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research

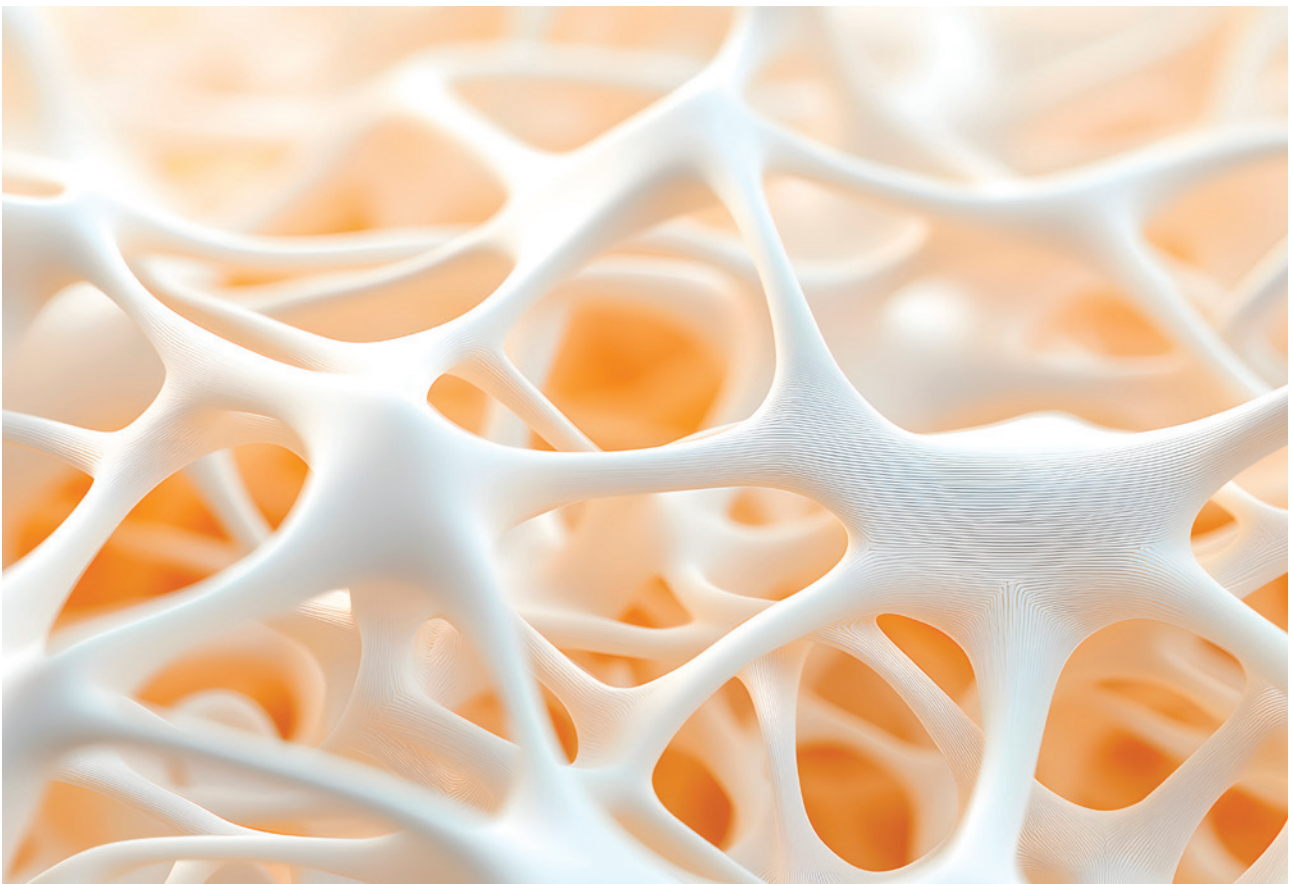
Peri-implantitis: the ongoing challenge in implant care

case report

Digital full-arch implant rehabilitation with immediate loading

interview

Geistlich's vision of regenerative dentistry

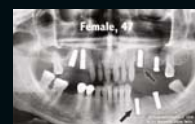




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Dr Georg Bach
President
of the DGZI



Progress with discernment

Dear colleagues,
Contemporary implant dentistry stands at a compelling intersection of scientific discovery, technological refinement and clinical responsibility. The articles gathered in this issue reflect a discipline that is advancing rapidly, yet is simultaneously confronted with questions that remain fundamentally biological, and unmistakably human. For all the precision now afforded by digital planning, guided surgery and intelligent systems, long-term success in implant care still depends on a careful understanding of tissue behaviour, risk, maintenance and judgement.

No subject captures this reality more clearly than peri-implantitis. It is a condition discussed extensively in the literature and encountered with increasing regularity in practice, yet it remains incompletely resolved in both pathogenesis and management. The contemporary debate has moved well beyond plaque alone. Increasing attention is being directed towards the role of biomaterial degradation, titanium particle release and the inflammatory cascades that may amplify tissue destruction. Such perspectives are not academic nuances; they compel us to reconsider the biological environment in which implants function and fail. They also remind us that implant dentistry must never be reduced to a purely technical exercise.

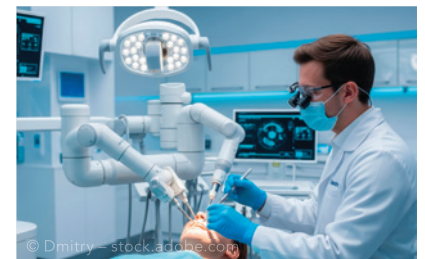
In this context, the renewed interest in zirconia is especially noteworthy. While aesthetic considerations and pa-

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tient demand have certainly accelerated its adoption, the more relevant conversation concerns tissue compatibility, corrosion resistance and the possibility of reducing inflammatory burden. These are promising developments, but they should be approached with scientific sobriety. No material, however favourable, substitutes for sound indication, meticulous execution and rigorous supportive care. If anything, the evolution of implant materials reinforces the need for clinicians to think more broadly—not less—about the biological consequences of every restorative decision.

At the same time, the digital transformation of implant therapy is redefining what is clinically possible. Intra-oral photogrammetry, CAD/CAM workflows, facial scanning and immediate-loading concepts are improving precision, efficiency and interdisciplinary communication, particularly in complex full-arch rehabilitation. Yet even the most advanced workflow requires verification, passive fit, prosthetic discipline and experienced interpretation. Digital excellence remains dependent on clinical excellence.

These themes were echoed with particular clarity at the International Osteology Symposium in Vienna, where scientific rigour and clinical applicability converged in exemplary fashion. The meeting reaffirmed that the future of oral regeneration and implant therapy will not be shaped by innovation in isolation, but by meaningful dialogue between research, industry and practice. Particularly striking was the emphasis on prevention, personalised treatment and the integration of new technologies without compromising biological principles.

Dentistry is not the mere management of information. It is a profession grounded in ethics, dexterity, accountability and trust.

As our field continues to evolve, one principle deserves renewed emphasis: progress is most valuable when coupled with discernment. In implant dentistry, innovation remains indispensable—but so too does the clinician.

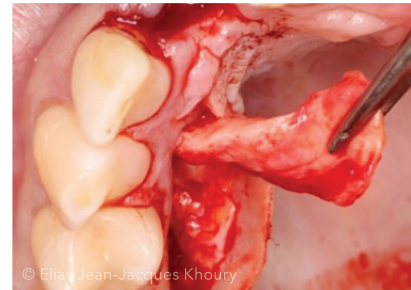
Yours,
 Dr Georg Bach
 President of the German Association
 of Dental Implantology—DGZI



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Peri-implantitis: the ongoing challenge in implant care

The topic of peri-implantitis is far from new in dental care. From its definition and prevalence statistics to ongoing discussions about prevention and treatment strategies, the debate continues to evolve.

Dr Mariane Sordi, DDS, MSc, PhD, Switzerland

What stands out is the substantial volume of publications on the subject. A quick search for “peri-implantitis” in PubMed, as of April 2025, reveals an impressive 4,858 articles, a number that continues to grow exponentially, particularly in the last 15 years. Besides, these numbers only reflect the articles indexed in PubMed, not even considering the vast range of other scientific databases or grey literature sources. In total, we are likely looking at thousands of research papers addressing every aspect of peri-implantitis.

But with such an overwhelming amount of literature, one must ask: What conclusions can be drawn from all these studies? Is the prevalence of peri-implantitis still on the rise, or are we seeing signs of stabilisation? What are the most effective strategies for preventing this disease? What are the underlying causes of the inflammatory breakdown that leads to implant failure? And perhaps most crucially, have researchers and practitioners come to a consensus on the best treatment options available? These critical questions remain at the forefront of ongoing research as we attempt for more effective solutions for managing peri-implantitis.

There is no doubt that the topic of peri-implantitis is a constant concern for every clinician, particularly those involved in implant care. In fact, peri-implantitis is one of the most challenging conditions to treat. Moreover, studies show that between 20 and 47 per cent of implants placed in patients will eventually develop some form of peri-implantitis.¹ This alarming statistic means that, at the very least, two out of every ten patients will return to their dental practices complaining of a problematic implant, leading to not only dissatisfaction from the patient but also significant frustration for the dentist. Such occurrences can be particularly distressing, as they represent a collapse in the expected success of what is considered a state-of-the-art dental treatment.

Zirconia implants were initially introduced to the market with the primary goal of achieving improved aesthetics in clinical practice. Indeed, white zirconia implants offer a more aesthetically pleasing option compared to traditional grey titanium implants, particularly in visible areas where the colour contrast might be noticeable. However, titanium implants, when placed with a proper approach, deliver excellent aesthetic results, achieving high patient satisfaction.

More recently, there has been a growing shift toward biocompatible and metal-free treatment options. Therefore, zirconia has gained popularity due to its perceived biological benefits for the peri-implant tissues. But once again, the question arises: **how much does a material change truly impact the overall health and well-being of the patient?** While zirconia implants may be a promising option for some, it is crucial to assess whether the shift to metal-free materials offers significant long-term health benefits or if it is more of an aesthetic and philosophical preference.

There is growing evidence highlighting the release of metallic particles from titanium implants into peri-implant tissues and its impact on both the biological response and the long-term stability of dental implants.² Throughout the entire implant treatment process, titanium devices continuously release metallic particles into the surrounding tissues due to several factors, including drill wear, friction between the implant and bone surface, wear caused by biomechanical load, and the biological corrosion effect.³ These titanium particles can accumulate in the peri-implant tissues over time, and the role of these particles in the progression of peri-implantitis may be significantly underestimated.³ Animal experiments based on a murine implant model have shown that the titanium implant itself promoted peri-implant inflammation and dysregulated mucosal homeostasis. Titanium ions that were released from the implant acted as a mediator in this process.⁴ Therefore, it is already known that the

„In fact, peri-implantitis is one of the most challenging conditions to treat. Moreover, studies show that between 20 and 47 per cent of implants placed in patients will eventually develop some form of peri-implantitis.“

presence of titanium particles in the peri-implant area triggers an immune response that exacerbates inflammation, thus accelerating the breakdown of bone and soft tissues surrounding the implant.

As a researcher, I studied an inflammatory process known as pyroptosis. The term is derived from the Greek “pyro,” relating to fire or fever, and “ptosis,” denoting a falling, which together describe the remarkable pro-inflammatory process of cell death in pyroptosis. This intense inflammatory response overwhelms the host’s immune system, leading to irreversible tissue damage.⁵ Initially described in the context of rheumatoid arthritis, pyroptosis has more recently been linked to periodontitis and, by extension, peri-implantitis.⁵ In my research, I concluded that pyroptosis is a caspase-dependent catabolic process that plays a significant role in periodontal disorders, where inflammation is central to the disease’s pathophysiology. Furthermore, I suggested that preventing pyroptosis by removing periopathogen virulence factors—those that trigger pyroptosis—may serve as a potential strategy to combat periodontal disease and restore tissue homeostasis.^{5,6} Transferring this knowledge to the context of peri-implantitis, it seems plausible that reducing the presence of peri-implant metallic particles could diminish the activation of inflammasomes, the protein complexes responsible for initiating inflammatory responses. This would likely lead to reduced inflammatory reaction and tissue destruction.

Likewise, findings from various research groups consistently point to a connection between microbial dysbiosis, titanium particle release, and peri-implantitis. Although it remains unclear whether biomaterial breakdown and titanium release precede, coincide with, or follow the dysbiotic shift in the peri-implant microbiota, one conclusion is evident: **titanium particles are omnipresent in peri-implantitis.**⁷

Hence, restricting the release of metallic particles in the peri-implant environment is likely to reduce the inflammatory load and tissue breakdown.

There is growing interest in exploring alternative materials, such as zirconia, which is known for its superior biocompatibility, reduced biofilm formation, and lower corrosion rates in challenging environments such as the mouth.^{8,9} Zirconia implants, due to their ceramic, stable composition, are unlikely to release particles into the surrounding tissues, consequently leading to a reduced incidence of peri-implant inflammatory reaction. In fact, zirconia implants trigger less inflammation and result in reduced marginal bone loss.¹⁰ This suggests that zirconia implants could offer a promising alternative to reduce the incidence of peri-implantitis in the near future.

However, claiming that zirconia implants will completely eliminate peri-implant inflammatory reactions is an overstatement. After all, even a natural tooth, with its perfect anatomy, can fail when exposed to certain virulence factors. Likewise, an implant may fail, regardless of its material quality. Moreover, it is important to consider the technical complications that are inevitably associated with any type of dental treatment.

Moving forward, if zirconia implants will lead to cases of peri-implantitis, clinicians will need to learn how to manage it, as there are currently no established guidelines or protocols for treating peri-implant inflammation around zirconia implants. While some knowledge from the management of periodontitis or peri-implantitis associated with titanium implants can certainly be applied, the unique properties of zirconia may necessitate specific adjustments in treatment approaches.

To conclude, and returning to my previous question “How much does a material change truly impact the overall health and well-being of the patient?”—It appears that zirconia implants can indeed offer improved well-being, primarily due to their biological benefits. With excellent tissue acceptance, low biofilm formation, and a reduced prospect of inflammatory and biological complications, zirconia implants contribute to enhanced patient satisfaction and long-term oral health.

