as a minimally invasive and reliable alternative for the dental rehabilitation of atrophic, completely edentulous cases. Despite this single case demonstrating the efficacy of the protocol, further long-term studies with large numbers of patients are needed to confirm the findings so far.

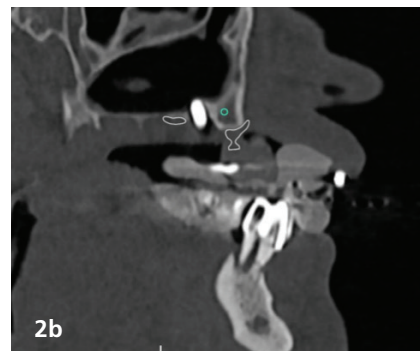
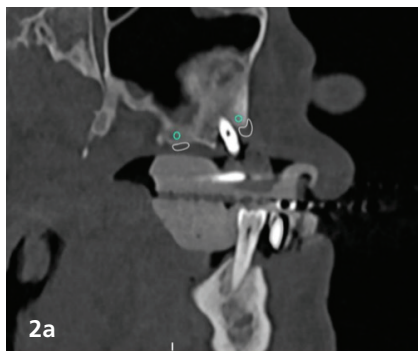
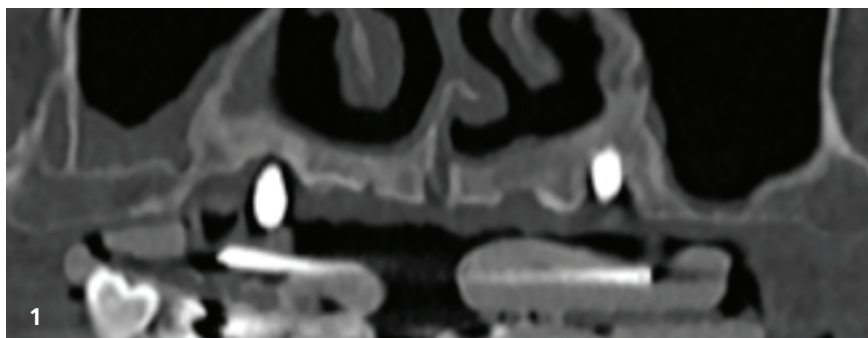
## Introduction

The restoration of atrophic jaws with implant-supported fixed dentures still represents a clinical challenge today. Many techniques have been described in the literature to solve this problem. Reconstructive procedures such as autogenous bone grafting or guided bone regeneration<sup>1</sup> are frequently used. However, autogenous bone grafting requires a second surgical procedure,<sup>2</sup> which involves additional morbidity,<sup>3</sup> and immediate loading is not always recommended,<sup>4</sup> plus the patient

must wear a removable denture for a long period of time, e.g. more than one year.

However, we must consider that the surgical procedure requires general anaesthesia and hospitalisation. Guided bone regeneration, especially the vertical one,

is often only possible to a limited extent and is also associated with possible complications in completely atrophied jaws.<sup>5</sup> Both techniques require several months for the graft to heal.<sup>6</sup> Alternative techniques for the rehabilitation of atrophic jaws, such as tilted implants<sup>7</sup> and zygo-

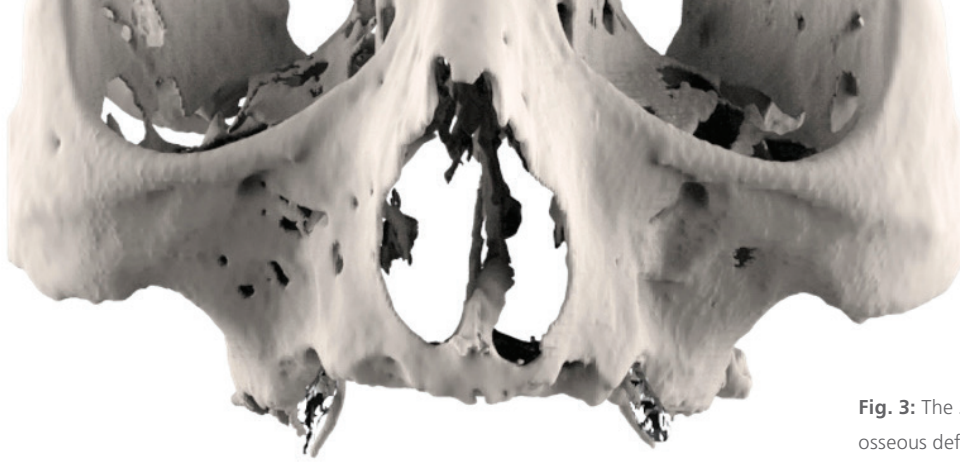


**Fig. 1:** Panoramic X-ray derived from a 3D scan shows class 5/6 Misch classification of bone atrophy.

**Fig. 2:** CBCT shows two existing osseointegrated implants that have failed due to advanced peri-implantitis.



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**Fig. 3:** The 3D rendering shows two deep intra-osseous defects around the existing implants.

matic implants,<sup>8</sup> seem to provide stable long-term results. Atrophic jaws have anatomical changes that increase the risk of injury to important structures, so that special surgical skills are required during surgery.

Zygomatic implants can often be performed under general anaesthesia, depending on the surgeon's experience and the patient's condition. A favourable zygoma bone is essential to support the implant.<sup>8</sup> In addition, complications such as late lateral exposure and peri-implantitis are difficult to manage during healing and the unavoidable removal of the implant is a distressing solution. In a severely atrophied jaw, the use of short implants is still controversial.<sup>9</sup>

Other techniques such as the sinus lift,<sup>10</sup> the lateralisation of the inferior alveolar nerve<sup>11</sup> or the osteogenic distraction<sup>12</sup> have shown varying results in the literature. Customised subperiosteal implants suitable for both maxillary atrophy and mandibular bone deficits<sup>13–15</sup> are again being considered as a solution for the rehabilitation of atrophic jaws, and several protocols have been developed for subperiosteal implant techniques.

## Case report

In March 2021, a 67-year-old patient with advanced bone loss of the maxilla was referred to our department for surgical treatment with final implant-supported fixed rehabilitation. The evaluation of the diagnostic CBCT (3D accuitomo 170, Morita) showed an advanced atrophy both in the premaxilla and in the area of the maxillary sinus. Furthermore, two conventional osseointegrated implants with advanced peri-implantitis were already in place and were to be removed during the implant surgery (Figs. 1 & 2).<sup>18</sup>

The image confirmed the advanced bone resorption and the deeper bone defects around the existing osseointegrated implants (Fig. 3). The main exclusion criteria (heavy smoker, recent cancer treatment and bruxism) were considered to admit the patient for the surgical procedure.

Conventional surgical treatments such as bone grafting and zygomatic implants have been clearly explained in terms of the risk of failure and complications. Graft resorption, delayed lack of osseointegration and stability achieved, morbidity and duration of treatment including the need to wear a temporary conventional removable prosthesis for a long period of time prior to implantation were explained to the patient.

Regarding the zygomatic approach, all surgical aspects, including the necessary skills of the surgeon to avoid surgical risks, the delayed complications such as sinusitis with infection and/or implant loosening and peri-implantitis<sup>17,18</sup> were clearly explained. Finally, a detailed discussion was dedicated to the customised subperiosteal implant option.<sup>20</sup> The 3D visualisation and a prototype of the implant were very useful to correctly describe the surgi-

cal procedure to the patient and are always necessary to make the final decision.

The detailed follow-up of the conventional options in comparison with the customised digitally fabricated implants has been discussed.<sup>21</sup> A minimally invasive procedure combined with immediate loading can be a big advantage of this innovative approach, which is why the patient considered a subperiosteal implant to be the preferred option and signed a special informed consent form for the treatment.

## Materials and methods

After a conventional wax-up, a radiographic scan prosthesis was delivered for a preoperative CBCT. During the scan, the patient was wearing a relined original appliance in occlusion labelled "3D bite" within the markings for the digital alignment of the images obtained from the radiographs (Fig. 4). The reference points also help in the alignment between the 3D rendered volume of the anatomy and the model obtained from the scanning (lab-based or intra-oral) of the upper and lower dentition and the 3D bite.

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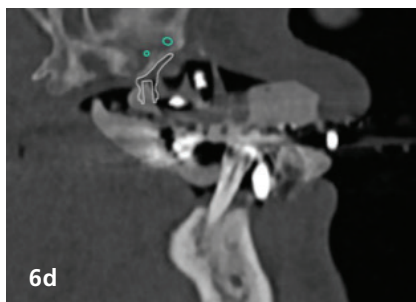
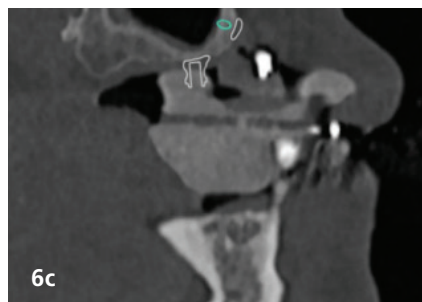
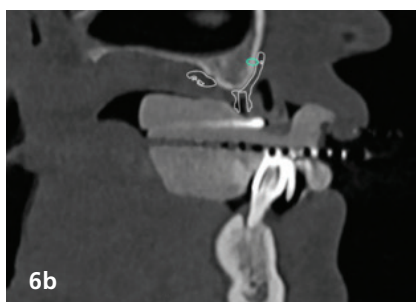
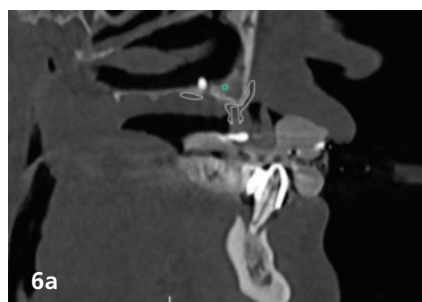
**Fig. 4:** The original bite, called the "3D bite", within the radiopaque markers is used during the CBCT acquisition to obtain the alignment between the rendering from the CBCT and the STL from the models.



