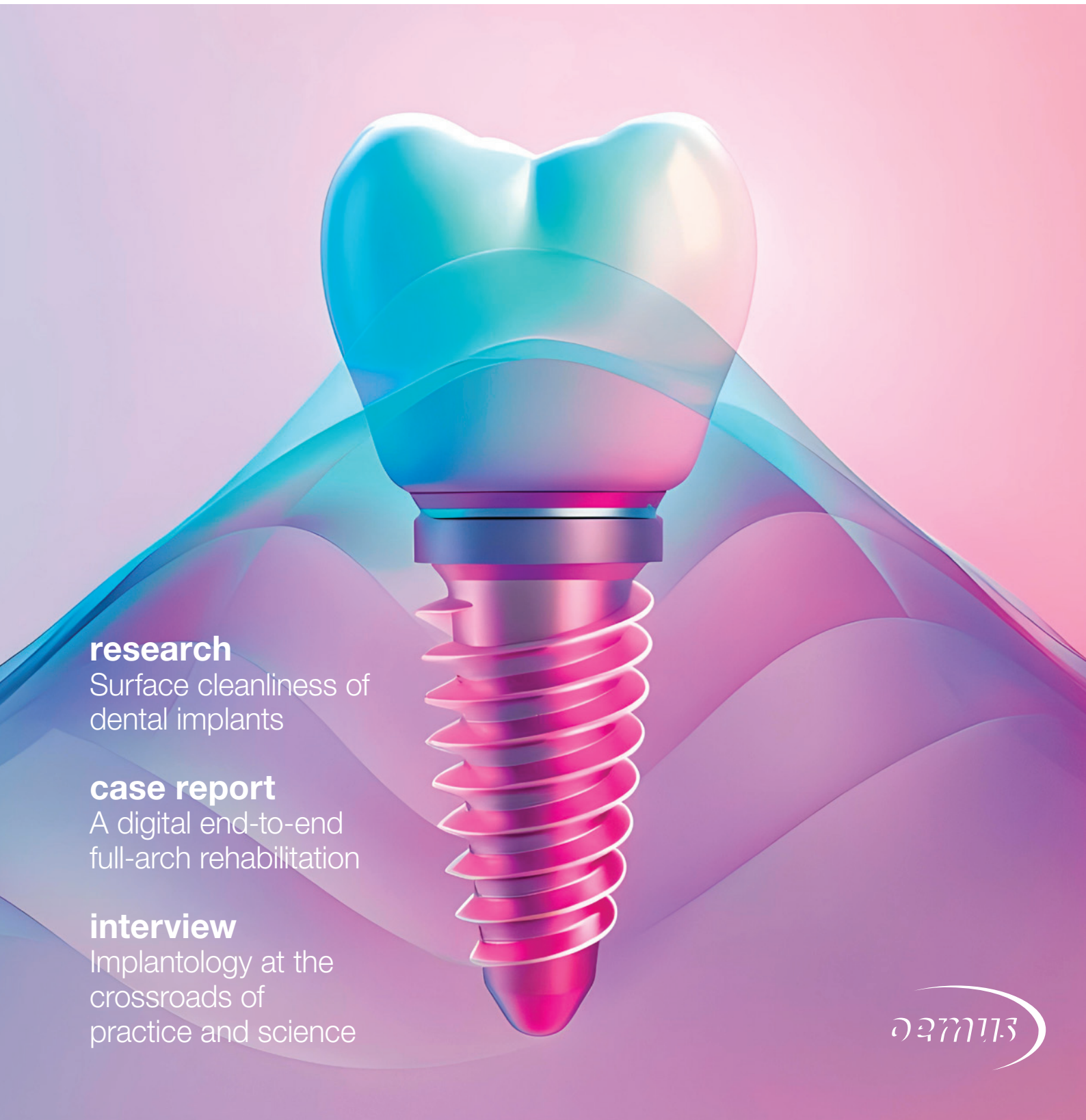
issn 1868-3207 • Vol. 26 • Issue 4/2025

4/25

implants

international magazine of oral implantology



research
Surface cleanliness of dental implants

case report
A digital end-to-end full-arch rehabilitation

interview
Implantology at the crossroads of practice and science

oemus

Fotona
choose perfection

TwinLight® Peri-implantitis Treatment

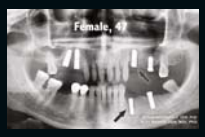
A simple and effective procedure that offers the power to treat peri-implantitis – an increasing threat to oral health.

- Minimally-invasive technique
- Fast regeneration/healing
- Reduced inflammatory response
- Highly effective treatment
- No antibiotics needed

LightWalker®

The ultimate all-in-one hard and soft tissue laser

Peri-implantitis treatment video



www.fotona.com

96014 CE ENG/1

Dr Georg Bach

President of the DGZI

At the crossroads of progress

Dear colleagues,

Implantology has always been a field where science meets craftsmanship, a dynamic balance between evidence and experience. As we close another year of innovation and reflection, this issue of *implants* captures that balance and looks ahead to the next chapter in our profession.

Our research article on surface cleanliness of dental implants addresses a crucial yet often overlooked aspect of implant safety. The findings presented here highlight how microscopic residues—often invisible yet biologically significant—can influence osseointegration and long-term implant success. Establishing clear, evidence-based standards for surface quality is not merely a technical ambition, but an ethical imperative that reinforces patient trust.

Equally inspiring are the case reports featured in this issue. From immediate full-arch restorations in periodontally compromised patients to digital, end-to-end workflows that redefine precision, these reports demonstrate how technology continues to elevate predictability and efficiency in daily practice. Yet, they also remind us that every digital tool serves a simple goal: to improve patient outcomes.

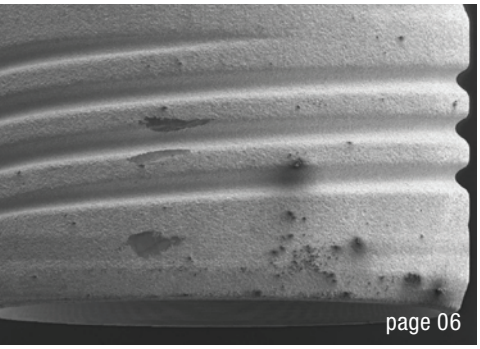
In our interview section, we explore how leading voices from the DGZI's own congress insights to the Osteology Foundation's forward-looking "Beyond Regeneration" initiative capture the essence of a discipline at the crossroads of practice and science. As new generations of clinicians join the conversation, collaboration across specialties and borders will be key to shaping the next era of implantology.

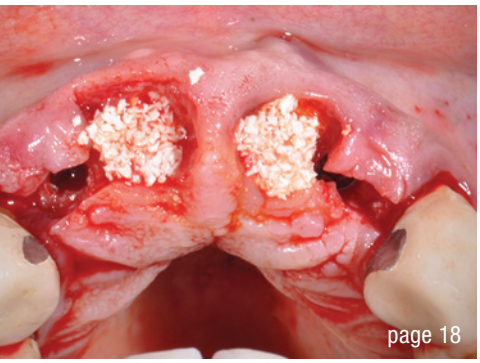
Let this issue serve as both an inspiration and a challenge: to stay curious, to keep questioning, and to ensure that technological advancement always aligns with clinical wisdom. Together, we continue to build the bridge between innovation and integrity in implantology.

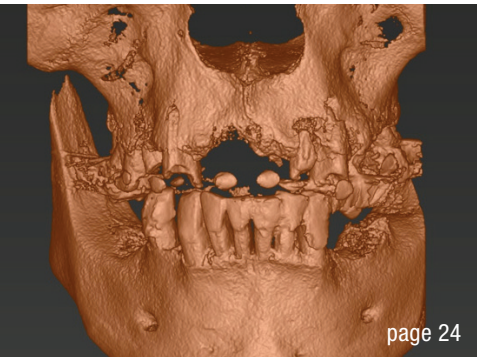
Sincerely,

Dr Georg Bach
President of the German Association
of Dental Implantology DGZI

Dr Georg Bach







editorial

At the crossroads of progress 03
Dr Georg Bach

research

Surface cleanliness of dental implants: Current insights 06
Susanne Reichard, Dr Maurice Hatzky & Prof. Rüdiger Junker

Full-arch implants in periodontally compromised patients 10
Dr Eduard Aghasan, Dr Tigran Hakobyan, Prof. Curd Bollen & Prof. Gagik Hakobyan

case report

Four-unit immediate restoration in the maxillary aesthetic area 18
Dr Massimo Frosecchi

Precision redefined: A digital end-to-end full-arch rehabilitation 24
Dr Ryan Ollerton

interview

Dentistry's next frontier: International Osteology Symposium 2026 32
An Interview with Lisa Heitz-Mayfield and Anton Sculean

Implantology at the crossroads of practice and science 34
An interview with Dr Georg Bach

Shaping the future of dentistry through technology 36
An interview with Dr Maria Grazia Di Gregorio-Schininà

events

Inspiration, knowledge and peer-to-peer networking 38
Implant Solutions World Summit 2026

Mastering the Perio-Restorative connection 39
Perio Master Clinic 2026

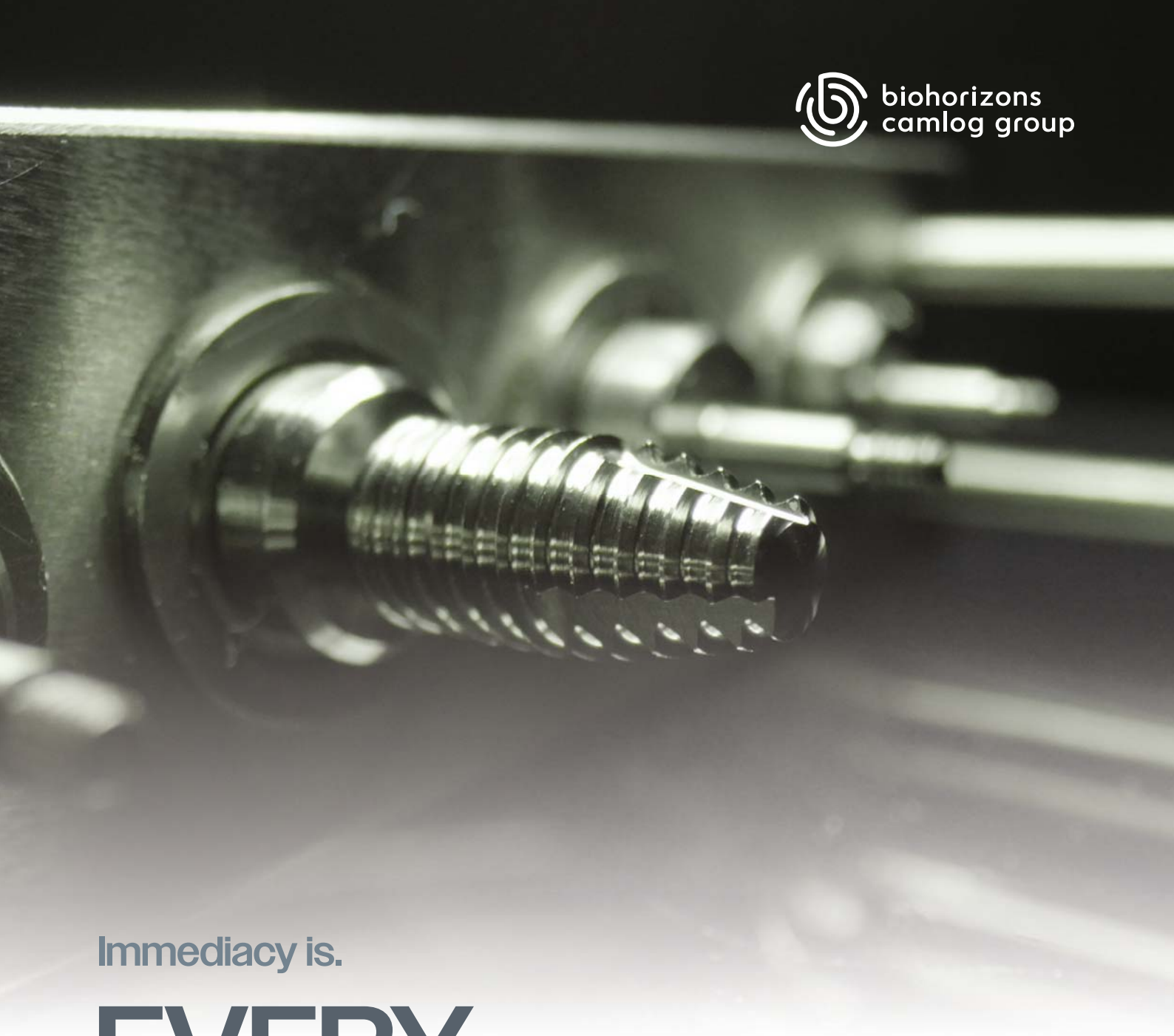
news

manufacturer news 40

news 41

about the publisher

imprint 42



biohorizons camlog group

Immediacy is.

EVERY IMMEDIATE POSSIBILITY.

Where science, stability & surface technology combine, the result is a reliable implant system supporting all your immediate treatment protocols from singles to full arches.

Learn more

Surface cleanliness of dental implants: Current insights

Susanne Reichard, Dr Maurice Hatzky & Prof. Rüdiger Junker, Austria

Manufacturing-related contamination of dental implants represents a significant yet under-recognised risk factor for implant failure. This review critically examines the evidence on surface cleanliness, focusing on the analytical protocols and findings of the CleanImplant Foundation. Using scanning electron microscopy and energy-dispersive X-ray spectroscopy, multiple studies have revealed metallic, organic and polymeric residues on sterile implants. Although these impurities can induce foreign body reactions and compromise osseointegration, current standards remain largely consensus-based. This review identifies methodological gaps and proposes a framework for future evidence-based testing to establish reproducible cleanliness thresholds and strengthen patient safety in implantology.

Introduction

Sterility is a regulatory requirement for dental implants, yet cleanliness—the absence of residual material on implant surfaces—remains insufficiently defined. The pioneering work by Duddeck revealed through scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS) that many sterile implants harbour inorganic and organic debris invisible to the naked eye.[1] Recognising this discrepancy, the CleanImplant Foundation (CIF) was founded in 2016 to systematically assess and certify implant cleanliness. By employing ISO-accredited laboratories and transparent evaluation protocols, the CIF provides manufacturers and clinicians with objective data on implant surface quality.[2] Nevertheless, the absence of globally harmonised cleanliness standards means that permissible levels of surface residues vary between manufacturers. Since surface contamination may provoke inflammatory or immune responses that interfere with osseointegration,[3] defining and validating cleanliness thresholds is crucial for consistent clinical outcomes. This review aims to summarise current findings on implant surface contamination, analyse the scientific and procedural framework of the CIF, and outline future directions for evidence-based cleanliness standards in implantology.

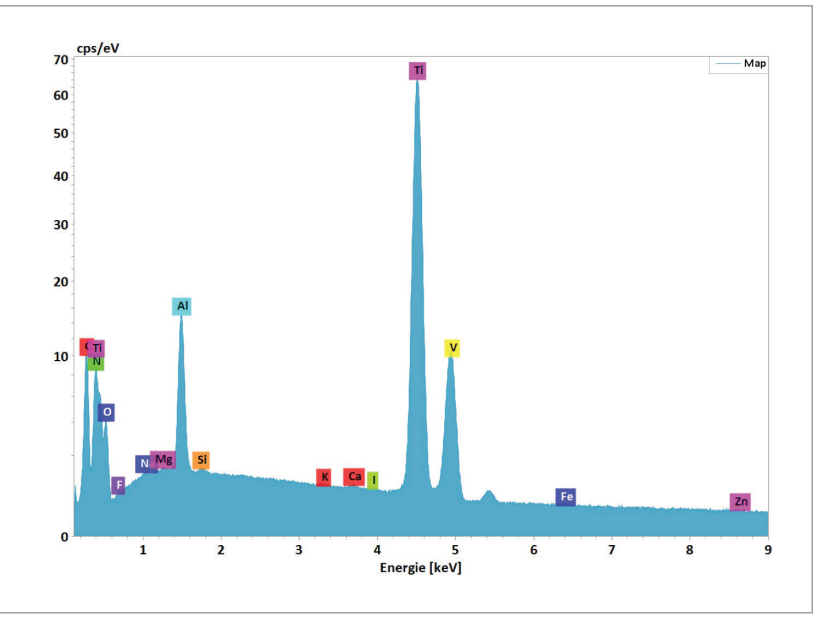


Fig. 1: Integrated spectrum across the entire imaged area. C = carbon; Ti = titanium; N = nitrogen; O = oxygen; F = fluorine; Na = sodium; Mg = magnesium; Al = aluminium; Si = silicone; K = potassium; Ca = calcium; I = iodine; V = vanadium; Fe = iron; Zn = zinc.

Materials and methods

This review was conducted to synthesise and critically analyse the available literature and institutional data concerning surface contamination of dental implants and the methodologies used to evaluate implant cleanliness. The research design followed the general principles of systematic qualitative review.

Relevant publications published between January 2016 and May 2025 were identified through a structured literature search in PubMed, ResearchGate and Google Scholar. The search terms were “CleanImplant Foundation”, “implant surface contamination”, “osseointegration”, “peri-implantitis”, “foreign body reaction”, “scanning electron microscopy (SEM)”, and “energy-dispersive X-ray spectroscopy (EDS)”. Additional material was obtained from the CIF’s official documentation, including its “Trusted Quality” mark reports and technical notes published between 2017 and 2025. The search was supplemented by manual screening of bibliographies from key articles to ensure comprehensive coverage.

Studies were included if they (1) provided analytical data on implant surface composition or contamination, (2) investigated biological or clinical consequences of surface residues, or (3) described standardised laboratory protocols for implant surface evaluation. Studies were excluded if they (1) lacked methodological transparency, (2) focused on non-titanium materials or (3) were unrelated to dental implantology. The final selection encompassed a variety of study types, including experimental *in vitro* analyses, *in vivo* animal models, and clinical or observational studies.

Data extraction focused on identifying the types of contaminants reported—such as metallic, organic and polymeric residues—as well as the analytical methods used for detection. The synthesis process further included comparing methodological frameworks and cleanliness thresholds between studies, particularly with reference to the evaluation procedures of the CIF. These procedures involve high-resolution SEM imaging and EDS compositional analysis under ISO Class 5 clean room conditions in laboratories accredited according to DIN EN ISO/IEC 17025, ensuring both accuracy and reproducibility.

Each study was analysed with respect to the reliability of its analytical procedures, the clarity of its contamination classification criteria, and the presence or absence of clinical correlation. Special attention was given to the distinction between sterility—the absence of living microorganisms—and cleanliness, defined as the absence of non-biological surface residues. This differentiation was essential for interpreting the significance of findings within the context of implant safety.

The results of this synthesis were interpreted descriptively and analytically rather than quantitatively, given the heterogeneity of study designs and outcome parameters. The review thus provides an integrative overview of the state of research, placing emphasis on the scientific basis, reproducibility and clinical relevance of surface cleanliness assessment methods. By aligning and contrasting the laboratory procedures of the CIF with peer-reviewed evidence, this study identifies existing methodological gaps and proposes directions for the establishment of evidence-based cleanliness standards in dental implantology.

Results

Findings of the CIF

The CIF's analytical protocol employs the Phenom ProX scanning electron microscope (Thermo Fisher Scientific), equipped with a high-sensitivity back-scattered electron detector and silicon drift detector for EDS, enabling compositional imaging at nanometre resolution. Implants are unpacked under ISO Class 5 clean room conditions to prevent testing artefacts.[4]

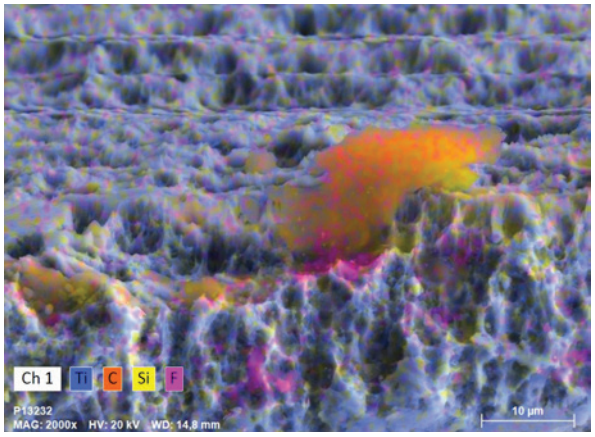


Fig. 2: SEM image and elemental mapping of the implant surface showing a localised contaminant deposit identified by energy-dispersive X-ray spectroscopy. Ti = titanium; C = carbon; Si = silicone; F = fluorine. Imaging parameters: magnification = ×2,000; accelerating voltage = 20 kV; working distance = 14.8 mm; scale bar = 10 µm.