Literature



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Five things AI cannot replace in dentistry—and why clinicians still matter

Artificial intelligence (AI) has seen a rapid surge in popularity and accessibility in dentistry, and more broadly in healthcare. Publicly available AI tools, particularly large language models, have become increasingly integrated into professional and clinical workflows. As of 2024, more than half of healthcare organisations globally reported integrating some form of AI, and both its applications in dentistry and the scale of its adoption therein continue to expand rapidly.^{1,2}

Dr Ali Nankali, UK

As an international speaker who is regularly invited to address dental education organisations and universities, I have observed first hand the growing interest and uncertainty surrounding AI among professionals and students alike. Many of the questions I receive during and after presentations reveal not only excitement about AI's potential but also widespread misconceptions about its limitations.

This article stems from those conversations. Based on both professional dialogue and current developments in dental technology, I have identified five essential things that AI cannot do in dentistry—areas where human expertise, intuition and care remain irreplaceable. These points are not exhaustive, but they represent critical themes that concern all members of the dental team, including general practitioners, specialists and educators.

AI cannot make nuanced real-time decisions

While AI systems, particularly those based on large-scale data analysis, are advancing rapidly and can perform impressive tasks, it is crucial to recognise that AI lacks the human nuance, contextual awareness and the ability to interpret complex or incomplete scenarios that are essential in clinical settings.

AI excels at supporting tasks such as data analysis and pattern recognition. However, machine learning systems are unable to make real-time decisions, especially when those decisions depend on patient communication, emotional cues or multifaceted medical and psychosocial factors. As noted in a letter published by the *British Dental Journal*, while AI demonstrates technical prowess, it lacks the ethical judgement and concern needed for comprehensive patient care, making it unfit to replace dentists entirely.³

Furthermore, the quality of AI output is heavily dependent on the quality of input data.⁴ In clinical practice, it may be challenging to convey all the subtleties of a patient's condition through data alone. This limitation underscores the indispensable role of human clinicians, who can interpret and act upon complex, context-dependent information that AI might overlook.

AI cannot perform hands-on procedures

As a specialised dental practitioner, I often see first hand how patients respond to the idea of complex treatments. Many arrive with a degree of fear or anxiety, especially when it is their first visit or the procedure is more involved. What I have noticed time and again is that trust plays a central role—and that trust is built not only on knowledge but on human interaction, empathy and reassurance.

When I ask patients if they would trust a robot for treatment, the answer is always a firm no. Their reaction—often incredulous—underscores the irreplaceable value of human presence and intra-operative judgement.

Regardless of AI's advancements, it cannot replicate the fine motor skills, adaptability or emotional awareness required in clinical dentistry. Even the idea of a large robotic arm performing dental procedures—regardless of its technical precision—is unsettling, not just for patients but even for us as professionals.

While robotics has been explored in some areas of dental implantology, current systems are strictly assistive, requiring human oversight and intervention at every step. The idea of autonomous robotic treatment in dentistry remains a distant possibility—and one that raises more ethical and practical concerns than it resolves.⁵

Ultimately, dentistry is a tactile profession. We rely not only on visual data but also on touch, sound, judgement and experience—factors that cannot simply be outsourced to machines.

AI cannot build patient relationships

One of the most irreplaceable aspects of dentistry is the relationship between clinician and patient. People do not just come for treatment; they come for reassurance, understanding and empathy. They want to look their clinician in the eye, read the clinician's body language and feel heard.

I have not seen any AI system capable of interpreting emotion, cultural context or psychological state in real time—unlike a human clinician. For example, when a patient is eligible for two treatment options—one more invasive, one more conservative—a human dentist might sense the patient's emotional unease and tailor his or her recommendation accordingly. AI, however, processes data not emotions. It might generate a technically optimal plan but not one that aligns with the patient's lived experience or personal values.

“Regardless of AI’s advancements, it cannot replicate the fine motor skills, adaptability or emotional awareness required in clinical dentistry.”

When I use AI in my practice—to generate ideas or analyse information, for example—I always remind myself that a single missing detail can easily lead to an incorrect or misleading result. In a clinical setting, such errors are not just technical; they are personal.

This is precisely the issue. A patient can sense whether you are confident, present and genuinely engaged. If the patient believes that his or her care is being directed by something impersonal or beyond his or her control, that bond begins to weaken. No matter how intelligent the software, AI cannot build the kind of trust that develops from consistent, honest human interaction.

There is also the matter of accountability. A dentist can articulate his or her reasoning, adjust based on patient feedback and share in the responsibility of outcomes. AI cannot. As a result, it cannot form the kind of therapeutic alliance that underpins all successful dental care. In short, while AI may assist communication—through translation, scheduling or information delivery—it cannot replicate the emotional intelligence and nuanced interpersonal connections fundamental to clinical care.

AI cannot make ethical decisions

Every patient is different—not just clinically but personally. Patients bring their values, preferences, fears and expectations to every appointment. As a dental professional, you begin to perceive these cues the moment a patient enters the room. You notice whether he or she is hesitant about a procedure, curious about alternatives or perhaps more concerned about aesthetics than longevity. These subtle cues inform how we frame options, provide guidance and respect patient autonomy. AI cannot do this.

“AI can be a powerful assistant, but it cannot assume the ethical and professional responsibilities that come with patient care.”

Furthermore, ethical decision-making often involves more than clinical judgement; it involves negotiation, compromise and compassion. We are trained not only to do no harm but to do what is right for that individual within the context of his or her life. To me, AI cannot substitute that sense of professional responsibility. It lacks moral reasoning and cannot be held accountable for the outcomes of its suggestions. Ethics in dentistry are dynamic and context-dependent, requiring discretion and sensitivity that only human experience can provide.

AI cannot ensure equity or critical oversight

The perhaps most overlooked limitation is AI's inability to ensure fairness and accountability without human oversight. In dentistry, as in all areas of healthcare, fairness matters. It is not just about applying the same procedure to everyone; it is about recognising difference, context and need. As professionals, we often make decisions based on a blend of clinical data, visual cues, body language, tone of voice and prior knowledge of the patient. Our ability to interpret these complex inputs helps ensure that care is both appropriate and equitable.

While AI systems can process large volumes of data and even flag inconsistencies, they lack the situational awareness that humans apply instinctively. A camera might capture an image, but it will not detect hesitation in a patient's voice. An algorithm may suggest a procedure, but it will not notice the anxiety in a patient's posture or pick up on the silent signals that a clinician observes intuitively.

This is where the risk lies. AI can only work with what it is given. If the data is incomplete, is biased or lacks essential human nuance, the results may inadvertently perpetuate inequality. In fact, many AI systems have been shown to reflect the limitations of their training data—leading to recommendations that disadvantage certain patient groups, particularly those under-represented in clinical datasets.

That is why human oversight is not optional; it is essential. AI can be a powerful assistant, but it cannot assume the ethical and professional responsibilities that come with patient care. Equity in dentistry requires judgement, awareness and a conscious commitment to fairness. These are a human's role to consider, not the functions of a machine.

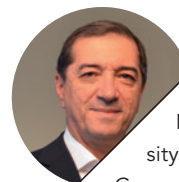
Human expertise at the heart of a digital future

The concerns addressed in this article are genuine and reflect the growing uncertainty many dental professionals feel about the future. As AI continues to evolve, it is natural to wonder how our roles may shift or whether aspects of our work might be replaced. Yet the points raised here reaffirm a vital truth: AI is a tool—not a replacement.

Yes, robotics and intelligent systems will become more capable over time. They may assist with increasing sophistication, speed and precision. However, they will always lack the very qualities that define our profession: clinical judgement, human connection, ethical awareness and the ability to adapt in real time. The future of dentistry will be shaped not by machines alone but by clinicians who lead with both skill and empathy—supported, not replaced, by AI.

Editorial note: This article was published in *digital—international magazine of digital dentistry* vol. 6, issue 3/2025.

References



About the author

Dr Ali Nankali is a clinical senior lecturer at Barts and the London School of Medicine and Dentistry at Queen Mary University of London and the president of UKDental-Courses, an online education platform that offers continuing professional development opportunities to dentists worldwide.

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Digital full-arch implant rehabilitation with immediate loading

A staged workflow for accurate results

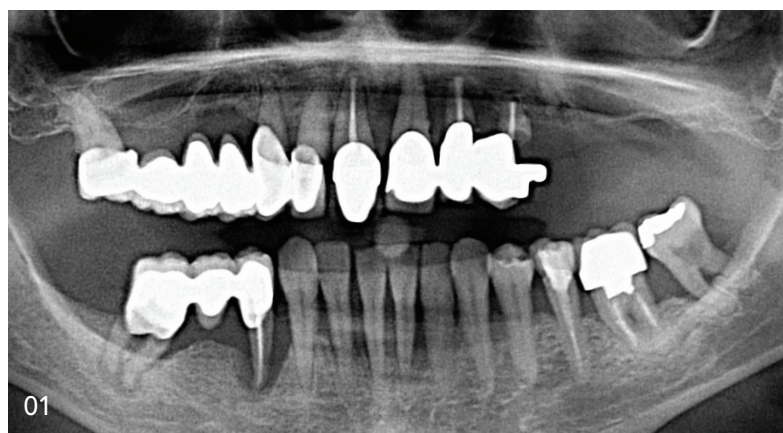
Full-mouth implant rehabilitation has historically required multiple surgical and prosthetic stages, each susceptible to cumulative error. The introduction of a whole range of digital devices (intra-oral, extra-oral, face scanners and cone beam computed tomography [CBCT] with low dose radiation) and processing software (computer-assisted design/computer-assisted manufacturing [CAD/CAM] prosthetic software, software for planning implant surgery), together with new durable aesthetic materials, powerful manufacturing and prototyping tools (milling machines and 3D printers), is radically transforming the dental profession.

Dr Theodoros Gonidis, Greece

Today, the digital revolution is changing the workflow and consequently changing operating protocols. In modern digital dentistry, the four basic phases of work are image acquisition, data preparation/processing, production and the clinical application on patients.¹

Image acquisition with traditional intra-oral scanning (IOS) systems struggle to capture soft-tissue topography to maintain the needed details for precise prosthetic contact. These limitations have made full-arch implant rehabilitation one of the most technically demanding procedures in dentistry. Intra-oral photogrammetry (IPG) overcomes these challenges by using coded scan markers that ensure precise implant positioning without relying on image stitching.² Accuracy of digital impressions may decline when scanning arches with more than four implants and photogrammetry appears to mitigate this effect.³

Facial scanners are gaining much popularity over the past few years. These devices create high-resolution, three-dimensional models (which can be aligned with the IOS and CBCT) utilising imaging technology that uses structured light or laser scanning to create a comprehensive view of the patient's smile and surrounding facial features.⁴ Facial scans allow for objective, quantitative assessment of facial morphology, better communication with patients, precise treatment planning and the recent technological advances have

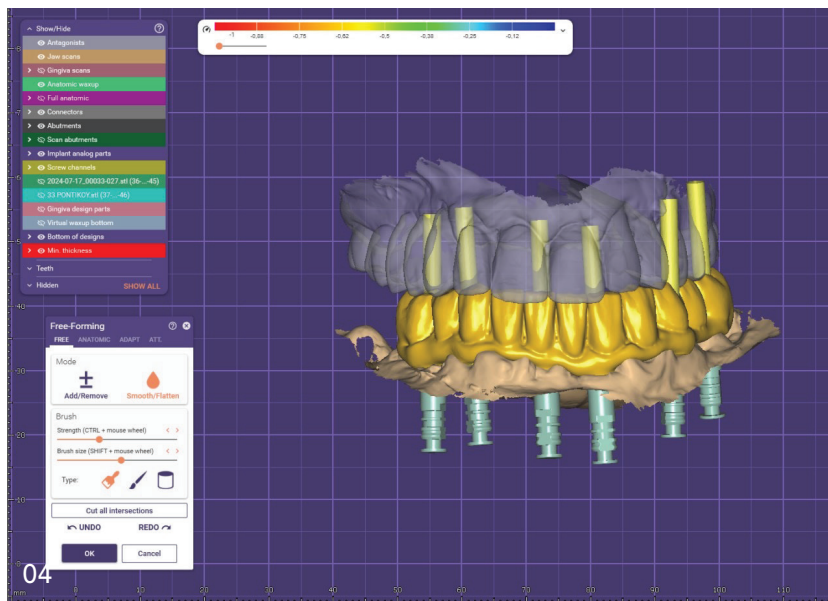


01
Pre-operative OPG showing generalised bone loss.

02
Teeth assessed as having a poor prognosis.



03
Fabrication of the mandibular surgical guide.



04
Digital design of the mandibular provisional prosthesis on exocad.



05
Immediate loading with a hybrid resin prosthesis.

made facial scanning more accessible, with the introduction of portable devices and improved software integration capabilities.⁵ Advances in digital implantology have transformed implant-supported full-mouth rehabilitation by enabling precise, efficient, and minimally invasive workflows.

This case report presents the treatment of a sixty-six-year-old patient in which the clinical and radiographic evaluation revealed poor prognoses for all teeth. (Figs. 1+2) A full-mouth implant-supported rehabilitation was planned using a staged, digitally guided protocol for two types of implant systems from bredent medical (blueSKY and copaSKY) owing to their unique attributes which make them suitable for immediate loading.

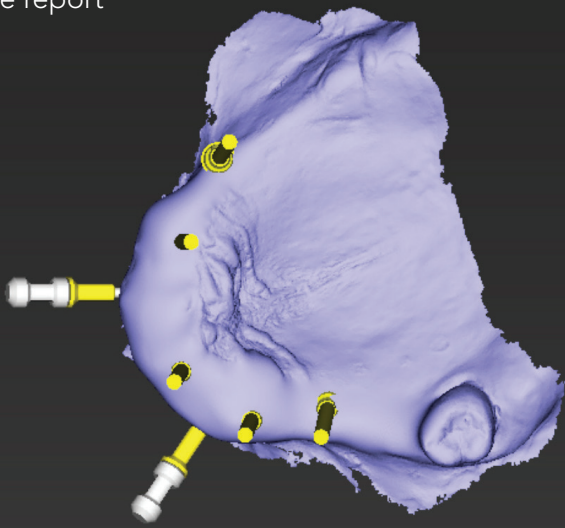
Surgical stage

a) Mandibular phase

A surgical guide was designed using the coDiagnostiX software (Fig. 3). Lower teeth were extracted and a combi-

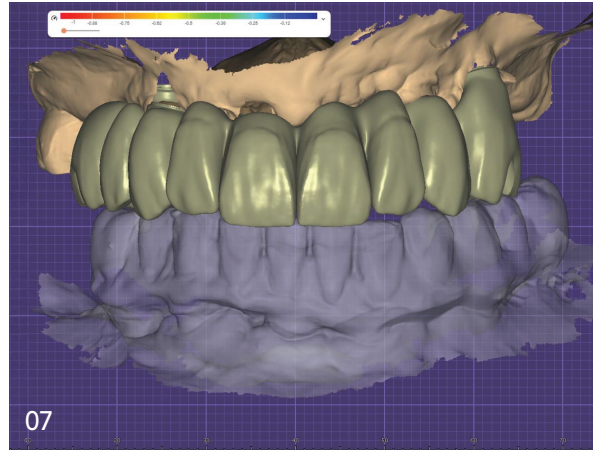
nation of blueSKY and copaSKY implants (bredent medical) were placed through guided surgery with the aid of the SKY Pro Guide kit (bredent medical). The blueSKY and copaSKY implant system have a unique osseo-connect-surface (OCS) which is a blasted and etched surface, thereby facilitating osteoblasts attachment for rapid osseointegration. The blueSKY implants are placed flushed with the bone (epicrestal) and achieve good mechanical stability due to cortical anchorage. The self-tapping double thread increases the speed of insertion and ensures a high primary stability adequate for immediate restoration.