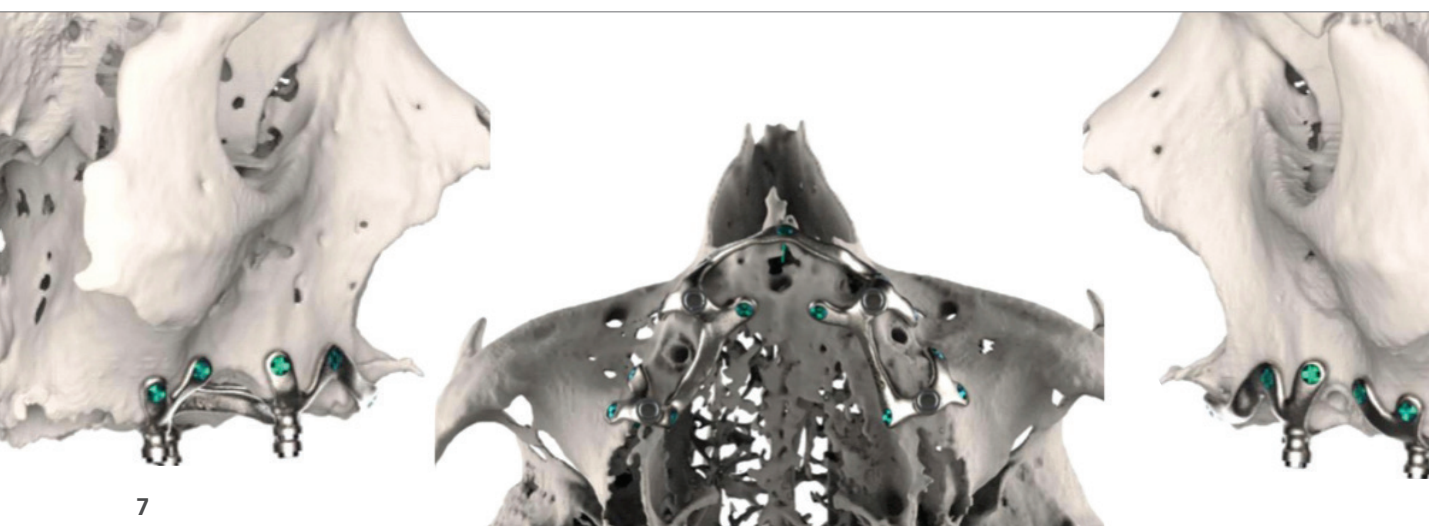
Using the Real Guide platform (3DIEMME Bioimaging Technologies), the clinician can interactively place the abutment from an existing library. According to our protocol and as suggested and previously published by Dr Linkow, the prosthetic position corresponds bilaterally to the first molar and the canine, which is why we named the implant "SP4" (Figs. 5 & 6). The plan was then sent to the 3Dfast company (3Dfast) to be uploaded with specialised software (Freeform, Artec 3D) and the implant has been designed.

All details are controlled by a haptic device. Therefore, our protocol works in a completely digital environment. The pre-positioned abutment, which corresponds to the anatomical abutment of the maxilla, is the main reference for the design of the implant. The positioning of the screws is the first step before the contours of the primary and secondary strips are defined (Fig. 7).

All screws are planned in length and direction according to anatomy such as the sinus and nasal cavity, the mental nerve and adjacent teeth (Fig. 8). The positioning of the screw according to the nasal spine,



**Fig. 5:** Using the real guide platform from the existing library, the prosthetic connections are placed in the design. **Fig. 6:** The four connectors must be placed according to the anatomical pillar of the maxilla: canine and first molar bilaterally. **Fig. 7:** The positioning of the screws is the first step to start the implant design.





which is another pillar of the maxillary anatomy, is key to predicting the stability of the implant after loading over time. This is another important detail that has been described and published by Dr Linkow for several years. The final file with all the details is then sent digitally to the laser sintering machine (Sint & Mill, Spring Engineering).

The subperiosteal implant is then sent to post-production management and finishing (TRUMPF). The platforms are microscopically machined, and the surface is chemically and mechanically treated to obtain a smooth texture on the outside and limited roughness on the inside of the implant body.

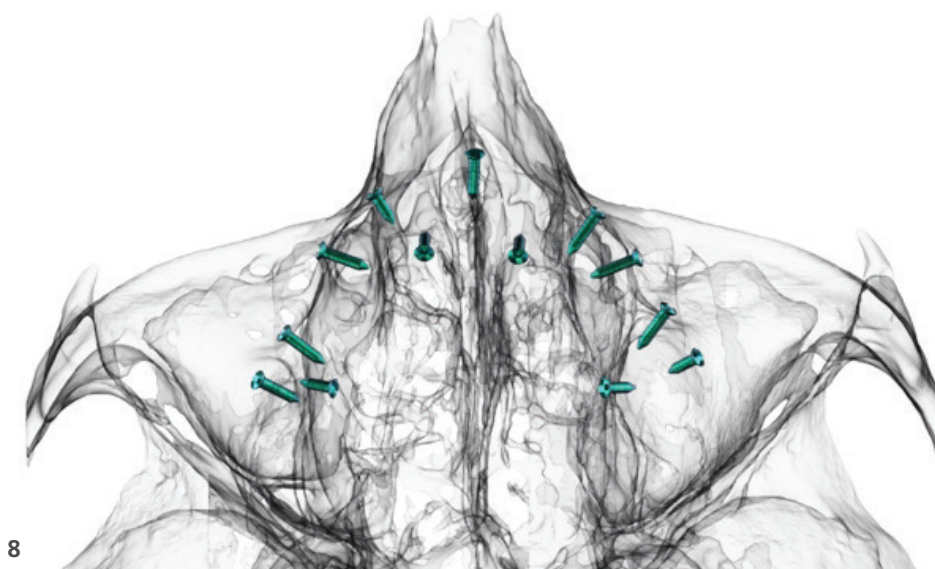
Ten to fifteen days are sufficient for delivery of a package containing:

- a “3D flap” to guide the incision
- a replica of the anatomy
- a prototype of the implant
- a subperiosteal implant
- a “3D bridge stabiliser” to facilitate the placement of the implant and correctly perform an efficient immediate loading
- the temporary bridge digitally made of PMMA (Fig. 9)

All surgical devices are autoclavable because they are made digitally from layers of polyamide (HD Printer). The company produces the bar structure using a laser sintering process with a chromium/cobalt alloy to ensure the accuracy of the passive fit between the implant platform and the temporary bridge.

The clinician can choose to receive only the STL file from the company to send to the trusted dental technician to fabricate the temporary bridge using the in-lab prosthetic digital process.

Six months later, in case of infection or mobility, the clinician can finalise the case using conventional prosthetic procedures. Finally, we would like to point out that the implant can initially be made with a prosthetic connection for a cemented restoration. Our suggestion is to limit this use, if desired, to partially edentulous rehabilitations.