Testing revealed recurring contamination, including iron, nickel, chromium, tungsten, copper, zinc and antimony—elements not native to titanium alloys. In addition, organic residues and PTFE fragments were frequently observed, often embedded in the outer threads and shoulder regions.[5] According Duddeck, the CIF defines tolerable contamination as (1) up to five organic particles smaller than 50 µm and (2) surface alterations due to blasting residues such as aluminium oxide or titanium dioxide.[4] All metallic debris and larger organic residues are considered unacceptable.

Manufacturing and packaging sources of contamination

Surface treatment methods such as sand-blasting and acid etching improve bone–implant contact but risk embedding blasting media.[6] Schupbach and Glauser found aluminium oxide residues on 14.4% of tested implants,[7] and Draenert and Mitov demonstrated successful elimination of residues in Straumann's SLA and SLActive systems, showing that manufacturing optimisation can prevent contamination.[8]

Mechanical machining contributes metallic debris—often stainless steel and tungsten—and packaging processes can introduce microplastic and organic residues.[9] The presence of such contaminants even on sterile implants underscores limitations in current clean room manufacturing protocols.

Clinical implications of contamination

Microscopic contaminants may alter the biological interface by triggering foreign body reactions or influencing peri-implant inflammation. Studies show that foreign materials such as silk ligatures can induce bone loss independent of bacterial infection, demonstrating that inflammation can arise from sterile stimuli.[10]

Albrektsson et al. propose that osseointegration reflects a homeostatic immune balance rather than complete tissue integration.[11] Metallic debris or organic films may disturb macrophage polarisation from M1 (pro-inflammatory) to M2 (anti-inflammatory), leading to chronic inflammation.

Peri-implantitis, once attributed primarily to plaque, is now recognised as multifactorial, involving host immune dysregulation and implant material effects.[12] Despite marginal bone loss being a common indicator, implants can remain functional for decades if immune equilibrium is maintained.[13,14]

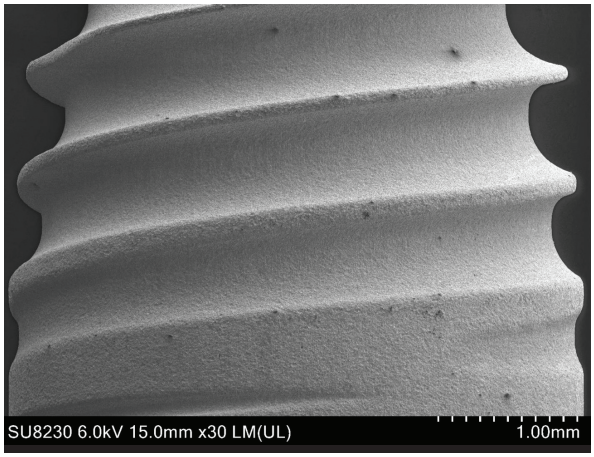


Fig. 3: SEM image of a sand-blasted and acid-etched titanium implant surface showing discrete dark deposits on the threads, indicating the presence of surface contaminants or embedded blasting residues. Imaging parameters: accelerating voltage = 6 kV; working distance = 15 mm; magnification = ×30; scale bar = 1 mm.

Discussion

A discussion of implant surface cleanliness must address both the scientific and practical implications of current analytical protocols, as well as the broader clinical consequences of contamination. The CIF has introduced a standardised analytical framework using SEM and EDS under ISO Class 5 clean room conditions. This represents a significant methodological advancement in the field. These protocols ensure that results are reproducible, traceable and independent of manufacturer influence. The CIF approach has identified a wide range of contaminants—including metallic, organic and polymeric residues—on sterile implants from multiple manufacturers. The foundation's commitment to transparency and peer-reviewed evaluation has undoubtedly elevated the discourse on implant surface quality and patient safety.

However, despite the technical precision of the CIF analytical process, the criteria used to classify implants as "clean" or "contaminated" are not grounded in empirically validated, evidence-based thresholds. Current contamination limits, such as the allowance of up to five organic particles smaller than 50 µm, were derived through expert consensus rather than statistical correlation with clinical outcomes. This limitation reflects a broader challenge in the field: while laboratory data clearly demonstrates the presence of contaminants, the biological significance of these residues remains poorly quantified. It is not yet known which particle types or concentrations might be clinically tolerable and which could trigger inflammatory or immune-mediated complications. The lack of published data linking specific contamination profiles to implant failure rates limits the ability of clinicians and regulatory bodies to distinguish between benign and harmful impurities.

Establishing evidence-based cleanliness standards therefore requires integrating materials science with biological and clinical research. Controlled experimental designs—combining *in vitro*, *in vivo* and clinical studies—are essential to quantify how contaminants influence osseointegration and peri-implant health. *In vitro* studies can provide a valuable first step by enabling the systematic evaluation of cytotoxic and inflammatory responses to defined contaminants. For instance, osteoblast and macrophage cultures exposed to titanium alloys containing iron, nickel or PTFE residues can reveal the degree to which such materials impair cell viability and mineralisation and induce or alter cytokine release.[15,16] Such models can help identify particle size and composition thresholds that disrupt the delicate balance between osteogenesis and immune regulation. *In vivo* animal experiments can then extend these findings by measuring bone–implant contact ratios and histological responses in controlled conditions. Notably, studies on rabbits have demonstrated that non-bacterial ligature materials alone can provoke peri-implant bone loss, illustrating that even sterile foreign bodies can trigger persistent inflammatory reactions.[10] Translating these findings to humans remains challenging, yet long-term clinical registries and cohort studies may provide the statistical power required to assess whether implants bearing the CIF's "Trusted Quality" mark indeed achieve lower rates of peri-implantitis or failure than non-certified systems do.

The absence of such longitudinal data underscores a critical gap between analytical quality assurance and real-world clinical evidence. While the CIF's certification process has a strong signalling effect, encouraging manufacturers to improve production hygiene, it currently serves more as a marker of procedural diligence than as a clinically validated predictor of success. To close this gap, interdisciplinary collaborations between independent research institutions, universities and implant manufacturers are needed. Such partnerships could generate standardised multicentre databases tracking

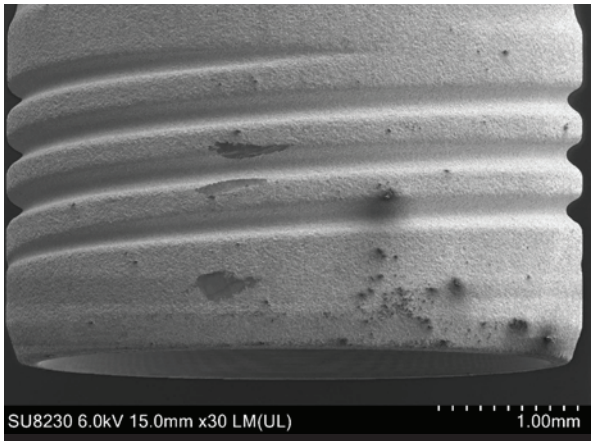


Fig. 4: SEM image of the coronal thread region of a titanium implant showing pronounced surface irregularities and contamination features. Imaging parameters: accelerating voltage = 6 kV; working distance = 15 mm; magnification = ×30; scale bar = 1 mm.

implant performance over time, while preserving data transparency and patient privacy. These registries would allow for correlation analyses between contamination parameters and clinical outcomes such as marginal bone loss, implant survival and patient-reported complications.

Beyond research, regulatory implications must also be considered. Regulation (EU) 2017/745 requires comprehensive safety evaluations of implantable materials, yet no explicit cleanliness criteria are included. Integrating surface cleanliness into these frameworks would shift the paradigm from voluntary certification to mandatory compliance. A harmonised ISO standard defining acceptable contamination levels—analogous to sterility norms—would compel manufacturers to maintain consistent quality across production batches. This would also facilitate more equitable market competition by ensuring that smaller manufacturers adhere to the same analytical rigour as industry leaders do. Moreover, mandating third-party verification could help prevent conflicts of interest and enhance clinician confidence in manufacturer claims.

For dentists and oral surgeons, understanding the potential impact of surface residues on biological integration is increasingly important. Even trace levels of metallic debris or polymeric films may alter protein adsorption, cell adhesion and the early stages of osseointegration. In susceptible patients—particularly those with compromised immune systems or systemic inflammatory conditions—these effects could amplify peri-implant inflammation and contribute to long-term bone loss. Clinical awareness therefore should extend beyond surgical technique to include implant selection and handling. Dentists should prioritise implant systems that have undergone independent cleanliness verification, ensure strict aseptic protocols during unboxing and placement, and avoid contact between the sterile implant and non-sterile instruments.

At a broader level, the CIF's work has already influenced industry behaviour by introducing accountability and transparency into the implant market. Manufacturers are increasingly publishing their analytical reports and adopting advanced cleaning technologies, such as plasma-based surface treatment or solvent-free sterilisation. These innovations are encouraging steps towards minimising particulate residues without compromising implant surface characteristics that promote osseointegration. However, achieving a true zero-contamination objective remains aspirational until there is comprehensive empirical validation of what constitutes a biologically clean implant.

Conclusion

While the CIF has set an invaluable precedent by systematising surface cleanliness evaluation, the field still requires robust scientific evidence linking contamination characteristics to biological and clinical outcomes. Only through coordinated interdisciplinary research and regulatory integration can cleanliness evolve from a conceptual quality mark into a measurable clinical safety standard. Such progress would not only reduce peri-implant complications but also reinforce patient trust in the long-term reliability of dental implants.

Alle Bilder: ©Archiv Reichard /Vollmer

about the authors

Susanne Marie Reichard began her studies in Dentistry in 2020 at the Danube Private University (DPU) in Krems an der Donau, Austria where she continues to advance her academic and professional development.

Dr Maurice Hatzky is a senior dentist and assistant professor at Danube Private University, specialising in dental prosthetics, biomaterials, and implantology.

Prof. Rüdiger Junker serves as the Director of the Center for Dental Prosthetics and Biomaterials at Danube Private University, overseeing research and clinical initiatives in his field.

References

contact

Susanne Marie Reichard
reichard.susanne@dp-uni.eu

Full-arch implants in periodontally compromised patients

Dr Eduard Aghasan, Dr Tigran Hakobyan, Prof. Curd Bollen & Prof. Gagik Hakobyan, Armenia

The study aimed to evaluate the long-term clinical and radiographic results of immediate dental implant placement and occlusal loading in periodontally compromised patients.

The study involved 42 patients with periodontitis who required the extraction of all remaining teeth and underwent immediate implant placement (588 implants; Bio3 Progressive, Bio3 Implants) into the fresh extraction sockets. Before implantation, all the patients underwent a set of clinical and radiographic examinations. Implant stability was measured using resonance frequency analysis (Osstell Mentor, Osstell) during implant placement and before fixation of the definitive prostheses. All implants underwent immediate occlusal loading with a provisional acrylic resin fixed denture. The definitive prostheses were completed three to five months after implant placement.

There were no complications during implant placement. Immediately postoperatively, there were no signs of infection around the implants, nor at the follow-up visits. Four weeks after implant placement, the soft tissue was in a healthy condition, evidenced by its pink colour and texture. After 12 months, the mean bone loss was 0.94 mm. After 36 months, the mean bone loss was 1.28 mm, and finally, after 60 months, the mean bone loss was 1.42 mm. For 588 measured implants, the mean resonance frequency analysis was 63.7 ISQ at the time of their placement and 72.4 ISQ after three to five months. Patients were satisfied with the functional and aesthetic results of the rehabilitation: masticatory function was restored, and facial profile aesthetics and occlusion were improved. The success rate of the implants after five years was 96.3%.

Immediate implant placement after tooth extraction can be a viable alternative to delayed implant placement in patients with periodontitis and can provide better aesthetics. Regular follow-up visits after such complex rehabilitation are key to long-term success.

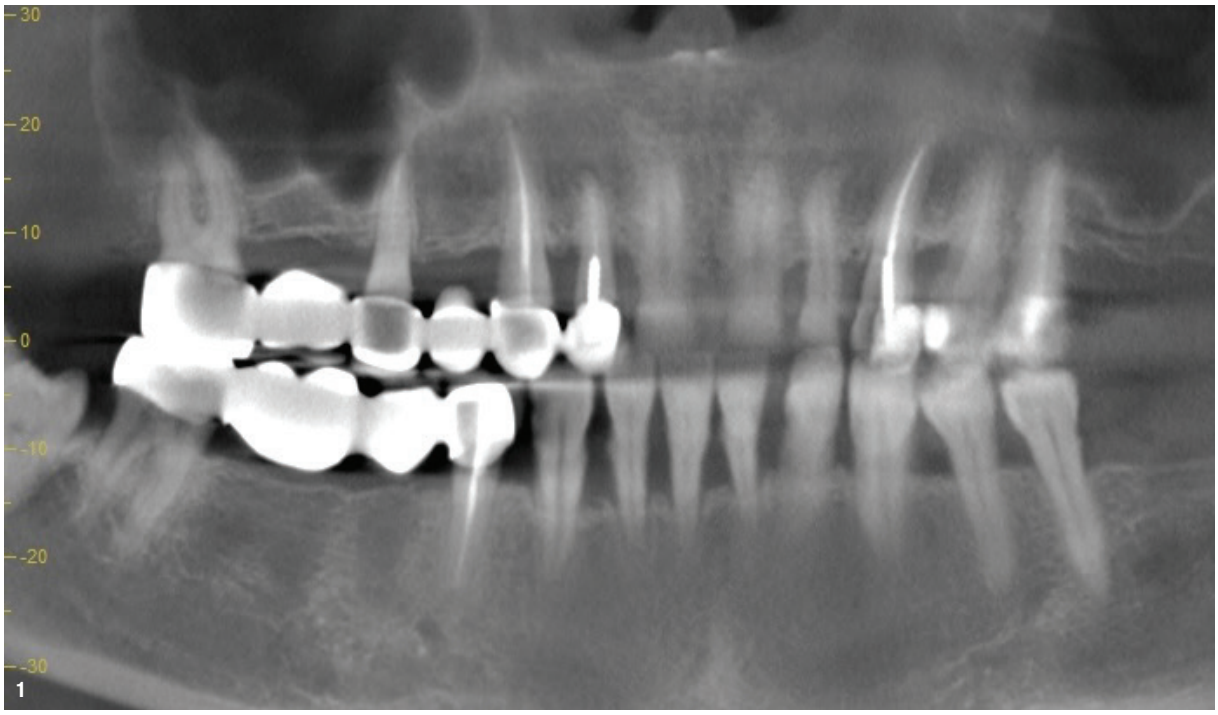


Fig. 1: Initial situation of a periodontally compromised patient.

Introduction

Dental implantation is a well-established, scientifically proven method of treating patients with partial and complete tooth loss.[1] The early rehabilitation of periodontitis patients with tooth loss is a topic of debate in implantology. Traditionally, a two-stage implantation technique is used. The main disadvantage is the additional time for the healing of the socket (three to four months) and osseointegration of the implant (three to six months).[2] In some cases, this is unacceptable for patients, especially when the teeth to be restored are in an aesthetically sensitive area. Immediate implantation allows significant reduction of the treatment time and improvement of the functional and aesthetic results by helping to prevent atrophy of the bone of the alveolar process, as well as reducing the number of surgical interventions.[3–5] Immediate placement of implants in extraction sockets was first described more than 30 years ago by Schulte and Heimke.[6]

After tooth extraction, a complex cascade of biochemical and histological processes is initiated during the wound healing period, leading to physiological changes in the bone and soft-tissue architecture.[7] These processes trigger an inevitable remodelling of the alveolar ridge that influences implant therapy in the edentulous area.[8] Several studies have shown that atrophic processes begin to develop in and around the socket area immediately after tooth extraction. The volume of bone decreases, and the structure and volume of the attached keratinised gingiva change.[9,10] During the normal bone healing process after tooth extraction, there is significant resorption of hard tissue, especially on the vestibular side, due to the thinner bone in this area and the presence of weak bundle bone. During a healing period of three to six months, there is a significant loss of tissue volume, particularly in the first three months after extraction.[11] These resorptive changes make it difficult to achieve an aesthetic result with definitive prostheses, especially in the anterior area. When the socket of the extracted tooth has intact walls and well-preserved surrounding soft tissue, it offers the ideal conditions for immediate implant placement.[12]

Earlier publications on immediate implantation warned of many complications, such as wound edge divergence and alveolar ridge resorption.[13] Several authors expressed the opinion that it was inappropriate to adopt this approach owing to the uncertainty of achieving good, predictable results and the difficulties that may arise during surgery.[14] The most frequent complications of immediate implant placement are early implant failure due to contamination of the operative field and infection, as well as fenestration and dehiscence, unacceptable aesthetics resulting from poor implant positioning, and gingival recession.[3]

Other authors, however, reported favourable outcomes with this approach, demonstrating that it can support successful prosthetic rehabilitation, including aesthetically pleasing results and earlier restoration of function.[15,16] Potential advantages of this treatment approach include a reduction in the number of surgical interventions, a shorter treatment time, preservation of alveolar bone and maintenance of soft-tissue aesthetics.

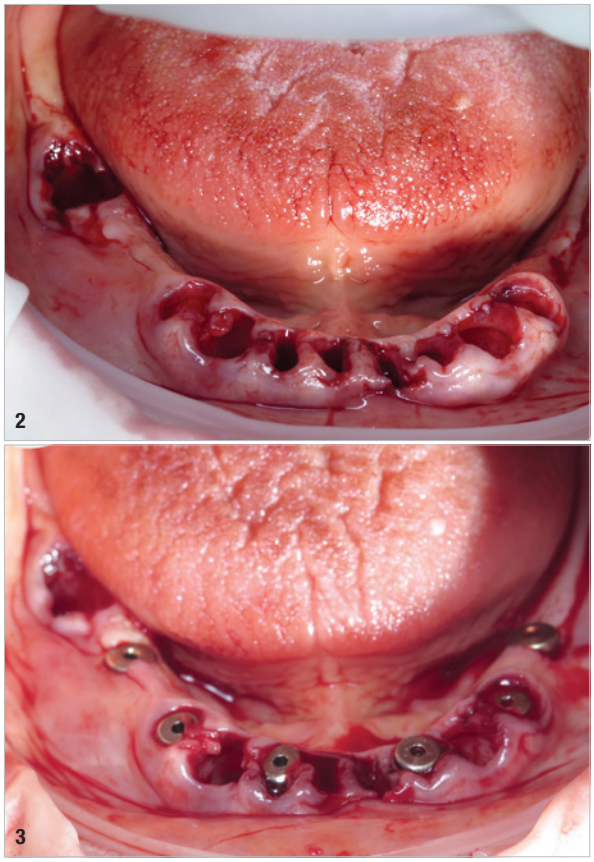


Fig. 2: Situation after extraction of all the remaining mandibular teeth. – **Fig. 3:** Six Bio3 Progressive implants placed in the mandible.