One-time uni.cone multi-unit abutments (bredent medical) were placed, and an intra-oral scan (TRIOS 3, 3Shape) was recorded immediately after surgery. A cross-arch FP-3 prosthesis was designed using exocad software (Fig. 4) and a 3D-printed resin (onX Tough 2, Sprint Ray) immediate provisional prosthesis reinforced by titanium cylinders was fabricated and immediately loaded two hours postsurgery with satisfactory outcome (Fig. 5).



06

06 Maxillary implant planning and surgical guide design in coDiagnostiX.



07

07 Digital design of the maxillary provisional prosthesis on exocad.



08



09



10

b) Maxillary phase

A surgical guide was milled using CAD/CAM, followed by total extraction of the upper teeth and guided subcrestal placement of five copaSKY implants (bredent medical). The copaSKY implants, owing to their micro-structured backtaper, allow subcrestal placement and bone-chip apposition, ensuring complete bone healing. Uni.cone multiunit abutments were placed, and an IOS (TRIOS 3, 3Shape) was performed immediately after surgery. An FP-2 provisional prosthesis was designed in exocad and 3D printed with OnX Tough 2 material (Sprint Ray) and titanium intermediate cylinders. This provisional prosthesis was immediately loaded onto the abutments within two hours after surgery (Figs. 6–8). The patient was functionally and aesthetically satisfied with the outcome (Fig. 9).

08 Immediate maxillary loading with a hybrid resin prosthesis.

09 Aesthetic outcome following the provisional phase.

10 Clinical status at ten months post-op.

Definitive stage

After ten months of successful function without complications, radiographic evaluation and implant stability testing (ISQ) confirmed osseointegration in both arches (Fig. 10).

“Full-arch implant rehabilitation is one of the most technically demanding procedures in dentistry.”

Intra-oral scanning (Aoralscan Elite, Shining 3D) of the existing provisional restorations (Fig. 11) was done followed by removal of the intermediate prosthesis and scanning of the scan post (bredent medical) on the maxillary multiunit uni. cone abutment (Fig. 12). The deficiencies of the provisional prosthesis were corrected, and the final maxillary prosthesis was designed (Fig. 13). A milled alloy verification jig was fabricated for the maxilla; however, it did not fit on the abutments. It was mandatory to cut and take a physical pick-up impression to fabricate a passive fit final prosthesis. The final titanium bar reinforced maxillary prosthesis with multilayered zirconia was fixed (Fig. 14) and the scan of the mandible was immediately done with the upper prosthesis as the reference point for occlusion. The lower arch was scanned with intra-oral photogrammetry (IPG) scanning flags (Fig. 15) on IPG mode (Aoralscan Elite, Shining 3D) The IPG minimises cumulative errors from scan data alignment and enhances overall



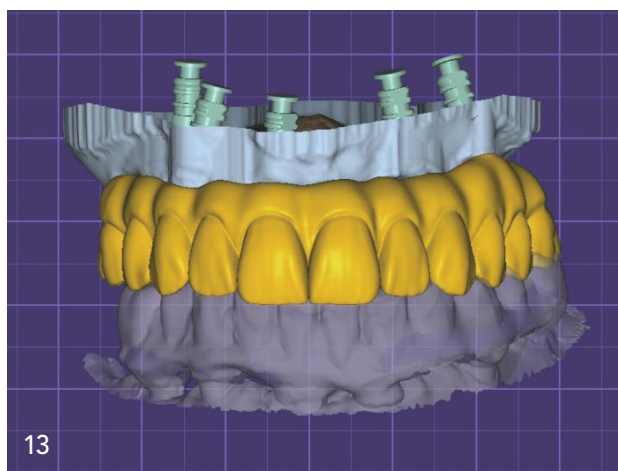
11



12

11 Intra-oral scan of the provisional prosthesis.

12 Maxillary intra-oral scan of the bredent scan posts at the multi-unit abutment level.



13



14

13 Digital design of the definitive maxillary prosthesis on exocad.

14 Definitive maxillary FP3 prosthesis.

15 Photogrammetry scan flags for mandibular scanning of Unicone multi-unit abutments.



15

accuracy. A milled alloy fabrication jig-trial was done to ensure a passive fit of the prosthesis (Fig. 16). A milled titanium bar with layered zirconia was fabricated which connected directly to the multiunit uni.cone abutments, maximising the use of vertical space and ensuring structural durability, with fewer components involved, making the process less complicated. The final prosthesis was fixed in the patient's mouth. (Figs. 17+18) A 3D facial scan (MetiSmile MR, Shining 3D) was performed to facilitate final occlusal adjustments using the software's jaw-tracking mode (Fig. 19). The one-year follow-up OPG showed successful treatment outcomes with stable crestal bone levels (Fig. 20).

Discussion

A complete digital workflow was planned with a prosthetically-driven full-arch implant rehabilitation deemed crucial for long term functional and aesthetic results. Guided surgeries entail the final restorative outcome in planning, and the correct implant position is decided with respect to anatomical restriction for safe and accurate implant placement. Implant survival with guided surgeries shows high survival percentages.⁶ The bredent medical implant systems used are very compatible with all digital equipment, since the systems' libraries is present on almost all intra-oral scanning, CAD/CAM implant planning software and 3D printing.

Immediate loading with in-house 3D printed cross arch provisional prosthesis was done for restoration of instant func-

tion and aesthetics. These performed exceptionally well for ten months with neither aesthetic nor mechanical complications. This additive method is an alternative way of digitally fabricating restorations and has advantages over the subtractive method of milled restorations such as mass production with little material waste, reduced manufacturing time, easy access to materials for 3D printing and the availability of low-cost 3D printers.⁷

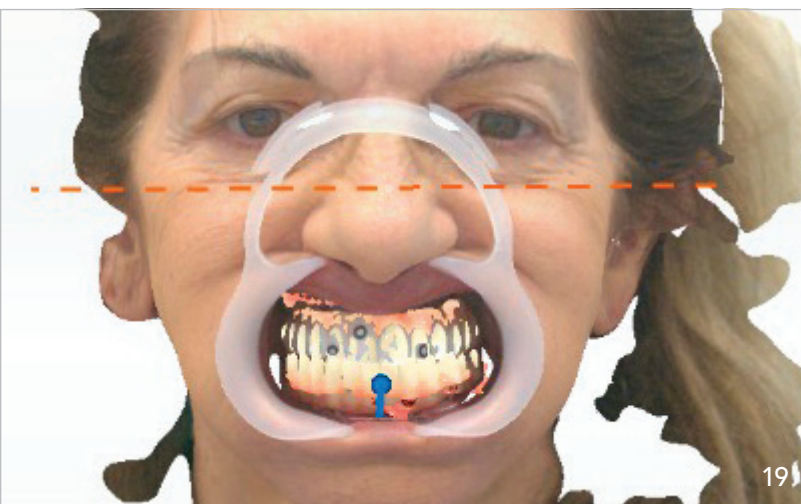
Two different intra-oral scanning methods were employed during the definitive restorative phase and had clinically different results as assessed by the fit of the milled alloy confirmation jig. The mandible scanned by IPG showed significantly superior results in the milled alloy jig, passing the Sheffield test clinically and radiographically as compared to the maxilla which was scanned by traditional IOS and had a misfit in the jig trial. A recent *in-vitro* study evaluated the accuracy of direct digital impression of various intra-oral scanners as compared to the IPG mode on the Aoralscan Elite on an edentulous mandible. The study concluded that the IPG was statistically more accurate in all parameters as compared to traditional IOS, highlighting clinical relevance of IPG as a reliable and precise technique for full-arch cases.⁸ The significance of accuracy of IPG in the mandible is more relevant as compared to traditional IOS due to presence of tongue, movable mucosa and lack of reference points such as the rugae as present on the palate making IOS less reliable than IPG especially in the mandible as compared to the maxilla. IPG, relying solely on the spatial relationship of

16
Milled framework
in situ.

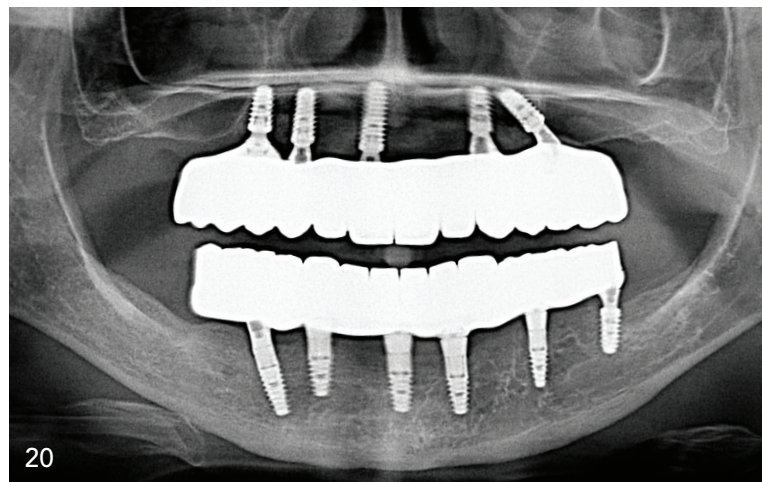
17
Milled titanium
bar with direct
connection to the
multi-unit
abutments.

18
Frontal view of
the definitive
multilayer
zirconia-on-
titanium FP3
prosthesis.





19
Facial scan used for final occlusal adjustment.



20
One-year postoperative follow-up demonstrating stable crestal bone levels.

fixed scan posts targets, remains unaffected by these variables, explaining its superior precision in this clinical setting.⁹ A study by Pozzi et al. concluded that IPG trueness might avoid rigid prototype try-in and IPG technology was feasible for complete-arch digital implant impression with mean linear, angular, and 3D deviations far below the acceptable range for a passive fit. For complete-arch implant rehabilitation, the photogrammetry system showed the best accuracy of all the impression techniques evaluated, followed by the conventional impression technique, and the intra-oral scanner provided the least accuracy.¹⁰

A 3D facial scan (MetiSmile MR, Shining 3D) at the end of treatment was used for final occlusal adjustment through the assessment of the jaw motion. A recent cross-sectional study evaluated the accuracy of various facial scanners and concluded the Metismile face scanner to be the most accurate. The scanner's algorithm allows operators to oversee the process in real time, adjust positioning, and address image gaps seamlessly. MetiSmile utilises structured light scanning technology, which has demonstrated superiority over the stereophotogrammetry used by other facial scanners. This technological advantage likely explains MetiSmile's superior performance in this study.¹¹ 3D facial scanning and jaw-motion tracking have expanded prosthodontic planning from tooth-driven to facially-driven workflows. Facial scans help align restorative design with soft-tissue contours, aesthetics, and patient-specific function.

Conclusion

This case demonstrates how combining advanced guided surgeries, IPG technology, 3D-printed provisional restorations, and motion-based facial scanning can streamline the digital workflow for full-arch implant reconstruction. Appropriate choice of implant systems can be crucial for achieving good primary stability to facilitate immediate loading and their prosthetic geometry to allow smooth integration of CAD/

CAM and 3D-printing protocols. This compatibility with the brendent medical's systems reduced intraoperative adjustments and simplified the transition from surgery to the final prosthesis. IPG scanning improved the passive fit outcome,

“Facial scanners are gaining much popularity over the past few years.”

while facial-scan integration enhanced functional and aesthetic predictability. This experience reinforces the shift from conventional full-arch scanning toward guided, verification-oriented digital protocols that can reduce the need for analog corrections and improve workflow consistency. Hence, an integrated digital workflow system can seamlessly deliver predictable full-mouth implant-supported rehabilitations and improve patients' acceptance and satisfaction.



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References



Case-based insights into versatile implant systems for modern dental practice

Clinical validation of prosthetic-driven implantology

Prosthetic-driven implantology integrates surgical, restorative and digital disciplines to optimise implant positioning and long-term peri-implant stability. Recent advances in digital planning, implant macro-design and scannable components have further enabled a crown-down approach that prioritises soft-tissue preservation, restorative space and biomechanical requirements.

Dr Georgios Emmanouilidis, UK

This case series presents two clinical scenarios illustrating how digital workflows and versatile implant designs can be applied to complex aesthetic and posterior maxillary rehabilitation.

The first case describes the replacement of an upper lateral incisor and posterior site using a bone-level implant system combined with a scannable anatomic healing abutment to control soft-tissue maturation without provisionalisation. A palatal roll-flap technique was incorporated to enhance buccal tissue thickness in a high-risk aesthetic area. The second case demonstrates the use of a short tissue-level implant in the posterior maxilla with limited residual bone height, allowing rehabilitation without a sinus augmentation. Treatment was facilitated by guided surgery and use of tapered macro-design implants, enabling high primary stability in low-density bone.

Both cases highlight the importance of integrating digital planning, appropriate implant selection and individualised soft-tissue management. Together, they demonstrate how biologically informed and digitally assisted protocols can improve predictability, reduce chair-time and deliver patient-centred outcomes in modern implant dentistry.