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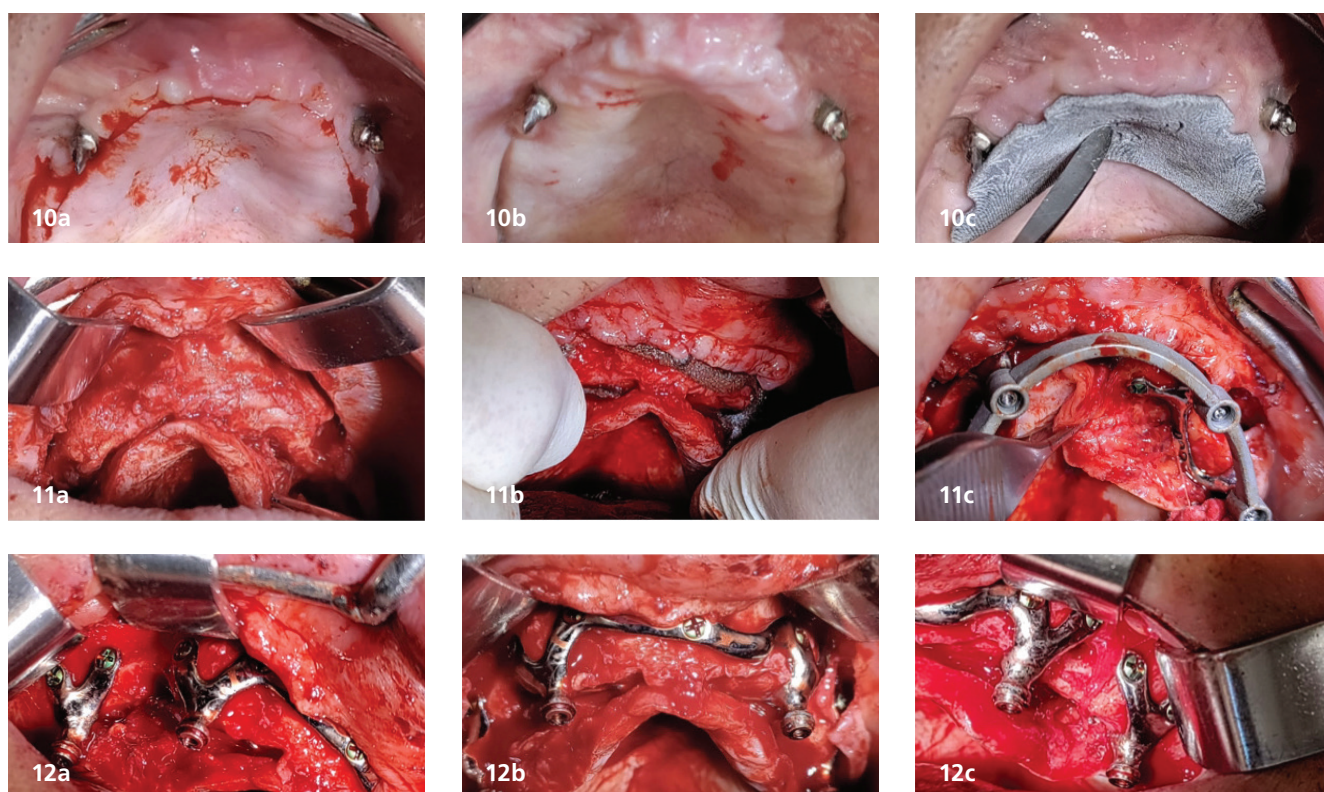
**Fig. 8:** All screws are digitally placed according to the anatomy to avoid the risk of damaging adjacent structures. **Fig. 9:** The package contains six different devices: the 3D flap for the incision, the replica and prototype of the implant for conservative bone exposure, the stabiliser 3D bridge for implant placement and immediate loading, and the provisional to simplify and shorten the loading protocol.

## Surgical protocol

The procedure can be performed without hospitalisation and conventional local anaesthesia is always sufficient for the entire procedure. Intravenous sedation is recommended for anxious patients. Antibiotics (amoxicillin) three times a day for ten days, cortisone (Bentelan) twice a day for three days and chlorhexidine rinses are prescribed. Cortisone injection is also recommended at the time of surgery, both locally and intravenously, to avoid swelling and consequent traction of the stitches. After infiltration with articaine with adrenaline 4% (Pierrel), a complete flap is precisely designed using the “3D Flap” device (Fig. 10). The incision line follows the previously planned position of the emergence of the prosthesis platform, allowing efficient repositioning of the soft tissues during suturing. This approach is important

to avoid dangerous vertical incisions. The entire flap is reflected to expose only the portion of bone required for implant placement. The sterilised implant prototype is essential in this part of the procedure to minimise bone exposure and preserve its natural vascularisation (Fig. 11). At this stage, the positioning of the subperiosteal implant, assembled with the “3D bridge” for easy placement, has always been achieved with immediate self-stabilisation (Fig. 12). Keeping the “3D bridge” in place, the “main screws” are positioned.

The sequence must always be: first in the nasal spine, two for each buccal side distally, and then two palatal medially. The 3D bridge can then be removed to facilitate screw placement; finally, screw stabilisation is completed using a special screwdriver. In case of loosening, an additional self-tapping pre-prepared screw,



**Fig. 10:** Using the “3D flap” device, we can more easily make the incision corresponding to the future positioning of the prosthetic connections. **Fig. 11:** With the prototype of the implant, we can minimise the reflection of the periosteum and preserve the existing vascularisation as much as possible. **Fig. 12:** The subperiosteal implant in place: the strips adhere closely to the bone surface and all the screws are in place.

called the “emergence screw”, is also available in the kit. This screw has a different shape, thread pitch and is 0.4mm wider. A 2 mm longer screw must be used. Thus, a deep, half thickness incision must be extended along the entire contour of the implant to achieve passive repositioning of the flap. This is the main management to avoid primary exposure of the implant strip. Finally, a suture can be applied, initially using single stitches as follows: first a loop around each prosthetic platform, then the conventional stitches along the

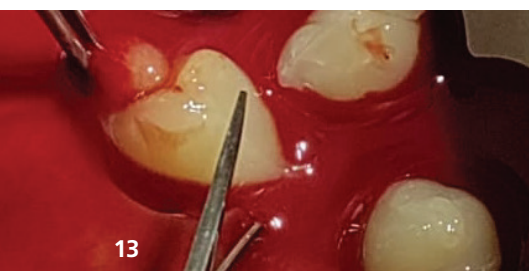
entire contour. Finally, a second continuous suture can be used to help the previous suture to minimise the effects of microswelling during the first ten days after surgery.

In addition, using a centrifuge (Duo Quattro, Intra-Lock System Europa), four L-PRF-derived membranes are placed under the flap corresponding to each prosthetic connection (Fig. 13). This additional precaution is particularly recommended in patients who are heavy smokers, if they are treated anyway. At the end of the previous procedures, after checking the occlusion and finishing in the laboratory, the temporary bridge is placed (Fig. 14). A panoramic (Fig. 15) and/or CBCT (Fig. 16) image is always taken immediately after surgery to confirm the close relationship between the implant structure and the bone. Immediate loading is one of the keys to success. The subperiosteal implant and its screws must be loaded immediately to heal together over time. Conventional recommendations for immediate loading

of the implant were given to the patient. The clinical picture with and without the provisional 27-month post-op is also documented here (Figs. 17 & 18).

## Discussion

This report documents the use of a digitally manufactured subperiosteal implant for the rehabilitation of advanced atrophic maxillae. This implant allows immediate loading, avoiding invasive procedures such as bone grafting or complex implantation through the zygomatic arch. Other surgical approaches are not considered indicated for the treatment of 5/6 Misch classification, especially in a fully edentulous patient. Subperiosteal implants were first described in 1943 by Dahl in Sweden.<sup>19</sup> However, these implants were associated with high complication rates such as soft-tissue dehiscence, implant superinfection and mobility, and ultimately implant loss. Immediate loading is one of the keys to the success of the subperiosteal implant



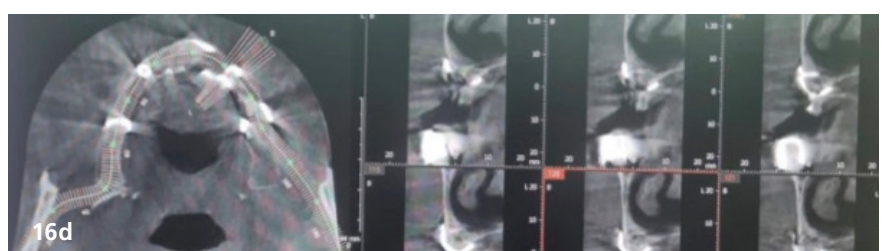
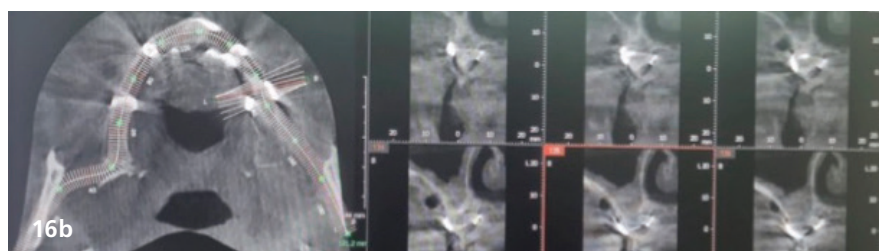
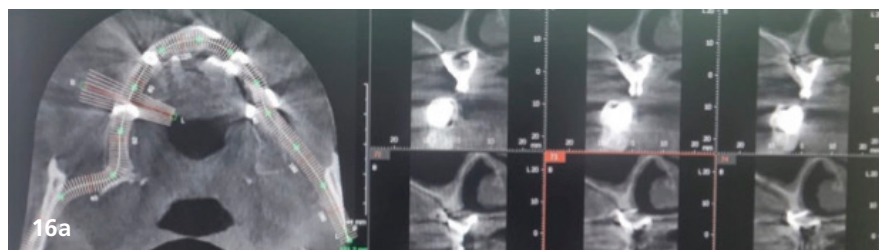
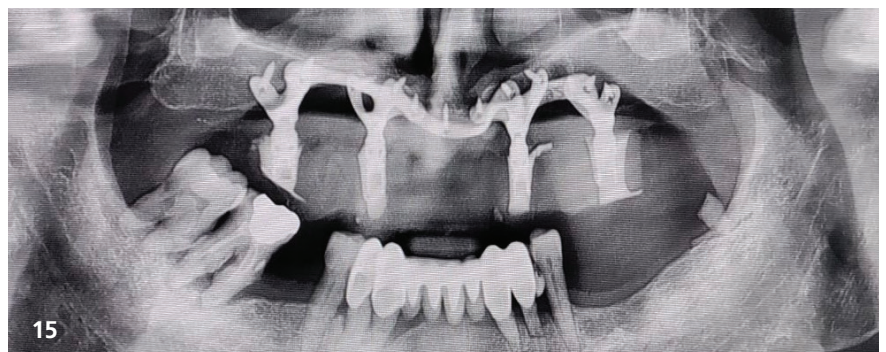
**Fig. 13:** The use of PRF membranes improves the soft-tissue healing, maximising new local vascularisation and neo-angiogenesis.



protocol. All screws and the structure must be loaded together immediately after placement. The subperiosteal implant is not “initially bone-retained” and we will never get osseointegration<sup>22</sup> even if the implant is made of grade 5 titanium alloy. Osseointegration is a natural healing mechanism whose principles have been well documented for many years around an unknown object. The subperiosteal implant is a completely different approach and the success is obtained respecting other factors as already widely published from the 70's.