To achieve optimal results, the following principles should be observed: (1) the length of the implant should be greater than that of the extracted tooth; (2) the implant must achieve primary stability, which is supported by intercortical fixation and placement of the implant in freshly processed bone; and (3) the surgeon should adhere strictly to the treatment protocols. Patient rehabilitation should be carried out over a period of up to four to six months. Immediate implant placement is indicated when tooth extraction is due to trauma, an endodontic lesion, a root fracture, root resorption, a root perforation or periodontal loss.[4] Contra-indications include presence of active infection, insufficient bone (< 3 mm) beyond the socket apex for primary implant stability and insufficient bone width.[17]

One of the more controversial issues is immediate implantation in infected sites. Some studies have shown that placing an implant directly into a socket with peri-

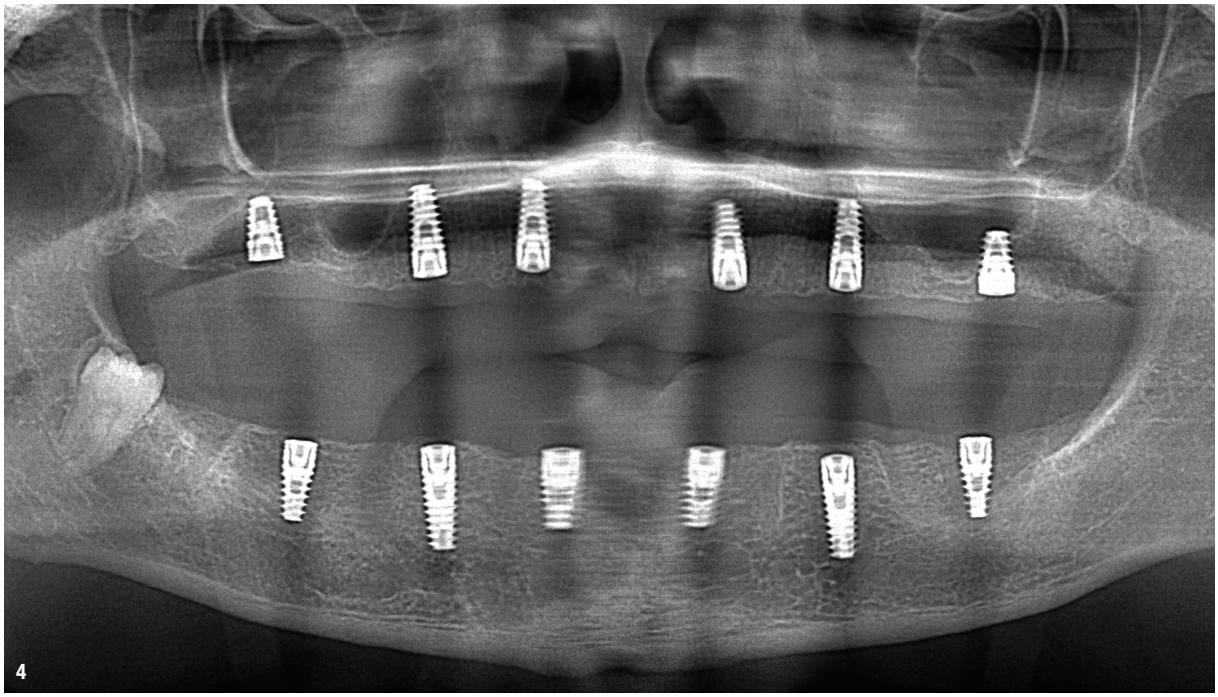


Fig. 4: Radiographic examination four months after implant placement.

apical infection significantly increases the likelihood of implant failure, compared with an uninfected socket.[18, 19] However, recent evidence has demonstrated that immediate implant placement in areas with chronic periapical lesions can be successful.[20–22]

A common reason for tooth extraction is chronic periodontal disease. It is known from the literature that, even after extensive antiseptic irrigation after extraction of teeth affected by periodontitis, pathogenic bacteria can persist, necessitating thorough curettage of pathological granulation tissue from the sockets. Because of the high risk of implant failure in such cases, immediate placement of implants in periodontitis-infected sites was avoided.[23] However, some studies have shown similar success and survival rates for immediate implants in infected sites compared with non-infected sites, suggesting that it may be a viable and effective treatment approach.[16, 24–26]

Immediate implant placement and immediate implant loading cannot be applied to every patient however. In comparison with conventional implant treatment, the ideal situation for immediately loaded implants includes adequate bone quality (at least Class D2 bone), minimum implant length of 10 mm, adequate primary stability and avoidance of lateral forces.[27]

Materials and methods

The study involved 42 patients with severe periodontitis who required extraction of all remaining teeth and received immediate implant placement into the fresh extraction sockets. All the patients showed functional and aesthetic problems. The patients (24 men and 18 women) ranged between 38 and 64 years of age (mean: 64.7 ± 10.6 years).

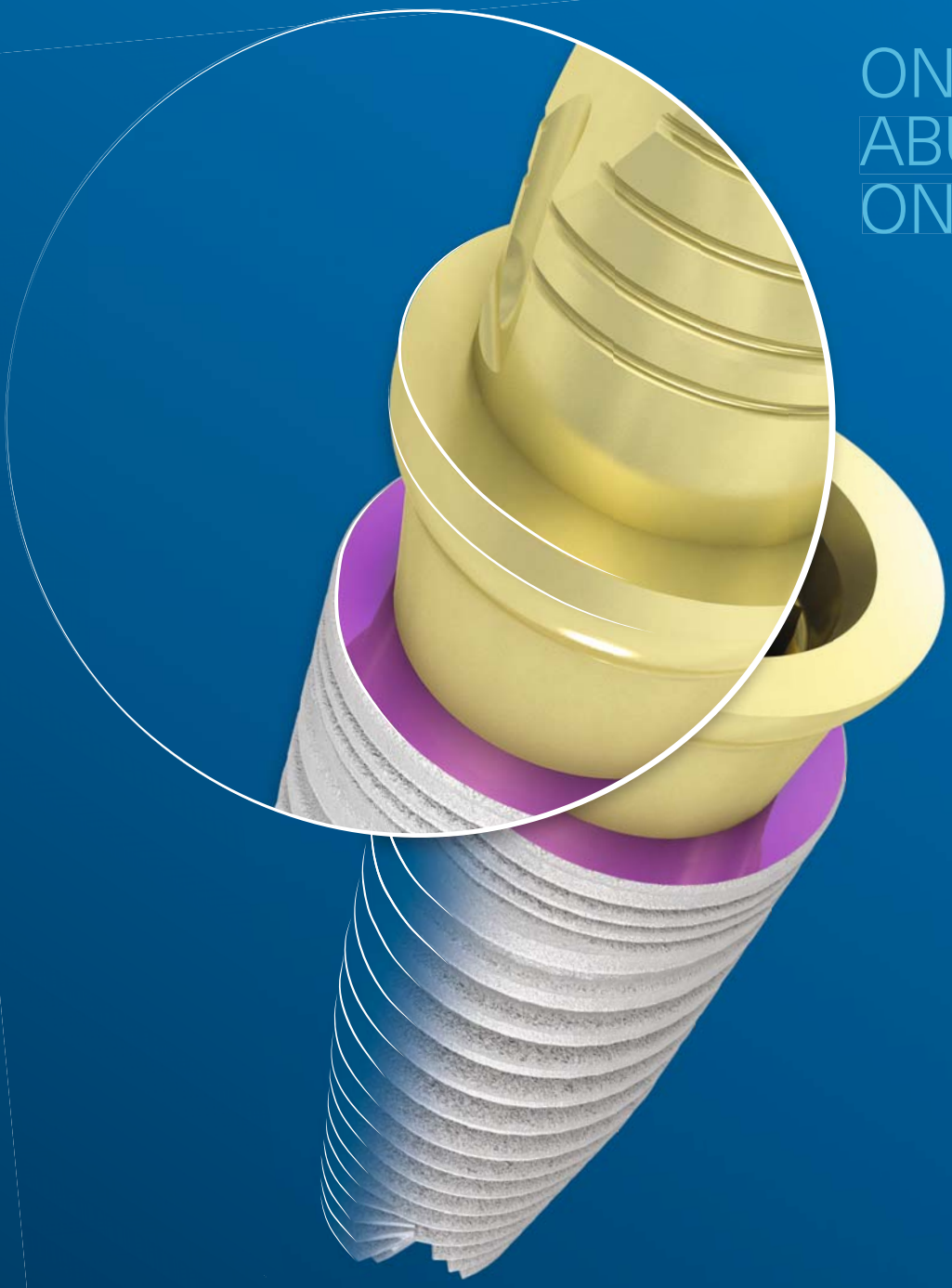
The study was conducted according to the principles outlined in the Declaration of Helsinki on clinical research involving humans. The ethical committee of the University of Seville in Spain approved the study protocol (No. 168/2022). All the patients provided written informed consent for implant placement and for inclusion in the clinical study.

The inclusion criteria were as follows:
- between 30 and 65 years of age and in good general health (ASA Class I or II);
- presence of four bony walls of the extraction socket;
- diagnosis of periodontitis based on clinical and radiographic assessments (according to the new periodontal classification from 2018);[28] and
- presence of teeth affected by periodontitis and deemed untreatable.

The exclusion criteria were as follows:
- uncontrolled chronic systematic disease;
- coagulation disorder;
- alcohol or drug abuse;
- acute or chronic autoimmune mucosal disease;
- smoking (more than ten cigarettes per day); and
- use of any medication or presence of any health condition that contra-indicated implant treatment.

MIS | Dentsply Sirona

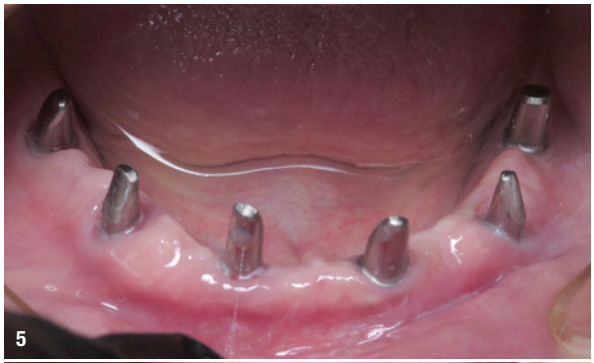
ONE ABUTMENT, ONE TIME

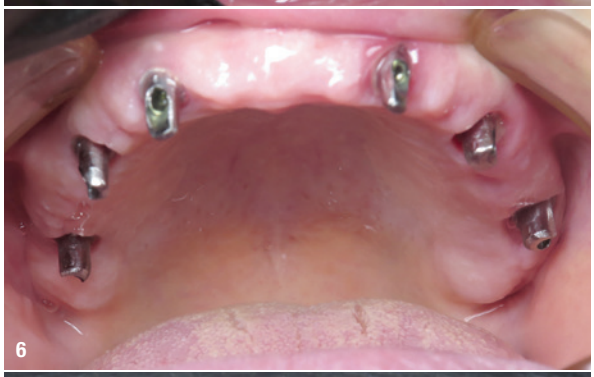


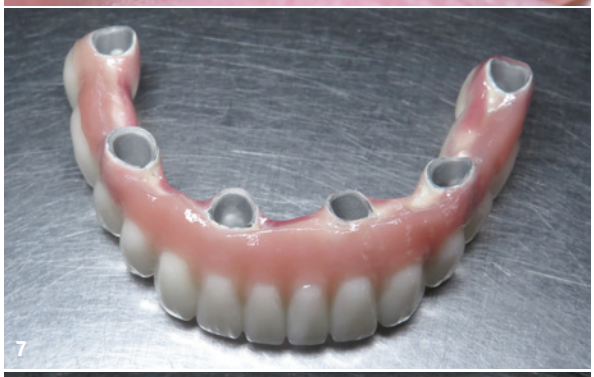
MIS CONNECT

TISSUE-LEVEL SCREW-RETAINED SYSTEM
MAKE IT SIMPLE

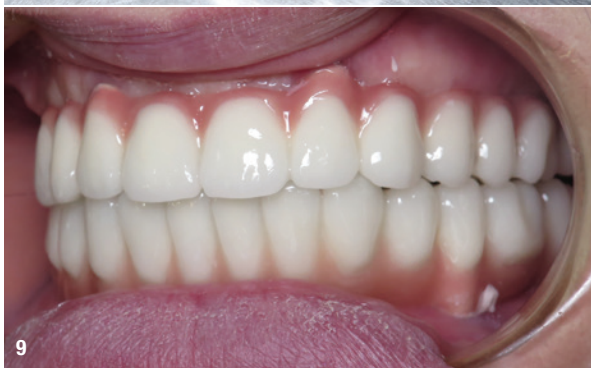
The MIS CONNECT is a stay-in abutment placed immediately after implant insertion and remains in place throughout the restoration process. Its design allows the prosthetic procedure and restoration to be performed away from the bone and within the soft tissue. Learn more about MIS at: www.mis-implants.com


5


6


7


8


9

Before implantation, all the patients underwent extensive clinical and radiographic examination, including CBCT scans to assess the quality and quantity of the bone. No implant surgery was performed before optimal motivation of and compliance by each patient had been achieved. No bone augmentation procedures were performed either prior to or concomitant with implant surgery. The treatment protocol has been described by Roccuzzo et al.[29]

The patients were given amoxicillin clavulanate (AUGMENTIN 1 g, GlaxoSmithKline) 1 hour before the implant surgery. Before the implant surgery, all remaining teeth were extracted with minimal trauma to the extraction socket and surrounding bone. After tooth extraction, the socket was immediately curetted to remove granulation tissue and rinsed with a 0.2% chlorhexidine digluconate solution. Implants of appropriate dimensions were selected and placed via standard protocols. The implants were inserted beyond the root apex in the extraction sockets to achieve primary stability, and a one-stage surgical protocol was employed for soft-tissue healing. Postoperatively, all the patients were prescribed 600 mg ibuprofen (Brufen, Kahira Pharmaceuticals & Chemical Industries), three times a day for seven days, and 0.2% chlorhexidine digluconate (Curasept, Curadent Healthcare), twice a day for seven days.

A total of 588 implants (Bio3 Progressive, Bio3 Implants; length: 6.0–13.0 mm; diameter: 3.3–5.0 mm) were placed to a minimum insertion torque of 30–35 Ncm, 33 implants in the maxilla and 252 in the mandible. Implant stability was measured using resonance frequency analysis (Osstell Mentor, Osstell) immediately after implant placement and after three to five months, just before fixation of the definitive prostheses. At the 36- and 60-month examination, all the prostheses were removed to measure the implant stability quotient (ISQ) value again.

Directly after implant placement, digital scan bodies were seated for a digital impression. After 6 hours, provisional acrylic resin dentures were fitted in the oral cavity and fixated to temporary abutments. Owing to precise digital preoperative planning, the occlusion only required minor adjustment. The definitive restoration was performed three to five months after implantation using CAD/CAM-fabricated (NobelProcera Software, Nobel Biocare) complete metal–ceramic or zirconia prostheses. The prostheses were fix-

Fig. 5: Final abutments placed in the mandible. – **Fig. 6:** Final abutments placed in the maxilla. – **Fig. 7:** Complete metal–ceramic mandibular denture. – **Fig. 8:** Complete metal–ceramic maxillary denture. – **Fig. 9:** Both metal–ceramic dentures *in situ*.

ated with cement (HS Implant and Long-Term Temporary Cement, Henry Schein).

All the patients were recalled yearly for preventive examination to assess inflammation of the peri-implant tissue, marginal bone loss, and aesthetic and functional satisfaction of the patients. All these parameters were rechecked during the follow-up examinations. Patients were followed up at six-month intervals for 36 months and then at a 60-month final follow-up (Figs. 1–10).

Results

There were no complications during implant placement and immediately postoperatively, and no signs of infection around the implants were detected at the follow-up visits. Four weeks after implant placement, the soft tissue around all the implants was in a good condition, evidenced by its healthy colour and texture. After three to five months, the mean marginal bone loss was 0.29 mm. At 12 months, it was 0.94 mm, and after 36 months, it was 1.28 mm. At the 60-month follow-up, the mean bone loss was 1.42 mm (Table 1).

Time	3–5 months	12 months	36 months	60 months
Marginal bone loss	0.29	0.94	1.28	1.42

Table 1: Mean marginal bone loss (mm) over time.

For the 588 implants, the mean resonance frequency analysis was 63.7 ISQ at implant insertion, and 72.4 ISQ after three to five months. At the 36- and 60-month follow-up, these values were 75.1 ISQ (512 implants were measured) and 76.3 ISQ (499 implants were measured), respectively (Table 2).

Time	3–5 months	12 months	36 months	60 months
ISQ value	63.7	72.4	75.1	76.3

Table 2: Mean resonance frequency analysis (ISQ value) over time.

The cumulative success rate of the implants after five years was 96.3% (based on 409 out of the initial 588 implants). Almost all the patients were completely satisfied with the functional and aesthetic results of the prosthetic rehabilitation: their masticatory function was restored, and their facial profile aesthetics and occlusion were improved.

Discussion

Evaluating the long-term results of immediate implant placement, the fourth ITI Consensus Conference stated that immediate implantation is a more complex technique compared with delayed implant placement. The survival rates of immediately placed implants are however high and comparable to those of implants placed according to

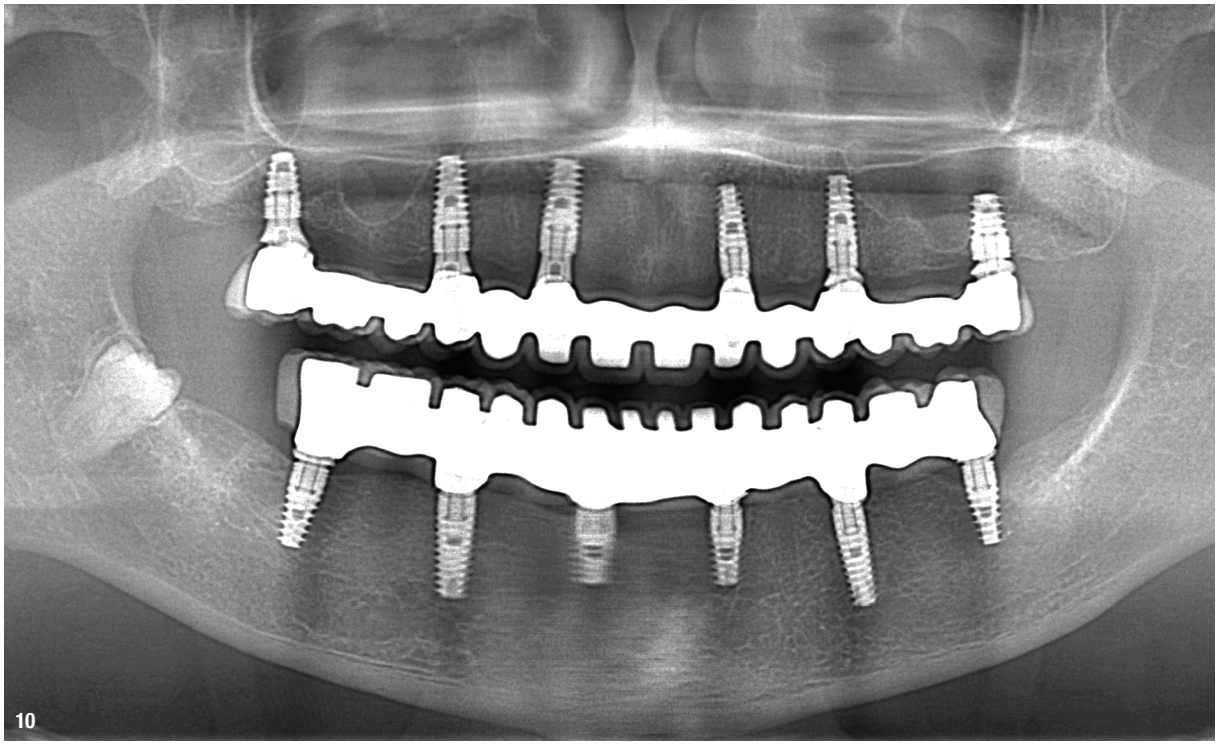


Fig. 10: Radiographic examination five years after placement and restoration of the implants.

a delayed protocol.[30] According to the seventh European Workshop on Periodontology, patients with severe periodontitis have a higher risk of complications and peri-implant infection.[31]

Recently, there have been a significant number of clinical studies and systematic reviews that have drawn positive conclusions regarding immediate placement and occlusal loading of implants. This protocol has shown a similar level of implant survival to that of the delayed loading protocol, which is considered a very predictable procedure.[32] The effectiveness of this treatment protocol depends on several factors: patient selection, bone quality and quantity, implant quantity and design, and implant primary stability. The employment of immediate occlusal loading protocols using full-arch fixed prostheses has many advantages: prevention of resorption of the residual alveolar ridge, reduction in the number of surgical interventions, reduction of treatment time, and improvement of aesthetics and occlusal function.[33]

There is only limited long-term data on immediate placement and occlusal loading of full-arch implants in periodontally compromised patients.[34] In published reports, implants in patients with periodontitis showed lower implant survival rates, higher marginal bone loss and an increased incidence of peri-implantitis compared with patients without a history of periodontitis. A recent clinical study of 58 patients with periodontitis over a longer period (ten years or longer) showed an implant failure rate of 10.08%.[35]

Studies have shown that, in patients with advanced periodontal disease, the clinical protocol of implant placement after tooth extraction and immediate occlusal loading is a predictable solution for prosthetic rehabilitation of the jaw, resulting in reduced treatment time. However, longer-term studies on a larger number of patients are needed to evaluate the effectiveness of immediate implant placement and delayed occlusal loading.