Introduction

Prosthetic-driven implantology has become central to contemporary implant dentistry, redefining how clinicians plan implant positioning and deliver restorations with long-term functional and aesthetic stability.¹ This approach requires an interdisciplinary mindset combining surgical, restorative, periodontal and digital expertise to tailor treatment

to individual patient needs. The process begins with the final restoration in mind—emergence profile, soft-tissue architecture, occlusion and biomechanics—and works backwards to determine optimal implant placement. Successful outcomes therefore rely on integrating patient-specific anatomical factors, bone density and volume, soft-tissue phenotype, aesthetic expectations and occlusal considerations into a coordinated treatment plan.¹

Parallel to these clinical principles, the implant industry has undergone significant transformation. Advances in implant geometry, implant-abutment connections and materials—such as high-strength Grade V titanium alloys and versatile designs suited for soft bone—have enhanced primary stability and crestal bone preservation.^{2,3} Digital innovations, including CBCT imaging, intra-oral scanning and 3D planning software, now allow clinicians to merge diagnostic information seamlessly.³⁻⁵ This not only improves the accuracy of presurgical planning but also enhances communication and consent by enabling patients to visualise treatment outcomes. Fully guided surgery supports minimally invasive protocols and reduces operative time by transferring the prosthetic plan accurately to the surgical field.⁵

Implant systems that facilitate a prosthetic-driven “crown-down” approach have markedly transformed workflow efficiency. Digital components—such as anatomically shaped scannable healing abutments—allow the emergence profile to be established and captured without provisionalisation, reducing the risk of soft-tissue collapse during impressions.⁶⁻⁸ These tools streamline clinical workflow, minimise chair-time, protect maturing peri-implant tissues and enhance collaboration between clinician and laboratory, improving overall predictability and patient experience.



01a



01b

01a–d
Preoperative assessment UR2 and UR5. Baseline frontal smile (a). Baseline retracted occlusal view (b). Baseline retracted frontal view (c). Baseline retracted right lateral view (d).



01c



01d

In this case series, two common clinical situations are presented to illustrate how these principles work in everyday practice. The first case focuses on aesthetic-zone management, where soft-tissue control is critical, using a digital workflow and a scannable anatomic healing abutment to guide tissue maturation. The second case addresses the challenge of limited bone height in the posterior maxilla, managed successfully with a short tissue-level implant designed to optimise primary stability in soft bone and avoid sinus augmentation. Together, these cases demonstrate how biological understanding and technological innovation complement one another to deliver predictable, patient-centred implant rehabilitation.

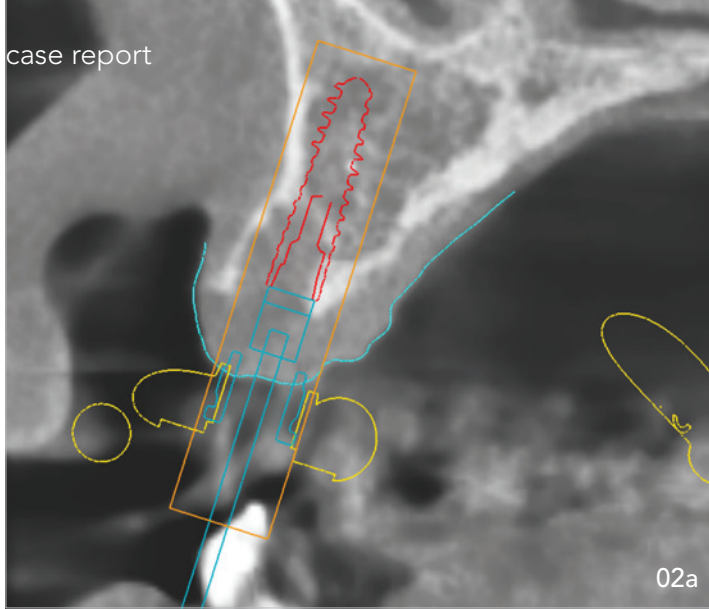
Materials and methods

All cases were planned and executed using a prosthetic-driven digital workflow. Diagnostic data—including CBCT imaging and digital impressions—were merged within

SMOP® (Swissmeda) software to enable virtual planning and guide design.⁹ Tooth-supported surgical guides were fabricated incorporating specific fully guided sleeves: Ø3.6mm and Ø4.2mm for the bone-level implants, and Ø5.0mm for the tissue-level implant (Integral, Anthogyr).

Two implant configurations of the Axiom® X3 (Anthogyr) system were employed: a boneLevel (BL) design for both the aesthetic-zone and posterior sites, and a Axiom® Tissue-Level (TL) design for a posterior site in a periodontally susceptible patient. Both feature a 6° Morse-taper conical connection with platform switching to enhance interface stability and minimise micro-movement.^{10,11}

The implants are manufactured from high strength titanium alloy with a tapered macro-design and progressive thread geometry that compact surrounding bone during insertion, integrating the principles of osseodensification without the need for reverse-rotation burs.^{11,12}



02a+b
Digital planning using SMOP® (Swissmeda) software. UR2 3D implant planning (a). UR5 3D implant planning (b).



Surgical preparation followed the recommended guided protocol, using an under-preparation sequence in low-density bone. In the aesthetic zone, soft-tissue management included a palatal roll-flap technique and the use of an anatomic healing abutment (HealFit® SH, Anthogyr) to shape the emergence profile.¹³ Posterior sites received standard cylindrical or tissue-level healing abutments according to implant design.

Digital impressions were taken using the TRIOS 3 (3Shape) scanner with the appropriate Axiom® BL and TL metal scan bodies, as well as the scannable anatomic healing abutment.¹⁴⁻¹⁶ Definitive restorations consisted of screw-retained monolithic CAD/CAM zirconia crowns on titanium bases (X-Base, Anthogyr), torqued to manufacturer-recommended values (25 Ncm). Periapical radiographs were used to verify complete seating and stable crestal bone levels at delivery and follow-up.

Case 1

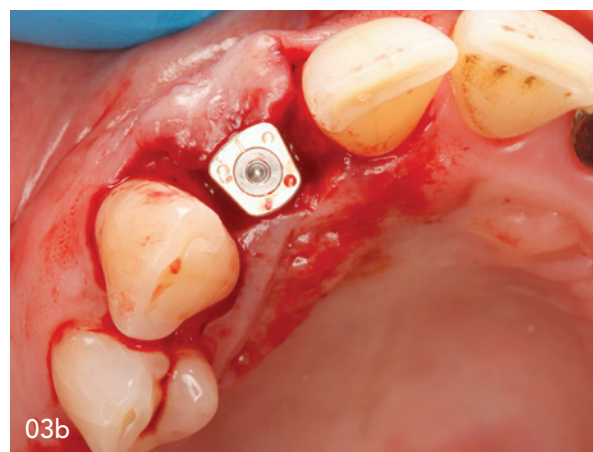
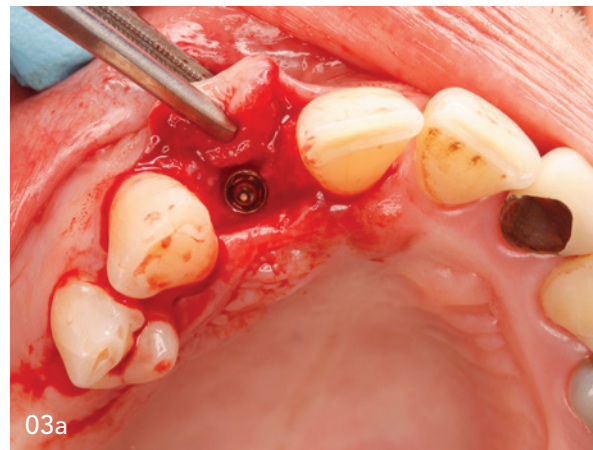
Prosthetic-driven rehabilitation in the aesthetic and posterior zones—soft-tissue management for aesthetic success using scannable healing screws

A 68-year-old male (ASA Class II) presented with a fractured post-crown on the UR2.

The non-restorable root was extracted, and an immediate removable denture was provided for aesthetics. He also had long-standing edentulism in the UR5–UR6 region and a defective PFM-crown on the UL2. After discussing all treatment options, the patient chose implant rehabilitation for the UR2 and UR5 to improve posterior support and reduce anterior loading. Replacement of the UL2 crown was also planned. Orthodontic treatment was considered but rejected by the patient.

Treatment plan

Fourteen weeks were allowed after the extraction to facilitate sufficient apical bone formation, followed



03a+b
UR2 implant placement and HealFit® SH connection. Palatal flap extension de-epithelialised and rolled buccally (a). HealFit® SH shape A, 3.5 × 3.0 mm positioned 1.5 mm supra-mucosal (b).

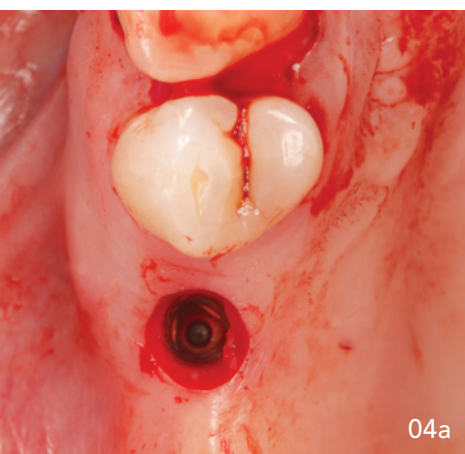
by clinical and radiographic assessment, including a CBCT scan. The findings confirmed favourable bone volume for both the UR2 and UR5/6 sites; however, the patient elected to replace only one posterior tooth despite adequate bone and restorative space for two implants. Potential challenges were discussed with the patient, including the established recession and papilla loss around his UR3, UR1 and UL1, and the low density of his bone (Class D3/D4), which could affect primary stability and lead to a two-staged approach with extended timings. The patient declined any additional surgery involving a soft-tissue graft and agreed to accept the unfavourable papilla. Having a low smile line, a thick phenotype and sufficient thickness of keratinised tissue (6 mm at UR2 and 4 mm at UR5), we decided to accept this aesthetic compromise (Figs. 1a–d). To maintain soft-tissue stability and prevent future recession, we planned to enhance buccal volume using a roll-flap technique at UR2.

Surgical procedure

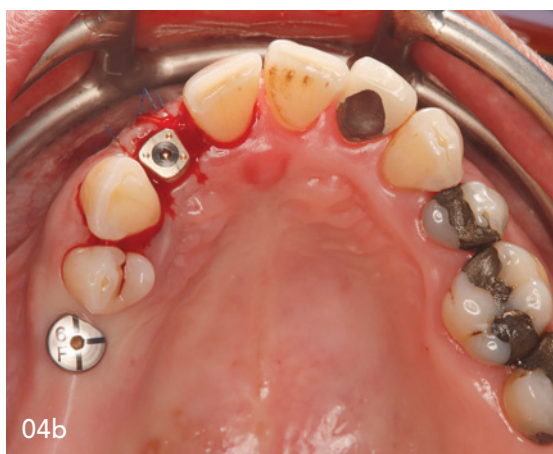
A fully digital, prosthetic-driven plan was created using SMOP (Swissmeda) software (Figs. 2a+b). This workflow allowed visualisation of the final prosthetic contours and accurate transfer of the plan to surgery via a tooth-supported guide, minimising chairside time and patient discomfort. The objective was to achieve natural emergence and long-

term soft-tissue stability in the aesthetic zone at UR2 while re-establishing posterior function with a single implant in the UR5 position restored with a molar-sized crown, matching his opposing tooth.

At the UR2 site, bone sounding confirmed favourable papillary support (3 mm from both mesial and distal bony peaks), which informed the decision to include the papilla in the flap. A full-thickness envelope flap with palatal extension was raised to allow the tissue to be rolled buccally, increasing the keratinised-tissue thickness and supporting the gingival margin. Osteotomy was completed following the guided drill sequence (Integral, Anthogyr) and underprepared by skipping the final drill according to the protocol. A bone-level Ø3.4 × 14 mm implant (Axiom® X3) was inserted 1.5 mm sub-crestally with a recorded torque of 45 Ncm, allowing for a transmucosal approach. An anatomic scannable healing abutment (HealFit® SH, Anthogyr), shape A, 3.5 × 3.0 mm, was selected using the dedicated manufacturer’s gauge and positioned 1.5 mm above the mucosa to contour the soft-tissue profile during healing.^{17–19} The palatal extension of the flap was de-epithelialized and rolled buccally. A combination of non-resorbable vertical mattress sutures (5/0 Prolene®) and resorbable single-interrupted 4/0 sutures (PGA Resorba®) was used to achieve tension-free closure (Figs. 3a+b). The denture was relieved to avoid pressure on the implant during healing.

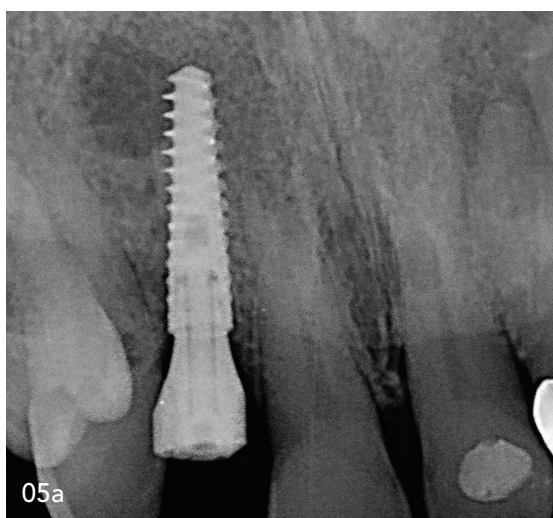


04a

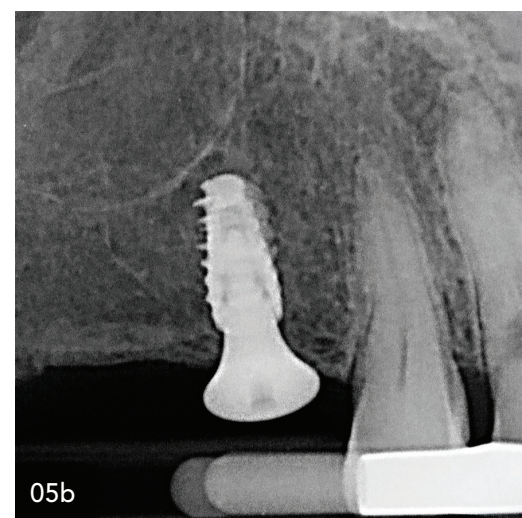


04b

04a+b
UR5 implant placement and final suturing. Flapless implant placement of UR5 (a). Suturing of the flap around UR2 and fit of a 6.0 × 4.0 mm cylindrical healing abutment on UR5 (b).