New acquisition techniques, improved hardware and software, computer-aided design and selective laser melting allow the customisation of implant therapy, improving several aspects such as only one surgery, accuracy of framework, screws, surgical management, titanium alloy, surface treatment, prosthetic connection. Compared to alternative modern designs, the SP4 custom subperiosteal implant of the present study, due to its high precision, does not rely on bone undercuts to achieve primary stability. The entire digital workflow allows the implant structure to be planned along the natural pillars of the maxilla, which favours the distribution of forces. The final design is therefore very minimal, without the need for the implant abutments to be extensive or invasive over the bony structure and surrounding muscle and soft-tissue envelope. The smaller the design, the more predictable the placement of the implant would be, speeding up the surgery and reducing the risk of infection, as well as facilitating removal in the unfortunate event of implant failure. For a more effective summary, it is also worth recalling the innovative devices introduced by the SP4 protocol and their benefits.

The 3D flap guide for incision predicts the prosthetic emergence of the prosthetic



**Fig. 14:** Immediate loading with screw-retained reinforced restoration. **Fig. 15:** Panoramic radiograph immediately after implantation. **Fig. 16:** CBCT post-implantation: the intimate contact between implant and bone is clearly visible.



**Fig. 17:** Clinical view of final bridge in place 27 months after loading. **Fig. 18:** Clinical aspect of soft-tissue healing two years after surgery.



connection, avoiding additional incisions and preventing premature exposure of the implant. The “implant prototype”, used in conjunction with a more conventional anatomical replica, is both extremely useful in exposing only sufficient bone surface for implant placement, avoiding unnecessary periosteal reflection and achieving faster and more predictable healing. The entire digital workflow of the accurate design allows to obtain even a customised shape to envelop the head of the screws. The self-tapping screws give the clinician an easier and faster placement in a critical part of the surgery. In addition, gain an excellent stability over time, as it seems after four years of follow-up of 68 consecutive clinical cases treated with SP4 implants from 2019. The “3D bridge” helps the clinician during the placement step to maintain a correct position and immobility during screw insertion. Its “double use” as a rigid framework of the temporary bridge is a way to drastically reduce the time of the immediate loading protocol while maintaining the optimal fit with the prosthetic platforms of the implant. In conclusion, considering all the details presented so far, the SP4 implant protocol seems to be a probable approach for the treatment of the advanced resorbed

jaw with an implant-supported fixed restoration.

## Conclusion

Despite the inherent limitations of a case report, this study showed that 3D digitally fabricated subperiosteal implants could be a valid solution for the rehabilitation of the atrophic maxilla, avoiding long, invasive and/or dangerous surgeries.

## Acknowledgements

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References





# Peri-implantitis: Can it be treated without surgery?

Prof. Hady Haririan, Austria

With the introduction of a uniform classification of periodontal and peri-implant disease in 2018, definitions of health and disease have now also been established for implants.<sup>1</sup> Comparable evidence on peri-implantitis should therefore be possible in the future. In recent years, there have been enormous developments in implantology with regard to the digital workflow and materials, but also new insights into what can lead to failure or how to counteract peri-implant mucositis and, subsequently, peri-implantitis.<sup>2</sup>

The proportion of patients with implants is increasing, due to an ageing population. A study at the University Clinic of Dentistry Vienna in Austria showed that the proportion of older patients with implants is continuously increasing.<sup>3</sup> For example, the proportion of patients between 70 and 75 years of age with implants in the outpatient clinic was already 30 % in 2017; in 2013, this was only around 20 %.<sup>3</sup> Old age is linked to various dimensions, usually accompanied by various diseases, which in turn can lead to polypharmacy and to malnutrition. In

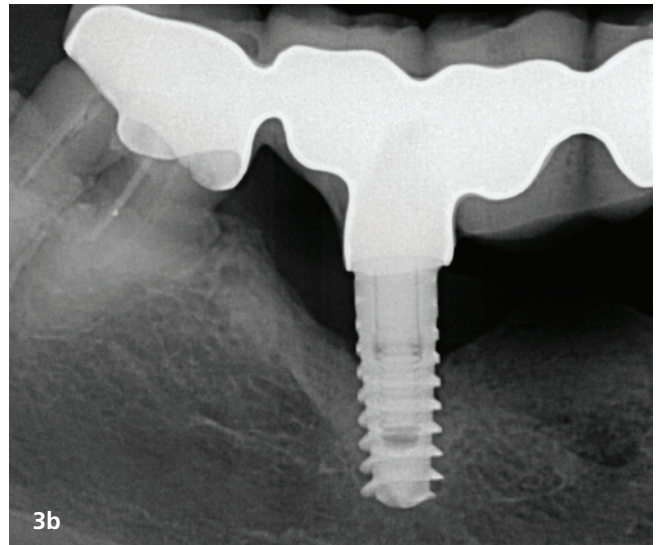
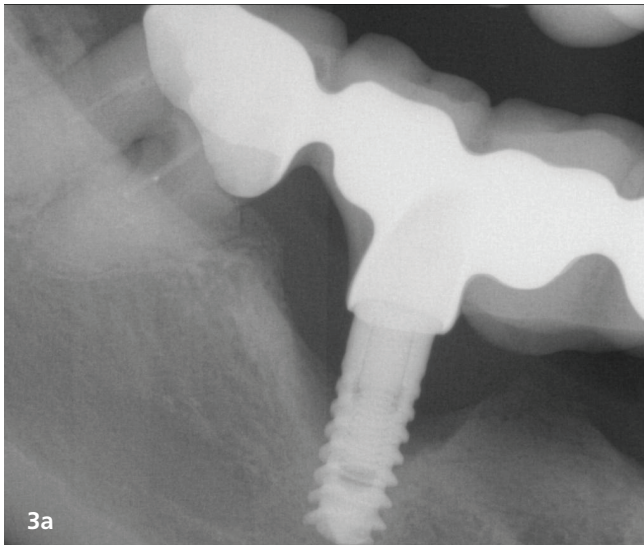
order to maintain stable occlusion in old age, people increasingly rely on fixed prostheses, which, however, are sometimes more difficult to clean than removable prostheses. The risk of complications also increases with age, and peri-implantitis is almost inevitable if prophylactic measures and the reduction of risk factors are not undertaken promptly and closely monitored.

Once bone resorption around the implant has begun, there is no predictable therapy that reliably leads to cessation of the inflammation or to regeneration, as is

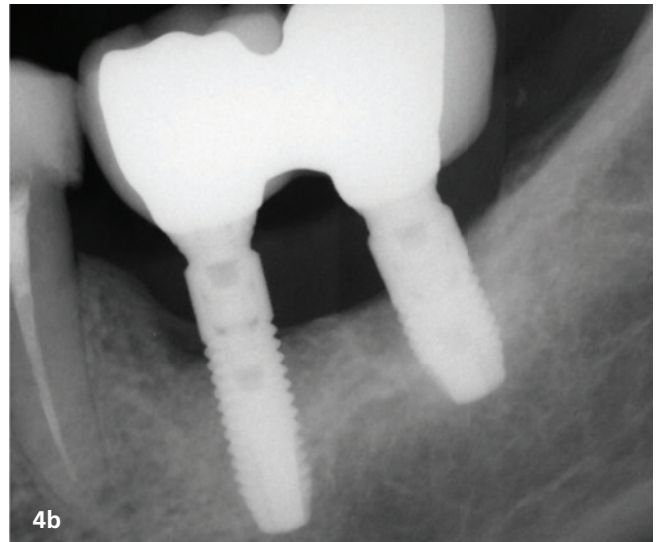
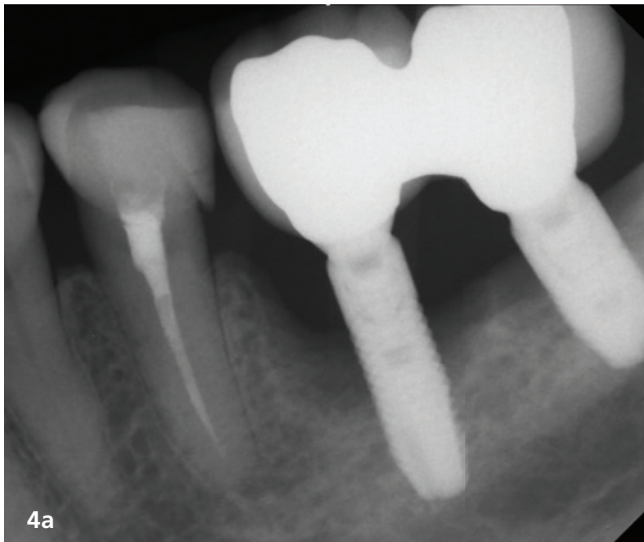
the case with periodontitis. The established treatment paradigm is that a conservative approach is limited and surgical intervention—resective or regenerative—is inevitable once several threads of the implant have become exposed. However, the following patient cases are intended to demonstrate that even initially hopeless situations can be resolved by relatively simple therapeutic measures if peri-implantitis has not yet progressed to the point of complete mobility of the implant (which was the situation in the first case presented).