Immediate implant placement and immediate occlusal loading is a reliable treatment option for cases requiring early restoration of teeth to be extracted if all criteria for primary implant stability and occlusal adjustment of the provisional restoration are met. Immediate placement and loading preserves the vertical bone height and maintains the gingival architecture. After rehabilitation with implants, masticatory function, aesthetics of the facial profile and occlusion are improved. Patients expressed their satisfaction with the results of the therapy and their improved quality of life.[36]

Conclusion

Careful patient selection, a proper treatment plan and thorough follow-up of surgical and prosthetic protocols are key to success. Immediate implant placement saves time, involves less-invasive surgical procedures and can offer a good aesthetic outcome and success rate.

Based on the results of this report, it can be concluded that immediate implant placement may be a favourable treatment option if there is sufficient keratinised gingival tissue and sufficient bone volume around the extracted tooth. Absence of acute inflammation in the socket of the extracted tooth and good primary stability of the implant are essential. Effective supportive therapy is crucial for the successful outcome of this approach.

Prof. Curd Bollen

Literature

about the authors

Dr Eduard Aghasan practises at Vivaldi Dental Clinic in Yerevan in Armenia.

Dr Tigran Hakobyan is a lecturer in the Department of Surgical Stomatology and Maxillofacial Surgery of the Mkhitar Heratsi Yerevan State Medical University and practises at Kamar Medical in Yerevan in Armenia.

Prof. Curd Bollen is a visiting professor in the Department of Surgical Stomatology and Maxillofacial Surgery of the Mkhitar Heratsi Yerevan State Medical University in Yerevan in Armenia. He can be contacted at curdbollen@me.com.

Prof. Gagik Hakobyan is head of the Department of Surgical Stomatology and Maxillofacial Surgery of the Mkhitar Heratsi Yerevan State Medical University in Yerevan in Armenia.

contact

Prof. Curd Bollen
Yerevan State Medical University
Yerevan, Armenia
+31 619 130754
curdbollen@me.com

straumann

iEXCEL

STRAUMANN® PERFORMANCE SYSTEM

STRAUMANN® IEXCEL

EMPOWERING YOU TO EXCEL

- ONE SET OF INSTRUMENTS
- FOUR IMPLANT DESIGNS
- ONE SIZE PROSTHETIC CONNECTION

www.straumann.com/iexcel

A0065/en/A/00 03/25

Four-unit immediate restoration in the maxillary aesthetic area

Dr Massimo Frosecchi, Italy

The present case report details the oral rehabilitation of a 62-year-old female patient presenting with chronic apical pathologies affecting the maxillary anterior teeth, which were deemed hopeless and indicated for extraction. Given her concerns regarding aesthetics and function, the patient sought a fixed, predictable treatment option capable of replicating her natural dentition. She further emphasised the importance of avoiding an edentulous phase and requested an immediate restoration to maintain her facial appearance and overall quality of life.

Introduction

Restoring the aesthetic zone in an older patient can present unique challenges. While the expectations for a natural and aesthetically pleasing result often remain high, considerations such as reduced bone volume and soft-tissue health require careful management. In this case, the presence of a thin buccal plate and chronic apical lesions added complexity, requiring advanced techniques for predictable outcomes.

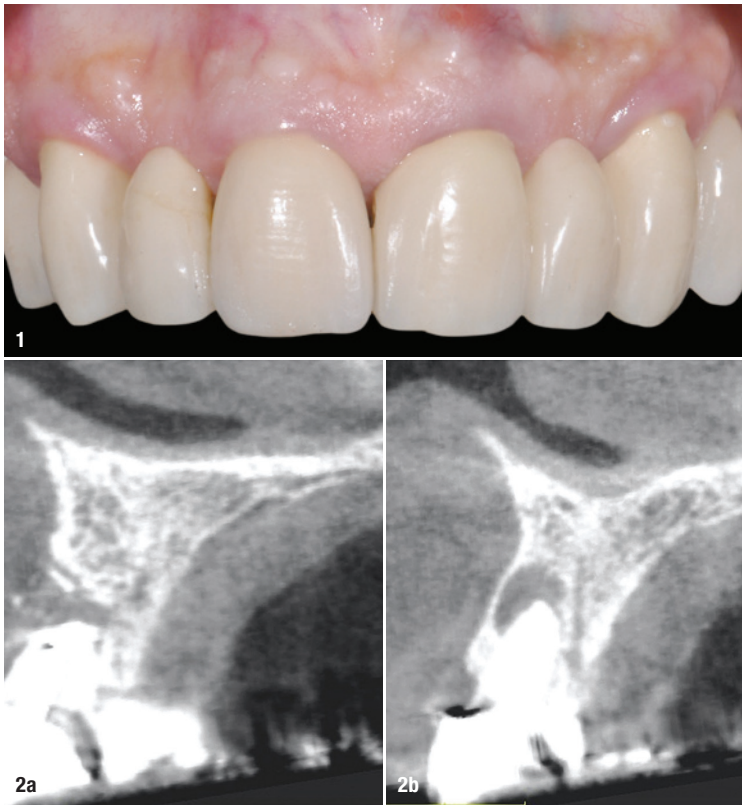


Fig. 1: Intra-oral view: Fixed dental bridges on teeth #13–11 and #21–23.
Figs. 2a+b: Radiographic analysis: Presence of chronic apical lesions and a thin buccal plate.

The treatment plan comprised immediate implant placement in conjunction with guided bone regeneration (GBR) to simultaneously address functional and aesthetic requirements. Straumann® BLX implants were selected for their capacity to achieve high primary stability, even in sites with limited bone availability. The implant's macrodesign is particularly advantageous for immediate placement and loading protocols, providing secure anchorage and predictable outcomes. This approach reduces overall treatment duration, preserves peri-implant soft-tissue architecture, and enables the patient to maintain both function and appearance throughout the rehabilitative process.

Guided bone regeneration was essential for ridge preservation and stability. Xenograft material was used to fill the extraction sockets of the central incisors. To address soft-tissue deficiencies and enhance contouring, Mucoderm®, a collagen-based soft-tissue substitute, was applied to the buccal aspect of the lateral incisor regions. This combination improved tissue quality, contributing to an aesthetic outcome and ensuring a natural transition between the prosthesis and tissues.

A prosthetic-driven implant planning workflow further enhanced the outcome of the treatment. The immediate placement of a screw-retained 4-unit temporary bridge allowed the patient to maintain functionality and aesthetics during the osseointegration period. The final restoration, made from zirconium oxide and lithium disilicate, offered a natural-looking result that met the patient's aesthetic and functional expectations.

This report highlights the importance of combining the Straumann® BLX implant with GBR techniques and soft-tissue substitutes in the management of the aesthetic zone. By addressing both biological and aesthetic challenges, this approach ensures long-term success, deliv-

ering functional and visual harmony while enhancing patient satisfaction.

Initial situation

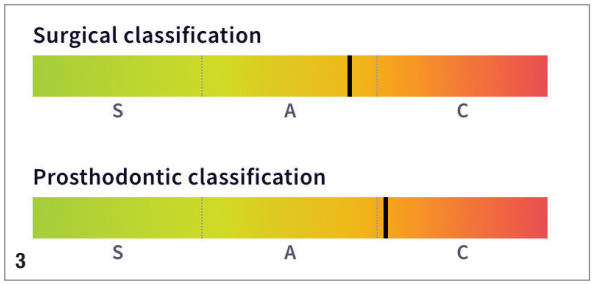
A 62-year-old systemically healthy female presented with chronic apical pathologies affecting the maxillary anterior teeth, which were deemed non-restorable and indicated for extraction. The patient expressed concern regarding the aesthetic implications of the treatment and its potential impact on her quality of life. She sought a predictable, fixed solution that would closely replicate her natural dentition and emphasised the importance of avoiding an edentulous period during the course of therapy. Accordingly, she requested an immediate restorative approach.

Clinical examination revealed a medium smile line and the presence of fixed partial dentures spanning teeth #13–11 and #21–23. Radiographic evaluation confirmed chronic apical lesions associated with the affected teeth and demonstrated a thin buccal cortical plate (Figs. 1–2b).

Based on the SAC classification, the patient's surgical case was categorised as advanced, while the prosthodontic status was classified as complex (Fig. 3).

Treatment planning

After evaluating the clinical and radiographic findings, a prosthetic-driven implant planning workflow was applied following a comprehensive discussion with the patient (Fig. 4).



This approach also allowed for a detailed explanation of the treatment steps, ensuring the patient had a clear understanding and that her expectations were aligned with the proposed plan. The treatment plan was as follows:

1. Cutting the present bridge between canines and lateral incisors.
2. Extraction of hopeless central incisors.
3. Implant insertion in the lateral incisor position.
4. Ridge preservation in the region of the central incisors.
5. Soft-tissue grafting in buccal aspects of the lateral incisor regions.
6. Delivery of screw-retained 4-unit temporary bridge.
7. Monitoring during osseointegration period.
8. Finalisation with zirconium oxide and lithium disilicate 4-unit screw-retained bridge.

Surgical procedure

Following administration of local anaesthesia with 2% lidocaine containing 1:100,000 epinephrine, the existing bridge was sectioned between the canines and lateral incisors. The hopeless maxillary central incisors were

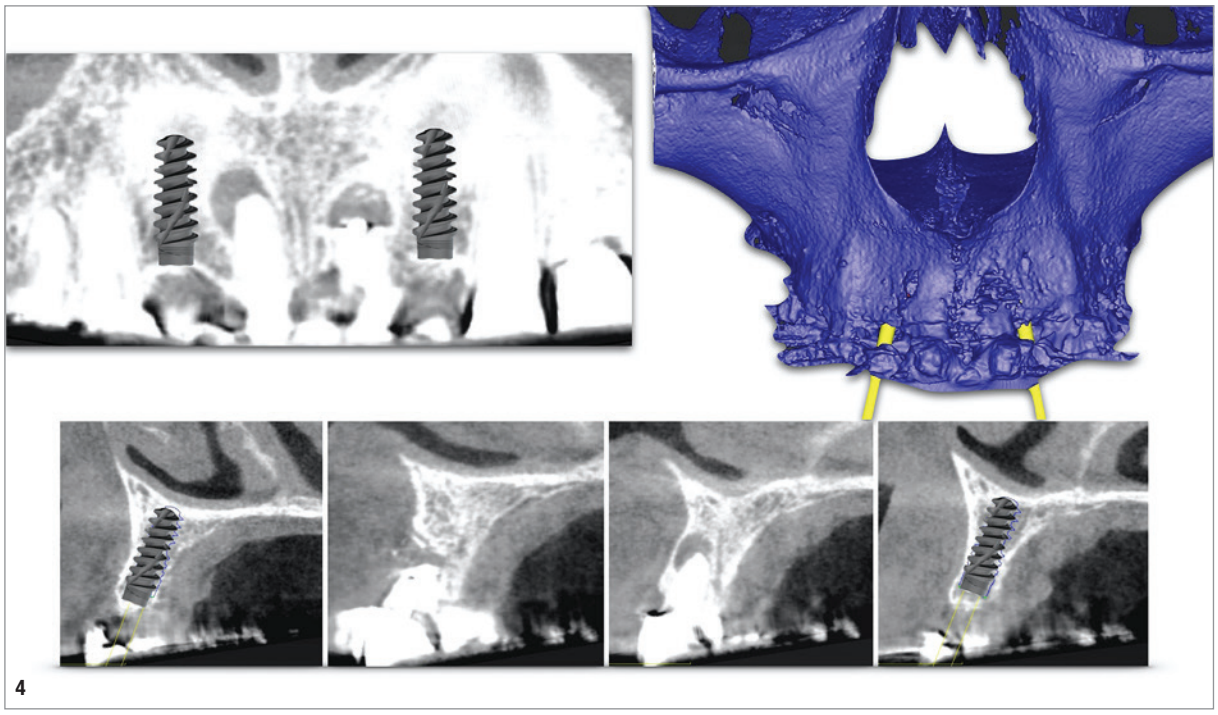
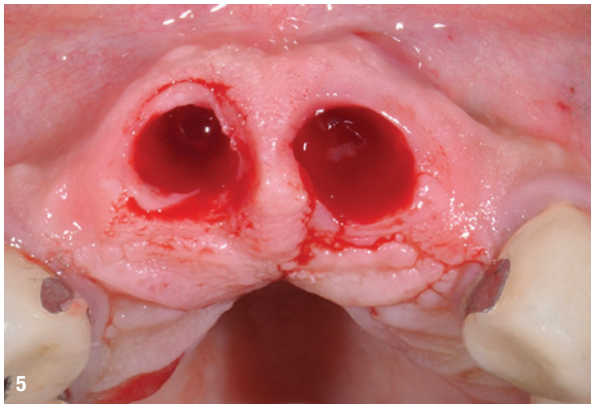


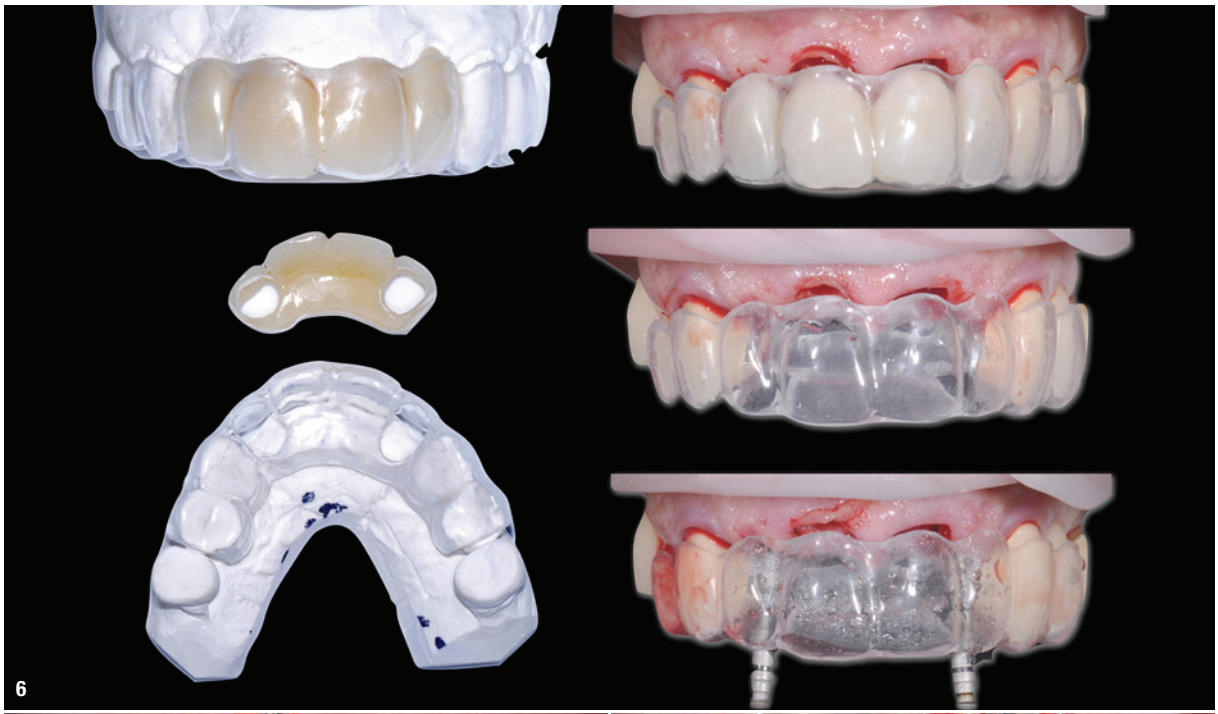
Fig. 3: SAC classification. – **Fig. 4:** A prosthetic-driven implant planning workflow.

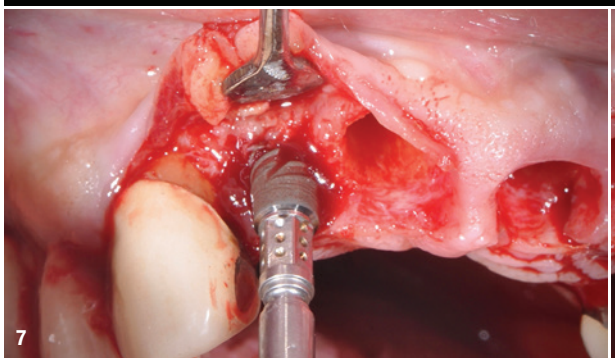


then carefully extracted using periotomes to preserve the alveolar bone. The teeth were luxated and removed atraumatically, avoiding excessive socket enlargement. The extraction sites were thoroughly debrided with curettes to ensure complete removal of granulation tissue and debris (Fig. 5). A mucoperiosteal flap was elevated via a crestal incision, and a surgical stent was employed to facilitate prosthetically guided implant placement (Fig. 6).

Implant osteotomies were prepared using the Straumann® BLX Surgical Cassette, with attention to local bone density. Preparation commenced with a 2.2 mm pilot drill following the manufacturer's protocol, using clockwise rotation and copious irrigation with chilled sterile saline. Subsequently, Straumann® BLX implants (Ø 3.75 mm, Roxolid® SLActive®) were placed at sites #12 and #22 using a handpiece (Figs. 7+8), achieving optimal primary stability.

A final insertion torque of ≥ 35 Ncm was achieved, confirming adequate primary stability. Following implant placement, the central incisor sockets were visualised prior to grafting (Fig. 9). A temporary screw-retained bridge was positioned before the grafting procedure to





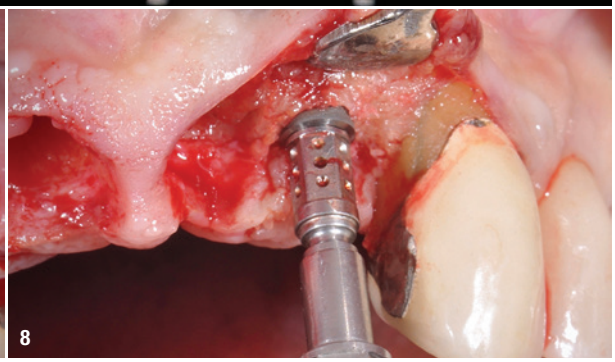
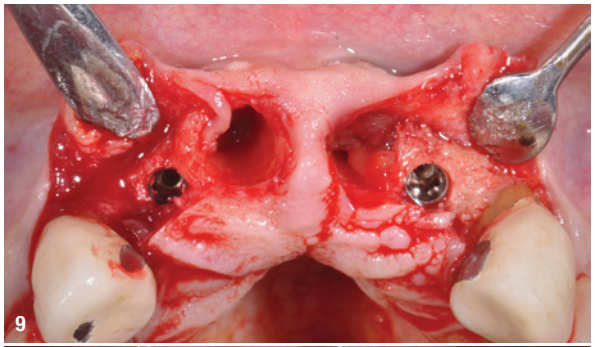
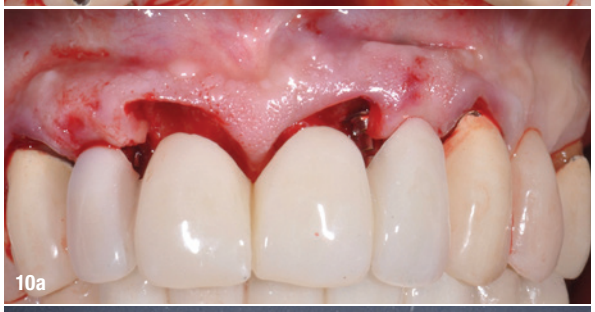
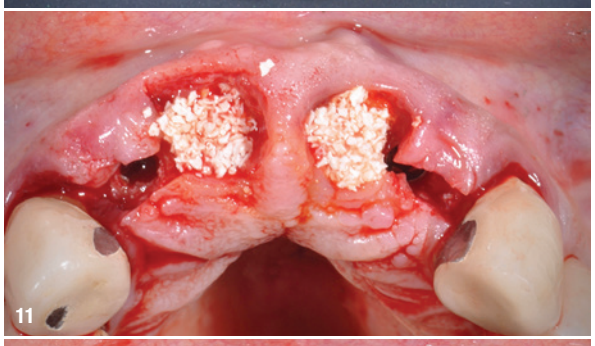


Fig. 5: After bridge sectioning, hopeless central incisors were extracted. – **Fig. 6:** A mucoperiosteal flap was raised, and a stent guided implant placement. **Figs. 7+8:** Straumann® BLX Roxolid® SLActive® implants (Ø 3.75 mm) were placed at sites #12 and #22.