05a



05b

05a+b
Implant placement radiographs with healing abutments *in situ*. UR2 Axiom® X3 bone level implant 3.4 × 14 mm (a). UR5 Axiom® X3 bone level implant 4.0 × 8.00 mm (b).

At the UR5 site, the implant was placed flapless to reduce surgical time and maintain the keratinised mucosa. The tooth-supported guide ensured precise positioning. Osteotomy was prepared using the same guided sequence, and a $\text{Ø}4 \times 8$ mm bone-level implant (Axiom® X3) was placed at a final torque of 40Ncm. A standard cylindrical healing abutment ($\text{Ø}6.0 \times 4.0$ mm) was connected (Figs. 4a+b). Immediate postoperative periapical radiographs confirmed accurate three-dimensional positioning and complete seating of both abutments (Figs. 5a+b). The patient was prescribed a short course of antibiotics (Amoxicillin 500mg for five days) and advised to use oxygen-releasing gel and mouthwash (Blue-m®) for two weeks.

Treatment outcome

Healing progressed uneventfully, and both implants demonstrated full osseointegration, stable peri-implant tissues and no inflammation (Fig. 6). Following a fully digital workflow, an intra-oral scan (TRIOS 3, 3Shape) was taken 12 weeks postsurgery. The UR2 site was scanned directly using the same HealFit® SH abutment left in place since surgery, preserving the conditioned soft tissue and eliminating the need for a temporary crown, while the UR5 site was scanned using a BL metal scan body.¹⁶ The old PFM crown on UL2 was removed at the same appointment, and the tooth was prepared and scanned (Figs. 7a+b).

Two screw-retained monolithic zirconia crowns on titanium bases (X-Base®, Anthogyr) were fitted for UR2 and UR5 at 25Ncm, alongside a monolithic zirconia crown for the UL2 for aesthetic symmetry. Both implant crowns seated passively with precise adaptation to the peri-implant tissues. The UR2 crown displayed a natural emergence contour consistent with the soft-tissue form created by the HealFit® SH abutment (Figs. 8a–e). Occlusion was refined for even centric contacts and light anterior guidance. Radiographs confirmed stable crestal bone levels (Figs. 9a+b). At the three-month review, the patient reported excellent comfort, function and aesthetics and continued to wear his protective nightguard as advised.

Discussion

This case highlights the importance of individualised soft-tissue management in prosthetic-driven implantology, particularly in the aesthetic zone. The decision to incorporate a palatal roll flap helped enhance soft-tissue thickness and protect the gingival margin.¹³ The flapless posterior approach reduced morbidity and preserved keratinised tissue, while the anatomically shaped scannable healing abutment enabled controlled tissue maturation without provisionalisation, significantly improving efficiency and reducing chair-time.^{17–19}



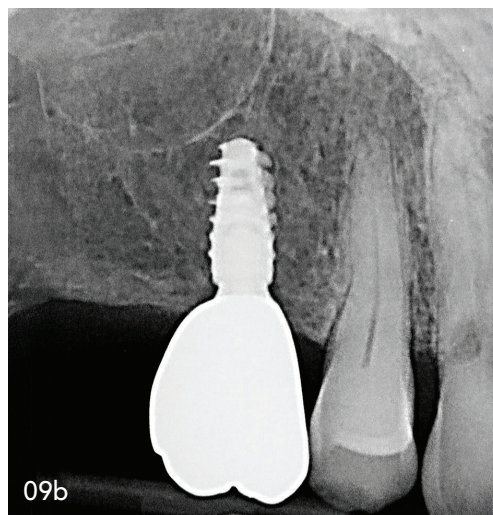
06
Healed sites UR2, UR5 and UL2 defective crown removal, 12 weeks postsurgery.

07a+b
Digital workflow and final intra-oral scanning. Lateral view using a metal scan body for UR5 and the HealFit® SH abutment retained *in situ* at UR2 (a). Occlusal view including UL2 for a new zirconia crown (b).





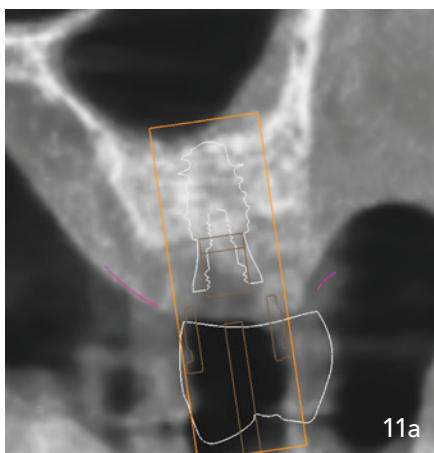
08a-e
Final restorations. Emergence profiles using the anatomic HealFit® SH abutment at UR2 and a standard cylindrical healing abutment at UR5 (a). Maxillary occlusal view of the screw retained UR2, UR5 zirconia restorations and the new zirconia crown on UL2 (b). Final frontal retracted view (c). Final retracted right lateral view (d). Final frontal smile (e).



09a+b
Final radiographic result demonstrating passive fit and stable bone levels. UR2 final radiograph (a). UR5 final radiograph (b).



10a+b
Preoperative assessment UL6. Baseline retracted occlusal view (a). Baseline retracted left lateral view (b).



11a+b
Digital planning using SMOP® (Swissmeda) software. UL6 3D implant planning (a). UL6 digital wax-up and surgical guide design (b).

Case 2

Managing bone deficiency with osseodensification in the posterior maxilla—occlusal and biomechanical factors

Another 68-year-old male (ASA Class I), with a history of successfully managed periodontitis, presented for replacement of his missing upper left first molar (UL6) with a fixed restoration. The tooth had been extracted approximately six months earlier due to unrestorable caries and chronic infection. The site had healed uneventfully, with sufficient soft-tissue thickness but with established recession around his upper left second premolar (UL5) and upper left second molar (UL7; Figs. 10a+b). The CBCT scan revealed limited residual bone height beneath the sinus floor, and treatment options included an internal sinus lift or placement of a short implant with a longer crown. The periodontal condition was stable, and bone quality appeared soft (Class D4), necessitating a technique and implant design capable of achieving reliable primary stability in low-density bone.^{20,21}

Treatment plan

Digital planning confirmed adequate ridge width but only 8–8.5 mm of vertical height to the sinus membrane. As the patient declined sinus augmentation, and given the bone limitation and periodontal background, a short tissue-

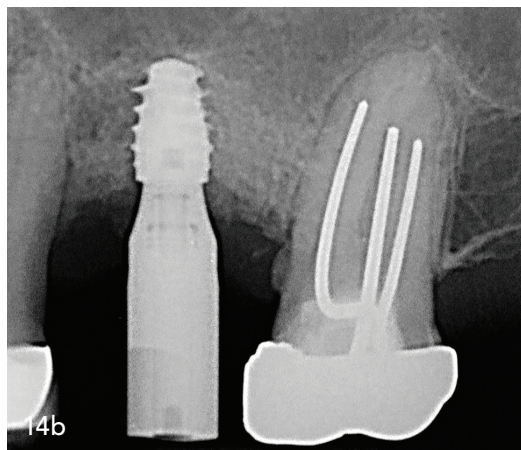
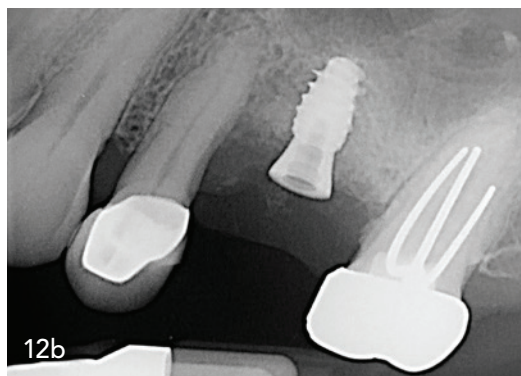
level (TL) implant (Axiom® X3 TL) was selected. Tissue-level implants maintain the implant–abutment junction supra-crestally, reducing microbial leakage and supporting improved hygiene for susceptible patients.²² A prosthetic-driven plan was created using SMOP® (Swissmeda) software to ensure ideal implant positioning and prosthetic emergence (Figs. 11a+b).

Surgical procedure

Under local anaesthesia, a full-thickness envelope flap was raised to visualise the ridge and confirm guide adaptation. Bone sounding indicated adequate papillary support (3 mm from both mesial and distal bony peaks). A tooth-supported guide was secured, and osteotomy preparation followed the guided Integral (Anthogyr) sequence with an under-preparation protocol adapted for low-density bone.

Following verification of osteotomy depth and angulation, a TL implant (4.6 × 6.5 mm, Axiom® X3) was inserted with an insertion torque of 40 Ncm. Despite achieving high primary stability, a decision was made to submerge the implant to optimise peri-implant soft-tissue healing. A cover screw was placed, and the flap was repositioned using 4/0 single-interrupted resorbable sutures (PGA Resorba®). Post-operative radiography confirmed accurate three-dimensional placement beneath the sinus floor (Figs. 12a+b).

12a+b
UL6 Implant
placement.
Cover screw fit
and implant
submersion (a).
Axiom® X3 tissue
level implant
4.0x6.5mm (b).



13
Fit of a tissue
level healing
abutment
4.8 x 2mm,
ten weeks
post-placement.

14a+b
Healing and
digital workflow.
UL6 healed site,
13 weeks post-
placement (a).
Intra-oral radio-
graph of the
tissue level scan
body showing
passive fit (b).

AD



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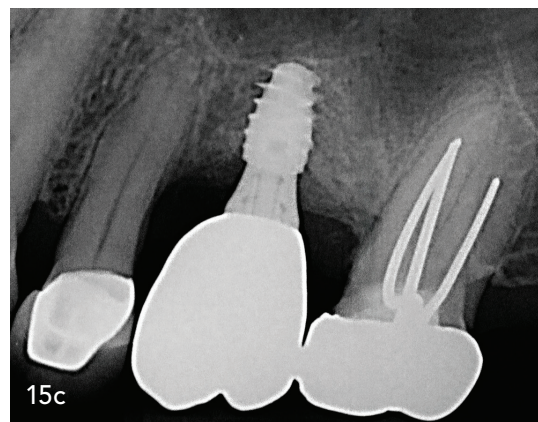


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15a–c
Final restoration UL6. Final occlusal view of the screw retained zirconia restoration (a). Final retracted left lateral view (b). UL6 final radiographic result demonstrating passive fit and stable bone levels (c).

Treatment outcome

Ten weeks post-placement, the implant was exposed, and the cover screw was replaced with a tissue-level healing abutment (4.8 × 2 mm; Fig. 13). Three weeks after uneventful soft-tissue maturation, digital impressions were taken using a TL metal scan body (TRIOS 3, 3Shape; Figs. 14a+b). The definitive restoration—a screw-retained monolithic zirconia crown on a titanium base (X-Base®, Anthogyr)—was torqued to 25 Ncm. Occlusion was refined for balanced centric contacts and light functional guidance. A periapical radiograph confirmed full seating and stable crestal bone, while the tissue-level collar maintained a thick, healthy band of keratinised mucosa (Figs. 15a–c).

At the three-month post-restoration review, soft-tissue health remained stable, and the patient reported improved function and comfort with the restoration.

Discussion

This case demonstrates the importance of osseodensification concepts combined with a short tissue-level configuration to enable predictable rehabilitation of the posterior maxilla with limited vertical bone—avoiding the need for sinus augmentation.^{23,24} The rationale for selecting a short implant was both anatomical and biomechanical. Occlusal forces are primarily concentrated within the coronal 3–4 mm of the bone–implant interface, and when primary stability and favourable load distribution are achieved, short implants perform predictably.^{9,11}

A fully guided approach in complex posterior cases, combined with the macro-geometry; tapered smooth collar and concave neck—of the Axiom® X3 Tissue Level design, enhances placement accuracy and provides a mechanical safeguard against apical displacement towards the sinus. The rounded apex further minimises the risk of inadvertent Schneiderian membrane perforation.

Conclusion

Prosthetic-driven planning and an integrated digital workflow can improve the predictability and efficiency of implant rehabilitation. Although the two cases presented in this series faced different challenges, both benefitted from a shared approach: start with the final restoration in mind, plan carefully, and choose the right implant designs and digital tools that support biological stability. In the aesthetic zone, early soft-tissue shaping with a scannable anatomic healing abutment improved efficiency and allowed a natural emergence profile to develop without interrupting tissue maturation. In the posterior maxilla, the use of a short implant with favourable macro-geometry and a simplified under-preparation protocol, instead of using separate reverse-rotation densifying burs, enabled us to avoid a sinus lift while still achieving reliable primary stability in soft bone. Together, these cases illustrate how combining clinical judgement with the thoughtful use of contemporary implant systems can simplify treatment, reduce chair-time and enhance the final outcome.

References



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Soft-tissue management

A key factor in modern implantology

Stable peri-implant soft tissue is a fundamental prerequisite for implant restorations that succeed both functionally and aesthetically. In the following interview, Dr Elias Jean-Jacques Khoury discusses its clinical relevance and outlines practical, evidence-informed concepts for soft-tissue management in contemporary implant dentistry.

Dr Khoury, in contemporary implant dentistry, what are the primary goals of soft-tissue management, and how does it influence clinical outcomes regarding peri implant health, aesthetics, patient comfort, and long-term stability?

Implant dentistry has reached a high level of technical maturity in recent years; however, long-term success is increasingly determined by the quality and quantity of the peri-implant soft tissues. Beyond purely functional considerations, stability, cleansability, and aesthetics have become key priorities. Soft-tissue management is therefore not an optional add-on, but an integral component of treatment planning—before, during, and after augmentation and implant placement.

In the pre augmentation planning phase how does your evaluation of the soft tissue influence the overall treatment plan and timing? And which soft-tissue augmentation procedures do you consider “standard of care” at this stage?

Within a pre-augmentation treatment concept, the primary focus is initially on rebuilding hard-tissue structures. However, establishing stable, well-vascularised soft-tissue conditions is a decisive prerequisite for successful bone augmentation. Free connective tissue grafts are the most commonly used form of soft-tissue augmentation in this context, as they can be applied universally in both the maxilla and mandible and provide reliable increases in peri-implant soft-tissue volume.