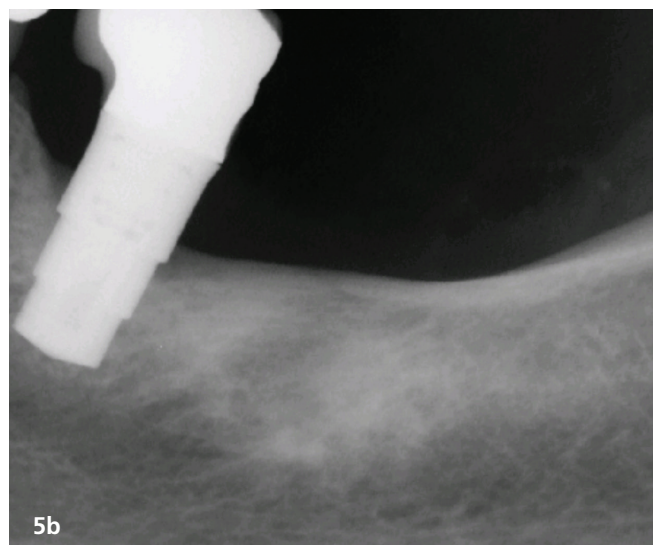
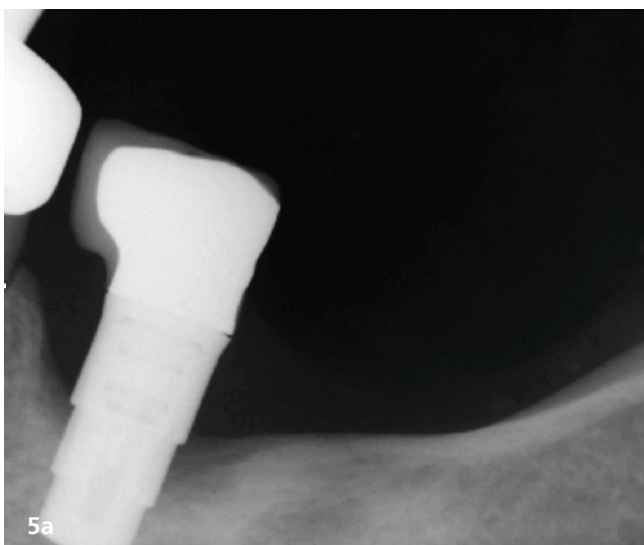
**Fig. 1:** The patient presented because of a broken denture tooth and loose restoration. Lifting of the upper lip revealed multiple fistula exits with pus discharge. **Fig. 2:** No further conservative therapy could be initiated for the maxillary implants.



**Figs. 3a & b:** Situation before conservative therapy (a) of peri-implantitis affecting implant #46 in the second case and six to 12 months thereafter (b).

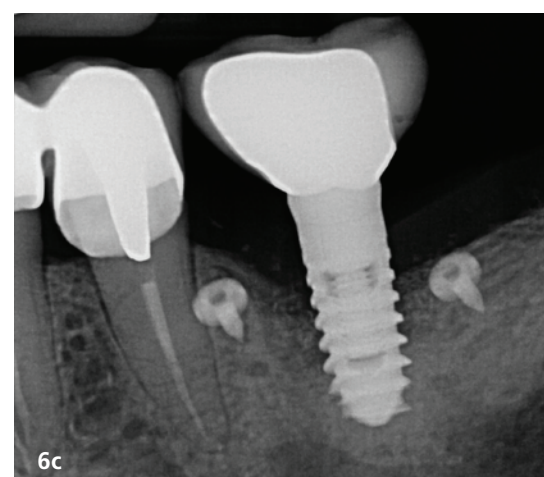
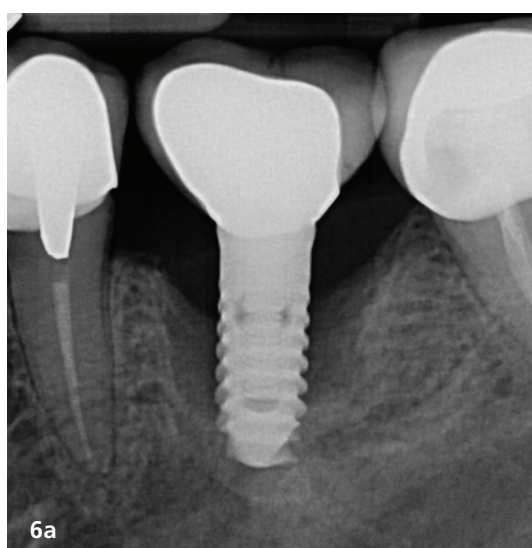


**Figs. 4a & b:** Situation before conservative therapy (a) of peri-implantitis affecting implants #36 and #37 in the third case and six to 12 months thereafter (b).



**Figs. 5a & b:** Situation before conservative therapy (a) of peri-implantitis affecting implant #36 in the fourth case and six to 12 months thereafter (b).





**Figs. 6a–c:** Implant #36 in the fifth case was initially planned for explantation, but could ultimately be preserved only with regenerative surgical measures (one-year follow-up).

## Peri-implantitis prevalence and risk factors

On the one hand, implants as replacements for lost teeth have a relatively high success rate over observation periods of more than ten years.<sup>4</sup> On the other hand, it has been shown that 10–50 % of implants showed signs of peri-implantitis after ten years. In general, the prevalence of peri-implant mucositis is as much as 80 % and that of peri-implantitis between 28 and 56 %.<sup>5</sup> Peri-implantitis cases are rising in daily practice, but their development can usually be linked to known risk factors.<sup>6</sup> These include:

- smoking;
- history of periodontitis;
- poor oral hygiene;
- irregular supportive periodontal therapy intervals; and
- systemic disease (poorly controlled diabetes, cardiovascular disease, immunosuppression).

Sometimes it is a combination of several risk factors that drastically increase the risk of complications. Zitzmann et al. have already noted in a review that the incidence of peri-implantitis is almost six times higher in patients with periodontitis compared with non-periodontitis patients.<sup>7</sup>

## Patient cases

### Implant loss due to poor oral hygiene and lifestyle habits

In the following patient case, several factors led to failure. Despite the patient smoking more than 40 cigarettes daily, implants were placed in such a way that a fixed restoration was possible. The patient stated that she could not tolerate any palatal coverage and wanted a fixed option. Since her smoking, abundant alcohol consumption and poor brushing habits were not improved, peri-implantitis was not a surprise diagnosis. This usually occurs around seven years after implantation if—like in the following case—periodontitis treatment for the remaining dentition is ignored and the patient's lifestyle aggravating to the periodontium. The patient presented because of aesthetic problems, but also because the implants were already very loose (Fig. 1). Conservative periodontal therapy with instruction on the correct use of interdental brushes could not prevent the loss of the implants (Fig. 2).

### Implant preservation with the aid of subgingival cleaning by air-scaler and concomitant administration of systemic antibiotics

Is conservative peri-implantitis therapy ever enough to resolve advanced peri-

implantitis cases? The following cases show that a single subgingival cleaning with air-scaler and adjunctive systemic antibiotics helped to regenerate the bone around the implants. A single-blind randomised clinical trial concluded that systemic adjunctive antibiotic administration does not necessarily provide a clinically relevant benefit when, for example, amoxicillin and metronidazole are administered systemically in combination.<sup>8</sup> Would the same effect have occurred in the cases shown here even without adjunctive metronidazole administration for seven days after subgingival cleaning? According to a more recent randomised clinical trial, the administration of metronidazole as an adjunct to non-surgical peri-implantitis therapy resulted in significant improvements in clinical, radiographic and microbiological parameters after 12 months of follow-up.<sup>9</sup>

In the second, third and fourth patient cases (Figs. 3–5), subgingival debridement was performed once by air-scaler and then metronidazole was taken at a dosage of 500 mg three times daily for seven days.

### Implant retention through interdisciplinary treatment

Not all cases develop as promisingly as the second, third and fourth cases did. The conservative approach should always



**Figs. 7a & b:** Situation of a removable prosthesis in the upper jaw (a) and a screw-retained prosthesis in the lower jaw (b) in a patient.

be attempted first, and if this does not lead to the desired clinical success, further surgical measures can be considered, including the use of methods for which there is not yet a strong evidence base.<sup>10</sup> The fifth case involved an implant that was initially thought to be lost, but could have been finally saved after periodontitis/peri-implantitis treatment and subsequent augmentation and use of a membrane as well as use of the GalvoSurge implant cleaning system (Fig. 6). Such interventions are relatively costly and the corresponding costs for augmentation material and the application of the electrode in that procedure are ultimately borne by the patients, who have an additional financial outlay in order to save the implant. Surgical interventions can only take place in an operating theater or clinic—a challenge that older people are usually no longer able to cope with, as they are largely no longer able to attend an appointment on their own.<sup>11</sup>

Ultimately, the best peri-implantitis therapy is prevention and control of risk factors, ideally before implant placement begins. In my view, the most common mistake is inadequate peri-implantitis prevention and inadequate therapy, which usually consists only of oral hygiene by the prophylaxis assistant. Sometimes patients are also instructed to attend oral hygiene sessions every few weeks—but this will not stop already existing peri-implantitis, and further bone loss will occur.