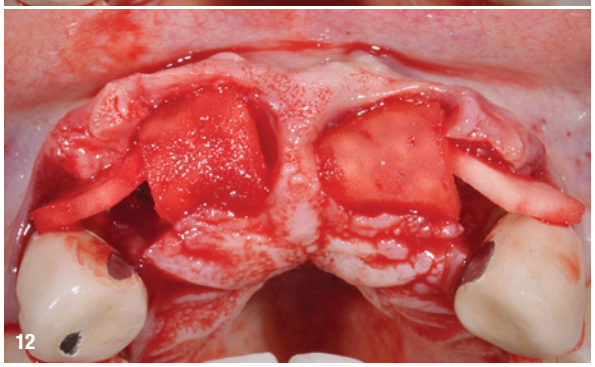


Fig. 9: A final insertion torque of ≥ 35 Ncm was achieved to ensure primary stability and the central incisor sockets were prepared for grafting. – **Figs. 10a+b:** Temporary bridge with screw-retained abutments. – **Figs. 11+12:** Xenograft and Mucoderm® were used to optimise hard and soft tissue for aesthetics.

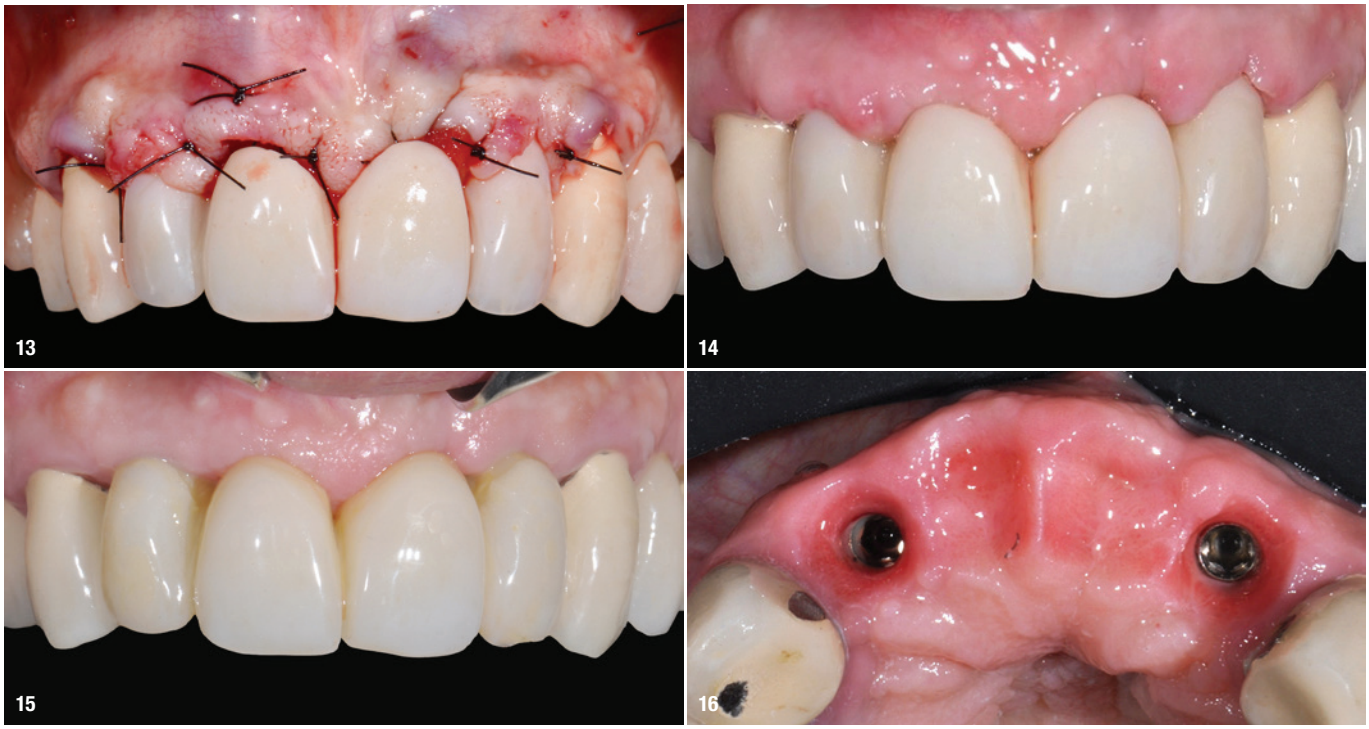


Fig. 13: Sutures placed and immediate loading done with a temporary 4-unit screw-retained bridge. – **Fig. 14:** Seven-day follow-up: sutures removed; healing uneventful. – **Figs. 15+16:** At 75 days post-surgery, soft-tissue conditioning at sites #11 and #21 ensured proper contour for final restoration.

support soft-tissue contours and immediate aesthetics (Figs. 10a+b).

Bone grafting was performed to facilitate soft-tissue management and promote optimal wound healing at the extraction sites. A xenograft was placed in the central incisor sockets, and Mucoderm® was applied to the buccal aspect of the lateral incisor region as a barrier membrane, ensuring sufficient hard and soft-tissue volume for optimal aesthetic outcomes (Figs. 11+12). The flap was then closed with sutures, and a temporary screw-retained four-unit bridge was delivered. Occlusion, aesthetics, and function were carefully evaluated, and comprehensive postoperative instructions were provided to the patient (Fig. 13).

Prosthetic procedure

At the seven-day postoperative follow-up, sutures were removed, and wound healing was progressing uneventfully (Fig. 14). At 75 days post-surgery, crestal bone and soft-tissue changes were evaluated, demonstrating favourable healing and adaptation of the surrounding tissues. Soft-tissue conditioning was performed at pontic sites #11 and #21 to achieve optimal contour and tissue health in preparation for the definitive prosthetic restoration (Figs. 15+16).

A definitive impression was subsequently taken and sent for the fabrication of a screw-retained bridge composed of zirconium oxide and lithium disilicate, selected for their

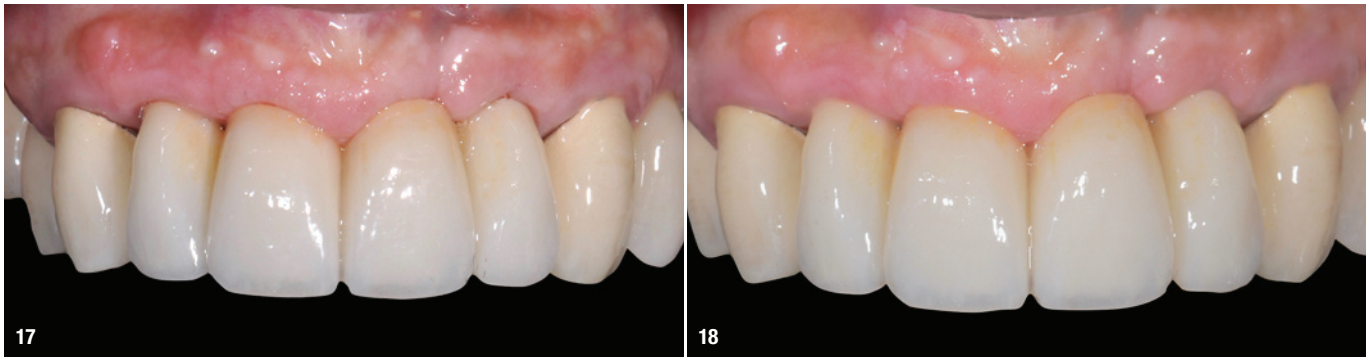
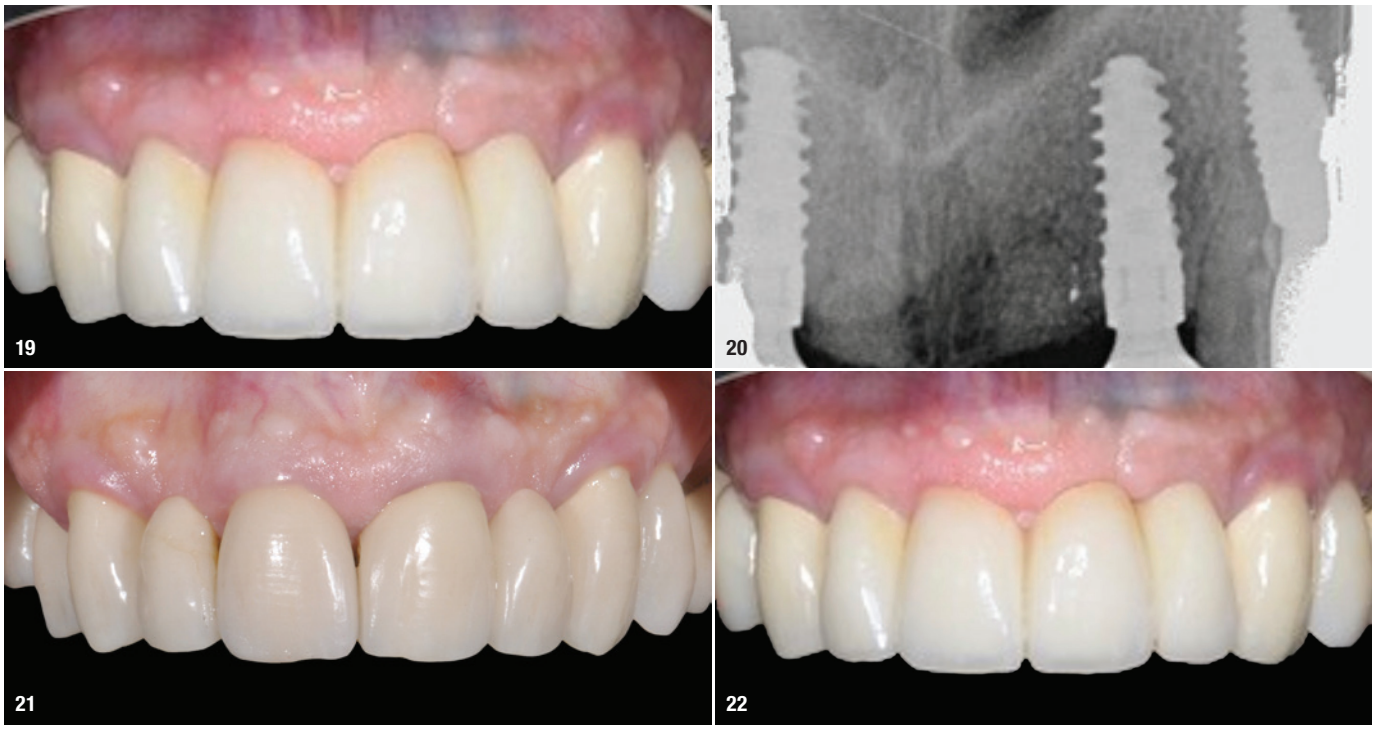


Fig. 17: The definitive prosthesis was delivered, demonstrating optimal fit, function, aesthetics, and patient comfort. – **Fig. 18:** 12-month intra-oral view showed stable soft-tissue integration and aesthetics.



Figs. 19+20: Five-year follow-up showed healthy soft tissues, stable implants, and no peri-implantitis or bone loss. – **Figs. 21+22:** Pre-treatment and five years post-treatment.

combination of strength, biocompatibility, and aesthetic qualities. Upon delivery, the prosthesis exhibited precise fit, functional stability, and a natural aesthetic appearance, ensuring patient comfort (Fig. 17).

Twelve months following prosthesis delivery, intra-oral evaluation revealed stable soft-tissue integration and aesthetic results (Fig. 18). At the five-year follow-up, soft tissues remained healthy, and radiographic assessment confirmed long-term implant stability with no evidence of peri-implantitis or marginal bone loss (Figs. 19+20).

Treatment outcomes

The treatment achieved successful functional and aesthetic outcomes. The patient reported high satisfaction, highlighting the impact of immediate restoration on her quality of life: “I was amazed that I could transition from failing dentition to a new anterior bridge in just one hour. I never imagined this would be possible: my appearance, speech, and masticatory function were never compromised at any stage of treatment. Even after five years, I have not experienced a single day without being able to smile and live my normal life.”

Conclusion

Immediate restoration must always be considered a challenging procedure. Implant planning, surgical procedure and prosthetic procedure must be extremely accurate. Optimal primary stability, absence of occlusal lateral forces and good patient compliance can be considered prerequisites for this kind of procedure.

about the author

Dr Massimo Frosecchi graduated in Dentistry from the University of Florence, Italy and is currently an Assistant Professor in Implantology at the University of Genoa. He is an active member of the Italian Academy of Osseointegration, the Italian Academy of Microscopic Dentistry, and the International Piezosurgery Academy. An ITI Fellow, Dr Frosecchi is also a recognised international speaker.

contact

Dr Massimo Frosecchi
+39 055 483706
info@dentalmedicine.it
www.dentalmedicine.it

Dr Massimo Frosecchi

Precision redefined: A digital end-to-end full-arch rehabilitation

Dr Ryan Ollerton, UK

Digital technologies have transformed implant dentistry by enhancing diagnosis, treatment planning and surgical simulation through 3D visualisation.[1] Within this context, the ultimate goal of a definitive impression or scan is to accurately capture the 3D position of the implant in relation to adjacent hard and soft tissue as well as the opposing dentition.[2]

Although it requires investment in an intra-oral scanner, software and ongoing maintenance, the digital workflow offers higher productivity and cost-effectiveness compared with conventional methods.[4] One of its main advantages is greater patient satisfaction, since intra-oral scanning provides superior convenience compared with physical impression taking.[3] Intra-oral scanning eliminates the need for trays, impression materials, disinfection and shipping, simplifies laboratory steps such as pouring and trimming models, and allows secure digital storage, avoiding the fragility and space demands of stone casts.[5]

Clinical factors such as implant angulation and scanning strategy can further influence accuracy.[7] Increased distances between implants enlarge the scanning area, requiring more image stitching and thereby reducing

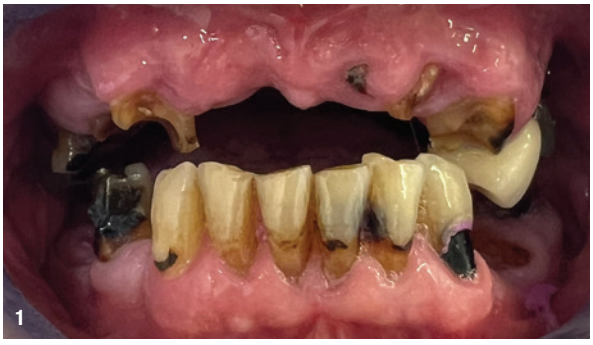


Fig. 1: Initial clinical situation.

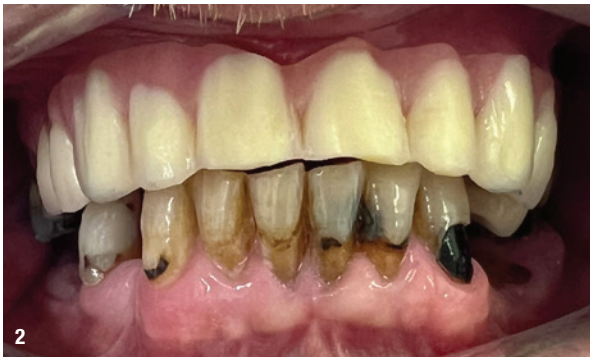


Fig. 2: Initial clinical situation with the maxillary denture in place.

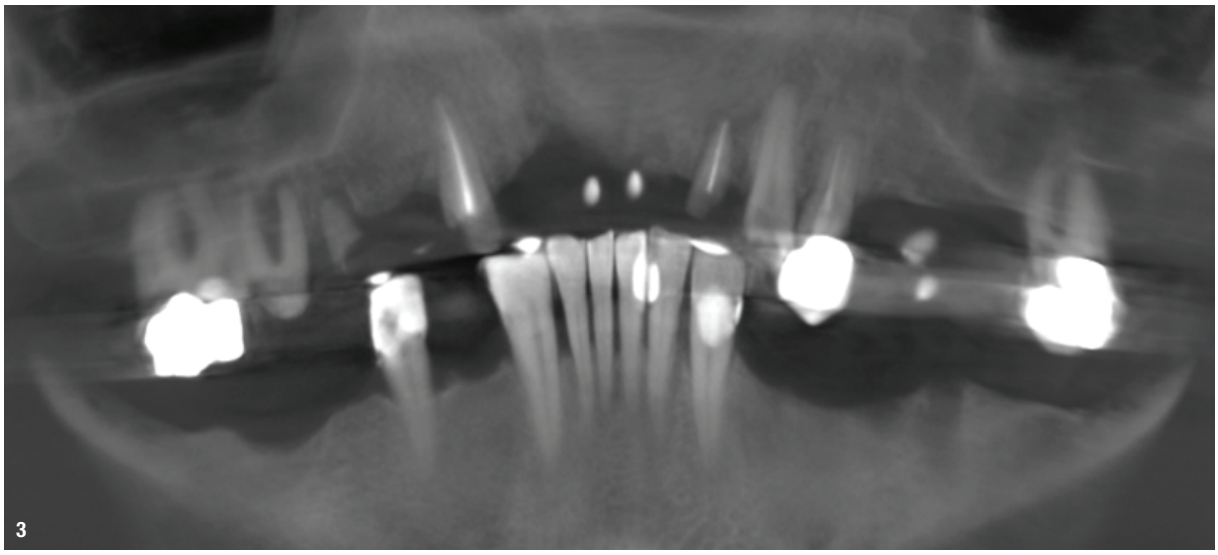


Fig. 3: Initial radiographic view.

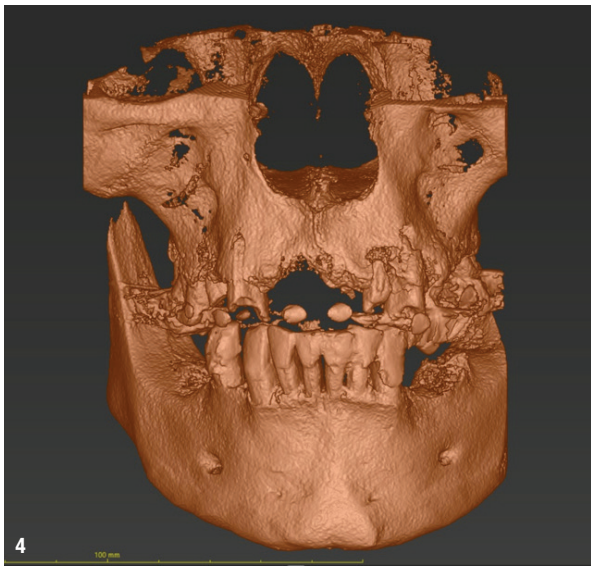


Fig. 4: CBCT scan for implant planning.