In severely compromised recipient sites, the advantages of a pedicled palatal connective tissue flap can be leveraged. Because the graft remains pedicled to the palate, its vascularity is preserved, which typically supports improved integration and reduced postoperative shrinkage (Fig. 1). When combined with augmentation procedures, this approach enables a double-layer wound closure that effectively protects the bony graft from dehiscence, exposure, and infection. At the same time, it thickens the peri-implant soft tissues—an important benefit, particularly in the aesthetically critical maxillary anterior region. This technique, however, is anatomically limited to the maxilla.

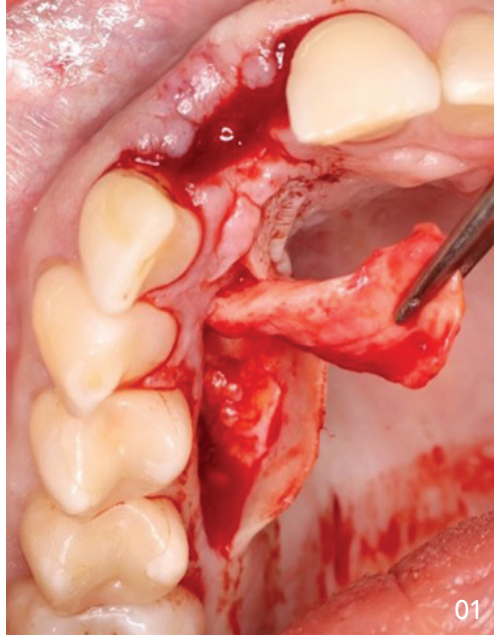
As an adjunct minimally invasive option, the Punch technique may be used, especially after tooth extractions, to protect the blood clot and stabilise early soft-tissue healing.

What options are available for targeted soft-tissue management during implant placement and bone augmentation?

During implant placement and bone augmentation, incision design, flap mobilisation, and suture positioning are critical to achieve a tension-free wound closure. Tunnel and lateral tunnel techniques allow the suture line to be kept away from the augmented area, thereby reducing the risk of dehiscence (Fig. 2).



01
A pedicled palatal flap is harvested from the palate for soft-tissue augmentation.



A key challenge particularly in the mandible is the frequent lack of keratinised mucosa. In this setting, the Kazanjian vestibuloplasty enables reconstruction of the vestibule and creation of keratinised, attached mucosa in a single-stage approach performed simultaneously with implant placement and augmentation (Fig. 3).

By selectively repositioning the muscle attachment and relocating the mucosa, a functionally stable, cleansable soft-tissue environment can be achieved (Fig. 4).

As a more recent refinement, the masseter–buccinator periosteal flap can be used in the posterior mandible. By providing a double-layer wound closure, it offers particular advantages in compromised recipient sites and markedly reduces the risk of exposure of the augmented bone.

Which methods are suitable for soft-tissue management after implant placement?

After implant placement, the focus shifts to long-term stabilisation of the peri-implant tissues. Free mucosal grafts remain the method of choice for increasing the width of keratinised and attached gingiva. As an adjunct, apically positioned flaps—either alone or combined with connective tissue grafts—can be used to transpose keratinised mucosa vestibularly. Roll-flap techniques are particularly useful in the maxilla for horizontal soft-tissue volume gain and optimisation of the emergence profile.

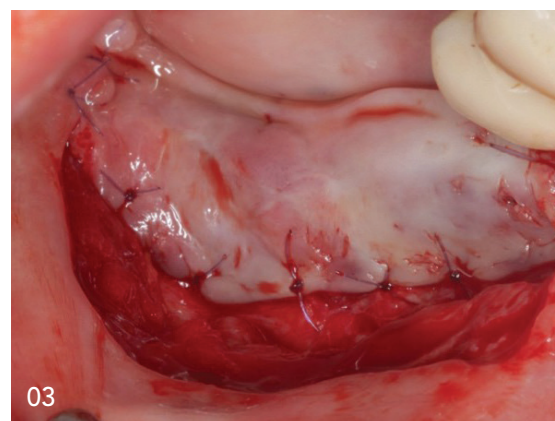
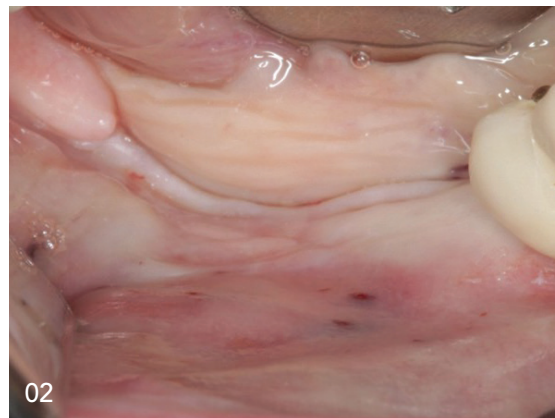
In the aesthetic zone, papilla reconstruction may be required; these measures are planned on an individual basis depending on defect morphology and the available soft-tissue volume.

Looking ahead, what developments do you expect to most influence implant dentistry, and what evidence or clinical needs are driving that change?

Modern implant dentistry is increasingly moving toward a biologically driven, comprehensive treatment concept. Long-term therapeutic success will depend to a large extent on the quality and stability of the peri-implant soft tissues. Proactive soft-tissue management will therefore become a key hallmark of high-quality implant care.

Thank you for the interview and for sharing these clinically relevant insights.

02
Clinical situation after vertical bone augmentation using the tunnel technique in the posterior mandible.



03
Correction of a shallow vestibule by Kazanjian vestibuloplasty, performed concurrently with implant placement.

04
Stable peri-implant soft tissues with an adequate zone of attached gingiva eight years after prosthetic rehabilitation.

Advancing periodontal health together

A presidency focused on collaboration, innovation, and care

Prof. Mia Rakić has been appointed president of the European Federation of Periodontology (EFP), succeeding Prof. Spyros Vassilopoulos, with a focus on strengthening research collaboration and building stronger evidence base for periodontal health policy in Europe. As she begins her term as president, she reflects on the priorities shaping the federation's work in a rapidly changing world.



As you take on the role of EFP president, what will be your top priorities for the coming year?

We are living in an unpredictable world, which makes the responsibility of a large organisation like the EFP even greater. As a federation uniting national societies and professionals across Europe and beyond, we know that global events inevitably affect healthcare, education, and professional life.

The EFP has an ambitious strategic plan, and today's uncertainty requires flexibility. A clear example was Perio Master Clinic in Baku, where difficult circumstances just days before the congress created major challenges for the organising committee and the EFP board. Thanks to dedication, coordination, and responsible decision-making, the event was held successfully. This showed the EFP's strength, driven by excellence, determination, and solidarity. As EFP president, I sincerely thank the team and all attendees for their trust.

This experience highlighted the resilience of our community. Going forward, we will continue to monitor developments, adapt where needed, and support colleagues and healthcare professionals, especially in affected regions. The EFP does not take political positions; our role is to support the periodontal and wider healthcare community.

Recent developments in Spain have brought renewed attention to the recognition of periodontology as a specialty. How can the EFP support national societies where recognition is still evolving?

Recognition of periodontology as a specialty has long been a key priority for the EFP because it ultimately serves patients, colleagues, and healthcare systems.

However, the regulatory landscape in Europe is complex. Each country has its own legal and professional framework, alongside European regulations. While the EFP provides guidance, advocacy, and statements at the European level, much of the work must happen nationally.

Some countries already recognise periodontology as a specialty, and their experience can provide valuable support for others working toward recognition. Spain is currently seeing significant progress after many years of effort. The Spanish Society of Periodontology (SEPA) and other dental organisations have played a major role in advancing this process, and their experience may inspire similar efforts elsewhere.

Periodontal diseases remain highly prevalent yet under-recognised in health policy. How can the EFP elevate gum health on European and global health agendas?

Raising awareness of periodontal health has always been a core priority of the EFP. It is a complex task because it requires collaboration across many levels: within dentistry, with other healthcare professions, and with policymakers and public health authorities.

The federation addresses this through education, public awareness initiatives such as Gum Health Day, and collaboration with the medical community. Work-

shops with other medical societies help strengthen the links between dentistry and medicine.

Another key contribution is the development of scientific recommendations, guidelines, and consensus reports. These help organise the available evidence and make it easier for clinicians and policymakers to understand and apply it.

Ultimately, the message is simple but powerful: oral health has a direct impact on overall health. Preventing periodontal disease and ensuring appropriate treatment benefits patients, healthcare systems, and society. The key now is perseverance.

Collaboration is central to the EFP's work. How do you plan to deepen partnerships within the periodontal community and beyond?

My overall approach is to harness the full potential of our community.

When I first became involved in EFP leadership, one of my responsibilities was Gum Health Day, which included engaging younger generations. I strongly believe that young professionals will play a crucial role in the future of periodontology.

During my presidency, I would like to explore ways to involve them more directly in collaborations with medical societies. Younger professionals are often particularly effective at communicating complex information to diverse audiences, including healthcare professionals, policymakers, and patients.

They can also play an important role in prevention initiatives and public health outreach. This may not yet become a fully structured programme during my term, but it is an area I care deeply about.

In a rapidly evolving environment shaped by digital innovation and AI, how should the federation approach new technologies while safeguarding scientific rigour?

Digital technologies and artificial intelligence have enormous potential to improve many aspects of healthcare. However, the role of the EFP is to carefully assess both their opportunities and limitations.

Artificial intelligence can analyse large datasets and detect patterns with remarkable speed, which may be particularly useful in areas such as diagnostics, where multiple variables interact.

These technologies may also support diagnostic workflow, surgical planning and other clinical stages. But it is essential to understand the core principles of this approach and to recognise their limits. They should assist clinicians, scientists, and educators, not replace critical reasoning.

The final judgement must always remain with the clinician, researcher, or teacher. Educational initiatives, such

as webinars and explanatory materials to help periodontal professionals understand how these technologies work and how to use them responsibly will be released by EFP in the coming months.

Environmental sustainability is becoming a priority in healthcare. What role can periodontology play in sustainable dentistry?

For me, the most sustainable approach in dentistry is very simple: preserving healthy natural teeth. Periodontology is, by definition, the most sustainable branch of dentistry as periodontists investing their knowledge and skills to preserving teeth over the long term. We should not forget this core principle of periodontology.

“During my presidency, I aim to strengthen the involvement of younger professionals in collaboration with medical societies. [...]”

Sustainable periodontology focuses on two main priorities: promoting good oral hygiene across the population and reinforcing the importance of preserving natural teeth within the dental community, exhausting every possible option before considering their replacement.

At the same time, good oral health contributes to better overall health, indirectly reducing the burden on healthcare systems.

As a young woman leading the EFP, what does leadership mean to you today?

I am proud to lead a federation that has long been committed to diversity and inclusion. The EFP actively promotes gender balance and encourages the involvement of younger generations across its activities, from workshops to major congresses such as EuroPerio and the Perio Master Clinic.

Personally, it is a great honour to serve as president. I am also the youngest president in the federation's history, which reflects the EFP's commitment to equal opportunities.

Thank you for your time!

Source: EFP

Pioneering spirit since 1851

Geistlich's vision of regenerative dentistry

With 175 years of company history behind it, a long-standing commitment to scientific excellence, and a clear focus on the future of regenerative dentistry, Geistlich continues to help shape progress in the field. At the Osteology Symposium Vienna 2026, CEO Diego Gabathuler spoke about the importance of the congress as a forum for professional exchange, the latest developments in hard- and soft-tissue regeneration, and the company's strategic priorities for the years ahead.

Dr Alina Ion

What role did the Osteology Symposium Vienna 2026 play for Geistlich—both in terms of dialogue with the professional community and for the company's own development?

The International Osteology Symposium is the most important event of the year for everyone working in regenerative dentistry at the highest level. Within implant dentistry and prosthetic treatment, regeneration remains one of the most demanding areas—but also one of the most decisive. It is fundamental not only to clinical success, but also to the long-term stability and durability of implants and prosthetic restorations.

That is precisely what makes the Osteology Symposium so valuable. It is entirely dedicated to excellence in dental regeneration, bringing together the latest scientific research and the newest clinical insights, all with the goal of improving patient care. For us, it is far more than a congress. It is a unique opportunity to engage in direct and meaningful dialogue with customers, researchers, clinicians, and partners from around the world.

The symposium creates an ideal setting to exchange ideas on the latest advances in science, discuss emerging techniques, and reflect on proven treatment concepts that continue to shape daily practice. It also allows us to better understand the needs and expectations of the professional community—something that is essential for our own continued development as a company.

The Osteology Foundation itself has deep significance for Geistlich. Peter Geistlich established it in 2003 with the aim of advancing research, supporting education, and fostering the next generation in regenerative medicine. That commitment remains at the heart of what we do today and is, if anything, more relevant than ever.

The symposium brought together international experts from both research and clinical practice. Which topics



and developments do you currently consider particularly important for the future of regenerative dentistry?

From my perspective, one of the most pressing questions is how we can address the rising prevalence of peri-implantitis, how we can reduce it more effectively and, above all, improve prevention. This raises a number of key issues: what are the decisive factors in treatment planning, clinical management, and product selection? There are some very exciting and highly relevant new studies and findings in this area that are helping to move the field forward.

Other particularly important developments in hard- and soft-tissue regeneration concern the growing potential for more personalised treatment. One key question is how we can make better use of technologies such as artificial intelligence. Thanks to intra-oral scanners, cone beam com-

puted tomography, and especially the combination of these tools, we now have access to more clinically relevant data than ever before. The challenge—and the opportunity—lies in using this information intelligently to develop truly individualised treatment concepts.

Another important area is how regeneration can be further enhanced and accelerated, for example through biologics. At the same time, the prevention of complications remains a central priority. Beyond these scientific and clinical advances, interdisciplinary collaboration and the patient perspective are also becoming increasingly important, and both were very clearly reflected throughout the congress.

Was there anything in particular that you found especially rewarding or enjoyable about the congress?

Very much so. What I appreciated most was the opportunity to connect with so many members of our wider community—and especially with the members of our Customer Advisory Board. This group brings together clinicians from all over the world. During the Osteology Symposium, we spent half a day together discussing and shaping future products, technologies, and treatment workflows. That exchange was extremely valuable.

Another personal highlight for me was the dialogue and collaboration with young surgeons and dentists. I am always interested in what motivates the next generation and in how we can best support them on their professional journey. It was also a pleasure to see the three winners of our Case Competition present their work on stage during the symposium.