The following scheme can help to prevent complications with implants:

- regular checks using a conventional periodontal probe (a special plastic implant probe is not necessary, but can make access for probing a little easier);
- annual close-up check of implants to detect incipient bone loss as soon as possible;
- screw-retained implants to make it easier to deal with complications;
- a backup strategy for older people so that initially fixed restorations can be converted into removable ones—supported on the same implants;
- cleanable design of the superstructure—no artificial gingivae up to the alveolar ridge;
- conscientious training on using interdental brushes—often people are still instructed on the use of dental floss, which is usually insufficient when cleaning the implant superstructure to remove plaque from the often wide interdental spaces.

### Ageing population

According to the United Nations, the global proportion of people over the age of 65 will rise to over 1.5 billion by 2050, and this population group will account for 25–40 % of the total population in

the EU. As the population ages, so does the proportion in need of care. According to the Austrian Federal Statistical Office, for example, 70 % of women older than 90 and around 50 % men in this age group require care, most of which is provided at home by relatives. How do complex and possibly even fixed implant restorations fit into the care regime? Even with patients who are institutionalised, the nursing staff seem to be incapacitated (for example, the sixth case is that of a patient from a Viennese nursing home; Fig. 7). It is therefore of crucial importance to also offer regular recall to the older generation, especially to those who can no longer visit the dental office on their own. Mobile units are used for this purpose, which unfortunately currently only take place on a project basis and have not yet become established for the general public in Austria.<sup>12</sup>

#### Author details



#### References



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# INTERNATIONAL **BLOOD** CONCENTRATE DAY

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## Insights from International Perio Master Clinic 2024

# Advancing periodontal practice

International Perio Master Clinic 2024, a significant event in the periodontal field organised by the EFP and the Society of Periodontology Singapore, successfully concluded on 20 January 2024. Held in the vibrant city of Singapore, this event drew over 520 attendees and speakers from 44 countries, showcasing the latest advancements in the unique combination of periodontics and orthodontics.



Professor Darko Božić, EFP president.

Professor Darko Božić, EFP president, reflected on the success of the event: "Our goal of bringing together global experts to inspire attendees with innovative methodologies was overwhelmingly achieved. One of the goals of this meeting was to bridge the perio-ortho knowledge of our European and Asian colleagues and to mutually share it on the big stage. The smiley atmosphere and positive feedback could be seen on every corner, which means we did the job. We empowered practitioners to achieve remarkable outcomes in their perio-ortho cases, unlocking new horizons for patients."

The congress, chaired by Prof. Philip Preshaw, was hailed for its practical impact on dental practice. Preshaw commented, "We've provided clinicians with evidence-based knowledge and techniques that can be directly applied in their

practice. Leading experts have opened new avenues in the combined approach to periodontal and orthodontic treatment. This was an outstanding meeting!"

### Wide variety of topics

The event featured a diverse range of issues, including managing and preventing implant infra-position, complex rehabilitation of stage IV periodontitis patients, and ortho movements into periodontal intrabony defects. Participants benefitted greatly from duo presentations and real-life case studies that highlighted advanced techniques in perio-ortho synergy.

Prof. Virginie Monnet-Corti, the scientific chair, ensured that the clinic's multidisciplinary programme was filled with the latest and most effective clinical techniques, based on data acquired from





520 attendees and speakers from 44 countries.



Participants had the opportunity to gather information about the latest products and technologies.



Hands-on courses provided insight into the latest treatment methods.

dental science. She said: "Since the Perio Master Clinic in Antwerp, new scientific publications emerged on the topic of Perio-Ortho Synergy, making the updated knowledge trendy." Her efforts were evident in the attendees' positive feedback and eagerness to apply their newfound knowledge.

As the event wrapped up, the sense of accomplishment was palpable among the attendees. The International Perio Master Clinic 2024 not only provided a platform for learning and networking, but also left a lasting impact on the attendees, empowering them with skills and knowledge to enhance their clinical practice. With its unique focus and high-calibre presentations, the event set a new benchmark for dental conferences worldwide.

"Our next stop is EuroPerio11 in Vienna in May 2025," said Božić. "See you there!"



The scientific committee headed by Chairman Philip Preshaw (fifth from left).

## OSSTEM IMPLANT's Global Symposiums in 2024

# Shaping the future of dentistry together

OSSTEM IMPLANT global community comes back with two landmark events this year—the OSSTEM World Meeting (OWM) and the OSSTEM-Hiossen Meeting in Europe (OHME). These events are not only academic symposiums, but also an excellent platform for hands-on experience, networking, and the sharing of practical knowledge among dentists all over the world.

The OSSTEM World Meeting (OWM) is scheduled to take place on 27–28 April 2024, in the vibrant city of Seoul, Korea—a location of special significance as it is also where the OSSTEM IMPLANT was founded in 1997. This year's theme is "Digital Dentistry", which reflects the cutting edge of innovation in our field. Dentists from all continents will speak on various topics and share their expertise in digital dentistry.

OWM invites European specialists to build a global community of dental professionals together. Prof. Marco Tallarico, Italy will uncover the synergy between aesthetic and digital dentistry. His colleagues Dr Nicolas Widmer, Switzerland and Dr Łukasz Zadrożny, Poland will run the workshops on guided surgery, using OSSTEM One CAS Kit and other products. Dr Andrea Ricci, Italy will moderate the

first session. This diverse and accomplished group will undoubtedly enrich the symposium with a variety of perspectives and insights.

Following closely on the heels of OWM, the OSSTEM-Hiossen Meeting in Europe (OHME) is set to take place on 22–23 November 2024 in London, UK. Building on the success of OHME 2022 in Rome, Italy this edition will gather over 1,000 dentists from Europe and beyond. The event will feature renowned speakers from both Europe and abroad, presenting a golden opportunity to learn from the best in the field.

OHME's comprehensive schedule includes workshops tailored for young dentists, a symposium delving into the latest advancements, and a gala dinner providing the perfect setting for networking and camaraderie. The rich and extensive programme ensures that attendees will

find something to enhance their professional journey, regardless of their level of expertise.

The OSSTEM IMPLANT community would like to invite all dental professionals to attend OWM and OHME in 2024. These symposiums are more than just traditional academic conferences; they are forums for global cooperation, innovation, and the exchange of expertise amongst colleagues. Participating, you join a community dedicated to building the future of dentistry. OSSTEM IMPLANT looks forward to welcoming you to Seoul and London soon.



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# 2024 OSTEM WORLD MEETING SEOUL

**27-28 APR 2024**

Osstem Implant HQ & Coex Grand Ballroom







## IMPLANT SOLUTIONS WORLD SUMMIT MIAMI 2024

Dentsply Sirona Implant Solutions World Summit 2024 in Miami

# Connecting top dental professionals

Implant Solutions World Summit is coming to Miami, Florida, USA on June 13–15 June 2024, with a promise of inspiration, confidence and passion delivered. This exclusive, state-of-the-art congress is focused on science and implant dentistry, and offers many networking opportunities.

With its commitment to advancing oral health and delivering innovative solutions, Dentsply Sirona has put together an exceptional programme that features an array of keynote presentations, engaging panel discussions, and interactive workshops. Attendees can look forward to exploring the latest trends, research, and breakthroughs in the field of implant dentistry.

"It is an honour to host the Implant Solutions World Summit," says Tony Susino, Group Vice President of Implant and Prosthetic Solutions at Dentsply Sirona. "This event reflects our commitment to advancing implant dentistry through education, innovation, and collaboration. We are excited to bring together experts

from around the world to share their expertise and inspire the future of implant and prosthetic innovations."

### A scientific programme featuring leading experts in implant dentistry

The scientific programme at the Implant Solutions World Summit 2024 is developed together with the Scientific Chairs Dean Lyndon Cooper and Dr Malene Hallund. Designed to empower dental professionals and foster collaboration, the agenda will feature a dynamic programme consisting of plenary sessions, breakout sessions and master classes. Leading experts in implant dentistry,





Dr Malene Hallund,  
Oral & Maxillofacial Surgeon



Lyndon Cooper,  
Dean of VCU School of Dentistry



Tony Susino, Group Vice President of Implant  
and Prosthetic Solutions at Dentsply Sirona

bone regeneration and digital dentistry will share their knowledge, insights, and case studies, as well as practical skills that can be directly applied in the practice. The scientific sessions cover several key areas in implant treatment. The latest scientific research and data will be presented to reassure dental professionals of the core commitment to clinical success, aesthetic results and safety. Another key area is the role of bone augmentation and regeneration in implant treatment, as well how to manage complications and control risk factors, including the role of the patient and oral health. Last but not least, the programme will dive into the how and why of digital dentistry and the way it can improve an already great practice, as well as how to grow your practice with digital implant workflows—from single tooth to full arch.