> "Within the digital workflow, obtaining highly accurate impressions remains a critical step, because precision directly affects the passive fit of implant-supported frameworks, which in turn determines the definitive treatment outcome."

accuracy.[8] In addition, some areas of scan bodies—especially screw access holes and proximal surfaces—are often incompletely captured, and this may compromise superimposition and processing.[9] Despite these limitations, studies indicate that deviations between full-arch intra-oral scans and conventional impressions generally remain within clinically acceptable thresholds.[10–12]

Within the digital workflow, obtaining highly accurate impressions remains a critical step, because precision directly affects the passive fit of implant-supported frameworks, which in turn determines the definitive treatment outcome.[13] Passive fit between prosthetic structures and supporting implants is widely recognised as a key determinant of long-term success, since inadequate fit may lead to mechanical complications such as screw loosening, fracture or prosthesis failure.[14] Although vertical and horizontal misfit within certain tolerances may not result in biological complications, mechanical outcomes appear to be more sensitive to misfit.[15] For this reason, passivity continues to be a decisive factor in the clinician's

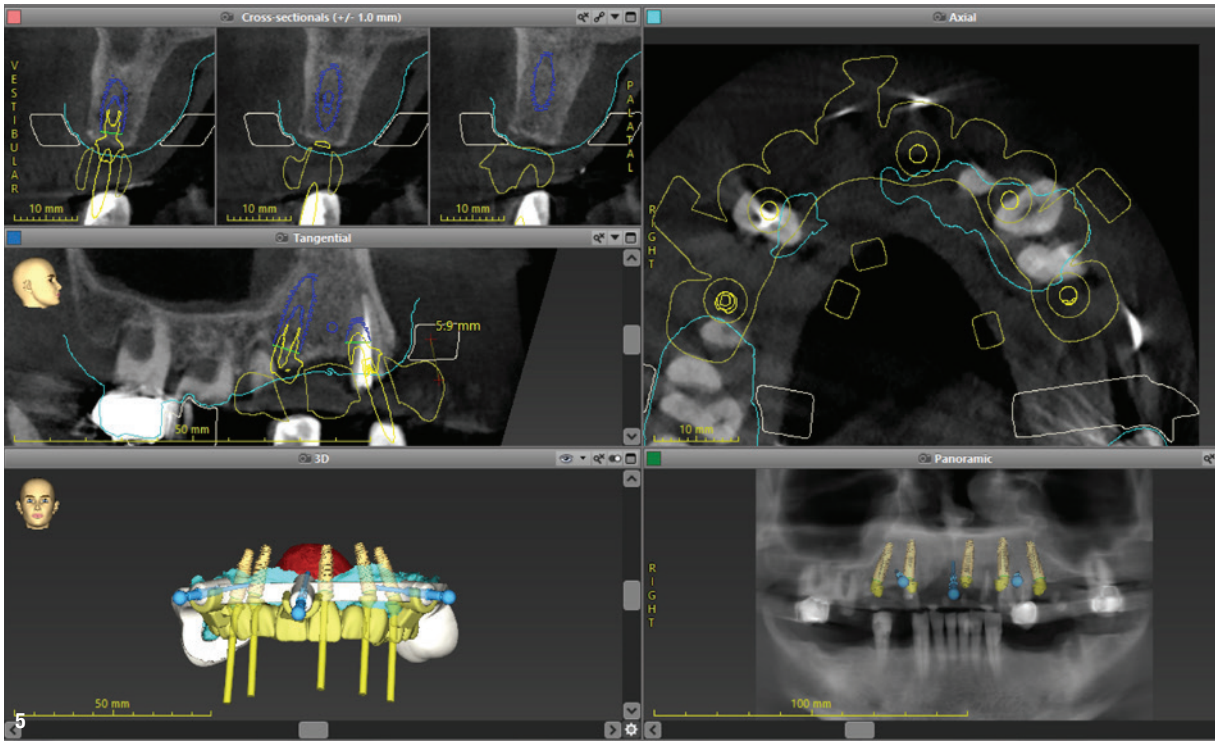


Fig. 5: Planning of the implant placement by Smile in a Box using coDiagnostiX.

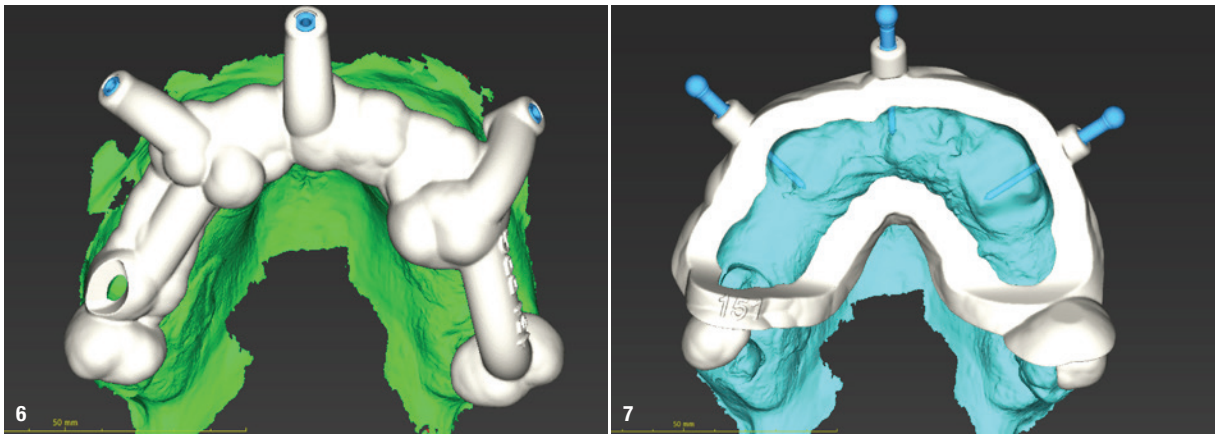


Fig. 6: Planning of the temporary prosthesis by Smile in a Box. – **Fig. 7:** Planning of the anchor pin guide by Smile in a Box.

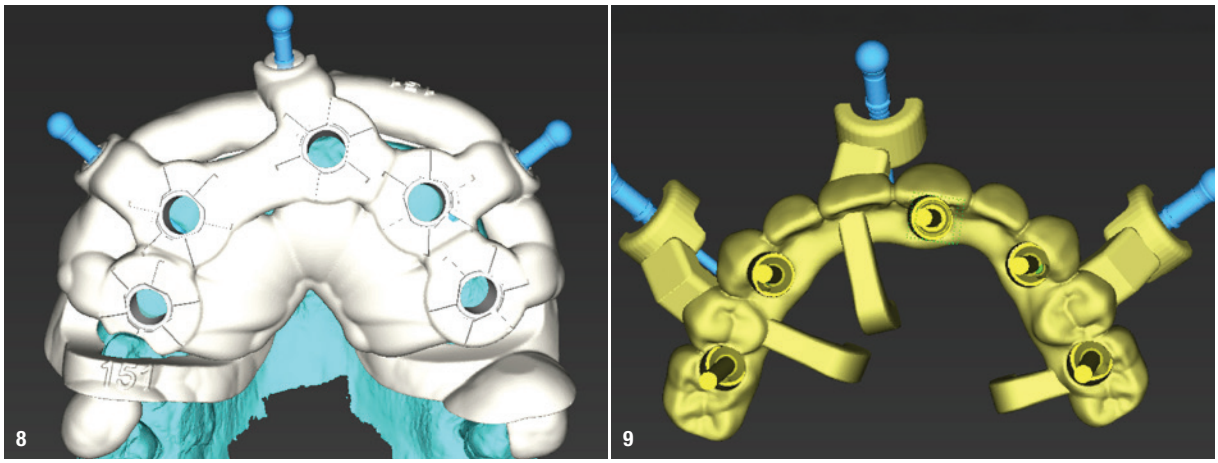


Fig. 8: Planning of the bone reduction guide by Smile in a Box. – **Fig. 9:** Planning of the implant placement guide by Smile in a Box.

selection of materials and production methods, ensuring both restoration longevity and implant health.[16]

The objective of this case report is to present a complete digital workflow for full-arch rehabilitation. In doing so, it will demonstrate how the integration of novel scan bodies with an implant system helped to mitigate discrepancies inherent to digital workflows and achieve superior outcomes in terms of accuracy, aesthetics, patient comfort and a passive prosthetic fit.

Initial situation

A 51-year-old male patient presented with severe partial edentulism in the maxilla. He reported a history of smoking but had quit, and no other comorbidities were identified (Fig. 1). The patient presented with a maxillary denture (Fig. 2). The patient did not have any existing implants (Fig. 3).

Treatment planning

After clinical and radiographic evaluation, guided full-arch implant surgery was planned, including tooth extraction and immediate implant placement. For the guided surgery procedure, intra-oral and CBCT scans were taken (Fig. 4). The scans were sent to the Smile in a Box implant planning service (Straumann), which planned the tooth extraction and flapless implant placement by overlaying the CBCT and intra-oral scans using coDiagnostiX planning software (Dental Wings; Fig. 5).

The surgery was planned for the placement of Helix GM implants (Neodent; 4 × 13 mm) in tooth positions #15, 12, 21, 23 and 25. Custom surgical guides were designed and manufactured based on the digital planning. The patient's existing denture was incorporated into the planning to aid in designing the temporary prosthesis (Fig. 6). Once the designs had been approved, the guides were produced and delivered along with the implants, anchor pins, abutments and temporary prosthesis.

Surgical procedure

Implant placement was performed using a fully guided protocol, and a sequence of three stackable guides was used for each arch: an anchor pin guide, stabilised by the patient's teeth (Fig. 7); an open fixation guide for bone

reduction, stabilised by the anchor pins (Fig. 8); and an implant placement guide, stabilised through the stackable system with fixation sleeves (Fig. 9).

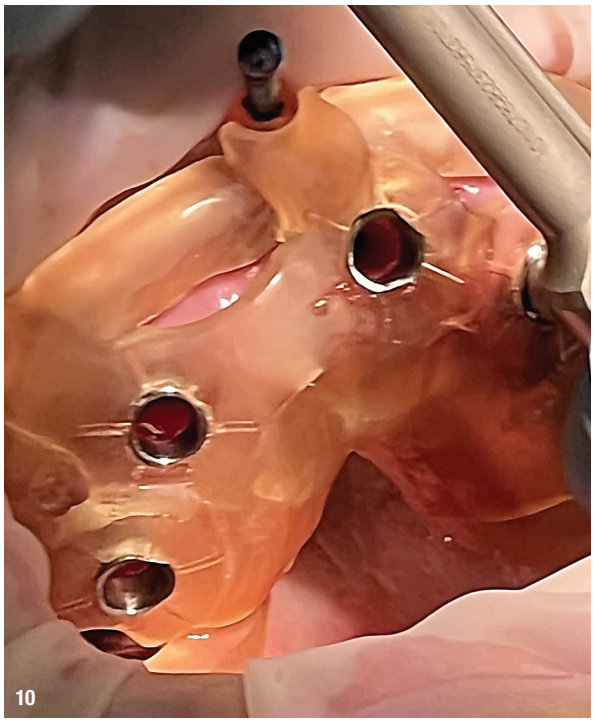
The five implants were placed at torques between 35 and 50 Ncm (Fig. 10). Bone grafting biomaterial was used after implant placement in the facial and canine areas as required. Immediately after surgery, the temporary prosthesis was placed over the bone reduction guide to verify its fit (Fig. 11).

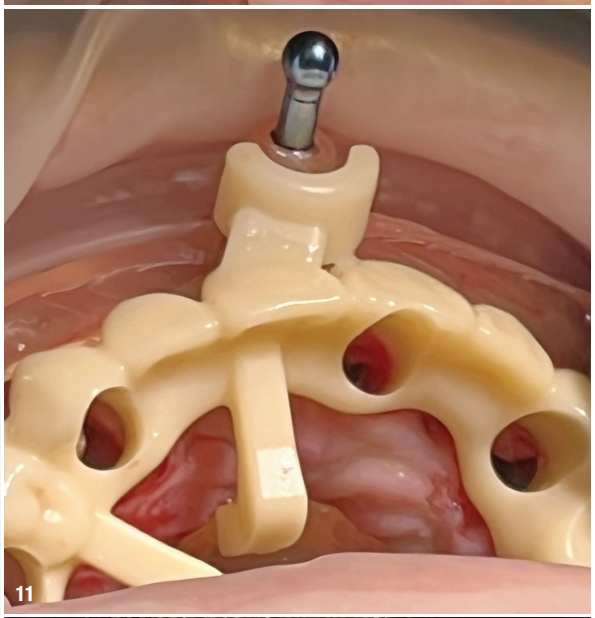
Prosthetic procedure

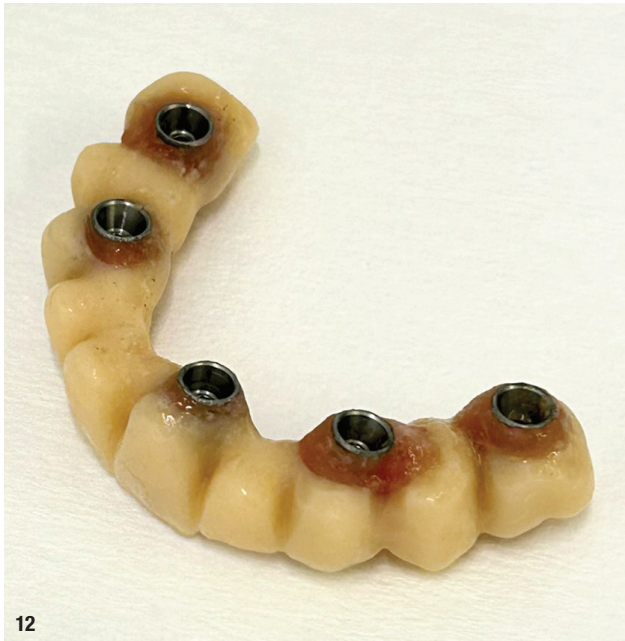
After implant placement, five GM Mini Conical Abutments were attached, and the prefabricated temporary prosthesis was delivered (Figs. 12+13). A radiograph was then acquired to confirm the correct positioning of the implants (Fig. 14).

After a three-month healing period, the patient was scanned using Straumann EXACT. The system is composed of titanium scan bodies and LINKS that facilitate full-arch scanning with an intra-oral scanner. From this, two scan files were created as follows:

1. Maxillary, mandibular and occlusion scans were taken. The maxillary scan was then removed, and a complete 360° scan of the temporary prosthesis used during surgery was performed.
2. Scan bodies and LINKS were placed on the abutments, and the LINKS were bonded (Fig. 15). Scans were then taken (Fig. 16). Afterwards, the bonded structure was removed, and a full soft-tissue scan was completed (Fig. 17).


10


11


12

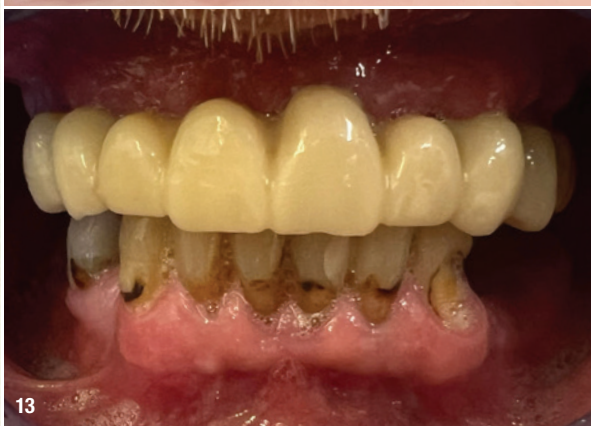
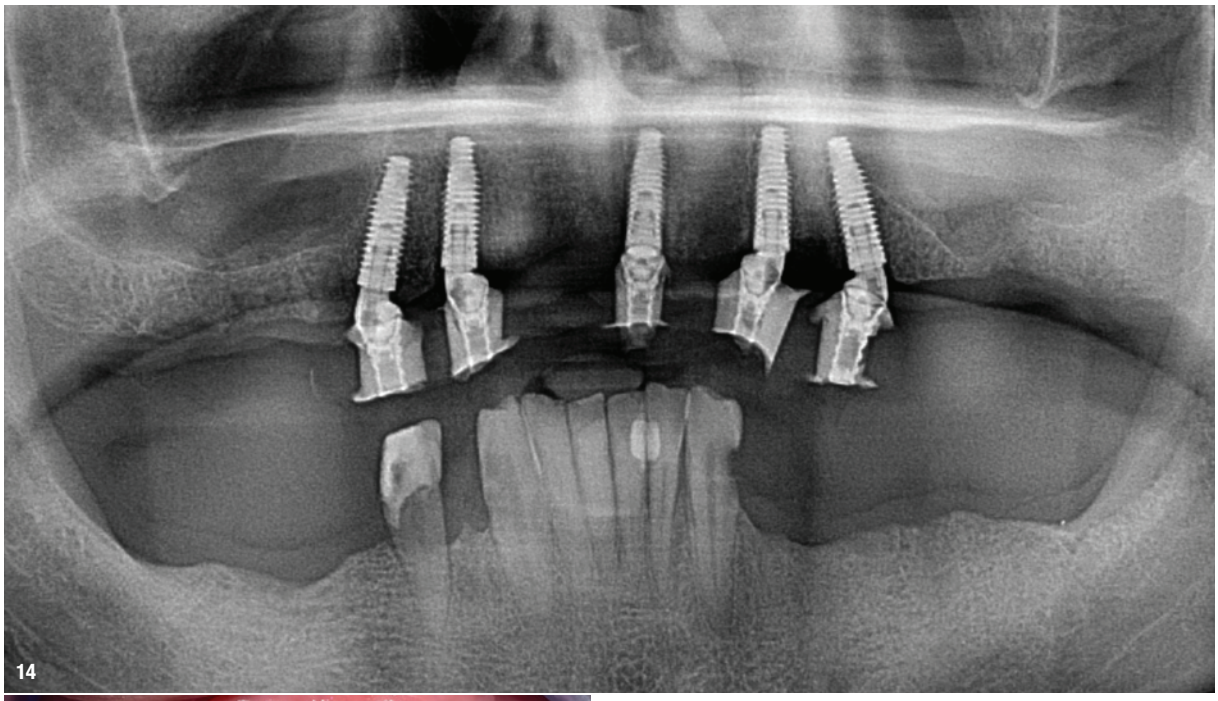
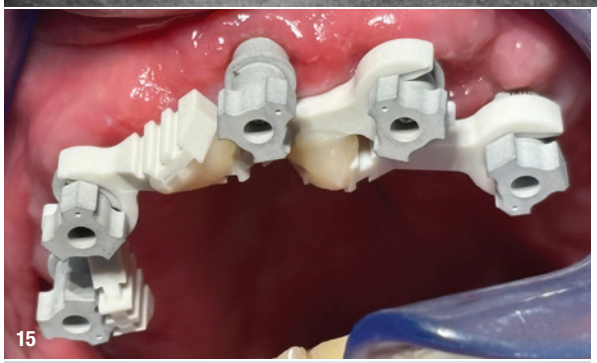

13

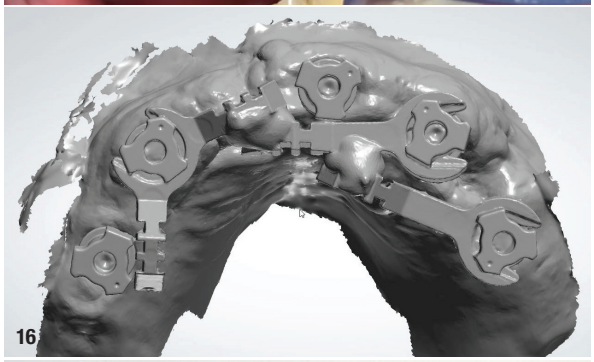
Fig. 10: Implant guide fitted and implants placed. – **Fig. 11:** Temporary prosthesis placed to assess fit. – **Fig. 12:** Temporary prosthesis prepared for placement. – **Fig. 13:** Temporary prosthesis in position.



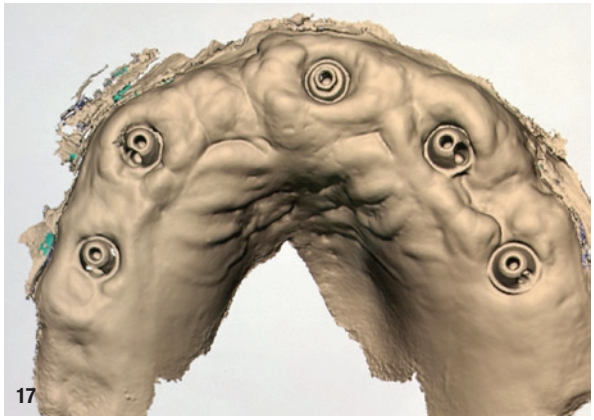
14



15



16



17

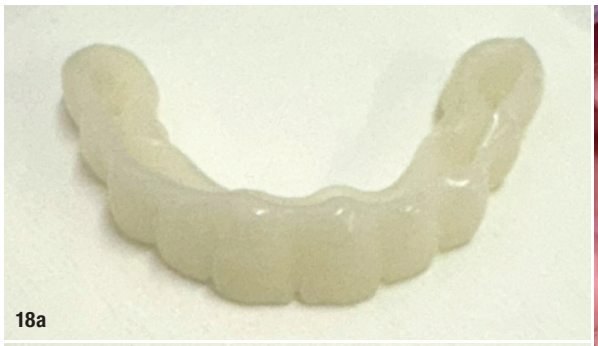
Both scan files were sent to Straumann UN!Q services, along with a digital wax-up, to order a 5-14 CoreBar for a cemented zirconia restoration. The CoreBar was requested with a gold hue to enhance case aesthetics and was supplied together with the prosthetic screws for the conical abutments. No physical impressions were taken or models made. The surgical temporary prosthesis was adjusted to provide a more ideal appearance and function for the patient, thereby reducing the likelihood of adjustments at the try-in and final delivery stages.