Geistlich is celebrating 175 years of company history. What does this anniversary mean to you personally as CEO, and what message would you like to send to customers and partners through it?

The long-term perspective of a family-owned company was one of the many reasons why I chose to become CEO of Geistlich. Celebrating 175 years of company history stands for reliability, quality, and responsibility—values that are more important today than ever before.

While many industries such as electronics and automotive are seeing a strong trend towards lower costs, often at the expense of quality, we have consciously chosen a different path. We remain committed to delivering the highest possible quality for our partners and, ultimately, for patients because we are not forced to think in terms of quarterly results, we have the freedom to pursue sustainable development over the long term.

In my previous professional environment in the electronics industry, business was driven by a 13-week rhythm. Here, by contrast, the Chairman of the Board asks me: what do we need to do today in emerging markets to maintain our leading position there ten years from now? Which regenerative approaches will be relevant a decade from now? That is a very different way of working. And it is a privilege.



Geistlich has stood for scientific rigour and long-term thinking for many decades. How do you succeed in combining that tradition with the pace of innovation today?

Our approach is built on a combination of long-term thinking, continuous innovation, and uncompromising scientific rigour. In regeneration, there are no shortcuts to lasting success. One of the defining themes is the interaction between oral and overall health, which makes the quality of the biomaterials used—as well as the treatment protocols themselves—absolutely critical.

When developing and approving new products, we actively seek feedback from clinicians during pilot phases before a product is launched. If the result is not fully convincing, the product does not go to market. That principle reflects the standard we set for ourselves: innovation must not only be new, it must also be reliable, clinically meaningful, and truly beneficial in practice.

Looking ahead, what priorities is Geistlich setting for the coming years in order to remain a relevant driving force in the industry after 175 years?

As a global leader in regeneration, we want to continue shaping the future with therapies that are even better, more efficient, and more individualised. At present, we are seeing a clear trend towards faster solutions and improved prevention—both of which are highly relevant to bone regeneration as well. Our role is to translate these developments into reliable, integrated treatment solutions.

At the same time, we are expanding our portfolio globally in order to align our offering even more closely with the needs of users and the specific requirements of different markets. A key part of this strategy is to make our expertise in regeneration accessible to an even broader range of customer groups and markets—always without compromising on quality.

Thank you very much for the interview and for these valuable insights.

Vienna emerged as a hub for the future of oral regeneration

Looking back at the International Osteology Symposium Vienna 2026

From 23 to 25 April Vienna became the international center of attention for oral regeneration. Bringing together more than 90 renowned experts and over 3,000 attendees from across the globe, the International Osteology Symposium offered a prestigious platform for scientific exchange, advanced clinical education, and fresh perspectives on the future of the field.

From the very start, the event made clear what sets this symposium apart: its rare ability to bridge scientific excellence with real-world clinical relevance. At the heart of the programme were the latest research findings, evidence-based insights, and, above all, their practical significance for day-to-day clinical work. The symposium did not simply present cutting-edge science at the highest level; it also translated that knowledge into meaningful applications clinicians could readily bring back into practice.

That same commitment to applicability was reflected in the hands-on programme. Across 18 practical workshops, participants were introduced to both well-established and emerging surgical techniques in a format designed to be structured, accessible, and immediately useful. These sessions gave attendees the chance not only to observe methods in detail, but also to strengthen and refine their own clinical skills. Just as importantly, the symposium fostered an interdisciplinary perspective, encouraging participants to look beyond the boundaries of their individual specialties and reinforcing a broader, more holistic approach to patient care.

Dialogue between clinicians and industry

Industry innovation was also a prominent theme throughout the meeting, underscoring the close relationship between scientific progress and commercial development in the field of implant dentistry. The symposium provided an ideal international platform for companies to present their latest products, technological advances, and strategic innovations to a highly specialised professional audience. In this way, the event not only facilitated academic exchange but also highlighted how industry is actively responding to the evolving clinical and aesthetic demands of modern practice.

Among the companies drawing particular attention was Geistlich which celebrated 175 years of company history and used the occasion to introduce its enhanced collagen membrane, Geistlich Bio-Gide® Forte, to the European market. This product launch represented more than the debut of a single innovation; it formed part of a wider global strategy aimed at expanding and strengthening the company's regenerative portfolio. In addition to new product development, this broader expansion includes the





integration of emerging technologies, the formation of strategic partnerships, and carefully targeted acquisitions designed to reinforce Geistlich's position within the field of regenerative dentistry and biomaterials.

SDS likewise took advantage of the symposium's international visibility to present an early preview of its forthcoming SDS Aesthetic and Anatomic Series. These new implant designs were developed in direct response to the increasing aesthetic and anatomical expectations that now shape contemporary implantology. As clinicians face more complex cases and higher patient demands—particularly in visually sensitive areas—the need for implant systems that combine functional reliability with refined aesthetic adaptability has become ever more important.

The new SDS series expands the company's existing implant portfolio by introducing additional implant shapes and geometries specifically intended for cases in which aesthetic considerations are especially critical. By offering greater flexibility in treatment planning and implant selection, the series aims to help clinicians better adapt to individual anatomical conditions while achieving more harmonious and natural-looking soft-tissue outcomes. Importantly, these innovations have been designed to integrate seamlessly into established surgical and prosthetic protocols, allowing practitioners to benefit from enhanced aesthetic

possibilities without requiring substantial changes to their familiar workflows.

Experts spotlight the future of oral tissue regeneration

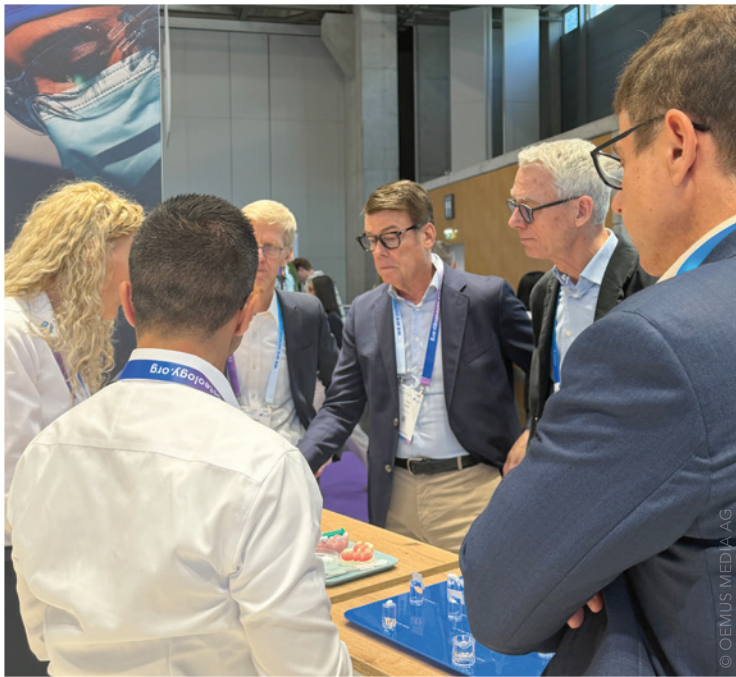
One of the core features of the symposium was its strong scientific programme, particularly the state-of-the-art lectures and case-based discussions. These sessions focused on current developments, novel treatment approaches, and the latest scientific advances in oral tissue regeneration. At the same time, the event made it clear that this is a discipline very much focused on what lies ahead. Technological innovation and emerging trends featured prominently throughout the programme, underscoring the speed and dynamism with which the field continues to evolve.

Beyond the lectures and workshops, it was the international exchange of ideas that gave the event much of its distinctive atmosphere. The symposium created numerous opportunities for participants to engage with leading voices in the specialty and to deepen conversations with colleagues from around the world. Interactive formats such as panel discussions and debates contributed to a lively and open culture of dialogue. Clinical challenges were discussed in depth, but so too were broader questions shaping the direction of the profession as a whole.

Vienna provides the perfect backdrop for a forward-looking symposium

The setting itself also played an important role in the symposium's appeal. With its rich cultural heritage and international character, Vienna proved an ideal host city for a meeting that brought together scientific rigor, personal interaction, and professional inspiration in such a compelling way. Even before the event began, scientific co-chair Lisa Heitz-Mayfield had noted that few things are more inspiring than an outstanding professional conference when it comes to bringing fresh ideas back into everyday clinical practice. Over the course of the symposium, that sentiment was powerfully affirmed.

In retrospect, the International Osteology Symposium Vienna 2026 was far more than a conventional professional congress. It stood out as a comprehensive educational experience—one that successfully combined scientific discovery, clinical application, international networking, and a forward-looking vision for the future of oral regeneration.



30 years of inspiration, progress & global impact

Looking back at the AEEDC Dubai 2026

What began in 1996 as a regional gathering of dental professionals has grown into the world's largest annual scientific dental conference and exhibition, bringing together leaders in dentistry and oral healthcare to foster knowledge exchange, collaboration, and innovation.

Held from 19 to 21 January, the 30th edition of the UAE International Dental Conference and Arab Dental Exhibition marked three decades of leadership in dentistry and oral health. The event achieved record-breaking results, with deals exceeding AED 22 billion, and introduced Dubai Dental Week, a new initiative expanding AEEDC Dubai's global reach.

AEEDC Dubai welcomed more than 80,000 visitors from 192 countries, alongside 4,316 exhibitors representing 5,860 brands and showcasing the latest in dentistry and oral healthcare. This international participation reinforced its role as a platform for innovation, scientific exchange, and professional collaboration.

Dubai as a global hub for dental excellence

Launched by AEEDC Dubai, Dubai Dental Week is a city-wide initiative uniting the dental sector across business, education, innovation, community engagement, and public awareness. Supported by Dubai Economy and Tourism and the Dubai Health Authority, it aims to strengthen collaboration and advance oral healthcare.

The first edition will take place annually, with its inaugural programme running from 16 to 22 January 2027 across Dubai. AEEDC Dubai 2027 will be held from 19 to 21 January as part of the week.

Dubai Dental Week aims to drive economic growth, strengthen education and training, accelerate clinical innovation, and raise awareness of oral health as part of overall wellbeing. Aligned with Dubai 2033 and the emirate's healthcare and medical tourism strategies, it will further position Dubai as a leading hub for dentistry, innovation, and healthcare events.

A comprehensive programme for professionals, youth, and the public

Dubai Dental Week brings together the full dental ecosystem, including professionals, clinics, hospitals, brands, universities, global partners, and media. Through a city-wide programme of



business and public events, it promotes innovation, education, oral health awareness, and career opportunities, while encouraging children and youth to build healthy oral hygiene habits.

The initiative is built around four pillars: economic impact, social awareness, scientific excellence, and careers and talent development. It will also feature a Clinics Festival, where dental clinics can showcase services and dental tourism packages, supporting Dubai's medical tourism sector.

International state of the art in dentistry

The 2026 continuing education calendar features a wide range of international dental events highlighting the latest developments in research, clinical practice, and technology. Congresses, symposia, seminars, and workshops offer valuable opportunities to share scientific insights and innovative treatment concepts.

Continuing dental education is essential for professional development. These events help keep knowledge current, support evidence-based care, and promote high clinical standards. They also encourage professional exchange between research, practice, and industry, helping integrate new developments into everyday dental care.

ITI Congress USA 2026

International Team of Implantology
23–25 April
Napa Valley, USA

ICOI/ADIA World Congress 2026

International Congress of Oral Implantologists
1–3 Oktober
Las Vegas, USA

Oral Reconstruction Global Symposium

Innovations in implant dentistry and tissue regeneration
16–18 April
Miami Beach, USA

Canadian Oral Health Summit

18–20 June
Saskatchewan, Canada

2026 ICD Global Convocation Ceremony & Educational Program

International College of Dentists
29 November
New York City, USA

International Conference on Dentistry and Maxillofacial Surgery

29–30 May
Rio de Janeiro, Brazil

Euro Dental Congress

20–21 August
London, UK

35th Euro Dentistry Congress

Reimagining Global Dentistry: Innovation, Integration and Impact
16–17 June
Paris, France

ADF Paris

The biggest meeting of the dental profession
24–28 November
Paris, France

EAO Congress 2026

Shaping the future of patient care
24–26 September
Lissbon, Portugal

EAED Spring Meeting 2026

European Academy of Esthetic Dentistry
28–30 May
Barcelona, Spain

RASPERINI REUNION-2026

Gingival Papilla and innovative periodontal approaches
17–20 June
Piacenza, Italy

2026 SADA Dental & Oral Health Congress and Exhibition

South African Dental Association
21–23 August
Cape Town, South Africa

paroknowledge 2026

29. Parodontology
Experts Days
18–20 June
Kitzbühel, Austria

**60th Moscow International
Dental Forum & Exhibition
“DENTAL-EXPO 2026”**

21–24 September
Moscow, Russia

Symposium Szeged 2026

Perspectives in Perio-Implantology
and Comprehensive Dentistry
7–9 May
Szeged, Hungary

**42. Annual Meeting of the
Professional Association of
German Oral Surgeons (BDO)**

Milestones in oral surgery
20–21 November
Berlin, Germany

WID 2026

Vienna International Dental
Exhibition
8–9 May
Vienna, Austria

SINO-DENTAL 2026

9–12 June
Beijing, China

fdi 2026

World Dental Congress
4–7 September
Prague, Czech Republic

**50th Austrian Congress for
Dental Medicine**

Austrian Society for Dentistry,
Oral and Maxillofacial Medicine
1–3 October
Vienna, Austria

DenTech China

The 29th International
Exhibition on Dental
Equipment, Technology
& Products
22–25 October
Shanghai, China

OSSTEM Europe Meeting 2026

13–14 November
Prague, Czech Republic

**Hong Kong International Dental
Expo and Symposium**

Hong Kong Dental Association
21–23 August
Hong Kong

**36th ISDR/IADR Indian Division
Annual Conference**

8–11 October
Chennai, India

**International Summit
on Dentistry and
Oral Hygiene**

8 October
Sydney, Australia

ITI Congress Middle East 2026

International Team for Implantology
29–31 October
Abu Dhabi, United Arab Emirates

**ITI Congress
Australasia 2026**

International Team
for Implantology
4–6 June
Melbourne, Australia

TI Safari 2026

Tackling the Toughest Cases
with Confidence
22–27 August
KwaZulu-Natal, South Africa

New Zealand Dental Congress 2026

New Zealand Oral Health Association/the New
Zealand Institute of Dental Technologists/FDI
27–29 August
Auckland, New Zealand

Geistlich launches new collagen membrane at the IOS

At the International Osteology Symposium (IOS) in Vienna, Geistlich Pharma AG (Geistlich) launched the advanced collagen membrane Geistlich Bio-Gide® Forte for the European market. The launch is part of the company's global portfolio expansion, which includes new technologies, strategic partnerships, and targeted acquisitions. At the same time, Geistlich is expanding its initiatives to support the next generation.