### **Inspiration Hub exhibition area for implant workflows & solutions**

The Inspiration Hub exhibition area is where interaction, inspiration, knowledge and passion come alive—it is the place to learn about implant workflows and solutions. Attendees will be able to experience the full implant treatment workflow

firsthand and at their own pace together with our experts, they can learn more about focus on scientific expertise and commitment to long-term science and future innovation, and they will have the opportunity to build their professional networks and be part of a fantastic community of implant professionals from all over the world. The exhibition will feature Dentsply Sirona's products, solutions, and treatment workflows, including EV Implants, OSSIX regenerative solutions, and the cloud-based DS Core platform.

### **Boosting knowledge with Master Classes**

Attending a Master Class can really make a difference and it is a great opportunity to boost knowledge together with leading experts within the field of implant dentistry. At the Implant Solutions World Summit in Miami on 13 June 2024, attendees can participate in one of eight parallel Master Classes, all designed to enhance knowledge and skill level in implant dentistry. The Master Class programme features both lectures and hands-on sessions, including a cadaver course and a pig jaw course, as well as topics on practice growth and oral systemic health, and a digital focus in the areas of work-

flows, the dental practice, advanced aesthetics using conometrics.

### **Implant Solutions World Summit 2024**

Implant Solutions World Summit is an exclusive, state-of-the-art congress focused on science and implant dentistry. Attendees will meet renowned industry leaders and international speakers in a scientific programme focused on inspiration and confidence for the dental team. Registration is open at: [www.dentsplysirona.com/worldsummit](http://www.dentsplysirona.com/worldsummit)

Read more  
and register!



Dentsply Sirona



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## Funding practical solutions to real-life problems in oral tissue regeneration

# New Applied Research Grant

The Osteology Foundation launches its new Applied Research Grant programme. “This restructuring of our grants sends a strong message of our determination to fund clinically impactful studies”, says Nikos Donos, Osteology Foundation Board Member and Chair of the Science Committee. The new granting programme underscores the Foundation’s on-going commitment to advancing clinical research with a focus on improving oral tissue regeneration.

This new granting programme replaces the Young and Advanced Researcher Grant programmes, which have been discontinued from January 2024. The amount of funding is significantly increased to CHF200,000 per award.

A comprehensive list of topics will be shared on Osteology Foundation’s website to provide clarity for applicants, guiding them towards areas of specific research interest and clinical impact. In order to



# Osteology Foundation



Nikos Donos, Osteology Foundation Board Member and Chair of the Science Committee.

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optimise its funding programmes, the Osteology Foundation has invested additional funding for transitioning to a new submission platform which will significantly facilitate the application process.

The Applied Research Grant programme embodies a translational approach, as it bridges the gap between basic science and everyday clinical practice, encouraging implementation of scientific discoveries for tangible patient benefits. “Applied research in dental medicine involves use of scientific investigations and studies to develop practical solutions for real-life problems”, explains Donos. A particular emphasis is placed on utilising multi-disciplinary approaches and combining new technologies for improving therapies, diagnostics, and care delivery in the field of tissue regeneration. By focusing on oral tissue regeneration, the grant applications submitted for consideration will also align with the research strategy and priorities of the Osteology Foundation, Donos clarifies.

## Details

- Launch: 15 February 2024
- Target group: Mainly early-to-mid career, but also more senior researchers worldwide, with an interest in developing clinical research projects
- Field of study: oral tissue regeneration, translational dental research
- Application deadline: 15 May 2024
- Funding: maximum CHF200,000 per study
- New grant management platform: better usability, enhanced features for faster application, easier post-award grant management and communication



## 2024 OSSTEM-Hiossen Meeting in Europe

# Elevating Dental Excellence

London, 22–23 November 2024—The OSSTEM-Hiossen Meeting in Europe, flagship symposium of OSSTEM IMPLANT, is poised to set new benchmarks in dental education and innovation. Building upon the success of its inaugural edition in 2022, which was meticulously curated by the OIC Scientific Committee, this event is primed to elevate its standards even further.

Scheduled biennially, the 2024 OSSTEM-Hiossen Meeting is slated to take place on 22 and 23 November at the illustrious Wembley Stadium in London, United Kingdom. Renowned for its rich history and cultural significance, London provides an ideal backdrop for this gathering of dental professionals, researchers, and industry leaders from across Europe and beyond.

The programme encompasses a dynamic array of activities, including a 1.5-day symposium, a gala dinner, and captivating live surgery. With a line-up of 15 distinguished speakers and 6 moderators, attendees can expect to delve into the latest advancements and best practices in various domains of dentistry, from implantology and periodontology to oral surgery and beyond.

Recognising the importance of nurturing the next generation of dental professionals, the organisers have also curated a post-session tai-

lored specifically for young professionals. This segment aims to provide emerging talents with invaluable insights, mentorship opportunities, and networking platforms to fuel their professional growth and development.

Anticipation is already building for the event, with registration set to open in May. Dental professionals eager to participate are encouraged to reach out to their national distributors for inquiries and stay tuned for further details, which will be disclosed in the coming months.

The 2024 OSSTEM-Hiossen Meeting in Europe promises to be an immersive experience, uniting expertise, innovation, and camaraderie in the pursuit of advancing dental care. As the dental community eagerly awaits this milestone event, all eyes are set on London for what is poised to be a landmark gathering in the realm of dentistry.



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### NucleOSS Europe

## SLH—The connection between you and your patients

The DC-BONE-LEVEL implant features modern and aesthetic design details and offers a safe and comfortable surgical experience for the dentist and patient. A wide range of prosthetic abutment options helps to give patients a radiant smile. In addition, the implant gives patients self-confidence through its intelligent and strong design. With extensive abutment options, a convenient application kit and a registered clean surface, the DC-BONE-LEVEL implant is more than outstanding. The groundbreaking aspect of the DC-BONE-LEVEL implant is that it balances quality and price. The

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### Dentsply Sirona

## Introducing DS OmniTaper Implant System

The DS OmniTaper Implant System is an innovative solution that combines the proven technologies of Dentsply Sirona's EV Implant Family with new features that deliver efficiency and versatility. Unique to the implant system is an intuitive drilling protocol for reduced chair time and a pre-mounted TempBase for immediate restorations and efficient workflows.

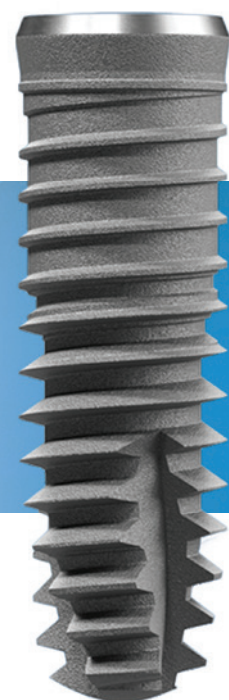
The DS OmniTaper Implant System is the newest member of the EV Implant Family, alongside Astra Tech Implant System and DS PrimeTaper Implant System. The EV Implant Family offers surgical flexibility to cover virtually every indication. All three implant systems deliver biologically driven implant designs for natural aesthetics and lasting bone care, have one connection for restor-

ative clarity, and are optimised for a seamless fit with digital dentistry workflows.

Like the rest of the EV Implant Family, the DS OmniTaper Implant System features the Osseo-Speed implant surface and the conical EV connection that provides access to the harmonised and comprehensive EV prosthetic portfolio for restorative flexibility and immediate chairside solutions.