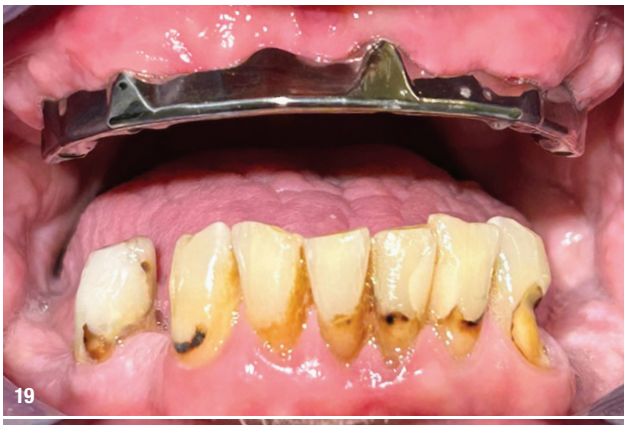
After approximately three weeks, a PMMA prosthesis and the CoreBar for try-in were delivered (Figs. 18a+b). As this was the first case utilising the Straumann EXACT workflow in both the clinic and the laboratory, the decision was made to order the bar for the try-in stage to verify passivity and aesthetics separately. Once bar passivity had been confirmed (Fig. 19), and since minimal adjustments were required at the try-in (Fig. 20), the laboratory was instructed to proceed with fabrication of the definitive prosthesis. A few weeks later, the definitive zirconia prosthesis was delivered (Figs. 21+22).

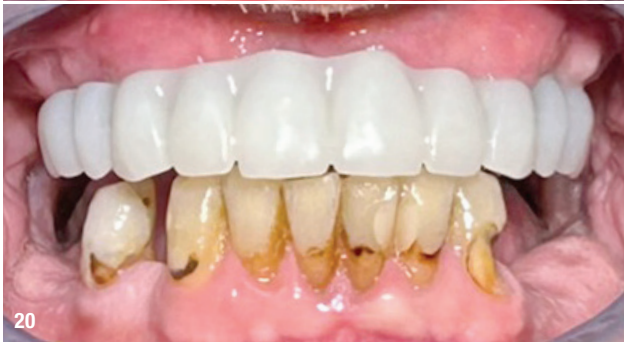
Treatment outcomes

Full-arch treatments today are often a hybrid of conventional and digital techniques, typically involving physical

Fig. 14: Post-op radiograph. – **Fig. 15:** Straumann EXACT scan bodies and links placed. – **Fig. 16:** Capture of Straumann EXACT scan bodies and links. – **Fig. 17:** Full tissue scan completed after removal of the Straumann EXACT scan bodies and links.

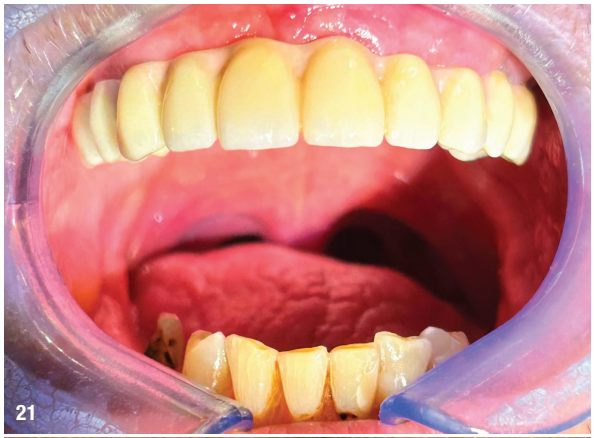






Figs. 18a+b: PMMA prosthesis **(a)** and CoreBar **(b)** delivered as separate components. – **Fig. 19:** CoreBar fit check to confirm passive fit. – **Fig. 20:** PMMA prosthesis placed over the bar to confirm positional accuracy.

“Although there may be initial scepticism about achieving a well-fitting definitive prosthesis using intra-oral scanning only, the use of Straumann EXACT after proper training for both clinic and laboratory proved to be highly effective.”



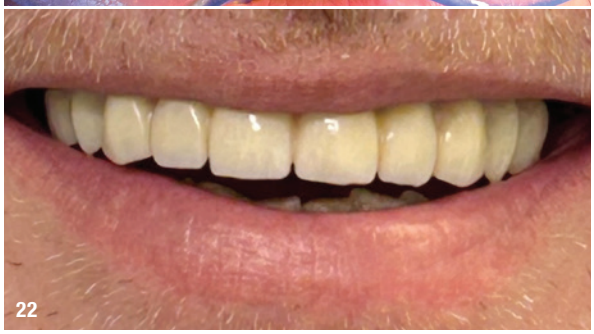


Fig. 21: Definitive zirconia prosthesis delivered. – **Fig. 22:** Final smile.

impressions, free-hand surgery and frequent chairside adjustments. In contrast, this case utilised a fully digital end-to-end workflow from diagnosis to final fit, eliminating the need for physical impressions, cast pouring or model production, and requiring only minimal adjustment of the definitive prosthesis. Importantly, the Straumann EXACT system used is fully compatible with the Helix GM implant system.

This approach simplified and standardised the full-arch treatment process by reducing manual steps for both the clinician and the laboratory. The techniques employed did not require any specialised clinical equipment beyond an intra-oral scanner, making the workflow highly accessible and easy to adopt. The patient experience was extremely positive, and the clinical team observed clear efficiency gains through the guided and digital prosthetic procedures.

Although there may be initial scepticism about achieving a well-fitting definitive prosthesis using intra-oral scanning only, the use of Straumann EXACT after proper training for both clinic and laboratory proved to be highly effective. It significantly reduced chair time, eliminated manual steps and delivered a prosthesis with excellent fit. The try-in phase required only minimal modifications, reinforcing the importance of this step in ensuring that the definitive prosthesis meets clinical expectations. The patient was fully satisfied with the outcome and appreciated the digital nature of the treatment.

Author’s testimonial

“My experience with the Straumann EXACT system was simple and precise from the very first try. The workflow gives me confidence that the final restoration will achieve a passive fit.”

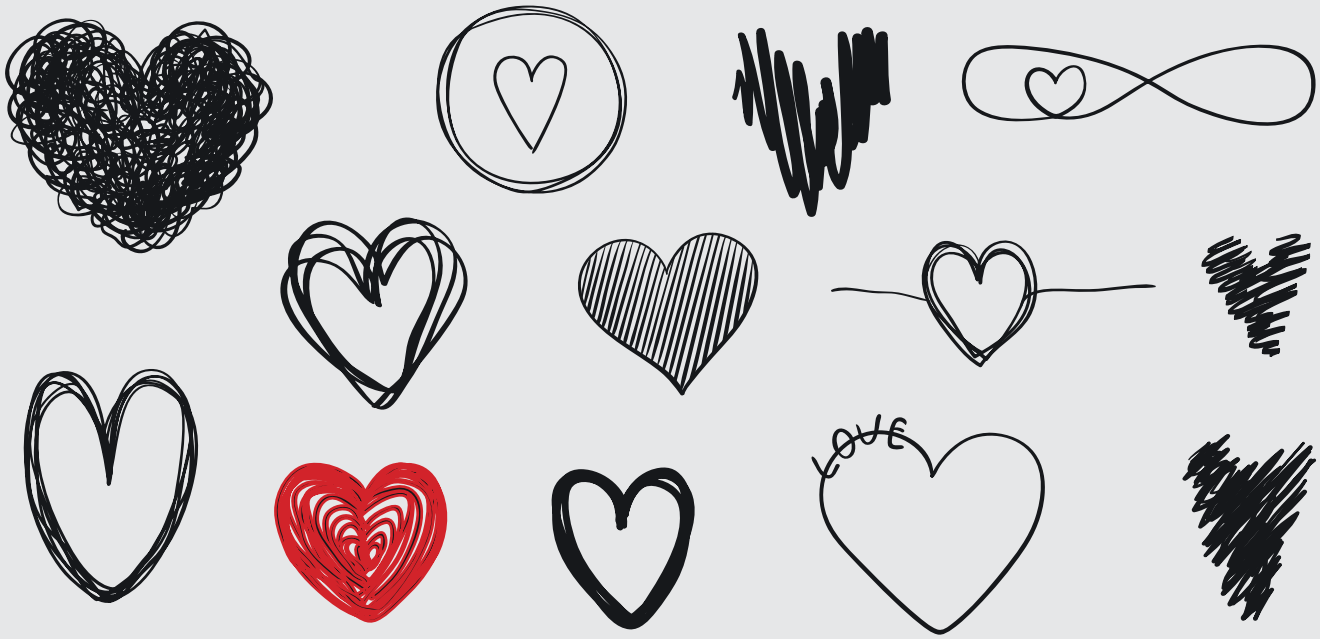
about the author

Dr Ryan Ollerton is a highly skilled implantologist specialising in full-mouth and complex rehabilitation cases. He is a graduate of the University of Liverpool in England and holds a certificate in advanced implant dentistry. Dr Ollerton has completed advanced training through international courses and workshops and continues to refine his expertise to provide cutting-edge care and transformative results for patients.

contact

Dr Ryan Ollerton
10 Chenotrie gardens
Prenton, Wirral
CH43 9WU, UK
+44 7534132669
ryan.ollerton@rcsed.net
www.smile-birmingham.com

References



Empowering dentistry:
EXPERTISE YOU CAN TRUST

Over 30 years of delivering dental media with dedication and insight.

Discover our full portfolio at oemus.com.

Dentistry's next frontier:

International Osteology Symposium 2026

An Interview with Lisa Heitz-Mayfield and Anton Sculean

"**Beyond Regeneration**" is the motto of the next International Osteology Symposium in Vienna, 23–25 April 2026. It reflects the core focus on oral tissue regeneration while broadening the view to comprehensive patient care and long-term treatment success. Vienna promises a unique learning experience, with condensed, practice-oriented knowledge delivered by world-renowned experts alongside the rising stars of tomorrow.

We spoke with the symposium's scientific chairs, Lisa Heitz-Mayfield and Anton Sculean, about what participants can expect from this high-level programme.

The motto of the 2026 symposium is "Beyond Regeneration." What does this mean for the programme?
Anton Sculean: The Osteology Foundation has always been dedicated to oral tissue regeneration, but this motto reaches further. Ultimately, it's about one goal: better patient outcomes. The programme is designed to go beyond what you'd expect from a conventional congress and deliver on that promise.

Lisa Heitz Mayfield: Exactly. And we do this in several ways. First, we're putting a strong emphasis on engagement. Participants won't just sit through lectures; they'll be able to vote during sessions, take part in roundtables, or get hands-on experience in workshops. Second, we're ensuring clinical relevance. It's not just about technical skills, but also about drawing on interdisciplinary perspectives and the insights from our leading partner associations. The programme will even include consensus guidelines that distill the latest evidence into practical treatment recommendations. And finally, we're looking ahead by giving the next generation a real voice. Their workshops and sessions bring fresh topics and formats that keep us future-oriented.

Who should attend the symposium?
AS: The beauty of the programme is that it's inclusive. Periodontists, surgeons, orthodontists, general dentists, and anyone with an interest in oral tissue regeneration will benefit.

LHM: That's right. Whether you're just starting your career or you're an experienced clinician, there's something here for you. We'll cover cutting-edge techniques but also take time to discuss limitations and risks openly. And by combining interdisciplinary, patient-centred approaches with the latest digital tools, the content really speaks across all levels of practice.

How does the programme balance scientific insights with clinical applications? Will there be opportunities to practice what you learn?
LHM: Absolutely. Participants will receive condensed, evidence-based knowledge and then immediately see how it translates into practice. A highlight this time is the re-live surgery sessions. Real cases from daily practice will show comprehensive treatment planning where the patient's needs, not just the technical steps, take priority. Four sessions will take participants through the entire clinical process, reinforcing that patient-reported outcomes are the compass for every decision.

How is the next generation involved?
LHM: They've been active from the start. The Next Generation Team helped shape the programme, designing sessions and workshops specifically for early-career clinicians. And with Jeniffer Perussolo joining the Scientific Committee, their perspective is embedded in the programme's development.

AS: You'll see them on stage as well, co-moderating with senior experts. That mix sparks lively discussions and ensures fresh perspectives are part of the dialogue.

LHM: And we've made sure it's accessible too. With the Young Professional Fee, early-career participants can save up to 75 per cent on registration—an unprecedented opportunity to engage with high-level education.

Is there a global perspective in the programme?
LHM: Very much so. More than 90 renowned speakers from all over the world will be joining us. We've also worked closely with global partner organisations like the EFP and AAP, who will present treatment guidelines and consensus papers. This means participants benefit from the latest science as well as internationally recognised recommendations across all indications in oral tissue regeneration.

Why attend a three-day congress when there are so many short online events?
AS: One word: community. Online events are valuable, but nothing replaces the energy of being in the same room, sharing ideas, exchanging experiences, and building networks. Oral tissue regeneration is moving to the centre of dental practice worldwide, and this congress offers a front-row seat to that transformation.

Thank you for the interview!

contact

Osteology Foundation
info@osteology.org
osteology.org
osteology-vienna.org

Implantology at the crossroads of practice and science

An interview with Dr Georg Bach

In early October 2025, Hamburg hosted the 54th International Annual Congress of the German Association of Dental Implantology (DGZI). Since 2018, the DGZI has reinvented its congress format, creating an event that not only highlights the latest developments in implantology but also charts the course for the specialty's future. Dr Georg Bach, the newly elected President of the DGZI, shares his reflections on this year's congress.


© private

Dr Bach, you mentioned a "tension" between practice and science in implantology. What does this mean, and why is it so relevant for dentists today?
Implantology has long been the dental specialty most closely scrutinised by scientific research. Practices are constantly inundated with new findings, and over the years we've learned that not everything presented in high-profile studies necessarily translates into everyday clinical relevance.

For practicing dentists, separating what truly matters in day-to-day implantology from what is primarily of academic interest remains a constant challenge. The sheer volume of research, combined with the unique needs and approaches of individual practitioners, makes this even more complex.

At this year's congress in Hamburg, we addressed this challenge head-on. Our goal was to explore the interface between cutting-edge science and practical application, to question assumptions, provide guidance where possible, and ultimately enable each dentist to draw their own conclusions and implement strategies that fit their practice.

With its mix of scientific rigor and clinical relevance, the DGZI Congress proved to be not just an event to attend, but a roadmap for the future of implantology.

The DGZI was founded in 1970, at a time when dental implantology was still in its infancy. What has changed in implantology over the past decades and which advances do you consider particularly significant today?
The founding fathers of the DGZI clearly recognised that oral implantology needed a solid, scientifically validated foundation, and that a unified voice, a true "common sense" in implantology, was essential. These insights were correct in 1970 and remain just as valid in 2025. From a purely professional standpoint, one might even say that not much has changed, but that's only a formal perspective.

Your question, however, almost certainly has a more practical focus, and in that regard, enormous progress has been made. Within the first decade of our society's existence, implantology had already resolved the primary questions regarding implant shapes and osseointegration protocols. Then came the phases of new implant surfaces and prosthetic approaches. The introduction of


© OEMUS MEDIA

cone-beam computed tomography (CBCT) revolutionised pre-implant diagnostics. This was followed by the multifaceted era of "digital implantology," which continues today and has transformed virtually every aspect of the field. Against this technological backdrop, oral implantology has changed fundamentally, there's no doubt about it!

Table Clinics were offered to participants at the congress. What exactly is meant by the concept of "Table Clinics," and how do they contribute to a particularly practice-oriented and interactive exchange for participants?
Table Clinics proved to be an invaluable tool and a core component of this year's congress. Leading experts introduced specific topics in oral implantology through brief opening statements in small groups. What followed was dynamic discussion, critical debate, and hands-on practice, allowing participants to gain practical know-how.

Participants could choose three Table Clinics tailored to their individual learning needs. A beginner in implantology naturally selected different sessions than an experienced practitioner seeking specialised topics. Walking through the hall during the congress, it was inspiring to see colleagues engaging in lively discussions at the tables. The combination of practical learning, collegial exchange, and relaxed atmosphere made these sessions truly special.

The congress also offered a forum for young dentists. How do you see the role of the next generation of implantologists, and what opportunities did the congress provide for them?
Our young colleagues are the future of the DGZI. In just a few years, they will not only shoulder the main responsibilities of dental care in Germany but, within our society, will also take on leadership roles and guide the DGZI for decades to come. They will do so under evolving conditions, certainly with different topics and priorities, and I am confident they will do so both empathetically and successfully.

To engage young colleagues and make the DGZI accessible and appealing to them, the first day of the congress was dedicated to their needs. This included a Future Forum with visionary and highly relevant topics, high-quality video presentations accompanied by live explanations from leading experts, and the Table Clinics specifically designed for them.

"This year, the DGZI turned 55 and remains committed to the same goals as in 1970: We are a reliable partner for implantology practitioners, continue to see dental implantology as primarily practiced in private clinics."

Finally, what is your vision for the future of dental implantology? How do you see the role of the DGZI in the coming years?
I would actually like to quote the vision of our founding fathers. This year, the DGZI turned 55 and remains committed to the same goals as in 1970: We are a reliable partner for implantology practitioners, continue to see dental implantology as primarily practiced in private clinics, accompany and evaluate scientific developments, and then distill the essence for our members—through congresses and education programmes, such as our new NEO curriculum. The objectives in 1970 and 2025 are almost identical; the challenge is to adapt them to the respective framework conditions.

Dr Bach, thank you very much for your time and for sharing these insights.

Shaping the future of dentistry through technology

An interview with Dr Maria Grazia Di Gregorio-Schininà

High-resolution intra-oral scans, CAD/CAM-guided milling, and additive manufacturing are transforming modern dentistry, enabling workflows that are faster, more precise, and increasingly patient-centered.

At the same time, the digital transition presents significant questions: How reliable are digital impressions in routine clinical practice? Which materials can withstand the demands of everyday use? And how can dental practices effectively integrate these new workflows?

In conversation with Dr Maria Grazia Di Gregorio-Schininà, Senior Consultant in the Department of Prosthodontics at University Hospital Cologne, Germany we examine the latest advances in digital dentistry—from virtual treatment planning and computer-aided fabrication to the clinical and patient acceptance of contemporary restorative methods.

Dr Di Gregorio-Schininà, as Senior Consultant in the Department of Prosthodontics at University Hospital Cologne, you have a comprehensive perspective on current developments. How has digital dentistry evolved in recent years?

In recent years, digital dentistry has advanced at a remarkable pace. The use of intra-oral scanners, facial scanners, and CBCT imaging for clinical diagnostics, alongside CAD/CAM technologies and 3D printing in the dental laboratory, has become firmly established and is increasingly regarded as standard practice. The integration of AI-assisted planning and diagnostic tools now enables clinicians and technicians to achieve significantly more precise and efficient treatment planning. This also supports improved patient communication, allowing for a clearer discussion of anticipated outcomes, compromises, and limitations of proposed treatments.

What concrete advantages do digital workflows offer for the planning and fabrication of dental restorations? Are there measurable improvements in precision or patient satisfaction?
Digital workflows facilitate accurate impressions and faster production of restorations, while also significantly increasing the predictability of treatment outcomes. The fit of crowns, bridges, and implant superstructures is often markedly improved through digital fabrication and achieved more quickly. Studies indicate that patient satisfaction has risen, particularly due to shorter treatment times and less invasive impression techniques.

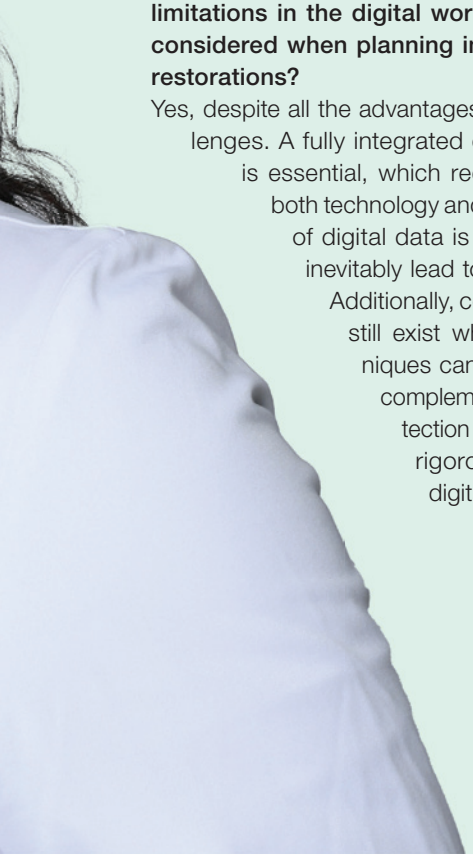
How has communication between dental technicians and surgeons evolved with digital workflows? Are there new opportunities for interdisciplinary collaboration?
Absolutely. Digital treatment strategies enable closer collaboration and more precise coordination in treatment planning. The use of digital planning software allows prosthodontists, surgeons, and dental technicians to work together efficiently. Virtual wax-ups, digital treatment plans, and real-time approvals reduce misunderstandings and streamline the workflow. As a result, interdisciplinary collaboration is not only facilitated but also significantly enhanced in terms of quality.