Geistlich is a global leader dedicated to advancing regenerative medicine. The company has been the world market leader in the field of regenerative dentistry for many years. In addition, Geistlich is committed to providing comprehensive support to clinicians in the field of regenerative medicine through scientific research, innovative developments as well as educational programmes. Geistlich is a Swiss family-owned company with tradition since 1851. With 15 subsidiaries and 120 distributors, the company reaches over 100 markets and employs around 900 people.

This year's International Osteology Symposium was dedicated to Geistlich's 175th anniversary. This milestone year marks the company's expansion into new fields of regenerative medicine and the launch of 20 new products in over 40 countries. Among them is the advanced collagen membrane Geistlich Bio-Gide® Forte. Following its successful introduction in the United States and highly positive feedback from clinical practice, it is now also available in Europe. Geistlich Bio-Gide® Forte builds on proven Geistlich technology and offers increased strength, improved stability, and easy handling. The membrane's strength was demon-



01
Attendees celebrate Geistlich's 175th anniversary.

02
Two of the three winners of the Case Competition on stage at the Geistlich Corporate Forum.



03
From left to right: Diego Gabathuler (CEO of Geistlich), Viraj Patel (Winner, Rising Stars Case Competition), Roberto Ledergerber (Winner, Rising Stars Case Competition), Frank Schwarz (President, Osteology Foundation), Nadja Nänni (Mentor, Next Generation Roundtable programme), Lorenzo Fiscalini (Winner, Rising Stars Case Competition), Dr Mark Spilker (CSO of Geistlich).

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“As a Swiss family-owned regenerative technology company, responsibility and pioneering spirit is in our DNA. Our pioneering spirit will drive continuous innovation. And, responsibility for patients, for our partners, for science and for quality, [...]”

strated in a load test at the IOS: 1,445 studies document the performance of the Geistlich Bio-Gide® technology, a scientific foundation of evidence equivalent to around four kilogrammes of paper, which Geistlich Bio-Gide® Forte can hold.

Tradition and expertise

At the IOS booth, visitors were able to immerse themselves in Geistlich’s rich history. What began in 1851 as Switzerland’s first glue factory evolved into a pioneer in medical regeneration thanks to scientific curiosity and expertise in bone and tissue processing. “As a Swiss family-owned regenerative technology company, responsibility and pioneering spirit is in our DNA. Our pioneering spirit will drive



04

© Geistlich



05

© Geistlich

04
Pack shot
of Geistlich
Bio-Gide® Forte.

05
Product image
of Geistlich
Bio-Gide® Forte.



06

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06
Geistlich’s booth
at the Osteology
Symposium 2026
in Vienna.

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07

07
Dr Mirjam Kessler, VP Brand & Corporate Communications.

continuous innovation. And, responsibility for patients, for our partners, for science and for quality," says CEO Diego Gabathuler.

Since 2025, Geistlich has been shaping the future. The company is expanding its portfolio and tailoring its offerings even more precisely to the needs of distinct customer groups and market segments. Specialists, dental service organisations (DSOs), general practitioners, and emerging markets will benefit from increasingly



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08



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08
CCO Istvan Galo.

09
At the press conference during the symposium: CEO Diego Gabathuler.



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10

10
CSO Dr Mark Spilker.



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11

11
Four kilos of paper: that's how much research was compiled on the Geistlich Bio-Gide® technology.



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12

12
At the IOS, Geistlich launched the new collagen membrane Geistlich Bio-Gide® Forte.

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13

13 Celebrating 175 years of company history stands for reliability, quality, and responsibility.

14 The Geistlich team at the press conference held during the symposium.



14

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15

15 Dialogue between practitioners and experts.

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customised solutions. By 2035, Geistlich aims to improve the quality of life of more than 80 million people through dental regeneration. A robust pipeline signals yet another transformation in the company's history, driven by the introduction of new technologies, new brands, and new channels.

Promoting young talent

To support the next generation, Geistlich has launched two additional development programmes. With the "Next Generation Round Table," a total of 67 selected, talented clinicians aged 30 to 42 from around the world will be-

gin a three-year training programme this year. In addition, the "Rising Stars Case Competition" recognised outstanding achievements in clinical practice on the IOS stage, such as Viraj Patel (UK) on the use of Allodyn® with and without REGENFAST® in a split-mouth comparison, Lorenzo Fiscalini (Switzerland) on the integration of Yxoss CBR® and REGENFAST® in bone regeneration in the anterior region, and Roberto Ledergerber (Ecuador) on innovative approaches to tooth splitting and periodontal regeneration.

Geistlich Pharma AG
www.geistlich.com

Watch here the Geistlich Bio-Gide® Forte handling



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Greater efficiency. Less effort. Higher treatment quality.

Digital impressions reimagined

The ICX-P5 makes the transition to digital dentistry easier than ever. Thanks to its open system architecture, intuitive operation and impressive scanning precision, you can optimise your practice workflows—whilst increasing patient satisfaction.

Why choose digital impression taking with the ICX-P5?

Digital workflows have long been standard in modern dentistry. With the ICX-P5, you benefit from a high-performance scanner solution that perfectly combines precision, efficiency and cost-effectiveness.

The scanner enables quick and convenient capture of the intra-oral situation—entirely without traditional impression material. The data is processed digitally immediately and can be transferred directly to the dental laboratory.

The result: more precise restorations, more efficient processes and satisfied patients.

The benefits at a glance

- **Ultra-fast scans**
A complete dental arch can be digitally captured in under a minute.
- **Open system**
Compatible with STL and PLY—for maximum flexibility in the digital workflow.
- **Precise results**
High scanning accuracy for reliable results with crowns, bridges and implant restorations.
- **Intuitive operation**
Simply start and scan—without complex settings or lengthy training.
- **Cost-effective**
Attractive value for money and no ongoing licence costs.
- **More efficient workflows in your practice**
With the ICX-P5, you can seamlessly integrate digital impressions into your daily practice routine.

Digital scans reduce sources of error, save time and improve collaboration with your dental laboratory. At the same time, your patients benefit from a significantly more comfortable treatment experience without impression trays and the gag reflex.

The ICX-P5 supports open data formats and integrates seamlessly into existing CAD/CAM workflows.

You are free to choose which laboratory or manufacturing partner you work with—without system lock-in or restrictions.

This ensures maximum flexibility and investment security for your practice.



ICX-BAMBOO PRO: Maximum mobility for your ICX-P5 intra-oral scanner

Scan without limitations: With the ICX-BAMBOO PRO, you can transform your ICX-P5 into a fully mobile scanning solution. The system combines powerful hardware, a large touchscreen and an integrated high-performance battery—for maximum flexibility in everyday practice.

Switch on. Scan. Work on the move. Complete freedom of movement whilst scanning.

The ICX-BAMBOO PRO allows you to use the intra-oral scanner independently of fixed workstations. Thanks to the integrated battery and wireless mobility, you can use the scanner flexibly between treatment rooms.

This ensures more efficient processes, shorter distances and optimal integration of digital workflows into your practice.

ICX-FREE—wireless scanning freedom

For even greater freedom of movement, the ICX-FREE is also available.

The wireless scanner impresses with its ergonomic handling and particularly flexible use in the treatment room. Try digital dentistry for yourself!

- Full dental arch in under 1 minute
- Up to 3.5 hours of continuous operation
- 24-hour stand-by
- Maximum freedom of movement whilst scanning

medentis medical GmbH
www.medentis.com

More information



Focus on ceramic implant innovation and pre launch of the new SDS Aesthetic Series

SDS Swiss Dental Solutions, headquartered in Kreuzlingen, Switzerland, is a global developer and manufacturer of ceramic dental implant systems. The company focuses exclusively on metal-free implant solutions and is recognised for its standardised, biomaterial driven approach to implant design, production, and clinical application. SDS systems are used by clinicians worldwide and are supported by continuous research, product development, and education initiatives.

SDS Swiss Dental Solutions was present at this year's Osteology Symposium in Vienna, where the company provided insights into its latest developments in ceramic implantology and presented selected innovations from its portfolio.

As part of its participation at Osteology, SDS introduced a pre launch preview of the new SDS Aesthetic and Anatomic Series—implant designs developed to address the growing aesthetic and anatomical demands in modern implant dentistry. The series expands the existing product portfolio with additional implant shapes and geometries designed to support natural soft-tissue outcomes in aesthetically sensitive indications, while maintaining a consistent surgical and prosthetic workflow.

The Aesthetic Series builds on SDS' long standing design principles, including optimised macro and micro geometry and the exclusive use of zirconium dioxide ceramic across all implant components. The new series complements the established SDS implant systems and aims to provide clinicians with additional options for challenging clinical situations requiring a high level of aesthetic precision.

During the Osteology meeting, customers had the opportunity to evaluate the new products in a hands-on session conducted by Dr Thore Santel. Additionally, within the Corporate Forum, Prof. Beuer and Dr Ilian Dargel presented current scientific evidence on ceramic dental implants, including the outcomes of the first Consensus Conference in Nice in 2025.



SDS Swiss Dental Solutions
www.swissdentalsolutions.com



More about the company



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

New design for **implants**— international magazine of oral implantology

After a comprehensive relaunch, our magazine returns in this issue with a thoroughly modernised design, created to deliver clearer orientation, sharper scientific communication and a distinctly editorial, journal-like character. The result is a reading experience that benefits dentists and clinicians, supports authors, and provides a premium platform for industry partners.

Striking use of red as a recognition cue:

the bold red in “implants” (and as an accent in the subtitle) serves as a clear signature colour (it was already there before, it just stands out more now).

Tension between classic serif and modern reduction:

the large serif wordmark feels high-end/editorial, while the layout remains minimal—premium and precision in a single look.

Strong minimalism on the cover as a design statement:

few elements, clear axes, lots of calm—stands out from typical “overloaded” trade magazines.



North America

Europe

North Africa

South America

Typography as the main brand carrier:

a clear focus on type rather than decoration; large, confident headline typography paired with a neutral, highly legible sans serif for informational text.

Radically pared-back, scientific look:

lots of white space, clear hierarchies, and an asymmetrical "journal-like" base layout—feels precise, modern, and professional.



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More "International Journal" character:

overall a design that more strongly resembles an academic journal aesthetic, emphasizing credibility and relevance.

Join us as a partner.

Do you have clinical cases and deep expertise in a specific treatment method? Join us and share your experience, reach a global audience, and raise your profile. We're always looking for new contributors to expand our clinical and scientific network.



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Do you want to showcase your implantology solutions where decision-makers truly pay attention? Position your brand in our magazine with ads or high-quality content formats. Reach a focused professional audience, strengthen your visibility, and become part of our international network spanning clinical practice, science, and industry. We're always looking for new industry partners and collaborations.



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Asia

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The Dawson Academy launches online education in functional aesthetic dentistry

The Dawson Academy, a provider of postgraduate dental education, has launched a new online campus and opened registration for its inaugural Fundamentals of Functional Esthetic Dentistry programme. The four-part on-demand series delivers approximately 16 hours of education and offers up to 13.5 continuing education credits.

Designed as a clinic-first educational pathway, the programme translates The Dawson Academy's evidence-based approach to functional aesthetic dentistry into a structured curriculum covering examination and record taking, occlusal analysis, treatment planning and smile design. The content integrates digital workflows and practical implementation guidance and features contributions from academy lecturers, including Senior Clinical Director Dr Leonard Hess, a practising dentist and an experienced continuing education lecturer with an international teaching record.

Access to the online campus is available through free membership, which provides entry to selected resources, tutorials and expert content. Enrolment in the Fundamentals of Functional Esthetic Dentistry series is offered as a single package, and all sessions are available on demand to support flexible learning

schedules. The four-part programme is priced at €999, excluding VAT, and is available only as a complete package. The fee includes supplementary learning materials, clinical checklists and expert guidance.

The Dawson Academy
www.dawsonacademy.eu



Colgate Oral Health Network celebrates 15 years of service to dental professionals

Colgate Oral Health Network (COHN) is celebrating its 15th anniversary in style, having awarded over 2.5 million CE certificates to 450,000 dental professionals from more than 200 countries.

Launched in 2011 and sponsored by Colgate Oral Pharmaceuticals, COHN is the dental team's one-stop resource for free dental continuing education. The site offers over 330 continuing education units at any time, and members can choose from a range of dental topics offered by internationally recognised experts in a variety of formats, including live and recorded webinars, articles, case studies and CE podcasts.

"Colgate is proud of its 15 year legacy in providing dental professionals the highest quality dental continuing education", said Dr Jason Goodchild, Colgate Scientific Affairs Director. "Colgate is committed to reimagining a healthier future for all people, including Dental Professionals and their patients."

In a recent survey, 98.5 per cent of participating COHN members said they would recommend the site to other dental professionals.¹ One survey respondent said: "I love that Colgate invests or gives back to the profession of oral health by offering free continuing education credit opportunities. It is so wonderful to be able to get CE from a reputable company that I have respected for years." Another shared, "I really like many features of the Colgate Oral Health Network. First, the content is extremely helpful and necessary for providing high-quality patient care. I also enjoy attending the live webinars because you can ask questions in real time. Overall, I'm very grateful for this platform. It has been very helpful for my learning and professional development."

The continuing education site is hosted by Tribune Group GmbH, a designated approved PACE Program Provider by the Academy of General Dentistry for Fellowship, Mastership, and Membership Maintenance Credit and most recently designated as an approved provider by the American Academy of Dental Hygiene, Inc.

¹ 2025 COHN Membership survey n=1,386.



Colgate Oral Health Network
www.colgateoralhealthnetwork.com

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Do you have clinical cases and a profound knowledge about a special treatment method? Then become part of **implants—international magazine of oral implantology**. Share your experience and knowledge and benefit from a global reach and high level of awareness.

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Numbered images in TIF or JPEG format, in a printable quality of at least 300 dpi.



Most important: we would like to introduce you/the mind behind the article. So please send us also your portrait photo with a short biography about your professional career and your contact information.



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24–26 September 2026
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Imprint

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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).

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