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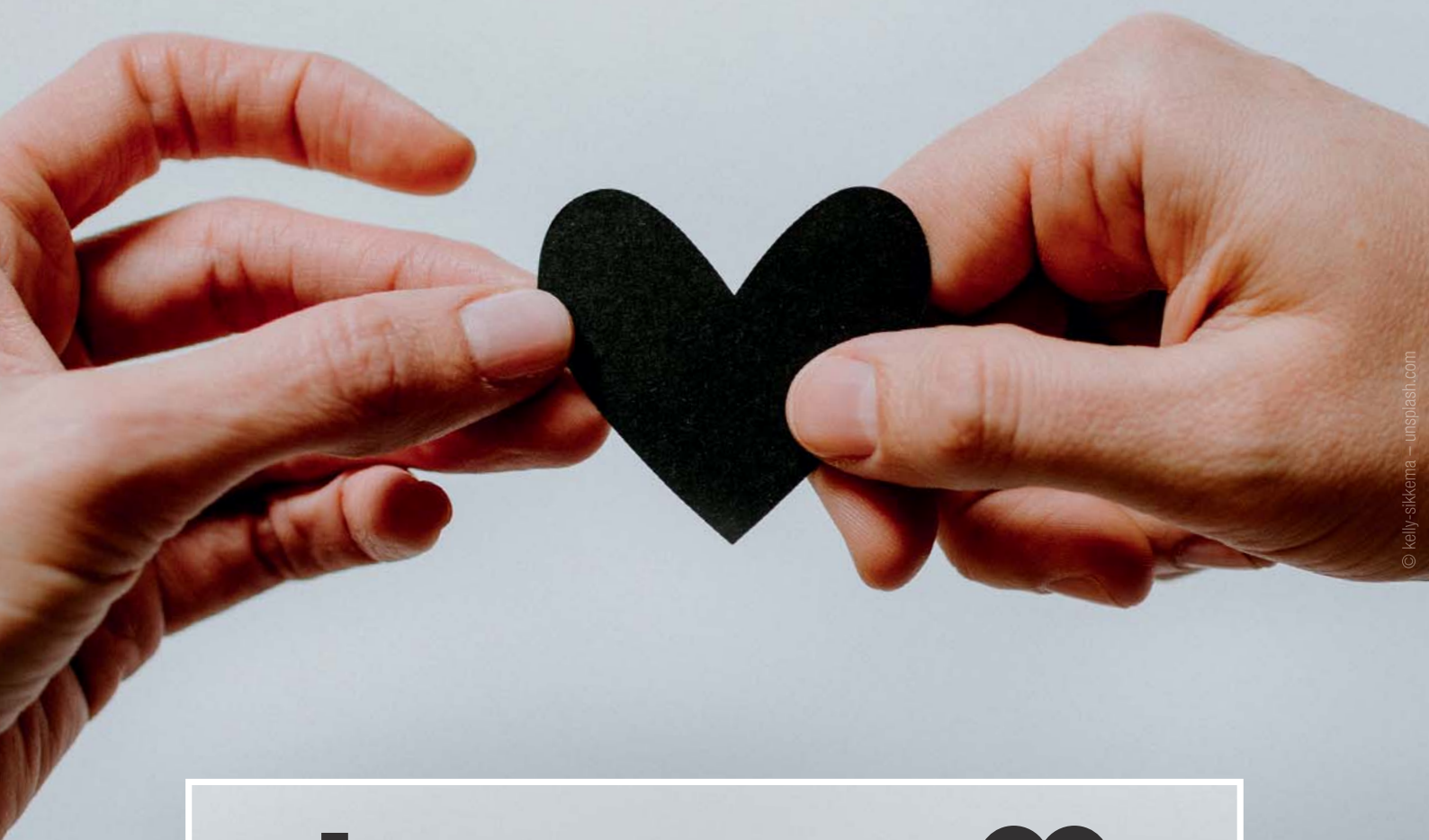






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Fotona

# Advancing dental laser technology

Fotona's LightWalker is a revolutionary dental laser system, incorporating state-of-the-art technologies that redefine the industry. With 20 W of power, 2 wavelengths, 5 pulse durations, and 4 special pulse modalities, LightWalker offers dentists an unparalleled range of clinical applications.

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## CleanImplant Foundation

# Once you see it, you cannot unsee it!

In March, the CleanImplant Foundation was proud to welcome another manufacturer in the family of high-quality implant manufacturers, awarded the Trusted Quality seal. The AO Annual Meeting in Charlotte, NC, was the perfect venue to hand over the certificate of excellence to Ritter Implants.

The award was preceded by a thorough analysis of five randomly selected cross-batch implant samples from the manufacturer in the SEM (Fig. 1). In order to achieve the required quality level, a maximum of 10 foreign particles, all smaller than 50 µm, may be present on the surface of the test samples. An independent peer review process ensures compliance with the threshold values of the CleanImplant guideline and proof of clinical performance. At present, implants from the following manufacturers have been awarded the internationally widely recognised seal of quality:

- Biotech Dental
- bredent medical
- BTI Biotechnology Institute
- Champions-Implants
- Dentis
- Dentium
- Dentsply Sirona
- Global D
- medentis medical
- MegaGen
- NucleOSS
- Ritter Implants
- SDS Swiss Dental Solutions
- Southern Implants



**Fig. 2:** Prof. Jörg Neugebauer, President of the Academy of Osseointegration, and Dr Dirk Duddeck, Head of the CleanImplant Foundation, both Germany.



**Fig. 1:** SEM mapping with material contrast (BSE imaging).

The results of the CleanImplant Foundation's extensive quality assessment studies show that residue-free implants are still not a matter of course (see cover illustration of this issue). It is not only small particulate carbonaceous plastic residues that lead to uncontrolled foreign body reactions, peri-implantitis, and bone resorption. An additional potential threat to the healing (osseointegration) following implant placement is posed by thin-layered residues of highly aggressive cell-toxic cleaning agents such as dodecylbenzene sulfonic acid (DBSA) or quaternary ammonium compounds—known for their use as pesticide and biocide—on the surface of some brand-new implants utilised before manufacturer packaging. Even in low concentrations, these chemicals are cytotoxic to cells and do not promote implant healing.

At the AO meeting, the new President of the Academy of Osseointegration, Prof. Jörg Neugebauer of Germany, met up with his former student, now head of the CleanImplant Foundation, Dr Dirk Duddeck (Fig. 2).

It was the now AO President, Prof. Neugebauer, as Dr Duddeck's supervisor at the University of Cologne years ago, who suggested the idea of a quality assessment of dental implants as the substance of his doctoral thesis. To date, more than 160,000 dental professionals following the CleanImplant Foundation on social media show how crucial and urgent this topic was back then and how it has lost none of its relevance still today.

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BEGO

## The smart (r)evolution of dental 3D printing

BEGO, a pioneer in dental material research with more than 135 years of experience, proudly announces the launch of VarseoSmile® TriniQ®. VarseoSmile® TriniQ® represents a smart (r)evolution and sets new standards in flexibility, aesthetics, and durability in dental 3D printing.

### BEGO presents groundbreaking material for dentistry and dental technology

With the market introduction of VarseoSmile® TriniQ®, BEGO brings a smart (r)evolution to dental 3D printing. This new material enables the printing of definitive, permanent three-unit bridges for the first time and offers unmatched aesthetics with 10 VITA® shades. The high material stability opens up new possibilities for permanent restorations and extensive temporary restorations.

### Premiere at LMT LAB DAY Chicago 2024

VarseoSmile® TriniQ® was presented to the public for the first time at LMT LAB DAY Chicago 2024, which took place from 22 to 24 February 2024. This event offered the first opportunity to experience the groundbreaking properties and applications of VS TriniQ® firsthand.



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**Straumann**

# Ceramic Healing Abutments: the first step to harmonious soft-tissue healing



These healing abutments for Straumann bone level implants enable aesthetics from the day of surgery and offer favourable conditions for soft-tissue attachment, thereby supporting a healthy peri-implant environment. Their well-proven zirconia material helps surgeons and prosthodontists who are looking for less plaque attachment (smoother surface compared to titanium) and they support soft-tissue healing from

the day of surgery. In general, more favourable soft-tissue attachment around zirconia than around titanium can be observed, with blood circulation similar to that around a natural tooth, as well as a more mature and pronounced soft-tissue integration. This comes with an ease of use entailing aspiration security thanks to the integrated screw and a colour-coding to clearly identify the corresponding prosthetic platform.

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Switzerland  
[www.straumann.com](http://www.straumann.com)

	Event	Location	Date	Details/Registration
04/2024	OSSTEM World Meeting	Seoul South Korea	27–28 April 2024	<a href="http://www.oic-europe.eu">www.oic-europe.eu</a>
05/2024	ITI World Symposium 2024	Singapore EXPO Singapore	09–11 May 2024	<a href="https://worldsymposium.iti.org">https://worldsymposium.iti.org</a>
	Expodental Meeting	Rimini Italy	16–18 May 2024	<a href="http://www.expdental.it/en">www.expdental.it/en</a>
06/2024	SSO Kongress	Bern Switzerland	06–08 June 2024	<a href="http://www.sso.ch/de/kongress">www.sso.ch/de/kongress</a>
	EOS 2024	Athens Greece	09–13 June 2024	<a href="http://www.eos2024.com">www.eos2024.com</a>
	Giornate Veronesi 2024	Verona Italy	14–15 June 2024	<a href="http://www.oemus.com/events">www.oemus.com/events</a>

## EDI Journal – Information for authors

**EDI Journal** – the interdisciplinary journal for prosthetic dental implantology is aimed at dentists and technicians interested in prosthetics implantology. All contributions submitted should be focused on this aspect in content and form. Suggested contributions may include:

- Original scientific research
- Case studies
- Product studies
- Overviews

### Manuscript submission

Submissions should be made in digital form. 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, and e-mail address of the contact author.

Manuscripts can be organised 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.

### Illustrations and tables

Each article should contain a minimum of 20 and a maximum of 50 pictures, except in unusual circumstances. Our publishing house attaches great importance to high quality illustrations. All illustrations should be numbered, have a caption and be mentioned in the text.

The photos should have a size of 10x15 cm, the image or graphic files must have a resolution of 300dpi. TIFF, EPS and JPG file formats are suitable. Radiographs, charts, graphs, and drawn figures are also accepted.

Captions should be brief one or two-line descriptions of each illustration, typed on a separate page following the references. Captions must be numbered in the same numerical order as the illustrations. Tables should be typed on a separate page and numbered consecutively, according to citation in the text. The title of the table and its caption must be on the same page as the table itself.

### References

Each article should contain a minimum of 10 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).

### Review process

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

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

## MEMBERSHIP REGISTRATION FORM

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

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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 ☐ Organisation .....

Entry in BDIZ EDI Directory: ☐ Yes ☐ No

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

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