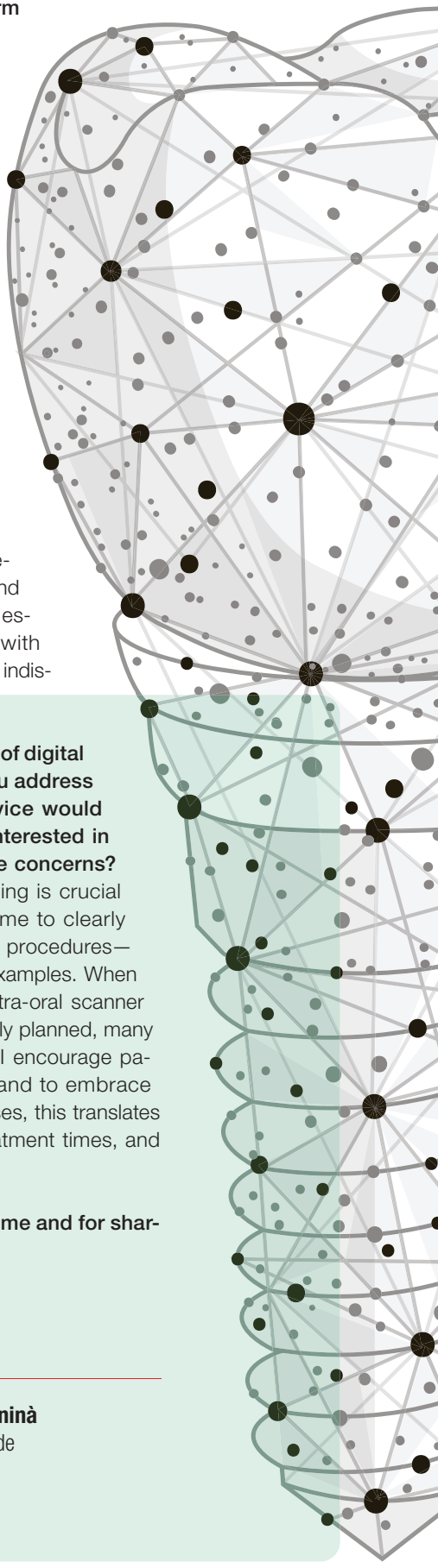
From your perspective, are there challenges or limitations in the digital workflow that must be considered when planning implants and dental restorations?
Yes, despite all the advantages, there are still challenges. A fully integrated digital infrastructure is essential, which requires investment in both technology and training. The quality of digital data is critical. Poor scans inevitably lead to suboptimal results. Additionally, complex clinical cases still exist where analogue techniques can serve as a valuable complement. Finally, data protection and security must be rigorously observed in all digital communications.

How do you assess the long-term development of digital dentistry? Will digital methods eventually replace nearly all traditional techniques, or will a hybrid approach remain necessary?
In the long term, digital workflows will certainly take over the majority of traditional processes. The trend is clearly moving toward fully digital treatment pathways. Nevertheless, there will always be cases where a hybrid approach is advantageous, for example, in highly individualised aesthetic restorations or with patients who present challenging anatomical conditions. Consequently, comprehensive training in both digital and conventional techniques remains essential, and close collaboration with dental technicians continues to be indispensable.

Many patients remain sceptical of digital treatment methods. How do you address this scepticism, and what advice would you give to patients who are interested in digital procedures but still have concerns?
Comprehensive patient counselling is crucial and indispensable. I take the time to clearly explain the advantages of digital procedures—often using images or practical examples. When patients see how precisely an intra-oral scanner works or how an implant is digitally planned, many of their concerns are alleviated. I encourage patients to ask questions openly and to embrace modern technology—in many cases, this translates into greater comfort, shorter treatment times, and improved outcomes.

Thank you very much for your time and for sharing these valuable insights.





contact

Dr Maria Grazia Di Gregorio-Schininà
maria.di-gregorio-schinina@uk-koeln.de
www.zahn-prothetik.uk-koeln.de

Inspiration, knowledge and peer-to-peer networking

Implant Solutions World Summit 2026

© Dentsply Sirona.

Dentsply Sirona is pleased to announce the return of its premier global education event, the Implant Solutions World Summit, taking place 25–27 June 2026 in Gothenburg, Sweden.

Following the success of the Implant Solutions World Summit in Athens, Greece in 2023 and Miami, USA in 2024, the 2026 edition will mark a powerful new chapter in Gothenburg—the birthplace of osseointegration and a hub for scientific and medical technology innovation—offering an inspiring setting for dental professionals to explore and be a part of the future of implant dentistry.

IMPLANT SOLUTIONS WORLD SUMMIT

GOTHENBURG 2026

Gothenburg stands as a city of remarkable innovation, contributing globally in fields such as engineering, transportation, and technology. These enduring achievements, built on a foundation of rigorous research and development, reflect the same spirit of science and innovation that continues to drive advancements at Dentsply Sirona—improving practices, lives, and the world.

This assembly also celebrates the pioneering origins of implant dentistry. More than 60 years ago, in this northern Scandinavian city, the discovery of osseointegration gave birth to implant dentistry, transforming millions of lives around the world.

Ideas, innovation, impact

“We are excited to welcome the global implant community to Gothenburg in 2026—a location deeply rooted in the history and evolution of implant dentistry,” said Rodrigo Canelhas, Group Vice President Implants and Prosthetic Solutions at Dentsply Sirona. “At the Implant Solutions World Summit ideas, experience, and inspiration converge. This event will yet again offer a dynamic space to exchange ideas, discover clinical breakthroughs, and connect with peers who are shaping the future of implant treatment.”

The Implant Solutions World Summit will gather clinicians, researchers, and industry leaders for three days of world-class education, interactive experiences, and community building. From emerging digital workflows to advanced surgical techniques and prosthetic solutions, the programme will focus on delivering meaningful clinical insights and practical strategies that elevate patient care.

Details about the speaker line-up and scientific programme will be announced in the coming months.

contact

Dentsply Sirona
www.dentsplysirona.com

*The articles in this category are provided by the manufacturers or distributors and do not reflect the opinion of the editorial team.

Mastering the Perio-Restorative connection

Register here

Perio Master Clinic 2026

The European Federation of Periodontology (EFP) warmly invites oral health professionals from across the globe to attend Perio Master Clinic 2026, taking place in the vibrant and culturally rich city of Baku, Azerbaijan on 6 and 7 March 2026. The 2026 edition will focus on the Perio-Restorative Interplay, underscoring the essential collaboration between periodontal and restorative disciplines in achieving outcomes that are not only predictable but also aesthetically refined and long-lasting—even in the most complex clinical situations.

At Perio Master Clinic, delegates will immerse themselves in the latest evidence-based clinical techniques, spanning periodontology, implantology, orthodontics, digital dentistry, and restorative care. The carefully structured programme emphasizes a multidisciplinary approach, seamlessly combining periodontal and restorative strategies to elevate patient care and clinical results.

This two-day event represents a truly exceptional opportunity to learn directly from world-leading experts in periodontology, implantology, and restorative dentistry. Guided by the principle "what you learn over the weekend, you'll put into practice on Monday", the programme has been thoughtfully designed to integrate cutting-edge scientific evidence with practical, actionable techniques that clinicians can immediately apply in their daily practice.

Prof. Mariano Sanz, Scientific Chair, remarked: "The Perio Master Clinic is far more than a conventional congress. In 2026, we place special emphasis on the synergy between periodontal and restorative approaches, presenting sessions that extend well beyond theory to provide practical, evidence-based solutions. You can now explore the full programme on the EFP website."

First time in Azerbaijan

This edition is particularly momentous, as it marks the first time a Perio Master Clinic is being hosted in this region, offering a unique opportunity for participants from both Europe and Asia. Delegates will be welcomed into the dynamic and captivating city of Baku, where the UNESCO-listed Old City, with its labyrinthine streets and historic charm, coexists harmoniously with striking modern architecture—creating an inspiring and stimulating environment for learning, networking, and cultural exploration.

From the iconic Flame Towers to the historic grandeur of the Old City, Baku provides a setting that is as visually compelling as it is culturally enriching. When combined with the high-caliber scientific content of the clinic, this creates an experience that is truly unmissable for dental professionals seeking both intellectual and personal enrichment.

Prof. Cavid Ahmedbeyli, Congress Chair, stated: "It is an honour for us to welcome colleagues from around the world to this landmark event. Baku offers a unique blend of tradition and modernity, and we are thrilled to share not only the scientific programme but also the city's rich cultural heritage with the international dental community."

A world-class programme in an inspiring setting

The programme will feature internationally renowned experts, offering sessions that elegantly bridge theoretical knowledge with practical clinical application.

Prof. Spyros Vassilopoulos, EFP President, highlights: "EFP Perio Master Clinics are designed to bridge the gap between knowledge and practice. In Baku, we will once again create an environment where clinicians can learn directly from leading experts, refine their skills, and immediately integrate new techniques into their daily practice. This is the type of transformative education that defines the EFP."

Perio Master Clinic 2026 promises to be an experience that is both scientifically enriching and personally memorable. For dental professionals, this is an unparalleled opportunity to learn, connect, and explore new horizons in clinical dentistry—an event that truly should not be missed.

contact

European Federation of Periodontology (EFP)
www.efp.org

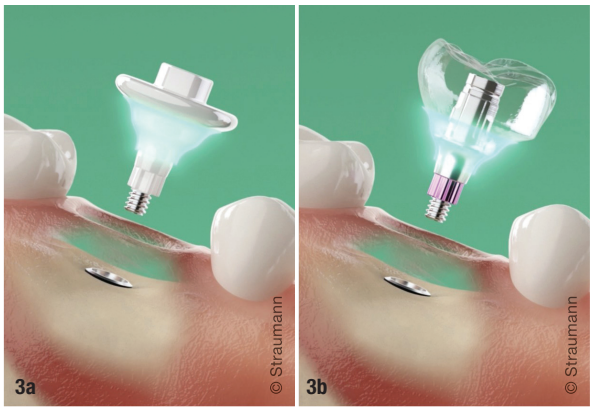
Straumann

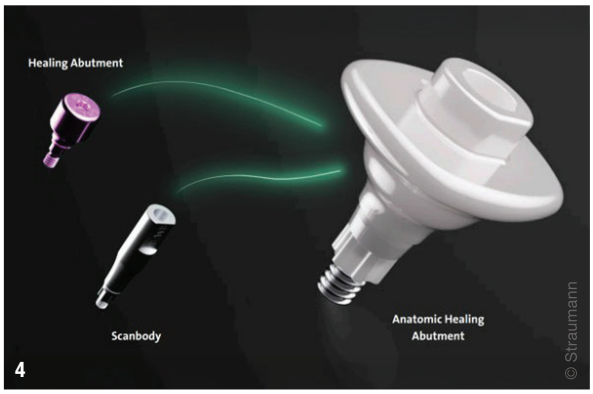
Fast Molar Solution: Efficient, effortless, aesthetic

Traditional implant workflows require multiple components—healing abutments, impression posts, scan bodies—all of which involve placing, removing, and replacing parts across multiple visits. This not only consumes time and may increase the risk of errors and biological complications. The Straumann® Fast Molar Solution eliminates extra steps by combining healing and scanning into a single component that remains in place from the day of surgery to the final restoration. Its streamlined procedures can save precious chair time and reduce the number of patient visits, increasing clinic efficiency and throughput.

Improved tissue preservation and healing

Multiple manipulation of the peri-implant soft tissue due to component changes can disrupt the healing site, delay recovery, and jeopardise the natural emergence profile. The Straumann® Fast Molar Solution's "non-removal" protocol allows soft tissue to form naturally around a contoured abutment that never needs to be removed. The anatomic shape supports an immediate soft-tissue seal, enhancing the stabilisation and preservation of peri-implant tissues ensuring a stable, well-shaped emergence profile—without additional surgical or prosthetic interventions. The results are: Healthier soft tissue, less risk of complications, and more predictable aesthetic results with minimal intervention.





Figs. 3a+b: RESTORE—Perfectly matching emergence profile. – **Fig. 4:** Straumann® anatomic healing abutment, healing abutment and scan body—greater predictability and digital compatibility.

Fig. 1: PLACE—Immediate soft-tissue stabilisation. – **Fig. 2:** SCAN—Scan without removing the healing abutment.

Inconsistent impressions and mismatched emergence profiles often lead to poorly fitting crowns that require time-consuming chairside adjustments. With the Straumann® Fast Molar Solution, clinicians can take intra-oral scans directly over the Straumann® Anatomic Healing Abutment, capturing implant position and the subgingival emergence profile from a single tissue level scan—resulting in faster, more precise prosthetic outcomes thanks to fewer restoration adjustments, easier collaboration with labs, and seamless integration into digital workflows.

Improved patient experience and satisfaction

Long treatment timelines, repeated component changes, and multiple appointments can lead to discomfort and dissatisfaction. With the Straumann® Fast Molar Solutions's fast turnaround and minimal interventions, patients benefit from a smoot, and comfortable journey with excellent aesthetic and functional results. They can receive high-quality restorations faster and with less discomfort, improving overall satisfaction and trust.

Learn more

Institut Straumann AG
info@straumann.com
www.straumann.com

*The articles in this category are provided by the manufacturers or distributors and do not reflect the opinion of the editorial team.

Dr Georg Bach re-elected President of the DGZI

Germany's oldest implantology society strengthens its leadership


© private

Freiburg-based oral surgeon Dr Georg Bach has been re-elected as President of the German Association of Dental Implantology (DGZI) during the general assembly held in Hamburg on 2 October. In his initial statement, Dr Bach expressed gratitude to his fellow board members for their dedication over the past years and voiced his enthusiasm for continuing their productive collaboration.

This new term marks Dr Bach's third tenure as president of Germany's oldest professional society dedicated to implantology. His re-election not only underscores continuity in the DGZI's leadership but also signals the society's strategic vision for the future.

Looking ahead, Dr Bach aims to showcase oral implantology as an inspiring and innovative field to the next generation of dentists. He is committed to strengthening the critical interface between dentistry and dental technology, while further establishing the DGZI as a dynamic, forward-thinking, and future-oriented professional society.

Source: German Association of Dental Implantology (DGZI)

Patent Medical

Patent Medical awarded "Dental Implants Manufacturer of the Year"

Swiss dental implant specialist Patent Medical has been named "Dental Implants Manufacturer of the Year in Europe" by MedTech Outlook. The award recognises Patent™ as the first implant system to achieve a scientifically proven bond between peri-implant soft tissue and a transmucosal implant surface—an advancement regarded as a decisive breakthrough in the field of dental implantology.

MedTech Outlook is a leading US-based trade magazine that provides in-depth coverage of advances in medical technology. The magazine honours companies developing disruptive medical technologies, and its recognition of Patent's implant system acknowledges the company's significant contribution to the prevention of peri-implantitis.

Soft-tissue bond to prevent peri-implantitis

The Patent™ Dental Implant System has demonstrated a bond between peri-implant mucosa and a synthetic surface—a first in the history of dentistry. A research team led by Prof. Anton Sculean, Dr Peter Schüpbach, Dr Roland Glauser and Prof. Dieter Bosshardt confirmed this novel cell bond in histological investigations.

Patent™ Implants undergo a proprietary surface treatment that imparts mucophilic and cell-occlusive properties—enhancing soft-tissue integration and creating a barrier to bacterial ingress—as well as a surface topography modelled on natural tooth structure. As a result, epithelial cells begin to grow on to the transmucosal Patent™ surface already in the early stages of healing, ultimately establishing a bond with it.

At EuroPerio11 in Vienna in Austria, where these histological results were presented during a symposium, Dr Glauser emphasised that the soft-tissue bond to the transmucosal Patent surface functions as a dynamic protective barrier that stops plaque from migrating downwards into the tissue and thereby protects it from bacterial invasion. Consequently, the risk of inflammation and tissue recession is greatly reduced, progression from mucositis to peri-implantitis is prevented, and stable aesthetics are maintained long term.

Peri-implantitis prevented in long-term studies

The efficacy of this soft-tissue bond in preventing peri-implantitis has been demonstrated in long-term studies at universities in Germany and Austria—even in high-risk patients with periodontitis or systemic diseases such as cancer, diabetes or multiple sclerosis or in patients with poor oral hygiene or smoking habits.

About the company

Patent Medical
info@mypatent.com
www.mypatent.com

Congresses, courses and symposia

French Dental Association Annual Meeting

25–29 November 2025
Paris, France
www.adfcongres.com

EFP Perio Master Clinic

6–7 March 2026
Baku, Azerbaijan
www.efp.org

International Osteology Symposium

23–25 April 2026
Vienna, Austria
www.osteology-vienna.org

Dentsply Sirona Implant Solutions World Summit

25–27 June 2026
Gothenburg, Sweden
www.dentsplysirona.com

FDI World Dental Congress

4–7 September 2026
Prague, Czech Republic
www.fdiworlddental.org

implants

international magazine of oral implantology

Imprint

Publisher
Torsten R. Oemus
oemus@oemus-media.de

Board
Ingolf Döbbecke
doebbecke@oemus-media.de

Lutz V. Hiller
hiller@oemus-media.de

Torsten R. Oemus
oemus@oemus-media.de

Chief Editorial Manager
Dr Torsten Hartmann (V. i. S. d. P.)
hartmann@dentalnet.de

Editorial Council
Dr Rolf Vollmer
info.vollmer@t-online.de

Dr Georg Bach
doc.bach@t-online.de

Dr Suheil Boutros
SMBoutros@aol.com

Editorial Management
Dr Alina Ion
a.ion@oemus-media.de

Executive Producer
Gernot Meyer
meyer@oemus-media.de

Product Manager
Timo Krause
t.krause@oemus-media.de

Art Director
Alexander Jahn
a.jahn@oemus-media.de

Designer
Aniko Holzer
a.holzer@oemus-media.de

Customer Service
Lysann Reichardt
l.reichardt@oemus-media.de

Published by
OEMUS MEDIA AG
Holbeinstraße 29
04229 Leipzig, Germany
Phone: +49 341 48474-0
Fax: +49 341 48474-290
kontakt@oemus-media.de

Printed by
Silber Druck GmbH & Co. KG
Otto-Hahn-Straße 25
34253 Lohfelden, Germany

implants—**international magazine of** oral implantology is published in cooperation with the German Association of Dental Implantology (DGZI).

DGZI
DGZI Central Office
Paulusstraße 1
40237 Düsseldorf, Germany
Phone: +49 211 16970-77
Fax: +49 211 16970-66
office@dgzi-info.de

www.dgzi.de
www.oemus.com
www.implants.de

NEODENT®
SOLUTIONS

Efficiency and precision to
simplify the clinical routine.

Smile through life.
NEODENT.COM

NEODENT®
DIRECTFIT SCREW

FIT AND FINISH, DIGITALLY

Achieve unmatched precision in digital workflows with the **Neodent® DirectFit Screw**, fit your prosthesis directly on Multi-Unit Abutments with accuracy and reliability.

STRAUMANN
EXACT™

DESIGNED FOR PRECISION 1
EASE OF USE 2
VERSATILE CLINICAL APPLICATIONS 3

Straumann EXACT™ delivers efficient, accurate, and flexible digital full-arch workflows, making treatment accessible without the high cost of photogrammetry.

Discover more of our solutions at: **neodent.com**
Scan the QR code!

Full Arch Solution

Digital Workflow

Alliedstar

Alliedstar **Sensa** Wireless

Sensational Scanning Performance

- Ergonomic Design
- Seamless Connectivity
- AI-Assisted Scanning
- Smart Power Management

Get a demo now